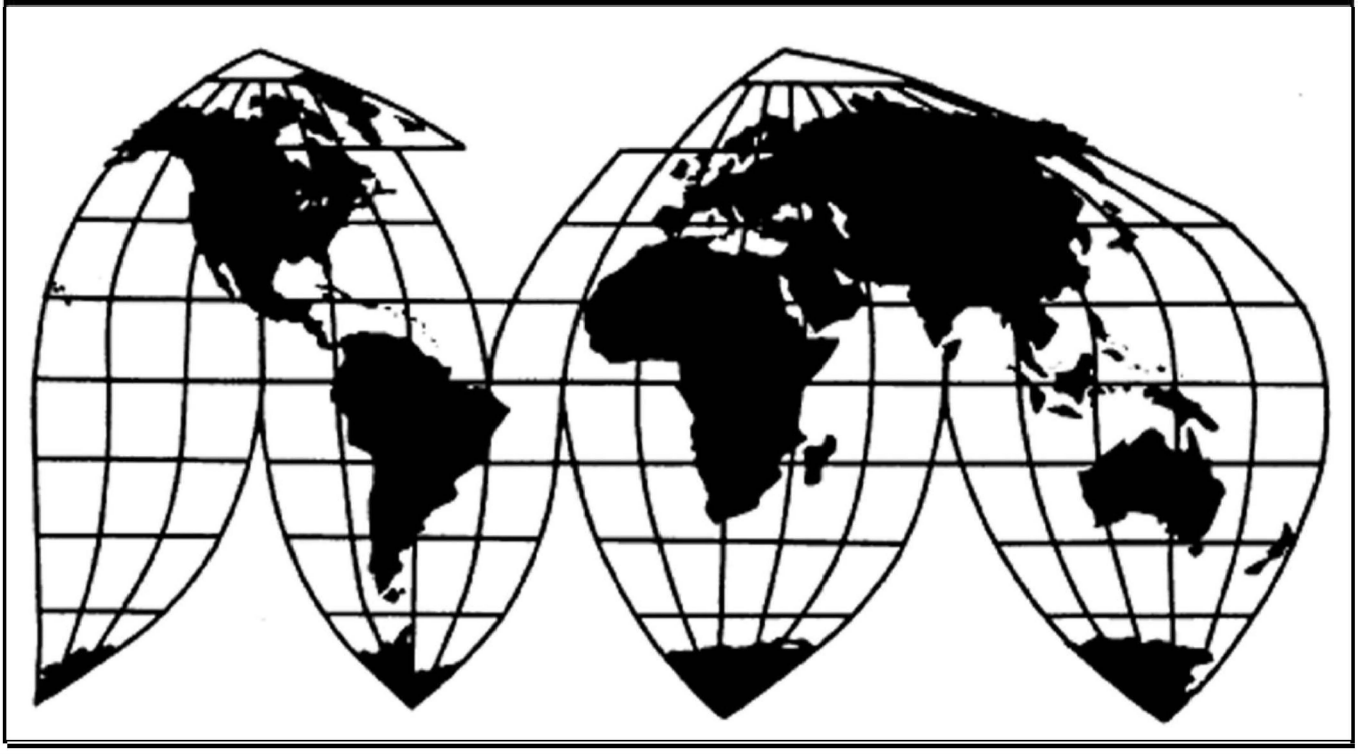
In the Matter of

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF

Investigation No. 337-TA-1133

Publication 5286 **March 2022**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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U.S. International Trade Commission

Washington, DC 20436
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In the Matter of

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF

Investigation No. 337-TA-1133

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133 (Recission)**

NOTICE OF A COMMISSION DETERMINATION TO INSTITUTE A RESCISSION PROCEEDING AND RESCIND PERMANENTLY A LIMITED EXCLUSION ORDER AND CEASE AND DESIST ORDERS; TERMINATION OF RESCISSION PROCEEDING

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission (the "Commission") has determined to institute a rescission proceeding and rescind the remedial orders issued in the underlying investigation. This rescission proceeding is hereby terminated.

FOR FURTHER INFORMATION CONTACT: Carl P. Bretscher, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436, telephone (202) 205-2382. Copies of non-confidential documents filed in connection with this investigation may be viewed on the Commission's electronic docket system ("EDIS") at https://edis.usitc.gov. For help accessing EDIS, please email EDIS3Help@usitc.gov. General information concerning the Commission may also be obtained by accessing its Internet server at https://www.usitc.gov. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal, telephone (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on October 2, 2018, based on a complaint filed by Autel Robotics USA, Inc. ("Autel") of Bothell, Washington. 83 FR 49575-76 (Oct. 2, 2018). The complaint accuses respondents of violating 19 U.S.C. 1337 of the Tariff Act of 1930, as amended ("Section 337") by importing into the United States, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles ("UAVs") and components thereof that infringe one or more of the asserted claims of U.S. Patent Nos. 9,260,184 ("the '184 patent"); 7,979,174 ("the '174 patent"); and 10,044,013 ("the '013 patent"). *Id*. The complaint also alleges the existence of a domestic industry. *Id*. The notice of investigation named the following respondents: SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. ("iFlight") of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC ("DJI Service") of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "DJI"). *Id*. The Office of Unfair Import Investigations is not a party to this investigation. *Id*.

On March 2, 2020, the presiding Chief Administrative Law Judge ("CALJ") issued a combined Initial Determination on Violation of Section 337 ("ID") and Recommended Determination ("RD") on Remedy and Bonding, finding a violation of Section 337 by way of infringement of the '184 patent but no violation with respect to the '174 patent or '013 patent.

On May 29, 2020, while the parties' petitions for review were still pending before the Commission, respondents' counsel filed a letter with the Commission attaching four recent Final Written Decisions by the Patent Trial and Appeal Board ("PTAB") of the U.S. Patent and Trademark Office, finding the challenged claims of the '184, '174, and '013 patents, including the claims asserted in this investigation, to be unpatentable. *See, e.g., SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00343, Final Written Decision Finding All Challenged Claims Unpatentable (PTAB May 21, 2020), *on appeal sub. nom.*, *Autel Robotics USA LLC v. SZ DJI Technology Co.*, Appeal No. 20-1987 (Fed. Cir.) ("Appeal No. 20-1987").

On June 8, 2020, the Commission issued a notice stating that it had determined to partially review certain findings relating to the '184 patent, including the impact, if any, of the PTAB's Final Written Decision finding the '184 patent claims unpatentable. Comm'n Notice at 2-3 (June 9, 2020). The Commission determined not to review the ID's findings that there is no violation with respect to the '174 patent or '013 patent. *Id*.

On August 20, 2020, the Commission affirmed that DJI violated Section 337 by way of infringing claims 1 and 2 of the '184 patent. Comm'n Notice at 3 (Aug. 20, 2020) ("Comm'n Notice"); Comm'n Op. at 8-21 (Aug. 20, 2020) ("Comm'n Op."). Having found a violation of Section 337, the Commission determined that the appropriate remedy is: (a) a limited exclusion order prohibiting the importation of UAVs and components thereof that are covered by claims 1 or 2 of the '184 patent; (b) cease and desist orders against respondents iFlight and DJI Service; and (c) set a bond in the amount of 11.5 percent of the entered value of the excluded products imported during the period of Presidential review (19 U.S.C. 1337(j)). *See* Comm'n Notice at 3; Comm'n Op. at 26-34. The Commission determined that the public interest factors enumerated in Section 337(d)(1) and (f)(1) do not preclude issuance of the limited exclusion order or cease and desist orders. *Id.* The Commission, however, determined to suspend enforcement of the limited exclusion order, cease and desist orders, and bond provision pending final resolution of the PTAB's Final Written Decision regarding the '184 patent. *See* Comm'n Notice at 4; Comm'n Op. at 35-38.

On October 16, 2020, Autel filed a notice of appeal of the Commission's final determination, including its determination to suspend enforcement of its remedial orders. *See Robotics USA, LLC v. ITC*, Appeal No. 21-1082 ("Appeal No. 21-1082"). On November 25, 2020, DJI filed a notice of a cross-appeal of the Commission's final determination. *See SZ DJI Technology Co. Ltd. v. ITC*, Appeal No. 21-1363 ("Appeal No. 21-1363"). On December 16, 2020, the Federal Circuit consolidated the appeals, designating Appeal No. 21-1082 as the lead case.

On August 16, 2021, Autel and DJI filed a joint motion to voluntarily dismiss their appeal and cross-appeal. *See Autel Robotics USA LLC v. Int'l Trade Comm'n LLC*, Appeal Nos. 2021-1082, -1363, Joint Stipulation to Dismiss Appeals (Aug. 16, 2021). The Federal Circuit

granted the motion and dismissed the appeals the following day. *See Autel Robotics USA LLC v. Int'l Trade Comm'n*, Appeal Nos. 21-1082, -1363, Order (Fed. Cir. Aug. 17, 2021).

On August 16, 2021, Autel and DJI filed a Joint Petition to Rescind the Limited Exclusion Order and Cease and Desist Orders ("Joint Petition") that the Commission issued in this investigation, pursuant to 19 U.S.C. § 1337(k) and Commission Rule 210.76(a) (19 C.F.R. § 210.76(a)). The parties filed both confidential and public versions of the settlement agreements.

Upon consideration of the parties' joint petition, the Commission has determined that the petition complies with Commission rules, *see* 19 CFR 210.76(a)(3), and that there are no extraordinary reasons to deny rescission of the remedial orders. Accordingly, the Commission has determined to institute a rescission proceeding and to permanently rescind the LEO and the CDOs. This rescission proceeding is hereby terminated.

The Commission voted to approve these determinations on September 10, 2021.

The authority for the Commission's determination is contained in Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337), and in part 210 of the Commission's Rules of Practice and Procedure (19 CFR part 210).

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: September 10, 2021

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served upon the following parties as indicated, on **September 10, 2021.**

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant:

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On Behalf of Respondents SZ DJI Technology Co. Ltd, DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133** **(Rescission)**

ORDER

The Commission instituted this investigation on October 2, 2018, based on a complaint filed by Autel Robotics USA, Inc. ("Autel") of Bothell, Washington. 83 Fed. Reg. 49575-76 (Oct. 2, 2018). The complaint accuses respondents of violating 19 U.S.C. 1337 of the Tariff Act of 1930, as amended ("Section 337") by importing into the United States, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles ("UAVs") and components thereof that infringe one or more of the asserted claims of U.S. Patent Nos. 9,260,184 ("the '184 patent"); 7,979,174 ("the '174 patent"); and 10,044,013 ("the '013 patent"). *Id*. The complaint also alleges the existence of a domestic industry. *Id*. The notice of investigation named the following respondents: SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. ("iFlight") of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC ("DJI Service") of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "DJI"). *Id*. The Office of Unfair Import Investigations is not a party to this investigation. *Id*.

On March 2, 2020, the presiding Chief Administrative Law Judge ("CALJ") issued a combined Initial Determination on Violation of Section 337 ("ID") and Recommended

Determination ("RD") on Remedy and Bonding, finding a violation of Section 337 by way of infringement of the '184 patent but no violation with respect to the '174 patent or '013 patent.

On May 29, 2020, while the parties' petitions for review were still pending before the Commission, respondents' counsel filed a letter with the Commission attaching four recent Final Written Decisions by the Patent Trial and Appeal Board ("PTAB") of the U.S. Patent and Trademark Office, finding the challenged claims of the '184, '174, and '013 patents, including the claims asserted in this investigation, to be unpatentable. *See, e.g., SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00343, Final Written Decision Finding All Challenged Claims Unpatentable (PTAB May 21, 2020), *on appeal sub. nom.*, *Autel Robotics USA LLC v. SZ DJI Technology Co.*, Appeal No. 20-1987 (Fed. Cir.) ("Appeal No. 20-1987").

On June 8, 2020, the Commission issued a notice stating that it had determined to partially review certain findings relating to the '184 patent, including the impact, if any, of the PTAB's Final Written Decision finding the '184 patent claims unpatentable. Comm'n Notice at 2-3 (June 9, 2020). The Commission determined not to review the ID's findings that there is no violation with respect to the '174 patent or '013 patent. *Id*.

On August 20, 2020, the Commission affirmed that DJI violated Section 337 by way of infringing claims 1 and 2 of the '184 patent. Comm'n Notice at 3 (Aug. 20, 2020) ("Comm'n Notice"); Comm'n Op. at 8-21 (Aug. 20, 2020) ("Comm'n Op."). Having found a violation of Section 337, the Commission determined that the appropriate remedy is: (a) a limited exclusion order ("LEO") prohibiting the importation of UAVs and components thereof that are covered by claims 1 or 2 of the '184 patent; (b) cease and desist orders ("CDOs") against respondents iFlight and DJI Service; and (c) set a bond in the amount of 11.5 percent of the entered value of the excluded products imported during the period of Presidential review (19 U.S.C. 1337(j)). *See*

Comm'n Notice at 3; Comm'n Op. at 26-34. The Commission determined that the public interest factors enumerated in Section 337(d)(1) and (f)(1) do not preclude issuance of the limited exclusion order or cease and desist orders. *Id.* The Commission, however, determined to suspend enforcement of the LEO, CDOs, and bond provision pending final resolution of the PTAB's Final Written Decision regarding the '184 patent. *See* Comm'n Notice at 4; Comm'n Op. at 35-38.

On October 16, 2020, Autel filed a notice of appeal of the Commission's final determination, including its determination to suspend enforcement of its remedial orders. *See Robotics USA, LLC v. ITC*, Appeal No. 21-1082 ("Appeal No. 21-1082"). On November 25, 2020, DJI filed a notice of a cross-appeal of the Commission's final determination. *See SZ DJI Techn. Co. Ltd. v. ITC*, Appeal No. 21-1363 ("Appeal No. 21-1363"). On December 16, 2020, the Federal Circuit consolidated these appeals, designating Appeal No. 21-1082 as the lead case.

On August 16, 2021, Autel and DJI filed a joint motion to voluntarily dismiss their appeal and cross-appeal. *See Autel Robotics USA LLC v. Int'l Trade Comm'n LLC*, Appeal Nos. 2021-1082, -1363, Joint Stipulation to Dismiss Appeals (Aug. 16, 2021). The Federal Circuit granted the motion and dismissed the appeals the following day. *See Autel Robotics USA LLC v. Int'l Trade Comm'n*, Appeal Nos. 21-1082, -1363, Order (Fed. Cir. Aug. 17, 2021).

On August 16, 2021, Autel and DJI filed a Joint Petition to Rescind the Limited Exclusion Order and Cease and Desist Orders ("Joint Petition") that the Commission issued in this investigation, pursuant to Section 337(k) (19 U.S.C. § 1337(k)) and Commission Rule 210.76(a) (19 C.F.R. § 210.76(a)).

Upon consideration of the parties' joint petition, the Commission has determined to institute a recission proceeding and to rescind the LEO and CDOs issued in the underlying investigation.

It is hereby ORDERED that:

(1) Pursuant to 19 U.S.C. § 1337(k) and 19 C.F.R. § 210.76, the remedial orders are RESCINDED;

(2) The Secretary shall serve a copy of this Order on the Secretary of the Treasury and all parties of record and shall publish notice thereof in the Federal Register.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: September 10, 2021

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **ORDER, COMMISSION** has been served upon the following parties as indicated, on **September 10, 2021.**

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant:

Timothy C. Bichkham, Esq.
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Washington, DC 20036
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On Behalf of Respondents SZ DJI Technology Co. Ltd, DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

NOTICE OF A FINAL DETERMINATION FINDING A VIOLATION OF SECTION 337 AND ISSUANCE OF REMEDIAL ORDERS; SUSPENSION OF ENFORCEMENT OF THE REMEDIAL ORDERS PENDING FINAL RESOLUTION OF A FINAL WRITTEN DECISION BY THE PATENT TRIAL AND APPEAL BOARD; AND TERMINATION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission (the "Commission") has determined that: (i) the respondents have violated Section 337 of the Tariff Act of 1930, as amended, by importing, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles ("UAVs") that infringe complainant's U.S. Patent No. 9,260,184 ("the '184 patent"); (2) the respondents' redesigned rotor locking assemblies were not ripe for adjudication in this investigation; (3) the appropriate remedies are a limited exclusion order and cease and desist orders; and (4) enforcement of said remedial orders will be suspended pending final resolution of a Final Written Decision by the Patent and Trademark Office ("PTAB") that the asserted claims of the '184 patent are unpatentable. This investigation is terminated.

FOR FURTHER INFORMATION CONTACT: Carl P. Bretscher, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436, telephone (202) 205-2382. Copies of non-confidential documents filed in connection with this investigation may be viewed on the Commission's electronic docket system ("EDIS") at *https://edis.usitc.gov*. For help accessing EDIS, please email *EDIS3Help@usitc.gov*. General information concerning the Commission may also be obtained by accessing its Internet server at *https://www.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal, telephone (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on October 2, 2018, based on a complaint filed by Autel Robotics USA, Inc. ("Autel") of Bothell, Washington. 83 FR 49575-76 (Oct. 2, 2018). The complaint accuses respondents of violating 19 U.S.C. 1337 of the Tariff Act of 1930, as amended ("Section 337") by importing into the United States, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles and components thereof that infringe the asserted claims of the '184

patent as well as of U.S. Patent Nos. 7,979,174 ("the '174 patent") and 10,044,013 ("the '013 patent"). *Id*. The complaint also alleges the existence of a domestic industry. *Id*.

The notice of investigation named the following respondents: SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. ("iFlight") of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC ("DJI Service") of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "DJI"). *Id*. The Office of Unfair Import Investigations is not a party to this investigation. *Id*.

On September 13, 2019, the presiding Administrative Law Judge ("ALJ") issued Order No. 21, granting in part Autel's motion to strike evidence and expert opinions relating to DJI's "new designs" for rotor and battery locking mechanisms that DJI allegedly disclosed after the close of discovery. Order No. 21 at 2-4 (Sept. 13, 2019).

On October 17, 2019, the Commission determined not to review Order No. 22, which partially terminated the investigation with respect to certain patent claims withdrawn by Autel. Order No. 22 (Sept. 30, 2019), *unreviewed by* Comm'n Notice (Oct. 17, 2019). The claims that remained at issue are claims 1, 2, and 5 of the '184 patent; claims 1, 7, 8, 14, and 17 of the '174 patent; and claims 1, 3-5, 8, 10, 13-16, 18, 22, or 23 of the '013 patent.

The ALJ held an evidentiary hearing on October 21-23, 2019. At the start of that hearing, the ALJ announced that DJI's new designs are not part of this investigation.

On March 2, 2020, the ALJ issued a combined Initial Determination on Violation of Section 337 ("ID") and Recommended Determination ("RD") on Remedy and Bonding, finding a violation of Section 337 by way of infringement of the '184 patent but no violation with respect to the '174 or '013 patents. On March 9, 2020, the ALJ issued an errata, which corrects a misstatement in the original ID regarding the '174 patent but does not change the ID's findings on infringement or violation. *See* Notice of Errata to Final Initial Determination (Mar. 9, 2020).

On March 16, 2020, the parties filed petitions for review of certain findings in the final ID, pursuant to Commission Rule 210.43(a) (19 CFR 210.43(a)). The parties filed their respective responses on March 24, 2020, pursuant to Commission Rule 210.43(c) (19 CFR 210.43(c)).

On May 15, 2020, the Commission issued a notice soliciting public comments on the public interest factors, if any, that may be implicated if a remedy were to be issued in this investigation. 85 FR 30735 (May 20, 2020). The Commission did not receive any comments in response to its notice.

On May 29, 2020, while the petitions for review were still pending before the Commission, respondents' counsel filed a letter with the Commission attaching four recent Final Written Decisions by the Patent Trial and Appeal Board ("PTAB") of the U.S. Patent and Trademark Office, in which the PTAB found the challenged claims of the '184, '174, and '013 patents, including the claims asserted in this investigation, to be unpatentable. *See SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00343, Final Written Decision

Finding All Challenged Claims Unpatentable (PTAB May 21, 2020) (regarding '184 patent); *SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00250, Final Written Decision Finding All Challenged Claims Unpatentable (PTAB May 13, 2020) (regarding '174 patent); *SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00249, Final Written Decision Finding All Challenged Claims Unpatentable (PTAB May 13, 2020) (regarding '174 patent); *SZ DJI Technology Co. v. Autel Robotics USA LLC*, Case IPR2019-00016, Final Written Decision Finding All Challenged Claims Unpatentable (PTAB May 14, 2020) (regarding '013 patent).

On June 8, 2020, the Commission issued a notice stating that it determined to partially review the ID with respect to infringement of the '184 patent, whether DJI's new rotor locking assemblies should be adjudicated as part of this investigation, and the impact on this investigation, if any, of the PTAB's Final Written Decision finding the challenged claims of the '184 patent unpatentable. Comm'n Notice at 2-3 (June 9, 2020). The Commission determined not to review the ID's findings that the asserted claims of the '184 patent are not invalid, the domestic industry requirement is satisfied, and there is no violation of Section 337 with respect to either the '174 or '013 patents. *Id*. The Commission asked the parties to brief several questions regarding: (i) the impact, if any, of the PTAB's Final Written Decision finding that asserted claims of the '184 patent, among others, are unpatentable; (ii) whether DJI's new rotor locking designs should be adjudicated as part of this investigation; and (iii) whether DJI's Phantom 4 Pro and Inspire UAVs infringe the asserted claims of the '184 patent. *Id.* at 3-4. The Commission also asked the parties for briefing on remedy, bonding, and the public interest and extended the target date for completion of this investigation to August 10, 2020. *Id*. at 4-5. The target date was further extended to August 20, 2020. Comm'n Notice (August 10, 2020).

The parties filed their initial responses to the Commission's review questions on June 24, 2020, and their respective reply briefs on July 1, 2020.

Having considered the parties' submissions, the ID, and the record in this investigation, the Commission has determined that DJI has violated Section 337 by importing into the United States, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles and components thereof that infringe claims 1 and 2 of the '184 patent. In particular, the parties did not petition for review of the ID's findings that DJI's Mavic Pro, Mavic Air, and Spark UAVs infringe claim 1 of the '184 patent. The Commission has determined that those UAVs also infringe claim 2 and that DJI's Phantom 4 Pro UAV infringes both claims 1 and 2. The Commission further determines that DJI's Inspire UAV does not infringe either claim 1 or 2 of the '184 patent. The Commission also affirms the ALJ's decision not to adjudicate DJI's new rotor locking designs in the present investigation.

The Commission has determined that the appropriate remedy is: (a) a limited exclusion order prohibiting the importation of certain unmanned aerial vehicles and components thereof that are covered by claims 1 or 2 of the '184 patent; and (b) cease and desist orders against respondents iFlight and DJI Service. The Commission has determined that the public interest factors enumerated in Section 337(d)(1) and (f)(1) do not preclude issuance of the limited exclusion order or cease and desist orders. The Commission has also determined to set a bond in the amount of 11.5 percent of the entered value of the excluded products imported during the period of Presidential review (19 U.S.C. 1337(j)).

The Commission has also determined to suspend enforcement of the limited exclusion order, cease and desist orders, and bond provision pending final resolution of the PTAB's Final Written Decision regarding the '184 patent. *See* 35 U.S.C. 318(b); *SZ DJI Technology Co. v. Autel Robotics USA, LLC*, IPR2019-00343, Patent 9,260,184, Final Written Decision Determining All Challenged Claims Unpatentable (May 21, 2020).

The Commission's orders and opinion were delivered to the President and United States Trade Representative on the day of their issuance.

The Commission voted to approve these determinations on August 20, 2020. This investigation is hereby terminated.

The authority for the Commission's determination is contained in Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337), and in part 210 of the Commission's Rules of Practice and Procedure (19 CFR part 210).

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: August 20, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served upon the following parties as indicated, on 8/20/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

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On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In The Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

LIMITED EXCLUSION ORDER

The United States International Trade Commission ("Commission") has determined that there is a violation of 19 U.S.C. § 1337 of the Tariff Act of 1930, as amended ("Section 337"), in the unlawful importation, sale for importation, or sale within the United States after importation by respondents SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "Respondents") of unmanned aerial vehicles and components thereof that infringe one or more of claims 1 and 2 of U.S. Patent No. 9,260,184 ("the '184 patent").

Having reviewed the record in this investigation, including the written submissions of the parties, the Commission has determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed entry of covered unmanned aerial vehicles and components thereof manufactured by or on behalf of Respondents or any of their affiliate companies, parents, subsidiaries, licensees, or other related business entities, or its successors or assigns.

The Commission has also determined that the public interest factors enumerated in 19 U.S.C. § 1337(d) do not preclude the issuance of the limited exclusion order, and that the

bond during the period of Presidential review shall be in the amount of 11.5 percent of the entered value of the unmanned aerial vehicles and components thereof subject to this Order.

Accordingly, the Commission hereby **ORDERS** that:

1. Unmanned aerial vehicles and components thereof that are covered by one or more of claims 1-2 of the ’184 patent and are manufactured abroad by, or on behalf of, or imported by or on behalf of Respondents or any of their affiliated companies, parents, subsidiaries, agents, or other related business entities, or its successors or assigns, are excluded from entry for consumption into the United States, entry for consumption from a foreign-trade zone, or withdrawal from a warehouse for consumption, for the remaining terms of the patent, except articles under license of the patent owner or as provided by law.

2. Notwithstanding paragraph 1 of this Order, the aforesaid unmanned aerial vehicles and components thereof are entitled to entry into the United States for consumption, entry for consumption from a foreign trade zone, or withdrawal from a warehouse for consumption, under bond in the amount of 11.5 percent of their entered value, pursuant to subsection (j) of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337(j), and the Presidential Memorandum for the United States Trade Representative of July 21, 2005 (70 *Fed. Reg.* 43,251), from the day after this Order is received by the United States Trade Representative, and until such time as the United States Trade Representative notifies the Commission that this action is approved or disapproved but, in any event, not later than sixty (60) days after the receipt of this Order.

3. At the discretion of U.S. Customs and Border Protection (“CBP”) and pursuant to the procedures it establishes, persons seeking to import unmanned aerial vehicles and components thereof that are potentially subject to this Order may be required to certify that they

are familiar with the terms of this Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the products being imported are not excluded from entry under paragraph 1 of this Order. At its discretion, CBP may require persons who have provided the certification described in this paragraph to furnish such records or analyses as are necessary to substantiate the certification.

4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to unmanned aerial vehicles and components thereof that are imported by and for the use of the United States, or imported for and to be used for, the United States with the authorization or consent of the Government.

5. The enforcement of this Order, including the bond provision, is suspended pending final resolution of a Final Written Decision issued by the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office on May 21, 2020, finding certain claims of the '184 patent, including claims 1 and 2, to be unpatentable. *See* 35 U.S.C. § 318(b); *SZ DJI Technology Co. v. Autel Robotics USA, LLC*, IPR2019-00343, Patent 9,260,184, Final Written Decision Determining All Challenged Claims Unpatentable (May 21, 2020).

6. The Commission may modify this Order in accordance with the procedures described in Rule 210.76 of the Commission's Rules of Practice and Procedure, 19 C.F.R. § 210.76.

7. The Secretary shall serve copies of this Order upon each party of record in this Investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and U.S. Customs and Border Protection.

8. Notice of this Order shall be published in the *Federal Register*.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: August 20, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **Order, Commission** has been served upon the following parties as indicated, on 8/20/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

Timothy C. Bichkham, Esq.
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue
NW Washington, DC 20036
Email: tbickham@steptoe.com

☐ Via Hand Delivery
☐ Via Express Delivery
☐ Via First Class Mail
☒ Other: Email Notification of Availability for Download

On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

Qingyu Yin, Esq.
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☐ Via First Class Mail
☒ Other: Email Notification of Availability for Download

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

CEASE AND DESIST ORDER

IT IS HEREBY ORDERED that DJI Service LLC, 17301 Edwards Road Cerritos, California 90703 ("Respondent") cease and desist from conducting any of the following activities in the United States: importing, selling, marketing, advertising, distributing, transferring (except for exportation), soliciting United States agents or distributors, and aiding or abetting other entities in the importation, sale for importation, sale after importation, transfer (except for exportation), or distribution of unmanned aerial vehicles and components thereof that are covered by one or more of claims 1 or 2 of U.S. Patent No. 9,260,184 ("the '184 patent") in violation of 19 U.S.C. § 1337, as amended ("Section 337").

I.
Definitions

As used in this order:

(A) "Commission" shall mean the United States International Trade Commission.

(B) "Complainants" shall mean Autel Robotics USA, Inc. of Bothell, Washington.

(C) "Respondent" shall mean DJI Service LLC, 17301 Edwards Road Cerritos, California 90703.

(D) "Person" shall mean an individual, or any non-governmental partnership, firm, association, corporation or other legal or business entity other than Respondent or its majority-owned or controlled subsidiaries, successors, or assigns.

(E) "United States" shall mean the fifty states, the District of Columbia, and Puerto Rico.

(F) The terms "import" and "importation" refer to importation for entry for consumption under the Customs laws of the United States.

(G) The term "covered products" shall mean unmanned aerial vehicles and components thereof covered by one or more of claims 1 and 2 of the '184 patent.

II.
Applicability

The provisions of this Cease and Desist Order ("Order") shall apply to Respondent and to any of its principals, stockholders, officers, directors, employees, agents, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns, and to each of them, insofar as they are engaging in conduct prohibited by Section III, *infra*, for, with, or otherwise on behalf of Respondent.

III.
Conduct Prohibited

The following conduct of Respondent in the United States is prohibited by this Order. For the remaining term of the '184 patent, Respondent shall not:

(A) import or sell for importation into the United States covered products;

(B) market, distribute, sell, or otherwise transfer (except for exportation) imported covered products;

(C) advertise imported covered products;

(D) solicit U.S. agents or distributors for imported covered products; or

(E) aid or abet other entities in the importation, sale for importation, sale after importation, transfer, or distribution of covered products.

IV.
Conduct Permitted

Notwithstanding any other provision of this Order, specific conduct otherwise prohibited by the terms of this Order shall be permitted if: (A) in a written instrument, the owner of the '184 patent licenses or authorizes such conduct; or (B) such specific conduct is related to the importation or sale of covered products by or for the United States.

V.
Reporting

For purposes of this requirement, the reporting periods shall commence on January 1 of each year and shall end on the subsequent December 31. The first report required under this Section shall cover the period from the date of issuance of this order through December 31, 2020. This reporting requirement shall continue in force until such time as Respondent has truthfully reported, in two consecutive timely filed reports, that it has no inventory of covered products in the United States.

Within thirty (30) days of the last day of the reporting period, Respondent shall report to the Commission: (a) the quantity in units and the value in dollars of covered products that it has (i) imported and/or (ii) sold in the United States after importation during the reporting period, and (b) the quantity in units and value in dollars of reported covered products that remain in inventory in the United States at the end of the reporting period.

When filing written submissions, Respondent must file the original document electronically on or before the deadlines stated above and submit eight (8) true paper copies to the Office of the Secretary by noon the next day pursuant to Section 210.4(f) of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.4(f)). Submissions should refer to the investigation number ("Inv. No. 337-TA-1133") in a prominent place on the cover pages and/or the first page. *See* Handbook for Electronic Filing Procedures,

http://www.usitc.gov/secretary/fed_reg_notices/rules/handbook_on_electronic_filing.pdf. Persons with questions regarding filing should contact the Secretary (202-205-2000). If Respondent desires to submit a document to the Commission in confidence, it must file the original and a public version of the original with the Office of the Secretary and must serve a copy of the confidential version on Complainant's counsel.[1]

Any failure to make the required report or the filing of any false or inaccurate report shall constitute a violation of this Order, and the submission of a false or inaccurate report may be referred to the U.S. Department of Justice as a possible criminal violation of 18 U.S.C. § 1001.

VI.
Record-Keeping and Inspection

(A) For the purpose of securing compliance with this Order, Respondent shall retain any and all records relating to the sale, offer for sale, marketing, or distribution in the United States of covered products, made and received in the usual and ordinary course of business, whether in detail or in summary form, for a period of three (3) years from the close of the fiscal year to which they pertain.

(B) For the purposes of determining or securing compliance with this Order and for no other purpose, subject to any privilege recognized by the federal courts of the United States, and upon reasonable written notice by the Commission or its staff, duly authorized representatives of the Commission shall be permitted access and the right to inspect and copy, in Respondent's principal offices during office hours, and in the presence of counsel or other representatives if Respondent so chooses, all books, ledgers, accounts, correspondence,

[1] Complainants must file a letter with the Secretary identifying the attorney to receive the reports or bond information associated with this Order. The designated attorney must be on the protective order entered in the investigation.

memoranda, and other records and documents, in detail and in summary form, that must be retained under subparagraph VI(A) of this Order.

VII.
Service of Cease and Desist Order

Respondent is ordered and directed to:

(A) Serve, within fifteen (15) days after the effective date of this Order, a copy of this Order upon each of its respective officers, directors, managing agents, agents, and employees who have any responsibility for the importation, marketing, distribution, or sale of imported covered products in the United States;

(B) Serve, within fifteen (15) days after the succession of any persons referred to in subparagraph VII(A) of this order, a copy of the Order upon each successor; and

(C) Maintain such records as will show the name, title, and address of each person upon whom the Order has been served, as described in subparagraphs VII(A) and VII(B) of this Order, together with the date on which service was made.

The obligations set forth in subparagraphs VII(B) and VII(C) shall remain in effect until the expiration date of the ’184 patent.

VIII.
Confidentiality

Any request for confidential treatment of information obtained by the Commission pursuant to Section VI of this Order should be made in accordance with Section 201.6 of the Commission’s Rules of Practice and Procedure (19 C.F.R. § 201.6). For all reports for which confidential treatment is sought, Respondent must provide a public version of such report with confidential information redacted.

IX.
Enforcement

Violation of this order may result in any of the actions specified in Section 210.75 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.75), including an action for civil penalties under Section 337(f) of the Tariff Act of 1930 (19 U.S.C. § 1337(f)), as well as any other action that the Commission deems appropriate. In determining whether Respondent is in violation of this order, the Commission may infer facts adverse to Respondent if it fails to provide adequate or timely information.

The enforcement of this Order, including the bond provision, is suspended pending final resolution of a Final Written Decision issued by the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office on May 21, 2020 finding certain claims of the '184 patent, including claims 1 and 2, to be unpatentable. *See* 35 U.S.C. § 318(b); *SZ DJI Technology Co. v. Autel Robotics USA, LLC*, IPR2019-00343, Patent 9,260,184, Final Written Decision Determining All Challenged Claims Unpatentable (May 21, 2020).

X.
Modification

The Commission may amend this order on its own motion or in accordance with the procedure described in Section 210.76 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.76).

XI.
Bonding

The conduct prohibited by Section III of this order may be continued during the sixty-day (60) period in which this Order is under review by the United States Trade Representative, as delegated by the President (70 *Fed. Reg*. 43,251 (Jul. 21, 2005)), subject to Respondent's posting of a bond in the amount of 11.5 percent of the entered value of the covered products. This bond

provision does not apply to conduct that is otherwise permitted by Section IV of this Order. Covered products imported on or after the date of issuance of this Order are subject to the entry bond as set forth in the exclusion order issued by the Commission and are not subject to this bond provision.

The bond is to be posted in accordance with the procedures established by the Commission for the posting of bonds by complainants in connection with the issuance of temporary exclusion orders. *See* 19 C.F.R. § 210.68. The bond and any accompanying documentation are to be provided to and approved by the Commission prior to the commencement of conduct that is otherwise prohibited by Section III of this Order. Upon the Secretary's acceptance of the bond, (a) the Secretary will serve an acceptance letter on all parties, and (b) Respondent must serve a copy of the bond and accompanying documentation on Complainant's counsel.[2]

The bond is to be forfeited in the event that the United States Trade Representative approves this Order (or does not disapprove it within the review period), unless (i) the U.S. Court of Appeals for the Federal Circuit, in a final judgment, reverses any Commission final determination and order as to Respondent on appeal, or (ii) Respondent exports or destroys the products subject to this bond and provides certification to that effect that is satisfactory to the Commission.

This bond is to be released in the event the United States Trade Representative disapproves this Order and no subsequent order is issued by the Commission and approved (or not disapproved) by the United States Trade Representative, upon service on Respondent of an

[2] *See* Footnote 1, *supra*.

order issued by the Commission based upon application therefore made by Respondent to the Commission.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: August 20, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **Order, Commission** has been served upon the following parties as indicated, on 8/20/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

Timothy C. Bichkham, Esq.
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue
NW Washington, DC 20036
Email: tbickham@steptoe.com

☐ Via Hand Delivery
☐ Via Express Delivery
☐ Via First Class Mail
☒ Other: Email Notification of Availability for Download

On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

Qingyu Yin, Esq.
FINNEGAN, HENDERSON, FARBOW, GARRETT & DUNNER LLP
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☒ Other: Email Notification of Availability for Download

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

CEASE AND DESIST ORDER

IT IS HEREBY ORDERED that iFlight Technology Co. Ltd., Units 912-916, 9/F, Building 16W, No. 16, Science Park West Avenue, Hong Kong, Science Park, Pak Shek Kok, Hong Kong 999077 ("Respondent") cease and desist from conducting any of the following activities in the United States: importing, selling, marketing, advertising, distributing, transferring (except for exportation), soliciting United States agents or distributors, and aiding or abetting other entities in the importation, sale for importation, sale after importation, transfer (except for exportation), or distribution of unmanned aerial vehicles and components thereof that are covered by one or more of claims 1 or 2 of U.S. Patent No. 9,260,184 ("the '184 patent") in violation of 19 U.S.C. § 1337, as amended ("Section 337").

I.
Definitions

As used in this order:

(A) "Commission" shall mean the United States International Trade Commission.

(B) "Complainants" shall mean Autel Robotics USA, Inc. of Bothell, Washington.

(C) "Respondent" shall mean iFlight Technology Co. Ltd., Units 912-916, 9/F, Building 16W, No. 16, Science Park West Avenue, Hong Kong, Science Park, Pak Shek Kok, Hong Kong 999077.

(D) "Person" shall mean an individual, or any non-governmental partnership, firm, association, corporation or other legal or business entity other than Respondent or its majority-owned or controlled subsidiaries, successors, or assigns.

(E) "United States" shall mean the fifty states, the District of Columbia, and Puerto Rico.

(F) The terms "import" and "importation" refer to importation for entry for consumption under the Customs laws of the United States.

(G) The term "covered products" shall mean unmanned aerial vehicles and components thereof covered by one or more of claims 1 and 2 of the '184 patent.

II.
Applicability

The provisions of this Cease and Desist Order ("Order") shall apply to Respondent and to any of its principals, stockholders, officers, directors, employees, agents, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns, and to each of them, insofar as they are engaging in conduct prohibited by Section III, *infra*, for, with, or otherwise on behalf of Respondent.

III.
Conduct Prohibited

The following conduct of Respondent in the United States is prohibited by this Order. For the remaining term of the '184 patent, Respondent shall not:

(A) import or sell for importation into the United States covered products;

(B) market, distribute, sell, or otherwise transfer (except for exportation) imported covered products;

(C) advertise imported covered products;

(D) solicit U.S. agents or distributors for imported covered products; or

(E) aid or abet other entities in the importation, sale for importation, sale after importation, transfer, or distribution of covered products.

IV.
Conduct Permitted

Notwithstanding any other provision of this Order, specific conduct otherwise prohibited by the terms of this Order shall be permitted if: (A) in a written instrument, the owner of the '184 patent licenses or authorizes such conduct; or (B) such specific conduct is related to the importation or sale of covered products by or for the United States.

V.
Reporting

For purposes of this requirement, the reporting periods shall commence on January 1 of each year and shall end on the subsequent December 31. The first report required under this Section shall cover the period from the date of issuance of this order through December 31, 2020. This reporting requirement shall continue in force until such time as Respondent has truthfully reported, in two consecutive timely filed reports, that it has no inventory of covered products in the United States.

Within thirty (30) days of the last day of the reporting period, Respondent shall report to the Commission: (a) the quantity in units and the value in dollars of covered products that it has (i) imported and/or (ii) sold in the United States after importation during the reporting period, and (b) the quantity in units and value in dollars of reported covered products that remain in inventory in the United States at the end of the reporting period.

When filing written submissions, Respondent must file the original document electronically on or before the deadlines stated above and submit eight (8) true paper copies to the Office of the Secretary by noon the next day pursuant to Section 210.4(f) of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.4(f)). Submissions should refer

to the investigation number ("Inv. No. 337-TA-1133") in a prominent place on the cover pages and/or the first page. *See* Handbook for Electronic Filing Procedures, *http://www.usitc.gov/secretary/fed_reg_notices/rules/handbook_on_electronic_filing.pdf*. Persons with questions regarding filing should contact the Secretary (202-205-2000). If Respondent desires to submit a document to the Commission in confidence, it must file the original and a public version of the original with the Office of the Secretary and must serve a copy of the confidential version on Complainant's counsel.[1]

Any failure to make the required report or the filing of any false or inaccurate report shall constitute a violation of this Order, and the submission of a false or inaccurate report may be referred to the U.S. Department of Justice as a possible criminal violation of 18 U.S.C. § 1001.

VI.
Record-Keeping and Inspection

(A) For the purpose of securing compliance with this Order, Respondent shall retain any and all records relating to the sale, offer for sale, marketing, or distribution in the United States of covered products, made and received in the usual and ordinary course of business, whether in detail or in summary form, for a period of three (3) years from the close of the fiscal year to which they pertain.

(B) For the purposes of determining or securing compliance with this Order and for no other purpose, subject to any privilege recognized by the federal courts of the United States, and upon reasonable written notice by the Commission or its staff, duly authorized representatives of the Commission shall be permitted access and the right to inspect and copy, in

[1] Complainants must file a letter with the Secretary identifying the attorney to receive the reports or bond information associated with this Order. The designated attorney must be on the protective order entered in the investigation.

Respondent's principal offices during office hours, and in the presence of counsel or other representatives if Respondent so chooses, all books, ledgers, accounts, correspondence, memoranda, and other records and documents, in detail and in summary form, that must be retained under subparagraph VI(A) of this Order.

VII.
Service of Cease and Desist Order

Respondent is ordered and directed to:

(A) Serve, within fifteen (15) days after the effective date of this Order, a copy of this Order upon each of its respective officers, directors, managing agents, agents, and employees who have any responsibility for the importation, marketing, distribution, or sale of imported covered products in the United States;

(B) Serve, within fifteen (15) days after the succession of any persons referred to in subparagraph VII(A) of this order, a copy of the Order upon each successor; and

(C) Maintain such records as will show the name, title, and address of each person upon whom the Order has been served, as described in subparagraphs VII(A) and VII(B) of this Order, together with the date on which service was made.

The obligations set forth in subparagraphs VII(B) and VII(C) shall remain in effect until the expiration date of the '184 patent.

VIII.
Confidentiality

Any request for confidential treatment of information obtained by the Commission pursuant to Section VI of this Order should be made in accordance with Section 201.6 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 201.6). For all reports for which confidential treatment is sought, Respondent must provide a public version of such report with confidential information redacted.

IX.
Enforcement

Violation of this order may result in any of the actions specified in Section 210.75 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.75), including an action for civil penalties under Section 337(f) of the Tariff Act of 1930 (19 U.S.C. § 1337(f)), as well as any other action that the Commission deems appropriate. In determining whether Respondent is in violation of this order, the Commission may infer facts adverse to Respondent if it fails to provide adequate or timely information.

The enforcement of this Order, including the bond provision, is suspended pending final resolution of a Final Written Decision issued by the Patent Trial and Appeal Board of the U.S. Patent and Trademark Office on May 21, 2020 finding certain claims of the '184 patent, including claims 1 and 2, to be unpatentable. *See* 35 U.S.C. § 318(b); *SZ DJI Technology Co. v. Autel Robotics USA, LLC*, IPR2019-00343, Patent 9,260,184, Final Written Decision Determining All Challenged Claims Unpatentable (May 21, 2020).

X.
Modification

The Commission may amend this order on its own motion or in accordance with the procedure described in Section 210.76 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.76).

XI.
Bonding

The conduct prohibited by Section III of this order may be continued during the sixty-day (60) period in which this Order is under review by the United States Trade Representative, as delegated by the President (70 *Fed. Reg*. 43,251 (Jul. 21, 2005)), subject to Respondent's posting of a bond in the amount of 11.5 percent of the entered value of the covered products. This bond

provision does not apply to conduct that is otherwise permitted by Section IV of this Order. Covered products imported on or after the date of issuance of this Order are subject to the entry bond as set forth in the exclusion order issued by the Commission and are not subject to this bond provision.

The bond is to be posted in accordance with the procedures established by the Commission for the posting of bonds by complainants in connection with the issuance of temporary exclusion orders. *See* 19 C.F.R. § 210.68. The bond and any accompanying documentation are to be provided to and approved by the Commission prior to the commencement of conduct that is otherwise prohibited by Section III of this Order. Upon the Secretary's acceptance of the bond, (a) the Secretary will serve an acceptance letter on all parties, and (b) Respondent must serve a copy of the bond and accompanying documentation on Complainant's counsel.[2]

The bond is to be forfeited in the event that the United States Trade Representative approves this Order (or does not disapprove it within the review period), unless (i) the U.S. Court of Appeals for the Federal Circuit, in a final judgment, reverses any Commission final determination and order as to Respondent on appeal, or (ii) Respondent exports or destroys the products subject to this bond and provides certification to that effect that is satisfactory to the Commission.

This bond is to be released in the event the United States Trade Representative disapproves this Order and no subsequent order is issued by the Commission and approved (or not disapproved) by the United States Trade Representative, upon service on Respondent of an

[2] *See* Footnote 1, *supra*.

order issued by the Commission based upon application therefore made by Respondent to the Commission.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: August 20, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **Order, Commission** has been served upon the following parties as indicated, on 8/20/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

Timothy C. Bichkham, Esq.
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue
NW Washington, DC 20036
Email: tbickham@steptoe.com

☐ Via Hand Delivery
☐ Via Express Delivery
☐ Via First Class Mail
☒ Other: Email Notification of Availability for Download

On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

Qingyu Yin, Esq.
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☒ Other: Email Notification of Availability for Download

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

COMMISSION OPINION

Table of Contents

I. INTRODUCTION

The Commission has made its final determination that the respondents have violated section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337"), by importing, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles ("UAVs") and components thereof that infringe the only patent still at issue, U.S. Patent No. 9,260,184 ("the '184 patent"). The Commission also affirms the presiding administrative law judge's ("ALJ's") decision not to adjudicate the respondents' allegedly new rotor or battery locking mechanisms.

The Commission has determined to issue a limited exclusion order and cease and desist orders with respect to the '184 patent and to impose a bond in the amount of 11.5 percent of the entered value of the covered UAVs and components thereof during the period of Presidential review. The Commission has also determined that the public interest considerations of Section 337(d)(1) and (f)(1) do not preclude the issuance of these remedies here. The Commission, however, has determined to suspend enforcement of those remedial orders, including the bond provision, pending resolution of the U.S. Patent and Trademark Office ("PTO") Patent Trial and Appeal Board's ("PTAB") Final Written Decision finding, *inter alia*, that claims 1, 2, and 5 of the '184 patent, the only claims still at issue, are unpatentable. *See SZ DJI Technology Co. v. Autel Robotics USA, LLC*, IPR2019-00343, Patent 9,260,184, Final Written Decision Determining All Challenged Claims Unpatentable (May 21, 2020) ("Final Written Decision").

This opinion sets forth the Commission's reasoning in support of its determinations. The Commission also affirms the findings in the final ID that are not inconsistent with this opinion.

II. BACKGROUND

A. Procedural History

The Commission instituted this investigation on October 2, 2018, based on a complaint filed by Autel Robotics USA, Inc. ("Autel") of Bothell, Washington. 83 Fed. Reg. 49575-76 (Oct. 2, 2018). The complaint alleges a violation of Section 337 in the importation into the United States, sale for importation, or sale in the United States after importation of certain UAVs and components thereof that infringe the asserted claims of the '184, '174, and '013 patents. *Id.* The complaint also alleges the existence of a domestic industry. *Id.*

The notice of investigation names the following respondents: SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "DJI"). *Id*. The Office of Unfair Import Investigations is not a party to this investigation. *Id.*

On September 13, 2019, the presiding ALJ issued Order No. 21, granting in part Autel's motion to strike certain evidence that DJI produced after the close of discovery and expert opinions relying on such evidence relating to its allegedly "new designs" for rotor and battery locking mechanisms. *See* Order No. 21 at 2-4 (Sept. 13, 2019). The ALJ denied Autel's motion with respect to evidence DJI produced before the close of fact discovery. *Id.* at 8-9. The ALJ also found the parties had not produced sufficient evidence to find whether DJI's new designs were sufficiently "final" for adjudication in this investigation and thus authorized the parties to produce additional evidence and arguments on that issue. *Id.* at 9.

On October 17, 2019, the Commission determined not to review Order No. 22, which partially terminated the investigation with respect to certain claims withdrawn by Autel. Order No. 22 (Sept. 30, 2019), *unreviewed*, Comm'n Notice (Oct. 17, 2019). By the time of the hearing, the claims still at issue were claims 1, 2, and 5 of the '184 patent; claims 1, 7, 8, 14, and 17 of the '174 patent; and claims 1, 3-5, 8, 10, 13-16, 18, 22, or 23 of the '013 patent.

The ALJ held an evidentiary hearing on October 21-23, 2019. At the start of the hearing, the ALJ announced that DJI's new rotor and battery locking designs would not be adjudicated and precluded the introduction of any evidence relating to those new designs at the hearing.

On March 2, 2020, the ALJ issued a final ID finding a violation of Section 337 regarding the '184 patent but not the '174 or '013 patents.[1] ID at 149-50, 156. In sum, the ID finds the following:

- ***'184 patent.*** The ID finds the accused Mavic Pro, Spark, and Mavic Air UAVs infringe claim 1 of the '184 patent but not claims 2 or 5, while the Phantom 4 Pro and Inspire UAVs do not infringe any claims. The ID also finds that the claims are not invalid and Autel satisfied the domestic industry requirement. The ID thus finds a violation of Section 337 with respect to asserted claim 1 of the '184 patent as to the Mavic Pro, Spark, and Mavic Air UAVs. ID at 149-50, 156.

- ***'174 patent.*** The ID finds that the accused DJI UAVs do not infringe any asserted claims of the '174 patent, Autel failed to satisfy the technical prong of the domestic industry requirement, and the asserted claims are invalid. The ID concludes there is no violation of Section 337 with respect to the '174 patent. *Id.* at 149, 156.

- ***'013 patent.*** The ID finds that DJI's Mavic Pro, Mavic Air, and Phantom 4 Pro infringe at least claims 1, 3-4, 10, and 22 of the '013 patent; the Mavic Pro additionally infringes claims 5, 13-16, 18 and 23; the Phantom 4 Pro additionally infringes claims 8, 13-16, 18, and 23; but that the Spark does not infringe any asserted claims of the '013 patent. *Id.* at 150, 156. The ID finds that Autel satisfied the domestic industry requirement, but that all of the asserted claims of the '013 patent are invalid as obvious. *Id*. The ID concludes there is no violation of Section 337 with respect to the '013 patent. *Id.*

[1] On March 9, 2020, the ALJ issued an errata, which corrected a misstatement in the final ID but did not alter its material findings. Notice of Errata to Final Initial Determination (Mar. 9, 2020).

The ID also includes the ALJ's Recommended Determination ("RD") on remedy and bonding. *Id.* at 150-55. The RD recommends that the Commission issue a limited exclusion order covering DJI products that infringe the '184 patent claims and cease and desist orders against infringing respondents[2] because they maintain "commercially significant" inventories in the United States. *Id.* at 151-53. The RD recommends setting a bond in the amount of 9.9 percent of the entered value of covered UAVs imported during the period of Presidential review. *Id.* at 154-55. The Commission did not ask the ALJ to analyze, nor did the ALJ analyze, the statutory public interest factors under Section 337(d)(1) or (f)(1). *See* 83 Fed. Reg. at 49575-76.

On March 16, 2020, Autel and DJI each filed petitions for review of certain findings in the ID, pursuant to Commission Rule 210.43(a).[3] The parties filed their respective responses to the opposing petition for review on March 24, 2020, pursuant to Commission Rule 210.43(c).[4]

On May 15, 2020, the Commission issued a notice soliciting comments on any public interest factors that may be implicated if remedial orders are issued. Comm'n Notice (May 15, 2020); 85 Fed. Reg. 30735 (May 20, 2020). The Commission did not receive any comments in response to its notice. Neither did any party file a public interest submission pursuant to Commission Rule 210.54(a)(4). *See* 19 C.F.R. § 210.54(a)(4).

On May 29, 2020, while the petitions for review were still pending before the Commission, DJI's counsel informed the Commission that the PTAB had issued final written

[2] The ALJ did not specify whether the recommendation was directed to all respondents or particular ones.

[3] *See* Complainant Autel Robotics USA LLC's Petition for Review (Mar. 16, 2020) ("Autel's Pet."); Respondents' Petition for Review (Mar. 16, 2020) ("DJI's Pet.").

[4] *See* Complainant Autel Robotics USA's Response to Respondents' Petition for Review (Mar. 24, 2020) ("Autel's Pet. Resp."); Respondents' Response to Autel's Petition for Review (Mar. 24, 2020) ("DJI's Pet. Resp.").

decisions in *inter partes* proceedings ("IPRs") challenging the '184, '174, and '013 patents and found all of the claims at issue, among others, unpatentable. Letter from S. Brittingham, Esq. to Secretary Barton (May 29, 2020) (Attachment 1 at 2, Attachment 2 at 2; Attachment 4 at 2).

On June 9, 2020, the Commission notified the parties that it had determined to partially review the subject ID with respect to: (i) the ID's findings on infringement of claims 1 and 2 (but not claim 5) of the '184 patent; (ii) the ALJ's decision not to adjudicate DJI's new rotor locking designs, and; (iii) the impact, if any, on this investigation of the PTAB's Final Written Decision with respect to the '184 patent, the only patent still at issue. Comm'n Notice at 1-3 (June 9, 2020) ("Comm'n Review Notice"). The Commission asked the parties to brief certain questions relating to these issues. The Commission also requested briefing from the parties, interested government agencies, and any other interested persons on the issues of remedy, the public interest, and bonding. *Id.* at 3-4. The Commission determined not to review, and thus adopted, the ID's findings that: (i) claims 1 and 2 of the '184 patent are not invalid; (ii) Autel satisfied both prongs of the domestic industry requirement with respect to the '184 patent; and (iii) there is no violation of Section 337 with respect to either the '174 or '013 patents. *Id*. at 2-3.

On June 24, 2020, Autel and DJI filed their initial responses to the Commission's questions on review and remedy, the public interest, and bonding.[5] On July 1, 2020, Autel and DJI filed their respective replies to each other's initial submissions to the Commission.[6]

[5] *See* Complainant Autel Robotics USA LLC's Written Submission on the Issues Identified in the Notice of a Commission Determination to Review the Final Initial Determination in Part (June 24, 2020) ("Autel's Review Br."); Respondents' Brief to the Commission on Issues Under Review and on Remedy, Bonding, and the Public Interest (June 24, 2020) ("DJI's Review Br.").

[6] *See* Complainant Autel Robotics USA LLC's Reply to Respondents' Brief to the Commission on Issues Under Review and on Remedy, Bonding, and the Public Interest (July 1, 2020) ("Autel's Review Reply"); Respondents' Reply Brief to the Commission on Issues Under Review and on Remedy, Bonding, and the Public Interest (July 1, 2020) ("DJI's Review Reply").

B. The Asserted Patents

The following background discussion focuses on the '184 patent, the only patent still at issue. The '184 patent is directed to a UAV with interlocking rotor and driveshaft assemblies for releasably attaching the rotors to the driveshafts. '184 patent, Abstract. As shown in the figures below (color-coded by Autel), claim 1 requires: (a) a shaft lock portion **(15A)** with "notches" **(27)** on the driveshaft assembly, which engage with (b) corresponding "lugs" **(25)**, or protrusions, on a blade lock portion **(17A)** of a rotor blade **(9)**. *Id.* at 3:55-62, Figs. 4, 9.

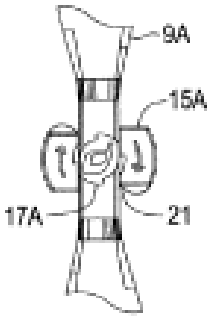


FIG. 9

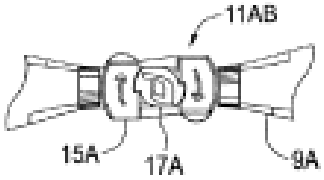


FIG. 10

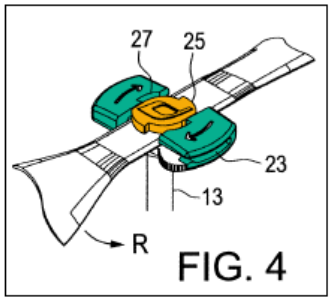


FIG. 4

Figure 2. '184 Patent, Fig. 4 (Highlighted)

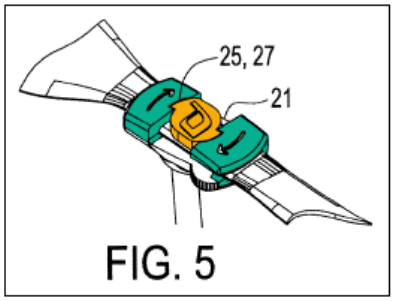


FIG. 5

Figure 3. '184 Patent, Fig. 5 (Highlighted)

In this example, a counterclockwise-rotating rotor **(9)** is secured by pressing the blade lock portion **(17A)** into the shaft lock portion **(15A)**, and then turning the rotor clockwise so that the lugs **(25)** engage the corresponding the notches **(27)**. *Id.* at 4:1-16, 27-30, Figs. 5, 10. The '184 patent discloses a mirror image of this locking mechanism for securing clockwise-rotating rotor blades. *Id.* at 4:16-35, Figs. 6, 8. The '184 patent teaches that the locking mechanisms are

designed to ensure that rotors are attached only to driveshafts that rotate in the same direction, *e.g.*, clockwise rotors are attached to clockwise-rotating driveshafts and not counterclockwise-rotating driveshafts, and vice versa. *See id.* at Abstract, 1:20-31, 1:55-2:7, 2:16-18, 3:14-18.

Claims 1 and 2, the only claims still at issue,[7] are recited below, with bracketed letters added as in the ID, and the claim terms of interest set forth in underlined italics:

1. [1a] A rotary wing aircraft apparatus comprising:

   [1b] a body;

   [1c] a plurality of arms extending laterally from the body, and [1d] *a rotor assembly attached to an outside end of each arm*;

   [1e] each rotor assembly comprising a rotor blade releasably attached to a driveshaft by a lock mechanism, and a drive rotating the driveshaft;

   [1f] wherein a first driveshaft rotates in a clockwise direction and a second driveshaft rotates in a counterclockwise direction;

   [1g] wherein a clockwise rotor blade is releasably attached to the first driveshaft by engagement in a clockwise lock mechanism and generates a vertical lift force when rotated in the clockwise direction, and a counterclockwise rotor blade is releasably attached to the second driveshaft by engagement in a counterclockwise lock mechanism and generates a vertical lift force when rotated in the counterclockwise direction;

   [1h] wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism; and

   [1i] wherein the clockwise lock mechanism comprises a shaft lock portion attached to the first driveshaft and a blade lock portion attached to the clockwise rotor blade, *the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion*.

2. The apparatus of claim 1 wherein [2a] the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade,

[7] The Commission determined not to review the ID's finding that DJI does not infringe claim 5 of the '184 patent. Comm'n Review Notice at 1-3.

> [2b] *the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism*.

'184 patent at 5:35-6:18 (emphasis added).

C. The Accused Products

The accused DJI products are unmanned aerial vehicles, or drones, and components thereof. 83 Fed. Reg. at 49575 (notice of institution). The accused products are referred to by their product lines – Mavic Air, Mavic Pro, Spark, Inspire, and Phantom 4 Pro – although there are multiple product versions or generations within each product line. ID at 3-4.

D. The Domestic Industry Products

The domestic industry product is the Autel EVO. ID at 4.

III. STANDARD ON REVIEW

With respect to the issues under review, "the Commission may affirm, reverse, modify, set aside or remand for further proceedings, in whole or in part, the initial determination of the administrative law judge." 19 C.F.R. § 210.45(c). The Commission also "may take no position on specific issues or portions of the initial determination," and "may make any finding or conclusions that in its judgment are proper based on the record in the proceeding." *Id.*

IV. ANALYSIS

The Commission determines to make the findings, conclusions, and supporting analyses set forth below. The Commission also affirms and adopts herein any findings, conclusions, and supporting analyses in the ID regarding issues under review that are not inconsistent with the Commission's own findings, conclusions, and supporting analyses discussed herein.

A. Infringement of the '184 Patent

Section 337 prohibits "the importation into the United States, the sale for importation, or the sale within the United States after importation . . . of articles that infringe a valid and

enforceable United States patent . . . ." 19 U.S.C. § 1337(a)(1)(B). Direct infringement includes making, using, offering to sell, or selling a patented invention or importing a patented invention into the United States, without consent of the patent owner. 35 U.S.C. § 271(a).

To prove direct infringement, the complainant must establish by a preponderance of the evidence that one or more claims of the asserted patent read on the accused product or process, either literally or under the doctrine of equivalents. *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 261 F.3d 1329, 1336 (Fed. Cir. 2001). Each limitation in a patent claim is considered material and essential to an infringement determination. *See London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). "Literal infringement of a claim exists when each of the claim limitations reads on, or in other words is found in, the accused device." *Allen Eng. Corp. v. Bartell Indus.*, 299 F.3d 1336, 1345 (Fed. Cir. 2002). If any claim limitation is found to be absent from the accused product or process, then there is no literal infringement. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 141, 1247 (Fed. Cir. 2000).

The parties did not petition for review of the ID's findings that DJI's Mavic Pro, Mavic Air, and Spark infringe claim 1 of the '184 patent and that none of the accused UAVs infringe claim 5. DJI's Pet. at 1, 21; Autel's Pet. at 2; *see* ID at 67-73 (Mavic Pro), 76-81 (Spark, Mavic Air), 149 (findings). The scope of the Commission's review of the '184 patent is thus limited to whether DJI's Phantom 4 Pro or Inspire infringe claim 1, and whether any of the accused UAVs infringe claim 2. Comm'n Review Notice at 2-3; *see* ID at 73-76 (Mavic Pro), 81-82 (Spark, Inspire), 83-92 (Phantom 4 Pro), 92-98 (Inspire), 149. For the following reasons, the Commission finds that DJI's Phantom 4 Pro, Mavic Pro, Mavic Air, and Spark infringe both claims 1 and 2, but affirms the ID's finding that the Inspire does not infringe either claim.

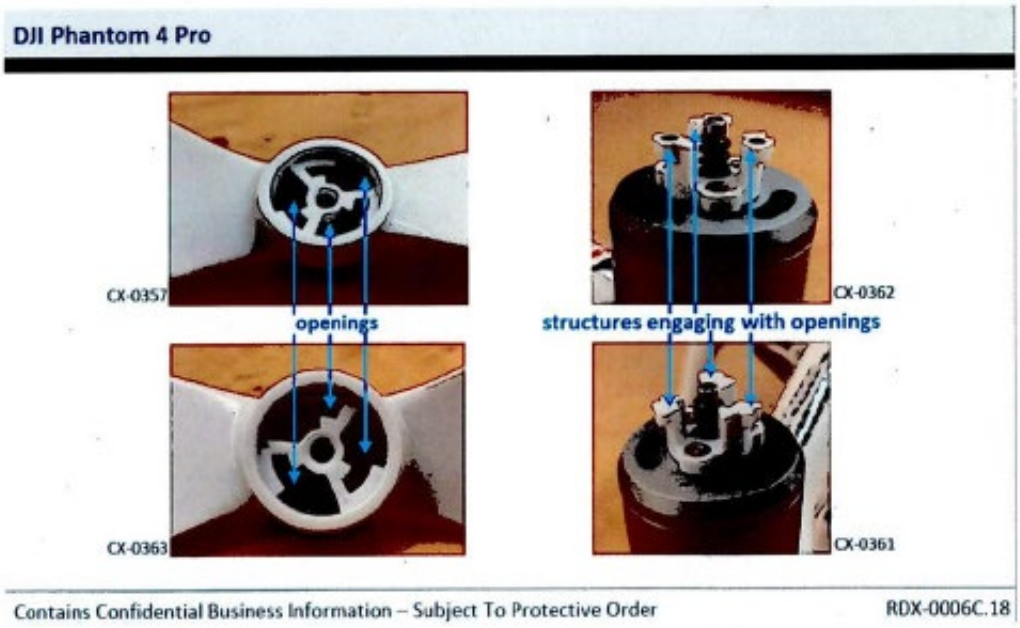
1. Infringement of Claim 1: Phantom 4 Pro

DJI did not contest that the Phantom 4 Pro satisfies claim limitations 1[a]-1[h]. *See* ID at 84-87. The only issue in dispute is whether the Phantom 4 Pro practices limitation 1[i], which states that the rotor locking mechanism includes a "blade lock portion" on the rotor blade and a "shaft lock portion" on the driveshaft, wherein "the shaft lock portion [has] notches configured to engage corresponding lugs on the blade lock portion." *See* '184 patent at 6:5-9.

The parties agree, and ALJ so finds, that this claim element and its individual terms "lug," "notch," and "engage" have their plain and ordinary meaning. Order No. 15 (*Markman* Order) at 21-23 (June 21, 2019) (quoted in ID at 65). The ID and the parties describe a "lug" as a protrusion and a "notch" as a slot, opening, or indentation of some kind. ID at 88; Autel's Review Resp. at 23; DJI's Review Br. at 21-22; Autel's Pet. at 33-34, 37; DJI's Pet. Resp. at 20, 23. The ALJ, however, rejected DJI's argument that the "notches" must match the shape of the "lugs," as depicted in the patent. Order No. 15 at 21-22 ("While Figures 4, 5, 6, 9, and 10 [of the '184 patent] depict notches that match the shape of the lugs, there is nothing else in the specification that indicates that the patentee intended to limit the claim to this embodiment").

The ID finds that the plain meaning of limitation 1[i] is that the "lugs" must be on the "blade lock portion" of the rotor and the "notches" on the "shaft lock portion" of the driveshaft. ID at 87-89. The ID finds that the Phantom 4 Pro does not infringe claim 1 for the singular reason that it "takes the opposite approach, with the notches on the blade and the lugs on the shaft lock portion."[8] *Id.* at 65, 88. The ID includes the following photographs, annotated by DJI, that show the alleged "lugs" on the Phantom 4 Pro's driveshaft and "notches" on the rotor.

[8] The ID also finds the Phantom 4 Pro does not infringe claim 1 under the doctrine of equivalents (ID at 87-92), but Autel did not petition for review of that finding and thus waived that issue.



ID at 88.

Autel petitioned for review of the ID's finding of non-infringement. Autel's Pet. at 27-40. In its petition for review, Autel argues that the Phantom 4 Pro's rotor includes an inner set of "lugs" comprising three "'^'-shaped" (or wedge-shaped) protrusions that resemble the "lugs" in the rotor locking mechanism **(17C)** in Figure 6 of the '184 patent.[9] Autel's Review Br. at 24. Autel's annotated photographs and figures identifying these "lugs" are reproduced below.

[9] Autel also argues that the Phantom 4 Pro has a second, outer set of "lugs" projecting from the inner surface of the rotor hub that engages a corresponding set of "notches" on the driveshaft. Autel's Review Br. at 26-28. DJI argues that Autel is raising new arguments and evidence (including annotated photographs) regarding this outer set of "lugs" and "notches" that Autel did not previously include in its post-hearing brief or petition for review. The Commission finds that even though Autel identified this alleged outer set of "lugs" and "notches" earlier, its present argument includes new material that is untimely and waived under 19 C.F.R. § 210.43(b)(2). *See also* Commission's Review Notice at 4 (directing the parties to brief the review questions "with reference to the applicable law and evidentiary record"). The Commission takes no position on whether Autel's argument, as previously presented, establishes that this alleged outer set of "lugs" and "notches" is sufficient to satisfy claim 1, as the Commission finds that the inner set, discussed above, is infringing.

Figure 7. CDX.0001C.72 (CX-0366)

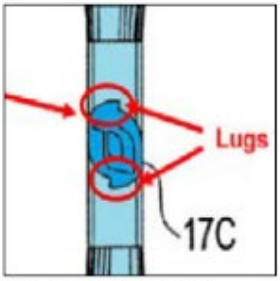


Figure 8. RDX-0001C.5 (JX-0002 at Fig. 6)

Autel Review Br. at 24.

Autel argues that these "lugs" engage a corresponding set of "'v'-shaped cutouts," or "notches," on the driveshaft, as shown below at left. *Id.* at 25. Autel contends these "notches" are similar to those "notches" **(15C)** depicted on the shaft lock portion of Figure 6, below. *Id.*

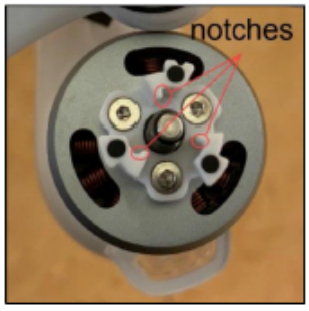


Figure 9. CDX.0001C.72 (CX-0362)

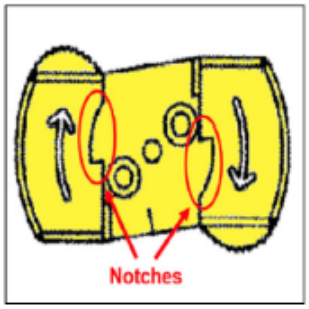


Figure 10. RDX-0001C.4 (JX-0002 at Fig. 6)

Autel Review Br. at 25.

Autel asserts that, when the Phantom 4 Pro's rotor are secured to the driveshaft, the three lugs fit into the three notches, "with both sides of the angular structures coming into contact with both sides of the cutouts." *Id.* at 25. Autel argues that this engagement of lugs and notches is very similar to that depicted in Figures 9 and 10 of the '184 patent, as shown below. *Id.* at 26.

Figure 11. Lugs and Notches on the Phantom 4 (before engagement) (CPX-0021)

Figure 12. Lugs and Notches on the Phantom 4 (after engagement) (CPX-0021)

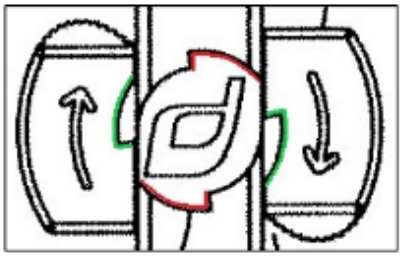


Figure 13. '184 Patent, Figure 9 (before engagement)

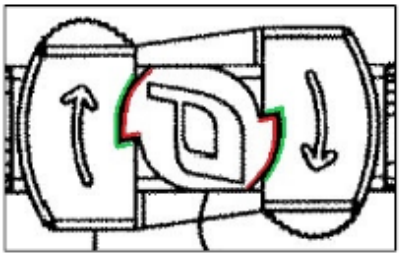


Figure 14. '184 Patent, Figure 10 (after engagement)

Autel's Review Br. at 25-26.

DJI agrees with the ID that the Phantom 4 Pro does not infringe because its configuration of "lugs" and "notches" is the opposite of what is required by limitation 1[i]. DJI's Review Br. at 21, 29 (citing ID at 21, 29). DJI argues that what Autel identified as inner and outer "lugs" on the inside of the Phantom 4 Pro's rotor hubs are not "lugs" at all, but define the walls of a slot, or "notch." *Id.* at 22, 25-26. DJI contends that this "notch" engages the corresponding "lugs" on the Phantom 4 Pro's driveshaft. *Id.* Likewise, DJI argues that what Autel identifies as a "notch" on the Phantom 4 Pro's driveshaft is simply part of that protrusion, or "lug." *Id.* at 23-24. DJI agrees with the ID that Autel's application of "lug" and "notch" is so broad that almost anything could be a lug, and almost anything can be a notch." *Id.* at 21-22 (quoting ID at 87).

Having reviewed the ID, the parties' submissions, and the record, the Commission has determined to reverse the ID and finds instead that DJI's Phantom 4 Pro practices limitation 1[i] and thus infringes claim 1 of the '184 patent, the only disputed limitation of this claim.

Limitation 1[i], as stated earlier, requires that the UAV include a "shaft lock portion [on the driveshaft] defining notches configured to engage corresponding lugs on the blade lock portion." '184 patent at 6:7-9. The addition of other elements not recited in the claim, however, does not defeat infringement, provided the recited limitations are satisfied. *See Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1372 (Fed. Cir. 2005). The Commission thus finds that claim 1 reads on a "shaft lock portion" that has ***both*** a "lug" ***and*** a "notch," which engage ***both*** a corresponding "notch" ***and*** a "lug," respectively, on the "blade lock portion," and therefore the recited limitations of claim 1 are met. The addition of other elements not recited in the claim (*e.g.*, "notches" on the blade lock portion) cannot defeat infringement, as long as the recited limitations (*e.g.*, "lugs" on the blade lock portion) are satisfied. *Id.* Thus, the ID's finding that "[t]he notches must be on the shaft lock portion and the lugs must be on the blade lock portion" (ID at 88) does not mean that "notches" cannot also be on the rotor ***and*** driveshaft, or "lugs" on the driveshaft ***and*** rotor, as long as the requirements of limitation 1[i] are met.

The Commission also notes that the *Markman* order in this case does not limit the "lugs" or "notches" to the preferred embodiment or to any other particular shapes, nor does it exclude any particular shapes. *See* Order No. 15 at 22. The Commission also finds that nothing in the '184 patent limits a "lug" to an extended, pillar-like structure, such as the protruding structures DJI identified as "lugs" on the driveshaft assembly in the Phantom 4 Pro. *See* DJI's Review Br. at 24; DJI's Review Reply at 18. Both DJI and Autel, in fact, recognize that the '184 patent uses "lug" broadly to include the flat, triangular-shaped extensions **(25)** depicted in Figure 6, above, as well as in Figures 4 and 5, below. The Commission notes that that these "lugs" **(25)** lie in the plane of the "blade lock portion," rather than extending pillar-like from its surface.

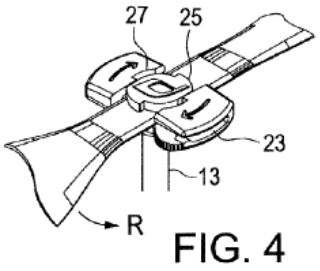


FIG. 4

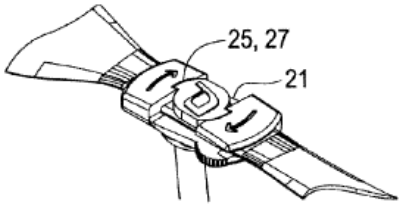


FIG. 5

The Commission finds that the inner set of "lugs" in the Phantom 4 Pro's rotor resemble the small, wedge-shaped "lugs" depicted in the '184 patent, as shown in the top row of figures below. The Commission also finds that these inner "lugs" are formed to engage a corresponding set of "notches" in the Phantom 4 Pro's driveshaft assembly, which resemble the "notches" **(27)** depicted in the '184 patent, as shown in the second set of figures below.

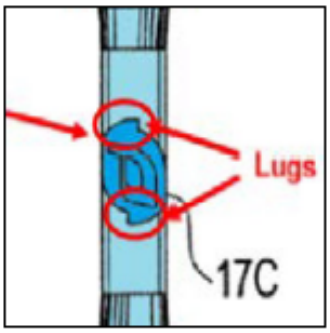


Figure 6. RDX-0001C.5
(JX-0002 at Fig. 6)

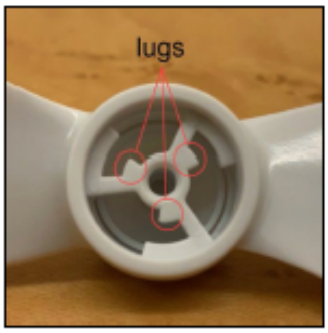


Figure 7. CDX.0001C.72
(CX-0366)

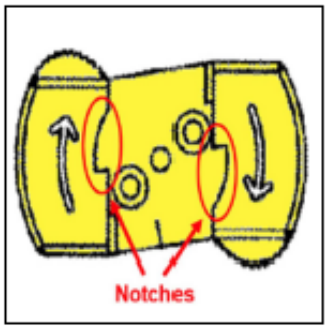


Figure 8. RDX-0001C.4
(JX-0002 at Fig. 6)

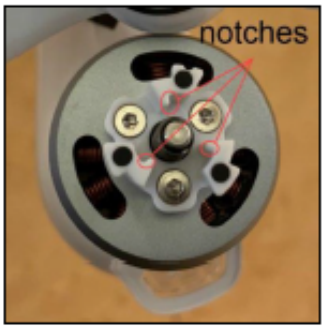


Figure 9. CDX.0001C.72
(CX-0362)

Autel's Pet. for Review at 33.

In light of these close similarities between the Phantom 4 Pro and the '184 patent, the Commission finds it is immaterial that these inner "lugs" may also serve as part of the structure that encloses a slot, or notch, as DJI argues. The inner "lug" does not have some random or unrelated pattern that serves no purpose other than to define such an indentation or slot. Rather, that "lug" is formed to have a particular wedge-like shape so that it can fit into, or "engage," a corresponding "slot" on the driveshaft assembly, just as depicted in the '184 patent. The close similarities between the preferred embodiment in the '184 patent and the Phantom 4 Pro also mean that Autel is not applying the terms "lug" or "notch" so broadly as to turn lugs into notches or notches into lugs, as the ID finds. Rather, Autel's position represents a proper application of the plain and ordinary meaning of "lug" and "notch," as interpreted and applied within the context of the '184 patent specification. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006) ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.").

Accordingly, the Commission finds the inner set of "lugs" and corresponding "notches" in the Phantom 4 Pro satisfy limitation 1[i]. Given that this is the only limitation in dispute, the Commission reverses the ID and finds the Phantom 4 Pro infringes claim 1 of the '184 patent.

2. Infringement of Claim 1: Inspire

The Commission has determined to affirm the ID's finding that DJI's Inspire UAVs do not infringe the '184 patent because they do not practice either limitation 1[d] or 1[i]. *See* ID at 92-98. Limitations 1[c], [d] require that the claimed UAV include:

> [1c] a plurality of arms extending laterally from the body, and
>
> [1d] <u>*a rotor assembly attached to an outside end of each arm*</u>;

'184 patent at 5:37-38.

The parties did not ask for a construction of these terms, so they should be construed and applied according to their plain and ordinary meaning in the context of the '184 patent, as in the ID. *See* ID at 93-95; *see also Phillips,* 415 F.3d at 1312-13 The Commission agrees with the ID that the plain and ordinary meaning of limitation 1[d] means that one end of each "arm" **(5)** must be connected to the body **(3)** of the UAV, while "an outside end of each arm" must be connected to a "rotor assembly" **(7)**, as shown in Figure 2 of the '184 patent, below. *See also* ID at 94-95 (discussing '184 patent at 5:37-38). The Commission further agrees with the ID that claim 1 requires "arms," not "arm assemblies," and that nothing in the specification supports Autel's "arm assembly" argument. *See id.*; '184 patent at 3:14-37, 5:37-38, Figs. 1-3, 11-14 (disclosing "arms," not arm assemblies).

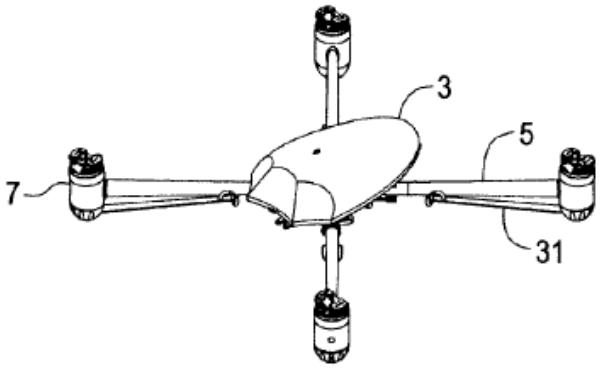
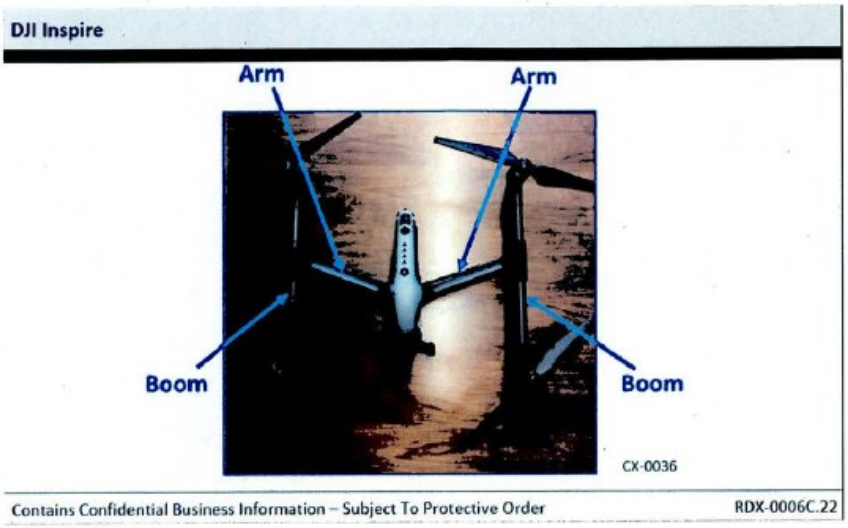


FIG. 2

The Commission agrees with the ID that the rotor assemblies on the Inspire do not practice limitation 1[d] because they are not attached to the "outside end" of an "arm" that extends laterally from the body. *See* ID at 93-95. Instead, the "outside end of each arm" is attached to a boom, in the ID's terms, which extend perpendicularly from each arm to form a "T-shaped assembly," as explained in the ID. *Id.* at 94-95. The "rotor assemblies" are attached to

the ends of the booms, as shown below, and not to the "outside end of each arm," as required by limitation 1[d]. *Id.* at 94.



For these and other reasons given in the ID, the Commission affirms that DJI's Inspire UAVs do not practice limitation 1[d], and thus do not infringe claim 1 or, by consequence, dependent claim 2 of the '184 patent.[10]

3. Infringement of Claim 2

The Commission has determined to reverse the ID and find that the Mavic Pro, Mavic Air, Spark, and Phantom 4 Pro infringe claim 2 of the '184 patent. *Cf.* ID at 73-76 (Mavic Pro), 81-82 (Mavic Air, Spark), 92 (Phantom 4 Pro), 149 (findings). The Commission, as noted above, affirms the ID's finding that the Inspire does not infringe claim 1, and thus does not infringe dependent claim 2. *See* ID at 97-98, 149.

Claim 2, which depends on claim 1, requires that the "blade lock portion" on the counterclockwise-rotating rotors include "lugs with a configuration that is different than the

[10] Having found that the Inspire does not practice limitation 1[d] or infringe claim 1, the Commission takes no position on whether it has "lugs" and "notches" as in limitation 1[i].

configuration of the lugs on the blade lock portion of the clockwise lock portion." '184 patent at 6:10-27 (claim 2). The parties did not ask for a construction of those terms, nor did the ALJ provide such a construction, thus the Commission affords them their plain and ordinary meaning. *See Phillips*, 415 F.3d at 1312-13.

DJI concedes that, if the Phantom 4 Pro UAVs are found to infringe claim 1, then they also infringe claim 2, because the "lugs" on the clockwise "blade lock portion" are mirror images of, and thus "different" from, the "lugs" on the counterclockwise "blade lock portion." *See* DJI's Review Br. at 29; Autel's Review Br. at 31-32. For the reasons given above, the Commission finds that the Phantom 4 Pro infringes claim 1 and, therefore, claim 2 of the '184 patent.

As for the Mavic Air, Mavic Pro, and Spark UAVs, the ID finds they do not infringe claim 2 because the "lugs" on their clockwise and counterclockwise blade lock portions are not "different" in any material respect. ID at 74-76, 82. In so holding, the ID rejects Autel's argument that the "lugs" on their counterclockwise rotors are "different" from the "lugs" on their clockwise rotors because only one set, but not the other, has "bumps" at the base of the "lugs," where they are affixed to the rotors. *See id.* at 74-76, 82. The ID finds, "Autel is not arguing that the 'bumps' themselves are the claimed lugs . . . It is therefore the *bumps*, not the lugs, that are configured differently." *Id.* at 74 (emphasis in original). The ID further finds:

> If, as Autel claims, the 'bumps' on the counterclockwise lock mechanism are integral with the lugs and thus a part of the lugs, then they too must engage with the corresponding notches. However, the evidence shows that they do not engage with the notches nor are they designed to.

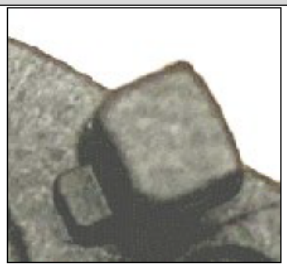
Id. at 75.

The Commission disagrees. The ID overlooks claim limitation 1[i], discussed earlier, which states that the "notches" on the shaft lock portion "engage corresponding lugs <u>*on the blade lock portion*</u>." '184 patent at 6:8-9 (emphasis added). Pursuant to its plain and ordinary

meaning, then, the term "lug" covers not only the portion of an L-shaped "lug" that engages the corresponding "notches" on the driveshaft but also the portion where that L-shaped "lug" attaches to the rotor blade. *See id*. The ID errs in finding that the portion of the "lug" that is configured differently than another lug must be the same portion of the "lug" that engages a corresponding "notch." *Cf.* ID at 75.

The Commission finds no dispute that the Mavic Pro, Mavic Air, and Spark UAVs have a bump in the base of one set of "lugs" (*e.g.*, on the counterclockwise rotor) that is not present in the other set of "lugs" (*e.g.*, on the clockwise rotor, or vice versa), as shown in the photographs below. *See* ID at 74-75, 82; Autel's Pet. at 40-42; DJI's Pet. Resp. at 34-38. The Commission further finds that each bump is part of the "lug" because claim 1, upon which claim 2 depends, it is integral to the portion of the "lug" that is attached to, or "*on* the blade lock portion." *See* '184 patent at 6:7-9 (emphasis added).

Mavic Air	
Clockwise	Counterclockwise
	
Figure 22. Mavic Air CW (RX-0274)	Figure 23. Mavic Air CCW (RX-0274)

Mavic Pro	
Clockwise	Counterclockwise
	
Figure 18. Mavic Pro CW (CX-0228)	Figure 19. Mavic Pro CCW (CX-0229)

Spark	
Clockwise	Counterclockwise
	
Figure 20. Spark CW (CX-328)	Figure 21. Spark CCW (CX-0329)

Based on the foregoing, the Commission finds that the presence of these bumps on one set of lugs and the absence from the other set of lugs are sufficient to satisfy claim 2. The Commission also finds it immaterial as to whether the purpose of the bumps is to avoid mounting the wrong rotors onto the wrong driveshaft assembly or to prevent their misalignment, as DJI argued, as neither claim 1 nor dependent claim 2 impose such a limitation on the "different" configurations of lugs on the clockwise versus counterclockwise lock mechanisms.

The Commission concludes that the accused UAVs, with the exception of Inspire, infringe both claims 1 and 2 of the '184 patent. Given that the Commission has previously determined to adopt the ID's finding that the claims are not invalid and Autel has satisfied the domestic industry requirement as the '184 patent, the Commission affirms the ID's finding that DJI has violated Section 337 with respect to claims 1 and 2 of the '184 patent. ID at 149.

B. The ID Correctly Determined that DJI's "New Designs" Were Not Sufficiently Fixed to Warrant Adjudication At This Time

The Commission affirms the ALJ's decision to decline to adjudicate DJI's new rotor locking designs. *See* Hr'g Tr. at 60:4-11, 383:2-8, 476:10-477:8 (Oct. 21-23, 2019). As explained below, the Commission finds that DJI's new rotor locking designs were not sufficiently fixed in design with use on UAVs to warrant adjudication of infringement based on

the information disclosed during discovery.[11] The Commission also affirms the ALJ's decision to exclude any evidence of the new designs that DJI produced after the close of fact discovery, as well as any expert opinions that relied on such evidence. *See* Order No. 21.

The Commission applies a four-factor test to determine whether a respondent has met its burden to adjudicate a redesigned or alternative product: (1) whether the product is within the scope of the investigation; (2) whether it has been imported; (3) whether it is sufficiently fixed in design; and (4) whether it has been sufficiently disclosed by respondent during discovery. *Certain Human Milk Oligosaccharides and Methods of Producing the Same*, Inv. No. 337-TA-1120, Comm'n Op. at 18-19, 2020 WL 3073788 at *11 (June 8, 2020). The Commission generally favors adjudicating redesigns, if warranted after consideration of the above factors, to prevent subsequent and potentially burdensome proceedings that could have been resolved in the earlier investigation. *Id.* Nonetheless, redesigned products may be covered by the remedial orders even if they were not adjudicated for infringement in the original investigation. *Id.*

DJI seeks to adjudicate what it identified as its Model C and Model F rotor locking designs.[12] DJI's Review Br. at 10. DJI asserts that the Model C does not infringe because it uses color coding in the form of a white painted ring, and not any physical structures, to distinguish

[11] DJI also sought to adjudicate certain new battery locking mechanisms that it claimed were not covered by the '013 patent. The Commission finds that issue to be moot, given that it affirmed the ID's finding that there is no violation with respect to the '013 patent. ID at 150, *unreviewed in pertinent part*; Comm'n Review Notice at 1, 3.

[12] DJI originally petitioned for review of five rotor locking designs (Models A, B, C, F, and G) and did not limit its request to Models C and F until it responded to the Commission's questions on review. The Commission notes Autel's concern that DJI's delay in expressing its intention to pursue only two models, and not all five, smacked of "gamesmanship," as it forced Autel to expend time and space briefing three models that DJI is no longer pursuing. Autel's Review Reply at 6. Nevertheless, the Commission finds this issue moot in light of its determination to affirm the ALJ's finding that all of the designs were insufficiently fixed for adjudication.

the clockwise and counterclockwise-rotating rotors. *Id.* at 11-12, 19-20. DJI asserts that its Model F does not infringe because it uses screws, rather than lugs and notches, to attach the rotors to the driveshaft assemblies. *Id.* at 12, 20-21.

In terms of whether the designs are ripe for adjudication, DJI contends that, before fact discovery closed on May 31, 2019, it produced photographs, animations, and exploded views of its Model C and (to a lesser extent) Model F rotor locking designs, as well as several sample Model C designs (including clockwise and counterclockwise rotors and motors), a sample Model F design (one counterclockwise rotor and motor), and updated interrogatory responses and non-infringement contentions covering those new rotor designs. DJI's Review Br. at 13-16; Autel's Review Br. at 18-21. DJI argues that its Model C and F designs fall within the scope of the investigation because the notice of investigation includes not only complete "drones" but also "rotors, rotor assemblies," and other components "used therein or therewith." DJI's Review Reply at 9-10 (citing 83 Fed. Reg. at 49576 (notice of investigation)).

The Commission finds that DJI's argument overlooks the fact that the "rotors" or "rotor assemblies" it seeks to adjudicate must be used with a UAV, *i.e.*, this investigation is directed to "unmanned aerial vehicles [or drones] and *components thereof*" that infringe one or more of the asserted claims of the '184 patent or other patents no longer at issue. 83 Fed. Reg. at 49575-76 (emphasis added). Thus, even though this investigation may include "rotor assemblies," as DJI argues, they must be "components thereof" that are constituent parts for a complete *UAV, including the accused UAVs*, and not just any components without a clear connection to a complete or accused UAV product. *See id.*

Even assuming DJI disclosed its Model C and Model F rotor locking designs before the close of fact discovery on May 31, 2019, the Commission finds that DJI produced little

information during discovery about whether the designs would be used on any UAVs, or whether any such UAVs were going to be imported and sold in the United States. With respect to the Model C, for example, DJI's designated corporate witness, Mr. Jiang, testified on May 23, 2019, that he did not know the status of development of the Model C ([[

]]), how many Model C prototypes had been made, whether it had been installed in any complete UAVs, or if DJI had any plans to implement the Model C in a commercial UAV. Jiang Dep. Tr. at 87:3-89:1 (May 23, 2019) (attached as Exhibit C to Autel's motion to strike DJI's new designs). He was certain, however, that DJI had not sold any UAVs incorporating the Model C design at that time. *Id.* at 157:1-6. Although the Commission does not require that a redesign involve a commercial product in order to be adjudicated, Mr. Jiang's testimony a few days before the close of fact discovery that he did not know the status of the development of the Model C is indicative that the design was not fixed at that time.

It was not until July 10, 2019 – over a month after the close of fact discovery and shortly before the deadline for serving rebuttal expert reports – that DJI produced a UAV (in that case, a reengineered Mavic 2 Pro) that incorporated a Model C rotor locking design. *See* DJI's Review Br. at 16-17. Regardless of the fact that Autel's counsel inspected that UAV, the timing of the production deprived Autel of the opportunity to develop infringement contentions, to obtain expert opinions, and to prepare for trial on that product, particularly when Mr. Jiang had provided no prior notice or information regarding any such product. DJI also does not deny that this reengineered Mavic 2 Pro was a "one-off engineering experiment," and not a "a fixed and

final product design" that DJI intended to make, import, or sell in the United States. *See* Autel's Review Resp. at 18-19.[13]

Similarly, the information disclosed by DJI before the close of discovery shows that the Model F rotor locking design was not sufficiently fixed in design with use on any UAV. Although Mr. Jiang testified that DJI was going to incorporate the Model F into what it was then calling its "WM160" UAV, he did not know when DJI was going to start manufacturing either the Model F or WM160, or when they might be imported or offered for sale in the United States (although he believed it would be by November 2019), or whether DJI was going to incorporate the Model F into any of its current UAVs. Jiang Dep. Tr. at 107:7-109:9, 111:7-13, 112:20-113:15, 115:4-11. Mr. Jiang also testified that DJI had not sold any UAVs using that design.[14] *Id.* at 157:1-6. Further, DJI did not import any UAVs incorporating its Model F design before the close of discovery. *See* DJI's Review Resp. at 16-17.

In short, the Commission finds that the information produced during discovery shows that the Model C and Model F rotor locking assemblies were not sufficiently fixed in design with use on any UAV. Because of this, the Commission finds that Autel did not have sufficient information to allow it to decide during the discovery period whether the new design in a DJI UAV infringes. For these reasons, the Commission affirms the ALJ's decision not to adjudicate DJI's Model C and Model F rotor locking designs in this investigation. This finding is without

[13] Although the Commission has held that importation is not mandatory for a redesign to be adjudicated, it may be relevant to this inquiry. *Human Milk Oligosaccharides*, Comm'n Op. at 18 n.21, 2020 WL 3073788 at *11 n.21. In this case, the importation of a single modified Mavic Pro 2 after the close of fact discovery supports the ALJ's finding that DJI did not have a UAV with a Model C design that was sufficiently fixed to be adjudicated in this investigation.

[14] Mr. Jiang testified that [[

]]. Jiang Dep. Tr. at 111:18-112:19, 113:16-114:14.

prejudice as to DJI's ability to present evidence in a future modification or advisory opinion proceeding to adjudicate a fixed UAV with a redesigned rotor locking assembly, provided it is consistent with Commission rules, procedures, and any applicable court decisions.

For the reasons given above, the Commission determines that DJI has violated Section 337 by importing, selling for importation, or selling into the United States after importation UAVs (with the exception of Inspire) that infringe claims 1 and 2 of the '184 patent.

C. Remedy, Bonding, The Public Interest, and Suspension

The Commission makes the following determinations regarding remedy, bonding, the public interest, and suspension of the remedial orders.

1. Remedy

The Commission has "broad discretion in selecting the form, scope, and extent of the remedy." *Viscofan, S.A. v. US. Int'1 Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986).

a. Limited Exclusion Order

Section 337(d)(1) provides that "[i]f the Commission determines, as a result of an investigation under this section, that there is a violation of this section, it shall direct that the articles concerned, imported by any person violating the provision of this section, be excluded from entry into the United States, unless, after considering the [public interest], it finds that such articles should not be excluded from entry." 19 U.S.C. § 1337(d)(1).

The Commission has determined to issue a limited exclusion order ("LEO") to preclude the importation of DJI UAVs that infringe claims 1 or 2 of the '184 patent, pursuant to Section 337(d)(1). The Commission, consistent with its standard practice, does not limit the LEO to UAVs that were actually adjudicated to infringe the '184 patent. *See Certain Graphics Systems, Components Thereof, and Consumer Products Containing Same*, Inv. No. 337-TA-1044,

Comm'n Op. at 66 (Sept. 18, 2018) (extending LEO to cover other products that infringe the patent at issue and not limiting that order to any particular model(s)); *Certain Hardware Logic Emulation Systems and Components Thereof* ("*Hardware Logic Emulation Sys.*"), Inv. No. 337-TA-383, Comm'n Op., 1998 WL 307240 at *9 (Mar. 9, 1998) (Commission typically issues broad remedial orders extending to "all products covered by the patent claims as to which a violation is found, rather than limiting its orders to only those specific models selected for the infringement analysis"). The purpose of issuing remedial orders in this manner is to ensure that the complainant receives "complete relief" because an "exclusion order covering only specific models of an accused device could be easily circumvented." *Hardware Logic Emulation Sys.*, Comm'n Op., 1998 WL 307240 at *9; *see also Human Milk Oligosaccharides*, Comm'n Op. at 19-20, 2020 WL 3073788 at *11 (redesigned products may still fall within the scope of the remedial orders even if they were not adjudicated for infringement in the original investigation).

The Commission's limited exclusion order includes a provision authorizing U.S. Customs and Border Protection ("Customs"), at its discretion, to establish a certification procedure to permit DJI to import UAVs (*e.g.*, the Inspire) that DJI certifies, to the best of its knowledge and belief, are non-infringing and thus "are not excluded from entry under paragraph 1 of this Order." Limited Exclusion Order, ¶ 3. The Commission, however, declines DJI's request to exempt spare parts used to service or repair UAVs it has already imported or sold in the United States because DJI did not produce any evidence to support its request or even identify which spare parts are of particular importance or should be permitted entry. *See Certain Non-Volatile Memory Devices and Products Containing Same*, Inv. No. 337-TA-1046, Comm'n Op. at 50, 2018 WL 6012622 at *31 (Oct. 26, 2018) (finding exemption for service or repair was not

warranted when the respondent did not identify any specific replacement parts or explain what repairs were needed).

b. Cease and Desist Order

Section 337(f)(1) provides that in addition to, or in lieu of, the issuance of an exclusion order, the Commission may issue a cease and desist order ("CDO") as a remedy for violation of Section 337. *See* 19 U.S.C. § 1337(f)(1). CDOs are generally issued when, with respect to the imported infringing products, respondents maintain "commercially significant" inventories in the United States or have significant domestic operations that could undercut the remedy provided by an exclusion order.[15] *See, e.g.*, *Certain Table Saws Incorporating Active Injury Mitigation Technology & Components Thereof* ("*Table Saws*"), Inv. No. 337-TA-965, Comm'n Op. at 4-6 (Feb. 1, 2017); *Certain Protective Cases & Components Thereof*, Inv. No. 337-TA-780, USITC Pub. No. 4405, Comm'n Op. at 28 (Nov. 19, 2012). Complainants bear the burden on this issue. "A complainant seeking a cease and desist order must demonstrate, based on the record, that this remedy is necessary to address the violation found in the investigation so as to not undercut the relief provided by the exclusion order." *Table Saws*, Comm'n Op. at 5 (citing *Certain Integrated Repeaters, Switches, Transceivers, & Prods. Containing Same*, Inv. No. 337-TA-435, USITC Pub. No. 3547 (Oct. 2002), Comm'n Op. at 27 (Aug. 16, 2002); *see also* H.R. REP. NO. 100-40, at 160 (1987)).

[15] When the presence of infringing domestic inventory or domestic operations is asserted as the basis for a CDO under section 337(f)(1), Commissioner Schmidtlein does not adopt the view that the respondent's inventory or domestic operations needs to be "commercially significant" before a CDO can be issued under Section 337(f)(1). *See, e.g.*, *Certain Magnetic Tape Cartridges and Components Thereof*, Inv. No. 337-TA-1058, Comm'n Op. at 65 n.24 (Mar. 25, 2019); *Table Saws*, Comm'n Op. at 6-7 n.2 (Feb. 1, 2017). In Commissioner Schmidtlein's view, the presence of an infringing domestic inventory or domestic operations, regardless of its commercial significance, provides a basis to issue a CDO. *Id.*

The Commission has determined to issue CDOs against respondents iFlight Technology Co., Ltd. ("iFlight") and DJI Service LLC ("DJI Service"), pursuant to Section 337(f)(1). The RD recommended issuing CDOs against "those Respondents found to infringe by the Commission" (RD at 153). However, the only DJI entities that Autel requested CDOs against are iFlight and DJI Service, which Autel identifies as "the two named DJI entities known to hold inventory of infringing products in the United States." Autel's Review Br. at 33. As to whether DJI maintains commercially significant inventories or domestic operations in the United States, the Commission finds that DJI collectively maintained "commercially significant' inventories of [[ ]] accused UAVs between September 2017 and April 2019, valued at [[ ]]. RD at 153. The Commission also finds that a "snapshot" taken on April 8, 2019, shows that DJI's collective inventory included [[ ]], valued at [[ ]]. *Id.* Although DJI challenges Autel's use of "absolute" numbers, DJI does not dispute the accuracy of the data or calculations cited by Autel or the RD, nor does it challenge Autel's identification of iFlight or DJI Service as respondents maintaining such inventories. *See id.* Therefore, the Commission has determined to issue CDOs directed to iFlight and DJI Service with respect to infringing UAVs.

2. Public Interest

Section 337 requires the Commission, upon finding a violation of section 337, to issue an LEO "unless, after considering the effect of such exclusion upon the public health and welfare, competitive conditions in the United States economy, the production of like or directly competitive articles in the United States, and United States consumers, it finds that such articles should not be excluded from entry." 19 U.S.C. § 1337(d)(l). Similarly, the Commission must consider these public interest factors before issuing a CDO. 19 U.S.C. § 1337(f)(1).

Under appropriate facts and circumstances, the Commission may determine that no remedy should issue because of the adverse impacts on the public interest. *See, e.g.*, *Certain Fluidized Supporting Apparatus & Components Thereof*, Inv. Nos. 337-TA-182/188, USITC Pub. 1667, Comm'n Op. at 1–2, 23–25 (Oct. 1984) (finding that the public interest warranted denying complainant's requested relief). Moreover, when the circumstances of a particular investigation require, the Commission has tailored its relief in light of the statutory public interest factors. For example, the Commission has allowed continued importation for ongoing medical research, exempted service parts, grandfathered certain infringing products, and delayed the imposition of remedies to allow affected third-party consumers to transition to non-infringing products. *E.g.*, *Certain Microfluidic Devices*, Inv. No. 337-TA-1068, Comm'n Op. at 1, 22–48, 53–54 (analyzing the public interest, discussing applicable precedent, and ultimately issuing a tailored LEO and CDO); *Certain Road Milling Machines & Components Thereof*, Inv. No. 337-TA-1067, Comm'n Op. at 32–33 (July 18, 2019) (exempting service parts); *Certain Baseband Processor Chips & Chipsets, Transmitter, & Receiver (Radio) Chips, Power Control Chips, & Prods. Containing Same, Including Cellular Tel. Handsets*, Inv. No. 337-TA-543, USITC Pub. No. 4258, Comm'n Op. at 150–51 (Oct. 2011) (grandfathering certain products); *Certain Personal Data & Mobile Comm'n Devices & Related Software*, Inv. No. 337-TA-710, USITC Pub. No. 4331, Comm'n Op., at 72–73, 80–81 (June 2012) (delaying imposition of remedy).

The statute requires the Commission to consider and make findings on the public interest in every case in which a violation is found regardless of the quality or quantity of public interest information supplied by the parties. 19 U.S.C. § 1337(d)(l), (f)(l). Thus, the Commission publishes a notice inviting the parties as well as interested members of the public and interested government agencies to gather and present evidence on the public interest at multiple junctures

in the proceeding. 19 U.S.C. § 1337(d)(l), (f)(l). The Commission did not ask the ALJ to make findings regarding the public interest when it instituted this investigation (83 Fed. Reg. at 49575-76), so the RD does not address that issue. The Commission received no response to its request for comments on the public interest from any interested third parties. *See* 85 Fed. Reg. at 30735.

The Commission finds that consideration of the public interest factors set forth in Sections 337(d)(1) or (f)(1) do not preclude issuance of an LEO or CDOs in this investigation.

First, the Commission finds that an exclusion order will not adversely impact public health or welfare. *See* 19 U.S.C. § 1337(d)(1), (f)(1). DJI argues that an exclusion order would impact public safety, health, and welfare because its UAVs account for over 75 percent of UAVs in the United States that weigh less than 75 pounds, due to their higher quality and safety features not found in its competitors' products. DJI's Review Br. at 33-35. DJI argues that its UAVs are used by federal, state, and local public safety agencies for critical and life-saving tasks, including search-and-rescue, accident reconstruction, and the public health response to COVID-19 by checking temperatures and enforcing social distancing. *Id.* at 24, 36. DJI argues that an exclusion order would hamper the efforts of U.S. public safety agencies, while forcing U.S. consumers to purchase lower quality, less safe alternatives. *Id.* In the alternative, DJI argues that the Commission should permit the continued importation of spare parts to enable service and repair of UAVs that have already been imported. *Id.* at 37.

Although DJI contends that its UAVs are used by certain public agencies, the Commission finds that DJI's argument is unsubstantiated. The record does not reflect that alternative suppliers offering competing UAVs would not suffice to meet the needs of these agencies. Even if DJI's representations are taken at face value, DJI does not deny that UAVs may be available from other sources (even if at a higher price or somewhat lower capabilities), or

that its competitors may be encouraged to enter or expand their presence in the UAV market if DJI's covered products are excluded. DJI also does not address whether some of these needs might be filled by its own non-infringing UAVs, such as Inspire, or by new, allegedly non-infringing UAV models, such as those using its allegedly non-infringing Model C (Mavic Air 2) or Model F (Mavic Mini) rotor locking assemblies (*e.g.*, upon adjudication of the redesign in a Commission modification or advisory proceeding or through certification of the non-infringing Inspire UAV before Customs). The record contains no expert testimony or declarations from customers in any public safety agency regarding any potential impact of an exclusion order or cease and desist order on the agency, nor did any such agency respond to the Commission's request for comments on the public interest or communicate any concerns on the record of this investigation. Moreover, the LEO does not apply to UAVs imported by or for the use of the United States government under Section 337(l). *See* 19 U.S.C. § 1337(l).

Second, the Commission finds that issuing an exclusion order will not adversely impact competitive conditions in the U.S. economy. *See* 19 U.S.C. § 1337(d)(1), (f)(1). To the contrary, an exclusion order may encourage other parties, such as Autel or other competitors like Yuneec or Parrot S.A., to enter or expand their presence in the U.S. UAV market, as noted above. *See* Autel's Review Br. at 35-36. DJI even acknowledges that Autel's EVO may be "comparable" to some of the accused UAVs and may even sell for a lower price. DJI's Review Resp. at 33. DJI may also be able to design around the '184 patent and import non-infringing UAVs, such as the Inspire, whether through adjudication, certification, or other proceedings finding those new designs are not covered by the exclusion order.

Third, the Commission finds that an exclusion order will not adversely impact the production of like or directly competitive articles in the United States. *See* 19 U.S.C.

§ 1337(d)(1), (f)(1). The Commission finds that an exclusion order would not harm production of competitive articles by Autel or another U.S. producer, but may even encourage their domestic production or expansion.

Finally, the Commission finds that an exclusion order will not adversely impact U.S. consumers. *See* 19 U.S.C. § 1337(d)(1), (f)(1). As noted above, there are other non-infringing UAVs in the U.S. market, and an exclusion order may spur additional entrants. The Commission finds that the public and U.S. competitive interests generally benefit from enforcement of intellectual property rights. *Certain Two-Handle Centerset Faucets & Escutcheons & Components Thereof*, Inv. No. 337-TA-422, Comm'n Op. at 9 (July 21, 2000)).

For all these reasons, the Commission finds that the public interest would not be adversely impacted to the extent that the remedial orders should not be issued.

3. Bond

When the Commission enters an exclusion order or a cease and desist order, a respondent may continue to import and sell its products during the 60-day period of Presidential review under a bond in an amount determined by the Commission to be "sufficient to protect the complainant from any injury." 19 U.S.C. § 1337(j)(3); *see also* 19 C.F.R. § 210.50(a)(3). When reliable price information is available, the Commission has often set the bond in an amount that would eliminate the price differential between the domestic product and the imported, infringing product. *See Certain Microsphere Adhesives, Processes for Making Same, & Prods. Containing Same, Including Self-stick Repositionable Notes*, Inv. No. 337-TA-366, USITC Pub. No. 2949, Comm'n Op. at 24 (Jan. 16, 1996). The Commission has also used a reasonable royalty rate to set the bond amount when a reasonable royalty rate could be ascertained from the evidence in the record. *See, e.g., Certain Audio Digital-to-Analog Converters & Prods. Containing Same*, Inv.

No. 337-TA-499, Comm'n Op. at 25 (Mar. 3, 2005). Where the evidence of record shows that the calculation of a price differential is impractical or is insufficient to determine a reasonable royalty, the Commission generally imposes a 100 percent bond. *See, e.g., Certain Liquid Crystal Display Modules, Prods. Containing Same, & Methods Using the Same*, Inv. No. 337-TA-634, Comm'n Op. at 6-7 (Nov. 24, 2009). The complainant bears the burden of establishing the need for a bond. *Certain Rubber Antidegradants, Components Thereof & Prods. Containing Same*, Inv. No. 337-TA-533, USITC Pub. No. 3975, Comm'n Op. at 40 (July 21, 2006).

The Commission has determined to impose a bond equal to 11.5 percent of the entered value of DJI UAVs imported during the 60-day period of Presidential review, based on an analysis of the difference in prices between UAVs sold by Autel and DJI. Although the RD recommends a rate of 9.9 percent of entered value, Autel argues that a higher rate of 11.5 percent is warranted when it excludes the non-infringing Inspire from its "weighted average" of DJI's products. Autel's Review Br. at 37-38. DJI argues that a bond is not necessary because Autel's EVO UAV is cheaper than many of DJI's comparable UAVs (*e.g.*, Mavic Pro, Phantom 4 Pro), while DJI's lower-priced products (*e.g.*, Mavic Air, Spark) have fewer capabilities than Autel's EVO. DJI's Resp. at 32-33. DJI, however, cites no expert testimony, calculations, or other evidence to support its allegations or evidence to show that Autel's "weighted average" was inappropriate. *See id.* The Commission thus finds that the record supports the imposition of a bond in the amount of 11.5 percent of the entered value of infringing DJI products. The Commission, however, has determined to suspend the bond provision and other aspects of the remedial orders, as explained in the following section.

4. Suspension of Remedial Orders

The Commission has found a violation and determined that issuance of an LEO and CDOs is warranted. However, the Commission has determined to suspend enforcement of those remedial orders pending resolution of the PTAB's Final Written Decision finding the asserted claims of the '184 patent – the only patent claims still at issue – to be unpatentable. *See Viscofan*, 787 F.2d at 548 (finding that the Commission has "broad discretion in selecting the form, scope, and extent of the remedy.").

The Commission may issue an exclusion order in a patent-based investigation only if it finds that the accused articles "infringe a *valid* and enforceable United States patent." 19 U.S.C. § 1337(a)(1)(B)(i), (d)(1) (emphasis added). Both parties acknowledge that the Commission has previously suspended enforcement of its remedial orders, at least in part, when the PTAB issued a final written decision finding one or more of the asserted claims unpatentable before the Commission made its determination on violation. *See, e.g., Certain Magnetic Tape Cartridges and Tape Components Thereof* ("*Magnetic Tape Cartridges*"), Inv. No. 337-TA-1058, Comm'n Op. at 62-63, 2019 WL 2635509 at *38 (Apr. 9, 2019); *Certain Three-Dimensional Cinema Systems and Components Thereof* ("*Three-Dimensional Cinema Systems*"), Inv. No. 337-TA-939, Comm'n Op. at 60, 2016 WL 7635412 at *37 (July 21, 2016). Neither party has identified an instance in which the Commission determined *not* to suspend remedial orders due to a PTAB final written decision that issued prior to the Commission's determination. This circumstance also differs significantly from other investigations in which the Commission issued its remedial orders *before* the PTAB issued its final written decision of unpatentability. *See, e.g., Certain Network Devices, Related Software and Components Thereof (II)* ("*Network Devices*"), Inv. No. 337-TA-945, Comm'n Op., 2017 WL 10954555 at *6, *8 (Aug. 16, 2017) (denying motion to

rescind or modify remedial orders, *inter alia*, on the grounds that the remedial orders had been issued before the PTAB issued its final written decision on unpatentability).

Suspension of the remedial orders pending resolution of the PTAB's Final Written Decision is consistent with the Commission's past practice on this issue.[16] The Commission determined to partially suspend its remedial orders in *Three-Dimensional Cinema Systems* due to its "broad discretion in selecting the form, scope and extent of the remedy," the fact that the PTAB had already issued a final written decision finding certain claims unpatentable, "the advanced posture of the PTAB's proceeding," and the "potential cancellation of those claims"

[16] The Commission also distinguishes the facts here – where the Commission has completed the investigation but is suspending enforcement of the remedial orders – from an earlier case, in which the ALJ, in an interim order, denied a motion to stay an ongoing investigation where the PTAB had issued a final written decision finding the claims of one of the asserted patents invalid and was engaged in *inter partes* reviews against the other two asserted patents. *See Certain Memory Modules and Components Thereof* ("*Memory Modules*"), Inv. No. 337-TA-1089, Order No. 49 at 1-4 (April 11, 2019). The ALJ found there was little to be gained by staying the investigation because it had already reached an advanced stage, discovery had been completed, and the evidentiary hearing would commence by the time the PTAB issued its other two final decisions. *Id.* at 2. Even so, the ALJ held that the PTAB's unpatentability decision weighed "heavily in favor of a stay" because it could "simplify the issues and hearing of the case." *Id.* at 2-3. The ALJ also found that "the Commission has signaled a willingness to suspend the enforcement of any remedial orders pending final resolution of those written decisions." *Id.* at 3 (citing *Magnetic Tape Cartridges, supra,* and *Three-Dimensional Cinema Systems, supra*). The investigation proceeded to its conclusion, the final ID issued, and the Commission issued a final determination of no violation. No party petitioned for review of Order No. 49 or the denial of the stay motion after the final ID issued.

after appeal. Comm'n Op. at 60, 2016 WL 7635412 at *37.[17] Those same considerations support suspension here as well.

Further, suspension of remedial orders in the current context recognizes the PTO's role as the lead agency in assessing the patentability, or validity, of proposed or issued claims. *See, e.g., Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 721 F.3d 1330, 1339, 1344 (Fed. Cir. 2013) ("Congress has expressly delegated reexamination authority to the PTO under a statute requiring the PTO to cancel rejected claims"). Even though the PTAB has no statutory authority to formally cancel a patent claim until its unpatentability decision has been finally resolved (including any appeal), *see* 35 U.S.C. § 318(b), the Commission recognized the PTAB's leading role when it suspended enforcement of the remedial orders as to the claims found unpatentable by the PTAB in *Magnetic Tape Cartridges* and *Three-Dimensional Cinema Systems*. The Commission's invalidity determinations in patent cases, in contrast, are for purposes of adjudicating whether or not a Section 337 violation has occurred, and are not binding on the PTO, federal courts, or other tribunals, even if affirmed by the Federal Circuit. *See Hyosung TNS Inc. v. Int'l Trade Comm'n*, 926 F.3d 1353, 1358 (Fed. Cir. 2019). Moreover, suspension of the remedial orders comports with the statutory directive that the Commission complete its investigations "at the earliest

[17] The Commission's determination is consistent with its previous decisions to rescind or modify remedial orders, pending appeal, after a district court enters a judgment that the asserted claims are invalid. *See, e.g., Certain Composite Wear Components and Products Containing Same*, Inv. No. 337-TA-644, Comm'n Op. at 1, 9, 12 (Feb. 10, 2011) (determining "to temporarily rescind" its remedial orders in their entirety, pending appeal, after a district court declared "the sole patent covered by the Commission's remedial orders" to be invalid); *see also SSIH Equip. S.A. v. Int'l Trade Comm'n*, 718 F.2d 365, 370-71 (Fed. Cir. 1983) (finding "the Commission acted properly" in modifying its remedial orders to exclude two of the three patents at issue after they had been found invalid by a district court). Temporary suspension based on a PTAB final written decision and temporary rescission based on a district court invalidity decision both have the effect of temporarily placing the Commission's remedial orders on hold until an appeal of the district court's (or PTAB's) decision has been resolved or exhausted.

practicable time" (19 U.S.C. § 1337(b)(1)), while at the same time deferring to the PTAB's Final Written Decision by holding its remedial orders in abeyance pending appeal of that decision.

In addition, the Commission's decision to suspend enforcement is guided by the goal of the *inter partes* review ("IPR") procedure under the America Invents Act ("AIA") to provide "a quick, inexpensive, and reliable alternative to district court litigation to resolve questions of patent validity." S. REP. NO. 110-259, at 20 (2008); *see Three-Dimensional Cinema Sys.*, 2016 WL 7635412 at *32 (citing H.R. REP. NO. 112-98, at 48 (2011)). The IPR "procedure allows private parties to challenge previously issued patent claims in an adversarial process before the Patent Office that mimics civil litigation." *SAS Institute, Inc. v. Iancu,* 138 S.Ct. 1348, 1352 (2018). Several aspects of the statutory framework reflect Congress's goal that IPR proceedings be a substitute for district court litigation on patent validity issues. For example, the AIA accounts for litigation timing; provides for an adversarial proceeding with discovery, an oral hearing, and adjudication by a panel of three administrative patent judges; and estops IPR petitioners from asserting invalidity grounds at the Commission and in district court that were raised or reasonably could have been raised in the IPR proceeding. *See* 35 U.S.C. §§ 315(a), 315(b), 315(e), 316(a)(5), 316(a)(10). Suspending enforcement of the remedial orders when the PTAB's Final Written Decision on unpatentability issues before the Commission's determination gives effect to the Congressional goal.

For the foregoing reasons, the Commission has determined that it is appropriate under the facts in this investigation to suspend enforcement of the LEO and CDOs, including the bond provision, pending final resolution of the PTAB's Final Written Decision finding the challenged claims of the '184 patent unpatentable.

V. CONCLUSION

For the reasons stated above, the Commission determines that DJI has violated Section 337 in the importation, sale for importation into the United States, and sale after importation of certain unmanned aerial vehicles and components thereof that infringe claims 1 and 2 of the '184 patent. Accordingly, the investigation is terminated with a finding of a violation of Section 337.

The Commission further determines that the appropriate remedy is the issuance of an LEO against the DJI respondents and CDOs against respondents iFlight and DJI Service, and imposition of a bond in the amount of 11.5 percent of the entered value of DJI's covered products during the period of Presidential review. The Commission finds that the public interest does not preclude issuance of the LEO or CDOs. The Commission, however, has determined to suspend enforcement of its remedial orders, including the bond provision, pending appeal of the PTAB's Final Written Decision holding asserted claims 1 and 2 of the '184 patent, among others, unpatentable as anticipated or obvious.

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: September 8, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **OPINION** has been served upon the following parties as indicated, on 9/8/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
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Washington, DC 20436

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On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1133**

NOTICE OF A COMMISSION DETERMINATION TO REVIEW THE FINAL INITIAL DETERMINATION IN PART, TO SET THE SCHEDULE FOR FILING WRITTEN SUBMISSIONS ON THE ISSUES UNDER REVIEW AND REMEDY, THE PUBLIC INTEREST, AND BONDING, AND TO EXTEND THE TARGET DATE FOR COMPLETION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission (the "Commission") has determined to: (1) review in part certain findings of the final initial determination ("ID") that certain accused products do not infringe claims 1 or 2 of U.S. Patent No. 9,260,184 ("'184 patent"); (2) decline to review, and thereby adopt, the ID's findings that there is no violation of Section 337 with respect to U.S. Patent Nos. 7,979,174 ("the '174 patent") and 10,044,013 ("the '013 patent"); (3) review whether to adjudicate products containing respondents' allegedly redesigned rotor locking mechanisms; (4) solicit briefing regarding the issues under review and remedy, the public interest, and bonding; and (5) extend the target date for completing this investigation to August 10, 2020.

FOR FURTHER INFORMATION CONTACT: Carl P. Bretscher, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436, telephone (202) 205-2382. Copies of non-confidential documents filed in connection with this investigation may be viewed on the Commission's electronic docket system ("EDIS") at *https://edis.usitc.gov*. For help accessing EDIS, please email *EDIS3Help@usitc.gov*. General information concerning the Commission may also be obtained by accessing its Internet server at *https://www.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal, telephone (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on October 2, 2018, based on a complaint filed by Autel Robotics USA, Inc. ("Autel") of Bothell, Washington. 83 FR 49575-76 (Oct. 2, 2018). The complaint accuses respondents of violating Section 337 by importing into the United States, selling for importation, or selling in the United States after importation certain unmanned aerial vehicles ("UAVs") and components thereof that infringe the asserted claims of Autel's '184, '174, and '013 patents. *Id*. The complaint also alleges the existence of a domestic industry. *Id*.

The notice of investigation named the following respondents: SZ DJI Technology Co. Ltd. of Shenzhen, China; DJI Europe B.V. of Barendrecht, Netherlands; DJI Technology Inc. of Burbank, California; iFlight Technology Co., Ltd. of Hong Kong; DJI Baiwang Technology Co. Ltd. of Shenzhen, China; DJI Research LLC of Palo Alto, California; DJI Service LLC of Cerritos, California; and DJI Creative Studio LLC of Burbank, California (collectively, "DJI"). *Id*. The Office of Unfair Import Investigations is not a party to this investigation. *Id*.

On October 17, 2019, the Commission determined not to review Order No. 22, which partially terminated the investigation with respect to certain patent claims withdrawn by Autel. Order No. 22 (Sept. 30, 2019), *not rev'd*, Comm'n Notice (Oct. 17, 2019). The claims still at issue are claims 1, 2, and 5 of the '184 patent; claims 1, 7, 8, 14, and 17 of the '174 patent; and claims 1, 3-5, 8, 10, 13-16, 18, 22, or 23 of the '013 patent.

The presiding Chief Administrative Law Judge ("CALJ") held an evidentiary hearing on October 21-23, 2019. On March 2, 2020, the CALJ issued a final ID, finding a violation of Section 337 by way of infringement of the '184 patent but not the '174 or '013 patents. On March 9, 2020, the CALJ issued an errata which corrects a misstatement in the original ID regarding the '174 patent but does not change the ID's findings on infringement or violation. *See* Notice of Errata to Final Initial Determination (Mar. 9, 2020).

On March 16, 2020, the Commission determined to extend the target date for completion of this investigation to June 9, 2020. Comm'n Notice (Mar. 16, 2020). On March 16, 2020, the parties filed petitions for review of certain findings in the final ID, pursuant to Commission Rule 210.43(a) (19 CFR 210.43(a)). On March 24, 2020, the parties filed their respective petition responses, pursuant to Commission Rule 210.43(c) (19 CFR 210.43(c)).

On May 15, 2020, the Commission issued a notice soliciting public comments on the public interest factors, if any, that may be implicated if a remedy were to be issued in this investigation. Comm'n Notice (May 15, 2020); 85 FR 30735 (May 20, 2020). The Commission did not receive any comments from the public in response to its notice.

On May 29, 2020, counsel for DJI filed a letter with the Commission conveying four recent final written decisions by the Patent Trial and Appeal Board ("PTAB"), in which the PTAB invalidated certain challenged claims of the '184, '174, and '013 patents, including the claims asserted in this investigation.

Having reviewed the record in this investigation, including the final ID, the parties' petitions, and responses thereto, the Commission has determined to adopt certain findings and review other findings in the final ID, as follows:

(1) With regard to the '184 patent, the Commission has determined to review the ID's findings of infringement with respect to claims 1 and 2 but not claim 5. The Commission has determined not to review, and thereby adopts, the ID's findings that: (a) Respondents have satisfied both the technical and economic prongs of the domestic industry requirement; and (b) claims 1 and 2 are not invalid as anticipated or obvious.

(2) The Commission has determined not to review, and thereby adopts, the ID's finding that there is no violation of Section 337 with respect to the '174 patent. .

(3) The Commission has determined not to review, and thereby adopts, the ID's finding that there is no violation of Section 337 with respect to the '013 patent.

(4) The Commission has determined to review the ID's decision not to adjudicate DJI's redesigned rotor locking mechanisms. The Commission has determined not to review the ID's decision not to adjudicate DJI's redesigned battery latching mechanisms, which implicates only the '013 patent.

(5) The Commission has determined not to review the ID with respect to any allegedly inconsistent statements Autel made before the Patent Trial and Appeal Board.

The parties are asked to provide additional briefing on the following issues under review. For each argument presented, the parties' submissions should include whether and how that argument was presented and preserved in the proceedings before the CALJ, in conformity with the CALJ's Ground Rules (Order No. 2), with citations to the record.

(A) Please discuss what, if any, effect the final written decision of the PTAB (attached to Respondents' letter to the Commission of March 29, 2020) finding the claims of the '184 patent unpatentable has on the Commission's present investigation with respect to the accused products and the '184 patent, including any impact on the issuance of relief.

(B) Please discuss whether and to what extent the PTAB's final written decision impacts Respondents' request to adjudicate its redesigned rotor locking assemblies for a determination as to whether they infringe the '184 patent, including Respondents' request for a remand to the ALJ for further proceedings.

(C) Please identify each redesigned product (or each redesigned component of a product) for which Respondents seek adjudication as to the '184 patent.

(D) For each redesigned product (or each redesigned component of a product) for which Respondents seek adjudication as to the '184 patent, please identify the following information:

(i) what discovery was provided or took place and when in relation to the deadline for the close of fact discovery and expert discovery; and

(ii) whether and to what extent the discovery addresses whether each redesigned product or redesigned component: (a) has been imported; (b) is fixed in design; and (c) infringes the asserted claims of the '184 patent.

(E) Regarding the Phantom 4 Pro and Inspire products, explain whether the structures on the rotors identified by Autel fall under the plain and ordinary meaning of "lugs," and whether the structures on the driveshaft fall under the plain and

ordinary meaning of "notches," pursuant to claim 1 of the '184 patent. Explain whether the so-called "notches" identified by Autel are "configured to engage" the so-called "lugs" to secure the rotors as required by claim 1, and if so, how.

(F) Explain whether the Phantom 4 Pro's and Inspire's counterclockwise-rotating rotors have "lugs with a configuration that is different than the configuration of the lugs" on its clockwise-rotating rotors, as required by claim 2 of the '184 patent.

The parties are requested to brief only the discrete issues identified above, with reference to the applicable law and evidentiary record. The parties are not to brief any other issues on review, which have already been adequately presented in the parties' previous filings.

The Commission has also determined to extend the target date to August 10, 2020**.**

In connection with the final disposition of this investigation, the statute authorizes issuance of : (1) an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) cease-and-desist orders that could result in the respondents being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. If a party seeks exclusion of an article from entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or likely to do so. For background, *see Certain Devices for Connecting Computers via Telephone Lines*, Inv. No. 337-TA-360, USITC Pub. No. 2843, Comm'n Op. at 7-10 (December 1994).

The statute requires the Commission to consider the effects of any remedy upon the public interest. The public interest factors the Commission will consider include the effect that an exclusion order and/or cease-and-desist order would have on: (1) the public health and welfare; (2) competitive conditions in the U.S. economy; (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation; and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

If the Commission orders some form of remedy, the U.S. Trade Representative, as delegated by the President, has 60 days to approve, disapprove, or take no action on the Commission's action. *See* Presidential Memorandum of July 21, 2005. 70 FR 43251 (July 26, 2005). During this period, the subject articles would be entitled to enter the United States under bond, in an amount determined by the Commission and prescribed by the Secretary of the Treasury. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed if a remedy is ordered.

WRITTEN SUBMISSIONS: Parties to this investigation are requested to file written submissions on the issue identified above in this notice. In addition, the parties, interested government agencies, and any other interested parties are requested to file written submissions on the issues of remedy, the public interest, and bonding. Such initial submissions should

include views on the recommended determination by the CALJ on remedy and bonding. Explain whether your views on public interest or bonding would differ if the redesigned products (or redesigned components of a product) put forward by Respondents were excluded from any remedy.

In its initial submission, Complainant is requested to identify the remedy sought and to submit proposed remedial orders for the Commission's consideration. Complainant is also requested to state the date that the '184 patent expires and the HTSUS subheadings under which the accused products are imported. Complainant is further requested to supply the names of known importers of the Respondents' products at issue in this investigation. Complainant is also requested to identify and explain, from the record, articles that it contends are "components of" the subject products, and thus potentially covered by the proposed remedial orders, if imported separately from the subject products. *See* 85 FR at 10725. Failure to provide this information may result in waiver of any remedy directed to "components of" the subject products, in the event any violation may be found.

The parties' written submissions and proposed remedial orders must be filed no later than the close of business on **June 24, 2020**. Reply submissions must be filed no later than the close of business on **July 1, 2020**. Opening submissions are limited to 40 pages. Reply submissions are limited to 35 pages. No further submissions on any of these issues will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file the original document electronically on or before the deadlines stated above. The Commission's paper filing requirements in 19 CFR 210.4(f) are currently waived. 85 *Fed. Reg.* 15798 (Mar. 19, 2020). Submissions should refer to the investigation number ("Inv. No. 337-TA-1133") in a prominent place on the cover page and/or first page. (*See Handbook for Electronic Filing Procedures, https://www.usitc.gov/documents/ handbook_on_filing_procedures.pdf.*). Persons with questions regarding filing should contact the Secretary (202-205-2000).

Any person desiring to submit a document to the Commission in confidence must request confidential treatment. All such requests should be directed to the Secretary to the Commission and must include a full statement of the reasons why the Commission should grant such treatment. *See* 19 CFR 201.6. Documents for which confidential treatment by the Commission is properly sought will be treated accordingly. All information, including confidential business information and documents for which confidential treatment is properly sought, submitted to the Commission for purposes of this Investigation may be disclosed to and used: (i) By the Commission, its employees and Offices, and contract personnel (a) for developing or maintaining the records of this or a related proceeding, or (b) in internal investigations, audits, reviews, and evaluations relating to the programs, personnel, and operations of the Commission including under 5 U.S.C. Appendix 3; or (ii) by U.S. government employees and contract personnel, solely for cybersecurity purposes. All contract personnel will sign appropriate nondisclosure agreements. All non-confidential written submissions will be available for public inspection at the Office of the Secretary and on EDIS.

The Commission voted to approve these determinations on June 9, 2020.

The authority for the Commission's determination is contained in Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337), and in part 210 of the Commission's Rules of Practice and Procedure (19 CFR part 210).

By order of the Commission.

Lisa R. Barton
Secretary to the Commission

Issued: June 9, 2020

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served upon the following parties as indicated, on 6/09/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

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PUBLIC VERSION

[redacted]

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of	
CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF	**Inv. No. 337-TA-1133**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Chief Administrative Law Judge Charles E. Bullock

(March 2, 2020)

Appearances:

For Complainant Autel Robotics USA LLC

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TABLE OF CONTENTS

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LIST OF ABBREVIATIONS

The following abbreviations may be used in this Initial Determination:

CDX	Complainant's demonstrative exhibit
CPX	Complainant's physical exhibit
CX	Complainant's exhibit
CIB	Complainant's initial post-hearing brief
CRB	Complainant's reply post-hearing brief
CPHB	Complainant's pre-hearing brief
Dep	Deposition
JX	Joint Exhibit
RDX	Respondents' demonstrative exhibit
RPX	Respondents' physical exhibit
RX	Respondents' exhibit
RIB	Respondents' initial post-hearing brief
RRB	Respondents' reply post-hearing brief
RPHB	Respondents' pre-hearing brief
Tr.	Transcript

PUBLIC VERSION

[redacted]

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of	Inv. No. 337-TA-1133
CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF	

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Chief Administrative Law Judge Charles E. Bullock

(March 2, 2020)

Pursuant to the Notice of Investigation, this is the final Initial Determination in the Matter of Certain Unmanned Aerial Vehicles and Components Thereof, Investigation No. 337-TA-1133.

For the reasons stated herein, the undersigned has determined a violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain unmanned aerial vehicles and components thereof alleged to infringe U.S. Patent No. 9,260,184. The undersigned has also determined that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred with respect to U.S. Patent Nos. 7,979,174 and 10,044,013.

[redacted]

I. INTRODUCTION

A. Procedural History

Complainant Autel Robotics USA LLC ("Autel") filed a complaint on August 30, 2018. The complaint alleged violations of section 337 based on the importation and sale of certain unmanned aerial vehicles and components thereof that purportedly infringe U.S. Patent Nos. 7,979,174 ("the '174 patent"); 9,260,184 ("the '184 patent"); and 10,044,013 ("the '013 patent"). 83 Fed. Reg. 49,575-576 (Oct. 2, 2018). The investigation was instituted on October 2, 2018. *Id.* The Notice of Institution named the following entities as respondents: SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC (collectively, "DJI"). *Id.* The Office of Unfair Import Investigations is not a party to the Investigation. *Id.*

On September 30, 2019, claims 2-6 and 15-16 of the '174 patent; claims 3, 4, and 11 of the '184 patent; and claims 6-7, 9, 11, 12, 21, and 24 of the '013 patent were terminated from the Investigation. *See* Order No. 22, *not reviewed* by Comm'n Notice (Oct. 17, 2019).

The evidentiary hearing was held October 21–23, 2019.

B. The Private Parties

1. Complainant Autel USA LLC

Autel is a limited liability company organized under the laws of Delaware, with its headquarters located in Bothell, Washington. CIB at 4. Autel designs, sells, and provides post-sales support for unmanned aerial vehicles ("UAVs"). *Id.*

[redacted]

2. Respondents

a) SZ DJI Technology Co. Ltd.

SZ DJI Technology Co. Ltd. is a Chinese corporation with its principal place of business at 14th Floor, West Wing, Skyworth Semiconductor Design Building, No. 18 Gaoxin South 4th Ave, Nanshan District, Shenzhen, China. *Id.* SZ DJI Technology Co. Ltd. is responsible for the research and development of DJI-branded products sold in the United States. *Id.*; *see also* Compl. at ¶ 3.1.

b) DJI Europe B.V.

DJI Europe B.V. is a European corporation with its principal place of business at Bijdorp-Oost 6, 2992 LA Barendrecht, Netherlands. CIB at 4. DJI Europe B.V. sells DJI-branded products into the United States. *Id.*; *see also* Resp. to Compl. at ¶ 3.2 ("Resp.").

c) DJI Technology Inc.

DJI Technology Inc. is a California corporation with its principal place of business at 201 S. Victory Blvd., Burbank, California 91503. CIB at 4. DJI Technology Inc. is involved in the marketing of the Accused Products. *Id.* at 4-5; *see also* Resp. at ¶ 3.3.

d) iFlight Technology Co. Ltd.

iFlight Technology Co. Ltd. is a Hong Kong corporation with its principal place of business at Units 912-916, 9/F, Building 16W, Science Park West Avenue, Hong Kong Science Park, Pak Shek Kok, Hong Kong. CIB at at 5. IFlight Technology Co. Ltd. is the parent company of both SZ DJI Technology Co. Ltd. and DJI Europe B.V. *Id.*; *see also* Compl. at ¶ 3.4.

e) DJI Baiwang Technology Co. Ltd.

DJI Baiwang Technology Co. Ltd. is a Chinese corporation with its principal place of business at Building 9, 7, 2, 1, Baiwang Creative Factory No. 1051, Songbai Road, Xili, Nanshan

[redacted]

District, Shenzhen, China. CIB at 5. DJI Baiwang Technology Co. Ltd. is responsible for the manufacturing of the Accused Products. *Id.*; *see also* Compl. at ¶ 3.5.

f) DJI Research LLC

DJI Research LLC is a California limited liability company with its principal place of business at 435 Portage Avenue, Palo Alto, California 94306. CIB at 5. DJI Research LLC performs research and development related to the Accused Products. *Id.*; *see also* Compl. at ¶ 3.6.

g) DJI Service LLC

DJI Service LLC is a California limited liability company with its principal place of business at 17301 Edwards Road, Cerritos, California 90703. CIB at 5. DJI Service LLC performs customer service and support for the Accused Products. *Id.*; *see also* Compl. at ¶ 3.7.

h) DJI Creative Studio LLC

DJI Creative Studio is a California limited liability company with its principal place of business at 201 S. Victory Blvd., Burbank, California 91502. CIB at 5. DJI Creative Studio LLC is involved in the marketing of the Accused Products. *Id.*; *see also* Compl. at ¶ 3.8.

C. Products at Issue

1. The Accused Products

Autel accuses the following products of infringing the Asserted Patents:

1. DJI Mavic Pro Series:
   - Mavic 2 Pro
   - Mavic 2 Zoom
   - Mavic Pro Platinum
   - Mavic Pro
   - Mavic Air
2. DJI Spark
3. DJI Phantom 4 Series:
   - Phantom 4 RTK
   - Phantom 4 Pro V2.0

[redacted]

- Phantom 4 Pro
- Phantom 4 Advanced

4. DJI Inspire Series:
   - Inspire 1
   - Inspire 2

CIB at 13.

2. The Domestic Industry Product

Autel's domestic industry product is the Autel EVO. CIB at 13.

II. JURISDICTION AND IMPORTATION

A. Subject Matter Jurisdiction

Section 337 confers subject matter jurisdiction on the Commission to investigate, and if appropriate, to provide a remedy for, unfair acts and unfair methods of competition in the importation, the sale for importation, or the sale after importation of articles into the United States. *See* 19 U.S.C. §§ 1337(a)(1)(B) and (a)(2). Autel filed a complaint alleging a violation of this subsection. Accordingly, the Commission has subject matter jurisdiction over this Investigation under section 337 of the Tariff Act of 1930. *Amgen, Inc. v. U.S. Int'l Trade Comm'n*, 902 F.2d 1532, 1536 (Fed. Cir. 1990).

B. Personal Jurisdiction

DJI has appeared and participated in this Investigation. The Commission therefore has personal jurisdiction over DJI. *See, e.g., Certain Optical Disk Controller Chips & Chipsets & Prods. Containing Same, Including DVD Players & PC Optical Storage Devices*, Inv. No. 337-TA-506, Initial Determination at 4-5 (May 16, 2005) (unreviewed in relevant part).

C. *In Rem* Jurisdiction

DJI does not contest the Commission's *in rem* jurisdiction over the Accused Products and

components thereof. RIB at 12. DJI also does not dispute that all the Accused Products in this Investigation have been imported into the United States. *Id.*

III. ORDINARY SKILL IN THE ART

The undersigned has previously determined that: (1) a person of ordinary skill in the art with respect to the '174 patent would have at least (a) a Bachelor's degree in robotics, computer, or electrical engineering, or equivalent knowledge, training, or experience, and (b) at least two years of experience working with the design and development of speed control systems for electromechanical systems, including autonomous vehicles, or equivalent experience; (2) that a person of ordinary skill in the art with respect to the '184 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent education, training, or experience, and (2) at least two years of experience with rotary apparatuses, including rotary aircraft apparatus and UAVs, or equivalent experience; and (3) that a person of ordinary skill in the art with respect to the '013 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent knowledge, training, or experience, and (2) at least two years of experience with electromechanical systems, or equivalent experience. Order No. 15 at 6 (June 21, 2019.)

IV. RELEVANT LAW

A. Infringement

In a section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a preponderance of the evidence. *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1349 (Fed. Cir. 2010). This standard "requires proving that infringement was more likely than not to have occurred." *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

[redacted]

1. Literal Infringement

Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). Literal infringement requires the patentee to prove that the accused device contains each limitation of the asserted claim(s). If any claim limitation is absent, there is no literal infringement of that claim as a matter of law. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000).

2. Doctrine of Equivalents

"[A] product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 21 (1997). "[T]he proper time for evaluating equivalency . . . is at the time of infringement, not at the time the patent issued." *Id.* at 37.

"The 'essential inquiry' in determining whether there has been infringement under this doctrine is whether 'the accused product or process contains elements identical or equivalent to each claimed element of the patented invention.'" *Am. Calcar, Inc. v. Am. Honda Motor Co.*, 651 F.3d 1318, 1338 (Fed. Cir. 2011) (quoting *Warner–Jenkinson*, 520 U.S. at 40). An element in the accused device is equivalent to a claim limitation if the only differences between the two are insubstantial to one of ordinary skill in the art. *Wavetronix LLC v. EIS Elec. Integrated Sys.*, 573 F.3d 1343, 1360 (Fed. Cir. 2009); *AquaTex Indus. v. Techniche Solutions*, 419 F.3d 1374, 1382 (Fed. Cir. 2005). In order to assess insubstantiality, a court considers whether an element of the accused product "performs substantially the same function in substantially the same way to obtain the same result" as the patented invention. *Am. Calcar*, 651 F.3d at 1338; *see also Voda v. Cordis Corp.*, 536 F.3d 1311, 1326 (Fed. Cir. 2008). A patentee alleging infringement under the doctrine

[redacted]

of equivalents must submit particularized evidence as to equivalence and must explain specifically why the difference between the claimed invention and what the accused product actually does is "insubstantial." *Am. Calcar*, 651 F.3d at 1338.

Prosecution history estoppel can prevent a patentee from relying on the doctrine of equivalents when the patentee relinquished subject matter during prosecution of the patent, either by amendment or argument. *AquaTex*, 419 F.3d at 1382. In particular, "[t]he doctrine of prosecution history estoppel limits the doctrine of equivalents when an applicant makes a narrowing amendment for purposes of patentability, or clearly and unmistakably surrenders subject matter by arguments made to an examiner." *Id.*

B. Validity

A patent is presumed valid. *See* 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011). A respondent who has raised patent invalidity as an affirmative defense has the burden of overcoming this presumption by clear and convincing evidence. *See Microsoft*, 564 U.S. at 95.

1. 35 U.S.C. § 101

Section 101 states:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

35 U.S.C. § 101. To determine patent eligibility under § 101, courts apply the two-step *Alice* test and first, "determine whether the claims at issue are directed to a patent-ineligible concept" and then if so, "examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice Corp. Pty. v. CLS Bank Intern.*, 573 U.S. 208, 217-18, 221 (2014). "The 'directed to' inquiry

[redacted]

applies a stage-one filter to claims, considered in light of the specification, based on whether 'their character as a whole is directed to excluded subject matter.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015); *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1375 (Fed. Cir. 2016)). To save a patent at the second step, an inventive concept must be evident in the claims. *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151-52 (Fed. Cir. 2016).

2. 35 U.S.C. § 102 (Anticipation)

Under 35 U.S.C. § 102, a claim is anticipated and therefore invalid when "the four comers of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation." *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000), *cert. denied*, 532 U.S. 904 (2001). To be considered anticipatory, the prior art reference must be enabling and describe the applicant's claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention. *Helifix Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1346 (Fed. Cir. 2000).

3. 35 U.S.C. § 103 (Obviousness)

Under 35 U.S.C. §103, a patent may be found invalid for obviousness if "the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains." 35 U.S.C. §103. Because obviousness is determined at the time of invention, rather than the date of application or litigation, "[t]he great challenge of the obviousness judgment is proceeding without any hint of hindsight."

[redacted]

Star Scientific, Inc. v. R.J. Reynolds Tobacco Co., 655 F.3d 1364, 1375 (Fed. Cir. 2011) ("*Star II*").

When a patent is challenged as obvious, the critical inquiry in determining the differences between the claimed invention and the prior art is whether there is an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417-418 (2007). The Federal Circuit has since held that when a patent is challenged as obvious, based on a combination of several prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007) (citations omitted).

Obviousness is a determination of law based on underlying determinations of fact. *Star II*, 655 F.3d at 1374. The factual determinations behind a finding of obviousness include: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) secondary considerations of non-obviousness. *KSR*, 550 U.S. at 399 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). These factual determinations are referred to collectively as the "*Graham* factors." Secondary considerations of non-obviousness include commercial success, long felt but unresolved need, and the failure of others. *Id.* When present, secondary considerations "give light to the circumstances surrounding the origin of the subject matter sought to be patented," but they are not dispositive on the issue of obviousness. *Geo. M. Martin Co. v. Alliance Mach. Sys. Int'l.*, 618 F.3d 1294, 1304-06 (Fed. Cir. 2010). A court must consider all of the evidence from the *Graham* factors before reaching a decision on obviousness. For evidence of secondary considerations to be given

[redacted]

substantial weight in the obviousness determination, its proponent must establish a nexus between the evidence and the merits of the claimed invention. *W. Union Co. v. MoneyGram Payment Sys. Inc.*, 626 F.3d 1361, 1372-73 (Fed. Cir. 2010) (citing *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995)).

C. Domestic Industry

For a patent-based complaint, a violation of section 337 can be found "only if an industry in the United States, relating to the articles protected by the patent . . . concerned, exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). This domestic industry requirement of section 337 is often described as having an economic prong and a technical prong. *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 707 F.3d 1295, 1298 (Fed. Cir. 2013); *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, USITC Pub. 4120, 2009 WL 5134139 (Dec. 2009), Comm'n Op. at 12-14. The complainant bears the burden of establishing that the domestic industry requirement is satisfied. *See Certain Set-Top Boxes and Components Thereof*, Inv. No. 337-TA-454, ID at 294, 2002 WL 31556392 (June 21, 2002) (unreviewed by Commission in relevant part).

1. Economic Prong

Section 337(a)(3) sets forth the following economic criteria for determining the existence of a domestic industry in such investigations:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned –
>
> (A) significant investment in plant and equipment;
> (B) significant employment of labor or capital; or
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). Thus, section 337(a)(3) requires that investments be either "significant" or "substantial." The Federal Circuit has clarified that a quantitative analysis must be performed in order to make this determination. *Lelo Inc. v. Int'l Trade Comm'n*, 786 F.3d 879, 883 (Fed. Cir. 2015) ("The plain text of § 337 requires a quantitative analysis in determining whether a [complainant] has demonstrated a 'significant investment in plant and equipment' or 'significant employment of labor or capital.'"). There is no threshold amount that a complainant must meet. *See Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 25-26 (May 16, 2008) ("We emphasize that there is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry under the 'substantial investment' requirement of this section."); *Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm'n Op. at 39 (Aug. 1, 2007) ("*Male Prophylactic Devices*") ("[T]here is no mathematical threshold test."). Rather, the inquiry depends on "the facts in each investigation, the article of commerce, and the realities of the marketplace." *Certain Printing & Imaging Devices & Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 27 (Feb. 17, 2011). As such, "[t]he determination takes into account the nature of the investment and/or employment activities, the industry in question, and the complainant's relative size." *Id.*

2. Technical Prong

The technical prong of the domestic industry requirement is satisfied when the complainant in a patent-based section 337 investigation establishes that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. § 1337(a)(2) and (3); *Certain Microsphere Adhesives, Process for Making Same and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 8, 1996 WL 1056095 (Jan. 16, 1996). "The test for satisfying the 'technical prong' of the industry requirement is essentially [the] same as that for infringement, *i.e.*, a

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comparison of domestic products to the asserted claims." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). To prevail, the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent. It is sufficient to show that the products practice any claim of that patent, not necessarily an asserted claim of that patent. *See Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm'n Op. at 38 (Aug. 1, 2007).

V. U.S. PATENT NO. 7,979,174

A. Overview

The '174 patent, entitled "Automatic Planning and Regulation of the Speed of Autonomous Vehicles," issued on July 12, 2011 to Kingsley O. C. Fregene, Michael R. Elgersma, Samar Dajani-Brown, and Stephen G. Pratt. The '174 patent is assigned on its face to Honeywell International Inc. and was subsequently assigned to Autel. JX-0001. The '174 patent generally relates "to a UAV that can adjust its speed due to the inputs from various sensors when flying along a predetermined flight path." Compl. at ¶ 5.7.

1. Asserted Claims

Autel is asserting claims 1, 7, 8, 14, and 17, which read as follows:

1. 1[a] An autonomous vehicle comprising:

1[b] one or more sensors configured to obtain data regarding conditions which affect movement of the autonomous vehicle;

1[c] a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors;

1[d] a control system configured to calculate speed commands based, at least in part, on the speed calculated by the speed planner; and

1[e] one or more actuators configured to adjust the speed of the autonomous vehicle based on the speed commands from the control system;

[redacted]

1[f] wherein the speed planner is further configured to output a speed command category associated with the desired speed.

7. The autonomous vehicle of claim 1, wherein the speed planner is configured to calculate a desired speed which does not cause the autonomous vehicle to violate one or more constraints.

8. The autonomous vehicle of claim 7, wherein each of the one or more constraints is assigned a priority, wherein the speed planner is configured to allow violation of a lower priority constraint in order to avoid violation of a higher priority constraint.

14. 14[a] A program product comprising program instructions embodied on a processor-readable medium for execution by a programmable processor, wherein the program instructions are operable to cause the programmable processor to:

14[b] calculate a desired speed of an autonomous vehicle based on data received regarding conditions which affect movement of the autonomous vehicle and on one or more prioritized constraints; and

14[c] output the calculated speed to a control system configured to use the output speed to calculate speed commands for use by one or more actuators to adjust the speed of the autonomous vehicle.

17. The program product of claim 14, wherein the program instructions are further operable to cause the programmable processor to calculate the desired speed by allowing violation of a lower priority constraint in order to avoid violation of a higher priority constraint.

2. Claim Construction

The undersigned has construed the following terms from claims 1 and 14 as follows:

TERM	CLAIM(S)	CLAIM CONSTRUCTION
"speed commands"	1, 14	commands relating to the speed of the autonomous vehicle
"speed command category"	1	information reflecting the reason for the desired speed

Order No. 15 at 12-26.

B. Infringement

Autel asserts that claims 1, 7, 8, 14, and 17 of the '174 Patent are infringed by all of the Accused Products. Autel claims that [redacted]. CIB at 27.

[redacted]

Therefore, Autel submits that [redacted]. *Id.* With respect to the '174 patent, DJI does not address [redacted]. *See* RIB at 13-29; RRB at 2-10; RX-0175C at Q/As 20-25.

1. Claim 1

For the purposes of infringement, DJI does not dispute limitations 1[a], 1[d], and 1[e]. RIB at xii.

a) Limitation 1[b]

Claim 1 includes the limitation "one or more sensors configured to obtain data regarding conditions which affect movement of the autonomous vehicle." JX-0001 at cl. 1[b].

Autel argues that the Accused Products meet this limitation because they have multiple sensors that are used "to facilitate obstacle avoidance and intelligent flight capabilities." CIB at 28-32 (citing CX-0106.13-16, 19-27; CX-0107.13-24; CX-0105.15-19, 23-32; CX-0109.13-22, 7; CX-0111.15-27, 8; CX-0115.15-27; CX-0112.15-27; CX-0113.15-24; CX-0117.13-16; CX-0118.15-25; CX-0001C at Q/As 63-64, 66, 70). For example, Autel claims that the Mavic Pro has Forward and Downward Vision Systems with four monocular sensors and two ultrasonic sensors that obtain data on conditions that affect movement of the vehicle. *Id.* at 29 (citing CX-0107.8, 16-17, 24; CX-0001C at Q/A 61). Autel contends that the Spark has a 3D Sensing and Vision System with a camera and 3D infrared module. *Id.* at 29-30 (citing CX-0109.13-22, 7; CX-0001 at Q/As 63-64). Autel claims that the Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK have Forward, Rear, and Downward Vision Systems with three stereo vision

[redacted]

sensors and two ultrasonic sensors, and an Infrared Sensing System with two 3D infrared modules. *Id.* at 30-31 (citing CX-0111.15-27, 8; CX-0115.15-27; CX-0112.15-27; CX-0113.15-24; CX-0001C at Q/A 66). Autel also submits that the Inspire 1 and Inspire 2 have a Vision System with two stereo vision sensors and two ultrasonic sensors, and an Infrared Sensing System with two infrared modules. *Id.* at 32 (citing CX-0117.13-16; CX-0118.15-25; CX-0001C at Q/A 70). In addition, Autel argues that the Mavic Pro, Spark, and Phantom 4 Pro have other sensors, including a GPS, IMU, and magnetometer. *Id.* at 29-31 (citing CX-0107.11; CX-0108.9; CX-0111.15; JX-0017C at 10-29, 32-34).

Autel argues that DJI is incorrect to limit the claim to sensors that obtain data "regarding the environment around the vehicle" because the plain language of the claim recites sensors that obtain data regarding "conditions which affect movement of the autonomous vehicle." CRB at 7-8 (citing JX-0001 at cl. 1, 14). Autel therefore argues that this includes sensors that obtain data regarding the vehicle itself. *Id.* at 8 (citing JX-0001 at 2:54-67, 7:14-17). According to Autel, this makes sense because an autonomous vehicle cannot determine the speed by which it should travel unless it knows where it is starting from. *Id.* Therefore, Autel claims that DJI's narrow construction is incorrect. *Id.* at 8-9. Moreover, even if DJI were correct, Autel argues that there are other sensors in addition to the cameras that meet this limitation. *Id.* at 9 (citing CX-0001C at Q/As 61-70; Reinholtz, Tr. at 146:21-147:25, 149:12-150:4; Nourbakhsh, Tr. at 353:6-356:22; JX-0017C at 13-29). Autel also claims that, contrary to DJI's position, [redacted]. *Id.* (citing CX-0122C). Autel argues that [redacted]. *Id.* at 10 (citing RX-0176C at Q/As 21-22; Reinholtz, Tr. at 146:21-147:25, 149:12-150:4). Autel contends that [redacted]. *Id.* (citing

[redacted]

Reinholtz, Tr. at 146:24-148:7; JX-0017C at 16:18-17:7, 19:18-25, 18:14-25, 24:25-26:5; Nourbakhsh, Tr. at 355:10-356:3, 358:7-24).

DJI argues that the Accused Products have two types of sensors: [redacted] RIB at 19. DJI points out that Dr. Reinholtz agreed that sensors that do not perceive the environment cannot be the claimed "sensors." *Id.* (citing Reinholtz, Tr. at 112:21-114:1, 112:2-12). Therefore, DJI argues that [redacted] *Id.* at 20. DJI claims Dr. Reinholtz conceded that [redacted] *Id.* at 21-22 (citing Reinholtz, Tr. at 120:4-18). Thus, DJI argues that [redacted] *Id.* at 22; RRB at 3. Moreover, DJI asserts that [redacted] cannot be the claimed "sensors" because they do not generate data regarding conditions which affect movements of the autonomous vehicle. RRB at 4 (citing Reinholtz, Tr. at 110:7-111:7, 112:21-114:1).

The claim language requires that the one or more sensors be "configured to obtain data regarding conditions which affect movement of the autonomous vehicle." JX-0001 at cl. 1. The parties dispute whether "data regarding conditions which affect movement of the autonomous vehicle" is limited to data about the environment or whether it can include data regarding the vehicle itself. *See* CRB at 7-9; RIB at 19-20. The specification of the '174 patent describes input data that goes from the sensors to the speed planner. *See* JX-0001 at 2:54-3:10, 7:14-16, 8:49-61. It also gives various examples of input data from the sensors, including, but not limited to data about head winds, tail winds, altitude of the unmanned aerial vehicle (UAV), speed limit zones, road conditions, tire pressure, obstacles in an area near the UAV, weather conditions, curvature of

a planned path, and speed of the UAV. *See id.* The specification also states that the "input data received depends on the type of autonomous vehicle being implemented and the environment around the autonomous vehicle." *Id.* at 2:57-59. Thus, according to the specification, input data from the sensors can include both information about the environment (*e.g.*, road or weather conditions) as well as information about the vehicle itself (*e.g.*, tire pressure, speed of the vehicle, or altitude of the vehicle). The evidence shows that the Accused Products each have vision systems[1] that scan for obstacles and help an aircraft identify its position. *See* CX-0105 at 9, 20, 65; CX-0106 at 8, 16, 55; CX-0107 at 8, 24; CX-0108 at 7, 11-12; CX-0111 at 8, 27; CX-0112 at 8, 27; CX-0113 at 9, 24; CX-0115 at 8, 27; CX-0117 at 9, 17; CX-0118 at 9, 25; CX-0001C at Q/As 58-70; JX-0017C at 32:4-19; RX-0175C at Q/A 21; RX-0176C at Q/A 21. These vision systems "obtain data regarding conditions which affect movement of the autonomous vehicle," such as data on obstacles or the position of the vehicle. *See id.* Thus, the undersigned finds that the Accused Products meet this limitation.

b) Limitation 1[c]

Claim 1 includes the limitation "a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors." JX-0001 at cl. 1[c].

Autel contends that the claimed speed planner in the Accused Products [redacted] CIB at 34 (citing CX-0001C at Q/A 77). Autel argues that [redacted]

[1] The evidence also shows that some of the Accused Products have additional sensors, including a GPS, IMU, and barometer. *See* RX-0176C at Q/A 21; CX-0122C. Those sensors, however, cannot be the claimed "sensors" because they are not coupled to either the perception or navigation module, but rather, only provide information to the flight control module. *See* RX-0176C at Q/A 31; CX-0122C.

[redacted]. *Id.* (citing CX-0001C at Q/A 79). Autel explains that [redacted]. *Id.* (citing CX-0001C at Q/A 80; JX-0017C at 16:18-17:10, 18:14-21, 19:9-24). Autel further claims that [redacted]. *Id.* (citing CX-0001C at Q/A 80).

According to Autel, [redacted] *Id.* at 34-35 (citing CX-0001C at Q/As 81-85). Autel claims that [redacted] *Id.* at 35-36 (citing JX-0017C at 10:13-17, 76:10-77:2, 77:16-19; CX-0001C at Q/A 86). Autel submits that [redacted]. *Id.* at 36 (citing RX-0176C at Q/As 21-23, 39, 41). Furthermore, Autel argues that DJI's expert does not dispute these admissions and concurs with Mr. Zhang and Dr. Reinholtz. *Id.* at 37-38 (citing RX-0175C at Q/As 20-25).

Autel disagrees with DJI's assertion that [redacted] *Id.* (citing JX-0001 at 2:1-4, 2:59-63; CX-0001C at Q/As 58-70; JX-0017C at 13:6-15:13). Autel argues that [redacted]

[redacted]. *Id.* at 39. Autel argues that this type of processing and analysis is exactly what is described in the '174 patent. *Id.* (citing JX-0001 at 3:29-6:47).

Autel also contends that the '174 patent specifically states that the speed planner can be "implemented in any number of ways, including as an ASIC, FPGA, as 'a process until which includes or functions with software programs, firmware or computer readable instructions' and that those computer readable instructions may be 'embodied on any appropriate medium.'" CRB at 11 (citing JX-0001 at 6:48-7:3). Autel counters DJI's arguments by claiming that [redacted] *Id.* (citing Reinholtz, Tr. at 147:18-148:17). Autel also disagrees with DJI's position because [redacted] *Id.* at 12. According to Autel, there is no reason why [redacted]. *Id.* Autel also disagrees with DJI's attempt to limit the scope of the claimed sensors to those that perceive the environment. *Id.* Autel argues that, contrary to DJI's assertions, [redacted] *Id.* at 13 (citing Reinholtz, Tr. at 147:18-148:17).

DJI asserts that [redacted] RIB at 15 (citing RX-0175C at Q/A 29). Contrary to Autel's approach, DJI argues

[redacted]

that [redacted]. *Id.* at 16 (citing RX-0175C at Q/As 29-33). In addition, DJI contends that [redacted] *Id.* at 17 (citing RX-0175C at Q/A 32; RX-0176C at Q/As 27-37). DJI claims that [redacted] *Id.* at 18 (citing CX-0001C at Q/A 77; Reinholtz, Tr.at 124:8-126:21, 129:20-24; RX-0175C at Q/A 33).

DJI also argues that the '174 specification "makes it clear that the sensors necessarily include associated software components" and thus, a sensor in its plain and ordinary meaning should include both hardware and associated software. RRB at 5 (citing JX-0001 at 3:1-7). In addition, DJI contends that, contrary to Autel's assertion, the '174 patent describes the speed planner as calculating speeds and outputting a speed command category, not processing sensor data. *Id.* at 6 (citing JX-0001 at 3:29-30, 4:3-4, 4:6-8, 8:23-25, 8:63-65).

The parties appear to agree that in the Accused Products, [redacted]. *See* CIB at 34; Reinholtz, Tr. at 127:14-21; RX-0175C at Q/A 32; RX-0176C at Q/A 35. The parties, however, disagree as to [redacted]. *See* CX-0001C at Q/As 76-85. Dr. Reinholtz contends that the specification supports this understanding. In response to a question on

redirect examination about Reinholtz, Tr. at 151:19-152:5. This is not persuasive. The evidence shows that . RX-0176C at Q/As 25-26. Additionally, Dr. Nourbakhsh stated, "[e]lectronics have become more and more integrated over the past many years. Just because two components or processors or modules may be put on the same physical chip, does not make them one functional component." *See* RX-0176C at Q/As 25-26; RX-0175C at Q/A 33. Moreover, as Dr. Nourbakhsh points out, . RX-0175C at Q/A 31. In addition, the specification describes data regarding obstacles as an example of sensor data, and Dr. Reinholtz agreed that *See* JX-0001 at 3:2-7; Reinholtz, Tr. at 120:11-18. The evidence also shows that the . *See* RX-0176C at Q/A 28. The undersigned therefore finds that a person of ordinary skill in the art would consider . *See id*; RX-0176C at Q/A 21; RX-0175C at Q/A 29. Consequently, the undersigned finds that it is not logical to

Claim 1 also requires that the speed planner "calculate a desired speed based, at least in part, on the data obtained from the one or more sensors." JX-0001 at cl. 1. However, at best, Dr. Reinholtz provides inconsistent and confusing testimony about what exactly is the claimed sensor

[redacted]

data. *See* Reinholtz, Tr. at 109:6-11, 119:4-120:18, 150:15-151:13. On one hand, he states that [redacted] *See* Reinholtz, Tr. at 119:4-12; *see also* Reinholtz, Tr. at 128:16-24 (stating that [redacted]). On the other hand, he states that [redacted] Reinholtz, Tr. at 120:4-10. Even during redirect examination, Dr. Reinholtz failed to clearly explain the [redacted]. *See* Reinholtz, Tr. at 150:15-151:13. The undersigned therefore finds that Autel has failed to prove that the Accused Products have a "speed planner" that calculates desired speed "based, at least in part, on the data obtained from the one or more sensors."

Accordingly, the undersigned finds that the Accused Products do not meet this limitation.

c) Limitation 1[f]

Claim 1 includes the limitation "wherein the speed planner is further configured to output a speed command category associated with the desired speed." JX-0001 at cl. 1[f].

Autel argues that the Accused Products meet this limitation and that the "speed command category" [redacted]. CIB at 42 (citing CX-0122C; CX-0001C at Q/A 88). Autel claims that when the aircraft senses an obstacle and stops or changes speed to avoid the obstacle, [redacted] indicates that the change in speed was due to the presence of an obstacle and a desire to avoid the obstacle. *Id.* Therefore, Autel argues that [redacted] reflects the reason for the aircraft stopping or changing

[redacted]

speeds and thus is a "speed command category." *Id.* (citing CX-0001C at Q/A 91). Autel contends that [redacted]. *Id.* (citing CX-0122C; CX-0105.50; JX-0017C at 60-61; CX-0001C at Q/A 92).

Autel argues that DJI's own witness testified that [redacted]. CRB at 14 (citing JX-0017C at 59:23-61:20). Moreover, Autel argues that it is undisputed that when there is an obstacle, the Accused Products will change speeds to avoid that obstacle. *Id.* at 15-16. Therefore, Autel claims that the Accused Products [redacted] which is part of the speed planner. *Id.* at 16.

DJI argues that [redacted] RIB at 23 (citing RX-1076C at Q/As 32-33). First, DJI claims that [redacted]. *Id.* (citing RX-0176C at Q/A 32; JX-0017C at 24:18-24, 59:23-61:4). DJI submits that [redacted] *Id.* (citing Reinholtz, Tr. at 134:1-5).

While Autel argues that the Accused Products meet this limitation because [redacted] *See* CIB at 42; CX-0001C at Q/A 88; *supra* at V.B.1.b. Therefore, for at least the same reasons as above with respect to claim limitation 1[c], the undersigned finds that the Accused Products do not meet this limitation.

[redacted]

d) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the Accused Products do not infringe claim 1 of the '174 patent.

2. Claims 7 and 8

Because the undersigned has found that independent claim 1 is not infringed, it is not necessary to determine whether dependent claims 7 and 8 are infringed. *See Wahpeton Canvas Co v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir.) ("One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitation) of that claims.").

3. Claim 14

For the purposes of infringement, DJI does not dispute limitations 14[a] and 14[c]. RIB at xii. DJI argues that the Accused Products do not infringe claim limitation 14[b]. *Id.* at 26-29. Autel argues that the Accused Products meet claim limitation 14[b] for the same reasons as the "one or more sensors" and "speed planner" limitations of claims 1, 7, and 8. *See* CIB at 50.

The undersigned found that the Accused Products do not meet the "speed planner" limitation of claim 1. *See supra* at V.B.1.b. Therefore, for at least the same reasons as set forth above with respect to claim 1, the undersigned finds that Autel fails to prove that the Accused Products infringe limitation 14[b]. Accordingly, the undersigned finds that the Accused Products do not infringe claim 14.

4. Claim 17

Because the undersigned has found that independent claim 14 is not infringed, it is not necessary to determine whether dependent claim 17 is infringed.

[redacted]

C. Domestic Industry – Technical Prong

Autel asserts that the EVO satisfies the technical prong of the domestic industry requirement for claims 1, 7, 8, 14, and 17 of the '174 patent.

1. Claim 1

For the purposes of the technical prong of domestic industry, DJI does not dispute limitations 1[a], 1[d], and 1[e]. RIB at xii.

a) Limitation 1[b]

Claim 1 includes the limitation "one or more sensors configured to obtain data regarding conditions which affect movement of the autonomous vehicle." JX-0001 at cl. 1[b].

Autel argues that the EVO meets this limitation because it includes an IMU, compass, barometer, ultrasonic sensors, a Binocular Vision System, and a Rear Avoidance Sensor. CIB at 51 (citing CX-0049 at 13-14, 20-21; CX-0001C at Q/As 408-09). According to Autel, these sensors obtain information regarding conditions which affect movement of the EVO. *Id.* at 51-52 (citing CX-0001C at Q/As 412-16; CX-0793; CX-0049 at 11-12, 21, 24).

DJI did not substantively address this claim limitation in its post-hearing briefs and has therefore waived any arguments that this limitation is not met. *See* RIB at 29-34; RRB at 10.

The evidence shows that the EVO has a binocular vision system and rear avoidance sensor.[2] *See* CX-0049 at 12-14, 20-21; CX-0001C at Q/As 408-16. These obtain data regarding conditions which affect movement of the autonomous vehicle, such as obstacle information, and information regarding the vehicle's motion or altitude. *Id.* Thus, the undersigned finds that the EVO meets this limitation.

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[2] The evidence also shows that the EVO has additional sensors, including a GPS, sonar, and IMU. *See* CX-0049 at 12-14, 20-21; CX-0001C at Q/A 408-16. Those sensors, however, cannot be the claimed "sensors" because they are not coupled to [redacted] module, but rather, [redacted] *See* CX-0001 at Q/A 420.

[redacted]

b) Limitation 1[c]

Claim 1 includes the limitations "a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors." JX-0001 at cl. 1[c].

Autel submits that the EVO meets this limitation and that the [redacted] act as the claimed "speed planner." CIB at 54 (citing CX-0001C at Q/As 423-24, 450); CRB at 18. According to Autel, the [redacted] is coupled to the gimbal camera, which captures images of the EVO's surroundings, and the forward vision system, which detects obstacles. CIB at 54-55 (citing CX-0001C at Q/A 431). Autel claims that in Dynamic Tracking and Viewpoint modes, the [redacted] obtains and processes images and other data from the sensors and calculates [redacted] about obstacles in the vehicle's path. *Id.* at 55. Then, Autel claims that the [redacted] calculates the desired speed based at least in part on the data. *Id.* (citing CX-0001C at Q/As 434-35). Autel argues that in Landing mode, the [redacted] obtains and processes images and other data from the sensors and calculates [redacted] about obstacles in the vehicle's path, and then the [redacted] calculates the desired speed based at least in part on the data from the sensors. *Id.* at 56 (citing CX-0001C at Q/As 454-55).

DJI argues that it is improper to include the [redacted] as part of the claimed "speed planner" because it senses the environment and detects objects in the surroundings, which is what the claimed sensor does. RIB at 31-32 (citing RX-0175C at Q/A 75; JX-001 at 2:61-3:7, 7:14-16). According to DJI, a person of ordinary skill in the art would not consider the [redacted] to be a part of the speed planner regardless of whether [redacted]

[3] Autel asserts that the [redacted]. CRB at 17-18.

[redacted]. *Id.* at 32 (citing RX-0175C at Q/A 76; Reinholtz, Tr. at 129:20-24). In addition, DJI claims that the alleged speed planner [redacted] does not receive the alleged sensor data [redacted] from the sensors, but rather, the alleged speed planner itself generates and outputs the alleged sensor data. *Id.* at 32-33. Lastly, DJI contends that Autel has not presented any evidence that the alleged speed planner calculates a desired speed based on data from other sensors other than the camera/vision system. RRB at 10.

The undersigned notes that Dr. Reinholtz contends that [redacted] calculate desired speed. *See* CX-0001C at Q/As 434, 454. Dr. Reinholtz also states that [redacted] "obtain data from the EVO's sensors and determine the obstacle distance and other parameters (such as the EVO's speed, orientation, and height) *that affect the EVO's movement.*" *Id.* at Q/A 422 (emphasis added). Thus, while [redacted] obtain data from the EVO's sensors, Dr. Reinholtz's testimony also suggests that those [redacted] would be part of the "one or more sensors configured to obtain data regarding conditions which affect movement of the autonomous vehicle." *Id.* Therefore, similar to the infringement determination for this claim limitation, the undersigned finds that a person of ordinary skill in the art would consider the [redacted] together with the front camera and forward vision system to be sensing the environment and at best, would be identified together as the claimed "sensors." *See* RX-0175C at Q/A 75. Indeed, Dr. Reinholtz's demonstrative exhibits[4] even

[4] Dr. Reinholtz's testimony relies, in part, on demonstrative exhibits showing block diagrams of the architecture of the EVO's alleged speed planner. *See, e.g.*, CX-0001C at Q/A 432, 453; CDX-0001C at 170, 177. While demonstrative exhibits are not admitted as substantive evidence, Dr. Reinholtz's reliance on those diagrams sheds light on the flaws in his infringement theory.

[redacted]

show [redacted]. *See* CDX-0001C at 170, 177. Consequently, the undersigned is not persuaded by Autel's efforts to include [redacted] as part of the claimed "speed planner." Accordingly, the undersigned finds that the EVO does not meet this limitation.

c) Limitation 1[f]

Claim 1 includes the limitations "wherein the speed planner is further configured to output a speed command category associated with the desired speed." JX-0001 at cl. 1[f].

Autel asserts that in Dynamic Track, Viewpoint, and Landing modes, the [redacted] the EVO outputs [redacted] which is the claimed "speed command category." CIB at 59-60 (citing CX-0001C at Q/As 437-38, 457-58). Autel argues that the [redacted] reflects the reason for the desired speed, especially when changing speeds in order to avoid an obstacle. *Id.* (citing CX-0001C at Q/A 439). Autel claims that this is demonstrated on the mobile application used to control/observe the actions of the aircraft. *Id.* at 59-60 (citing CX-0001C at Q/As 440-41; CX-0793); CRB at 18-19.

DJI contends that [redacted] does not reflect the reason for a desired speed. RIB at 33. DJI argues that the speed of the drone may be determined based on other factors besides distance to objects and that Dr. Reinholtz fails to establish that [redacted] reflects the reason for the desired speed calculated by [redacted]. *Id.* (citing RX-0175C at Q/As 80-81). According to DJI, the fact that the EVO display shows a 23.4 ft distance to obstacle is insufficient to show that [redacted] reflects the reason for a desired speed calculated by [redacted]. *Id.* (citing RX-0175C at Q/As 80-81).

[redacted]

According to Autel, the [redacted] outputs [redacted], which is the speed command category. *See* CIB at 59-60. However, as discussed above, the undersigned found that the [redacted] in the EVO is not part of the claimed "speed planner." Thus, for at least the same reasons as above with respect to the "speed planner" limitation, the undersigned finds that the EVO does not meet this limitation.

d) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the EVO does not practice claim 1.

2. Claims 7 and 8

The undersigned found hereinabove that the EVO does not practice claim 1. Because claims 7 and 8 depend from claim 1, the EVO also does not practice these claims.

3. Claim 14

For the purposes of the technical prong of domestic industry, DJI does not dispute limitations 14[a] and 14[c]. RIB at xii. DJI argues that the EVO does not satisfy limitation 14[b]. *Id.* at 34. Autel argues that the EVO meets claim limitation 14[b] for the same reasons as the "one or more sensors" and "speed planner" limitations of claims 1, 7, and 8. *See* CIB at 62.

The undersigned found that the EVO does not meet the "speed planner" limitation of claim 1. *See supra* at V.C.1.b. Therefore, for at least the same reasons as set forth above with respect to claim 1, the undersigned finds that Autel fails to prove that the EVO meets limitation 14[b]. Accordingly, the undersigned finds that the EVO does not practice claim 14.

4. Claim 17

The undersigned found hereinabove that the EVO does not practice claim 14. Because claim 17 depends from claim 14, the EVO also does not practice this claim.

[redacted]

D. Validity

Below is a summary of the references that DJI alleges, either alone or in combination, render the asserted claims of the '174 patent invalid[5]:

"Primary References":

- RX-0110: U.S. Patent No. 6,836,719 to Andersson et al. ("Andersson")
- RX-0111: Chris Urmson et al., A Robust Approach to High-Speed Navigation for Unrehearsed Desert Terrain, 23(8) Journal of Field Robotics 467-508 (Aug. 2006) ("Urmson")
- RX-0113: U.S. Patent Pub. No. 2007/0219720 to Trepagnier et al. ("Trepagnier")

"Category References":

- RX-0124: U.S. Patent No. 6,516,262 to Takenaga et al. ("Takenaga")
- RX-0116: U.S. Patent No. 5,315,295 to Fujii et al. ("Fujii")
- RX-0117: U.S. Patent No. 7,034,668 to Engelman et al. ("Engelman")

"Constraint References":

- RX-0121: U.S. Patent Pub. No. 2007/0078600 to Fregene et al. ("Fregene")
- RX-0120: Douglas A. Reece et al., A Computational Model of Driving for Autonomous Vehicles, Transportation Research, Part A, Vol. 27A, No. 1, pp. 23-50 (1993) ("Reece")

RIB at 36. In addition, below is a summary of DJI's invalidity grounds with respect to the '174 patent:

Ground	Claim	Primary Reference Alone or Combinations
1	1, 7, 8	Andersson alone
2	1, 7, 8	Any Primary Reference + Any Category Reference
3[6]	8	Andersson + Any Constraint Reference
4	8	Any Primary Reference[7] + Any Category Reference + Any Constraint Reference
5	14, 17	Any Primary Reference alone
6	14, 17	Any Primary Reference[8] + Any Constraint Reference

[5] DJI asserts that all of the prior art references "are prior art under at least 35 U.S.C. § 102(b)." RIB at 35. Autel, however, does not address this issue in its post-hearing briefs and has therefore waived any arguments as to this issue. *See* CIB at 62-83; CRB at 19-30. Therefore, because Autel has not presented any arguments in its post-hearing briefs that the '174 patent is entitled to priority as of the provisional application filing date, the undersigned declines to so find.

[6] DJI no longer asserts Ground 3. *See* RRB at 11.

[7] DJI no longer asserts Ground 4 based on Andersson or Urmson. *See id.*

[8] While DJI listed Ground 6 as one of its asserted invalidity grounds for "Any Primary Reference," it did not substantively address this invalidity ground in its initial post-hearing brief with respect to Andersson or Urmson. *See*

[redacted]

Id. at 37. DJI also asserts that claims 14 and 17 are invalid under 35 U.S.C. § 101. *Id.* at 68.

1. Andersson

a) Anticipation – Claims 1, 7, 8, 14, and 17

For the purposes of anticipation, Autel does not dispute Andersson's disclosure as to limitations 1[a], 1[b], 1[e], 14[a] and 14[c]. CIB at xii, 63.

i. Claim 1

a. Limitation 1[c]

DJI argues that Andersson discloses either (i) speed plan generator 12 or (ii) controller 1 that includes the speed plan generator 12 and computer 2 that calculates a desired speed based on sensor data. RIB at 38-39 (citing RX-0110 at 2:44-47; Reinholtz, Tr. at 403:7-11), 42-43; RRB at 12. DJI disputes Autel's contention that using a neural network is not calculating. RIB at 42 (citing RX-0110 at 4:47-49; Reinholtz, Tr. at 427:3-13). According to DJI's expert, Dr. Nourbakhsh, "neural networks are precisely computational models used in computers to do calculation." RRB at 12 (citing RX-0002C at Q/A 99). In addition, DJI submits that even if a neural network does not perform calculation, Andersson still teaches that speed plan generator 12 generates the speed plan through calculation. RIB at 42 (citing Reinholtz, Tr. at 429:3-5, 402:22-404:15). DJI also disagrees with Autel's argument that the speed planner only calculates speed when there is a route planner because the "relevant disclosure only suggests adding a route planner, not a modification to the speed planner." RRB at 13.

Autel claims that generation of a speed plan is not the same as calculation of a desired speed. RIB at 64 (citing RX-0110 at 4:25-27). According to Autel, the sensors in Andersson input

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RIB at 36 n.4. Because DJI bears the burden of proving invalidity, however, it should have substantively addressed all asserted invalidity grounds in its initial post-hearing brief. *See* Ground Rule 13.3. The undersigned therefore finds that DJI has waived Ground 6 with respect to Andersson or Urmson.

[redacted]

data to the speed plan, which may contain user defined speeds, but only to set comfort speeds. *Id.* Autel argues that this, at most, discloses the use of sensor data to select a user defined speed. *Id.* at 64-65 (citing CX-0016C at Q/As 392-94; CDX-0016.0029; Reinholtz, Tr. at 427:3-13). Autel also submits that Andersson's reference to a speed plan calculated in advance is an addition to the cruise control system and is not part of the speed planner. *Id.* at 65 (citing RX-0110 at 6:26-29; CX-0016C at Q/A 393; Reinholtz, Tr. at 427:3-13); CRB at 21. In addition, Autel argues that Andersson teaches away from calculating speeds by using a neural network, which is similar to a "look-up table." *Id.* at 65-66 (citing Reinholtz, Tr. at 422:8-423:5, 427:3-13; CX-0016C at Q/A 394; CDX-0016.0029); CRB at 20.

The parties dispute whether the neural network disclosed in Andersson calculates a desired speed. On one hand, Dr. Nourbakhsh claims that "neural networks are precisely computational models used in computers to do computation." RX-0002C at Q/A 99. On the other hand, Dr. Reinholtz claims that "[i]n a neural network, no such equation would be used, and no calculation of speed would be performed. Rather, the neural network would be trained, for example by having a human driver drive the car for many miles and under varying conditions." CX-0016C at Q/A 394. The undersigned finds Dr. Reinholtz's explanation of a neural network more persuasive. In general, a neural network is used to model relationships and find patterns in data. As Andersson states:

> By using a neural network for relating different road section attributes (from the map database) to a driver speed behavior as stored in the driver information database 4, the driver behavior model may be derived. The use of a neural network further enables the driver behavior model to be used for predicting a drivers [*sic*] intended speed on a road section never driven before. This is done by studying a chosen set of road section attributes, as described above, such as curvature, road surface and so on, and studying driver behavior at previously driven road sections showing similar attributes, as stored in the driver information database 4.

[redacted]

RX-0110C at 4:49-60; *see also* RX-0110C at 3:50-57. Therefore, Andersson teaches determining a speed plan based on relating data from the map database and driver information database with position of the vehicle, not based on calculating desired speed. *See id.* Accordingly, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Andersson discloses this limitation.

b. Limitation 1[d]

DJI contends that Andersson discloses system controller 8 that receives the speed plan from speed plan generator 12 and is connected with brake control unit 9 and/or throttle control unit 10. RIB at 39 (citing RX-0110 at 3:57-4:2, Fig. 2; RDX-0002.30; RX-0002C at Q/A 100). According to DJI, system controller 8 converts the speed plan into commands or signals that can be interpreted by brake control until 9 and throttle control unit 10. *Id.* (citing RX-0002C at Q/A 100). DJI argues that Autel's argument regarding this limitation fails for the same reasons as above for the "a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors" limitation. RIB at 43.

Autel asserts that this limitation is not disclosed by Andersson for the same reasons that Andersson does not disclose the "a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors" limitation. CIB at 66-67 (citing CX-0016C at Q/A 395). In addition, Autel argues that Andersson does not disclose "speed commands" because the speed plan may contain speed information, but there is no requirement that a calculation occur or that any such speed command calculation be based on a speed calculation performed by the speed planner. *Id.* at 67 (citing RX-0110 at 3:57-4:2); CRB at 21.

[redacted]

This claim limitation requires that the control system "calculate speed commands based, at least in part, on the speed calculated by the speed planner." *See* JX-0001 at cl. 1. Because the undersigned found above that DJI did not prove that Andersson discloses calculating a desired speed, Andersson cannot disclose this claim limitation. Accordingly, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Andersson discloses this limitation.

c. Limitation 1[f]

DJI contends that Andersson teaches the speed planner outputting a warning display on display unit 6 that reflects the reason a desired speed is calculated in the speed plan. RIB at 39 (citing RX-0110 at 3:61-64, 4:2-5). DJI asserts that in manual mode, speed alteration recommendations are displayed on display unit 6 and in autonomous control mode, the speed plan is inputted to the system controller. *Id.* at 43-44 (citing RX-0110 at 3:58-4:2). DJI also asserts that the manual mode and autonomous control mode can be combined whereby the speed plan provides information to the system control and to display unit 6. *Id.* at 44 (citing RX-0110 at 4:2-5; RX-0002C at Q/A 102); RRB at 13 (citing RX-0110 at 4:2-5). DJI argues that display unit 6 may display messages such as "Slow down!" or "Dangerous curve ahead," which indicate why the desired speed was selected. RIB at 44 (citing RX-0110 at 4:2-5, Fig. 2; RDX-0002.33; RX-0002C at Q/A 103). DJI contends that Dr. Reinholtz admitted at the hearing that information displayed on display unit 6 comes from the speed plan. *Id.* at 44-45 (CX-0016C at Q/A 396; Reinholtz, Tr. at 405:19-406:5; RX-0110 at Fig. 2, 4:30-32; RX-0002C at Q/A 104; RDX-0002.33). Moreover, DJI asserts that claims 1 and 3 of Andersson provide further evidence that Andersson intends for the driver display unit to receive the warning information from the speed plan. RRB at 14.

Autel asserts that this limitation is not disclosed by Andersson for the same reasons that Andersson does not disclose the "a speed planner coupled to the one or more sensors and

[redacted]

configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors" limitation. CIB at 67. Autel argues that there is nothing in Andersson indicating that anything other than velocities, accelerations, and decelerations are ever passed from the speed planner to the mode selector or displayed to the driver in autonomous mode. *Id.* at 68 (citing CX-0016C at Q/A 396). While Autel concedes that Anderson contemplates that its manual and autonomous modes can be combined, Autel argues that "[t]here is no disclosure or teaching as to what specific aspects of the two modes would be combined, let alone a disclosure of a speed planner that calculates a desired speed based on sensor input and additionally outputs a speed command category associated with that desired speed." *Id.* (citing RX-0110 at 4:2-5; Reinholtz, Tr. at 407:13-19); CRB at 22. Moreover, Autel contends that even if the information displayed is the basis of the recommended speed, it does not reflect the reason for the speed or why the desired speed was selected because it is not based on sensor data. CIB at 69 (citing CX-0016C at Q/As 393, 396); CRB at 22.

This claim limitation requires that the speed planner "output a speed command category associated with the desired speed." *See* JX-0001 at cl. 1. Because the undersigned found above that DJI did not prove that Andersson discloses calculating a desired speed, Andersson cannot disclose this claim limitation. Accordingly, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Andersson discloses this limitation.

d. Conclusion

Accordingly, for the reasons set forth above, DJI has failed to show by clear and convincing evidence that Andersson anticipates claim 1 of the '174 patent.

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ii. Claims 7 and 8

Claims 7 and 8 depend from independent claim 1, and incorporate all the limitations of claim 1. The undersigned therefore finds that DJI has failed to show by clear and convincing evidence that Andersson anticipates claims 7 and 8 for at least the same reasons as claim 1.

iii. Claim 14

DJI argues that Andersson discloses claim limitation 14[b] for the same reasons it teaches claim 8. *See* RIB at 41. Dr. Nourbakhsh states that the same analysis discussed with respect to the "one or more sensors" and "speed planner" limitations applies to claim 14. RX-0002C at Q/A 122.

As discussed above, the undersigned found that Andersson does not disclose the "speed planner" limitation of claim 1 and subsequently, does not anticipate claim 1 or 8. *See* supra at V.D.1.a.i.a. Therefore, for at least the same reasons as set forth above with respect to claim 1, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Andersson teaches limitation 14[b]. Accordingly, the undersigned finds that DJI has failed to show by clear and convincing evidence that Andersson anticipates claim 14 of the '174 patent.

iv. Claim 17

Claim 17 depends from independent claim 14, and incorporates all the limitations of claim 14. The undersigned therefore finds that DJI has failed to show by clear and convincing evidence that Andersson anticipates claim 17 for at least the same reasons as claim 14.

b) Obviousness – Claims 1, 7, and 8

While DJI asserts that each of the "Category References" teaches limitation 1[f], DJI does not assert that any of the "Category References" teach limitations 1[c] or 1[d]. Therefore, because the undersigned found above that DJI fails to prove that Andersson teaches limitations 1[c] and

[redacted]

1[d], the undersigned finds that DJI has failed to prove by clear and convincing evidence that Andersson in combination with any of the "Category References" (Takenaga, Fujii, or Engelman), renders claim 1 of the '174 patent obvious.

Claims 7 and 8 depend from claim 1. If claim 1 is not obvious, then claims 7-8 cannot be obvious because they depend from a nonobvious claim. *See In re Fritch,* 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious."); *In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) ("Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious."). Accordingly, claims 7 and 8 are not obvious in view of Andersson in combination with any of the "Category References" (Takenaga, Fujii, or Engelman).

2. Urmson

a) Obviousness – Claims 1, 7, and 8

DJI argues that Urmson teaches all elements of claim 1 except limitation 1[f]. RIB at 51. DJI claims that a person of ordinary skill would have modified the speed planner in Urmson based on the "Category References" to output information reflecting the reason for desired speed. *Id.* at 53-54 (citing RX-0002C at Q/As 135-40).

Autel does not dispute that Urmson discloses limitations 1[a], 1[b], 1[d], 1[e], claim 7, and claim 8. CIB at xii, 63.

i. Claim 1

DJI asserts that Urmson discloses limitation 1[c] and teaches a speed planner and a geometric planner. RIB at 51 (citing RX-0111 at 488). DJI argues that "[b]ecause the geometric planner calculates outputs based on sensor input, the speed planner's calculations are therefore based 'on the data obtained from the one or more sensors.'" *Id.* (citing RX-0002C at Q/A 132). In

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addition, DJI contends that the speed planner must be able to determine and adjust speed, which requires real-time determination, and which also means that the speed planner must be coupled to receive sensor data. *Id.* at 51-52 (citing RX-0111 at 482, 490; RX-0002C at Q/A 132; RDX-0002.100). Contrary to Autel, DJI asserts that Urmson explicitly teaches "desired speed" going from the navigation system to the speed controller. RRB at 16 (citing RX-0111 at Figs. 4 and 9). DJI contends that "[g]radually decreasing speed toward maximum safe speed or at a maximum deceleration necessitates the Urmson system to calculate a desired speed. *Id.*

Autel argues that Urmson discloses a geometric planner that adjusts the path to avoid obstacles and a speed planner, which operates on the output of the geometric planner and pre-emptively slows the robot for sharp turns that may result when the geometric planner generates a path plan to avoid obstacles. CIB at 71 (citing RX-0111 at 488). Thus, Autel claims that the speed planner is responsible for ensuring that driving speeds are safe, and specifically, estimates a maximum safe speed, not a desired speed at which the vehicle travels. *Id.* (citing RX-0111 at 490); CRB at 22 (citing CX-0016C at Q/A 416; RX-011 at 490). Thus, Autel contends that one of ordinary skill in the art would not understand Urmson to disclose or teach this claim element. CIB at 71.

DJI does not explain how Urmson teaches "a speed planner coupled to the one or more sensors." According to the language of claim 1, the speed planner must be coupled to the one or more sensors, not "coupled to receive sensor data," as Dr. Nourbakhsh claims. *Compare* RX-0002C at Q/A 132, *with* JX-0001 at cl. 1. As shown in Figure 14 of Urmson, the speed planner is not coupled to any of the sensors. *See* RX-0111 at Fig. 14. Accordingly, the undersigned finds that DJI fails to meet its burden to prove that Urmson discloses limitation 1[c]. DJI does not assert that any of the "Category References" teach limitation 1[c]. Therefore, the undersigned finds that none

[redacted]

of the "Category References" (Takenaga, Fujii, or Engelman) can cure Urmson's deficiencies with respect to this claim limitation. Therefore, for the reasons set forth above, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Urmson in combination with any of the "Category References" (Takenaga, Fujii, or Engelman), renders claim 1 of the '174 patent obvious.

ii. Claims 7 and 8

Claims 7 and 8 depend from claim 1. Because the claim 1 is nonobvious, claim 7-8 are also not obvious in view of Urmson in combination with any of the "Category References" (Takenaga, Fujii, or Engelman).

b) Anticipation – Claims 14 and 17

Autel does not dispute that Urmson discloses limitations 14[a] and 14[c]. CIB at xii, 63[9].

i. Claim 14

DJI argues that Urmson discloses claim limitation 14[b] for the same reasons it teaches claim 8. *See* RIB at 56. Dr. Nourbakhsh states that the same analysis discussed with respect to the "one or more sensors" and "speed planner" limitations applies to claim 14. RX-0002C at Q/A 154.

As discussed above, the undersigned finds that Urmson does not disclose the "speed planner" limitation. *See* supra at V.D.2.a. Therefore, for at least the reasons set forth above with respect to claim 1, the undersigned finds that DJI fails to prove that Urmson teaches limitation 14[b]. Accordingly, the undersigned finds that DJI has failed to prove by clear and convincing evidence that Urmson anticipates claim 14 of the '174 patent.

[9] There appears to be a typographical error in Autel's initial post-hearing brief whereby Autel intended to state that it does not dispute Urmson's disclosure as to claim limitations 14[a] and 14[c], not 14[a] and 14[b]. *Compare* CIB at xii, *with* CIB at 63.

[redacted]

ii. Claim 17

Claim 17 depends from independent claim 14, and incorporates all the limitations of claim 14. The undersigned therefore finds that DJI has failed to show by clear and convincing evidence that Urmson anticipates claim 17 for at least the same reasons as claim 14.

3. Trepagnier

Autel does not dispute that Trepagnier discloses limitations 1[a], 1[b], 1[c], 1[d], 1[e], and claim 7. CIB at xii, 63.

a) Obviousness – Claims 1, 7, and 8

i. Claims 1, 7, and 8 ("Category References")

DJI asserts that Trepagnier in combination with any of the Category References (Takenaga, Fujii, or Engleman) renders claims 1, 7, and 8 of the '174 patent obvious. RIB at 57-61.

a. Takenaga

DJI argues that one of ordinary skill in the art would have been motivated to combine Trepagnier with Takenaga to provide better control of the brake and throttle under different conditions and increase safety and drive quality. RIB at 59 (citing RX-0002C at Q/A 171). In addition, DJI claims that one would also be motivated to modify Trepagnier to provide information reflecting the reason for the desired speed to better influence how actuators are used so that they operate more precisely, efficiently, and safely in a particular traffic scenario. *Id.* (citing RX-0002C at Q/A 171). DJI also contends that Trepagnier recognizes the burden of the control system to decide how to proceed and one of ordinary skill would have been motivated to alleviate such a burden by providing additional information to the control system. *Id.* (citing RX-0002C at Q/A 171).

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DJI asserts that Takenaga discloses a control content modifying means 5 that outputs both a speed command V_{cop} (*i.e.*, a desired speed) and a control mode M (*i.e.*, a speed command category). *Id* at 45 (citing RX-0124 at Fig. 1, 5:63-6:16, 10:21-24; RX-0002C at Q/A 109; RDX-0002.39). DJI disagrees with Autel's assertion that V_{cop} is a deceleration command, not the speed itself. RRB at 18 (citing RX-0124 at 7:18). DJI contends that "when V_{cop} is used, control mode M . . . reflects the reason why V_{cop} should be used, i.e., the vehicle is at an intersection and the light is yellow or red." RIB at 46 (citing RX-0002C at Q/A 87); RRB at 18-19. DJI argues that while Dr. Reinholtz asserts that control mode M is not related to the calculation of speed command V_{cmd} or V_{cop}, that is not required by the claim construction for the term "speed command." RIB at 46-47.

Autel argues that Takenaga's control mode M is not related to the calculation of speed command V_{cmd} or V_{cop} and does not reflect the reason for the speed command calculation of V_{cmd} or V_{cop}. CIB at 76-77 (citing RX-0124 at 6:41-43, 8:51-65). Autel asserts that V_{cop} is not a speed, but rather, is a deceleration command. *Id.* at 77 (citing Reinholtz, Tr. at 423:12-424:21; RX-0124 at Fig. 8B, Fig. 9; CX-0016C at Q/A 402). In addition, Autel argues that a "speed command category" cannot satisfy this claim limitation without being "associated with the desired speed." CRB at 24.

The undersigned notes that Takenaga states that "the control modes M generated depending upon control states (1) to (12) generated by the control content modifying means 5 will be shown in (B) of FIG. 8." RX-0124 at 8:42-45. Figure 8B of Takenaga shows that control mode M can be, for example, "maintain distance control, use speed command V_{cmd}" or "deceleration operation, use speed command V_{cop}." *See id.* at Fig. 8B, 8:42-10:7. Thus, control mode M designates use of speed command V_{cop} or V_{cmd}. *See id.* at 7:31-41, 8:42-10:7, Fig. 8B. Contrary to DJI's assertions, control

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mode M does not reflect the reason why V_{cop} should be used because control mode M does not indicate that the vehicle is at an intersection and the light is yellow or red. *See id.*; *see also* RIB at 46. Rather, the estimated traffic signal conditions STs (traffic signal condition of own vehicle) and STp (traffic signal condition of preceding vehicle) are output by traffic signal condition estimating means 4. *See* RX-0124 at 5:43-6:16, 8:29-35, Fig. 8A. Accordingly, the undersigned finds that Takenaga does not disclose limitation 1[f] and therefore, DJI has failed to show by clear and convincing evidence that Trepagnier in combination with Takenaga renders claim 1 of the '174 patent obvious.

Claims 7 and 8 depend from claim 1. Because claim 1 is nonobvious, "any claim depending therefrom is nonobvious." *In re Fine*, 837 F.2d at 1076. Accordingly, claims 7 and 8 are not obvious in view of Trepagnier in combination with Takenaga.

b. Fujii

DJI contends that one of ordinary skill in the art would have been motivated to modify Trepagnier with Fujii so that the speed planning unit outputs both a desired speed and warning of upcoming road conditions because such warnings would allow the driver to take necessary action and further improve safety. RIB at 60 (citing RX-0002C at Q/A 171). DJI claims that such modification could be performed with only minor changes to the programming or circuitry of Trepagnier's speed planning unit. *Id.* DJI argues that Fuji teaches vehicle speed control unit 23 that controls the speed of the vehicle and also provides warnings to alert the driver of the current condition that causes the change of speed. RIB at 47 (citing RX-0116 at 7:66-8:3, Fig. 1; RX-0002C at Q/A 109; RDX-0002.48). According to DJI, Dr. Reinholtz conceded that speed control unit 23 calculates a speed based on the sensors and provides a warning and/or automatically brakes the vehicle. *Id.* at 47-48 (citing Reinholtz, Tr. at 416:6-418:12); RRB at 19.

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Autel contends that neither the deceleration nor the warning is the speed command category "because there is no teaching or suggestion as to calculating a desired speed based on sensor input or providing an indication as to why a speed was selected." CIB at 77. Autel argues that Fujii's output command is deceleration, not speed. *Id.* (citing Reinholtz, Tr. at 416:6-11; CX-0016C at Q/A 403).

According to Fujii, vehicle speed control unit 23 receives signals from various sensors, and based on those signals, calculates a limit vehicle speed VB at or below which the vehicle can safely enter into and exit from a curve. *See* RX-0116 at 6:31-50. Dr. Nourbakhsh claims that the warning means 28 in Fujii alerts the driver of the current condition that causes the change of speed. *See* RX-0002C at Q/A 109. The undersigned finds this unpersuasive. According to Fujii, "[w]hen the vehicle speed is higher than the limit vehicle speed, the vehicle speed control system provides a warning." *See* RX-0116 at Abstract, 6:44-50 ("If an actual vehicle speed VA is higher than the limit vehicle speed VB the vehicle speed control unit provides a warning to the driver through the warning means 28."). In reference to the flowchart in Figure 7, Fujii further explains that at step S6, vehicle speed control unit 23 calculates a limit vehicle speed VB, which is the speed the vehicle can pass safely through the curve. *See id.* at 7:16-43, Fig.7. In step S7, if the vehicle speed has not slowed down below speed VB, then the vehicle must be decelerated. *See id.* at 7:44-53, Fig. 7. In step S8, vehicle speed control unit 23 determines if closing the throttle valve can slow down the vehicle to or below speed VB. *See id.* at 7:54-66, Fig. 7. If it cannot, then vehicle speed control unit 23 will provide a warning through the warning means 28. *See id.* at 7:67-8:4, Fig. 7. Therefore, the warning in Fujii does not indicate the reason for VB (*i.e.*, "information reflecting the reason for the desired speed") but rather, provides information that VB differs from VA (actual speed) by more than a certain amount. *See id.* at 7:16-8:4; Fig. 7. Accordingly, the undersigned finds that

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Fujii does not disclose limitation 1[f] and therefore, DJI has failed to show by clear and convincing evidence that Trepagnier in combination with Fujii renders claim 1 of the '174 patent obvious.

Claims 7 and 8 depend from claim 1. Because claim 1 is nonobvious, "any claim depending therefrom is nonobvious." *In re Fine*, 837 F.2d at 1076. Accordingly, claims 7 and 8 are not obvious in view of Trepagnier in combination with Fujii.

c. Engelman

i) Claim 1

DJI argues that Engelman discloses main controller 22 that outputs both countermeasures and information reflecting the countermeasures. RIB at 48 (citing RX-0117 at 1:12-16, 1:33-35, 5:1-5, Fig. 1; RX-0002C at Q/A 109; RDX-0002.52-57). Contrary to Dr. Reinholtz's assertions, DJI contends that Engelman explicitly teaches that main controller 22 may reduce traveling speed (*i.e.*, desired speed) and may generate a warning signal that is communicated to vehicle occupants. *Id.* at 49 (citing RX-0117 at 10:27-42; RX-0002C at Q/A 109). DJI contends that one of ordinary skill in the art would have been motivated to modify Trepagnier with Engelman so that the speed planning unit outputs both a desired speed and warning of upcoming road conditions because such warnings would allow the driver to take necessary action and further improve safety. RIB at 60 (citing RX-0002C at Q/A 171). DJI claims that such modification could be performed with only minor changes to the programming or circuitry of Trepagnier's speed planning unit. *Id.*

Autel asserts that Engelman does not include a speed command category or anything that could be interpreted as information reflecting the reason for the desired speed. CIB at 78. While Autel submits that Engelman may signal the vehicle operator of an impending potential collision, there is no desired speed associated with that signal and thus, it cannot be the claimed speed command category. *Id.* (citing RX-0117 at 4:28-33; CX-0016C at Q/A 404).

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The undersigned finds that Engelman is directed to vehicle sensing systems for identifying and quantifying the threat of objects within a host vehicle operating environment. *See* RX-0117 at 1:6-9. Engelman discloses that, upon determining to perform a countermeasure, main controller 22 generates a safety system signal, which may contain various countermeasure related signals. *See id.* at 10:31-34. A safety system signal may include a warning signal, a collision-warning signal, a countermeasure signal, or an object identification signal. *See id.* at 5:1-5. Thus, one of ordinary skill in the art would understand that a safety system signal could reflect the reason for a countermeasure. Moreover, Engelman discloses that countermeasures can include brake control or reducing traveling speed. *See id.* at 4:25-28, 10:37-40. Autel argues that there is no desired speed associated with that safety system signal and thus, it cannot be the claimed speed command category. *See* CIB at 78. However, while the safety system signal in Engelman may not be explicitly tied to a desired speed, Autel does not dispute that Trepagnier discloses limitation 1[c], which includes "a speed planner . . . configured to calculate a desired speed." *See* CIB at xii, 63; JX-0001 at cl. 1. Therefore, the question is not whether Engelman discloses a desired speed, but rather, whether one of ordinary skill in the art would modify Trepagnier, which calculates a desired speed, with Engelman to output "information reflecting the reason for the desired speed." As Dr. Nourbakhsh's unrebutted testimony explains, the speed planner in Trepagnier calculates desired speed based on data from the LADAR sensor, which can identify obstacles. *See* RX-0002C at Q/A 166; RX-0113 at ¶¶ [0144]-[0145]. The undersigned finds that it would have been obvious to one of ordinary skill in the art to modify Trepagnier with the teachings in Engelman to include a signal about an object/obstacle that would reflect the reason for the desired speed.

In addition, the undersigned finds that one of ordinary skill would have been motivated to combine Trepagnier with Engelman because they are in the same field of endeavor and are both

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directed to controlling autonomous vehicles and safe operation. *See* RX-0002C at Q/A 171; *see generally* RX-0113; RX-0117. One of ordinary skill in the art would have been motivated to modify Trepagnier with Engelman so that the speed planning unit outputs both a desired speed and warning of upcoming road conditions because such warnings would allow the driver to take necessary action and further improve safety. *See id.* Moreover, Dr. Nourbakhsh's unrebutted testimony explains that the functionality of Engelman could be added to Trepagnier with only minor changes to the programming or circuitry of Trepagnier's speed planning unit. *See* RX-0002C at Q/A 171.

Accordingly, the undersigned finds that Trepagnier in combination with Engelman renders claim 1 of the '174 patent obvious.

ii) Claim 7

Autel does not dispute that Trepagnier discloses claim 7. CIB at xii, 63. Accordingly, the undersigned finds that Trepagnier in combination with Engelman renders claim 7 of the '174 patent obvious.

iii) Claim 8

DJI submits that Trepagnier discloses calculating a desired speed based on constraints and even though it does not explicitly use the word "prioritized," a person of ordinary skill in the art would understand obstacle avoidance must have the highest priority even if other constraints need to be violated. RIB at 61 (citing RX-0113 at [0102], [0153], [0170]; RX-0002C at Q/As 175-76).

Autel argues that "Trepagnier does not expressly disclose assigning priorities to constraints and 'violation of a lower priority constraint in order to avoid violation of a higher priority constraint.'" CIB at 74. According to Autel, there is no disclosure in Trepagnier related to prioritized constraints. *Id.* (citing CX-0016C at Q/A 428). Autel contends that the portions of

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Trepagnier that DJI cites do not disclose prioritized constraints, either individually or collectively. CIB at 74; CRB at 23-24.

As previously noted, Autel does not dispute that Trepagnier discloses calculating a desired speed which does not cause the autonomous vehicle to violate one or more constraints, as recited in claim 7. *See* CIB at xii, 63. According to Dr. Nourbakhsh's unrebutted testimony, Trepagnier discloses that autonomous vehicles must avoid obstacles as well as observe curves, width of the streets, and speed limits. *See* RX-0002C at Q/A 174; RX-0113 at ¶¶ [0061]-[0115], [0150], [0170]. Dr. Nourbakhsh states that the speed planning unit in Trepagnier "must calculate the desired speed to avoid violating these constraints." RX-0002C at Q/A 174. In addition, Trepagnier specifically teaches providing steering and speed control directions to avoid an obstacle:

> The steering and speed control directions can take into consideration the destination of the vehicle, and thereby provide steering and speed control directions to the vehicle in order to avoid the obstacle and to return on course to the destination.

RX-0113 at ¶ [0102], cl. 38. One of ordinary skill in the art would understand this to mean that the constraint of obstacle avoidance is prioritized over the constraints of remaining on a course or remaining in the center of the road, for example, and that the vehicle can violate the latter constraints in order to avoid violating the constraint of obstacle avoidance. *See id.* at ¶ [0102], [0152], Figs. 11-13, cl. 38. Accordingly, the undersigned finds that Trepagnier discloses the limitations of claim 8 and therefore, Trepagnier in combination with Engelman render claim 8 of the '174 patent obvious.

ii. Claim 8 (Engelman and any of the "Constraint References"

DJI asserts that even if Trepagnier in combination with Engelman does not render claim 8 obvious, a person of ordinary skill would have been motivated to combine Trepagnier and

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Engelman with either of the "Constraint References" (Fregene or Reece) to achieve the limitation of claim 8. RIB at 61 (citing RX-0002C at Q/As 177-78).

a. Fregene

DJI asserts that Fregene discloses claim 8. RIB at 62 (citing RX-0121 at Abstract, [0007], [0009], [0025], [0038], [0047], [0069], Fig. 5; RX-0002C at Q/A 118; RDX-0002.71-76). According to DJI, Dr. Reinholtz agreed that Fregene discloses nominal constraints and emergency constraints, where nominal constraints may be violated and emergency constraints may be observed in emergency situations. *Id.* at 62-63 (citing RX-0121 at [0025], [0038], [0047]; RX-0002C at Q/A 118; Reinholtz, Tr. at 418:19-421:5); RRB at 19. DJI contends that one of ordinary skill would have been motivated to combine Trepagnier with Fregene because they are in the same field of endeavor and are pertinent to addressing how to autonomously adjust vehicle speed. RIB at 65 (RX-0002C at Q/A 179). DJI argues that Trepagnier teaches avoiding obstacles and Fregene suggests a specific method to do so and thus, a person of ordinary skill in the art would be motivated to modify Trepagnier with Fregene to improve the vehicle's ability to avoid collisions. *Id.* According to DJI, it would be simple to add the functionality of Fregene to Trepagnier because it would require only minor changes or additions to the programming or circuitry. *Id.* (citing RX-0002C at Q/A 180).

Autel argues that the system in Fregene will remain within the constraint boundaries and never violate the constraints. CIB at 79 (citing RX-0121 at ¶ [0025]). Autel also argues that Fregene switches between applying nominal or emergency constraints, and does not apply both types of constraints at once. *Id.* (citing Reinholtz, Tr. at 420:19-25). In addition, Autel contends that Fregene does not address constraint prioritization for speed calculation. *Id.* at 80. According to Autel, Fregene discloses different operating modes and not that the two different modes will

[redacted]

occur simultaneously. *Id.* Moreover, Autel submits that a person of ordinary skill in the art would not consider the Fregene vehicle to be autonomous because it has an external processor and an external supervisory controller. *Id.* (citing RX-0121 at 5, 18).

Fregene discloses two types of constraints – nominal constraints that are the constraints under normal operation and emergency constraints that are the constraints under emergency operation. *See* RX-0121 at ¶ [0038]; Reinholtz, Tr. at 418:22-419:7. Fregene discloses that a positively invariant set defines a protection zone enclosed within a buffer zone that is centered around the vehicle. *See* RX-0121 at ¶ [0024]. According to Fregene, "nominal constraints are more restrictive than the actual operating limits of the vehicle, since maximum performance is used for a vehicle only in emergency situations." RX-0121 at ¶ [0038]. One of ordinary skill in the art would understand that the emergency constraints ensure that the protection zone is not breached and that the vehicle can never violate emergency constraints. *See* Reinholtz, Tr. at 420:1-18; RX-0002C at Q/A 118; CX-0016C at Q/A 409. If an object is outside the buffer zone, the vehicle observes nominal constraints, but if an object is detected within the buffer zone, the vehicle will operate according to emergency constraints. *See* RX-0121 at ¶¶ [0007]-[0010], [0023]-[0024], [0069]-[0074], Figs. 5-7; Reinholtz, Tr. at 421:1-5 (agreeing that nominal constraints are no longer observed in emergency situations); RX-0002C at Q/As 93-94, 178. Thus, one of ordinary skill would understand that, within the buffer zone, emergency constraints have a higher priority than nominal constraints such that nominal constraints can be violated and emergency constraints cannot be violated. *See* RX-0121 at ¶ [0038]; RX-0002C at Q/As 93-94, 178. Accordingly, one of ordinary skill in the art would modify Trepagnier and Engelman with Fregene such that the constraints are prioritized and lower priority constraints could be violated in order to avoid violation of higher priority constraints.

[redacted]

Autel and Dr. Reinholtz contend that the two different types of constraints are actually two different operating modes that would not occur simultaneously. *See* CIB at 80; CX-0016C at Q/A 409. While it could be true that a set of constraints for driving on an interstate highway would be different from the set of constraints for driving in a parking lot, as Autel claims, that does not necessarily mean that one would use a set of nominal constraints for one environment and a set of emergency constraints for another environment. Indeed, that would not be logical in the context of Fregene, which teaches a collision avoidance system that operates to ensure that the protection zone of the vehicle is not breached. And while Fregene teaches that vehicles can switch to an emergency maneuver mode when normal collision avoidance schemes fail, that does not mean that those modes only utilize either emergency constraints or nominal constraints. *See* RX-0121 at ¶¶ [0053], [0056]. As Dr. Nourbakhsh points out, emergency constraints are activated and nominal constraints ignored/violated when an object is within the buffer zone, and nominal constraints are observed when an object is outside the buffer zone. *See* RX-0002C at Q/A 118; Reinholtz, Tr. at 421:1-5.

Autel also argues that Fregene does not disclose an autonomous vehicle because it uses an external processor. *See* CIB at 80. This argument is misplaced for two reasons. First, Fregene repeatedly refers to autonomous vehicles and UAVs. *See* RX-0121 at ¶¶ [0002]-[0004], [0022], [0023], [0063]. Second, this obviousness inquiry is whether Trepagnier, which Autel concedes discloses an autonomous vehicle, modified by Fregene meets the limitations of claim 8, not whether Fregene alone meets the limitations of claim 8.

In addition, the undersigned finds that one of ordinary skill would have been motivated to combine Trepagnier with Fregene because they are in the same field of endeavor and are both directed to controlling autonomous vehicles and obstacle avoidance. *See* RX-0002C at Q/A 179;

[redacted]

see generally RX-0113; RX-0121. Trepagnier teaches avoiding obstacles and Fregene suggests a specific method to do so and thus, a person of ordinary skill in the art would be motivated to modify Trepagnier with Fregene to improve the vehicle's ability to avoid collisions. *Id.* Moreover, Dr. Nourbakhsh's unrebutted testimony explains that it would be simple to add the functionality of Fregene to Trepagnier because it would require only minor changes or additions to the programming or circuitry. *See* RX-0002C at Q/A 180.

Accordingly, the undersigned finds that Fregene discloses the limitations of claim 8 and therefore, Trepagnier and Engelman in combination with Fregene render claim 8 of the '174 patent obvious.

b. Reece

DJI argues that Reece discloses a tactical driving program that can encode knowledge of constraints with some constraints assigned higher priority levels. RIB at 63-64 (citing RX-0120 at Abstract, 24, 26, 29, 34, Tables 4 and 5; RX-0002C at Q/A 118). DJI disputes Dr. Reinholtz's argument that Reece's constraints are not associated with vehicle speed because Reece specifically teaches that "Ulysses operationalizes concepts such as 'risk avoidance' in these models with specific constraints on lane selection and ***speed***." *Id.* at 64 (citing RX-0120 at 26 (emphasis in original)). DJI asserts that one of ordinary skill in the art would have been motivated to include Reece's functionality to improve Trepagnier's vehicle collision avoidance. *Id.* at 66 (citing RX-0002C at Q/A 180). According to DJI, it would have been a simple matter to add Reece's functionality because it would require only minor changes or additions to the programming or circuitry of Trepagnier's system and would not require any structural changes. *Id.* (citing RX-0002C at Q/A 181).

[redacted]

Autel argues that the constraints Dr. Nourbakhsh relies on are not constraints on speed, but rather, are constraints related to lane selection. CIB at 79 (citing RX-0120 at 18, 19). Autel contends that these constraints are not associated with vehicle speed and thus a person of ordinary skill in the art would not understand Reece to disclose or teach prioritized constraints.

Reece discloses constraints and preferences for various traffic conditions. *See* RX-0120 at 17-19, Tables 4-5. Reece also discloses that preferences can be ranked from highest to lowest priority. *See id.* While Tables 4 and 5 in Reece specifically refer to lane changes as the allowed actions, Reece also states that "[a]fter all triggered constraints have been combined, Ulysses chooses an acceleration and lane-changing action from the available choices. *See id.* at 4. Contrary to Autel's assertions, one of ordinary skill in the art would understand that higher priority constraints, like blocking traffic, are given priority over lower priority constraints. *See id.* at 17-19, Tables 4-5; RX-0002C at Q/A 118. Accordingly, one of ordinary skill in the art would modify Trepagnier and Engelman with Reece such that the constraints are prioritized and lower priority constraints could be violated in order to avoid violation of higher priority constraints.

In addition, the undersigned finds that one of ordinary skill would have been motivated to combine Trepagnier with Reece because they are in the same field of endeavor and are both directed to controlling autonomous vehicles. *See* RX-0002C at Q/A 179; *see generally* RX-0113; RX-0120. One of ordinary skill in the art would have been motivated to include Reece's functionality to improve Trepagnier's vehicle collision avoidance. *See id.* And as Dr. Nourbakhsh's unrebutted testimony shows, it would have been a simple matter to add Reece's functionality because it would require only minor changes or additions to the programming or circuitry of Trepagnier's system and would not require any structural changes. *See* RX-0002C at Q/A 181.

[redacted]

Accordingly, the undersigned finds that Reece discloses the limitations of claim 8 and therefore, Trepagnier and Engelman in combination with Reece render claim 8 of the '174 patent obvious.

b) Anticipation – Claims 14 and 17

Autel does not dispute that Trepagnier discloses limitations 14[a] and 14[c]. CIB at xii, 63.

DJI contends that Trepagnier teaches limitation 14[b] and claim 17 for the same reasons it teaches claim 8. RIB at 67 (citing RX-0002C at Q/As 185-86, 189). As to claims 14 and 17, Autel argues that "[a]s explained . . . with regard to claim 8, Trepagnier does not disclose or teach assigning priorities to constraints or avoiding violating constraints" or calculating "desired speed by allowing violation of a lower priority constraint in order to avoid violation of a higher priority constraint." CIB at 74-75 (citing CX-0016C at Q/A 429).

As discussed above, the undersigned found that Trepagnier[10] disclosed the additional limitations of claim 8. *See supra* at Section V.D.3.a.i.c.iii. Accordingly, at least for the same reasons, the undersigned finds that Trepagnier anticipates claims 14 and 17 of the '174 patent.

c) Obviousness – Claims 14 and 17 ("Constraint References")

DJI argues that Trepagnier teaches limitation 14[b] for the same reasons it teaches claim 8. RIB at 67 (citing RX-0002C at Q/As 185-86). DJI asserts that, even assuming Trepagnier does not explicitly disclose prioritized constraints, one of ordinary skill in the art would have been motivated to combine Trepagnier with Fregene or Reece to render claims 14 and 17 obvious. *Id.* (citing RX-0002C at Q/As 177-78, 185; RDX-0002.194-206, 208-14, 217-19).

Autel does not dispute that Trepagnier discloses limitations 14[a] and 14[c]. CIB at xii, 63. Autel, however, argues that "none of the Constraint References disclose claim 8 and element

[10] Although the previous discussion with respect to claim 8 was in reference to the combination of Trepagnier and Engelman, DJI asserted that the Trepagnier reference alone taught the additional limitations of claim 8.

[redacted]

14[b]" and therefore Trepagnier combined with any of the Constraint References do not disclose all of the elements of claim 14. CIB at 82 (citing CX-0016C at Q/A 433); CRB at 26.

As discussed above, the undersigned found that Trepagnier[11] disclosed the additional limitations of claim 8 and limitation 14[b]. *See supra* at Sections V.D.3.a.i.c.iii and V.D.3.b. In addition, the undersigned found that Fregene and Reece disclosed the limitations of claim 8. Accordingly, at least for the same reasons, the undersigned finds that Trepagnier in combination with either Fregene or Reece renders claims 14 and 17 of the '174 patent obvious.

4. Secondary Considerations of Nonobviousness

Autel does not address secondary considerations for the '174 patent in its post-hearing briefs and has therefore waived any arguments as to that issue. *See* CIB at 62-84; CRB at 19-30. Accordingly, the undersigned finds that there are no secondary considerations of non-obviousness that overcome the finding that Trepagnier in combination with Engelman, or Trepagnier in combination with Engelman and either Fregene or Reece renders claims 1, 7, and 8 of the '174 patent obvious. Similarly, the undersigned finds that there are no secondary considerations of non-obviousness that overcome the finding that Trepagnier in combination with either Fregene or Reece renders claims 14 and 17 of the '174 patent obvious.

5. Subject Matter Eligibility – Claims 14 and 17

a) *Alice* Step One

DJI argues that claims 14 and 17 claim the concept of calculating a speed based on perceived conditions and a set of constraints, which is an abstract idea. RIB at 68-69 (citing RX-0002C at Q/As 195, 196, 211). DJI contends that the "remainder of the claim covers nothing more than conventional technology used in prior art autonomous vehicles." *Id.* DJI asserts that contrary

[11] Although the previous discussion with respect to claim 8 was in reference to the combination of Trepagnier and Engelman, DJI asserted that the Trepagnier reference alone taught the additional limitations of claim 8.

[redacted]

to Autel's position, nothing in claims 14 and 17 requires improved program/processor or special arrangements of components. *Id.* at 68-69. For example, DJI argues that claim 14 recites a general purpose processor that performs conventional functions that have been performed mentally or in non-computer settings long before the invention of the '174 patent. *Id.* at 69 (citing RX-0002C at Q/As 195, 197, 199, 200). Similarly, DJI contends that claim 17 is directed to the same abstract idea performed by a generic programmable processor. *Id.* (citing RX-0002C at Q/A 211). DJI argues that these ideas have been performed mentally or in non-computer settings by drivers or pilots for years before the '174 patent. *Id.* at 70. For example, DJI submits that humans operating ground or air vehicles mentally determine the desired speed for vehicles based on received data such as traffic and weather, or prioritized constraints like speed limits or distance to an object. *Id.* (citing RX-0002C at Q/A 197).

DJI claims that at most, claims 14 and 17 merely automate those mental steps and assign the task to computer processors. *Id.* However, DJI argues that "mere automation does not transform an abstract idea into a patentable invention, not even if that means greater efficiency." *Id.* (citing *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1371 (Fed. Cir. 2011); *Smart Sys. Innovations, LLC v. Chicago Transit Authority*, 873 F.3d 1364, 1372 (Fed. Cir. 2017); *Bancorp Servs., LLC v. Sun Life Assurance Co. of Canada*, 687 F.3d 1266, 1278 (Fed Cir. 2012)). Moreover, DJI asserts that automation of human activity through a computer does not render the implementation non-abstract. *Id.* at 70-71 (citing *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1094-95 (Fed. Cir. 2016); *Intellectual Ventures I LLC v. Erie Indemnity Co.*, 850 F.3d 1315, 1330 (Fed. Cir. 2017); *Certain Road Construction Machines and Components Thereof*, Inv. No. 337-TA-1088, Comm'n Op. at 11 (July 15, 2019)). DJI also argues that claims 14 and 17 do not include any particular way of programming or designing the software, but instead, merely

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claim the resulting system. *Id.* at 72 (citing RX-0002C at Q/As 195, 201-03, 211). Thus, DJI contends that the claims recite no more than basic computer hardware without modification, customization, or improvement. *Id.* (citing RX-0002C at Q/A 202). In addition, DJI asserts that the remaining components in claims 14 and 17 are comment components used in conventional autonomous vehicles and "[t]he claims do not recite any particularity of the sensors, actuators, or controllers that suggest they must be implemented or used in any special or improved manner." *Id.* at 72-73.

Autel contends that claim 14 is directed to an improved program for controlling the speed of an autonomous vehicle that requires a specific means for arranging its components and is directed to an improved processor for controlling the speed of an autonomous vehicle. CIB at 82-83 (citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016)); CRB at 27. Autel argues that calculating desired speeds based on sensor input and/or prioritized constraints, calculating speed commands based on calculated speeds, and using speed commands to control actuators and adjust the speed of autonomous vehicles were "new and non-obvious technological advancements beyond generic components." CRB at 27. Autel asserts that speed calculation based on prioritized constraints is a specific and improved means for controlling the speed of an autonomous vehicle and allows functionality that an autonomous vehicle would not have otherwise had. *Id.* Autel also contends that the '174 patent claims are distinguishable from prior art neural networks that attempt to emulate the human decision-making process. *Id.* at 28 (citing CX-0016C at Q/As 392-94). For example, Autel asserts that speed calculation based on prioritized constraints is not a human-performed abstract idea. *Id.* (citing CX-0016C at Q/As 392-94). Moreover, Autel argues that claim 14 "recites a specific and improved arrangement of processor components and

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recites how the improved processing is achieved." *Id.* Autel also argues that claim 17 is directed to further improvements and the means for achieving those improvements. CIB at 83; CRB at 29.

The undersigned finds that claims 14 and 17 are directed to the abstract idea of controlling the speed of an autonomous vehicle using sensor data and prioritized constraints. *See* JX-0001 at cl. 14, 17, 9:18-19 ("embodiments of the present inventions enable the automatic regulation of the speed of an autonomous vehicle"); CIB at 82 ("The plain text of claim 14, when properly 'read as a whole' is directed to and recites an improved program for controlling the speed of an autonomous vehicle."). Claim 14 of the '174 patent recites a processor to "calculate a desired speed of an autonomous vehicle based on data received regarding conditions which affect movement of the autonomous vehicle and on one or more prioritized constraints; and output the calculated speed to a control system configured to use the output speed to calculate speed commands for use by one or more actuators to adjust the speed of the autonomous vehicle." JX-0001 at cl. 14. Claim 17 adds that the processor "calculate[s] the desired speed by allowing violation of a lower priority constraint in order to avoid violation of a higher priority constraint." *Id.* at cl. 17. According to the '174 patent, a processor receives sensor data and calculates speed based on the sensor data and prioritized constraints. *See id.* at 2:54-56, 3:29-31. The processor can calculate the speed by violating a lower priority constraint in favor of avoiding violation of a higher priority constraint. *See id.* at 3:48-51. However, other than stating that it is based on sensor data and prioritized constraints, claims 14 and 17 do not recite how the speed is calculated nor how the constraints are prioritized. *See id.* at cl. 14, 17; *Secured Mail Solutions LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 910-11 (Fed. Cir. 2017) (finding some claims directed to an abstract idea, in part, because while they provided for encoding data, they did not set out how this was to be performed). The processor then transmits that speed to a control system, which calculates a speed command to

adjust the speed of the vehicle. *See* JX-0001 at 9:8-13; cl. 14. As the Commission previously stated, "the Federal Circuit has held that claims directed to 'collecting information, analyzing it, and displaying certain results of the collection and analysis,' 'fall into a familiar class of claims "directed to" a patent-ineligible concept.'" *Certain Road Construction Machines and Components Thereof*, Inv. No. 337-TA-1088, Comm'n Op. at 11 (July 15, 2019) (citing *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016)). Here, claims 14 and 17 are directed to the abstract idea of automating speed control in an unmanned vehicle by using conventional components to receive, process, and transmit information. *See Elec. Power Grp.*, 830 F.3d at 1353-54; *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018).

In addition, claims 14 and 17 are not any less abstract because of the specific nature of the information – *i.e.*, sensor data and prioritized constraints in the context of speed control. *See Elec. Power Grp.*, 830 F.3d at 1353 ("[W]e have treated collecting information, including when limited to particular content (which does not change its character as information), as within the realm of abstract ideas"). Moreover, analyzing the information through some mental process or mathematical algorithm and generating new information is treated "as essentially mental processes within the abstract-idea category." *See id.* at 1354; *see also Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) ("Without additional limitations, a process that employs mathematical algorithms to manipulate existing information to generate additional information is not patent eligible. 'If a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.'"). Autel cites to Dr. Reinholtz to argue that calculating speed based on prioritized constraints is not a human-performed abstract idea. *See* CRB at 28. However, that portion of Dr. Reinholtz's testimony asserts that Andersson does not calculate speed since it uses a neural

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network; Dr. Reinholtz does not assert that humans do not or cannot calculate speed based on prioritized constraints. *See* CX-0016C at Q/As 392-94.[12] And as Dr. Nourbakhsh points out, humans have long been mentally determining desirable vehicle speeds based on what they perceive and on prioritized constraints like speed limits and distance to a traffic light or object. *See* RX-0002C at Q/A 197. Similarly, humans allow violations of a lower priority constraint (*e.g.*, speed limit) in order to avoid violation of a higher priority constraint (*e.g.*, hitting with an obstacle). *See id.* at Q/A 200.

Despite Autel's assertions, the present claims are unlike those in *Enfish* because the claims here are not directed to an improvement in the way computers operate. *See Enfish*, 822 F.3d at 1336. Indeed, the Federal Circuit in *Enfish* stated that the first step of the *Alice* analysis "asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . . or, instead on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish*, 822 F.3d at 1335-36. Here, nothing in the '174 patent claims or describes as innovative any specific feature of the processor. *See, e.g.,* JX-0001 at 6:48-7:10, 9:8-16. In fact, the specification discloses nothing more than utilizing conventional components to implement the claimed "speed planner." As the specification states:

> In some embodiments, speed planner 104 is implemented as an application specific integrated circuit (ASIC) or a field programmable gate array (FPGA) configured to execute a speed controller function such as the one described above. In other embodiments, speed planner 104 is implemented as a processing unit which includes or functions with software programs, firmware or computer readable instructions for carrying out various methods, process tasks, calculations, and control functions, used in calculating the desired speeds for an autonomous vehicle.
>
> These instructions are typically tangibly embodied on any appropriate medium used for storage of computer readable instructions or data structures. Such computer readable media can be any available media that can be accessed by a general purpose or special purpose computer or processor, or any programmable logic

[12] The undersigned notes that while Autel cites to Dr. Reinholtz's testimony on Andersson as prior art, Dr. Reinholtz does not provide any testimony on the issue of patentable subject matter. *See generally* CX-0016C.

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> device. Suitable computer readable media may include storage or memory media such as magnetic or optical media, e.g., disk or CD-ROM, volatile or non-volatile media such as RAM (e.g. SDRAM, DDR SDRAM, RDRAM, SRAM, etc.), ROM, EEPROM, flash memory, etc. as well as transmission media such as electrical, electromagnetic, or digital signals, conveyed via a communication medium such as a network and/or a wireless link.

Id. at 6:48-7:3. There is no disclosure in either the specification or the claims for any improvement in the processor's functionality, such as faster, efficient, or more powerful processing. The claims therefore are not directed to an improvement in computers as tools, but rather, on an abstract idea that uses computers as tools. *See Elec. Power Grp.*, 830 F.3d at 1354; *SAP*, 898 F.3d at 1168.

b) *Alice* Step Two

DJI asserts that "[n]othing in claims 14 and 17 amounts to an inventive concept sufficient to transform the abstract idea into a patent-eligible invention." RIB at 73. According to DJI, each limitation of claims 14 and 17, individually and as an ordered combination, was well-known in the art prior to the '174 patent. *Id.* (citing RX-0002C at Q/As 205, 213; RIB at Sections III.D.3.d, III.D.6, III.D.9, III.D.10). DJI claims that Autel's reliance on the *Amdocs* case is misplaced as it relates to computer networks, not autonomous vehicles. *Id.* at 74 (citing *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1298 (Fed. Cir. 2016)). In addition, DJI argues that controlling an autonomous vehicle and confronting more than one constraint at once was not a unique technological problem, but one that was "the nature of the industry." *Id.* DJI also contends that obtaining information with sensors merely represents data gathering and adds nothing of practical significance to the underlying abstract idea. *Id.* (citing *CyberSource*, 654 F.3d at 1370). Similarly, DJI argues that enabling the calculation of desired speed with the use of conventional sensors communicating with other electronic components does not change the abstract idea into a patentable invention, particularly when the '174 patent does not discuss any new or innovative type of sensor. *Id.* at 74-75 (citing *Elec. Power*, 830 F.3d at 1355). In addition, DJI asserts that

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claim 17 is merely calculation using a mathematical formula, which is insufficient to render the claim patent-eligible. *Id.* at 75 (citing *Digitech Image Techs.*, 758 F.3d at 1351). Furthermore, DJI argues that merely incorporating particular types of data does not make the idea any less abstract. *Id.*

DJI also asserts that the hardware recited in the claims is conventional and the functions performed by the components are generic. *Id.* at 75-76 (citing RX-0002C at Q/As 200-04, 211, 212 215). According to DJI, the '174 patent never mentions that a special computer or special autonomous vehicle is required to implement the invention and the claims do not purport to have invented or improved any of those generic components, and the configuration/arrangement of such components is not essential to the invention. *Id.* at 76 (citing JX-0001 at Fig. 1, 2:50-54; RX-0002C at Q/As 201, 216). Thus, DJI contends that using these existing components in their conventional manner cannot supply an inventive concept. *Id.* (citing *Alice*, 573 U.S. at 222). Lastly, DJI argues that Autel's reliance on *Berkheimer v. HP Inc.* is misplaced because the Federal Circuit in that case indicated that there were remaining factual questions and did not determine that the claims were patent eligible. RRB at 20-21 (citing *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1369-71 (Fed. Cir. 2018)). In contrast, DJI contends that the evidentiary record in this investigation is closed and numerous prior art references demonstrate that the hardware recited in these claims is well-understood, routine, and conventional. *Id.* at 20-21 (citing RX-0002C at Q/As 200-03, 211, 215).

Autel claims that "DJI has failed to prove that all the elements of claims 14 and 17 were known in the prior art, let alone well-understood, routine, and conventional." CIB at 83 (citing *Berkheimer*, 881 F.3d at 1369); CRB at 29. According to Autel, the elements of claims 14 and 17, alone and arranged in the claims, were not known or obvious. CRB at 29-30. Autel argues that claim 14 recites the following inventive concepts: calculating desired speeds based on sensor input

[redacted]

and/or prioritized constraints, calculating speed commands based on calculated speeds, using speed commands to control actuators and adjust autonomous vehicle speed, and the combination of those features. *Id.* at 30. Autel also argues that claim 17 recites the following inventive concept: allowing violation of a lower priority constraint to avoid violation of a high priority constraint. *Id.* Autel contends that these were not known in the art because none of the references DJI relies on disclose prioritized constraints. *Id.* Autel argues that claims 14 and 17 should be found patent eligible for the same reasons as in *Amdocs* because they are an unconventional technological solution to a technological problem. *Id.* (citing *Amdocs*, 841 F.3d at 1300-01). According to Autel, that solution operates in a nonconventional way because prioritized constraints were not known or conventional. *Id.*

The undersigned finds that there is no inventive concept in the claim elements, whether considered individually or as an ordered combination and that the claims do not add any meaningful limitations to the routine steps of data collection, analysis, and transmission using conventional computer components. Here, the claims amount to nothing more than applying an abstract idea using a generic computer. However, "[a] simple instruction to apply an abstract idea on a computer is not enough" to transform an abstract idea into a patent-eligible invention. *See Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367 (Fed. Cir. 2015). And while the Federal Circuit has held that the machine-or-transformation test may be helpful in deciding eligibility at step two of the *Alice* analysis, claims 14 and 17 merely claim a conventional way to collect and manipulate data for controlling speed in an unmanned vehicle using a generic processor. *See Smart Sys.*, 873 F.3d at 1375 (citing *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014)); JX-0001 at 6:48-7:3.

[redacted]

While step two of the *Alice* inquiry can be satisfied when the claim limitations "involve more than performance of 'well-understood, routine, [and] conventional activities previously known to the industry,'" that is not the case here. *See Berheimer*, 881 F.3d at 1367-68. Autel argues that claims 14 and 17 were not known or obvious[13] and instead recite inventive concepts, but Autel does not cite to any evidence to support that argument other than conclusory arguments reciting claim language. In contrast, as explained above, Dr. Nourbakhsh explains that humans have long been mentally determining desirable vehicle speeds based on what they perceive and on prioritized constraints like speed limits and distance to a traffic light or object, and humans allow violations of a lower priority constraint (*e.g.*, speed limit) in order to avoid violation of a higher priority constraint (*e.g.*, colliding with an obstacle). *See* RX-0002C at Q/As 197, 200. Moreover, an inventive concept must be evident from the claim language. *See Secured Mail Solutions*, 873 F.3d at 911-12 ("The claim language does not provide any specific showing of what is inventive about the identifier or about the technology used to generate and process it."); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1321-22 (Fed. Cir. 2016) ("The district court erred in relying on technological details set forth in the patent's specification and not set forth in the claims to find an inventive concept."). Therefore, even if there is arguably an inventive concept in how the speed planner calculates speed or prioritizes constraints, that technological detail is not set forth in claims 14 or 17.

Despite Autel's argument, the present case is distinct from *Amdocs* where the Federal Circuit based their decision, in part, on the fact that, while the invention used arguably generic components, the claims as construed necessarily required those generic components to operate in

[13] While the patent-eligibility inquiry and the novelty inquiry may overlap, "a claim for a *new* abstract idea is still an abstract idea" and "[t]he search for a § 101 inventive concept is thus distinct from demonstrating § 102 novelty." *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016).

[redacted]

an unconventional manner to achieve an improvement in computer functionality. *See Amdocs*, 841 F.3d at 1300-01. Here, there is nothing to suggest that the generic processor, or even the sensors, are being used in an unconventional manner. Rather, the components of the present claims are being combined in a generic manner and are being used exactly as one would expect – sensors to sense data about the environment or vehicle and processors to calculate speed based on various information. *See TDE Petroleum Data Solutions, Inc. v. AKM Enterprise, Inc.*, 657 F. App'x 991, 993 (Fed. Cir. 2016).

Accordingly, the undersigned finds that claims 14 and 17 of the '174 patent are directed to patent-ineligible subject matter under 35 U.S.C. § 101 and are therefore invalid.

VI. U.S. PATENT NO. 9,260,184

A. Overview

The '184 patent, entitled "Compact Unmanned Rotary Aircraft" issued on February 16, 2016 to Orville Olm, Greg Wood, and Zenon Dragan. The '184 patent is assigned on its face to Zenon Dragan and was subsequently assigned to Autel. JX-0002. The '184 patent generally relates to "a UAV wherein the rotors are secured to the unmanned aerial vehicle so as to not be released during flight." Compl. at ¶ 5.1.0

1. Asserted Claims

Autel is asserting claims 1, 2, and 5, which read as follows:

1. [1a] A rotary wing aircraft apparatus comprising:

[1b] a body;

[1c] a plurality of arms extending laterally from the body, and [1d] a rotor assembly attached to an outside end of each arm;

1[e] each rotor assembly comprising a rotor blade releasably attached to a driveshaft by a lock mechanism, and a drive rotating the driveshaft;

[redacted]

1[f] wherein a first driveshaft rotates in a clockwise direction and a second driveshaft rotates in a counterclockwise direction;

1[g] wherein a clockwise rotor blade is releasably attached to the first driveshaft by engagement in a clockwise lock mechanism and generates a vertical lift force when rotated in the clockwise direction, and a counterclockwise rotor blade is releasably attached to the second driveshaft by engagement in a counterclockwise lock mechanism and generates a vertical lift force when rotated in the counterclockwise direction;

1[h] wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism; and

1[i] wherein the clockwise lock mechanism comprises a shaft lock portion attached to the first driveshaft and a blade lock portion attached to the clockwise rotor blade, the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion.

2. The apparatus of claim 1 wherein the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade, the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism.

5. The apparatus of claim 1 wherein each rotor assembly comprises a leg extending downward from a bottom portion of the rotor assembly to support the apparatus on a ground surface.

2. Claim Construction

The undersigned has construed the following term from claim 1 as follows:

TERM	CLAIM(S)	CLAIM CONSTRUCTION
"the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion"	1	Plain and ordinary meaning

Order No. 15 at 21-23 (June 21, 2019).

[redacted]

a) The Claimed "Lock Mechanism"

DJI contends that there is a dispute regarding the interpretation of the term "lock mechanism," which "the Chief ALJ must resolve . . . in order to consistently apply the claims to both the accused products and the asserted prior art." RIB at 78. According to DJI, the dispute centers on whether the claimed "lock mechanism" can include structures that are not part of the claimed "shaft lock portion" or "blade lock portion." *Id.* DJI's position is that "the claims can include non-claimed structures, even structures that play a role in the locking function." *Id.* DJI claims that Autel, on the other hand, has advanced a "narrow" interpretation of lock mechanism, whereby "any device that uses a component other than the blade lock portion and the shaft lock portion to assist in the locking function" does not infringe. *Id.* at 81.

Contrary to DJI's assertions, Autel agrees that the claimed "lock mechanism" can include additional components. CIB at 89. Autel explicitly states: "Autel has not argued, in this Investigation or in any other proceeding, that the claimed 'lock mechanism' cannot include additional components." CRB at 34.

Based on Autel's representation, there does not appear to be an actual claim construction issue that must be resolved. Nevertheless, the undersigned wants to make clear that the claimed "lock mechanism" is not restricted to only the shaft lock portion and blade lock portion. It can include components or structures other than those specifically recited in the claims. The claim language confirms this interpretation. JX-0002 at cl. 1. The claim uses the word "comprises," which is open-ended and inclusive language. *See, e.g., Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) ("'Comprising' is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within

[redacted]

the scope of the claim."). The specification also supports this interpretation, as it does not preclude other components from performing the locking function. *See generally* JX-0002.

B. Infringement

1. Mavic Pro

Autel asserts that the Mavic Pro, Mavic Pro Platinum, Mavic Pro 2, and Mavic Pro Zoom infringe claims 1 and 2. Autel also asserts that: "For purposes of infringement, the Mavic Pro is representative of the Mavic Pro Platinum, Mavic 2 Pro, and the Mavic 2 Zoom." CIB at 84. DJI does not dispute that the Mavic Pro is representative of the other Mavic products and, in fact, relies on the Mavic Pro as representative in its own briefing. RIB at 77 n.6.

a) Claim 1

DJI does not dispute that the Mavic Pro meets limitations 1[b], 1[c], and 1[f]. RIB at xii. DJI did not address the 1[a] or 1[d] limitations in its briefs, and has therefore waived any arguments that these limitations are not met. *See* RIB at 80-86; RRB at 23-25. DJI also did not address whether the Mavic Pro infringes limitations 1[e], 1[g], 1[h], and 1[i] under its purported construction of the claimed "lock mechanism," which is the construction adopted hereinabove (and agreed-to by Autel). *Id.* DJI has therefore waived any such arguments.

i. Limitation 1[a]

Limitation 1[a] is the preamble of claim 1. Neither Autel nor DJI contends that the preamble is limiting. *See* CIB at 85; RIB at 80-86. Thus, it is not necessary to address whether the Mavic Pro discloses this limitation.[14]

[14] It is well established law that the preamble generally does not limit the claims. *Georgetown Rail Equipment Co. v. Holland L.P.*, 867 F.3d 1229, 1236 (Fed. Cir. 2017)

[redacted]

ii. Limitation 1[d]

Claim 1 includes the limitation of "a rotor assembly attached to an outside end of each arm." JX-0002 at cl. 1[d]. Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that a motor and a propeller (*i.e.*, rotor) are installed at the end of each arm of the Mavic Pro. CX-0001C at Q/A 172; CDX-0001C.0042; CX-0107.8. Each of the motor and propeller pairs comprises a rotor assembly. *Id.* The undersigned therefore finds that the Mavic Pro meets this limitation.

iii. Limitation 1[e]

Claim 1 includes the limitation of "each rotor assembly comprising a rotor blade releasably attached to a driveshaft by a lock mechanism, and a drive rotating the driveshaft." JX-0002 at cl. 1[e]. Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Mavic Pro's propellers can be attached or detached from the driveshaft of the motors on the end of each arm. CX-0001C at Q/A 173. The mechanism by which the propellers are attached and/or detached secures the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. As Dr. Reinholtz explained, "the Mavic Pro's propellers have a small hole that fits over the drive shaft. The propeller is mounted to the motor via shaft lock portion that is fixedly attached to the drive shaft." *Id.* This mechanism of the Mavic Pro's rotor assemblies is the claimed "locking mechanism." CDX-0001C.0043. In fact, DJI's own user manual describes this mechanism as a "lock." CX-0107.27.

[redacted]

Attaching and Detaching the Propellers

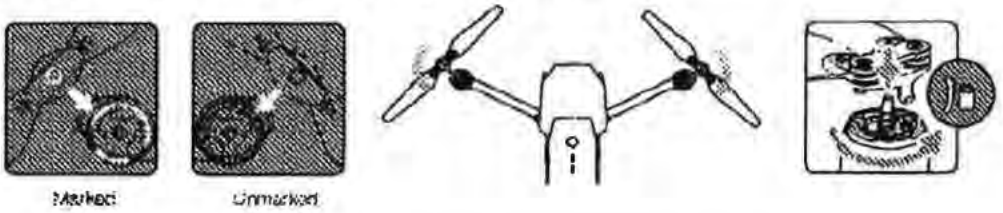
Use only DJI approved propellers with your Mavic Pro. White ring and unmarked propellers indicate where they should be attached and in which direction whey should spin

Aircraft

Propellers	White Ring	Unmarked
Figure		
Attach On	Motors with white marks	Motors without white marks
Legends	Lock : Turn the propellers in the indicated direction to mount and tighten	

Attaching the Propellers

Attach the white ringed propellers to the mounting base with white marks. Press the propeller down onto the mounting plate and rotate in the lock direction until it is secured. Attach the other propellers to the mounting bases without marks. Unfold all the propellers blades



Marked Unmarked

Detaching the Propellers

Press the propellers down into the motor mount and rotate in the unlock direction

Id. The undersigned therefore finds that the Mavic Pro meets this limitation.

iv. Limitation 1[g]

Claim 1 includes the limitation "wherein a clockwise rotor blade is releasably attached to the first driveshaft by engagement in a clockwise lock mechanism and generates a vertical lift force when rotated in the clockwise direction, and a counterclockwise rotor blade is releasably attached to the second driveshaft by engagement in a counterclockwise lock mechanism and generates a vertical lift force when rotated in the counterclockwise direction." JX-0002 at cl. 1[g]. Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Mavic Pro's clockwise propellers generate lift when rotated clockwise and are attached to the corresponding motors via a lock mechanism comprised of lugs

[redacted]

and notches that engage with one another to secure the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. CX-0001C at Q/A 175; CDX-0001C.0045; CX-0221 (showing the propeller blade detached from the motor); CX-0223 (showing the propeller blade attached to the motor); CPX-0005. Like the clockwise propellers, the Mavic Pro's counterclockwise propellers (with white markings) generate lift when rotated counterclockwise and are attached to the corresponding motors by a lock mechanism of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts so as to prevent them from coming loose during flight. CX-0001C at Q/A 176; CDX-0001.0046; CX-0224 (showing the propeller blade detached from the motor); CX-0226 (showing the propeller blade attached to the motor); CPX-0005. The undersigned therefore finds that the Mavic Pro meets this limitation.

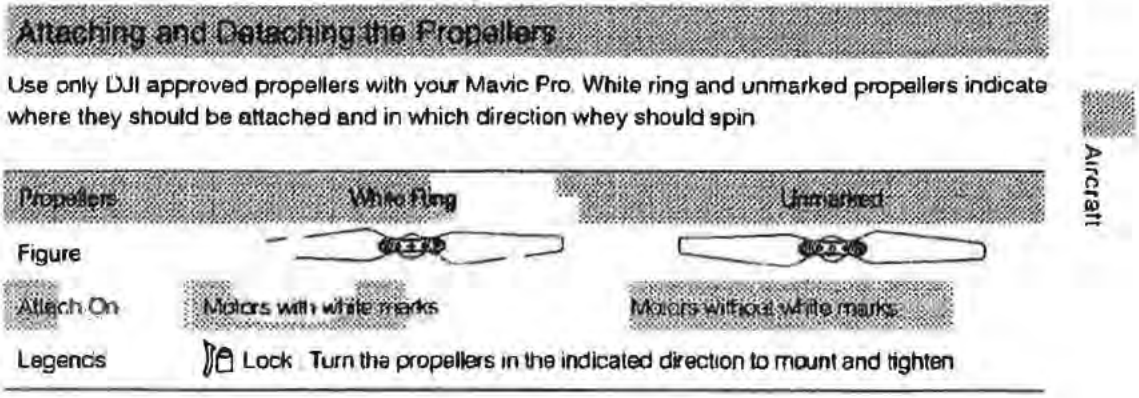
v. Limitation 1[h]

Claim 1 includes the limitation "wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism; and . . . ." JX-0002 at cl. 1[h]. Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Mavic Pro's clockwise lock mechanism is configured so that the clockwise propeller can only be attached to the clockwise motor. CX-0001C at Q/A 177; CDX-0001C.0047; CX-0107.27; CPX-0005. Similarly, the counterclockwise lock mechanism is configured so that the counterclockwise propeller can only be attached to the counterclockwise motor (but not the clockwise motor). *Id.* As Dr. Reinholtz explained: "[T]he propeller with the

[redacted]

white marks can only be engaged with the motor with white marks, and vice-versa." CX-0001C at Q/A 177. The Mavic Pro user manual confirms this:



CX-0107.27. The undersigned therefore finds that the Mavic Pro meets this limitation.

vi. Limitation 1[i]

Claim 1 includes the limitation "wherein the clockwise lock mechanism comprises a shaft lock portion attached to the first driveshaft and a blade lock portion attached to the clockwise rotor blade, the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion." JX-0002 at cl. 1[i]. Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Mavic Pro's clockwise propellers have three structures that extend from the center of the propeller and then bend at roughly right angles. CX-0001C at Q/A 178; CX-0221; CDX-0001C.0048. These structures are the claimed "lugs" that are configured to be inserted into and engage with corresponding notches on a plate of the Mavic Pro's clockwise motor. CX-0001C at Q/A 178.

[redacted]

CDX.0001C.0048 (showing annotated version of a photo of the Mavic Pro marked as CX-0221); *see also* CX-0221. The lugs and notches of the Mavic Pro's locking mechanism can also be seen in the schematic of the Mavic Pro's rotor assembly. CX-0130. An annotated excerpt of the schematic is set forth below:

CDX-0001C.0049 (showing the lock mechanism from two angles); CX-0131C (annotated schematic from DJI's corporate witness' deposition). The undersigned therefore finds that the Mavic Pro meets this limitation.

[redacted]

vii. Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the Mavic Pro series infringes claim 1.

b) Claim 2

Claim 2 is directed to "[t]he apparatus of claim 1 wherein the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade, the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism."[15] JX-0002 at cl. 2. Autel argues that the Mavic Pro infringes the additional limitations of claim 2. CIB at 92-93. DJI did not address limitation 2[a] and has therefore waived any arguments that this limitation is not met. *See* RIB at 80-90; RRB at 23-26. DJI does, however, dispute that the Mavic Pro meets limitation 2[b]. RIB at 86-90; RRB at 26.

i. Limitation 2[a]

Claim 2 includes the limitation of "wherein the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade." JX-0002 at cl. 2[a]. Autel asserts that this limitation is met. CIB at 91-92. DJI has presented no evidence to the contrary.

The evidence shows that the Mavic Pro's counterclockwise propellers have three structures that extend from the center of the propeller and then bend at roughly right angles. CX-0001C at Q/A 180. These three structures are the claimed lugs. *Id.* As Dr. Reinholtz explained: "These lugs

[15] For purposes of this section, the "wherein the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade" limitation from claim 2 will be referred to as 2[a] and the "the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism" limitation will be 2[b].

[redacted]

are configured to be inserted into and engage corresponding notches on a plate on the counterclockwise motor." *Id.*; *see also* CDX-0001C.50; CX-0224. The undersigned therefore finds that the Mavic Pro meets this limitation.

ii. Limitation 2[b]

Claim 2 includes the limitation of "the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism." JX-0002 at cl. 2[b]. Autel asserts that this limitation is met. CIB at 92. DJI disagrees. RIB at 86-90.

According to Autel, the lugs on the blade lock portion on the clockwise propeller are configured differently that the lugs on the blade lock portion on the counterclockwise propeller. CIB at 92. Autel explains: [T]he clockwise lock mechanism has three small bumps located near the center hole (or center ring) on the propeller portion on the lock mechanism. In contrast, the counterclockwise lock mechanism has slightly larger bumps extending from and integral with each of the three lugs on the propeller portion of the lock mechanism. *Id.* (citing CX-0001C at Q/A 181; CDX-0001C.0051). Autel therefore contends that the lugs on the counterclockwise lock mechanism have a different configuration because "they include these integral bumps." *Id.*

As discussed above, Autel claims that the "bumps" are the crucial difference between the clockwise and counterclockwise lug configurations. DJI disputes this assertion, stating: "But those bumps do not engage with the claimed notches and are not involved in the locking function." RIB at 87-88 (citing RX-0174C at Q/A 63). Because the bumps do not engage with any notches on the shaft lock portion, DJI insists that they cannot be the claimed lugs. *Id.* at 89. Thus, DJI asserts that the clockwise and counterclockwise lugs on the Mavic Pro have the same configuration and as a

[redacted]

result, cannot infringe claim 2. RIB at 86-87 (arguing that the lugs identified by Dr. Reinholtz are the same for both types of rotors).

Claim 2 requires that the clockwise lug configuration differs from the counterclockwise lug configuration. JX-0002 at cl. 2[b] ("[T]he blade lock portion comprising lugs with a configuration *that is different* than a configuration of the lugs on the blade lock portion of the clockwise mechanism." (emphasis added).) Autel's position is that the lugs on the clockwise blades are configured differently than those on the counterclockwise blade because one (and not the other) has a "bump" on the inner surface. RRB at 36. To be clear, Autel is not arguing that the "bumps" themselves are the claimed lugs; rather, Autel asserts that "[t]he presence (or lack thereof) of the extra protrusion or 'bump' on one surface of the claimed lug" constitutes the required difference. The undersigned is not persuaded by this argument.

First, a review of the blades on the clockwise and counterclockwise mechanisms clearly shows that the configuration of the lugs is identical, including the position, the size, and the bent shape of the lugs. RX-0174C at Q/A 61; RDX-0006C.0007; CX-0228; CX-0229. It is therefore the *bumps*, not the lugs, that are configured differently.

Second, Autel appears to ignore the following claim language from claim 1, from which claim 2 depends – "wherein the clockwise lock mechanism comprises a shaft lock portion attached to the first driveshaft and a blade lock portion attached to the clockwise rotor blade, *the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion.*" JX-0002 at cl. 1[i]. If, as Autel claims, the "bumps" on the counterclockwise lock mechanism are integral with the lugs and thus a part of the lugs, then they too must engage with the corresponding notches. However, the evidence shows that they do not engage with the notches nor are they designed to. RX-0174C at Q/As 61-63; RDX-0006C.0007; CX-0228 (photo of the lugs on the

[redacted]

clockwise lock mechanism); CX-0229 (photo of the lugs on the counterclockwise lock mechanism). In fact, Dr. Reinholtz admitted on cross-examination that the bumps are there to prevent mis-installation, not to engage with the notches. Reinholtz, Tr. at 178:1-16. Dr. Reinholtz also admitted that he did not know whether the bumps engage with the notches or not. *Id.* at 178:17-21.

For these reasons, the undersigned finds that the Mavic Pro does not meet limitation 2[b].

iii. Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the Mavic Pro series does not infringe claim 2.

2. Spark/Mavic Air

Autel asserts that the Spark infringes claims 1 and 2, and the Mavic Air infringes claims 1, 2, and 5. Autel submits that: "For purposes of infringement of claims 1 and 2, the Spark is representative of the Spark and Mavic Air." CIB at 93. Autel further explains that "the analysis with respect to claim 5 applies only to the Mavic Air." *Id.* DJI does not address whether the Spark and is representative of the Mavic Air. *See* RIB at 76-102; RRB at 21-31.

a) Claim 1

DJI does not dispute that the Spark/Mavic Air meets limitations 1[b], 1[c], and 1[f]. RIB at xii. DJI did not address the limitations of 1[a] or 1[d] in its briefs, and has therefore waived any arguments that these limitations are not met. *See* RIB at 80-86; RRB at 23-25. DJI also did not address whether the Spark/Mavic Air infringes limitations 1[e], 1[g], 1[h], and 1[i] under its purported construction of the claimed "lock mechanism," which is the construction adopted hereinabove (and agreed-to by Autel). *Id.* DJI has therefore waived any such arguments.

[redacted]

i. Limitation 1[a]

Limitation 1[a] is the preamble of claim 1. Neither party has asserted that the preamble is limiting. *See* CIB at 93-94; RIB at 80-86. Thus, it is not necessary to address whether the Spark/Mavic Air discloses this limitation.

ii. Limitation 1[d]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that a motor and a propeller are installed at the end of each arm of the Spark/Mavic Air. CX-0001C at Q/A 189; CDX-0001C.0055 (identifying the arms and rotor assemblies); CX-0109.7; CPX-0012 (Mavic Air); CPX-0015 (Spark). Each of the motor and propeller pairs comprises a rotor assembly. *Id.* The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

iii. Limitation 1[e]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Spark/Mavic Air's propellers can be attached or detached from the driveshaft of the motors on the end of each arm. CX-0001C at Q/A 190; CPX-0012; CPX-0015; CDX-0001C.0056. The mechanism by which the propellers are attached and/or detached secures the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. This mechanism is the claimed "locking mechanism." CX-0001C at Q/A 190. DJI's user manual for the Spark also describes this mechanism as a "lock." CX-0109.26.

[redacted]

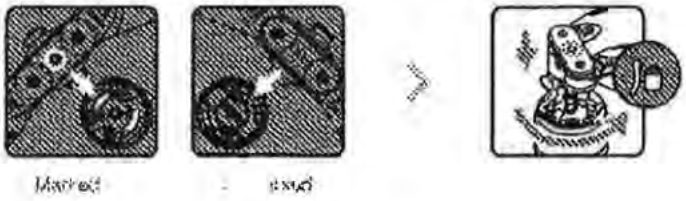
Attaching and Detaching the Propellers

Only use DJI approved propellers with your Spark. White ringed and unmarked propellers indicate where they should be attached and in which direction whey should spin

Propellers	White Ring	Unmarked
Figure		
Attach On	Motors with white marks	Motors without white marks
Legend	Lock : Turn the propellers in the indicated direction to mount and tighten.	

Attaching the Propellers

Attach the propellers with the white rings to the mounting base with white marks. Press each propeller down onto the mounting plate and rotate in the lock direction until it is secured. Attach unmarked propellers to the mounting bases without marks. Unfold all the propeller blades.



Detaching the Propellers

Press the propellers down into the motor mount and rotate them in the unlock direction.

Id. The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

iv. Limitation 1[g]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Spark/Mavic Air's clockwise propellers generate lift when rotated clockwise and are attached to the corresponding motors via a lock mechanism comprised of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. CX-0001C at Q/A 192; CDX-0001C.0058; CX-0312 (showing the clockwise propeller blade detached from the motor); CX-0314 (showing the clockwise propeller blade attached to the motor); CPX-0012; CPX-0015.

[redacted]

Like the clockwise propellers, the Spark/Mavic Air's counterclockwise propellers (with white markings) are attached to the corresponding motors by a lock mechanism of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts so as to prevent them from coming loose during flight. CX-0001C at Q/A 193; CDX-0001C.0058; CX-0315 (showing the counterclockwise propeller detached from the motor); CX-0317 (showing the counterclockwise propeller attached to the motor); CPX-0012; CPX-0015. The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

v. Limitation 1[b]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Spark/Mavic Air's clockwise lock mechanism is configured so that the clockwise propeller can only be attached to the clockwise motor. CX-0001C at Q/A 194; CDX-0001C.0059; CX-0109.26; CPX-0012; CPX-0015. Similarly, the counterclockwise lock mechanism is configured so that the counterclockwise propeller can only be attached to the counterclockwise motor (but not the clockwise motor). *Id.* The Spark user manual confirms this:

Attaching and Detaching the Propellers

Only use DJI approved propellers with your Spark. White ringed and unmarked propellers indicate where they should be attached and in which direction whey should spin.

Propellers	White Ring	Unmarked
Figure		
Attach On	Motors with white marks	Motors without white marks
Legend	Lock : Turn the propellers in the indicated direction to mount and tighten	

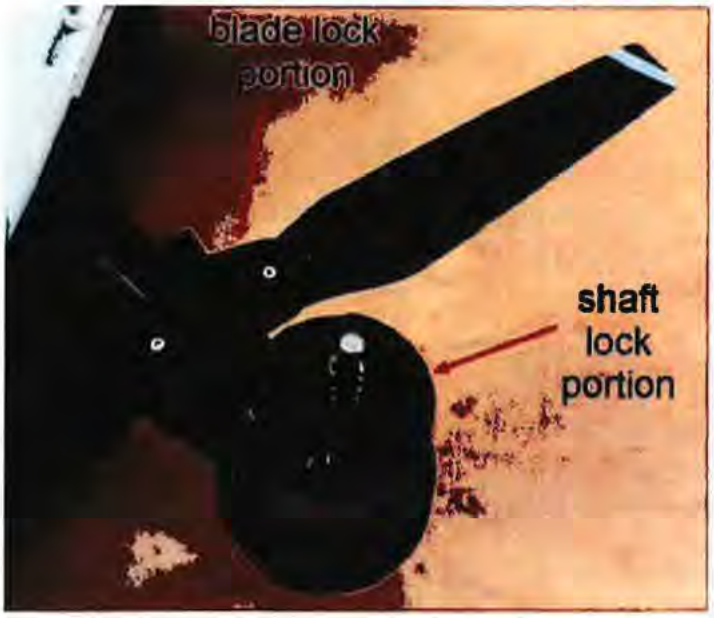
CX-0109.26. The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

[redacted]

vi. Limitation 1[i]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Spark/Mavic Air's clockwise propellers have two structures that extend from the center of the propeller and then bend at roughly right angles. CX-0001C at Q/A 195; CX-0312; CDX-0001C.0060. These structures are the claimed "lugs" that are configured to be inserted into and engage with corresponding notches on a plate of the Mavic Pro's clockwise motor. CX-0001C at Q/A 195. A picture of a Spark product is set forth below. *See* CX-0312. It has been annotated to identify the blade lock portion, the shaft lock portion, the lugs, and the notches.



[redacted]

CDX-0001C.60; CX-0312. The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

vii. Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the Spark and Mavic Air infringe claim 1.

b) Claim 2

Autel argues that the Spark/Mavic Air infringes the additional limitations of claim 2. CIB at 98-99. DJI did not address limitation 2[a] and has therefore waived any arguments that this limitation is not met. *See* RIB at 80-90; RRB at 23-26. DJI does, however, dispute that the Spark/Mavic meets limitation 2[b]. RIB at 86-90; RRB at 26.

i. Limitation 2[a]

Autel asserts that this limitation is met. CIB at 98. DJI has presented no evidence to the contrary.

The evidence shows that the Spark/Mavic Air's counterclockwise propellers (with white markings) have two structures that extend from the center of the propeller and then bend at roughly

[redacted]

right angles. CX-0001C at Q/A 196. These three structures are the claimed lugs. *Id.* As Dr. Reinholtz explained: "These lugs are configured to be inserted into and engage corresponding notches on a plate on the counterclockwise motor." *Id.*; *see also* CDX-0001C.0061; CX-0315. The undersigned therefore finds that the Spark/Mavic Air meets this limitation.

ii. Limitation 2[b]

Autel asserts that this limitation is met. CIB at 98-99. DJI disagrees. RIB at 86-90. The parties' arguments mirror those made with respect to the Mavic Pro. *See* CIB at 98-99; CRB at 35-39; RIB at 86-90; RRB at 26. Thus, for the reasons discussed in Section VI.B.1.b.ii above, the undersigned finds that the Spark/Mavic Air does not meet limitation 2[b]. *See* RX-0174C at Q/As 86-89, 105-108; CX-0316 (photo of the lugs on the clockwise lock mechanism); CX-0317 (photo of the lugs on the counterclockwise lock mechanism); RPX-0028 (Spark); RPX-0027 (Mavic Air); RDX-0006C.0013, .0016; RX-0274 (photo of the lugs on the Mavic Air).

iii. Conclusion

Accordingly, for the reasons discussed above (*see also* Section VI.B.1.b), the undersigned finds that the Spark and Mavic Air do not infringe claim 2.

c) Claim 5

Claim 5 is directed to "[t]he apparatus of claim 1 wherein [5[a]] each rotor assembly comprises a leg extending downward from a bottom portion of the rotor assembly to support the apparatus on a ground surface." JX-0002 at cl. 5. Autel asserts that the Mavic Air meets limitation 5[a] because "[t]he Mavic Air's rotor assemblies installed at the end of each of its four arms have legs extending from them that attach to the ground, such that the aircraft can rest on the ground wherein the legs support the weight of the aircraft in that position." CIB at 99. DJI disputes that the Mavic Air infringes claim 5. RIB at 101. According to DJI, the Mavic Air does not have rotor

[redacted]

assemblies where "each rotor assembly comprises a leg extending downward from a bottom portion of the rotor assembly." *Id.* To the extent the Mavic Air products have legs at all, DJI contends that they are screwed to and extend from the arms of the UAV and are not part of the rotor assembly. *Id.*

Claim 5 requires that the legs extend down from a bottom portion of the rotor assembly. The Mavic Air's "legs" extend from the *arms*, rather than the rotor assemblies. RX-0174C at Q/As 111, 113; RDX-0006C.0017; RX-0264–RX-0267. Autel appears to rely on Figure 11 of the patent to support its argument that the leg is "part of – or installed at – the end of the arm of the UAV." CIB at 100. However, nothing in the specification supports this assertion. To the contrary, the specification, describes the legs as extending from the rotor assembly. *See, e.g.*, JX-0002 at 5:1-4 ("FIGS. 11 and 12 show one of the legs in the operating position, where the leg 31 slopes from the rotor assembly 7 downward and away from the body at the opposite inner end of the arm 5."), 5:15-16. Figure 12, which depicts a side view of the leg, confirms that leg 31 extends from the bottom portion of rotor assembly 7. *Id.* at Fig. 12, 2:63-65. A physical inspection also confirms that the alleged "legs" extend from the arms, not the rotor assembly. CPX-0012.

The undersigned therefore finds that the Mavic Air does not infringe claim 5.

3. Phantom 4 Pro

Autel asserts that the Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK infringe claims 1 and 2. Autel also asserts that: "For purposes of infringement, the Phantom 4 Pro is representative of the Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK." CIB at 100. DJI does not dispute that the Phantom 4 Pro is representative of the entire Phantom 4 series. RIB at 77 n.6.

[redacted]

a) Claim 1

DJI does not dispute that the Phantom 4 Pro meets the limitations of claim 1[b], 1[c], and 1[f]. RIB at xii. DJI did not address limitations 1[a] or 1[d] in its briefs, and has therefore waived any arguments that these limitations are not met. *See* RIB at 80-86; RRB at 23-25. DJI also did not address whether the Phantom 4 Pro infringes limitations 1[e], 1[g], 1[h], and 1[i] under its purported construction of the claimed "lock mechanism," which is the construction adopted hereinabove (and agreed-to by Autel). DJI has therefore waived any such arguments.

i. Limitation 1[a]

Limitation 1[a] is the preamble of claim 1. Neither Autel nor DJI contends that the preamble is limiting. *See* CIB at 101; RIB at 80-86. Thus, it is not necessary to address whether the Phantom 4 Pro discloses this limitation.

ii. Limitation 1[d]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that installed at the end of each arm of the Phantom 4 Pro is a motor and a propeller (*i.e.*, rotor). CX-0001C at Q/A 205; CDX-0001C.0065; CX-0111.1. Each of the motor and propeller pairs comprises a rotor assembly. *Id.* The undersigned therefore finds that the Phantom 4 Pro meets this limitation.

iii. Limitation 1[e]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Phantom 4 Pro's propellers can be attached or detached from the driveshaft of the motors on the end of each arm. CX-0001C at Q/A 206; CPX-0021; CDX-0001C.0066; CX-0355; CX-0356. The mechanism by which the propellers are attached and/or detached secures the propellers to the motors and driveshafts, thereby preventing them from

[redacted]

coming loose during flight. This mechanism is the claimed "locking mechanism." CX-0001C at Q/A 206. DJI's user manual for the Phantom 4 Pro also describes this mechanism as a "lock." CX-0111.7.

2. Attaching the Propellers

Mount the propellers with black propeller rings to the motors with black dots. Mount the propellers with silver propeller rings to the motors without black dots. Press the propeller down onto the mounting plate and rotate in the lock direction until it is secured.

Id. The undersigned therefore finds that the Phantom 4 Pro meets this limitation.

iv. Limitation 1[g]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Phantom 4 Pro's clockwise propellers are attached to the corresponding motors via a lock mechanism comprised of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. CX-0001C at Q/A 208; CDX-0001C.0068; CX-0359 (photo of the black-ringer clockwise propeller); CPX-0021. More specifically, "the black-ringed propeller generates a vertical lift force when rotated clockwise." CX-0001C at Q/A 208; *see also* CX-0111.30. Like the clockwise propellers, the Phantom 4 Pro's counterclockwise propellers are attached to the corresponding motors by a lock mechanism of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts so as to prevent them from

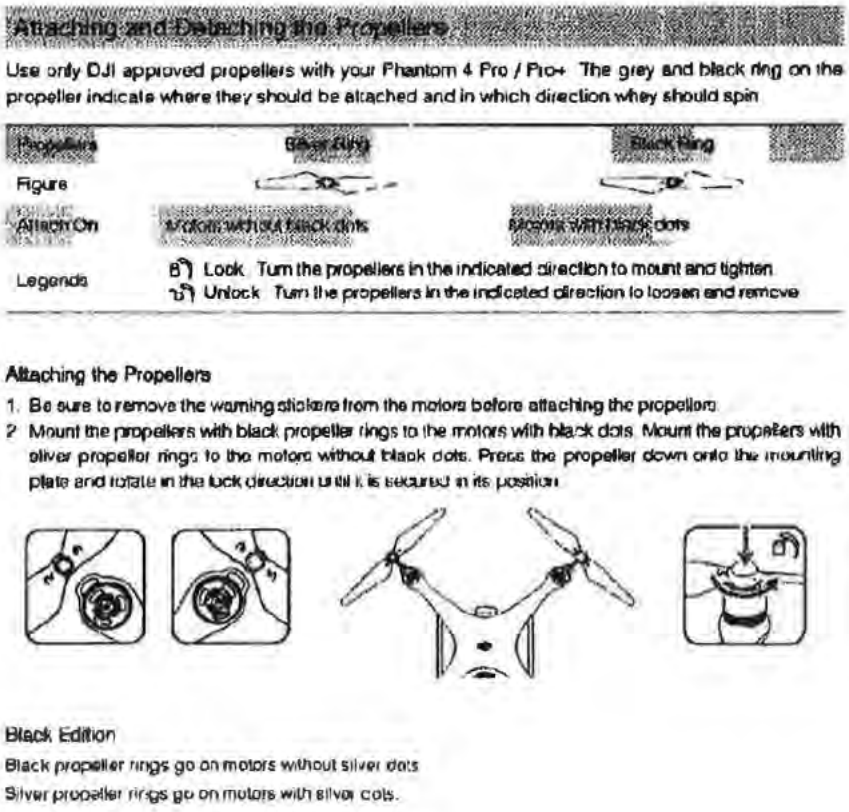
[redacted]

coming loose during flight. CX-0001C at Q/A 209; CDX-0001C.0068; CX-0360 (photo of the silver-ringed counterclockwise propeller); CPX-0021. The silver-ringed propeller generates a vertical lift when rotated counterclockwise. CX-0001C at Q/A 209; *see also* CX-0111.30. The undersigned therefore finds that the Phantom 4 Pro meets this limitation.

v. Limitation 1[h]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary.

The evidence shows that the Phantom 4 Pro's clockwise lock mechanism is configured to engage with the clockwise propeller, but not the counterclockwise motor, and vice versa. CX-0001C at Q/A 210; CDX-0001C.0069; CX-0111.30; CPX-0021. Similarly, the counterclockwise lock mechanism is configured so that the counterclockwise propeller can only be attached to the counterclockwise motor (but not the clockwise motor). *Id.* The Phantom 4 Pro user manual confirms this:



Attaching and Detaching the Propellers

Use only DJI approved propellers with your Phantom 4 Pro / Pro+. The grey and black ring on the propeller indicate where they should be attached and in which direction whey should spin.

Propellers	Silver Ring	Black Ring
Figure		
Attach On	Motors without black dots	Motors with black dots
Legends	Lock: Turn the propellers in the indicated direction to mount and tighten Unlock: Turn the propellers in the indicated direction to loosen and remove	

Attaching the Propellers

1. Be sure to remove the warning stickers from the motors before attaching the propellers.
2. Mount the propellers with black propeller rings to the motors with black dots. Mount the propellers with silver propeller rings to the motors without black dots. Press the propeller down onto the mounting plate and rotate in the lock direction until it is secured in its position.

Black Edition

Black propeller rings go on motors without silver dots.

Silver propeller rings go on motors with silver dots.

[redacted]

CX-0111.30. The undersigned therefore finds that the Phantom 4 Pro meets this limitation.

vi. Limitation 1[i]

Autel asserts that the Phantom 4 Pro meets this limitation, both literally and under the doctrine of equivalents. CIB at 104-106.

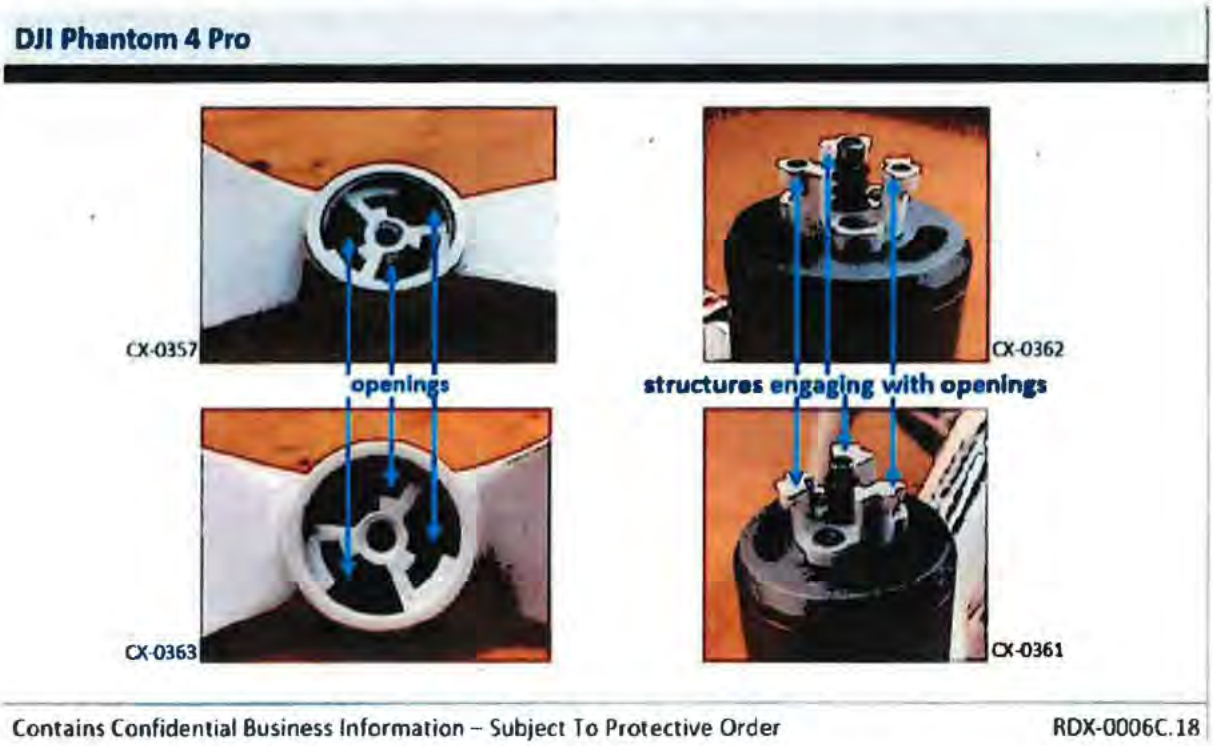
a. Literal Infringement

According to Autel, the "Phantom 4 Pro's propellers attach to their corresponding motors through the interaction of the elements on the propeller (blade lock portion) and the motor (the shaft lock portion), which engage to secure the propeller in place. CIB at 104 (citing CX-0111.30; CPX-0021; CX-0001C at Q/As 211-212; CDX-0001C.70). Autel contends that the "Phantom 4 Pro's clockwise propellers have protruding structures within the center cap of the propeller (blade lock portion) that comprise the claimed 'lugs.'" *Id.* Autel asserts that "these lugs are configured to engage corresponding cuts or angles (notches) found on the structures on the Phantom 4 Pro's clockwise motor (the shaft lock portion)." *Id.* at 105. Autel also contends that the Phantom 4 Pro's clockwise propellers have a second set of protruding structures near the center of the propeller that are configured to engage a second set of corresponding cuts or angles found on the structure of the clockwise motor. *Id.*

DJI asserts that the "Phantom 4 . . . products do not satisfy the claim 1 limitation that the lugs appear on the blade lock portion" because "any structure that could reasonably be accused of being a lug is on the shaft lock portion." RIB at 91. DJI objects to Autel's contention that "the structures within the center cap of the propeller are the claimed lugs, and the space between the white structures on the rotor mounting plate are the claimed notches. *Id.* (citing CX-0001C at Q/A 211). DJI insists that "under Autel's interpretation, almost anything could be a lug, and almost anything could be a notch." *Id.*

[redacted]

The language of limitation 1[i] is clear. The notches must be on the shaft lock portion and the lugs must be on the blade lock portion. JX-0002 at cl. 1[i]. The evidence demonstrates that the Phantom 4 Pro takes the opposite approach, with the notches on the blade and the lugs on the shaft lock portion. For example, the rotor mounting plate on the Phantom 4 Pro includes three protruding plastic structures – the "lugs". RX-0174C at Q/A 118; CX-0362. Conversely, the center cap of the propeller has three cut-outs or openings – the "notches". RX-0174C at Q/A 118; CX-0363. The lugs on the rotor mounting plate are inserted into the cut-outs in the center cap of the propeller to engage the two components. RX-0174C at Q/A 118; RDX-0006C.18.



RDX-0006C.18. Notably, in its post-hearing briefing, Autel argues that the Phantom 4 Pro literally infringes "***in a manner that mirrors*** the embodiments" disclosed in the patent. CRB at 40 (emphasis added). Autel then describes the Phantom 4 Pro as having "two sets of lugs on the blade lock portion that engage with corresponding notches on the shaft lock portion." *Id.* Despite Autel's

[redacted]

arguments to the contrary, there can be no dispute that the Phantom 4 Pro's lugs and notches are the opposite of what limitation 1[i] requires.

For these reasons, the undersigned finds that the Phantom 4 Pro does not literally infringe claim 1[i].

b. Doctrine of Equivalents

Autel asserts that the Phantom 4 Pro also meets this limitation under the doctrine of equivalents. CIB at 106. Autel explains that "[t]he lugs and notches in this alternative analysis performs substantially the same function (locking the blades on the shaft) in substantially the same way (rotation of the blades opposite their flight direction to a position where the interaction of the lugs and notches creates a mechanical inferences) to achieve substantially the same result (the rotor blades are secure during flight but can be removed for storage or replacement)." *Id.* (citing CX-0001C at Q/As 221-222; CDX-0001C.73).

DJI argues that the "[doctrine of equivalents] theory is barred due to prosecution history estoppel." RIB at 93. DJI explains that "Autel's amendment added the requirement that the lugs be on the blade lock portion, which clearly excluded structures where the blade portion has notches and the shaft portion has lugs from the scope of the claim." *Id.* In the event Autel can rely on the doctrine of equivalents, DJI asserts that "the blades and rotors of the Phantom 4 series perform the locking function in a substantially different way from the claimed limitation." *Id.* at 95.

In response, Autel contends that prosecution history estoppel should not preclude its doctrine of equivalents argument because "the patentee's amendment . . . did not disclaim the opposite configuration [of claim 1[i]] (DJI calls this the "lugs-on-shaft" configuration) and the claim is not so limited." CRB at 44.

[redacted]

The Federal Circuit has held that "rewriting [] dependent claims into independent form coupled with the cancellation of the original independent claims creates a presumption of prosecution history estoppel." *Honeywell Int'l Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1134 (Fed. Cir. 2004). The Federal Circuit has rejected the argument that prosecution history estoppel should not apply to amendments made "concern[ing] the form of the application and not the subject matter of the invention . . . [such as] rewrit[ing] a dependent claim as an independent one." *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 736 (2002). Instead, a rebuttable presumption will be created that all equivalents of the amended limitation are disclaimed unless the patentee proves "(1) 'the alleged equivalent would have been unforeseeable at the time . . . the narrowing amendment' was made; (2) 'the rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent' at issue; or (3) 'there was "some other reason" suggesting that the patentee could not reasonably have been expected to have described the alleged equivalent.'" *Honeywell*, 370 F.3d at 1140 (Fed. Cir. 2004) (citing *Festo*, 535 U.S. at 741).

The undersigned finds that prosecution history estoppel applies here because amended claim 1 was re-written from dependent to independent form. The Federal Circuit has repeatedly held that the presumption of prosecution history estoppel attaches in this scenario because the patentee is narrowing the scope of their claim for patentability. *Id.* at 1143 ("[C]anceling a broader independent claim and replacing it with a dependent claim rewritten into independent form was a clear surrender of the broader subject matter that presumptively barred application of the doctrine of equivalents.") (internal citations omitted). The evidence shows that the patent examiner rejected Autel's original independent claim 1, but indicated that the claim would be allowable if combined with dependent claims 2-5. JX-0005 at 157-160, 166 ("Claims 2-5 . . . would be allowable if

[redacted]

rewritten in independent form including all of the limitations of the base claim and any intervening claims."). Autel subsequently amended its claims by combining the original independent claim 1 and dependent claim 2 to form the allowable independent claim 1 in the '184 patent. *Id.* at 172. This amendment gives rise to prosecution history estoppel because it narrowed the original independent claim with the limitation "the shaft lock portion defining *notches* configured to engage corresponding *lugs* on the blade lock portion." *Id.*

The undersigned also finds that Autel has failed to rebut the presumption of prosecution history estoppel. Autel's only argument against the application of prosecution history estoppel is as follows: "[T]he amendment at issue was not directed to . . . dictating a particular relationship between the 'lugs' and 'notches.'" CRB at 43. The undersigned finds this argument not sufficient to prove that "the rationale underlying the narrowing amendment bore no more than a tangential relation to the equivalent at issue." *Festo*, 535 U.S. at 741. The prosecution history shows that the examiner found the prior art to disclose "a shaft lock portion attached to the first driveshaft and a first blade lock portion attached to the clockwise rotor blade." JX-0005 at 158. In order to overcome this prior art, the patentee amended the claim to disclose a specific configuration for the shaft and blade lock portions–lugs on the blade and notches on the shaft. *Id.* at 172. Nothing in the prosecution history explains why the patentee chose to limit the claim to such a specific configuration of the lugs and notches.[16] It is therefore unclear whether the reason for the amendment is only tangentially related to the accused equivalent.[17]

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[16] While the prosecution history does not explain the specific reason for the patentee's lug-on-blade disclosure, the undersigned notes that the patent examiner relied on a propeller that was prior art to the '184 patent in the denial of the original independent claim. JX-0005.0157-158. This piece of prior art disclosed a locking mechanism that included a protruding shaft on the rotor lock mechanism that engaged with a grooved notch on the blade lock mechanism – a similar configuration to the Phantom 4 Pro. Without any contrary evidence, one can conclude that the patentee narrowed its claim to overcome the prior art cited by the examiner.

[17] The undersigned notes that Autel did not argue that the alleged equivalent would have been unforeseeable at the time of the amendment. CIB at 104-106; CRB at 43-44. Autel also failed to assert "some other reason" the patentee would not be expected to describe the equivalent. *Id.* Autel has therefore waived any such arguments.

[redacted]

The undersigned therefore finds that Autel is precluded from relying on the doctrine of equivalents for limitation 1[i].[18]

vii. Conclusion

Accordingly, the undersigned finds that the Phantom 4 series does not infringe claim 1.

b) Claims 2 and 5

Because the undersigned has found that independent claim 1 is not infringed, it is not necessary to determine whether dependent claims 2 and 5 are infringed.

4. Inspire

Autel asserts that the Inspire 1 and Inspire 2 infringe claims 1, 2, and 5. Autel submits that: "For purposes of infringement, the Inspire 2 is representative of the Inspire 1 and Inspire 2." CIB at 108. DJI does not dispute that the Inspire 2 is representative of the entire Inspire series, which includes Inspire 1. RIB at 77 n.6 (relying on the Inspire 2 as being representative in its own briefing).

a) Claim 1

DJI does not dispute that the Inspire 2 meets the limitations of claim 1[b], 1[c], and 1[f]. RIB at xii. DJI did not address limitation 1[a] in its briefs, and has therefore waived any arguments that this limitation is not met. *See* RIB at 80-102; RRB at 23-31. DJI also did not address whether

[18] Assuming *arguendo* that Autel is not precluded from relying on the doctrine of equivalents, the undersigned finds that Autel has failed to prove that the Phantom 4 Pro infringes this limitation under the doctrine. A patentee alleging infringement under the doctrine of equivalents must submit particularized evidence of equivalence and must explain specifically why the difference between what the claims literally require and what the accused products actually do is "insubstantial." *Am. Calcar*, 651 F.3d at 1338. Autel's entire doctrine of equivalents argument is based on one sentence in its post-hearing brief. *See* CIB at 106 ("The lugs and notches in this alternative analysis perform substantially the same function . . . in substantially the same way . . . to achieve substantially the same result."). This falls far short of "particularized evidence." In addition, while Autel does cite to one question from Dr. Reinholtz's witness statement, it does not include any substantive discussion of his testimony in its briefing. A review of Dr. Reinholtz's testimony shows that it is conclusory in nature and does not qualify as "*particularized testimony* of a person of ordinary skill in the art." *AquaTex Indus.*, 479 F.3d at 1329 (emphasis added).

[redacted]

the Inspire 2 infringes limitations 1[e], 1[g], and 1[h] under its purported construction of the claimed "lock mechanism," which is the construction adopted hereinabove (and agreed-to by Autel). DJI has therefore waived any such arguments.

i. Limitation 1[a]

Limitation 1[a] is the preamble of claim 1. Neither Autel nor DJI contends that the preamble is limiting. *See* CIB at 108; RIB at 80-86. Thus, it is not necessary to address whether the Inspire 2 discloses this limitation.

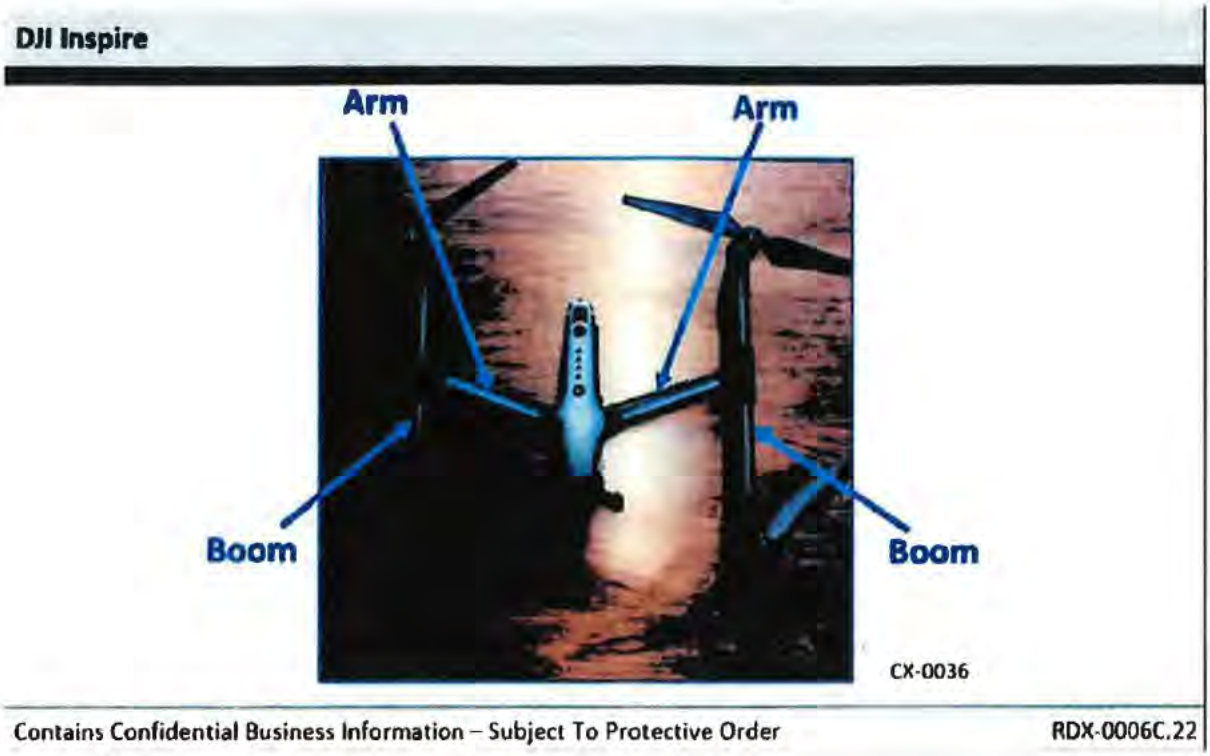
ii. Limitation 1[d]

Autel asserts that "[t]he Inspire 2 contains four arms, each of which extends laterally from the body of the aircraft." CIB at 109. Autel claims that "the purported 'arm' and 'boom' on each side of the Inspire forms a structure that serves as an arm assembly, and DJI's own documentation refers to this structure as an arm assembly." *Id.*

DJI argues that "[t]he rotor assemblies in the DJI Inspire series products are not attached to an outside end of 'each arm' that extends laterally from the body." RIB at 98. According to DJI, "at best, the rotor assemblies in the DJI Inspire series products are attached to *booms* that are attached to two arms." *Id.* (emphasis in original).

Limitation 1[d] requires that the rotor assembly be "attached to an outside end of each arm." JX-0002 at cl. 1. As shown below, the rotor assemblies are not attached to "an outside end" of an arm that extends laterally from the body of the UAV:

[redacted]



RDX-0006.22; *see also* RX-0174C at Q/A 147; CX-0036. Rather, the rotor assemblies are attached to booms that extend from the arms. *Id.* This is confirmed by a physical inspection of the Inspire 2. *See* CPX-0026.

Autel argues that the "arm" and "boom" on each side of the Inspire 2 form a structure that serves as an arm assembly. CIB at 109. Alternatively, Autel contends that the "arms" be considered part of the large central structure that makes up the UAV body. *Id.* at 110. Neither of these arguments are persuasive. First, as DJI correctly notes in its briefing, "the claim requires arms, not 'arm assemblies'." RRB at 28. There is nothing in the specification to support Autel's "arm assembly" argument.[19] Second, Autel cites to no evidence (beyond attorney argument) to support its alternative infringement argument – that the body and the arms together make up the claimed body. In fact, Autel's own expert appears to disagree with this argument. *See* Reinholtz, Tr. at

[19] The undersigned also notes that, at trial, Dr. Reinholtz referred to the Inspire as having "four arms," not two "arm assemblies." Reinholtz, Tr. at 185:7-9.

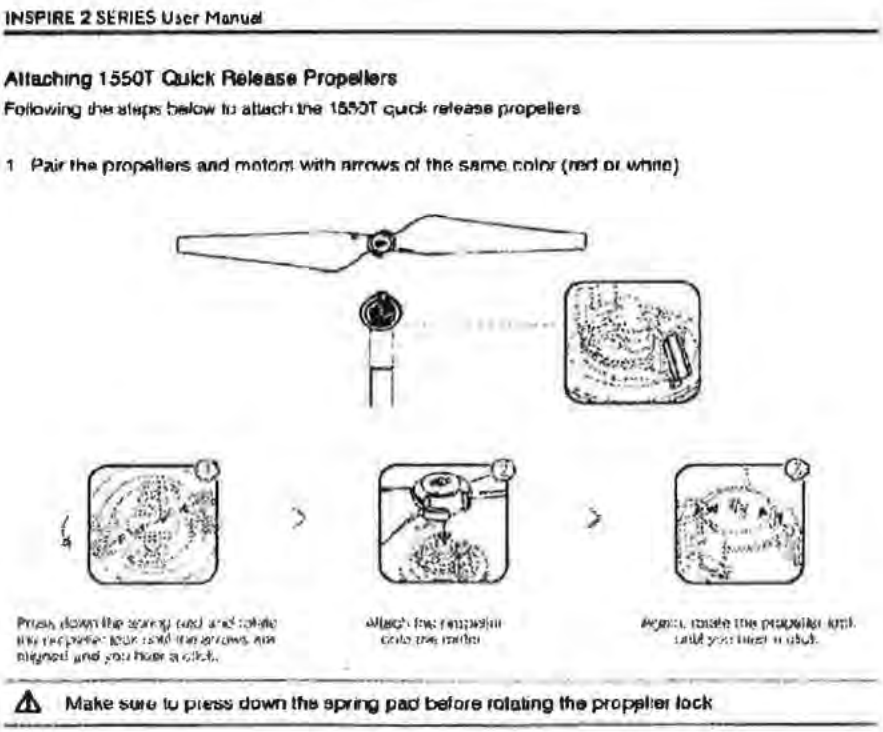
[redacted]

185:1-5 (testifying that the body of the Inspire is the central structure of the UAV, not the arms extending therefrom), 186:11-13 (stating that the body of the Inspire is the central portion of the UAV that is parallel to the booms).

For the reasons set forth above, the undersigned finds that the Inspire 2 does not meet this limitation.

iii. Limitation 1[e]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary. The evidence shows that the Inspire 2's propellers can be attached or detached from the driveshaft of the motors on the end of each arm. CX-0001C at Q/A 231; CPX-0026; CDX-0001C.79. The mechanism by which the propellers are attached and/or detached secures the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. This mechanism is the claimed "locking mechanism." CDX-0001C.79. DJI's user manual for the Inspire 2 also describes this mechanism as a "lock." CX-0118.8.



INSPIRE 2 SERIES User Manual

Attaching 1550T Quick Release Propellers

Following the steps below to attach the 1550T quick release propellers.

1 Pair the propellers and motors with arrows of the same color (red or white).

Make sure to press down the spring pad before rotating the propeller lock.

[redacted]

Id. The undersigned therefore finds that the Inspire 2 meets this limitation.

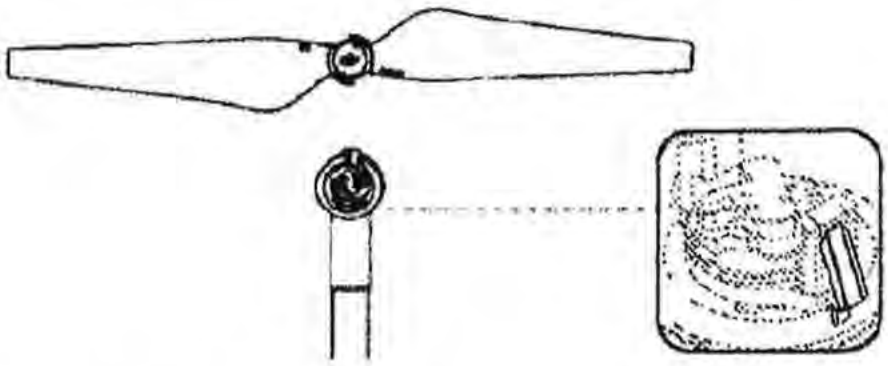
iv. Limitation 1[g]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary. The evidence shows that the Inspire 2's clockwise propellers (with red markings) generate lift when rotated clockwise and are attached to the corresponding motors via a lock mechanism comprised of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts, thereby preventing them from coming loose during flight. CX-0001C at Q/A 233; CDX-0001C.81; CX-0386 (showing the clockwise propeller blade attached to the motor); CX-0387 (showing the clockwise propeller blade detached from the motor); CPX-0026. Like the clockwise propellers, the Inspire 2's counterclockwise propellers (with white markings) are attached to the corresponding motors by a lock mechanism of lugs and notches that engage with one another to secure the propellers to the motors and driveshafts so as to prevent them from coming loose during flight. CX-0001C at Q/A 234; CDX-0001C.82; CX-0389 (showing the counterclockwise propeller detached from the motor); CX-0390 (showing the counterclockwise propeller attached to the motor); CPX-0026. The undersigned therefore finds that the Inspire 2 meets this limitation.

v. Limitation 1[h]

Autel asserts that this limitation is met. DJI has presented no evidence to the contrary. The evidence shows that the Inspire 2's clockwise lock mechanism is configured so that the clockwise propeller can only be attached to the clockwise motor. CX-0001C at Q/A 235; CDX-0001C.83; CX-0118.8; CPX-0026. Similarly, the counterclockwise lock mechanism is configured so that the counterclockwise propeller can only be attached to the counterclockwise motor (but not the clockwise motor). *Id.* The Inspire 2 user manual confirms this:

[redacted]



CX-0118.8. The undersigned therefore finds that the Inspire 2 meets this limitation.

vi. Limitation 1[i]

Autel asserts that the Inspire 2 meets this limitation, both literally and under the doctrine of equivalents. CIB at 113-115. DJI disputes that the Inspire 2 literally infringes claim 1 and argues that Autel's doctrine of equivalents argument is precluded by prosecution history estoppel. RIB at 96-98.

The parties' arguments are nearly identical to their arguments for the Phantom 4 Pro. *See* CIB at 113-115; CRB at 42-44; RIB at 96-98; RRB at 27. Thus, for the reasons discussed in Section VI.B.3.a.vi above, the undersigned finds that the Inspire 2 does not meet limitation 1[i]. *See* RX-0174C at Q/As 38, 132, 141, 155-159; RDX-0006C.23-24; CX-0391.

vii. Conclusion

Accordingly, the undersigned finds that the Inspire 1 and Inspire 2 do not infringe claim 1.

[redacted]

b) Claims 2 and 5

Because the undersigned has found that independent claim 1 is not infringed, it is not necessary to determine whether dependent claims 2 and 5 are infringed.

C. Domestic Industry – Technical Prong

Autel asserts that the EVO practices claims 1 and 5 of the '184 patent. CIB at 117-121.

1. Claim 1

Autel submits that the EVO practices claim 1. DJI did not address claim 1 in its briefs, and has therefore waived any arguments that the EVO does not practice this claim. *See* RIB at 102-103; RRB at 31-32.

The evidence shows that Autel's EVO practices claim 1 of the '184 patent. CX-0001C at Q/As 493-501; CPX-0003; CDX-0001C.196-204; CX-0049.39-40.

2. Claim 5

Because a patentee need only establish that the domestic product practices one claim of the patent, it is not necessary to determine whether the EVO practices claim 5. *See Male Prophylactic Devices*, Comm'n Op. at 38.

3. Conclusion

Accordingly, the undersigned finds that Autel has satisfied the technical prong of the domestic industry requirement for the '184 patent.

D. Validity

DJI asserts the following invalidity grounds: (1) the Microdrones user manual, version 2.2[20] ("Microdrones manual") anticipates claims 1 and 2, or alternatively renders claims 1 and 2 obvious; (2) the Microdrones manual combined with U.S. Patent Publication No. 2014/0263823

[20] The Microdrones manual corresponds to the md4-200 UAV product that was produced and sold by Microdrones. RIB at 105; CIB at 123.

[redacted]

to Wang et al. ("Wang") renders claim 5 obvious; (3) the JP Unexamined Utility Model Application Publication H06-17511 to Ryoichi Sasaki ("Sasaki") combined with either European Patent Application EP 0 921 067 A2 to Muller ("EP067") or U.S. Patent No. 6,929,226 to Philistine ("Philistine") renders claims 1 and 2 obvious, and either combination further combined with Wang renders claim 5 obvious; and (4) the U.S. Patent No. 8,973,861 to Zhou et al. ("Zhou") combined with EP067 or Philistine renders claims 1 and 2 obvious, and either combination further combined with Wang renders claim 5 obvious. RIB at 103.

1. Microdrones Manual

Autel does not dispute that the Microdrones manual discloses elements 1[a], 1[b], 1[c], 1[d], and 1[f]. CIB at xiii. However, Autel does dispute that DJI has established that the Microdrones manual qualifies as a "printed publication." *Id.* at 123.

a) Whether Microdrones is a printed publication

DJI asserts that "Microdrones is prior art to the claims of the '184 patent under 35 U.S.C. § 102(b) because it was publicly available before May 15, 2013, the earliest possible priority date of the '184 patent." RIB at 104. First, DJI argues that "[t]he copyright notices, contact information, and content of the Microdrones manual show that it is a product manual to be distributed with a commercial product without restriction." *Id.* at 106. Second, DJI contends that Mr. Sales, a Microdrones purchaser, was able to download the Microdrones manual by "creat[ing] a customer account and register[ing] the UAV he purchased on the Microdrones website." *Id.*

Autel asserts that DJI's testimony "does not establish public accessibility, and DJI's evidence lacks traditional indicia of 'public accessibility' required to prove Microdrones is a 'printed publication.'" CIB at 126. Autel argues: "DJI presents no evidence that potential customers or non-customers could locate or access Microdrones by, for example, requesting a copy

[redacted]

from the Manufacturer or downloading a copy from a website." *Id.* at 125 (citing RX-0003C). Autel contends that the evidence establishes "that any access [to Microdrones] is limited to customers and that no one else had access." *Id.*

The Federal Circuit has held that a document qualifies as a prior art printed publication under 35 U.S.C. § 102 when it is "sufficiently accessible to the public interested in the art." *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016). To be considered accessible to the public there must be "a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it." *See C.R. Bard, Inc. v. AngioDynamics, Inc.*, 748 F. App'x 1009, 1013 (Fed. Cir. 2018) (quoting *Kyocera Wireless corp. v. ITC*, 545 F.3d 1340, 1350 (Fed. Cir. 2008)). A key consideration in the analysis of public accessibility includes "whether [] copies were freely distributed to interested members of the public . . . ." *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1380 (Fed. Cir. 2018).

The undersigned finds that DJI has failed to demonstrate that the Microdrones manual is a printed publication. While the Microdrones manual bears certain indicia (*e.g.*, copyright notices, contact information), said indicia, by itself, is not conclusive of public accessibility. To be clear, copyright notices and manufacturer contact information *may* be relevant evidence that the document was prepared for public dissemination; however, they do not demonstrate that the document was in fact readily available to the public.[21] RX-0036 at 1, 15-113, 116.

DJI also argues that Mr. Sales' testimony establishes that the Microdrones manual was publicly accessible because anyone could access the manual by purchasing a UAV. RIB at 106-107. The undersigned finds this argument unpersuasive. Jonathan Sales purchased a UAV from

[21] DJI contends that "[n]othing in the manual indicates that it was for internal use or that its use was restricted." RIB at 105. This omission of language is not conclusive evidence of public accessibility.

[redacted]

Microdrones in 2008 for 22,605.50 Euros. RX-0003C at Q/As 17, 20; RX-0086; RX-0087. In order to download the Microdrones manual, Mr. Sales had to create an account on the Microdrones client portal and register his purchase. RX-0003C at Q/As 17, 20. Based on Mr. Sales' testimony, access to the Microdrones manual was *contingent* upon purchasing a UAV. As Autel correctly notes: "At best, the Sales testimony indicates that a single customer who purchased a Microdrones product was able to download a Microdrones manual from some unspecified 'client portal'." CIB at 124. This is not sufficient to prove that the manual was publicly available to interested persons.[22]

Thus, beyond the testimony of a single purchaser, DJI has presented no other evidence that the Microdrones manual was marketed, disseminated, or made available to the public.[23] For example, DJI did not provide any testimony or documents from Microdrones GmbH, the publisher of the manual. *See, e.g., Constant v. Advanced Micro-devices, Inc.*, 848 F.2d 1560, 1569 ("Evidence of routine business practice can be sufficient to prove that a reference was made accessible before a critical date."). DJI also did not provide any testimony or evidence that potential customers or members of the public could locate or access the Microdrones manual by contacting the manufacturer, or by downloading a copy online. Furthermore, the fact that a "client portal" exists does not prove that reasonably interested persons could access the portal or if they did have access, how they would find the Microdrones manual on the portal. To the contrary, Mr. Sales' testimony suggests that the "client portal" was private and only accessible to those who purchased a UAV. RX-0003C at Q/As 24-28.

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[22] The undersigned also finds it unreasonable to expect the relevant public interested in UAVs to pay over 20,000 Euros just to access the Microdrones manual.

[23] DJI asserts that at least 300 UAVs were sold to customers interested in the art. RIB at 109 (citing RX-0003C at Q/A 21). This is merely evidence that 300 Microdrones were produced and sold to individuals who could afford to spend *over 20,000 Euros*. It does not demonstrate that the Microdrones manual was accessible to the reasonably diligent public interested in UAVs. RIB at 109.

[redacted]

Therefore, for the reasons discussed above, the undersigned finds that DJI has not shown by clear and convincing evidence that the Microdrones manual qualifies as a prior art printed publication that was available to the public before May 15, 2013.[24]

b) Conclusion

Because the Microdrones manual does not qualify as a printed publication, it cannot be relied upon as prior art under 35 U.S.C. §§ 102 or 103. The undersigned therefore need not determine whether the Microdrones manual anticipates or renders obvious the '184 patent.

2. Sasaki

Autel does not dispute that Sasaki discloses elements 1[a], 1[b], 1[c], 1[d], 1[e], and 1[f] or that Wang discloses the element added in claim 5. CIB at xiv. Autel does dispute that Sasaki discloses elements 1[g], 1[h], 1[i], or claim 2. *Id.* Autel also disputes that EP067 and Philistine disclose, teach, or suggest any of the claim elements, and that there is a motivation to combine Sasaki with EP067 or Philistine. *Id.*

a) Sasaki with EP067

DJI asserts that claims 1, 2, and 5 of the '184 patent are invalid under 35 U.S.C. § 103 due to EP067 combined with Sasaki. RIB at 125. DJI explains that Sasaki is a "flying toy [that] includes a rotor assembly with a motor and blades and a drive rotating the driveshaft." *Id.* at 127. However, DJI states that "it is the admitted prior art structure disclosed in Sasaki that is relevant for the

[24] The undersigned notes that the PTAB found the Microdrones manual to be a prior art printed publication in its institution decision for the '184 patent's IPR proceeding. *SZ DJI Tech. Co. v. Autel Robotics USA*, IPR2019-00343, Paper No. 7 (P.T.A.B. 2019). While informative, the PTAB's decision is not controlling. In addition, the evidence presented by DJI in the IPR proceeding differs from the evidence presented in this Investigation. *Id.* at 21, 23 (relying on a declaration for a witness who did not appear before the Commission). And, it appears the PTAB applied a lower evidentiary standard in determining that the Microdrones manual was available to the relevant public. *Id.* at 23. (holding that the Petitioner "has made a *threshold showing* that members of the relevant public could have obtained the Microdrones user manual.").

[redacted]

obviousness analysis of claim 1."[25] *Id.* at 135. DJI argues that the prior art cited in Sasaki teaches the limitations of claim 1 because it discloses "a system where each type of blade can only engage with one of the available lock mechanisms." *Id.* at 138. DJI also relies on "EP067 [which] discloses a lug and notch lock mechanism." *Id.* Based on these disclosures, DJI argues that "it would have been obvious to use a mirror image of [EP067] as a counterclockwise lock mechanism in view of Sasaki's [prior art's] disclosure of left and right screws." *Id.*

Autel argues that "DJI's assertion that the screw on mechanism [in Sasaki's prior art] prevents attachment of the wrong blade is simply not credible." CIB at 139. Autel also argues that "Sasaki specifically teaches away from the claim limitations of the '184 patent related to the directionally specific lock mechanisms." *Id.* at 137. Autel states that "[a] POSA would not be motivated to combine [] EP067 . . . with Sasaki." *Id.* at 140.

For the reasons discussed below, the undersigned finds that the combination of Sasaki, the prior art cited in Sasaki, and EP067 fails to disclose limitation 1[h] of claim 1 of the '184 patent.[26] Limitation 1[h] states: "[T]he clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism." JX-0002 at cl. 1[h]. This means that a clockwise rotor blade cannot be attached to a counterclockwise driveshaft, and vice versa.

DJI asserts that prior art cited in Sasaki discloses a directional threading system where "the clockwise rotor blade is engageable only with the clockwise lock mechanism" and the

[25] DJI does not rely on the invention disclosed by Sasaki itself because its locking mechanism allows propellers to "easily be attached to and detached from a rotating shaft without depending on the direction of rotation of the propeller." RX-0037.0007 at 1:30-32, 2:24-28.

[26] The undersigned notes that DJI is only relying on Sasaki's prior art to disclose limitation 1[h]. RIB at 138. DJI does not assert that EP067 discloses a locking system that prevents the improper engagement of rotor blades on directional locking mechanisms. *Id.*

[redacted]

counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism. RIB at 137. The undersigned disagrees. The evidence demonstrates that Sasaki's prior art does not teach a system that prevents the improper attachment of rotor blades.[27] CX-0016C at Q/A 87. As Dr. Reinholtz explained: "Multirotor UAV's typically use plastic or composite propellers for both the clockwise and counterclockwise blades. Because this material is soft, it is relatively easy to thread a clockwise rotor blade on a motor shaft intended for a counterclockwise blade, and vice versa." *Id.* DJI's expert, Dr. Alonso, conceded on cross-examination that it would be possible to screw a blade onto the wrong rotor. Alonso, Tr. at 317:15-319:14. This was confirmed during trial when counsel for Autel demonstrated that a screw-on type blade could indeed be attached to the wrong rotor. *Id.* at 333:2-337-20 (demonstrating that a clockwise rotor blade could be installed on a counterclockwise rotor using a DJI UAV that practiced the directionally threaded locking system from Sasaki's prior art); Reinholtz, Tr. at 441:4-442:3 (confirming the wrong blade was installed during the demonstration). Dr. Alonso acknowledged that the blade was successfully engaged on the wrong rotor because it did not fall off when the rotor shaft was twisted or when the UAV was turned upside down.[28] Alonso, Tr. at 337:1-20.

The evidence also does not show that it would have been obvious to a person of ordinary skill in the art to modify Sasaki to use directionally specific lock mechanisms to prevent the installation of a blade on the wrong drive. Sasaki does not mention a need, motivation, or desire

[27] The undersigned also finds that it would not have been obvious to a person of ordinary skill in the art to modify Sasaki to use directionally specific lock mechanisms to prevent the installation of a blade on the wrong drive. Sasaki does not mention a need, motivation, or desire to utilize lock mechanisms for the blade and driveshaft that depend on the rotational direction of the blade. CX-00016C at Q/A 86. Sasaki also does not mention a need to prevent installation of the wrong blade. *Id.*

[28] DJI argues that the term "engagement" used in limitation 1[h] requires that the blades be properly affixed to their corresponding rotor. RIB at 142. This argument is not persuasive. Engagement does not require a blade to be affixed per factory instructions. Rather, a rotor blade is engaged when a user can twist the threads on the improper shaft such that the blade will not fall off. Reinholtz, Tr. 333:15-337:20. By DJI's own admission, the blade and rotor shaft could engage together to such an extent that their threads began to permanently deform. RIB at 142.

[redacted]

to utilize lock mechanisms for the blade and driveshaft that depend on the rotational direction of the blade. CX-00016C at Q/A 86. Sasaki also does not mention a need to prevent installation of the wrong blade. *Id.* Nor does the evidence show that a person of ordinary skill in the art would be motivated to combine Sasaki with EP067 to achieve a lock mechanism that prevents installation of a blade on the wrong rotor.[29] EP067 is a single direction interlock mechanism that attaches individual propeller blades to a hub on boat motors. RX-0039.0002. It does not relate to UAVs, UAV design, a locking mechanism for UAV propeller blades, nor does it disclose different configurations for its locking mechanism based on the direction of the blade's rotation. CX-0016C at Q/A 19; *see also* Alonso, Tr. at 328:3-7 (conceding that EP067 does not disclose different configurations for its lock mechanism). And, as Dr. Reinholtz noted, "[t]here is no discussion in EP067 regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades." CX-0016C at Q/A 19.

Moreover, Dr. Alonso only provided a conclusory opinion as to why a person of ordinary skill in the art would combine Sasaki with EP067. RX-0001C at Q/A 166, 176-178 (stating that one would be motivated by "the paramount importance . . . to maximize convenience, speed of preparation, and the actual time spent [flying drones]."). This conclusory statement is insufficient. Dr. Alonso failed to provide an explanation "for how the mechanisms in EP067 are simpler, more reliable, and faster than the mechanisms in Sasaki." CX-0016C at Q/A 93. Without such testimony, there is not clear and convincing evidence that there is a motivation to combine. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *see also InTouch Techs. v. VGO Commcn's*, 751 F.3d

[29] DJI argues that if the locking mechanism in EP067 only rotates in one direction, a person of ordinary skill in the art would use a mirror image configuration for rotation in the opposition direction. This argument is flawed. EP067 does not disclose a "mirror image" configuration. CX-0016C at Q/A 96; Alonso, Tr. at 328:8-330:11, 332:11-22. Thus, a person of ordinary skill in the art "is not going to look to use EP067 to achieve directionally specific lock mechanisms." CX-0016C at Q/A 96.

[redacted]

1327, 1351 (Fed. Cir. 2014) ("A reason for combining disparate prior art references is a critical component of an obviousness analysis.").

Accordingly, DJI has failed to show by clear and convincing evidence that EP067 combined with Sasaki renders claim 1 of the '184 patent obvious.

b) Sasaki with Philistine

DJI asserts that Sasaki in combination with Philistine renders claim 1 obvious. More specifically, DJI argues that "Sasaki combined with [] Philistine renders obvious the limitation 'wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism,'" and vice-versa. RIB at 137. DJI contends that Philistine "relates generally to a mounting system and more specifically to a twist lock mounting system for rapid and secure attachment and detachment of a variety of devices to various surfaces." *Id.* at 139. Thus, DJI submits that "[i]n view of Sasaki's disclosure of a prior art system using left and right screws, it would have been obvious to a person having ordinary skill in the art to use the configuration of Philistine for one locking mechanism and use a mirror image of Philistine's configuration for the locking mechanism in the opposite direction." *Id.* at 141.

Autel argues that a "POSA would not be motivated to combine [] Philistine with Sasaki to achieve the '184 lock mechanism." CIB at 140. Autel asserts that "there is no discussion in Philistine regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades." *Id.* at 141. Autel further asserts that "Philistine does not relate to UAVs or UAV design, and it is not related to a locking mechanism for rotor blades, in general, or UAV propeller blades in particular." *Id.*

The undersigned previously determined that Sasaki failed to disclose limitation 1[h]. *See* Section VI.D.2.a, *supra*. The undersigned also found that it would not have been obvious to a

[redacted]

person of skill in the art to modify Sasaki's lock mechanisms to prevent the installation of a blade on the wrong drive. *Id.*

The evidence shows that Philistine similarly fails to disclose a system that prevents the improper installation of rotor blades. Like EP067, Philistine does not relate to UAVs, UAV design, or locking mechanisms for rotor blades. CX-0016C at Q/A 92. Rather, Philistine relates to a twist-lock mount for a blower mower in a system that provides filtered air. *Id.* According to Dr. Reinholtz, "the Philistine mount achieves a rigid and secure locking arrangement with two basic components, a mounting member, and a receiving member, that are designed to interlock when one is twisted relative to one another." *Id.* Dr. Reinholtz further explains: "Philistine does not depict different configurations for its lock mechanism to accommodate the proper fitting of components based on the direction of rotation." *Id.* Dr. Alonso does not dispute that Philistine only discloses a locking mechanism for a single direction of rotation. Alonso, Tr. at 328:8-330:11, 332:11-22. And, as Dr. Reinholtz notes: "There is no discussion in Philistine regarding clockwise or counterclockwise rotating rotor blades and the critical need to prevent interchangeably mounting such blades." *Id.*

The evidence also does not show that a person of ordinary skill in the art would be motivated to combine Sasaki and Philistine – disparate pieces of prior art – to achieve a "mistake proof" way to install the correct blades on the correct rotors. As the Federal Circuit has stated, "teachings of references can be combined only if there is some suggestion or incentive to do so." *ACS Hosp Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 (Fed. Cir. 1984). There is no such suggestion or incentive here. First, Philistine relates to a mechanism for attaching a blower motor to a fixed location in a filtered air system. RX-0040.0004. Philistine's locking system is not related to UAVs or propellers in general. CX-0016C at Q/A 92. Thus, contrary to Autel's assertions, a

[redacted]

person of ordinary skill in the art would not be motivated to use Philistine's fixed surface locking mechanism on a rotating UAV rotor. *Id.* at Q/A 92, 110 ("Philistine . . . do[es] not provide a motivation to improve UAV rotor blade attachment design."). Second, like the Sasaki and EP067 combination, Dr. Alonso's opinions are of a conclusory nature. For example, in discussing the motivation to combine, Dr. Alonso opines that "a person having ordinary skill in the art would have understood the need to overcome the limitations of Sasaki to ensure simpler, more reliable, less error prone, and faster ways of attaching and detaching the propellers of a UAV." RX-0001C at Q/A 177. Yet, he provides no explanation of how the mechanisms in Philistine are simpler, more reliable, or faster than those in Sasaki. *Id.* Without such testimony, there is not clear and convincing evidence that there is a motivation to combine.

Thus, for the reasons discussed above, DJI has failed to show by clear and convincing evidence that Philistine combined with Sasaki renders claim 1 of the '184 patent obvious.

c) Claims 2 and 5

Claims 2 and 5 depend from claim 1. Because claim 1 is nonobvious, claims 2 and 5 are also not obvious due to Sasaki with EP067 or Philistine, and claim 5 is not obvious due to Sasaki with Philistine or EP067, and in further combination with Wang.

3. Zhou

Autel does not dispute that Zhou discloses elements 1[a], 1[b], 1[c], 1[d], and 1[f] or that Wang discloses the element added in claim 5. CIB at xiv. Autel does dispute that Zhou discloses elements 1[e], 1[g], 1[h], 1[i], or claim 2. *Id.* Autel also disputes that EP067 and Philistine disclose, teach, or suggest any of the claim elements, and that there is a motivation to combine Zhou with EP067 or Philistine. *Id.*

[redacted]

a) Zhou with EP067 or Philistine

DJI asserts that claims 1, 2, and 5 of the '184 patent are invalid under 35 U.S.C. § 103 due to EP067 or Philistine combined with Zhou. RIB at 146. DJI explains that Zhou discloses a "tetra-propeller aircraft." *Id.* DJI argues that "[a] person having ordinary skill in the art would understand that the mounting mechanism used by Zhou is a 'lock mechanism.'" *Id.* at 148 (citing RX-0001C at Q&A 220; RDX-0001.100). Thus, DJI concludes that "[a] person having ordinary skill in the art would have been motivated to mistake-proof or configure the clockwise and counterclockwise connections of Zhou and EP067 or Philistine to ensure that a user does not use a counterclockwise propeller with a clockwise motor or a clockwise propeller with a counterclockwise motor." *Id.* at 155 (citing RX-0001C at Q&A 247).

Autel argues that "[c]laim 1 of the '184 patent has numerous elements related to the mechanism for attaching the rotor blade to the driveshaft. Zhou does not disclose any of them." CIB at 147. Autel asserts that "a POSA looking to design a UAV with directionally specific lock mechanisms that prevent the installation of a blade on the wrong motor is not going to look to combine Zhou (which has none of those features and does not suggest a need for them) with two secondary references (EP067 and Philistine) that do not teach different locking mechanism configurations that could achieve those features." *Id.* at 149. DJI states that "a POSA would not combine Zhou with EP067 or Philistine for the same reasons outlined in [the Sasaki section]." *Id.* at 148-149.

The undersigned has already rejected DJI's arguments that Sasaki in combination with EP067 and Philistine renders claim 1 of the '184 patent obvious. *See* Sections VI.D.2.a & VI.D.2.b, *supra*. More specifically, the undersigned found that neither Sasaki, EP067, nor Philistine disclose

[redacted]

limitation 1[h]. *Id.* DJI is relying on the same secondary references in combination with Zhou. Thus, for DJI to prevail on its invalidity argument, Zhou must disclose limitation 1[h].

Zhou is directed to a UAV "having a body that is fashioned with an upper enclosure mated to a lower enclosure." CX-00016C at Q/A 105. The focus of Zhou is on the upper and lower enclosures and "the mechanisms for attaching the two components." *Id.* A review of Zhou reveals that its disclosure is sparse. RX-0038; *see also* CX-0016C at Q/A 106. It does not discuss attachment or lock mechanisms for its rotor blades. CX-0016C at Q/As 106-107; RX-0038. DJI acknowledges as much its brief. RIB at 150 (stating "Zhou does not disclose the details of the lock mechanism used to mount its propellers to the motors."). Dr. Reinholtz provides further details: "Zhou merely states that the props 'are mounted to the motors.' Zhou provides no other information whatsoever on the mechanism for mounting props to the driveshaft." CX-0016C at Q/A 106.

The evidence also fails to demonstrate that a person of ordinary skill in the art would have been motivated to combine Zhou with EP067 or Philistine to achieve the attachment mechanism of the '184 patent. *Id.* at Q/A 106, 109; Alonso, Tr. at 321:25-322:4 ("Q: And you would agree that Zhou, the patent, identifies no need to improve or modify any aspect of the propeller attachment mechanism? A: I don't recall it saying anything that leads somebody to believe that."). As noted above, Zhou's disclosure is very limited. A person of ordinary skill in the art would therefore not know "whether the mechanism from another reference would provide any additional benefit." CX-0016 at Q/A 109. Moreover, Zhou is directed towards simplifying UAV design by including as few components as possible. RX-0038.0008 at 1:17-25; CX-0016C at Q/A 110. A person of ordinary skill in the art would not add multi-directional lock systems to Zhou because they would complicate, not simplify the UAV design. CX-0016C at Q/A 110.

[redacted]

For the foregoing reasons, DJI has failed to show by clear and convincing evidence that Zhou combined with EP067 or Philistine renders claim 1 of the '184 patent obvious.

b) Claims 2 and 5

Claims 2 and 5 depend from claim 1. Because claim 1 is nonobvious, claims 2 and 5 are also not obvious due to Zhou with EP067 or Philistine, and claim 5 is not obvious due to Zhou with Philistine or EP067, and in further combination with Wang.

VII. U.S. PATENT NO. 10,044,013

A. Overview

The '013 patent, entitled "Battery Used for Unmanned Aerial Vehicle and an Unmanned Aerial Vehicle" issued on August 7, 2018 to Longxue Qiu and Xingwen Wu. JX-0003. The '013 patent is assigned to Autel. The '013 patent generally relates to "a UAV wherein the battery assembly is detachably connected to the body of the UAV." Compl. at ¶ 5.19.

1. Asserted Claims

Autel is asserting claims 1, 3-5, 8, 10, 13-16, 18, and 22-23, which read as follows:

1. [Preamble] A multi-rotor unmanned aerial vehicle, comprising:

1[a] a main body comprising a battery compartment;

1[b] four arms, wherein each arm is coupled to the main body;

1[c] a propulsion assembly disposed on the each arm, wherein the propulsion assembly comprises a propeller and a motor, the motor being configured to drive the propeller to rotate in order to generate lift force;

1[d] a battery assembly capable of being accommodated in the battery compartment, the battery assembly comprising a shell and a battery body substantially disposed in the shell;

1[e] a clamp button, wherein a first end of the clamp button being mounted directly or indirectly to the shell and a second end of the clamp button being detachably coupled to the main body; and

[redacted]

1[f] a restorable elastic piece, wherein a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell, a second end of the restorable elastic piece contacting the clamp button;

1[g] wherein the battery compartment comprises a clamping portion configured to detachably connect to the clamp button.

3. The multi-rotor unmanned aerial vehicle according to claim 1, wherein at least one of the first end and the second end of the restorable elastic piece contains a bent portion.

4. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the first end of the restorable elastic piece abuts against the shell.

5. The multi-rotor unmanned aerial vehicle according to claim 4, wherein the second end of the restorable elastic piece is coupled to the clamp button.

8. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the second end of the restorable elastic piece is disposed on an inner side of the clamp button.

10. The multi-rotor unnamed aerial vehicle according to claim 9, wherein the battery compartment contains the same number of the clamping portions as the number of the clamp buttons.

13. The multi-rotor unmanned aerial vehicle according to claim 12, wherein the hook disposed on the clamp button is configured to engage the clamping portion of the battery compartment.

14. The multi-rotor unmanned aerial vehicle according to the claim 12, wherein the clamp button comprises a body, the hook being disposed on an end of the body of the clamp button.

15. The multi-rotor unmanned aerial vehicle according to the claim 14, wherein a groove is formed between the body of the clamp button and the hook.

16. The multi-rotor unmanned aerial vehicle according to claim 14, wherein an anti-slip structure is configured on an outer surface of the body of the clamp button.

18. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the unmanned aerial vehicle comprises at least two restorable elastic pieces, the at least two restorable elastic pieces being mirror symmetric.

22. The multi-rotor unmanned aerial vehicle according to claim 1, wherein in a stale where the battery assembly is completely pushed or positioned into the battery compartment, the restorable elastic piece is configured to automatically rebound so that (a) the clamp button is able to return to its original position and (b) the battery assembly is held in position by the cooperation of the clamping portion and the clamp button.

[redacted]

23. The multi-rotor unmanned aerial vehicle according to claim 1, the battery assembly is capable of being removable from the battery compartment in a state where the clamp button is pressed down.

2. Claim Construction

The undersigned has construed the following limitations from claims 1, 23, and 24 of the '013 patent:

TERM	CLAIM(S)	CLAIM CONSTRUCTION
"battery compartment"	1	separate section for holding a battery
"a first end of the clamp button being mounted directly or indirectly to the shell"/ "a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell"	1	"a first end of the clamp button being mounted with nothing in between or with an intermediary in between to the shell"/"a first end of the restorable elastic piece is disposed on the shell or connects with nothing in between or with an intermediary in between the shell"
"pressed down"	23, 24	Plain and ordinary meaning

Order No. 15 at 27-34.

B. Infringement

1. Mavic Pro

Autel asserts that the Mavic Pro, Mavic Pro Platinum, Mavic Pro 2, and Mavic 2 Zoom infringe claims 1, 3-5, 10, 13-16, 18, and 22-23. CIB at 152. Autel also asserts that: "For purposes of infringement, the Mavic Pro is representative of the Mavic Pro Platinum, Mavic 2 Pro, and the Mavic 2 Zoom." *Id.* DJI does not dispute that the Mavic Pro is representative of the other Mavic products and, in fact, relies on the Mavic Pro as representative in its own briefing. RIB at 159 n. 11; *see also* RX-0174C at Q/A 257. Additionally, DJI's corporate witness testified that the battery latching mechanisms for the Mavic Pro, Mavic Pro Platinum, Mavic 2 Pro, and Mavic 2 Zoom are the same. JX-0018C at 66:18-67:10.

[redacted]

a) Claim 1

DJI does not dispute that the Mavic Pro meets limitations 1[b] and 1[c]. RIB at xii.

i. Preamble

The preamble of claim 1 states: "A multi-rotor unmanned aerial vehicle." JX-0003 at cl. 1. DJI does not address the preamble in its briefs and has therefore waived any argument that the preamble is not met. RIB at 164-171; RRB at 48-51. Additionally, the evidence shows that the Mavic Pro meets the preamble. CX-0001C at Q/A 266; CPX-0005; CPX-0007.

ii. Limitation 1[a]

Claim 1 includes the limitation "a main body comprising a battery compartment." JX-0003 at cl. 1[a]. DJI does not address this limitation in its briefs and has therefore waived any argument that this limitation is not met. RIB at 164-171; RRB at 48-51. Additionally, the evidence shows that the Mavic Pro meets this limitation. CX-0001C at Q/As 267-270; CPX-0005; CPX-0007.

iii. Limitation 1[d]

Claim 1 includes the limitation "a battery assembly capable of being accommodated in the battery compartment, the battery assembly comprising a shell and a battery body substantially disposed in the shell." JX-0003 at cl. 1[d]. DJI does not address this limitation in its briefs and has therefore waived any argument that this limitation is not met. RIB at 164-171; RRB at 48-51. Additionally, the evidence shows that the Mavic Pro meets this limitation. CX-0001C at Q/A 273; CPX-0005; CPX-0007.

[redacted]

iv. Limitation 1[e]

Claim 1 includes the limitation of "a clamp button, wherein a first end of the claim button being mounted directly or indirectly to the shell and a second end of the clamp button being detachably coupled to the main body." JX-0003 at cl. 1[e].

Autel asserts that this limitation is met. Autel explains that "[t]he Mavic Pro battery assembly contains two buttons – one on each of two sides of the battery assembly." CIB at 155. Each of these clamp buttons "has one end . . . that is held in place in a corresponding rectangular hole in the shell by a thin silver piece, which, in turn, is attached to the shell with a screw." *Id.* "There is a hook on the other end of the clamp button . . . that attaches the battery assembly to the battery compartment." *Id.* "Accordingly, each of the Mavic Pro's buttons has one end that is mounted to the shell. The other end of each button is detachably coupled to the body of the aircraft through a hook." *Id.* at 156.

DJI asserts that "[t]he clamp button in the Mavic Pro series is mounted to the restorable elastic piece and is not mounted 'to the shell,' either directly or indirectly." RIB at 168-169. DJI explains that "Dr. Reinholtz points to the rectangular plastic piece . . . as the first end of the clamp button . . .[b]ut the rectangular plastic piece . . . is mounted to the silver piece" rather than the shell. *Id.* at 169. DJI further argues that "the silver piece in the Mavic Pro is not an intermediary to mount the clamp button to the shell," because "the clamp button is mounted on the vertical portion of the silver piece that is perpendicular to the shell." *Id.* at 170.

The undersigned agrees with DJI that the first end of the clamp button is not directly mounted to the shell. As Dr. Reinholtz concedes, the term "mounted" means something other than touching or grazing and instead requires a connection. Reinholtz, Tr. at 194:1-12. In the Mavic Pro, however, the end of the clamp button *touches* the shell, but it is not *connected* to the shell,

[redacted]

i.e., there is nothing affixing the clamp button to the shell. In fact, if one removes the screw that attaches the restorable elastic piece to the shell, the clamp button no longer touches the shell at all. *See* CPX-0007.

The undersigned finds, however, that the clamp button is mounted *indirectly* to the shell. The clamp button is mounted to the silver piece, which is, in turn, mounted to the shell. CPX-0007; *see also* CX-0001C at Q/A 278. A visual inspection of the battery assembly confirms this. *Id.*

DJI disagrees and explains that "[t]he silver piece has a bent portion that is mounted to the shell by a screw." RIB at 170. DJI notes that the clamp button is not mounted to this bent portion but is instead "mounted on the vertical portion of the silver piece that is perpendicular to the shell." *Id.* Thus, according to DJI, the clamp button is not indirectly mounted to the shell. The undersigned is not persuaded by this argument. The silver piece is all one structure. There is nothing in the claim language that requires that the clamp button be mounted on a specific location of the intermediary. Thus, it is irrelevant if the clamp button is not mounted on the portion of the silver piece with the screw. The undersigned finds that first end of the claim button is mounted indirectly (*i.e.*, with an intermediary in between) to the shell.

Accordingly, the undersigned finds that the Mavic Pro meets this limitation.

v. Limitation 1[f]

Claim 1 includes the limitation of "a restorable elastic piece, wherein a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell, a second end of the restorable elastic piece contacting the clamp button . . .." JX-0003 at cl. 1[f].

Autel asserts that "the Mavic Pro battery assembly contains a thin silver piece (a restorable elastic piece)." CIB at 159. Autel explains that "[a] first end of the thin silver piece is disposed on the shell and connects to the shell with a screw" and "[a] second end contacts the clamp button."

[redacted]

Id. Autel further explains that the second end "is inserted and thus fixed into a slot at the end of the clamp button." *Id.*

DJI argues that "claim 1 requires the 'clamp button' and 'restorable elastic piece' to be two separate and distinct components." RIB at 170. According to DJI, the clamp button and restorable elastic piece in the Mavic Pro are instead "an integral piece." *Id.* at 171.

Autel responds that "the silver piece and the clamp button are different components made of different materials with different material properties." CIB at 158. "A person of ordinary skill in the art (and, for that matter, any layperson) can easily see where the silver piece ends and the clamp button begins." *Id.*

The undersigned agrees with Autel that, although the clamp button and the restorable elastic piece are mounted together, they are discrete components made of different materials. CPX-0007; *see also* RRB at 50-51 (acknowledging that the clamp button and restorable elastic piece are made of different materials); RX-0174C at Q/A 261 (testifying that one component is plastic while the other is metal). There is nothing in the claims that prohibits the pieces from being attached.

Accordingly, the undersigned finds that the Mavic Pro meets this limitation.

vi. Limitation 1[g]

Claim 1 includes the limitation of "wherein the battery compartment comprises a clamping portion configured to detachably connect to the clamp button." JX-0003 at cl. 1[g]. The parties disagree on the construction of "clamping portion."

DJI asserts that Autel's view of "clamping portion" should be rejected due to prosecution disclaimer. RIB at 160. According to DJI, "Autel is interpreting that term to encompass structures that are basically 'a hole or a receiving space' even though Autel avoided prior art during

[redacted]

prosecution of a related European patent application by arguing that the equivalent structure in the European application did not cover a hole or receiving space." *Id.* at 160-161.

Autel argues that "[b]y failing to identify this claim term and make these arguments during the claim construction process, DJI has conceded that the 'clamping portion,' . . . should be afforded its plain and ordinary meaning." CIB at 160. Autel further argues that DJI's "argument is incorrect on the merits." *Id.* Autel explains that the statement at issue was made in response to "legal and procedural requirements" unique to European law and should therefore "be given no weight when construing American claims in an American legal proceeding." *Id.* at 160-161. Finally, Autel asserts that "statements made in a foreign prosecution history are considered extrinsic evidence." *Id.* at 162.

The undersigned agrees with Autel that it is too late to raise a claim construction argument with respect to "clamping portion." The Procedural Schedule provides a date by which the parties must identify terms to be construed. Order No. 6 (Nov. 6, 2018). Although the undersigned has, at times, made exceptions to this Rule and entertained claim construction disputes raised in post-hearing briefs, such exceptions are limited to two scenarios: (1) when both parties have different understandings of the term, such that the dispute *must* be resolved to rule on the underlying issue of infringement or invalidity; or (2) when the parties could not have raised their argument at an earlier stage of the case.

Neither situation is applicable here. The first scenario does not apply to arguments based on prosecution disclaimer as this is not a situation where both parties have different proposals for the term's meaning. Rather, the parties here do not dispute that the term has a plain and ordinary meaning to one of ordinary skill in the art. As to the second, DJI does not provide any explanation

[redacted]

as to why it would have been unable to raise the prosecution disclaimer argument earlier.[30] As such, the undersigned finds DJI waived its argument regarding prosecution disclaimer. The undersigned therefore finds that "clamping portion" should be accorded its plain and ordinary meaning. *See Phillips*, 415 F.3d at 1312-1313 ("[T]he words of a claim are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art at the time of the invention.").

Outside of its prosecution disclaimer argument, DJI does not provide any reason why the Mavic Pro does not meet this limitation.[31] Additionally, the evidence shows that the Mavic Pro has a battery compartment comprising a clamping portion configured to detachably connect to the clamp button. CX-0001C at Q/A 281; CX-0033.0003. Accordingly, the undersigned finds that the Mavic Pro meets this limitation.

vii. Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the Mavic Pro series infringes claim 1.

b) Dependent Claims

Autel asserts that the additional limitations of claims 3-5, 10, 13-16, and 18 are met. CIB at 163-167. DJI does not address the additional limitations of these claims in its brief, and has therefore waived any arguments that these claims are not met. RIB at 176-179; RRB at 53-56.

[30] While the statement upon which DJI bases its argument was not made until February 2019, DJI never moved for leave to make a new claim construction argument. Additionally, there was an opportunity to do so, given that initial *Markman* briefs were not due until March 25, 2019 and the hearing was not held until April 29, 2019. Order No. 8 (Feb. 7, 2019).

[31] While DJI argues that a person of ordinary skill in the art would find that "'a hole or a receiving space' falls outside the plain meaning of the term," there is no evidence to support this argument. RIB at 164 (citing RX-0174C at Q/A 270). DJI cites to the testimony of Dr. Alonso, but Dr. Alonso relies solely upon the prosecution disavowal argument. Dr. Alonso does not provide any other reason why a person of ordinary skill in the art would find that "a hole or a receiving space" cannot be a "clamping portion." *See* RX-0174C at Q/A 270.

[redacted]

Additionally, the undersigned finds that the Mavic Pro meets the additional limitations of claims 3-5, 10, 13-16, and 18. *See* CX-0001C at Q/As 282-286; 290-297.

2. Spark

Autel asserts that the Spark infringes claims 1, 3-5, 8, 10, 18, and 22. CIB at 152.

a) Claim 1

DJI does not dispute that the Spark meets the limitations 1[b] and 1[c]. RIB at xii.

i. Preamble

DJI does not address the preamble in its briefs and has therefore waived any argument that the preamble is not met. RIB at 172-175; RRB at 48-49, 51-53. Additionally, the evidence shows that the Spark meets the preamble. CX-0001C at Q/A 325; CPX-0015; CPX-0016.

ii. Limitation 1[a]

DJI does not address this limitation in its briefs and has therefore waived any argument that this limitation is not met. RIB at 172-175; RRB at 48-49, 51-53. Additionally, the evidence shows that the Spark meets this limitation. CX-0001C at Q/As 326-327; CPX-0015; CPX-0016.

iii. Limitation 1[d]

DJI does not address this limitation in its briefs and has therefore waived any argument that this limitation is not met. RIB at 172-175; RRB at 48-49, 51-53. Additionally, the evidence shows that the Spark meets this limitation. CX-0001C at Q/As 330-331; CPX-0005; CPX-0015; CPX-0016.

iv. Limitation 1[e]

Autel asserts that this limitation is met. Autel explains that the Spark "contains two clamp buttons, one on each side of the battery assembly." CIB at 177. "One end of each clamp button has two protrusions that hook onto the top and bottom sides of a slot in the shell." *Id.* "Accordingly,

[redacted]

the first end of the clamp button of the Spark is mounted to the shell, while the second end of the clamp button is capable of attaching to the battery compartment of the aircraft to secure the battery therein." *Id.*

DJI asserts that "the alleged clamp button does not have an end 'detachably coupled to the main body.'" RIB at 172. DJI explains that "Dr. Reinholtz testifies that two separate pieces collectively constitute the clamp button and the two separate pieces constitute the first and second ends of the clamp button." *Id.* at 172-173. According to DJI, "[n]othing in the patent specification supports such a broad reading of 'clamp button' to encompass two separate structures that are separately movable in different directions." *Id.* at 173.

The undersigned agrees with DJI that the Spark does not meet this limitation. The claim requires a clamp button with a "first end" and a "second end." In the Spark, the alleged clamp button consists of two separate components made of two separate pieces of plastic. *See* CX-0001C at Q/A 332; Reinholtz, Tr. at 218:6-219:7 (acknowledging that the clamp button is made up of two separate pieces of plastic). There is nothing in the specification, however, that supports such a broad reading of the claim language. Rather, by specifically referencing two ends of the clamp button, the claim language suggests that the clamp button is one structure.

Because the Spark does not have one structure that meets the requirements of a clamp button, the undersigned finds that the Spark does not meet this limitation.

v. Limitation 1[f]

The parties disagree as to whether an end of the spring (*i.e.*, the restorable elastic piece) contacts the clamp button. CIB at 178; RIB at 175.

Because the undersigned found that the Spark does not include a clamp button, the undersigned likewise finds that the Spark does not meet this limitation.

[redacted]

vi. Limitation 1[g]

DJI disputes that this limitation is met for the same reasons as for the Mavic Pro. RIB at 164-168 (arguing that none of the accused products satisfy the clamping portion). As explained above, the undersigned found that DJI waived its prosecution disclaimer argument. DJI does not assert any other reason why the Spark does not meet this limitation. The undersigned previously found, however, that the Spark does not include a "clamp button." Accordingly, the undersigned finds that the Spark does not meet this limitation.

vii. Conclusion

For the reasons set forth above, the undersigned finds that the Spark does not infringe claim 1 of the '013 patent.

b) Dependent Claims

Because the undersigned has found that independent claim 1 is not infringed, it is not necessary to determine whether dependent claims 3-5, 8, 10, 18, and 22 are infringed. The undersigned notes, however, that Respondents do not appear to dispute that, if claim 1 is infringed, then claims 3, 4, 10, and 22 are infringed as well. *See* RIB at 176-179; RRB at 53-56.

3. Mavic Air

Autel asserts that the Mavic Air infringes claims 1, 3-5, 8, 10, 18 and 22. CIB at 152.

a) Claim 1

DJI does not dispute that the Mavic Air meets limitations 1[b] and 1[c]. RIB at xii. DJI does not address the limitations of the preamble, 1[a], 1[d], 1[e], or 1[f] in its briefs, and has therefore waived any arguments that these limitations are not met. *See id.* at 168-176; RRB at 45-56. Additionally, the undersigned finds that the Mavic Air has a main body comprising a battery compartment, a battery assembly capable of being accommodated in the battery compartment, the

[redacted]

battery assembly comprising a shell and a battery body substantially disposed in the shell, and a clamp button, wherein a first end of the clamp button being mounted directly or indirectly to the shell and a second end of the clamp button being detachably coupled to the main body. CX-0001C at Q/As 300-303, 306-308; CPX-0012; CPX-0013.

DJI disputes that claim 1[g] is met for the same reasons as for the Mavic Pro. RIB at 164-168 (arguing that none of the accused products satisfy the clamping portion). As explained above, the undersigned found that DJI waived its prosecution disclaimer argument. DJI does not assert any other reason why the Mavic Air does not meet this limitation. Additionally, the evidence shows that the Mavic Air has a battery compartment comprising a clamping portion configured to detachably connect to the clamp button. CX-0001C at Q/A 309; CPX-0013. Accordingly, the undersigned finds that the Mavic Air meets this limitation.

b) Claims 3, 4, 5, 10, and 22

Autel asserts that the additional limitations of claims 3, 4, 5, 10, and 22 are met. CIB at 172-175. DJI does not address the additional limitations of these claims in its brief, and has therefore waived any arguments that these limitations are not met. RIB at 176-179; RRB at 53-56. Additionally, the undersigned finds that the Mavic Air meets the additional limitations of claims 3, 4, 5, 10, and 22. *See* CX-0001C at Q/As 310-312, 316-317, 323.

c) Claim 8

Claim 8 is directed to "[t]he multi-rotor unmanned aerial vehicle according to claim 1, wherein the second end of the restorable elastic piece is disposed on an inner side of the clamp button." JX-0003 at cl.8. Autel explains that "[t]he second end of the silver coil spring is connected to and linked with the inner side of the clamp button." CIB at 173.

[redacted]

DJI argues that the Mavic Air uses a "spring[] as a restorable elastic piece, and the spring[] . . . [is] not disposed on the inner side of the clamp button." RIB at 176. Specifically, "the spring that Dr. Reinholtz identified as the 'restorable elastic piece' curves around the cylindrical portion of the piece Dr. Reinholtz points to as the alleged clamp button, not its inside face." *Id.*

The undersigned finds that Autel has not established that this claim is met. Dr. Reinholtz testifies that "[t]he coil spring [*i.e.*, the restorable elastic piece] is mounted more toward the interior of the battery compartment than the clamp button and therefore on an inner side of the clamp button." CX-0001C at Q/A 315. The evidence shows, however, that the second end of the restorable elastic piece curves around the cylindrical portion of the clamp button and is not disposed on the inner side. RX-0174C at Q/A 289; CX-0278. The undersigned therefore finds that Autel has not demonstrated that the Mavic Air infringes claim 8.

d) Claim 18

Claim 18 is directed to "[t]he multi-rotor unmanned aerial vehicle according to claim 1, wherein the unmanned aerial vehicle comprises at least two restorable elastic pieces, the at least two restorable elastic pieces being mirror symmetric." JX-0003 at cl.18.

Autel explains that "[t]he Mavic Air includes two silver coil springs (the restorable elastic pieces), which are located on opposite sides of the battery assembly." CIB at 174. Autel further explains that a person of ordinary skill in the art would consider the springs to be mirror symmetric. *Id.* (quoting Reinholtz, Tr. at 223:18-23).

DJI argues that the Mavic Air "use[s] springs on either side of the battery assembly, but those springs are wound in the same direction and are identical, not mirror symmetric." RIB at 178.

[redacted]

The undersigned finds that Autel has not established that this claim is met. The Mavic Air has silver coil springs (the restorable elastic pieces) with coils wound in the same direction. RX-174C at Q/As 292-293; CX-0273; CX-0278. In order to prevail, Autel would need to establish that a person of ordinary skill in the art would understand that such springs are mirror symmetric. Autel does not succeed in doing so. While Dr. Reinholtz testified that he believes that a person of ordinary skill in the art would consider springs wound in the same direction to be mirror symmetric, his statement is conclusory. Reinholtz, Tr. at 223:18-23. Dr. Reinholtz does not for instance, reference any evidence establishing that others in the field would reach the same conclusion. Indeed, Dr. Alonso disagrees. RX-0174C at Q/A 293. Without more evidence, the undersigned finds that Autel has not demonstrated that the Mavic Air infringes claim 18.

4. Phantom 4 Pro

Autel asserts that the Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK infringe claims 1, 3-4, 8, 10, 13-16, 18, and 22-23. CIB at 152. Autel also asserts that: "For purposes of infringement, the DJI Phantom 4 Pro is representative of the Phantom 4, Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK." *Id.* at 182. DJI does not dispute that the DJI Phantom 4 Pro is representative of the other Phantom products and, in fact, relies on the Phantom 4 as representative in its own briefing. RIB at 159 n. 11; *see also* RX-0174C at Q/A 326.

a) Claim 1

DJI does not dispute that the Phantom 4 Pro meets limitations 1[b] and 1[c]. RIB at xii. DJI does not address the limitations of the preamble, 1[a], 1[d], 1[e], or 1[f] in its briefs, and has therefore waived any arguments that these limitations are not met. *See id.* at 168-176; RRB at 45-56. Additionally, the undersigned finds that the Spark has a main body comprising a battery

[redacted]

compartment, a battery assembly capable of being accommodated in the battery compartment, the battery assembly comprising a shell and a battery body substantially disposed in the shell, a clamp button, wherein a first end of the clamp button being mounted directly or indirectly to the shell and a second end of the clamp button being detachably coupled to the main body, and a restorable elastic piece, wherein a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell, a second end of the restorable elastic piece contacting the clamp button. CX-0001C at Q/As 354-355, 358-360; CPX-0020, CPX-0021; CX-0035.0003.

DJI disputes that claim 1[g] is met for the same reasons as for the Mavic Pro. RIB at 164-168 (arguing that none of the accused products satisfy the clamping portion). As explained above, the undersigned found that DJI waived its prosecution disclaimer argument. DJI does not assert any other reason why the Phantom 4 Pro does not meet this limitation. Additionally, the evidence shows that the Phantom 4 Pro has a battery compartment comprising a clamping portion configured to detachably connect to the clamp button. CX-0001C at Q/A 361; CPX-0020, CPX-0021; CX-0035.0003. Accordingly, the undersigned finds that the Phantom 4 Pro series meets this limitation.

b) Dependent Claims

Autel asserts that the additional limitations of claims 3-4, 8, 10, 13-16, 18, and 22-23 are met. CIB at 187-191. DJI does not address the additional limitations of these claims in its brief, and has therefore waived any arguments that these limitations are not met. RIB at 176-179; RRB at 53-56. Additionally, the undersigned finds that the Phantom 4 Pro series meets the additional limitations of claims 3-4, 8, 10, 13-16, 18, and 22-23. *See* CX-0001C at Q/As 362-363, 367-377.

[redacted]

C. Domestic Industry – Technical Prong

Autel asserts that the EVO practices claims 1, 3-5, 8, 13, 14, 22, and 23 of the '013 patent. CIB at 191.

1. Claim 1

DJI does not dispute that the EVO meets limitations 1[b] and 1[c]. RIB at xii.

a) Preamble

The preamble of claim 1 states: "A multi-rotor unmanned aerial vehicle." JX-0003 at cl. 1. DJI does not address the preamble in its briefs and has therefore waived any argument that the preamble is not met. RIB at 179-184; RRB at 56-58. Additionally, the evidence shows that the EVO meets the preamble. CX-0001C at Q/As 507, 513-517.

b) Limitation 1[a]

Claim 1 includes the limitation of "a main body comprising a battery compartment . . .." JX-0003 at cl. 1[a].

Autel argues that "[t]he EVO's main body includes a space or compartment and corresponding structure where the battery is placed and secured in the aircraft, which is visible in the photos [below]:

Figure 101. EVO (CX-0050.0002)

Figure 102. EVO (CX-0050.0003)

CIB at 192. Autel notes that the compartment is bounded on two sides and "[n]othing else is placed in this space." CIB at 190-191; CRB at 67. "Accordingly, this is a 'separate section for holding a battery' and satisfies the 'battery compartment' limitation." CRB at 67.

[redacted]

DJI asserts that "[u]nder the Chief ALJ's construction, the Autel EVO product does not meet this claim limitation because it does not have a separate section for holding a battery. Instead, it has an open space where the battery is placed, not a compartment." RIB at 180.

The undersigned agrees that the EVO includes a battery compartment. The undersigned construed this term consistent with its plain and ordinary meaning: "separate section for holding a battery." Order No. at 30. In reaching this construction, the undersigned noted that "[t]here is nothing in the specification that suggests that the battery compartment" be surrounded on all sides. *Id.* at 28-29. Here, the area for the battery is bounded on two sides and designed to hold a battery. *See* CX-0001C at Q/A 509; *see also* CX-0810.0032 (EVO User Manual referring to the space as a "battery compartment"). It therefore meets the definition of "battery compartment."

c) Limitation 1[d]

Claim 1 includes the limitation of "a battery assembly capable of being accommodated in the battery compartment, the battery assembly comprising a shell and a battery body substantially disposed in the shell. . .." JX-0003 at cl. 1[d]. DJI disputes that this limitation is met for the same reasons it disputes that claim 1[a] is met: the EVO lacks a battery compartment. RIB at 180-181. As stated above, the undersigned found that the EVO has a "battery compartment." The undersigned therefore finds that the EVO practices this claim limitation. *See* CX-0001C at Q/A 512.

d) Limitation 1[e]

Claim 1 includes the limitation of "a clamp button, wherein a first end of the claim button being mounted directly or indirectly to the shell and a second end of the clamp button being detachably coupled to the main body." JX-0003 at cl. 1[e]. DJI does not address this limitation in its briefs and has therefore waived any argument that this limitation is not met. *See* RIB at 179-

[redacted]

184; RRB at 56-58. Additionally, the evidence shows that the EVO meets this limitation. CX-0001C at Q/As 513-517; CX-0050.003.

e) Limitation 1[f]

Claim 1 includes the limitation of "a restorable elastic piece, wherein a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell . . .." JX-0003 at cl. 1[f]. The parties agree that the silver coil spring of the EVO is a restorable elastic piece and that this spring is connected to a clear plastic piece. The parties disagree, however, as to whether the clear plastic piece is part of the shell.

According to Autel, "[t]he shell includes an outer orange piece and a clear plastic piece, as shown in the photos [below]":

Figure 103. EVO Battery (CX-0844)

Figure 104. EVO Battery (CX-0863)

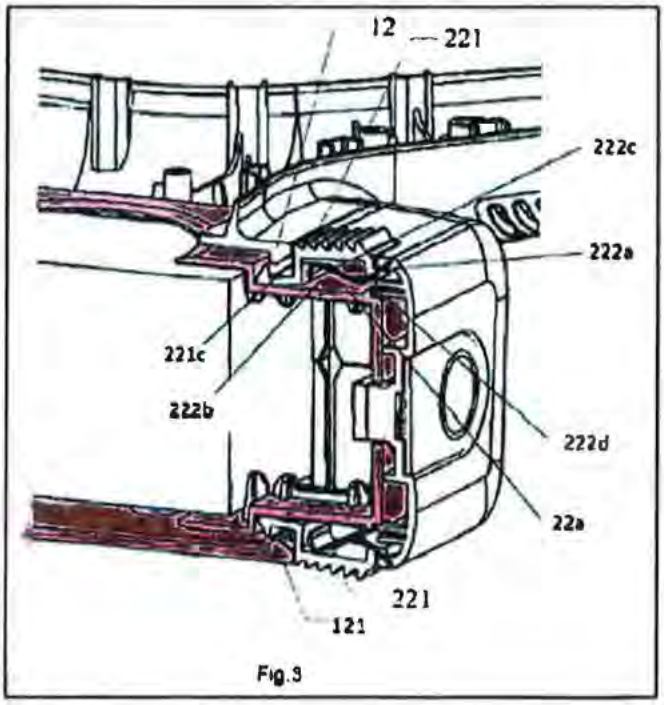
CIB at 194. Autel asserts that "[u]nder its actual plain meaning, the clear plastic piece certainly qualifies as part of the structure that comprises the shell, i.e., the external structure, case, or covering of the battery body." *Id.* at 196. Autel further notes that "the specification describes and illustrates an embodiment in which the shell is a structure with multiple components." *Id.* at 196-197.[32]

[32] Autel also asserts that "shell" has a plain and ordinary meaning and cites to a dictionary in support. CIB at 196 (citing Meriam-Webster). This dictionary was not an exhibit at the hearing and therefore cannot be used as evidence now. Accordingly, the undersigned disregards this argument.

[redacted]

DJI contends that "[t]he clear plastic piece is not part of the shell." RIB at 182. "Instead, that clear plastic piece is a separate piece that does not serve as a shell to the battery as the claim requires." *Id.* DJI asserts that "[a] shell is normally defined as a continuous thin structure" and "[t]he clear piece is an additional part affixed to the structure and, therefore, not part of the shell." *Id.* DJI also argues that the requirement that the battery body be "substantially disposed in the shell" leads to the conclusion that the clear plastic piece is not part of the shell. *Id.*

The evidence shows that a person of ordinary skill in the art would find that the '013 patent contemplates that a clear plastic piece is part of the shell. As Autel notes, the specification depicts an embodiment in which the shell includes a plate 22a. JX-0003.2 at Fig. 2, 3, 4:28-31. DJI's expert agrees with this characterization. During his deposition, Dr. Alonso was asked to identify the shell in Figure 3 and he highlighted the portion that includes the plate 22a:



[redacted]

CX-0921.005; *see also* Alonso, Tr. at 270:15-271:5. Because the patent indicates that a plate is part of the shell, the undersigned finds that the clear plastic piece is likewise part of the shell.[33]

The undersigned is also not persuaded by DJI's argument that the clear plastic piece cannot be part of the shell based on the claim's requirement that "a battery body is substantially disposed in the shell." Even assuming the battery body is not "substantially disposed" on the clear plastic piece, there is nothing in the claim that requires that the battery body be "substantially disposed" in every part of the shell. Without anything in the patent restricting the claim in such a way, the undersigned declines to include such a limitation. *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1306 (Fed. Cir. 2011) ("To disavow claim scope, the specification must contain expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

For the above reasons, the undersigned finds that the EVO meets this claim limitation.

f) Limitation 1[g]

Claim 1 includes the limitation of "wherein the battery compartment comprises a clamping portion configured to detachably connect to the clamp button." JX-0003 at cl. 1[g]. DJI asserts that "the claimed clamping portion cannot be simply a hole or receiving space for receiving the protrusion." RIB at 184. As explained in Section VII.B.1.a.vi, the undersigned found that DJI waived this argument. Additionally, the evidence shows that the EVO includes a battery compartment comprising a clamping portion configured to detachably connect to the clamp button. CX-0001C at Q/A 522; CX-0050.0003. As such, the undersigned finds that the EVO practices this claim limitation.

[33] DJI does not address this particular argument in either of its briefs.

[redacted]

g) Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that the EVO practices claim 1.

2. Claims 3, 5, 8, 14, 22, and 23

Autel asserts that the additional limitations of claims 3, 5, 8, 14, 22, and 23 are met. CIB at 198-201. DJI does not address the additional limitations of these claims in its brief, and has therefore waived any arguments that these limitations are not met. RIB at 185-186; RRB 56-58. Additionally, the undersigned finds that EVO practices the additional limitations. CX-0001C at Q/As 523, 525, 528, 531, 533-534.

3. Claim 4

DJI argues that the EVO does not meet the limitation "wherein the first end of the restorable elastic piece abuts against the shell." RIB at 185. DJI explains: "As discussed earlier, the clear piece is not part of the shell because it is a separate piece that does not serve as the shell to the battery as the claim requires." *Id.* "Thus, neither end of the spring in the Autel EVO, which Dr. Reinholtz identifies as the restorable elastic piece, abuts against the shell or is fixed with the shell, as required by" claim 4. *Id.* The undersigned previously rejected DJI's argument that the clear plastic piece is not part of the shell. Additionally, the evidence shows that the first end of the restorable elastic piece abuts against the shell. CX-0001C at Q/A 524. As such, the undersigned finds the EVO practices the additional limitation of claim 4.

4. Claim 13

Claim 13 states: "The multi-rotor unmanned aerial vehicle according to claim 12, wherein the hook disposed on the clamp button is configured to engage the clamping portion of the battery compartment." JX-0003 at cl. 13. Claim 12, in turn, provides: "The multi-rotor unmanned aerial

[redacted]

vehicle according to claim 1, wherein a hook is disposed on the second end of the clamp button for detachably connecting the battery assembly to the battery compartment."[34]

DJI asserts that the additional limitations of claim 13 are not met. Specifically, DJI contends that the EVO does not include a clamping portion. RIB at 186. Additionally, "the portion Dr. Reinholtz identifies as the clamping portion is located on the main body of the UAV, not in any compartment." *Id.*

The undersigned previously rejected DJI's argument that the EVO lacks a battery compartment or a clamping portion. Additionally, the evidence shows that the hook is disposed on the second end of the clamp button for detachably connecting the battery assembly to the battery compartment. CX-0001C at Q/As 529-530; CX-0050.0003. As such, the undersigned finds the EVO meets the additional limitation of claim 13.

5. Conclusion

Accordingly, for the reasons set forth above, the undersigned finds that Autel has satisfied the technical prong of the domestic industry requirement for the '013 patent.

D. Validity

DJI argues that the asserted claims are invalid as obvious due to the following combinations: (1) the Phantom 2 Vision+ User Manual v1.4 ("Phantom 2 Manual") combined with U.S. Patent No. 5,769,657 to Kondo et al. ("Kondo"); and (2) U.S. Patent Publication No. 2017/0001721 to Saika et al. ("Saika") combined with either Kondo or Japanese Unexamined Patent Application Publication 2007-123082 to Ichiba et al. ("Ichiba"), or for claim 16, the combination of Saika, Ichiba, and Kondo. RIB at 186.

[34] Claim 13 depends from claim 12. Autel asserts only that the EVO practices claim 13, and does not specifically assert that the EVO practices claim 12. CIB at 191. In its briefing, however, Autel explains how the EVO meets the limitations of claim 12, as well as claim 13. *Id.* at 199-200.

[redacted]

1. Phantom 2 Manual with Kondo

Autel does not dispute that the Phantom 2 Manual discloses elements 1[a], 1[b], 1[c], and 1[d] or that Kondo discloses elements 1[e], 1[f], or 1[g]. CIB at 202-203. Nor does Autel dispute that these references disclose the limitations added by claims 3-5, 8, 10, 13-16, 18, 22, and 23. *Id* at 209. Thus, Autel does not dispute that the Phantom 2 Manual and Kondo together disclose each and every limitation of the asserted claims. Instead, Autel argues that there is no evidence that a person of ordinary skill in the art "would have been motivated to modify the battery shell in the Phantom 2 Manual to incorporate components of Kondo's attachment structure." *Id.* at 207. Autel specifically argues that "DJI has not identified any motivation to modify the battery in the Phantom 2 Manual in the first place," and that, even if such motivation was identified, a person of ordinary skill in the art "would not have consulted Kondo (or, for that matter any power tool reference)." *Id.*

DJI argues that "a person having ordinary skill in the art would have been motivated to search for references describing battery latching mechanisms for portable electronics devices to come up with a detailed and secure latching mechanism for a battery." RIB at 196. DJI further contends that a person of ordinary skill in the art would be motivated to consider power tool battery references. *Id.* at 195. DJI explains that, during prosecution of the patent, "[t]he applicant, patent examiner, and a third party all considered power tool references as relevant to the claimed invention." *Id.*

The undersigned agrees with DJI that a person of ordinary skill in the art would have been motivated to modify the battery shell in the Phantom 2 Manual to incorporate components of Kondo's attachment structure. The evidence shows that a person of ordinary skill in the art would recognize that a UAV requires its battery to be secured, in order to prevent disengagement during

[redacted]

flight or landing. RX-0001C at Q/As 337-338. Thus, "a person having ordinary skill in the art would have been motivated to search for references describing battery latching mechanisms for portable electronics devices to come up with a detailed and secure latching mechanism for a battery." *Id.* at Q/A 337.

The undersigned also agrees with DJI that a person of ordinary skill in the art would be motivated to consider power tool references. As Dr. Alonso explains:

> Clear similarities exist between multi-rotor UAVs and power tools in terms of their requirement that the removable battery maintains its position with respect to the body of the vehicle and tool. . . [P]ower tools are subjected to rough handling (*e.g.*, dropping, tossing into tool boxes, etc.) which can cause disconnection of the battery. In addition, the dangerous nature of power tools makes any shift in the balance that could result in accidental misplacement of the tool . . . a series safety concern. A person having ordinary skill in the art would therefore have understood that a battery latching mechanism for securing a power tool battery would have success in securing a UAV battery because of these commonalities.

Id. at Q/A 340.

Dr. Alonso's testimony is supported by the evidence. During prosecution, the applicant, the patent examiner, and a third party all identified power tool references as relevant prior art. The applicant disclosed U.S. Patent Publication No. 2002/0125857, titled "Battery adapter for a cordless power tool system and related method" in an information disclosure statement. *Id.* at Q/As 346-347; RX-0033; RX-0034. The examiner identified two references which describe power tool battery connectors. RX-0013 at 117-119, 138-139, 146. (identifying Turner and Chellew references); Reinholtz, Tr. 464:18-465:1 (confirming that Turner and Chellew are power tool references). Finally, a third party submitted a power tool reference as prior art during prosecution. RX-0013 at 63, 68; RX-0029; Reinholtz, Tr. 465:2-466:24 (confirming that the third party reference relates to power tools). The fact that three entities identified power tool references as prior art demonstrates that a person of ordinary skill in the art would be motivated to look to power tool references.

[redacted]

The undersigned also finds that a person of ordinary skill in the art would have been motivated to consult Kondo specifically. The evidence shows that, to solve the problem of a secure battery, a person of ordinary skill in the art would have searched for designs of battery latching mechanisms designed to secure batteries in devices subject to movement, vibration, or heavy use. RX-0001C at Q/As 337-338. As Dr. Alonso explains:

> A shift in the position of the battery in the UAV during operation may cause the electrical connection between the battery and the UAV to be broken or create a weight imbalance. Each of these situations causes significant safety concerns. For example, a loss of electrical connection will cause the UAV to stop operating and rapidly descend in an uncontrolled manner. For this reason, a person having ordinary skill in the art would have been motivated to use Kondo's secure latching mechanism with Phantom 2's removable battery.

Id. at Q/A 338. Dr. Alonso further notes:

> A person having ordinary skill in the art would have been motivated to combine the teachings of Phantom 2 and Kondo to strike the right balance between securely latching the battery . . . and the convenience of quickly installing and swapping batteries in preparation for flight or in between multiple flights. It is not uncommon to fly a drone multiple times as the batteries discharge to complete a mission that cannot be done with a single battery. In these instances, it is beneficial to have a number of additional charged batteries ready to swap so that the flight time is disrupted as little as possible. A person having ordinary skill in the art would have understood that quickly and securely installing and swapping batteries would increase the productivity of the drone user and would have therefore been motivated to combine the teachings of Phantom 2 and Kondo.

Id. at Q/A 339.

Because the evidence shows that a person of ordinary skill in the art would have been motivated to combine the teachings of the Phantom 2 Manual with Kondo, the undersigned finds that the '013 patent is invalid as obvious due to the Phantom 2 Manual in view of Kondo.

2. Saika with Kondo or Ichiba

Autel does not dispute that Saika discloses elements 1[a], 1[b], 1[c], and 1[d] or that both Kondo and Ichiba disclose elements 1[e], 1[f], or 1[g]. CIB at 211. Nor does Autel dispute the disclosure of the limitations added by claims 3-5, 8, 10, 13-16, 18, 22, and 23. *Id* at 218. Thus,

[redacted]

Autel does not dispute that Saika and Kondo/Ichiba together disclose each and every limitation of the asserted claims. Instead, Autel disputes that a person of ordinary skill in the art "would have been motivated to modify the battery shell in Saika to incorporate components of Ichiba's battery attachment and detachment system or Kondo's attachment structure." *Id.* at 217. Autel argues that "DJI has not identified any motivation to modify the battery in Saika in the first place," and that, even if such motivation was identified, a person of ordinary skill in the art "would not have consulted Ichiba or Kondo." *Id.*

DJI argues that "[f]or many of the same reasons described above in connection with the combination of the Phantom 2 Manual and Kondo, a person having ordinary skill in the art would have been motivated to use the battery latching mechanism disclosed in Ichiba with the Saika quadcopter." RIB at 204. DJI explains that Saika emphasizes the benefits of "a battery which can be removed quickly and easily" and thus a person of ordinary skill in the art "would be motivated to incorporate further mechanisms to make Saika's battery latch more user-friendly and easier to operate." *Id.* at 204, 205. "Ichiba provides just that type of a user-friendly battery latching mechanism." *Id.* at 205.

The undersigned agrees with DJI that a person of ordinary skill in the art would have been motivated to modify the battery in the Saika quadcopter to incorporate components of Kondo's attachment structure or the battery latching mechanism disclosed in Ichiba. As Dr. Alonso explained "one design goal of Saika was 'a battery which can be removed quickly and easily,'" so that "the aerial vehicle may continue to be flown without having to first recharge the battery." RX-0001C at Q/A 450. Dr. Alonso also testified that the quadcopter of Saika was "designed for recreational and hobby users," so a battery latch that was user-friendly and easy to operate was important. *Id; see also id.* at Q/A 448 (indicating that "Saika recognizes at ¶ 0004 that a 'battery

[redacted]

which can be removed quickly and easily is advantageous'"). Thus, a person of ordinary skill in the art would be motivated to find ways to improve upon Saika's battery latch.

The undersigned further finds that a person of ordinary skill in the art would have been motivated to incorporate the "user-friendly battery latching mechanism" of Ichiba specifically. *See* RX-0001C at Q/A 450. As stated above, the evidence shows that a person of ordinary skill in the art would look to power tool references. *See* Section VII.D.1. The evidence further shows that a person of ordinary skill in the art "would recognize that Ichiba's spring actuated latching mechanism provides a means to secure the battery package in place to avoid accidental dislodgement during both battery installation and operation of the UAV." RX-0001C at Q/A 451. Additionally, Ichiba teaches that "its removable batteries and associated latching mechanism are not limited to electric tools and can be applied to other devices." *Id.* (citing RX-0024 at ¶ 0002, 0029). A person of ordinary skill would also understand that "[t]he combination of Saika with Ichiba is merely a simple substitution of one element . . . with another." *Id.* at Q/A 452. Thus, a person of ordinary skill in the art would look to Ichiba when modifying the battery of Saika.

A person of ordinary skill in the art would also look to Kondo when modifying the battery of Saika. As Dr. Alonso explains: "A person having ordinary skill in the art would have searched for specific designs of battery latching mechanisms designed to secure batteries in devices subject to movement, vibration, or heavy use . . ." *Id.* at Q/A 456. As explained above, Kondo discloses such a battery latching mechanism.

Accordingly, the undersigned finds that the '013 patent is invalid as obvious due to Saika in view of Kondo or Ichiba.

[redacted]

3. Secondary Considerations of Nonobviousness

Autel argues that there are "secondary considerations that provide objective evidence that the claimed invention of the '013 patent was not obvious at the time of its invention." CIB at 218. Specifically, Autel asserts that there is evidence of a long-felt, but unsolved need in the industry and failure of others. *Id.* at 218-219.

a) Long-Felt, but Unresolved Need

Autel asserts that "[t]he claimed invention of the '013 patent solved a long-felt, but unsolved need in the industry." *Id.* at 218. Specifically, Autel relies on Dr. Reinholtz to establish that the long-felt need in the industry was "for a battery latching mechanism for quadcopter UAVs that strikes the right balance between securely latching the battery while still allowing a user to easily and quickly install and remove batteries between flights." *Id.* Autel argues that "[t]here has been a need in the industry as early as 1999" and "it did not occur to anyone to combine a quadcopter UAV battery with a spring-loaded battery latch until 2015." *Id.* at 218-219.

DJI asserts that "[t]he information on which Dr. Reinholtz relies does not support his opinion." RIB at 211. DJI further argues that the expert testimony of Dr. Alonso, upon which Dr. Reinholtz relies, establishes that "any such alleged need was satisfied by others before the applicant's invention, negating any long-felt need." *Id.*

The Federal Circuit has held that "long-felt need is analyzed as of the date of an articulated identified problem and evidence of efforts to solve that problem." *Texas Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993). If "another supplied the key element" to cure the long-felt need prior to the invention by the patentee "there [is] no long felt need or, indeed, a problem to be solved." *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

[redacted]

The undersigned finds that Autel did not prove that there was a long-felt but unsolved need in the industry that the '013 patent solved. First, Autel does not demonstrate that battery latch mechanisms were an "articulated identified problem" in the UAV industry. Dr. Reinholtz relies on testimony from Dr. Alonso and Mr. Xiong, but both of these witnesses testified only about relevant considerations in battery design and did not specifically identify a problem with battery latch mechanisms. *See* CX-0016C at Q/As 357-358; JX-0018C at 45:5-46:2. Moreover, the record does not include any evidence that the industry was making efforts to solve an identified problem. For example, the record is devoid of evidence that other UAV companies identified the existing art as a problem and were experimenting with new latch technologies.

Second, there is evidence that, to the extent a problem with battery latching mechanisms existed, the problem was cured prior to the invention of the '013 patent. Autel's argument that the alleged long-felt need was unsolved because no one thought to combine a spring-loaded locking mechanism with a UAV battery until 2015 defines the problem in terms that are too narrow. Instead, the unsolved need that Autel proposed was for a "battery latch mechanism for quadcopter UAVs that strikes the right balance." CIB at 218. Therefore, any number of mechanisms that secured the battery and allowed for easy access solved the problem. For instance, the evidence demonstrates that the Phantom prior art secured the battery to the UAV and allowed for easy access by utilizing plastic clips that deformed according to the inherent elasticity within the plastic rather than utilizing an elastic spring mechanism. *See* RX-0023 (Phantom 2 Manual); *see also* CRB at 89-90. Thus, if a problem did exist in the industry, it was solved before the priority date of the '013 patent.

[redacted]

b) Failure of Others

Autel asserts that "that the Phantom 4 was the first DJI quadcopter to use a spring-loaded battery latching mechanism." CIB at 219. Autel explains that none of DJI's prior models included such a mechanism. Instead, "it took many years to launch a product that incorporates a spring-loaded battery latching mechanism." *Id.* Autel also argues that GoPro, Inc. ("GoPro") failed when it attempted to solve the problem and instead issued a quadcopter drone with a faulty battery latch, resulting in a recall of the product. *Id.* at 220.

DJI asserts that [redacted] RIB at 211. Nor is it "evidence that the spring-loaded battery latching mechanism solves a recognized problem that existed in the art for a long period of time without a solution." *Id.*

The Federal Circuit has held that the failure of others negates a finding of obviousness "when the evidence indicates that others found development of the claimed invention difficult and failed to achieve any success." *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1081 (Fed. Cir. 2012). Thus, the relevant question is whether "others had tried but failed to make [the] invention." *Ecolochem, Inc. v. S. California Edison Co.*, 227 F.3d 1361, 1378 (Fed. Cir. 2000).

The evidence does not support a finding that others tried to solve the problem but failed to do so. While the evidence shows that [redacted]. JX-0018C at 63:11-65:18.

[redacted]

Nor is the undersigned persuaded that the GoPro evidence supports a finding of failure of others. While the evidence shows that GoPro recalled its quadcopter drone due to problems with the "latch mechanism which secured the drone's battery," the evidence does not expand on what the problem was. CX-0473. The problem may have been due to a defect in the materials used in the latch mechanism, for example, rather than the design of the latch mechanism. It is also possible that the problem *affected* the latch mechanism but was actually the result of an error in a related component. Without more information, the undersigned cannot conclude that GoPro failed to develop a spring-loaded battery latching mechanism. Additionally, the evidence shows that GoPro reissued the product within three months of the recall. *Id.* This, too, weighs against a finding of "failure of others" as it indicates that the problem was easily fixed within a short amount of time.

4. Conclusion

For the reasons set forth above, the undersigned finds the asserted claims of the '013 patent are invalid under 35 U.S.C. § 103.

VIII. DOMESTIC INDUSTRY – ECONOMIC PRONG

Autel asserts that it has an established domestic industry that satisfies the economic prong of the domestic industry requirement for the Asserted Patents under 19 U.S.C. § 1337(a)(3)(A), (B), and (C).[35] CIB at 220-244. DJI disagrees. RIB at 213-219.

A. Significant Employment of Labor or Capital

Autel asserts that it has an existing domestic industry in the EVO based on significant employment of labor and capital. CIB at 228. Autel submits that it has several teams that performed and continue to perform R&D and quality assurance activities for the EVO in the United States, including the Vision, Flight Control, Application, and Quality Assurance teams. *Id.* at 228-230

[35] Autel does not assert that a domestic industry "is in the process of being established." *See* CIB at 220-244.

[redacted]

(citing CX-0004C at Q/As 36-41, 43). Autel states that its Vision team is "responsible for research and development pertaining to the computer vision system for the EVO, which allows the EVO to sense and avoid obstacles while it is flying" and its Flight Control team is "responsible for research and development of the flight control system for the EVO, which allows the EVO to fly and react to commands through the mobile application and/or remote controller." *Id.* at 228-229 (citing CX-0004C at Q/As 39-42). Autel argues that its Application Team "was responsible for developing (and later updating) the mobile application used to control the EVO," while its Quality Assurance team "contributes to research and development of the EVO by performing testing and quality control procedures for the EVO following manufacturing." *Id.* at 229 (citing CX-0004C at Q/As 36-38). Autel submits that the total labor investment allocable to EVO-related R&D and quality assurance amounts to [redacted] in 2016, [redacted] in 2017, and [redacted] in 2018.[36] *Id.* at 231 (citing CX-0002C at Q/A 74).

In addition, Autel contends that its Technical Support team performs customer support, testing, and repair of the EVO product.[37] *Id.* at 231 (citing CX-0004C at Q/A 45). Autel states that its Technical Support team works on both the X-Star and EVO products. *Id.* at 232. Autel notes that it stopped selling the X-Star in late 2017 and launched the EVO in June 2018. *Id.* Autel argues that, as a result, the Technical Support team's repair efforts have shifted away from the X-Star and towards the EVO, moving from [redacted] of activities in July 2018 to [redacted] in May 2019. *Id.* (citing CX-0002C at Q/As 51, 76; CX-0004C at Q/A 48). Autel submits that the EVO currently accounts for roughly [redacted] of the team's repair and support activities. *Id.* (citing CX-0006C at Q/A 27; CX-0004C at Q/A 48). Autel argues that the total domestic industry labor investment allocable to EVO-

[36] Autel's labor expenses include employee salaries, benefits, bonuses, and payroll taxes. CX-0004C at Q/A 35.
[37] Autel explains that its Technical Support team communicates directly with customers to troubleshoot issues, and if necessary, accepts EVO units for analysis and repair. CIB at 231.

[redacted]

related technical support amounts to [redacted] in 2018. *Id.* at 233 (citing CX-0002C at Q/A 80). Autel therefore submits that, collectively, the EVO labor investments performed by the Vision, Flight Control, Application, Quality Assurance, and Technical Support teams total [redacted] in 2016, [redacted] in 2017, and [redacted] in 2018. *Id.* at 231, 239 (citing CX-0002C at Q/As 74, 80).

Autel further contends that a series of research projects it funded at [redacted] directly contributed to the R&D of the EVO and are relevant to the domestic industry analysis. *Id.* at 233. Autel totals its investments in these research projects at [redacted] in 2016, [redacted] in 2017, [redacted] in 2018, and [redacted] in 2019. *Id.* at 234 (citing CX-0002C at Q/A 97). Autel asserts these investments were generally directed towards "faculty, professional, and graduate student salaries, as well as benefits, operating expenses, travel expenses, and indirect costs" for the research projects, and were intended to advance the functionality of the EVO. *Id.* at 233-239.

Autel contends that these labor and capital expenditures are significant under section 337(a)(3)(B). Autel submits that "all of Autel's employees are located in the United States" and "the majority" of its present work "is focused on the EVO." *Id.* at 243 (citing CX-0004C at Q/A 10; CX-0002C at Q/A 114). Autel points out that its labor investments totaled nearly [redacted] from 2016 to 2018, compared to total U.S. labor investments of [redacted] over the same period. *Id.* (citing CX-0002C at Q/A 115). Autel further describes how its Technical Support, Quality Assurance, Vision, and Flight Control teams "spend a significant and increasing amount of time on the [EVO]." *Id.* (citing CX-0002C at Q/A 116).

DJI challenges Autel's investment in labor and capital for many of the same reasons it did under § 337(a)(3)(A). DJI argues that Autel provides insufficient context to determine whether

[redacted]

Autel's labor and capital investments are quantitatively significant. RIB at 217-218. DJI also challenges Autel's computation of labor expenses related to technical support and repair of the EVO. *Id.* at 214-215. DJI claims that Autel erroneously inflates its technical support and repair labor expenses by submitting its labor expenses for the entirety of 2018. *Id.* at 215. Because the EVO was released in June 2018 and the Complaint in this Investigation was filed in August 2018, DJI argues that the correct allocation of these labor expenses would "only cover the June-to-August 2018 timeframe." *Id.*

DJI further argues that Autel's "disappearing" R&D workforce cannot establish a domestic industry. *Id.* at 214. DJI contends that Autel's Vision and Flight Control teams declined from [redacted] in 2017 to [redacted] in 2019, and its Application team went from [redacted] employees in 2017 to [redacted] in 2019. *Id.* (citing CX-0004C at Q/As 50-52; CX-0002C at Q/As 68-69). Citing these reductions, DJI argues that "investments in these research and development categories effectively no longer exist in the United States and cannot be credited" in the domestic industry analysis. *Id.* DJI also contends that the university research sponsored by Autel represents "illusory black-box grants of cash without any evidence of correlation to the domestic industry product" and should not be considered in the domestic industry analysis. *Id.* at 215-216.

The evidence demonstrates that Autel's investments in employment of labor or capital are significant. Autel's labor expenses are as follows:

AUTEL LABOR EXPENSES BY TEAM	2016	2017	2018
Vision & Flight Control	[redacted]		
Application			
Quality Assurance			
Total R&D and QA			
Technical Support – Repair			

[redacted]

AUTEL LABOR EXPENSES BY TEAM	2016	2017	2018
Technical Support – Other	[redacted]		
Total Technical Support			

See CX-0002C at Q/As 74, 76-80.

The undersigned also finds that Autel's employment of labor related to EVO R&D is relevant and probative in the domestic industry analysis, despite its decline from 2016 to 2018. Autel utilized the following number of employees on its EVO R&D teams over time:

AUTEL NUMBER OF EMPLOYEES BY TEAM	2016	2017	2018
Vision & Flight Control	[redacted]		
Application			
Total R&D Employees			

See id. at Q/A 69-70; CX-0004C at Q/A 50-52. These R&D employees spent [redacted] of their time on the EVO. CX-0002C at Q/A 73. While Autel trimmed its EVO R&D workforce because of a reduced need for product development once the EVO was released, the undersigned is persuaded that this change in Autel's employment of labor is reasonable and consistent with product development in this industry. CX-0004C at Q/A 32; Powell, Tr. at 69:4-12.

Furthermore, the Commission has clearly stated that:

> [W]here production, development or sales of protected articles have declined or even ceased entirely, a domestic industry may nevertheless be established based on past significant or substantial investments relating to the protected articles provided that complainant continues to maintain ongoing qualifying activities under section 337(a)(3) at the time the complaint is filed.

Certain Television Sets, Television Receivers, Television Tuners, & Components Thereof, Inv. No. 337-TA-910, Comm'n Op. at 69 (Oct. 30, 2015). Here, the evidence shows that at least the Vision,

[redacted]

Flight Control, and Application teams directly contributed to R&D and product development for the EVO. Furthermore, Autel's Vision and Flight Control teams continue to provide updates and enhancements for the EVO, while the Technical Support team directs most of its efforts to the EVO as of May 2019. *See* CX-0002 at Q/A 76-79, 116; CX-0004C at Q/A 48, 84. Given Autel's ongoing activities related to the EVO, its past employment of domestic industry R&D labor is properly considered here.

While DJI objects to the allocation of Autel's employment of labor in 2018 for EVO technical support and repair, this amount is only [redacted] of Autel's overall domestic industry labor expenses from 2016 to 2018. Even omitting the disputed 2018 domestic industry technical support labor expenses entirely, Autel's R&D and quality assurance domestic industry labor expenses from 2016 to 2018 total [redacted] The evidence shows that over the same period, Autel's total labor expenses in the United States were [redacted]. *See* CX-0002C at Q/A 115. Thus, Autel's labor expenses over this period represent [redacted] of its total U.S. labor expenses. This proportion of labor expenses is indicative of the relative importance of the EVO as Autel's "flagship" product. CX-0004C at Q/A 10; *see also Certain Solid State Storage Drives, Stacked Electronics Components, and Prods. Containing Same*, Inv. 337-TA-1097, Comm'n Op. at 29 (June 29, 2018) (determining domestic industry investments in plant and equipment between 22% and 25% of complainant's total unallocated domestic investments in plant and equipment were significant under § 337(a)(3)(A)).

The undersigned finds that Autel's R&D and quality assurance labor expenses represent a considerable fraction of its overall U.S. labor expenses, and that these expenses are quantitatively significant under section 337(a)(3)(B). Furthermore, Autel's R&D and quality assurance efforts advanced EVO development and functionality and were directed to certain claims of the Asserted

[redacted]

Patents. *See* CX-0001C at Q/A 380; CX-0002C at Q/A 110; *Male Prophylactic Devices*, Comm'n Op. at 42 (domestic activity directed to the practice of asserted patent claims is distinctly relevant under § 337(a)(3)(A) and (B)). For instance, Autel's Vision and Flight Control teams "worked on advanced algorithms for flight path planning and object detection" while its Application team developed mobile applications to control the EVO. CX-0001C at Q/A 392; CX-0004C at Q/As 36-38. These R&D efforts involve the Asserted Patents and specifically relate "to at least the claims of the '174 patent." *Id.* Additionally, Autel's Quality Assurance team worked on relevant EVO features including "flying, the propellers, the battery mechanism, dynamic tracking and obstacle avoidance" that are related to the claims of the '184, '013, and '174 patents. *Id.* at Q/A 394. For these reasons, the undersigned concludes that Autel's R&D and quality assurance labor expenses are also qualitatively significant under section 337(a)(3)(B).

Accordingly, the undersigned finds that Autel has satisfied the economic prong of the domestic industry requirement for the Asserted Patents pursuant to section 337(a)(3)(B).[38]

B. Conclusion

For the reasons set forth above, Autel has satisfied the economic prong of the domestic industry requirement.[39]

[38] Having concluded that Autel's R&D and QA domestic industry labor expenses are significant under section 337(a)(3)(B), the undersigned declines to consider the university research projects funded by Autel.

[39] Accordingly, the undersigned need not decide whether Autel meets the economic prong under sections 337(a)(3)(A) and 337(a)(3)(C).

[redacted]

IX. CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over the parties, and subject-matter jurisdiction over the accused products.

2. The importation or sale requirement of section 337 is satisfied.

3. The Mavic Air, Mavic Pro, Mavic Pro Platinum, Mavic 2 Pro, Mavic 2 Zoom, Spark, Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, Phantom 4 RTK, Inspire 1, and Inspire 2 do not infringe claims 1, 7, 8, 14, or 17 of U.S. Patent No. 7,979,174.

4. The technical prong of the domestic industry requirement for U.S. Patent No. 7,979,174 has not been satisfied.

5. Claims 1, 7, and 8 of U.S. Patent No. 7,979,174 are not invalid under 35 U.S.C. § 102 for anticipation.

6. Claims 14 and 17 of U.S. Patent No. 7,979,174 are invalid under 35 U.S.C. § 102 for anticipation.

7. Claims 1, 7, 8, 14, and 17 of U.S. Patent No. 7,979,174 are invalid under 35 U.S.C § 103 for obviousness.

8. Claims 14 and 17 of U.S. Patent No. 7,979,174 are directed to patent-ineligible subject matter under 35 U.S.C. § 101.

9. The Mavic Pro, Mavic Pro Platinum, Mavic Pro 2, and Mavic Pro Zoom infringe claim 1 of U.S. Patent No. 9,260,184.

10. The Mavic Pro, Mavic Pro Platinum, Mavic Pro 2, and Mavic Pro Zoom do not infringe claim 2 of U.S. Patent No. 9,260,184.

11. The Spark and Mavic Air infringe claim 1 of U.S. Patent No. 9,260,184.

12. The Spark and Mavic Air do not infringe claim 2 of U.S. Patent No. 9,260,184.

13. The Mavic Air does not infringe claim 5 of U.S. Patent No. 9,260,184.

14. The Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK do not infringe claims 1, 2, and 5 of U.S. Patent No. 9,260,184.

15. The Inspire 1 and Inspire 2 do not infringe claims 1, 2, and 5 of U.S. Patent No. 9,260,184.

[redacted]

16. The technical prong of the domestic industry requirement for U.S. Patent No. 9,260,184 has been satisfied.

17. The asserted claims of U.S. Patent No. 9,260,184 are not invalid under 35 U.S.C. § 102 for anticipation.

18. The asserted claims of U.S. Patent No. 9,260,184 are not invalid under 35 U.S.C. § 103 for obviousness.

19. The Mavic Pro, Mavic Pro Platinum, Mavic Pro 2, and Mavic 2 Zoom infringe claims 1, 3-5, 10, 13-16, 18, and 22-23 of U.S. Patent No. 10,044,013.

20. The Spark does not infringe claims 1, 3-5, 8, 10, 18, or 22 of U.S. Patent No. 10,044,013.

21. The Mavic Air infringes claims 1, 3-5, 10, and 22 of U.S. Patent No. 10,044,013.

22. The Mavic Air does not infringe claims 8 and 18 of U.S. Patent No. 10,044,013.

23. The Phantom 4 Pro, Phantom 4 Pro V2.0, Phantom 4 Advanced, and Phantom 4 RTK infringe claims 1, 3-4, 8, 10, 13-16, 18, and 22-23 of U.S. Patent No. 10,044,013.

24. The technical prong of the domestic industry requirement for U.S. Patent No. 10,044,013 has been satisfied.

25. The asserted claims of U.S. Patent 10,044,013 are invalid under 35 U.S.C. § 103 for obviousness.

26. The economic prong of the domestic industry requirement has been satisfied.

X. RECOMMENDED DETERMINATION ON REMEDY AND BOND

The Commission's Rules provide that subsequent to an initial determination on the question of violation of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, the administrative law judge shall issue a recommended determination concerning the appropriate remedy in the event that the Commission finds a violation of section 337, and the amount of bond to be posted by respondent during Presidential review of the Commission action under section 337(j). *See* 19 C.F.R. § 210.42(a)(1)(ii).

[redacted]

The Commission has broad discretion in selecting the form, scope and extent of the remedy in a section 337 proceeding. *Viscofan, S.A. v. Int'l Trade Comm'n*, 787 F.2d 544, 548 (Fed. Cir. 1986). Under section 337(d)(1), if the Commission determines as a result of an investigation that there is a violation of section 337, the Commission is authorized to enter either a limited or a general exclusion order. 19 U.S.C. § 1337(d)(1).

Autel submits that the appropriate remedy is a limited exclusion order prohibiting the importation of articles that infringe the Asserted Patents, as well as cease and desist orders. CIB at 245. In the event a bond equal to 100% of entered value is not awarded, Autel requests that the Commission set a bond rate of between 9.9% and 11.5% during the Presidential Review Period. *Id.* DJI asserts that if a violation is found, the appropriate remedy is a limited exclusion order that identifies those specific products found to infringe. RIB at 220. DJI does not believe cease and desist orders are necessary or that any bond is warranted. *Id.* at 220-221.

A. Limited Exclusion Order

Under section 337(d), the Commission may issue a limited exclusion order directed to a respondent's infringing products. 19 U.S.C. § 1337(d). A limited exclusion order instructs the U.S. Customs and Border Protection ("CBP") to exclude from entry all articles that are covered by the patent at issue that originate from a named respondent in the investigation. *Fuji Photo Film Co. Ltd. v. Int'l Trade Comm'n*, 474 F.3d 1281, 1286 (Fed. Cir. 2007).

Autel requests that a limited exclusion order issue as to DJI's products that infringe the Asserted Patents. CIB at 245-46. Autel further asserts that there should be no exemption "for repair or replacement parts." *Id.* at 245.

In the event the Commission finds a violation, DJI submits that the appropriate remedy is a limited exclusion order. RIB at 220. DJI requests that any limited exclusion order "identify those

[redacted]

specific products found to infringe the Asserted Claims of the Asserted Patents," and "include an exception to allow for DJI's continued service and repair of any products already sold to consumers prior to the effective date of any order that might issue." *Id.*

Should the Commission determine there is a violation, the undersigned recommends the issuance of a limited exclusion order. However, the undersigned does not recommend that the limited exclusion order include certain exemptions and provisions, as DJI requests. Beyond attorney argument, DJI did not cite to any evidence or provide any information to support its request. *See* RIB at 220; RRB at 64.

B. Cease and Desist Order

Under section 337(f)(1), the Commission may issue a cease and desist order in addition to, or instead of, an exclusion order 19 U.S.C. § 1337(f)(1). The Commission generally issues a cease and desist order directed to a domestic respondent when there is a "commercially significant" amount of infringing, imported product in the United States that could be sold, thereby undercutting the remedy provided by an exclusion order. *See Certain Crystalline Cefadroxil Monohydrate*, Inv. No. 337-TA-293 USITC Pub. 2391, Comm'n Op. on Remedy, the Public Interest and Bonding at 37-42 (June 1991); *Certain Condensers, Parts Thereof and Prods. Containing Same, Including Air Conditioners for Automobiles*, Inv. No. 337-TA-334 (Remand), Comm'n Op. at 26-28, 1997 WL 817767 at *11-12 (U.S.I.T.C. Sept. 10, 1997).

Autel contends a cease and desist order is an appropriate and necessary remedy here because DJI "maintains commercially significant inventory in the United States." CIB at 247. Autel argues that DJI's domestic inventory from [redacted] comprised [redacted] of Accused Products. *Id.* (citing CX-0094C.0048; CX-0487C). Autel further submits that DJI [redacted] as recently as [redacted]

[redacted] in the United States" with [redacted] *Id.* at 247-48 (citing CX-0579C; CX-0580C; JX-0015C at 48:24-53:25).

DJI asserts that Autel failed to present any evidence showing that DJI "maintains a commercially significant inventory in the United States warranting issuance of a cease-and-desist order." RIB at 220. However, should a cease and desist order issue, DJI requests that it be "limited to the specific products and models found to infringe and that serve as the basis for any finding of violation." *Id.* at 220-221.

The undersigned recommends that cease and desist orders issue as to those Respondents found to infringe by the Commission. Evidence adduced at the hearing shows that DJI maintained an inventory [redacted]. *See* CX-0094C.0048; CX-0579C; CX-0580C; JX-0015C at 48:24-53:25. According to a snapshot of DJI's inventory as of [redacted], "DJI has [redacted] in the United States, which based on the retail prices of those products, [redacted]." CIB at 248. For example, DJI's inventory on [redacted] included [redacted] with an [redacted].[40] *See* CX-0579C; CX-0580C; JX-0015C at 48:24-53:25. Thus, this evidence signals that DJI presently maintains a "commercially significant" inventory of Accused Products in the United States.

C. Bonding

Pursuant to section 337(j)(3), the Administrative Law Judge and the Commission must determine the amount of bond to be required of a respondent during the 60-day Presidential review period following the issuance of permanent relief, in the event that the Commission determines to

[40] DJI submits that the retail price of its Mavic Air product was $799 as of April 18, 2019. RIB at 222.

[redacted]

issue a remedy. 19 U.S.C. § 1337(j)(3). The purpose of the bond is to protect the complainant from any injury. 19 C.F.R. § 210.42(a)(1)(ii), § 210.50(a)(3).

When reliable price information is available, the Commission has often set the bond by eliminating the differential between the domestic product and the imported, infringing product. *See Microsphere Adhesives, Processes for Making Same, and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, USITC Pub. 2949, Comm'n Op. at 24 (Dec. 8, 1995). In other cases, the Commission has turned to alternative approaches, especially when the level of a reasonable royalty rate could be ascertained. *See, e.g., Certain Integrated Circuit Telecomm. Chips and Prods. Containing Same, Including Dialing Apparatus*, Inv. No. 337-TA-337, Comm'n Op. at 41, 1993 WL 13033517, at *24 (U.S.I.T.C. June 22, 1993). A 100 percent bond has been required when no effective alternative existed. *See, e.g., Certain Flash Memory Circuits and Prods. Containing Same*, Inv. No. 337-TA-382, USITC Pub. No. 3046, Comm'n Op. at 26-27 (July 1997) (imposing a 100% bond when price comparison was not practical because the parties sold products at different levels of commerce, and the proposed royalty rate appeared to be *de minimis* and without adequate support in the record).

Autel requests a bond of 100%, or, alternatively, a bond of between 9.9% and 11.5% per Accused Product. CIB at 250. Autel's lower bond request is based on a price difference analysis. Specifically, Autel's expert Dr. Vander Veen calculated the average sales price of each Accused Product between Q2 2018 and Q3 2018, and the average sales price of the EVO during the same period. CIB at 249 (citing CX-0002C at Q/As 121-122). Dr. Vander Veen then compared the average sales prices of the EVO and each Accused Product, and weighted these differences by Accused Product sales, resulting in a weighted average percentage difference of 9.9%. *Id.* (citing CX-0002C at Q/As 121-122). Excluding the most expensive Accused Product, which is over four

[redacted]

times the price of the EVO, yields a weighted average percentage difference of 11.5%. *Id.* (citing CX-0002C at Q/A 123).

DJI argues that there is "no need for bond" in this Investigation. RIB at 221. It contends that Autel's "weighted average" analysis "attempt[s] to create a lower-price differential where none exists." *Id.* DJI asserts that the EVO "is lower-priced than nearly every DJI accused product," and that Dr. Vander Veen's analysis does not account for the wide range in capabilities, features, and price points of the different Accused Products when compared to the EVO. *Id.* at 221-22.

The undersigned finds that the availability of pricing information here discourages against the adoption of a 100% bond. The undersigned further finds that a bond of 9.9% is reasonable here. DJI submits that recent retail prices for its Mavic Air and Spark products are $799 and $399, respectively. RMIB at 222. These Accused Products are both less than the average sales price for the EVO, which Dr. Vander Veen determined was [redacted] in 2018. CX-0002C at Q/A 122. Furthermore, the evidence shows that, [redacted] *See* CX-0094C.0048. These factors indicate that DJI's importation of Accused Products threaten Autel with injury.

Accordingly, the undersigned recommends that the Commission set the bond value at 9.9%.

[redacted]

XI. INITIAL DETERMINATION

Based on the foregoing, it is the Initial Determination of the undersigned that Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC infringe claim 1 of U.S. Patent No. 9,260,184 and claims 1, 3-5, 8, 10, 13-16, 18, 22-23 of 10,044,013, but do not infringe the asserted claims of U.S. Patent No. 7,979,174. The undersigned further determines that U.S. Patent Nos. 7,979,174 and 10,044,013 are invalid, and that the domestic industry requirement has been satisfied for U.S. Patent Nos. 9,260,184 and 10,044,013, but not U.S. Patent No. 7,979,174.[41]

The undersigned hereby CERTIFIES to the Commission this Initial Determination and the Recommended Determination. The parties' briefs, which include the final exhibits lists, are not certified as they are already in the Commission's possession in accordance with Commission rules. 19 C.F.R. § 210.38(a).

The Secretary shall serve the confidential version of this Initial Determination upon counsel who are signatories to the Protective Order (Order No. 1) issued in this Investigation. A public version will be served at a later date upon all parties of record.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to 19 C.F.R. § 210.43(a) or the Commission, pursuant to 19 C.F.R. § 210.44, orders on its own motion a review of the Initial Determination or certain issues therein.

[41] Any arguments from the parties' pre-hearing briefs incorporated by reference into the parties' post-hearing briefs are stricken, unless otherwise discussed herein, as an improper attempt to circumvent the page limits imposed for post-hearing briefing.

[redacted]

Within ten days of the date of this document, the parties must jointly submit a statement to Bullock337@ustic.gov stating whether or not each seeks to have any portion of this document redacted from the public version. Should any party seek to have any portion of this document redacted from the public version thereof, the parties shall attach to the statement a copy of a joint proposed public version of this document indicated with red brackets any portion asserted to contain confidential business.[42] To the extent possible, the proposed redacting should be made electronically, in a PDF of the issued order, using the "Redact Tool" within Adobe Acrobat, wherein the proposed redactions are submitted as "marked" but not yet "applied." The parties' submission concerning the public version of this document should not be filed with the Commission Secretary.

SO ORDERED.

Charles E. Bullock
Chief Administrative Law Judge

[42] If the parties submit excessive redactions, they may be required to provide an additional written statement, supported by declarations from individuals with personal knowledge, justifying each proposed redaction and specifically explaining why the information sought to be redacted meets the definition for confidential business information set forth in Commission Rule 201.6(a). 19 C.F.R. § 201.6(a).

CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF **Inv. No. 337-TA-1133**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **INITIAL DETERMINATION** has been served upon the following parties as indicated, on 4/21/2020.

Lisa R. Barton, Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainant Autel Robotics USA LLC:

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On Behalf of Respondents SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC:

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UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of **CERTAIN UNMANNED AERIAL VEHICLES AND COMPONENTS THEREOF**	**Inv. No. 337-TA-1133**

ORDER 15: CONSTRUING THE TERMS OF THE ASSERTED CLAIMS OF THE PATENTS AT ISSUE

(June 21, 2019)

TABLE OF CONTENTS

I. INTRODUCTION

This Investigation was instituted by the Commission on September 26, 2018 to determine whether the importation, sale for importation, or sale within the United States after importation of certain unmanned aerial vehicles and components thereof violates section 337 of the Tariff Act of 1930, as amended, due to infringement of U.S. Patent Nos. 7,979,174 ("the '174 patent"); 9,260,184 ("the '184 patent"); and 10,044,013 ("the '013 patent") (collectively, the "Asserted Patents"). *See* 83 Fed. Reg. 49,575 (Oct. 2, 2018). Autel Robotics USA LLC ("Autel") is the Complainant. The named Respondents are SZ DJI Technology Co. Ltd., DJI Europe B.V., DJI Technology Inc., iFlight Technology Co. Ltd., DJI Baiwang Technology Co. Ltd., DJI Research LLC, DJI Service LLC, and DJI Creative Studio LLC (collectively, "DJI").

Pursuant to Ground Rule 6, a *Markman* hearing was held on April 29, 2019. After the hearing and pursuant to Order No. 8, the parties submitted an updated Joint Claim Construction Chart.[1]

II. IN GENERAL

The claim terms construed in this Order are done so for the purposes of this section 337 Investigation. Those terms not in dispute need not be construed. *See Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1323 (Fed. Cir. 2004) (noting that the administrative law judge need only construe disputed claim terms).

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[1] For convenience, the briefs and chart submitted by the parties are referred to hereafter as:

CMIB	Autel's Initial *Markman* Brief
CMRB	Autel's Reply *Markman* Brief
RMIB	DJI's Initial *Markman* Brief
RMRB	DJI's Reply *Markman* Brief
JC	Updated Joint Proposed Claim Construction Chart

III. RELEVANT LAW

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*) (internal citations omitted), *aff'd*, 517 U.S. 370 (1996). Claim construction is a "matter of law exclusively for the court." *Id.* at 970-71. "The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*); *see also Markman*, 52 F.3d at 979. As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the "ordinary and customary meaning of a claim term" as understood by a person of ordinary skill in the art at the time of the invention. 415 F.3d at 1313. "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms." *Id.* at 1314; *see also Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001)

("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point[ ] out and distinctly claim[ ] the subject matter which the patentee regards as his invention.'"). The context in which a term is used in an asserted claim can be "highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.*

The specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316. "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id.* As a general rule, however, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be . . . the correct construction." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

In addition to the claims and the specification, the prosecution history should be examined, if in evidence. *Id.* at 1317; *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can "often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317; *see also Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed.

Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to 'exclude any interpretation that was disclaimed during prosecution.'").

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* at 1317. "The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

If, after a review of the intrinsic and extrinsic evidence, a claim term remains ambiguous, the claim should be construed so as to maintain its validity. *Phillips*, 415 F.3d at 1327. Claims, however, cannot be judicially rewritten in order to fulfill the axiom of preserving their validity. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999). Thus, "if the only claim construction that is consistent with the claim's language and the written description renders the claim invalid, then the axiom does not apply and the claim is simply invalid." *Id.*

A claim must also be definite. Pursuant to 35 U.S.C. § 112, second paragraph: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. In *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014), the Supreme Court held that § 112, ¶ 2 requires "that a patent's claims, viewed in light of the specification and prosecution history inform those skilled in the art about the scope of the invention with reasonable certainty." (*Id.* at

2129.) A claim is required to "provide objective boundaries for those of skill in the art," and a claim term is indefinite if it "might mean several different things and no informed and confident choice is among the contending definitions." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). A patent claim that is indefinite is invalid. 35 U.S.C. § 282(b)(3)(A).

IV. LEVEL OF ORDINARY SKILL IN THE ART

Autel did not propose a level of ordinary skill in the art. Autel notes, however, that, in its view, the level of ordinary skill in the art "d[oes] not matter" for "purposes of claim construction." (Tr. at 24:12-14.)

DJI submits that a person of ordinary skill in the art with respect to the '174 patent would have at least (1) a Bachelor's degree in robotics, computer, or electrical engineering, or equivalent knowledge, training, or experience, and (2) at least two years of experience working with the design and development of speed control systems for electromechanical systems, including autonomous vehicles, or equivalent experience. (RMIB at 5.) DJI also proposes that "[a]dditional graduate education could substitute for professional experience and significant work experience for formal education." (*Id.*)

DJI submits that a person of ordinary skill in the art with respect to the '184 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent education, training, or experience, and (2) at least two years of experience with rotary apparatuses, including rotary aircraft apparatus and UAVs[2], or equivalent experience. (*Id.*) DJI also proposes that "[a]dditional graduate education could substitute for professional experience and significant work experience could substitute for formal education." (*Id.*)

[2] A "UAV" is an unmanned aerial vehicle.

DJI submits that a person of ordinary skill in the art with respect to the '013 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent knowledge, training, or experience, and (2) at least two years of experience with electromechanical systems, or equivalent experience. (*Id.* at 5-6.) DJI also proposes that "[a]dditional graduate education could substitute for professional experience and significant work experience could substitute for formal education." (*Id.* at 6.)

The undersigned finds DJI's proposal reflects the level of skill in the art at the time of the Asserted Patents. Accordingly, the undersigned finds: (1) a person of ordinary skill in the art with respect to the '174 patent would have at least (a) a Bachelor's degree in robotics, computer, or electrical engineering, or equivalent knowledge, training, or experience, and (b) at least two years of experience working with the design and development of speed control systems for electromechanical systems, including autonomous vehicles, or equivalent experience; (2) that a person of ordinary skill in the art with respect to the '184 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent education, training, or experience, and (2) at least two years of experience with rotary apparatuses, including rotary aircraft apparatus and UAVs, or equivalent experience; and (3) that a person of ordinary skill in the art with respect to the '013 patent would have at least (1) a Bachelor's degree in mechanical engineering, or equivalent knowledge, training, or experience, and (2) at least two years of experience with electromechanical systems, or equivalent experience. The undersigned also finds that, with respect to the Asserted Patents, additional graduate education could substitute for professional experience and significant work experience could substitute for formal education.

V. THE ASSERTED PATENTS

A. The '174 Patent

The '174 patent, entitled "Automatic Planning and Regulation of the Speed of Autonomous Vehicles," issued on July 12, 2011 to Kingsley O. C. Fregene, Michael R. Elgersma, Samar Dajani-Brown, and Stephen G. Pratt. The '174 patent is assigned on its face to Honeywell International Inc. and was subsequently assigned to Autel. (Compl. at ¶ 5.1.) The '174 patent generally relates "to a UAV that can adjust its speed due to the inputs from various sensors when flying along a predetermined flight path." (*Id.* at ¶ 5.7.)

The '174 patent has 17 claims. Claims 1-8 and 14-17 have been asserted in this Investigation. The asserted claims read as follows (with the first instance of the disputed terms highlighted in **bold**):

1. An autonomous vehicle comprising:
one or more sensors configured to obtain data regarding conditions which affect movement of the autonomous vehicle;
a speed planner coupled to the one or more sensors and configured to calculate a desired speed based, at least in part, on the data obtained from the one or more sensors;
a control system configured to calculate **speed commands** based at least in part, on the speed calculated by the speed planner; and
one or more actuators configured to adjust the speed of the autonomous vehicle based on the speed commands from the control system;
wherein the speed planer is further configured to output a **speed command category** associated with the desired speed.

2. The autonomous vehicle of claim 1, wherein the autonomous vehicle is one of an autonomous aerial vehicle, an autonomous ground vehicle, an autonomous surface vehicle, and an autonomous underwater vehicle

3. The autonomous vehicle of claim 1, wherein the speed planner is implemented in one of an application specific integrated circuit and a field programmable gate array.

4. The autonomous vehicle of claim 1, wherein the speed planner is further configured to calculate a desired speed for each of a plurality of points along a planned path.

5. The autonomous vehicle of claim 4, further comprising a path planner configured to calculate the planned path and provide the speed planner with the planned path.

6. The autonomous vehicle of claim 1, wherein the one or more sensors are configured to detect obstacles; wherein the speed planner is configured to calculate the desired speed such that the desired speed is the maximum safe speed when no obstacles are detected and the **minimum safe speed** when obstacles are detected.

7. The autonomous vehicle of claim 1, wherein the speed planner is configured to calculate a desired speed which does not cause the autonomous vehicle to violate one or more constraints.

8. The autonomous vehicle of claim 7, wherein each of the one or more constraints is assigned a priority, wherein the speed planner is configured to allow violation of a lower priority constraint in order to avoid violation of a higher priority constraint.

14. A program product comprising program instructions embodied on a processor-readable medium for execution by a programmable processor, wherein the program instructions are operable to cause the programmable processor to:
calculate a desired speed of an autonomous vehicle based on data received regarding conditions which affect movement of the autonomous vehicle and on one or more prioritized constraints; and
output the calculated speed to a control system configured to use the output speed to calculate speed commands for use by one or more actuators to adjust the speed of the autonomous vehicle.

15. The program product of claim 14, wherein the data received regarding conditions which affect movement of the autonomous vehicle includes data regarding detected obstacles, wherein the program instructions are further operable to cause the programmable processor to calculate the desired speed such that the desired speed is a maximum safe speed when the received data indicates that no obstacles are detected and a minimum safe speed when the received data indicates that obstacles are detected.

16. The program product of claim 14, wherein the program instructions are further operable to cause the programmable processor to calculate a desired speed for each of a plurality of points along a planned path

17. The program product of claim 14, wherein the program instructions are further operable to cause the programmable processor to calculate the desired speed by allowing violation of a lower priority constraint in order to avoid violation of a higher priority constraint.

B. The '184 Patent

The '184 patent, entitled "Compact Unmanned Rotary Aircraft" issued on February 16, 2016 to Orville Olm, Greg Wood, and Zenon Dragan. The '184 patent is assigned on its face to Zenon Dragan and was subsequently assigned to Autel. (Compl. at ¶ 5.10.) The '184 patent

generally relates to "a UAV wherein the rotors are secured to the unmanned aerial vehicle so as to not be released during flight." (*Id.*)

The '184 patent has 11 claims. Claims 1-5 and 11 are at issue in this Investigation. The asserted claims read as follows (with the first instance of the disputed terms highlighted in **bold**):

1. A rotary wing aircraft apparatus comprising:
a body;
a plurality of arms extending laterally from the body, and a rotor assembly attached to an outside end of each arm;
each rotor assembly comprising a rotor blade releasably attached to a driveshaft by a lock mechanism, and a drive rotating the driveshaft;
wherein a first driveshaft rotates in a clockwise direction and a second driveshaft rotates in a counterclockwise direction;
wherein a clockwise rotor blade is releasably attached to the first driveshaft by engagement in a clockwise lock mechanism and generates a vertical lift force when rotated in the clockwise direction, and a counterclock-wise rotor blade is releasably attached to the second driveshaft by engagement in a counterclockwise lock mechanism and generates a vertical lift force when rotated in the counterclockwise direction;
wherein the clockwise rotor blade is engageable only with the clockwise lock mechanism and cannot be engaged in the counterclockwise lock mechanism, and the counterclockwise rotor blade is engageable only with the counterclockwise lock mechanism and cannot be engaged in the clockwise lock mechanism; and
wherein the clockwise lock mechanism comprises a shaft lock portion attached to the first driveshaft and a blade lock portion attached to the clockwise rotor blade, **the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion.**

2. The apparatus of claim 1 wherein the counterclockwise lock mechanism comprises a shaft lock portion attached to the second driveshaft and a blade lock portion attached to the counterclockwise rotor blade, the blade lock portion comprising lugs with a configuration that is different than a configuration of the lugs on the blade lock portion of the clockwise lock mechanism.

3. The apparatus of claim 1 **wherein the blade lock portion of the clockwise lock mechanism is rotated counterclockwise with respect to the shaft lock portion thereof to releasably attach the clockwise rotor blade to the first driveshaft.**

4. The apparatus of claim 3 **wherein the blade lock portion of the counterclockwise lock mechanism is rotated clockwise with respect to the shaft lock portion thereof to releasably attach the counterclockwise rotor blade to the second driveshaft.**

5. The apparatus of claim 1 wherein each rotor assembly comprises a leg extending downward from a bottom portion of the rotor assembly to support the apparatus on a ground surface.

11. The apparatus of claim 1 wherein the arms are movably attached to the body such that the arms can be moved from a flying position, where the arms extend forward and rearward laterally outward from the body such that **the arms are substantially equally spaced**, to a folded stored position where at least one arm is substantially aligned with and adjacent to another arm.

C. The '013 Patent

The '013 patent, entitled "Battery Used for Unmanned Aerial Vehicle and an Unmanned Aerial Vehicle" issued on August 7, 2018 to Longxue Qiu and Xingwen Wu. The '013 patent is assigned to Autel. The '013 patent generally relates to "a UAV wherein the battery assembly is detachably connected to the body of the UAV." (Compl. at ¶ 5.19.)

The '013 patent has 24 claims. Claims 1, 3-16, 18, and 21-24 are at issue in this Investigation. The asserted claims read as follows (with the first instance of the disputed terms highlighted in **bold**):

1. A multi-rotor unmanned aerial vehicle, comprising:
a main body comprising **a battery compartment**;
four arms, wherein each arm is coupled to the main body;
a propulsion assembly disposed on the each arm, wherein the propulsion assembly comprises a propeller and a motor, the motor being configured to drive the propeller to rotate in order to generate lift force;
a battery assembly capable of being accommodated in the battery compartment, the battery assembly comprising a shell and a battery body substantially disposed in the shell;
a clamp button, wherein **a first end of the clamp button being mounted directly or indirectly to the shell** and a second end of the clamp button being detachably coupled to the main body; and
a restorable elastic piece, wherein **a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell**, a second end of the restorable elastic piece contacting the clamp button;
wherein the battery compartment comprises a clamping portion configured to detachably connect to the clamp button.

3. The multi-rotor unmanned aerial vehicle according to claim 1, wherein at least one of the first end and the second end of the restorable elastic piece contains a bent portion.

4. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the first end of the restorable elastic piece abuts against the shell.

5. The multi-rotor unmanned aerial vehicle according to claim 4, wherein the second end of the restorable elastic piece is coupled to the clamp button.

6. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the first end of the restorable elastic piece is fixed with the shell.

7. The multi-rotor unmanned aerial vehicle according to claim 6, wherein the second end of the restorable elastic piece is coupled to the clamp button.

8. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the second end of the restorable elastic piece is disposed on an inner side of the clamp button.

9. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the multi-rotor unmanned aerial vehicle comprises at least two clamp buttons.

10. The multi-rotor unnamed aerial vehicle according to claim 9, wherein the battery compartment contains the same number of the clamping portions as the number of the clamp buttons.

11. The multi-rotor unnamed aerial vehicle according to the claim 9, wherein the at least two clamp buttons are separately disposed on opposite sides of the shell.

12. The multi-rotor unmanned aerial vehicle according to claim 1, wherein a hook is disposed on the second end of the clamp button for detachably connecting the battery assembly to the battery compartment.

13. The multi-rotor unmanned aerial vehicle according to claim 12, wherein the hook disposed on the clamp button is configured to engage the clamping portion of the battery compartment.

14. The multi-rotor unmanned aerial vehicle according to the claim 12, wherein the clamp button comprises a body, the hook being disposed on an end of the body of the clamp button.

15. The multi-rotor unmanned aerial vehicle according to the claim 14, wherein a groove is formed between the body of the clamp button and the hook.

16. The multi-rotor unmanned aerial vehicle according to claim 14, wherein an anti-slip structure is configured on an outer surface of the body of the clamp button.

18. The multi-rotor unmanned aerial vehicle according to claim 1, wherein the unmanned aerial vehicle comprises at least two restorable elastic pieces, the at least two restorable elastic pieces being mirror symmetric.

21. The multi-rotor unmanned aerial vehicle according of claim 1, wherein the number of the restorable elastic piece is the same as the number of the clamp button.

22. The multi-rotor unmanned aerial vehicle according to claim 1, wherein in a stale where the battery assembly is completely pushed or positioned into the battery compartment, the restorable elastic piece is configured to automatically rebound so that (a) the clamp button is able to return to its original position and (b) the battery assembly is held in position by the cooperation of the clamping portion and the clamp button.

23. The multi-rotor unmanned aerial vehicle according to claim 1, the battery assembly is capable of being removable from the battery compartment in a state where the clamp button is **pressed down**.

24. The multi-rotor unmanned aerial vehicle according to claim 23, wherein the clamp button is configured to cause the restorable elastic piece to be pressed down in a state where the battery assembly is not completely pushed into the battery compartment or is only partially positioned in the battery compartment.

VI. CLAIM CONSTRUCTION

A. "speed commands"

The term "speed commands" appears in claims 1 and 14 of the '174 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning. Autel does not believe that this term needs construction, but to the extent necessary, Autel submits that the plain and ordinary meaning is "a command relating to the speed of the autonomous vehicle."	commands or signals to adjust the vehicle's speed

(JC at 1.)

Autel argues that the term "speed commands" is "straightforward and readily understandable by laypersons and persons of ordinary skill in the art." (CMIB at 17.) Autel asserts that an understanding of "speed command" as "a command related to the speed of the autonomous vehicle" is "consistent with the context in which the term is used in the claims." (*Id.* at 18.) Autel also explains that the claims indicate that the speed commands *may* be used to adjust the vehicle's

speed, but are not required to do so. (*Id.*) Autel states: "For example, a speed command may indicate that the vehicle should *maintain* its current speed or hover in place." (*Id.*)

DJI asserts that "[t]he '174 specification explains that the speed commands are calculated based on the calculated desired speed and transmitted to one or more actuators to adjust the speed of the vehicle." (RMIB at 10.) DJI notes that "[t]he specification also explains that the actuators are responsive to 'signals' when adjusting the speed of the autonomous vehicle." (*Id.* at 11.) DJI argues that Autel's construction is too broad. It writes: "This definition brings into the claim scope any command relating to the actual speed of the vehicle, despite the explicit claim language in claim 1 that the speed commands must be based on the desired speed calculated by the speed planner, not simply related to the speed of the vehicle . . . ." (RMRB at 9.)

The undersigned finds that DJI's proposal improperly imports limitations into the claim term. *Seachange Int'l., Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) ("[I]t is improper to import a limitation into a claim where the limitation has no basis in the intrinsic record.") While it is true that claim 1 requires that the actuators adjust the speed of the vehicle based on speed commands, this requirement is not part of "speed commands" itself. Instead, it is found in a separate claim element: "one or more actuators configured to adjust the speed of the autonomous vehicle based on the speed commands from the control system." ('174 patent, cl. 1.) If the term "speed commands" standing alone required adjustment by the actuators, this claim limitation would be superfluous.

Likewise, the undersigned disagrees with DJI's insistence that the speed commands be based on the desired speed calculated by the speed planner. As with the actuator limitation, this requirement comes from another element of claim 1: "a control system configured to calculate speed commands based, at least in part, on the speed calculated by the speed planner." (*Id.*) If

"speed commands" were always based in part on the speed calculated by the speed planner, it would be unnecessary for claim 1 to so specify.

Autel's construction is consistent with the specification. The specification provides examples of speed commands, which include commands to avoid exceeding the speed limit, to allow stopping before a collision, and to allow the vehicle to go around a curve. (*Id.* at 6:30-46.) All of these examples are encompassed in the definition proposed by Autel.

Accordingly, the undersigned hereby construes the term "speed commands" as "***commands relating to the speed of the autonomous vehicle***."[3]

B. "speed command category"

The term "speed command category" appears in claim 1 of the '174 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning.	information reflecting the reason for the desired speed, to be used to influence the control of actuators of the vehicle to achieve the desired speed

(JC at 1-2.)

Autel "does not object to construing the term to mean 'information reflecting the reason for the desired speed,' which is the first part of DJI's proposed construction." (*Id.* at 2.)[4] Autel "maintains [its] objections to the rest of DJI's proposed construction," however, because "nothing in the language of claim 1 requires the speed command category to be used to control the vehicle's actuators in the manner described." (*Id.*; CMIB at 21.) Autel states: "Most notably, the speed

[3] This definition is a slight modification of Autel's proposal. Autel proposed that "speed commands" be interpreted as "a command . . .." The undersigned believes that the definition should reflect that "commands" is plural.

[4] Autel originally argued that the "[t]he term 'speed command category' should be given its plain and ordinary meaning because it is straightforward and readily understandable by laypersons and persons of ordinary skill in the art." (CMIB at 19.) Its new position is set forth in the Joint Claim Construction submission.

command category is not mentioned in either the 'control system' element or the 'one or more actuators' element in claim 1." (CMIB at 21.) Autel further explains that the specification provides that the speed command category is used to influence how the actuators adjust the speed of the autonomous vehicle "in *some* embodiments." (*Id.* at 22 (emphasis added).) Thus, "[i]t follows from this language that there are other embodiment [sic] where the speed command category is not used in such a manner." (*Id.*)

DJI argues that "the '174 patent specification expressly states that '[t]he speed command category indicates why the desired speed was selected'" and that "[t]his comes very close to providing an express definition." (RMIB at 8.) DJI further asserts that "[t]he speed command category is . . . used to influence the actuators to achieve the desired speed." (*Id.* at 9.) According to DJI, "[t]he specification explains that the speed planner further 'outputs a speed command category which is used to influence how the actuators adjust the speed of the vehicle.'" (*Id.*)

The undersigned agrees with Autel that the inclusion of the phrase "to be used to influence the control of actuators of the vehicle to achieve the desired speed" adds a limitation that is not supported by the specification. While the specification provides that "[t]he speed command category enables more efficient use of actuators 106 to achieve the desired speed," the specification indicates that this applies only in "some embodiments." ('174 patent at 8:23-44.) DJI offers no evidence of an intent to limit the invention to these particular embodiments. *See GE Lighting Sols., Inc. v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (explaining that "it is improper to read limitations from a preferred embodiment described in the specification – even if it is the only embodiment – into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited"). Additionally, as with "speed command" above, there is nothing to indicate that the term "speed command category" itself includes the requirement that

the speed command category be used to influence the control of the actuators. Rather, this outcome is mandated by the claim as a whole which requires a speed planner that outputs a speed command category, a control system to calculated speed commands based on information from the speed planner, and actuators which adjust the speed based on the speed commands from the control system. ('174 patent, cl. 1.)

The first part of the construction is, however, consistent with the intrinsic evidence. The specification provides that "[t]he speed command category indicates why the desired speed was selected." (*Id.* at 8:26-27.)

Accordingly, the undersigned hereby construes the term "speed command category" as "***information reflecting the reason for the desired speed.***"

C. "minimum safe speed"

The term "minimum safe speed" appears in claims 6 and 15 of the '174 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning. Autel does not believe that this term needs construction, but to the extent necessary, Autel submits that the plain and ordinary meaning is "desired speed for the vehicle when obstacles are present."	Indefinite. Alternatively, the term should be interpreted to mean "a minimum speed a non-hovering aerial vehicle must maintain in order to maintain flight."

(JC at 2.)

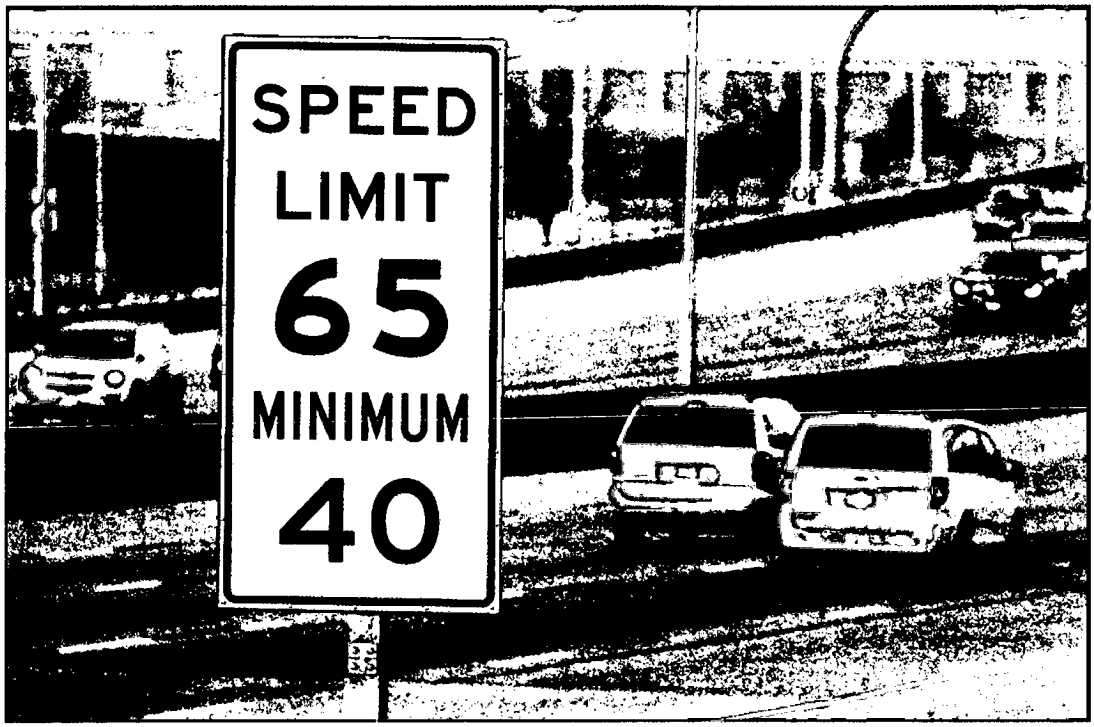
DJI asserts that "[t]he term 'minimum safe speed' requires a determination of what is safe and what is minimum in a given situation [and argues that] both these terms are undefined in the specification and the claims." (RMIB at 11-12.) DJI also asserts that "with many forms of autonomous vehicles, the concept of a 'minimum safe speed' makes little or no sense," because

many types of vehicles "can go as slow as they want, and even stop moving in any direction, and still operate normally." (*Id.* at 12.)

Autel argues that this term "is clear and readily understandable to any layperson or person of ordinary skill in the art." (CMIB at 22-23.) Autel explains that the claims and specification make it clear that "minimum safe speed" is "the desired speed for the vehicle when obstacles are present." (*Id.* at 23.)

Claim terms are normally given their plain and ordinary meanings. *See Phillips*, 415 F.3d at 1314 (explaining that, "[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words). In the context of the '174 patent, however, it is not clear if the patentee intended for the plain and ordinary meaning to apply. For the reasons discussed below, the undersigned therefore finds that this term is indefinite.

First, the undersigned disagrees with DJI that "the concept of a 'minimum safe speed' makes little or no sense." (RMIB at 12; *see also* Tr. at 53:21-23 (arguing that "[w]hen we drive a car on the highway, if we encounter some dangerous situation, the minimum speed is what? It's zero.").) Rather, the concept of a minimum safe speed is understandable, even to laypersons. When traveling various highways in the United States, for example, drivers encounter signs posting both a "speed limit" and a "minimum" speed:



(Paul Hammel, *Fewer speeding tickets may be a perk of new, higher speed limits*, OMAHA WORLD-HERALD, Dec. 9, 2018, https://www.omaha.com/news/public-safety/roads/fewer-speeding-tickets-may-be-a-perk-of-new-higher/article_44c3457d-218d-5e23-a188-db7bb159f03a.html.) In fact, numerous states have enacted laws relating to minimum safe speeds for vehicles, demonstrating that this is a commonly understood concept. (*See, e.g.*, ALA. CODE § 32-5A-174(a) (Alabama minimum speed law); ARIZ. REV. STAT. ANN. § 28-704(B) (Arizona minimum speed law); CAL. VEH. CODE. CODE § 22400 (California minimum speed law); FLA. STAT. § 316.183(5) (Florida minimum speed law); N.Y. V & T LAW §1181 (New York minimum speed law); VA. CODE ANN. § 46.2-877 (Virginia minimum speed law).) These states enact such laws with the knowledge that a vehicle can, of course, go slower than the minimum speed – or even stop – if the conditions warrant it. (*See, e.g.*, WASH. REV. CODE § 46.61.425 (Washington State) ("No person shall drive a vehicle slower than such minimum speed limit *except when necessary for safe operation or in compliance with law.*") (emphasis added).) Thus, the undersigned finds that

laypersons would generally understand "minimum safe speed" to be the slowest speed at which a vehicle can safely travel.

The '174 patent does not appear to use the term "minimum safe speed" in this manner, however. Both claim 6 and claim 15 use the term "minimum safe speed" in the context of when obstacles are detected. ('174 patent, cls. 1, 15.) The understanding of "minimum safe speed" as the slowest speed at which a vehicle can safely travel is not useful when determining the speed in such a situation. Rather, a person would more likely be interested in determining the *maximum* speed at which a vehicle can travel when obstacles are present. Indeed, the specification explains that, when obstacles are present, the vehicle cannot necessarily travel at the posted speed limit and the speed planner therefore calculates the speed at which is *can* travel safely. (*Id.*) The specification states:

> Similarly, avoidance of collision with obstacles has a higher priority, in some embodiments, than a constraint on speed limits. Hence, in such embodiments, speed planner 104 is configured to allow violation of lower priority constraints in order to avoid violation of a higher priority constraint. For example, in calculating the desired speed, speed planner 104 may determine that the autonomous vehicle cannot stay within a posted speed limit and still avoid collision with another vehicle. In such situations, speed planner 104 selects the desired speed which prevents the autonomous vehicle from colliding with the obstacle even thought [sic] the speed limit constraint is violated.

(*Id.* at 3:46-57.) This speed is not the minimum speed at which the vehicle can travel, but rather the "speed that the vehicle can operate at but still stop (or turn away) safely before colliding with the nearest obstacle." (*Id.* at 3:61-63.)

The formulas set forth in the specification confirm this. The specification provides "an example formula used for calculating the speed of the vehicle such that the vehicle is capable of: 1) stopping in time to avoid obstacles, and 2) staying on a curved path." (*Id.* at 4:26-29.) The specification notes that this formula includes a first equation for calculating the "*the maximum*

speed allowed that still allows stopping at distance d_{stop}." (*Id.* at 4:63-5:2 (emphasis added).) The specification then sets forth a "second equation for speed in terms of acceleration and radius of path curvature," and solves for the minimum of the two speeds calculated by each equation. (*Id.* at 5:37-55.) Therefore, although the specification uses the term "minimum," it is apparent that the formula is solving for a *maximum* speed, *i.e.*, the minimum of the maximum speeds.[5]

The end result of these teachings is that the claim can be read as: "the maximum safe speed when no obstacles are detected and the [maximum] safe speed when obstacles are detected." Such an understanding would clearly conflict with the plain and ordinary meaning of "minimum." While a patentee can serve as its own lexicographer and redefine the meaning of a term, there must be evidence of an intent to do so. *See, e.g.*, *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365-66 (Fed. Cir. 2012) (explaining that, to act as its own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term" and "clearly express an intent to define the term"). There is no such evidence here. The patent does not provide an explicit definition of "minimum safe speed." Indeed, outside of the claims, this term is not used in the specification. Without any additional information, the undersigned finds that, with respect to this term, the patent "fails to provide 'objective boundaries for those of skill in the art' and does not inform [one of skill] about the scope of the invention with 'reasonable certainty.'"[6]

Accordingly, the undersigned hereby finds that the term "minimum safe speed" is indefinite.

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[5] Autel's counsel concedes this point. (Tr. at 61:19-21 (explaining that the formula calculates "the maximum [speed] you can go when obstacles are present").)

[6] The undersigned notes that DJI's alternative construction would likewise not resolve the ambiguity as to the patent's use of this term. Additionally, the undersigned agrees with Autel that this alternative construction "ignores the context in which the term 'minimum safe speed' appears in claims 6 and 15, which make multiple references to the presence of obstacles in the vehicle's environment and selecting a desired speed accordingly." (CMIB at 24-25.)

D. "the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion"

The term "the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion" appears in claim 1 of the '184 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning.	the shaft lock portion defining two or more separate indentations each of which engages and is shaped to match the shape of one of two or more separate projections on the blade lock portion

(JC at 2.)

Autel argues that the terms "notch," "lug," and "engage" are readily understandable to one of ordinary skill in the art. (CMIB at 26-27.) According to Autel, DJI's requirement that notches "match the shape" of the lugs "is not in the language of the claims." (*Id.* at 28.) "Moreover, requiring that the lugs and notches have 'matching' shapes adds ambiguity where none previously existed and raises a number of new questions about the meaning of this claim term." (*Id.*)

DJI's concern with respect to this term is "to make sure that the concepts of the claim term are really being followed, which is they're shaped to match because that's how they engage." (Tr. at 70:15-18.) DJI notes that "Figure 5 illustrates two indentations defined by the shaft lock portion (notches), whose shapes match the shape of two projections on the blade lock portion (lugs). The same configuration is consistently and repeatedly shown in Figures 4, 5, 6, 9, and 10." (RMIB at 17.) DJI cites to *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1370 (Fed. Cir. 2016) for the proposition that "when a patent 'repeatedly and consistently' characterizes a claim term in a particular way, it is proper to construe the claim term in accordance with that characterization." (*Id.*)

The undersigned finds that DJI's proposed construction improperly limits the claim to a preferred embodiment. While Figures 4, 5, 6, 9, and 10 depict notches that match the shape of the lugs, there is nothing else in the specification that indicates that the patentee intended to limit the claim to this embodiment, as the case law requires. *See GE Lighting Sols.*, 750 F.3d at 1309.

The undersigned also finds that this case can be distinguished from *GPNE*. In that case, the Federal Circuit noted that "the words 'pager' and 'pager units" appear in the specification over 200 times, and, apart from the Abstract, the specification *repeatedly and exclusively* uses these words to refer to the devices in the patented system." (*Id.* at 1370 (emphasis added).) DJI cannot point to any evidence that the '172 patent "repeatedly and exclusively" requires that the notches match the shape of the lugs. Aside from the figures, there is nothing else in the specification or prosecution history which indicates an intent for the term to be limited in the manner proposed by DJI.

Other than the inclusion of this limitation, DJI does not dispute the meaning of this term.[7] For instance, DJI notes that it "does not discern any meaningful difference in the slightly different wording of the parties' proposals" with respect to notch and lugs. (RMRB at 13.) Additionally, the evidence shows that "lug," "notch" and "engage" all have plain and ordinary meanings. (CMIB Ex. E at 283, 499, 575; Ex. F at 574, 1039, 1200; Ex. G at 471, 853, 986.) Accordingly, after resolution of the parties' dispute with respect to whether the notches must match the shape of the lugs, the undersigned finds that no further construction is required.

[7] At the hearing, counsel for DJI stated that "there's not as much of a dispute here as it appears" with respect to this term. (Tr. at 67:14-15.) Counsel explained that there is no actual dispute "about what a lug and what a notch is." (*Id.* at 69:10-12.) Counsel acknowledged, for example, that DJI is not taking the position that "notches" exclude holes. (*Id.* at 70:5-11; *see id.* at 70:12-14 ("I think we're comfortable saying that a notch could, in certain circumstances, given the other limitations of the claim be a hole").)

Accordingly, the undersigned hereby finds that the term "the shaft lock portion defining notches configured to engage corresponding lugs on the blade lock portion" should be given its plain and ordinary meaning.

E. "wherein the blade lock portion of the [clockwise/counterclockwise] lock mechanism is rotated [counterclockwise/clockwise] with respect to the shaft lock portion thereof to releasably attach the [clockwise/counterclockwise] rotor blade to the [first/second] driveshaft"

The terms "wherein the blade lock portion of the [clockwise/counterclockwise] lock mechanism is rotated [clockwise/counterclockwise] with respect to the shaft lock portion thereof to releasably attach the [clockwise/counterclockwise] rotor blade to the first driveshaft" appear in claims 3 and 4 of the '184 patent. The parties disagree on the claim construction of these terms and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning.	Indefinite

(JC at 2-3.)

According to DJI, "[c]laims 3 and 4 of the '184 patent combine apparatus claim elements with a method for using that apparatus." (RMIB at 19.) Specifically, "both claims require the act of rotating the blade lock portion counterclockwise or clockwise with respect to the shaft lock portion in order to attach the rotor blade, an act necessarily performed by a user or operator of the apparatus." (*Id.*)

Autel asserts that "[t]he language [in claims 3 and 4] reflects the capability of the lock mechanism's structure" and "do not claim activities performed by the user." (CMIB at 29, 30.) Autel explains that the claims "describe the rotation of the clockwise and counterclockwise lock

mechanisms entirely in the passive voice and never make any reference to a user physically manipulating the lock mechanisms to perform these actions." (*Id.* at 30.)

A claim is indefinite when it recites both a system and a method for using that system. *IPXL Holdings, LLC v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005). The undersigned finds that claims 3 and 4 are such claims. *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1313 (Fed. Cir. 2017) (explaining that prior Federal Circuit decisions have held claims indefinite when they claim activities performed by the user as opposed to the system's capability to receive and respond to a user's action). These claims specifically require activities performed by the user: It is the user who must rotate the blade lock portion to releasably attach the rotor blade. ('184 patent, cls. 3, 4.)[8] This is confirmed by the specification which explains that

> The blade lock portion 17A of the lock mechanism 11A on the clockwise rotor blade 9A ***is dropped into the recess 21*** as seen in FIG. 4 ***and the rotor blade 9A is then rotated in direction R opposite to the direction of the arrows*** such that the blade 9A slides into slots 23 on each side of the shaft lock portion 15A under the arrows, and lugs 25A on the blade lock portion 17A engages notches 27A defined by the shaft lock portion as seen in FIG. 5.
>
> The blade lock portion 17A of the clockwise lock mechanism 11A ***are rotated counterclockwise with respect to the shaft lock portion 15A thereof to push the blade into the slots 23 to releasably attach the clockwise rotor blade 9A to the shaft lock portion 15A and thus to the driveshaft*** **13.**

(*Id.* at 4:1-13)(emphasis added).

Accordingly, the undersigned hereby finds that the terms "wherein the blade lock portion of the [clockwise/counterclockwise] lock mechanism is rotated [counterclockwise/clockwise] with respect to the shaft lock portion thereof to releasably attach the [clockwise/counterclockwise] rotor blade to the [first/second] driveshaft" are indefinite.

[8] Although the claim is written in the passive voice, the undersigned agrees with DJI that the claim requires action by the user and does not merely describe the capability of the apparatus.

F. "the arms are substantially equally spaced"

The term "the arms are substantially equally spaced" appears in claim 11 of the '184 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning.	Indefinite

(JC at 3.)

DJI asserts that this term "fails to provide 'objective boundaries for those of skill in the art' and does not inform [one of skill] about the scope of the invention with 'reasonable certainty.'" (RMIB at 21 (quoting *Interval Licensing*, 766 F.3d at 1371).) DJI explains that "[t]he words 'substantially' and 'equally' in claim 11 are words of degree with no clarification or support in the specification, affording no clear notice of what is claimed." (*Id.*)

Autel argues that "[a] person of ordinary skill in the art would readily understand from the claims and specification of the '184 Patent that the purpose of having arms that are 'substantially equally spaced' while 'in a flying position' is to balance the torque from each of the rotors in order to keep the UAV stable when it is airborne." (CMIB at 31.)

The undersigned agrees with DJI that the term "the arms are substantially equally spaced" "read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S.Ct. at 2124. First, the undersigned notes that the primary concern with this term is not the word "substantially," but rather with the meaning of "equally spaced." As DJI explains, the specification does not set forth a standard for measuring whether the arms are, in fact, "equally spaced":

> The '184 patent specification . . . does not define how "substantially" equally spaced apart the arms must be, for example, whether the space between the arms is measured in terms of angles, distance, or some other unit; or whether such measurements are taken from one arm to the other arm, from the arms to the body of the vehicle, or from some other reference point; or what point on the arms is to be used as the reference.

(RMIB at 21.) This concern is illustrated by a "potential embodiment" of the '184 patent as set forth in Autel's brief:

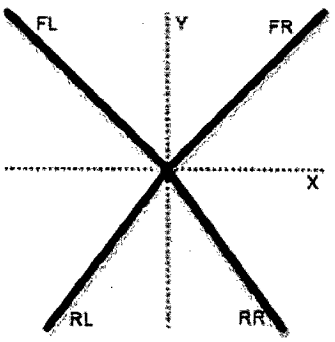

Figure 29. Potential Embodiment of '184, Claim 11

(CMIB at 32.)[9] Autel explains that this configuration "possess[es] horizontal but not vertical symmetry," and concludes that "most attributes of the spacing would be identical." (*Id.*) The fact that "most" – but not *all* – of the attributes of the spacing are equal is key. The distance between the forward-left arm (FL) and the rearward-left arm (RL) is not the same as the distance between the rearward-left arm (RL) and the rearward-right arm (RR). The specification does not reveal whether this matters and, if it does not matter, the specification does not set forth which arms must be equally spaced and which arms do not need to be. Without more information, it is impossible to determine whether this configuration would meet the limitations of claim 11.

[9] Despite its label of "Figure 29," this image is not a figure in the '182 patent, but was instead created by Autel for its briefs.

Nor does the undersigned agree with Autel that "the boundaries [of the term] can be inferred from the function that is being performed." (CMRB at 11.) According to Autel, "[a] person of ordinary skill in the art would readily understand [that the purpose] is to balance the torque from each of the rotors in order to keep the UAV stable when it is airborne." (CMIB at 31.) As DJI notes, however, a UAV could have a configuration that balances the torque from the four rotors, but that does not have arms that are "substantially equally spaced." (RMRB at 18.) Because there is not perfect correlation between when the torque is balanced and when the arms are "substantially equally spaced," this function cannot be used as a standard to determine whether the limitation is met.

The undersigned further finds that, if "substantially equally spaced" simply meant that the arms were configured so that the vehicle could fly, the inclusion of this term would be unnecessary. Claim 1 – the claim from which claim 11 depends – covers a rotary wing air aircraft apparatus, which necessarily means that the apparatus can fly. ('184 patent, cls. 1, 11.) Additionally, claim 11 specifies that the arms are in a "flying position." (*Id.* at cl. 11.) The term "the arms are substantially equally spaced" must mean something more than the fact that the vehicle can fly.

Accordingly, the undersigned finds that the term "the arms are substantially equally spaced" is indefinite.

G. "battery compartment"

The term "battery compartment" appears in claim 1 of the '013 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning. Alternatively, this term should be construed as "space or area bounded on one or more sides by the body of the UAV where the battery is designed to be placed."	structure defining an enclosed space for holding a battery

(JC at 3.)

Autel argues that "the term 'battery compartment' is an ordinary term that both laypersons and persons of ordinary skill in the art will readily understand." (CMIB at 33.) Autel explains that the "claims and specifications use the term 'battery compartment' in a manner consistent with its plain meaning." (*Id.* at 34.) Autel further explains that the "area or compartment is bounded on one or more sides by the body of the UAV" and that the "unbounded sides comprise an opening through which the battery is placed into the compartment. (*Id.*) According to Autel, "[w]hile there may be two or more such sides to the compartment, this is not required by the independent claim." (*Id.*)

DJI argues that "when the claim language refers to the battery assembly and the battery compartment, it is clear that the compartment is an enclosed space that holds the battery assembly as the claims require that the battery assembly be 'accommodated in,' 'pushed into,' or 'positioned into' the battery compartment." (RMIB at 24.) DJI asserts that the figures confirm this understanding. (*Id.*) DJI also notes that its proposed construction is consistent with the extrinsic evidence. (*Id.*)

The undersigned disagrees with DJI that the battery compartment must be an enclosed space. As Autel notes, the term "enclosed space" suggests that the battery compartment be surrounded on all sides. (*See* CMIB at 35; CMIB Ex. H at 588 (defining "enclose" as "[t]o surround on all sides; close in"); CMIB Ex. G at 468 (defining "enclose" as "to shut in all around").) There

is nothing in the specification that suggests that the battery compartment is limited in this way. Rather, a battery assembly can still be "accommodated in,' 'pushed into,' or 'positioned into" a battery compartment, even if that compartment is not bounded on all sides.

The undersigned also declines to adopt Autel's construction.[10] As Autel itself notes, the plain and ordinary meaning of "compartment" is "a separate section, part, division, or category" or "a separate room, section, or chamber." (CMIB at 34 (citing CMIB Ex. G at 296; CMIB Ex. H at 375).) Autel's suggestion that a compartment can be bounded on only one side does not necessarily comport with this definition. While there may be instances in which a space is bounded on only one side and still qualifies as a "separate section," the reverse is not true: All spaces bounded on one side would not necessarily be considered compartments.

The undersigned does, however, agree that the term "battery compartment" should be given its plain and ordinary meaning to a layperson. There is nothing to indicate that the patentee sought to provide a special definition for this term, that the intrinsic evidence imparts any additional requirements or limitations, or that this term has a specific meaning to a person of ordinary skill in the art.

DJI requests that the undersigned provide a specific definition as "[t]he parties simply disagree regarding what the plain and ordinary meaning of battery compartment in the context of the '013 patent means." (Tr. at 103:10-13.) The parties introduced evidence of the plain and ordinary meaning of this term, including several definitions of compartment: (1) "any of the divisions into which a space is portioned off" or "a separate section, part, division, or category" (CMIB Ex. G at 297); (2) "one of the parts or spaces into which an area is subdivided" or "a separate room, section, or chamber" (CMIB Ex. H at 375); and (3) "one of

[10] Because the undersigned rejects Autel's alternative construction, it is unnecessary to determine whether the alternative construction should be rejected on procedural grounds. (*See* RMRB at 19.)

the parts into which an enclosed space is subdivided by lines or partitions" or "any separate section or chamber." (RMIB Ex. 10.) Thus, each of the dictionaries includes one definition of "compartment" as "a separate section." The undersigned finds that this is the plain and ordinary meaning of the term.

Accordingly, the term "battery compartment" should be construed as a "***separate section for holding a battery.***"

H. "a first end of the clamp button being mounted directly or indirectly to the shell"/ "a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell"

The terms "a first end of the clamp button being mounted directly or indirectly to the shell" and "a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell" appear in claim 1 of the '013 patent. The parties disagree on the claim construction of these terms and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning.	Indefinite

(JC at 3-4.)

DJI asserts that "[t]he phrase 'directly or indirectly' in these two portions of claim 1 is vague and ambiguous and fails to inform [a person of ordinary skill in the art] about the metes and bounds of the claim." (RMIB at 25.) DJI explains that "[n]othing in the specification explains or illustrates what falls within and outside the scope of being mounted 'directly' or 'indirectly.'" (*Id.*) DJI notes "the claim scope may have been sufficiently clear if claims used only the unadorned English word 'mounted' or even 'directly mounted,'" but that "introducing the concept of 'indirectly' mounting creates the lack of precision and unbounded scope that renders claims invalid as indefinite." (*Id.*) Similarly, "[w]hile a [person of ordinary skill in the art] may understand the

term connected or even a direct connection, deciphering what is an indirect connection based on the specification is not as clear." (*Id.* at 26.)

Autel asserts that these terms are "written in straightforward and readily understandable language." (CMIB at 37.) Autel explains that "[t]he specification provides examples of what it means to be 'mounted directly or indirectly to the shell.'" (*Id.*) Autel argues that "courts have had little trouble with terms containing the words 'directly or indirectly.'" (*Id.* at 38.)

Claim terms are normally given "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788, 796 (Fed. Cir. 2019) (quoting *Phillips*, 415 F.3d at 1312-13).) The Federal Circuit has explained, however, that "[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314.

The undersigned finds that this is precisely the situation here. The evidence shows that the terms "directly" and "indirectly" have plain and ordinary meanings, even to a lay person. (CMIB Ex. E at 242; Ex. F at 492, 885; Ex. G at 408, 727). Thus, it is not problematic if the specification is silent as to the meaning of these terms. Rather, this confirms that the plain and ordinary meaning applies and nothing special is required by the patent.

DJI asks the undersigned to disregard these plain and ordinary meanings, and instead find that the terms do not inform a person of ordinary skill in the art about their scope. Other than attorney argument that the word "indirect" can have a broad scope, DJI fails to cite to any evidence to establish that applying the plain and ordinary meaning of these terms would be inappropriate. Without such evidence, DJI fails to meet its burden to show that these terms are indefinite.

The undersigned instead finds that "directly" is commonly understood to mean "with nothing in between" and "indirectly" is understood to mean "with an intermediary in between." (CMIB Ex. E at 242; Ex. F at 492, 885; Ex. G at 408, 727).

Accordingly, the undersigned hereby construes the terms "a first end of the clamp button being mounted directly or indirectly to the shell" as "***a first end of the clamp button being mounted with nothing in between or with an intermediary in between to the shell***" and "a first end of the restorable elastic piece is disposed on the shell or connects directly or indirectly to the shell" as "***a first end of the restorable elastic piece is disposed on the shell or connects with nothing in between or with an intermediary in between to the shell.***"

I. "pressed down"

The term "pressed down" appears in claims 23 and 24 of the '013 patent. The parties disagree on the claim construction of this term and have proposed the following constructions:

AUTEL	DJI
Plain and ordinary meaning. Autel does not believe that this term needs construction, but to the extent necessary, Autel submits that the plain and ordinary meaning is "to exert pressure in the direction that compresses or flexes the restorable elastic piece"	pressed towards the interior of the shell

(JC at 4.)

Autel argues that "pressed down" is "an ordinary term that laypersons and persons of ordinary skill in the art will readily understand." (CMIB at 41.) Autel disagrees with DJI's proposed construction because "[t]here is no basis to limit the directional movement of the clamp button or the restorable plastic piece 'towards the interior of the shell.'" (*Id.*) Autel also explains that "a reasonable layperson would not have any difficulty applying [the word 'down'] in the

context of the claims." (*Id.* at 42.) A layperson "would understand that the plain and ordinary meaning of 'press down' is to exert pressure in the direction that compresses or flexes the restorable elastic pieces such that when the pressure is released the clamp button or elastic piece 'rebounds' back to its original form." (*Id.*)

DJI asserts that figure 3 "illustrates what 'pressed down' means": "When the clamp buttons 221 are pressed, so are the restorable elastic pieces 222 such that they are pressed towards the interior of the shell." (RMIB at 27.) DJI notes that "the specification explains "The clamp button 221 can be pressed down and moved inwards . . .'" (*Id.*) According to DJI: "'Inwards' itself would be unclear unless it is referring to the interior of the shell, which is the clear implication a [person of ordinary skill in the art] would draw from the specification." (*Id.* at 28.)

The undersigned declines to adopt Autel's construction. This construction focuses on the restorable elastic piece but, as DJI notes, claim 23 is directed to the claim button being pressed down – and not the restorable elastic piece. (RMRB at 24.) The undersigned further agrees that Autel's proposal would improperly "cover structures that deform without being pushed in any direction," such as a clamp button that had to be twisted into place. (*Id.*)

The undersigned also, however, disagrees with DJI that the construction requires a limitation that the button be pressed towards "the interior of the shell." Although this occurs in an embodiment, there is nothing in the intrinsic evidence that supports limiting the term to this one embodiment. Additionally, while the term "pressed down" certainly suggests to a layperson that something is pressed downwards, there is nothing to support the idea that this direction must be towards the "interior of the shell." One can certainly envision scenarios in which something is pressed down, but, due to the configuration of the apparatus, the direction of "down" is actually away from the interior of the shell or towards another direction.

As with "battery compartment," the intrinsic evidence does not indicate any intent to depart from the plain and ordinary meaning of the term. Nor is there any evidence that this term would have a specialized meaning to a person of ordinary skill in the art.

Accordingly, the undersigned finds that the term "pressed down" should be given its plain and ordinary meaning.

SO ORDERED.

Charles E. Bullock
Chief Administrative Law Judge

I, Lisa R. Barton, hereby certify that the attached **ORDER NO. 15** has been served upon the following parties as indicated, on **June 21, 2019**.

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U.S. International Trade Commission
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