

**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)**

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## 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.<sup>1</sup>

## 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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<sup>1</sup> For convenience, the briefs and chart submitted by the parties are referred to hereafter as:

CMIB	Autel’s Initial <i>Markman</i> Brief
CMRB	Autel’s Reply <i>Markman</i> Brief
RMIB	DJI’s Initial <i>Markman</i> Brief
RMRB	DJI’s Reply <i>Markman</i> 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<sup>2</sup>, 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.*)

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<sup>2</sup> 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 planner 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 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;  
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 state 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
<p>Plain and ordinary meaning.</p> <p>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.”</p>	<p>commands or signals to adjust the vehicle’s speed</p>

(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.”***<sup>3</sup>

**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:

<b>AUTEL</b>	<b>DJI</b>
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.)<sup>4</sup> 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

<sup>3</sup> 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.

<sup>4</sup> 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 calculate 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](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 though [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  $d_{\text{stop}}$ .” (*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.<sup>5</sup>

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.’”<sup>6</sup>

Accordingly, the undersigned hereby finds that the term “minimum safe speed” is indefinite.

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<sup>5</sup> 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”).)

<sup>6</sup> 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.<sup>7</sup> 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.

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<sup>7</sup> 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.)<sup>8</sup> 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.

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<sup>8</sup> 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:

<b>AUTEL</b>	<b>DJI</b>
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:

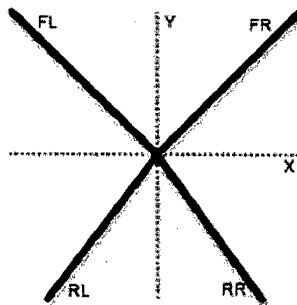


Figure 29. Potential Embodiment of '184, Claim 11

(CMIB at 32.)<sup>9</sup> 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.

<sup>9</sup> 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
<p>Plain and ordinary meaning.</p> <p>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.”</p>	<p>structure defining an enclosed space for holding a battery</p>

(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.<sup>10</sup> 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

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<sup>10</sup> 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.)

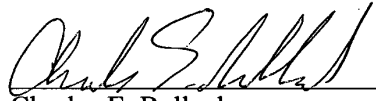
The undersigned declines to adopt Autel’s construction. This construction focuses on the restorable elastic piece but, as DJI notes, claim 23 is directed to the claim button being pressed down – and not the restorable elastic piece. (RMRB at 24.) The undersigned further agrees that Autel’s proposal would 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

**CERTAIN UNMANNED AERIAL VEHICLES AND  
COMPONENTS THEREOF**

**Inv. No. 337-TA-1133**

Certificate of Service – Page 1

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**.



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.  
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- ☐ Via Hand Delivery  
☐ Via Express Delivery  
☒ Via First Class Mail  
☐ Other: \_\_\_\_\_

**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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☐ Other: \_\_\_\_\_