IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

TEXTRON INNOVATIONS INC., Plaintiff, v. SZ DJI TECHNOLOGY CO., LTD., DJI EUROPE B.V., SZ DJI BAIWANG TECHNOLOGY CO. LTD., AND IFIGHT TECHNOLOGY COMPANY LTD. Defendants.	Civil Action No. 2:22-cv-00351-RWS-RSP

DEFENDANTS' INVALIDITY CONTENTIONS

I. Introduction

Pursuant to Rule 3-3 and 3-4 of the Local Patent Rules ("P.R.") of the Eastern District of Texas, DJI SZ DJI Technology Co. Ltd., DJI Europe B.V., SZ DJI Baiwang Technology Co. Ltd., and iFlight Technology Company Ltd. (collectively "DJI") provides the following initial invalidity contentions for Claims 1-5, 8-9, 12-14, and 16 of U.S. Patent No. 10,275,950 (the "'950 Patent"); Claims 1-20 of U.S. Patent No. 8,332,082 (the '802 Patent"); Claims 1-20 of U.S. Patent No. 8,682,505 (the "'505 Patent"); Claims 1-20 of U.S. Patent No. 11,288,972 (the "'972 Patent") that Plaintiff Textron Innovations Inc. ("TII") asserted in its Infringement Contentions, dated April 10, 2023.

II. Reservation of Rights

1. DJI provides these initial invalidity contentions in the absence of a claim construction order from the Court. DJI's initial invalidity contentions do not represent its view or constitute an agreement as to the proper construction of any term of any Asserted Claims. These contentions also do not represent DJI's view or constitute an agreement that any of the Asserted Claims are sufficiently definite so as to be properly construed. No position regarding the applicability of any prior art to the Asserted Claims should be taken as an admission as to claim scope. No position regarding the sufficiency of a specification's disclosure to support the Asserted Claims should be taken as an admission as to claim scope. Portions of the charted prior art rely on and/or are influenced by TII's apparent construction, as best DJI can determine, as set forth in its April 10, 2023 Infringement Contentions.

2. These invalidity contentions are preliminary and are based on DJI's current knowledge, understanding, and belief as to the facts and information available as of the date of these contentions. DJI has not completed its investigation, discovery or analysis of information related to this action. Therefore, additional discovery, additional research, the discovery of additional prior art, claim construction positions taken and orders issued, and expert discovery, may each and all provide a reasonable good cause basis for, or require DJI to supplement or amend its invalidity contentions. Accordingly, DJI reserves all rights to amend or supplement its contentions.

3. TII's P.R. 3-1(e) disclosures allege that the Asserted Claims of the '950, '972, '082 and '505 Patent are entitled to a specific priority date.[1] This is the date DJI relies on in forming the invalidity contentions contained herein. TII "bears the burden of establishing that its claimed invention is entitled to an earlier priority date than an asserted prior art reference." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1376 (Fed. Cir. 2016). "To obtain the benefit of the filing date of a parent application, the claims of the later-filed application must be supported by the written description in the parent 'in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the filing date sought.'" *Anascape, Ltd.* v. *Nintendo of Am., Inc.*, 601 F.3d 1333, 1335 (Fed. Cir. 2010) (quoting *Lockwood* v. *Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997)). As of the service of these contentions, TII has not provided meaningful contentions supporting the asserted priority dates of the Asserted Patents. The priority dates are, instead, simply provided without evidentiary basis. DJI provides these invalidity contentions in the absence of meaningful contentions from TII regarding priority date.

4. DJI reserves the right to challenge any priority date and any alleged date of conception and to amend these contentions upon any judicial findings concerning the priority date(s) of the Asserted Patents or Asserted Claims, information learned through discovery, or otherwise. Further, to the extent the Asserted Patents or Asserted Claims lack proper support under Section 112 as discussed herein, TII is not entitled to claim priority back to the related parent applications thereby permitting reliance on later prior art, including but not limited to the

[1] The dates DJI relies upon in these Invalidity Contentions are based upon the alleged priority dates provided in TII's Infringement Contentions: July 26, 2013, for the '950 Patent, December 19, 2019 for the '972 Patent, and March 30, 2011, for the '082 and '505 Patents.

continuation applications themselves insofar as they render obvious the Asserted Claims, and/or later versions of the prior art systems identified herein.

5. DJI has made a good-faith effort to produce a list of prior art relevant to this case, but reserves the right to modify or supplement its prior art list and invalidity contentions with or based upon pertinent information that may subsequently be discovered. DJI also reserves the right to identify references that would disclose any alleged missing limitation(s) of the claimed method, device, or system. Since discovery is ongoing, DJI also reserves the right to assert all other defenses that may be available to it, including but not limited to defenses that the Asserted Patents or any of the Asserted Claims are unenforceable based on laches, estoppel, ensnarement, waiver, acquiescence, inequitable conduct, patent misuse, patent exhaustion, unfair competition, unclean hands, express or implied license, or any other grounds.

6. Nothing herein shall be construed as an admission regarding the application of the Asserted Patents or Asserted Claims to any of the accused product. DJI's Initial Invalidity Contentions are set forth in the alternative and do not constitute any concession by DJI for purposes of determining infringement or any other issue in this case. *See, e.g., Vanmoor v. Wal-Mart Stores, Inc.*, 201 F.3d 1363, 1366 (Fed. Cir. 2000). By including prior art and arguments in the initial invalidity contentions, DJI is neither adopting TII's apparent claim construction, nor admitting to the accuracy of any particular claim construction. Nor should any position with regard to the applicability of any prior art to the Asserted Patents or Asserted Claims be taken as an admission as to claim scope. Nor should any position with regard to the sufficiency of a specification's disclosure to support the Asserted Claims be taken as an admission as to claim scope. Any invalidity analysis depends, ultimately, upon claim construction, which is a question of law reserved for the Court. The Asserted Claims have not yet

been construed by the Court in this case and, thus, DJI has not yet had the opportunity to compare the Asserted Claims (as construed by the Court) with the prior art. DJI therefore reserves the right to modify or supplement its invalidity contentions after claim construction.

7. DJI reserves the right to assert that a claim is indefinite, not enabled, or fails to meet the written description requirement based on any claim construction position taken by TII in this case or based on any claim construction the Court may adopt.

8. DJI is providing invalidity contentions only for the Claims asserted by TII, but reserves the right to seek invalidation of all Claims in each Asserted Patent.

9. DJI reserves the right to modify, amend, supplement or otherwise alter its invalidity contentions in the event that the Court allows TII to supplement or amend its Infringement Contentions or takes a claim construction position different than or in addition to those set forth in its Infringement Contentions, or for any other reason constituting good cause to modify, amend, supplement or otherwise alter these invalidity contentions.

10. DJI also reserves the right to rely upon any reference cited during the prosecution history or any *inter partes* review proceeding, including the prosecution history and any proceeding against patents related to the Asserted Patents. Defendant reserves the right to rely on that prior art, including in a similar manner that the reference was used in either the prosecution history or any *inter partes* review proceeding.

11. DJI further reserves the right to rely upon the following to show the state of the art in the relevant timeframes: all prior art cited on the face of the Asserted Patents and Related Patents, all prior art disclosed in these initial invalidity contentions, the admitted prior art

references in the specification of the Asserted Patents and Related Patents, all prior art cited in the prosecution histories of the Asserted Patents and Related Patents, including in any reexaminations, reissue, or *inter partes* review proceedings, and the references cited in any invalidity contentions submitted in any action or proceedings involving the Asserted Patents or Related Patents.

12. To the extent that Plaintiff challenges a prior art patent's qualification as prior art, DJI reserve the right to rely upon: (i) foreign counterparts of U.S. patents identified in these Invalidity Contentions; and (ii) U.S. counterparts of foreign patents and foreign patent applications identified in these Invalidity Contentions, to the extent such references qualify as prior art and contain the same substantive disclosure and (iii) evidence of sale, offer for sale, importation or use of any system prior art

13. Pursuant to P.R. 3-3 and 3-4, DJI hereby provides its invalidity contentions and related documents pertaining only to the Asserted Claims as identified by TII in its Infringement Contentions. For each Asserted Claim, DJI: (a) identifies each currently known item of prior art that either anticipates or renders obvious each Asserted Claim; (b) specifies whether such prior art anticipates each Asserted Claim or renders it obvious; (c) submits a chart identifying where each element in each Asserted Claim is disclosed, described, or taught in the prior art, including for each element that is governed by 35 U.S.C. § 112, ¶ 6, the identity of the structure(s), act(s), or material(s) in each item of prior art (if any) that performs the claimed function; and (d) identifies the grounds for invalidating Asserted Claims based on indefiniteness under 35 U.S.C. § 112, non-enablement or lack of written description under 35 U.S.C. § 112, ¶ 1. Each of the following patents, publications, systems, and products is prior art under at least one

or more of 35 U.S.C. § 102(a), (b), (e), (f), or (g) (pre-AIA) or § 102(a) (post-AIA), as applicable.

14. Nothing herein should be construed as limiting DJI's statutory rights under 35 U.S.C. §282.

III. Identification of Prior Art

Pursuant to P.R. 3-3(a), and subject to DJI's reservation of rights, DJI has identified each prior art patent or application by its number, country of origin, and date of issue or, if an application, date of publication for the '950, '972, '082 and '505 Patents (the "Patents")[2]. DJI also incorporates by reference each and every prior art reference disclosed in the Patents. Unless otherwise noted, the country of origin for the prior art patent or patent application is the U.S. To the extent feasible, Defendants have identified each prior art publication by its title, date of publication, author, and publisher. The dates provided are not necessarily the earliest date and should be understood accordingly (e.g., the date of issue/publication is at least as early as the date cited below, as with date of publication, filing date, etc.). DJI has identified each prior art publication by its title, date of publication, author, and publisher.

Additionally, DJI contends that certain systems and products constitute prior art. DJI's reference to any particular component, device, machine, or other product in these Invalidity Contentions should be interpreted as a reference to the product itself and any corresponding patents, publications, or product literature cited in the Exhibits that relate to the cited component, device, machine, or other product. Insofar as DJI is relying on a system or product as prior art,

[2] Unless otherwise noted, the country of origin for the prior art patent or patent application is the U.S.

rather than a publication, DJI may use additional evidence to show the structure, function, operation and prior art status of that system or product insofar as that evidence is obtained during discovery and in a manner that is consistent with the invalidity theory disclosed in these Invalidity Contentions. At least some of the products were publicly disclosed, used, sold, or offered for sale before (post-AIA) or in the United States before (pre-AIA), and potentially more than a year before, the earliest priority date of the Asserted Claims of the Asserted Patents. Moreover, many of the inventive research, design, and development activities concerning these products and technologies occurred, including in the United States, before the earliest priority date of the Asserted Claims of the Patents.

DJI reserves the right to identify additional non-patent and non-publication prior art systems that were sold, offered for sale, used, etc. prior to the priority date to the extent that any such systems become known during discovery, third party discovery or *inter partes* review.

A. Patent '950

1. Prior Art Patents, Applications and Printed Publications

No.	Patent No. or Title (Primary Inventor/Author)	Date of Issue / Publication	Filing Date	Herein Referred As
Patents				
1	US Pub. 2014/0074322 (Baumgarten)	Mar. 13, 2014	Sep. 10, 2012	Baumgarten
2	USP 7,103,456 (Bloch)	Oct. 13, 2005	Apr. 12, 2004	Bloch
3	US Pub. 2005/0026609 (Brinkley)	Feb. 3, 2005	Jun. 30, 2004	Brinkley
4	USP 8,280,741 (Colin)	Sep. 11, 2008	Feb. 28, 2008	Colin
5	USP 8,258,983 (Conner)	Feb. 16, 2012	Aug. 11, 2010	Conner
6	US Pub. 2009/0220929 (Daniel)	Sep. 3, 2009	Jan. 12, 2009	Daniel
7	US Pub. 2004/0148088 (Davis)	Jul. 29, 2004	Oct. 1, 2003	Davis
8	US Pub. 2010/0105329 (Durand)	Apr. 29, 2010	Oct. 22, 2009	Durand
9	US Pub. 2013/0304276 (Flies)	Nov. 14, 2013	Mar. 7, 2013	Flies

12	US6408259 (Goebel)	Jun. 18, 2002	Feb. 1, 2000	Goebel
13	US6181990 (Grabowsky)	Jan. 30, 2001	Jul. 30, 1998	Grabowsky
14	US2014/0328248 (Greubel)	Jul. 26, 2016	May 6, 2013	Greubel
15	US2007/0236366 (Gur)	Oct. 11, 2007	Jan. 24, 2007	Gur
16	US8856134 (Hadley)	Oct. 7, 2014	May 6, 2013	Hadley
17	US2012/0265372 (Hedrick)	Jan. 29, 2013	Apr. 14, 2008	Hedrick
18	US7,290,716 (Ito)	Nov. 6, 2007	Aug. 5, 2004	Ito '716
19	US7395975 (Ito)	Jul. 8, 2008	Feb. 16, 2007	Ito '975
20	US6278913 (Jiang)	Aug. 21, 2001	Mar. 12, 1999	Jiang
21	US2010/0169548 (Kanda)	Jul. 1, 2010	Aug. 6, 2009	Kanda
22	US2002/0131730 (Keeble)	Nov. 2, 2004	Jan. 18, 2002	Keeble
23	US8768534 (Lentz)	Jul. 1, 2014	Nov. 14, 2012	Lentz
24	US7,769,501 (Lusardi)	Aug. 3, 2010	Jun. 23, 2004	Lusardi
25	US2012/0194679 (Nehowig)	Aug. 2, 2012	Jan. 30, 2012	Nehowig
26	US2007/0219831 (Ne'meth)	Sep. 20, 2007	Aug. 15, 2005	Ne'meth
27	US7755890 (Rui)	Jun. 26, 2008	Oct. 23, 2007	Rui
28	US2011/0241902 (Shavit)	Oct. 6, 2011	Mar. 28, 2011	Shavit
29	US2011/0313645 (Shukla)	Dec. 22, 2011	Jun. 1, 2011	Shukla
30	US2007/0264953 (Srinivasan)	Nov. 15, 2007	May 12, 2006	Srinivasan
31	US2008/0228330 (Srinivasan)	Sep. 18, 2008	Mar. 14, 2007	Srinivasan
32	US2002/0140574 (Starkey)	Oct. 3, 2002	Mar. 29, 2001	Starkey
33	US2005/0149238 (Stefani)	Jul. 7, 2005	Jan. 5, 2004	Stefani
34	US9443432 (Tam)	May 15, 2014	Nov. 9, 2012	Tam
35	US2013/0141572 (Torres)	Jun. 6, 2013	Dec. 5, 2011	Torres
36	US9,204,477 (Tsumagari)	Oct. 17, 2013	Mar. 19, 2013	Tsumagari
37	US9141830 (Uczekaj)	Jan. 24, 2013	Jul. 23, 2012	Uczekaj
38	US2012/105083 (sutsu)	Aug. 9, 2012	Sep. 16, 2011	Wakutsu
39	US8948996 (Warkentin)	Jun. 26, 2014	Dec. 20, 2012	Warkentin
40	US9563580 (Warner)	Nov. 26, 2015	Jul. 24, 2014	Warner
41	US6148179 (Wright)	Nov. 14, 2000	Jun. 25, 1999	Wright '179
42	US7769376 (Wright)	Sep. 17, 2009	May 5, 2009	Wright '376
43	US 2012/0053777 (Meisels)	Mar. 1, 2012	Aug. 31, 2010	Meisels
Publications				
43	IEEE 802.11 Handbook: A Designer's Companion (Bob O'Hara)	2005, IEEE		O'Hara
44	802.11 Wireless Networks: The Definitive Guide, Second Edition (Matthew Gast)	2002, O'Reilly Publishers		Gast

45	North Data Flight Systems (NFDS) FASTARS application (assignee with Warner patent)	Feb. 5, 2015, U.S.P.T.O	Feb. 5, 2014	NFDS
46	ISR-Eagle: Unmanned Aerial Systems Competition Report (Peters et. al.)	Mar. 23, 2011, Embry-Riddle Aeronautical University		ISR-Eagle

2. Relevant Systems

System Name	Use/Knowledge/Offer Date	Company/Organization
Omnitracs XRS	Sep. 13, 2009	Omnitracs
North Flight Data Systems – FASTARS application		North Flight Data Systems
Connected Pilot	July 26, 2011	Aspen Avionics
EKPV Aeronautical Navigator	July 24, 2013	AvMap
Wireless LAN SD standard aims to give every SD card that Eye-Fi flair (https://www.engadget.com/2012-01-09-wireless-lan-sd-standard-wifi-sd-cards-ces-2012.html)	Jan. 9, 2012	Murph
Electronic Flight Bag (EFB) 2010 Industry Survey	Sep. 2010	U.S. Department of Transportation
Ace One	Nov. 2010	DJI
Ace Waypoint	Sep. 2011	DJI
Assistant	Dec. 2010/Sep. 2011	DJI

WooKong-M /WooKong-M Assistant	Aug. 30, 2012/July 18, 2013	DJI
Ground Station	2010/Sep. 1, 2011/Jan. 5, 2012	DJI
XP3.1 Series	Sep. 2009	DJI
iPad EFB	May 2, 2012	Flightman
Foreflight Mobile	April 24, 2013	Foreflight
GoPro	Oct. 8, 2012	GoPro
Mobi Wifi SD Card	Feb. 18, 2011	Eye-Fi
DIC-600	Sep. 25, 2013	Scandinavian Avionics
UTC	Jun. 12, 2013	Collins Aerospace
RocketRoute	Sep. 6, 2013	RocketRoute
Boeing EFB System	2008	Boeing
FlashAir	Sep. 1, 2011	Toshiba
avplanefb	Nov. 2011	AVSOFT
Transcend	Nov. 11, 2012	Transcend

B. Patent ’972

1. Prior Art Patents, Applications and Printed Publications

No.	Patent No. or Title (Primary Inventor/Author)	Date of Issue / Publication	Filing Date	Herein Referred As
Patents				
1	US6359570B1 (Adcox)	Mar. 19, 2002	Oct. 11, 2000	Adcox
2	US10192450B2 (Adler)	Jan. 29, 2019	Aug. 24, 2016	Adler
3	US2017/092136 A1 (Agrawal)	May 8, 2018	Aug. 29, 2016	Agrawal
4	US11209816B2 (Beth)	Dec. 28, 2021	Jan. 25, 2019	Beth
5	US9658619B1 (Bethke)	May 23, 2017	Apr. 18, 2016	Bethke

6	US7228232B2 (Bodin)	Jun. 5, 2007	Jan. 24, 2005	Bodin
7	US9852642B2 (Butler)	Sep. 30, 2019	Dec. 26, 2017	Butler
8	US11217106B2 (Butler)	Jan. 4, 2022	Sep. 30, 2019	Butler
9	US10909859B1 (Dodd)	Feb. 2, 2021	Jul. 9, 2018	Dodd
10	US9990854B1 (Elmasry)	Jun. 5, 2018	Mar. 15, 2016	Elmasry
11	US2016/0292696 A1 (Gong)	Oct. 31, 2017	Nov. 16, 2015	Gong
12	US2016/0284221 A1 (Hinkle)	Sep. 29, 2016	Mar. 25, 2016	Hinkle
13	US9542850B2 (Kantor)	Jan. 10, 2017	May 20, 2014	Kantor
14	US10332405B2 (Kopardekar)	Jun. 25, 2019	Dec. 19, 2014	Kopardekar '405
15	CN108292134B (Levinson)	Aug. 16, 2022	Nov. 3, 2016	Levinson
16	US2020/250993 A1 (Li)	Aug. 6, 2020	Oct. 16, 2018	Li
17	US2020/193844 A1 (Mahkonen)	Jun. 18, 2020	Dec. 12, 2017	Mahkonen '844
18	US11429118B2 (Mangharam)	Aug. 30, 2022	Jul. 18, 2019	Mangharam
19	CN109075855A (Miu)	Dec. 21, 2018	Aug. 31, 2017	Miu
20	US2015/0234387 A1 (Mullan)	Aug. 20, 2015	Feb. 11, 2015	Mullan
20	US2016/0116912 A1 (Nehmadi)	Apr. 28, 2016	Sep. 17, 2014	Nehmadi
21	US10629082B1 (Paczan)	Apr. 21, 2020	Apr. 25, 2017	Paczan
22	US10360803 B2 (Postrel)	Jul. 23, 2019	Sep. 20, 2017	Postrel
23	US2016/0247404 A1 (Srivastava)	Mar. 19, 2002	Oct. 11, 2000	Srivastava
24	US9671790B2 (Srivastava)	Jan. 29, 2019	Aug. 24, 2016	Srivastava
25	CN106898133A (Wan)	May 8, 2018	Aug. 29, 2016	Wan
26	CN109196440A (Wu)	Dec. 28, 2021	Jan. 25, 2019	Wu
27	CN105334863A (Yang)	May 23, 2017	Apr. 18, 2016	Yang
28	CN106292711A (Yang)	Jun. 5, 2007	Jan. 24, 2005	Yang
29	US6122572A (Yavnai)	Sep. 30, 2019	Dec. 26, 2017	Yavnai
30	CN103344240A (Zhang)	Jan. 4, 2022	Sep. 30, 2019	Zhang
31	CN108594681B (Zhang)	Feb. 2, 2021	Jul. 9, 2018	Zhang
32	CN109508029B (Zhang)	Jun. 5, 2018	Mar. 15, 2016	Zhang
33	US9958864B2 (Zoox)	Oct. 31, 2017	Nov. 16, 2015	Zoox
34	US1165923	May 9, 2023	Jun. 18, 2020	Mahkonen '923
35	WO2018/l78759	Oct. 4, 2018	Dec. 12, 2017	Mahkonen '759
Publications				
36	Small Unmanned Aircraft Systems Operational and Traffic Management Considerations (Barbeau)	July 2017		Barbeau
37	Drones-as-a-service: A management architecture to provide mission planning, resource brokerage and operation support for fleets of drones (Beseda)	Jun. 1, 2019, IEEE		Beseda

38	Machine Learning and Cognitive Ergnonomics in Air Traffic Management: Recent Developments and Considerations for Certification (Kistan)	Oct. 1, 2018, IEEE		Kistan
39	UTM and D-NET: NASA and JAXA's Collaborative Research on Integreating Small UAS with Disaster Response Efforts (Homola)	2018, NASA		Homola
40	Enabling Airspace Integration for High-Density On-Demand Mobility Operations (Mueller)	Jun. 5, 2017, MASA		Mueller
41	2016 UTM Concept of Operations	Jun. 1, 2016, Nasa		UTM
42	Safe Planning and Control of Autonomous Systems: Robust Predictive Algorithms (Pant)	2019		Pant Dissertation
43	UTM Data Working Group Demonstration 1 Final Report (Rios et al.)	Apr. 2017, NASA		NASA DWG
44	Kopardekar, et al, Unmanned Aircraft System Traffic Management (UTM) Concept of Operations	2018		Kopardekar 2018
45	Kopardekar, et al, Unmanned Aerial System (UAS) Traffic Low-Altitude Airspace and UAS Operations	2014		Kopardekar 2014

2. Relevant Systems

System Name	Use/Knowledge/Offer Date	Company/Organization
Amazon Prime Air	July 16, 2019 (Petition)	Amazon
US9725171 (Carmack)	Aug. 8, 2017	Amazon
US9646502 (Gentry)	May 9, 2017	Amazon
US9524648 (Gopalakrishnan)	Dec. 20, 2016	Amazon
US2017/0090271 A1 (Harris)	Mar. 30, 2017	Amazon
US2015/0210094 A1 (Kimchi)	Apr. 30, 2015	Amazon

US 2015/0277440 A1 (Kimchi)	Oct. 1, 2015	Amazon
US 9536216 (Lisso)	Jan. 3, 2017	Amazon
US 9685089 (Paczan)	Jun. 20, 2017	Amazon
US 9671791 (Paczan)	Jun. 6, 2017	Amazon
UTM Platform	Oct. 3, 2019	ANRA Technologies
Flight Planning	Nov. 1, 2019	ANRA Technologies
Fleet Management	Nov. 1, 2019	ANRA Technologies
Command and Control	Nov. 1, 2019	ANRA Technologies
MG-1P	2018	DJI
Goggles	Apr. 23, 2017	DJI
Geo	Nov. 17, 2015	DJI
GS Pro	July 29, 2017	DJI
FlightHub 1	Nov. 7, 2017	DJI
Inspire 1	Nov. 13, 2014	DJI
Aeroscope	Oct. 12, 2017	DJI
UTM Data Working Group Demonstration 1 Final Report (Rios et al.)	Apr. 2017	NASA DWG
Thales Launches Ecosystem UTM and joins forces with Unifly to Facilitate Drone Use	Mar. 7, 2019	Thales
ECOsystem UTM: a solution to simplify the process of drone flight authorization for small operators	Oct. 19, 2019	Thales
US9646597 (Beckman)	May 9, 2017	Amazon
Wing Demonstrates Decentralized Drone Traffic	Sept 4., 2019	Wing

Management as Part of FAA Pilot Program		
FAQ: Wing	Apr. 10, 2019	Wing

C. Patent '082

1. Prior Art Patents, Applications and Printed Publications

No.	Patent No. or Title (Primary Inventor/Author)	Date of Issue / Publication	Filing Date	Herein Referred As
Patents				
1	US4003532 (Adams)	Jan. 18, 1977	Mar. 15, 1976	Adams '532
2	US5065962 (Adams)	Nov. 19, 1991	Dec. 12, 1989	Adams '962
3	US4067517 (Barnum)	Jan. 10, 1978	Feb. 3, 1976	Barnum
4	US5001646 (Caldwell)	Mar. 19, 1991	Dec. 19, 1988	Caldwell
5	US2008/124377 A1 (Cherepinsky)	Oct. 16, 2008	Apr. 1, 2008	Cherepinksy
6	EP1078308 (Cotton)	Feb. 28, 2001	Apr. 13, 1999	Cotton
7	US5676334 (Cotton)	Oct. 14, 1997	Dec. 21, 1995	Cotton
8	US5195700 (Fogler)	Mar. 23, 1993	Aug. 28, 1991	Fogler
9	US2010/0084513 A1 (Gariepy)	Apr. 8, 2010	Sep. 9, 2009	Gariepy
10	US6648269 (Gold)	Nov. 18, 2003	Dec. 10, 2001	Gold '269
11	US5553812 (Gold)	Sep. 10, 1996	Jun. 3, 1994	Gold '812
12	US2010/0228406 A1 (Hamke)	Sep. 9, 2010	Mar. 3, 2009	Hamke
13	US4645141 (McElreath)	Feb. 24, 1987	May 23, 1984	McElreath
14	US6885917 (Osder)	Apr. 26, 2005	Nov. 7, 2002	Osder
15	US4206891 (Perez)	Jun. 10, 1980	Oct. 26, 1978	Perez
16	US2010/0324758 A1 (Piasecki)	Dec. 23, 2010	Jun. 29, 2010	Piasecki
17	US3711042 (Rempfer)	Jan. 16, 1973	Jul. 13, 1970	Rempfer
18	US2011/0057071 A1 (Sahasrabudhe)	Mar. 10, 2011	Sep. 10, 2010	Sahasrabudhe
19	US5299759 (Sherman)	Apr. 5, 1994	Jun. 1, 1992	Sherman
20	CN101804862B (Shouzhao)	Oct. 2, 2013	Apr. 7, 2010	Shouzhao

21	US2008/0097658 A1(Shue)	Apr. 24, 2008	Nov. 8, 2005	Shue
22	US5238203 (Skonieczny)	Aug. 24, 1993	Aug. 28, 1991	Skonieczny
23	US2008/0077284 A1 (Swope)	Mar. 27, 2008	Apr. 19, 2007	Swope
24	US6076024 (Thornberg)	Jun. 13, 2000	Apr. 29, 1998	Thornberg
25	GB1520391 (UTC)	Aug. 9, 1978	Jan. 13, 1977	UTC
26	US2008/0147254 A1 (Vos)	Jun. 19, 2008	Jun. 2, 2005	Vos
27	US6059226 (Walsh-Cotton)	May 9, 2000	Apr. 29, 1998	Walsh-Cotton
Publications				
28	Design and Flight Testing of a Model Following Control System for Helicopters (Bouwer)	Jun. 25-27, 1984, AIAA		Bouwer
29	UH-60M Upgrade Fly-By-Wire Flight Control Risk Reduction using the RASCAL JUH-60A In-Flight Simulator (Fletcher)	Apr. 29, 2008, American Helicopter Society International, Inc.		Fletcher
30	Design and Pilot Evaluation of the RAH-66 Comanche Selectable Control Modes (Gold)	Jul. 1, 1993, National Aeronautics and Space Administration (NASA)		Gold RAH-66
31	Microprocessor-Based Decoupled Control of Manipulator Using Modified Model-Following Method with Sliding Mode (Hiroi)	May 1986, Institute of Electrical and Electronics Engineers (IEEE)		Hiroi
32	Application of a New Multivariable Model-Following Method to Decoupled Flight Control (Kanai)	Sep.-Oct. 1985, American Institute of Aeronautics and Astronautics (AIAA)		Kanai 1985
33	A Discrete-Time Multivariable Model-Following Method Applied to Decoupled Flight Control (Kanai)	Jul.-Aug. 1986, AIAA		Kanai 1986

34	Helicopter Flight Control Law Design Using H∞ Techniques (Kureemun)	Dec. 12-15, 2005, European Control Conference		Kureemun
35	Aircraft Dynamics and Automatic Control (McRuer)	1973		McRuer
36	Decoupled Flight Control Via a Model-Following Technique Using the Euler Operator (Nikiforuk)	1990, Elsevier B.V.		Nikiforuk
37	Model-Following Control of a Helicopter in Hover (Tretini)	Sept-Nov, 1996, IEEE		Tretini
38	Robust Control of the Longitudinal and Lateral Dynamics of the BELL 205 Helicopter (Walker)	Jun. 2, 1999, American Control Conference		Walker

2. Relevant Systems

System Name	Use/Knowledge/Offer Date	Company/Organization
Rah-66 Comanche	Jan. 4, 1996	Boeing
AH-64D Apache Helicopter	Sep. 30, 1975	Boeing
T-Hawk	Jan. 11, 2011	Honeywell
AR.Drone2	Mar. 12, 2012	Parrot
ACE ONE	Nov. 2010	DJI
XP3.1 Standard	Sep, 2009	DJI
XP3.1 Waypoint	April 28, 2010	DJI
US5238203 (Skonieczny)	Aug. 28, 1991	U.S.P.T.O.
US3711042 (Rempfer)	Jul. 13, 1970	U.S.P.T.O.
US5676334 (Cotton)	Oct. 14, 1997	U.S.P.T.O.
US5065962 (Adams)	Nov. 19, 1991	U.S.P.T.O.
US4645141 (McElreath)	May 23, 1984	U.S.P.T.O.
WO2008/124377 (Cherepinsky)	Oct. 16, 2008	WIPO (PCT)
US 2008/0097658 (Shue)	Apr. 24, 2008	U.S.P.T.O.
US 2010/228406 (Hamke)	Sep. 9, 2010	U.S.P.T.O.
US 9,098,090 (Christensen)	Apr. 11, 2013	U.S.P.T.O.

D. Patent ’505

1. Prior Art Patents, Applications and Printed Publications

No.	Patent No. or Title (Primary Inventor/Author)	Date of Issue / Publication	Filing Date	Herein Referred As
		Patents		
1	US4003532 (Adams)	Jan. 18, 1977	Mar. 15, 1976	Adams '532
2	US5065962 (Adams)	Nov. 19, 1991	Dec. 12, 1989	Adams '962
3	US4067517 (Barnum)	Jan. 10, 1978	Feb. 3, 1976	Barnum
4	US5001646 (Caldwell)	Mar. 19, 1991	Dec. 19, 1988	Caldwell
5	US2008/124377 A1 (Cherepinsky)	Oct. 16, 2008	Apr. 1, 2008	Cherepinksy
6	EP1078308 (Cotton)	Feb. 28, 2001	Apr. 13, 1999	Cotton
7	US5676334 (Cotton)	Oct. 14, 1997	Dec. 21, 1995	Cotton
8	US5195700 (Fogler)	Mar. 23, 1993	Aug. 28, 1991	Fogler
9	US2010/0084513 A1 (Gariepy)	Apr. 8, 2010	Sep. 9, 2009	Gariepy
10	US6648269 (Gold)	Nov. 18, 2003	Dec. 10, 2001	Gold '269
11	US5553812 (Gold)	Sep. 10, 1996	Jun. 3, 1994	Gold '812
12	US2010/0228406 A1 (Hamke)	Sep. 9, 2010	Mar. 3, 2009	Hamke
13	US4645141 (McElreath)	Feb. 24, 1987	May 23, 1984	McElreath
14	US6885917 (Osder)	Apr. 26, 2005	Nov. 7, 2002	Osder
15	US4206891 (Perez)	Jun. 10, 1980	Oct. 26, 1978	Perez
16	US2010/0324758 A1 (Piasecki)	Dec. 23, 2010	Jun. 29, 2010	Piasecki
17	US3711042 (Rempfer)	Jan. 16, 1973	Jul. 13, 1970	Rempfer
18	US2011/0057071 A1 (Sahasrabudhe)	Mar. 10, 2011	Sep. 10, 2010	Sahasrabudhe
19	US5299759 (Sherman)	Apr. 5, 1994	Jun. 1, 1992	Sherman
20	CN101804862B (Shouzhao)	Oct. 2, 2013	Apr. 7, 2010	Shouzhao
21	US2008/0097658 A1(Shue)	Apr. 24, 2008	Nov. 8, 2005	Shue

22	US5238203 (Skonieczny)	Aug. 24, 1993	Aug. 28, 1991	Skonieczny
23	US2008/0077284 A1 (Swope)	Mar. 27, 2008	Apr. 19, 2007	Swope
24	US6076024 (Thornberg)	Jun. 13, 2000	Apr. 29, 1998	Thornberg
25	GB1520391 (UTC)	Aug. 9, 1978	Jan. 13, 1977	UTC
26	US2008/0147254 A1 (Vos)	Jun. 19, 2008	Jun. 2, 2005	Vos
27	US6059226 (Walsh-Cotton)	May 9, 2000	Apr. 29, 1998	Walsh-Cotton
Publications				
28	Design and Flight Testing of a Model Following Control System for Helicopters (Bouwer)	Jun. 25-27, 1984, AIAA		Bouwer
29	UH-60M Upgrade Fly-By-Wire Flight Control Risk Reduction using the RASCAL JUH-60A In-Flight Simulator (Fletcher)	Apr. 29, 2008, American Helicopter Society International, Inc.		Fletcher
30	Design and Pilot Evaluation of the RAH-66 Comanche Selectable Control Modes (Gold)	Jul. 1, 1993, National Aeronautics and Space Administration (NASA)		Gold RAH-66
31	Microprocessor-Based Decoupled Control of Manipulator Using Modified Model-Following Method with Sliding Mode (Hiroi)	May 1986, Institute of Electrical and Electronics Engineers (IEEE)		Hiroi
32	Application of a New Multivariable Model-Following Method to Decoupled Flight Control (Kanai)	Sep.-Oct. 1985, American Institute of Aeronautics and Astronautics (AIAA)		Kanai 1985
33	A Discrete-Time Multivariable Model-Following Method Applied to Decoupled Flight Control (Kanai)	Jul.-Aug. 1986, AIAA		Kanai 1986
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36	Decoupled Flight Control Via a Model-Following Technique Using the Euler Operator (Nikiforuk)	1990, Elsevier B.V.		Nikiforuk
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2. Relevant Systems

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US5065962 (Adams)	Nov. 19, 1991	U.S.P.T.O.
US4645141 (McElreath)	May 23, 1984	U.S.P.T.O.
WO2008/124377 (Cherepinsky)	Oct. 16, 2008	WIPO (PCT)
US 2008/0097658 (Shue)	Apr. 24, 2008	U.S.P.T.O.
US 2010/228406 (Hamke)	Sep. 9, 2010	U.S.P.T.O.
US 9,098,090 (Christensen)	Apr. 11, 2013	U.S.P.T.O.

IV. Invalidity Due to Anticipation Pursuant to P.R. 3-3(b) and (c)

A. Legal Standard

For both pre-AIA('950 and '972) and post-AIA patents ('082 and '505), 35 .U.S.C. § 102 defines what qualifies as prior art that precludes the granting of a patent.

Pre-AIA, under 35 U.S.C. § 102(a), a claim in a patent is invalid as anticipated where the claimed subject matter "was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent." Moreover, under 35 U.S.C. § 102(e), a claim is invalid as anticipated where the claimed subject matter "was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language." Lastly, a claim can also be invalid under 35 U.S.C. § 102(f), where a claim is invalid when the putative inventor "did not himself invent the subject matter sought to be patented."

AIA 35 U.S.C. § 102 provides "[a] person shall be entitled to a patent unless— (1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or (2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b)". *See also Helsinn Healthcare SA. v.*

Teva Pharm. USA, Inc., 855 F.3d 1356, 1367 (Fed. Cir.2017), aff'd *Helsinn Healthcare S.A. v. Teva Pharm.*, USA, Inc., 139 S. Ct. 628 (2019).

As set forth below and in the accompanying Claim Charts, the Asserted Claims are invalid over at least the cited prior art listed pursuant to 35 .U.S.C. §§ 102 and/or 103, pre- and post- AIA as appropriate. DJI identifies and discusses below the prior art that it contends anticipates one or more of the Asserted Claims. A full citation to each reference is in the Tables above, along with the "Short Name" used to identify each reference throughout this disclosure. The following tables list: (i) each anticipating prior art reference, (ii) the Asserted Claims anticipated by each anticipating reference, (iii) for each anticipating reference, the chart identifying where specifically in that reference each element of each Asserted Claim is found, including for each element that DJI contends is governed by 35 U.S.C. § 112(6), the identity of the structure(s), act(s), or material(s) in each item of prior art (if any) that performs the claimed function.

To the extent a reference below is not cited against a particular Asserted Claim, DJI nonetheless may rely on the reference as relevant background art in demonstrating that the Asserted Claim is obvious. References to patents shall be taken to include all related U.S. and foreign patents and/or publications. References to papers and articles shall be taken to include all Supplemental Information. DJI may also rely on additional prior art references, alone or in combination with any of the references set forth in Section I.A or the accompanying charts, as well as witness testimony, to further demonstrate that the Asserted Claims are anticipated and/or obvious. DJI may also rely on expert testimony to explain how the Asserted Claims are anticipated and/or obvious in light of the prior art.

The corresponding charts in Exhibits A-D for each prior art reference identifies where and how each alleged item of prior art meets one or more limitations of the Asserted Claims. Pursuant

to P.R. 3-6, DJI expressly reserves the right to supplement these charts to provide additional details about obviousness should the Court's claim construction require. DJI intends to rely on experts to evaluate invalidity in this case. While DJI has attempted to map the prior art to the Asserted Claims, and have done so to put TII on notice of its reliance on the prior art disclosed herein, DJI's experts may identify additional portions of the prior art relevant to the analysis. DJI reserves the right for its experts to rely on these analyses in evaluating invalidity.

DJI reserves the right to amend to pair the below references with other references or to assert §103 single reference obviousness if TII alleges any elements not satisfied by the prior art. DJI further incorporates by reference, all prior art cited during the prosecution of the Asserted Patents and reserves the right to use the cited prior art to establish the knowledge and level of ordinary skill and claim elements that were well known in the art.

B. Prior Art Anticipating Asserted Claims of the '950 Patent[3]

Exhibit	Prior Art Reference
B	Aspen
B	Boeing

C. Prior Art Anticipating Asserted Claims of the '972 Patent

Exhibit	Prior Art Reference
A	DJI FlightHub 1

[3] For all prior art devices and systems asserted herein, DJI relies on the underlying device or system itself, the source code (for DJI devices and systems), and prior art references disclosing the devices or systems. DJI may rely on each of these things alone and in combination. For purposes of charting, DJI uses references disclosing aspects of the devices and systems to describe the devices and systems. For any invalidity analysis, the claim elements are satisfied by the devices and systems alone, and/or the source code (for DJI devices and systems), and/or the references that disclose the devices and systems, each alone or in combination.

A	DJI GS Pro
A	DJI MG-1P
A	Kopardekar
A	Amazon System
A	Thales System
A	Wing System
A	NASA UTM System
A	ANRA Technologies
A	Mahkonen
A	Carmack
A	Li
A	Homola

D. Prior Art Anticipating Asserted Claims of the ’082 Patent

Exhibit	Prior Art Reference
D	Shue ’658
D	Piasecki ’758
D	Osder ’917
D	Gold ’812
D	Gold ’269
D	Comanche
D	DJI ACE One

D	DJI XP3.1 Waypoint
D	DJI XP3.1 Standard

E. Prior Art Anticipating Asserted Claims of the ’505 Patent

Exhibit	Prior Art Reference
C	Shue ’658
C	Piasecki ’758
C	Osder ’917
C	Gold ’269
C	Walsh-Cotton ’226
C	Caldwell ’646
C	Cotton ’334
C	Gold ’812
C	Hamke ’406
C	DJI ACE One
C	DJI XP3.1 Waypoint
C	DJI XP3.1 Standard
C	Comanche
C	Apache
C	T-Hawk

C	Sikorsky Cypher (II)

F. Incorrect Inventorship

TII has asserted that DJI has infringed all Claims of the ’505 and ’082 Patents. The putative inventors listed on those Patents are Kevin Thomas Christensen, Shyhpyng Jack Shue, and Troy Sheldon Caudill. These same putative inventors, however, filed applications related to another patent family that also named Nicholas Dean Lappos as an inventor. *See* WO 2012/134447; U.S. Patent 9,098,090. The patent and patent applications within this patent family share significant portions of their specification with that of the ’505 and ’082 Patents, including several figures. TII’s failure to name Mr. Lappos as an inventor on the ’505 and ’082 Patents renders them invalid.

V. Invalidity Due to Obviousness Pursuant to P.R. 3-3(b) and (c)

A. Legal Standard

The result of ordinary innovation, ordinary skill or common sense should not be patentable. *KSR Int’l Co. v. Teleflex Inc.,* 550 U.S. 398 (2007). “As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor.” *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992). It is sufficient that a combination of elements was “obvious to try” because “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” *KSR*, 550 U.S. at 421.

To the extent that TII contends that any of the references identified as anticipatory references fail to disclose one or more elements, those anticipatory references render the Asserted

Claims obvious, either alone or in combination with other references. DJI contends that one of skill in the art, at the time the alleged inventions were made, would have been motivated to combine the references disclosed herein in such a way as to reach the alleged inventions, as described in further detail below. DJI presently believes a reasonable basis exists that each of the Claims asserted against it would have been obvious to one of ordinary skill in the art at the time of the alleged invention. Below, DJI identifies the current bases for obviousness. As seen below, DJI presently asserts certain combinations of prior art reference(s) plus the knowledge of one of ordinary skill in the art in situations where DJI reasonably anticipates TII may argue the reference(s) alone do not disclose every element. (DJI offers these combinations without conceding that the reference(s) standing alone are insufficient to invalidate the relevant Claims.) DJI specifically reserves its rights to combine any of its anticipatory references or any combinations of references with the knowledge of ordinary skill in the art to rebut a contention of TII that such reference(s) standing alone do not disclose every element of the Asserted Claims. DJI lists below prior art references and combinations of prior art references now known to DJI, which DJI contends render at least obvious the Patents.

The corresponding charts in Exhibits A-D for each prior art reference identifies where and how each alleged item of prior art meets one or more limitations of the Asserted Claims. Pursuant to P.R. 3-6, DJI expressly reserves the right to supplement these charts to provide additional details about obviousness should the Court's claim construction require. DJI intends to rely on experts to evaluate invalidity in this case. While DJI has attempted to map the prior art to the Asserted Claims, and have done so to put TII on notice of its reliance on the prior art disclosed herein, DJI's experts may identify additional portions of the prior art relevant to the analysis. DJI reserves the right for its experts to rely on these analyses in evaluating invalidity. DJI's contention that the

references in this section in various combinations render obvious the ’950 Asserted Claims, ’972 Asserted Claims, ’082 Asserted Claims and ’505 Asserted Claims under 35 U.S.C. § 103 are in no way an admission or suggestion that each reference does not independently anticipate or render obvious the ’950 Asserted Claims, ’972 Asserted Claims, ’082 Asserted Claims and ’505 Asserted Claims under 35 U.S.C. § 102.

These combinations would have been obvious to try given that there were a finite number of identified, predictable solutions in the prior art, and there would have been a reasonable expectation of success to simply implement one prior art solution with concepts from prior art in the same field.[4]

DJI reserves the right to substitute other prior art into reference combinations to satisfy elements should TII claim that the requisite elements are not satisfied.

DJI further incorporates by reference, all prior art cited during the prosecution of the Patents and reserves the right to use the cited prior art to establish the knowledge and level of ordinary skill and claim elements that were well known in the art. [5]

DJI intends to rely on simultaneous invention based on the art below as against the Asserted Patents, both for proof of obviousness and evidence of the level of skill in the art.

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[4] DJI’s disclosures concerning motivations to combine the teachings of references and/or devices —here and elsewhere in these contentions— does not and is not intended to exclude other potential rationales that may support a conclusion of obviousness, e.g., combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable results; use of known techniques to improve similar devices (methods, systems, or products) in the same way; applying a known technique to a known device (method, system, or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and some teaching or suggestion in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. This list of rationales provided is not intended to be an all-inclusive list.

[5] In the event TII asserts any arguments or evidence concerning alleged secondary considerations of non-obviousness, DJI reserves the right to respond accordingly and consistent with the applicable rules.

B. The ’950 Patent

1. Knowledge of a POSITA and State of the Art

A person of ordinary skill in the art (“POSITA”) at the time of the alleged priority date of the ’950 Patent would be an individual with a bachelor’s degree or equivalent in the field of aeronautical engineering, electrical engineering, computer science, or equivalent training and experience, and at least one year of experience in the field of avionics system analysis and/or design. A higher level of education or work experience might make up for less experience, and vice versa.

2. Motivation to Combine

A person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or adapt known or familiar methods in the art for the reasons described below.

DJI intends to intends to present expert evidence, as well as intrinsic evidence, demonstrating the motivation to combine the relied upon prior art references. This evidence will be presented in DJI's expert reports in accordance with the procedural deadlines in this case. DJI incorporates by reference its forthcoming expert reports and any testimony of its experts presented according to the Court's schedule in this case.

The motivation to combine or modify the above prior art is present, for example, in the references themselves, references cited on the face of the Patents-in-Suit, the knowledge, skill, or creativity of one of ordinary skill in the art, the prior art as a whole, and/or the nature of the problems allegedly addressed by the Patents-in-Suit. The law requires no showing of specific motivation to combine or modify prior art references disclosed herein and in the Invalidity Charts, as each combination or modification of art would have no unexpected results and, at most, would represent a known alternative to one of skill in the art. *See, e.g.*, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727,

1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead espousing an "expansive and flexible approach"). A person or ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases, a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. To a person of ordinary skill in the art, the Asserted Claims of the '950 Patent represent solutions that were known or obvious to try, with predictable results.

Nevertheless, should additional evidence of motivation to combine or modify be required to render the Asserted Claims of the '950 Patent obvious, there was a motivation to combine the references identified above. That motivation was provided in the nature of the problem allegedly solved by the '950 Patent, the design need or market pressure to solve the problem allegedly solved by the '950 Patent, the teachings of the cited prior art itself, and/or the knowledge of a person of ordinary skill in the art. For example, the combinations identified above would have been combined or modified using: known methods to yield predictable results; common sense; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion or motivation in the prior art generally. In addition, it would have been obvious to try combining or modifying the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces in the same field or a different one. In addition, the combination the combination of the prior art references would have been obvious because the combination represents known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine or modify the prior art references above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the

background knowledge, skill, or creativity that would have been possessed by a person having ordinary skill in the art. DJI may rely on uncited portions of the prior art references cited and produced, other publications and testimony, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references so as to render the claims obvious. References identified by DJI address the same technical issues and suggest very similar solutions to those issues discussed in the Patents-in-Suit and generally known at the time of the alleged invention(s) claimed in the Asserted Claims of the ’950 Patent. DJI reserves the right to supplement these Invalidity Contentions with additional charts for any of the references listed above, and/or common knowledge and state of the art.

The vast majority of the prior art references identified in the Tables herein relating to the ’950 Patent and Exhibit B are directly related to flight monitoring, analysis and feedback systems in aircraft and other vehicles, including collection, storage, processing and wireless communication of flight and pilot related data in and between avionics systems other electronics, devices and databases, including consistent with FAA and other transportation industry regulations and objectives, including regarding restricted access to such data. Thus, the reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by researchers working in the same or similar areas of flight monitoring, analysis and feedback systems in aircraft, that the references are directed toward the same problem (e.g., collecting, storing, processing and providing secure access to flight and pilot data), the fact that the prior art is all in the field of aircraft and other vehicle data collection, monitoring, analysis and communication system, and one of ordinary skill in the art would be motivated to investigate the various existing methods for implementing such aircraft and vehicle data monitoring and communication systems, including with known and commonly utilized electronic components and for the purposes of improved safety and performance during flight, and other references identified herein to address their particular needs. To the extent not anticipated by the prior

art references, the combinations and modifications of the prior art to invalidate the Asserted Claims of the ’950 Patent would have arisen from ordinary innovation, ordinary skill, and/or common sense, and/or would have been obvious to try and/or would have been otherwise predictable in the field. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

3. The Combinations

Consistent with the exemplary motivations to combine each of the references discussed above, the below table provides a summary of the exemplary combinations of references rendering obvious to a POSITA, with or without a POSITA’s knowledge (including the AAPA and general state of the art), skill and/or creativity, the Asserted Claims of the ’950 Patent.

Exhibit	Prior Art Reference	Reference Alone or in Combination With One or More of the Following
B	WooKong-M	POSITA, WM Assistant, Ground Station
B	XP3.1	POSITA, XP3.1 Ground Station
B	Ace One	POSITA, DJI Assistant, Ace One Ground Station
B	Ace Waypoint	POSITA, DJI Ace Assistant, Ace Waypoint Ground Station
B	Aspen	POSITA, Boeing, CMC, AvPlanefb, AvMap, Omnitracs
B	Boeing	POSITA, Aspen, AvMap, CMC, AvPlanefb, Omnitracs
B	Omnitracs	POSITA, Aspen, Boeing, CMC, AvPlanefb, AvMap
B	Warner	POSITA, Shavit, Wakutsu, Greubel, Uczekaj
B	Uczekaj	POSITA, Jiang, Gruebel, Warner, Shavit
B	Brinkley	POSITA, Gruebel, Tam, Flies, Tsumagari, Conner, Stefani, Omnitracs

B	Stefani	POSITA, Gruebel, Tam, Flies, Tsumagari, Omnitracs
B	Conner	POSITA, Gruebel, Tam, Flies, Tsumagari, Omnitracs

C. The ’972 Patent

1. Knowledge of a POSITA and State of the Art

A POSITA at the time of the alleged priority date of the ’972 Patent would be an individual with a bachelor’s degree or equivalent in the field of aeronautical engineering, electrical engineering, computer science, or equivalent training and experience, and at least one year of experience in the field of unmanned vehicles. A higher level of education or work experience might make up for less experience, and vice versa.

2. Motivation to Combine

A person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or adapt known or familiar methods in the art for the reasons described below.

DJI intends to present expert evidence, as well as intrinsic evidence, demonstrating the motivation to combine the relied upon prior art references. This evidence will be presented in DJI's expert reports in accordance with the procedural deadlines in this case. DJI incorporates by reference its forthcoming expert reports and any testimony of its experts presented according to the Court's schedule in this case.

The motivation to combine or modify the above prior art is present, for example, in the references themselves, references cited on the face of the Patents-in-Suit, the knowledge, skill, or creativity of one of ordinary skill in the art, the prior art as a whole, and/or the nature of the problems

allegedly addressed by the Patents-in-Suit. The law requires no showing of specific motivation to combine or modify prior art references disclosed herein and in the Invalidity Charts, as each combination or modification of art would have no unexpected results and, at most, would represent a known alternative to one of skill in the art. *See, e.g.*, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead espousing an "expansive and flexible approach"). A person or ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases, a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. To a person of ordinary skill in the art, the asserted claims of the '972 Patent represent solutions that were known or obvious to try, with predictable results.

Nevertheless, should additional evidence of motivation to combine or modify be required to render the asserted claims of the '972 Patent obvious, there was a motivation to combine the references identified above. That motivation was provided in the nature of the problem allegedly solved by the '972 Patent, the design need or market pressure to solve the problem allegedly solved by the '972 Patent, the teachings of the cited prior art itself, and/or the knowledge of a person of ordinary skill in the art. For example, the combinations identified above would have been combined or modified using known methods to yield predictable results; common sense; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art. In addition, it would have been obvious to try combining or modifying the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces in the same field or a different one. In addition, the combination the combination of the prior art references would have been obvious because the combination represents known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine or modify the prior art references above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the asserted claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge, skill, or creativity that would have been possessed by a person having ordinary skill in the art. DJI may rely on uncited portions of the prior art references cited and produced, other publications and testimony, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references so as to render the claims obvious. References identified by DJI address the same technical issues and suggest similar solutions to those issues discussed in the Patents-in-Suit and known at the time of the alleged invention(s) claimed in the asserted claims of the ’972 Patent. DJI reserves the right to supplement these Invalidity Contentions with additional charts for any of the references listed above, and/or common knowledge and state of the art.

The vast majority of the prior art references identified in Exhibit A are papers, dissertations, theses, videos, systems, or patents that contemplate or otherwise disclose the use of autonomous vehicles, fleet control, fleet management, fleet planning, semiautonomous and autonomous vehicle fleet control, vehicle missions, vehicle safety and security, vehicle flight plans, vehicle regulation compliance, or collision avoidance. Moreover, some of the prior art references disclose the use of applications, interfaces, traffic management systems, software, and/or hardware to manage, access, optimize, or otherwise utilize the aforesaid vehicles, fleets, plans, and the like.

Thus, the reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by researchers working in the same or similar areas of drones or autonomous vehicle control, and avionics that the references are directed toward the same problem (e.g., managing a fleet of drones executing missions, avoiding collisions, or planning the flight

pathing of one or more drones), the fact that the prior art is all in the field of autonomous fleet management, and one of ordinary skill in the art would be motivated to investigate the various existing methods for managing autonomous vehicles, either alone or in a fleet and across a variety of environments and use cases, and other references identified herein to address their particular needs.

To the extent not anticipated by the prior art references, the combinations, and modifications of the prior art to invalidate the asserted claims of the ’972 Patent would have arisen from ordinary innovation, ordinary skill, and/or common sense, and/or would have been obvious to try and/or would have been otherwise predictable in the field. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.[6]

3. The Combinations

Consistent with the exemplary motivations to combine each of the references discussed above, the below table provides a summary of the exemplary combinations of references rendering obvious to a POSITA, with or without a POSITA’s knowledge (including the AAPA and general state of the art), skill and/or creativity, the Asserted Claims of the ’972 Patent.

Exhibit	Prior Art Reference	Reference Alone or in Combination With One or More of the Following
A	DJI MG-1P	POSITA, DJI Inspire 1, DJI Goggles, NASA DWG, Kopardekar 2014, Kopardekar 2018, Homola, DJI Flighthub 1, DJI Aeroscope
A	Amazon System	POSITA, Mahkonen ’923, Li, Carmack, Mullan, Flighthub 1 System, DJI Goggles,

[6] In the event TII asserts any arguments or evidence concerning alleged secondary considerations of non-obviousness, DJI reserves the right to respond accordingly and consistent with the applicable rules.

		DJI GS Pro, NASA DWG, Kopardekar 2014, Kopardekar 2018, DJI MG-1P, Homola
A	Mahkonen ’923	POSITA, Amazon System, Thales System, Wing System, ANRA Technologies, Mullan, Li, Carmack, DJI Flighthub 1 System, DJI Aeroscape, DJI Goggles, NASA DWG, Kopardekar 2014, Kopardekar 2018, DJI MG-1P, Homola
A	Mullan	POSITA, DJI Aeroscape, Li, Carmack, Mahkonen ’923, DJI Flighthub 1 System, DJI Goggles System, ANRA Technologies, Wing System, Thales System, Amazon System, NASA DWG, Kopardekar 2014, Kopardekar 2018, DJI MG-1P, Homola
A	Li	POSITA, Amazon System, Wing System, NASA UTM, ANRA Technologies, Carmack, DJI Aeroscope, DJI Goggles, Flighthub 1 System, Thales System, Mullan, NASA DWG, Kopardekar 2014, Kopardekar 2018, DJI MG-1P, Homola
A	Carmack	POSITA, Amazon System, DJI Goggles System, Flighthub 1 System, DJI Aeroscope, Wing System, Li, Mahkonen ’923, Thales

		System, ANRA Technologies, NASA DWG, Kopardekar 2014, Kopardekar 2018, Homola
A	Thales	POSITA, Mahkonen ’923, Li, Carmack, Mullan, DJI Inspire 1, DJI Flighthub 1, DJI Goggles, Homola
A	Wing System	POSITA, Mahkonen ’923, Li, Carmack, Mullan, Homola
A	ANRA Technologies	POSITA, Mahkonen ’923, Li, Carmack, Mullan, Homola
A	NASA DWG	POSITA, Kopardekar 2014, Kopardekar 2018, Mullan, Mahkonen ’923, Li, Carmack, DJI Aeroscope, DJI MG-1P, Homola
A	DJI Flighthub 1	POSITA, DJI Geo, DJI Inspire 1, DJI Goggles, Mahkonen ’923, Li, DJI GS Pro, DJI Aeroscope, Carmack, Mullan, DJI MG-1P, Homola
A	DJI Inspire 1	POSITA, DJI Goggles, DJI GS Pro, Mahkonen ’923, Li, DJI Aeroscope, Carmack, Mullan, DJI MG-1P, Homola
A	DJI GS Pro	POSITA, DJI Goggles, DJI Inspire 1, DJI Aeroscope, Carmack, Mullan, Li, Mahkonen ’923, DJI Flighthub 1, DJI MG-1P, Homola

A	DJI Goggles	POSITA, DJI Inspire 1, Carmack, Li, Mahkonen ’923, Mullan, DJI Aeroscope, DJI Flighthub 1, DJI MG-1P, Homola
A	Homola	POSITA, DJI Geo, DJI Inspire 1, DJI Goggles, Mahkonen ’923, Li, DJI GS Pro, DJI Aeroscope, Carmack, Mullan, DJI MG-1P, DJI Inspire 1, DJI Flighthub 1, Bethke, Butler

D. The ’082 Patent

1. Knowledge of a POSITA and State of the Art

A POSITA would have at least an equivalent of a Bachelor’s degree from an accredited institution in mechanical engineering, aerospace engineering, electrical engineering, robotics or any other discipline covering principles of the design or operation of flight controls for helicopters, drones, or other rotary aircraft, as well as one year of experience working on the design, development, implementation, or operation of such technologies. Significant experience could substitute for formal education, and significant education could substitute for work experience.

2. Motivation to Combine

A person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or adapt known or familiar methods in the art for the reasons described below.

DJI intends to intends to present expert evidence, as well as intrinsic evidence, demonstrating the motivation to combine the relied upon prior art references. This evidence will be presented in DJI's expert reports in accordance with the procedural deadlines in this case. DJI

incorporates by reference its forthcoming expert reports and any testimony of its experts presented according to the Court's schedule in this case.

The motivation to combine or modify the above prior art is present, for example, in the references themselves, references cited on the face of the Patents-in-Suit, the knowledge, skill, or creativity of one of ordinary skill in the art, the prior art as a whole, and/or the nature of the problems allegedly addressed by the Patents-in-Suit. The law requires no showing of specific motivation to combine or modify prior art references disclosed herein and in the Invalidity Charts, as each combination or modification of art would have no unexpected results and, at most, would represent a known alternative to one of skill in the art. *See, e.g.*, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead espousing an "expansive and flexible approach"). A person or ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases, a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. To a person of ordinary skill in the art, the Asserted Claims of the '082 Patent represent solutions that were known or obvious to try, with predictable results.

Nevertheless, should additional evidence of motivation to combine or modify be required to render the Asserted Claims of the '082 Patent obvious, there was a motivation to combine the references identified above. That motivation was provided in the nature of the problem allegedly solved by the '082 Patent, the design need or market pressure to solve the problem allegedly solved by the '082 Patent, the teachings of the cited prior art itself, and/or the knowledge of a person of ordinary skill in the art. For example, the combinations identified above would have been combined or modified using: known methods to yield predictable results;

common sense; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion or motivation in the prior art generally. In addition, it would have been obvious to try combining or modifying the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces in the same field or a different one. In addition, the combination the combination of the prior art references would have been obvious because the combination represents known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine or modify the prior art references above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge, skill, or creativity that would have been possessed by a person having ordinary skill in the art. DJI may rely on uncited portions of the prior art references cited and produced, other publications and testimony, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references so as to render the claims obvious. References identified by DJI address the same technical issues and suggest very similar solutions to those issues discussed in the Patents-in-Suit and generally known at the time of the alleged invention(s) claimed in the Asserted Claims of the ’082 Patent. DJI reserves the right to

supplement these Invalidity Contentions with additional charts for any of the references listed above, and/or common knowledge and state of the art.

The vast majority of the prior art references and devices identified in the Tables herein relating to the ’082 and ’505 Patents and Exhibits C and D are directly related to flight control systems used in aircraft that have flight control laws that enable aircraft maneuvering, including the lateral, longitudinal, and yaw movements and associated control laws and architecture.[7] Moreover, a significant number of the cited devices and references were issued by the same companies or groups of researchers or concern different features of the same aircraft.[8] Thus, the reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by researchers working in the same or similar areas of flight control systems the references are directed toward the same problem (e.g., reducing pilot workload during maneuvers by using flight control laws to counter disturbances caused by the natural environment), the fact that the prior art is all in the field of aircraft with control systems, and one of ordinary skill in the art would be motivated to investigate the various existing methods and systems using flight control systems, control laws, and related architecture, including with known and commonly utilized electronic components and other references identified herein to address their particular needs. To the extent not anticipated by the prior art references, the combinations and modifications of the prior art to invalidate the asserted claims

[7] Additionally, most flight control systems involve controllers operated by a pilot, and a POSITA would have been motivated to investigate various controllers to reduce pilot workload. Such a person would have been aware of the Adam U.S. Patent No. 5,065,962 Patent, which DJI has included in its claim charts, as well as McElreath U.S. Patent No. 4,645,141 and Cherepinsky U.S. Patent Application No. 2008/12377A1, which DJI relies upon for the same or similar disclosures.

[8] For example, as for motivations to combine asserted devices with the cited secondary references, to the extent a motivation is necessary, DJI notes that the teachings of certain references (e.g., the Gold references) were actually combined in the asserted device (e.g., the Comanche helicopter). In that sense, the reference might also serve as descriptions of the device itself rather than a secondary reference to be combined with the device.

of the ’505 and ’082 Patents would have arisen from ordinary innovation, ordinary skill, and/or common sense, and/or would have been obvious to try and/or would have been otherwise predictable in the field. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

3. The Combinations

Consistent with the exemplary motivations to combine each of the references discussed above, the below table provides a summary of the exemplary combinations of references rendering obvious to a POSITA, with or without a POSITA’s knowledge (including the AAPA and general state of the art), skill and/or creativity, the Asserted Claims of the ’082 Patent.

Number	Prior Art Reference	Reference Alone or in Combination With One or More of the Following
1.	Piasecki ’758	POSITA[9]
2.	Shue ’658	POSITA
3.	Osder ’917	POSITA
4.	Gold ’812	POSITA
5.	Gold ’269	POSITA
6.	Piasecki ’758	812, 269, Gold Publication
7.	Piasecki ’758	658
8.	Piasecki ’758	646, 071
9.	Piasecki ’758	203, 962
10.	Piasecki ’758	203, 141
11.	Piasecki ’758	203, 377
12.	Piasecki ’758	812, 203, 962
13.	Piasecki ’758	812, 203, 141
14.	Piasecki ’758	812, 203, 377
15.	Piasecki ’758	658, 962

[9] Please note that a POSITA would be aware of all of the cited prior art as it would reflect a POSITA’s level of knowledge and understanding of the art, including, although not expressly cited as a secondary reference, knowledge of, for example, the use of a control system including a lateral control component utilizing lateral equations of motion and a longitudinal control component utilizing longitudinal equations of motion, which was not a new concept. *See, e.g.*, McRuer et al., *Aircraft Dynamics and Automatic Control*, Technical Report No. 129-1, at Fig. 1-4 (Systems Technology, Inc. Aug. 1968).

16.	Piasecki ’758	658, 141
17.	Piasecki ’758	658, 377
18.	Gold ’812	758
19.	Gold ’812	658
20.	Gold ’812	646, 071
21.	Gold ’812	203, 962
22.	Gold ’812	203, 141
23.	Gold ’812	203, 377
24.	Gold ’812	071, 203, 962
25.	Gold ’812	071, 203, 141
26.	Gold ’812	071, 203, 377
27.	Gold ’812	758, 203, 962
28.	Gold ’812	758, 203, 141
29.	Gold ’812	758, 203, 377
30.	Shue ’658	812, 269, Gold Publication
31.	Shue ’658	758
32.	Shue ’658	646, 071
33.	Shue ’658	071, 203, 962
34.	Shue ’658	071, 203, 141
35.	Shue ’658	071, 203, 377
36.	Shue ’658	812, 203, 962
37.	Shue ’658	812, 203, 141
38.	Shue ’658	812, 203, 377
39.	Comanche	269, 646
40.	Comanche	812, Gold Publication, 269
41.	Comanche	812, Gold Publication, 646
42.	Comanche	812, Gold Publication, 203
43.	Comanche	812, Gold Publication, 962
44.	Comanche	812, 203, 141
45.	Comanche	812, 203, 377
46.	Comanche	812, 203, 962
47.	Comanche	812, Gold Publication, 141
48.	Comanche	812, Gold Publication, 337
49.	Comanche	812, 042
50.	Comanche	812, Gold Publication, 758
51.	Comanche	812, 203, 758
52.	Comanche	812, Gold Publication, 658
53.	Comanche	812, 203, 658
54.	Comanche	646, 071, 269
55.	Comanche	646, 071, 758
56.	Comanche	646, 071, 203
57.	Comanche	646, 071, 962
58.	Comanche	646, 071, 141
59.	Comanche	646, 071, 377

60.	Comanche	646, 071, 962
61.	Comanche	646, 071, 658
62.	Comanche	758, 203, 962
63.	Comanche	758, 203, 141
64.	Comanche	758, 203, 377
65.	Comanche	758, 042
66.	Comanche	758, 658
67.	Comanche	658, 203, 962
68.	Comanche	658, 203, 141
69.	Comanche	658, 203, 377
70.	Comanche	658, 042
71.	DJI ACE One	269, 646
72.	DJI ACE One	812, Gold Publication, 269
73.	DJI ACE One	812, Gold Publication, 646
74.	DJI ACE One	812, Gold Publication, 203
75.	DJI ACE One	812, Gold Publication, 962
76.	DJI ACE One	812, 203, 141
77.	DJI ACE One	812, 203, 377
78.	DJI ACE One	812, 203, 962
79.	DJI ACE One	812, Gold Publication, 141
80.	DJI ACE One	812, Gold Publication, 337
81.	DJI ACE One	812, 042
82.	DJI ACE One	812, Gold Publication, 758
83.	DJI ACE One	812, 203, 758
84.	DJI ACE One	812, Gold Publication, 658
85.	DJI ACE One	812, 203, 658
86.	DJI ACE One	646, 071, 269
87.	DJI ACE One	646, 071, 758
88.	DJI ACE One	646, 071, 203
89.	DJI ACE One	646, 071, 962
90.	DJI ACE One	646, 071, 141
91.	DJI ACE One	646, 071, 377
92.	DJI ACE One	646, 071, 962
93.	DJI ACE One	646, 071, 658
94.	DJI ACE One	758, 203, 962
95.	DJI ACE One	758, 203, 141
96.	DJI ACE One	758, 203, 377
97.	DJI ACE One	758, 042
98.	DJI ACE One	758, 658
99.	DJI ACE One	658, 203, 962
100.	DJI ACE One	658, 203, 141
101.	DJI ACE One	658, 203, 377
102.	DJI ACE One	658, 042
103.	Apache	269, 646
104.	Apache	812, Gold Publication, 269

105.	Apache	812, Gold Publication, 646
106.	Apache	812, Gold Publication, 203
107.	Apache	812, Gold Publication, 962
108.	Apache	812, 203, 141
109.	Apache	812, 203, 377
110.	Apache	812, 203, 962
111.	Apache	812, Gold Publication, 141
112.	Apache	812, Gold Publication, 337
113.	Apache	812, 042
114.	Apache	812, Gold Publication, 758
115.	Apache	812, 203, 758
116.	Apache	812, Gold Publication, 658
117.	Apache	812, 203, 658
118.	Apache	646, 071, 269
119.	Apache	646, 071, 758
120.	Apache	646, 071, 203
121.	Apache	646, 071, 962
122.	Apache	646, 071, 141
123.	Apache	646, 071, 377
124.	Apache	646, 071, 962
125.	Apache	646, 071, 658
126.	Apache	758, 203, 962
127.	Apache	758, 203, 141
128.	Apache	758, 203, 377
129.	Apache	758, 042
130.	Apache	758, 658
131.	Apache	658, 203, 962
132.	Apache	658, 203, 141
133.	Apache	658, 203, 377
134.	Apache	658, 042
135.	DJI XP3.1 Standard	269, 646
136.	DJI XP3.1 Standard	812, Gold Publication, 269
137.	DJI XP3.1 Standard	812, Gold Publication, 646
138.	DJI XP3.1 Standard	812, Gold Publication, 203
139.	DJI XP3.1 Standard	812, Gold Publication, 962
140.	DJI XP3.1 Standard	812, 203, 141
141.	DJI XP3.1 Standard	812, 203, 377
142.	DJI XP3.1 Standard	812, 203, 962
143.	DJI XP3.1 Standard	812, Gold Publication, 141
144.	DJI XP3.1 Standard	812, Gold Publication, 337
145.	DJI XP3.1 Standard	812, 042
146.	DJI XP3.1 Standard	812, Gold Publication, 758
147.	DJI XP3.1 Standard	812, 203, 758
148.	DJI XP3.1 Standard	812, Gold Publication, 658
149.	DJI XP3.1 Standard	812, 203, 658

150.	DJI XP3.1 Standard	646, 071, 269
151.	DJI XP3.1 Standard	646, 071, 758
152.	DJI XP3.1 Standard	646, 071, 203
153.	DJI XP3.1 Standard	646, 071, 962
154.	DJI XP3.1 Standard	646, 071, 141
155.	DJI XP3.1 Standard	646, 071, 377
156.	DJI XP3.1 Standard	646, 071, 962
157.	DJI XP3.1 Standard	646, 071, 658
158.	DJI XP3.1 Standard	758, 203, 962
159.	DJI XP3.1 Standard	758, 203, 141
160.	DJI XP3.1 Standard	758, 203, 377
161.	DJI XP3.1 Standard	758, 042
162.	DJI XP3.1 Standard	758, 658
163.	DJI XP3.1 Standard	658, 203, 962
164.	DJI XP3.1 Standard	658, 203, 141
165.	DJI XP3.1 Standard	658, 203, 377
166.	DJI XP3.1 Standard	658, 042
167.	DJI XP3.1 Waypoint	269, 646
168.	DJI XP3.1 Waypoint	812, Gold Publication, 269
169.	DJI XP3.1 Waypoint	812, Gold Publication, 646
170.	DJI XP3.1 Waypoint	812, Gold Publication, 203
171.	DJI XP3.1 Waypoint	812, Gold Publication, 962
172.	DJI XP3.1 Waypoint	812, 203, 141
173.	DJI XP3.1 Waypoint	812, 203, 377
174.	DJI XP3.1 Waypoint	812, 203, 962
175.	DJI XP3.1 Waypoint	812, Gold Publication, 141
176.	DJI XP3.1 Waypoint	812, Gold Publication, 337
177.	DJI XP3.1 Waypoint	812, 042
178.	DJI XP3.1 Waypoint	812, Gold Publication, 758
179.	DJI XP3.1 Waypoint	812, 203, 758
180.	DJI XP3.1 Waypoint	812, Gold Publication, 658
181.	DJI XP3.1 Waypoint	812, 203, 658
182.	DJI XP3.1 Waypoint	646, 071, 269
183.	DJI XP3.1 Waypoint	646, 071, 758
184.	DJI XP3.1 Waypoint	646, 071, 203
185.	DJI XP3.1 Waypoint	646, 071, 962
186.	DJI XP3.1 Waypoint	646, 071, 141
187.	DJI XP3.1 Waypoint	646, 071, 377
188.	DJI XP3.1 Waypoint	646, 071, 962
189.	DJI XP3.1 Waypoint	646, 071, 658
190.	DJI XP3.1 Waypoint	758, 203, 962
191.	DJI XP3.1 Waypoint	758, 203, 141
192.	DJI XP3.1 Waypoint	758, 203, 377
193.	DJI XP3.1 Waypoint	758, 042
194.	DJI XP3.1 Waypoint	758, 658

195.	DJI XP3.1 Waypoint	658, 203, 962
196.	DJI XP3.1 Waypoint	658, 203, 141
197.	DJI XP3.1 Waypoint	658, 203, 377
198.	DJI XP3.1 Waypoint	658, 042
199.	T-Hawk	269, 646
200.	T-Hawk	812, Gold Publication, 269
201.	T-Hawk	812, Gold Publication, 646
202.	T-Hawk	812, Gold Publication, 203
203.	T-Hawk	812, Gold Publication, 962
204.	T-Hawk	812, 203, 141
205.	T-Hawk	812, 203, 377
206.	T-Hawk	812, 203, 962
207.	T-Hawk	812, Gold Publication, 141
208.	T-Hawk	812, Gold Publication, 337
209.	T-Hawk	812, 042
210.	T-Hawk	812, Gold Publication, 758
211.	T-Hawk	812, 203, 758
212.	T-Hawk	812, Gold Publication, 658
213.	T-Hawk	812, 203, 658
214.	T-Hawk	646, 071, 269
215.	T-Hawk	646, 071, 758
216.	T-Hawk	646, 071, 203
217.	T-Hawk	646, 071, 962
218.	T-Hawk	646, 071, 141
219.	T-Hawk	646, 071, 377
220.	T-Hawk	646, 071, 962
221.	T-Hawk	646, 071, 658
222.	T-Hawk	758, 203, 962
223.	T-Hawk	758, 203, 141
224.	T-Hawk	758, 203, 377
225.	T-Hawk	758, 042
226.	T-Hawk	758, 658
227.	T-Hawk	658, 203, 962
228.	T-Hawk	658, 203, 141
229.	T-Hawk	658, 203, 377
230.	T-Hawk	658, 042
231.	Cypher II	269, 646
232.	Cypher II	812, Gold Publication, 269
233.	Cypher II	812, Gold Publication, 646
234.	Cypher II	812, Gold Publication, 203
235.	Cypher II	812, Gold Publication, 962
236.	Cypher II	812, 203, 141
237.	Cypher II	812, 203, 377
238.	Cypher II	812, 203, 962

239.	Cypher II	812, Gold Publication, 141
240.	Cypher II	812, Gold Publication, 337
241.	Cypher II	812, 042
242.	Cypher II	812, Gold Publication, 758
243.	Cypher II	812, 203, 758
244.	Cypher II	812, Gold Publication, 658
245.	Cypher II	812, 203, 658
246.	Cypher II	646, 071, 269
247.	Cypher II	646, 071, 758
248.	Cypher II	646, 071, 203
249.	Cypher II	646, 071, 962
250.	Cypher II	646, 071, 141
251.	Cypher II	646, 071, 377
252.	Cypher II	646, 071, 962
253.	Cypher II	646, 071, 658
254.	Cypher II	758, 203, 962
255.	Cypher II	758, 203, 141
256.	Cypher II	758, 203, 377
257.	Cypher II	758, 042
258.	Cypher II	758, 658
259.	Cypher II	658, 203, 962
260.	Cypher II	658, 203, 141
261.	Cypher II	658, 203, 377
262.	Cypher II	658, 042

E. The ’505 Patent

1. Knowledge of a POSITA and State of the Art

A POSITA would have at least an equivalent of a Bachelor’s degree from an accredited institution in mechanical engineering, aerospace engineering, electrical engineering, robotics or any other discipline covering principles of the design or operation of flight controls for helicopters, drones, or other rotary aircraft, as well as one year of experience working on the design, development, implementation, or operation of such technologies. Significant experience could substitute for formal education, and significant education could substitute for work experience.

2. Motivation to Combine

A person of ordinary skill in the art at the time of the alleged invention would have been motivated to combine or adapt known or familiar methods in the art for the reasons described below.

DJI intends to intends to present expert evidence, as well as intrinsic evidence, demonstrating the motivation to combine the relied upon prior art references. This evidence will be presented in DJI's expert reports in accordance with the procedural deadlines in this case. DJI incorporates by reference its forthcoming expert reports and any testimony of its experts presented according to the Court's schedule in this case.

The motivation to combine or modify the above prior art is present, for example, in the references themselves, references cited on the face of the Patents-in-Suit, the knowledge, skill, or creativity of one of ordinary skill in the art, the prior art as a whole, and/or the nature of the problems allegedly addressed by the Patents-in-Suit. The law requires no showing of specific motivation to combine or modify prior art references disclosed herein and in the Invalidity Charts, as each combination or modification of art would have no unexpected results and, at most, would represent a known alternative to one of skill in the art. *See, e.g.*, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead espousing an "expansive and flexible approach"). A person or ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases, a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 1742. To a person of ordinary skill in the art, the Asserted Claims of the '082 Patent represent solutions that were known or obvious to try, with predictable results.

Nevertheless, should additional evidence of motivation to combine or modify be required to render the Asserted Claims of the ’082 Patent obvious, there was a motivation to combine the references identified above. That motivation was provided in the nature of the problem allegedly solved by the ’082 Patent, the design need or market pressure to solve the problem allegedly solved by the ’082 Patent, the teachings of the cited prior art itself, and/or the knowledge of a person of ordinary skill in the art. For example, the combinations identified above would have been combined or modified using: known methods to yield predictable results; common sense; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion or motivation in the prior art generally. In addition, it would have been obvious to try combining or modifying the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces in the same field or a different one. In addition, the combination the combination of the prior art references would have been obvious because the combination represents known potential options with a reasonable expectation of success.

Additional evidence that there would have been a motivation to combine or modify the prior art references above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the Asserted Claims; the existence of a known need or problem in the field of the endeavor at the time of the alleged invention(s); and the background knowledge, skill, or creativity that would have been possessed by a person having ordinary skill in the art. DJI may rely on uncited

portions of the prior art references cited and produced, other publications and testimony, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references so as to render the claims obvious. References identified by DJI address the same technical issues and suggest very similar solutions to those issues discussed in the Patents-in-Suit and generally known at the time of the alleged invention(s) claimed in the Asserted Claims of the '950 Patent. DJI reserves the right to supplement these Invalidity Contentions with additional charts for any of the references listed above, and/or common knowledge and state of the art.

The vast majority of the prior art references and devices identified in the Tables herein relating to the '082 and '505 Patents and Exhibits C and D are directly related to flight control systems used in aircraft that have flight control laws that enable aircraft maneuvering, including the lateral, longitudinal, and yaw movements and associated control laws and architecture.[10] Moreover, a significant number of the cited devices and references were issued by the same companies or groups of researchers or concern different features of the same aircraft.[11] Thus, the reasons or motivations to combine the prior art include the explicit teachings of the references, that the references were produced by researchers working in the same or similar areas of flight control systems the references are directed toward the same problem (e.g., reducing pilot workload during maneuvers by using flight control laws to counter disturbances

[10] Additionally, most flight control systems involve controllers operated by a pilot, and a POSITA would have been motivated to investigate various controllers to reduce pilot workload. Such a person would have been aware of the Adam U.S. Patent No. 5,065,962 Patent, which DJI has included in its claim charts, as well as McElreath U.S. Patent No. 4,645,141 and Cherepinsky U.S. Patent Application No. 2008/12377A1, which DJI relies upon for the same or similar disclosures.

[11] For example, as for motivations to combine asserted devices with the cited secondary references, to the extent a motivation is necessary, DJI notes that the teachings of certain references (e.g., the Gold references) were actually combined in the asserted device (e.g., the Comanche helicopter). In that sense, the reference might also serve as descriptions of the device itself rather than a secondary reference to be combined with the device.

caused by the natural environment), the fact that the prior art is all in the field of aircraft with control systems, and one of ordinary skill in the art would be motivated to investigate the various existing methods and systems using flight control systems, control laws, and related architecture, including with known and commonly utilized electronic components and other references identified herein to address their particular needs. To the extent not anticipated by the prior art references, the combinations and modifications of the prior art to invalidate the asserted claims of the ’505 and ’082 Patents would have arisen from ordinary innovation, ordinary skill, and/or common sense, and/or would have been obvious to try and/or would have been otherwise predictable in the field. A person having ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons having ordinary skill in the art.

3. The Combinations

Consistent with the exemplary motivations to combine each of the references discussed above, the below table provides a summary of the exemplary combinations of references rendering obvious to a POSITA, with or without a POSITA’s knowledge (including the AAPA and general state of the art), skill and/or creativity, the Asserted Claims of the ’505 Patent.

Number	Prior Art Reference	Reference Alone or in Combination With One or More of the Following
1.	Piasecki ’758	POSITA[12]
2.	Shue ’658	POSITA
3.	Osder ’917	POSITA
4.	Gold ’269	POSITA

[12] Please note that a POSITA would be aware of all of the cited prior art as it would reflect a POSITA’s level of knowledge and understanding of the art, including, although not expressly cited as a secondary reference, knowledge of, for example, the use of a control system including a lateral control component utilizing lateral equations of motion and a longitudinal control component utilizing longitudinal equations of motion, which was not a new concept. *See, e.g.*, McRuer et al., *Aircraft Dynamics and Automatic Control*, Technical Report No. 129-1, at Fig. 1-4 (Systems Technology, Inc. Aug. 1968).

5.	Piasecki ’758	812, 269, Gold Publication
6.	Piasecki ’758	658
7.	Piasecki ’758	646, 071
8.	Piasecki ’758	203, 962
9.	Piasecki ’758	203, 141
10.	Piasecki ’758	203, 377
11.	Piasecki ’758	812, 203, 962
12.	Piasecki ’758	812, 203, 141
13.	Piasecki ’758	812, 203, 377
14.	Piasecki ’758	658, 962
15.	Piasecki ’758	658, 141
16.	Piasecki ’758	658, 377
17.	Gold ’812	758
18.	Gold ’812	658
19.	Gold ’812	646, 071
20.	Gold ’812	203, 962
21.	Gold ’812	203, 141
22.	Gold ’812	203, 377
23.	Gold ’812	071, 203, 962
24.	Gold ’812	071, 203, 141
25.	Gold ’812	071, 203, 377
26.	Gold ’812	758, 203, 962
27.	Gold ’812	758, 203, 141
28.	Gold ’812	758, 203, 377
29.	Shue ’658	812, 269, Gold Publication
30.	Shue ’658	758
31.	Shue ’658	646, 071
32.	Shue ’658	071, 203, 962
33.	Shue ’658	071, 203, 141
34.	Shue ’658	071, 203, 377
35.	Shue ’658	812, 203, 962
36.	Shue ’658	812, 203, 141
37.	Shue ’658	812, 203, 377
38.	Comanche	269, 646
39.	Comanche	812, Gold Publication, 269
40.	Comanche	812, Gold Publication, 646
41.	Comanche	812, Gold Publication, 203
42.	Comanche	812, Gold Publication, 962
43.	Comanche	812, 203, 141
44.	Comanche	812, 203, 377
45.	Comanche	812, 203, 962
46.	Comanche	812, Gold Publication, 141
47.	Comanche	812, Gold Publication, 337

48.	Comanche	812, 042
49.	Comanche	812, Gold Publication, 758
50.	Comanche	812, 203, 758
51.	Comanche	812, Gold Publication, 658
52.	Comanche	812, 203, 658
53.	Comanche	646, 071, 269
54.	Comanche	646, 071, 758
55.	Comanche	646, 071, 203
56.	Comanche	646, 071, 962
57.	Comanche	646, 071, 141
58.	Comanche	646, 071, 377
59.	Comanche	646, 071, 962
60.	Comanche	646, 071, 658
61.	Comanche	758, 203, 962
62.	Comanche	758, 203, 141
63.	Comanche	758, 203, 377
64.	Comanche	758, 042
65.	Comanche	758, 658
66.	Comanche	658, 203, 962
67.	Comanche	658, 203, 141
68.	Comanche	658, 203, 377
69.	Comanche	658, 042
70.	DJI ACE One	269, 646
71.	DJI ACE One	812, Gold Publication, 269
72.	DJI ACE One	812, Gold Publication, 646
73.	DJI ACE One	812, Gold Publication, 203
74.	DJI ACE One	812, Gold Publication, 962
75.	DJI ACE One	812, 203, 141
76.	DJI ACE One	812, 203, 377
77.	DJI ACE One	812, 203, 962
78.	DJI ACE One	812, Gold Publication, 141
79.	DJI ACE One	812, Gold Publication, 337
80.	DJI ACE One	812, 042
81.	DJI ACE One	812, Gold Publication, 758
82.	DJI ACE One	812, 203, 758
83.	DJI ACE One	812, Gold Publication, 658
84.	DJI ACE One	812, 203, 658
85.	DJI ACE One	646, 071, 269
86.	DJI ACE One	646, 071, 758
87.	DJI ACE One	646, 071, 203
88.	DJI ACE One	646, 071, 962
89.	DJI ACE One	646, 071, 141
90.	DJI ACE One	646, 071, 377
91.	DJI ACE One	646, 071, 962
92.	DJI ACE One	646, 071, 658

93.	DJI ACE One	758, 203, 962
94.	DJI ACE One	758, 203, 141
95.	DJI ACE One	758, 203, 377
96.	DJI ACE One	758, 042
97.	DJI ACE One	758, 658
98.	DJI ACE One	658, 203, 962
99.	DJI ACE One	658, 203, 141
100.	DJI ACE One	658, 203, 377
101.	DJI ACE One	658, 042
102.	Apache	269, 646
103.	Apache	812, Gold Publication, 269
104.	Apache	812, Gold Publication, 646
105.	Apache	812, Gold Publication, 203
106.	Apache	812, Gold Publication, 962
107.	Apache	812, 203, 141
108.	Apache	812, 203, 377
109.	Apache	812, 203, 962
110.	Apache	812, Gold Publication, 141
111.	Apache	812, Gold Publication, 337
112.	Apache	812, 042
113.	Apache	812, Gold Publication, 758
114.	Apache	812, 203, 758
115.	Apache	812, Gold Publication, 658
116.	Apache	812, 203, 658
117.	Apache	646, 071, 269
118.	Apache	646, 071, 758
119.	Apache	646, 071, 203
120.	Apache	646, 071, 962
121.	Apache	646, 071, 141
122.	Apache	646, 071, 377
123.	Apache	646, 071, 962
124.	Apache	646, 071, 658
125.	Apache	758, 203, 962
126.	Apache	758, 203, 141
127.	Apache	758, 203, 377
128.	Apache	758, 042
129.	Apache	758, 658
130.	Apache	658, 203, 962
131.	Apache	658, 203, 141
132.	Apache	658, 203, 377
133.	Apache	658, 042
134.	DJI XP3.1 Standard	269, 646
135.	DJI XP3.1 Standard	812, Gold Publication, 269
136.	DJI XP3.1 Standard	812, Gold Publication, 646

137.	DJI XP3.1 Standard	812, Gold Publication, 203
138.	DJI XP3.1 Standard	812, Gold Publication, 962
139.	DJI XP3.1 Standard	812, 203, 141
140.	DJI XP3.1 Standard	812, 203, 377
141.	DJI XP3.1 Standard	812, 203, 962
142.	DJI XP3.1 Standard	812, Gold Publication, 141
143.	DJI XP3.1 Standard	812, Gold Publication, 337
144.	DJI XP3.1 Standard	812, 042
145.	DJI XP3.1 Standard	812, Gold Publication, 758
146.	DJI XP3.1 Standard	812, 203, 758
147.	DJI XP3.1 Standard	812, Gold Publication, 658
148.	DJI XP3.1 Standard	812, 203, 658
149.	DJI XP3.1 Standard	646, 071, 269
150.	DJI XP3.1 Standard	646, 071, 758
151.	DJI XP3.1 Standard	646, 071, 203
152.	DJI XP3.1 Standard	646, 071, 962
153.	DJI XP3.1 Standard	646, 071, 141
154.	DJI XP3.1 Standard	646, 071, 377
155.	DJI XP3.1 Standard	646, 071, 962
156.	DJI XP3.1 Standard	646, 071, 658
157.	DJI XP3.1 Standard	758, 203, 962
158.	DJI XP3.1 Standard	758, 203, 141
159.	DJI XP3.1 Standard	758, 203, 377
160.	DJI XP3.1 Standard	758, 042
161.	DJI XP3.1 Standard	758, 658
162.	DJI XP3.1 Standard	658, 203, 962
163.	DJI XP3.1 Standard	658, 203, 141
164.	DJI XP3.1 Standard	658, 203, 377
165.	DJI XP3.1 Standard	658, 042
166.	DJI XP3.1 Waypoint	269, 646
167.	DJI XP3.1 Waypoint	812, Gold Publication, 269
168.	DJI XP3.1 Waypoint	812, Gold Publication, 646
169.	DJI XP3.1 Waypoint	812, Gold Publication, 203
170.	DJI XP3.1 Waypoint	812, Gold Publication, 962
171.	DJI XP3.1 Waypoint	812, 203, 141
172.	DJI XP3.1 Waypoint	812, 203, 377
173.	DJI XP3.1 Waypoint	812, 203, 962
174.	DJI XP3.1 Waypoint	812, Gold Publication, 141
175.	DJI XP3.1 Waypoint	812, Gold Publication, 337
176.	DJI XP3.1 Waypoint	812, 042
177.	DJI XP3.1 Waypoint	812, Gold Publication, 758
178.	DJI XP3.1 Waypoint	812, 203, 758
179.	DJI XP3.1 Waypoint	812, Gold Publication, 658
180.	DJI XP3.1 Waypoint	812, 203, 658
181.	DJI XP3.1 Waypoint	646, 071, 269

182.	DJI XP3.1 Waypoint	646, 071, 758
183.	DJI XP3.1 Waypoint	646, 071, 203
184.	DJI XP3.1 Waypoint	646, 071, 962
185.	DJI XP3.1 Waypoint	646, 071, 141
186.	DJI XP3.1 Waypoint	646, 071, 377
187.	DJI XP3.1 Waypoint	646, 071, 962
188.	DJI XP3.1 Waypoint	646, 071, 658
189.	DJI XP3.1 Waypoint	758, 203, 962
190.	DJI XP3.1 Waypoint	758, 203, 141
191.	DJI XP3.1 Waypoint	758, 203, 377
192.	DJI XP3.1 Waypoint	758, 042
193.	DJI XP3.1 Waypoint	758, 658
194.	DJI XP3.1 Waypoint	658, 203, 962
195.	DJI XP3.1 Waypoint	658, 203, 141
196.	DJI XP3.1 Waypoint	658, 203, 377
197.	DJI XP3.1 Waypoint	658, 042
198.	T-Hawk	269, 646
199.	T-Hawk	812, Gold Publication, 269
200.	T-Hawk	812, Gold Publication, 646
201.	T-Hawk	812, Gold Publication, 203
202.	T-Hawk	812, Gold Publication, 962
203.	T-Hawk	812, 203, 141
204.	T-Hawk	812, 203, 377
205.	T-Hawk	812, 203, 962
206.	T-Hawk	812, Gold Publication, 141
207.	T-Hawk	812, Gold Publication, 337
208.	T-Hawk	812, 042
209.	T-Hawk	812, Gold Publication, 758
210.	T-Hawk	812, 203, 758
211.	T-Hawk	812, Gold Publication, 658
212.	T-Hawk	812, 203, 658
213.	T-Hawk	646, 071, 269
214.	T-Hawk	646, 071, 758
215.	T-Hawk	646, 071, 203
216.	T-Hawk	646, 071, 962
217.	T-Hawk	646, 071, 141
218.	T-Hawk	646, 071, 377
219.	T-Hawk	646, 071, 962
220.	T-Hawk	646, 071, 658
221.	T-Hawk	758, 203, 962
222.	T-Hawk	758, 203, 141
223.	T-Hawk	758, 203, 377
224.	T-Hawk	758, 042
225.	T-Hawk	758, 658
226.	T-Hawk	658, 203, 962

227.	T-Hawk	658, 203, 141
228.	T-Hawk	658, 203, 377
229.	T-Hawk	658, 042
230.	Cypher II	269, 646
231.	Cypher II	812, Gold Publication, 269
232.	Cypher II	812, Gold Publication, 646
233.	Cypher II	812, Gold Publication, 203
234.	Cypher II	812, Gold Publication, 962
235.	Cypher II	812, 203, 141
236.	Cypher II	812, 203, 377
237.	Cypher II	812, 203, 962
238.	Cypher II	812, Gold Publication, 141
239.	Cypher II	812, Gold Publication, 337
240.	Cypher II	812, 042
241.	Cypher II	812, Gold Publication, 758
242.	Cypher II	812, 203, 758
243.	Cypher II	812, Gold Publication, 658
244.	Cypher II	812, 203, 658
245.	Cypher II	646, 071, 269
246.	Cypher II	646, 071, 758
247.	Cypher II	646, 071, 203
248.	Cypher II	646, 071, 962
249.	Cypher II	646, 071, 141
250.	Cypher II	646, 071, 377
251.	Cypher II	646, 071, 962
252.	Cypher II	646, 071, 658
253.	Cypher II	758, 203, 962
254.	Cypher II	758, 203, 141
255.	Cypher II	758, 203, 377
256.	Cypher II	758, 042
257.	Cypher II	758, 658
258.	Cypher II	658, 203, 962
259.	Cypher II	658, 203, 141
260.	Cypher II	658, 203, 377
261.	Cypher II	658, 042

VI. INVALIDITY UNDER 35 U.S.C. § 112 PURSUANT TO P.R. 3-3(d)

DJI contends that the Asserted Claims of the Patents are invalid under 35 U.S.C. § 112. A claim can be invalid under § 112 for lack of written description, lack of enablement and/or indefiniteness.

A. Legal Standard

1. Indefiniteness

Where the claims of a patent, read in light of its specification and prosecution history, fail to inform those skilled in the art about the scope of the invention with reasonable certainty, such claims are invalid under 35 U.S.C. § 112 for indefiniteness. *Nautilus, Inc.* v. *Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). Indefiniteness may exist where elements specified by the claim may be measured or assessed by a variety of means, none of which are written into a claim. In such instances, where something falls within the scope of the claim when assessed or measured by one means, but is excluded from the scope of the claim when assessed or measured by another means, the claim is invalid for indefiniteness. *Dow Chem. Co.* v. *NOVA Chems. Corp.* (Canada), 803 F.3d 620, 634–35 (Fed. Cir. 2015); *Teva Pharm. USA, Inc.* v. *Sandoz, Inc.*, 789 F.3d 1335, 1344–45 (Fed. Cir. 2015). "[P]atent claims with descriptive words or terms of degree must provide objective boundaries for those of skill in the art in the context of the invention to be definite." *Niazi Licensing Corp.* v. *St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1349 (Fed. Cir. 2022).

DJI reserves the right to supplement these disclosures based on further investigation and discovery, including through expert discovery. DJI reserves the right to supplement these disclosures based on further investigation and discovery.

2. Written Description

The written description, drawings, and claims in a patent must clearly allow a person of ordinary skill in the art to understand and recognize that the patentee invented what is claimed. *Gentry Gallery, Inc.* v. *Berkline Corp.*, 134 F.3d 1473, 1479 (Fed. Cir. 1998). In this regard, the patent must demonstrate by disclosure in the specification to those skilled in the art that the patentee had "possession" of what is now asserted to be the claimed invention. *Vas-Cath Inc.* v. *Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991). The written description must actually or

inherently disclose every claim element. *PowerOasis, Inc.* v. *T-Mobile USA, Inc.*, 522 F.3d 1299, 1306–07 (Fed. Cir. 2008). It is not enough to say that undisclosed subject matter would have been obvious or within the normal skill set of a person of ordinary skill. *ICU Med., Inc.* v. *Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009). A written description that discloses only a certain method does not "necessarily support a broad claim as to every possible type of [method], no matter how different in structure or operation from the inventor's [discussion]." *LizardTech, Inc.* v. *Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1346 (Fed. Cir. 2005). That is, an inventor's description of one type of method does not entitle the inventor to claim "any and all means for achieving that objective." *Id.*; *see also ICU Med.*, 558 F.3d at 1377–79.

For the written description requirement, "the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms.* v. *Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Possession requires a "show[ing] that the inventor actually invented the invention claimed." *Id.* The "level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology." *Id.* "[T]he purpose of the written description requirement is to 'ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification.'" *ICU Med., Inc.*, 558 F. 3d at 1376–79 (citations omitted).

3. <u>Enablement</u>

To satisfy the enablement requirement, the specification of a patent must enable a person of skill in the art, as of the filing date, to practice the full scope of the claimed invention without undue experimentation. *Alza Corp.* v. *Andrx Pharms., LLC*, 603 F.3d 935, 941–42 (Fed. Cir. 2010); *Sitrick* v. *Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). "Enabling the full scope

of each claim is part of the quid pro quo of the patent bargain." *Id.* at 999 (quoting *AK Steel Corp.* v. *Sollac*, 344 F.3d 1234, 1244 (Fed. Cir. 2003) (quotations omitted)). If a patent enables some embodiments within the scope of a claim, but not others, then the claim is invalid. *Alza*, 603 F.3d at 939–43 (affirming judgment that claims encompassing medicinal tablets in both osmotic and non-osmotic dosage forms were invalid where specification taught only osmotic dosage forms); *Sitrick*, 516 F.3d at 999–1001 (affirming summary judgment that claims encompassing both video games and movies held invalid where specification only taught use of invention in video games); *Auto. Tech. Int'l, Inc.* v. *BMW of N. Am., Inc.*, 501 F.3d 1274, 1281–85 (Fed. Cir. 2007) (affirming summary judgment that claims encompassing both mechanical and electronic side-impact sensors were invalid where specification taught only mechanical sensors).

The focus of an enablement inquiry is on the teachings in the specification. *See* 35 U.S.C. § 112 ("The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same. . . .") (emphasis added). To satisfy the plain language of 35 U.S.C. § 112, the patentee is "required to provide an adequate enabling disclosure in the specification; it cannot simply rely on the knowledge of a person of ordinary skill to serve as a substitute for the missing information in the specification." *Alza*, 603 F.3d at 941; *see also Auto. Tech.*, 501 F.3d at 1283–84 (claims encompassing electronic sensors held invalid despite the fact that known technologies could be used to create the electronic sensors, where specification did not teach electronic sensors).

The Federal Circuit has identified several factors that a court may consider when deciding whether the specification requires undue experimentation: "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of

working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *Alza*, 603 F.3d at 940. Moreover, "when there is no disclosure of any specific starting material or of any of the condition under which a process can be carried out, undue experimentation is required." *Id*. at 941 (quoting *Auto. Tech.*, 501 F.3d at 1283–84).

B. The '950 Patent

1. Indefiniteness under 35 U.S.C. § 112

Certain terms and phrases are indefinite because they do not have a meaning that can be clearly and definitely determined from the patent, and thus fail to put the public on notice of what is and is not covered by these claims. At least in view of TII's apparent construction of the claims in its Infringement Contentions, the Asserted Claims of the '950 patent are invalid because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention under 35 U.S.C. § 112. All Asserted Claims of the '950 patent fail to satisfy the requirements of 35 U.S.C. § 112 due to the identified terms being indefinite.

To the extent the Asserted Claims are invalid for any reason under 35 U.S.C. § 112, all Claims depending therefrom are invalid for at least the same reasons.

Based on DJI's present understanding of TII's Infringement Contentions, DJI asserts that the Asserted Claims of the '950 Patent are invalid for reciting at least the following claim terms/phrases/limitations:

1. Claims 1 and 9 of the '950 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "configured to

store information relating to a pilot flying the aircraft during flight". The '950 Patent does not describe, or give any indicators, as to what "information relating to a pilot flying the aircraft during flight" encompasses or what it means for a database to be "configured to store" such unspecified and ambiguous "information", which TII appears to be interpreting in its Infringement Contentions as distinct from "pilot identification information" and which the claim language distinguishes from both "pilot identification information" and information relating to "the flight performance of the aircraft during flight". As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

2. Claims 1 and 9 of the '950 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "a non-volatile memory card coupled to the memory card interface of the avionics system". The '950 Patent does not describe, or give any indicators, as to what "the memory card interface of the avionics system" is or what it means for "a non-volatile memory card" to be "coupled" to or with such an interface. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

3. Claim 13 of the '950 Patent and its dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "a non-volatile memory card configured for coupling to the memory card interface of the avionics system". The '950 Patent does not describe, or give any indicators, as to what "the memory card interface of the avionics system" is or what it means for "a non-volatile memory card" to be "configured for coupling" to

such an interface. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

4. Claims 1, 9 and 13 of the ’950 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “transceiver having a transceiver identity associated with pilot identification information”. The ’950 Patent does not describe, or give any indicators, as to what a “transceiver identity” is or what it means for a transceiver identity to be “associated” with pilot identification information. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

5. Claim 1 of the ’950 Patent and its dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “wherein the wireless transceiver is configured to wirelessly receive and transmit aircraft flight performance data to the database.” The ’950 Patent does not describe, or give any indicators, as to whether the transceiver is configured to both wirelessly receive and wirelessly transmit aircraft flight performance data or what it means to receive flight performance data “to the database”. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

6. Claims 1, 9 and 13 of the ’950 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “database”. The ’950 Patent does not describe, or give any indicators, as to whether the database is external,

internal or both with respect to the aircraft and whether the data is transmitted forward to or (downloading) or backward (uploading) from the database.

2. Lack of Enablement/Written Description Under 35 U.S.C. § 112

With respect to the components, or how to perform the steps, of the alleged inventions of the Asserted Claims, the ’950 Patent does not provide any substantial disclosure beyond that found in the prior art, including the prior art items identified in these Invalidity Contentions. As a result, TII cannot contend that (1) the ’950 Patent would have enabled a person of ordinary skill to make the alleged inventions within the full scope of the Asserted Claims, while contending that (2) the prior art does not. To the extent TII contends that any of the prior art does not provide an enabling description of the alleged inventions, the ’950 Patent also fails to provide an enabling disclosure of the alleged inventions.

At least in view of TII’s apparent construction of the claims in its Infringement Contentions, the Asserted Claims of the ’950 Patent are invalid because the specification as filed does not contain adequate written description of the claimed inventions sufficient to lead a person of ordinary skill in the art to understand that the named inventors had possession of the purported inventions as claimed as required by 35 U.S.C. § 112, ¶ 1. Likewise, the specification does not enable one of ordinary skill in the art to make or use the claimed inventions without undue experimentation. Based on DJI’s present understanding of TII’s Infringement Contentions, DJI asserts that the Asserted Claims of the of the ’950 Patent are invalid for reciting at least the following claim terms/phrases/limitations:

1. “aircraft” (All Asserted Claims) – There is no written description support for, or enabling disclosure of, an aircraft that is an unmanned and/or remotely controlled aircraft and/or a quad rotor aircraft.

2. "avionics system" (All Asserted Claims) - There is no written description support for, or enabling disclosure of, an avionics system for an aircraft that is an unmanned and/or remotely controlled aircraft and/or a quad rotor aircraft

3. "avionics system comprising… a memory card interface…" (All Asserted Claims). There is no written description support for, or enabling disclosure of, the avionics system comprising a memory card interface.

4. "a database in data communication with the sensor and the avionics system… configured to store information…during flight" (Claims 1 and 9 and their dependent claims); "a database" (Claim 13 and its dependent claims). There is no written description support for, or enabling disclosure of, such a "database", that is not physically located within an aircraft, being "in data communication with the sensor and the avionics system" located within an aircraft and "configured to store information… during flight". Further, the specification does not disclose or teach a database that is, or includes components, both internal and external to the aircraft.

5. "being configured to store information relating a pilot flying the aircraft" (Claims 1 and 9 and their dependent claims) - There is no written description support for, or enabling disclosure of, a "pilot" remotely flying an aircraft or for being located outside the aircraft during flight; and no written description support for, or enabling disclosure of, "information relating to a pilot flying the aircraft"; and no written description support for, or enabling disclosure of, a database "being configured" to store such "information relating to a pilot flying the aircraft" or information relating to "the flight performance of the aircraft during flight."

6. "the wireless transmitter in data communication with… the database" (Claims 1 and 9 and their dependent claims). There is no written description support for, or enabling disclosure of, a wireless transmitter located within an aircraft "in data communication" with a

"database" as claimed that is not physically located within an aircraft. There is no written description support for, or enabling disclosure of, "the wireless transmitter", that is not physically located within an aircraft, in data communication" with a "database" as claimed that is not physically located within an aircraft.

7. "the wireless transmitter comprising a non-volatile memory card coupled to the memory card interface of the avionics system" (Claims 1 and 9 and their dependent claims); "a wireless transmitter comprising… a non-volatile memory card configured for coupling to the memory card interface of the avionics system" (Claim 13 and its dependent claims) - There is no written description support for, or enabling disclosure of, a "memory card interface of the avionics system" or of a non-volatile memory card "coupled to" or "configured for coupling to" the "memory card interface of the avionics system". There is also no written description support for, or enabling disclosure of, any such coupling (or configuration for such coupling) between an "avionics system" located within an aircraft and a "a non-volatile memory card" that is not physically located within an aircraft.

8. "a transceiver" (All Asserted Claims). There is no written description support for, or enabling disclosure of, a transceiver as claimed that is not physically located within an aircraft.

9. "transceiver having a transceiver identity associated with pilot identification information" (All Asserted Claims). There is no written description support for, or enabling disclosure of, a "transceiver identity" or how it is "associated with pilot identification information".

10. "the transceiver being configured… for associating the thus received information with the pilot identification information associated with the transceiver identity" (Claims 1 and 9 and their dependent claims); "associating, by the transceiver, the sensed flight performance data

received from the wireless transmitter with the pilot identification information associated with the transceiver identity" (Claim 13 and its dependent claims). There is no written description support for, or enabling disclosure of, a transceiver associating, or being "configured" for "associating", information or data relating to sensed flight performance with "pilot identification information associated with the transceiver identity".

11. "wherein the wireless transceiver is configured to wirelessly receive and transmit aircraft flight performance data to the database" (Claims 1 and its dependent claims). There is no written description support for, or enabling disclosure of, a transceiver physically located within an aircraft being configured both to wirelessly receive and to wirelessly transmit aircraft flight performance data "to the database".

12. "wherein the stored sensed flight performance is only accessible with the associated pilot identification information" (Claims 1 and 9 and their dependent claims); "allowing access to the received sensed flight performance data only with the associated pilot identification information" (Claim 13 and its dependent claims). There is no written description support for, or enabling disclosure of, the stored sensed flight performance being only accessible with the associated pilot identification information.

13. "wherein the pilot identification information is entered directly into the input device of the transceiver" (Claims 1 and 9 and their dependent claims); "entering the pilot identification information directly on the transceiver" (Claim 13 and its dependent claims). There is no written description support for, or enabling disclosure of, directly entering pilot identification information into the input device of the transceiver.

C. The '972 Patent

1. <u>Indefiniteness under 35 U.S.C. § 112</u>

Certain terms and phrases are indefinite because they do not have a meaning that can be clearly and definitely determined from the patent, and thus fail to put the public on notice of what is and is not covered by these Claims. The specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the below terms. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112. All Asserted Claims of the ’972 Patent are invalid because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention under 35 U.S.C. § 112. All Asserted Claims of the ’972 Patent fail to satisfy the requirements of 35 U.S.C. § 112 because the terms identified below are indefinite.

To the extent any Asserted Claims are invalid for any reason under 35 U.S.C. § 112, all Claims depending therefrom are invalid for at least the same reasons.

Based on DJI’s present understanding of TII’s Infringement Contentions, DJI asserts that the Asserted Claims of the ’972 Patent is invalid for reciting at least the following claim terms/phrases/limitations:

1. Claims 1, 8, and 15 of the ‘972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of an “autonomous vehicle fleet” or “fleet controller.” The ’972 Patent does not describe, or give any indicators, as to what “autonomous vehicle fleet” means for drone flight, in the context of the ’972 Patent’s claims. For example, and without reservation, claims 1, 8, and 15 reference a “fleet” of autonomous vehicles; but the plain language of the claims is satisfied by a singular vehicle. As

such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

2. Claims 1, 8, and 15 of the ’972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “verifying,” “verify a usability of the flight path,” “flight path is not verified,” “verifying,” and “verify.” The ’972 Patent does not describe, or give any indicators, as to what “verifying usability,” for drone flight, refers to in the context of the ’972 Patent’s claims. For example and without reservation, neither the claims nor the specification of the patent indicate which data or criteria are used to verify the usability of the flight path, how those criteria are weighed, how they are calculated, or a means of understanding if those calculations differ when “checking on the flight path for vehicle traffic,” as compared to checking the availability of the flight path due to “restrictions” or “requirements for use of the flight path. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

3. Claims 1, 8, and 15 of the ’972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “mission parameters,” “mission parameters associated with the mission,” “generating/generate vehicle commands according to mission parameters associated with the mission based on the flight path,” and “mission parameters associated with the mission based on the flight path.” The ’972 Patent does not describe, or give any indicators, as to what “mission parameters,” for drone flight, refers to in the context of the ’972 Patent’s claims. For example, and without reservation, neither the claims nor the specification defines “mission parameters” or describe what it means for them to be

"associated with the mission." Dependent claims 5, 11, and 18 suffer from the same deficiencies. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

4. Claims 1, 8, and 15 of the '972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "generat[ing] vehicle commands." The '972 Patent does not describe, or give any indicators, as to what "generat[ing] vehicle commands," for drone flight, refers to in the context of the '972 Patent's claims. For example, and without reservation, the claims to not indicate which commands can be given or are given, how the fleet controller generates them, or what it means for those commands to be "associated with the mission" or to be generated "according to the flight path." Dependent claims 5, 11, and 18 suffer from the same deficiencies. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

5. Claims 1, 8, and 15 of the '972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "flight path." The '972 Patent does not describe, or give any indicators, as to what "flight path," for drone flight, refers to in the context of the '972 Patent's claims. For example, and without reservation, claims 1, 8, and 15 indicate that the fleet controller first verifies the usability of a flight path, then modifies the flight path. However, the claims then recite that a command is generated "according to … the flight path," but do not indicate *which* flight path. Under this reading, the fleet controller could determine that a flight patis not usable, then continue to generate commands according to that

unusable flight path. Dependent claims 7, 14, and 20 suffer from the same deficiencies. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

6. Claims 1, 8, and 15 of the ’972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of “maintain[ing] a persistent connection with the vehicle” and “the connection.” The ’972 Patent does not describe, or give any indicators, as to what “maintain[ing] persistent connection” or “the connection” for drone flight, refers to in the context of the ’972 Patent’s claims. For example, and without reservation, “persistent” generally requires constant, unyielding activity; but other dependent claims make it clear that the drone may send a last status symbol *after* connection is lost, which suggests that a drone could potentially not be in connection with the fleet controller, but still in “persistent” connection with the fleet controller. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

7. Claims 1, 8, and 15 of the ’972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the “availability of the flight path due to flight restrictions and requirements for use of the flight path.” The ’972 Patent does not describe, or give any indicators, as to what “availability of the flight path due to flight restrictions and requirements for use of the flight path” refers to in the context of the ’972 Patent’s claims. For example, and without reservation, the claims are bereft of any data, factors, formulas, or databases that the fleet controller would utilize to determine availability;

moreover, neither the claims nor the specification provide no clear metrics to determine the boundaries of availability. A POSITA practicing in this space would be unable to properly ascertain the boundaries of the fleet controller's function. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

8. Claims 1, 8, and 15 of the '972 Patent and their dependent claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of "monitoring operation" of the vehicle. The '972 Patent does not describe, or give any indicators, as to what "monitoring operation" refers to in the context of the '972 Patent's claims. For example, and without reservation, the claims are bereft of any data, factors, formulas, conditions, or databases that the fleet controller would monitor. Moreover, the claims provide no detail as to what "operations" the fleet controller should monitor, how often it should monitor them, or how they impact the "performance" of the mission. Even if they did, the claims nor the specification define "performance" or provide any metrics for measuring it (e.g., deliveries per hour, days without a drone collision, or some other efficiency or safety metric). Therefore, a POSITA practicing in this space would be unable to properly ascertain the boundaries of the fleet controller's function. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

9. Claim 3 of the '972 Patent is invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the "monitoring a connection of the vehicle to a communications network associated with the fleet controller." The '972 Patent does not describe,

or give any indicators, as to what "monitoring a connection of the vehicle to a communications network associated with the fleet controller" refers to in the context of the '972 Patent's claims. For example, and without reservation, the claims do not describe how which operations the fleet controller monitors or how often it monitors them. Moreover, neither the claims nor the specification properly indicate what it means for a fleet controller to be "associated with" a communications network or properly elucidate the scope of the "communications network." As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

10. Claims 5 and 11 of the '972 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the following clauses: "whether the mission parameters associated with the mission are supported by mission impact data received at the fleet controller"; "generating, in response to the mission parameters not being supported by the mission impact data, adjusted vehicle commands according to the mission impact data and the mission parameters"; and "sending the adjusted vehicle commands to the vehicle using the connection." The '972 Patent does not describe, or give any indicators, as to what any of these three refer to in the context of the '972 Patent's claims. Even if the claims did describe mission parameters, it does not describe how the fleet controller determines whether the undefined "mission impact data" do or do not support them. And even if it did make clear how the fleet controller makes this evaluation, neither the claims nor the specification show how the fleet controller would develop or generate new vehicle commands (e.g., which criteria it would change, how much it would adjust the flight path, etc.). As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

11. Claims 6, 13, and 19 of the ’972 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the “forwarding the vehicle commands to the vehicle in response the vehicle being subject to the single source control, or a source of the vehicle commands being assigned an authority greater than any other set of vehicle’s commands associated with the vehicle.” The ’972 Patent does not describe, or give any indicators, as to what “forwarding the vehicle commands to the vehicle in response the vehicle being subject to the single source control, or a source of the vehicle commands being assigned an authority greater than any other set of vehicle’s commands associated with the vehicle” refers to in the context of the ’972 Patent’s claims. This language is untenable for several reasons. For example, and without reservation, the claims do not indicate how “forwarding” is different or the same as “sending” in other claims of the patent. Additionally, the claims nor the specification indicate what it means for a source to have “an authority greater than any other set of commands associated with the vehicle.” There are no authority criteria or metrics that in the specification to support this claim or make it any clearer. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

12. Claims 8 and 15 of the ’972 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the “maintaining a persistent connection with the vehicle through a communications network.” The ’972 Patent does not describe, or give any indicators, as to what “maintaining a persistent connection with the vehicle through a communications network” refers to in the context of the ’972 Patent’s claims. For example, and without reservation, it is impossible to reconcile this language with claims 10 and 17, which

reference receiving a last known vehicle status after the vehicle has lost connection. It is impossible for the vehicle to maintain a connection and lose it. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

13. Claims 10 and 17 of the ’972 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not describe or otherwise inform one of ordinary skill with reasonable certainty about the scope of the “receiving, from an access point of the communications network, a last vehicle status in response to loss of a connection between the vehicle and the access point hosting the persistent connection.” The ’972 Patent does not describe, or give any indicators, as to what “receiving, from an access point of the communications network, a last vehicle status in response to loss of a connection between the vehicle and the access point hosting the persistent connection” refers to in the context of the ’972 Patent’s claims. For example, and without reservation, it is impossible to reconcile this language with claims 8 and 15, which reference maintaining a persistent connection through the network. It is impossible for the vehicle to maintain connection and lose it. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

14. Claims 15-18 of the ’972 Patent are invalid, pursuant to 35 U.S.C. § 112, for failure to describe otherwise unsupported recitations of the substantially similar claim language and failure to otherwise inform one of ordinary skill with reasonable certainty about the scope of that claim language. The specification of the ’972 patent is bereft of the phrase “is configured.” Yet the same cannot be said of its claims. Claim 15 recites a “fleet controller configured to [perform functions]”; claim 16 recites that the “fleet controller is configured to [perform a function]”; claim

17 recites that the "fleet controller is configured to [perform a function]"; and claim 18 recites that the "fleet controller is configured [to perform functions]". In substance, the claims and the specification provide insufficient information to properly ascertain the bounds of what it would mean for the fleet controller to perform the functions, as opposed to what it would mean for the fleet controller to be configured to perform those same functions. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

15. Claims 18 and 19 of the '972 Patent are invalid, pursuant to 35 U.S.C. § 112, for failure to describe otherwise unsupported recitations of the substantially similar claim language and failure to otherwise inform one of ordinary skill with reasonable certainty about the scope of that claim language. The specification of the '972 patent is bereft of the phrase "is configured." Yet the same cannot be said of its claims. Claim 18 recites a vehicle "configured to execute the mission according to the adjusted vehicle command" and claim 19 recites "a control arbitrator configured to…". In substance, the claims and the specification provide insufficient information to properly ascertain the bounds of what it would mean for the vehicle and control arbitrator to perform the functions, as opposed to what it would mean for them to be configured to perform those same functions. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112.

2. Lack of Enablement/Written Description Under 35 U.S.C. § 112

With respect to the components, or how to perform the steps, of the alleged inventions of the Asserted Claims, the '972 Patent does not provide any substantial disclosure beyond that found in the prior art, including the prior art items identified in these Invalidity Contentions. As a result, TII cannot contend that (1) the '972 Patent would have enabled a person of ordinary skill to make the alleged inventions within the full scope of the Asserted Claims, while

contending that (2) the prior art does not. To the extent TII contends that any of the prior art does not provide an enabling description of the alleged inventions, the ’972 Patent also fails to provide an enabling disclosure of the alleged inventions.

The Asserted Claims of the ’972 Patent are invalid because the specification as filed does not contain adequate written description of the claimed inventions sufficient to lead a person of ordinary skill in the art to understand that the named inventors had possession of the purported inventions as claimed as required by 35 U.S.C. § 112. Likewise, the specification does not enable one of ordinary skill in the art to make or use the claimed inventions without undue experimentation.

To the extent any Asserted Claims are invalid for any reason under 35 U.S.C. § 112, all Claims depending therefrom are invalid for at least the same reasons.

Based on DJI’s present understanding of TII’s Infringement Contentions, DJI asserts that the Asserted Claims of the of the ’972 Patent are invalid for lack of written description and lack of enablement for at least the following claim terms/phrases/limitations:

1. Claims 1, 8, and 15: There is no written description support for, or enabling disclosure of, “verifying a usability” and/or “verify a usability” and/or “flight path is not verified.” There is no written description of enabling disclosure to verify usability or to know if a flight path is verified.

2. Claims 1, 8, and 15: There is no written description support for, or enabling disclosure of, “modifying the flight path” and/or “modify the flight path.” There is no written description of enabling disclosure to inform or teach how to modify the flight plan for purposes of the Claims.

3. Claims 1, 8, and 15: There is no written description support for, or enabling disclosure of, "mission parameters associated with the mission" or "mission parameters associated with the mission based on the flight path." There is no written description of such parameters and no enabling disclosure to inform or teach one how to practice the full scope of the Claims as required.

4. Claims 1, 8, and 15: There is no written description support for, or enabling disclosure of, "usability," "availability," and/or "flight restrictions and requirements." The patent does not provide written description of these elements, and it does not teach one to practice the Claims with respect to these claim elements.

5. Claims 1, 8, and 15: There is no written description support for, or enabling disclosure of, "monitoring operation of the vehicle during performance of the mission." There is no written description of enabling disclosure to verify usability or to know how to monitor operation while the mission is ongoing.

6. Claims 15-19: There is no written description support for, or enabling disclosure of, the "configured to…" elements of these Claims. There is no written description of enabling disclosure to configure the various portions of the system to perform the claim elements.

7. Claims 1, 8, and 15 of the '972 Patent and their dependent Claims are invalid for failure to satisfy the requirements of 35 U.S.C. § 112 because the specification does not properly provide a written description of the invention capable of showing that the applicant was in possession of the invention. This is true for all subject matter that was added in the October 4, 2021 amendments to claims and new claims. For example and without reservation, paragraphs 41 and 46 of the disclosure provide no detail as to how the critical inventive steps in the process, identifying, verifying, or modifying can be done. The specification lacks any and all

documentation indicating that the inventor was in possession of the invention at the time because it provides no calculations, formulas, or doctrine to suggest how any of the proposed functions described within these steps (e.g., checking on the flight path, modifying the flight path to avoid obstacles, checking for requirements, or checking for restrictions) can be performed. The language of the claims reflects the applicant's attempt to survive the Mullan patent's § 102 bar. No proper written description of these claims indicating that the inventor was in possession or could have created the proposed invention is provided. As such, one of ordinary skill would not be able to include that the applicant was in possession of the proposed invention by viewing the claims, rendering them insufficient under the written description requirement of 35 U.S.C. § 112.

8. The '972 Patent does not properly indicate what a flight path is or which data points it provides. This is a fatal flaw as to the independent claims: the "identify," "verify," "modify," and "generate" steps of the independent claim, which were added via amendment, so that the patent could survive a prior art rejection under 35 U.S.C. § 102. Because neither the claims nor the specification indicate what is included within flight path (e.g., where the object is using coordinate points, latitude and longitude, distance to a waypoint, distance from the fleet controller), it does not properly enable one skilled in the art to even *identify* what a flight path were if given access to the proposed invention. For at least this reason, these elements of the claims lack written description and enablement.

9. The patent does not disclose any formulas utilized for "modify[ing]" a flight path, formulas for collision avoidance, formulas for avoiding flight restrictions, instructions for checking requirements of the flight path, or data points used as inputs in any of the above. As indicated in the patent filing history, only two paragraphs—41 and 46—of the disclosure support the independent claims. These two paragraphs provide insufficient written description for a person

of ordinary skill in the art to properly create any invention insomuch as it requires multiple drones to avoid pathing issues and properly fulfill missions according to indefinite mission parameters. For at least this reason, these elements of the claims lack written description and enablement.

10. The patent does not properly disclose the role of the UTM in performing the above functions. For example and without reservation, it is unclear how the fleet controller and the UTM interact to perform the identifying, verifying, and modifying of flight paths. The claims only indicate that the usability is verified "with [the UTM]" and the fleet controller "according to data [from the UTM]." The disclosure does not indicate which of the two, between the fleet controller and the UTM, performs any calculations or how they, operating alone or in tandem, perform the function of "checking on" the flight path, its availability, and any restrictions upon that availability. As such, one of ordinary skill would not understand how to create the invention described in the claims, rendering the patent disclosure insufficient to properly enable under 35 U.S.C. § 112. For at least this reason, these elements of the claims lack written description and enablement.

D. The '082 Patent

1. Indefiniteness under 35 U.S.C. § 112

Claims 17, 19, and 20 refer to an aircraft purportedly defined in Claims 16, 11, and 19, respectively, but those Claims purport to define methods. Accordingly, these Asserted Claims are invalid as indefinite for lack of antecedent basis, for purporting to embrace two statutory classes, and/or for improper dependence. Similarly, Claim 18 refers to a method defined by claim 17, but claim 17 purports to define an aircraft, and is invalid as indefinite, for purporting to embrace two statutory classes, and/or for improper dependence.

Independent Claims 1 and 11, and all of their dependent Claims, are invalid as indefinite due to the "initialization command logic" and/or "constant vector heading" limitations, which appear nowhere in the specification, lack antecedent basis, are undefined, and are invalid as

indefinite since it does not inform a POSITA, with reasonable certainty, of the scope of the claimed inventions.

Independent Claims 1 and 11, and their dependent Claims, are invalid as indefinite due to the "decouple[ing]" limitation, which is addressed only the following passage of the specification at column 4, lines 55–63:

> Since the aircraft model matrices are large and contain coupling terms of lateral and longitudinal motions within the matrices, it is difficult to determine the best performance control gains for all at the same time. In order to overcome these issues, the linear model of aircraft performance is decoupled first. After the aircraft model is decoupled to lateral and longitudinal equations of motion, the effect of coupling terms between lateral and longitudinal motions can be reduced to a minimum, thus stabilizing the system.

This passage provides no definition of "decoupling"; indicates that, after decoupling, some uncertain amount of coupling may remain; and does not inform a POSITA, with reasonable certainty, of the scope the claimed inventions.

To the extent DJI asserts, in the alternative, invalidity arguments based upon a construction of these Claims, it does so without waiver of its position that these terms are indefinite. DJI reserves the right to identify additional claim limitations as indefinite as the case proceedings, including in connection with claim construction.

2. Written Description Under 35 U.S.C. § 112

DJI contends that Claims 1–20 of the '082 Patent are invalid for lack of written description support. Among other reasons that may be developed through discovery, DJI contends as follows:

1. Independent Claims 1 and 11, and their dependent Claims, claim an aircraft or method in which the "lateral control architecture" and "longitudinal control architecture" are "selectively activated." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no written description support for the selective activation of the lateral control architecture and the longitudinal control architecture.

2. Independent Claims 1 and 11, and their dependent Claims, claim an aircraft of method in which there is a "control system having . . . a model." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no written description for a control system with a model in the control system.

3. Independent Claims 1 and 11, and their dependent Claims, claim an aircraft or method in which there is a control system having a "model" that "decoupl[es]" the "directional movement of the aircraft into a lateral equation of motion and a longitudinal equation of motion." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no written description for the decoupling of the directional movement of the aircraft.

4. Independent Claims 1 and 11, and their dependent Claims, claim an aircraft or method in which there is a control system having "an initialization command logic in data communication with the lateral control architecture and in data communication with the longitudinal control architecture." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position,

DJI contends that there is insufficient written description for a am initialization logic "in data communication" with lateral and/or longitudinal control architecture.

5. Independent Claim 1, and its dependent Claims, claim an aircraft with a "model" in "data communication" with a "lateral control architecture" and a "longitudinal control architecture." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no written description for a model in data communication with the lateral and/or longitudinal control architecture.

Furthermore, Independent Claim 11, and its dependent Claims, claims a method in which an aircraft experiences "flat yawing turns of an aircraft while maintaining a constant vector heading across a ground surface" and "yawing turns of the aircraft while maintaining a constant vector across a ground surface." For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no written description for these claim elements and, indeed, it would appear that one cannot move in a yaw direction and also maintain a constant vector heading.

Additionally, the Asserted Claims of the '082 Patent impose no limitations with respect to the groundspeed of the aircraft, but the specification itself repeatedly references to using the claimed functionality at "low speed" and "preferably from 10 to 35 knots groundspeed." *See, e.g.*, '082 Patent, at abstract, 1:13-16, 2:35-65, 5:32-40, 6:19-25, figs. 1, and 2:56-65. The named inventors even stated: "*this invention* will enable a pilot to use the directional controller to command flat yawing turns at *low groundspeeds*, while maintaining a constant vector across the ground." *Id.* at 2:35-39 (emphasis added). The data associated with Figure 2 indicates that the aircraft had a ground speed of "10<V<35." *Id.* at fig. 2, 3:24-36. The data associated with Figure

3 indicates that the aircraft was not testing did not exceed 20 knots groundspeed. *Id.* at fig. 3, 3:37-51. Similarly, the data associated with Figures 4 and 5 indicates that the testing involved a groundspeed between 10 and 35 knots. *Id.* at fig. 4, 3:52-4:21. The specification also refers to the Constant Vector Flat Turn "*threshold*" as being "typically around 35 KGS [sic]." *Id.* at 7:23-31. For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that, because the Asserted Claims are not limited to "low" groundspeeds—indeed, there is no upper limit at all—there is no written description support for the full scope of the Claims. They are invalid.

Claim 1, and its dependent Claims 2, 3, and 5–10, fails to include any limitations requiring "Constant Vector Flat Turns," or even "flat vector turns" or yaw movement. Yet, these features appear in the Title and Abstract; are included in the description of the problem the alleged inventors allegedly overcame, *id.* at 1:41-52; are reflected in the data associated with Figures 1–5, *id.* at 2:56-5:20; the alleged "key to enabling seamless and transient free GRM lies in the advanced control law architecture of the CVFT control system as shown in FIGS. 6 to 8," *id.* at 4:33-7:10; Figure 9 allegedly "shows control law logic 901 for the CV[F]T mode, *id.* at 7:11-31; and Figure 10 allegedly "present[s]" a "control flow chart 1001 for a CVFT," *id.* at 7:33-53. Moreover, the named inventors said that these features were part of the invention(s):

> This invention will enable seamless and transient free GRM. More specifically *this invention* will enable a pilot to use the directional controller to command *flat yawing turns* at low groundspeeds, while maintaining a constant vector across the ground. *The seamless integration of this design requires no manual cockpit switches to select a Constant Vector Flat Turn (CVFT) mode*. As a result of this auto-moding logic, the control laws will *automatically adjust* pitch and roll attitude

> to keep the aircraft moving in the same direction at a constant speed whenever the pilot inputs directional command at low speed.

Id. at 2:35-45 (emphasis added). Accordingly, the specification clearly indicates that the named inventors' alleged invention(s) are narrower in scope than what has been claimed, and, furthermore, the omission by Claims 1–3 and 5–10 of any limitations requiring Constant Vector Flat Turns, or even "flat vector turns" or yaw movement omits what appears to be an essential element of the named inventors' alleged invention. *See Cooper Cameron Corp.* v. *Kvaerner Oilfield Prods., Inc.*, 291 F.3d 1317, 1323 (Fed. Cir. 2002); *Gentry Gallery, Inc.* v. *Berkline Corp.*, 134 F.3d 1473, 1479-80 (Fed. Cir. 1998).

Moreover, for purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, with respect to the elements in Claims 1 and 11, and their dependent Claims, based on the data disclosed in, e.g., Fig. 3, a person of ordinary skill in the art would not conclude that the named inventors had possession of an aircraft or method by which one could "maintain[] a constant vector heading across a ground surface."

To the extent that TII relies on the disclosures of the prior art to overcome these failures, the prior art anticipates and/or renders obvious these Claims.

3. <u>Lack of Enablement Under 35 U.S.C. § 112</u>

DJI contends that Claims 1–20 of the '082 Patent are invalid for lack of enablement. Among other reasons that may be developed through discovery, Independent Claim 11, and its dependent Claims, claims a method in which an aircraft experiences "flat yawing turns of an aircraft while maintaining a constant vector heading across a ground surface" and "yawing turns of the aircraft while maintaining a constant vector across a ground surface." For purposes of these

contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is insufficient disclosure to enable these claim elements and, indeed, it would appear that one cannot move in a yaw direction and also maintain a constant vector heading and, thus, the claimed invention(s) lack an enabling disclosure.

Additionally, the Asserted Claims of the '082 Patent impose no limitations with respect to the groundspeed of the aircraft, but the specification itself repeatedly references to using the claimed functionality at "low speed" and "preferably from 10 to 35 knots groundspeed." *See, e.g.*, '082 Patent, at abstract, 1:13-16, 2:35-65, 5:32-40, 6:19-25, figs. 1, and 2:56-65. The named inventors even stated: "*this invention* will *enable* a pilot to use the directional controller to command flat yawing turns at *low groundspeeds*, while maintaining a constant vector across the ground." *Id.* at 2:35-39 (emphasis added). The data associated with Figure 2 indicates that the aircraft had a ground speed of "10<V<35." *Id.* at fig. 2, 3:24-36. The data associated with Figure 3 indicates that the aircraft was not testing did not exceed 20 knots groundspeed. *Id.* at fig. 3, 3:37-51. Similarly, the data associated with Figures 4 and 5 indicates that the testing involved a groundspeed between 10 and 35 knots. *Id.* at fig. 4, 3:52-4:21. The specification also refers to the Constant Vector Flat Turn "*threshold*" as being "typically around 35 KGS [sic]." *Id.* at 7:23-31. For purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, DJI contends that, because the Asserted Claims are not limited to "low" groundspeeds—indeed, there is no upper limit at all—the disclosures would not enable a person of ordinary skill in the art to practice the full breadth of the Claims without undue experimentation. They are invalid.

Claim 11, and its dependent Claims, are invalid as non-enabled due to the limitation requiring "selectively activating the lateral control architecture and the longitudinal control

architecture with the initialization command logic." The specification does not explain or offer any guidance on how yawning turns are facilitated when "lateral control architecture and the longitudinal control architecture"—and the lateral and longitudinal speed and/or directional controls—are selectively activated in a way that would permit them to be activated separately and without attitude control.

Moreover, for purposes of these contentions only, based upon TII's apparent understanding of this claim, and without prejudice to DJI's ability to amend its position, with respect to the elements in Claims 1 and 11, and their dependent Claims, based on the data disclosed in, e.g., Fig. 3, a person of ordinary skill in the art would not be able to make and use, without undue experimentation, the claimed aircraft or methods by which one could "maintain[] a constant vector heading across a ground surface"; "maintain[] the constant vector heading; "maintain[] a constant vector flat turn relative to a ground surface"; and/or "maintain[] the constant vector heading."

To the extent that TII relies on the disclosures of the prior art to overcome these failures, the prior art anticipates and/or renders obvious these Claims.

E. The '505 Patent

1. Indefiniteness Under 35 U.S.C. § 112

Claims 17, 19, and 20 refer to an aircraft purportedly defined in Claims 16, 11, and 19, respectively, but those Claims purport to define methods. Accordingly, these Asserted Claims are invalid as indefinite for lack of antecedent basis, for purporting to embrace two statutory classes, and/or for improper dependence. Similarly, Claim 18 refers to a method defined by Claim 17, but Claim 17 purports to define an aircraft, and is invalid as indefinite, for purporting to embrace two statutory classes, and/or for improper dependence.

Claims 1 and 11, and all of their dependent Claims, are invalid as indefinite due to the "constant vector heading" limitation, which appears nowhere in the specification, lacks antecedent

basis, is undefined, and is invalid as indefinite since it does not inform a POSITA, with reasonable certainty of the scope of the claimed inventions.

Claims 1 and 11, and all of their dependent Claims, are invalid as indefinite due to the "constant vector heading" limitation, which appears nowhere in the specification, lacks antecedent basis, is undefined, and is invalid as indefinite since it does not inform a POSITA, with reasonable certainty of the scope of the claimed inventions.

Claims 7 and 17 are invalid as indefinite due to the "lateral control hatch" limitation, which appears nowhere in the specification, lacks antecedent basis, is undefined, and is invalid as indefinite since it does not inform a POSITA, with reasonable certainty of the scope of the claimed inventions.

Claims 7 and 17 are invalid as indefinite due to the "lateral control latch" limitation, which lacks antecedent basis and is invalid as indefinite since it does not inform a POSITA, with reasonable certainty of the scope of the claimed inventions.

Claims 10 and 20 are invalid as indefinite due to the "longitudinal control latch" limitation, which lacks antecedent basis and is invalid as indefinite since it does not inform a POSITA, with reasonable certainty of the scope of the claimed inventions.

To the extent DJI asserts, in the alternative, invalidity arguments based upon a construction of these Claims, it does so without waiver of its position that these terms are indefinite. DJI reserves the right to identify additional claim limitations as indefinite as the case proceedings, including in connection with claim construction.

2. Lack of Written Description Under 35 U.S.C. § 112

DJI contends that Claims 1–20 of the ’505 Patent are invalid for lack of written description support. Among other reasons that may be developed through discovery, Independent Claim 1, and its dependent Claims, claims a “control system” for an aircraft “wherein the control system utilizes the lateral control architecture and the longitudinal control architecture to control yaw movement of the aircraft while the aircraft maintains a constant vector heading across a ground surface.” For purposes of these contentions only, based upon TII’s apparent understanding of this claim, and without prejudice to DJI’s ability to amend its position, DJI contends that there is no written description support for a control system in which the lateral and longitudinal control architectures are used to control “yaw movement.” DJI notes that, during the prosecution of related European Patent Application No. 11862189.5, TII deleted references to controlling “a yaw movement of the aircraft” in view of an examiner’s rejection finding no support for such a limitation.

Furthermore, Claim 1, and its dependent Claims, claims a system in which an aircraft experiences “yaw movement . . . while the aircraft maintains a constant vector heading across a ground surface” and “the aircraft continuously moves in a yaw direction while maintaining the constant vector heading.” Similarly, Claim 11, and its dependent Claims, claim a method in which an aircraft experiences “flat yaw movement . . . while maintaining a constant vector flat turn relative to a ground surface” and in which “the aircraft continuously moves in a yaw direction while maintaining the constant vector heading.” For purposes of these contentions only, based upon TII’s apparent understanding of this claim, and without prejudice to DJI’s ability to amend its position, DJI contends that there is no written description for these claim elements and, indeed, it would appear that one cannot move in a yaw direction and also maintain a constant vector heading.

Additionally, the Asserted Claims of the ’505 Patent impose no limitations with respect to the groundspeed of the aircraft, but the specification itself repeatedly references to using the claimed functionality at “low speed” and “preferably from 10 to 35 knots groundspeed.” *See, e.g.*, ’505 Patent, at abstract, 1:13-16, 2:35-65, 5:32-40, 6:19-25, figs. 1, and 2:56-65. The named inventors even stated: “*this invention* will enable a pilot to use the directional controller to command flat yawing turns at *low groundspeeds*, while maintaining a constant vector across the ground.” *Id.* at 2:35-39 (emphasis added). The data associated with Figure 2 indicates that the aircraft had a ground speed of “10<V<35.” *Id.* at fig. 2, 3:24-36. The data associated with Figure 3 indicates that the aircraft was not testing did not exceed 20 knots groundspeed. *Id.* at fig. 3, 3:37-51. Similarly, the data associated with Figures 4 and 5 indicates that the testing involved a groundspeed between 10 and 35 knots. *Id.* at fig. 4, 3:52-4:21. The specification also refers to the Constant Vector Flat Turn “*threshold*” as being “typically around 35 KGS [sic].” *Id.* at 7:23-31. For purposes of these contentions only, based upon TII’s apparent understanding of this claim, and without prejudice to DJI’s ability to amend its position, DJI contends that, because the Asserted Claims are not limited to “low” groundspeeds—indeed, there is no upper limit at all—there is no written description support for the full scope of the Claims. They are invalid.

Moreover, for purposes of these contentions only, based upon TII’s apparent understanding of this claim, and without prejudice to DJI’s ability to amend its position, with respect to the elements in Claims 1 and 11, and their dependent Claims, based on the data disclosed in, e.g., Fig. 3, a person of ordinary skill in the art would not conclude that the named inventors had possession of a system or method by which one could “maintain[] a constant vector heading across a ground surface”; “maintain[] the constant vector heading”; “maintain[] a constant vector flat turn relative to a ground surface”; and/or “maintain[] the constant vector heading.”

Claims 7 and 17 claim a system and aircraft/method having a "lateral control hatch." For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no support in the specification for this Claim element.

Claims 10 and 20 claim a system and aircraft/method having a "longitudinal control hatch." For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is no support in the specification for this Claim element.

To the extent that TII relies on the disclosures of the prior art to overcome these failures, the prior art anticipates and/or renders obvious these Claims.

3. Lack of Enablement Under 35 U.S.C. § 112

DJI contends that Claims 1–20 of the '505 Patent are invalid for lack of enablement. Among other reasons that may be developed through discovery, Independent Claim 1, and its dependent Claims, claims a "control system" for an aircraft "wherein the control system utilizes the lateral control architecture and the longitudinal control architecture to control yaw movement of the aircraft while the aircraft maintains a constant vector heading across a ground surface." For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is insufficient disclosure to enable a control system in which the lateral and longitudinal control architectures are used to control "yaw movement." DJI notes that, during the prosecution of related European Patent Application No. 11862189.5, TII deleted references to controlling "a yaw movement of the aircraft" in view of an examiner's rejection finding no support for such a limitation.

Furthermore, Claim 1, and its dependent Claims, claims a system in which an aircraft experiences "yaw movement . . . while the aircraft maintains a constant vector heading across a

ground surface" and "the aircraft continuously moves in a yaw direction while maintaining the constant vector heading." Similarly, Claim 11, and its dependent Claims, claim a method in which an aircraft experiences "flat yaw movement . . . while maintaining a constant vector flat turn relative to a ground surface" and in which "the aircraft continuously moves in a yaw direction while maintaining the constant vector heading." For purposes of these contentions only, based upon TII's apparent understanding of this cCaim, and without prejudice to DJI's ability to amend its position, DJI contends that there is insufficient disclosure to enable these claim elements and, indeed, it would appear that one cannot move in a yaw direction and also maintain a constant vector heading and, thus, the claimed invention(s) lack an enabling disclosure.

Additionally, the Asserted Claims of the '505 Patent impose no limitations with respect to the groundspeed of the aircraft, but the specification itself repeatedly references to using the claimed functionality at "low speed" and "preferably from 10 to 35 knots groundspeed." *See, e.g.*, '505 Patent, at Abstract, 1:13-16, 2:35-65, 5:32-40, 6:19-25, figs. 1, and 2:56-65. The named inventors even stated: "*this invention* will *enable* a pilot to use the directional controller to command flat yawing turns at *low groundspeeds*, while maintaining a constant vector across the ground." *Id.* at 2:35-39 (emphasis added). The data associated with Figure 2 indicates that the aircraft had a ground speed of "10<V<35." *Id.* at fig. 2, 3:24-36. The data associated with Figure 3 indicates that the aircraft was not testing did not exceed 20 knots groundspeed. *Id.* at fig. 3, 3:37-51. Similarly, the data associated with Figures 4 and 5 indicates that the testing involved a groundspeed between 10 and 35 knots. *Id.* at fig. 4, 3:52-4:21. The specification also refers to the Constant Vector Flat Turn "*threshold*" as being "typically around 35 KGS [sic]." *Id.* at 7:23-31. For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that, because the

Asserted Claims are not limited to "low" groundspeeds—indeed, there is no upper limit at all—the disclosures would not enable a person of ordinary skill in the art to practice the full breadth of the Claims without undue experimentation. They are invalid.

Moreover, for purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, with respect to the elements in Claims 1 and 11, and their dependent Claims, based on the data disclosed in, e.g., Fig. 3, a person of ordinary skill in the art would not be able to make and use, without undue experimentation, the claimed systems or methods by which one could "maintain[] a constant vector heading across a ground surface"; "maintain[] the constant vector heading; "maintain[] a constant vector flat turn relative to a ground surface"; and/or "maintain[] the constant vector heading."

Claims 7 and 17 claim a system and aircraft/method having a "lateral control hatch." For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is enabling disclosures in the Patent with respect to this Claim element.

Claims 10 and 20 claim a system and aircraft/method having a "longitudinal control hatch." For purposes of these contentions only, based upon TII's apparent understanding of this Claim, and without prejudice to DJI's ability to amend its position, DJI contends that there is enabling disclosures in the Patent with respect to this Claim element.

To the extent that TII relies on the disclosures of the prior art to overcome these failures, the prior art anticipates and/or renders obvious these Claims.

VII. OTHER GROUNDS FOR INVALIDITY

When a claim limitation cites incorrect science or mathematical concepts that would render the product inoperable, the patent becomes ineligible under the law. See *EMI Grp. N. Am., Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342, 1348-49 (Fed. Cir. 2001) ("A claimed invention

having an inoperable or impossible claim limitation may lack utility under 35 U.S.C. § 101 [and] when a claim itself recites incorrect science in one limitation, the entire claim is invalid, regardless of the combinations of the other limitations recited in the claim.”).

Patent claims are invalid if the claim lacks utility. Section 101 requires that an invention be possible before it can become patentable. *In re Huping Hu*, 848 F. App'x 416, 425 (Fed. Cir.), *cert. denied sub nom. Hu v. Hirshfeld*, 142 S. Ct. 240 (2021) (collecting cases); *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1359 (Fed. Cir. 1999) (holding claims inoperable because they violate the principle of conservation of mass); *Newman v. Quigg*, 877 F.2d 1575 (Fed. Cir. 1989) (describing device as an operating perpetual motion machine violates the first or second law of thermodynamics); *In re Swartz*, 50 F. Appx 422, 424–25 (Fed. Cir. 2002) (claims to process said to implement “cold fusion” rejected as directed to an “unattainable result”).

A. ’082 Patent

Claim 1, and its dependent Claims, describes a system in which an aircraft experiences “yaw movement . . . while the aircraft maintains a constant vector heading across a ground surface” and “the aircraft continuously moves in a yaw direction while maintaining the constant vector heading.” Similarly, claim 11, and its dependent Claims, claim a method in which an aircraft experiences “flat yaw movement . . . while maintaining a constant vector flat turn relative to a ground surface” and in which “the aircraft continuously moves in a yaw direction while maintaining the constant vector heading.” But based on any reasonable interpretation of the applicability of these Claims and TII’s apparent understanding of these Claims (without prejudice to DJI’ ability to amend its position), one simply cannot maintain a constant heading—which is determined by where the nose is pointing—and also have continuous yaw movement, which moves the entire body of the aircraft, including the nose, in a turn. In short, these Claims would render DJI’s aircrafts inoperable and therefore are invalid on their face.

B. ’505 Patent

Independent Claim 11, and its dependent Claims, describe a system in which an aircraft experiences “flat yawing turns of an aircraft while maintaining a constant vector heading across a ground surface” and “yawing turns of the aircraft while maintaining a constant vector across a ground surface.” Based upon any reasonable understanding of the real world applicability of these Claims and TII’s apparent understanding of this Cclaim (without prejudice to DJI’ ability to amend its position), it would appear that one cannot move in a yaw direction and also maintain a constant vector heading. Therefore, these claimed inventions lack utility and are invalid.

C. ’972 Patent

Claims 1, 8, and 15 require that the fleet controller “maintain a persistent connection with the vehicle through the communications network,” whereby the fleet controller sends the vehicle commands and monitors its operation. Claims 10 and 17, which are dependent on Claims 8 and 15, recite instructions for receiving “a last vehicle status in response to a loss of a connection between the vehicle and the access point hosting the persistent connection.” Because the status cannot be both maintained persistently and lost, Claims 10 and 17 are invalid.

VIII. Document Production Pursuant to P.R. 3.4 (b)

Pursuant to P.R. 3-4(b) DJI is producing (or making available for inspection) prior art references, devices, and source code for the prior art cited in these contentions. This production will occur under separate cover.

Dated: January 19, 2023

/s/ Catherine Nyarady

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