

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

SMARTSKY NETWORKS, LLC,

Plaintiff,

v.

**GOGO BUSINESS AVIATION, LLC and
GOGO INC.,**

Defendants.

Case No. 1:22-cv-00266-JDW

MEMORANDUM

Trials are both a quest for truth and an exercise in showmanship. Lawyers have broad discretion, especially in closing, to tell the jury how to interpret the evidence. But one thing lawyers can't do is turn to misdirection or sleight of hand to persuade the jury to reach a conclusion divorced from the evidence. In this case, I gave SmartSky Networks, LLC an opportunity to present its case to a jury even after excluding its expert evidence on damages, and SmartSky did its best. In the end, though, its damages case relied too much on numerical mumbo jumbo. The jury fell victim to SmartSky's sleight of hand and returned a damages award that is untethered to the evidentiary record. And, while SmartSky presented enough evidence for the jury to find that Gogo Business Aviation, LLC and Gogo Inc. (together, "Gogo"), infringed its patents, that they did so willfully, and that SmartSky's patents are valid, it offered no evidence to allow a jury to awarded damages. Therefore, I will grant a judgment as a matter of law for lack of damages.

I. BACKGROUND

On November 21, 2025, a jury found that Gogo infringed four patents that SmartSky owns: U.S. Patent Nos. 9,312,947 ("947 Patent"); 11,223,417 ("417 Patent"); 11,533,639 ("639 Patent"); and 9,713,077 ("077 Patent"). SmartSky's claims focus on Gogo's development of a 5G network to provide air-to-ground ("ATG") communications.

A. The Patents And Claims In Suit

The '947 and '417 Patents describe a network of base stations that provide high speed data communications to aircraft. The jury found that Gogo infringed Claim 3 of the '947 Patent and Claims 11 and 17 of the '417 Patent. Claim 3 of the '947 Patent describes "[a] network base station" that is comprised of a radio that uses beam forming to communicate with in-flight communication nodes via different high-speed data communication links. Claims 11 and 17 of the '417 Patent provide for "a wireless communication network configured to provide high speed wirelessly transmitted data communication to an in-flight aircraft." The claims also require that the network be comprised of "a plurality of ground stations" which are "configured via software defined radio" to communicate with an aircraft by "utiliz[ing] beamforming to generate a plurality of steerable beams."

The '077 Patent describes a network that provides ATG wireless communication. The jury found that Gogo infringed Claims 1 and 2 of the '077 Patent. Those claims recite

an ATG network comprised of ATG base stations that define radiation patterns by "focusing energy toward the horizon."

The '639 Patent describes "Wedge Shaped Cells In A Wireless Communication System" directed to address problems with providing continuous wireless communication to aircraft at various distances and altitudes. The jury found that Gogo infringed Claims 1 and 10. Those claims describe "a base station in a network" that provides ATG wireless communication. That base station must be "configured to wirelessly communicate with a radio disposed on an aircraft ... via unlicensed spectrum, and coordinate with [an] adjacent base station to enable the adjacent base station to communicate with the radio."

B. Gogo's 5G Network

Gogo has a 5G wireless ATG network that includes 150 base stations capable of communicating with in-flight aircraft, but it has not activated the network. Gogo also makes radios and the associated hardware and software that communicate with the base stations. This hardware includes two radios, one that operates on unlicensed spectrum and one that operates on licensed spectrum. Those radios conduct a hand-over between base stations to maintain coverage.

Gogo advertises its 5G connectivity system and associated hardware through marketing materials and public communications. Gogo's website and other promotional channels solicit customer interest and provide technical and commercial information about its 5G products. Gogo has entered commercial arrangements with aviation service

providers to provide hardware for their fleets. It has also provided antennas that customers will need to communicate with Gogo's 5G network, but which can only at present connect with Gogo's currently available network that operates only on licensed spectrum.

C. Procedural History

SmartSky filed this suit on February 28, 2022. After claim construction and summary judgment, the parties tried the case to a jury in November 2025. During trial but before the jury rendered a verdict, Gogo moved for judgment as a matter of law ("JMOL") on a variety of legal issues. I denied that motion, and the jury found in favor of SmartSky on all counts. Gogo now renews its motion, seeking JMOL on the validity of the '077 Patent; the validity of the '947 and '417 Patents; its infringement of the '077, '639, '947, and '417 Patents; the willfulness of its infringement; and damages. The motion is now ripe for disposition. In addition, following the jury trial, the Parties appeared for a one-day bench trial concerning Gogo's inequitable conduct defense with respect to the '639 and '077 Patents.

II. INEQUITABLE CONDUCT

A. Findings Of Fact

1. The '639 and '077 Patents

The '639 Patent issued on December 20, 2022. It lists Douglas Hyslop as the inventor and is assigned to SmartSky. The '639 Patent is a continuation of (among others)

(a) U.S. Patent Application No. 13/832,385, which was filed on March 15, 2013, and which issued as U.S. Patent No. 9,008,669 ("669 Patent") and (b) Application No. 15/877,625, which issued as U.S. Patent No. 10,257,717 ("717 Patent"). During prosecution of the '669 Patent, SmartSky's patent prosecutor, Chad Thorson, submitted an Information Disclosure Statement to the Patent Office identifying U.S. Patent App. Pub. No. 2012/0200458 ("Jalali '458"). Mr. Jalali worked for Qualcomm. During prosecution of the '717 Patent, the examiner rejected pending claims under 35 U.S.C. § 103 as unpatentable over Bin-Shimol et al (EP2278732) in view of Agrawal et al. (U.S. Patent No. 7,933,598). SmartSky distinguished those references by noting that neither used the word "horizon" or used a base station with unlicensed spectrum that had a particular directional radiation pattern. The examiner then issued a notice of allowance, and the '717 Patent issued. During prosecution of the '639 Patent, the Patent Office issued a non-statutory obviousness-type double patenting rejection, finding the claims of the '639 Patent not patentably distinct from those of the '717 Patent. In response, SmartSky issued a terminal disclaimer over the '717 Patent.

The '077 Patent issued on August 8, 2017. It names Ryan Stone and Douglas Hyslop as inventors and is assigned to SmartSky. During the prosecution of the '077 Patent, the examiner rejected claims 1-21 as anticipated by Monk (U.S. Patent Pub. No. 2006/0229076). In response, SmartSky amended Claim 1 of the '077 Patent to require a plurality of ATG base stations and argued that Monk did not "teach or suggest a plurality

of ATG base stations, each of which defines a corresponding radiation pattern focusing energy toward the horizon” and that Monk did not disclose “overlapping coverage areas” to create layers of radiation.” (Tr. Ex. 1525 at 49 (emphasis omitted).) In addition, the examiner rejected claims 1, 2, 14, and 15 as anticipated by Cruz (U.S. Patent Pub. No. 2006\0229076). SmartSky, however, argued that “Cruz clearly fails to teach or suggest a plurality of ATG base stations, each of which defines a corresponding radiation pattern focusing energy toward the horizon” (Tr. Ex. 1525 at 51 (emphasis omitted).) During the prosecution of the ‘077 Patent, the examiner rejected one then-pending claim as obvious in view of U.S. Patent App. Pub. No. 2006/0040660 to Jalali (“Jalali ‘490”) and Cruz. (See Tr. Ex. 12 at 76-78.) The notice of allowance for the ‘077 Patent explains that “none of [the prior art references] teach the first, second and additional ATG base stations are each configured to communicate in the ATG communication layer using the same radio frequency (RF) spectrum used by the terrestrial base stations in the ground communication layer as recited in claimed.” (Tr. Ex. 12 at 77 (emphasis omitted).)

2. The Qualcomm Petition

Qualcomm filed a Petition For Rulemaking with the FCC on July 7, 2011 (the “Qualcomm Petition”). It disclosed a Next-Gen AG system for in-flight connectivity that would operate in a licensed band of spectrum that was already in use to communicate with satellites in geosynchronous orbit. (Tr. Ex. 714 at 4.) Qualcomm therefore designed a network that would not interfere with the communication with those satellites. The

Petition describes an ATG network that would have multiple base stations providing overlapping radiation patterns facing north, each with “an elevation angle such as 10° or less.” (*Id.* at 20.) Qualcomm explained in the Qualcomm Petition that its proposed “system could not operate in an unlicensed band because of the need to use higher transmit power than is permitted in any existing unlicensed band and the concomitant need for certainty as to the other users in the band to avoid interference.” (*Id.* at 24-25; *see also id.* at 38.) Thus, the Qualcomm Petition explained that the system that Qualcomm proposed could not operate in an unlicensed band like the 2.4 GHz band, which includes hundreds-of-millions of ground-based devices.

Drew Caplan, SmartSky’s Chief Technology Officer, sent several people at SmartSky the Qualcomm Petition on December 21, 2011. On April 19, 2012, Mr. Hyslop emailed a presentation comparing Qualcomm’s proposal relative to SmartSky’s planned 2.4 GHz network. At the time, SmartSky was planning a network in which each base station would provide 360 degrees of coverage. On November 30, 2012, Mr. Hyslop sent an email describing alternatives that included a “Current Plan” and three alternatives, including a “2.4 GHz Qualcomm Architecture.” (Tr. Ex. 708.) On December 10, 2012, Mr. Hyslop sent an email titled “Alternative Architecture for consideration” that would “let each site focus its coverage within a narrow few degrees of vertical elevation to reach the far distance,” which would result in a “coverage pattern ... similar to a wedge—very narrow vertically close to the base station, but extending in vertical height in the far distance to eventually

cover our target altitudes.” (Tr. Ex. 742 at 1.) In response, SmartSky’s Chief Network Engineer Mike Dodson said, “Sort of like scales on a fish [...] but I think I get it and seems to make sense.” (*Id.*)

On February 20, 2013, Mr. Dodson emailed Mr. Thorson and identified the wedge architecture as something worth patenting. He explained that the wedge architecture “is adapted from an approach we believe Qualcomm may have initially conceived.” (Tr. Ex. 1950 at 3.) That same day, Don Alcorn of SmartSky emailed Messrs. Hyslop, Mr. Dodson, Mr. Caplan, and David Claassen to explain that the “2006 ‘wedge concept’ ... has been around for (at least) seven years – giving us the chance of being first to invent, ahead of Qualcomm.” (Tr. Ex. 710.)

Mr. Stone and Mr. Hyslop understood that they had an obligation to disclose to the Patent Office any prior art that might be material to their patent applications. Several individuals at SmartSky were aware of the Qualcomm Petition, including Mr. Stone, Mr. Hyslop, Mike Dodson, and Drew Caplan. Although each of them was aware of the Qualcomm Petition, none of them disclosed it to Mr. Thorson. Mr. Stone, at a minimum, did not think it was material because of its statements about not working in an unlicensed band.

B. Conclusions Of Law

“Inequitable conduct is an equitable defense to patent infringement that, if proved, bars enforcement of a patent.” *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276,

1285 (Fed. Cir. 2011) (en banc). To prevail on a defense of inequitable conduct, the accused infringer must prove that the applicant misrepresented or omitted material information with the specific intent to deceive the PTO. *See id.* at 1287. “The accused infringer must prove both elements—intent and materiality—by clear and convincing evidence.” *Id.* Gogo has not proven either element.

First, Gogo has not proved that the Qualcomm Petition was material to the patentability of either the ‘639 Patent or the ‘717 Patent. To prove that a reference that a patentee withheld from the PTO is material, an infringer must prove by clear and convincing evidence that the “PTO would have denied a claim had it known of the undisclosed prior art.” *Cal. Inst. Of Tech. v. Broadcom Ltd.*, 25 F.4th 976, 991 (Fed. Cir. 2022) (citing *Therasense*, 649 F.3d at 1291). The analysis occurs from the perspective of a patent examiner. *See Therasense*, 649 F.3d at 1287, 1291-92.

An undisclosed prior art reference cannot have been material if it is cumulative of other references that the examiner had. *See Cal. Inst. Of Tech.*, 25 F.4th at 991. A “reference is cumulative when it teaches no more than what a reasonable examiner would consider to be taught by the prior art already before the PTO.” *Regeneron Pharms., Inc. v. Merus N.V.*, 864 F.3d 1343, 1350 (Fed. Cir. 2017) (citation modified). That’s the case with respect to the Qualcomm Petition, which is cumulative of the two Jalali references.

Jalali ‘790 describes an array of ground station antennas that overlap covering various elevations. (Tr. Ex. 2154 at ¶¶ 53-56.) It explains that the “coverage region in

azimuth and elevation may be divided into narrow regions where the antenna array can maintain its gain requirement over all angles in the coverage area.” (*Id.* at ¶ 53.) Jalali ‘458 contains a similar disclosure for a system that would cover .5 degrees to 10 degrees in elevation. (Tr. Ex. 1582 at ¶ 40.) Dr. Goldberg testified that the Jalali disclosures (primarily the disclosures in Jalali ‘790) would have disclosed to a POSA the same system that the Qualcomm Petition disclosed. He explained that Jalali ‘790 discloses the same “antenna parameters, the beamwidths and the directions” and elevation” and “overlap” as the Qualcomm Petition. (Trial Tr. 3/4/26 at 153:16-19.) I found Dr. Goldberg’s testimony on that point credible, and I credit it. I also note that Gogo’s expert Dr. Shoemake conceded that Jalali ‘458 discloses what appears to be the same architecture that the Qualcomm Petition does. (*See id.* at 78:1-79:1.)

Gogo’s argument that the Jalali references do not disclose the complete wedge-shaped architecture that the Qualcomm Petition discloses takes too narrow a view of the concept of cumulativeness. Two references do not have to be identical to be cumulative. The point is to determine whether an undisclosed reference would have been but-for material to a patent examiner. So, if the disclosed references disclose enough information to alert a POSA to what is in the undisclosed reference, then a court can presume that the examiner had what he needed to assess the claims and would not have benefitted from

the disclosure of the additional reference. That's what happened in this case, even if the examiner did not have the Qualcomm Petition itself in front of him.¹

Gogo also argues that SmartSky has distinguished Jalai '790 before the Patent Office in a way that is inconsistent with its current arguments.² There does seem to be some inconsistency. But SmartSky's characterization does not control my analysis. I have reviewed the Jalali references for myself, in light of the testimony at trial. And, while there are questions about the references, Gogo has not shown by clear and convincing evidence that they leave a gap with the examiner for the Qualcomm Petition to fill.

Second, Gogo has not proved that anyone at SmartSky acted with the required intent to deceive. To prove the required specific intent in "a case involving nondisclosure of information, clear and convincing evidence must show that the applicant *made a deliberate decision* to withhold a *known* material reference." *Therasense*, 649 F.3d at 1290 (citation modified). "Because direct evidence of deceptive intent is rare, a district court may infer intent from direct and circumstantial evidence. However, to meet the clear and convincing evidence standard, the specific intent to deceive must be the single most reasonable inference able to be drawn from the evidence." *Id.* (citation modified). The

¹ Dr. Shoemaker testified about distinctions that he perceived between the Jalali references and the Qualcomm Petition. I did not find that testimony credible, though.

² SmartSky challenges Gogo's request that I take judicial notice of statements in Trial Exhibit 1543, which is a file history. Gogo does not want me to accept that the statements in the file history are true. It wants me to notice the fact that SmartSky made the statements. There's no dispute about the authenticity of the file wrapper, so I can take notice of the fact that SmartSky said it without deciding if it is true.

evidence “must be sufficient to *require* a finding of deceitful intent in the light of all the circumstances.” *Id.* (citation modified). “The absence of a good faith explanation for withholding a material reference does not, by itself, prove intent to deceive.” *Id.* at 1291. And, proving that a patentee “knew of a reference, should have known of its materiality, and decided not to submit it to the USPTO does not prove specific intent to deceive” *GS Cleantech Corp. v. Adkins Energy LLC*, 951 F.3d 1310, 1324 (Fed. Cir. 2020) (citation modified).

No one disputes that many people at SmartSky knew about the Qualcomm Petition. However, Gogo has not shown that anyone at SmartSky considered the Qualcomm Petition material to SmartSky’s patent applications. To the contrary, Mr. Hyslop didn’t remember anything about his consideration of the Qualcomm Petition. Mr. Stone testified that he did not consider the Qualcomm materials because they sought to address a problem with interference with geospatial satellite communication in a licensed band, not interference with terrestrial signals in an unlicensed band. (Trial Tr. 3/4/26 at 96:8-97:10.) I found Mr. Stone’s testimony on this issue credible, and I credit it. To be clear, Mr. Stone didn’t have to be correct about his determination of materiality. What matters is that he held that view subjectively, and it was not so unreasonable as to suggest that his view amounted to willful blindness (or even reckless disregard) of the Qualcomm Petition’s potential materiality.

Gogo argues that statements from SmartSky employees to Mr. Thorson that SmartSky derived its wedge architecture from Qualcomm demonstrate that SmartSky understood the materiality of the Qualcomm Petition. But something inspires every idea, and the fact that someone at SmartSky had an idea to solve a problem different than the one that Qualcomm was addressing by using a similar structure does not mean that I have to infer that anyone at SmartSky (let alone everyone, as Gogo suggests) thought that the Qualcomm Petition was a material reference to any particular patent application.

Gogo also has not shown that anyone made a deliberate attempt to conceal the Qualcomm Petition from the PTO. The direct evidence about intent consists of Mr. Stone's and Mr. Thorson's testimony that neither intended to mislead the Patent Office. I find the testimony of both witnesses credible on this point, and I credit it. Gogo does not acknowledge that testimony. Instead, it focuses on circumstantial evidence that is not as powerful as Gogo suggests.

Gogo's argument rests on the premise that Mr. Hyslop and others at SmartSky derived the wedge-shaped architecture from the Qualcomm Petition. But the evidence and testimony also lead me to conclude that Mr. Hyslop, Mr. Stone, and others at SmartSky reasonably thought that the Qualcomm Petition taught away from SmartSky's invention given its statements about unlicensed spectrum. The Qualcomm Petition explains its focus on a licensed band and states that its solution would not work in a crowded, unlicensed terrestrial band. Regardless of whether that constitutes teaching-

away as a matter of law, a reasonable person could read those statements and think that the Qualcomm Petition was teaching away from SmartSky's solution.

While Gogo disagrees with SmartSky's teaching-away conclusion, it offers no evidence to suggest that anyone at SmartSky held such a view in bad faith or is using it as a post-hac rationalization to avoid a disclosure obligation. Instead, the evidence shows, and I conclude, that individuals at SmartSky subjectively believed that the Qualcomm Petition taught away from Qualcomm's invention, making its disclosure unnecessary. At a minimum, it is an equally likely inference to draw from the circumstantial evidence that Gogo cites, and the possibility of multiple reasonable inferences means Gogo has not satisfied its burden to prove the requisite intent. *See Therasense*, 649 F.3d at 1290-91.

I also reject Gogo's effort to read too much into Mr. Alcorn's email. No one has testified about that email. I have the words on paper, but no context in which to evaluate them. It is not clear whether Mr. Alcorn is discussing the Qualcomm Petition or one of the Jalali references, which he could also attribute to Qualcomm and which more closely fit the seven-year-old time frame that he discusses in his email. Ultimately, the cold words on the page are not enough to satisfy Gogo's burden of proof, particularly given the uncertainty that Mr. Hyslop (the only witness to testify about the email) expressed about the context of many of the communications around the time of Mr. Alcorn's email.

Gogo's effort to lay the blame at Mr. Thorson's feet also falls short, for the same reason. Gogo concedes that Mr. Thorson didn't know about the Qualcomm Petition, so

he could not have decided to withhold it. Gogo argues that Mr. Thorson should have done more investigation into the Qualcomm Petition, but it has not offered evidence suggesting that Mr. Thorson should have done more to find the Qualcomm Petition. There's no evidence from anyone in the case opining about Mr. Thorson's compliance with that investigative duty. Gogo hangs its hat on the fact that people at SmartSky told Mr. Thorson that they conceived of the wedge-shaped architecture based on an idea that Qualcomm conceived. Yet the testimony also establishes that Mr. Jalali worked for Qualcomm, and Mr. Thorson disclosed those references to the PTO. Thus, it is an equally likely inference that Mr. Thorson thought he had gathered and disclosed relevant information from Qualcomm. Although Gogo complains that SmartSky has not offered evidence about what Mr. Thorson was thinking, it was not SmartSky's burden to do so. It remains Gogo's burden to demonstrate that the inferences it wants me to draw are the ones single most reasonable ones for me to draw, and it has not done that. *See Therasense*, 649 F.3d at 1290. In addition, Gogo does not produce any evidence to suggest that, if Mr. Thorson had done that investigation, he would then have determined that he needed to disclose the Qualcomm Petition to the PTO. Thus, Gogo does not have enough evidence to blame Mr. Thorson for any disclosure failures.

III. JMOL

A. Legal Standard

Federal Rule of Civil Procedure 50 allows a party to seek JMOL on an issue once the non-moving party has been fully heard on the issue. *See* FED. R. CIV. P. 50. A court may grant JMOL if it “finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for the [non-moving] party on that issue.” *Id.* The court must view the evidence in the light most favorable to the non-moving party and give that party every fair and reasonable inference. *Lightning Lube, Inc. v. Witco Corp.*, 4 F.3d 1153, 1166 (3d Cir. 1993). The court “may not weigh the evidence, determine the credibility of witnesses, or substitute [its] version of the facts for the jury’s version.” *Mancini v. Northampton Cnty.*, 836 F.3d 308, 314 (3d Cir. 2016) (citation modified).

B. Invalidity Issues

1. '077 Patent

Gogo argues that the '077 Patent is invalid both because prior art anticipates it and it is indefinite.

a. Anticipation

A judge can declare a patent invalid if it can be anticipated from prior art. *See* 35 U.S.C. § 102. To prove anticipation, a defendant must show that a prior art reference discloses – either explicitly or inherently – each element of the asserted claims. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 851 F.3d 1270, 1273 (Fed.

Cir. 2017). To disclose a claim element inherently, the element must be “necessarily present, not merely probably or possibly present,” in a single prior art reference. *Guangdong Alison Hi-Tech Co. v. Int’l Trade Comm’n*, 936 F.3d 1353, 1364 (Fed. Cir. 2019) (citation modified).

Gogo argues that U.S. Patent Application No. 2011/0032149 (“Leabman”) anticipates the ‘077 Patent because it provides for ATG base stations that use beamforming to communicate with aircraft. The record contains enough evidence to support the jury’s finding that Leabman did not anticipate the focus-energy-towards-the-horizon requirement of the ‘077 Patent. Although Leabman provides for ATG base stations that use beamforming to communicate with aircraft, SmartSky introduced expert testimony from Dr. Goldberg that showed the ATG base stations in Leabman do not “focus energy toward the horizon” as the ‘077 Patent requires because Leabman was designed to use an algorithm that “would steer the beam all over the sky to look for planes.” (Trial Tr. at 1093:24–1094:3.) Even once the aircraft is located, Dr. Goldberg explained that Leabman merely requires the antennas to direct a beam toward the aircraft, not the horizon. Even if the plane happens to be near the horizon, Dr. Goldberg explained that the Leabman base stations do not explicitly or inherently meet the claim limitation of the ‘077 Patent that requires focusing energy toward the horizon. (*See* Trial Tr. at 1094:20–25.) This expert testimony provided a sufficient evidentiary basis for the jury to have found that Leabman did not anticipate the ‘077 Patent.

b. Indefiniteness

For a patent to issue, the patent claims must “particularly [point] out and distinctly [claim] the subject matter which the inventor or joint inventor regards as the invention.” 35 U.S.C. § 112(b). The Supreme Court has explained that “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). The patent doesn’t need to disclose exact measurements, but it must describe the invention “in a way that distinctly identifies the boundaries of [the inventor’s] claims.” *Halliburton Energy Servs., Inc. v. M-1 LLC*, 514 F.3d 1244, 1253 (Fed. Cir. 2008).

There was sufficient evidence at trial for a reasonable jury to have determined that the phrase “focusing energy toward the horizon” in the ‘077 Patent was not indefinite. Dr. Goldberg explained that a POSA would understand that phrase to mean a radiation pattern “from approximately [0] degrees ... to approximately [15] degrees above the horizon.” (Trial Tr. at 659:19–660:8.) Dr. Goldberg grounded that understanding in the language of the specification. In fact, the specification provides an example where the aircraft antenna focuses on “an area from the horizon to about 10 or 15 degrees below the horizon.” (Tr. Ex. 4 at 12:5–10.) Given that this example is directly from the specification, a POSA no doubt would have relied on it to understand the language of the

'077 Patent. *See Guangdong*, 936 F.3d at 1363. Thus, the jury had evidence from which to reach its conclusion.

Gogo's arguments to the contrary do not persuade me otherwise. It argues that the example listed in the '077 Patent's specification, on which Dr. Goldberg relies, is irrelevant to what a POSA would understand about whether a base station antenna pattern points toward the horizon because the example describes an aircraft antenna pattern. But this argument does not render Dr. Goldberg's testimony irrelevant. Dr. Goldberg explained that the ground antenna must be pointed 0 to 15 degrees from the ground in order "to coordinate" with the aircraft antenna and that the elevation levels of the aircraft and ground antennas must line up. (Trial Tr. at 609:21–25.) Dr. Goldberg supported this testimony by citing to the part of the specification that describes how the aircraft and ground transmitters are "mutually optimized" to focus respectively just below and just above the horizon. (Trial Tr. at 607:11–609:13.) Thus, the jury could infer that the specification's example of 10-15 degrees applied in both directions.

Gogo also argues that, even if "toward the horizon" means 0 to 15 degrees above the horizon, the '077 Patent is still indefinite because the specification contains no disclosure for ascertaining whether a radiation pattern is focused within that range. Without such disclosure, Gogo insists that a POSA would not know "that the 'focus' of a radiation pattern is defined by its 'peak gain' or 'half power beam width' relative to the horizon." (D.I. 640 at 16.) But this argument flies in the face of Dr. Goldberg's testimony

that when a POSA “talk[s] about which way an antenna is pointing, they generally talk about the half power beam width.” (Trial Tr. at 611:7–612:13.) That testimony is enough to support and uphold the jury’s finding that the ‘077 Patent is not indefinite.

2. ‘947 and ‘417 Patents

Gogo argues that the ‘947 Patent and ‘417 Patent are invalid because they are obvious in light of the WiMAX and Monk prior art references. WiMAX is a mobile, wireless technical overview, designed to deliver high-speed broadband internet access over extended distances. (*See* D.I. 376 at ¶ 11.) WiMAX discloses mobile stations capable of seamless hand-offs between base stations and vehicles traveling faster than 120 km/h. (*See* D.I. 500 at 11.) And while the Parties dispute whether WiMAX pertains to airplanes, Monk describes a network that uses ATG technology. According to Gogo, a POSA would have considered the ‘947 and ‘417 Patents’ use of WiMAX in ATG communications as obvious given the combined teachings of WiMAX and Monk.

“A patent for a claimed invention may not be obtained ... if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious ... to a person having ordinary skill in the art.” 35 U.S.C. § 103. To prove obviousness, a defendant must show by clear and convincing evidence that the claimed invention would have been obvious to a POSA at the time of invention. *Innovation Toys, LLC v. MGA Entm’t, Inc.*, 637 F.3d 1314, 1320 (Fed. Cir. 2011).

There is sufficient evidence for a reasonable jury to have determined that the '947 and '417 Patents were not obvious. Dr. Goldberg testified that a POSA would not have thought WiMAX could be combined with Monk. (Trial Tr. at 1091:6–1092:20.) He testified that a POSA would know WiMAX did not apply to aircraft because there is no mention of aircraft in the overview and “[a]ll the modeling” done for WiMAX is “at either walking speeds, ... slow vehicle speeds[,] or maybe highway speeds.” (*Id.* at 1086:24–1087:8). Indeed, he explained that when an airplane is going “really fast,” problems that arise would cause a POSA at the time not to think of applying WiMAX to aircraft. (*Id.* at 1090:19–1091:5.) In addition to Dr. Goldberg’s testimony, there was evidence of secondary considerations that support the jury’s non-obviousness findings – namely, that there was an unmet need for additional bandwidth that the patented inventions provided and skepticism from members of the industry that unlicensed spectrum could be used for ATG communications given the concerns about interference. This evidence in combination with Dr. Goldberg’s testimony provided ample basis for the jury’s non-obviousness findings.

C. Infringement Issues

For a product to literally infringe a patent, the accused product must “contain[] every limitation in the asserted claims;” “[i]f even one limitation is missing or not met as claimed, there is no literal infringement.” *Mas-Hamilton Grp. v. LaGard, Inc.*, 156 F.3d 1206, 1211 (Fed. Cir. 1998) (citations omitted). Alternatively, a product infringes under the

doctrine of equivalents “if, and only if, the differences between the claimed and accused products or processes are insubstantial.” *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1517 (Fed. Cir. 1995), *rev’d on other grounds*, *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17 (1997).

1. ‘077 Patent

According to Gogo, its products do not focus their energy “toward[s] the horizon,” as Claims 1 and 2 of the ‘077 Patent require, because its products extend above the 0-to-15-degree radiation pattern that the Patent requires. But even assuming that Gogo’s products direct some energy outside of the 0-to-15-degree range, there is still evidence supporting the jury’s finding that Gogo’s products infringed the ‘077 Patent. Dr. Goldberg testified that Gogo’s antennas have a peak gain at five degrees above the horizon – which falls squarely within the 0-to-15-degree range (and that the gain from Gogo’s antennas drops by half at 3.5 degrees above and below the five-degree peak and drops by 70% at 10 degrees). (Trial Tr. at 610:19–615:25.) In other words, a substantial portion of Gogo’s radiation is focused in the requisite range of the ‘077 Patent. So even though Gogo’s products send *some* amount of energy outside of the requisite 0-to-15-degree range, that does not mean they do not *focus* energy toward the horizon between 0 and 15 degrees as the ‘077 Patent requires. Dr. Goldberg’s testimony provides sufficient support for a jury to find that Gogo’s products focused energy within the range required by Claims

1 and 2 of the '077 Patent. Because the jury was free to credit this testimony, there is no reason for me to disturb its finding of infringement.

2. '639 Patent

Claims 1 and 10 of the '639 Patent require one base station to employ unlicensed spectrum to communicate with "a radio" on an aircraft and an adjacent base station to employ licensed spectrum to communicate with that same aircraft radio. Gogo's product uses one radio to communicate with the base station employing unlicensed spectrum and another radio to communicate with the base station employing licensed spectrum. At claim construction, SmartSky requested that the term "a radio" be construed to include "one or more radios." (D.I. 174 at 32-33.) But Judge Hall rejected that request, holding that "the same radio on the plane that is in communication with the first base station that employs the unlicensed spectrum [has] to be the radio that is handed off to the claimed second base station that employs the licensed spectrum." (D.I. 640 at 18 (quoting D.I. 233 at 5).) Because Judge Hall rejected SmartSky's request for a multi-radio construction and Gogo's product uses two radios to communicate with the adjacent base stations, Gogo insists that its two-radio product cannot be recaptured as an equivalent to the single radio embodied in Claims 1 and 10.

Gogo's argument, however, ignores both Federal Circuit precedent and the record evidence that demonstrates a POSA would have understood Gogo's two radios to be equivalent to one. According to the Federal Circuit, "[a] holding that the doctrine of

equivalents cannot be applied to an accused device because it vitiates a claim limitation” merely means there is insufficient evidence to support a finding of infringement under an equivalence theory. *Cadence Pharms. Inc. v. Exela PharmSci Inc.*, 780 F.3d 1364, 1371 (Fed. Cir. 2015) (citation modified). But in this case, there is expert testimony from Dr. Goldberg demonstrating that a POSA would understand Gogo’s two radios to function as one. Dr. Goldberg explained that Gogo’s two radios are connected by a “data switch” or “multilink balancer” that makes the two radios “work together as one.” (Trial Tr. at 628:17–19; 649:6–9.) Dr. Goldberg went on to explain that a POSA would consider the differences between using one radio, as the ‘639 Patent requires, and using Gogo’s two radios with a data switch are insubstantial because both function as a single radio does. (See Trial Tr. at 630:4–631:5; 631:14–632:15; 635:4–12.) The Federal Circuit has held that if an “accused infringer has simply separated into two components what the patentee has claimed as one component, a fact finder might indeed find such a change ‘insubstantial.’” *Toro Co. v. White Consol. Indus., Inc.*, 266 F.3d 1367, 1370 (Fed. Cir. 2001) (citation omitted). Because Federal Circuit law merely requires sufficient evidence to overcome a holding that the doctrine of equivalents does not apply and because there is evidence supporting the jury’s finding that Gogo’s two radios act as one radio, I will not disturb the jury’s finding that Gogo infringed Claims 1 and 10 of the ‘639 Patent.

Gogo also points to U.S. Patent No. 8,914,022 (“Kostanic”), which is prior art to the ‘639 Patent, and contends that if SmartSky’s doctrine of equivalents theory is correct, then

Kostanic would anticipate it. However, Dr. Goldberg testified that Kostanic does not cover the “overlapping” elements of the ‘639 Patent. Although Gogo dismisses this as “non-sensical” and “conclusory” (D.I. 663 at 9), neither accusation is true. Dr. Goldberg referenced Kostanic and explained to the jury why its direct connection to a tower did not embody overlapping. The jury was free to credit his testimony and therefore to reject Gogo’s position.

3. ‘947 and ‘417 Patents

Gogo argues that no reasonable jury could have found it to have infringed the asserted claims of the ‘947 and ‘417 Patents because it didn’t sell any base stations or 5G chips or launch its 5G service before the Patents expired in August 2025. (*See* D.I. 640 at 21-22.) But a sale is not necessary for a finding of infringement. *See 3D Sys., Inc. v. Aarotech Labs., Inc.*, 160 F.3d 1373, 1378-79 (Fed. Cir. 1998). “[A]n offer to sell” alone can constitute infringement. *See id.* Not only can an “offer to sell” lead to infringement liability but so can “a contract.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1310 (Fed. Cir. 2010).

There was ample evidence introduced at trial that supports the jury’s finding of infringement. That evidence established that Gogo advertised, entered into contracts, and shipped pre-provisioning kits for its 5G network before the ‘947 and ‘417 Patents expired. That is all that is needed to let the jury’s infringement finding stand. *See Transocean Offshore Deepwater Drilling, Inc.*, 617 F.3d at 1311.

4. Willfulness

A district court may award enhanced damages if there has been a finding that the defendant's infringement was willful. *See Beatrice Foods Co. v. New England Printing & Lithographing Co.*, 923 F.2d 1576, 1578 (Fed. Cir. 1991). A finding of "willful infringement" requires a showing that the defendant knew of the patent and then engaged in "deliberate or intentional infringement." *Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1296 (Fed. Cir. 2023) (citation omitted).

The evidence supports the jury's finding that Gogo willfully infringed SmartSky's patents. At trial, the Parties introduced testimony and exhibits that demonstrated Gogo not only knew about SmartSky's patents but also that it deliberately or intentionally infringed them. For example, SmartSky introduced exhibits demonstrating that Gogo had spent years developing an ATG network focused on using *licensed* spectrum to provide aircraft with inflight WiFi. SmartSky also introduced an email chain in which Gogo's Chief Technology Officer directed a Gogo engineer to "survey SmartSky operations" months before Gogo announced that it was launching its own ATG network that utilized *unlicensed* spectrum just like SmartSky's. (Tr. Ex. 131 at 131-2.) In fact, in that very same chain, the same Gogo engineer reported to the Chief Technology Officer that he was currently "digging into SmartSky" and had already reviewed a SmartSky patent along with its FCC filings related to the orientation of antennas. (*See id.*) SmartSky also introduced evidence that Gogo filed for *inter partes* review of the '947 Patent. Taken together, it

would be reasonable for a jury to conclude that Gogo was focused on developing its network that utilized *licensed* spectrum, learned of SmartSky's technology that utilized *unlicensed* spectrum, investigated SmartSky's technology, learned of SmartSky's patents, and then developed its 5G network that infringed SmartSky's patents. In other words, this evidence suffices to support the jury's finding that Gogo knew about the '947, '077, '417, and the '639 Patents and that its infringement of them was willful.

D. Damages

1. Trial presentation regarding damages

Prior to trial, I excluded much of SmartSky's damages-related evidence. I held that it failed to disclose Mr. Stone as an expert witness with respect to lost profits and that its expert Bryce Cook could not offer sufficient testimony without relying on Mr. Stone. I granted summary judgment as to SmartSky's lost profits claim. I also excluded Mr. Cook's reasonable royalty analysis because he relied on a license that was not comparable and because he did not apportion between SmartSky's patents and other features of Gogo's 5G network in his analysis.

Following that ruling, SmartSky asked me to continue the trial or to bifurcate the damages phase of the trial so that it could obtain a new expert report on damages. I refused. Gogo, on the other hand, asked to reopen summary judgment briefing to make an expedited motion for summary judgment due to a lack of damages evidence. I refused that request, as well. After I rejected those entreaties, SmartSky indicated that it intended

to have Mr. Cook testify about an income approach, rather than a market approach. After a hearing, I held that although Mr. Cook had disclosed that theory, it too suffered from a lack of apportionment because Mr. Cook assumed that the value of Gogo's 5G network was attributable entirely to SmartSky's patented inventions, without accounting for any other aspects of the technology. In reaching that conclusion, I explained that I would not let Mr. Cook "put a number in front of the jury that ... Gogo was going to charge for these different services [because] they are all un-apportioned [and] putting a series of un-apportioned numbers in front of the jury is no better than putting a single un-apportioned number in front of the jury." (Tr. 11/13/25 at 30-31.)

On the first day of trial, SmartSky's counsel explained that SmartSky intended to present to the jury an "expert free damages case" using a "price premium model." (Trial Tr. at 14:4-14.) SmartSky also acknowledged its obligation to "provide apportionment evidence." (*Id.* at 14:15-17.) At trial, SmartSky introduced Exhibit 631, which is a spreadsheet that shows the prices that Gogo intended to charge or did charge for 4G and 5G service in 2022 and forward. In addition, Dr. Goldberg testified that the more bandwidth that is available, the faster the speed of the network. He testified that Gogo achieved a 20x speed improvement by going from a 4G network to a 5G network and that the first 15x improvement would result from unlocking unlicensed spectrum. (*See* Trial Tr. at 514:11-19, 522:1-523:1.)

During closing arguments, SmartSky presented a damages theory that focused on the price premium that Gogo charged for its network, invoked its expert's analysis as a basis for the jury to apportion damages at a rate of 75% to the patented features. It suggested that the jury use that formula to find a reasonable royalty rate because, according to SmartSky, it was "[t]he value of having unlocked the unlicensed spectrum" that provided "additional speed." (Trial Tr. at 1260:9–12.) For its royalty base, SmartSky multiplied the number of 5G kits that it determined Gogo would have sold between the second quarter of 2024 through September 2025 and the purported price of each kit. To determine the number of kits Gogo would have sold, SmartSky took the 52 Gogo 5G kits that were shipped in the second quarter of 2024 and extrapolated that number out to each quarter through September 2025, resulting in 552 total 5G kits. To determine the price of each kit, SmartSky simply relied on the "average equipment price" listed in a Gogo SEC filing, which was \$71,000. Multiplying the 552 kits by the \$71,000 price, SmartSky calculated a royalty base of \$39,192,000. SmartSky then suggested to the jury reasonably royalty damages in the range of "\$10,875,780, \$9,700,020, and \$5,584,860." (*Id.* at 1264:13-15.) The jury returned a verdict that included damages awards of \$4,712,838 for the '947 Patent; \$4,712,838 for the '417 Patent; \$8,406,684 for the '077 Patent; and \$4,840,212 for the '639 Patent.

2. Analysis of the renewed JMOL regarding damages

Upon a finding of infringement, a court “shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty.” 35 U.S.C. § 284. But despite the statute’s use of the word “shall,” the Federal Circuit has explained that this language “does not require an award of damages if none are proven that adequately tie a dollar amount to the infringing acts.” *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1291 (Fed. Cir. 2020). In other words, “there can be an award of no damages where none were proven.” *Id.* (citation modified).

In this case, there was not sufficient evidence for a reasonable jury to find that SmartSky was entitled to damages. For starters, SmartSky failed to provide sufficient evidence of apportionment. In a patent case, “the patentee must ... give evidence tending to separate or apportion the defendant’s profits and the patentee’s damages between the patented feature[s] and the unpatented features.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 904 F.3d 965, 977 (Fed. Cir. 2018). But SmartSky provided no evidence of apportionment. No witness testified to the relative value of any individual patent. Nor did any exhibit shed light on the value of each patent (or even of the patents collectively). SmartSky just provided attorney argument at closing to support its conclusion that 75% of the value of Gogo’s new technology is attributed to the SmartSky patents in dispute. But attorney argument is not evidence and cannot be used to support

the jury's damages calculation. *See Shopify Inc. v. Express Mobile, Inc.*, No. 2024-1977, 2025 WL 3511442, at *6 (Fed. Cir. Dec. 8, 2025).

Nor was there evidence in the record to support SmartSky's argument or the jury's conclusion. *First*, there was no evidence to support SmartSky's theory about the connection between network speed and prices. Dr. Goldberg explained the technological connection between bandwidth and network speed. But neither he nor anyone else tied network speed (as opposed to reliability, breadth of coverage, or any other range of issues) to prices, let alone provided any basis for anyone to assume that an increase in network speed correlated to an increase in prices on a 1:1 basis. In fact, the **only** evidence at trial on that point contradicts that assumption because it demonstrates that Gogo's oldest – and slowest – product was its most expensive. (*See* Tr. Ex. 631.) In this regard, SmartSky was not asking the jury to draw an inference about the connection between speed and price. It was asking them to guess. And a guess can't support a damages award.

Second, even if there were evidence showing that speed drove the price premiums, SmartSky failed to provide any evidence showing how its patents – as opposed to other parts of its network – contributed to the improvements in speed. To proceed on a price premium model, SmartSky had to show that Gogo's 4G system was identical to SmartSky's system in every way except for the technology that embodies the four SmartSky patents in dispute. Otherwise, it is not clear whether the improvements in speed were due to the non-patented differences or the patented ones. SmartSky provided no evidence that

demonstrates the systems were identical but for the asserted patents. In fact, there is evidence in the record showing that they were quite different. The record shows that the systems had a different number of active towers; SmartSky and Gogo used different software for network functionality; and SmartSky had “proprietary technology” that is secured by “185 domestic and international patents granted and 120+ patents pending,” which is far more than the four patents at issue in this case. (Trial Tr. at 261:16-18, 349:5-14, 486:8-11, 795:15-796:7; Tr. Ex. 737A at 19.)

Third, SmartSky provided scant evidence to support its royalty base calculation. With respect to its determination for the number of sales, SmartSky pointed to Gogo’s highest-selling quarter and asked the jury to extrapolate forward that number of sales for every quarter thereafter. But SmartSky presented no evidence of actual sales combined with reliable economic analysis of demand, supply, and price over time. It did not present testimony about Gogo’s projected sales. It just asked the jury to take a cherry-picked sales figure and apply it across six quarters to determine a royalty base of 552 units even though Gogo had only sold 240 units over the preceding two years. Such projections are untethered to any reliable economic testimony and cannot support a jury award. The Federal Circuit has held that a plaintiff failed to prove damages when it “assume[d] that [sales] figures, from a few months, support[ed] an extrapolation of demand over future years.” *Oiness v. Walgreen Co.*, 88 F.3d 1025, 1031–32 (Fed. Cir. 1996). This case is no

different. SmartSky provides no other evidence that would support its 552-unit calculation for a royalty base.

SmartSky's royalty base calculation fails for another reason: there is no trial evidence establishing that Gogo's "average equipment revenue" had any relevance to Gogo's sales of its infringing products. In establishing the average equipment revenue used in SmartSky's reasonable royalty base calculation, SmartSky's counsel asked the jury to use the "average equipment revenue per ATG unit sold" listed in a 2023 SEC filing as a proxy for the price of the accused products. (Trial Tr. at 1264:3–12.) But it's not clear how the "average equipment revenue per ATG unit sold" corresponds to the price of the infringing products. After all, the term "ATG units" does not even correspond to the infringing products and instead refers to some of Gogo's non-infringing products. Because the Federal Circuit prohibits royalties from "be[ing] based on ... past sales of non-accused products," SmartSky's royalty base calculation is not supported by sufficient evidence to withstand JMOL. *Enplas Display Device Corp. v. Seoul Semiconductor Co.*, 909 F.3d 398, 412 (Fed. Cir. 2018).³

IV. CONCLUSION

The trial record included enough evidence for a jury to reasonably conclude that Gogo infringed the '947, '417, '639, and '077 Patents and that that infringement was willful.

³ Following trial, SmartSky filed a Motion For Enhanced Damages, Ongoing Royalties, Pre-Judgment Interest, and Post-Judgment Interest (D.I. 635.) But because I am granting JMOL of no damages, there are no damages to enhance. SmartSky's motion is thus moot.

There was also enough trial evidence for a jury to reasonably conclude that SmartSky's patents are valid. However, there was not enough trial evidence to support SmartSky's damages case. I will therefore only enter JMOL for Gogo as to damages and consequently deny SmartSky's Motion For Enhanced Damages, Ongoing Royalties, Pre-Judgment Interest, and Post-Judgment Interest as moot. An appropriate Order follows.

BY THE COURT:

/s/ Joshua D. Wolson

JOSHUA D. WOLSON, J.

September 30, 2026