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

FRACTUS, S.A.	§	
	§	
Plaintiff	§	6:12CV421
	§	SEVERED FROM
vs.	§	**CASE NO. 6:09-CV-203**
	§	**PATENT CASE**
SAMSUNG ELECTRONICS CO., LTD., ET AL.,	§	
	§	
Defendants	§	
	§	

MEMORANDUM OPINION AND ORDER

Before the Court are the parties' post-trial motions. Having considered the parties' written submissions and oral arguments, the Court: **DENIES** Samsung's Renewed Motions for Judgment as a Matter of Law that: (1) Samsung Does Not Infringe Any Claim of the Patents-in-Suit; (2) the Asserted Claims of the Patents-in-Suit are Invalid; (3) Samsung is Not A Willful Infringer; and (4) the Damages Award was Improper (Docket No. 1025, "JMOL"); **DENIES** Samsung's Motion Under Rule 52 for Entry of Findings of Fact and Conclusions of Law Regarding Indefiniteness (Docket No. 1026, "MTN FACT AND LAW"); **DENIES** Samsung's Motion for New Trial Under Rule 59 Based on Material Errors in Evidentiary Rulings (Docket No. 1027, "NEW TRIAL MTN"); **GRANTS-IN-PART** Fractus S.A.'s Motion for Enhanced Damages and Attorneys' Fees (Docket No. 1028, "ENHANCED DAMAGES MTN"); **DENIES** Fractus S.A.'s Motion for Permanent Injunction, and **SEVERS** Fractus's request for an Ongoing Royalty into a separate action (Docket No. 1030, "INJUNCTION MTN"); and **GRANTS** Fractus,

S.A.'s Motion for Prejudgment Interest and Bill of Costs (Docket No. 1032, "INTEREST AND COSTS MTN").

Contents

BACKGROUND

Fractus, S.A.'s ("Fractus") filed suit on May 5, 2009,[1] alleging that Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Telecommunications America, LLC, Samsung Electronics Research Institute, and Samsung Semiconductor Europe GmbH (collectively "Samsung"); LG Electronics, Inc., LG Electronics U.S.A., Inc., and LG Electronics Mobilecomm U.S.A., Inc. (collectively "LG"); Research in Motion Ltd. and Research in Motion Corporation (collectively "RIM"); Pantech Wireless, Inc. and Pantech, Co., Ltd. (collectively "Pantech"); Kyocera America, Inc., Kyocera Wireless Corp., Kyocera Communications, Inc., and Kyocera Corporation (collectively "Kyocera"); Palm, Inc. ("Palm"); High Tech Computer Corp. and HTC America, Inc. (collectively "HTC"); Sharp Corporation and Sharp Electronics Corp. (collectively "Sharp"); UTStarcom Inc., UTStarcom Telecom Co., Ltd., and Personal Communications Devices Holdings, LLC (collectively "UTStarcom"); and Sanyo Electric Co., Ltd. and Sanyo North America Corp. (collectively "Sanyo") infringe U.S. Patent Nos. 7,015,868 ("the '868 Patent"); 7,123,208 ("the '208 Patent"), 7,148,850 ("the '850 Patent"), 7,202,822 ("the '822 Patent"), 7,312,762 ("the '762 Patent"),[2] 7,394,432 ("the '432 Patent"),[3] 7,397,431 ("the '431 Patent"), 7,411,556 ("the '556 Patent"),[4] and 7,528,782 ("the '782 Patent"). All Defendants except Samsung settled prior to trial. *See* Docket Nos. 1100, 1083, 1009, 955, 894, 562, 551, 487, 461, 407, 254, 179, 144, 93, 72.

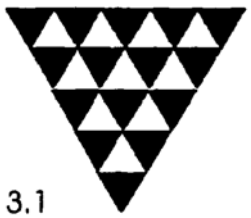
[1] Amended on May 6, 2009, to correct a typographical error (Docket No. 14).

[2] Fractus did not assert the '762 Patent against Sharp or UTStarcom.

[3] Fractus did not assert the '432 Patent against Sanyo.

[4] Fractus did not assert the '556 Patent against Sharp or UTStarcom.

Fractus proceeded to trial on May 16, 2010, and asserted four patents: the ‘868, ‘208, ‘431 and ‘432 Patents (collectively “Patents-in-Suit”). The Patents-in-Suit belong to the “multilevel” patent family (“MLV”), which also includes the ‘782 Patent. The MLV Patent family generally claims antennas made of “multilevel structures.” The inventor’s coined the term “multilevel” to describe the structural configuration of the claimed antennas. The ‘432 Patent derived from a divisional application, in which the parent application issued as the ‘431 Patent. The ‘432 Patent is a continuation of the ‘208 Patent, which in turn, is a continuation of the ‘868 Patent. The ‘782 Patent is a continuation of the ‘431 Patent. The MLV Patents explain that multilevel structures are generally characterized by their shape. ‘868 Patent at 2:32–33. The claimed invention relates to a specific geometric design of antennas with two main advantages: multiband operation and/or small size. *Id.* at 1:13–16. One configuration of a multilevel structure is depicted in Figure 3.1:



Fractus asserted seven (7) claims at trial: claims 26 and 35 of the ‘868 Patent; claims 7 and 12 of the ‘208 Patent; claims 14 and 30 of the ‘431 Patent; and claim 6 of the ‘432 Patent. Fractus alleged that fifty-one (51) different models of Samsung cell phones contained infringing internal, multiband antennas. Fractus further alleged that Samsung willfully infringed the Patents-in-Suit both literally and under the doctrine of equivalents. Fractus requested damages,

interest and costs, enhanced damages, attorneys' fees, and an injunction. Samsung denied infringement and alleged that the asserted claims are not enabled, lack a proper written description and are invalid as anticipated and/or obvious. Fractus's case went to the jury on all alleged questions. After a five day trial, the jury found the Patents-in-Suit valid, Samsung liable for willful infringement, and awarded total damages of $23,129,321. Docket No. 999, "JURY VERDICT."

SAMSUNG'S MOTION FOR JUDGMENT AS A MATTER OF LAW

JMOL Standard

Judgment as a matter of law is only appropriate when "a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." FED. R. CIV. P. 50(A). "The grant or denial of a motion for judgment as a matter of law is a procedural issue not unique to patent law, reviewed under the law of the regional circuit in which the appeal from the district court would usually lie." *Finisar Corp. v. DirectTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). The Fifth circuit "uses the same standard to review the verdict that the district court used in first passing on the motion." *Hiltgen v. Sumrall*, 47 F.3d 695, 699 (5th Cir. 1995). Thus, a jury verdict must be upheld, and judgment as a matter of law may not be granted, unless "there is no legally sufficient evidentiary basis for a reasonable jury to find as the jury did." *Id.* at 700. The jury's verdict must be supported by "substantial evidence" in support of each element of the claims. *Am. Home Assurance Co. v. United Space Alliance*, 378 F.3d 482, 487 (5th Cir. 2004).

A court reviews all evidence in the record and must draw all reasonable inferences in favor of the nonmoving party; however, a court may not make credibility determinations or weigh the evidence, as those are solely functions of the jury. *See Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150–51 (2000). The moving party is entitled to judgment as a matter

of law, "only if the evidence points so strongly and so overwhelmingly in favor of the nonmoving party that no reasonable juror could return a contrary verdict." *Int'l Ins. Co. v. RSR Corp.*, 426 F.3d 281, 296 (5th Cir. 2005).

Judgment as a Matter of Law Regarding Literal Infringement

Samsung first contends that Fractus failed to present substantial evidence that each accused antenna literally infringes the Patents-in-Suit. *See* JMOL at 6–14.

Applicable Law

To prove infringement, the plaintiff must show the presence of every element or its equivalent in the accused device. *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985). Determining infringement is a two-step process: "[f]irst, the claim must be properly construed, to determine the scope and meaning. Second, the claim, as properly construed must be compared to the accused device or process." *Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1129 (Fed. Cir. 2011) (citing *Carroll Touch, Inc. v. Electro Mech. Sys., Inc.*, 15 F.3d 1573, 1576 (Fed. Cir. 1993)). "A determination of infringement is a question of fact that is reviewed for substantial evidence when tried to a jury." *ACCO Brands, Inc. v. ABA Locks Mfr. Co.*, 501 F.3d 1307, 1311 (Fed. Cir. 2007).

Claim Construction: Multilevel Structure and Polygon

The parties' primary dispute at trial revolved around two terms used in the Patents-in-Suit: (1) "multilevel structure" and (2) "polygon." For the sake of clarity and context, the Court provides a brief explanation of the two terms and the Court's relevant constructions.

Given that the inventors coined the term "multilevel structure," the Court discerned its constructions from the intrinsic evidence and the inventors' lexicography. Docket No. 526, "CLAIM CONSTRUCTION ORDER" at 8. The Court relied on specific portions of the MLV

specification and provided a construction of "multilevel structure" based on those passages read in context of the entire specification and prosecution history. *Id.* at 8–9. Ultimately, the Court construed "multilevel structure" as:

> a structure for an antenna useable at multiple frequency bands with at least two levels of detail, wherein one level of detail makes up another level. These levels of detail are composed of polygons (polyhedrons) of the same type with the same number of sides (faces) wherein most of the polygons (polyhedrons) are clearly visible and individually distinguishable and most of the polygons (polyhedrons) having an area of contact, intersection or interconnection with other elements (polygons or polyhedrons) that is less than 50% of the perimeter or area. *Id.* at 18–19.

The parties also extensively briefed and contested the meaning of "polygon" throughout this litigation. The Court initially adopted the classic definition of polygon with a minor modification consistent with a peculiarity defined in the MLV patents. In particular, the MLV specifications allow for the possibility of a polygon with curved sides. *See id.* at 26–27. Accordingly, the Court construed "polygon" as "a closed plane figure bounded by straight lines, further including circles and ellipses." *Id.* Months later, Defendants filed a motion to clarify the claim construction order due to a dispute between the parties regarding the scope of the claims and the proper understanding of the term "polygon." *See* Docket No. 901. The Court clarified its prior reasoning and construed polygon as: "a closed plane figure bounded by straight sides, further including circles and ellipses, where a portion of a circle or ellipse is counted as one side." *Id.* at 6.

Infringement: Clearly Visible and Individually Indistinguishable

Samsung contends that Fractus failed to present substantial evidence that each accused antenna is composed of "clearly visible and individually distinguishable" polygons. JMOL at 7. Specifically, Samsung argues that: (1) Fractus's infringement expert, Dr. Stuart Long, resorted to

an elaborate and complicated "polygon decomposition method" to identify polygons (in the accused products), that should otherwise be immediately visible upon inspection (*Id.* at 8–10; Docket No. 1063, "JMOL REPLY" at 4–5); and (2) Samsung's antennas are continuous pieces of stamped or plated metal, therefore, they are not composed of individual polygons (JMOL at 7–8).

Samsung asserts that a "clearly visible and individually distinguishable" polygon in a multilevel structure must, in large part: resemble the figures in the MLV patents; be immediately recognizable upon visual inspection; and have boundaries free of contact. *See* JMOL at 10. Samsung presented much the same arguments at trial. *See, e.g.*, 5/18/2011 p.m. TT at 135:24–142:5. As an initial matter, "drawings in a patent need not illustrate the full scope of the invention." *Arlington Industries, Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) (citing *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) ("[p]atent coverage is not necessarily limited to inventions that look like the ones in the figures. To hold otherwise would be to import limitations onto the claim from the specification, which is fraught with danger.")); *see also Gart v. Logitech, Inc.* 254 F.3d 1334, 1342 (Fed. Cir. 2001) ("[t]hese drawings are not meant to represent 'the' invention or to limit the scope of coverage defined by the words used in the claims themselves."). Further, the jury rejected Samsung's position regarding how a person of ordinary skill in the art would understand the "clearly visible and individually distinguishable" requirement based on extensive testimony and evidence presented by Fractus via one of its technical experts, Dr. Long.

Dr. Long presented a thorough infringement analysis of the accused Samsung antennas based on: (1) physical analysis of the antennas (5/18/2011 a.m. TT at 134:7–139:4); (2) Samsung product materials and user manuals (*id.* at 135:16–24); (3) Samsung test data (*id.* at 136:6–22)

and (4) independent simulations of Samsung phones (*id.* at 137:2–138:6). Dr. Long also specifically testified regarding the "clearly visible and individually distinguishable" requirement consistent with the Court's, and the MLV patents', guidance. 5/18/2011 p.m. TT at 22:12–29:6.

Dr. Long explained that a clearly visible and individually distinguishable polygon must have less than 50% of its perimeter connected to another polygon. *Id.* at 24:8–25:6.[5] Dr. Long's testimony is consistent with the guidance provided in the MLV patents. *See id.* at 24:14–29:6; *see also* '868 Patent at 3:24–29 ("[i]n multilevel geometry most of these elements are clearly visible as their area of contact intersection or interconnection (if these exist) with other elements is always less than 50% of their perimeter.").

Dr. Long then provided a step-by-step analysis of how to identify polygons in the accused antennas. Dr. Long's analysis begins by identifying the "feed point." *Id.* at 33:23–35:2. Dr. Long explained that the "feed" is the point on the antenna which the cell phone circuitry is attached and is a logical starting point given that the current is injected into the antenna at this point. *Id.* at 34:1–17. He further explained how to find the feed point in a particular antenna. *Id.* at 34:18–35:2 ("A. Oftentimes, it's in the . . . specifications . . . we get from the cell phone manufacturer. . ."). Dr. Long next identified the first polygon that is electromagnetically connected to the feed point. *Id.* at 35:4–22. After identifying the first polygon, Dr. Long then tracked the longest current path from the feed point and sequentially identified the polygons along that path according to the guidance provided in the MLV patents. *Id.* at 35:23–39:7. Dr. Long repeated the previous steps of identifying the next longest current path and attendant polygons until all polygons were identified. *Id.* at 39:8–41:4.

[5] "Q. And, Dr. Long, just to be clear, so what you're saying is that you don't look at clearly visible and individually distinguishable as those words alone, but rather those are modified in terms of figuring out whether they are clearly visible and individually distinguishable about whether you can draw it according to some objective guidance with more than 50-percent free perimeter – is that right? A. [. . .] So the whole idea of clearly visible and individually distinguishable, I see it as sort of defined by the patent. In other words, if you have more than 50 percent of them free, then you're going to be able to clearly – be clearly visible and individually distinguishable."

Following identification, Dr. Long analyzed each of the polygons to determine which had 50% of their perimeters free as required by the MLV patents. *Id.* at 41:6–43:2. Consistent with this definition, if more than half of the polygons had 50% of their perimeters free, Dr. Long determined that the antenna contained a multilevel structure. *Id.* at 43:3–44:9. Dr. Long analyzed each of the accused antennas using the above described methodology and Fractus presented this analysis to the jury. *Id.* at 45:7–46:2; 60:16–72:16; PX-385; PX-387; PX 421. Based on the foregoing, Fractus presented substantial evidence for the jury to find that the accused antennas included clearly visible and individually distinguishable polygons.[6]

Samsung further contends that because its antennas are composed of continuous pieces of stamped or plated metal instead of individual metal polygon elements, they are not composed of "clearly visible and individually distinguishable" polygons. JMOL at 7–8. The MLV patents explicitly indicate that the claimed antennas may be constructed from metal or conducting material consisting of a single piece of metal. *See, e.g.*, '868 Patent at 5:58–6:3. Fractus also presented testimony and evidence that particular software packages allow an antenna designer to construct an antenna by drawing polygons on a single piece of metal and predicting the current paths on the antenna surface. 5/17/2011 p.m. TT at 15:21–16:19 (testimony of Dr. Carlos Puente regarding IE3D software); 5/18/2011 p.m. TT at 15:19–18:22 (testimony of Dr. Long regarding IE3D software). As such, substantial evidence supports the jury's verdict that the accused antennas composed of a continuous piece of metal contain "clearly visible and individually distinguishable" polygons.

[6] Samsung contends that Dr. Long only presented testimony regarding one of the 51 accused antennas and relied on summary demonstrative exhibits for the remaining accused antennas. Docket No. 1025 at 7, n.6. Dr. Long, however, testified regarding each antenna (*id.* at 60:16–71:3) and Fractus presented the jury with evidence demonstrating Fractus's and Samsung's testing, Dr. Long's analysis of the Samsung phones, the actual antennas, and an identification of the multilevel structures and the antenna test data. *See* PX-385, 386, 387, 421, 422 and 423.

Infringement: Closed, Planar Polygons of the Same Type with the Same Number of Sides

Samsung also contends the individual polygons identified by Dr. Long run afoul of the Court's construction of the terms "multilevel structure" and "polygon." JMOL at 10. As previously explained, the Court found that the proper construction of "polygon" is "a closed plane figure bounded by straight sides, further including circles and ellipses, where a portion of a circle or ellipse is counted as one side." Docket No. 901 at 6. Samsung challenges Dr. Long's polygon identification in four ways. First, Samsung argues that Dr. Long ignored the actual contour of the accused antennas, which include various holes, bump-outs and bends. JMOL at 10–13. Samsung contends, had Dr. Long followed the actual geometry of the accused antennas, the resulting polygons would not form a multilevel structure composed of polygons of the same type with the same number of sides as required by the Court's construction. *Id.* Second, Samsung asserts that by identifying polygons with internal "holes," Dr. Long's shapes ran afoul of the Court's construction requiring "a *closed* plane figure." *Id.* Third, Samsung argues that Dr. Long ignored bends in the antennas, violating the planar requirement of the Court's construction of the term "polygon." *Id.* at 12–13. Last, Samsung argues that Dr. Long conflated the separate requirements that a multilevel structure be made of polygons of the same type, with the same number of sides. *Id.* at 13–14.

Regarding Samsung's first argument, Fractus provided substantial evidence that small discontinuities and mounting holes on the accused antennas do not allow the antennas to escape the purview of the MLV claims. Dr. Long testified that when determining the number of sides or type of polygon, minor discontinuities do not materially impact the claimed functionality of the polygonal antennas. Dr. Long based his analysis on the basic shape of the antennas and on the current flow and electromagnetic characteristics of the antenna. 5/18/2011 p.m. TT at 45:7–

46:2; 60:16–72:16; PX-385; PX-387; PX-421. Based on that analysis, and other evidence, Dr. Long concluded that minor irregularities around the periphery, and mounting holes within the identified polygons, which are solely necessary for mechanical mounting reasons, may be properly discounted for purposes of identifying a functional multilevel structure and its component polygons. 5/18/2011 p.m. TT at 54:22–59:22.

Dr. Long's testimony was buttressed by Samsung's own testimony that small irregularities and mounting holes do not affect the performance of the antenna when included for purely mechanical purposes, *e.g.*, mounting the antenna or fitting an antenna around the other components in a cell phone. *Id.* at 56:22–57:14 (Dr. Long reading Samsung engineer deposition testimony). Dr. Long, however, did not arbitrarily ignore all discontinuities in the accused antennas. Dr. Long testified that any irregularity that affected the electromagnetic performance of the antenna was properly counted as a side of a polygon. *Id.* at 58:7–11. As such, Fractus presented substantial evidence—and the jury accepted—that small irregularities and mounting holes within the accused antennas that do not materially alter the basic shape, and that fail to affect the antenna's functional performance, are not relevant to identifying an infringing multilevel structure.

Samsung next argues that Dr. Long identified polygons containing "holes," thus violating the Court's claim construction that polygons be "closed." JMOL at 11–12. As an initial matter, neither party asked the Court to further construe polygon regarding the "closed" requirement. Additionally, Fractus presented substantial evidence that small mounting holes, within *closed boundary* polygons, do not affect the electromagnetic properties of the antenna; therefore, the holes may be ignored for purposes of identifying a polygon. 5/18/2011 p.m. TT at 54:25–56:8.

Dr. Long testified that holes are used for the purely mechanical reason of attaching the antenna to the phone and holding it in place. *Id.* Indeed, Samsung's own engineer corroborated Dr. Long's testimony that the mounting holes have little effect on the performance of the antenna. *Id.* at 56:22–57:14. Accordingly, the jury was presented with substantial evidence that a polygon with an internal hole that does not affect the performance of the antenna may be considered a "closed" figure.

Third, Samsung contends that despite the Court's claim construction requiring a polygon to be a closed *plane* figure, Dr. Long identified "non-planar" figures as polygons. JMOL at 12–13. Specifically, Samsung contends that Dr. Long included as polygons portions of the accused antennas that have "bends" in the metal and are not flat, *i.e.* planar. *Id.* However, as Dr. Long testified, the MLV patents allow for the possibility of a polygon positioned on a curved surface. *See* '868 Patent at 5:46–54. ("[i]n general, the multilevel structure forms part of the radiative element characteristic of said configurations, such as the arm, the mass plane or both in a monopole, an arm or both in a dipole, the patch or printed element in a microstrip, patch or coplanar antenna; the reflector for an [sic] reflector antenna, or the conical section or even antenna walls in a horn type antenna. It is even possible to use a spiral type antenna configuration in which the geometry of the loop or loops is the outer perimeter of a multilevel structure."); *see also* 5/18/2011 p.m. TT at 46:3–23.

Dr. Long also testified, and provided evidence, that people of skill in the art routinely refer to curved surfaces as "planar." 5/18/2011 p.m. TT at 46:3–49:1; PX-213. Samsung's counsel, and many of its witnesses—who described Samsung's antennas as "planar inverted-f antennas," despite those antennas including curved surfaces and mounting holes—confirmed Dr. Long's testimony. *Id.* at 49:5–50:13; 5/19/2011 p.m. TT at 81:21–82:13. As such, the jury was

presented substantial evidence that the "bent" accused antennas were sufficiently "planar" to support a finding of infringement.

Last, Samsung argues that Dr. Long improperly conflated the separate requirements that a multilevel structure be made of polygons (1) of the same type and (2) with the same number of sides. JMOL at 13–14. For example, Samsung contends that Dr. Long treated two four-sided figures as the "same type" of polygon, despite them not both being "rectangles." Fractus presented evidence that the MLV patents do not require that polygons with the same number of sides be restricted to a specific "species" of polygon. For example, the MLV specification describes multilevel structures made up of triangles, without explicitly requiring a particular species of triangle (*e.g.* right triangle, equilateral triangle, etc.). *See* '868 Patent at 2:32–36; 4:44–48. Indeed, claim 6 of the '868 Patent explicitly refers to "four-sided polygons" as a single type. '868 Patent at 10:9–13 ("6. The antenna according to claim 1, wherein said at least one multilevel structure is formed by polygon of a single type, selected from the group consisting of four-sided polygons . . ."). Fractus presented substantial evidence to support the jury's finding that Samsung's antennas are made of multilevel structures composed of polygons of the same type with the same number of sides.

Conclusion: Literal Infringement

Fractus presented substantial evidence to support the jury's verdict, and the Court will not disturb the jury's verdict regarding literal infringement.

Judgment as a Matter of Law Regarding Infringement Under the Doctrine of Equivalents

The jury also found that Samsung infringed all seven asserted claims of the Patents-in-Suit under the doctrine of equivalents (DOE). *See* JURY VERDICT. Samsung contends that Fractus failed to provide the necessary evidence to prove that the accused antennas infringe

under the DOE. JMOL at 14. In particular, Samsung contends that Dr. Long failed to identify specific differences between Samsung's antennas and the polygons he identified, and merely expressed a general conclusion that any structural differences between the geometry of the accused antennas and the identified polygons could be ignored. *Id.* at 14–15. Samsung further argues that finding equivalence between Dr. Long's identified polygons and the geometric requirements of a "multilevel structure" vitiates the limitation. *Id.* at 15–18.

Applicable Law

To support a finding of infringement under the DOE, a patentee must either: (1) demonstrate an insubstantial difference between the claimed invention and the accused product or method; or (2) satisfy the function, way, result test. *Aquatex Industries, Inc. v. Techniche Solutions*, 479 F.3d 1320, 1326 (Fed. Cir. 2007) (citing *Graver Tank & Mfg. v. Linde Air Prods. Co.*, 339 U.S. 605, 608, 70 S.Ct. 854, 94 L.Ed. 1097 (1950)). A patentee must provide particularized testimony and linking argument as to the insubstantiality of the differences between the claimed invention and the accused device or process on a limitation-by-limitation basis. *Id.* at 1328 (quoting *Texas Instruments, Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996)). A patentee should typically provide particularized testimony from a qualified expert describing the claim limitations and establishing that those skilled in the art would recognize the equivalents. *Id.* at 1329. However, the expert is not required to "re-start his testimony at square one when transitioning to a doctrine of equivalents analysis." *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1305 (Fed. Cir. 2007). Instead, an expert may explicitly or implicitly incorporate his earlier testimony into the DOE analysis. *Id.*

Doctrine of Equivalents: Sufficiency of the Evidence

Samsung focuses its attack on Dr. Long's testimony and alleges that he failed to provide a basis for his conclusions that the actual antennas were insubstantially different from the polygons he identified. Docket No. 1025 at 14–15. Samsung contends that Dr. Long merely provided conclusory testimony regarding why he ignored the bumps, notches and holes in the accused antennas when identifying the claimed "polygons." *Id.* at 15.

In addition to the evidence on literal infringement, Fractus presented substantial evidence that should a claimed polygon element not literally be met due to the existence of holes, bumps, notches, etc., the accused antennas infringe under the DOE because the differences between the claimed polygon and accused antennas are insubstantial.

Regarding holes, Dr. Long testified that small mounting holes in some of the polygons have little impact on the electromagnetic characteristics of the accused antennas. 5/18/2011 p.m. TT at 54:25–56:8. Other witnesses confirmed Dr. Long's analysis that small mounting holes do not affect the electromagnetic performance of antennas in cell phones. Dong-Hawn Kim, a Samsung employee who works in the company's antenna research and development group, testified that small mounting holes have little effect on the performance of cell phone antennas and are merely used for mounting. 5/17/2011 p.m. TT at 129:14–130:13; 5/20/2011 a.m. TT at 112:5–11. Samsung's expert, Dr. Steven Best, also confirmed Dr. Long's testimony that small holes in the antennas have little effect on the performance of the antenna. 5/19/2011 p.m. TT at 83:12–83:21 ("[n]ow, the other aspect of this design that's very important is that fact that – you know, Dr. Long mentioned yesterday that the holes within the antenna design really don't significantly affect the electromagnetic performance. And for the most part, that's true.").

Accordingly, the jury was presented with substantial evidence that the accused antennas, which may have internal holes, are insubstantially different than the claimed polygons without holes.

Dr. Long also provided testimony that polygons placed on a smoothly curved surface were not substantially different than a polygon on a flat plane. 5/18/2011 p.m. TT at 46:3–23 ("[t]hat all of the polygons that I have identified are planar, or they're not substantially – they are insubstantially different from planar polygons."). Dr. Long explained that the Patents-in-Suit allow for the possibility of polygons on curved surfaces (*id.* at 46:8–23) and that others of skill in the art define a plane to include curved surfaces. *Id.* at 46:24–48:1. Also, Dr. Long explained that a multilevel structure may need to be placed on a curved surface to fit within a particular cell phone, but it was not substantially different than placing it on flat surface because it would have little effect on the electromagnetic performance of the phone. *See id.* at 47:13–17; 53:23–54:24; 131:10–20. Dr. Long supported his testimony with similar testimony from antenna engineers working for Kyocera and HTC. *See id.* at 46:24–49:2. Therefore, Fractus presented substantial evidence that a polygon with a smoothly curved surface is insubstantially different from a polygon with a flat surface.

Regarding bumps or notches on the periphery of the accused antennas, Dr. Long provided testimony that these minor features are included for mechanical reasons and do not affect the electromagnetic performance of the antenna. *Id.* at 57:15–58:14. Dr. Long's assertion that there is an insignificant difference between the claimed polygons and antennas with small bumps and notches was confirmed by testimony from other antenna engineers. LG's corporate witness on technical issues testified that small "protrusions" are included for mechanical purposes and have little effect on the performance of a cell phone antenna. *Id.* at 58:18–59:12. As such, Fractus presented the jury with substantial evidence to support a finding that a polygon with a small

bump or notch on its periphery was insubstantially different than a polygon with a straight perimeter.

Doctrine of Equivalents: Vitiation

Samsung further contends that even if Fractus had presented requisite testimony on the DOE, Fractus's effort was futile because application of the DOE in this case vitiates the "multilevel structure" limitation. JMOL at 15. While no formula exists for determining whether a theory of equivalents vitiates a claim element, the Federal Circuit has instructed courts to view the totality of the circumstances and "determine whether the alleged equivalent can be fairly characterized as an insubstantial change from the claimed subject matter without rendering the pertinent limitation meaningless." *Freedman Seating Co. v. Am. Seating Co.*, 420 F.3d 1350, 1359 (Fed. Cir. 2005).

Samsung argues that the geometric requirements of the "multilevel structure" are important—if not the most important—feature. Therefore, a finding of equivalence between the geometric requirements and the polygons identified by Dr. Long vitiate the multilevel structure limitation. Samsung relies heavily on *Tronzo v. Biomet, Inc.*, 156 F.3d 1154 (Fed. Cir. 1998) and *MHL Tek, LLC v. Nissan Motor Co.*, 691 F. Supp. 2d 698 (E.D. Tex. 2010) (Ward, J.) (overruled on other grounds by *MHL Tek, LLC v. Nissan Motor Co.*, 655 F.3d 1266 (Fed. Cir. 2011)) to support its position. *Id.* at 16–18. Both cases apply the "all elements rule where application of the doctrine of equivalents would vitiate a shape limitation." *MHL*, 691 F. Supp. 2d at 706.

In *Tronzo*, the relevant claims were drawn to a hip implant with a cup having "a generally conical outer surface" also described as a "hemispherical cup." *Tronzo*, 156 F.3d at 1156. Tronzo's expert testified that *any shape* cup would be equivalent to the conical limitation in the

claims. *Id.* at 1160. The Federal Circuit held that allowing any shape to be equivalent to the "conical limitation" would impermissibly write out the limitation. *Id.*

Similarly, in *MHL*, the relevant claims were drawn to a tire pressure monitor with a "cylindraceous housing." *MHL*, 691 F. Supp. 2d at 701. Much like the expert in *Tronzo*, MHL's experts testified that the accused devices' shapes were largely irrelevant to a finding of infringement under the DOE, so long as they functioned in substantially the same way. *Id.* at 707. Judge Ward held that such a result would vitiate the "cylindraceous housing" limitation because MHL's experts "either discount [the] shape limitation or expand the coverage of 'cylindraceous' so broadly that . . . it covers all realistic housing shapes." *Id.*

Unlike the experts in *Tronzo* and *MHL*, Dr. Long did not testify that *any* shape can satisfy the geometric requirements of the claimed "multilevel structure." Dr. Long further did not wholly disregard the actual shape of the accused antennas. As previously explained, Dr. Long identified polygons in the accused antennas only after consideration of all of the inconsequential features that have no impact on the electromagnetic properties of the antennas. Dr. Long conducted a detailed analysis regarding the bumps, notches, holes and bends and testified that if and only if they have little impact of the functionality and current flows of the accused antennas, they may be discounted. *See, e.g.*, 5/18/2011 p.m. TT at 57:15–59:22. Dr. Long conducted an analysis of the effect of small bumps and notches and presented testimony that these minor differences are provided for mechanical reasons and are insubstantially different from a straight side. *Id.* When the small discontinuities did affect antenna performance, Dr. Long counted them as a side of the polygon.

Viewing the evidence as a whole, and drawing all reasonable inferences in favor of the nonmoving party, Fractus identified four-sided quadrilaterals, in some instances with small

bumps or notches on the periphery. Fractus did not wholly ignore the shape of the accused antennas and contend that *any shape* may satisfy the multilevel structure requirements. Likewise, Dr. Long provided explicit testimony and evidence as to why polygons with small bends or internal mounting holes may also be considered because these features do not affect the electromagnetic performance of the accused antennas. Therefore, Fractus's application of the DOE does not vitiate the multilevel structure limitation.

Conclusion: Doctrine of Equivalents

Substantial evidence supports the jury's verdict regarding infringement under the doctrine of equivalents and that Fractus's theory does not vitiate the multilevel structure limitation. As such, the Court will not disturb the jury's verdict regarding infringement under the doctrine of equivalents. Furthermore, based on the foregoing, Samsung's JMOL regarding non-infringement is **DENIED**.

Judgment as a Matter of Law Regarding Invalidity

Samsung contends that that the asserted claims of the Patents-in-Suit are invalid: (1) due to a lack of an adequate written description under 35 U.S.C. § 112 ¶ 1; (2) due to lack of enabling disclosure under 35 U.S.C. § 112 ¶ 1; and (3) as anticipated, or rendered obvious, by U.S. Patent No. 6,140,975 ("Cohen Patent" or "the '975 Patent") under 35 U.S.C. §§ 102(b), 103(a). JMOL at 18–32. Each argument is addressed in turn.

Invalidity: Written Description

Samsung contends that the MLV specifications lack any reference to a multilevel, multiband antenna for use in a portable communication device or handset. *Id.* at 21.

Applicable Law

Patents are presumed valid and overcoming this presumption requires clear and convincing evidence. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1354 (Fed. Cir. 2010) (*en banc*). Written description is a requirement set forth in 35 U.S.C. § 112, which provides in relevant part:

> 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, or with which it is most nearly connected, to make and use the same.

35 U.S.C § 112 ¶ 1 (2006). The written description of a patent "must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." *Ariad*, 598 F.3d at 1351 (citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562–63 (Fed. Cir. 1991)). "In other words, 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." *Id.*

Determining whether the inventor had "possession" of the claimed subject matter requires "an objective inquiry into the four corners of the specification." *Id.* The disclosure in the written description must describe an invention such that a person of ordinary skill in the art would understand that the inventor actually invented the claimed invention. *Centocor Ortho Biotech, Inc. v. Abbott Labs.*, 636 F.3d 1341, 1348 (Fed. Cir. 2011) (quoting *Ariad* 598 F.3d at 1351). The level of detail required largely depends on the nature of the claims and the complexity of the technology. *Ariad*, 598 F.3d at 1351. However, the written description requirement "does not demand either examples or an actual reduction to practice; constructive reduction to practice that in a definite way identifies the claimed invention can satisfy the

[requirement]." *Id.* at 1352 (citing *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1366–67 (Fed. Cir. 2006)). A "mere wish or plan for obtaining the claimed invention is not" sufficient. *Centocor*, 636 F.3d at 1348 (citing *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997)).

"A determination that a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112 ¶ 1 is a question of fact" and the "jury's determinations of facts related to compliance with the written description requirement [are reviewed] for substantial evidence." *Ariad*, 598 F.3d at 1355 (quoting *PIN/NIP, Inc. v. Platte Chem. Co.*, 304 F.3d 1235, 1243 (Fed. Cir. 2002)).

Analysis

After review of the record, and drawing all reasonable inferences in favor of the nonmoving party, substantial evidence supports the jury's verdict regarding written description.

Samsung's expert on invalidity, Dr. Best, provided only brief and conclusory testimony regarding the written description requirement. *See, e.g.*, 5/19/2011 p.m. TT at 154:11–156:12; 5/20/2011 a.m. TT at 49:15–52:1. Specifically, Dr. Best testified that, based on his reading of the specifications, there was no disclosure that the inventors "had actually put an antenna in a cell phone, designed an antenna to work at cell phone frequencies, described antenna dimensions for a cell phone antenna, or an actual cell phone design." 5/19/2011 p.m. TT at 155:10–155:14. Dr. Best further confirmed Samsung's counsel's statement that the Patents-in-Suit allegedly do not describe "how to get the antennas to work in a cell phone." *Id.* at 155:15–20. Finally, Dr. Best testified that the specifications do not explain how to make the disclosed multilevel structures into a multiband antenna. 5/20/2011 a.m. TT at 51:16–23.

As an initial matter, because the written description requirement does not require examples or an actual reduction to practice (*Ariad*, 598 F.3d at 1351), Dr. Best's testimony that the specifications do not disclose that the inventors "had actually put an antenna in a cell phone" or "designed an antenna to work at cell frequencies" is irrelevant to this issue. Additionally, while Fractus did not present explicit rebuttal evidence on the issue of written description, it did present contrary evidence regarding all of the relevant issues raised by Dr. Best.

For example, one of the inventors testified that Figure 4.7 disclosed a multiband antenna. 5/17/2011 a.m. TT at 146:11–147:25. Additionally, Dr. Long testified on cross examination that the MLV specifications teach how to make small, multiband antennas that would be small enough to fit inside a cell phone. 5/18/2011 p.m. TT at 163:20–164:11.[7] Dr. Long also testified that Figure 11, as disclosed in the specification, was small enough to fit inside a cell phone. 5/19/2011 a.m. TT at 25:24–28:12.

Fractus presented ample evidence to support the jury's verdict, and the jury was free to weigh the competing evidence and determine that Fractus's was more reliable—even absent an explicit rebuttal case. Nevertheless, Fractus presented evidence and testimony that the written description discloses the claimed invention to the extent necessary to reasonably convey to the person of ordinary skill in the art that the inventors possessed the claimed invention.[8]

[7] In fact, Samsung's counsel implicitly acknowledged that Dr. Long had given such testimony: "Q. Right, And since it does that, since the patent gives you what you need to know to make a multilevel antenna small enough to fit inside a cell phone, obviously, Dr. Puente would have known how to do that, right?" 5/18/2011 p.m. TT at 164:7–11.

[8] The Court further notes that the specification describes that the antennas may be reduced in size for use with a "portable telecommunication device." *See, e.g.*, '868 Patent at 6:30–34. Samsung vigorously disputes that this passage discloses an *internal* antenna on a portable telecommunication device. However, the jury was free to disagree with Samsung's interpretation of that passage, and the Court will not disturb the jury's finding on written description when there is such evidence of adequate disclosures in the specification of the claimed invention.

Invalidity: Enablement

Samsung argues that the MLV specifications do not enable the full scope of the invention. JMOL at 24–26. Much like its argument regarding written description, Samsung argues that the MLV specification fails to disclose internal cell phone antennas; therefore, the specification cannot enable one of skill in the art to design and build an internal cell phone antenna. JMOL at 24–25. Samsung further asserts that up to three years after the filing of the patents, Fractus had never developed an internal cell phone antenna. *Id.* at 26.

Applicable Law

In addition to the written description requirement, 35 U.S.C. § 112 ¶ 1 also requires that the "specification must enable those skilled in the art to make and use the full scope of the claimed invention without undue experimentation." *ReedHycalog UK, Ltd. v. United Diamond Drilling Servs., Inc.*, 2009 WL 1011730, at *10 (E.D. Tex. April 15, 2009) (Davis, J.) (citing *Harris Corp. v. IXYS Corp.*, 114 F.3d 1149, 1155 (Fed. Cir. 2007)).

Enablement is a highly factual inquiry, and the jury is instructed to consider several factors in determining whether undue experimentation is needed to practice a claimed invention. These factors include: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance disclosed in the patent; (3) the presence or absence of working examples in the patent; (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 of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Not all of the *Wands* factors need be considered, only those relevant to the facts of the case. *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1216 (Fed. Cir. 1991).

Analysis

After a thorough review of the record, and drawing all reasonable inferences in favor of the nonmoving party, substantial evidence supports the jury's verdict regarding enablement. Samsung's only evidence at trial regarding enablement was Dr. Best's conclusory testimony that the MLV specification does not enable internal cell phone antennas. *See* 5/19/2011 p.m. TT at 156:13–157:11.[9] Samsung failed to address any of the *Wand* factors during trial and again ignores them in post-trial briefing. Samsung failed to provide any analysis or explicitly describe any shortcomings in the disclosure. Based on Samsung's evidence presented at trial, the jury was free to find that Samsung had not met its burden in demonstrating a lack of enablement.

Additionally, Dr. Long explained during trial that the MLV specification provides a person of ordinary skill the requisite instructions to build an internal cell phone antenna. 5/18/2011 p.m. TT at 163:13–164:6. Dr. Long further testified that antennas for cell phones must be designed around other components and that the flexible design guidelines in the MLV specification are more helpful than specific dimensions of shape and size. 5/18/2011 a.m. TT at 140:9–141:23. Dr. Long also testified that the MLV specification discloses two working examples in Figures 8 and 11. 5/19/2011 a.m. TT at 27:23–28:16; 31:21–32:7. Importantly, Dr. Long testified that these working examples would provide the necessary framework and concrete examples to a person of ordinary skill in the art to create small, multiband antennas for cell phones. 5/18/2011 a.m. TT at 140:8–142:4.

Some experimentation may be necessary to practice a claimed invention, but so long as the experimentation is not "unduly extensive," the jury's rejection of Samsung's evidence was not improper. *See Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*, 750 F.2d 1559, 1576

[9] Samsung also cites to a conclusory statement from Dr. Best that the MLV patents are not enabled; however, Fractus moved to strike that exchange for exceeding the scope of the cross examination, which the Court granted. 5/20/2011 a.m. TT at 52:2–52:12.

(Fed. Cir. 1984). Fractus was not required to prove the enablement of its claims. The jury was free to resolve the factual disputes presented, based on Samsung's brief evidence of non-enablement, in Fractus's favor—especially given Samsung's high burden to provide clear and convincing evidence to overcome the presumption of validity. Fractus presented ample evidence to contest Samsung's scant evidence regarding enablement. As such, the Court will not overturn the jury's finding that Fractus's claims are enabled.

Invalidity: Anticipation

Samsung contends that there was no legally sufficient basis for the jury to have found that the Cohen Patent does not anticipate the asserted claims of the MLV patents. JMOL at 27. Samsung contends that Dr. Best identified each and every claim limitation of the asserted claims in the Cohen Patent, with one exception—claim 30 of '431 patent. *Id.*

Applicable Law

A patent claim is invalid as anticipated if the claimed invention 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 by the applicant. 35 U.S.C. § 102(a) (2006). Anticipation requires the presence in the prior art of each and every limitation of the claimed invention. *Amgen, Inc. v. Hoffman-La Roche Ltd.*, 580 F.3d 1340, 1366 (Fed. Cir. 2009).

Analysis

Substantial evidence supports the jury's verdict regarding anticipation. The jury may have relied on any number of issues to determine that Samsung failed to prove by clear and convincing evidence that the Cohen Patent anticipated the MLV asserted claims. Namely, Fractus presented testimony and evidence during trial that the Cohen Patent failed to disclose: (1) multilevel structures composed of polygons; (2) polygons of different sizes; and (3) antennas that

are useable at multiple frequency bands. Additionally, the jury may have simply disregarded Dr. Best's testimony.

Dr. Best relied heavily on Figure 7C-1 of the Cohen Patent which teaches a "Minkowski Island" antenna. 5/19/2011 p.m. TT at 131:19–133:1. Dr. Long, however, repeatedly testified that the antenna in Figure 7C-1 was actually a "wire antenna" and not composed of "polygons" of conductive material as required by the MLV claims. *See, e.g.*, 5/18/2011 p.m. TT at 154:6–155:1 ("A. No. The wire is shaped like, you know, the outside piece of a polygon . . . we have a wire that's in the shape of a—of a four-sided figure there, but that's not the same as a polygon. A polygon means . . . that whole *inside* structure is a conducting material. Here it's just a wire.") (emphasis added); *see also* 5/18/2011 p.m. TT at 155:2-157:11.

Indeed, Fractus presented evidence that Dr. Best referred to the antennas in the Cohen Patent as "wire antennas" prior to this litigation. During cross-examination, Dr. Best conceded that he had written an article discussing a simulation he conducted of the Cohen Minkowski antennas in which he referred to the antennas as "wire antennas." *See* PX-225; 5/20/2011 a.m. TT at 67:7–69:14. Dr. Best also conceded that his simulations of the Cohen antennas, which were presented to the jury, all entailed wires or printed circuits lacking conductive material inside the wire perimeter. *See, e.g.*, 5/20/2011 a.m. TT at 66:5–69:17; 35:25–37:11.

Dr. Long also testified that the Cohen Patent does not disclose "polygons" because it is a wire antenna. While Dr. Long conceded that the Cohen Patent discloses that the Minkowski Island antennas may be fabricated on a printed circuit, he also explained to the jury why the printed circuits in the Cohen Patent lack conductive material inside the printed wire. In turn, Dr. Long asserted that because the "printed wire" lacked conductive material inside the perimeter of the wire, it could not be composed of "polygons." For example, Dr. Long explained that the

printed wires in the Cohen Patent merely approximate the boundary of a "polygon," however because the material inside the wire trace is not conductive, it is not the same as the MLV Patent limitations. 5/18/2011 p.m. TT at 154:9–157:12. Based on the foregoing, the jury may have reasonably determined that the Cohen Patent does not disclose multilevel structures composed of polygons.

The asserted claims of the '868 and '208 Patents also require that "not all of the [polygons] have the same size." *See, e.g.*, '868 Patent at 9:62–63. Dr. Best, in testifying that this limitation was met, merely stated, "[i]f we examine the Cohen antenna on the right, we see that, in fact, the rectangles do not have the same [size]." 5/19/2011 p.m. TT at 141:5–142:3. However, one of the inventors of the MLV Patents testified that even if the Cohen Patent disclosed polygons, the Minkowski island that Dr. Best relied upon was made of polygons of the same size; therefore, not disclosing a multilevel structure. 5/17/2011 p.m. TT at 85:24–86:25. Furthermore, upon causal inspection of Figure 7C-1, as Dr. Best directed, the so-called polygons appear to all have the same size. Therefore, given Dr. Best's conclusory testimony on this point, the MLV Patent inventor's testimony, and the actual figure in the Cohen Patent, it was reasonable for the jury to conclude that the Cohen Patent did not anticipate the MLV patents.

Additionally, the parties presented the jury with conflicting evidence regarding whether the Cohen Patent disclosed antennas useable at multiple frequency bands and other limitations of the MLV patents. *See, e.g.*, 5/19/2011 p.m. TT at 137:17–139:7; 152:14–153:19; 5/20/2011 a.m. TT at 44:9–20 (Dr. Best testimony that Cohen discloses multiband antennas); PX-252 at 73–77 (former defendant Kyocera PTO prosecution of a patent distinguishing Cohen as not giving "instructions to one skilled in the art for designing a multiple-frequency antenna."); 5/17/2011 p.m. TT at 85:2–9; 87:4–9; 90:3–21 (Dr. Puente testimony that Cohen does not disclose antennas

operating at multiple frequency bands.). The jury was free to either disbelieve Dr. Best's testimony regarding this issue, or resolve the factual dispute in Fractus's favor given the contradictory evidence presented.

Finally, then jury could have concluded that Dr. Best lacked credibility and discounted his testimony altogether. Fractus presented evidence to the jury that the inventor of the Cohen Patent, Dr. Nathan Cohen, publicly questioned Dr. Best's understanding of the technology at issue. *See, e.g.*, 5/20/2011 a.m. TT at 12:17–22 ("Q. [] This is how Dr. Cohen described you [, Dr. Best]: He is clearly wrong. For anyone to say this, they cannot have a good handle on understanding mutual coupling, resonance, ohmic loss, radiation resistance, and field strength. A. That's what he says, yes."); *see also* PX-417 at 22, 65-67, 69, 130–131 (excerpts of online discussion between Dr. Cohen and Dr. Best, wherein Dr. Cohen accuses Dr. Best of inaccurate statements, etc.). Additionally, Dr. Best's trial testimony included inaccuracies that Fractus revealed under cross-examination. *See, e.g.*, 5/20/2011 a.m. TT at 33:12–37:4 (testimony of Dr. Best that in a demonstrative of the Cohen Figure 7C-1 antenna, he removed the outer non-conductive material, but not the inner non-conductive material, which arguably made it more likely to resemble the MLV patent figures); *id.* at 38:9–41:6; *id.* at 67:7–70:24. The jury may have discounted Dr. Best's opinion as unreliable because of these inaccuracies or misstatements in his testimony.

Based on the foregoing, and a thorough review of the record evidence in this case, the jury reasonably found that Samsung failed to prove by clear and convincing evidence that the MLV patents are anticipated by the Cohen Patent.

Invalidity: Obviousness

Samsung contends that, to the extent any limitation was explicitly missing from the Cohen Patent, it would have been obvious to one of skill in the art. JMOL at 30–32.

Applicable Law

Obviousness is a question of law based on underlying findings of fact. *In re Kubin*, 561 F.3d 1351, 1355 (Fed. Cir. 2009). Obviousness is based on several factual inquiries: "(1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention was made; and (4) objective evidence of nonobviousness, if any." *Id.*

Analysis

The parties do not appear to dispute that the evidence established that a person of ordinary skill in the art is someone with a Ph.D., master's degree, or bachelor's degree in electrical engineering with two to five years of relevant antenna design experience. JMOL at 30. The only explicit obviousness testimony or evidence that Samsung presented was directed at claim 30 of the '431 Patent. *See* 5/19/2011 p.m. TT at 151:9–22. Dr. Best, however, merely stated that while the Cohen Patent did not explicitly anticipate claim 30 of the '431 Patent, it renders it obvious. *Id.* Based on such scant evidence, a reasonable jury may have determined that Samsung failed to demonstrate by clear and convincing evidence that the Cohen Patent renders claim 30 of the '431 Patent obvious.

After review of the record and drawing all reasonable inferences in the nonmoving party's favor, substantial evidence supports the jury's verdict regarding obviousness. Dr. Best did not provide an explicit obviousness analysis regarding each of the asserted claims, but merely concluded that the limitations or claims were "anticipated or at least obvious." *See, e.g.*,

5/19/2011 p.m. TT at 144:9–16; 147:14–21. Such conclusory testimony regarding obviousness failed to provide the jury with an understanding of why a person of ordinary skill would have found the limitations obvious. *See Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (holding "some kind of motivation must be shown from some source, so that the jury can understand why a person of ordinary skill would have thought of" combining or modifying references to achieve the patented method).

Additionally, Fractus presented evidence of secondary indicia of non-obviousness. Some of the factors that indicate non-obviousness include commercial success, long felt but unsolved needs, failure of others, copying by others, unexpected and superior results, and industry acceptance as indicated by industry praise or licensing. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007); *PowerOne, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1351–52 (Fed. Cir. 2010).

Among other things, Fractus presented evidence regarding numerous awards and industry praise it had received related to technologies that incorporated the patented inventions. *See, e.g.*, PX-41; PX-53. The jury also was able to review licensing agreements other companies and cell phone manufacturers had entered with Fractus regarding the patented technology. PX-24–30. As such, given the evidence of secondary indicia of non-obviousness, the jury was free to determine that the Cohen Patent did not clearly and convincingly render the MLV patents obvious.

The jury reasonably concluded that Samsung failed to prove by clear and convincing evidence that the MLV patents are obvious in view of the Cohen Patent. Accordingly, the Court will not disturb the jury's verdict regarding obviousness.

Conclusion: Invalidity

Based on the foregoing, substantial evidence supports the jury's verdict finding the MLV Patents valid. As such, Samsung's JMOL regarding invalidity is **DENIED**.

Judgment as a Matter of Law Regarding Willfulness

Samsung next moves for judgment as a matter of law on the jury's finding that it willfully infringed the Patents-in-Suit. JMOL at 33–39. To prevail on a charge of willful infringement, the patentee must show the accused infringer acted with objective recklessness. *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007). First, the patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions infringed a valid patent. *Id.* The accused infringer's state of mind is irrelevant to this objective inquiry. *Id.* If the patentee meets this threshold objective standard, the patentee must further demonstrate that the accused infringer knew or should have known of this objectively high risk. *Id.* Whether infringement is willful is a question of fact and reviewed for substantial evidence. *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1359 (Fed. Cir. 2004).

Willfulness: Objectively High Likelihood

Samsung contends that Fractus failed to provide substantial evidence that Samsung acted despite an objectively high likelihood that its actions constituted infringement of a valid patent. JMOL at 34–36. In particular, Samsung contends that it presented strong non-infringement and invalidity defenses demonstrating that it would not have appreciated its actions as infringing a valid patent. *Id.* However, "[t]he fact that [Samsung] presented several defenses at trial, including noninfringement and invalidity, does not mean the jury's willfulness finding lacks a sufficient evidentiary basis." *i4i Ltd. Partnership v. Microsoft Corp.*, 598 F.3d 831, 860 (Fed. Cir. 2010) *aff'd* — U.S. —, 131 S.Ct. 2238, L.Ed.2d 131 (2011).

On June 14, 2012, the Federal Circuit issued a new decision clarifying the legal standard for *Seagate*'s objective prong of the willfulness test. The Federal Circuit held that the objective prong is now a question of law. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Associates, Inc.*, No. 2010-1510, slip. op. at 9 (Fed. Cir. June 14, 2012) ("[C]onsistent with this court's holding today, the ultimate legal question of whether a reasonable person would have considered there to be high likelihood of infringement of a valid patent should always be decided as a matter of law by the judge."). The Federal Circuit remanded the *Bard* case to the trial court to determine "based on the record ultimately made in the infringement proceedings whether a reasonable litigant could realistically expect those defenses to succeed." *Id.* at 10 (quoting *iLor, LLC v. Google, Inc.*, 631 F.3d 1372, 1378 (Fed. Cir. 2011)) (internal quotation omitted). Accordingly, this Court must also heed this instruction in the instant suit. [10]

Even reviewing the trial evidence under the new legal standard for *Seagate*'s objective prong, the result is the same. Regarding Samsung's invalidity defense, it analyzed the wrong antenna and resorted to altering the prior art to make it resemble the figures in the Patents-in-Suit. Samsung, via Dr. Best, contended that the Minkowski Island 2 antenna in the Cohen patent met the claim elements requiring similar radiation patterns across different bands in the Patents-in-Suit, but on cross-examination, Dr. Best admitted that he relied on a different antenna with a different design. *See* 5/20/2011 a.m. TT at 38:9–40:17. Dr. Best also presented a particular

[10] Under the old standard, the jury's willfulness finding would also be upheld, on much the same evidence. The jury assessed the evidence and decided that Samsung willfully infringed Fractus's patents. For example, Fractus presented evidence that Samsung analyzed the wrong antenna for its invalidity defense and failed to disclose the entire antenna design of Samsung's alleged non-infringing alternative. *See* 5/20/2011 p.m. TT at 38:9–40:17; 42:3–43:10. Also, the jury could have determined that Samsung's noninfringement defense was flawed because it asserted that its antennas were not "planar," despite Samsung describing them as *planar* inverted-f antennas (PIFA). *See e.g.* 5/17/2011 p.m. TT at 80:9–10; 5/20/2011 p.m. TT at 84:25–85:3; 5/19/2011 p.m. TT at 122:7–13. Indeed, based on substantial evidence presented at trial, "the jury was free to decide for itself whether [Samsung] reasonably believed there were any substantial defenses to a claim of infringement." *i4i Ltd. P'ship*, 598 F.3d at 860. Fractus presented sufficient evidence, and the jury accepted that Samsung acted despite an objectively high likelihood that its actions amounted to infringement of a valid patent.

demonstrative representing the Minkowski Island 2 antenna, but conceded that he removed some of the non-radiating portions of the demonstrative antenna. *Id.* at 35:7–36:10. By failing to remove all of the non-radiating portions, the demonstrative resembled the figures in the MLV Patents, but did not demonstrate the true nature of the Cohen patent. In sum, Samsung's invalidity case was severely flawed.

Regarding Samsung's non-infringement case, Samsung attempted to argue that its antennas were not "planar" because they include notches and holes, despite referring to its own antennas as "*planar* inverted-f antennas (PIFA)." *See*, *e.g.*, 5/17/2011 a.m. TT at 80:9–10; 5/19/2011 p.m. TT at 122:7–13; 5/20/2011 a.m. TT at 84:25–85:3. Samsung also attempted to argue that its antennas did not include polygons of the same type, while its expert admitted that four-sided polygons would be a type of polygon. *See* 5/19/2011 p.m. TT at 176:4–6. Additionally, Samsung relied on an alleged non-infringing alternative, but failed to reveal the entire design of the antenna. *See* 5/20/2011 a.m. TT at 42:3–43:10.

Beyond the explicit defenses that Samsung presented, as explained in other portions of this opinion (*see*, *e.g.*, New Trial section at 49–58), Samsung attempted to shorthand its presentation with figures from the patents and buzzwords, such as, presenting the Cohen patent as "fractal," and merely claiming that it invalidated the MLV Patents because they are allegedly "fractal". Such examples demonstrate the relative weakness of Samsung's invalidity defense. After a review of the record, the Court finds that objective prong of the willfulness test is met. As such, the "jury's subjective willfulness finding [must now] be reviewed for substantial evidence." *Bard*, No. 2010-1510, slip. op. at 10.

Willfulness: Known or Obvious

Samsung next contends that even if Fractus satisfied the objective prong, Fractus failed to demonstrate that Samsung knew or should have known of the risk it was infringing the MLV patents. JMOL at 37–39. Samsung contends that it believed: (1) that it was using well-known antenna techniques that predate the MLV Patents; and (2) that it had no notice of infringement prior to the filing of this action. *Id.*

Fractus, however, presented the jury with both direct and circumstantial evidence that Samsung knew or should have known of the risk that its actions may constitute infringement. Among other evidence, they jury was able to review two Fractus presentations given to Samsung in 2006 that described the Fractus antennas as "multilevel" and as planar inverted-f antennas. *See* PX-408; PX-224. In fact, one of the antennas depicted in the Fractus presentation is described as a "multilevel PIFA" antenna and explicitly cites the European counterpart patent to the '868 Patent and the parent application number (US 10/102,568) of the MLV patent family. *See* PX-408 at 22. Additionally, the presentations both depict Fractus-developed antennas that appear remarkably similar to the accused Samsung antennas.

The jury also reviewed an invoice sent from Fractus to Samsung for the sale of a number of antennas that specifically represented that the antennas were covered by the '868 and '208 Patents. PX-114; *see also* 5/18/2011 a.m. TT at 48:19–51:3. Fractus introduced evidence that it warned Samsung that using a supplier that lacked patent protection would introduce risk to both Samsung and its suppliers, *i.e.* Fractus's competitors. DX-3. Additionally, the jury heard evidence that Samsung concluded that the Cohen Patent was not related to internal mobile antennas and that Fractus did not have a problem with Cohen's patents. PX-419; 5/19/2011 p.m. TT at 49:3–24.

In addition to the evidence cited above, Fractus presented other evidence demonstrating that Samsung had knowledge that Fractus held antenna patents; that Samsung independently found one of Fractus's patents-in-suit in 2008 (PX-244); and that the impetus to stop working with Fractus may have been related to Fractus raising its prices once its patents issued. *See, e.g.*, 5/17/2011 p.m. TT at 120:11–121:20; 5/18/2011 a.m. TT at 65:7–66:14. Taken together and drawing all reasonable inferences in the nonmoving party's favor, Fractus presented the jury with ample direct and circumstantial evidence that Samsung knew, or should have known, about Fractus's patents and that Samsung's actions constituted infringement.

Conclusion: Willfulness

Fractus presented substantial evidence supporting the jury's finding that Samsung willfully infringed the Patents-in-Suit. As such, the Court will not disturb the jury's verdict and Samsung's JMOL regarding no willfulness is **DENIED**.

Judgment as a Matter of Law Regarding Damages

Samsung contends that the Court should grant judgment as a matter of law regarding damages, or in the alternative, order a new trial or a remittitur because the jury's damages award was excessive.

Damages: Applicable Law

A patentee is entitled to damages for infringement under 35 U.S.C. § 284 ("Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court."). The burden of proving damages falls on the patentee. *Dow Chem. Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1381 (Fed. Cir. 2003). There are two alternative categories of infringement compensation: the patentee's

lost profits, and the reasonable royalty the patentee would have received through arms-length bargaining. *Lucent Tech., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009).

To ascertain the reasonable royalty, patentees commonly consider a hypothetical negotiation, in which the asserted patent claims are assumed valid, enforceable, and infringed, and attempt to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began. *Id.* at 1324–25; *see also Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538, 1554 n.13 (Fed. Cir. 1995) (en banc). Calculation of a reasonable royalty requires determination of two separate and distinct amounts: 1) the royalty base, or the revenue pool implicated by the infringement; and 2) the royalty rate, or the percentage of that pool "adequate to compensate" the plaintiff for the infringement. *Cornell Univ. v. Hewlett-Packard Co.*, 609 F. Supp. 2d 279, 286 (N.D.N.Y. 2009).

The entire market value rule "recognizes that the economic value of a patent may be greater than the value of the sales of the patented part alone." *See King Instruments Corp. v. Perego*, 65 F.3d 941, 951 n.5 (Fed. Cir. 1995). "The entire market value rule allows a patentee to assess damages based on the entire market value of the accused product [if] the patented feature creates the 'basis for customer demand' or 'substantially create[s] the value of the component parts.'" *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011) (citing *Lucent*, 580 F.3d at 1336). "[T]he patentee . . . must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative," or show that "the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature." *Id.* (citing *Garreston v. Clark*, 111 U.S. 120, 121, 4 S.Ct. 291, 28 L.Ed. 371 (1884)); *see also Lucent*, 580 F.3d at 1336–

67. For minor patent improvements, a patentee cannot justify using the entire market value of an accused product simply by asserting a lower royalty rate. *Uniloc,* 632 F.3d at 1319–20 (rejecting contrary interpretation of *Lucent,* 580 F.3d at 1338–39). Although a reasonable royalty analysis "necessarily involves an element of approximation and uncertainty," *Unisplay, S.A. v. Am. Elec. Sign Co.,* 69 F.3d 512, 517 (Fed. Cir. 1995), the Court must ensure that the jury verdict is supported by sufficient evidence.

"A district court's duty to remit excessive damages is a procedural issue, not unique to patent law." *Imonex Servs., Inc. v. W.H. Munzprufer Dietmar Trenner GMBH,* 408 F.3d 1374, 1380 (Fed. Cir. 2005). In the Fifth Circuit, a decision on remittitur and new trial is within the sound discretion of the trial court. *See Volger v. Blackmore,* 352 F.3d 150, 154 (5th Cir. 2003). The standard is highly deferential, and damages are set aside "only upon a clear showing of excessiveness." *i4i Ltd. v. Microsoft Corp.*, 598 F.3d 831, 857 (Fed. Cir. 2010) (quoting *Duff v. Werner Enters., Inc.*, 489 F.3d 727, 730 (5th Cir. 2007)). An excessive award exceeds the "maximum amount calculable from the evidence." *Carlton v. H.C. Price Co.*, 640 F.2d 573, 579 (5th Cir. 1981).

Damages: Fractus's Model

Fractus argued that it was entitled to a reasonable royalty as a result of Samsung's infringement. The parties dispute the proper way to interpret Fractus's damages model.

At trial, Fractus's expert, Mr. James Nawrocki, testified that he used the number of infringing units, or approximately 65 million units, as the royalty base. 5/19/2011 a.m. TT at 70:4–72:14. Mr. Nawrocki calculated the royalty rate by first apportioning the value attributable to an internal multiband antenna to the overall price of an infringing cell phone. *Id.* Mr. Nawrocki testified that the average price of an infringing Samsung cell phone was $140.36. *Id.*

at 113:7–114:10. Mr. Nawrocki explained that he used the average price to account for the wide difference in prices of cell phones. *Id.* at 129:20–130:10. Mr. Nawrocki then conducted an analysis to apportion the value between the unpatented features of the cell phone and the unit that contains the patented invention—the internal antenna. *Id.* at 113:7–114:10. Mr. Nawrocki determined that an internal antenna provides 10% of the value of an infringing cell phone—or $14.04, based on the average price of a Samsung cell phone—in comparison with the unpatented components. *Id.*

Next, Mr. Nawrocki calculated the portion of the value of the internal antenna Fractus would be entitled to as compensation for its patented technology. Relying on substantial evidence that will be discussed later, Mr. Nawrocki determined that Fractus would be entitled to 3.5% to 10% of the value of the internal antenna. As such, Mr. Nawrocki arrived at a per unit royalty rate of $0.46 to $1.40 representing the value that can be attributed to the MLV patents. *Id*. at 72:2–14. Mr. Nawrocki conservatively used the low end of his rate: $0.40–$0.60. *Id.* at 71:11–20

Finally, Mr. Nawrocki multiplied the per-unit royalty rate of $0.40 to $0.60 by the royalty base of approximately 65 million units sold by Samsung, to arrive at a reasonable royalty range of $26 million to $39 million. *Id.* at 72:2–14.

Despite Mr. Nawrocki's presentation at trial regarding Fractus's damages model, Samsung provides a different interpretation of Fractus's damages model. Samsung contends that Fractus claimed that its royalty base was the number of infringing units to disguise its reliance on the entire market value rule. JMOL at 45 n.21. Samsung argues that the royalty base must be the revenue implicated by the infringement (*see Mirror Worlds, LLC v. Apple, Inc.*, 784 F. Supp.

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2d 703, 724 (E.D. Tex. 2011)); therefore, the number of infringing units cannot be that revenue pool. JMOL at 45 n.21.

Instead, Samsung contends, that Fractus's real royalty base was Mr. Nawrocki's apportioned value attributable to the internal antenna, or $14.04. *Id.* Further, Samsung argues that Fractus's real royalty rate was Mr. Nawrocki's percentage range that attempted to capture the portion of the value of the internal antenna Fractus would be entitled to as compensation for its patented technology. *Id.* Accordingly, Samsung argues that Fractus's real reasonable royalty request was $0.40 to $0.60 per unit. In other words, the additional step of multiplying the per unit rate is largely irrelevant and merely an attempt to disguise Fractus's use of the average sales price of an infringing Samsung cell phone as the beginning point of it damages model, in contravention of the entire market value rule.

As an aside, Samsung also conducted a per-unit royalty analysis, and its expert opined that a proper per-unit royalty would be $0.011 (1.1 cents) per-infringing unit. 5/20/2011 p.m. TT at 13:1–5.

The parties' characterizations of Fractus's damages theory is a matter of semantics. In other words, Fractus plainly made reference to, and began its damages calculation with, the average price of infringing Samsung phones. Fractus then apportioned the value attributable to the internal antenna. Whether it is termed a "royalty base" or "royalty rate" is irrelevant. The operative questions of whether Fractus's damages model should be upheld is captured by Samsung's post-trial arguments.

Damages: Samsung's Post-Trial Arguments

Samsung argues that it is entitled to judgment as a matter of law because: (1) Fractus's damages theory violated the entire market value rule; (2) Fractus's 10% apportionment was not

supported by the evidence; and (3) Fractus's proposed reasonable royalty rate was not supported by substantial evidence. JMOL at 42–52. Alternatively, Samsung contends that it is entitled to a new trial or a remittitur because the damages award is against the weight of the evidence and excessive. *Id.* at 52–53.

As an initial matter, the jury' departed from both party's damages model. Fractus's damages model set a floor of approximately $0.40 per infringing unit, while Samsung's set a ceiling of $0.011 (1.1 cents) per infringing unit. The jury awarded $0.355 per infringing unit. Therefore, the jury may have rejected both damages models, and based on substantial evidence presented at trial discussed below, formulated its own damages award within the confines of the law presented in the Court's charge. Nevertheless, Samsung again raises threshold issues apparently seeking JMOL on the basis that Fractus's damages expert's opinions should not have been admitted at trial.

Damages: Entire Market Value Rule

Premised on its interpretation of Fractus's damages model, Samsung argues that Fractus violated the entire market value rule because Mr. Nawrocki used the average price of the infringing phones as the foundation of his royalty base. JMOL at 42–46.

Even assuming Samsung's interpretation of Fractus's damages model is correct, Mr. Nawrocki did not improperly invoke the entire market value rule. Instead, Mr. Nawrocki presented substantial evidence "tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features." *Uniloc Inc.*, 632 F.3d at 1318 (quoting *Garretson v. Clark*, 111 U.S. at 121). Mr. Nawrocki's royalty base did not extend to unpatented components of Samsung's cell phones.

Mr. Nawrocki presented substantial evidence to support his 10% apportionment, and did not rely on the entire price of the accused Samsung cell phones as his royalty base. For example, Mr. Nawrocki presented evidence demonstrating the importance of using Fractus's internal antennas compared to other features of the phones. *See*, *e.g.*, 5/19/2011 a.m. TT at 116:1–121:19; *see also Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y 1970) ("11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use."). Mr. Nawrocki's royalty base was not the average price of the infringing phones, or $140.36. On the contrary, Mr. Nawrocki's royalty base was the estimated value of the infringing antennas ($14.04)—the revenue pool implicated by the infringement—after apportionment between the patented features and unpatented features.

Samsung appears to argue that despite Fractus's apportionment, mere reference to the average price of the accused devices was an improper invocation of the entire market value rule. JMOL at 42–46. However, Mr. Nawrocki's references to the average price of Samsung's cell phones was supported by the record evidence, not merely speculative, and was not intended to, and did not, "skew the damages horizon for the jury." *Uniloc USA, Inc.*, 632 F.3d at 1319. For example, Mr. Nawrocki mentioned the average price of Samsung's cell phones to establish Fractus's position in the hypothetical negotiation. Fractus presented evidence that it would have attempted, and intended to attempt, to license its patents for up to 5% of the value of a phone. 5/20/2011 a.m. TT at 92:6–94:14; PX-62. Fractus also presented evidence that it had previously entered an agreement that included a royalty of 5% on the entire purchase price of the covered products containing components covered by Fractus's patents. 5/19/2011 a.m. TT at 102:17–103:2; PX-24; 5/19/2011 a.m. TT at 48:6–49:10; PX 262. Other Fractus agreements presented at

trial related to cellular technology and were not based on the smallest saleable portion, but on the value of the entire device. *Id.* at 101:11–102:16.

Further, Fractus's reference to the average price of the infringing phones, unlike *Uniloc*, does not provide "a good example of the danger of admitting consideration of the entire market value of the accused" device.[11] *Uniloc, Inc.*, 632 F.3d at 1320. In *Uniloc*, the plaintiff disclosed that Microsoft's total revenue was $19 billion for the larger software product that contained the relatively minor accused product. *Id.* at 1297, 1318. First, simply as a matter of degree, Fractus's mention of the average price of a Samsung cell phone of $140 does not raise the policy concerns addressed in *Uniloc* where the plaintiff made reference to Microsoft's $19 billion of revenue from the software packages that contained the relatively minor accused product. Second, and more importantly, ample trial evidence demonstrated that a multiband, internal antenna is not an insignificant component of the infringing phones. 5/18/2011 a.m. TT at 34:24–37:1; 111:14–112:24; 113:12–114:3; PX-141; PX-331; *see also* 5/19/2011 a.m. TT at 116:1–121:19; *see also* 5/20/2011 p.m. TT at 60:3–8; PX-334 at 1:31–33. Indeed, a cell phone cannot perform its essential features without an antenna and there was substantial evidence that the market demanded small, internal multiband antennas akin to Fractus's designs.

[11] Fractus argues that reference to the average sales price of Samsung's phones was justified on its own terms, citing *Funai Elec. Co. v. Daewoo Electronics Corp.*, 616 F.3d 1357, 1375–76 (Fed. Cir. 2010). In *Funai*, the Federal Circuit allowed reference to the entire market value of the infringing VCRs because trial evidence established "general industry demand for smaller, cheaper, faster, and more reliable VCRs, and Funai presented evidence that the patented technology further[ed] these goals." *Id.* The *Funai* court also recognized that these benefits were the basis for customer demand. *Id.* Similarly, both Fractus and Samsung's documents demonstrated that antennas are fundamental to the infringing cell phones and that the market demanded internal, multiband antennas in small, sleekly designed phones. 5/18/2011 a.m. TT at 34:24–37:1; 111:14–112:24; 113:12–114:3; PX-141; PX-331; *see also* 5/19/2011 a.m. TT at 116:1–121:19; *see also* 5/20/2011 p.m. TT at 60:3–8; PX-334 at 1:31–33. Fractus also presented evidence that there were no plausible alternatives to internal antennas to satisfy customer demands. 5/19/2011 a.m. TT 172:6–175:1. While Fractus conceded that it did not invent internal antennas (5/17/2011 p.m. TT at 37:10–15; 38:2–22), as discussed elsewhere in this opinion, it did present evidence that its patented technology furthered the goals of creating small, sleekly designed cell phones with multiband, internal antennas. Nevertheless, because Fractus presented reliable and tangible evidence that it had, and was intending to, license its technology as a percentage of the overall sales price, Fractus's contention of the applicability of *Funai* need not be addressed at this time.

Mere reference to the average price of the accused devices, prior to apportionment, did not create a situation akin to where "[t]he $19 billion cat was never put back into bag even by Microsoft's cross-examination." *Uniloc, Inc.*, 632 F.3d at 1320. Mr. Nawrocki clearly and unequivocally stated that he was not relying on the average price of the phone as his royalty base. *See* 5/19/2011 a.m. TT at 107:13–20 ("I didn't use that range[, based on the overall cell phone price,] in this case. My range, as we talked about earlier, is much less than that. I used the 40 to 60 cents, but this is something I considered. I didn't elect to use this type of approach in my case, because this was, again, based upon the overall handset value. And what I did is looked at the value of the internal antenna, the internal multiband antenna."); *id.* at 127:3–7 ("Let me give an example. So the 10 percent applied to the 140 would be $14, as an example, instead of the 40 to 60. So the entire market value would be much higher level of damage.").

Accordingly, Fractus's damages model did not improperly invoke the entire market value rule and references to the average price of Samsung's infringing phones were appropriate during Mr. Nawrocki's testimony.[12]

[12] Samsung, relying on *Cornell University v. Hewlett-Packard, Co.*, 609 F. Supp. 2d 279 (N.D.N.Y. 2009) (Rader, J. sitting by designation), argues that where a separate market exists for the accused component of a larger device, the known market value for the component is the most appropriate base. JMOL at 46–47. As such, Samsung argues that evidence presented at trial demonstrated that Samsung paid Fractus and its vendors an average of 60 to 72 cents per antenna, which would be the proper base. *Id.* As an initial matter, in *Cornell*, Judge Rader struck the plaintiff's expert testimony post-trial for an improper invocation of the entire market value rule, leaving defendant's damages evidence "as the only reliable evidence in this record." *Cornell*, 609 F. Supp. 2d at 290. The instant case is unlike *Cornell*, because Fractus did not improperly invoke the entire market value rule, the proper damages calculation was (and is post-trial) a fact issue that the jury ultimately resolved in Fractus's favor. Nevertheless, there are inherent problems with Samsung's damages theory. For example, Fractus's last antenna sale to Samsung was for $1.58, Fractus's average selling price to Samsung was $1.44 after the Patents-in-Suit issued, and Fractus was able to make a profit of approximately $1.15 per unit sold in 2007. 5/19/2011 a.m. TT at.110:1–113:3; PX-114. The higher sales numbers reflect the most relevant price points because the sales are post-issuance of the Patents-in-Suit. Further, Samsung's royalty base may not have accounted for Fractus's status as a small, start-up like company, and the effect that would have had on Fractus's ability to demand higher prices for its antennas. Samsung's royalty base also did not account for the affect wide spread infringement on Fractus's ability to derive the full value of its patents.

Damages: 10% Apportionment

Samsung next contends that Mr. Nawrocki's apportionment of ten percent of the average market value of the phones to the antenna was not supported by any evidence and was based on pure conjecture. JMOL at 47–49. Fractus presented ample evidence to support its model that a 10% apportionment of the average market value of Samsung's cell phones is attributable to the internal antenna. Fractus relied upon, among other things, technical information related to the Patents-in-Suit and antennas; documents from Samsung and third-parties describing the relative importance of small, multiband internal cell phone antennas; and customer and service provider data regarding the relative importance of internal cell phone antennas.[13] 5/19/2011 a.m. TT at 77:2–78:18.

Mr. Nawrocki, for example, presented a series of analyses that identified the core components of a cell phone. *Id.* at 116:1–119:18. These analyses came from cell phone manufacturers, as well as Samsung, and identified the key components of modern cell phones, including such components as a keyboard, circuit board, and internal antenna. *Id.* Based on these analytics, Mr. Nawrocki was able to apportion the relative value of the individual components, including the internal antenna, to the overall price of the phone.

Additionally, Mr. Nawrocki testified and presented the jury with documents establishing the relative importance of small, multiband internal antennas to modern cell phones. For example, Mr. Nawrocki presented the jury with a document from Silicon Valley Bank ("SVB") extolling the importance of small, multiband internal antennas that allow cell phone

[13] Samsung repeatedly contends that Fractus conceded that it did not invent internal cell phone antennas—which is true. However, Mr. Nawrocki's 10% apportionment was only the beginning point of his calculation in determining the proper royalty, and Fractus never contended that it was entitled to the full 10% of the value of the average Samsung cell phone as a royalty. Fractus presented evidence that a 10% apportionment is proper to determine the value of the the internal antenna, relative to the overall phone—and then applied specific royalty rates derived from other relevant metrics to arrive at a proper royalty for the patented feature.

manufacturers the freedom to meet market demand for sleek and compact cell phones. *Id.* at 79:11–81:16; PX-232.

The SVB analysis explains that market forces require small multiband internal antennas to meet the "end users' insatiable demand for compact devices" as well as "manufacturers' desire for increasing design flexibility." PX-232 at 4. The SVB analysis also recognizes Fractus as one company that was developing "innovative technology for embedded mobile device antennas." *Id.* at 7. Fractus presented additional evidence demonstrating that internal antennas are essential to modern cell phone production, as well as evidence of how Fractus's technology meets the market demands for such antennas. *See, e.g.*, 5/19/2011 a.m. TT at 77:2–17; 78:15–17; 83:1–84:1; 119:4–121:19; PX-416. Mr. Nawrocki explained that he used these data points, among others, to analyze the relative value of an internal multiband antenna to the overall value of the infringing cell phones.

Fractus presented other evidence demonstrating the relative value of internal multiband antennas to modern cell phones. For example, Fractus presented evidence demonstrating the value Samsung derived from the use of internal antennas and Fractus's technology. 5/19/2011 a.m. TT at 116:25–119:8. Mr. Nawrocki also considered the average price paid for Fractus's antennas (*id.* at 108:15–109:10). Mr. Nawrocki presented substantial evidence to support the apportionment of the value created by the infringing antennas and Fractus's technology. In sum, Mr. Nawrocki amply supported his 10% apportionment.

Damages: Substantial Evidence of Reasonable Royalty Rate

Samsung also contends that Mr. Nawrocki's calculation of his reasonable royalty rate was not supported by substantial evidence. JMOL at 49–52. As previously noted, Fractus presented testimony and evidence that in 2004, prior to the issuance of the Patents-in-Suit,

Fractus was contemplating a per-unit royalty of $0.12–$0.13 (€0.10). 5/19/2011 a.m. TT at 90:3–92:5; DX-140. After the Patents-in-Suit issued, however, the jury heard testimony and viewed other evidence that Fractus was contemplating a per-unit royalty rate of $0.50 and a reasonable royalty of two to five percent of the overall price of a phone. *Id.* at 92:6–94:14; PX-262.

Mr. Nawrocki relied upon, among other things, the profit Fractus derived per unit for its antennas that included the patented technology. Mr. Nawrocki testified that historically, Fractus's average manufacturing costs varied between $0.25 and $0.30. *Id.* at 108:15–109:13. As such, Mr. Nawrocki explained that Fractus historically realized a profit of approximately $0.25 per unit sold. *Id.* Mr. Nawrocki, however, also testified that after issuance of the Patents-in-Suit in 2007, Fractus's profit from the antennas including the patented technology was much higher than the historical average. Specifically, Mr. Nawrocki testified that Samsung paid up to $1.58 (€1.20) for antennas including the patented technology in 2007, and Fractus was able to realize an average profit of approximately $1.15 per antenna in 2007. *Id.* at 110:1–113:3; PX-114.

Fractus also presented evidence regarding prior licenses for the Patents-in-Suit. For example, the jury heard testimony regarding what other cell phone manufacturers had agreed to pay for both past infringement and future use of the Patents-in-Suit. *See, e.g.*, 5/19/2011 a.m. TT at 96:10–101:10; 5/20/2011 p.m. TT at 55:1–57:13. Additionally, Fractus presented evidence of other licenses to the Patents-in-Suit for related technologies, as well as licenses covering other essential features of cell phones for comparison. *See, e.g.*, 5/19/2011 a.m. TT at 96:10–107:20; 116:1–8.

Samsung contends that the licenses Mr. Nawrocki relied upon are not comparable. JMOL at 49–52. As explained above, Mr. Nawrocki's reasonable royalty rate was not solely predicated on Fractus's prior licenses, but also on other evidence, such as Fractus's historical and projected per-unit royalty rates, as well as Samsung's market share and previous contracts with Fractus. Nevertheless, the licenses were sufficiently comparable to be admitted and considered as one data point for Mr. Nawrocki's reasonable royalty analysis. Fractus also proffered three non-litigation licenses to the Patents-in-Suit; settlement agreements that included the Patents-in-Suit from the instant litigation; licenses covering other essential features for cell phones; and licenses covering cell phone standards. 5/19/2011 a.m. TT at 96:10–107:20. All of the licenses relate to the technology, and Samsung cross-examined Mr. Nawrocki extensively about them, as well as presented its own interpretation of the licenses. *Id.* at 133:2–147:15; 5/20/2011 p.m. TT at 21:12–31:11. The jury was free to weigh the probative value of these licenses in determining the proper reasonable royalty rate.

Fractus also presented evidence, among other things, of its others sales prices, Fractus's position as a start-up trying to gain entry into the market, and Samsung's testimony about always meeting the price demanded by the manufacturer. *See generally* 5/19/2011 a.m. TT at 69:25–175:1. Mr. Nawrocki amply supported his reasonable royalty rate and the jury's ultimate determination of the proper royalty rate.

Damages Alternative Request: Remittitur or New Trial

Samsung contends, in the alternative, that it should be granted a new trial or remittitur because the jury's damage award is against the greater weight of the evidence and is excessive. JMOL at 52–53. Remittitur is within the sound discretion of the trial court and is only appropriate when the damages verdict is "clearly excessive." *See Alameda Films SA de CV v.*

Authors Rights Restoration Corp., 331 F.3d 472, 482 (5th Cir. 2003). Samsung's request of remittitur is denied for the same reasons above, which demonstrate that the damage verdict was not clearly excessive. In sum, Samsung's motion for JMOL and request for a new trial regarding damages or remittitur is **DENIED**.

Conclusion: Samsung's Rule 50 Motions

Based on the foregoing, the Court **DENIES** Samsung's motions for judgment as a matter of law (Docket No. 1025).

SAMSUNG RULE 52 MOTION FOR ENTRY OF FINDINGS OF FACT AND CONCLUSIONS OF LAW

Samsung also moves under Rule 52 for entry of findings of fact and conclusions of law on the defense of invalidity due to indefiniteness. *See* MTN FACT AND LAW at 1. In sum, Samsung rehashes its summary judgment argument that the MLV patents fail to provide an objective standard for identifying polygons. *Id.* at 2–4; *see also* Docket Nos. 611, 765 (denial of defendants' motion for summary judgment for indefiniteness). Fractus counters that Samsung has waived any arguments regarding indefiniteness. Docket No. 1047 at 42–46.

Samsung failed to present any explicit indefiniteness evidence at trial. Prior to trial, the Court provided the parties with time limits and general guidelines regarding trial procedure. Docket No. 925. Therein, the Court explained to the parties that the time limits were inclusive of all issues, including issues to be tried to the bench. *Id.* Samsung was aware of the Court's procedures and explicitly stated at the final pretrial conference that it intended to present its indefiniteness evidence outside the presence of the jury. *See* 4/20/2011 Pretrial Hearing Transcript at 14:13–23.

Nevertheless, Samsung failed to make a single reference to indefiniteness during trial. In fact, Samsung did not request to present testimony or evidence regarding any equitable issues

outside the presence of the jury. Samsung did not move for judgment as a matter of law regarding indefiniteness, or any other non-jury issues, at the close of its case-in-chief or at the close of evidence. Allowing Samsung to revive its defense post-trial deprives Fractus of any opportunity to substantively respond with its own testimony or evidence to Samsung's alleged evidence[14] of indefiniteness.

Samsung argues that it preserved its defense by asserting it in the Final Pretrial Order and submitting pretrial proposed findings of fact and conclusions of law. Docket No. 1055 at 10. However, Samsung listed a litany of defenses in the pretrial order, including laches and inequitable conduct, which it never pursued at trial. *See* Docket No. 798. Samsung also submitted pretrial proposed findings of fact and conclusions of law regarding laches. *See* Docket No. 792. Samsung essentially alleges that Fractus should rebut all defenses listed in the pretrial order, jury or nonjury, regardless of whether Samsung presents any explicit testimony or evidence, or even mentions such defenses, during trial. Such a result is untenable. Accordingly, Samsung has waived its indefiniteness challenge by not raising the issue at trial or preserving it via Rule 50. *See Lisle Corp. v. A.J. Mfg, Co.*, 398 F.3d 1306, 1317 (Fed. Cir. 2005).

The Court notes, however, that had Samsung not waived its indefiniteness challenge, it failed to present clear and convincing evidence that the claims are not amenable to construction. *Datamize LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005). As previously stated, Samsung merely reiterates its arguments from its summary judgment motion and presented no new evidence regarding indefiniteness during trial. The Court also notes that the bulk of Samsung's arguments appear related to noninfringement and its disagreement with Dr.

[14] Samsung's evidence consists mainly of citations to Fractus's expert, Dr. Long, and his method of identifying polygons. *See* MTN FACT AND LAW 2–4. Samsung also presents "facts" that were not presented at trial. *Id.* at 3 ¶ 13. Samsung's evidence merely reiterates its position during the summary judgment phase of the case and restates its *noninfringement* positions that Dr. Long's methodology is flawed—not that the claims are insolubly ambiguous. In essence, Samsung uses Dr. Long's testimony as "proof" that the claims are indefinite, because Samsung disagrees with how Dr. Long conducted his analysis.

Long's methodology and not necessarily whether the claim limitations are sufficiently definite. Given that Samsung did not present any explicit evidence regarding indefiniteness, the Court also denies Samsung's motion for the same reasons it denied Samsung's motion for summary judgment of indefiniteness.

Conclusion on Samsung's Rule 52 Motion

Based on the foregoing, the Court **DENIES** Samsung's Motion Under Rule 52 for Entry of Findings of Fact and Conclusions of Law Regarding Indefiniteness (Docket No. 1026).

SAMSUNG RULE 59 MOTION FOR A NEW TRIAL FOR ERRORS IN EVIDENTIARY RULINGS

Samsung moves for a new trial under Rule 59 arguing that the Court made material errors regarding evidentiary issues that warrant a new trial. NEW TRIAL MTN at 1. Specifically, Samsung contends that the Court erred in: (1) admitting correspondence between Dr. Nathan Cohen and Samsung; and (2) improperly sustaining Fractus's objection during closing argument regarding whether Samsung believed that Fractus's patents covered "fractal" antennas. *Id.* at 1–2.

Applicable Law

Under Rule 59(a) of the Federal Rules of Civil Procedure, a new trial can be granted to any party to a jury trial on any or all issues "for any reason for which a new trial has heretofore been granted in an action at law in federal court." FED. R. CIV. P. 59(a). "A new trial may be granted, for example, if the district court finds the verdict is against the weight of the evidence, the damages awarded are excessive, the trial was unfair, or prejudicial error was committed in its course." *Smith v. Transworld Drilling Co.*, 773 F.2d 610, 612–13 (5th Cir. 1985). The Court must view the evidence "in a light most favorable to the jury's verdict, and [] the verdict must be affirmed unless the evidence points so strongly and overwhelmingly in favor of one party that

the court believes that reasonable persons could not arrive at a contrary conclusion." *Dawson v. Wal-Mart Stores, Inc.*, 978 F.2d 205, 208 (5th Cir. 1992).

Cohen Correspondence

Samsung first argues that the Court improperly admitted correspondence between Dr. Nathan Cohen and Samsung's counsel. Dr. Nathan Cohen is the inventor of the '975 Patent, upon which Samsung rested its anticipation and obviousness invalidity defenses. Samsung originally listed Dr. Cohen in its initial disclosures as a person with relevant knowledge regarding prior art. *See, e.g.*, 4/20/2011 Pretrial Hearing Transcript at 196:12–197:1.

By way of background, at a pretrial hearing on April 20, 2011, Defendants represented to the Court that they intended to call Dr. Cohen as a fact witness. 4/20/2011 Pretrial Hearing Transcript at 187:10–15; 198:7–9. Fractus told the Court that Dr. Cohen was listed as a "may call" on all Defendants' witness lists and that if he was going to testify, Fractus would like to take his deposition. *Id.* at 184:9–185:10. Fractus also explained that it did not know how Dr. Cohen was involved with the Defendants. *Id.*

In response, Samsung's counsel represented that Defendants intended to call Dr. Cohen as a live witness at trial and that Samsung was amenable to Fractus deposing him. *Id.* at 187:10–22. The parties were instructed to schedule Dr. Cohen's deposition. *Id.* at 191:18–24. The parties disagreed over how long Dr. Cohen would be required to sit for his deposition, and counsel for LG, speaking on behalf of all Defendants, stated that Dr. Cohen was not under their control because he was not the Defendants' expert, nor a prior art expert, but a third-party fact witness. *Id.* at 196:12–21; 198:2–6.

The parties agreed, with the Court's guidance, that Dr. Cohen would sit for a discovery deposition in Texas prior to trial. *Id.* at 196:12–199:16. Nevertheless, the parties continued to

squabble over the scheduling of Dr. Cohen's deposition. *See, e.g.*, Docket No. 1043, Ex. 8 ("5/5/2011 Pretrial Hearing Transcript"). The parties had agreed that Dr. Cohen would sit for a deposition on Saturday prior to his Monday trial testimony, after which he would return home late Monday evening or, more likely, Tuesday. *Id.* Due to a change in the Court's scheduling of the trial, Dr. Cohen was then not scheduled to testify until Wednesday. *Id.* As such, Dr. Cohen would not agree to travel to Texas for the Saturday deposition, but would only agree to sit for a deposition in Texas on Tuesday, during trial, or sit for a deposition on the Saturday prior to trial in Boston, Massachusetts. *Id.*

After some back and forth, the parties finally agreed that Dr. Cohen would sit for a deposition in Boston. Docket No. 1043 at 12. However, 24 hours prior to the deposition, Fractus contended that Dr. Cohen had yet to produce some relevant documents from his company Fractal Antennas Systems, Inc.; therefore, Fractus cancelled the deposition in Boston opting for an evening deposition the night before Dr. Cohen would testify at trial. *Id.*; *see also* 5/20/2011 p.m. TT at 126:17–129:12 (Court recounting the events regarding Dr. Cohen's deposition).

Thereafter, Samsung issued its own subpoena to Dr. Cohen, intending to take his deposition in Boston. 5/20/2011 p.m. TT at 126:17–129:12. On Fractus's motion, the Court quashed that deposition, explaining that it had allowed a discovery deposition to reveal the topics and issues that Dr. Cohen intended to testify about at trial and that Samsung could not convert it into a trial deposition. *Id.* Dr. Cohen never sat for a deposition. Subsequently, Samsung advised Fractus and the Court on the first day of trial that Dr. Cohen would not appear at trial. 5/17/2011 a.m. TT at 5:6–9.

In the midst of attempting to schedule Dr. Cohen's deposition, Samsung voluntarily produced correspondence between itself and Dr. Cohen because it intended to call him as a "fact witness." Docket No. 1043 at 11. Contrary to previous representations, the documents revealed that in October 2010, Samsung had hired Dr. Cohen as a consulting expert to search for invalidating prior art regarding the MLV patents. *Id.*. The documents also included an April 24, 2011 email from Dr. Cohen to Samsung's counsel reporting that he was "completing his final report as technical consultant," and that he had located some allegedly invalidating prior art. PX-411. Dr. Cohen promised to forward the report to Samsung the following morning and also requested to forward the report to other Defendants in the case. PX-411. Dr. Cohen also stated that he had exceeded his "$5000 retainer" and that he intended to submit a new bill. *Id.* Dr. Cohen's retainer agreement also obligated Dr. Cohen to testify at trial as a testifying expert at Samsung's leisure. PX-412. The Court admitted these documents during trial, and Samsung now contends that such admissions were improper.

The correspondence between Dr. Cohen and Samsung includes: (1) an email between Dr. Cohen and counsel for Samsung in which Dr. Cohen explains that the disclosures of the MLV patents are broader than the claims and that he needs guidance in his search (PX-409, 410); (2) an email between Dr. Cohen and counsel for Samsung in which Dr. Cohen explains that he has prepared a report that he will submit and that he has found invalidating prior art (PX-411); and (3) the agreement in which Samsung retains Dr. Cohen (PX-412).

Samsung contends that the Court improperly admitted the correspondence between Dr. Cohen and Samsung. NEW TRIAL MTN at 1. Samsung contends that the documents were hearsay, misleading and prejudicial.[15] *Id.* Samsung affirmatively told the jury that they had

[15] Fractus contends that Dr. Cohen's statements amount to an admission by a party opponent, citing *Collins v. Wayne Corp.*, 621 F.2d 777, 780–82 (5th Cir. 1980), *superseded by rule on other grounds*. Because Samsung

hired Dr. Cohen as an expert, and also told the jury that Dr. Cohen would "know better than anyone that Fractus's patents are invalid." 5/17/2011 a.m. TT at 75:2-17. Samsung opened the door to allow Fractus to question whether Dr. Cohen indeed knew better than anyone that his prior art invalidated the MLV Patents and whether he had prepared a report opining on the same for Samsung.

Samsung could have easily rectified the situation by bringing Dr. Cohen to trial, as he had agreed to do, to explain what had happened to his report and that he was not acting as Samsung's expert when he sent the email.[16] At a minimum, Samsung could have had Dr. Cohen submit a declaration or affidavit explaining the same. Samsung did neither.

Samsung proffers no admissible evidence to support its argument that no report exists. Instead, Samsung merely presents post-hoc attorney argument that the voluntarily produced and relevant documents were improperly revealed to the jury. Samsung hired Dr. Cohen and rested its entire invalidity defense on his '975 patent; therefore, the fact that Dr. Cohen served as Samsung's paid expert and had prepared a report regarding the same was highly relevant and the jury was entitled to hear such evidence and draw its own conclusions.

Nevertheless, to the extent any error does exist, the extensive evidence presented regarding the failure of Samsung's invalidity defense outweighs any prejudice from the admittance of these documents. *See supra* at 18–30 (section on Invalidity).

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opened the door to the Cohen correspondence, and any prejudice as a result of its admission is greatly outweighed by the other substantive evidence regarding the Cohen reference, the Court need not address this issue.

[16] Samsung contends that Dr. Cohen was only employed as an expert from October to December 2010. Docket No. 1043 at 11. However, one of the documents at issue indicates that he was still employed as an expert in April 2011. PX-411.

Closing Argument

Samsung also contends that the Court's ruling that Samsung could not use the word "fractal" at one point during closing argument was a material evidentiary error and highly prejudicial and mandates a new trial.[17] NEW TRIAL MTN at 1–2.

By way of background, during the claim construction phase of this case, Fractus argued that it had explicitly disclaimed "fractal" antennas in the MLV Patents' specification and requested a "non-fractal" disclaimer in the construction of "multilevel structure." *See* Docket No. 423 at 6. In response, Samsung argued that Fractus's proposed "non-fractal" disclaimer was meaningless and vague to the point that should the Court include any reference to "fractal" or "non-fractal" concepts in the construction of "multilevel structure," it would render the patent hopelessly ambiguous. Docket No. 430 at 11–13.

Specifically, Samsung argued that the MLV Patents fail to define the bounds of a "fractal antenna;" therefore, the term "non-fractal" was similarly undefined. *Id.* Furthermore, Samsung argued that even as a mathematical abstraction, the term "fractal" (and "non-fractal") was undefined—as taught by "the father of fractals"—Benoit Mandelbrot. *Id.*; *see also* Docket No. 429, DEFENDANTS' MOTION ON INDEFINITENESS ("Given that mathematicians cannot define 'fractal,' the term 'non-fractal' is also indefinite."); *see also* Docket No. 429, Ex. BB at 122 (article written by Benoit B. Mandelbrot stating, "[m]y concern with the precise role of definition in mathematics is, of course, strengthened by the fact that there is no precise mathematical definition of the terms *fractal* and *multifractal*."); Docket No. 452, n.13. While the Court recognized that the MLV Patents explicitly taught away from "fractal" antennas, the Court

[17] With the parties consent, Magistrate Judge John D. Love, rather than the undersigned, read the Court's Charge to the jury and presided over closing arguments due to the undersigned's unavailability because of a scheduled medical procedure. *See* 5/20/2011 a.m. TT at 122:7-22.

agreed with Samsung that the term "fractal" was undefined and an explicit disclaimer was improper. Docket No. 526 at 10–11.

Remarkably, when it became convenient for Samsung to assert that "fractal" had a well-known and accepted meaning in the art, it urged the Court to allow the parties to freely use the term and assert that both Fractus's and Cohen's patents are "fractal." As the case proceeded to trial, Samsung changed positions (consistent with Fractus's original claim construction position) that the term "fractal antenna" is well-defined in the antenna field. Additionally, as explained in other portions of this opinion, Samsung contended that Dr. Cohen was the authority and first inventor of multiband "fractal" antennas.

Samsung argued that Fractus had always represented its technology as "fractal" in pre-suit presentations to Samsung; therefore, Samsung could not have known it was infringing because either: (1) Samsung was not using "fractal" designs to develop its antennas; or (2) Fractus's patents were invalid in light of the Cohen Patent directed at "fractal" antennas. Accordingly, the Court determined that the best course of action would be to urge the parties to minimize use of the term "fractal" during trial to avoid juror confusion, but also allow Samsung leeway to present its evidence referencing "fractal" prior art and pre-suit representations.[18] *See* Docket No. 971; 5/20/2011 a.m. TT at 84:9–22; 87:2–88:5.

During trial, Samsung presented the jury with a Fractus slide presentation containing a single slide depicting an earlier generation of Fractus's patented technology as "fractal." PX-408. The Court allowed Samsung to question one of the inventors named on the MLV patents regarding the Fractus presentation. 5/17/2011 p.m. TT at 80:18–82:2. Samsung explained that

[18] Neither party requested revisiting the "multilevel structure" construction prior to trial. The Court recognized in its *Markman* order that the MLV Patents explicitly taught away from "fractal" antennas, but chose not the include a "non-fractal" disclaimer at Samsung's urging.

such questions were only related to willfulness and intended to establish that if it knew about the Patents-in-Suit, it believed they were related to "fractal" technology. *Id*.

During closing argument, Samsung again displayed the Fractus presentation and attempted to argue that it could not have known that it infringed the Patents-in-Suit because Fractus had represented that its technology was "fractal." 5/23/2011 a.m. TT at 121:3–130:7. Fractus objected based on an earlier Court instruction (discussed and reproduced in full below) regarding the ambiguous nature of the term "fractal." *Id.* Ultimately, the Court allowed Samsung to argue that Fractus told it that the technology was "different" than the MLV Patents, but did not allow Samsung to explicitly use the word "fractal." *Id.* Samsung argues that it was materially prejudiced because the Court did not allow it to use the word "fractal" during this portion of closing argument. NEW TRIAL MTN at 1–2.

First, while Samsung could not say "fractal" during closing argument, it did make its point by stating that Fractus told it that its technology was "different." *See* 5/23/2011 a.m. TT at 121:3–130:7. Accordingly, any alleged error would have been harmless given that Samsung was actually allowed to make its argument. Second, Samsung was not foreclosed from presenting the relevant evidence to the jury. Samsung presented the slide show, among other evidence, to the jury and was not limited from explicitly referencing and highlighting for the jury the references to "fractals." Samsung was merely foreclosed, in response to an earlier instruction, from using the word fractal at one point during closing argument. As such, Samsung not being able to say "fractal" in closing argument was not so prejudicial as to entitle it to a new trial.

Samsung also contends, via a footnote in the invalidity section of its JMOL, that it is entitled to a new trial because the Court precluded particular "fractal" documents. Samsung argues that the Cohen Patent teaches "fractal" antennas, and that internal Fractus documents

"establish that Dr. Puente invented the term 'multilevel antenna' as a way to claim the same 'fractal' geometries as Cohen disclosed," without using the term fractal. JMOL at 27, n.14. Samsung argues that it was precluded from making any argument that "fractal" equates to "multilevel," and from introducing these Fractus documents into evidence. *Id.* In other words, Samsung contends that both the MLV Patents and the Cohen Patent are "fractal," therefore, Cohen invalidates the MLV Patents. As such, Samsung argues that these evidentiary rulings precluding documents that allegedly prove that multilevel equals fractal constitute "substantial error" entitling Samsung to a new trial on the issue of invalidity. *Id.*

Samsung claims that the Court committed "substantial error" by urging both parties to *minimize* (not forbid) use of the vague and imprecise term "fractal." *See* Docket No. 971 (stating that the MLV patent *did not* disclaim fractal antennas, but that the term is ill-defined; therefore, the parties are urged to minimize use of the term during trial to avoid juror confusion.) Samsung was given substantial latitude to present its theory that Cohen anticipates the MLV patents, and the record is replete with Samsung's references to evidence and testimony that Fractus's patents were allegedly "fractal" in nature. *See e.g.* 5/17/2011 a.m. TT at 80:18–84:5. While Samsung attempts to silo such evidence as directed at willfulness, it was also, at least indirectly, related to Samsung's invalidity theory that "multilevel" equals "fractal," and that Cohen was first to invent "fractal" antennas. Therefore, the exclusion of the documents was not "highly prejudicial."

Another concern during trial was Samsung's attempt to shorthand its invalidity presentation. Indeed, "fractal" was mentioned to such an extent, a jury instruction during trial was necessary to remind the jurors to focus on the claim language, the Patent-in-Suit, and the prior art and not to be confused by buzzwords:

> As I have previously explained to you in my preliminary instructions, sometimes in a patent suit, there is a disagreement between the parties as to what certain words mean. When this happens, the Court interprets these terms in light of the patent as a whole. And you noticed at Tab 1, there are certain definitions of certain words in the patent.
>
> One such word that keeps coming up, and it will probably come up in this case is the word fractal as it relates to antennas. You will notice it's not listed in my claim construction chart. In the parties' presentations, you may hear and see many references to this term. The Court has found, with regard to the patents-in-suit, that this term, fractal, is both unclear, not precisely defined, not consistently used, and has different meanings, depending upon when, where, and who is using it. It is not a reasonable descriptive—it is not a reasonably descriptive term.
>
> The parties have been instructed to avoid any attempt to shorthand their presentation of the evidence based upon this term fractal. In light of the Court's finding about the non-definition of this term or the manner in which it's used at different times with different definitions, do not let any of the parties use of this term confuse you. It is not used in the claims in the patents-in-suit. Your job and you should focus your attention on the words of the claims of the patents-in-suit, and you should compare the words and the elements of the claims of the patents-in-suit to the accused devices with regard to infringement and with regard to prior art, any prior art with regard to issues of invalidity. Do not be misled by tags or labels but look to a comparison of the claim elements in evaluating the case. And I'm sure the attorneys will attempt to forego using that term except where it's absolutely necessary or where it comes up in some of the documents, but just realize it's really a term without any precise meaning.

5/17/2011 p.m. TT at 108:6–109:21.

Further, while Samsung alleges that internal Fractus documents establish that multilevel equates to fractal, a review of the documents reveals that such a result is a not a foregone conclusion. Therefore, exclusion of the hearsay documents was not "highly prejudicial" as Samsung contends. As such, to the extent that Samsung is moving for a new trial on this issue via its footnote, the motion is **DENIED**.

Conclusion: Samsung Rule 59 Motion For a New Trial for Errors in Evidentiary Rulings

Based on the foregoing, the Court **DENIES** Samsung's Motion for a New Trial Under Rule 59 Based on Material Errors in Evidentiary Rulings.

FRACTUS'S MOTION FOR ENHANCED DAMAGES AND ATTORNEYS' FEES

As stated above, the jury found that Samsung willfully infringed the MLV Patents. Fractus now moves for enhanced damages and attorneys' fees in accordance with the jury findings. *See* ENHANCED DAMAGES MTN at 1.

Applicable Law

A court may, in its discretion, enhance damages up to three times when there is a finding of willful infringement or bad-faith on the part of the infringing party. 35 U.S.C. § 284; *see SRI Int'l Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1468–69 (Fed. Cir. 1997). "Bad faith" in this context refers to an infringer's lack of due care with regard to avoiding infringement and is more properly called "bad faith infringement." *Jurgens v. CBK, Ltd.*, 80 F.3d 1566, 1571 (Fed. Cir. 1996). Although "bad faith" acts such as litigation misconduct are not alone sufficient to support an enhancement of damages, assuming the requisite culpability is present, such acts can be considered in determining whether to award enhanced damages and how much to award. *See id.* at 1570–71. A finding of willful infringement provides sufficient culpability to justify the enhancement of damages under § 284. *See id.* at 1571, 1573.

Enhanced damages are a punitive measure taken by a court to penalize a willful infringer for his or her increased culpability. *See id.* at 1570. However, a court may refrain from awarding enhanced damages based on the weight of the evidence supporting willfulness and the closeness of the issues at trial. *See Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1582 (Fed. Cir. 1992); *Laitram Corp. v. NEC Corp.*, 115 F.3d 947, 955 (Fed. Cir. 1997). "The paramount determination in deciding enhancement and the amount thereof is the egregiousness of the defendants' conduct based on all the facts and circumstances." *Read Corp.*

v. Portec, Inc., 970 F.2d 816, 826 (Fed. Cir. 1992), (abrogated on other grounds by *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 975 (Fed. Cir. 1995) (en banc)).

Courts normally consider the following factors in deciding whether to enhance damages and the amount of enhancement: (1) whether the infringer deliberately copied the ideas or design of another; (2) whether the infringer, when he knew of the other's patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed; (3) the infringer's behavior as a party to the litigation; (4) the defendant's size and financial condition; (5) closeness of the case; (6) duration of the defendant's misconduct; (7) remedial action by the defendant; (8) the defendant's motivation for harm; and (9) whether the defendant attempted to conceal its misconduct. *Id.* at 827.

In addition, attorneys' fees and costs may be awarded in "exceptional cases" to the "prevailing party." 35 U.S.C. § 285. Awarding attorneys' fees under § 285 is a two-step process. *Cybor Corp. v. FAS Tech.*, 138 F.3d 1448, 1460 (Fed. Cir. 1998). "First, the district court must determine whether a case is exceptional, a factual determination reviewed for clear error. After determining that a case is exceptional, the district court must determine whether attorney fees are appropriate." *Id.* (internal citation omitted); *Delta-X Corp. v. Baker Hughes Prod. Tools, Inc.*, 984 F.2d 410, 413 (Fed. Cir. 1993). "[E]xceptional cases" may, but are not required to, include the jury's finding of willfulness. *Insituform Techs., Inc. v. Cat Contracting, Inc.*, 518 F. Supp. 2d 876, 895 (S.D. Tex. 2007) (citing *Avia Group Int'l, Inc. v. L.A. Gear Ca., Inc.*, 853 F.2d 1557, 1567 (Fed. Cir. 1998)). "The decision to increase damages is committed to the discretion of the trial judge." *Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 543 (Fed. Cir. 1990). However, in cases where there has been an express finding of willfulness, the trial

court must, in denying attorneys' fees, "explain why the case is not 'exceptional' within the meaning of 35 U.S.C. § 285." *Id.*

Background

Samsung and Fractus's business relationship dates back to 2002. DX-75. Between 2002 and 2006, Fractus bid on various Samsung antenna projects and in 2005 won its first project to develop an internal antenna for Samsung's Coupe phone. 5/20/2011 a.m. TT at 94:1–13. Fractus's manufacturing facility, however, failed Samsung's stringent audit requirements. 5/20/2011 p.m. TT at 69:3–72:10. As explained by Fractus's Executive Chairman, Samsung urged, and Fractus agreed, to allow Intops, Inc. to manufacture the Fractus-designed antenna for the Coupe. 5/20/2011 p.m. TT at 69:3–72:10. Thereafter, Fractus continued to compete and win projects with Samsung. *Id.*

In 2006, Fractus gave a presentation entitled, "Fractus Handset/Wireless Innovation Report for Samsung" that was of particular importance during trial. PX-408. The presentation gives a general overview of Fractus as a company, its technical capabilities, and its potential value as a business partner. *Id.* at FRAC-01308137–143. The presentation also documents a series of "case studies" and descriptions of "solutions." *Id.*

In particular, the presentation includes descriptions of a "Slim PIFA (planar inverted-f antenna)" antenna described as combining a multilevel and space-filling PIFA design. *Id.* at FRAC-01308150. Also depicted and/or mentioned in various slides is Fractus's "Multilevel PIFA" antenna. *Id.* at FRAC-01308152; 169–170; 173–174. Importantly, throughout the presentation there are extensive references to Fractus's patent portfolio and, specifically, the European counterpart to the '868 Patent and the parent application number (10/102,568) of the MLV Patent family. *See, e.g.*, PX-408 at FRAC-01308152. Also, Fractus's presentation

includes a single slide that states "[f]ractal [g]eometry [a]pplied to [a]ntennas." *Id*. at FRAC-01308136. The same slide states that Fractus currently owns forty-two patents or pending patent applications covering the relevant technology depicted in the presentation. *Id.*

Also in 2006, Dr. Nathan Cohen's company, Fractal Antenna Systems ("FAS"), made a presentation to a Samsung division in the United States about its "fractal" antenna technology. DX-37; PX-419. During that presentation, FAS contended that Fractus had "[p]atent infringement concerns in [the United States]." *Id.* at 9. Contemporaneous internal Fractus communications reveal that Samsung was concerned about the conflict between FAS and Fractus, but that Samsung led Fractus to believe: (1) that FAS's patents are not directly related to "current [m]obile internal antenna[s];" and (2) that Fractus does not "violate" FAS's patent regarding mobile internal antennas. PX-419.

During this time, Fractus was not awarded any new Samsung projects. DX-1. Fractus's internal communications again reveal that the FAS conflict was part of the issue, but that Samsung had other concerns regarding Fractus's technology. *Id.* All of these issues correspond in time with the issuance of the '868 Patent on March 21, 2006. Shortly thereafter, the '208 Patent issued in October 2006. Fractus subsequently raised its antenna prices, which Samsung accepted in November 2006. PX-114. Ultimately, this would be Samsung's last purchase of Fractus antennas.

Enhanced Damages Factor 1: Copying

Fractus now argues that Samsung deliberately copied Fractus designs, relying on the following evidence: (1) that Fractus marked its antennas and then Samsung used the identical designs in its phones; (2) a Fractus antenna engineer left to work for a Fractus competitor that also supplied Samsung with antennas; (3) that Samsung admitted to directly copying Fractus's

design in the instance of the Coupe phone; and (4) Samsung failed to explain a discrepancy in sales data between its internal figures and publicly-reported industry data related to another project involving the "Chorus" phone, which contained Fractus supplied and designed antennas. ENHANCED DAMAGES MTN at 2. Each contention will be taken in turn.

Fractus first argues that it marked its antennas with its patent numbers when it sold them to Samsung and that identical antenna designs ultimately ended up in Samsung phones. Samsung's primary response is that Fractus represented its antennas as employing "fractal" designs and that Samsung avoided such designs, instead choosing to employ more "standard designs" such as planar inverted-f antennas (PIFAs). Docket No. 1043 at 17–18. In particular, Samsung points to the 2006 Fractus presentation that mentions fractal geometry as applied to antenna design. *Id.*

Samsung's reliance on its assertion that Fractus described its technology as "fractal" and, therefore, Samsung avoided such designs, is overstated. The Fractus presentation does reference "fractal geometry," but it also plainly describes "multilevel PIFA" designs as well as attendant references to Fractus's European and United States patents and pending patent applications. *See, e.g.*, PX-408. While Fractus has presented no direct evidence that Samsung copied its designs, it argues that the circumstantial evidence demonstrates that Samsung must have copied its designs because Fractus marked its antennas and similar antennas ended up in Samsung phones. Without more, however, the Court cannot make an unsubstantiated leap on an important issue such as copying.

Likewise, Fractus's assertion that its former employee left Fractus and took a position with a competitor that supplied Samsung with antennas is merely circumstantial evidence of copying. Fractus presents no relevant direct evidence or testimony that its former employee used

any of Fractus's patented designs while at his new company. 5/18/2011 a.m. TT at 118:20–119:19. Again, while the circumstantial evidence may show that Samsung copied Fractus's designs, absent more direct evidence, the Court cannot bridge the gap and find that Samsung copied.

Also, Fractus contends that Samsung "admitted" to copying with regard to the Coupe project. On the contrary, the evidence presented at trial revealed that Fractus was fully aware of and consented to Samsung's use of a different manufacturer, Intops, Inc., when Fractus's manufacturing facility failed Samsung's audit. 5/20/2011 p.m. TT at 69:3–72:10. Moreover, Fractus's allegation regarding the discrepancy between Samsung's sales figures and industry data for another Samsung phone containing a Fractus supplied antenna is not supported by the record evidence. While there is circumstantial evidence that Samsung copied Fractus's designs, there is a lack of direct evidence of copying. Accordingly, this *Read* factor is neutral, or at best, slightly favors an enhancement.

Enhanced Damages Factor 2: Investigation and Good Faith Belief of No Liability

Fractus also contends that Samsung never performed an analysis of the patents despite Fractus informing Samsung of the attendant risk of using other antenna suppliers. ENHANCED DAMAGES MTN at 2. Samsung counters that it had no reason to investigate Fractus's patents because Fractus never informed Samsung about the infringement and because Fractus told Samsung that its patents related to "fractal" technology. Docket No. 1043 at 19–20.

While Fractus did not send a letter to Samsung in 2006 informing it of the alleged infringement, Samsung was on notice regarding Fractus's patents and failed to thoroughly investigate. Among other things, Fractus informed Samsung that: (1) the MLV patent family covered PIFA type designs (PX-408); (2) sent Samsung invoices which included references to

the Patents-in-Suit (PX-114); and (3) warned Samsung of the dangers of using a supplier without patent protection. DX-3. Samsung also independently found one of Fractus's patents during an unrelated search. *See* PX-244.

Samsung again repeats its contention that it did not investigate the Patents-in-Suit because Fractus represented that its technology was "fractal." Samsung is a remarkably successful and sophisticated corporation; Fractus's few references to fractal geometry in a presentation do not wholesale absolve Samsung from investigating the Patents-in-Suit. Indeed, the fact that the 2006 Fractus presentation made explicit references to PIFAs, which Samsung vehemently contends is related to all of its antenna designs, should have prompted a diligent and earnest investigation of whether Samsung's PIFAs infringe the Patents-in-Suit.

While Samsung contends post-filing that it does not infringe and that the Patents-in-Suit are invalid, under the circumstances, it appears that Samsung failed to adequately investigate the nature of Fractus's patents. Certainly Fractus could have explicitly communicated its belief that Samsung was infringing its Patents-in-Suit immediately after issuance of the '868 Patent in March 2006. Nevertheless, Samsung was notified of Fractus's patents on numerous occasions, and the evidence in this case does not establish that Samsung ever undertook a serious investigation to form a good-faith belief that its antennas do not infringe or that the Patents-in-Suit are invalid.

In fact, Samsung presented evidence that it explicitly had concerns regarding Fractus's patents, but could not produce any evidence of a technical investigation to establish that it had a good-faith belief regarding non-infringement or validity. Instead, Samsung merely claims that Fractus represented its antennas as "fractal," and that Samsung chose not to use such designs,

while at the same instance contending that "fractal" is a vague and amorphous term. As such, this *Read* factor favors enhancement.

Enhanced Damages Factor 3: Conduct During Litigation

Fractus also contends that Samsung committed litigation misconduct by: (1) destroying documents; (2) misrepresenting its relationship with Dr. Nathan Cohen and not producing related documents; (3) lying about its knowledge of Fractus's patents; (4) misrepresenting the facts regarding the Cohen prior art antenna; (5) engaging in misleading arguments during trial; (6) refusing to agree to representative phones; and (7) not presenting evidence on equitable issues.

Fractus first contends that Samsung intentionally destroyed documents relevant to this suit. ENHANCED DAMAGES MTN at 5–6. As part of its initial disclosures, Fractus identified Samsung employee, Mr. Jai-Ki Jung, as a person with relevant information. *Id.* Mr. Jung was designated as a Samsung corporate representative in this case and admitted that he was not asked whether he had any relevant documents until 16 months after the suit was filed. *Id.* Mr. Jung also testified that his emails were continually purged every 14 days, and that he had changed computers between 2009 and 2010 and all of the data was subsequently destroyed. *Id.* Samsung counters, among other things, that it had no duty to preserve documents until it had notice of the infringement allegations in 2009 when Fractus filed suit. Docket No. 1043 at 8–9.

While the Court appreciates the desire for a large organization such as Samsung to reduce server costs by monitoring and disposing of unnecessary data, given the importance of email to current civil discovery, a policy of indiscriminately purging employee email every 14 days raises red flags. During trial, nor in its briefing, did Samsung present persuasive reasons for implementing such a policy. While a particular email may not appear "important" at a given time, thus warranting deletion, the same email may become highly relevant in the future and may

prompt a future party to contend that Samsung's policy amounts to deliberate spoliation to frustrate discovery efforts. After a thorough review of the record, however, while Samsung's purging of emails every 14 days raises serious concern, it does not appear that in this case Samsung intentionally and knowingly destroyed relevant documents.

Fractus next argues that Samsung misrepresented its relationship with Dr. Cohen and destroyed or withheld his technical report and billing records. ENHANCED DAMAGES MTN at 7–10. The Court has previously detailed the relationship between Samsung and Dr. Cohen. *See supra* at 49–58 (New Trial section). While both party's histrionics regarding Dr. Cohen's involvement in this litigation are unimpressive, the facts shine an extremely poor light on Samsung's handling of its consulting expert, which it attempted to convert into a fact witness.

Samsung concedes, and openly admitted during trial, that it hired Dr. Cohen as a consulting expert to conduct prior art searches in an attempt to invalidate Fractus's patents. *See*, *e.g.*, 5/17/2011 a.m. TT at 75:2-17. Samsung contends that this relationship lasted from October to December 2010 (Docket No. 1043 at 11), and that Samsung later attempted to covert Dr. Cohen into a fact witness. Nevertheless, Dr. Cohen sent an email to Samsung's counsel on April 24, 2011, claiming that he was putting the finishing touches on his "final report" as technical consultant and informing counsel that he had exceeded the "$5000 retainer" and that he would submit both the report and bill the next day. PX-411. In the end, Dr. Cohen did not testify and no report or bill ever surfaced at trial.

Samsung now contends that in April 2011, it contacted Dr. Cohen about serving as a fact witness in this litigation and shortly thereafter decided to call him as a fact witness at trial. Docket No. 1043, Decl. of Neal P. Sirota ¶¶ 10–11. A few days later, Dr. Cohen sent the email regarding the report and bill. After some discussion between Samsung's counsel and Dr. Cohen,

Samsung states that Dr. Cohen was only "mentally formulating" a report and nothing had been reduced to writing. *Id.* at ¶¶ 12–18. Additionally, Samsung states that Dr. Cohen never sent a bill for his services beyond the original $5000 retainer. *Id.*

While Samsung attempts to set the record straight regarding Dr. Cohen, the documentary evidence weighs heavily against Samsung's version of the facts. Samsung's explanation is exceedingly incredible given that Dr. Cohen authored correspondence to Samsung's counsel stating that he was "finally completing [his] final report," and would send it to both Samsung and others the following morning, when he was merely "mentally formulating" a report. Also, Samsung's failure to correct the record during pretrial when its co-counsel informed the Court that Dr. Cohen was not an expert, consulting or otherwise, sheds a harsh and disinfecting light on Samsung's attempt to walk a fine line between disclosing that Dr. Cohen was a paid expert, and having him testify in front of the jury as an unpaid "fact witness." 4/20/2011 Pretrial Hearing Transcript at 196:12–21; 198:2–6.

At best, Samsung simply made a tactical mistake realizing at a late hour that it needed Dr. Cohen to testify and had not properly designated him as a testifying expert; therefore, Samsung had to find a way to elicit his testimony at trial. At worst, Samsung asked Dr. Cohen to destroy his technical report because it was unfavorable to Samsung's positions.[19] Either way, Samsung's handling of Dr. Cohen supports Fractus's request for enhanced damages.

Fractus also contends that Samsung witnesses lied about their knowledge of Fractus's patents. ENHANCED DAMAGES MTN at 10. Fractus called Samsung's corporate representative, Jae Kim, as a witness. Mr. Kim was sitting at counsels' table throughout the trial. Mr. Kim

[19] Samsung also claims that Fractus's reference to the missing report was prejudicial. Docket No. 1043 at 13. However, Samsung told the jury that Dr. Cohen would know better than anyone whether Fractus's patents were invalid. *See* 5/17/2011 a.m. TT at 75:2-17. Samsung, therefore, opened the door to both the admission and questioning regarding Dr. Cohen's emails.

testified that Samsung had no knowledge of Fractus's patents prior to the filing of this suit. During his testimony, however, Fractus showed Mr. Kim documents that demonstrated that Fractus, at a minimum, had informed Samsung of its patents prior to this litigation. 5/18/2011 a.m. TT at at 50:21–51:3. Mr. Kim then conceded that the documents reflect that Samsung may have had notice of Fractus's patents prior to filing suit. *Id.*

Samsung counters that Fractus never gave Samsung notice of its "infringement allegations" until Fractus filed suit. Docket No. 14–15. Samsung also argues that Mr. Kim was caught off-guard when Fractus informed him that he would be called as a witness and that he testified based on his personal recollection and did not intend to contradict the evidence of record. Docket No. 1043 at 14, n.8. While Mr. Kim indeed contradicted Samsung's earlier statements that it had no notice of the Patents-in-Suit, under the circumstances, Mr. Kim does not appear to have lied or *deliberately* contradicted the record.

Fractus further argues that Samsung's technical expert, Dr. Best, misrepresented facts regarding the Cohen antenna. ENHANCED DAMAGES MTN at 10-11. Fractus contends that: (1) Dr. Best testified that the Minkowski Island 2 antenna in the Cohen patent met the claim elements requiring similar radiation patterns across different bands in the Patents-in-Suit, but on cross-examination admitted that he relied on a different antenna with a different design; and (2) Dr. Best created some demonstratives that altered how the Minkowski Island 2 antenna looked to make it more closely resemble the figures in the Patents-in-Suit. *Id.*

Samsung contends that Dr. Best did not present misleading testimony regarding the radiation patterns in the Cohen patent, and that he merely removed the non-radiating part of the Cohen antenna to assist, not mislead, the jury. Docket No. 1043 at 14. Dr. Best, at best, was fast and loose with his testimony and demonstratives regarding the radiation patterns in the Cohen

Patent—regardless of whether the jury accepted his testimony as true or not. Dr. Best also conceded that he only removed some of the non-radiating portions of his demonstrative exhibit, not all of them. 5/20/2011 a.m. TT at 35:7–36:10. By only removing some of the non-radiating portions, Dr. Best's demonstrative did more closely resemble the figures in the Patents-in-Suit, something the Court repeatedly warned the parties to avoid.

Samsung also refused to agree to representative phones, making the presentation of evidence regarding 54 different models significantly more difficult, time consuming, and complicated the issues for the jury. Samsung informed the Court that there were no representative phones (*see* 3/20/2011 Hearing Transcript, at 40:8–7), however, other Defendants who ultimately settled, were able to agree to limit the trial presentation to a handful of phones that would ease the burden on the both the parties and the jury. Samsung did not agree. During trial, however, Samsung never raised any significant differences between the models. A few representative phones would have simplified the issues for both the parties and the jury.

Fractus's remaining allegations of misconduct—that Samsung engaged in misleading arguments and did not present evidence on any equitable issues—do not amount to litigation misconduct. Nevertheless, viewing the evidence as a whole and, in particular, Samsung's handling of Dr. Cohen, this *Read* factor favors an enhancement.

Enhanced Damages: Remaining Factors

Samsung is a publicly traded company with billions of dollars in revenue, in both the mobile phone market, as well as countless other markets. Ultimately, the case that went to trial was not close. As extensively documented, Samsung repeatedly attempted to relitigate claim construction regarding the meaning of "multilevel structure" and "polygon," and arguably misrepresented the prior art. *See supra* at 4–30 (Noninfringement and Invalidity sections).

Samsung has also been on notice of the MLV patents since 2006. *See supra* at 30–34 (Willfulness section). On the other hand, Samsung has discontinued use of all but one of the infringing antennas, does not appear to have a direct motivation to harm Fractus, and, for better or worse, did not clearly "conceal" its actions.

Accordingly, given the circumstantial evidence of copying along with Samsung's failure to conduct a good faith investigation of Fractus's patents, handling of Drs. Best and Cohen during the litigation, apparent attempts to misrepresent the prior art, Samsung's size and revenue, repeated attempts to relitigate claim construction, and notice of Fractus's patents since 2006, *Read* factors 1, 2, 3, 4, 5, and 6 support enhancement, while factors 7, 8 and 9 do not support enhancement.

The Court could enhance damages against Samsung up to three times the jury verdict of $23,129,321, or $69,378,963, but under the totality of the circumstances, enhancing damages to the maximum extent allowable under § 284 is not warranted. However, a meaningful enhancement is appropriate to address Samsung's willful infringement and conduct during the litigation. As such, the Court awards an additional $15,000,000 to the jury's damage award, making the total award $38,129,321.

Exceptional Case

For the same reasons that a maximum enhancement is not warranted, this is not an "exceptional case" under § 284. Samsung's litigation misconduct does not rise to the level of "exceptional" and is properly reflected in the damages enhancement. *Cf. z4 Techs., Inc. v. Microsoft Corp.*, No. 6:06-cv-142, 2006 WL 2401099 at *22–25 (E.D.Tex. 2006) (Davis, J) (concluding that attorneys' fees were properly awarded where Microsoft withheld critical

evidence, misled the Court regarding facts probative to the admissibility of evidence, and marked nearly 3500 exhibits while only admitting 100 of those at trial).

Conclusion: Enhanced Damages and Attorneys' Fees

Based on the foregoing, the Court **GRANTS** Fractus's request for an enhancement and enhances the jury award by $15,000,000. The Court **DENIES** Fractus's request for an exceptional case finding.

FRACTUS'S MOTION FOR PERMANENT INJUNCTION OR ONGOING ROYALTY

Fractus also requests an order permanently enjoining Samsung from infringing the MLV patents, or in the alternative, an ongoing royalty. INJUNCTION MTN at 1.

Permanent Injunction

Fractus proposes the following language:

> Samsung Electronics Co., Samsung Telecommunications America, Samsung Electronics Research Institute, Samsung Semiconductor Europe (collectively "Samsung"), their agents, representatives, and affiliates, be enjoined from making, using, selling or offering to sell in the United States, or importing into the United States, any mobile phone that infringes U.S. Patent Numbers 7,015,868; 7,123,208; 7,394,432; and/or 7,397,431, including the following mobile phones and mobile phones not colorably different from the below:
>
> 1. [list of 57 Samsung phones].
> 2. Mobile phones with [a] multiband antenna having a multilevel structure, wherein it is possible to identify at least two levels of details, composed of polygons of the same type with the same number of sides, and wherein most of the polygons are clearly visible and individually distinguishable and most of the polygons having an area of contact, intersection, or interconnection with the other elements that is less than 50 percent of the perimeter.
> 3. Mobile phones with a multiband antenna made, used, sold, imported, or developed prior to May 23, 2011.

Id. at 5–7. At the post-trial hearing, Fractus agreed to withdraw the second paragraph of its requested injunction. POST-TRIAL TRANSCRIPT HEARING, 8/20/2011 TT at 163:24–164:7.

Permanent Injunction: Applicable Law

In determining whether to issue a permanent injunction in patent cases, courts apply the four factor test provided for in *eBay, Inc. v. MercExchange, LLC*, 547 U.S. 388, 394, 126 S.Ct. 1837, 164 L.Ed.2d 641 (2006). A party is entitled to a permanent injunction only if: "(1) [the party] has suffered an irreparable injury; (2) that remedies at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the [parties], a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction. *Id.* at 391. The Supreme Court held "the decision whether to grant or deny injunctive relief rests within the equitable discretion of the district courts, and that such discretion must be exercised consistent with traditional principles of equity, in patent disputes no less than in other cases governed by such standards." *Id.*

Permanent Injunction: Irreparable Injury and Monetary Damages

Fractus contends that it directly competes with Samsung in the supply of internal cell phone antennas. INJUNCTION MTN at 2–3. When the parties are direct competitors in the marketplace, such competition weighs heavily in favor of a finding of irreparable injury. *Brooktrout, Inc. v. Eicon Networks Corp.*, 2:03-cv-059, 2007 WL 1730112, at *1 (E.D. Tex. June 14, 2007).

As an initial matter, an open question remains regarding whether Fractus continues to function as a cell phone antenna manufacturer or has merely decided to license its cell phone related intellectual property. One of the named inventors of the Patents-in-Suit, and current Fractus research and development manager, Dr. Carmen Borja, testified that she continues to "do research for developing new antenna technologies." 5/17/2011 p.m. TT at 136:4–15. On the other hand, Mr. Josep Portabella, another current Fractus employee, testified that Fractus is

currently selling only one antenna designed for cell phones. *See* Docket No. 1045, Ex. 2, Deposition Transcript of Josep Portabella at 101:5–103:10.

Additionally, other evidence presented indicates that Fractus has transitioned out of the cell phone antenna industry and moved toward licensing its cell phone antenna technology. *See*, *e.g.*, DX-45 (statement by Fractus President and CEO Ruben Bonet regarding Fractus's new licensing strategy and partnership with iPotential); DX-194 (Fractus CEO Report entitled "[p]lan to become a licensing company"); DX-140; DX-174. While Fractus appears to continue its development of general antenna technologies, the evidence weighs toward a finding that Fractus has discontinued its *cell phone* antenna business in favor of licensing its patent portfolio related to such technologies.

Even assuming Fractus has continued to develop, manufacture, and sell mobile phone antennas, Samsung does not appear to be a direct competitor. Samsung sells handsets, not cell phone antennas. 5/20/2011 a.m. TT at 77:1–78:1. The fact that Samsung purchased antennas from Fractus and continues to purchase antennas from third-party vendors indicates that Samsung and Fractus's markets are distinct. *See* 5/19/2011 p.m. TT at 35:18–22; 5/20/2011 a.m. TT at 77:16–78:18. Samsung's sale of cell phones does not restrict Fractus's ability to market and sell its antennas to other cell phone manufacturers. Fractus's damages from Samsung's infringement are limited to Fractus's loss of Samsung as a customer.

While Fractus argues that Samsung competes in the market for "designing antennas" for its own devices (*see* Docket No. 1058 at 1), Fractus has not demonstrated that Samsung manufactures and sells those antennas in the marketplace. In other words, Fractus cannot demonstrate that it has lost sales or market share as a result of a cell phone manufacturer purchasing an infringing antenna from Samsung.

Fractus identifies a Samsung third-party affiliate and antenna vendor, Samsung Electro-Mechanics, Co., Ltd. ("SEMCO"), as a direct competitor in the antenna market. INJUNCTION MTN at 3. As an initial matter, SEMCO is not a named Samsung entity to this lawsuit. Additionally, Fractus fails to present enough competent evidence to demonstrate that the Samsung entities named in this lawsuit have control over SEMCO to the extent that they can be held liable for any infringing acts by that company. In sum, "[t]here is no logical reason that a potential customer or licensee of [Fractus's] technology would have been dissuaded from purchasing or licensing [Fractus's antenna technology] for use in its own [cell phones] due to [Samsung's] infringement." *z4 Techs., Inc. v. Microsoft Corp.* 434 F. Supp. 2d 437, 439–40 (E.D. Tex. 2006) (Davis, J.).

Samsung's sale of cell phones containing infringing antennas has not caused Fractus to suffer lost profits or market share that would have been derived from other cell phone manufacturers. At most, Samsung's infringement has caused Fractus to lose *Samsung's* business, which can be remedied with monetary damages. Fractus has licensed its patents to other cell phone manufacturers, many of which were named defendants in the instant suit. As a result of Fractus and Samsung not directly competing, Samsung's use of Fractus's technology does not inhibit Fractus from selling or licensing its products in the market, and Fractus's damages can be calculated with reasonable certainty in the form of monetary damages.

As such, both the irreparable harm and monetary damages factors weigh against enjoining Samsung.

Permanent Injunction: Balance of Hardships and Public Interest

Fractus has not demonstrated that Samsung directly competes with Fractus. Also, Samsung's sale of infringing cell phones does not restrict Fractus's market. Put simply,

Fractus's damages are largely limited to the lost sales it would have obtained from Samsung had Samsung merely continued purchasing or licensing Fractus's antenna technology. While it is plausible that Fractus's stature and goodwill as an antenna supplier and manufacturer would have been positively impacted had Samsung chosen to license or purchase Fractus's technology, there is no direct evidence to demonstrate the contrary conclusion, *i.e.*, that Fractus has lost goodwill as a result of Samsung's infringement.

On the other hand, Fractus's requested injunction will severely hamper Samsung's cell phone business, but most importantly, it will significantly disrupt related third-party businesses such as Samsung's suppliers and customers. Additionally, enjoining Samsung would detrimentally affect the retail sellers of Samsung phones, as well as their customers. Though the public has a keen interest in maintaining a strong patent system, Fractus has not identified a specific public interest that would be served by entry of its requested injunction. Accordingly, the balance of hardships and public interest factors also weigh against enjoining Samsung.

Conclusion: Permanent Injunction

Based on the foregoing, the Court **DENIES** Fractus's request for entry of a permanent injunction.

Ongoing Royalty

In the alternative, Fractus requests an ongoing royalty of $1.06 per phone applied to all phones not "colorably different" than the accused phones. INJUNCTION MTN at 9–10; Docket No. 1058 at 4–5.

"Under some circumstances, awarding an ongoing royalty for patent infringement in lieu of an injunction may be appropriate." *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1314 (Fed. Cir. 2007). Absent an injunction, an ongoing royalty may compensate a patentee for

relinquishing his right to exclude others from using his invention. *Paice, LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620, 630 (E.D. Tex. 2009) (Folsom, J.). Additionally, the Court must consider the change in the legal relationship between the parties to avoid incentivizing defendants "to fight each patent infringement case to the bitter end because without consideration of the changed legal status, there is essentially no downside to losing." *Id.* at 628. Furthermore, "[t]here is a fundamental difference . . . between a reasonable royalty for pre-verdict infringement and damages for post-verdict infringement." *Amado v. Microsoft Corp*., 517 F.3d 1353, 1361–62 (Fed. Cir. 2008). Therefore, an ongoing post-verdict royalty may appropriately be higher than the jury's pre-verdict reasonable royalty.

However, the Federal Circuit has encouraged courts to allow the parties to negotiate a license amongst themselves regarding the future use of a patented technology prior to the court imposing a royalty. *See Paice, LLC*, 504 F.3d at 1315; *Telecordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1378–79 (Fed. Cir. 2010). From the parties' post-trial briefing on the ongoing royalty issue, as well as the parties' settlement negotiation history thus far, the Court is not hopeful that the parties will be able to agree regarding an ongoing royalty. Nevertheless, Samsung has explicitly requested that the parties have an opportunity to negotiate a license once all post-trial motions are resolved. Docket No. 1045 at 13.

Conclusion: Ongoing Royalty

Accordingly, to provide finality to the trial, the Court **SEVERS** Fractus's claim for an ongoing royalty into a separate cause of action. *See* FED.R.CIV.P. 21. ("[t]he court may sever any claim against a party."). The parties' are **ORDERED** to meet and confer to schedule mediation within 60 days of this order to attempt to negotiate an ongoing royalty rate. Should the parties fail to agree regarding an ongoing royalty at the mediation, Fractus is **ORDERED** to

file a new motion in the severed case, and the Court will consider the parties' positions prior to setting the appropriate royalty rate.

FRACTUS'S MOTION FOR PREJUDGMENT INTEREST, POST JUDGMENT INTEREST, AND BILL OF COSTS

Fractus also moves the Court for prejudgment and post-judgment interest, along with costs. INTEREST AND COSTS MTN at 1. The parties agree that Fractus is entitled to post-judgment interest pursuant to 28 U.S.C. § 1961(a). INTEREST AND COSTS MTN at 2–3; Docket No. 1046 at 5. The parties have also agreed to attempt to resolve any disputes regarding bill of costs according to this Court's standard procedure. *Id.* The parties dispute, however, the issue of prejudgment interest.

Prejudgment Interest

A court should award interest in patent cases after a finding of infringement. 35 U.S.C. § 284. The purpose of prejudgment interest is to place the patentee in as good a position as he would have been had the infringer paid a reasonable royalty instead of infringing. *Beatrice Foods v. New England Printing*, 923 F.2d 1576, 1580 (Fed. Cir. 1991). Prejudgment interest should be awarded unless there is a significant justification for withholding such an award, such as a delay in bringing suit against the infringer. *See Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657 (1983); *Bio-Rad Labs. v. Nicolet Instrument Corp.*, 807 F.2d 964, 967 (Fed. Cir. 1986). The interest rate used to calculate prejudgment interest and the method and frequency of compounding are left to the discretion of the district court. *See Uniroyal, Inc.*, 939 F.2d at 1545; *Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc.*, 862 F.2d 1564, 1579–80 (Fed. Cir. 1988) (citing *Bio-Rad Labs.*, 807 F.2d at 969). Prejudgment interest can only be applied to actual damages and not punitive or enhanced damages. *Beatrice Foods*, 923 F.2d at 1580. Interest

should be awarded from the date of infringement to the date of final judgment. *Nickson Indus., Inc. v. Rol Mfg.*, 847 F.2d 795, 800 (Fed. Cir. 1988).

Samsung urges the Court to limit or altogether deny prejudgment interest contending that Fractus unreasonably delayed filing suit merely to increase damages. Docket No. 1046 at 1–3. In particular, Samsung contends that Fractus was nefariously and secretly preparing its infringement case against Samsung as early as October 2006, but chose to delay filing suit because it knew that the demand for cell phones was going to grow in subsequent years and Fractus could exponentially increase its damages award. *Id.* In support, Samsung cites to some of the trial evidence that appears to demonstrate that Fractus was considering a licensing strategy regarding its patent rights. *See* DX-57, 58, 194.

Fractus, however, filed suit in May 2009, less than a year after two of the four Patents-in-Suit issued from the Patent Office. Further, Fractus originally asserted the '782 Patent against Samsung on the precise day it issued from the Patent Office, May 5, 2009.[20] *See* Docket No. 1. Indeed, some of the trial evidence does appear to establish that Fractus was viewing its intellectual property as an asset and was considering pursuing a licensing strategy, but the mere fact that Fractus was considering a licensing strategy does not establish that it was hiding in the shadows for years while Samsung's sales increased. The same evidence that Samsung cites could easily be interpreted as Fractus recognizing the value of its patented technology, doing its due diligence, creating a clear strategy for licensing, and if necessary, preparing for litigation. Fractus did not unduly delay filing suit such that it should be denied prejudgment interest.

The parties also dispute the proper calculation of prejudgment interest. Fractus contends that it is entitled prejudgment interest calculated at the prime rate compounded quarterly.

[20] The '782 Patent is within the MLV Patent family, but Fractus ultimately chose not to proceed to trial on the '782 Patent.

INTEREST AND COSTS MTN at 2. Samsung, on the other hand, contends that prejudgment interest should be limited to the time period beginning from the date suit was filed, should consider that royalty income would have been taxable at the time of its realization, and should be based on the quarterly U.S. Treasury Bill rate. Docket No. 1046 at 4–5. After careful consideration of the parties' positions, Fractus shall be awarded prejudgment interest on the $23,129,321 damages award at the prime rate in effect as of June 28, 2012, compounded quarterly. Interest should be calculated from the date of infringement through the date of final judgment.

Accordingly, the Court **GRANTS** Fractus's motion for prejudgment and post judgment interest, and costs.

CONCLUSION

Based on the foregoing, the Court **DENIES** Samsung's Renewed Motions for Judgment as a Matter of Law (Docket No. 1025); **DENIES** Samsung's Motion Under Rule 52 for Entry of Findings of Fact and Conclusions of Law Regarding Indefiniteness (Docket No. 1026); **DENIES** Samsung's Motion for New Trial Under Rule 59 Based on Material Errors in Evidentiary Rulings (Docket No. 1027); **GRANTS-IN-PART** Fractus S.A.'s Motion for Enhanced Damages and Attorneys' Fees (Docket No. 1028); **DENIES** Fractus S.A.'s Motion for Permanent Injunction, and **SEVERS** Fractus's request for an Ongoing Royalty into a separate action (Docket No. 1030); and **GRANTS** Fractus, S.A.'s Motion for Prejudgment Interest and Bill of Costs (Docket No. 1032).

So ORDERED and SIGNED this 28th day of June, 2012.

LEONARD DAVIS
UNITED STATES DISTRICT JUDGE