

**IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA**

<p>BELL NORTHERN RESEARCH, LLC,</p> <p style="text-align: center;">Plaintiff,</p> <p>v.</p> <p>COOLPAD TECHNOLOGIES, INC. AND YULONG COMPUTER COMMUNICATIONS,</p> <p style="text-align: center;">Defendants.</p>	<p>C.A. No. 3:18-cv-1783-CAB-BLM</p> <p>Judge: Hon. Cathy Ann Bencivengo</p> <p>Magistrate Judge: Hon. Barbara L. Major</p>
<p>BELL NORTHERN RESEARCH, LLC,</p> <p style="text-align: center;">Plaintiff,</p> <p>v.</p> <p>HUAWEI DEVICE (DONGGUAN) CO., LTD, HUAWEI DEVICE (SHENZHEN) CO., LTD., and HUAWEI DEVICE USA, INC.,</p> <p style="text-align: center;">Defendants.</p>	<p>C.A. No. 3:18-cv-1784-CAB-BLM</p>
<p>BELL NORTHERN RESEARCH, LLC,</p> <p style="text-align: center;">Plaintiff,</p> <p>v.</p> <p>KYOCERA CORPORATION and KYOCERA INTERNATIONAL INC.,</p> <p style="text-align: center;">Defendants.</p>	<p>C.A. No. 3:18-cv-1785-CAB-BLM</p>

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BELL NORTHERN RESEARCH, LLC, Plaintiff, v. ZTE CORPORATION, ZTE (USA) INC., ZTE (TX) INC., Defendants.	C.A. No. 3:18-cv-1786-CAB-BLM
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PLAINTIFF’S OPENING CLAIM CONSTRUCTION BRIEF

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17
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23
24
25
26
27
28

TABLE OF CONTENTS

I. INTRODUCTION 1

II. LEGAL STANDARD 2

 A. The scope of a patent is defined by the plain import of its claims. 2

 B. A claim term is given its full ordinary and customary meaning unless the patentee: (i) clearly otherwise defined the term, or (ii) unequivocally disclaimed the full scope of the term. 2

III. CLAIM CONSTRUCTION REGARDING THE GORIS PATENTS 3

 A. Background of the Inventions 3

 B. “a signal indicative of proximity of an external object” and “a signal indicative of the existence of a first condition, the first condition being that an external object is proximate” 4

IV. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,990,842 11

 A. Background of the Invention 11

 B. Person of Ordinary Skill in the Art 13

 C. “Inverse Fourier transformer” 13

V. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 8,416,862 21

 A. Background of the Invention 21

 B. Person of Ordinary Skill in the Art 22

 B. “decompose the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information” 22

VI. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,957,450 27

 A. Background of the Invention 27

 B. Person of Ordinary Skill in the Art 29

 C. “channel estimate matrices” / “matrix based on the plurality of channel estimates” 29

1 D. “coefficients derived from performing a singular value matrix decomposition
(SVD)” 34

2 VII. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 6,941,156 37

3 A. Background of the Invention..... 37

4 B. “simultaneous communication paths from said multimode cell phone” 37

5 C. “a module to establish simultaneous communication paths from said
6 multimode cell phone using both said cell phone functionality and said RF
7 communication functionality” 44

8 1. The “module to establish simultaneous communications” term is not
9 governed by § 112, ¶ 6..... 45

10 2. If the Court determines that the presumption has been rebutted, and § 112, ¶
11 6 applies, Defendants’ disclosed structure is improperly narrow..... 48

12 D. “an automatic switch over module, in communication with both said cell phone
13 functionality and said RF communication functionality, operable to switch a
14 communication path established on one of said cell phone functionality and said RF
15 communication functionality, with another communication path later established on
16 the other of said cell phone functionality and said RF communication functionality”
17 50

18 1. The “automatic switch over module” term is not governed by § 112, ¶ 6. ... 51

19 2. If the Court determines that the presumption has been rebutted, and § 112, ¶
20 6 applies, Defendants’ disclosed structure is improperly narrow..... 55

21 VIII. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,039,435 61

22 A. Background of the Invention..... 61

23 A. “position to a communications tower” 63

24 IX. CONCLUSION..... 71

25

26

27

28

TABLE OF AUTHORITIES

1
2
3
4
5
6
7
8
9
10
11
12
13
14
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19
20
21
22
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25
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27
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Cases

Amgen, Inc. v. Hoechst Marion Roussel, Inc.,
314 F.3d 1313 (Fed. Cir. 2003) 20

Apple Inc. v. Motorola, Inc.,
757 F.3d 1286 (Fed. Cir. 2014) 52

Aventis Pharma S.A. v. Hospira, Inc.,
675 F.3d 1324 (Fed. Cir. 2012) 18

Bal Seal Eng’g Co. v. Qiang Huang, No. 10cv819-CAB, 2011 U.S. Dist. LEXIS
84516 (S.D. Cal. Aug. 1, 2011) 48, 55

Baxter Healthcare Corp. v. Fresenius Med. Care Holdings, Inc.,
No. C 07-1359, 2009 U.S. Dist. LEXIS 14842 (N.D. Cal. Feb. 10, 2009)..... 20

Becton Dickinson & Co. v. C.R. Bard, Inc.,
922 F.2d 792 (Fed. Cir. 1990) 18

Blast Motion, Inc. v. Zepp Labs, Inc.,
No. 15-CV-700 JLS (NLS), 2017 U.S. Dist. LEXIS 16549
(S.D. Cal. Feb. 6, 2017) passim

C.R. Bard, Inc. v. United States Surgical Corp.,
388 F.3d 858 (Fed. Cir. 2004) 65, 67

CCS Fitness, Inc. v. Brunswick Corp.,
288 F.3d 1359 (Fed. Cir. 2002) 2

Cloud Farm Assocs. LP v. Volkswagen Grp. of Am., Inc.,
674 Fed. Appx. 1000 (Fed. Cir. 2017)..... 11

Cont’l Circuits LLC v. Intel Corp.,
915 F.3d 788 (Fed. Cir. 2019) 64, 67, 70

Curtiss-Wright Flow Control Corp. v. Velan, Inc.,
438 F.3d 1374 (Fed. Cir. 2006) 34

1 *CVI/Beta Ventures, Inc. v. Tura LP*,
 2 112 F.3d 1146 (Fed. Cir. 1997) 11
 3 *Dayco Prods. v. Total Containment, Inc.*,
 4 258 F.3d 1317 (Fed. Cir. 2001) 17
 5 *Digital Biometrics v. Identix, Inc.*,
 6 149 F.3d 1335 (Fed. Cir. 1998) 11
 7 *Digital-Vending Servs., Int’l, LLC v. Univ. of Phoenix, Inc.*,
 8 672 F.3d 1270 (Fed. Cir. 2012) 43
 9 *Ecolab, Inc. v. FMC Corp.*,
 10 569 F.3d 1335 (Fed. Cir. 2009) 18
 11 *Julius Zorn, Inc. v. Medi Mfg.*,
 12 No. 3:15-CV-02734-GPC-RBB, 2017 U.S. Dist. LEXIS 35826
 13 (S.D. Cal. Mar. 13, 2017) 26
 14 *JVW Enters. v. Interact Accessories, Inc.*,
 15 424 F.3d 1324 (Fed. Cir. 2005) 56
 16 *K-2 Corp. v. Salomon S.A.*,
 17 191 F.3d 1356 (Fed. Cir. 1999) 3
 18 *Kara Tech. Inc. v. Stamps.com Inc.*,
 19 582 F.3d 1341 (Fed. Cir. 2009) 33
 20 *L.B. Plastics, Inc. v. Amerimax Home Prods.*,
 21 499 F.3d 1303 (Fed. Cir. 2007) 17
 22 *Liebel-Flarsheim Co. v. Medrad, Inc.*,
 23 358 F.3d 898 (Fed. Cir. 2004) 9, 34
 24 *Markman v. Westview Instruments, Inc.*,
 25 52 F.3d 967 (Fed. Cir. 1995) 2
 26 *Media Rights Techs., Inc. v. Capital One Fin. Corp.*,
 27 800 F.3d 1366 (Fed. Cir. 2015) 46, 52
 28

1 *Micro Chem, Inc. v. Great Plains Chem. Co.*,

2 194 F.3d 1250 (Fed. Cir. 1999)passim

3 *Nazomi Communs., Inc. v. ARM Holdings, PLC*,

4 403 F.3d 1364 (Fed. Cir. 2005)9, 11

5 *Phillips v. AWH Corp.*,

6 415 F.3d 1303 (Fed. Cir. 2005)passim

7 *Renishaw PLC v. Marposs Societa' per Azioni*,

8 158 F.3d 1243 (Fed. Cir. 1998)2, 36

9 *Retractable Techs., Inc. v. Becton*,

10 653 F.3d 1296 (Fed. Cir. 2011)32

11 *Riverwood Int'l Corp. v. RA. Jones & Co.*,

12 324 F.3d 1346 (Fed. Cir. 2003)17

13 *Robert Bosch, LLC v. Snap-On Inc.*,

14 769 F.3d 1094 (Fed. Cir. 2014)46, 52

15 *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*,

16 365 F.3d 1299 (Fed. Cir. 2004)2

17 *Scripps Research Inst. V. Illumina, Inc.*,

18 No. 16-cv-661 JLS (BGS), 2018 U.S. Dist. LEXIS 60928

19 (S.D. Cal. Apr. 10, 2018).....24, 25

20 *Serrano v. Telular Corp.*,

21 111 F.3d 1578 (Fed. Cir. 1997)48, 49, 55, 60

22 *Symantec Corp. v. Computer Assocs. Int'l, Inc.*,

23 522 F.3d 1279 (Fed. Cir. 2008)16

24 *TEK Global, S.R.L. v. Sealant Sys. Int'l*,

25 920 F.3d 777 (Fed. Cir. Mar. 29, 2019).....46, 48, 52, 55

26 *Thorner v. Sony Computer Entm't Am. LLC*,

27 669 F.3d 1362 (Fed. Cir. 2012)2, 3

28

1	<i>TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co.,</i>	
2	264 F.3d 1111 (Fed. Cir. 2001)	20
3	<i>Vitronics Corp. v. Conceptronic, Inc.,</i>	
4	90 F.3d 1576 (Fed. Cir. 1996)	3, 24, 31
5	<i>White v. Dunbar,</i>	
6	119 U.S. 47 (1886).....	2
7	<i>Williamson v. Citrix Online, LLC,</i>	
8	792 F.3d 1339 (Fed. Cir. 2015)	46, 52
9	Statutes	
10	35 U.S.C. § 112(2).....	2

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12
13
14
15
16
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TABLE OF EXHIBITS

Exhibit	Description
A	U.S. Patent No. 7,319,889 to Goris, et al., issued January 15, 2008
B	Excerpts of the Certified File History for U.S. Patent No. 7,319,889.
C	U.S. Patent No. 8,204,554 to Goris, et al., issued June 19, 2012
D	Excerpts of the Certified File History for U.S. Patent No. 8,204,554.
E	U.S. Patent No. 7,990,842 to Trachewsky, et al., issued August 2, 2011
F	U.S. Patent No. 8,416,862 to Aldana, et al., issued April 3, 2013
G	U.S. Patent No. 7,957,450 to Hansen, et al., issued June 7, 2011
H	U.S. Patent No. 6,941,156 to Mooney, issued September 6, 2005
I	Excerpts of the Certified File History for U.S. Patent No. 6,941,156
J	U.S. Patent No. 7,039,435 to McDowell, et al., issued May 2, 2006
K	Excerpts of the Certified File History for U.S. Patent No. 7,039,435
L	Amended Declaration of Dr. Vijay Madiseti In Support of Plaintiff's Claim Constructions dated May 2, 2019 ("Madiseti Op. Decl.")
M	Rebuttal Declaration of Dr. Vijay Madiseti In Support of Plaintiff's Claim Constructions dated May 8, 2019 ("Madiseti Rebuttal Decl.")
N	Sur-Rebuttal Declaration of Dr. Vijay Madiseti In Support of Plaintiff's Claim Constructions dated May 16, 2019 ("Madiseti Sur-Rebuttal Decl.")
O	Excerpts from the May 1, 2019 Declaration of Paul Min, Ph.D. Regarding Claim Construction ("Min Op. Decl.")
P	Excerpts from the May 19, 2019 Deposition of Paul Min, Ph.D. ("Min Dep.")
Q	Excerpts from Webster's Unabridged Dictionary (2001)
R	Excerpts from Rebuttal Declaration of Dr. Jonathan Wells, Ph.D. dated May 8, 2019 ("Wells Rebuttal Decl.")
S	Excerpts from William Yee, <i>Mobile Communications Engineering – Theory and Applications</i> , McGraw Hill (2d ed. 1997)

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Exhibit	Description
T	U.S. 6,498,924 (“Vogel”)
U	Ronald N. Bracewell, <i>The Fourier Transform and its Applications</i> (3 rd ed., 2000)
V	Discrete Fourier Transform based Multimedia Colour Image Authentication for Wireless Communication (DFTMCIAWC)
W	Spatial Channel and System Characterization

1 **I. INTRODUCTION**

2 Pursuant to this Court’s Case Management Order of October 15, 2018, Plaintiff
3 Bell Northern Research, LLC’s (“BNR”) hereby submits its Opening Claim
4 Construction Brief in the following cases, consolidated for pretrial purposes: *Bell*
5 *Northern Research, LLC v. Coolpad Technologies, Inc., et al.*, No. 3:18-cv-1783; *Bell*
6 *Northern Research, LLC v. Huawei Device USA, Inc., et al.*, No. 3:18-cv-1784; *Bell*
7 *Northern Research, LLC v. Kyocera Corporation, et al.*, No. 3:18-cv-1785; and *Bell*
8 *Northern Research, LLC v. ZTE Corporation, et al.*, No. 3:18-cv-1786.¹

9 The consolidated cases involve eight patents: U.S. Patent No. 7,319,889 (“the
10 ’889 Patent”); U.S. Patent No. 8,204,554 (“the ’554 Patent”); U.S. Patent No.
11 7,990,842 (“the ’842 Patent”); U.S. Patent No. 8,416,862 (“the ’862 Patent”); U.S.
12 Patent No. 7,957,450 (“the ’450 Patent”); U.S. Patent No. 6,941,156 (“the ’156
13 Patent”); U.S. Patent No. 8,792,432 (“the ’432 Patent”); and U.S. Patent No. 7,039,435
14 (“the ’435 Patent”) (collectively, the “Asserted Patents”).

15 BNR’s proposed constructions adhere to the well-known principles of claim
16 construction and are based on the plain and ordinary meaning of the terms at issue,
17 taking into account the specification’s teachings. Defendants’ proposed constructions,
18 on the other hand, generally seek to import extraneous limitations or ignore key
19 disclosures in an attempt to manufacture non–infringement and invalidity positions.
20 Because BNR’s constructions are consistent with the canons of patent law and
21 properly balance granting the full scope of applicants’ invention while ensuring that
22 the public has proper notice of the scope of the invention, BNR respectfully requests
23 that the Court adopt its proposed constructions for the disputed terms described below.

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27 _____
28 ¹ BNR’s expert’s opinions cited herein are offered against the Huawei, Coolpad, and
Kyocera Defendant Groups.

1 **II. LEGAL STANDARD**

2 Claim construction is the process by which “the meaning and scope of the patent
3 claims asserted to be infringed” is determined. *Markman v. Westview Instruments, Inc.*,
4 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). This is a task
5 for the Court. *Id.* at 979.

6 **A. The scope of a patent is defined by the plain import of its claims.**

7 It is fundamental patent law that a patent’s claims define the patent’s scope.
8 *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Thus, “the
9 claim construction inquiry . . . begins and ends . . . with the actual words of the claim.”
10 *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 365 F.3d 1299, 1303 (Fed. Cir.
11 2004) (quoting *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1248
12 (Fed. Cir. 1998)); *Blast Motion, Inc. v. Zepp Labs, Inc.*, No. 15-CV-700 JLS (NLS),
13 2017 U.S. Dist. LEXIS 16549, at *3 (S.D. Cal. Feb. 6, 2017). Given the express
14 statutory purpose of the patent claim—“to particularly point[] out and distinctly
15 claim[]” the invention—it is “unjust to the public, as well as an evasion of law, to
16 construe it in a manner different from the plain import of its terms.” *Phillips*, 415 F.3d
17 at 1312 (quoting *White v. Dunbar*, 119 U.S. 47, 52 (1886)); 35 U.S.C. § 112(2).
18 Specifically, limiting the claims by the exemplary embodiments described in the patent
19 document is “one of the cardinal sins of patent law.” *Phillips*, 415 F.3d at 1320. This is
20 true even if the patentee described only one embodiment in the patent. *Id.* at 1323.

21 **B. A claim term is given its full ordinary and customary meaning unless the** 22 **patentee: (i) clearly otherwise defined the term, or (ii) unequivocally** 23 **disclaimed the full scope of the term.**

24 “The words of a claim are generally given their ordinary and customary meaning
25 as understood by a person of ordinary skill in the art when read in the context of the
26 specification and prosecution history.” *Thorner v. Sony Computer Entm’t Am. LLC*,
27 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Phillips*, 415 F.3d at 1313); *accord CCS*
28 *Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (“Generally
speaking, we indulge a heavy presumption that a claim term carries its ordinary and

1 customary meaning.” (internal quotation marks omitted)). “There are only two
2 exceptions to this rule: 1) when a patentee sets out a definition and acts as his own
3 lexicographer, or 2) when the patentee disavows the full scope of the claim term either
4 in the specification or during prosecution.” *Thorner*, 669 F.3d at 1365 (citing *Vitronics*
5 *Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1996)); accord *K-2 Corp. v.*
6 *Salomon S.A.*, 191 F.3d 1356, 1362–63 (Fed. Cir. 1999) (“The ordinary and
7 accustomed meaning of a disputed claim term is presumed to be the correct one subject
8 to . . . a different meaning clearly and deliberately set forth in the intrinsic material.”
9 (citations omitted)). Ultimately, “[t]he patentee is free to choose a broad term and
10 expect to obtain the full scope of its plain and ordinary meaning unless the patentee
11 explicitly redefines the term or disavows its full scope.” *Thorner*, 669 F.3d at 1367.

12 **III. CLAIM CONSTRUCTION REGARDING THE GORIS PATENTS**

13 **A. Background of the Inventions**

14 The ’889 and ’554 Patents, the “Goris Patents,” belong to the same patent
15 family; the ’554 Patent is a continuation of the ’889 Patent. Each patent is entitled
16 “System and Method for Conserving Battery Power in a Mobile Station” and claims
17 priority to an earlier application filed on June 17, 2003.

18 The Goris Patents relate to inventions that help reduce cell phone consumption
19 of battery power. The specification notes that “the stand-by time, as well as the talk-
20 time, of a mobile station depend on the lifetime of a (rechargeable) battery inserted
21 within the mobile station and hence, on the load and/or on the capacity of the battery.”
22 (Ex. A, ’889 Patent at 1:27–30; Ex. C; ’554 Patent at 1:28–31.) The specification
23 further notes the problems in the prior art stemming from increasing the capacity of the
24 battery: “batteries having increased capacities are often larger, heavier or more
25 expensive, none of which are desirable attributes for a portable, affordable mobile
26 station.” (Ex. A, ’889 Patent at 1:31–35; Ex. C, ’554 Patent at 1:32–36.)

27 Thus, the Goris Patents describe “a way to prolong the lifetime of a mobile
28 station without having to use a battery with an increased capacity,” and they do so by

1 focusing on the power supply to the display of the phone. (Ex. A, '889 Patent at 1:35–
 2 37; Ex. C, '554 Patent at 1:36–38.) The claims are drawn to systems and methods that
 3 include (among other things) use of a proximity sensor and processor “adapted to
 4 cause power consumption of the display to be reduced when the display is within a
 5 predetermined range of an external object,” such as a user’s ear. (Ex. A, '889 Patent at
 6 1:44–46; Ex. C, '554 Patent at 1:45–47; *see also, e.g.*, Claim 1.) The specification
 7 explains that “by reducing the power consumption of the display of an activated
 8 telephone set in [the] case [that] the display is not needed, i.e., in particular during a
 9 telephone call, current is saved instead of needlessly consumed from the (recharge-
 10 able) battery. Accordingly, the spared available battery power may be significant,
 11 especially for color displays, resulting in an overall increasement of the stand-by
 12 and/or talk time of the telephone set.” (Ex. A, '889 Patent at 1:47–54; Ex. C, '554
 13 Patent at 1:48–55.)

14 **B. “a signal indicative of proximity of an external object” and “a signal**
 15 **indicative of the existence of a first condition, the first condition being**
 16 **that an external object is proximate”**

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. To the extent the Court determines that a specific construction is warranted, BNR proposes: “a signal that an external object is within a predetermined range”	“a signal that an external object is or is not within a predetermined range”

23 These terms appear in the following claims in the Goris Patents, and there is a
 24 difference in language between the '889 Patent term and the '554 Patent terms:

'889 Patent Claim 1	'554 Patent Claim 1	'554 Patent Claim 14
A mobile station, comprising:	A mobile station, comprising:	A mobile station, comprising:

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'889 Patent Claim 1	'554 Patent Claim 1	'554 Patent Claim 14
<p>a display;</p> <p>a proximity sensor adapted to generate <u>a signal indicative of proximity of an external object</u>; and</p> <p>a microprocessor adapted to:</p> <p>(a) determine whether a telephone call is active;</p> <p>(b) receive the signal from the proximity sensor, and</p> <p>(c) reduce power to the display if (i) the microprocessor determines that a telephone call is active and (ii) the signal indicates the proximity of the external object; wherein:</p> <p>the telephone call is a wireless telephone call;</p> <p>the microprocessor reduces power to the display while the signal indicates the proximity of the external object only if the microprocessor determines that the wireless telephone call is active; and</p> <p>the proximity sensor begins detecting whether</p>	<p>a display;</p> <p>a proximity sensor adapted to generate <u>a signal indicative of the existence of a first condition, the first condition being that an external object is proximate</u>; and</p> <p>a microprocessor adapted to:</p> <p>(a) determine, without using the proximity sensor, the existence of a second condition independent and different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;</p> <p>(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor;</p> <p>(c) receive the signal from the activated proximity sensor; and</p> <p>(d) reduce power to the display if the signal from the activated proximity</p>	<p>a display;</p> <p>a proximity sensor adapted to generate <u>a signal indicative of the existence of a first condition, the first condition being that an external object is proximate</u>; and</p> <p>a microprocessor adapted to:</p> <p>(a) determine, independently of the determination whether the external object is proximate, the existence of a second condition different from the first condition, the second condition being that a user of the mobile station has performed an action to initiate an outgoing call or to answer an incoming call;</p> <p>(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor;</p> <p>(c) receive the signal from the activated proximity sensor; and</p>

'889 Patent Claim 1	'554 Patent Claim 1	'554 Patent Claim 14
an external object is proximate substantially concurrently with the mobile station initiating an outgoing wireless telephone call or receiving an incoming wireless call.	sensor indicates that the first condition exists.	(d) reduce power to the display if the signal from the activated proximity sensor indicates that the first condition exists.

The only dispute regarding the definition of this claim term centers on Defendants' insertion of the three words "or is not," effectively requiring that the proximity sensor be adapted to generate a signal when an external object *is not* within a predetermined range. But Defendants cannot point to any support in the intrinsic record that requires the proximity sensor of these three claims to be adapted to generate a signal to show that something *is not* there. Nor do the Defendants cite any extrinsic evidence, including any expert testimony, that a person of ordinary skill in the art would interpret the claim term to require a signal indicating the absence of an object within a predetermined range. On the contrary, the specification invariably refers to a determination that an external object *is* within a predetermined range. For instance, in the specification:

- "The proximity sensor is coupled to the chassis and causes the power consumption to be reduced when the *display is within* a predetermined range of an external object." (Ex. A, '889 Patent at Abstract; Ex. C, '554 Patent at Abstract.)
- "...a proximity sensor coupled to the chassis and adapted to cause a power consumption of the display to be reduced when the *display is within* a predetermined range of an external object." (Ex. A, '889 Patent at 1:43–46; Ex. C, '554 Patent at 1:44–47.)

- 1 • “If the proximity sensor 140 *detects an external object* (such as the user's
- 2 ear) *within* the monitored range...” (Ex. A, ’889 Patent at 3:20–22; Ex. C,
- 3 ’554 Patent at 3:21–23.)
- 4 • “...*detecting* an attachment of the set, in particular of the display of said
- 5 set *near to an object*, in particular to the ear...” (’889 Patent at 2:20–22;
- 6 Ex. C, ’554 Patent at 2:21–23.)
- 7 • “If the proximity sensor 140 *detects an external object* (such as the user's
- 8 ear) *within the monitored range*...” (Ex. A, ’889 Patent at 3:20–22; Ex.
- 9 C, ’554 Patent at 3:21–23.)
- 10 • “...the proximity sensor 140 *detects proximity* to an external object...”
- 11 (Ex. A, ’889 Patent at 3:36–37; Ex. C, ’554 Patent at 3:37–38.)
- 12 • “...the proximity sensor 140 again *detects an object*. . .” (Ex. A, ’889
- 13 Patent at 3:57–58; Ex. C, ’554 Patent at 3:57–58.)

14 Similarly, the file histories for the Goris Patents evidence no requirement of a signal
15 that an object *is not* there. (Ex. B; Ex. D.)

16 Even in a scenario where the external object is moved away from the display or
17 proximity sensor, which the patent specifically contemplates, there is no requirement
18 that the proximity sensor must generate a “negative signal” (i.e., a signal that
19 something *is not* within a predetermined range). For example, the specification states,
20 “the means may be further adapted to switch-on the display in response to a detection
21 that the set, preferably the display of the set, is moved away from any object, in
22 particular from the ear.” (Ex. A, ’889 Patent at 2:6–9; Ex. C, ’554 Patent at 2:7–10; *see*
23 *also* Ex. A, ’889 Patent at 3:48–58; Ex. C, ’554 Patent at 3:48–58.) Nothing in the
24 patent forecloses an embodiment where the *absence* of a signal that an external object
25 is proximate would allow the display to switch back on. In fact, the specification
26 describes an embodiment that is wholly consistent with the absence of a signal
27 indicating proximity to an external object:
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1 Moreover, *if the proximity sensor 140 is directly activated by an incoming call*
2 or automatically activated, the display can be kept in a Switched-off condition as
3 long as the mobile station 110 is, for example, *within a pocket* (not referenced)
4 or the like and is only switched on when the user retrieves the mobile station
5 110 from the pocket to enable the user to look on the display 150 for an
6 information about the calling party. If the user then wants to accept the call and
7 thence places the mobile station 110 proximate an external object, such as his
8 ear, the *proximity sensor 140 again detects an object*, causing the display again
9 to be switched off.

10 (Ex. A, '889 Patent at 3:48–68 (emphasis added); Ex. C, '554 Patent at 3:48–58.)

11 These disclosures, coupled with the fact that there is nothing in the claim language
12 itself to indicate that a negative signal is required, supports BNR's proposal. *See*
13 *Phillips*, 415 F.3d at 1315 (“[T]he specification is always highly relevant to the claim
14 construction analysis. Usually, it is dispositive; it is the single best guide to the
15 meaning of a disputed term.”) (citation omitted).

16 Moreover, focusing on the disputed language in Claim 1 and 14 of the '554
17 Patent yields further support to BNR's interpretation that the generated signal need
18 only indicate that an external object is within a predetermined range: “a signal
19 indicative of the existence of a first condition, the first condition being that an external
20 object is proximate” (emphasis added). Here, the claim language makes it clear that the
21 subject of the signal is “that an external object is proximate.” Defendants' attempt to
22 insert an “or is not” into this very clear language describing the signal is unsupported.

23 In the parties' claim construction exchanges, the sole piece of evidence that
24 Defendants have relied upon to support the “is or is not” portion of their proposed
25 definition is Claim 2 of the '554 Patent:

26 The mobile station of Claim 1, further comprising increasing power to the
27 display if the signal from the activated proximity sensor indicates that the first
28 condition no longer exists.

Defendants argue that because this dependent claim requires that the increasing
of power to the display is conditional on “the signal from the activated proximity

1 sensor indicates that the first condition no longer exists,” the independent Claim 1, a
2 different independent claim in the same patent that Claim 2 does not depend from, and
3 an independent claim from a different but related patent must also be read to require a
4 signal that “indicates that the first condition no longer exists.” But that argument is
5 erroneous because it is black letter law that the requirements of a dependent claim
6 cannot be imported into a construction for an independent claim. *Nazomi Communs.,*
7 *Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1370 (Fed. Cir. 2005) (“[L]imitations
8 stated in dependent claims are not to be read into the independent claim from which
9 they depend.”). Indeed, under Federal Circuit case law, “the presence of a dependent
10 claim that adds a particular limitation gives rise to a *presumption* that the limitation in
11 question *is not present in the independent claim.*” *Phillips*, 415 F.3d at 1314–1315
12 (emphasis added) (“Differences among claims can also be a useful guide in
13 understanding the meaning of particular claim terms.”).

14 BNR has never argued that sending a signal that “indicates that the first
15 condition no longer exists” is inconsistent with or precluded by the requirements of
16 Claim 1. ***But Claim 1 does not require it.*** And Defendants’ attempt to import that
17 requirement from a dependent claim, without any intrinsic or extrinsic support, lacks
18 any support in the face of this strong presumption. *See, e.g., Liebel-Flarsheim Co. v.*
19 *Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (reversing district court’s claim
20 construction finding where “[t]he juxtaposition of independent claims lacking any
21 reference to a pressure jacket with dependent claims that add a pressure jacket
22 limitation provides strong support for [the] argument that the independent claims were
23 not intended to require the presence of a pressure jacket.”).

24 Finally, Defendants’ proposed construction, in addition to lacking any intrinsic
25 or extrinsic support, is also inconsistent with Defendants’ agreement with BNR on
26 another term that appears further in the ’889 Patent claim identified above (as well as
27 in other claims). The parties have agreed that the term “the signal indicates the
28 proximity of the external object” as it appears twice in the underlined portions of

1 Claim 1 of the '889 Patent below² means, “the signal is that an external object is within
2 a predetermined range”—remarkably similar to BNR’s proposal for the disputed term.

3 A mobile station, comprising:

4 a display;

5 a proximity sensor adapted to generate a signal indicative of
6 proximity of an external object; and

7 a microprocessor adapted to:

8 (a) determine whether a telephone call is active;

9 (b) receive the signal from the proximity sensor, and

10 (c) reduce power to the display if (i) the microprocessor
11 determines that a telephone call is active and (ii) **the**
12 **signal indicates the proximity of the external object;**
13 wherein:

14 the telephone call is a wireless telephone call;

15 the microprocessor reduces power to the display while **the**
16 **signal indicates the proximity of the external object**
17 only if the microprocessor determines that the wireless
18 telephone call is active; and

19 the proximity sensor begins detecting whether an external
20 object is proximate substantially concurrently with the
21 mobile station initiating an outgoing wireless telephone
22 call or receiving an incoming wireless call.

23 But the only difference between this agreed-upon term and the disputed term is
24 that one (the agreed-upon) begins with “the signal indicates the” and the other (the
25 disputed) begins with “a signal indicative of.” The remainder of the term, “proximity
26 of an external object,” is identical. Defendants’ insertion of “or is not” into the
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28 ² This agreed-upon term also appears in Claim 2 of the '889 Patent.

1 disputed term while leaving it out of the agreed-upon term cannot be explained by the
2 difference in language, because the subject of the signal—“proximity of an external
3 object”—is exactly the same. Defendants’ proposed construction, which adds an “is
4 not” to the proximity in one case and omits it in the other, seeks to apply different
5 meanings to the same term, which is against basic principles of claim construction.
6 *See, e.g., Digital Biometrics v. Identix, Inc.*, 149 F.3d 1335, 1345 (Fed. Cir. 1998)
7 (“[T]he same word appearing in the same claim should be interpreted consistently.”);
8 *Cloud Farm Assocs. LP v. Volkswagen Grp. of Am., Inc.*, 674 Fed. Appx. 1000, 1006
9 (Fed. Cir. 2017) (“The same term should be construed consistently throughout the
10 same patent and any related patents sharing a common specification.”) (citing
11 *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1159 (Fed. Cir. 1997) (“[W]e are
12 obliged to construe the [asserted term] consistently throughout the claims.”)); *Nazomi*
13 *Communs.*, 403 F.3d at 1370 (“The court must consider not only that different
14 embodiments are possible, but also that the meaning of ‘instruction’ in the claims must
15 be the same in all of them.”).

16 **IV. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,990,842**

17 **A. Background of the Invention**

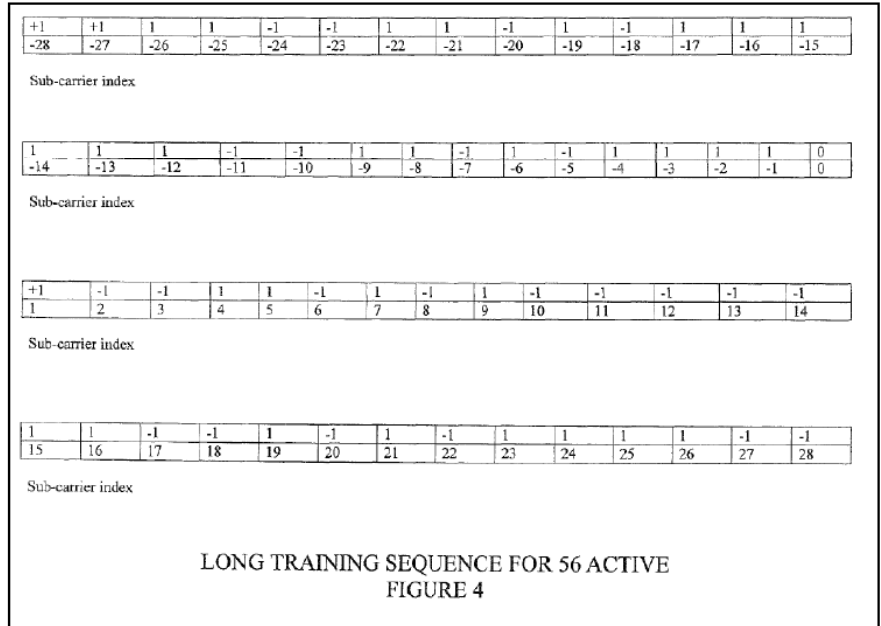
18 The ’842 Patent is entitled “Backward-Compatible Long Training Sequences for
19 Wireless Communication Networks” and claims priority to a date no later than July
20 2004. The ’842 Patent was conceived against the backdrop of the 802.11 standard for
21 WiFi promulgated by the Institute of Electrical and Electronics Engineers (“IEEE”).
22 The specification explains that “different wireless devices in a wireless communication
23 system may be compliant with different standards or different variations of the same
24 standard,” such as the versions of 802.11 that had already issued or were being
25 developed at the time (i.e., 802.11a, 802.11b, 802.11g, and the then under development
26 802.11n). (Ex. E, ’842 Patent at 1:50–60.) The newer versions of the 802.11 standard
27 enabled more data to be transferred at a faster speed.
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1 Because the 802.11 is an evolving standard, “[w]hen devices that are compliant
2 with multiple versions of the 802.11 standard are in the same [wireless network], the
3 devices that are compliant with older versions are considered to be legacy devices. To
4 ensure backward compatibility with legacy devices, specific mechanisms must be
5 employed to insure that the legacy devices know when a device that is compliant with
6 a newer version of the standard is using a wireless channel to avoid a collision.” (Ex.
7 E, ’842 Patent at 1:63–2:2.) This way, the patent specification explains, “legacy”
8 devices can still communicate in systems using new protocols. (Ex. E, ’842 Patent at
9 2:3–7.) The 802.11 standard uses an encoding scheme that “spread[s] a single data
10 stream over a band of sub-carriers, each of which is transmitted in parallel.” (Ex. E,
11 ’842 Patent at 2:12–14.) The standard includes “training sequences” that synchronize
12 data transfer between a wireless sender and a receiver. (Ex. E, ’842 Patent at 2:31–33.)
13 At the time, the existing version of the 802.11 standard utilized a training sequence
14 with 52 active subcarriers. (Ex. E, ’842 Patent at 2:15–17, 24–28.)

15 The ’842 Patent teaches longer “training sequence[s] of minimum peak-to-
16 average ratio that uses more sub-carriers without interfering with adjacent channels.”
17 (Ex. E, ’842 Patent at 2:37–39.) The patentees described specific embodiments of
18 longer training sequences utilizing 56 and 63 subcarriers that also had minimum peak-
19 to-average power ratios, which decreased power back-off. Power Amplifiers used in
20 radio transmitters have nonlinear characteristics that cause significant distortion at the
21 output when input signals are large enough to cause the power amplifier to enter a
22 nonlinear saturation region. Therefore, amplifiers are operated with a certain safety
23 margin, called “power back off,” which can be generally defined as the ratio of
24 maximum or peak saturation output power to average output power, the “PAPR.”
25 Increasing the back off while reducing the nonlinear distortion, can also result in
26 overall lower amplifier efficiency and higher overall power consumption and battery
27 drain. Therefore, a trade-off that minimizes power back-off subject to design
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constraints is desired. For example, Figure 4 details “the long training sequence with a minimum peak-to-average power ratio that is used in 56 active subcarriers”:



(Ex. E, '842 Patent at 5:14–19; Fig. 4.)

B. Person of Ordinary Skill in the Art

A person of ordinary skill in the art (“POSITA”) for the '842 Patent would have a bachelor’s degree in electrical engineering, computer engineering, computer science or similar field, and two to three years of experience in digital communications systems, such as wireless communications systems and networks, or equivalent. Moreover, someone with more technical education but less experience could have also met this standard. (Ex. L, Madisetti Op. Decl. ¶ 154.)

C. “Inverse Fourier transformer”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. To the extent the Court determines that a specific construction is warranted, BNR proposes:	“a circuit and/or software that performs a defined mathematical function that transforms a series of

1 2 3 “circuit and/or software that at least performs an inverse Fourier transform.”	values from the frequency domain into the time domain”
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4 This term appears in Claim 1 of the '842 Patent:

5 A wireless communications device, comprising:

6 a signal generator that generates an extended long training sequence; and

7 an **Inverse Fourier Transformer** operatively coupled to the signal generator,

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9 wherein the **Inverse Fourier Transformer** processes the extended long training sequence from the signal generator and provides an optimal extended long training sequence with a minimal peak-to-average ratio, and

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11 wherein at least the optimal extended long training sequence is carried by a greater number of subcarriers than a standard wireless networking configuration for an Orthogonal Frequency Division Multiplexing scheme.

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18 The '842 Patent teaches that a network device includes an inverse Fourier transform for processing the extended long training sequence from a signal generating circuit:

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- “The network device also includes an Inverse Fourier Transform for processing the expanded long training sequence from the signal generating circuit and producing an optimal expanded long training sequence with a minimal peak-to-average ratio.”
 - “The network device also includes an Inverse Fourier Transform for processing the expanded long training sequence from the signal generating circuit and producing an optimal expanded long training

1 sequence with a minimal peak-to-average ratio. The expanded long
2 training sequence and the optimal expanded long training sequence are
3 stored on more than 52 sub-carriers.”

4 (Ex. E, '842 Patent at Abstract, 2:51–58; *see also id.* 2:63–3, 3:6–15 (similar).)

5 In the specification’s “Detailed Description of the Invention” section, referring
6 to Figure 2, the patentees teach:

7 **The inventive long training sequence is inputted into**
8 **an Inverse Fourier Transform 206.** The invention uses
9 the same +1 or -1 BPSK encoding for each new sub-
10 carrier. **Inverse Fourier Transform 206 may be an**
11 **inverse Fast Fourier Transform (IFFT) or Inverse**
12 **Discrete Fourier Transform (IFDT). Inverse Fourier**
13 **Transform 206 processes the long training sequence**
14 **from signal generating circuit 205** and thereafter
15 produces an optimal expanded long training sequence with
16 a minimal peak-to-average power ratio. The optimal
17 expanded long training sequence may be used in either 56
18 active sub-carriers or 63 active subscribers.

19 (Ex. E, '842 Patent at 4:50–61 (emphasis added).)

20 Fourier transform is a well-known and understood mathematical principle
21 encountered by math and engineering students in a college-level math course. (Ex. L,
22 Madisetti Op. Decl. ¶ 186.) A Fourier transform operates in one-dimension or in
23 multiple-dimensions to map functions between one domain and another domain. These
24 domains can include, but are not limited to, space, time, frequency, or another variable.
25 (Ex. L, Madisetti Op. Decl. ¶ 187.)

26 The specification provides no specific constraints or limitations on the term
27 “inverse Fourier transformer.” Likewise, the claim language does not functionally
28 restrict the “inverse Fourier transformer” and mandate a specific type of transformation
or identify specific variable or domains for transformation:

A wireless communications device, comprising: a signal
generator that generates an extended long training

1 sequence; **and an Inverse Fourier Transformer**
 2 **operatively coupled to the signal generator, wherein**
 3 **the Inverse Fourier Transformer processes the**
 4 **extended long training sequence from the signal**
 5 **generator and provides an optimal extended long**
 6 **training sequence with a minimal peak-to-average**
 7 **ratio**, and wherein at least the optimal extended long
 8 training sequence is carried by a greater number of
 9 subcarriers than a standard wireless networking
 10 configuration for an Orthogonal Frequency Division
 11 Multiplexing scheme.

9 A person of ordinary skill in the art at the time of the invention would
 10 understand that an inverse Fourier transform is just what the name implies—the
 11 reverse of a Fourier transform operation. Below is a generic mathematical
 12 representation of two definitions of a Fourier transform, where one of them is the
 13 inverse or reverse of the other (i.e., $f()$ is inverse of $F()$, and vice versa):

$$F(s) = \int_{-\infty}^{\infty} f(x)e^{-i2\pi xs} dx$$

$$f(x) = \int_{-\infty}^{\infty} F(s)e^{i2\pi xs} ds.$$

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 19 (See Ex. U at Appx560 (“[T]he customary formulas exhibiting the reversibility of the
 20 Fourier transformation are In this form, two successive transformations are made
 21 to yield the original function.”). Of importance, the equations do not require space,
 22 time, frequency, or any other specific variable. Similarly, even contemporaneous
 23 dictionary definitions define “Fourier Transform” broadly as “a mapping function, as a
 24 signal, that is defined in one domain, as space or time, into another domain, as
 25 wavelength or frequency, where the function is represented in terms of sines and
 26 cosines.” (Ex. Q at Appx230 (definition of “Fourier Transform.”) See *Symantec Corp.*
 27 *v. Computer Assocs. Int’l, Inc.*, 522 F.3d 1279, 1291 (Fed. Cir. 2008) (quoting *Phillips*,
 28 415 F.3d at 1318) (“Dictionaries are ‘among the many tools that can assist the court in

1 determining the meaning of particular terminology to those of skill in the art of the
2 invention.”); *L.B. Plastics, Inc. v. Amerimax Home Prods.*, 499 F.3d 1303, 1308 (Fed.
3 Cir. 2007).

4 Therefore, because the intrinsic record does not place any restrictions on
5 “inverse Fourier transformer,” a POSITA would simply understand the term to mean
6 “circuit and/or software that at least performs an inverse Fourier transform,” a well-
7 known mathematical operation. (Ex. L, Madisetti Op. Decl. ¶ 190.) See *Riverwood*
8 *Int’l Corp. v. RA. Jones & Co.*, 324 F.3d 1346, 1357 (Fed. Cir. 2003) (“In construing
9 claims, the analytical focus must begin and remain centered on the language of the
10 claims themselves...”)

11 Defendants’ proposed construction of a “mathematical function that transforms
12 a series of values from the frequency domain into the time domain” is wrong for
13 several reasons. *First*, as mentioned above, the Fourier transform and inverse Fourier
14 transform operations are agnostic—there is no requirement to transform values from a
15 frequency domain into a time domain or vice versa. A Fourier transform could be used
16 to transform values from a frequency domain into a time domain, likewise and a
17 Fourier transform could also transform values into a time domain into a frequency
18 domain. (Ex. N, Madisetti Sur-Rebuttal Decl. ¶ 9.) Even Defendants’ expert admits
19 that “the Fourier transform *could* map one domain to another in a broad mathematical
20 sense.” (Ex. R, Wells Rebuttal Decl. ¶ 8.) Defendants’ requirement that the
21 transformation occurs *from* the frequency domain *into* a time domain, adds both a
22 direction limitation and variable limitations (time and frequency) not required by the
23 specification or the claim. See *Dayco Prods. v. Total Containment, Inc.*, 258 F.3d
24 1317, 1327 (Fed. Cir. 2001) (“In each of the three claim constructions discussed above,
25 the district court erroneously read a limitation into the claim language. Our cases make
26 clear, however, that adding limitations to claims not required by the claim terms
27 themselves, or unambiguously required by the specification or prosecution history, is
28 impermissible.”); *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir.

1 2012) (“We previously have refused to impose such limitations when not required by
2 the language of the claims or the specification, and decline to do so here.”) (internal
3 citations omitted). Adopting Defendants’ proposed construction would amount to an
4 impermissible redrafting of the claims. *See Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335,
5 1344 (Fed. Cir. 2009) (“It is likewise well-settled that courts generally may not re-draft
6 claims; we must construe the claims as written.”); *Becton Dickinson & Co. v. C.R.*
7 *Bard, Inc.*, 922 F.2d 792, 799 n.6 (Fed. Cir. 1990) (“Nothing in any precedent permits
8 judicial redrafting of claims.”). Therefore, Defendant’s proposed construction is overly
9 restrictive in light of the claim language, and the generally understood meaning of
10 inverse Fourier transform. (Ex. L, Madisetti Op. Decl. ¶ 192.)

11 *Second*, Defendants’ expert Dr. Wells’ acknowledges that a “Fourier transform
12 *could* map one domain to another in a broad mathematical sense,” but argues that the
13 construction of the term should be narrowed because the patent is within the field of
14 wireless communications. (Ex. R, Wells Rebuttal Decl. ¶¶ 8–9.) However, the term
15 under construction is “inverse Fourier transformer,” not “inverse Fourier transformer
16 in wireless communications.”

17 *Third*, Dr. Wells is wrong to suggest that from a technical point of view, in
18 wireless communications, the inverse Fourier transform can *only* map between the
19 time domain and frequency domain as a matter of fact. (Ex. N, Madisetti Sur-Rebuttal
20 Decl. ¶ 7.)

21 For instance, a peer-reviewed and published academic paper entitled “Discrete
22 Fourier Transform based Multimedia Colour Image Authentication for **Wireless**
23 **Communication** (DFTMCIAWC),” (emphasis added) shows the exemplary use of an
24 inverse Fourier transform to “transform [an] embedded image from **frequency** domain
25 to **spatial** domain” (emphasis added). Equation 1 of this reference further shows
26 exemplary forward mapping between frequency and spatial domains in the wireless
27 communications area between two 2-dimensional domains, (x, y) and (u, v)
28 respectively:

$$F(u, v) = \frac{1}{\sqrt{MN}} \sum_{x=0}^{M-1} \sum_{y=0}^{N-1} f(x, y) e^{-j2\pi\left(\frac{ux}{M} + \frac{vy}{N}\right)}$$

(Ex. N, Madisetti Sur-Rebuttal Decl. ¶ 8; Ex. V at Appx563.)

Similarly, another peer-reviewed and published academic paper entitled “Spatial Channel and System Characterization” discussing multi-antenna (wireless) communications systems, shows that an example of an “inverse Fourier transform converts a signal from **wave vector** domain to **space domain**” (emphasis added). Equations 2 and 3 of this reference show exemplary mapping between the wave vector and spatial domains in a Fourier transform and corresponding inverse Fourier transform in the context of wireless communications.

$$G(\vec{k}) = \int g(\vec{r}) e^{j\vec{r} \cdot \vec{k}} d^3 r$$

$$g(\vec{r}) = \frac{1}{(2\pi)^3} \int G(\vec{k}) e^{-j\vec{k} \cdot \vec{r}} d^3 k$$

(Ex. N, Madisetti Sur-Rebuttal Decl. ¶ 9, Ex. W at Appx569.) These are “two examples of references that support[ing] []that the plain and ordinary, mathematical meaning of an inverse Fourier transform still applies in wireless communications and a definition that must use time to frequency mapping or vice versa is just an example of its use, and not a correct definition or construction even when restricted to wireless communications.” (Ex. N, Madisetti Sur-Rebuttal Decl. ¶ 9.)

Thus, even in the context of wireless communications, inverse Fourier transforms are not limited to conversions between time and frequency domains. Nor are they limited it to a single variable in these or other domains (time, frequency, space, symbol, wave-vectors, ...) (Ex. N, Madisetti Sur-Rebuttal Decl. ¶ 10.)

1 Dr. Wells also justifies his opinion incorporating Defendants’ direction and
2 variable limitations by pointing the specification’s disclosure of a fast Fourier
3 transform, which he says is “a specific algorithmic implementation of a Fourier
4 transform (FFT).” (Ex. R, Wells Rebuttal Decl. ¶ 11.) This presents several problems
5 because even Dr. Wells concedes the FFT is a “specific algorithmic implementation”
6 and the specification confirms that a FFT is merely one embodiment. (See Ex. E, ’842
7 Patent at 4:53–55 (“Inverse Fourier Transform 206 may be an inverse Fast Fourier
8 Transform (IFFT) or Inverse Discrete Fourier Transform (IDFT).”). See *Phillips*, 415
9 F.3d at 1323 (“[A]lthough the specification often describes very specific embodiments
10 of the invention, we have repeatedly warned against confining the claims to those
11 embodiments.”).

12 In addition, Claim 9, which depends from Claim 1, adds the limitation “wherein
13 the Inverse Fourier Transformer comprises at least one of the following: an Inverse
14 Fast Fourier Transformer and an Inverse Discrete Fourier Transformer.” Thus, there is
15 a presumption that Dr. Wells’s “specific algorithmic implementation” cannot be read
16 into Claim 1. “Under the doctrine of claim differentiation, when one claim does not
17 recite a particular limitation that is recited in another claim, ‘that limitation cannot be
18 read into the former claim.’” *Baxter Healthcare Corp. v. Fresenius Med. Care*
19 *Holdings, Inc.*, No. C 07-1359, 2009 U.S. Dist. LEXIS 14842, at *13 (N.D. Cal. Feb.
20 10, 2009) (quoting *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1326
21 (Fed. Cir. 2003)); *TurboCare Div. of Demag Delaval Turbomachinery Corp. v. Gen.*
22 *Elec. Co.*, 264 F.3d 1111, 1123 (Fed. Cir. 2001) (Claim terms should not be read to
23 contain a limitation “where another claim restricts the invention in exactly the [same]
24 manner.”).

25 The Court should adopt BNR’s proposed definition of this term because its
26 construction adheres to well-established principles of claim construction and is
27 consistent with how a POSITA would understand the term, while Defendants’
28 construction violates black-letter patent law.

1 **V. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 8,416,862**

2 **A. Background of the Invention**

3 The '862 Patent is entitled "Efficient Feedback of Channel Information in a
4 Closed Loop Beamforming Wireless Communication System" and claims priority to a
5 date no later than April 2005. The '862 Patent is related to wireless communications
6 using beamforming. Beamforming is a process that allows for adapting an RF
7 transmission (for example, WiFi) so that the intended recipient receives a stronger
8 signal. When a transmitter is sending out an RF signal, the signal can become degraded
9 by mixing with other signals, by passing through objects, or simply due to the distance
10 that it must cover. Beamforming alters the properties of that RF signal to send it more
11 directly to the recipient in a line and minimizing surrounding signal interference to
12 increase the strength. To properly implement beamforming, the transmitter must know
13 the properties of the channel, which is signal and noise, over which the wireless
14 communication is conveyed. This is called feedback information. Without any
15 modification, the feedback information required to be sent back to the wireless
16 transmitting device may be so large that the channel may change before the entire
17 feedback information is received by the transmitter.

18 The '862 Patent's claims describe improvements on transmitting feedback of
19 transmitter beamforming information. In particular, they describe a way for the
20 receiving device to manipulate, through mathematical techniques, the data that
21 represents an estimate of the channel information required and further minimize and
22 manipulate the data that must be sent back to the transmitter through mathematical
23 techniques. One of the important technical advantages and improvements offered by
24 the invention is a decrease in the amount of data required to send the feedback
25 information to the transmitting wireless transmitter, which allows beamforming to
26 occur more efficiently. (Ex. F, '862 Patent at 16:1–6.)
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B. Person of Ordinary Skill in the Art

A Person of Ordinary Skill in the Art (“POSITA”) for the ’862 Patent would have a bachelor’s degree in electrical engineering, computer engineering, computer science or similar field, and two to three years of experience in digital communications systems, such as wireless communications systems and networks, or equivalent. Moreover, someone with more technical education but less experience could have also met this standard. (Ex. L, Madisetti Op. Decl. ¶ 88.)

B. “decompose the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. In the alternative, to the extent the Court determines that a specific construction is warranted, BNR proposes: “factor the estimated transmitter beamforming unitary matrix (V) to produce a reduced number of quantized coefficients”	“factor the estimated transmitter beamforming unitary matrix (V) to produce a reduced set of angles”

The term “decompose the estimated transmitter beamforming unitary matrix (V) to produce the transmitter beamforming information” appears in Claim 9 of the ’862 Patent:

9. A wireless communication device comprising:

a plurality of Radio Frequency (RF) components operable to receive an RF signal and to convert the RF signal to a baseband signal; and

a baseband processing module operable to:

receive a preamble sequence carried by the baseband signal;

estimate a channel response based upon the preamble sequence;

1 determine an estimated transmitter beamforming unitary
2 matrix (V) based upon the channel response and a receiver
3 beamforming unitary matrix (U);

4 ***decompose the estimated transmitter beamforming unitary***
5 ***matrix (V) to produce the transmitter beamforming***
6 ***information; and***

7 form a baseband signal employed by the plurality of RF
8 components to wirelessly send the transmitter
9 beamforming information to the transmitting wireless
device.

10 (Ex. F, '862 Patent Claim 9.)

11 A person of ordinary skill in the art at the time of the invention would have
12 understood this term to mean: “factor the estimated transmitter beamforming unitary
13 matrix (V) to produce a reduced number of quantized coefficients.” There is no dispute
14 regarding the first portion of the construction; specifically that “decompose the
15 estimated transmitter beamforming unitary matrix (V) to produce” means “factor the
16 estimated transmitter beamforming unitary matrix (V) to produce.” Thus, the dispute
17 centers on whether factoring the estimated transmitter beamforming unitary matrix (V)
18 results in “a reduced number of quantized coefficients” as BNR contends, or “a
19 reduced set of angles,” as Defendants contend.

20 BNR’s construction is consistent with both the claim language and specification,
21 and is further supported by extrinsic evidence. Defendants’ construction finds no
22 anchor in the intrinsic record and selectively incorporates extrinsic references to
23 support it. The specification identifies a clear example of what this transmitter
24 beamforming information is:

25 As the reader will appreciate, the *coefficients* of the
26 Givens Rotation and the phase matrix *coefficients* serve as
27 ***the transmitter beamforming information*** that is sent
28 from the receiving wireless communication device to the
transmitting wireless communication device.

1 (Ex. F, '862 Patent at 15:34–38 (emphasis added)).³

2 The use of the term “coefficients” in BNR’s proposal aligns with this portion of
3 the specification. First, for the phase matrix, the specification specifically refers to the
4 entries in that matrix as coefficients. *See id.* And regarding the Givens Rotation, Dr.
5 Min acknowledged during deposition that the values of the result of the Givens
6 Rotation are coefficients:

7 Q. The result of a Givens Rotation is two matrices,
8 right?

9 A. Yes, product of the two matrices.

10 Q. And you already said that the values of the matrices
11 are called coefficients, right, commonly?

12 A. Yeah, sure. That’s some number.

13 (Ex. P, Min Dep. at 101:6–12.) Thus, BNR’s use of the term coefficients in its
14 construction to describe the result of the factoring is well supported by the intrinsic
15 record. *See Scripps Research Inst. V. Illumina, Inc.* No. 16-cv-661 JLS (BGS), 2018
16 U.S. Dist. LEXIS 60928, at *5–6 (S.D. Cal. Apr. 10, 2018) (“Usually, the specification
17 is dispositive; it is the single best guide to the meaning of a disputed term.” (quoting
18 *Vitronics*, 90 F.3d at 1582)).

19 Further, a person of ordinary skill in the art would also understand that the
20 reduced set of coefficients are quantized coefficients. In understanding why a person of
21 skill in the art would understand that the coefficients are quantized, it is important to
22 note the surrounding claim language that indicates what happens with the transmitter
23 beamforming information: that the bandwidth processing module forms “a baseband
24 signal employed by the plurality of RF components *to wirelessly send* the transmitter
25 beamforming information to the transmitting wireless device.” (Ex. F, '862 Patent

26 ³ While this example refers to decomposition using Givens Rotation, it is not limiting
27 as to the type of matrix decompositions within the scope of the claim. Dependent claim
28 5, for example, claims decomposing using a QR decomposition technique and
dependent claim 6 comprises where the QR decomposition technique of claim 5
comprises a Givens Rotation operation. (*See* Ex. F, '862 Patent at Claims 5-6.) In both
cases, the decomposition is matrix factorization and results in product matrices, and
the use of the term coefficients is therefore consistent.

1 Claim 9 (emphasis added).) Quantization is, in effect, trading exactness or precision
2 for finiteness and, as a result, size. As Dr. Madisetti stated, “as used in the patent and
3 as understood by a person of skill in the art, quantization is reducing a larger set of
4 possible values to a smaller set.” (Ex. L, Madisetti Op. Decl. ¶ 94.)

5 This quantization occurs most often in digital signal processing as
6 approximation by fixing the length of the bits for the value that otherwise would far
7 exceed that length. Dr. Min offered a similar explanation for quantization: “In any
8 formable digital communications, you would have to fix the – what we call the
9 precision of the number. Sometimes you use 8 bits, 16 bits, 32 bits, sometimes even 64
10 bits, that’s just to indicate a floating number of any kind.” (Ex. P, Min Dep. at 97:10–
11 14; *see also* Ex. O, Min Op. Decl. ¶ 180 (“Quantization refers to the transformation of
12 data into integer values”)) Quantization is required because the alternative is
13 unworkable in digital communications, because “if you want to transmit a true
14 valuable angle, then you need *infinite bits*, it is a real number.” (Ex. P, Min Dep. at
15 94:7–18 (emphasis added).)

16 The specification, too, confirms that quantization is expected for the transmitter
17 beamforming information. For example, in each instance where the patent discusses
18 angles that relate to the V matrix and to feedback information, the patent goes on to
19 discuss the number of bits and bytes required for the expression of those angles during
20 feedback. (*See, e.g.*, Ex. F, ’862 Patent at 10:40–65; 11:1–20; 11:21–55; 12:64–13:14;
21 14:48–15:17; 15:34–58.) There is no disclosure within the patent that contemplates the
22 transmission of real values of angles, and therefore the transmitter beamforming
23 information that is produced by factoring the estimated transmitter beamforming
24 matrix (V) is a reduced number of quantized coefficients. *See Scripps Research*, 2018
25 U.S. Dist. LEXIS 60928, at *5–6 (the specification “is the single best guide to the
26 meaning of a disputed term”) (citation omitted).

27 In contrast, Defendants’ construction cherry-picks one portion of the
28 specification, ignores others and disregards context provided by the entirety of the

1 specification and the claim language. Dr. Min cites to Col. 13:65–14:3 to support his
 2 and Defendants’ construction. That excerpt states “[w]ith a decomposed matrix form
 3 for the estimated transmitter beamforming matrix (V), the set of angles fed back to the
 4 transmitting wireless device are reduced.” (See Ex. O, Min Op. Decl. ¶¶ 176–77.) This
 5 is true; the *goal* of sending the transmitter beamforming information to the transmitting
 6 wireless device is to provide these angles (ψ and Φ) to the transmitting wireless device
 7 to regenerate V. But Defendants ignore the remaining portion of the specification and
 8 claims that describe *how* the angles are reduced and in what format the angles are fed
 9 back—as transmitter beamforming information. This *how* is described above and
 10 represents why the values are coefficients and not angles. The specification also
 11 supports why a person of ordinary skill in the art would understand that the
 12 coefficients are quantized for transmission. Dr. Min acknowledged this at deposition:

13 **Q.** Now under your construction [for the decompose
 14 term], in what format are the angles transmitted to the
 15 transmitting wireless device?

16 **A.** So what, what the patent specification says is you do
 17 unitary matrix V and you then decompose it using the
 18 Givens Rotation. Actually, you do it multiple times as
 19 necessary depending on the size of the B and then after
 20 that, *the actually data sent back to the transmitter is,
 21 uh, quantized information.*

22 (Ex. P, Min Dep. at 88:12–22 (emphasis added).) Dr. Min attempts to support his
 23 opinions by stating, “Now, having said that, that is not really what the claim says. The
 24 claim language does not say anything about transmitting, what is being transmitted.”
 25 (See Ex. P, Min Dep. at 88:23–89:2.) But the claim language *does* address
 26 transmitting. The claim requires that the transmitter beamforming information is
 27 wirelessly sent back to the transmitter. (See Ex. F, ’862 Patent at Claim 9). And a
 28 person of ordinary skill in the art would understand that, in order to send the
 information back in a wireless system, quantization must occur. (See Ex. L, Madisetti
 Op. Decl. ¶ 95.) See *Julius Zorn, Inc. v. Medi Mfg.*, No. 3:15-CV-02734-GPC-RBB,
 2017 U.S. Dist. LEXIS 35826, at *4 (S.D. Cal. Mar. 13, 2017) (“Importantly, the
 person of ordinary skill in the art is deemed to read the claim term not only in the

1 context of the particular claim in which the disputed term appears, but in the context of
2 the entire patent, including the specification.” (quoting *Phillips*, 415 F.3d at 1313)).

3 **VI. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,957,450**

4 **A. Background of the Invention**

5 The '450 Patent is entitled “Method and System for Frame Formats for MIMO
6 Channel Measurement Exchange” and claims priority to a date no later than December
7 2004. Like the '862 Patent, the '450 Patent is related to wireless communications using
8 beamforming. Many wireless devices contain multiple antennas that utilize signal
9 processing techniques to directionally focus the transmission and reception of signals
10 in a specific direction. The process of optimizing signals in a specific direction is
11 known as “beamforming”:

12 Smart antenna systems combine multiple antenna
13 elements with a signal processing capability to optimize
14 the pattern of transmitted signal radiation and/or reception
15 in response to the communications medium environment.
16 **The process of optimizing the pattern of radiation is
17 sometimes referred to as “beamforming,” which may
18 utilize linear array mathematical operations to
19 increase the average signal to noise ratio (SNR) by
20 focusing energy in desired directions.**

21 (See Ex. G, '450 Patent at 1:35–42 (emphasis added).)

22 The specification goes on to describe that, “[i]n conventional smart antenna
23 systems, only the transmitter or the receiver may be equipped with more than one
24 antenna, and may typically be located in the base transceiver station (BTS) where the
25 cost and space associated with smart antenna systems have been perceived as more
26 easily affordable than on mobile terminals such as cellular telephones.” (Ex. G, '450
27 Patent at 1:42–48.) But “[w]ith advances in digital signal processing (DSP) integrated
28 circuits (ICs) in recent years, multiple antenna multiple output (MIMO) systems have
emerged in which mobile terminals incorporate smart antenna systems comprising
multiple transmit antenna and multiple receive antenna.” (Ex. G, '450 Patent at 1:53–

1 57.) When used in a wireless device, such as a home router, beamforming in a MIMO
2 system increases WiFi signal strength by focusing signals to another wireless device,
3 such as a cellular phone or tablet.

4 The patent notes that beamforming is challenging because focusing the
5 transmission of wireless signals must be adjusted as the relative positions of the
6 transmitting and receiving wireless device positions change relative to one another.
7 (*See, e.g.*, Ex. G, '450 Patent at 2:33–56.) For example, when a user walks around their
8 home with a phone or tablet using WiFi the directionality of the WiFi signal from the
9 home router is adjusted to compensate for the movement of the phone or tablet relative
10 to the router. Thus, information about the RF channel used to transmit information
11 must be adapted or else “information loss between the transmitting mobile terminal
12 and the receiving mobile terminal may result.” (*See* Ex. G, '450 Patent at 4:22–24.)

13 The '450 Patent teaches “feedback mechanisms by which a receiving mobile
14 terminal may feedback information to a transmitting mobile terminal to assist the
15 transmitting mobile terminal in adapting signals which are sent to the receiving mobile
16 terminal.” (Ex. G, '450 Patent at 1:30–34.) Specifically, the '450 Patent claims a
17 method of transmitting data via multiple radio frequency channels with more than one
18 transmitting antenna, receiving feedback information, and modifying a transmission
19 mode based on the feedback information. The method reduces the network resources
20 required for beamforming operations freeing up bandwidth for other network traffic,
21 such as data.

22 Singular Value Decomposition (“SVD”) is a mathematical matrix
23 decomposition technique for reducing a matrix to its constituent parts to make certain
24 subsequent matrix calculations easier. By using (SVD), wireless devices decrease the
25 quantity of information transmitted to other parts of the system, such as a base station,
26 which conserves bandwidth making the beamforming process more efficient.

B. Person of Ordinary Skill in the Art

A Person of Ordinary Skill in the Art (“POSITA”) for the ’450 patent would have a bachelor’s degree in electrical engineering, computer engineering, computer science or similar field, and two to three years of experience in digital communications systems, such as wireless communications systems and networks, or equivalent. Moreover, someone with more technical education but less experience could have also met this standard. (Ex. L, Madisetti Op. Decl. ¶ 129.)

C. “channel estimate matrices” / “matrix based on the plurality of channel estimates”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. In the alternative, to the extent the Court determines that a specific construction is warranted, BNR proposes: “one or more matrices that is based on an SVD decomposition of the estimates of the values of H(t)”	“matrix H_{est} for tones of different frequencies, where H_{est} contains estimates of the true values of H(t)”

The term in question is highlighted below in Claim 1 of the ’450 Patent:

A method for communication, the method comprising:

computing a plurality of **channel estimate matrices** based on signals received by a mobile terminal from a base station, via one or more downlink RF channels, wherein said plurality of **channel estimate matrices** comprise coefficients derived from performing a singular value matrix decomposition (SVD) on said received signals; and

transmitting said coefficients as feedback information to said base station, via one or more uplink RF channels.

In order to properly consider the meaning of this term, some background information regarding the communication channel is necessary. The specification

1 explains that an RF channel between a transmitting mobile terminal and a receiving
 2 mobile terminal may be represented by a transfer system function, H . The specification
 3 further describes different variables relevant to signal transmission in the system:

4 The relationship between a time varying transmitted
 5 signal, $X(t)$, a time varying received signal, $y(t)$, and the
 6 systems function may be represented as shown in equation
 [1]:

$$7 \quad y(t) = Hx(t) + n(t),$$

8 where $n(t)$ represents noise...introduced as the signal
 9 travels through the communications medium and the
 10 receiver itself.

11 (Ex. G, '450 Patent at 3:53–4:9.)

12 The specification further notes that “[i]n MIMO systems, the elements in
 13 equation 1 may be represented as vectors and matrices.” (See Ex. G, '450 Patent at
 14 3:65–66.) Because signal strength is subject to fading effects that might vary with time,
 15 the transfer system function H may itself become time-varying and may thus also
 16 become a function of time, $H(t)$. Therefore, individual coefficients (or multipliers),
 17 $h_{ij}(t)$, in the transfer function $H(t)$ may become time varying in nature. (See Ex. G, '450
 18 Patent at 4:6–9.) These variables become important in MIMO systems operating
 19 according to the IEEE’s 802.11 standard because in such systems “the receiving
 20 mobile terminal may compute $H(t)$ each time a frame of information is received from a
 21 transmitting mobile terminal based upon the contents of a preamble field in each
 22 frame.” (See Ex. G, '450 Patent at 4:10–14.) The “preamble field” is a signal to used to
 23 synchronize and facilitate data transmission.

24 In this context, the specification describes the meaning of the disputed term
 25 “channel estimate matrix.” It notes that “[t]he computations which are performed at the
 26 receiving mobile terminal may constitute *an estimate of the ‘true’ values of $H(t)$ and*
 27 *may be known as ‘channel estimates’*... To the extent that *$H(t)$, which may be*
 28

1 *referred to as the “channel estimate matrix”*, changes with time and to the extent that
2 the transmitting mobile terminal fails to adapt to those changes, information loss
3 between the transmitting mobile terminal and the receiving mobile terminal may
4 result.” (See Ex. G, ’450 Patent at 4:14–24 (emphasis added).) Thus, the patentees
5 twice link the term “channel estimate matrix” to the time-varying transfer system
6 function “H(t).” See *Phillips*, 415 F.3d at 1315 (“[T]he specification ‘is always highly
7 relevant to the claim construction analysis. Usually, it is dispositive; it is the single
8 best guide to the meaning of a disputed term.’”) (quoting *Vitronics*, 90 F.3d at 1582).

9 Turning to the claim language, the method requires computing one or more
10 channel estimate matrices from signals received by a wireless communication device
11 from a base station. The claim language requires that a plurality of channel estimate
12 matrices comprise “coefficients derived from performing singular value decomposition
13 (SVD)” on the RF signals received by the wireless communication device from the
14 base station. (See Ex. G, ’450 Patent at 19:13–19.) The coefficients of H(t) resulting
15 from SVD are then transmitted back to the base station. By doing so, the wireless
16 communication device can feedback channel information in a compressed format that
17 the base station can use to adjust or attenuate signal strength as necessary to improve
18 performance; for example, by reducing noise. See *Phillips*, 415 F.3d at 1314 (“the
19 claims themselves provide substantial guidance as to the meaning of particular claim
20 terms.”).

21 After reviewing the specification and claim language, Dr. Madisetti explains:

22 [T]he method requires computing one or more channel
23 estimate matrices, H(t) from signals received by a wireless
24 communication device from a base station. The claim
25 language goes on to explain that a plurality of channel
26 estimate matrices are comprised of coefficients derived
27 from performing SVD on the RF signals received by the
28 wireless communication device from the base station.
These SVD coefficients of H(T) are then transmitted back
to the base station. By doing so, the wireless
communication device can feedback channel information

1 in a compressed format that the base station can use to
 2 adjust or attenuate signal strength as necessary to improve
 performance, for example by reducing noise.

3 (Ex. L, Madisetti Op. Decl. ¶ 139.) Dr. Madisetti goes on to opine that a “POSITA
 4 would understand the term ‘channel estimate matrices/matrices based on the plurality
 5 of channel estimates’ to mean ‘one or more matrices that is based on an SVD
 6 decomposition of the estimates of the values of $H(t)$.’” (Ex. L, Madisetti Op. Decl. ¶
 7 140.) *See Phillips*, 415 F.3d at 1318 (“[E]xtrinsic evidence in the form of expert
 8 testimony can be useful to a court for a variety of purposes, such as to provide
 9 background on the technology at issue, to explain how an invention works, to ensure
 10 that the court's understanding of the technical aspects of the patent is consistent with
 11 that of a person of skill in the art, or to establish that a particular term in the patent or
 12 the prior art has a particular meaning in the pertinent field.”).

13 BNR’s proposed construction aligns with the claim language, the teachings of
 14 the specification, and the understanding of a POSITA and should be adopted. Even
 15 Defendants’ expert, Dr. Min, acknowledges that “the ’450 Patent consistently refers to
 16 “channel estimate matrix” as a matrix H ... Similarly, the claim term ‘matrix based on
 17 the/said plurality of channel estimates’ must also refer to a matrix H .” (Ex. O, Min Op.
 18 Decl. ¶ 148.)

19 On the other hand, Defendant’s construction violates a fundamental tenet of
 20 patent law: importing limitations from an embodiment into the claims. *See Retractable*
 21 *Techs., Inc. v. Becton*, 653 F.3d 1296, 1313 (Fed. Cir. 2011) (“It is improper to import
 22 limitations from the specification into the claims, and this court has expressly and
 23 repeatedly warned against confining claims to specific embodiments of the invention
 24 set forth in the specification.”).

25 The specification describes several different channel estimate embodiments:

26 In one embodiment of the invention, a receiving mobile
 27 terminal may periodically transmit feedback information,
 28 comprising a **channel estimate matrix**, H_{up} , to a

1 transmitting mobile terminal. In another embodiment of
 2 the invention, a receiving mobile terminal may perform a
 3 singular value decomposition (SVD) on the channel
 4 estimate matrix, and subsequently transmit SVD-derived
 5 feedback information to the transmitting mobile terminal.

(Ex. G, '450 Patent at 7:64–8:5 (emphasis added).)

6 **Yet another embodiment of the invention** may expand
 7 upon the method utilizing sounding frames to incorporate
 8 calibration. In this aspect of the invention, a receiving
 9 mobile terminal, after transmitting a sounding frame, may
 10 subsequently receive a **channel estimate matrix, H_{down}** ,
 11 from the transmitting mobile terminal. The receiving
 12 mobile terminal may then transmit feedback information
 13 which is based upon the difference $H_{\text{up}}-H_{\text{down}}$, to the
 14 transmitting mobile terminal.

(Ex. G, '450 Patent at 8:10–18 (emphasis added).)

15 **In one embodiment of the invention, a full channel**
 16 **estimate matrix** which is computed by a receiving mobile
 17 terminal, H_{est} , may be represented by its SVD: $H_{\text{est}}=USV^H$,
 18 where equation[2] H_{est} may be a complex matrix of
 19 dimensions $N_{\text{rx}} \times N_{\text{tx}}$, where N_{rx} may be equal to the
 20 number of receive antenna at the receiving mobile
 21 terminal, and N_{tx} may be equal to the number of transmit
 22 antenna at the transmitting mobile terminal, U may be an
 23 orthonormal complex matrix of dimensions $N_{\text{rx}} \times N_{\text{rx}}$, S may
 24 be a diagonal real matrix of dimensions $N_{\text{rx}} \times N_{\text{tx}}$, and V
 25 may be an orthonormal complex matrix of dimensions N_{tx}
 26 $\times N_{\text{tx}}$ with V^H being the Hermitian transform of the matrix
 27 V .

(Ex. G, '450 Patent at 8:52–65 (emphasis added).)

28 Defendants' construction is derived from the last embodiment describing H_{est} ,
 but the specification explicitly states that this is merely "one embodiment of the
 invention" and there is nothing in the claim language that justifies limiting the claims
 to the H_{est} embodiment. *See Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348
 (Fed. Cir. 2009) ([T]he patentee is generally "entitled to the full scope of his claims,

1 and we will not limit him to his preferred embodiment or import a limitation from the
 2 specification into the claims.” (citing *Phillips*, 415 F.3d at 1323)); *Liebel-Flarsheim*,
 3 358 F.3d at 906 (“This court has expressly rejected the contention that if a patent
 4 describes only a single embodiment, the claims of the patent must be construed as
 5 being limited to that embodiment.”). Defendants’ expert, Dr. Min, acknowledges that
 6 the use of H_{est} is disclosed as “an embodiment of the invention utilizing singular value
 7 decomposition...” (Ex. O, Min Op. Decl. ¶ 146.)

8 Additionally, dependent Claim 2 of the ’450 Patent adds the limitation
 9 “computing each of said plurality of channel estimate matrices for a corresponding **one**
 10 **of a plurality of tones**, wherein each of said plurality of tones corresponds to **one or**
 11 **more distinct frequencies**.” (Ex. G, ’450 Patent at 19:23–27 (emphasis added).) Thus,
 12 the “for tones of different frequencies” limitation in Defendants’ proposed construction
 13 is improper for violating the doctrine of claim differentiation. *See Curtiss-Wright Flow*
 14 *Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006) (“In the most
 15 specific sense, “claim differentiation” refers to the presumption that an independent
 16 claim should not be construed as requiring a limitation added by a dependent claim.”).

17 The Court should adopt BNR’s proposed definition because it is consistent with
 18 the plain and ordinary meaning, the claim language, descriptions in the specification,
 19 and the opinions of persons of ordinary skill in the art. Defendants’ construction
 20 inappropriately imports limitations from a specific embodiment described in the
 21 specification and another embodiment claimed in a dependent claim, contrary to basic
 22 principles of claim construction.

23 **D. “coefficients derived from performing a singular value matrix**
 24 **decomposition (SVD)”**

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. In the alternative, to the extent the Court determines that a specific	“values in the matrices U , S , or V^H , where $H_{est}=USV^H$ ”

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	construction is warranted, BNR proposes: “values derived from a singular value decomposition”	
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The term in question is highlighted below in Claim 1 of the '450 Patent:

1. A method for communication, the method comprising:

computing a plurality of channel estimate matrices based on signals received by a mobile terminal from a base station, via one or more downlink RF channels, wherein said plurality of channel estimate matrices comprise **coefficients derived from performing a singular value matrix decomposition (SVD)** on said received signals; and transmitting said coefficients as feedback information to said base station, via one or more uplink RF channels

Singular Value Decomposition (“SVD”) is a well-known matrix decomposition method for reducing a matrix to its constituent parts to make certain subsequent matrix calculations easier. (Ex. L, Madisetti Op. Decl. ¶ 138.) The specification describes that “SVD is a method which may reduce the quantity of channel feedback information which is transmitted between a receiving mobile terminal and a transmitting mobile terminal.” (Ex. G, '450 Patent at 8:45–47.)

In the context of the H_{est} embodiment, the patentees provide an example of an SVD operation:

In one embodiment of the invention, a full channel estimate matrix which is computed by a receiving mobile terminal. H_{est} may be represented by its SVD:

$$H_{est} = USV^H, \text{ where}$$

H_{est} may be a complex matrix of dimensions $N_{rx} \times N_{tx}$, where N_{rx} may be equal to the number of receive antenna at the receiving mobile terminal, and N_{tx} may be equal to the number of transmit antenna at the transmitting mobile terminal, U may be an orthonormal complex matrix of dimensions $N_{rx} \times N_{rx}$, S may be a diagonal real matrix of

1 dimensions $N_{rx} \times N_{tx}$, and V may be an orthonormal
 2 complex matrix of dimensions $N_{tx} \times N_{tx}$, with V^H being
 the Hermitian transform of the matrix V .

3 (Ex. G, '450 Patent at 8:52–65.) The computed matrices U , S , and V^H , contain
 4 coefficients. (See, for example, Ex. G, '450 Patent at 9:37–42.) According to the claim
 5 language, these coefficients are transmitted back to the base station. (Ex. G, '450
 6 Patent Claim 1 (“transmitting said coefficients as feedback information to said base
 7 station”).) But this is just one embodiment of the invention, as explicitly stated in the
 8 excerpt above.

9 BNR’s proposed construction accurately reflects the plain claim language and
 10 should be adopted. See *Renishaw*, 158 F.3d at 1250 (“The construction that stays true
 11 to the claim language and most naturally aligns with the patent’s description of the
 12 invention will be, in the end, the correct construction.”). Furthermore, BNR’s
 13 construction conforms to Dr. Madisetti’s understanding of this term based on the
 14 perspective of a POSITA:

15 [T]he structure of the claim dictates that SVD must be
 16 performed on the wireless signals received by a wireless
 17 device from a base station. The SVD will result in a
 18 decomposition of the estimates of the values of $H(t)$. The
 19 coefficients derived from the SVD operation will then be
 transmitted back to the base station.

20 Therefore, it is my opinion that a POSITA would
 21 understand the term “coefficients derived from performing
 22 a singular value matrix decomposition (SVD)” to mean
 “values derived from a singular value decomposition.”

23 (Ex. L, Madisetti Op. Decl. ¶¶ 150–151.)

24 Defendants’ construction is flawed because it requires that the coefficients be
 25 from the H_{est} matrix—only one embodiment of the invention. This error flows directly
 26 from Defendants’ proposed construction of “channel estimate matrices,” which also
 27 impermissibly limits the “channel matrices” term to H_{est} . However, as discussed above,
 28

1 H_{est} is a preferred embodiment that Defendants have improperly imported into the
 2 claims, and their proposed construction for this disputed term should be rejected for
 3 the same reasons enumerated above.

4 **VII. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 6,941,156**

5 **A. Background of the Invention**

6 The '156 Patent is entitled “Automatic Handoff for Wireless Piconet Multimode
 7 Cell Phone” and claims priority to a date no later than June 2001. The '156 Patent is
 8 generally related to the use of multimode cellular phones and the ability to smoothly
 9 switch between two different modes of communication operable on the cellular phone,
 10 such as a cellular connection and another RF connection (like WiFi). The claimed
 11 inventions in the '156 Patent are directed to improved methods of switching between
 12 the modes of operation. One of the important technical advantages and improvements
 13 offered by the invention is a multimode cell phone capable of automatic switching,
 14 including establishing a second communications link while the first communications
 15 link is still active. The prior art required the call to disconnect before switching modes
 16 or for a second to be initiated by an intermediary instead of the claimed multimode cell
 17 phone.

18 **B. “simultaneous communication paths from said multimode cell phone”**

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Plain and ordinary meaning. In the alternative, to the extent the Court determines that a specific construction is warranted, BNR proposes: “two or more active links at the same time from said multimode cellphone”	“at least two established distinct and different communication links from said multimode cell phone to a far-end communication device, at the same time”

24 The term “simultaneous communication paths from said multimode cell phone”
 25 appears in Claim 1 of the '156 Patent (bolded in text):

- 26 1. A multimode cell phone, comprising:
 27 a cell phone functionality; and
 28

1 an RF communication functionality separate from said cell
2 phone functionality;

3 a module to establish *simultaneous communication paths*
4 *from said multimode cell phone* using both said cell
5 phone functionality and said RF communication
6 functionality; and

7 an automatic switch over module, in communication with
8 both said cell phone functionality and said RF
9 communication functionality, operable to switch a
10 communication path established on one of said cell phone
11 functionality and said RF communication functionality,
12 with another communication path later established on the
13 other of said cell phone functionality and said RF
14 communication functionality.

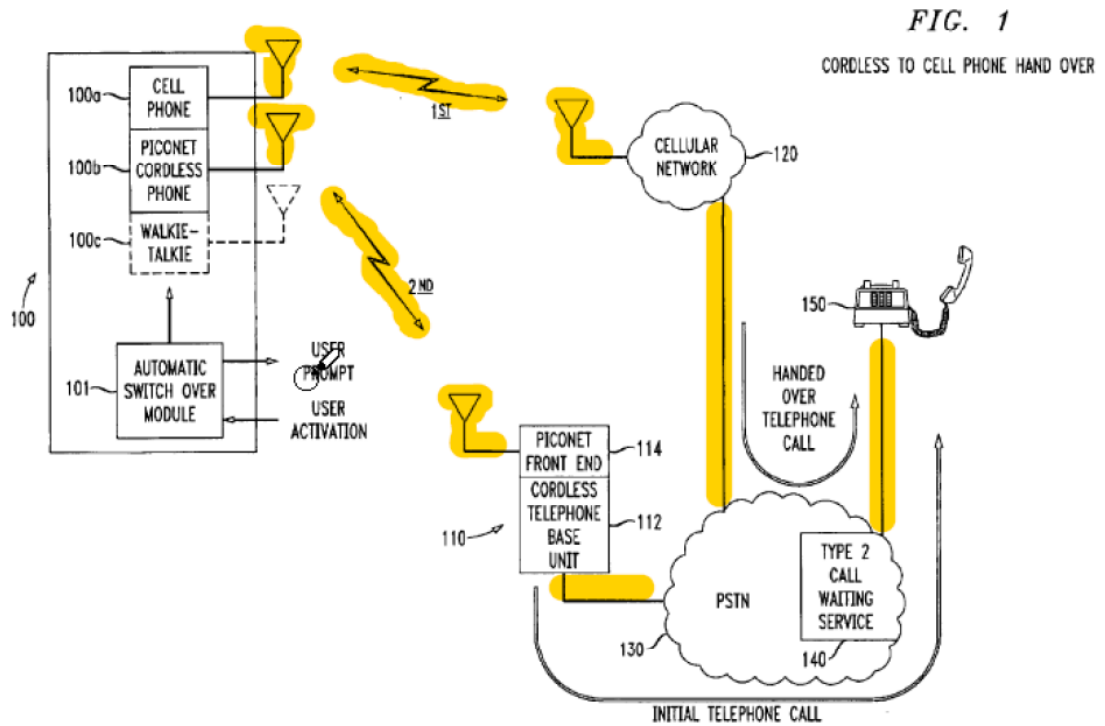
(Ex. H, '156 Patent at 8:15–31.)

15 BNR's proposed definition, in addition to reflecting the plain and ordinary
16 meaning, is consistent with and supported by the intrinsic record. The meaning is
17 confirmed by the opinions of Dr. Madisetti, viewing the claim language through the
18 eyes of a person of ordinary skill in the art. In contrast, Defendants' construction is
19 flawed because it violates fundamental tenets of claim construction regarding
20 importing limitations that either exist in other elements of the claim or are unsupported
21 by the intrinsic record.

22 First, the claim language focuses on the capabilities of the claimed multimode
23 cell phone, not the telecommunications network or the far-end device—neither of
24 which is referenced in the claim. Claim 1 describes a multimode cell phone with two
25 communication functionalities: cellular and an RF separate from cellular. It then
26 describes a module to establish the simultaneous communication paths using both of
27 those communication functionalities, cellular and RF, that are resident on the claimed
28 multimode cell phone. Finally, it claims an automatic switchover module within the
multimode cell phone that switches between “a communication path established *on*

1 *one of said cell phone functionality and said RF communication functionality*” and
 2 “another communication path later established *on the other of said cell phone*
 3 *functionality and said RF communication functionality.*” (See Ex. H, ’156 Patent
 4 Claim 1 (emphasis added).) That is, the claimed modules act on the functionalities that
 5 are a part of the claimed multimode cell phone. The focus of the claim language is on
 6 the multimode cell phone, and does not address the telecommunication network or the
 7 far-end device.

8 The specification also confirms BNR’s construction. Figure 1 is particularly
 9 instructive in that the links are identified with respect to the *multimode cell phone*, and
 10 not with respect to the far end device:



13 (Ex. H, ’156 Patent at Fig. 1 (highlights added).) Figure 1 shows the two
 14 communication paths for (a) a cell phone functionality (as shown by 100a, the antenna
 15 diagram, following through to the path identified as “1st” to the cellular network 120)
 16
 17
 18
 19
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 23
 24

1 and (b) a second RF communication functionality other than cell phone functionality
2 (as shown by 100b, the related antenna diagram, following through to the path
3 identified as “2nd” to the piconet front end 114 and cordless telephone base unit 112).
4 (See Ex. L, Madisetti Op. Decl. ¶ 51; Ex. M, Madisetti Rebuttal Decl. ¶ 14.) But both
5 of these paths are depicted in the claimed multimode cell phone. Figure 1 thus
6 discloses two links from the multimode cell phone that flow to the PSTN 130. From
7 the PSTN 130 to the far end device 150, there is only *one link*. For Defendants’
8 construction to be correct, there would have to be two.

9 Further, additional portions of the specification support BNR’s construction.
10 Under Defendants’ construction, there must be two concurrent paths, each of a
11 different mode, that extend all the way to the far end device—that is, the far end device
12 would be required to have the same mode capabilities as the multimode cell phone. But
13 the specification unambiguously rejects that argument; the far end device “can be any
14 telephonic device, multi-mode or *single mode*.” (Ex. H, ’156 Patent at 4:12–17
15 (emphasis added).) Defendants’ construction thus contradicts the specification. See
16 *Phillips*, 415 F.3d at 1313 (“[C]laims must be construed so as to be consistent with the
17 specification.”).

18 BNR’s position is also consistent with statements made during the prosecution
19 of the application that led to the ’156 Patent. To overcome a prior art rejection over
20 U.S. Patent 5,842,122 to Schellinger et al. (“Schellinger”), the patentee amended the
21 claims to include the limitation “a module to establish simultaneous communication
22 paths from a multimode cell phone using both a cell phone functionality and RF
23 communication functionality.” (See Ex. I at Appx299, Jan. 6, 2005 Response to Office
24 Action at p. 7; see also *id.* at Appx294–98 (pp. 2–6).) In explaining how this claim
25 amendment traversed the Examiner’s rejection, the patentee stated as follows:
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28

1 However, according to Schellinger, automatic forwarding systems
 2 of a central office are implemented to allow handoff of a call. See, e.g., col. 6,
 3 lines 12-15; and col. 6, line 24 (remote call forwarding performed). As explained
 4 by Schellinger at col. 7, lines 50-62, a call in process is handed off by producing
 5 a THREE WAY CALL through the cellular telephone system (i.e., NOT through
 6 the cell phone itself). To finally implement the handoff, the cell phone switches to
 7 a landline leg of a three way call (set up by a central office and/or cellular
 8 telephone system), and the initial call is dropped.

9 The present invention requires a module to establish simultaneous
 10 communication paths from a multimode cell phone using both a cell phone
 11 functionality and RF communication functionality, or to establish from a
 12 multimode cell phone a second type RF communication link while a first type
 13 RF communication link remains active at the multimode cell phone. Schellinger
 14 fails to disclose simultaneous communication paths from a multimode cell phone
 15 as claimed by the claims of the present application.

16 (See Ex. I at Appx300, Jan. 6, 2005 Response to Office Action at p. 8 (highlights
 17 added).) According to the patentee, Schellinger disclosed a communication path
 18 “produced . . . through the cellular telephone system” or “set up by a central office
 19 and/or cellular telephone system.” See *id.* By adding the limitation for a module on the
 20 multimode cell phone that establishes the communication paths, the patentee was
 21 stating that the patentable distinction is that the claimed multimode cell phone
 22 establishes the communication path, and not some external network or function. See
 23 *Phillips*, 415 F.3d at 1317 (“[T]he prosecution history can often inform the meaning of
 24 .”).

25 Further, Defendants’ expert, Dr. Paul Min, acknowledged during deposition that
 26 the Schellinger reference discloses a communication system where the multimode cell
 27 phone *does not initiate* the three-way call (i.e., the second communication path). Dr.
 28 Min was asked to refer to an excerpt cited in his declaration from Schellinger, which

1 stated “In Fig. 6–2 the cordless base station 115 . . . answers the landline leg of the
2 three way call . . . to open communication between the other party and the cordless
3 base station 115.” (*See* Ex. P, Min Dep. at 57:18–23 (referencing Ex. O, Min Op. Decl.
4 ¶ 88).) Dr. Min testified:

5 Q. So if the cordless base station answers the landline,
6 then it did not initiate that communication path, correct?

7 A. That’s what it says here. I mean, in this particular
8 paragraph.

9 Q. It says that it did not initiate the communication path?

10 A. That’s right. It answers the landline leg of the three-
11 way call.

12 (*See* Ex. P, Min Dep. at 57:24–58:16.) Therefore, Schellinger discloses a second
13 communication path initiated by the telephone system and not the multimode cell
14 phone. This distinction was sufficient to overcome the Examiner’s rejection, and the
15 Examiner issued a Notice of Allowance. A person of skill in the art, reading the
16 prosecution history would likewise understand that the distinction between Schellinger
17 and the ’156 Patent is that the claimed multimode cell phone, instead of an off-device
18 system, establishes the second communication path. (*See* Ex. M, Madisetti Rebuttal
19 Decl. ¶ 13.)

20 Defendants’ construction is flawed for additional reasons. First, Defendants’ use
21 of the phrase “established distinct and different communication links” is confusing. In
22 fact, during deposition, Dr. Min struggled to even define the phrase. (*See* Ex. P, Min
23 Dep. at 35:6–42:4.) Dr. Min states that “[distinct and different] both indicate that these
24 two communications links are not the same, but perhaps distinct has a more
25 characterized nature of communication link versus different could be, maybe the path
26 itself the link, the path itself is different” where “characterized” could mean that “you
27 could use a different technology for example. So the claim, say it’s a multimode cell
28 phone. So it may describe the mode being different. And different, just using different

1 by itself could say, I mean, you could use a different path, physical path, but maybe
2 use the same mode.” (See Ex. P, Min Dep. at 37:18–38:17.)

3 To the extent Defendants’ proposed construction “different and distinct” means
4 a different physical path and a distinct mode, these limitations are captured by the
5 surrounding claim language, rendering Defendants’ construction improper. Claim 1, in
6 the same limitation as the term for construction, and just after it, states “using *both* said
7 cell phone functionality and said RF communication functionality.” (Ex. H, ’156
8 Patent at Claim 1.) Claim 1 also expressly states that the RF communication
9 functionality is “separate from said cell phone functionality.” See *id.* Thus, the claim
10 already requires that each communication path utilize a different mode. For the same
11 reason, the communication paths are necessarily different: one will start at the
12 multimode cell phone and transit to the cell phone network and the other will start at
13 the multimode cell phone and transit to the base station for the other RF
14 communication. As a result, Defendants’ use of the terms “distinct and different” are at
15 best, redundant, and at worst, likely to cause even more confusion for the jury and
16 uncertainty during the litigation. See *Digital-Vending Servs., Int’l, LLC v. Univ. of*
17 *Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012) (It is important to construe “claim
18 terms in light of the surrounding claim language, such that words in a claim are not
19 rendered superfluous.”).

20 Defendants’ construction adds an additional unsupported limitation that the
21 “established distinct and different communication links from said multimode cell
22 phone” extend all the way to “a far-end communication device.” As explained above,
23 not only is this limitation nonexistent in the claim or specification, the intrinsic record
24 repudiates such a requirement. (Ex. H, ’156 Patent at 4:12–17 (far-end device “can be
25 any telephonic device, multi-mode or *single mode*”) (emphasis added).) Defendants’
26 construction also would require “distinct and different” paths—that is, paths using
27 different modes and along different physical paths—all the way to the far-end device.
28 A single mode telephonic device simply cannot maintain two established

1 communication paths using two modes; it is a technical impossibility. (*See* Ex. L,
 2 Madisetti Op. Decl. ¶¶ 51–52.) This reading is further supported by reference to Fig. 1,
 3 as shown above, that clearly identifies only one link (the solid line from PSTN 130 to
 4 far-end device 150).

5 To the extent the Court deems construction of the term “simultaneous
 6 communication paths from said multimode cell phone” is necessary, the Court should
 7 adopt BNR’s proposal because it is well supported by the intrinsic evidence.
 8 Defendants’ construction, on the other hand, injects confusion and violates
 9 fundamental claim construction jurisprudence because it contradicts the specification.

10 **C. “a module to establish simultaneous communication paths from said**
 11 **multimode cell phone using both said cell phone functionality and said RF**
 12 **communication functionality”**

Plaintiff’s Proposed Construction	Huawei & Coolpad’s Proposed Construction ⁴
<p>14 Not a 112 ¶ 6 claim element –</p> <p>15 In the alternative, to the extent the</p> <p>16 Court determines that this claim is</p> <p>17 governed by 112 ¶ 6, BNR proposes</p> <p>18 the following Function and</p> <p>19 Structure, and disagrees that the term</p> <p>20 is indefinite for lack of</p> <p>21 corresponding structure:</p> <p>22 <u>Function:</u> establish simultaneous communication paths from said multimode cell phone using both said cell phone functionality and said RF communication functionality</p> <p>23 <u>Structure:</u> Corresponding structure for the alleged function exists in at least the following portions of the patent specification, or their equivalents:</p>	<p>14 This is a 112 ¶ 6 claim</p> <p>15 element.</p> <p>16 <u>Function:</u> “establish</p> <p>17 simultaneous communication</p> <p>18 paths from said multimode</p> <p>19 cell phone using both said cell</p> <p>20 phone functionality and said</p> <p>21 RF communication</p> <p>22 functionality”</p> <p>23 <u>Structure:</u> Fig. 1 (element</p> <p>24 101); Fig. 2 steps 202-208;</p> <p>25 Fig. 4 steps 402-408; 4:50-67;</p> <p>26 7:1-16.</p>

27 ⁴ BNR understands from the parties claim construction exchanges and submissions to
 28 the Court that Kyocera and ZTE do not join in this proposal.

1 Figs. 1, 3, Col. 3:48–4:49; 4:54–
2 5:62; 6:3–55; 6:60–8:5

3 The term “a module to establish simultaneous communication paths from said
4 multimode cell phone using both said cell phone functionality and said RF
5 communication functionality” appears in Claim 1 of the ’156 Patent:

6 1. A multimode cell phone, comprising:

7 a cell phone functionality; and

8 an RF communication functionality separate from said cell
9 phone functionality;

10 *a module to establish simultaneous communication paths
11 from said multimode cell phone using both said cell
12 phone functionality and said RF communication
13 functionality;* and

14 an automatic switch over module, in communication with
15 both said cell phone functionality and said RF
16 communication functionality, operable to switch a
17 communication path established on one of said cell phone
18 functionality and said RF communication functionality,
19 with another communication path later established on the
20 other of said cell phone functionality and said RF
21 communication functionality.

22 (Ex. H, ’156 Patent Claim 1.)

23 The term “a module to establish simultaneous communication paths from said
24 multimode cellphone using both said cell phone functionality and said RF
25 communication functionality” is not a means-plus-function term because the limitation
26 connotes sufficiently definite structure to a person of ordinary skill in the art. However,
27 to the extent the Court determines that § 112, ¶ 6⁵ applies, Huawei and Coolpad’s
28 proposed structure is too narrow in view of the broader language in the specification.

1. The “module to establish simultaneous communications” term is not
governed by § 112, ¶ 6.

⁵ The ’156 Patent was filed on June 26, 2001 and therefore pre-AIA.

1 There is no presumption that a means-plus-function reading is warranted for this
2 term, and the intrinsic and extrinsic evidence demonstrates that the claim itself recites
3 sufficiently definite structure. Where a limitation does not use the word “means,”
4 “there is a rebuttable presumption that § 112, ¶ 6 does not apply.” *See TEK Global,*
5 *S.R.L. v. Sealant Sys. Int’l*, 920 F.3d 777, 786 (Fed. Cir. Mar. 29, 2019). Only “if the
6 challenger demonstrates that the claim term fails to recite sufficiently definite
7 structure,” can the rebuttable presumption be overcome. *See id.* (quoting *Williamson v.*
8 *Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015)). Specifically with respect to
9 a term including the word “module,” courts in this district have made clear that
10 “*Williamson* does not . . . stand for the broad proposition that the term ‘module’
11 automatically places it among terms such as ‘means’ and ‘step for,’ thus triggering a
12 presumption that [§ 112, ¶ 6] applies.” *Blast Motion*, 2017 U.S. Dist. LEXIS 16549 at
13 *45–46. Instead, even if the claim term uses the term module, there is still the
14 rebuttable presumption that § 112, ¶ 6 does not apply. *See id.* at *45–46. Defendants
15 have failed to overcome this presumption; the term recites more than sufficiently
16 definite structure.

17 “Paragraph 6 does not apply when ‘the words of the claim are understood by
18 persons of ordinary skill in the art to have a sufficiently definite meaning as the name
19 for structure. . . . To determine whether the claim limitation at issue connotes
20 sufficiently definite structure to a person of ordinary skill in the art, we look first to
21 intrinsic evidence, and then, if necessary, to the extrinsic evidence.” *TEK Global*, 920
22 F.3d at 786; *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372
23 (Fed. Cir. 2015) (“In undertaking this analysis, we ask if the claim language, read in
24 light of the specification, recites sufficiently definite structure to avoid § 112, ¶ 6.”)
25 (quoting *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014));
26 *see also Blast Motion*, 2017 U.S. Dist. LEXIS 16549, at *9, 47 ((stating same and
27 conducting an analysis that looked to whether the claims, in light of the specification,
28

1 recites sufficiently definite structure). Here, the claim language and the specification
2 confirm that the limitation connotes sufficient structure.

3 First, the claim language itself connotes sufficiently definite structure to a
4 person of ordinary skill in the art. Claim 1 claims “A *multimode cell phone*
5 *comprising* . . . a module to establish simultaneous communication paths from said
6 multimode cell phone using both said cell phone functionality and said RF
7 communication functionality.” (Ex. H, ’156 Patent Claim 1.) That is, this module to
8 establish simultaneous communication paths *is a part of the* multimode cell phone.
9 And a person of skill in the art understood what a multimode cell phone was at the
10 time of the invention and the inner circuitry and specialized software for the
11 multimode cellphone. (*See* Ex. O, Min Op. Decl. ¶ 100) (“A POSITA would
12 understand that multimode cell phone 100 described by the ’156 Patent must include
13 radio communication equipment (e.g. antenna, amplifier, transmitter, receiver, etc.)
14 operating in conjunction with a general purpose computer (e.g. microprocessor) that is
15 specially programmed to perform wireless communications, typical in compliance with
16 telecommunication industry standards (e.g. 3GPP/ETSI, etc)”); (Ex. P, Min Dep. at
17 46:2–4 (“So at the time 2000, let’s say earlier date of the two possible priority date,
18 2000. People knew what the cell phone was.”).) Thus, a person of skill in the art at the
19 time of the invention would understand that the module to establish simultaneous
20 communication paths refers to the hardware and specialized software that manages the
21 transmission and receiving for each of the modes in accordance with the relevant
22 standards, often the integrated system on a chip or the baseband processors. (*See* Ex. L,
23 Madisetti Op. Decl. ¶¶ 59–60.)

24 Second, the specification supports this reading of the claim. As shown above in
25 Fig. 1, the separate communication functionalities are located within the multimode
26 cell phone. (Ex. H, ’156 Patent at Fig. 1.) And the specification particularly references
27 cell phone functionality 100a and RF communication functionality 100b, which a
28 person of skill in the art would readily understand to mean the requisite hardware and

1 software, including transceivers, operating in accordance with the relevant
2 telecommunications standards. (See Ex. H, '156 Patent at 3:52–55; Ex. L, Madisetti
3 Op. Decl. ¶¶ 58–59.) See *TEK Global*, 920 F.3d at 786.

4 2. If the Court determines that the presumption has been rebutted, and § 112, ¶
5 6 applies, Defendants' disclosed structure is improperly narrow.

6 Assuming that § 112, ¶ 6 applies to this limitation (which it should not), then
7 construing the term requires two steps: determining the claimed function and
8 identifying the corresponding structure in the written description of the patent that
9 performs the function. See *Blast Motion*, 2017 U.S. Dist. LEXIS 16549, at *10. “When
10 multiple embodiments in the specification correspond to the claimed function, proper
11 application of § 112 P 6 generally reads the claim element to embrace each of those
12 embodiments.” *Micro Chem, Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258–59
13 (Fed. Cir. 1999); *Serrano v. Telular Corp.*, 111 F.3d 1578, 1583 (Fed. Cir. 1997).
14 Finally, in construing a term subject to § 112, ¶ 6, the claim “shall be construed to
15 cover the corresponding structure, material, or acts described in the specification and
16 equivalents thereof.” See *Bal Seal Eng'g Co. v. Qiang Huang*, No. 10cv819-CAB,
2011 U.S. Dist. LEXIS 84516, at *4 (S.D. Cal. Aug. 1, 2011).

17 As an initial matter, there is no dispute with regard to the alleged function (if §
18 112, ¶ 6 applies). The function is to “establish simultaneous communication paths from
19 said multimode cell phone using both said cell phone functionality and said RF
20 communication functionality.”

21 BNR contends that the structures that correspond with this function are
22 disclosed in Figure 1, including 100a and 100b, as well as Col. 3:52–55, 3:64–4:1,
23 4:12–23, 5:27–32, 6:3–8, and 6: 33–40. As Dr. Madisetti opined, these portions of the
24 specification show that there is circuitry, including hardware and software for the
25 multimode cell phone 100 in Figure 1, including the transceivers and related hardware
26 and software components of 100a and 100b of multimode cell phone 100, which
27 describes the inputs and outputs, and where information travels next. (See Ex. L,
28

1 Madisetti Op. Decl. ¶¶ 58, 59, 63) For example, in Col. 3:60–4:27, the specification
2 teaches that the module to establish simultaneous communication paths is first
3 controlled through suitable communications with each communication path
4 functionality 100a–100c. Where a communication path may be dropped, another mode
5 is activated and establishes a communication link while the first remains active. (*See*
6 *Ex. H, ’156 Patent at 3:60–4:27.*) Further, the specification identifies steps where the
7 user may be prompted about impending loss of the signal and or prompted to permit
8 establishment of the alternate communication path. (*See Ex. H, ’156 Patent at 4:41–*
9 *44.*) Thus, it is clear that the multimode cell phone 100, and the cell phone
10 functionality 100a and RF communication functionality 100b, which are readily
11 understood to a person of skill in the art as RF transceivers operating in accordance
12 with their respective telecommunications standards and using hardware and software,
13 where the steps of setting up a first communication path, awaiting indication of the
14 need for a second, simultaneous communication path, and then, third establishing a the
15 second communication path are implemented within the multimode cell phone 100 and
16 the elements 100a and 100b.

17 Huawei and Coolpad’s proposed structure incorrectly narrows the relevant
18 structure to just two embodiments, those disclosed in Fig. 1 (element 101) and in Fig.
19 2, steps 202-208; Fig. 4 steps 402-408 as well as the corresponding specification
20 description at Col. 4:50–67 and 7:1–16. These figures represent particular
21 embodiments, do not include the structure that captures all potential embodiments, as
22 discussed above. In doing so, Defendants capture only an “exemplary process” (Col.
23 4:50; Col. 7:1). *See Micro Chem*, 194 F.3d at 1258–59; *Serrano*, 111 F.3d at 1583
24 (declining to require “overly limiting structure” that is “contrary to the statement of
25 multiple structures disclosed in the specification” and noting that “[d]isclosed structure
26 includes that which is described in a patent specification, including any alternative
27 structures identified.”).

D. “an automatic switch over module, in communication with both said cell phone functionality and said RF communication functionality, operable to switch a communication path established on one of said cell phone functionality and said RF communication functionality, with another communication path later established on the other of said cell phone functionality and said RF communication functionality”

Plaintiff’s Proposed Construction	Huawei & Coolpad’s Proposed Construction
<p>Not a 112 ¶ 6 claim element</p> <p>In the alternative, to the extent the Court determines that this claim is governed by 112 ¶ 6, BNR proposes the following Function and Structure, and disagrees that the term is indefinite for lack of corresponding structure:</p> <p><u>Function:</u> in communication with both said cell phone functionality and said RF communication functionality, operable to switch a communication path established on one of said cell phone functionality and said RF communication functionality, with another communication path later established on the other of said cell phone functionality and said RF communication functionality</p> <p><u>Structure:</u> Corresponding structure for the alleged function exists in at least the following portions of the patent specification, or their equivalents: Figs. 1, 3, Col. 3:48–4:49; 4:54–5:62; 6:3–55; 6:60–8:5</p>	<p>This is a 112 ¶ 6 claim element.</p> <p><u>Function:</u> “automatic switch over of a communication path established on one of said cell phone functionality and said RF communication functionality, with another communication path later established on the other of said cell phone functionality and said RF communication functionality”</p> <p><u>Structure:</u> Fig. 1 (element 101); Fig. 2 steps 210-212; Fig. 4 steps 410-412; 5:1-7; 7:17-26, Claim 1 (“an automatic switch over module, in communication with both said cell phone functionality and said RF communication functionality”).</p>

The term “an automatic switch over module, in communication with both said cell phone functionality and said RF communication functionality, operable to switch a communication path established on one of said cell phone functionality and said RF communication functionality, with another communication path later established on

1 the other of said cell phone functionality and said RF communication functionality”
2 appears in Claim 1 of the ’156 Patent:

3 A multimode cell phone, comprising:

4 a cell phone functionality; and

5 an RF communication functionality separate from said cell
6 phone functionality;

7 a module to establish simultaneous communication paths
8 from said multimode cell phone using both said cell phone
9 functionality and said RF communication functionality;
10 and

11 *an automatic switch over module, in communication with*
12 *both said cell phone functionality and said RF*
13 *communication functionality, operable to switch a*
14 *communication path established on one of said cell*
15 *phone functionality and said RF communication*
16 *functionality, with another communication path later*
17 *established on the other of said cell phone functionality*
18 *and said RF communication functionality.*

19 (See Ex. H, ’156 Patent at Claim 1.)

20 The term “an automatic switch over module, in communication with both said
21 cell phone functionality and said RF communication functionality, operable to switch a
22 communication path established on one of said cell phone functionality and said RF
23 communication functionality, with another communication path later established on
24 the other of said cell phone functionality and said RF communication functionality” is
25 not a means-plus-function term because the limitation connotes sufficiently definite
26 structure to a person of ordinary skill in the art. However, to the extent the Court
27 determines that § 112, ¶ 6⁶ applies, Huawei and Coolpad’s proposed structure is too
28 narrow in view of the broader language in the specification.

1. The “automatic switch over module” term is not governed by § 112, ¶ 6.

6 The ’156 Patent was filed on June 26, 2001 and therefore pre-AIA.

1 There is no presumption that a means-plus-function reading is warranted for this
2 term, and the intrinsic and extrinsic evidence demonstrate that the claim itself recites
3 sufficiently definite structure. Where a limitation does not use the word “means,”
4 “there is a rebuttable presumption that § 112, ¶ 6 does not apply.” *See TEK Global*,
5 920 F.3d at 786. Only “if the challenger demonstrates that the claim term fails to recite
6 sufficiently definite structure,” can the rebuttable presumption be overcome. *See id.*
7 (quoting *Williamson*, 792 F.3d at 1349). While the term module be a well-known
8 nonce word, this Court has made clear that “*Williamson* does not . . . stand for the
9 broad proposition that the term ‘module’ automatically places it among terms such as
10 ‘means’ and ‘step for,’ thus triggering a presumption that [§ 112, ¶ 6] applies.” *See*
11 *Blast Motion*, 2017 U.S. Dist. LEXIS 16549, at *45–46. Instead, even if the claim term
12 uses the term module, there is still the rebuttable presumption that § 112, ¶ 6 does not
13 apply. *See id.* at *45–46. Defendants have failed to meet their burden; the term recites
14 more than sufficiently definite structure.

15 “Paragraph 6 does not apply when ‘the words of the claim are understood by
16 persons of ordinary skill in the art to have a sufficiently definite meaning as the name
17 for structure. . . . To determine whether the claim limitation at issue connotes
18 sufficiently definite structure to a person of ordinary skill in the art, we look first to
19 intrinsic evidence, and then, if necessary, to the extrinsic evidence.” *TEK Global*, 920
20 F.3d at 786; *Media Rights*, 800 F.3d at 1372 (“In undertaking this analysis, we ask if
21 the claim language, read in light of the specification, recites sufficiently definite
22 structure to avoid § 112, ¶ 6.”) (quoting *Robert Bosch*, 769 F.3d at 1099); *see also*
23 *Blast Motion*, 2017 U.S. Dist. LEXIS 16549, at *9, 47 (stating same and conducting an
24 analysis that looked to whether the claims, in light of the specification, recites
25 sufficiently definite structure). Further, sufficient structure “may be provided by
26 describing the claim limitation’s operation, such as its input, output, or connections.”
27 *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1299 (Fed. Cir. 2014). Here, the claim
28 language and the specification confirm that the limitation connotes sufficient structure.

1 As with the prior term, the claim language itself connotes sufficiently definite
2 structure to a person of ordinary skill in the art. Claim 1 claims “A *multimode cell*
3 *phone comprising* . . . an automatic switch over module, in communication with both
4 said cell phone functionality and said RF communication functionality, operable to
5 switch a communication path established on one of said cell phone functionality and
6 said RF communication functionality, with another communication path later
7 established on the other of said cell phone functionality and said RF communication
8 functionality.” The automatic switch over module is *a part of* the multimode cell
9 phone, itself.

10 Further, this limitation is described by its operation and includes its inputs and
11 outputs in the claim language. The automatic switch over module is in communication
12 with both said cell phone functionality and said RF communication functionality.
13 Further, it is operable to switch, or route, a communication path from the cell phone
14 functionality to the RF communication functionality or in reverse. A person of
15 ordinary skill in the art at the time of the invention would share that understanding.
16 (See Ex. M, Madisetti Rebuttal Decl. ¶ 41.)

17 These connections to the cell phone functionality and the RF communication
18 functionality within the multimode cell phone connote sufficient structure in the claim
19 itself such that the presumption against § 112, ¶ 6 is not overcome. Indeed, even
20 Huawei and Coolpad identify a portion of the claim limitation to be *structure*:

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Huawei & Coolpad's Proposed Construction
Structure: Fig. 1 (element 101); Fig. 2 steps 210-212; Fig. 4 steps 410-412; 5:1-7; 7:17-26, claim 1 (“an automatic switch over module, in communication with both said cell phone functionality and said RF communication functionality”).

(See Doc. No. 63-2 at 53, Appendix B to Joint Hearing Statement) (identifying “an automatic switch over module, in communication with both said cell phone functionality and said RF communication functionality”).

Looking to the specification also confirms that the limitation connotes sufficient structure because a person of ordinary skill in the art, reading the claims in view of the specification, would understand the term to refer to sufficiently definite structure. Figure 1 identifies inputs of user activation and outputs of user prompt, as well as connection to each of the modes 100a–100c. (See Ex. H, '156 Patent at Fig. 1.) The specification further includes an example of such inputs and outputs:

In accordance with the principles of the present invention, an automated procedure may be initiated by the user of the multimode cell phone 100 at the press of a designated button. The user may be prompted about impending loss of signal or otherwise loss of the established telephone call, and may be prompted to permit establishment of and ultimately transfer to an alternative type communication path (e.g., a cellular phone call). In response, the user preferably activates a suitable button, e.g., a dedicated

1 button called, e.g., “Switch to Cell Network”, or simply
2 “Switch Communication Path”.

3 (See Ex. H, ’156 Patent at 4:37–47.) Thus a person of ordinary skill in the art would
4 understand that this automatic switchover module limitation connotes sufficient
5 structure and § 112, ¶ 6 does not apply. See *TEK Global*, 920 F.3d at 786.

6 2. If the Court determines that the presumption has been rebutted, and § 112,
7 ¶ 6 applies, Defendants’ disclosed structure is improperly narrow.

8 Assuming that § 112, ¶ 6 applies to this limitation (which it should not), then
9 construing the term requires two steps: determining the claimed function and
10 identifying the corresponding structure in the written description of the patent that
11 performs the function. See *Blast Motion*, 2017 U.S. Dist. LEXIS 16549, at *10.

12 “When multiple embodiments in the specification correspond to the claimed function,
13 proper application of § 112 P 6 generally reads the claim element to embrace each of
14 those embodiments.” *Micro Chem*, 194 F.3d at 1258–59; *Serrano*, 111 F.3d at 1583.
15 Finally, in construing a term subject to § 112, ¶ 6, the claim “shall be construed to
16 cover the corresponding structure, material, or acts described in the specification and
17 equivalents thereof.” See *Bal Seal*, 2011 U.S. Dist. LEXIS 84516, at *4.

18 The first dispute centers on the identification of the alleged function. Huawei
19 and Coolpad’s alleged function derives from their acknowledgement that “an
20 automatic switch over module, in communication with both said cell phone
21 functionality and said RF communication functionality” was adequate *structure*, but
22 attempts to alter the function to just what the automatic switch over module was
23 “operable to” do. (See Doc. No. 63-2 at 53, Appendix B to Joint Hearing Statement)

24 BNR’s proposed function, “in communication with both said cell phone
25 functionality and said RF communication functionality, operable to switch a
26 communication path established on one of said cell phone functionality and said RF
27 communication functionality, with another communication path later established on
28 the other of said cell phone functionality and said RF communication functionality,”

1 which fully encompasses the scope of the claimed module. In contrast, Huawei and
2 Coolpad's alleged function does not explicitly recite the claim language and is instead
3 artificially created; this is improper. "[A] court may not construe a means-plus-
4 function limitation by adopting a function different from that explicitly recited in the
5 claim." *JVW Enters. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1331 (Fed. Cir.
6 2005) (quoting *Micro Chem.*, 194 F.3d at 1258. (internal quotations omitted)).

7 This function finds corresponding structure disclosed in Figure 1. "Fig. 1 shows
8 a multimode cell phone handing over a telephone call from a cordless mode to a
9 cellular mode, in accordance with the principles of the present invention." This also
10 includes element 101 of Fig. 1, identified as the automatic switch over module, which
11 is a part of the multimode cell phone 100. The specification further provides:

12 A method of automatically switching between a first type
13 RF communication link and a second type RF
14 communication link different from the first type RF
15 communication link, comprising participating in the first
16 type RF communication link. An availability of the second
17 type RF communication link is sensed, and if available,
18 the second type RF communication link is established
19 while the first type RF communication link remains active.
The parties participating in the first type RF
communication link are switched to active utilization of
the second type RF communication link.

20 (See Ex. H, '156 Patent at 1:62–2:4.) This disclosure highlights the algorithm that
21 allows a system to practice the function. First, there is participation in a first type of
22 RF communication link. Next, the second type of RF communication link is sensed
23 and, if available, established while the first type of RF communication link remains
24 active. Then, the switch occurs.

25 Further elucidation of the structure for this algorithm exists at Col. 4:7–49:

26 For explanation purposes, FIG. 1 depicts an established
27 telephone call between the multimode cell phone 100 and
28 a far end telephone 150 (which in the example is a landline

1 telephone accessed through a cellular network). Of course,
2 the far end telephone can be any telephonic device,
3 multimode or single mode.

4 Once the multimode cell phone 100 extends beyond its
5 acceptable range, the telephone call would ordinarily be
6 dropped, perhaps involuntarily. However, in accordance
7 with the principles of the present invention, the telephone
8 call between the multimode cell phone 100 and the far end
9 telephone 150 is automatically re-established using the
10 cellular network 120. By automatically changing the mode
11 of the multimode cell phone 100 (preferably subsequent to
12 a prompt to the user for permission to transfer), the
13 conversation or other communication between the parties
14 is transferred to the newly established cell phone call.

15 (See Ex. H, '156 Patent at 4:12–27.)

16 The patent then continues to describe examples of switching, including the use
17 of a button or prompt for switching or an automated switch:

18 In accordance with the principles of the present invention,
19 an automated procedure may be initiated by the user of the
20 multimode cell phone 100 at the press of a designated
21 button. The user may be prompted about impending loss
22 of signal or otherwise loss of the established telephone
23 call, and may be prompted to permit establishment of and
24 ultimately transfer to an alternative type communication
25 path (e.g., a cellular phone call). In response, the user
26 preferably activates a suitable button, e.g., a dedicated
27 button called, e.g., “Switch to Cell Network”, or simply
28 “Switch Communication Path”. Of course, the transfer
may be entirely automated without requiring input from
the user, within the scope of the invention.

(Ex. H, '156 Patent at 4:7–49.) Additional structure for the handover is disclosed in
Col. 5:7–62 and 6:3–51, particularly for the step of switching over from one
communication link to the other:

The converse of the example of FIGS. 1 and 2 is also
possible. For instance, the multimode cell phone **150** may

1 move from a cell phone call to a cordless telephone call,
2 e.g., once the multimode cell phone **100** becomes within
3 range of its matching base unit **110**. In this case, the
4 multimode cell phone **100** automatically establishes a
5 wireless connection with the cordless telephone base
6 station **110** using, e.g., a wireless piconet protocol
7 conforming to the BLUETOOTH™ standard. Using the
8 wireless cordless telephone communication path
 established between the multimode cell phone **150** and its
 base unit **110**, a suitable telephone number relating to the
 far end party may be determined and passed to the cordless
 telephone functionality of the multimode cell phone **100**.

9 (See Ex. H, '156 Patent at 5:7–20.)

10 The '156 Patent's discussion of embodiments confirms that the Defendants'
11 formulation of the structure is too narrow. Restricting merely two examples would
12 result in exclusion of structures handling the automatic switchover functions that are
13 described in the following excerpts from the specification:

- 14 • “Preferably, the initial caller in the first telephone call controls the re-
15 establishment of an alternative mode communication path. For instance, in the
16 disclosed embodiment, the far end party's telephone number is obtained by the
17 multimode cell phone **150** that initiated the first telephone call (i.e., who called
18 whom).” (See Ex. H, '156 Patent at 5:21–26.)
- 19 • “Telephone numbers for the far end party may be recalled from a last number
20 dialed functionality of the multimode cell phone **150**. However, call related
21 information such as CallerID information may be used to allow a far end party
22 to themselves initiate a communication path mode transfer.” (See Ex. H, '156
23 Patent at 5:27–32.)
- 24 • “In the given example, the cordless telephone base station **110** then goes off
25 hook and dials the telephone number of the far end party, whether or not the far
26 end party initiated the transferred telephone call. In this example, from the far-
27 end user's perspective, the far end user hears that there is a call coming in (e.g.,
28

1 using a Call Waiting service) and may or may not review CallerID information
2 such as the telephone number and/or name of the calling party, before they
3 accept the new call. Using Call Waiting type service, the far end party would
4 accept the new communication mode by simply activating a FLASH button and
5 abandoning the first telephone call...To this end, the cordless telephone base
6 unit **110** may notify the handset that the new communication path has been
7 established and accepted, allowing the base unit **110** to finally switch the audio
8 path from the cell phone link to the BLUETOOTH™ cordless telephone link
9 and then disconnect the cell phone call.” (See Ex. H, ’156 Patent at 5:42–62.)

- 10 • “The automatic handoff capability may be implemented using a lookup table
11 including entries relating to alternate telephone numbers, e.g., associated cell
12 phone numbers, land line numbers, etc. However, care should be taken to avoid
13 the vulnerability to erroneous communication path switching.” (See Ex. H, ’156
14 Patent at 6:3–8.)
- 15 • “A safer, alternative approach implements a predetermined signaling tone (e.g. a
16 DTMF tone sent from the near end (switching) phone and a detector on the far
17 end phone 150 recognizing it and preparing to flash when the new call comes in.
18 Of course, there could be a combination of both. Let’s look at this example.”
19 (See Ex. H, ’156 Patent at 6:9–14.)
- 20 • “To accomplish [switching], the multimode cell phone 100 may send, e.g., a
21 quick DTMF “7” followed by a DTMF “9” (i.e., representing the characters
22 “SW”) notifying the near end user and the far end phone 150 (and user) that a
23 switch is about to happen. The far end phone 150 would remain ready for a
24 switch over for a given length of time, e.g., for 20 seconds. The multimode cell
25 phone 100 makes the alternate phone call as described above. After the far end
26 phone receives the new call, it checks the call related information (e.g., CallerID
27 data) against entries in a suitable lookup table, and if it finds a match, then
28 automatically flashes the telephone line on the original telephone call. The near

1 end phone, as in the first example, is then notified that the second call has gone
2 through, allowing the conversation to continue on a switched over
3 communication path.” (See Ex. H, ’156 Patent at 6:25–39.)

- 4 • “In the unlikely event that the switchover does not succeed, the switchover is
5 preferably delayed (e.g., for 10 seconds or more) to allow the users to switch
6 back to the initial telephone call or communication path.” (See Ex. H, ’156
7 Patent at 6:40–44.)
- 8 • “Similar to the above examples, the multimode cell phone 100 may switch from
9 cordless mode to cell phone mode when the user wishes to leave the proximity
10 of the cordless telephone base unit 110. For instance, manual activation of a
11 suitable button, or automatic detection of the quality of the RF link (e.g., the
12 BLUETOOTH™ piconet link) below a preset level may initiate this feature.”
13 (See Ex. H, ’156 Patent at 45–51.)

14 Thus, the proper structure is Fig. 1, including element 101, Col. 1:62–2:4, 4:7–
15 49, 5:7–62, and 6:3–51 and equivalents thereof. See § 112, ¶ 6.

16 Huawei and Coolpad’s proposed structure, on the other hand, is limited only to
17 “exemplary processes” for alleged function. Specifically, Huawei and Coolpad
18 incorrectly narrow the relevant structure to just two embodiments, those disclosed in
19 Fig. 1 (element 101) and in Fig. 2, steps 202-208; Fig. 4 steps 402-408 as well as the
20 corresponding specification description at Col. 4:50–67 and 7:1-16. In doing so,
21 Huawei and Coolpad capture only two “exemplary process[es],” see Col. 4:50; Col.
22 7:1 and not the full scope of the disclosed structure for all embodiments. See *Micro*
23 *Chem*, 194 F.3d at 1258–59; *Serrano*, 111 F.3d at 1583 (declining to require “overly
24 limiting structure” that is “contrary to the statement of multiple structures disclosed in
25 the specification” and noting that “[d]isclosed structure includes that which is
26 described in a patent specification, including any alternative structures identified.”).

1 **VIII. CLAIM CONSTRUCTION REGARDING U.S. PATENT NO. 7,039,435**

2 **A. Background of the Invention**

3 The '435 Patent is entitled "Proximity Regulation System for Use with a
4 Portable Cell Phone and a Method of Operation Thereof," and it issued from an
5 application filed on September 28, 2001.

6 The '435 Patent generally relates to systems or methods that regulate a mobile
7 device's transmission power to reduce potentially harmful radiation when the device is
8 proximate to a user. The specification describes the potential issue that the patent
9 addresses:

10 Typically, the quality of service of a cell phone is
11 proportional to the transmit power level of the cell
12 phone....[H]ealth concerns have arisen due to the power
13 used to transmit the radio frequency of cell phones when
14 operated close to the body of a cell phone user. For
15 example, when held close to the ear, many users have
16 health concerns about the high levels of radio frequency
17 energy causing damage to brain cells.

18 (See Ex. J, '435 Patent at 1:33–41.)

19 The background section of the '435 Patent describes shortcomings of the prior
20 art:

21 ... [P]ermanently reducing the power of the transmitter in
22 cellphones...also reduces the quality of service of the cell
23 phone. Another option for consumers is the use of cell
24 phones with a base that typically allows a higher transmit
25 power level of up to three watts....These type of cell
26 phones, however, do not allow the flexibility demanded by
27 consumers that is found in the use of a portable cell phone.

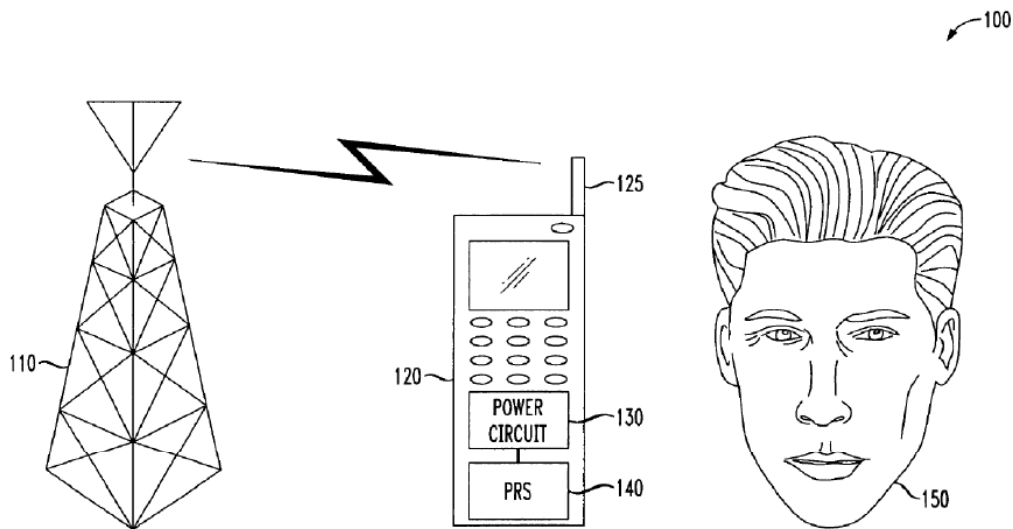
28 (See Ex. J, '435 Patent at 1:52–62.)

"Thus, [t]o address the above-discussed deficiencies of the prior art, the present invention provides a proximity regulation system for use with a portable cell phone." (Ex. J, '435 Patent at 2:3–5.) This proximity regulation system, in turn, "includes a

1 location sensing subsystem and a power governing subsystem, which cooperate to
 2 determine both the proximity transmit power level and when it may be employed.”
 3 (Ex. J, '435 Patent at 3:47–51.) The location sensing subsystem determines the
 4 location of the cell phone relative to the user, and based on this information, the power
 5 governing subsystem, which is coupled to the location sensing subsystem, determines a
 6 “proximity transmit power level” of the phone. (Ex. J, '435 Patent at 3:47–51.)

7 The '435 Patent further discloses a “power circuit” that produces the cell
 8 phone’s transmission power. (Ex. J, '435 Patent at 3:31–34.) The '435 Patent refers to
 9 its Figure 1 and elaborates on the power circuit’s function, disclosing that “[t]hrough
 10 communications with the communications tower **110** employing the antenna **125**, the
 11 power circuit,” provides a “network adjusted transmit power level...” (*Id.* at 3:34–37.)
 12 The bolded element numbers refer to Figure 1 of the '435 Patent, duplicated below:

13
 14 *FIG. 1*



25 The '435 Patent teaches that the cell phone’s transmit power level is ultimately
 26 determined, for example, by considering, adjusting, or reducing the network adjusted
 27 transmit power level in view of the proximity transmit power level. (*See, e.g.*, Ex. J,
 28 '435 Patent at 5:24–36; 7:9–40.)

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A. “position to a communications tower”

Plaintiff’s Proposed Construction	Huawei’s and ZTE’s Proposed Construction⁷
“transmit signal strength of a communications path between a communications tower and the portable cell phone”	Plain and ordinary meaning. In the alternative, to the extent the Court determines that a specific construction is warranted, Huawei and ZTE propose: “position of the portable cell phone relative to a communications tower.”

The term in question is bolded below in Claim 1 of the ’435 Patent:

1. A portable cell phone, comprising:

a power circuit that provides a network adjusted transmit power level as a function of a **position to a communications tower**; and

a proximity regulation system, including:

a location sensing subsystem that determines a location of said portable cell phone proximate a user; and

a power governing subsystem, coupled to said location sensing subsystem, that determines a proximity transmit power level of said portable cell phone based on said location and determines a transmit power level for said portable cell phone based on said network adjusted transmit power level and said proximity transmit power level.

BNR’s proposed construction of the disputed term is dictated by the specification of the ’435 Patent, and is supported by additional intrinsic evidence,

⁷ Plaintiffs have asserted the ’435 Patent against Hauwei and ZTE, but not Coolpad or Kyocera.

1 including references identified and incorporated into the specification and the
 2 prosecution history of the '435 Patent. BNR's proposed construction also more
 3 completely resolves potentially disputed claim scope by providing meaning to the
 4 entirety of the disputed phrase, including the term "position." Defendant's proposed
 5 construction, on the other hand, leaves unresolved the meaning and scope of
 6 "position," and further introduces the additional term "relative to" that is absent from
 7 the '435 Patent claims and specification and causes confusion as to its meaning,
 8 thereby providing less, rather than more clarity regarding the scope of this claim.

9 As set forth by the claim language immediately above, the "network adjusted
 10 transmit power level" is defined within the claim as a function of the disputed phrase
 11 "position to a communications tower." The specification contains three instances
 12 describing what the network adjusted transmit power level is a function of.⁸ Each of
 13 these instances establish that the patentee acted as its own lexicographer and
 14 specifically described the patent's usage of this term. *See Cont'l Circuits LLC v. Intel*
 15 *Corp.*, 915 F.3d 788, 796 (Fed. Cir. 2019) ("Our case law has recognized that the
 16 specification may reveal a special definition given to a claim term by the patentee that
 17 differs from the meaning it would otherwise possess. When the patentee acts as its own
 18 lexicographer, that definition governs. To act as its own lexicographer, a patentee must
 19 clearly set forth a definition of the disputed claim term other than its plain and ordinary
 20 meaning.") (internal quotation marks and citations omitted).

21 The first instance defines the term explicitly:
 22

23 ⁸ The '435 Patent at col. 2:18-20 states "In yet another aspect, the present invention
 24 provides a portable cell phone that includes a power circuit as a function of a position
 25 to a communications tower and a proximity regulation system." Although this sentence
 26 contains the disputed phrase, this section of the specification does not elaborate on the
 27 meaning of the terms in dispute—neither does it mention the term: "network adjusted
 28 transmit power," which immediately precedes the disputed phrase in Claim 1, and
 which is therefore central to the dispute. Accordingly, the above-identified sentence
 does not appear relevant to the present claim dispute.

1 The network adjusted transmit power level is based on a
2 transmit signal strength of a communications path between
3 the communications tower 110 and the portable cell phone
4 120.

4 (See Ex. J, '435 Patent at 3:39–42.) The fact that this sentence contains no conditional
5 language, or descriptions limiting it to a particular embodiment would inform a POSA
6 that the above statement applies generally throughout the patent, including the claims.
7 See, e.g., *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 864 (Fed. Cir.
8 2004) (unconditional statements in specification not tied to a particular embodiment
9 that characterized implants and plugs as pleated applied globally and required a pleated
10 surface for claimed plugs). In contrast, the preceding sentences, in discussing
11 particular embodiments of the invention, use conditional language such as “may,” or
12 “for instance,” and/or address specific possible values for power levels. '435 Patent at
13 3:31–38. In other places, the specification of the '435 Patent makes uses of terms such
14 as “alternatively,” “in an alternative embodiment,” “in one embodiment,” and “in
15 another embodiment,” when a particular feature or characteristic describes a particular
16 embodiment or instance. (See, e.g., Ex. J, '435 Patent at 3:55–4:4.)

17 This unambiguous statement defines the disputed term in Claim 1. Both phrases
18 reference the same term: “network adjusted transmit power level.” The specification’s
19 statement that this term is “based on a transmit signal strength of a communications
20 path between the communications tower 110 and the portable cell phone 120,” would
21 inform a person of ordinary skill in the art that Claim 1’s “network adjusted transmit
22 power level as a function of a position to a communications tower,” means “network
23 adjusted transmit power level as a function of a transmit signal strength of a
24 communications path between the communications tower and the portable cell phone.”

25 The second instance in the specification confirms that “network adjusted
26 transmit power level” is determined by the communications path between the portable
27 cell phone and the communications tower:
28

1 After adjusting the transmit power level, the portable cell
2 phone then transmits at a reduced level in a step 350. In
3 one embodiment, the adjusted transmit power level may
4 not exceed **the network adjusted transmit power level**
5 **as determined by the communications path between**
6 **the portable cell phone and the communications tower.**
7 In other embodiments, the adjusted transmit power level
8 may be reduced to the proximity transmit power level.

9 (See Ex. J, '435 Patent at 7:21–26 (emphasis added).) Although this excerpt refers to a
10 particular embodiment, the language identifying the characteristics of the embodiment
11 refers to the relative power of the ultimately adjusted transmit power level of the cell
12 phone, not the statement that the network adjusted transmit power level is determined
13 by the communications path between the portable cell phone and communications
14 tower. A POSA would understand that this second instance's reference to "network
15 adjusted transmit power level as determined by the communications path between the
16 portable cell phone and the communications tower" is consistent with and analogous to
17 the first instance's description of the same term being "based on a transmit signal
18 strength of a communications path between the communications tower and the portable
19 cell phone."

20 The third instance in the specification also confirms that "network adjusted
21 transmit power level" is a function of the communications path between the portable
22 cell phone and the communications tower:

23 In one embodiment, the network adjusted transmit power
24 level may equal the maximum transmit power level of a
25 portable cell phone. In other embodiments, **the network**
26 **adjusted transmit power level** may be a reduction from
27 the maximum transmit power level **due to the**
28 **communications path between the communications**
tower and the portable cell phone.

(See Ex. J, '435 Patent at 7:34–40 (emphasis added).) Again, the language in the
excerpt above referring to embodiments pertains to the particular value of a network

1 adjusted transmit power level relative to a cell phone's maximum transmit power level,
2 and not the statement that the "network adjusted transmit power level" is "due to the
3 communications path between the communications tower and the portable cell phone."
4 For the same reasons as mentioned above with regard to the second instance, a POSA
5 would understand that this third instance's reference to "network adjusted transmit
6 power level," being "due to the communications path between the portable cell phone
7 and the communications tower" is consistent with and analogous to the first instance's
8 description of the same term.

9 In view of the consistent and unambiguous disclosures in the specifications as to
10 what a network adjusted transmit power level is "based on," "determined by," and
11 "due to," the Court should adopt BNR's construction. *See Phillips*, 415 F.3d at 1315
12 ("the specification is always highly relevant to the claim construction analysis.
13 Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.")
14 (citation omitted); *Cont'l Circuits*, 915 F.3d at 796 ("When the patentee acts as its own
15 lexicographer, that definition governs."). These three consistent and unambiguous
16 characterizations, which also closely track the language surrounding the disputed claim
17 term, additionally indicate that patentee intended these definitions to apply globally.
18 *See, e.g., C.R. Bard*, 388 F.3d at 864, 866 (two unconditional statements in
19 specification not tied to a particular embodiment applied globally, and use of language
20 in specification containing the additional feature that is similar to language in the
21 claims that did not explicitly contain the feature, supported construing the claim to
22 include the defined feature.).

23 BNR's claim construction is also consistent with and supported by the
24 knowledge a POSA possessed at the time of the filing of the '435 Patent regarding cell
25 phone networks relying on transmitted signal strength information to maintain cell
26 phone connections and call quality, as cited in the patent. A POSA would know that
27 the transmission signal strength necessary for a signal to travel between a tower and
28 cell phone is determined by the communications path along which these signals must

1 travel (taking into account, for example, whether there are natural or man-made
2 obstructions in the communications path). (*See, e.g.*, Ex. S at Appx537-538 (William
3 Yee, *Mobile Communications Engineering – Theory and Applications* 21–22, McGraw
4 Hill (2d ed. 1997).) (“Terrestrial losses are greatly affected by the general topography
5 of the terrain...In general the texture and roughness of the terrain tend to dissipate
6 propagated energy, reducing the received signal strength at the mobile unit and also at
7 the base station...However, even under the most optimal siting conditions, there are
8 often hills, trees, and various man-made structure and vehicles that can adversely
9 affect the propagation of mobile-radio signals.”).⁹

10 The prosecution history further supports BNR’s proposed construction. In an
11 Office Action mailed on August 13, 2004, the Patent Office Examiner rejected pending
12 Claim 19 (which corresponds to Claim 1 of the ’435 Patent), based on an obviousness
13 combination involving U.S. 6,456,856 (“Werling”) and U.S. 6,498,924 (“Vogel”). In
14 connection with the “network adjusted transmit power level as a function of a position
15 to a communications tower” limitation in then Claim 19, the examiner stated:

16 It should be noticed that Werling fails to clearly teach the feature of
17 providing a network adjusted transmit power level as a function of a position to a
18 communications tower. However, Vogel teaches such limitations in column 1,
19 lines 26-37 for the purpose of reducing the overall interference level.

20 (*See* Ex. K at Appx322 (August 13, 2004 Office Action at 7 from the ’435 Patent’s
21 prosecution history).) The portion of the Vogel reference relied upon by the examiner
22 related to measuring distance between a mobile station and a base station, and using
23 this information to control transmission power of the mobile station as a function of
24 distance between it and the base station to reduce interference levels:

25 _____
26 9 This book by William Yee is identified and incorporated by reference into the
27 specification. *See* ’435 Patent, Col. 9-13. Accordingly, this reference constitutes
28 intrinsic evidence.

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The present invention relates more particularly to apparatus for measuring the distance, or the propagation time, between a mobile station and a base station in such a system. 10

Such knowledge of distance or of propagation time can be used for various purposes, such as the following, given by way of example: 15

in a mobile radiocommunications system of the Time Division Multiple Access (TDMA) type, such as in particular the Global System for Mobile communications (GSM), such knowledge can be used for the purpose of determining the timing advance to be applied to information from the mobile station so as to enable said information to be received at the base station in that one of the time channels which has been allocated to said mobile station, regardless of the propagation time between said mobile station and said base station; and 20 25

in a mobile radiocommunications system of the cellular type (also such as the above-mentioned GSM), such knowledge can be used for the purpose of controlling the transmission power of the mobile station as a function of the distance between it and the base station so as to reduce the overall interference level in the system, or else so as to locate the mobile station, e.g. by combining the result of such a measurement of the distance between the mobile station and a base station with the results of measurements of the distances between said mobile station and other base stations. 30 35

(See Ex. T at Appx549 (U.S. 6,498,924 (“Vogel”) at Col 1:10–37; Ex. K at Appx322 (August 13, 2004 Office Action at 7–8 from the ’435 Patent’s prosecution history).)

The applicant objected to the Vogel rejection, and in a response dated November 18, 2004 argued that the Vogel reference did not disclose “a power circuit that provides a network adjusted transmit power level as a function of a position to a communications”:

III. Rejection of Claims 19-21, 24-25 and 27 under 35 U.S.C. §103

1 The Examiner has rejected Claims 19-21, 24-25 and 27 under 35 U.S.C. §103(a) as being
2 unpatentable over Werling in view of U.S. Patent No. 6, 498,924 to Vogel, *et al.* 195,562. The
3 Applicants respectfully disagree.

4 As recognized by the Examiner, Werling does not teach or suggest a portable cell phone
5 including a power circuit that provides a network adjusted transmit power level as a function of a
6 position to a communications tower as recited in independent Claim 19. Thus, the Examiner cites
7 Vogel to cure this deficiency of Werling. (*See* Examiner's Action, page 7.)

8 Vogel provides mobile radio communications systems and an apparatus for measuring the
9 distance or the propagation time between a mobile station and a base station in such a system. (*See*
10 column 2, lines 15-32.) Vogel provides no teaching or suggestion, however, of a power circuit that
11 provides a network adjusted transmit power level as a function of a position to a communications
12 tower. Instead, Vogel is directed to improving the accuracy of determining the distance and
13 propagation. (*See* column 2, lines 1-14.) Vogel does teach in the background that the distance and
14 propagation measurements may be used for various purposes. Vogel provides no teaching or
15 suggestion, however, that the purpose may be for providing a power level for transmitting.

16 (*See* Ex. K at Appx336 (November 18, 2004 Response to August 13, 2004 Office
17 Action at 9 from the '435 Patent's prosecution history).) The patent examiner agreed
18 with the applicant, withdrew the rejection regarding Claim 19, and allowed Claims 19–
19 27, which issued as Claims 1–9. (*See* Ex. K at Appx346, 355-358 (August 8, 2005
20 Office Action at 7 from the '435 Patent's prosecution history, et al).)

21 The prosecution history, therefore, is consistent with BNR's proposed claim
22 construction, which emphasizes that the network adjusted transmit power level is a
23 function of "a transmit signal strength of a communications path between the
24 communications tower and the portable cell phone," influenced by multiple factors,
25 including natural and man-made obstacles in the communication path—rather than
26 simply a function of distance between a cell phone and a communication tower. *See*
27 *Cont'l Circuits*, 915 F.3d at 796 (Although "it often lacks the clarity of the
28 specification and thus is less useful for claim construction purposes," "a court should

1 also consider the patent’s prosecution history....Like the specification the prosecution
2 history provides evidence how the [USPTO] and the inventor understood the patent.”)
3 (citations omitted).

4 Finally, BNR’s construction completely addresses the meaning of all terms in
5 the disputed phrase, including the meaning and scope of “position.”
6 Defendants’ proposed construction, on the other hand, does little, if anything, to clarify
7 the meaning of the disputed phrase. Defendant’s construction does not define
8 “position” other than to associate it to the cell phone, but this says nothing as to
9 whether “position” is meant to address only distance, communication paths, or whether
10 natural and man-made obstacles between the cell phone and tower are taken into
11 account. Additionally, rather than elaborate on the meaning of the disputed terms,
12 Defendants propose additional terms, such as “relative to” that are not used or defined
13 in the specification in connection with these disputed claim terms. Accordingly, for all
14 of the above reasons, the Court should adopt BNR’s proposed construction in view of
15 the clear intrinsic evidence and the understanding of a person of ordinary skill in the
16 art supporting it.

17 **IX. CONCLUSION**

18 For the foregoing reasons, BNR respectfully requests the Court reject
19 Defendants’ constructions and adopt BNR’s constructions for the disputed claim terms.

1 Dated: May 24, 2019

Respectfully Submitted,

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CERTIFICATE OF SERVICE

1
2 I hereby certify that a true and correct copy of the above and foregoing
3 document has been served on May 24, 2019 to all counsel of record who are deemed to
4 have consented to electronic service via the Court’s CM/ECF system. Pursuant to
5 Local Rule 5.4(c), any other counsel of record will be served by electronic mail,
6 facsimile, or overnight delivery.

7 /s/ Sadaf R Abdullah
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