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3 UNITED STATES DISTRICT COURT
4 SOUTHERN DISTRICT OF CALIFORNIA
5

6 BELL NORTHERN RESEARCH, LLC,
7 Plaintiff,
8 v.
9 COOLPAD TECHNOLOGIES, INC. et
10 al.,
11 Defendants.

Case No.: 18-CV-1783-CAB-BLM

**CLAIM CONSTRUCTION ORDER
AND ORDER ON MOTIONS FOR
SUMMARY JUDGMENT**

[Doc. No. 68]

12 BELL NORTHERN RESEARCH, LLC,
13 Plaintiff,
14 v.
15 HUAWEI TECHNOLOGIES CO., LTD.
16 et al.,
17 Defendants.

Case No.: 18-CV-1784-CAB-BLM

[Doc. No. 65]

18 BELL NORTHERN RESEARCH, LLC,
19 Plaintiff,
20 v.
21 ZTE CORPORATION et al.,
22 Defendants.

Case No.: 18-CV-1786-CAB-BLM

[Doc. Nos. 86, 93]

23
24 On June 19-20, 2019, the Court held a hearing to construe certain disputed terms and
25 phrases of the patents at issue in this lawsuit. Having considered the submissions of the
26 parties, the arguments of counsel, and for the reasons set forth at the hearing and herein,
27 the Court enters the claim constructions listed below.
28

1 **I. U.S. Patent Nos. 7,319,889 and 8,204,554¹**

2 The ‘889 patent and the ‘554 patent (a continuation of the ‘889 patent) are for a
3 System and Method for Conserving Battery Power in a Mobile Station. The patent
4 addresses the need in the art as of 2003, for “a way to prolong the lifetime of a mobile
5 station [cordless phone or cell phone] without having to use a battery with an increased
6 capacity.” [Doc. No. 1-2, at Col. 1:21-26, 35-37.] The system and method accomplish this
7 by reducing the power consumption of the display of an activated mobile station when the
8 display is not needed, particularly during a telephone call thereby saving needless power
9 consumption. [Id., at Col. 1:47-51.]

10 The parties requested construction of the following terms **in bold** of the ‘889 patent
11 and the ‘554 patent.

12 Claim 1 [of ‘889 patent]. A mobile station, comprising:

13 A display;

14 A proximity sensor adapted to generate **a signal indicative of proximity of an
external object**; and

15 A microprocessor adapted to:

16 (a) Determine whether a telephone call is active;

17 (b) Receive the signal from the proximity sensor; and

18 (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

19 The telephone call is a wireless telephone call;

20 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

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

24 [Id., at Col. 4:2-25.]

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27
28 ¹ These patents are filed in case 18cv1783 at Doc. Nos. 1-2 and 1-3.

Claim 7 [of ‘554 patent]. A mobile station, comprising:
a display;
a proximity sensor adapted to generate **a signal indicative of the first condition, the first condition being that an external object is proximate**; and
a microprocessor adapted to:
(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;
(b) in response to a determination in step (a) that the second condition exists, activate the proximity sensor;
(c) receive the signal from the activated proximity sensor; and
(d) reduce power to the display if the signal from the activated proximity sensor indicates the first condition exists.

[The mobile station as recited in claim 1,] wherein the proximity sensor begins detecting whether an external object is proximate **substantially concurrently** with the mobile station initiating an outgoing telephone call.

[Doc. No. 1-3 at Col. 4:2-22, 40-43.]

The ‘889 and ‘554 Claim Constructions

**A. signal indicative of proximity of an external object;
a signal indicative ... that an external object is proximate**

The parties agree that the proximity sensor is adapted to generate **a signal that indicates an external object is within predetermined range**. [Doc. No. 1-2 at Abstract and Col. 1:44-4.] Defendants, however, sought additional language in the construction that the sensor generates “a signal that indicates an external object is *or is not* detected to be within a predetermined range.” The Court declined to include the proposed *or is not* language.

The plain language of the claim states the sensor generates a signal when an external object is proximate. Nothing in the claim or the specification supports a construction that a signal is generated to indicate the absence of a proximate external object. If there is no external object sensed, then no signal is generated. The signal may cease when an object is no longer proximate (*Id.* at Col 4:16-18, the microprocessor reduces power to the display

1 “while the signal indicates the proximity of the external object”). Defendants’ proposed
2 construction creates a requirement that the proximity sensor generate a signal that indicates
3 an external object is not within a predetermined range. This is not supported by the claim
4 language or the specification. The Court construes “a signal indicative of proximity of an
5 external object” and “a signal indicative ... that an external object is proximate” as **a signal**
6 **that indicates an external object is within predetermined range.**

7 **B. substantially concurrently**

8 Defendants argue that a person of skill in the art could not understand the scope of
9 claim 1 of the ‘889 patent and claim 7 of the ‘554 patent because the claims require the
10 proximity sensor begin detecting whether an object is proximate “substantially
11 concurrently” with the mobile station initiating or receiving a telephone call. Defendants
12 contend that the patent provides no standard for determining what is encompassed by
13 “substantially concurrently.” Defendants therefore argue the claims are indefinite and
14 invalid. The Court is not persuaded.

15 The Court construes “concurrently” to have its ordinary meaning of
16 “simultaneously” or “at the same time.” The use of a relative term such as “substantially”
17 does not render the patent claim so unclear as to prevent persons skilled in the art from
18 determining the claim scope. *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed.
19 Cir. 2012). When such a word is used the court must determine whether the patent provides
20 some standard for measuring the degree. Words of degree—such as “substantially”—are
21 not considered indefinite so long as intrinsic evidence “provides objective boundaries for
22 those of skill in the art.” *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370–71
23 (Fed. Cir. 2014).

24 “Substantially” as a word of degree is generally understood to mean “essentially” or
25 “mainly.” In the context of the claims and the patents, the Court finds this phrase not to be
26 indefinite and that a person of skill in the art would understand that the proximity sensor
27 will begin detecting the proximity of an external object **essentially at the same time** the
28 mobile station receives or makes a call.

1 **II. U.S. Patent No. 7,039,435**²

2 The ‘435 patent is for a Proximity Regulation System for use with a portable cell
3 phone and a method of operation thereof. Filed in 2001, the patent is directed at increased
4 health concerns regarding the power used to transmit the radio frequency of cell phones
5 when operated close to the body of the cell phone user. “For example, when held close to
6 the ear, many users have health concerns about the high level of radio frequency energy
7 causing damage to brain cells.” [Doc. No. 33-8 at Col. 1:14-40.] The patent claims a system
8 and method to automatically reduce the transmit power level of a portable cell phone when
9 located near a human body thereby decreasing the perception of health risks associated
10 with the use thereof. [*Id.* at Col. 1:63-67.]

11 Plaintiff requested construction of the following term **in bold** of the ‘435 patent.

12 Claim 1. A portable cell phone, comprising:
13 a power circuit that provides a network adjusted transmit power level as a function
14 of a **position to a communications tower**; and
15 a proximity regulation system including:
16 a location sensing subsystem that determines a location of said portable cell phone
17 proximate a user; and
18 a power governing subsystem, coupled to said location sensing subsystem, that
19 determines a proximity transmit power level of said portable cell phone based on
20 said location and determines a transmit power level for said portable cell phone
21 based on said network adjusted power level and said proximity transmit power level.

22 [*Id.* at Col. 8:2-15.]

23 Plaintiff sought clarification that the limitation of a network adjusted transmit power
24 level as a function of a “position to a communications tower” is based on the transmit signal
25 strength of a communications path between the communications tower and the portable
26 cell phone. [*Id.* at Col. 3:39-41.] Plaintiff therefore proposed that **position to a**
27 **communications tower** be construed as “transmit signal strength of a communications
28 path between the communications tower and the portable cell phone.” Defendants offered
that the network adjusted transmit power level as a function of the position of the cell phone

² This patent is filed in case 18cv1786 at Doc. No. 33-8.

1 to a communications tower is unambiguous to one in the art and required no construction
2 or explanation. The Court agrees and declines to construe, or explain, the claim term.

3 **III. U.S. Patent No. 6,941,156³**

4 The ‘156 patent is an Automatic Hand off for Wireless Piconet Multimode Cell
5 Phone. Filed in 2001, the background of the invention describes existing multimode cell
6 phones with the capability to make a telephone connection using a cellular network or
7 alternatively using a short-range RF frequency such as a Bluetooth wireless piconet
8 network. It additionally describes such phones functioning as walkie-talkies, connecting
9 to a similarly capable handset using a short-range RF frequency such as Family Radio
10 System Band. [Doc. No. 1-5 at Col. 1:13-22, Col. 2:37-52, Col. 7:44-44.] The patent
11 further describes how the convenience of being able to switch from one connection mode
12 to another was inhibited by the necessity that the user “must first terminate any existing
13 telephone call, and then manually switch the mode of the 3-1 telephone” and then
14 reestablish the call. [*Id.* at Col. 1:31-45.]

15 The patent is directed at an apparatus and methods to provide a smooth switchover
16 and interactions between the separate modes of operation with minimal or even
17 unnoticeable disruption of the participants or content of the telephone conversation. [*Id.*
18 at Col. 1:46-48; Col. 3:26-33.]

19 The parties requested construction of the following terms **in bold** of the ‘156 patent.

20 Claim 1. A multimode cell phone, comprising
21 a **cell phone functionality**; and
22 an **RF communication functionality** separate from said cell phone functionality;
23 a **module to establish simultaneous communication paths from said**
24 **multimode cell phone** using both said cell phone functionality and said RF
communication functionality; and

25 **an automatic switch over module**, in communication with both said cell phone
26 functionality and said RF communication functionality, operable to switch a
communication path established on one of said cell phone functionality and said RF

27
28 ³ This patent is filed in case 18cv1783 at Doc. No. 1-5.

1 communication functionality, with another communication path later established on
2 the other of said cell phone functionality and said RF communication functionality.

3 [*Id.* at Col. 8:15-31.]

4 The ‘156 Claim Constructions

5 **A. cell phone functionality**

6 Cell phone functionality is a term used by the patentee to describe an existing **mode**
7 **of communication link made via a wireless cellular network**, and the Court construes it
8 as such. [*Id.* at Col.1:31-33, “a 3-in-1 cell phone conventionally provides establishment of
9 a telephone call with a wireless cell phone network”; Col. 3:49-63, Fig. 1.] Defendants
10 argue that no structure is provided for this limitation, however the Court finds that such
11 wireless cellular network communications were known in the art, the patent employs such
12 network communications but claims no improvement to the wireless cellular network, and
13 further description is unnecessary.

14 **B. RF communication functionality**

15 RF communication functionality is a term used by the patentee to describe an
16 existing **mode of communication link made via short-range radio frequencies** (such as
17 a BLUETOOTH piconet network or Family Radio System Band), and the Court construes
18 it as such. [*Id.* at Col. 1:13-18, Col. 2:37-Col. 3:12, Col. 7:31-44.] Defendants argue that
19 no structure is provided for this limitation, however the Court finds that such short-range
20 radio frequency communications discussed in the patent were known in the art, the patent
21 employs such short-range radio frequency communications but claims no improvement of
22 such modes and further description is unnecessary.

23 **C. [to establish] simultaneous communications paths**

24 The parties agreed in part that “simultaneous communications paths” means “two or
25 more communication links at the same time” from the multimode cell phone. The claim
26 language provides the further limitation that these simultaneous paths, or links, are
27 established using both the cell phone functionality (i.e., a wireless cellular network) and
28 the separate RF communication functionality (i.e., a short-range radio frequency). The

1 Court therefore finds Defendants’ proposed construction that the links be defined as
2 “distinct and different” is superfluous in the context of the entire claim which requires they
3 use different and separate modes of connection.

4 Defendants further proposed as part of the construction that the two or more
5 communications links are made between the multimode cell phone and a far-end
6 communication device at the same time, thereby incorporating into the construction a
7 definition of “to establish.”⁴ Plaintiff alternatively proposed that the two or more links
8 from the multimode cell phone be active. Although the parties disagreed with each other’s
9 proposed additional language, the Court is not persuaded they are necessarily different, in
10 so far as they define “to establish” as part of the claim limitation, **to establish**
11 **simultaneous communications paths.**

12 The patent describes the invention as “a technique for transferring an active
13 telephone call from cordless telephone mode [RF communication functionality] to cell
14 phone mode (and vice versa) in a 3-in-1 cell phone.” [Id., at Col. 3:26-28; Fig.2.] The
15 multi-mode cell phone establishes an active connection (a telephone call using the multi-
16 mode phone’s RF mode) to a far-end device, that can be any telephonic device, multi-mode
17 or single mode. [Id., Col. 4:12-17.] The multi-mode cell phone then establishes a second
18 active communication path in a different mode (the cellular network mode) that connects
19 with the far-end device at the same time the first communication path is still active. After
20 the second connection is established, the connection on the first communication path is
21 terminated. The phone call proceeds uninterrupted by the change of mode. [Id., Fig. 2;
22 Col. 4:50- Col. 5:6.] The communication path, or link, is established when it is actively
23 connected to the far-end device.

24 In accordance with the claim language, the teachings of the patent, and the
25 prosecution history the Court construes **to establish simultaneous communication paths**
26

27
28 ⁴ “To establish simultaneous communications paths” is the function of the module claimed in this
limitation and discussed further in the construction of module, *infra*.

1 **from said multimode cell phone as making two or more communications links from**
2 **the multimode cell phone to a far-end communication device at the same time.**

3 **D. a module** to establish simultaneous communications paths from said
4 multimode cell phone

5 The Court determines that “module” in the context of this claim is subject to 35
6 U.S.C. § 112 ¶6. Under section § 112 ¶6, an applicant is permitted to make use of means-
7 plus-function language, to express a claim limitation as a means or step for performing a
8 specified function without claiming the structure. *See Williamson v. Citrix Online, LLC*,
9 792 F.3d 1339, 1347 (Fed. Cir. 2015). Such limitations are construed as the scope of the
10 structure, materials or acts described in the specification as corresponding to the claimed
11 function or equivalents thereof. *Id.* In making the determination of whether a limitation is
12 subject to the strictures of § 112 ¶6 the essential inquiry is not merely the presence or the
13 absence of the word “means” but whether the words of the claim are understood by persons
14 of ordinary skill in the art to have a sufficiently definite meaning as the name for a structure.
15 *Id.* at 1348.

16 The entire claim limitation is “a module to establish simultaneous communications
17 paths from said multimode cell phone using both said cell phone functionality and said RF
18 communication functionality.” [Doc. No. 1-5 at Col. 8:20-23.] This format is consistent
19 with traditional means-plus-function claims limitations, replacing “means” with “module”
20 and reciting the function to be performed. “Module” is a well-known nonce word that can
21 operate as a substitute for “means” in the context of § 112 ¶6. *Williamson*, 792 F.3d at
22 1350. In this case “module” does not provide any indication of structure for providing the
23 function of establishing simultaneous communications paths from said multimode cell
24 phone using both said cell phone functionality and said RF communication functionality.

25 Having determined that “module” is subject to § 112 ¶6, the court must determine
26 what structure, if any, disclosed in specification corresponds to the claimed function. If
27 the patentee fails to disclose adequate corresponding structure the claim is indefinite.
28

1 In accordance with the claim, this module is part of the multimode cell phone. It is
2 distinct from the claim limitations of cell phone functionality [*id.* at Fig. 1, (100a)], RF
3 communication functionality [*id.* at Fig. 1, (100b)], and the automatic switch over module
4 [*id.* at Fig. 1, (101)]. The module of the multimode cell phone, that establishes
5 simultaneous communications paths using cell phone and RF communication functionality
6 is not identified in any figure. There is no direct reference in the specification to this
7 module.

8 There is reference to the “automatic switch over module” in the specification. [*Id.*
9 at Col. 1:51-61; 3:56-60, Col. 4:1-6; Fig 1, (101).] The word module appears nowhere else
10 in the specification. This reference is however to a separate claim limitation from the
11 “module” that establishes the simultaneous communications paths. The claimed “automatic
12 switch over module” operates to switch from an established communications path to the
13 later established communications path.

14 Plaintiff identified the following portions of the patent as disclosing the structure
15 that corresponds to the claimed module’s function of establishing the simultaneous
16 communication paths: Figs. 1, 3; Col. 3:48-4:49; 4:54-5:62; 6:3-55; 6:60-8-5. [*See*
17 18cv1783, Doc. No. 63-1 at 44.] This absurdly overinclusive designation fails to identify
18 a sufficiently definite structure that corresponds to the claimed function.

19 Structure disclosed in the specification qualifies as “corresponding structure” if the
20 intrinsic evidence clearly links or associates that structure to the function recited in the
21 claim. *Williamson*, 792 F.3d at 1352. Plaintiff cites to the entirety of figures 1 and 3,
22 which include a multitude of unrelated structures, and large blocks of the specification that
23 encompass structures separate from the multimode cell phone that provide many different
24 functions. The Court will not scour the Plaintiff’s submission to locate, or otherwise
25 ascertain from the blanket proffer made by Plaintiff what structure of the multimode cell
26 phone is disclosed to provide the function of establishing the simultaneous
27 communications paths.

1 Although the patent discloses a number of steps that may be performed by hardware
2 or software not contained in the multimode cell phone to create a cellular network
3 connection and an RF connection between the phone and a far-end device, the claimed
4 “module” of the multimode cell phone device remains a mystery. It is not sufficient to
5 simply state that one of ordinary skill in the art would “know this is a structure for RF
6 communications through a genus of RF communication types well known in the art.” [Doc.
7 No. 63-1 at 42.]

8 The ‘156 patent fails to disclose any structure of the multimode cell phone that
9 corresponds to the function to “establish simultaneous communications paths from said
10 multimode cell phone using both said cell phone functionality and said RF communication
11 functionality.” The Court therefore finds Claim 1 of the ‘156 patent invalid for
12 indefiniteness under 35 U.S.C. §112 ¶6. Defendants’ corresponding motion for summary
13 judgment on this claim is **GRANTED**.

14 **E. an automatic switch over module**

15 The Court determines that “an automatic switch over module” in the context of this
16 claim is subject to 35 U.S.C. § 112 ¶6. The entire claim limitation is “an automatic switch
17 over module, in communication with both said cell phone functionality and said RF
18 communication functionality, operable to switch a communication path established on one
19 of said cell phone functionality and said RF communication functionality, with another
20 communication path later established on the other of said cell phone functionality and said
21 RF communication functionality.” [Doc. No. 1-5 at Col. 8:24-31.]

22 This format is consistent with traditional means-plus-function claims limitations,
23 replacing “means” with “module” and reciting the function to be performed. The prefix
24 “automatic switch over” does not impart structure into the term module. The detail that
25 this module of the multimode cell phone will switch the communication path of the
26 multiphone cell phone from cell phone mode to RF mode, or vice versa, automatically,
27 does not impart any structure.
28

1 The “automatic switch over module” is referenced in the specification. [*Id.* at Col.
2 3:56-60, Col. 4:1-6; Fig 1, (101).] It is mentioned in the Summary of Invention:

3 [in] accordance with the principles of the present invention, a multimode cell phone
4 comprises a cell phone functionality, and an RF communication functionality
5 separate from the cell phone functionality. An automatic switch over module is in
6 communication with both the cell phone functionality and the RF communication
7 functionality. The automatic switch over module operates to switch a
8 communication path established on either the cell phone functionality or the RF
communication path established on the other of the cell phone functionality and the RF communication functionality.

9 [*Id.* at Col. 1:51-61.]

10 Similarly, it is discussed briefly in the Detailed Embodiment:

11 [importantly, an automatic switch over module 101 is in communication with each
12 communication path functionality, e.g., with the cell phone functionality 110a, the
13 piconet cordless telephone functionality 100b, and the walkie-talkie functionality
14 100c.... [While] operating in a cell phone mode, the automatic switch over module
15 101 of the multimode cell phone 100 may detect walkie-talkie communications
16 activity from the far party’s multimode cell phone 100 and establish a
communication link therebetween even while the two parties remain in cell phone
communication.

17 [*Id.* at Col. 3:56-60, Col. 4:1-6; Fig. 1.]

18
19 These are the only direct references in the patent to the “automatic switch over
20 module” and the function of establishing the simultaneous communications link described
21 above is not the claimed function of this module, but that of the separately claimed
22 “module” limitation discussed in the preceding section.

23 Plaintiff identified the following portions of the patent as disclosing the structure
24 that corresponds to the function of switching the established communication paths: Figs.
25 1, 3; Col. 3:48-4:49; 4:54-5:62; 6:3-55; 6:60-8-5. [See 18cv1783, Doc. No. 63-1, at 48.]
26 This is the same designation made for the “module” limitation discussed in the previous
27 section. Plaintiff’s designation of the same broad and overinclusive passages as the
28

disclosed structure for two separate claim limitations underscores that the patent fails to identify a sufficiently definite structure that corresponds to this claimed function as well.

Although the patent discloses a number of steps that may be performed by hardware or software not contained in the multimode cell phone to switch from a cellular network connection to an RF connection, or vice versa, between the multimode cell phone and a far-end device, the claimed “automatic switch over module” of the multimode cell phone device is not identified with sufficiently definite structure. It is just a black box in Fig 1. Nor is it sufficient to simply state that one of ordinary skill in the art would “know this is a structure for RF communications through a genus of RF communication types well known in the art.” [Doc. No. 63-1 at 46.]

The ‘156 patent fails to disclose any structure of the multimode cell phone that corresponds to the function “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.” The Court therefore finds Claim 1 of the ‘156 patent invalid for indefiniteness under 35 U.S.C. §112 ¶6. Defendants’ corresponding motion for summary judgment on this claim is **GRANTED**.

IV. U.S. Patent No. 7,990,842⁵

The ‘842 patent is for a device that generates backward-compatible long training sequences for wireless communication networks. The patent addresses the need “to create a long training sequence of minimum peak-to-average ratio that uses more sub-carriers [than the existing standard compliant devices] without interfering with adjacent channels” and “be usable by legacy devices in order to estimate channel impulse response and to estimate carrier frequency offset between a transmitter and a receiver.” [Doc. No. 1-4, at Col. 2:8-16; 37-43.]

⁵ This patent is filed in case 18cv1783 at Doc. No. 1-4.

1 The parties requested construction of the following terms **in bold** of the ‘842 patent.

2 Claim 1. A wireless communications device, comprising
3 a signal generator that generates **an extended long training sequence**; and
4 an **Inverse Fourier Transformer** operatively coupled to the signal
generator,

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

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

10 Claim 14. The wireless communications device according to claim 1, wherein the
optimal extended long training sequence is longer than a long training sequence used
11 by **a legacy wireless local area network device in accordance with a legacy**
12 **wireless networking protocol standard**.

13 [*Id.* at Col. 5:37-49; Col. 6:28-32.]

14 ‘842 Claim Constructions

15
16 **A. an extended long training sequence**

17 Defendants contend this phrase is indefinite and has no understandable meaning to
18 a person of skill in the art. Plaintiff contends it would be clear to person of skill that an
19 extended, or expanded, long training sequence in the context of the entirety of the claim
20 language and the specification is a training sequence that uses more active subcarriers than
21 an existing standard. The Court finds that an extended, or expanded, long training sequence
22 is one longer than the long training sequence that was the known standard implemented in
23 the art at the time the patent was filed. [*Id.* at Col. 2:55-58; Col. 3:21-24; Col. 4:6-18.]
24 The specification identifies the standard for an Orthogonal Frequency Division
25 Multiplexing scheme at the time the patent was filed as a technique that uses 52 of the
26 available 64 active subcarriers. [*Id.* at Col. 2:8-16.]

27 If, as Plaintiff advocates, a standard wireless networking configuration for an OFDM
28 scheme is whatever that standard is at the time the patent is being practiced, then the Court

1 agrees with the Defendants that the claim would be indefinite. The patent does not disclose
2 a standard implementing more than 64 active subcarriers and does not teach an OFDM
3 scheme with more than 64 active subcarriers, but rather teaches how to use more of those
4 existing subcarriers than the current standard utilized. Consequently, the extended long
5 training sequence is bounded by the scheme known in the art at the time the patent was
6 filed. The Court therefore construes **an extended long training sequence as a training**
7 **sequence that uses more than 52 of 64 active subcarriers.** Defendants' motion for
8 summary judgment of invalidity based on indefiniteness is denied.

9 **B. optimal extended long training sequence**

10 Defendants contend this phrase is indefinite and has no understandable meaning to
11 a person of skill in the art. Plaintiff contends it would be clear to person of skill that an
12 optimal extended long training sequence in the context of the entirety of the claim language
13 and the specification is a long training sequence with a minimal peak to average ratio
14 resulting from processing by the Inverse Fourier Transformer. The Court agrees with
15 plaintiff that an optimal extended long training sequence is an extended long training
16 sequence with minimal peak to average ratio, i.e., a peak to power ratio of 3.6dB⁶, using
17 more subcarriers than the standard at the time the patent was filed. [*Id.* at Col. 2:37-39;
18 Col. 5:14-19, 20-25.] The Court therefore construes **an optimal extended long training**
19 **sequence as a training sequence with a minimal peak to average ratio of 3.6dB that**
20 **uses more than 52 of 64 active subcarriers.** Defendants' motion for summary judgment
21 of invalidity based on indefiniteness is denied.

22 **C. Inverse Fourier Transformer**

23 The parties agree that an Inverse Fourier Transform is a well-known mathematical
24 principle used to map functions between one domain and another domain, which can
25 include domains such as space, time and frequency. They therefore agree that an Inverse
26

27
28 ⁶ The specification provides reasonable certainty to the meaning of "optimal" by providing an objective
standard of a peak to power ratio by identifying a ratio "that is" (i.e.) 3.6dB as the optimal ratio.

1 Fourier Transformer is a circuit and/or software that performs a defined mathematical
2 function that transforms a series of values from one domain into another domain.

3 Defendants however contend that in the context of this claim for a wireless
4 communications device, that function is necessarily limited to transforming a series of
5 values from the frequency domain to the time domain. Plaintiff disagrees and argues that
6 the claim language and specification require no such narrowing of the claim to specific
7 types of domains or the direction of the transformation. The Court agrees with the Plaintiff.

8 Ultimately, it may be that to “process the extended long training sequence from the
9 signal generator and provide an optimal extended long training sequence with a minimal
10 peak-to-average ratio” as required by the claim, the Inverse Fourier Transformer must
11 operate as the Defendants contend, but the Court will not import the Defendants’ proposed
12 limitation into the claim. The Court construes **Inverse Fourier Transformer as a circuit**
13 **and/or software that performs a defined mathematical function that transforms a**
14 **series of values from one domain into another domain.**

15 **D. a greater number of subcarriers than a standard wireless networking**
16 **configuration for an Orthogonal Frequency Division Multiplexing**
17 **scheme.**

18 Defendants contend this phrase is indefinite. The Court however finds that the
19 specification identifies the known standard implemented in the art at the time the patent
20 was filed. [*Id.* at Col. 2:8-28.] The Court construes a standard wireless networking
21 configuration for an OFDM scheme as **a configuration using no more than 52 of 64**
22 **active subcarriers.** Defendants’ motion for summary judgment of invalidity based on
23 indefiniteness is denied.

24 **E. longer than a long training sequence used by a legacy wireless local**
25 **area network device in accordance with a legacy wireless**
26 **networking protocol standard.**

27 Defendants contend this phrase is indefinite. The Court however finds that the
28 specification identifies the known standard implemented in the art at the time the patent
was filed. [*Id.* at Col. 2:8-28.] The Court construes a legacy wireless networking protocol

1 standard as **standard using no more than 52 of 64 active subcarriers**. [*Id.* at Col 2:3-7,
2 37-43; Col. 4:4-18.] Defendants' motion for summary judgment of invalidity based on
3 indefiniteness is denied.

4 **V. U.S. Patent Nos. 7,957,450⁷**

5 The '450 patent is for a method and system for frame formats for MIMO channel
6 measurement exchange. The patent is directed toward utilizing signal processing
7 techniques to directionally focus the transmission and reception of signals in a specific
8 direction known as beamforming, to address signal fading, a significant problem, in
9 wireless communications systems that often results in temporary loss of communications
10 at mobile terminals. [Doc. No. 33-7 at Col. 1:35-42, 63-65.]

11 The parties requested construction of the following terms **in bold** of the '450 patent.

12 Claim 1. A method for communication, the method comprising:
13 computing a plurality of **channel estimate matrices** based on signals received by a
14 mobile terminal from a base station, via one or more downlink RF channels, wherein
15 said plurality of channel estimate matrices comprise **coefficients derived from**
16 **performing a singular value matrix decomposition (SVD)** on said received
17 signals; and
18 transmitting said coefficients as feedback information to said base station, via one
19 or more uplink RF channels.

20 Claim 21. A method for communication, the method comprising:
21 computing a plurality of channel estimates based on signals received by a mobile
22 terminal from a base station, via one or more downlink RF channels,
23 deriving a **matrix based on the plurality of channel estimates**, wherein the matrix
24 comprises coefficients from performing a singular value matrix decomposition
25 (SVD) on said plurality of channel estimates; and
26 transmitting the coefficients as feedback information to said base station, via one or
27 more uplink RF channels.

28 [*Id.* at Col. 19:13-22; Col. 20:42-51.]

⁷ This patent is filed in case 18cv1786 at Doc. No. 33-7.

1 '450 Claim Constructions

2 **A. Channel estimate matrices/matrix based on the plurality of**
3 **channel estimates**

4 The patent states that “computations which are performed at the receiving mobile
5 terminal may constitute an estimate of the ‘true’ values of $H(t)$ ⁸ and may be known as
6 ‘channel estimates’.” [*Id.* at Col. 4:14-17.] It further states that $H(t)$ may be referred to as
7 the “channel estimate matrix.” [*Id.* at Col. 4:19-21.] Based on language of the
8 specification, the Court construes **channel estimate matrices** and a **matrix based on the**
9 **plurality of channel estimates** as **one or more matrices that is, or are, the estimates of**
10 **the values of $H(t)$.**

11 **B. coefficients derived from performing a singular value matrix**
12 **decomposition (SVD)**

13 Based on the Court’s construction of channel estimate matrices, as set forth above,
14 the parties agreed that no construction of this term was necessary and its plain and ordinary
15 meaning applies. The Court notes that the patent describes “SVD” as “a method which
16 may reduce the quantity of channel feedback information which is transmitted between a
17 receiving mobile terminal and a transmitting mobile mobile terminal,” and incorporates by
18 reference, in its entirety, U.S. application Ser. No. 11/052,389 for its description of SVD.
19 [*Id.* at Col. 8:45-49.] It is therefore anticipated that in applying the “plain and ordinary
20 meaning” of coefficients derived from performing SVD, the parties’ interpretation will
21 comport with the disclosure in the incorporated reference.

22 **VI. U.S. Patent Nos. 8,416,862⁹**

23 The ‘862 patent is for efficient feedback of channel information in a closed loop
24 beamforming wireless communication system. This patent is also directed toward utilizing
25

27 ⁸ H represents the transfer system function [*id.* at Col. 3:53-57] which may become a function of time
28 represented by $H(t)$. [*Id.* at Col. 4:5-7.]

⁹ This patent is filed in case 18cv1784 at Doc. No. 1-6.

1 signal processing techniques to directionally focus the transmission and reception of
2 signals in a specific direction known as beamforming, and to improve that technique by
3 reducing beamforming feedback information for wireless communications. [Doc. No. 1-6
4 at Col. 2:66-3:13; Col. 3:49-51.]

5 The parties requested construction of the following terms **in bold** of the ‘862 patent.

6 Claim 9. A wireless communication device comprising:
7 a plurality of Radio Frequency (RF) components operable to receive an RF signal
8 and to convert the RF signal to a baseband signal; and

9 **a baseband processing module** operable to:

10 receive a preamble sequence carried by the baseband signal;

11 estimate a channel response based upon the preamble sequence;

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

14 **decompose the estimated transmitter beamforming unitary matrix (V) to
15 produce the transmitter beamforming information;** and

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

18 [Id. at Col. 17:15-34.]

19 ‘862 Claim Constructions

20 **A. decompose the estimated transmitter beamforming unitary matrix
21 (V) to produce the transmitter beamforming information**

22 The parties agreed that to “decompose” the estimated transmitter beamforming
23 unitary matrix (V) to produce information is properly construed as “factor” the estimated
24 transmitter beamforming unitary matrix (V) to produce information. The parties disagreed
25 as to the need to construe the product of the factoring – “the estimated transmitter
26 beamforming information.” After argument the Court concluded that it was not necessary
27 to construe the product of the factoring of the estimated transmitter beamforming unitary
28 matrix – the transmitter beamforming information that is then wirelessly transmitted to the
transmitting wireless device. This appears to be a mathematical function and a person of
skill in this art would understand. The Court declined Defendants’ request to construe

1 “transmitter beamforming information” without prejudice to revisiting this issue if needed
2 at a later stage of the litigation.

3 **B. A baseband processing module**

4 Defendants argued that this “module” should be construed in accordance with
5 Section 112(6) as it has no understood meaning in the art and can only be understood by
6 the functions it must carry out as set forth in the claim. Plaintiff however demonstrated
7 that Defendants’ expert acknowledged that a baseband processor is a device known in the
8 art and the patent describes that baseband processing module as one or more such baseband
9 processors that would be implemented to perform the required steps. [See Case No.
10 18cv1786, Doc. No. 99 at 17-18.] The Court declined Defendants’ request to apply Section
11 112(6) to this claim limitation.

12 **VII. Conclusion**

13 As discussed at the hearing and set forth above, it is **ORDERED** that Defendants’
14 joint motion for summary judgment on indefiniteness is **GRANTED** as to Claim 1 of the
15 ‘156 patent and **DENIED** as to remaining claims, and Plaintiff’s motion for reconsideration
16 re order on motion to strike [Doc. No. 93 in Case No. 18cv1786] is **DENIED**.

17 It is **SO ORDERED**.

18 Dated: August 9, 2019



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20 Hon. Cathy Ann Bencivengo
21 United States District Judge
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