

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD. AND SAMSUNG ELECTRONICS
AMERICA, INC.**

Petitioners

v.

MAXELL, LTD.

Patent Owner

Inter Partes Review No.: IPR2024-00907

**PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE TO
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO.
10,129,590**

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1074	Razavi, et al., (2006) Efficient Packetization for Bluetooth Video Transmission, Electronic Letters, Vol. 42, No. 20, pp. 1143-1145
1075	U.S. Pat. No. 8,514,832

I. INTRODUCTION

PO's arguments primarily address theoretical product implementations, not the disclosures in the publications and PO's expert's arguments, for which he cites no authority, are not credible in light of the objective evidence provided by the specification, prior art, and intrinsic record.

II. POSITA

The slight differences in the proposed definitions of a POSITA are not relevant. EX1058, ¶7.

III. CLAIM CONSTRUCTION

PO does not dispute Petitioner's constructions of "circuit" and "video." Pet., 3-4.

PO proposes the Board adopt the district court's construction related to the phrase "an indication from the user indicates to transmit video information using the first radio communication circuit" (POR, 3-4), but PO does not apply that construction to the prior art and does not dispute that the prior art discloses that portion of that limitation under any proposed construction. POR, 23-25 (only contesting whether the controller controls assignment of the radio as required by the latter portion of limitation [1j]). Thus, no construction of this limitation is necessary. Paper 11(D.I.), 3.

IV. PUBLICATIONS

A. N93

PO does not dispute that N93 was publicly available on Nokia's website at http://nds1.nokia.com/phones/files/guides/Nokia_N93-1_UG_en.pdf (N93 URL), but PO disputes whether a POSITA would know of it or could find it. POR, 4-8. A POSITA could have located it as evidenced by the fact that the N93 URL was on the N93 Wikipedia page. EX1034, ¶2. Specifically, the N93 Wikipedia page archived on October 15, 2007 included an "External links" section with the N93 URL as "Online copy of the N93 Manual (PDF)".¹ *Id.*; EX1033, 4-6; EX1007, 2, 9-139; EX1034, ¶2 (Bhattarai Decl.); EX1058, ¶9.

Mr. McNair confirmed Mr. Bhattarai's testimony that the link embedded on the N93 Wikipedia page as archived on October 15, 2007 was to the N93 URL by rolling his cursor over the link and testifying that the N93 URL (http://nds1.nokia.com/phones/files/guides/Nokia_N93-1_UG_en.pdf) appeared in a pop up. EX1057, 64:20-65:9. When he clicked on the link, he navigated to N93 URL as archived on April 23, 2007. *Id.*, 65:15-68:13. Mr. McNair also advanced to

¹ The N93 URL is hyperlinked on the "Online copy of the N93 Manual (PDF)" in the historical versions of the N93 Wikipedia page. *See, e.g.*, https://en.wikipedia.org/w/index.php?title=Nokia_N93&oldid=164114929 (October 12, 2007 version) (EX1071), https://en.wikipedia.org/w/index.php?title=Nokia_N93&oldid=152044634 (August 18, 2007 version). EX1072; EX1058, ¶10

the next archived version of the N93 URL, which was archived in July 2011, and which still pointed to the same version of N93. EX1057, 68:14-69:17. Because N93 was archived at the N93 URL on April 23, 2007 and in July 2011 and because the N93 URL was added to the N93 Wikipedia page during that time period, the preponderance of the evidence shows Nokia made the N93 publicly available at the N93 URL and interested members of the public could and did find it. PO's implausible argument should be rejected.

PO also misrepresents that the Wayback affidavit addresses a URL to an HTML page (POR, 6), when it actually addresses the URL to the .pdf file itself. EX1007, 2 (N93 Link).

B. BT-SPEC

BT-Spec was publicly available at the Bluetooth technology website as follows:

- (1) Starting at <http://www.bluetooth.com/bluetooth/> (EX1033, 19-20), click on "Learn;"
- (2) On <http://www.bluetooth.com/Bluetooth/Learn/> *Id.*, 21-22 click on "Bluetooth Technology;"
- (3) On <http://www.bluetooth.com/Bluetooth/Learn/Technology/> *Id.*, 23-24, click on "Specification Documents;"

(4) On

<http://www.bluetooth.com/Bluetooth/Learn/Technology/Specifications/>

Id., 25-26, click on “Core Specification v2.0+EDR” to download BT-

Spec. *Id.*, 27; EX1007, 2, 194-1423; EX1058, ¶11.

Mr. McNair could follow this sequence. EX1057, 81:22-85:3.

C. 3GPP-SPEC

3GPP-Spec was publicly available at the 3GPP website that would be the first place for the POSITA to learn about 3G (UMTS) technology (EX1058, ¶12) as follows:

(1) Staring at <https://www.3gpp.org/> (EX1033, 7-8), click on

“Specifications;”

(2) On <http://www.3gpp.org/specs/specs.htm> (*id.*, 9-13), click on

“specifications file server area;”

(3) On <http://www.3gpp.org/ftp/Specs/> (*id.*, 14-15) click on “Latest-drafts;”

(4) On <http://www.3gpp.org/ftp/Specs/Latest-drafts/> (*id.*, 16-18), click on

December 5, 2006 version of “36211-021.zip” to download the zip file at

<http://www.3gpp.org/ftp/specs/latest-drafts/36211-021.zip> with clean and

redlines version of the 3GPP-Spec. EX1007, 2, 141-164 (clean), 165-192

(redlines). EX1058, ¶13.

Mr. McNair could follow this sequence. EX1057, 69:18-73:8.

3GPP-Spec was also available following a slightly different path. EX1058, ¶14 (explaining alternate path with EX1059-EX1062); EX1057, 73:22-77:20.

PO once again misrepresents the Wayback affidavit by asserting it references a different document. POR, 7. The affidavit includes both the clean version of 3GPP-Spec (EX1015) and a redline comparing 3GPP-Spec to the prior version. EX1007, 141-164 (clean), 165-192 (redline). Mr. McNair confirmed that EX1015 is the clean version from EX1007. EX1057, 81:4-9.

V. GROUND 1

A. Limitation [1a]

PO disputes whether Bluetooth implemented $\pi/4$ -DQPSK and 8DPSK (POR, 10-11), but PO does not dispute Bluetooth implemented GFSK, which alone satisfies [1a]. Pet. 18-20; EX1057(McNair Tr.), 46:17-47:4. PO is wrong to dispute the other modulation schemes, at least because Dua teaches the radio should implement “Bluetooth” and “support the widest array of communication protocols and broadcast standards.” EX1008, [0062]-[0063]. Thus, as of November 2007, the combination inherently disclosed (or at least rendered obvious) all three modulation schemes in the then-current Bluetooth standard—Bluetooth 2.0+EDR. EX1014 (BT-Spec), 1 (4 November 2004). EX1058, ¶15.

B. Limitation [1b]

PO disputes whether the UMTS radio would implement QAM and OFDM (POR, 12-13), but does not dispute that it implements QPSK, which alone satisfies

[1b]. Pet. 20-22; EX1057 (McNair Tr.), 59:10-21. QAM/OFDM are addressed below for claims 18/21.

C. Limitation [1c]

GSM (mapping A) or Wi-Fi (mapping B) satisfies [1c]. Pet., 22-24.

For Mapping A, PO bases its entire argument (POR, 13-16) on a “separate” limitation that PO improperly reads into claim 1. POR, 13 “separate.” But PO waived a “separate” construction by not disputing the “any circuitry” construction. Pet., 3 (explaining no “separate” requirement).

PO’s argument also fails as a factual matter. There is no dispute that UMTS/GSM implement different transmission frequencies and modulation schemes, so there would be at least some different circuitry. For example, PO relies on Kao (POR, 14) and Kao teaches cellphones used different circuitry for GSM and 3G radios. EX1013(Kao), Fig 2, [0010] (different RF modules, A/D converters, and based band processing modules for each standard); Fig. 4, [0031] (different RF modules).

PO’s argument also fails because it is based on a theoretical product that implements GSM and UMTS as a combined circuit. POR, 13-16. PO does not dispute that Rooyen (like Kao) teaches implementing separate chipsets for 2G and 3G. EX1011, Fig. 4a (WCDMA (3G) chip 412a, GSM (2G) chip 412b), ¶[0039].

EX2026 and Mr. McNair confirm. EX2026, 99 (“Early 3G handsets contained two discrete radio chipsets – one for 2G and another for 3G....”); EX1057, 55:22-56:4.

Dua explicitly discusses both GSM and 3G and the fact that references can switch between GSM and 3G does not mean they implement them as a combined circuit as shown by Kao.

For Mapping B, PO does not dispute that the Wi-Fi radio is implemented as a “separate” radio with a transmission scheme at 2.4 GHz (POR, 15-16), which is sufficient. Pet., 23-24.

D. Limitation [1h]

PO makes essentially the same argument it previously made (compare POR, 16-22 with POPR, 37-44) and the Board rejected (D.I., 54-58), without offering any reason for the Board to reach a different result.

PO first argues N93 alone is insufficient (POR, 17-18), but PO does not dispute N93 discloses user indications to control the Bluetooth/Wi-Fi/GSM/UMTS radios—PO just refuses to acknowledge that Dua is an example of a smartphone with a CPU for assigning radios based on such indications. Mr. McNair’s unsubstantiated statements that CPU’s do not control assignment of cellular radios is not credible in light of Dua and the other references. EX1009 (Herle), 6:62-7:3 (processor 240 executes OS and controls forward and reverse radio channels); EX1006, 424 (Tee), 426 (Fig. 2), 430, 435 (Honkanen), 436 (Figs. 1-2), 440-441.

PO then argues Dua alone is insufficient (POR, 18-22), but fails to address the showing in the Petition at 31-32 (including its incorporation from [1j]) that the CPU receives the Dua/N93 user indications and uses that to control assignment of the relevant radio.

PO again asserts undisclosed “modems typically handled cellular functionality” at some unspecified level (POR, 20), but PO fails to show that individual modems/radios could perform the relevant functionality in N93/Dua without the CPU. Pet., [1h] and [1j]. A radio cannot run the UI, OS, or application run by the CPU. No radio can bypass the CPU and “assign itself” as there is no way for an individual radio to even know they had been indicated by the N93/Dua user indications (e.g., selection of UMTS/GSM, SIP connection, selection of profile for Bluetooth or WiFi, etc.). PO’s unsubstantiated theory of autonomous radios with no CPU control is contrary to Dua’s entire architecture.

PO’s complaint that Dua’s description is “vague” (POR, 20) is not persuasive in light of Dua’s detailed description of the CPU’s functions. Pet. 31-32. PO’s assertion that Dua (alone) does not disclose the CPU controlling the cellular radios (POR, 19-20), is wrong. Pet., 31-32 (including [1j]). The lack of implementation details in Dua (POR, 21, citing Pet., 54) relates to the hardware implementation of the radio chipsets, not the CPU’s control of the radios. EX2026 (POR 22) is not relevant to Dua’s architecture and, in any event, also discloses a

CPU. EX2026, 140-141, 146. And nothing in EX1011, Fig. 3d indicates one of the “baseband processors” performs the CPU functionality for Dua/N93.

PO then finally addresses the combination. POR, 22. PO states in a single conclusory sentence that Dua is “non-enabling” (POR, 22), but that conclusory statement is not credible in light of Dua’s detailed disclosure that Dua’s CPU receives all the user indications and runs all the relevant software (UI, OS, media application) to control Dua’s various radios. Pet., [1h], [1j]. Dua explicitly discusses maintaining support for a user’s “normal” manual selection of radios (like N93’s user indications). In the combination, the N93’s user indications related to the cellular radios (e.g., preference for UMTS/GSM) is an extremely simple user setting that the CPU disclosed in Dua could easily implement to control assignment of the corresponding UMTS or GSM radio, whether they are implemented as combined or separate radios (e.g., Rooyen in Grounds 2, 5). EX1058, ¶¶16-26, 33. This is normal, manual user selection of an I/O interface well known in the art and referred to by Dua. *Id.* Dua explicitly discloses the CPU can control assignment of a large number of different types of radios (Fig. 7) and that Dua’s CPU is deeply involved in the cellular connections. *Id.*

E. Limitation [1j]

PO does not address the showing in the Petition that in the combination, the CPU runs the software (UI, OS, media application) that receives all the N93/Dua

user indications and controls assignment of all the radios. Pet., 14-15, 33-35 (NFC based on user indication of button; Bluetooth or Wi-Fi based on normal or improved indications; UMTS or GSM based on user indications). Nothing else is required by this limitation. PO's single, conclusory sentence about enablement (POR, 23), is insufficient to preserve this issue and its attempt to incorporate twelve paragraphs of its expert's declaration is improper. EX1058, ¶¶16-26, 33.

The "Live" function (POR, 23-24) is a good example wherein the CPU in the combination "assigns a connection" (a SIP connection) to the UMTS radio. N93 discloses that a user indication of "Live" causes a SIP connection over the UMTS radio to send/receive video. Pet., 30; EX1010, 60-62. Dua discloses that its CPU controls assignment of SIP connections because the CPU runs the SIP and TCP/IP stack that controls multimedia communications over all the various radios, including the cellular radios. Pet., 31; EX1008, [0066]-[0069], [0184]-[0202]. Thus, in the combination, based on the "Live" user indication the CPU assigns the SIP connection to the UMTS radio to send/receive video. PO's argument that there must already be a lower-level connection over UMTS radio to send/receive a Live or video call invitation (POR, 24), just confirms that the CPU is assigning the SIP connection to the UMTS radio as claimed.

F. Limitation [1k]

The Petition shows this limitation is satisfied. Pet., 12-14, 36-38.

PO's "simultaneous" arguments (POR, 25-35) are not commensurate with the scope of the claims. The claims require a first ongoing processes (transmission of video) occur "simultaneously" with a second ongoing process (connecting to a home network or internet). Each of those processes consists of many, many packets separated over time. EX1058, ¶34. Because the claims only require the overall process occur "simultaneously" with the other process, the claims do not require instantaneous "simultaneous" transmission of individual packets or "full duplex" operation as asserted by PO. See EX1012(Desai), [0051], [0063]; EX1075, 1:38-43.

PO attacks N93 individually (POR, 25-30), but there is no legitimate dispute that N93 teaches the functionality of serving as a modem for a PC by simultaneously using a Bluetooth connection to the PC and a UMTS connection to the Internet. Pet. 12-14, 36. These teachings are sufficient to render obvious simultaneous operation of the two processes as a whole, for example, when a user is browsing the web or transferring a video file. *Id.* PO and Mr. McNair's arguments that a theoretical device could be implemented to use time-division multiplexing is irrelevant because it addresses a device, not the publication, and is not commensurate with the scope of the claims which encompass simultaneous, TDM processes.

As for Dua (POR, 30-34) PO first hypothesizes that an undisclosed modem could perform certain low-level tasks related to timing requirements (POR, 31), but that is irrelevant because Dua's CPU would control assignment of UMTS radio based on the user indications to establish the connection. Pet. 29-32 ([1h]), 33-35 ([1j]), 36-38 ([1k]). PO then agrees Dua discloses video file transfer (POR, 31), and PO does not dispute that it would have been obvious to use that functionality simultaneously with the UMTS radio connecting to the Internet.

PO's argument regarding video streaming over Bluetooth (POR, 31) fails to address that Dua explicitly teaches its CPU will assign the appropriate radio, which Dua explicitly teaches could be the Bluetooth radio "designed to support the widest array of communication protocols." Pet., 19-20, 24; EX1008, Fig. 7, [0062]-[0063]. This teaching includes all Bluetooth modulation schemes (including EDR) and the Bluetooth Video Distribution Profile that PO and Mr. McNair admit supports video streaming. POR, 32. PO's argument that Dua does not explicitly name the permutation of the Bluetooth radio and the video data type in Figure 7 (POR, 32) ignores the fact that Dua explicitly teaches all permutations are supported with the "widest array" of protocols.

PO does not address the fact that Dua repeatedly and explicitly teaches a POSITA that the shortrange radios (e.g., Bluetooth/Wi-Fi) and cellular radios (e.g., 3G/UMTS) operate "simultaneously," explicitly teaching this limitation to a

POSITA under the narrowest of possible constructions. Pet., 37. PO does not dispute that the intrinsic record confirmed video streaming over Bluetooth and that “simultaneous” operations of such radios was “well known.” Pet., 12-14. In addition to his admissions regarding the video distribution profile, Mr. McNair cites a single document to support his opinions—which document also confirms many prior art examples of streaming video over Bluetooth. EX2010, 6; *see also*; EX1073 (streaming video of Bluetooth in 2003 without EDR); EX1074 (streaming video over Bluetooth in 2006 with EDR). EX2010 and the other references merely seek to improve the quality of streaming. EX1058, ¶¶27-32.

PO then argues one would not implement Bluetooth and UMTS simultaneously (POR 32-33) based on their incorrect Bluetooth streaming argument. Compression is not a problem (POR, 34), as disclosed by Dua. PO then argues a product might time division multiplex the processes (POR, 34), but that is irrelevant based on Dua’s repeated and explicit teaching of “simultaneous” and is irrelevant given the claim still covers simultaneity using TDM.

Similarly, Mr. McNair’s unsubstantiated discussions about “limited hardware” (277), “time division” (278) and “adjacent frequency bands (which they are not)” (279) are not credible in light of the disclosures of Dua, the intrinsic record (Tee, Honkanen) and the fact that the specification simply states four-adjacent radios can operate simultaneously. EX1001, Fig. 11; EX1058, ¶¶27-32.

G. Limitation [11]

N93 and Dua disclose cellphones connected to the Internet and running an OS and applications, and Herle teaches such cellphones should include over-the-air updates for the OS and applications. Pet., 15-17, 38-40. PO only argues it would not have been obvious to combine N93 and Dua with Herle. POR, 36-43.

PO first argues N93 does not individually disclose this limitation. POR, 36. PO's assertion that N93 uses a "pull type system" (POR, 36), even if true, is irrelevant because the claimed signal can be received in response to a request. EX1009, 7:19-36; Pet. 39-40. N93's discussion of deleting files and trusted sources (POR, 36) teaches how a user should perform updates. This is a perfect match for Herle, which uses a delta file to reduce memory demands (EX1009, 8:36-38 ("very small")) and verifies the file with a "cryptographic secure checksum" before installing. EX1009, 8:52-54. PO relies on the unsubstantiated statements of its expert to assert wireless updates were so dangerous as to discourage OTA updates (36-37), but Herle addresses those very issues.

PO and Mr. McNair then make a baseless and irrelevant claim that the N93 product was "inherently unstable" and that all update methods were undesirable. POR, 37. But the publications teach that any such concerns are addressed by Herle's process as discussed above. PO then presents a false choice between OTA

and tethered updates (*id.*), but Herle teaches both should be used, again, making Herle a perfect match for N93. EX1009, 9:1-6.

PO then improperly attacks N93 individually and raises the specter of failed OS updates and security concerns (POR, 37-38), which was a known risk that Herle addresses by using cryptographic verification of “very small” binary files. EX1009, 2:3-29 (addressing known risks).

PO then attacks Dua and N93 individually as not teaching OS updates (POR, 38-39), but as shown in the Petition and as the Board already found, the motivation to support OS updates comes from the combination, including Herle. *See* D.I., 64-65.

PO then asserts that Nokia as a company would not have been motivated to create update servers to support a “high number” of customers of the N93 product. POR, 40-41. This argument, again, improperly switches from the documents to the N93 product, for which Nokia in fact had update servers. EX1063 (Nokia software updater). More importantly, whether a particular businessperson would subjectively conclude a technological improvement is commercially worthwhile is legally irrelevant to whether that technological improvement would have been obvious to a POSITA. *Orthopedic Equipment Co., Inc. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983).

PO then repeats its argument about security and asserts Symbian was too complex (POR, 40-41), but Herle addresses these concerns. EX1009, 2:3-28. And PO's attack on Symbian improperly shifts the focus to the product as opposed to the publication. Regardless, the attacks are unsupported and not credible, as it was known that Symbian could be updated over the air. EX1064(Skan), ¶¶ [0001] (remote OS update), [0042] (Symbian OS could be updated OTA); EX1058, ¶35.

PO and Mr. McNair's speculation that the UMTS/GSM networks may not be able to support Herle's updates (POR, 41), is not credible in light of the teaching in N93 and Dua that those networks could stream video and ignores that Herle teaches "very small" delta update files for this very reason. Pet., 15-17.

Similarly, their assertion that significant computing resources on the phone would be needed (POR, 41), ignores Herle's explicit teaching that its "very small" delta file updates are design for devices with "far fewer resources available than a PC." EX1009, 1:61-2:2, 8:36-38. Indeed, PO and Mr. McNair lack credibility by simultaneously asserting the Herle devices are "less complex" (POR, 39) and that N93 and Dua could not handle Herle's "very small" updates.

PO then asserts "historical evidence" shows the combination was not obvious because N93 and Dua were "specialized." POR, 41-42. But PO's only arguments relate to Symbian, which could be updated OTA as shown above, and memory, bandwidth, and security concerns, all of which are addressed by Herle.

PO's assertions about when one company commercially launched OTA updates (POR, 42) is legally irrelevant. PO uses the word "delay" in its POR, but the cited evidence (EX2014, EX2015) just shows implementation, not "delay."

PO and Mr. McNair conclude by asserting a POSITA lacked the skill to implement Herle's improvement in a completed cellphone. POR, 42-43. This argument again improperly focuses on bodily incorporation of technologies into completed products instead of the relevant teachings of the publications. Their attacks are not credible in light of the specification, which merely states, without any explanation whatsoever, that operating systems in cellphones can be updated OTA. EX1001, 6:54-58, 11:48-51 (no teaching regarding memory, processing power, bandwidth, security, stability, or any other of PO's and Mr. McNair's feigned concerns); *Ex Parte Reisner*, 2013 WL 6217754 at *3 (PTAB Nov. 14, 2013) (holding the fact that the specification does not explain how to perform the disputed feature undermines the argument that the feature was not obvious); EX1058, ¶36.

And their attacks are not credible because OTA updates of an OS is clearly a known solution in the prior art, as shown by Herle and Skan (including Symbian).

Id.

H. Claim 4

See claim 1.

I. Claim 5

1. Limitations [5a]-[5c], [5f]-[5i]

See limitations [1a]-[1c], [1h], [1j]-[1l].

2. Limitation [5d]

Dua discloses the video can be received by radio and converted into the format supported by the target device. EX1008, [0168] (Internet movie source and television target), [0172] (convert for target), [0197]-[0198] (convert incoming into format for target), [0205] (same). Dua discloses the conversion can be between any formats, including formats that would constitute compression, e.g., from MPEG2 to MPEG4. EX1008, Fig. 7; EX1057(McNair Tr.), 33:15-34:14 (converting from MPEG2 to MPEG4 would result in smaller file). N93 is the same, as a received file over Bluetooth could be received in any format but would have to be compressed to 300KB in .3gp-QCIF format to be sent over UMTS. Pet., 42.

3. Limitation [5h]

Incorporated [1k] explicitly discusses receipt of video over Bluetooth for the combination based on many disclosures in Dua, which PO does not address. Pet., 36-37. As for the N93 individually, since the Bluetooth link is how the PC connects to the Internet through the N93, this would be a bi-directional connection for all data, including video transfers. Pet., 10, 12, 36. The Petition at [1k] also incorporated [1a], which discloses receipt of video over Bluetooth for N93.

J. Claims 8-10

See claims 1 and 5.

K. Claim 11

Dua explicitly discloses a cellular phone with each of the radios and that each radio is controlled by the CPU. Pet. 47-38.

For NFC, Dua explains NFC radios were standard radios. EX1008, [0053]-[0054]. The only support PO and Mr. McNair have for their argument that Dua is not enabling is that Petitioner did not commercially launch a 4-radio cellphone with NFC until 2011. POR, 47-48, EX2017, ¶¶327-328. This is not a legally cognizable basis on which to argue lack of enablement.

Once again, Mr. McNair's testimony is conclusory and not credible in light of how the Challenged Patent and cited references describe standard multi-radio devices and rely on the knowledge and skill of a POSITA to implement them. EX1057 (McNair Tr.) at 22:11-17 (admitting the patent discloses six radios); EX1004, *passim* (not disclosing any practical implementation details for dealing with six radios); EX1006, at 436, 440-441 (Honkanen disclosing many radios); EX1058, ¶20.

For GSM, see claim 1.

L. Claims 12, 14-15

See claim 1.

M. Claim 16

See claim 1 (obvious to combine with Herle for OTA application updates and N93 alone discloses updating applications).

N. Claim 17

See claim 1.

O. Claim 18

The Petition and Dr. Cruesere's testimony shows that by November 2007, UMTS included QAM and QPSK. Pet., 8-9, 20-22. PO's expert agrees. EX1057(McNair Tr.), 59:10-21 ("Q. Okay. So UMTS as shown in Exhibit 2036 includes both QPSK and QAM modulation, correct? A. Correct."). PO and Mr. McNair rely on EX2036 to describe UMTS and EX2036 confirms UMTS included QAM and QPSK. *Id.*, 59:1-9 ("this is the 3GPP UMTS physical map ... that describes the UMTS protocol, the physical layer"); POR, 52 (citing EX2017, ¶366, which relies on EX2036); EX2036, 19-21 (disclosing UMTS uses QAM and QPSK).

Mr. McNair agrees that a POSITA would have been knowledgeable about QAM and QPSK and how to implement them (EX1057, 13:2-14:16) consistent with the conclusory reference to them in the specification. EX1004, 14:66-15:3 (QAM), 15:2-4,28-44 (QPSK).

Mr. McNair agrees that HSDPA implements QAM and that HSDPA is a 3GPP standard. EX1057 (McNair Tr.), 48:5-17 ("Q. HSDPA is one of the 3GPP

standards, correct? A. Correct.”). Mr. McNair offers no opinion whether Dua’s teaching to be fully compliant with the 3GPP standards includes using UMTS with QAM (*id.*, 41:19-42:25), thus, the showing in the Petition at 22 is uncontested.

PO states without basis that HSDPA is a “different” technology than UMTS (POR at 52), but Mr. McNair clarified at his deposition that he offered no opinion regarding the relationship between UMTS and HSDPA. *Id.*, at 41:4-13. In fact, HSDPA is part of UMTS. EX2036, 1 (“Universal Mobile Telecommunications System (UMTS)”), 54 (“HSDPA”). Additionally, UMTS included UTRAN. *Id.*, 9 (“UTRAN: UMTS Terrestrial Radio Access Network”); Ex. 1006, 429 (Tee at [0020]). And UMTS included “Evolved UMTS Terrestrial Radio Access Network” (EUTRAN). Ex. 1006, 429 (Tee at [0020]) (“EUTRAN”). Mr. McNair agrees EUTRAN is a 3GPP standard. EX1057 (McNair Tr.), 41:14-18. Mr. McNair did not opine on whether Dua’ teaching to implement all 3GPP standards included EUTRAN. *Id.*, 41:19-42:25. Evolved UMTS (EUTRAN) also confirms that UMTS included QAM and QPSK. Ex. 1015 (3GPP-Spec), 2 (UMTS), 10, 21-23 (QAM), 10, 21 (QPSK).

Dr. Creusere confirmed at his deposition that “UMTS” referred to all 3G capabilities, including many variations. Ex. 2030, 13:7-16, 24:8-18 (all worldwide 3GPP standards), 44:23-24 (“3GPP refers to the UMTS”).

P. Claim 19

UMTS implements QAM as shown above for claim 1 and 18. PO does not otherwise dispute this limitation. POR, 53-54.

Q. Claim 20

See claim 1.

R. Claim 21

By November 2007, UMTS (second radio) and Wi-Fi (Mapping B: third radio) included OFDM. Pet., 22-24; EX1057(McNair Tr.), 6:23-7:10. PO only disputes whether UMTS included OFDM because, according to PO, only “LTE” included OFDM. POR, 54-57. PO once again takes an incorrectly narrow interpretation of “UMTS” to exclude OFDM.

UMTS is a trademark of ETSI which publishes the 3GPP standards. EX2036, 2. Dr. Creusere confirmed at his deposition that it was a “reasonable characterization” to use “GSM” to refer to all 2G and “UMTS” to refer to all 3G capabilities, including “many variations” over time. Ex. 2030, 13:7-16, 24:8-18 (all worldwide 3GPP standards), 44:23-24 (“3GPP refers to the UMTS”); EX1002, ¶95 (GSM includes EDGE). PO gets Dr. Creusere’s testimony precisely backwards. POR, 55-56. Thus, UMTS includes enhancements over time, including the 3GPP-Spec, which itself confirms it is describing UMTS. EX1015 (3GPP-Spec), 2 (“UMTS, radio, layer 1”), 5 (“The present document describes the physical channels for evolved UTRA.”); EX1006, 429 (Tee at [0020]) (“3GPP EUTRAN”).

Ground 1 includes the teaching in the N93 User Guide to use a “UMTS” radio and Dua’s teaching to use all the 3GPP standards. Pet., 21-22. Thus, “UMTS” is inclusive of the 3GPP-Spec’s teaching to include OFDM. *Id.* PO’s argument is incorrectly premised on using extrinsic evidence to assert that actual mobile devices implemented only a subset of UMTS that did not include OFDM. POR, 55. But the relevant legal test is whether the N93 publication teaching “UMTS” and Dua’s teaching to use all 3GPP standards taught or rendered obvious OFDM, which they clearly do.

Even if the Board were to accept PO’s narrow interpretation of UMTS based on the N93 product, that would not impact Ground 2, which relies on the combination of the N93/Dua teachings with the 3GPP-Spec itself. Pet. 55-57. With respect to obviousness, Mr. McNair agrees EUTRAN is a 3GPP standard. EX1057 (McNair Tr.), 41:14-18. Mr. McNair did not opine on whether Dua’ teaching to implement all 3GPP standards included EUTRAN. *Id.*, 41:19-42:25. And the 3GPP website itself listed 3GPP-Spec under Evolved UTRAN. See IV.C. (Publications 3GPP-Spec).

Moreover, Mr. McNair agrees with the showing in the Petition (Pet., 55-56) that OFDM was known to a POSITA (EX1057 (McNair Tr.), 6:2-15) and that a POSITA would have known how to implement OFDM. *Id.*, 7:16-8:17. Mr. McNair agreed that the patent itself merely states “OFDM” and relies on the knowledge

and skill of a POSITA to implement it in the claimed cellphone. *Id.*, 8:21-9:8. Indeed, he testified that one of less than ordinary skill could implement OFDM. *Id.*, 11:12-12:14. Thus, PO's arguments that a POSITA would have had a problem implementing OFDM have no merit.

PO compounds its error of focusing on the N93 product by discussing commercially implemented base stations. POR, 55-57. The art renders features like OFDM obvious long before commercialization is widespread. For example, Tee taught 3GPP EUTRAN should be used when Tee was filed on September 27, 2005. And Dua taught 802.11n should be used when it was filed on May 12, 2005. One cannot patent known features like OFDM merely by filing a patent prior to the finalization of the standards or the commercial launch of the networks incorporating those features. Finally, PO's argument regarding LTE (POR, 56-57), is inapposite as to UMTS.

S. Claim 22-24

See claims 1, 5.

VI. GROUND 2

A. Combination Rationale

Rooyen (GSM/UMTS) and Desai (Wi-Fi/Bluetooth) teach that the radios can be implemented as a combined circuit (dependent claim 16) or as discrete circuits (PO's waived "separate" construction). Pet., 53-55.

PO's complaint that Rooyen and Desai do not address each other's radios (POR, 58-59), is inapposite because the radios operate in different bands (1800-2100 v. 2.4Ghz). EX1058, ¶31.

PO's complaint that they do not show how the CPU controls them (POR, 59-60), is inapposite because in the combination Dua's CPU would receive the Dua/N93 user indications and control the appropriate, separate radio. Pet. 29-32. PO admits that Kao discloses implementing separate GSM and UMTS radios (POR, 60) with separate baseband signal processors. EX1013, [0010]-[0011]. But baseband signal processing is irrelevant to the combination, wherein Dua's CPU controls assignment of connection to the appropriate, separate radio (including its separate baseband signal processor), based on the N93/Dua user indications.

Kao highlights the flaw in PO's argument. Neither of the separate GSM and UMTS baseband signal processors in Kao are running a UI, OS, or media application to receive user indications and control which radio to assign. Only Dua's CPU can perform those functions and control which of the separate GSM or UMTS baseband processing units will be used based on the user's indication. The same is required for Rooyen's separate cellular radios. EX1058, ¶38.

PO's complaints about 3GPP-Spec (POR, 60-61) are addressed above. PO's argument that industry standards are not enabling (POR, 60-61) are not credible in

light of Mr. McNair's deposition testimony regarding QAM and OFDM. EX1038, ¶40.

B. Claims 1-5, 8-12, 14-21, and 23-25

Rooyen's separate GSM and UMTS radios in the combination removes any doubt that the CPU would respond to the user indications to control assignment of the correct, separate radio circuit.

VII. GROUND 3

A. Combination Rationale

Dua is a cellphone that Herle teaches should support OTA updates. PO's incorporated arguments in Ground 1 rely heavily on incorrect allegations about the N93, and are inapplicable to Grounds 3-5.

B. Claims 1-5, 8-12, 14-25

PO's incorporated arguments from Ground 1 (POR, 62-64), are wrong as explained above and are largely inapplicable to Grounds 3-5, which are based on Dua's teachings to support all standards.

For [1a] and [1k] (Bluetooth modulations), PO's argument that the N93 implemented only a subset of the Bluetooth with limited bandwidth is irrelevant to Grounds 3-5.

For [1b], claim 18, and claim 21 (UMTS and QAM/OFDM), PO's argument that the N93 implemented UMTS without QAM/OFDM is irrelevant to Grounds 3-5.

PO's argument regarding [1j] (POR, 65) is wrong because Dua does not "teach away" from the normal user indications as explained for Ground 1, [1j]. PO does not contest that Dua's improved and normal user indications satisfy the claimed "indication" under any proposed construction.

VIII. GROUND 4

A. Combination Rationale

PO's arguments for Ground 1 (POR, 64; EX1017, ¶406) do not address the different rationale for Ground 4—it would have been obvious to modify Dua to implement N93's user indications related to Bluetooth, Wi-Fi, GSM, and UMTS, as examples of the "normal" user indications already referred to by Dua. Pet. 66-70; EX1002, ¶¶266-275. Thus, this showing in the Petition is undisputed.

B. Claims 1-5, 8-12, 14-25

PO's incorporated arguments are insufficient as explained above. While Dua prefers its "improved" user indications, it does not teach away from using "normal" user indications as discussed above, and the N93 provides user indications related to Bluetooth, Wi-Fi, GSM, and UMTS. Pet., 29-32.

IX. GROUND 5

A. Combination Rationale

PO's incorporated arguments are insufficient as described above.

B. Claims 1, 4-5, 8-12, 14-25

See incorporated claims.

X. CONCLUSION

All Challenged Claims of the '590 patent should be found unpatentable.

Date: June 25 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that on June 25, 2025, a true and correct copy of the Petitioners' Reply to Patent Owner's Response to Petition for Inter Partes Review of U.S. Patent 10, 129,590 was served by emailing a copy of same (by agreement) to the following attorneys for the Patent Owner:

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioners certify that this petition includes 5502 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, claim listing, and exhibits.

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The undersigned certifies pursuant to 37 C.F.R. §§ 42.6(e) and 42.105 that on June 25, 2025, a true and correct copy of the Reply for the Patent Owner's Response for *Inter Partes* Review of U.S. Patent No. 10,129,590 was served by emailing a copy of same (by agreement) to the following attorneys for the Patent Owner:

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