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| 199279 7590 06/13/2024<br>Lowenstein & Weatherwax LLP (Cobblestone)<br>ATTN: Cobblestone<br>1016 Pico Blvd<br>Santa Monica, CA 90405 |             |                      | EXAMINER<br>ENGLAND, DAVID E |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



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BARNES & THORNBURG, LLP  
555 12TH STREET, NW  
SUITE 1200  
WASHINGTON, DISTRICT OF COLUMBIA 20006

***EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM**

REEXAMINATION CONTROL NO. 90/019,458 .

PATENT UNDER REEXAMINATION 7924802 .

ART UNIT 3992 .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

|                                                              |                                    |                                              |                                |
|--------------------------------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|
| <b>Order Granting Request For<br/>Ex Parte Reexamination</b> | <b>Control No.</b><br>90/019,458   | <b>Patent Under Reexamination</b><br>7924802 |                                |
|                                                              | <b>Examiner</b><br>DAVID E ENGLAND | <b>Art Unit</b><br>3992                      | <b>AIA (FITF) Status</b><br>No |

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

The request for *ex parte* reexamination filed 03/27/2024 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a) ☒ PTO-892, b) ☐ PTO/SB/08, c) ☐ Other: \_\_\_\_\_

1. ☒ The request for *ex parte* reexamination is GRANTED.

**RESPONSE TIMES ARE SET AS FOLLOWS:**

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

|                                                      |  |  |
|------------------------------------------------------|--|--|
| /DAVID E ENGLAND/<br>Primary Examiner, Art Unit 3992 |  |  |
| cc:Requester ( if third party requester )            |  |  |

## **DECISION GRANTING EX PARTE REEXAMINATION**

A substantial new question of patentability affecting claims 1 – 15, and 17 – 23 of United States Patent Number 7,924,802 to Tarighat-Mehrabani et al., (hereafter “the ‘802 Patent”) is raised by the request for *ex parte* reexamination submitted on 03/26/2024.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

### ***Notice of Pre-AIA or AIA Status***

The present application is being examined under the pre-AIA first to invent provisions.

### **Notification of Concurrent Proceedings**

The patent owner is reminded of the continuing responsibility under 37 CFR 1.985 to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the ‘802 Patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

### **Concurrent IPRs and Litigations**

A review of the post grant history for the underlying patent indicates that there have been other Office post grant challenges made to the patent (Reexamination Proceedings or Inter Partes Review, Post Grant Review, Covered Business Method trials).

The '802 Patent has been asserted in the following pending litigations:

- 2:23cv380 Cobblestone Wireless, LLC V. AT&T Services Inc., Et Al Pursuant To Court Order 2:23cVv382, 2023-08-24.
- 2:23cv382 Cobblestone Wireless, LLC, V. Cellco Partnership D/B/A Verizon Wireless, 2023-08-24.
- 2:23cv454 Cobblestone Wireless, LLC, V. Cisco Systems, Inc., 2023-09-28.
- 2:23cv455 Cobblestone Wireless, LLC, V. Commscope Holding Company, Inc., Et Al, 2023-09-28
- 2:23cv457 Cobblestone Wireless, LLC, V. Hewlett Packard Enterprise Company Et Al, 2023-09-28.
- 2:23cv285 Cobblestone Wireless, LLC V. Samsung Electronics America, Inc. Et Al, 2023-06-15.
- 2:23cv381 Cobblestone Wireless, LLC, V. T-Mobile USA, Inc., 2023-08-24.
- IPR2024-00707 Hewlett Packard Enterprise 2024-03-18 Company et al. Vs. –
- IPR2024-00606 Samsung Electronics 2024-02-25 America, Inc. et al. Vs.  
Cobblestone Wireless LLC

### **Prosecution History**

The '802 Patent issued from U.S. Application 12/018,370 (the “ ‘370 Application”), filed on January 23, 2008.

'370 Application only has one office action, which is a Notice of Allowance. In the Notice of Allowance, the Applicant stated that prior art of Hinson (us 2003/0016701) and Zhang (US 2008/0225761),

“fails to disclose the inventive method steps of “simultaneously transmitting second information across a second frequency range using same wireless transmitter, sane frequency range having a second center frequency greater than the first center frequency, a second highest frequency, and a second lowest frequency (claim 1); Up-converting first analog signal, second analog signal to a second RF center frequency greater than first center RF frequency to produce a second up-converted analog signal wherein the frequency difference between the RF center frequency and the second RF center frequency is greater than the sum of on-half the first frequency range and one-half the second frequency range (claims 10 and 17); and first and a second downconverter to receive up-converted signal outputting sown-converted signal modulated at the RF frequency wherein a filter receiving down-converted signals (claim 24)”.”

No other reasons for allowance nor action was taken.

### **Analysis of Substantial New Question of Patentability**

A SNQ of patentability is raised by a cited patent or printed publication when there is a substantial likelihood that a reasonable examiner would consider the prior art patent or printed publication important in deciding whether the claim is patentable. A SNQ of patentability is not

raised by prior art presented in a reexamination request if the Office has previously considered (in an earlier examination of the patent) the same question of patentability as to a patent claim favorable to the patent owner based on the same prior art patents or printed publications. In *re* *Recreative Technologies*, 83 F.3d 1394, 38 USPQ2d 1776 (Fed. Cir. 1996). The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination. MPEP §2216.

It is not sufficient that a request for reexamination merely proposes one or more rejections of a patent claim or claims as a basis for reexamination. It must first be demonstrated that a patent or printed publication that is relied upon in a proposed rejection presents a new, non-cumulative technological teaching that was not previously considered and discussed on the record during the prosecution of the application that resulted in the patent for which reexamination is requested, and during the prosecution of any other prior proceeding involving the patent for which reexamination is requested. MPEP §2216.

The examiner can also consider any patents and printed publications of record in the patent file from submissions under **37 CFR 1.501**, which is in compliance with **37 CFR 1.98**, in making the determination. If the examiner believes that additional prior art patents and publications can be readily obtained by searching to supply any deficiencies in the prior art cited in the request, the examiner can perform such an additional search. Such a search should be limited to that area most likely to contain the deficiency of the prior art previously considered and should be made only where there is a reasonable likelihood that prior art can be found to supply any deficiency necessary to "a substantial new question of patentability." MPEP §2244

The Director of the USPTO may conduct a search for new art to determine whether a substantial new question of patentability exists prior to terminating the prosecution of any ongoing reexamination proceeding. See **35 U.S.C. 303**. See also **35 U.S.C. 305** (indicating that "reexamination will be conducted according to the procedures established for initial examination," thereby suggesting that the Director of the USPTO may conduct a search during an ongoing reexamination proceeding). MPEP 2258.01

### **Basis of SNQ**

The '802 Patent issued from U.S. Application 12/018,370 (the " '370 Application"), was filed on January 23, 2008 and allowed claims 1 – 25 on 12/22/2010.

Third Party Requester, hereinafter "3PR", proposes a SNQ concerning claims 1 – 15 and 17 – 23 of the '802 Patent. In the Notice of Allowance, the Examiner First Action Allowance stated these limitations as allowable from the independent claims:

*"fails to disclose the inventive method steps of "simultaneously transmitting second information across a second frequency range using same wireless transmitter, the second frequency range having a second center frequency greater than the first center frequency, a second highest frequency, and a second lowest frequency (claim 1);*

*Up-converting first analog signal, second analog signal to a second RF center frequency greater than first center RF frequency to produce a second up-converted analog signal wherein the frequency difference between the RF center frequency and the second RF center frequency is greater than the sum of on-half*

*the first frequency range and one-half the second frequency range (claims 10 and 17);*

*and first and a second downconverter to receive up-converted signal outputting down-converted signal modulated at the RF frequency wherein a filter receiving down-converted signals (claim 24)”. ”*

Therefore, the specific SNQ will be directed towards at least one of the limitations stated above.

### **Proposed Substantial New Question of Patentability**

3PR identifies the following prior art as forming the basis for the SNQ in the Request in proposed rejections, see the Request p. 9.

- U.S. Patent No. 7,742,388 to Shearer et al., (“Shearer”).
- U.S. Patent No. 6,516,206 to Jaentti, (“Jaentti”).
- Rao, K. D., & Murthy, T. S. N. (2007, July). “*Analysis of Effects of Clipping and Filtering on the Performance of MB-OFDM UWB Signals.*” In 2007 15th International Conference on Digital Signal Processing (pp. 559-562). IEEE, “Rao”.
- U.S. Patent Application Pub. No. 2007/0081613 by Kim et al., (“Kim”).
- U.S. Patent Application Pub. No. 2005/0237923 by Balakrishnan et al., “Balakrishnan”.
- U.S. Patent No. 8,416,879 to Rofougaran et al., (“Rofougaran”).
- U.S. Patent Application Pub. No. 2010/0062726 by Zheng et al., (“Zheng”).

Declaration of Mark R. Lanning, filed with the Request, (hereinafter “Lanning Dec.”).

3PR has alleged a SNQ of patentability with regards to claims 1 – 15 and 17 – 23 of the ‘802 Patent in light of the prior art utilized in this proposed rejection which is stated below and in the corresponding Request for Reexamination:

| Proposed Rejection | Claims        | Statutory Basis                                                                                       |
|--------------------|---------------|-------------------------------------------------------------------------------------------------------|
| 1                  | 1-4, 6, and 9 | Anticipated by Shearer                                                                                |
| 2                  | 4             | Obvious over Shearer and Jaentti                                                                      |
| 3                  | 5             | Obvious over Shearer in view of Rao and Jaentti                                                       |
| 4                  | 6             | Obvious over Shearer in view of Kim                                                                   |
| 5                  | 7 and 8       | Obvious over Shearer in view of Balakrishnan                                                          |
| 6                  | 1-6 and 9     | Obvious over Rao in view of Shearer                                                                   |
| 7                  | 7 and 8       | Obvious over Rao and Shearer in view of Balakrishnan                                                  |
| 8                  | 10-13, 17-22  | Anticipated by Rofougaran                                                                             |
| 9                  | 10-13, 17-22  | Obvious over Rofougaran in view of Jaentti                                                            |
| 10                 | 11, 20        | Obvious over Rofougaran (and alternatively Rofougaran with Jaentti) in view of Rao                    |
| 11                 | 12, 19, 23    | Obvious over Rofougaran (and alternatively Rofougaran with Jaentti) in view of Shearer                |
| 12                 | 14-15         | Obvious over Rofougaran (and alternatively Rofougaran with Jaentti) in view of Balakrishnan and Zheng |
| 13                 | 6             | Obvious over Rao in view of Shearer and Kim                                                           |

#### **Alleged SNQ based upon Shearer**

Shearer is presented to determine if a SNQ is raised of patentability regarding at least independent claim 1 of the ‘802 Patent. Shearer was not used or discussed as prior art used in a rejection or reasons for allowance in prior prosecutions of the application which became the ‘802 Patent. Shearer teaches technological features that a reasonable Examiner would consider important in deciding whether the subject claims are patentable.

**Shearer** is directed to methods, systems, and apparatus for a digital communication system and particularly techniques to increase data rate for a wireless local area network transmission, (See Shearer, Abstract.). Shearer further discloses a transmitter for an 802.11 device that includes a PHY unit 300, (e.g., *Id.*, 4:62-63, Fig. 3). The PHY unit 300 includes an

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orthogonal frequency division multiplex (OFDM) transmit kernel 320, an interleaver/mapper 304, a symbol wave shaper/interpolator/shifter/summer 310, an IQ modulator 312, a mixer 314, a high power amplifier (HPA) 316, and an antenna 318, (e.g., *Id.*, 4:63-5:4). Shearer further discloses that the PHY 300 can include two 20 MHz signal processing paths, (e.g., *Id.*, 8:25-26). A lower 20 MHz path, shown in FIG. 8, includes a lower OFDM Tx kernel 320a as well as an interpolator 310a and —10 MHz frequency shifter 310b. An upper 20 MHz path, shown in FIG. 11, includes an upper OFDM Tx kernel 320b as well as an interpolator 310c and a +10 MHz frequency shifter 310d, (e.g., *Id.*, 8:61-63). In an exemplary embodiment shown in FIG. 13, the output from each of the lower 20 MHz path and the upper 20 MHz path is aggregated in adder 310 to achieve an aggregated signal 1400, (e.g., *Id.*, 9:16-22).

In use, the PHY unit 300 receives two 20 MHz 802.11a input signals substantially simultaneously, (e.g., *Id.*, 8:22-25). A signal from the lower 20 MHz OFDM transmit kernel 320a is interpolated by 2 and then shifted down by 10 MHz, (e.g., *Id.*, 8:39-54; fig. 10, illustrating down-shifted signal 1000). Another signal from the upper 20 MHz OFDM transmit kernel 320b is interpolated by 2 and then shifted up by 10 MHz, (e.g., *Id.*, 8:61-9:10; fig. 12, illustrating up-shifted signal 1200). The output from each of the upper and lower 20 MHz signal paths (i.e., the down-shifted signal 1000 and the up-shifted signal 1200) are aggregated by the adder 310e to generate the aggregated signal 1400, with 40 MHz bandwidth, (e.g., *Id.*, 9:16-24; fig. 14, illustrating aggregated signal 1400). The output from the symbol wave shaper/interpolator/shifter/summer 310 (i.e., the aggregated signal 1400) is sent to modulator 312, which modulates the encoded data with conventional OFDM modulation techniques, (e.g., *Id.*, 5:29-33). The modulated data is sent to the mixer 314, which upconverts the signal to the desired transmit frequency, and then the upconverted signal is amplified by the HPA 316 and

sent to the antenna 318 for transmission, (e.g., *Id.*, 5:37-42). Shearer further discloses more generalized methods for aggregating an arbitrary number (greater than two) of simultaneous input signals, (e.g., *Id.*, 9:25-10:31; see also figs. 15-18). In particular, Shearer discloses separate methods for aggregating an even number of signals, (e.g., *Id.*, 9:31-60, and for aggregating an odd number of signals, *Id.*, 9:61-10:23). As an example illustrated in FIGS. 15-16, Shearer describes a process for shifting and aggregating six simultaneous signals. In this example, for an even number of signals “[e]ach simultaneous input is interpolated and shifted from the center frequency by a progressive odd multiple of BW/2 on alternating sides of the center frequency.”, (e.g., *Id.*, 9:45-48). Similarly, in an example shown in FIGS. 17-18 for an odd number of signals (i.e., five signals in the illustrative example), “[e]ach substantially simultaneous input is interpolated and shifted from the center frequency by a progressive multiple of the BW on alternating sides of the center frequency.”, (e.g., *Id.*, 10:13-16). Shearer at FIG. 19 illustrates a graph of each signal and its frequency versus time relationship, (e.g., *Id.*, 10:32-33). As shown in FIG. 19, each of Signals 1 and 2 are in separate frequency ranges, but each of Signals 1 and 2 start at the same start time 1902 and end at the same end time 1904. Each signal’s start time and end time are preferably substantially equivalent to eliminate problems with multiple signal acquisition and termination, (e.g., *Id.*, 10:33-38).

**Accordingly**, the teachings of Shearer would be important to a reasonable examiner in deciding patentability as to at least independent claim 1 of the ‘802 Patent. Therefore, Shearer would raise a SNQ. Shearer teachings are new and non-cumulative. Accordingly, Shearer raises a substantial new question of patentability as to at least independent claim 1 of the ‘802 Patent that have not been decided in a previous examination. Claims 2 – 4, 6, and 9 are also brought in for reexamination purposes because of Shearer raising an SNQ on at least claim 1.

**Alleged SNQ based upon Rao**

Rao is presented to determine if a SNQ is raised of patentability regarding at least independent claim 1 of the '802 Patent. Rao was not used or discussed as prior art used in a rejection or reasons for allowance in prior prosecutions of the application which became the '802 Patent. Rao teaches technological features that a reasonable Examiner would consider important in deciding whether the subject claims are patentable.

**Rao** describes an ultra-wideband (UWB) system as an attractive solution for very high data rate short-range wireless communication applications , (e.g., Rao, Abstract). In particular, Rao describes the Multi band Orthogonal Frequency Division Multiplexing (MB-OFDM) approach for using the available UWB spectrum. In particular, the FCC has approved UWB to operate in a spectrum from 3.1 GHz to 10.6 GHz, (e.g., *Id.*, p. 559, col. 1). For MB-OFDM UWB, this spectrum has been divided into fourteen sub- bands that each have a channel spacing of 528 MHz, (e.g., *Id.*, p. 559, col. 2). The fourteen sub-bands are grouped into five band groups, and transmitted OFDM signals are time-interleaved across sub bands, (e.g., *Id.*, Table 1 of Rao, reproduced below, shows the band number, lower frequency, center frequency, and upper frequency for each of the band groups).

TABLE 1 - OFDM PHY BAND ALLOCATION

| Band Group | Band ID | Lower Frequency (MHz) | Center Frequency (MHz) | Upper Frequency (MHz) |
|------------|---------|-----------------------|------------------------|-----------------------|
| 1          | 1       | 3168                  | 3432                   | 3696                  |
|            | 2       | 3696                  | 3960                   | 4224                  |
|            | 3       | 4224                  | 4488                   | 4752                  |
| 2          | 4       | 4752                  | 5016                   | 5280                  |
|            | 5       | 5280                  | 5544                   | 5808                  |
|            | 6       | 5808                  | 6072                   | 6336                  |
| 3          | 7       | 6336                  | 6600                   | 6864                  |
|            | 8       | 6864                  | 7128                   | 7392                  |
|            | 9       | 7392                  | 7656                   | 7920                  |
| 4          | 10      | 7920                  | 8184                   | 8448                  |
|            | 11      | 8448                  | 8712                   | 8976                  |
|            | 12      | 8976                  | 9240                   | 9504                  |
| 5          | 13      | 9504                  | 9768                   | 10032                 |
|            | 14      | 10032                 | 10296                  | 10560                 |

Rao further provides a mathematical description of the MB-OFDM UWB signals. /d. at 560, col. 1. In particular, Rao explains how input data (128-tone (16-QAM symbols) coefficients) are inverse transformed to obtain data block samples. Each MB-OFDM symbol includes a 32- sample zero prefix, the data block, and a 5-sample guard interval suffice, making the total symbol length 165 samples, or about 312.5 ns. Rao further explains that MB-OFDM signals hop between the 14 band center frequencies according to a specified time-frequency code. The time-frequency code specifies the number of bands to hop between and the number of OFDM periods to dwell in each band. As shown in Table 2, potential time-frequency codes include 3 bands, e.g., the number of sub-bands in each of band groups 1-4. However, Rao does not specifically disclose *“simultaneously transmitting second information across a second frequency range the using same wireless transmitter, the second frequency range having a second center frequency greater than the first center frequency, a second highest frequency, and a second lowest frequency”*.

**Accordingly**, the teachings of Rao would be important to a reasonable examiner in deciding patentability as to at least independent claim 1 of the ‘802 Patent. However, Rao does not raise a SNQ. Rao teachings are not new and non-cumulative. Accordingly, Rao does not raise a substantial new question of patentability as to at least independent claim 1 of the ‘802 Patent that have not been decided in a previous examination.

#### **Alleged SNQ based upon Rofougaran**

Rofougaran is presented to determine if a SNQ is raised of patentability regarding at least independent claims 10 and 17 of the ‘802 Patent. Rofougaran was not used or discussed as prior art used in a rejection or reasons for allowance in prior prosecutions of the application which

became the '802 Patent. Rofougaran teaches technological features that a reasonable Examiner would consider important in deciding whether the subject claims are patentable.

**Rofougaran** discloses exemplary communication systems capable of various communications modes, such as cellular communication, wireless networking, television communication, etc., (e.g., Rofougaran, 2:36-3:6). In the exemplary system shown in FIG. 1, the communication system 100 receives two baseband signals as input, which may correspond to different communication protocols (e.g., a variety of wireless communication protocols and/or standards), (e.g., *Id.*, 3:7-23). The system 100 further includes a spectral placement module 110 that spectrally shifts the first baseband signal to one or more frequency bands that are substantially distinct from the frequency bands occupied by the second baseband signal, (e.g., *Id.*, 3:35-49, “*Occupying such substantially distinct frequency bands, the spectrally shifted first baseband signal may, for example, be combined with the second baseband signal for simultaneous transmission with no interference, relatively little interference, or an acceptable level of interference.*”). The system 100 further includes a signal combiner 130 that generates a composite signal simultaneously comprising components associated with various inputs such as inputs based on the first and second baseband signals, (e.g., *Id.*, 4:33-58). The system 100 further includes an upconverter 140 that upconverts the composite signal for transmission, (e.g., *Id.*, 5:24-28). The system 100 also includes an RF transmission stage 150 adapted to transmit an RF signal, such as the upconverted, composite signal output by the upconverter 140, (e.g., *Id.*, 5:39-46). Rofougaran further discloses various additional features and scenarios applicable to the system 100. For example, “the spectral placement module 110 may be adapted to implement a frequency-hopping scheme with the first baseband signal.”, (e.g., *Id.*, 3:50-52). Continuing that

example, the first baseband signal may be hopped to “numerous consecutive frequency spaces (or bands) that are substantially distinct from the second frequency space.”, (e.g., *Id.*, 3:52-58).

Rofougaran further discloses that the system may also include a second spectral placement module that may shift the spectrum of the second baseband signal, which allows either or both of the first and second baseband signals to be spectrally shifted and/or frequency hopped, (e.g., *Id.*, 4:16-32). As another example, the first and second baseband signals may be combined without spectral shifting, for example if the spectra of the first and second baseband signals do not overlap, (e.g., *Id.*, 4:48-62). Rofougaran illustrates additional exemplary communication systems in FIGS. 2-7, which all may share any or all characteristics with the previously discussed systems. For example, the system 200 shown in FIG. 2 may share any or all characteristics of the system 100 of FIG. 1, (e.g., *Id.*, 6:5-11). In particular, FIG. 2 illustrates the various spectra associated with the signals transmitted by the system 200. As shown, the system 200 receives two input baseband signals 201, 202 having spectra 203, 204, respectively, (e.g., *Id.*, 6:12-31). Those signals illustratively represent Bluetooth and IEEE 802.11 communications, respectively. As shown, the first baseband signal 201 is spectrally shifted, resulting in frequency 211 including an upper spectral image 212 and a lower spectral image 213 (which may be filtered out), (e.g., *Id.*, 6:46-57). The spectrally shifted first baseband signal is combined with the second baseband signal, resulting in a composite signal with spectrum 231 including first portion 233 associated corresponding to the first signal component and second portion 232 corresponding to the second signal component, (e.g., *Id.*, 6:66-7:18). The composite signal is upconverted, resulting in an RF signal having frequency spectrum 241 with first portion 243 corresponding to the first signal component and second portion 242 corresponding to the second

signal component. The spectrum 241 also may include mirror portions 244, 245, which may be removed, (e.g., *Id.*, 7:25-46).

Rofougaran also discloses that “various components of the exemplary communication system 100 (and other communication systems illustrated and discussed herein) may be implemented in analog and/or digital circuitry.”, (e.g., *Id.*, 5:64-67). For example, FIG. 5 illustrates a system 500 that includes a first digital-to-analog converter (DAC) 592 and a second DAC 594, (e.g., *Id.*, 9:14-29). The first ADC converts the first baseband signal to the analog domain, and the second ADC converts the second baseband signal to the analog domain. As disclosed by Rofougaran, the system 500 may share any or all characteristics with the systems 100-300 illustrated in FIGS. 1-3, (e.g., *Id.*, 9:14-20). Rofougaran discloses at FIG. 7 a system 700 that upconverts the first and second baseband signals with two different mixers prior to generating the composite signal for transmission. As disclosed by Rofougaran, the system 700 may share any or all characteristics with the systems 100-600 illustrated in FIGS. 1-6, (e.g., *Id.*, 10:16-22). Specifically, the system 100 includes a first mixer 744 that receives a signal based on the first baseband signal and a first RF mixing signal, which is illustratively a 2.446 GHz signal generally associated with Bluetooth. The second mixer 748 receives a signal based on the second baseband signal and a second RF mixing signal, which is illustratively a 2.486 MHz signal generally associated with IEEE 802.11(g). The output from each of the mixers 744, 748 is received by an RF signal combiner 730 which generates an RF composite signal. An RF transmission stage 750 receives the RF composite signal and transmits the signal, (e.g., *Id.*, 10:23-43).

**Accordingly**, the teachings of Rofougaran would be important to a reasonable examiner in deciding patentability as to at least independent claims 10 and 17 of the ‘802 Patent.

Therefore, Rofougaran would raise a SNQ. Rofougaran teachings are new and non-cumulative. Accordingly, Rofougaran raises a substantial new question of patentability as to at least independent claims 10 and 17 of the '802 Patent that have not been decided in a previous examination. Claims 11 – 15 and 18 – 23 are also brought in for reexamination purposes because of Shearer raising an SNQ on at least claims 10 and 17.

**Alleged SNQ based upon Jaentti**

Jaentti is presented to determine if a SNQ is raised of patentability regarding at least independent claims 10 and 17 of the '802 Patent. Jaentti was not used or discussed as prior art used in a rejection or reasons for allowance in prior prosecutions of the application which became the '802 Patent. Jaentti teaches technological features that a reasonable Examiner would consider important in deciding whether the subject claims are patentable.

**Jaentti** discloses a method of implementing transceiver operation at a base station, (e.g., Jaentti, Abstract.) The disclosure of Jaentti relates to third generation mobile systems, including wideband code division multiple access (WCDMA) technology, (e.g., *Id.*, 2:9-26). Jaentti discloses that prior art mobile systems have sectored base stations, with the transmitter functions of two sectors having different carriers implemented with different transmitters, (e.g., *Id.*, 1:27-30). Each sector-specific transmitter includes its own power amplifier and associated cabling, which introduces high costs due to the amount of components, the amount of expensive cabling required, and the amount of space required, (e.g., *Id.*, 1:30-43).

Jaentti discloses a transmitter in a radio system comprising a signal block 100, *Id.*, 4:43-44, which comprises two transmitter units 300, 302 for generating signals to be transmitted, *Id.*, 4:64- 66. Those signals generated by the transmitter units 300, 302 have different frequencies,

which are typically implemented by generating in each transmitter unit a carrier that is on a different frequency for each transmitter unit, (e.g., *Id.*, 4:66-5:9 “*When carriers are at different frequencies, they are typically on entirely different frequency ranges, or frequency bands.*”). Those signals having different carrier frequencies are combined in an “adder” in the transmitter block, (e.g., *Id.*, 5:12-14). After combination, the signals are amplified in a “multifrequency amplifier,” which is implemented as a linear amplifier that enables simultaneous processing of several signals at different frequencies, (e.g., *Id.*, 5:15-22). The multifrequency amplifier simultaneously amplifies at least two combined signals at different carrier frequencies, (e.g., *Id.*, 5:25-27). After amplification, the combined signals are filtered and then transmitted on sector-specific antennas 318, 320, (e.g., *Id.*, 5:28-51). Therefore, it is seen that Jaentti does not specifically disclose, “*Up-converting first analog signal, second analog signal to a second RF center frequency greater than first center RF frequency to produce a second up-converted analog signal wherein the frequency difference between the RF center frequency and the second RF center frequency is greater than the sum of on-half the first frequency range and one-half the second frequency range*”.

**Accordingly**, the teachings of Jaentti would be important to a reasonable examiner in deciding patentability as to at least independent claims 10 and 17 of the ‘802 Patent. However, Jaentti does not raise a SNQ. Jaentti teachings are not new and non-cumulative. Accordingly, Jaentti does not raise a substantial new question of patentability as to at least independent claims 10 and 17 of the ‘802 Patent that have not been decided in a previous examination.

The prior art of Kim, Balakrishnan, and Zheng are not utilized in an SNQ for the independent claims.

**35 USC 325(d)**

35 USC 325(d) states in part that “[i]n determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.”. Thus, in order for the Director to exercise discretion as to whether to Order a reexamination proceeding under chapter 30, the request must first be determined to be based on the same or substantially the same prior art or arguments that previously were presented to the Office.

A review of the post grant history for the ‘802 patent indicates that there were 2 prior filed Office post grant challenges. On February 26, 2024, Petitioners Samsung Electronics Co., Ltd and Samsung Electronics America, Inc. filed a petition (IPR2024-00707) seeking *inter partes* review of claims 1-4, 6-10, 13, 14, 17 and 21-25 of the ‘802 patent which asserted the following grounds as raising a reasonable likelihood in prevailing (RLP):

| RLP | Claims                                   | Basis      | Prior Art                      |
|-----|------------------------------------------|------------|--------------------------------|
| 1   | 1                                        | 35 USC 103 | Rick                           |
| 2   | 1 – 4, 6 – 8, 10, 13, 17, 21, 22, and 24 | 35 USC 103 | Suzuki                         |
| 3   | 7 – 9, 22, and 23                        | 35 USC 103 | Suzuki and Jalali.             |
| 4   | 14, 24, and 25                           | 35 USC 103 | Suzuki and Chen                |
| 5   | 6, 13, and 21                            | 35 USC 103 | Suzuki and Etemad              |
| 6   | 1 – 4, 6 – 8, 10, 13, 17, 21, 22, and 24 | 35 USC 103 | Fernandez and Montojo.         |
| 7   | 7 – 9, 22, and 23                        | 35 USC 103 | Fernandez, Montojo, and Jalali |
| 8   | 14, 24, and 25                           | 35 USC 103 | Fernandez, Montojo, and Chen   |
| 9   | 6, 13, and 21                            | 35 USC 103 | Fernandez, Montojo, and Etemad |

As of the mailing date of this Order, the no decision on institution has been made in by the PTAB in response to the IPR2024-00606 petition.

On March 26, 2024, Petitioners Hewlett Packard Enterprise Company and Cisco Systems, Inc., filed a petition (IPR2024-00606) seeking *inter partes* review of claims 1-9 of the

‘802 patent which asserted the following grounds as raising a reasonable likelihood in prevailing (RLP):

| RLP | Claims    | Basis      | Prior Art                                |
|-----|-----------|------------|------------------------------------------|
| 1   | 1-9       | 35 USC 103 | 802.11n D2.0 in view of IEEE 802.11-2007 |
| 2   | 1-4 and 9 | 35 USC 103 | Shearer                                  |

As of the mailing date of this Order, the no decision on institution has been made in by the PTAB in response to the IPR2024-00707 petition.

A comparison between the prior art and arguments presented in the current reexamination request and the two pending *inter partes* review petitions, indicates that the request is based at least in part on the same prior art previously presented to the Office. As stated above, the instant Reexamination Request filed by Unified Patents, LLC. asserts the following grounds as raising a substantial new question of patentability (SNQ) of the ‘802 patent.

| SNQ | Claims          | Basis      | Prior Art                                                                               |
|-----|-----------------|------------|-----------------------------------------------------------------------------------------|
| 1   | 1-4, 6 and 9    | 35 USC 102 | Shearer                                                                                 |
| 2   | 4               | 35 USC 103 | Shearer and Jaentti                                                                     |
| 3   | 5               | 35 USC 103 | Shearer, Rao and Jaentti                                                                |
| 4   | 6               | 35 USC 103 | Shearer and Kim                                                                         |
| 5   | 7 and 8         | 35 USC 103 | Shearer and Balakrishnan                                                                |
| 6   | 1-6 and 9       | 35 USC 103 | Rao and Shearer                                                                         |
| 7   | 7 and 8         | 35 USC 103 | Rao, Shearer and Balakrishnan                                                           |
| 8   | 10-13 and 17-22 | 35 USC 102 | Rofougaran                                                                              |
| 9   | 10-13 and 17-22 | 35 USC 103 | Rofougaran and Jaentti                                                                  |
| 10  | 11 and 20       | 35 USC 103 | Rofougaran (and alternatively Rofougaran in view of Jaentti) and Rao                    |
| 11  | 12, 19 and 23   | 35 USC 103 | Rofougaran (and alternatively Rofougaran in view of Jaentti) and Shearer                |
| 12  | 14 and 15       | 35 USC 103 | Rofougaran (and alternatively Rofougaran in view of Jaentti) and Balakrishnan and Zheng |
| 13  | 6               | 35 USC 103 | Rao, Sherer and Kim                                                                     |

Since the Shearer reference alone (SNQ #1) wase previously presented to the Office in the IPR2024-00707 petition (RLP #2), the instant reexamination Request is at least in part based on the same prior art as previously presented to the Office. Thus, the statutory threshold under

35 USC 325(d) for the Director to exercise discretion in determining whether to reject the instant reexam request is met.

However, in view of the following reasons, the Examiner as delegated by the Director, declines to discretionarily reject this reexamination request:

- 1.) No decision on institution has been made by the PTAB in IPR2024-00707 in which the Shearer reference was presented and thus the PTAB and not evaluate the Shearer reference on the or the IPR2024-00707 petition on the merits.
- 2.) There is no evidence that that the real party interest for the current reexamination request has made serial abusive post grant Office challenges to the '802 patents.

Accordingly, *ex parte* reexamination is ordered in view of the determination that the request raises a substantial new question of patentability to the challenged claims of the '802 patent.

### ***Conclusion***

Therefore, as seen above, the combinations of Shearer and Rofougaran, cited areas supplied by the 3PR raise a SNQ on at least independent claims 1, 10, and 17 of the '802 Patent. Rao, Jaentti, Kim, Balakrishnan, and Zheng do not raise a SNQ. Claims 2 – 9, 11 – 15, 18 – 23 are also brought into reexamination for claiming similar limitations or being dependent on claims 1, 10, and 17.

Therefore, the Reexam on claims 1 – 15, and 17 – 23 are ordered.

### **CORRESPONDENCE**

**All** correspondence relating to this *ex parte* reexamination proceeding should be directed:

Electronically: Registered users may submit via Patent Center at <https://patentcenter.uspto.gov/>

By Mail to: Mail Stop *Ex Parte* Reexam  
Central Reexamination Unit

Commissioner for Patents  
United States Patent & Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900  
Central Reexamination Unit

By hand: Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

For electronic transmissions, 37 CFR 1.8(a)(1)(i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the USPTO patent electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed: /DAVID E ENGLAND/  
Primary Examiner, Art Unit 3992

Conferees:

/Roland Foster/  
Primary Examiner, Art Unit 3992

/Michael Fuelling/  
Supervisory Patent Reexamination Specialist, Art Unit 3992