

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SPRINT SPECTRUM L.P., CELLCO PARTNERSHIP D/B/A VERIZON  
WIRELESS, AND AT&T MOBILITY LLC,

Petitioners

v.

ADAPTIX, INC.,

Patent Owner

U.S. Patent No.: 8,934,375

Issue Date: January 13, 2015

OFDMA WITH ADAPTIVE SUBCARRIER-CLUSTER  
CONFIGURATION AND SELECTIVE LOADING

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Case IPR2016-00824

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**ADAPTIX, INC.**

**PATENT OWNER'S PRELIMINARY RESPONSE**

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**LIST OF EXHIBITS**

<b>Exhibit No.</b>	<b>Exhibit</b>
2101	Expert report of Thomas Fuja, Ph.D. regarding invalidity of U.S. Patent Nos. 6,947,748 and 7,454,212, July 7, 2014.
2102	Patent Trial and Appeal Board Decision Denying Institution of <i>Inter Partes</i> Review of U.S. Patent No. 7,454,212, June 10, 2015.

**STATEMENT OF MATERIAL FACTS IN DISPUTE**

Petitioners, Sprint Spectrum L.P., Cellco Partnership D/B/A Verizon Wireless, and AT&T Mobility LLC (“Petitioners”), did not submit a specific articulated statement of material facts in the Petition. Accordingly, no response is due pursuant to 37 C.F.R. § 42.23(a), and no facts are admitted.

## **I. INTRODUCTION.**

The Office has already considered and rejected three of the four references relied upon by the Petitioners in their proposed rejection. Unsatisfied with the Office's review, the Petitioners filed the present petition for *inter partes* review ("Petition") of Patent Owner's U.S. Patent No. 8,934,375 ("375 patent").

The Board should deny the Petition in its entirety based on procedural and substantive defects. Under 35 U.S.C. § 325(d), the Board has broad discretion to deny a petition that raises substantially the same prior art or arguments previously presented to the Office. Furthermore, the Petitioners argue multiple alternate grounds for each of the challenged claims and provide no meaningful distinction between them. This runs counter to a petitioner's obligation to present only its best case in a petition for *inter partes* review.

In order for the Board to grant review of the Petition, the Petitioners must prove that there is a reasonable likelihood that at least one of the challenged claims is unpatentable. (*See* 37 C.F.R. § 42.108(c).) The Petition fails to meet this requirement. Even if the Board identifies any grounds in the Petition that are not redundant or cumulative, it should deny the Petition because the Petitioners have failed to meet their threshold burden to prove that there is a reasonable likelihood that at least one of the claims challenged in the Petition is unpatentable.

**A. Grounds of the Petitioners' proposed rejections.**

The Petition is directed to claims 2, 4-8, 11, 13, 14, 18, 20-24, 27, 29, and 30, and proposes various grounds of rejection under 35 U.S.C. § 103(a) against the subject claims including the following:

1. Claims 2, 8, 14, 18, 24, and 30 are allegedly invalid under 35 U.S.C. § 103(a) as being obvious over German Patent No. DE19800953 to Ritter (Exhibit 1103) (hereinafter "Ritter") in view of U.S. Patent No. 6,760,882 to Gesbert et al. (Exhibit 1105) (hereinafter "Gesbert") and U.S. Patent No. 7,039,120 to Thoumy et al. (Exhibit 1107) (hereinafter "Thoumy");

2. Claims 4-7, 11, 13, 20-23, 27, and 29 are allegedly invalid under 35 U.S.C. § 103(a) as being obvious over Ritter in view of Gesbert, Thoumy, and U.S. Patent No. 6,018,528 to Gitlin et al. (Exhibit 1106) (hereinafter "Gitlin");

3. Claims 6-8, 11, 13, 22-24, 27, and 29 are allegedly invalid under 35 U.S.C. § 103(a) as being obvious over Thoumy in view of Gesbert and Gitlin;

4. Claims 2, 14, 18, and 30 are allegedly invalid under 35 U.S.C. § 103(a) as being obvious over Thoumy in view of Gesbert and Ritter; and



5. Claims 4, 5, 20, and 21 are allegedly invalid under 35 U.S.C. § 103(a) as being obvious over Thoumy in view of Gesbert, Gitlin, and Ritter.

As explained below, Patent Owner submits that claims 2, 4-8, 11, 13, 14, 18, 20-24, 27, 29, and 30 are patentable over the respective five (5) grounds of rejection proposed in the Petition.

## **II. BACKGROUND.**

### **A. Summary of the prosecution of the ‘375 patent.**

The application for the ‘375 patent was filed on June 2, 2014 and published as U.S. Patent Publication No. 2014/0269396 on September 18, 2014. The ‘375 patent is a continuation of Application No. 13/230,625, filed September 12, 2011, now U.S. Patent No. 8,964,719; which is a continuation of Application No. 12/748,781, filed March 29, 2010, now U.S. Patent No. 8,036,199; which is a continuation of Application No. 11/931,926, filed October 31, 2007, now U.S. Patent No. 7,715,358; which is a continuation of Application No. 11/199,586, filed August 8, 2005, now U.S. Patent No. 7,454,212 (“‘212 patent”); which is a continuation of Application No. 09/738,086, filed December 15, 2000, now U.S. Patent No. 6,947,748 (“‘748 patent”).

Three of the four references relied on by the Petitioners were considered by the Examiner during the prosecution of the ‘375 patent. (Exhibit 1013 at 118, 122, and 127.) The Petitioners acknowledge that these references were considered but

insist that they were “not substantively discussed during prosecution.” (Petition at 7, 9, and 10.) However, the examiner during the prosecution of the ‘375 patent, Examiner Zewdu, was also the examiner in all five (5) of the applications to which the ‘375 patent claims priority. Examiner Zewdu did substantively discuss Ritter in at least two of the prior applications. In addition, Examiner Zewdu considered Gesbert in three of the prior applications and considered Gitlin in one of the prior applications. Moreover, Patent Owner notified Examiner Zewdu that the ‘212 and ‘748 patents (both of which were examined by Examiner Zewdu) were the subject of 50 litigations and that each of the ‘212 and ‘748 patents were the subject of two *inter partes* reviews. (Exhibit 1113 at 107-112.) Furthermore, Patent Owner explained that Ritter, Gesbert, and Gitlin were identified by defendants in the various litigations that asserted those references were pertinent to the issue of validity of the ‘212 and ‘748 patents. (Exhibit 1113 at 111, 118, 122, and 127.)

Given that Examiner Zewdu examined all five (5) prior applications, relied upon Ritter to support rejections in two (2) prior applications, and was informed that two (2) applications he examined were involved in numerous litigations and *inter partes* reviews, Patent Owner submits that Examiner Zewdu was acutely aware of Ritter, Gesbert, and Gitlin, and determined that the claims of the ‘375 patent are patentable over them.

**B. Summary of the claimed subject matter of the ‘375 patent.**

The ‘375 patent is related to a method and apparatus for adaptive subcarrier allocation for systems employing orthogonal frequency-division multiple access (“OFDMA”). The first half of independent claim 1 recites “measuring, at a first time by a subscriber unit, a first channel information for a plurality of subcarriers based on a first plurality of pilot symbols,” then “providing, by the subscriber unit, a first feedback information relating to a plurality of feedback clusters based on at least the measuring of the first channel information...each feedback cluster of the plurality of feedback clusters being at least two subcarriers, the first feedback information...includes an index corresponding to a first modulation and coding rate associated with each feedback cluster of the plurality of feedback clusters,” next “receiving, by the subscriber unit, a first allocation of OFDMA subcarriers based on at least the providing of the first feedback information selected by the base station for use by the subscriber unit...including an indication of a modulation and coding rate.” As explained by the specification, each subscriber unit is measuring channel information across a plurality of subcarriers, and from the plurality of subcarriers, each subscriber unit selects a subset of preferred clusters and informs the base station of the subscriber unit’s preferred clusters, the quality of each of the preferred clusters, and each cluster’s corresponding preferred modulation and coding rates. From the preferred clusters, the base station selects a

subset of clusters for use by each subscriber unit, and sends an allocation of subcarriers to each subscriber unit, including an indication of modulation and coding rates for use with the allocated subcarriers. ('375 patent at 3:24-57.)

The second half of independent claim 1 recites the subscriber unit repeating the entire process, starting over with measuring the channel information for “the plurality of subcarriers,” i.e., all the same subcarriers initially measured, not just the subcarriers already allocated to the subscriber unit. That is, the subscriber unit is repeatedly monitoring the quality of other subcarriers, even those allocated to other users, and constantly feeding back updated information in search of better subcarriers. ('375 patent at 6:63-7:8.) Independent claim 17 recites an apparatus configured to perform the same process.

This process is shown at least in Fig. 1B (reproduced below), and the process is described at least at column 5, line 29 to column 7, line 35 of the '375 patent.

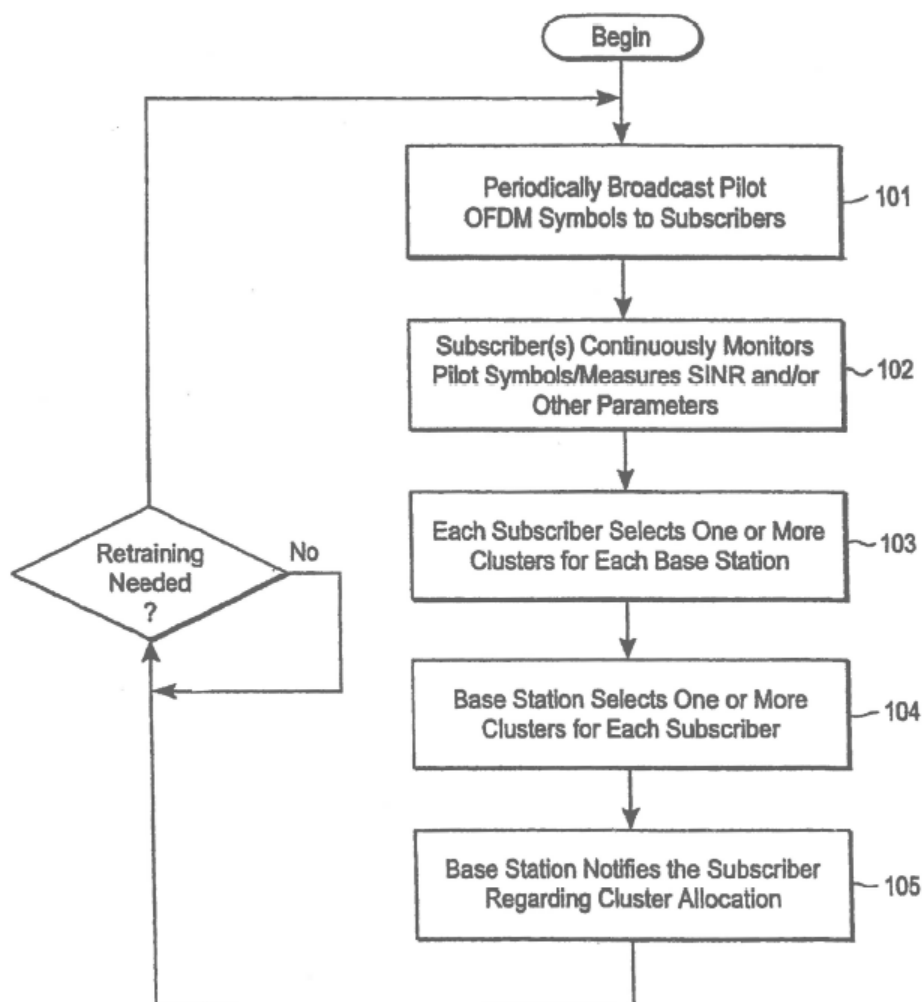


FIG. 1B

This “retraining” process is described in the ‘375 specification:

From time to time, processing logic performs retraining by repeating the process described above (processing block 106). The retraining may be performed periodically. This retraining compensates for subscriber movement and any changes in interference. In one embodiment, each subscriber reports to the base station its updated selection of clusters and their associated SINRs. Then the base station

further performs the reselection and informs the subscriber about the new cluster allocation.

(‘375 patent at 6:63-7:4, emphasis added.) This process was very counterintuitive at the time because it would consume a large amount of bandwidth and would be very computationally intensive.

### **III. STANDARD FOR GRANTING *INTER PARTES* REVIEW.**

The standard for granting/denying *inter partes* review is controlled by 35 U.S.C. § 314(a), which indicates the following:

The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

(35 U.S.C. § 314(a).) As discussed below, claims 2, 4-8, 11, 13, 14, 18, 20-24, 27, 29, and 30 are patentable over the respective five (5) proposed grounds of rejection. As such, the Petitioners have failed to meet their burden under 35 U.S.C. § 314(a), and thus, Patent Owner respectfully requests that the Board deny institution of an *inter partes* review based on the Petition.

#### **IV. CLAIM CONSTRUCTION OF THE CHALLENGED CLAIMS.**

##### **A. Claim construction.**

In an *inter partes* review, claim terms of an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. (37 C.F.R. § 42.100(b), see also, *Cuozzo Speed Technologies, LLC v. Lee*, 579 U.S. \_\_\_, \_\_\_ (2016) (slip op., at 13).) Furthermore, under the broadest reasonable interpretation standard, claims are given their ordinary and customary meaning in view of the specification as would be understood by one of ordinary skill in the art at the time of the invention. (*In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).)

##### **1. Meaning of the claim recitation of “cluster.”**

The Petitioners argue that “the broadest reasonable construction of ‘cluster’ is ‘a logical unit that contains at least one physical subcarrier.’” (Petition at 6.) Patent Owner notes that both independent claims 1 and 17 recite that “each feedback cluster of the plurality of feedback clusters being at least two subcarriers.” Accordingly, Patent Owner submits that “cluster” as recited in the claims should be properly construed as “being at least two subcarriers.”

In the event that the Board preliminarily adopts any claim term definitions not consistent with the Patent Owner’s position, Patent Owner reserves the right to further argue its positions in a Response if an *inter partes* review is instituted.

**V. THE CLAIMS OF THE '375 PATENT ARE PATENTABLE OVER THE PETITIONERS' PROPOSED REJECTIONS BASED ON OBVIOUSNESS.**

**A. Claims 2, 8, 14, 18, 24, and 30 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Ritter in view of Gesbert and Thoumy.**

The Petitioners allege that claims 2, 8, 14, 18, 24, and 30 (all of which depend from independent claims 1 or 17, or claims dependent therefrom) are unpatentable under 35 U.S.C. § 103(a) as being obvious over Ritter in view of Gesbert and Thoumy. Dependent claims incorporate all the recitations of the claims from which they depend. (37 C.F.R. § 1.75(c).) Accordingly, in order for the Petitioners' proposed combination to render the dependent claims obvious, the proposed combination must also render the independent claims obvious. However, as explained below, the Petitioners' proposed combination of Ritter in view of Gesbert and Thoumy does not result in every aspect of the claimed invention of independent claims 1 and 17. Moreover, one of ordinary skill would not combine the references in the manner proposed by the Petitioners. Therefore, claims 2, 8, 14, 18, 24, and 30 are patentable at least due to their dependency from a patentable independent claim.



**1. The Petitioners’ proposed combination of Ritter and Gesbert is impermissible and therefore cannot be relied upon to disclose “measuring, at a first time by a subscriber unit, a first channel information for a plurality of subcarriers based on a first plurality of pilot symbols received from a base station,” as recited in independent claim 1, or “a processor configured to: measure, at a first time, a first channel information for a plurality of subcarriers based on a first plurality of pilot symbols received from a base station,” as recited in independent claim 17.**

The Petitioners assert that “Ritter teaches that each subscriber unit measures channel quality information for subcarriers between it and a base station.” (Petition at 11.) While Ritter does disclose a mobile station measuring the quality of various segments of the frequency spectrum, Ritter does not utilize pilot symbols received from the base station to do so, as required by the claims of the ‘375 patent. Instead, the Petitioners argue that “[t]o the extent the Patent Owner argues that Ritter does not explicitly disclose ‘measuring ... based on a first plurality of pilot symbols,’ it would have nevertheless been obvious to measure channel quality using pilot symbols in view of Gesbert.”<sup>1</sup> (Petition at 12.) Ritter does not disclose the above-quoted recitation, and as discussed below, the Petitioners’ proposed

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<sup>1</sup> This statement implies that Petitioners believe Ritter may disclose measuring based on pilot symbols. This position directly contradicts Petitioners’ own expert, who definitively stated that Ritter does not. (Fuja Report, Exhibit 2101 at para. 261.)

combination of Ritter in view of Gesbert is improper under the law. (Fuja Report, Exhibit 2101 at para. 261 and *see In re Ratti*, 270 F.2d 810, 813 (CCPA 1959).)

“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.” (MPEP § 2143.01(VI) citing *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959), emphasis added.) According to the Petitioners’ expert, Dr. Fuja, from a related litigation, “Ritter did not disclose the use of pilot symbols to make those measurements – proposing a more sophisticated ‘blind’ approach based on amplitude variations.” (Fuja Report, Exhibit 2101 at para. 245.) Rather than using pilot symbols, Dr. Fuja explains:

Part of Ritter’s novelty is that it proposes to derive the channel and interference measurements from data symbols (which are typically unknown to the receiver in advance) rather than pilot symbols (which are typically known to the receiver in advance). Making such measurements from data is a much more challenging problem than making them from pilots; estimating channel quality without the benefit of a known transmitted signal is an example of blind processing, and it is valuable because it does not require the

“overhead” implied by estimating the channel quality from known (non-data-bearing) pilot symbols.

(Fuja Report, Exhibit 2101 at paras. 245, 263, and 261, emphasis in original.)

Indeed, Ritter explains that the first step of the disclosed method is to “[m]easure the quality of various segments of the frequency spectrum” and how it is done:

An especially simple method to measure quality consists of so determining the relative deviations of the amplitudes of the data symbols, that the absolute amplitude difference from data symbol to data symbol is added up and the addition result is normalized with the average amplitude of all data symbols transmitted on a given subcarrier.

(Ritter at 4 and 9.) Given that Ritter departed from the use of pilot symbols, and instead invented a novel method of measurement to save valuable “overhead,” Patent Owner submits that the novel method of measurement is a basic principle under which Ritter was designed to operate. Thus, replacing the novel approach invented by Ritter with the teachings of Gesbert would change the basic principles under which Ritter was designed to operate. Accordingly, under *Ratti*, such a combination of Ritter in view of Gesbert is “not sufficient to render the claims *prima facie* obvious.” (MPEP § 2143.01(VI) citing *In re Ratti* at 813.)

**2. The Petitioners’ proposed combination of Ritter, Gesbert, and Thoumy does not disclose “measuring, at a second time by the subscriber unit, a second channel information for the plurality of subcarriers based on a second plurality of pilot symbols,” as recited in independent claim 1, or “measure, at a second time, a second channel information for the plurality of subcarriers based on a second plurality of pilot symbols received from the base station,” as recited in independent claim 17.**

In an attempt to show that Ritter discloses the above-quoted recitations, the Petitioners falsely assert that “both Ritter and Gesbert describe performing repeated channel quality measurements for the plurality of subcarriers to obtain current and reliable channel quality measurements.” (Petition at 24.) However, one of ordinary skill would recognize that Ritter has no need to take additional measurements after the initial priority list is sent by each user because Ritter explicitly states that the method is “especially advantageous” for “applications with low movement speeds.” (Ritter at 7.) In other words, Ritter’s procedure is most useful where bandwidth demands might change, but the channel conditions are not likely to change dramatically, and therefore, there is no need to waste valuable overhead continually measuring and reporting the channel conditions, when the bandwidth can be modified based on the initial priority list. Regardless, the Petitioners aim to support their false assertion by pointing to various sections of Ritter, none of which disclose performing a second measurement.

First, the Petitioners point to the following statement in Ritter:

In the process, the quality of the actual communication link plays a decisive role with respect to the frequency situation which according to the procedure of the invention can be individually changed after the determination of the best suitable segments in each mobile station overseen by a base station and can thereby be improved.

(Petition at 24, quoting Ritter at 6.) Note that this passage does not mention performing a second measurement by a mobile station. This passage states that the allocations can be changed “after the determination of the best suitable segments in each mobile station overseen by a base station.” (Ritter at 6.) Ritter discloses that the determination of the best suitable segments in each mobile station is performed after each mobile station transmits its own list of preferred segments. (Ritter at 8 and 12-14.) Ritter does not disclose this process repeating.

Second, the Petitioners point to the statement that “the best suited segments for communication can be determined at any time for individual communications links which differ from each other and they can be changed as needed.” (Petition at 24, quoting Ritter at 7-8.) Again, Ritter does not mention performing a second measurement. Instead, the sentence preceding the section quoted by the Petitioners explains that “[t]he flexibility of the procedure of the invention can be especially used in an advantageous manner, if segments of the frequency spectrum are allocated to the mobile stations by the base station whose bandwidths vary or a

different number of time slots for the transmission of data symbols are assigned to the allocated segments.” (Ritter at 7.) In other words, Ritter touts the procedure’s ability to modify a user’s bandwidth; a modification that can be accomplished based on the initial priority lists.

Third, the Petitioners point to the statement that “[i]n addition, for each mobile station the number of assigned subcarriers in a time slot can be variably adjusted by the base station.” (Petition at 24-25, quoting Ritter at 16.) Again, there is no mention of performing a second measurement. This is just another example of Ritter’s disclosed ability to modify each user’s bandwidth based on the initial priority list.

Patent Owner notes that the ‘375 patent discloses a similar method of allocating additional subcarriers to a subscriber unit to increase bandwidth without taking another measurement:

In an alternative embodiment, the base station first allocates multiple clusters, referred to herein as the basic clusters, to establish a data link between the base station and the subscriber. The base station then subsequently allocates more clusters, referred to herein as the auxiliary clusters, to the subscriber to increase the communication bandwidth.

(‘375 patent at 6:42-48.) However, this embodiment is NOT what is claimed in the ‘375 patent. What the ‘375 patent claims is the retraining process, wherein the subscriber unit is repeatedly monitoring the quality of other subcarriers, even those allocated to other users, and constantly feeding back updated information in search of better subcarriers. (‘375 patent at 6:63-7:8.) “Retraining” is not disclosed by Ritter, whether alone or in any proper combination with Gesbert and Thoumy.

Gesbert never discloses how the carriers discussed therein are allocated. Furthermore, Gesbert has nothing to do with subcarrier reallocation. In fact, Gesbert discloses a method of dealing with channel degradation without the need to allocate different subcarriers. In the background section, Gesbert explains:

Wireless communications channels between transmit and receive devices are inherently variable and their quality fluctuates.

Specifically, the quality parameters of such communications channels vary in time. Under good conditions wireless channels exhibit good communication parameters, e.g., large data capacity, high signal quality, high spectral efficiency and throughput. At these times significant amounts of data can be transmitted via the channel reliably. However, as the channel changes in time, the communication parameters also change. Under altered conditions former data rates, coding techniques and data formats may no longer

be feasible. For example, when channel performance is degraded the transmitted data may experience excessive corruption **yielding unacceptable communication parameters.**

(Gesbert at 1:21-35, emphasis added.) Gesbert acknowledged that channels may become unacceptable with the initially prescribed modulation and coding rates over time, but rather than switching channels, Gesbert proposed to solve the problem by “provid[ing] a mode selection technique which allows the system to rapidly and efficiently select the appropriate mode for encoding data in a quickly changing channel.” (Gesbert at 2:45-48.) Accordingly, Gesbert allows for maximizing the efficiency of the assigned channel so that the user does not need to change subcarriers. (Gesbert at 3:48-50, “the subsequent mode can maximize data capacity, signal quality, spectral efficiency or throughput of the channel.”) Gesbert is clear that the disclosed adaptive coding and modulation is for an already allocated communication channel, rather than for a prospective allocation:

The present invention provides a method for selecting a mode for encoding data for transmission in a wireless communication channel between a transmit unit and a receive unit. The data is **first** encoded in accordance with an **initial mode** and transmitted from the transmit unit to the receive unit. One or more quality parameters are sampled in the data received by the receive unit. **Then**, a first-order statistical



parameter and a second-order statistical parameter of the quality parameter are computed and used for selecting a **subsequent mode** for encoding the data.

(Gesbert at 2:56-65, emphasis added.)

Gesbert discloses reactively adapting the modulation and coding rates based on variations in signal quality of an established channel. Gesbert does not disclose proactively establishing rates for candidate subcarriers that may, or may not, be allocated to the user at a future time. Because Gesbert teaches that the mobile unit only monitors the channel that it is already using, Gesbert cannot teach measuring “a second channel information for the plurality of subcarriers.” Moreover, given that Gesbert apparently solves the problem of channel degradation for an established channel by reactively adapting the modulation and coding rates, Patent Owner submits that one of ordinary skill would not be motivated to modify Ritter to continually repeat the steps of measuring prospective channels, feeding back information on prospective channels, and receiving new allocations. Rather, if one was inclined to combine Ritter and Gesbert, Patent Owner submits that one of ordinary skill would most likely use the allocation of Ritter to establish the best available channel at the time and then rely on the mode selection of Gesbert to handle changing channel conditions. Accordingly, a proper combination of Ritter and Gesbert would not result in “measuring, at a second time by the subscriber

unit, a second channel information for the plurality of subcarriers based on a second plurality of pilot symbols,” as recited in independent claim 1, nor the similar recitation of independent claim 17.

**3. The Petitioners’ proposed combination of Ritter, Gesbert, and Thoumy does not disclose “providing ... a second feedback information relating to the plurality of feedback clusters based on at least the measuring of the second channel information for the plurality of subcarriers” nor “receiving ... a second allocation of OFDMA subcarriers based on at least the providing of the second feedback ... the second allocation ... being different from the first,” as recited in independent claim 1, or “provide a second feedback information relating to the plurality of feedback clusters based on at least the measurement of the second channel information for the plurality of subcarriers” nor “receive a second allocation of OFDMA subcarriers based on at least the second feedback information ... the second allocation ... being different from the first,” as recited in independent claim 17.**

Neither Ritter, Gesbert, Thoumy, nor any proper combination thereof, disclose a retraining process. All of the teachings of Ritter, Gesbert, and Thoumy are performed without proactively monitoring and reporting on unallocated subcarriers. Moreover, Gesbert teaches a method of dealing with channel degradation without the need for new subcarrier allocations. Given that the references do not disclose monitoring unallocated subcarriers, and Gesbert eliminates the need to do so, the references also cannot teach providing feedback information about clusters that are not being monitored. Nor can the references teach receiving second allocations, different than the first, based at least in part on feedback information, because no feedback information on the unallocated

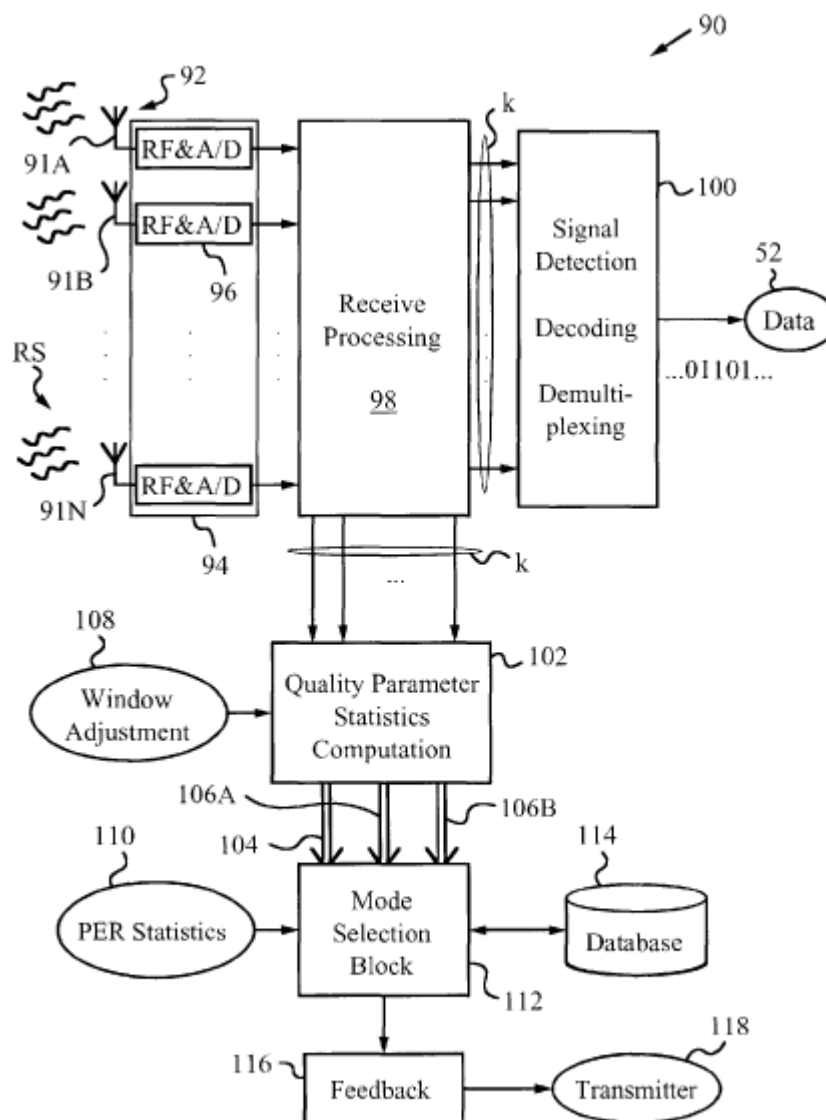
subcarriers is provided. Therefore, a proper combination of Ritter, Gesbert, and Thoumy would not result in the additional retraining steps recited in the independent claims.

**4. One of ordinary skill in the art would not combine Ritter, Gesbert, and Thoumy, as proposed by the Petitioners, to allegedly disclose “receiving, by the subscriber unit ... an indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers,” as recited in independent claim 1, or “receive ... an indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers,” as recited in independent claim 17.**

Neither Ritter nor Gesbert disclose “receiving, by the subscriber unit... an indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers.” Accordingly, the Petitioners rely on Thoumy as allegedly disclosing this recitation. (Petition at 21-22.) However, one of ordinary skill in the art would not combine the references as proposed by the Petitioners, because such a combination would do nothing more than usurp valuable bandwidth to transmit redundant information.

Gesbert discloses that the modulation and coding rates are decided by the receive unit (*e.g.*, the mobile phone) and dictated to the transmit unit (*e.g.*, the base station). (Gesbert at 4:21-22, “[t]he receive unit also has a mode selection block for **assigning** the subsequent mode,” emphasis added.) Fig. 4 “is a block diagram of an exemplary receive unit in accordance with the invention” and Gesbert

explains that “[b]lock 112 **selects** the subsequent mode number for encoding data 52”:



**FIG. 4**

(Gesbert at 4:47-48; 9:66-67, emphasis added.) Gesbert also states that “a mode index indicating the mode **to be used** for each of the  $k$  streams is fed back to transmit unit 50.” (Gesbert at 10:7-8, emphasis added.) Accordingly, Gesbert is

very clear that it is the receive unit (*e.g.*, the mobile phone) that instructs the transmit unit (*e.g.*, the base station) as to what rates are to be used. Therefore, the transmit unit has no need to send an indication back to the receive unit including an “indication of a modulation and coding rate.” Modifying the transmit unit to send an indication to the receive unit, reminding the receive unit what rates the receive unit assigned, which the Petitioners rely on Thoumy for, would be an unnecessary waste of valuable bandwidth, which goes against Gesbert’s express reason for sending the index from the receive unit in the first place. (Gesbert at 10:2-5, “the convenience of indexing modes becomes clear, since feedback of an index number to transmit unit 50 does not require much bandwidth.”)

Given that the Petitioners’ proposed combination would do nothing more than waste valuable bandwidth, which both Ritter and Gesbert are designed to save, Patent Owner submits that one having ordinary skill in the art would not combine Thoumy with Ritter and Gesbert in the manner proposed by the Petitioners. Therefore, for at least the reasons discussed above in sections V.A.1-4, the Petitioners’ proposed combination of Ritter, Gesbert, and Thoumy does not render independent claims 1 and 17 obvious, and by extension, the Petitioners’ proposed combination does not render claims 2, 8, 14, 18, 24, and 30 obvious because of their dependency from patentable independent claims.

**B. Claims 2 and 18 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Ritter in view of Gesbert and Thoumy.**

In addition to their patentability, due to their dependency from a patentable independent claim, claims 2 and 18 are patentable over the Petitioners' proposed combination for the reasons discussed below.

**1. The Petitioners' proposed combination of Ritter, Gesbert, and Thoumy does not disclose "the plurality of feedback clusters at the second time is different than the plurality of feedback clusters at the first time," as recited in claims 2 and 18.**

As discussed above in sections V.A.2-3, Ritter fails to perform a second measurement at a second time because Ritter fails to disclose a "retraining" process as recited in independent claims 1 and 17 of the '375 patent. As such, Ritter cannot disclose that "the plurality of feedback clusters at the second time is different than the plurality of feedback clusters at the first time" (emphasis added), as recited in claims 2 and 18, because there is no measurement at a second time disclosed in Ritter. Ritter discloses that the determination of the best suitable segments in each mobile station is performed after each mobile station transmits its own list of preferred segments. (Ritter at 8 and 12-14.) Ritter fails to disclose this process ever repeating, and thus, fails to disclose "the plurality of feedback clusters at the second time," as recited in claims 2 and 18.

In an attempt to show that Ritter discloses the above-quoted recitation, the Petitioners falsely assert that "[o]ne of ordinary skill in the art would understand

Ritter's disclosure of measuring the quality of 'various segments' to mean that the subscriber unit can measure different segments at different times." (Petition at 30.)

The Petitioners aim to support this false assertion by paraphrasing Ritter as disclosing "an embodiment in which each mobile station provides feedback on only certain segments." (Petition at 30, citing Ritter at 13.) However, this section of Ritter simply does not disclose performing a second measurement relating to a plurality of feedback clusters at a second time. Therefore, the Petitioners' proposed combination of Ritter, Gesbert, and Thoumy does not render claims 2 and 18 obvious.

**C. Claims 14 and 30 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Ritter in view of Gesbert and Thoumy.**

Claims 14 and 30 depend from claims 9 and 25, respectively. As explained below, the Petitioners' proposed combination fails to disclose the recitations of claims 9 and 25. Accordingly, in addition to being patentable due to their dependency from patentable independent claims 1 and 17, claims 14 and 30 are also patentable due to their dependency from patentable claims 9 and 25, respectively.

**1. The Petitioners’ proposed combination of Ritter, Gesbert, and Thoumy does not disclose “the receiving of the first allocation of OFDMA subcarriers includes receiving a first allocation of at least one group of clusters selected by the base station for use by the subscriber unit,” as recited in claim 9, or “receipt of the first allocation of OFDMA subcarriers includes receipt of a first allocation of at least one group of clusters selected by the base station for use by the subscriber unit,” as recited in claim 25.**

As discussed above in sections II.B and IV.A.1, the feedback information recited in the independent claims is on a per cluster basis. Ritter discloses submitting a priority list, which provides the base station with a list of segments to choose from. The Petitioners assert that “information” about these segments constitutes the claimed “feedback information” that relates to each cluster. Accordingly, if the Petitioners’ argument that the priority list provides feedback on a per cluster basis, then each segment of Ritter must be a “cluster” under the Petitioners’ rationale. However, the base station in Ritter only selects one segment for the subscriber. Claims 9 and 25 require that the base station allocate a “**group**” of clusters. A group of clusters must be more than one cluster.

Independent claims 1 and 17 recite receiving “a first allocation of OFDMA subcarriers.” This means that the first allocation includes two or more subcarriers. In arguing that the proposed combination of Ritter, Gesbert, and Thoumy discloses the first allocation includes a “group of clusters,” the Petitioners state “[i]f one physical subcarrier can constitute a ‘cluster,’ then a group of two or more physical subcarriers can constitute a ‘group of clusters.’” (Petition at 32.) However, the



principle of claim differentiation advises that since the independent claims already explicitly require that the first allocation includes two or more subcarriers, then claims 9 and 25 should have a different meaning. (*Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.”); *id.* (“Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.”); *cf. Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *Aristocrat Techs. Austl. PTY Ltd. v. Int’l Game Tech.*, 709 F.3d 1348, 1356 (Fed. Cir. 2013) (rejecting construction of claim term that would render other claim language “superfluous”).) The Petitioners’ construction would render claims 9 and 25 superfluous. Patent Owner submits that the plain and ordinary meaning of the terms is readily apparent: a cluster includes multiple subcarriers and a group includes multiple clusters. The specification confirms this understanding:

FIG. 1A illustrates subcarriers and clusters.

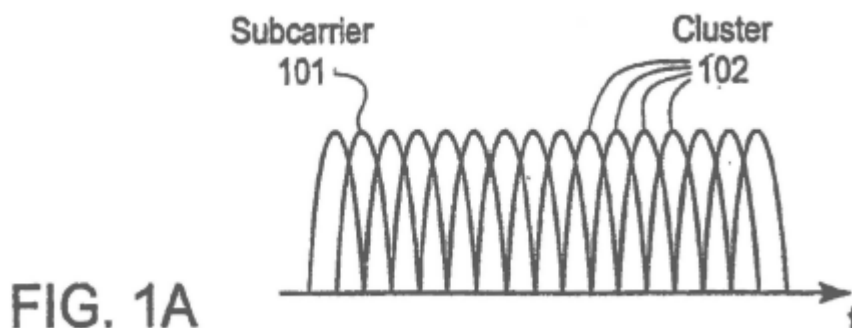


FIG. 2 illustrates [a] time and frequency grid of OFDM symbols, pilots and clusters.

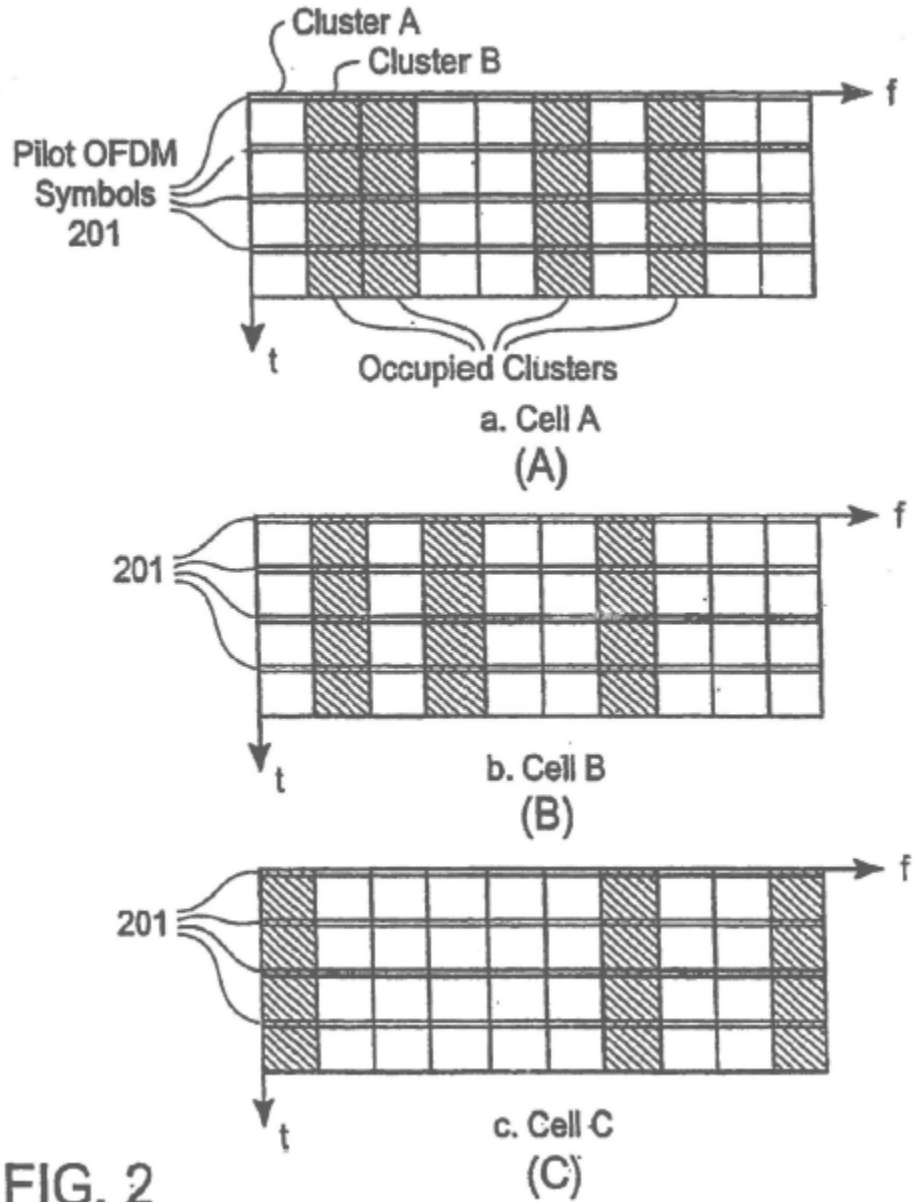
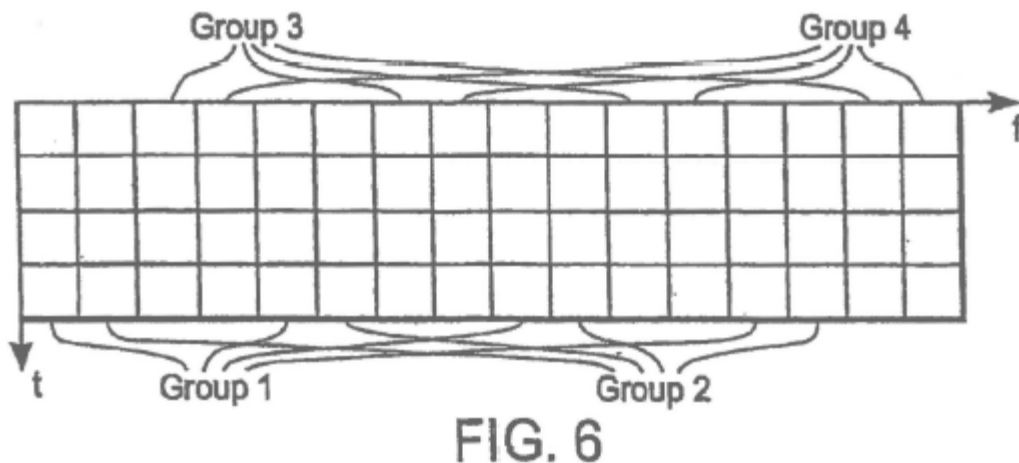


FIG. 6 illustrates one embodiment of a partition (sic) the clusters into groups.



(‘375 patent at 2:43, 46, 52, and 53; and Figs. 1A, 2, and 6.) The Petitioners do not even attempt to argue that this is taught by the proposed combination. The Petitioners instead rely on an argument that claims 9 and 25 have the same scope as the independent claims from which they depend. (Petition at 32.) As discussed above, the basic tenants of claim differentiation should prohibit the Petitioners’ flawed logic. Therefore, the Petitioners’ proposed combination of Ritter, Gesbert, and Thoumy does not render claims 9 and 25 obvious, and by extension, the Petitioners’ proposed combination does not render claims 14 and 30 obvious because of their dependency from patentable claims.

**D. Claims 4-7, 11, 13, 20-23, 27, and 29 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Ritter in view of Gesbert, Thoumy, and Gitlin.**

The Petitioners allege that claims 4-7, 11, 13, 20-23, 27, and 29 (all of which depend from independent claims 1 or 17, or claims dependent therefrom) are unpatentable under 35 U.S.C. § 103(a) as being obvious over Ritter in view of

Gesbert, Thoumy, and Gitlin. As discussed above in sections V.A.1-4, the Petitioners' proposed combination of Ritter, Gesbert, and Thoumy fails to render obvious independent claims 1 and 17. The addition of Gitlin does not remedy the deficiencies. Nor do the Petitioners attempt to do so. Gitlin is merely relied upon to allegedly disclose additional features recited in the dependent claims.

Therefore, claims 4-7, 11, 13, 20-23, 27, and 29 are patentable at least due to their dependency from a patentable independent claim.

**E. Claims 5 and 21 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Ritter in view of Gesbert, Thoumy, and Gitlin.**

Claim 5 depends from claims 1, 3, and 4. Claim 21 depends from claims 17, 19, and 20. In addition to being patentable due to their dependency from patentable independent claims, the Petitioners' proposed combination does not disclose each and every recitation of claims 5 and 21. Accordingly, claims 5 and 21 are not rendered obvious by the Petitioners' proposed combination of Ritter, Gesbert, Thoumy, and Gitlin.

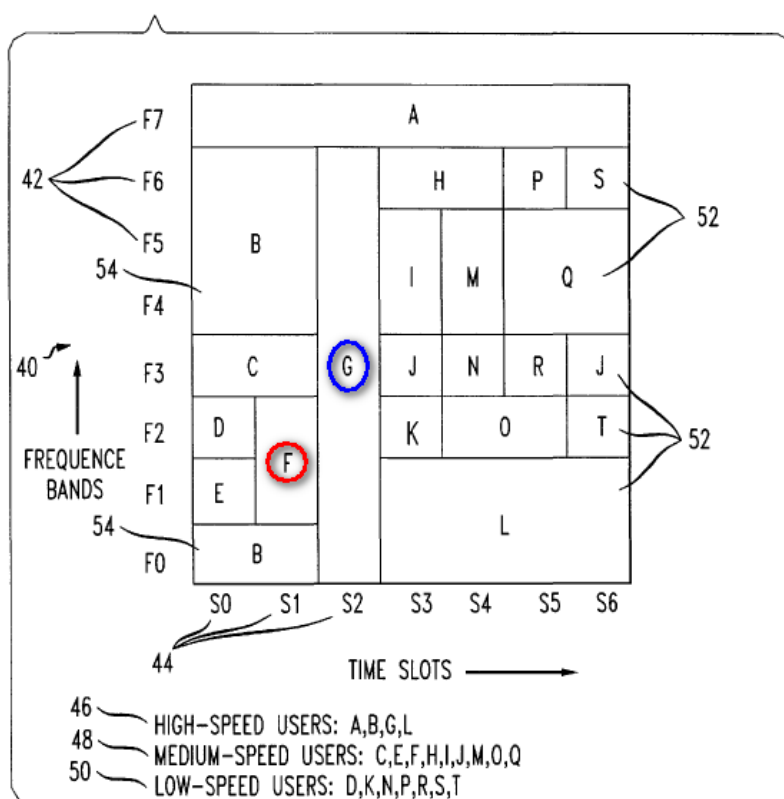
**1. The Petitioners' proposed combination of Ritter, Gesbert, Thoumy, and Gitlin does not disclose "at least one subcarrier of the first plurality of subcarriers in the first time slot is different than all of the subcarriers of the second plurality of subcarriers in the second time slot," as recited in claims 5 and 21.**

The Petitioners rely on Gitlin and Thoumy to allegedly disclose the above-quoted recitation of claims 5 and 21. The Petitioners acknowledge that Gitlin does

not explicitly disclose this recitation. (Petition at 37.) Instead, the Petitioners point to frequency band F1 at time slot S1 and frequency band F2 at time slot S2 of Fig. 6 and the standard patent drafter's catchall sentence: "Other ways of effecting slicing and scheduling in accordance with the system and method of the invention can be readily envisioned or otherwise arrived at by those skilled in the art." (Petition at 37; Gitlin at 5:8-10.) And then, the Petitioners rely on the opinion of their expert, Professor Gitlin, the inventor of Gitlin, to opine that, despite not thinking of the claimed configuration himself, it would have been obvious to one of only ordinary skill in the art. (Petition at 37, citing Professor Gitlin's Declaration (Exhibit 1102) at ¶¶ 128-129.)

Putting aside the specious nature of Professor Gitlin's opinion about his own insufficient disclosure, the Petitioners ignore the fact that the above-quoted recitation of claims 5 and 21 corresponds to "the first allocation of OFDMA subcarriers" to the one "subscriber unit," as recited in independent claims 1 and 17, and dependent claims 4 and 20, from which claims 5 and 21 depend. As shown below in Fig. 6 of Gitlin (annotation added), frequency band F1 in time slot S1 is allocated to user "F" and frequency band F2 in time slot S2 is allocated to user "G." User F is not the same subscriber unit as user G.

FIG. 6



(Gitlin Fig. 6, annotation added.) Fig. 6 shows seven (7) users being allocated multiple time slots, and in every single example the user is allocated the exact same frequency band(s) in every allocated time slot. (See users A, B, C, H, L, O, and Q.) If Professor Gitlin and his co-inventors had appreciated the benefit of allocating different subcarriers in different time slots to a single user, they would have disclosed and claimed such a feature. Just as Professor Gitlin did not appreciate these benefits, one of ordinary skill in the art would not have appreciated them either. Regardless, with the '375 patent in hand, and 16 years of hindsight, Professor Gitlin asserts that it would have been obvious to one of only

ordinary skill, even though it was not obvious to him. Patent Owner respectfully submits that Professor Gitlin is mistaken.

Regardless of Professor Gitlin's erroneous assertion, the Petitioners' proposed combination cannot render the claims obvious because the Petitioners have failed to articulate a rationale to modify Gitlin. The law requires an articulated reasoning, with some rational underpinning, in order to conclude that a modification or combination of references would have been obvious. (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) quoting *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir 2006).) The Petitioners naked assertion that one of ordinary skill could have done it is not sufficient under the law. As such, Gitlin cannot disclose a first allocation to one subscriber unit "wherein at least one subcarrier of the first plurality of subcarriers in the first time slot is different than all of the subcarriers of the second plurality of subcarriers in the second time slot," as recited in claims 5 and 21.

The Petitioners also cite to Thoumy as allegedly disclosing this recitation: "The given number of carriers to be allocated to said at least one communication channel between the base station and the peripheral station can also be less than that allocated previously to this communication channel." (Petition at 37, quoting Thoumy at 11:61-64.) However, this section of Thoumy refers to the number of carriers for a subsequent allocation to the communication channel. As such, the

Petitioners have ignored the scope of the claims. Claims 5 and 21 are directed to “the first allocation of OFDMA subcarriers” to one “subscriber unit,” as recited in independent claims 1 and 17, and dependent claims 4 and 20, from which claims 5 and 21 depend. The above-quoted recitation of claims 5 and 21 refer to the same one allocation to the subscriber unit and not subsequent allocations of the communication channel as disclosed in Thoumy. As such, Thoumy also fails to disclose the above-quoted recitation of claims 5 and 21. Therefore, the Petitioners’ proposed combination of Ritter, Gesbert, Thoumy, and Gitlin does not render claims 5 and 21 obvious.

**F. Claims 6-8, 11, 13, 22-24, 27, and 29 are patentable over the proposed rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Gitlin.**

The Petitioners allege that claims 6-8, 11, 13, 22-24, 27, and 29 (all of which depend from independent claim 1 or 17, or claims dependent therefrom) are unpatentable under 35 U.S.C. § 103(a) as being obvious over Thoumy in view of Gesbert and Gitlin. Dependent claims incorporate all the recitations of the claims from which they depend. (37 C.F.R. § 1.75(c).) Accordingly, in order for the Petitioners’ proposed combination to render the dependent claims obvious, the proposed combination must also render the independent claims obvious. However, the Petitioners’ proposed combination of Thoumy, Gesbert, and Gitlin fails to render obvious independent claims 1 and 17. The Petitioners’ proposed rejection



of independent claims 1 and 17 relies solely on Thoumy and Gesbert. Gitlin is merely relied upon to allegedly disclose additional features recited in the dependent claims. As explained below, the Petitioners' proposed combination of Thoumy in view of Gesbert does not result in every aspect of the claimed invention of independent claims 1 and 17. Moreover, one of ordinary skill would not combine the references in the manner proposed by the Petitioners. Therefore, claims 6-8, 11, 13, 22-24, 27, and 29 are patentable at least due to their dependency from a patentable independent claim.

Patent Owner notes that, throughout the Petition, the Petitioners conflate two separate and distinct embodiments of Thoumy. The first embodiment relates to a method and device wherein there are only two identical devices (local device A and remote device B) transmitting between each other. The first embodiment of Thoumy teaches a method and device that includes measuring the quality of each of the subcarriers received and transmitted on the channel used by the two devices, assigning an importance level to the transmission data, and assigning the most important data to the highest quality subcarriers and the data of the lowest import to the worst quality subcarriers. (Thoumy at 5:14-28.) The description of the first embodiment never discusses more than one remote device, nor does it mention anything regarding the allocation of subcarriers to the channel. The first embodiment is generally discussed in the Brief Summary of the Invention from

col. 4, line 65 to col. 7, line 33; Detailed Description of the Invention from col. 17, line 16 to col. 20, line 44; and Figs. 3-7.

The second embodiment is directed to “a method and device for managing information transmissions in a communication network including a base station and at least one peripheral station.” (Thoumy at 9:9-12.) The second embodiment is discussed in the Brief Summary of the Invention at col. 9, lines 9-14, and col. 9, line 63 to col. 14, line 45, and in the Detailed Description of the Invention from col. 24, line 39 to col. 38, line 37; and Figs. 14-30.

In addition, the Petitioners even cite to Thoumy’s description of two pieces of prior art that Thoumy characterizes as inferior thereto, as if they were part of the description of one of Thoumy’s embodiments. (Petition at 48, quoting Thoumy at 9:24-28 and 9:31-34, describing the general operation of French Patent No. 2 660 131 to Halbert-Lassalle et al. (“Halbert-Lassalle”) and at 49, quoting Thoumy at 9:53-59, describing the general operation of U.S. Patent No. 5,726,978 to Frodigh et al.<sup>2</sup> (“Frodigh”).) Consequently, when the Petitioners cite to

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<sup>2</sup> Patent Owner notes that Frodigh is of record in the ‘375 patent as well as in every U.S. Application related to the ‘375 patent. In addition, the petitioners in *Inter Partes* Review No. IPR2015-00318 of the related ‘212 patent asserted four (4) separate grounds of obviousness relying on Frodigh as the base reference and

“Thoumy” in support of their proposed rejections, they are actually pointing to four different embodiments, including two that Thoumy disparaged (*i.e.*, Halbert-Lassalle and Frodigh). Yet, contrary to the requirements recited in *KSR* (*KSR* at 418.), the Petitioners provide absolutely no explanation as to why one of ordinary skill in the art would combine the two embodiments of Thoumy and modify Thoumy to operate in the manner of the two inventions Thoumy purports to be an improvement over.

The following explains the Petitioners’ reliance on Halbert-Lassalle, Frodigh, and the two separate embodiments of Thoumy by each claim limitation: for limitations (a) and (b) (first measuring and first providing), the Petitioners cite to the first embodiment of Thoumy; for the preamble and limitation (e) (second providing), the Petitioners cite to the second embodiment of Thoumy; for limitation (c) (first receiving), the Petitioners cite to Halbert-Lassalle and the second embodiment of Thoumy; and for limitations (d) and (f) (second measuring and second receiving), the Petitioners cite to Frodigh and the second embodiment of Thoumy. Again, the Petitioners never even acknowledge that the proposed combination of Thoumy and Gesbert combines two separate and distinct

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various other secondary references, including Ritter. The Board denied Institution. (Exhibit 2102.)

embodiments of Thoumy as well as combining Thoumy's descriptions of Halbert-Lassalle and Frodigh, let alone provide a rationale for why one of ordinary skill in the art would combine the two embodiments and the two disparaged references. Accordingly, as a preliminary matter, given the Petitioners' failure to articulate a rationale to combine the embodiments and the two other pieces of prior art (and an explanation of the modifications that would be required to accomplish a combination thereof), Patent Owner submits that the Petitioners have failed to lay out a *prima facie* case of obviousness.

**1. Thoumy does not disclose “providing, by the subscriber unit, a first feedback information relating to a plurality of feedback clusters ... each feedback cluster of the plurality of feedback clusters being at least two subcarriers,” as recited in independent claim 1, and “provide a first feedback information relating to a plurality of feedback clusters ... each feedback cluster of the plurality of feedback clusters being at least two subcarriers,” as recited in independent claim 17.**

The Petitioners assert that the above-quoted recitations of independent claims 1 and 17 are disclosed by the FCD signal 230 of the first embodiment of Thoumy which “represents the characteristics of the channel in the direction  $A \rightarrow B$ , as observed by the remote device B.” (Petition at 46, quoting Thoumy at 18:18-23.) As noted by the Petitioners, the first embodiment of Thoumy discloses a system which sends back “a signal 230 representing the transmission quality observed by a remote receiving device on each subcarrier in the so-called

‘outward,’ or A→B direction.” (Thoumy at 17:49-51.) Accordingly, Thoumy teaches feedback on each subcarrier of one channel; the one channel including a fixed number of subcarriers. The independent claims, however, recite “first feedback information relating to a **plurality of feedback clusters**” and that “**each feedback cluster** of the plurality of feedback clusters **being at least two subcarriers.**” (Emphasis added.) Thus, the claims require feedback information about at least two clusters, each including at least two subcarriers. The Petitioners do not even attempt to show where this recitation is disclosed in Thoumy. Instead, the Petitioners stand on a naked assertion by their expert erroneously alleging that “Thoumy discloses the subscriber unit providing feedback on all subcarriers, which means Thoumy necessarily discloses providing feedback of channel quality on a plurality of feedback clusters.” (Petition at 46.) The Petitioners rely exclusively on Thoumy as allegedly disclosing this claim recitation, but Thoumy does not even hint at the benefits of organizing subcarriers into clusters, let alone disclose the ability to organize subcarriers into clusters. Therefore, because Thoumy fails to disclose the above-quoted recitations of independent claims 1 and 17 of the ‘375 patent, the proposed rejection of any claim dependent therefrom under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Gitlin fails.

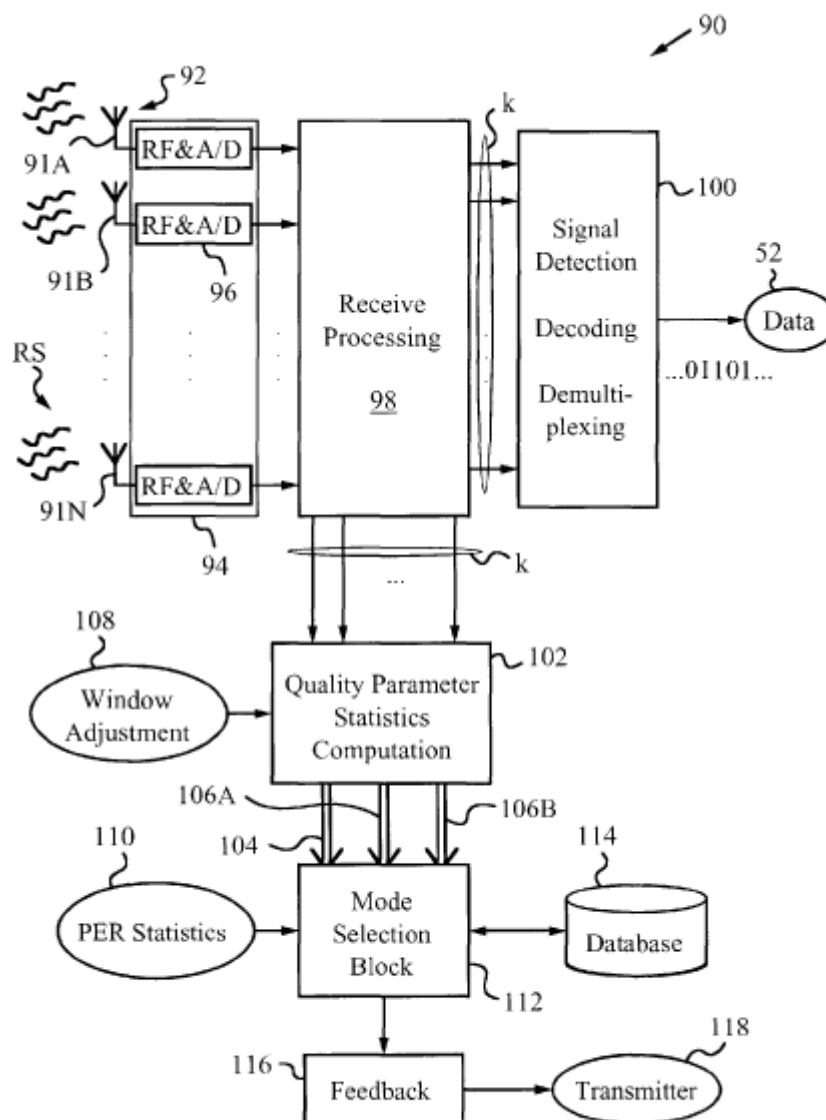
**2. The Petitioners’ proposed combination of Thoumy, Gesbert, and Gitlin does not disclose “the first feedback information relating to the plurality of feedback clusters... includes an index corresponding to a first modulation and coding rate associated with each feedback cluster of the plurality of feedback clusters,” as recited in independent claims 1 and 17.**

As explained above in section V.F.1, Thoumy does not disclose providing feedback on a plurality of clusters. Furthermore, combining the teachings of Gesbert with Thoumy does not create clusters. As pointed out by the Petitioners, Gesbert teaches “selecting a subsequent mode for encoding the data” and that “[t]he system also has a feedback mechanism for communicating the subsequent mode from the receive unit to the transmit unit.” (Petition at 48, quoting Gesbert at 2:64-65 and 4:30-32.) Accordingly, the Petitioners’ proposed combination discloses feeding back one mode to be applied to the data streamed on the one communication channel, not a “modulation and coding rate associated with each ... of the plurality of feedback clusters,” as recited in independent claims 1 and 17. Therefore, because the Petitioners’ proposed combination of Thoumy, Gesbert, and Gitlin does not result in every aspect of the claimed invention of independent claims 1 and 17, the proposed rejection of any claim dependent therefrom under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Gitlin fails.

**3. One of ordinary skill in the art would not combine Thoumy and Gesbert, as proposed by the Petitioners, to allegedly disclose “receiving, by the subscriber unit, ... an indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers,” as recited in independent claim 1, or “receive ... an indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers,” as recited in independent claim 17.**

The Petitioners combine Gesbert with Thoumy to allegedly disclose providing “an index corresponding to a first modulation and coding rate associated with each feedback cluster.” (Petition at 46-47.) But, the Petitioners rely on Thoumy to disclose providing an “indication of a modulation and coding rate associated with the first allocation of OFDMA subcarriers.” However, one of ordinary skill in the art would not combine the references as proposed by the Petitioners, because such a combination would do nothing more than usurp valuable bandwidth to transmit redundant information.

Gesbert discloses that the modulation and coding rates are decided by the receive unit (*e.g.* the mobile phone) and dictated to the transmit unit (*e.g.* the base station). (Gesbert at 4:21-23, “[t]he receive unit also has a mode selection block for **assigning** the subsequent mode,” emphasis added.) Fig. 4 “is a block diagram of an exemplary receive unit in accordance with the invention” and Gesbert explains that “[b]lock 112 **selects** the subsequent mode number for encoding data 52”:

**FIG. 4**

(Gesbert at 4:47-48; 9:66-67, emphasis added.) Gesbert also states that “a mode index indicating the mode **to be used** for each of the  $k$  streams is fed back to transmit unit 50.” (Gesbert at col. 10, lines 7-8, emphasis added.) Accordingly, Gesbert is very clear that it is the receive unit (*e.g.*, the mobile phone) which instructs the transmit unit (*e.g.*, the base station) as to what rates are to be used.



Therefore, the transmit unit has no need to send an indication back to the receive unit, including an “indication of a modulation and coding rate.” Having the base station, in the Petitioners’ proposed combination of Thoumy and Gesbert, send an indication to the receive unit (Thoumy’s peripheral station), reminding the receive unit what rates the receive unit assigned, would be an unnecessary waste of valuable bandwidth, which goes against Gesbert’s express reason for sending the index from the receive unit in the first place. (Gesbert at col. 10, lines 2-5, “the convenience of indexing modes becomes clear, since feedback of an index number to transmit unit 50 does not require much bandwidth.”)

Given that the Petitioners’ proposed combination would do nothing more than waste valuable bandwidth, which Gesbert is designed to save, Patent Owner submits that one having ordinary skill in the art would not combine Thoumy with Gesbert in the manner proposed by the Petitioners. Therefore, because the Petitioners’ proposed combination of Thoumy, Gesbert, and Gitlin does not result in every aspect of the claimed invention of independent claims 1 and 17, the proposed rejection of any claim dependent therefrom under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Gitlin fails.

**4. The Petitioners' proposed combination of Thoumy, Gesbert, and Gitlin does not disclose "receiving ... a second allocation of OFDMA subcarriers based on at least the providing of the second feedback information ... the second allocation ... being different from the first allocation," as recited in independent claim 1, or "receive a second allocation of OFDMA subcarriers based on at least the second feedback information ... the second allocation ... being different from the first allocation," as recited in independent claim 17.**

As explained above, the claims of the '375 patent are directed to the retraining process disclosed therein, where the selection of subcarriers is made "because their performance is good or better than that of other subcarriers." ('375 patent at 3:35-36.) That is, during the retraining, the subscriber unit is repeatedly monitoring the quality of other subcarriers, even those allocated to other users, and constantly feeding back updated information in search of better subcarriers. ('375 patent at 6:63-7:8.) The only way to find better subcarriers is to measure the quality of subcarriers the subscriber unit is not already allocated, which is not disclosed in Thoumy, Gesbert, or Gitlin. Next, the subscriber unit must inform the base station about any clusters that may be better than those already being used by the subscriber unit. Again, neither Thoumy, Gesbert, nor Gitlin disclose a subscriber unit providing feedback information about potential clusters because (a) they only measure the quality of the subcarriers they are already allocated and (b) they are not arranging the feedback on clusters of subcarriers. Finally, in the '375 patent, the base station selects better subcarriers from all the allocable subcarriers

(including those already allocated to other subscriber units) based on the feedback information relating to preferred clusters of subcarriers, as selected by the subscriber unit. Again, neither Thoumy nor Gesbert provide better subcarriers.

In contrast, Thoumy indicates that Frodigh teaches replacing carriers affected by an excessively high error rate with other carriers less affected by noise. (Thoumy at 9:45-59.) Next, Thoumy explains that the solution of Frodigh is deficient because the method disclosed by Frodigh “proposes above all to guarantee a low transmission error rate between the base station and the peripheral stations.” (Thoumy at 9:60-62.) Thoumy proposes a solution to remedy this deficiency of Frodigh by, instead of replacing noisy subcarriers, merely allocating **more** subcarriers to the channel. (Thoumy at 11:10-60.)

The ‘375 patent discloses a similar method of allocating additional subcarriers to a subscriber unit:

In an alternative embodiment, the base station first allocates multiple clusters, referred to herein as the basic clusters, to establish a data link between the base station and the subscriber. The base station then subsequently **allocates more clusters**, referred to herein as the auxiliary clusters, to the subscriber **to increase the communication bandwidth.**

(‘375 patent at 6:42-48, emphasis added.) However, this embodiment is NOT what is claimed in the ‘375 patent. As explained above, what the ‘375 patent claims is the retraining process, wherein the subscriber unit is repeatedly monitoring the quality of other subcarriers, even those allocated to other users, and constantly feeding back updated information in search of better subcarriers. (‘375 patent at 6:63-7:8.) “Retraining,” as taught and claimed in the ‘375 patent, is not disclosed by Thoumy, whether alone or in any proper combination with Gesbert and Gitlin. Therefore, for at least the reasons discussed above in sections V.F.1-4, the Petitioners’ proposed combination of Thoumy, Gesbert, and Gitlin does not render independent claims 1 and 17 obvious, and by extension, the Petitioners’ proposed combination does not render claims 2, 8, 14, 18, 24, and 30 obvious because of their dependency from patentable independent claims.

In addition, the Petitioners never provide any rationale for combining any of the teachings of Gitlin with the proposed Thoumy-Gesbert combination. (See Petition at 42-56.) *KSR* requires an articulated reasoning for combining and/or modifying references. (*KSR* at 418.) The Petitioners have failed to provide the required reasoning. Accordingly, for at least this reason, the Petition does not provide a *prima facie* case of obviousness for the rejections based on the proposed combination of Thoumy, Gesbert, and Gitlin.

**G. Claims 2, 14, 18, and 30 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Ritter.**

The Petitioners assert that “[t]he combination of Thoumy and Gesbert discloses all the limitations of independent claims 1 and 17.” (Petition at 56.) That is, the Petitioners’ proposed combination relies solely on the combination of Thoumy and Gesbert. Ritter is merely relied upon to allegedly disclose additional features recited in the dependent claims. Accordingly, for at least the same reasons discussed above in sections V.F.1-4, the Petitioners’ proposed combination of Thoumy, Gesbert, and Ritter does not render independent claims 1 and 17 obvious, and by extension, the Petitioners’ proposed combination does not render claims 2, 14, 18, and 30 obvious because of their dependency from patentable independent claims.

In addition, the Petitioners never provide any rationale for combining any of the teachings of Ritter with the proposed Thoumy-Gesbert combination. (See Petition at 56.) *KSR* requires an articulated reasoning for combining and/or modifying references. (*KSR* at 418.) The Petitioners have failed to provide the required reasoning. Accordingly, for at least this reason, the Petition does not provide a *prima facie* case of obviousness for the rejections based on the proposed combination of Thoumy, Gesbert, and Ritter.

**H. Claims 2 and 18 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Ritter.**

In addition to their patentability due to their dependency from a patentable independent claim, claims 2 and 18 are patentable over the Petitioners' proposed combination for the reasons discussed below.

**1. The Petitioners' proposed combination of Thoumy, Gesbert, and Ritter does not disclose "the plurality of feedback clusters at the second time is different than the plurality of feedback clusters at the first time," as recited in claims 2 and 18.**

As discussed above in sections V.A.2-3, Ritter fails to perform a second measurement at a second time because Ritter fails to disclose a "retraining" process as provided in independent claims 1 and 17 of the '375 patent. As such, Ritter cannot disclose "the plurality of feedback clusters at the second time is different than the plurality of feedback clusters at the first time" (emphasis added), as recited in claims 2 and 18, because there is no measurement at a second time disclosed in Ritter. Ritter discloses that the determination of the best suitable segments in each mobile station is performed after each mobile station transmits its own list of preferred segments. (Ritter at 8 and 12-14.) Ritter fails to disclose this process repeating, and thus, fails to disclose "the plurality of feedback clusters at the second time," as recited in claims 2 and 18.

In an attempt to show that Ritter discloses the above-quoted recitation, the Petitioners falsely assert that "[o]ne of ordinary skill in the art would understand

Ritter's disclosure of measuring the quality of 'various segments' to mean that the subscriber unit can measure different segments at different times." (Petition at 30.)

The Petitioners aim to support this false assertion by paraphrasing Ritter as disclosing "an embodiment in which each mobile station provides feedback on only certain segments." (Petition at 30, citing Ritter at 13.) However, this section of Ritter simply does not disclose performing a second measurement relating to a plurality of feedback clusters at a second time. Therefore, the Petitioners' proposed combination of Ritter, Gesbert, and Thoumy does not render claims 2 and 18 obvious.

**I. Claims 14 and 30 are also patentable over the proposed rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert and Ritter.**

Claims 14 and 30 depend from claims 9 and 25, respectively. As explained below, the Petitioners' proposed combination fails to disclose the recitations of claims 9 and 25. Accordingly, in addition to being patentable due to their dependency from patentable independent claims 1 and 17, claims 14 and 30 are also patentable due to their dependency from patentable claims 9 and 25, respectively.

**1. The Petitioners’ proposed combination of Thoumy, Gesbert, and Ritter does not disclose “the receiving of the first allocation of OFDMA subcarriers includes receiving a first allocation of at least one group of clusters selected by the base station for use by the subscriber unit,” as recited in claim 9, or “receipt of the first allocation of OFDMA subcarriers includes receipt of a first allocation of at least one group of clusters selected by the base station for use by the subscriber unit,” as recited in claim 25.**

As discussed above in section V.C., Ritter does not disclose groups of clusters. Therefore, the Petitioners’ proposed combination of Thoumy, Gesbert, and Ritter does not render claims 9 and 25 obvious, and by extension, the Petitioners’ proposed combination does not render claims 14 and 30 obvious because of their dependency from patentable claims.

**J. Claims 4, 5, 20, and 21 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert, Gitlin, and Ritter.**

The Petitioners assert that “[t]he combination of Thoumy, Gesbert, and Gitlin disclose all the limitations of independent claims 1 and 17.” (Petition at 57.) However, the Petitioners’ proposed combination relies solely on the combination of Thoumy and Gesbert to allegedly disclose all of the recitations of independent claims 1 and 17.<sup>3</sup> Gitlin and Ritter are merely relied upon to allegedly disclose

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<sup>3</sup> While the Petitioners state that “[t]he combination of Thoumy, Gesbert, and Gitlin disclose all the limitations of independent claims 1 and 17,” (Petition at 57)



additional features recited in the dependent claims. Accordingly, for at least the same reasons discussed above in sections V.F.1-4, the Petitioners' proposed combination of Thoumy, Gesbert, Gitlin, and Ritter does not disclose every recitation of independent claims 1 and 17. Therefore, the Petitioners' proposed combination does not render claims 4, 5, 20, and 21 obvious because of their dependency from patentable independent claims.

In addition, the Petitioners never provide any rationale for combining any of the teachings of Ritter with the proposed Thoumy-Gesbert-Gitlin combination. (See Petition at 56-58.) *KSR* requires an articulated reasoning for combining and/or modifying references. (*KSR* at 418.) The Petitioners have failed to provide the required reasoning. Accordingly, for at least this reason, the Petition does not provide a *prima facie* case of obviousness for the rejections based on the proposed combination of Thoumy, Gesbert, Gitlin, and Ritter.

**K. Claims 5 and 21 are patentable over the proposed obviousness rejection under 35 U.S.C. § 103(a) based on Thoumy in view of Gesbert, Gitlin, and Ritter.**

Claim 5 depends from claims 1, 3, and 4. Claim 21 depends from claims 17, 19, and 20. In addition to being patentable due to their dependency from

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the Petitioners never point to Gitlin as disclosing any recitations of independent claims 1 and 17.

patentable independent claims, the Petitioners' proposed combination does not disclose each and every recitation of claims 5 and 21. Accordingly, claims 5 and 21 are not rendered obvious by the Petitioners' proposed combination of Thoumy, Gesbert, Thoumy, and Ritter.

**1. The Petitioners' proposed combination of Thoumy, Gesbert, Gitlin, and Ritter does not disclose "at least one subcarrier of the first plurality of subcarriers in the first time slot is different than all of the subcarriers of the second plurality of subcarriers in the second time slot," as recited in claims 5 and 21.**

In this proposed combination, the Petitioners only rely on Thoumy to allegedly disclose the above-quoted recitation of claims 5 and 21. The Petitioners cite to Thoumy as allegedly disclosing this recitation. (Petition at 57, referring to page 37, quoting Thoumy at 11:61-64.) However, this section of Thoumy refers to the number of carriers for a subsequent allocation to the communication channel. As such, the Petitioners have ignored the scope of the claims. Claims 5 and 21 are directed to "the first allocation of OFDMA subcarriers" to one "subscriber unit," as recited in independent claims 1 and 17, and dependent claims 4 and 20, from which claims 5 and 21 depend. The above-quoted recitation of claims 5 and 21 refer to the same one allocation to the subscriber unit and not subsequent allocations of the communication channel as disclosed in Thoumy. As such, Thoumy also fails to disclose the above-quoted recitation of claims 5 and 21.

Therefore, the Petitioners' proposed combination of Ritter, Gesbert, Thoumy, and Gitlin does not render claims 5 and 21 obvious.

## **VI. CONCLUSION.**

For the above-discussed reasons, Patent Owner submits that the claims are patentable over the respective four (4) grounds of rejection proposed in the Petition. As such, the Petitioners have failed to meet their burden under 35 U.S.C. § 314(a), and thus, Patent Owner respectfully requests that the Board deny institution of an *inter partes* review based on the Petition.

Respectfully submitted,

Dated: July 12, 2016

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**CERTIFICATION UNDER 37 C.F.R. § 42.24(d)**

I hereby certify that this preliminary response, excluding its table of contents, table of authorities, certification under 37 C.F.R. § 42.24(d), and certificate of service has 11,157 words as counted by Microsoft Word 2013, the word-processing system used to prepare this preliminary response.

Date of Service: July 12, 2016

Signature: /Amedeo F. Ferraro/  
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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a copy of the PRELIMINARY RESPONSE and EXHIBITS were served in their entirety via electronic mail, upon the following counsel of record for Petitioner:

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