

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.,

Petitioner

v.

KONINKLIJKE KPN N.V.¹,

Patent Owner

Case No. IPR2023-00526

U.S. Patent No. 9,210,590

PATENT OWNERS' PRELIMINARY RESPONSE

¹ The Petition names only Koninklijke KPN N.V. as Patent Owner, but the patent is co-owned by Koninklijke KPN N.V. and Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, on both of whose behalf this Patent Owners' Preliminary Response is submitted.

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I. INTRODUCTION

Koninklijke KPN N.V. and Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO (“Patent Owners”), the co-owners of the patent, respectfully submit this Preliminary Response in accordance with 35 U.S.C. § 313 and 37 C.F.R. § 42.107, responding to the Petition for *inter partes* review (the “Petition”) filed by Ericsson Inc. (“Petitioner”) challenging Claims 1-20 (“the challenged claims”) of U.S. Patent No. 9,210,590 (the “’590 Patent”).

Petitioner has failed to meet its burden. At a minimum, Petitioner fails to show that any of its references, or their combination, teach (i) processing information contained in “measurement reports” that are received from a “plurality of terminals” and that indicate measurements of a presence signal “by the plurality of terminals” to provide a “processing result” or (2) activating an inactive cell when the “processing result” fulfills at least one “activation condition.” Petitioner’s references and its characterizations of them instead relate to a single terminal attempting random access to a cell or to handover of a single given terminal from cell to cell based on *measurement reports for that given terminal*. These failures are grounds to deny the Petition, and indeed to grant discretionary denial at least because the same failings of the references to teach the “measurement reports” here were considered as lacking in the references considered by the Examiner. Indeed,

the primary reference relied upon by the Petitioner (Frenger) was considered by the Examiner and the Examiner did not find that it anticipated or rendered obvious the '590 Patent.

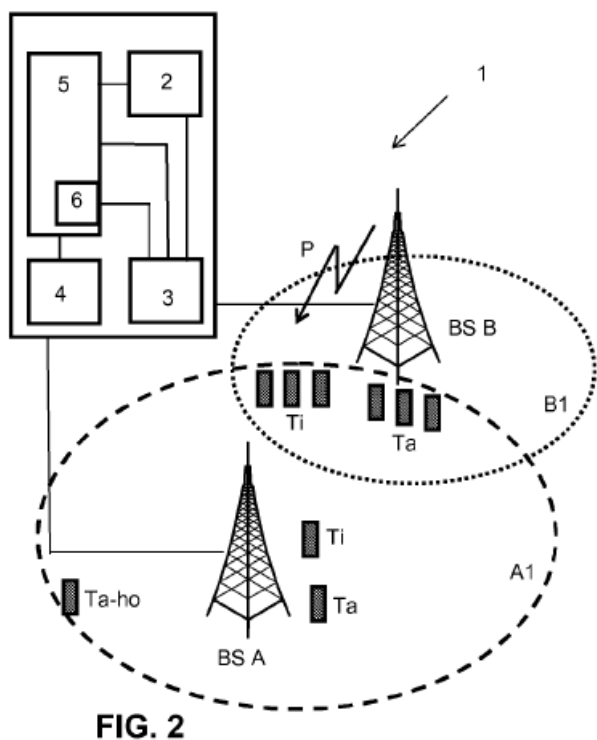
For the reasons set forth more fully below, institution should be denied.

II. THE '590 PATENT, THE REFERENCES RELIED UPON IN THE PETITION, AND THE PROPOSED GROUND FOR INSTITUTION

A. The '590 Patent

The '590 Patent discloses a method and telecommunications infrastructure for activating an inactive cell. *See* Ex. 1001, Abstract, 2:3-20, and 24:5-22. The invention comes against the background of a desire to reduce the energy consumption of telecommunications networks. *See id.* at 1:18-32. Energy saving in networks has previously been approached by switching off some base stations or cells during periods of low load, such as during the night, and using fewer base stations to provide coverage in the network. *See id.* at 1:38-52. However, once some cells are deactivated, there may be a need to reactivate those cells when the network load increases again. Previous techniques for determining when to reactivate cells needed improving. For example, in previous techniques, base stations or cells could be reactivated at a predetermined time, or all inactive cells adjacent to a currently active cell could be reactivated when the currently active cell detected a traffic load exceeding a threshold. *See id.* at 1:53-67.

The '590 Patent solves the need in the art to improve on previous solutions for determining more accurately which base stations or cells should be activated. *See id.* at 1:65-67. To do this, the '590 Patent teaches an infrastructure that is schematically illustrated in FIG. 2, reproduced below:



See id. at FIG. 2.

As shown in FIG. 2, a cell A1 served by base station BS A is active, while cell B1 served by base station BS B has been inactivated, for example to save on energy. *See id.* at 9:37-52. In the telecommunications infrastructure 1 of the '590 Patent, the base station B of the inactive cell B1 transmits a presence signal P. A

receiver 4 is configured for receiving measurement reports from a plurality of terminals (shown as active terminals, Ta, and inactive terminals, Ti, in FIG. 2) that detect the presence signal P. *See id.* at 9:51-58. A processor system 5 is configured for processing information contained in the measurement reports received from the plurality of terminals (Ta and Ti in FIG. 2) to provide a processing result. An activation module 6 is configured to activate the inactive cell (BS B) when the processing result fulfills at least one activation condition such that at least one of the plurality of terminals is within a coverage area of the activated cell B1 of base station BS B. *See id.* at 9:58-65. For example, the activation condition may be fulfilled when the processing result indicates that the number of terminals which are estimated to be in the best server area of an inactive cell, when activated, is above a predetermined number of terminals or is above a predetermined fraction of the terminals currently served by one or more active cells, or that the load (expressed, *e.g.*, in the number of calls or in an aggregated bit rate or in another load measure) that is estimated to be absorbed by an inactive cell, when activated, is above a pre-determined load measure. *See id.* at 3:1-10.

Advantageously, because measurement reports are received from a *plurality of terminals* and processed by the processor system to produce the “processing result” that is used to fulfill the activation condition, the telecommunications

infrastructure allows for several potential advantages. For example, the telecommunications infrastructure can take into account the *distribution of the plurality of terminals* in the active cell, how many of these terminals can be adequately covered by the currently inactive cell, and what would be the total energy consumption if the inactive cell were to be activated and a portion of the terminals were transferred to the newly activated cell. *See id.* at 10:43-61 and FIG.

4. In one embodiment, if the processing result based on reported signal level measurements from the plurality of terminals reveals that a considerable number of active terminals (Ta) served by the active cell finds themselves near the edge of the active cell A1 and can be served by the inactive cell B1, as shown in FIG. 2, those terminals can be transferred to the inactive cell B1 in a reconfiguration of the network. *See id.* at 10:49-61.

In this way, the '590 Patent infrastructure can determine more accurately which base stations or cells should be activated, in a method that processes measurement reports from the “plurality of terminals” indicating measurements of the presence signal and hence allows taking into account factors such as the distribution of the plurality of terminals in the active cell, how many of these terminals can be adequately covered by the currently inactive cell, and what would be the total energy consumption if the inactive cell were to be activated and a

portion of the terminals were transferred to the newly activated cell. *See id.* at 1:65-67 and 10:43-61.

B. References Relied Upon in the Petition

As relevant here, Petitioner makes no showing whatsoever that any of its references, or their combination, teach processing information contained in “measurement reports” that are received from a “*plurality of terminals*” and that indicate measurements of the presence signal “*by the plurality of terminals,*” to provide a “processing result” and activating an inactive cell when the “processing result” fulfills at least one “activation condition.” Instead, Petitioner’s references and its characterizations of them relate to a single terminal attempting random access to a cell or to handover of a single given terminal from cell to cell based on measurement reports *for that given terminal*.

1. US2012/0094661 A1 of Frenger *et al.* (“Frenger”) (Ex. 1004)

Frenger teaches a technique of mobility cell search, in which networks decide whether a terminal should be handed over to a neighboring cell. *See* Ex. 1004 at [0030]. The network can wake up idle base stations in conjunction with the handover procedure for a given terminal or when a given terminal is making a random access attempt. *See id.* at [0040]. Frenger notes that, in the absence of active terminals in a cell, the base station can be put into an idle state, in which

only the signals necessary for mobility and cell search are intermittently transmitted, by defining a DTX (discontinuous transmission) cycle. *See id.* at [0034]-[0035]. The mobility and cell search signals are used in the handover procedure for handing a terminal from cell to cell or for a random access attempt from a given terminal. An idle cell exits the DTX period when it detects that *any terminal* is attempting random access to the cell or when *any handover* is requested for a terminal. *See id.* at [0040] and [0044].

In Frenger, the waking up of a base station is performed in connection with a *single terminal* making a random access attempt or the handover of a *single given terminal* from cell to cell. *See, e.g., id.* at [0040] (“An idle cell would exit the DTX period when it detects that *a terminal*... is attempting a random access... [A base station] commanding *a terminal*... to perform handover from cell RC2 to cell RC1... would, in addition to the handover command to *the terminal*, also send a wake up command to base station BS1 over a base station interface,” emphasis added); *id.* at [0044] (“Step S13 detects whether there are *any* random access attempts from terminals. If so, step S14 instructs the base station to leave DTX mode, and to enter normal continuous mode. Otherwise step S15 detects whether *any handover commands* have been received from neighboring base stations. If so, step S14 instructs the base station to leave DTX mode, and to enter normal CTX

mode” (emphasis added)).

Frenger is silent on the details of the handover process, in particular how measurement reports for a terminal are used in the handover process, and is silent on how a measurement report is used to activate a cell.

2. 3GPP TS 36.300 v.8.11.0 (“36.300”) (Ex. 1005)

36.300 teaches the detailed procedure for handover of a terminal from a source base station to a target base station. In each case, 36.300 makes its decision about whether to handover a terminal (UE) from cell to cell by considering the results in a *measurement report* for a *given terminal* to be handed over. *See* Ex. 1005 at 45 (“***UE [a terminal]*** is triggered ***to send MEASUREMENT REPORT*** by the rules set by *i.e.* system information, specification etc.”); *id.* at 46 (“Source eNB makes decision based on MEASUREMENT REPORT and RRM information to ***hand off UE.***”) (emphases added). In short, the handover procedure for a terminal in 36.300 is performed on a terminal-by-terminal basis using a measurement report that *each given terminal* produces.

3. 3GPP TS 36.331 v.8.9.0 (“36.331”) (Ex. 1006)

The Petitioner cites 36.331 for defining the contents of the “MEASUREMENT REPORT” referenced above in the 36.300 reference. *See* Petition at 20. Once again, the measurement report relates *only to a given terminal*

(UE). *See* Ex. 1006 at 70. Fig. 5.5.5-1 of 36.331 (reproduced below) clearly shows this by showing the “MeasurementReport” being sent from a *single terminal “UE”* to the “EUTRAN” to which the measurement report is provided:

5.5.5 Measurement reporting

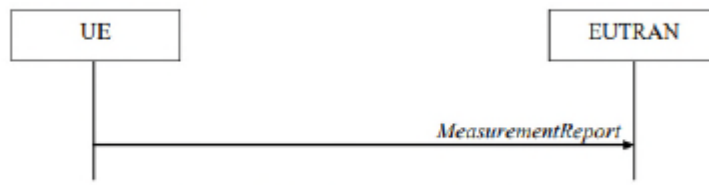


Figure 5.5.5-1: Measurement reporting

See id.

This is confirmed by the specific contents of the fields specified within the measurement report of 36.331, where the parameter *measResultServCell* is said to include “the quantities of serving cell” and the parameter *measResultNeighCells* is said to include “the best neighbouring cells.” *See id.* Again, it is clear from the context that these parameters are referring to the specific serving cell for the given terminal (UE) and the neighboring cells *for the given terminal*, and the measurement report relates only to the measurements *of that given terminal*. *See id.*

4. Furht, “Long Term Evolution: 3GPP LTE Radio and Cellular Technology” (“Furht”) (Ex. 1007)

Furht is a textbook cited by Petitioner as teaching the “principles underlying the LTE standard.” *See* Petition at 22. This reference confirms that handover decisions for a terminal are made on a terminal-by-terminal basis using

measurement reports *from the given terminal* (UE). *See* Ex. 1007 at 114-115 (“The network-controlled and UE-assisted property of the handover means that the decision to move the radio link connection of *the UE* from one cell to the other is made by the network – more specifically, by the eNodeB serving *the UE*, assisted by *measurement reports received from the UE*” (emphasis added)). Furht is silent on any teaching of processing measurement reports from a plurality of *different* terminals indicating measurements of a presence signal to produce a processing result. *See id.*

5. 3GPP TS 24.301 V8.5.0 (2010-03) (“24.301”) (Ex. 1008)

24.301 is cited by the Petitioner as teaching “the mechanism in LTE for *the UE* [terminal] to periodically update the network with its current location.” *See* Petition at 24, citing Ex. 1008 at 48-49, emphasis added. Again, the reference changes nothing of the terminal-by-terminal nature of the handover decision for each given terminal.

C. Proposed ground of institution

The proposed ground is summarized in the table below:

Ground	'590 Patent Claims	Primary Reference	Secondary References	Type of Challenge
1	1-20	Frenger	36.300, 36.331, Furht, and 24.301	pre-AIA 35 U.S.C. §103(a)

III. THE CHALLENGED INDEPENDENT CLAIMS

The Petition should be denied institution because it fails to establish a reasonable likelihood that any of Claims 1-20 of the '590 Patent is unpatentable.

The challenged independent claims are as follows.

Independent Claim 1 reads:

1. A method for activating at least one inactive cell in a wireless access telecommunications infrastructure, the wireless access telecommunications infrastructure comprising an active cell containing a plurality of terminals, the method comprising:
transmitting a presence signal by the at least one inactive cell;
receiving measurement reports from the plurality of terminals
detecting the presence signal, the measurement reports indicating measurements of the presence signal by the plurality of terminals;
processing information contained in the received measurement reports in a processing system of the wireless access telecommunications infrastructure to provide a processing result; and
activating the at least one inactive cell when the processing result fulfills at least one activation condition such that at least one of the plurality of terminals is within a coverage area of the at least one activated cell.

Independent Claim 11 reads:

11. A non-transitory computer-readable medium having instructions stored thereon that, when executed by one or more processing units, cause the one or more processing units to perform functions for activating at least one inactive cell in a wireless access telecommunications infrastructure, the wireless access telecommunications infrastructure comprising an active cell containing a plurality of terminals, the functions comprising:
transmitting a presence signal by the at least one inactive cell;
receiving measurement reports from the plurality of terminals
detecting the presence signal, wherein the measurement reports

indicate measurements of the presence signal by the plurality of terminals;

processing information contained in the measurement reports received from the plurality of terminals in a processing system of the wireless access telecommunications infrastructure to provide a processing result; and

activating the inactive cell when the processing result fulfills at least one activation condition such that at least one of the plurality of terminals is within a coverage area of the activated cell.

Independent Claim 12 reads:

12. A wireless access telecommunications infrastructure for a wireless access telecommunications system comprising an active cell and at least one inactive cell, the active cell comprising a plurality of terminals, the wireless access telecommunications infrastructure comprising:

a presence signal generator configured for transmitting a presence signal in the at least one inactive cell;

a receiver configured for receiving measurement reports from the plurality of terminals detecting the presence signal, wherein the measurement reports indicate measurements of the presence signal by the plurality of terminals;

a processor system configured for processing information contained in the measurement reports received from the plurality of terminals to provide a processing result; and

an activator configured for activating the inactive cell when the processing result fulfills at least one activation condition such that at least one of the plurality of terminals is within a coverage area of the activated cell.

IV. CLAIM CONSTRUCTION

A. Claim Construction Standard

In an *inter partes* review proceeding, claim terms are construed according to the same claim construction standard used in district courts as articulated in

Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). Without necessarily agreeing with the claim constructions identified in the Petition, Patent Owner here discusses the construction of claim terms that are relevant in the below discussion of claim elements, and which will be used in showing that institution should be denied.

B. In Claim 1[b], the “measurement reports” must be received from the “*plurality of terminals*” and must indicate measurements of the presence signal “*by the plurality of terminals*” – a measurement report of measurements from a single terminal will not suffice

In element 1[b], Claim 1 recites “receiving measurement reports from the plurality of terminals detecting the presence signal, the *measurement reports* indicating *measurements of the presence signal by the plurality of terminals*.” See Ex. 1001 at 22:64-67 (emphases added). Based on the plain and ordinary meaning of this claim element (as demonstrated by the words of the claim itself), the “measurement reports” must necessarily indicate measurements of the presence signal “*by the plurality of terminals*.” A measurement report of *measurements of the presence signal by a single terminal will not suffice*. This conclusion from the claim language is reinforced by the context throughout the specification of the ’590 Patent. For example, at 9:55-58, with reference to FIG. 2, the specification describes that the “telecommunications infrastructure 1 further comprises a

receiver 4 configured for receiving reports from the plurality of terminals Ta, Ti detecting the presence signal P.” *See id.* at 9:55-58.

The examples continue throughout the specification; for example, at 10:44-46 the specification describes that the “telecommunications infrastructure 1 allows to take account of the distribution of terminals Ta and Ti in the active cell A1,” and continues that if “the analysis (e.g. based on the reported signal level measurements) reveals that a considerable number of active terminals Ta served by the active cell A1 finds themselves near the edge of the active cell A1 as shown in FIG. 2 and is transferable to inactive cell B1 (step 4-I), a reconfiguration of the network can be analysed (step 4-II) wherein the inactive cell B1 is activated (step 4-II).” *See id.* at 10:44-55.

Such passages reinforce the plain language of claim element 1[b], which has a clear requirement that the “measurement reports” must indicate measurements of the presence signal “by the plurality of terminals,” and that a measurement report of measurements of the presence signal by a single terminal will not suffice.

C. In Claim 1[c], the “processing result” must be provided from processing information contained in “the received measurement reports,” which must indicate measurements of the presence signal by the *plurality of terminals* – a processing result that is provided from processing a measurement report from a single terminal will not suffice

In element 1[c], Claim 1 recites “processing information contained in the

received measurement reports in a processing system of the wireless access telecommunications infrastructure to provide a ***processing result***.” See Ex. 1001 at 23:1-4. Based on the plain and ordinary meaning of this claim element (as demonstrated by the words of the claim itself), the “processing result” must be provided from processing information contained “in the received measurement reports,” where “the received measurement reports” refers to the “measurement reports” construed above in element 1[b]. Therefore, the “processing result” must be provided from processing information contained “in the received measurement reports,” which as shown above must indicate measurements of the presence signal ***by the plurality of terminals***. Hence, a “processing result” that is provided from ***processing a measurement report from a single terminal will not suffice***.

This conclusion from the claim language is reinforced by the specification of the ’590 Patent. For example, at 9:58-60, with reference to FIG. 2, the specification describes that a processor system is “configured for processing information contained in the reports received from the plurality of terminals Ta, Ti to provide a processing result.” See *id.* at 9:58-60. Therefore, the plain and ordinary meaning of element 1[c] requires that the “processing result” must be provided from processing information contained “in the received measurement reports,” which must indicate measurements of the presence signal ***by the plurality of terminals***,

and a “processing result” that is provided from *processing a measurement report from a single terminal will not suffice.*

D. In Claim 1[d], the “activation condition” must cover different subject matter from the “processing result”

Claim element 1[d] recites “activating the at least one inactive cell *when the processing result fulfills at least one activation condition* such that at least one of the plurality of terminals is within a coverage area of the at least one activated cell.” *See* Ex. 1001 at 23:5-8; emphasis added. Based on the plain and ordinary meaning construction of this claim element, the “activation condition” must cover different subject matter from the “processing result,” in the specific sense that the “processing result” must be a result that can sometimes “fulfill[]” the “activation condition” and sometimes not “fulfill[]” the “activation condition.” This necessarily follows from the plain words of the claim stating that the at least one inactive cell is activated “when the processing result fulfills” the at least one activation condition.

While this construction of element 1[d] may seem self-evident, it is necessary to address an argument presented in the Petition, discussed below relative to element 1[d], which presents a “handover command” as being both the “processing result” and the “activation condition” at one and the same time.

In addition, based on ordinary antecedent reference in the term “the

processing result” in the claim, it follows that the “processing result” in element 1[d] that may or may not “fulfill[]” the “activation condition,” must be the same “processing result” construed above in element 1[c], which must be based on processing measurement reports that indicate measurements of the presence signal *by the plurality of terminals*.

These claim constructions will be compared with the Petition and its cited references, below.

E. Similar considerations apply to the “measurement reports,” “processing result,” and “activation condition” in independent Claims 11 and 12

As with Claim 1, elements 11[b], 11[c], 11[d], 12[b], 12[c], and 12[d] of independent Claims 11 and 12 recite “measurement reports,” a “processing result,” and an “activation condition” in ways that are similar in relevant regards to elements 1[b], 1[c], and 1[d], above, and similar claim constructions (adapted for the “computer-readable medium” and “telecommunications infrastructure” context of those claims) apply to those corresponding elements for the same reasons.

V. THE PETITION DOES NOT ESTABLISH A REASONABLE LIKELIHOOD THAT ANY OF CLAIMS 1-20 OF THE ’590 PATENT IS UNPATENTABLE

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic*

Inc. v. Avid Tech., Inc., 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)).

Petitioner has failed to meet its burden.

A. Ground 1 should be denied for failure to establish a reasonable likelihood that Frenger in view of 36.300, 36.331, Furht, and 24.301 render Claims 1-20 unpatentable

1. Claim 1[b]; the Petition fails to establish that Frenger in view of 36.300, 36.331, Furht, and 24.301 teach “receiving measurement reports from the plurality of terminals detecting the presence signal, the measurement reports indicating measurements of the presence signal by the plurality of terminals”

The Petition fails to establish that the cited combination of references teach element 1[b] because the Petition fails to show that any of its references, or their combination, teach processing information contained in “measurement reports” that are received from a “*plurality of terminals*” and that indicate measurements of the presence signal “*by the plurality of terminals*,” and which are subsequently processed in 1[c] to provide the “processing result.” Instead, Petitioner’s references and its characterizations of them relate to a single terminal attempting random access to a cell or to *handover of a single given terminal* from cell to cell based on *measurement reports for that given terminal* – not based on measurement reports

from a plurality of terminals.

For this claim element, the Petition first cites paragraph [0030] of Frenger, which states: “Active terminals typically also report the received signal strength of reference signals... transmitted by the neighboring cells to the network, which takes a decision if ***the terminal*** should be handed over to the candidate cell.” *See* Petition at 39; Ex. 1004 at [0030] (emphasis added). Note that the end of the passage refers to “***the terminal***,” which clearly shows that the passage is referring to a handover decision taken for *each given terminal*, based on the given terminal’s *own measurement report* of the received signal strength of neighboring cells.

To avoid this clear requirement, Petitioner relies on the *opening* of the quoted passage at [0030] of Ex. 1004 (“Active terminals typically...”) to attempt to imply that, because the opening of the passage refers to “Active terminals” in the plural, the network in Frenger is somehow using measurements from multiple different terminals in making a handover decision for a given terminal. However, from the context of the end of the sentence (“***the terminal***”) and the subsequent teachings of Frenger, as well as from the other references on which the Petition itself relies for the handover process, it is clear that Frenger in [0030] is referring to measurement reports that are *in general* received from *each of the given terminals* separately (hence the use of the plural “Active terminals typically”),

based on which the network makes a terminal by terminal decision *for each such given terminal* whether to perform a handover (“which takes a decision if *the terminal* should be handed over”).

In short, Petitioner is incorrectly using the opening phrase “Active terminals” in Frenger at [0030], which refers to a generally-used process for each active terminal, using a measurement report for each such given terminal, to imply that Frenger is somehow using measurements from multiple different terminals in making a handover decision for a given terminal.

But to the contrary, the nature of the handover decision (and random access attempts) as being a terminal-by-terminal decision on whether to handover a *given terminal* based on the terminals’ own measurement reports – and not based on measurement reports from a *plurality of terminals* – is very clear both from the full teachings of Frenger and the other cited references regarding the nature of the cell handover and random access attempt procedures. In Frenger, the waking up of a base station is performed in connection with a random access attempt from a *single terminal* or the handover of a *single given terminal* from cell to cell. *See, e.g.,* Ex. 1004 at [0040] (“An idle cell would exit the DTX period when it detects that *a terminal... is attempting a random access... [A base station] commanding a terminal... to perform handover from cell RC2 to cell RC1... would, in addition to*

the handover command to *the terminal*, also send a wake up command to base station BS1 over a base station interface,” emphasis added); *id.* at [0044] (“Step S13 detects whether there are *any* random access attempts from terminals. If so, step S14 instructs the base station to leave DTX mode, and to enter normal continuous mode. Otherwise step S15 detects whether *any handover commands* have been received from neighboring base stations. If so, step S14 instructs the base station to leave DTX mode, and to enter normal CTX mode,” emphasis added).

Therefore, in Frenger, whenever there is a handover request from a *single* terminal towards the inactive cell or even a random access attempt from a *single* terminal (*i.e.*, setting up a connection with the inactive cell), Frenger’s solution is to activate the inactive cell. This contrasts directly with the approach of the ’590 Patent, which explicitly envisions that handover requests and random access attempts from a single terminal need not result in activating during the “probing period” of an inactive cell, stating: “Also, requests for handover towards the inactive cell and requests for setting up a session to the inactive cell may be received and properly responded to, *i.e.* be refused or redirected towards an active cell. It is expected that with a close to full functionality during a probing period, a noticeable energy consumption is unavoidable but that still a major energy saving

is achieved by not allowing normal data or voice traffic.” *See* Ex. 1001 at 6:21-28.

This approach is diametrically opposite to Frenger’s approach, in which a handover request or random access attempt from a single terminal results in immediate activation of an inactive cell. *See, e.g.*, Ex. 1004 at [0040], [0044].

In addition, Frenger does not teach any specifics of the handover process, and is silent on how a measurement report is used to activate a cell. Consequently, the Petition fails to show that Frenger teaches whether or not the “measurement reports” used in a handover of a given terminal in [0030] of Frenger are based on processing multiple measurement reports for a *plurality of terminals*, as is Petitioner’s burden for its proposed combination. Instead, Petitioner relies upon three further references to attempt to show claim element 1[b]: 36.331 (*see* Petition at 42-45), 36.300 (*see* Petition at 45-47), and Furht (*see* Petition at 47-50). Each of those references, however, relates to making a handover decision on a terminal-by-terminal basis where *the measurement report for the given terminal* is used for the handover decision.

The Petitioner cites 36.331 for the contents of the “MEASUREMENT REPORT.” *See* Petition at 42-45. However, it is clear that the measurement report relates *only to a given terminal* (UE). *See* Ex. 1006 at 70. Fig. 5.5.5-1 of 36.331 (reproduced below) clearly shows this by showing the “MeasurementReport” being

sent from a *single terminal* “UE” to the “EUTRAN” to which the measurement report is provided:

5.5.5 Measurement reporting



Figure 5.5.5-1: Measurement reporting

See id.

This is confirmed by the specific contents of the fields specified within the measurement report of 36.331, where the parameter *measResultServCell* is said to include “the quantities of serving cell” and the parameter *measResultNeighCells* is said to include “the best neighbouring cells.” *See id.* Again, it is clear from context that these are referring to the specific serving cell for the given terminal (UE) and the neighboring cells *for the given terminal*, and the measurement report relates only to the measurements *of that given terminal*. *See id.*

The Petition cites 36.300 for further details of the procedure for handover of a terminal from a source base station to a target base station. *See* Petition at 45-47. However, again, in each case, 36.300 makes its decision about whether to handover a terminal (UE) from cell to cell by considering the results in a *measurement report* for a *given terminal* to be handed over. *See* Ex. 1005 at 45

(“*UE [a terminal]* is triggered *to send MEASUREMENT REPORT* by the rules set by *i.e.* system information, specification etc.”); *id.* at 46 (“Source eNB makes decision based on MEASUREMENT REPORT and RRM information to *hand off UE.*”) (emphases added). In short, the handover procedure for a terminal in 36.300 is performed on a terminal-by-terminal basis using a measurement report that *each given terminal* produces.

Finally, the Petition relies on the Furht textbook for further teachings on the handover decision. *See* Petition at 47-50. But this reference confirms that handover decisions for a terminal are made on a terminal-by-terminal basis using measurement reports *from the given terminal* (UE). *See* Ex. 1007 at 114-115 (“The network-controlled and UE-assisted property of the handover means that the decision to move the radio link connection of *the UE* from one cell to the other is made by the network – more specifically, by the eNodeB serving *the UE*, assisted by *measurement reports received from the UE,*” emphasis added). Furht is silent on any teaching of processing measurement reports from a plurality of different terminals indicating measurements of a presence signal to produce a processing result. *See id.*

The Petition’s showings on element 1[b], therefore, all fail to teach processing information contained in “measurement reports” that are received from

a “*plurality of terminals*” and that indicate measurements of the presence signal “*by the plurality of terminals*,” and which are subsequently processed in 1[c] to provide the “processing result.” Instead, Petitioner’s references and its characterizations of them relate to a single terminal attempting random access to a cell or to *handover of a single given terminal* from cell to cell based on *measurement reports for that given terminal* – not based on measurement reports from a plurality of different terminals.

For example, Petitioner’s references reactivate a cell once it is useful from the perspective of just a single user terminal, while in the solution of Claim 1 of the ’590 Patent, reactivation can be based on a broader assessment that considers *how many* users would benefit from a cell reactivation. The associated threshold is left open and can be optimized by a network operator, for example, to manage the trade-off between how many users would benefit from a reactivation and how much energy a full reactivation would cost; in other words, to assess whether the energy needed for a cell’s full reactivation is worthwhile in relation to the improvement in factors such as the provisioned service quality and local network capacity. *See, e.g.*, Ex. 1001 at 10:49-11:20.

Petitioner’s combination is therefore devoid of any showing of element 1[b], which includes receiving “measurement reports” from a “*plurality of terminals*”

and that indicate measurements of the presence signal “*by the plurality of terminals.*”

2. Claim 1[c]; the Petition fails to establish that Frenger in view of 36.300, 36.331, Furht, and 24.301 teach “processing information contained in the received measurement reports in a processing system of the wireless access telecommunications infrastructure to provide a processing result”

The Petition continues in its failings when the Petition turns to element 1[c]. See Petition at 50-52. Here, the Petition states that Frenger teaches that the network processes information in “the measurement report” to “provide a handover decision (*i.e.*, a ‘processing result’).” See *id.* at 50.

In this passage, notice that the Petition refers in the *singular* tense to “*the* measurement report” used to provide the Petitioner’s posited “processing result,” thereby acknowledging that, even in Petitioner’s own theory, Frenger is processing only *a single measurement report for a given terminal* when performing a handover, and is not processing measurement reports for a “plurality of terminals” indicating measurements of a presence signal. Next, notice that the “handover decision” in the foregoing passage is taken by the Petitioner as being the “processing result.” And yet, as shown above, *handover decisions* are taken on a terminal-by-terminal basis by assessing a measurement report *for the given terminal*. Petitioner again cites 36.300, 36.331, and Furht for the use of

measurement reports in handover decisions, *see* Petition at 51, but as shown above for element 1[b], each of those references uses a measurement report *for a given terminal* in the handover decision, and does not use measurement reports from *a plurality of terminals*. *See, e.g.*, Ex. 1005 at 45 (“**UE [a terminal]** is triggered **to send MEASUREMENT REPORT** by the rules set by *i.e.* system information, specification etc.”); *id.* at 46 (“Source eNB makes decision based on MEASUREMENT REPORT and RRM information to **hand off UE**.”) (emphases added); Ex. 1006 at 70, Fig. 5.5.5-1 (“MeasurementReport” sent from a **single terminal “UE”** to the “EUTRAN” to which the measurement report is provided).

Indeed, throughout its discussion of element 1[c], Petitioner refers to use of a measurement report *for a given terminal* in the handover decision, and not to use measurement reports from a “plurality of terminals” indicating measurements of a presence signal: “to consider the measurements received in **the UE’s** [singular] measurement reports” (Petition at 51); the “serving cell processes the reports in order to determine whether the measurements of **the neighbor cell** [singular]... could support **a handover**” (Petition at 52); and “this determination would have produced a ‘processing result’ that reflected a comparison between **the neighboring, idle cell** [singular] measurements and **the serving cell** [singular] measurements” (Petition at 52) (emphases added).

The Petition therefore lacks any showing of processing measurement reports from *a plurality of terminals* indicating measurements of the presence signal to provide a “processing result.”

In that regard, it is worth noting that Petitioner makes reference to a passage of Frenger regarding “congestion” of a cell. But that passage does not imply the use of measurement reports from a plurality of terminals indicating measurements of the presence signal in making the handover decision as the Petition suggests. *See* Petition at 52 (“For example, the serving cell may decide to activate the idle cell if congested or at risk of losing a connection”), referring to Ex. 1004 at [0046]; *see also* Petition at 16 (“Notably, Frenger specifically contemplates that the serving eNodeB may base its handover decision on ‘if a cell is congested’ or if the connection may be lost,” citing Ex. 1004 at [0046]).

Instead, that passage of Ex. 1004 at [0046] actually states as follows: “When a base station enters DTX mode it may inform its neighbor cells of this fact. In this way ***the neighbor cells*** can decide to reject handover requests to the idle cell to reduce energy consumption in the system. In such an embodiment ***handover requests to the idle cell will be accepted*** only if a cell is congested or there is an apparent risk of losing a connection.” *See* Ex. 1004 at [0046] (emphases added). In other words, the reference to the congested cell refers to occasions on which

handover requests from the neighbor cell to an idle cell **would be accepted** only when the neighbor cell is congested.

But that provides no teaching of a different procedure for the resulting *handover request itself* to the idle cell, which all of Petitioner’s references show relies upon a measurement report *for the given terminal* and not to measurement reports from a plurality of different terminals. The reference to the congestion in the neighbor cell provides no teaching of processing measurement reports from a plurality of different terminals indicating measurements of a presence signal to produce a processing result, and the Petition provides no showing that the “congestion” in the neighbor cell relies in any way on measurement of a presence signal or that there are any plural measurements of such a presence signal by terminals that are processed in connection with the “congestion” in the neighbor cell. *See id.* Rather, handover requests from the neighbor cell to an idle cell **would be accepted** only when the neighbor cell is congested, and the resulting *handover request itself* to the idle cell relies upon a measurement report *for the given terminal* and not to measurement reports from a plurality of different terminals. *See id.*

The Petition simply lacks any teaching of processing measurement reports of a presence signal from *a plurality of terminals* to provide a “processing result” that

is used to activate an inactive cell, and hence is critically lacking in a showing of element 1[c].

3. Claim 1[d]; the Petition fails to establish that Frenger in view of 36.300, 36.331, Furht, and 24.301 teach “activating the at least one inactive cell when the processing result fulfills at least one activation condition such that at least one of the plurality of terminals is within a coverage area of the at least one activated cell”

The Petition’s arguments for element 1[d] are murky, but cannot succeed for at least the same reasons as for elements 1[b] and 1[c]. In element 1[d] the inactive cell is activated when “the processing result” fulfills at least one “*activation condition*.” This “processing result” in element 1[d] must be the same “processing result” from 1[c] that is provided from processing “measurement reports” indicating measurements from a *plurality of terminals*, as in 1[b].

However, instead of showing use of the “processing result” to fulfill the “activation condition” as in element 1[d], the Petition begins by flatly contradicting itself: at 53-54, the Petition states “For example, the ‘*handover command*’ *itself is at least one activation condition*” and yet, at 52, the Petition had stated that the “*handover command*” *was the “processing result”* (“For example, Frenger discloses that the serving cell provides a ‘processing result’ in the form of a ‘handover command’”). As shown above in the discussion of claim construction of element 1[d], the “activation condition” clearly cannot be one and the same thing

as the “processing result,” because element 1[d] clearly requires that the “processing result” may or may not “fulfill[]” the “activation condition.” Therefore, Petitioner’s confusing identification of the “handover command” of Frenger as being both the “processing result” and the “activation condition” of Claim 1 cannot be correct, and is itself a failing of the Petition.²

In any event, the Petition’s use of the “handover decision” as being “based on *the measurement report of the UE*” (see Petition at 54), which is revealingly worded as a reference to a *singular measurement report* for “the UE,” simply does not teach use of a “processing result” that is provided from processing measurement reports from a *plurality of terminals* indicating measurements of the presence signal to fulfill an activation condition. Petitioner’s failing for the “activation condition” of 1[d] therefore follows from its failings to teach the “measurement reports” and “processing result” of 1[b] and 1[c] discussed above.

Further, as discussed above, in Petitioner’s combination with Frenger, the waking up of a base station is performed in connection with a random access attempt from a *single terminal* or the handover of a *single given terminal* from cell to cell. *See, e.g.*, Ex. 1004 at [0040], [0044]. Yet this fails to teach the claimed

² Indeed, in Frenger, both a handover and a random access attempt of even a *single terminal* would trigger an inactive cell to become active. *See, e.g.*, Ex. 1004 at [0040], [0044].

“activation condition,” in which there is a processing of measurement reports from a plurality of terminals indicating measurements of a presence signal to fulfill the “activation condition.” Among other things, Petitioner’s references therefore suffer from the drawback that it may be premature to activate an inactive cell based purely on requests from a single terminal, and fail to achieve potential advantages of the claimed technique.

For example, the claimed “activation condition” of the ’590 Patent may be fulfilled when the processing result indicates that the number of terminals which are estimated to be in the best server area of an inactive cell, when activated, is above a predetermined number of terminals or is above a predetermined fraction of the terminals currently served by one or more active cells, or that the load (expressed, *e.g.*, in the number of calls or in an aggregated bit rate or in another load measure) that is estimated to be absorbed by an inactive cell, when activated, is above a pre-determined load measure. *See* Ex. 1001 at 3:1-10.

Advantageously, because measurement reports are received from a *plurality of terminals* and processed by the processor system to produce the “processing result” that is used to fulfill the “activation condition,” the telecommunications infrastructure allows for several potential advantages. For example, the ’590 Patent telecommunications infrastructure can determine more accurately which base

stations or cells should be activated, in a method that processes measurement reports from the “plurality of terminals” indicating measurements of the presence signal and hence allows taking into account factors such as the distribution of the plurality of terminals in the active cell, how many of these terminals can be adequately covered by the currently inactive cell, and what would be the total energy consumption if the inactive cell were to be activated and a portion of the terminals were transferred to the newly activated cell. *See id.* at 1:65-67 and 10:43-61.

At least because of its failings to show a teaching of elements 1[b], 1[c], and 1[d], the Petition therefore fails to show that the references or their combination teaches independent Claim 1.

4. Dependent Claims 2-10

For at least the same reasons as given for Claim 1, from which Claims 2-10 directly or indirectly depend, the Petition likewise fails to show that any of the references or their combination teach dependent Claims 2-10.

5. Independent Claims 11 and 12; Dependent Claims 13-20

For similar reasons to those given for Claim 1 for elements 1[b], 1[c], and 1[d], the Petition fails to establish that Frenger in view of 36.300, 36.331, Furht, and 24.301 teach the elements relating to the “measurement reports,” “processing

result,” and “activation condition” in independent Claims 11 and 12, namely, claim elements 11[b], 11[c], 11[d], 12[b], 12[c], and 12[d], which should be construed similarly in relevant regards as discussed above.

Petitioner therefore fails to show that the references or their combination teaches independent Claims 11 and 12, and, for at least the same reasons, dependent Claims 13-20, which depend directly or indirectly from Claim 12.

6. Lack of Reasonable Likelihood of Ground 1

The Petition therefore fails to demonstrate a reasonable likelihood that Claims 1-20 of the '590 Patent are unpatentable in view of any combination of Frenger with 36.300, 36.331, Furht, and 24.301.

VI. DISCRETIONARY DENIAL SHOULD BE GRANTED UNDER § 325(D)

The above failures also are grounds to grant discretionary denial because the same failings of the references to teach the “measurement reports” here were considered as lacking in the references considered by the Examiner.

As Petitioner admits, the Examiner allowed the application at least partly due to the prior art’s failure to teach “*measurement reports* indicating measurements of the presence signal by the plurality of terminals.” *See* Petition at 7-8, *citing* Ex. 1002 at 24, 31-33 (emphasis added). Since these “*measurement reports*” from the “*plurality of terminals*” indicating measurements of the

presence signal are the very same claim element that Petitioner fails to show, for the reasons discussed above for element 1[b], it follows that the Petitioner has presented nothing that warrants reconsideration by the Board. The Petition instead presents a situation in which “the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d); *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017) (precedential).

Moreover, as acknowledged in the Petition, the primary reference relied upon by the Petitioner, Frenger, was considered by the Examiner and the Examiner chose not to rely upon it. *See* Petition at 6-7. Yet Frenger was considered substantively in an Office Action in a continuation application (App. 14/937,303, filed 11/10/2015, now U.S. Patent 9,462,544), giving rise to an inference that, where the Office was aware of Frenger – as here, where Frenger was of record, and as in the continuation application – the Office would not and did not hesitate to raise it in a rejection if the Office had considered that Frenger was more pertinent than other references. *See* Ex. 2001. The Examiner nevertheless granted the application and specifically noted that the “measurement reports” element was lacking in the references of record (*see* Petition at 8). For the reasons given above, the same shortcomings are present in the Petition’s combination of references here.

Discretionary denial should be granted.

VII. CONCLUSION

The Board should not institute *inter partes* review on any of the grounds set forth in the Petition.

Respectfully submitted this 6th day of July, 2023.

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PATENT OWNERS' LIST OF EXHIBITS

Exhibit	Description
2001	Office Action dated January 20, 2016 from U.S. App. No. 14/937,303.

CERTIFICATE OF COMPLIANCE

I hereby certify that this Patent Owner Preliminary Response complies with the type- volume limitations of 37 C.F.R. § 42.24(b)(1), because it contains 8,013 words, as calculated by the Microsoft Word program excluding the parts of the brief exempted by 37 C.F.R. § 42.24.

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that on July 6, 2023, the foregoing ***Patent Owner Preliminary Response, List of Exhibits, and Exhibits referred to herein*** are being served electronically by agreement of the parties at the following email service addresses:

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