

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AT&T MOBILITY LLC, AT&T SERVICES, INC., ERICSSON INC., NOKIA
OF AMERICA CORPORATION, T-MOBILE USA, INC.
Petitioners,

v.

DAINGEAN TECHNOLOGIES LTD.,
Patent Owner.

Case No. IPR2024-00310
U.S. Patent No. 10,932,207

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 10,932,207**

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LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent 10,932,207 (“’207 Patent”)
1002	Prosecution History of U.S. Patent 10,932,207 (“’207 File History”)
1003	Declaration of Mark Mahon, Ph.D. (“Mahon Declaration”)
1004	Curriculum Vitae of Mark Mahon, Ph.D.
1005	US Patent Publication No. 2017/0019930 (“Lee1”)
1006	US Patent Publication No. 2010/0255847 (“Lee2”)
1007	Dahlamn et al. 4G, LTE-ADVANCED PRO AND THE ROAD TO 5G (3rd ed. 2016)
1008	Harri Holma and Antti Toskala LTE FOR UMTS (2009)
1009	Nokia, “Considerations on NR RACH procedures,” R2-168013 (Nov. 2016)
1010	3GPP TS 36.331 v13.0.0 (2016) (“TS 36.331”)
1011	3GPP TS 25.214 v3.2.0 (March 2000) (“TS 25.214 Release 1999”)
1012	3GPP TS 38.321 v16.1.0

AT&T Mobility LLC, AT&T Services, Inc., Ericsson Inc., Nokia of America Corporation, and T-Mobile USA, Inc. (collectively, “Petitioners”) petition for *Inter Partes* Review (“IPR”) of claims 4–6 and 8 (the “Challenged Claims”) of U.S. Patent No. 10,932,207 (“the ’207 Patent”) (Ex-1001), which, according to PTO records, is assigned to Daingean Technologies Ltd. (“Daingean” or “Patent Owner”). For the reasons set forth below, the Challenged Claims should be found unpatentable and canceled.

I. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

Real Parties-in-Interest: Petitioners identify the following as the real parties-in-interest: AT&T Corp, AT&T Mobility LLC, AT&T Mobility II LLC, AT&T Services, Inc., Ericsson Inc., Nokia of America Corporation, and T-Mobile USA, Inc. No other parties have directed, funded, or controlled the filing of this Petition.

Related Matters: The ’207 Patent was asserted in *Daingean Tech. Ltd. v. AT&T Corp. et al.*, 2:23-cv-00123-JRG (E.D. Tex. Mar. 24, 2023) and *Daingean Tech. Ltd. v. T-Mobile USA, Inc.*, 2:23-cv-00347-JRG (E.D. Tex. July 24, 2023) but has been dismissed in both matters.

Counsel and Service Information:

Petitioners identify lead and backup counsel below. A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b). Petitioners consent to email service at: ATT_Daingean@mckoolsmith.com.

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A copy of this entire Petition, including all Exhibits and a Power of Attorney, is being served by FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record for Patent Owner in the district court proceedings regarding the '207 Patent: Demetrios Anaipakos, Alavi & Anaipakos PLLC, 609 Main Street, Suite 3200, Houston, TX 77002; and to the address of the attorney or agent of record at the USPTO: Imperium Patent Works, P.O. BOX 607, Pleasanton, CA 94566.

II. FEES

The Office is authorized to charge the fee in 37 C.F.R. § 42.15(a) to Deposit Account No. DA-505723 and any additional fees that are due.

III. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioners certify that the '207 Patent is available for IPR and Petitioners are not barred or estopped from requesting IPR on the grounds identified herein.

B. Challenge and Relief Requested

Petitioners request IPR of claims 4–6 and 8 of the '207 Patent on the following grounds:

Ground	Claims	Basis
1	4–6 and 8	§ 102 and/or § 103 – Lee1
2	4–6 and 8	§ 103 – Lee1 + Lee2

The earliest possible priority date of the '207 Patent is February 20, 2017.

Lee1 (filed February 12, 2015 and published January 19, 2017) is prior art under at least post-AIA §§ 102(a)(1) and 102(a)(2) as a patent application filed and published prior to February 20, 2017.

Lee2 (filed April 1, 2010 and published October 7, 2010) is prior art under at least post-AIA §§ 102(a)(1) and 102(a)(2) as a patent application filed and published prior to February 20, 2017.

IV. INTRODUCTION

The Challenged Claims merely combine two well-known concepts from the prior art: (1) a 2-step random access procedure that was developed years before the

Challenged Claims were filed and (2) a method for controlling the transmission power of random access preambles that has been used in every cellular standard since 3G. It comes as no surprise, then, that the Challenged Claims are anticipated or, at the very least, rendered obvious by the prior art.

V. BACKGROUND AND SUMMARY OF THE '207 PATENT

A. Random Access Procedure

In modern wireless telecommunications networks, a single base station is capable of receiving signals from multiple mobile devices, or user equipment (“UE”). Ex-1003, ¶ 41.¹ Due to capacity limitations, it would be impossible for each base station to dedicate network resources to each UE in perpetuity. *Id.* Instead, a base station dedicates network resources to a UE only when that UE needs to access the network (*e.g.*, to initiate a data transmission or a telephone call). *Id.* The process by which the UE requests network resources is called “random access” procedure. *Id.*

Random access is a multi-step procedure. Before the development of 5G, the random access procedure employed for decades as part of the 3G and 4G standards comprised 4 steps, but as a result of numerous contributions from Petitioners and

¹ Petitioner submits the declaration of Dr. Mark Mahon (Ex-1003), an expert in the field of the '207 Patent. Ex-1003, ¶¶ 5–18; *see also* Ex-1004.

other participants in the standard setting process, the organization responsible for writing the technical specifications for wireless standards, the Third-Generation Partnership Project (“3GPP”), adopted an optional 2-step random access procedure in the 5G standards. *Id.* at ¶ 44.

In both the 4-step and 2-step random access procedures, the UE begins by transmitting an initial, unscheduled (or random) message to a base station requesting a voice or data channel. *Id.* at ¶¶ 42–45. This initial message is called a “random access preamble” and is transmitted over the physical random access channel (“PRACH” or “RACH”) to the base station when the UE needs access to the wireless network. *Id.* at ¶¶ 42–45.

Because random access preambles are unscheduled, it is possible for two or more requests to arrive at the base station at the same time. In some mobile telecommunication systems, this results in a “collision” that prevents the base station from deciphering requests that are received simultaneously. *Id.* at ¶ 42. A contention-based random access procedure is used minimize the likelihood of such collisions. *Id.* To that end, the base station broadcasts a set of potential random access preambles as system information to each UE within range. *Id.* at ¶ 42. Subsequently, when a given UE decides to initiate random access, the UE randomly selects one of the random access preambles from the set and transmits the selected preamble sequence over the RACH. *Id.* With this technique, the base station is capable of

decoding random access preambles that are received simultaneously so long as different preamble sequences are randomly selected by each UE attempting random access. *Id.*

B. Power Control of Random Access Preambles

In the first step of contention-based random access procedure, the UE transmits the random access preamble at a configurable transmission power P_{PRACH} to the base station. Ex-1003, ¶¶ 46–49. If the UE successfully transmits the random access preamble and receives a random access response from the base station in return, the UE can continue performing the random access procedure without adjusting the transmission power. *Id.* at ¶ 47. However, if the UE does not receive a response from the base station within a certain period of time, the UE re-transmits the preamble at a higher, or “ramped up,” transmission power. *Id.* This process is called “power ramping” and has been used in the field of wireless communications for more than two decades. *Id.* at ¶¶ 47–48.

To determine the appropriate transmission power of a random access preamble, the UE uses the following information: (1) the initial transmission power; (2) the power ramping step, or how much the UE should increase the transmission power on subsequent transmissions; and (3) how many times the UE has attempted random access without receiving a response from the base station. *Id.* at ¶¶ 46–49. The initial transmission power and power ramping step are configured by system

information that the UE receives from the base station before attempting random access. *Id.*

C. The Purported Invention Claimed in the '207 Patent

The '207 Patent is generally directed to methods and systems for “efficiently perform[ing] a random access procedure” in a radio communications system. *See* Ex-1001 at 1:53–61, 2:35–40. Radio communications systems include terminal apparatus (like cell phones, tablets, and other cellular-enabled user equipment) and at least one base station apparatus. *Id.* at 3:49–51. Communications from the terminal apparatus to the base station apparatus are referred to as “uplink radio communications,” and comprise the “following uplink physical channels”:

- Physical Uplink Control Channel (PUCCH)
- Physical Uplink Shared Channel (PUSCH)
- Physical Random Access Channel (PRACH)

Id. at 6:16–23.

The PUCCH is used to transmit Uplink Control Information, or UCI. *Id.* at 6:24–25. The PUSCH is used for transmission of uplink data (UpLink-Shared Channel (UL-SCH)). *Id.* at 6:39–40. The PRACH is “used to transmit a random access preamble (random access message 1)” and “indicating the initial connection establishment procedure, the handover procedure, the connection re-establishment

procedure, synchronization (timing adjustment) for uplink transmission, and the request for the (UL-SCH) resource.” *Id.* at 6:47–53.

The ’207 Patent describes methods for “configuring the transmit power P_{PRACH} for transmission of a PRACH including a random access preamble” in both a 2-step contention-based random access procedure and a 4-step contention-based random access procedure. *Id.* at 12:13–23, 29:14–16. The random access preamble, and thus transmit power P_{PRACH} , is identified and transmitted in the first step of both the 2-step contention-based random access procedure and 4-step contention-based random access procedure. *Id.* at 12:29–31, 13:22–26, 15:9–10.

The ’207 Patent further describes calculating transmit power P_{PRACH} according to the below equation:

$$P_{PRACH} = \min\{\text{PREAMBLE_RECEIVED_TARGET_POWER} + \text{dBm}\} \quad \text{Equation 5}$$

Id. at 29:19–20. The “PREAMBLE_RECEIVED_TARGET_POWER” is calculated according to the below equation:

$$\begin{aligned} \text{PREAMBLE_RECEIVED_TARGET_POWER} = & \text{pre-} \\ & \text{ambleInitialReceivedTargetPower}(m) + \text{DEL-} \\ & \text{TA_PREAMBLE}(F) + (\text{PREAMBLE_TRANS-} \\ & \text{MISSION_COUNTER} - 1) * \text{powerRamping} \\ & \text{Step}(m); \end{aligned} \quad \text{Equation 6}$$

Id. at 29:31–39.

The “preambleInitialReceivedTargetPower” refers to the initial transmission power of the preamble. Ex-1003, ¶ 55. The “powerRampingStep” refers to a “step size of transmit power ramp up” or, in other words, the amount by which the initial transmission power of the preamble is increased for each random access attempt that does not succeed. Ex-1001 at 29:52–53; Ex-1003, ¶ 55.

The ’207 Patent further discloses that a “[c]ommon preambleInitialReceivedTargetPower may be used for the 2 step contention based random access response procedure [and] the 4 step contention based random access response procedure.” Ex-1001 at 30:3–5. Likewise, the ’207 Patent discloses that a “[c]ommon powerRampingStep may be used for the 2 step contention based random access response procedure [and] the 4 step contention based random access response procedure.” *Id.* at 30:7–11.

VI. CLAIM CONSTRUCTION

In IPR proceedings, a claim is construed “using the same claim construction standard that would be used to construe the claim in a civil action” 37 C.F.R. § 42.100(b). The Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper 11 at 16 (PTAB Aug. 14, 2015); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). Petitioners respectfully submit that no terms need to be construed to resolve the issues raised in this Petition

because the prior art discloses all limitations under the plain meaning as well as under any plausible construction. Ex-1003, ¶ 57.

VII. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art at the time of the alleged invention of the '207 Patent ("POSITA"), which for purposes of this proceeding is on or around February 20, 2017, would have had a B.S. in Electrical Engineering or a related field with at least three years of experience designing, developing, and/or testing telecommunication systems. Ex-1003, ¶ 36. A POSITA would also have familiarity with the wireless standards and well-known protocols for accessing wireless networks. *Id.* More education may supplement practical experience or *vice versa. Id.*

VIII. 35 U.S.C. §325(d) is Inapplicable

The asserted references were not disclosed in an IDS filed during the prosecution of the '207 Patent, and the Examiner never identified them or used them to reject claims during prosecution. *See generally* Ex-1002. The Examiner also never considered the testimony of Petitioners' expert, Dr. Mahon (Ex-1003), regarding these references and the knowledge of a POSITA. The grounds for invalidity advanced in this Petition are not substantially the same as prior art or arguments the Office previously considered. Thus, 35 U.S.C. §325(d) is inapplicable to this case.

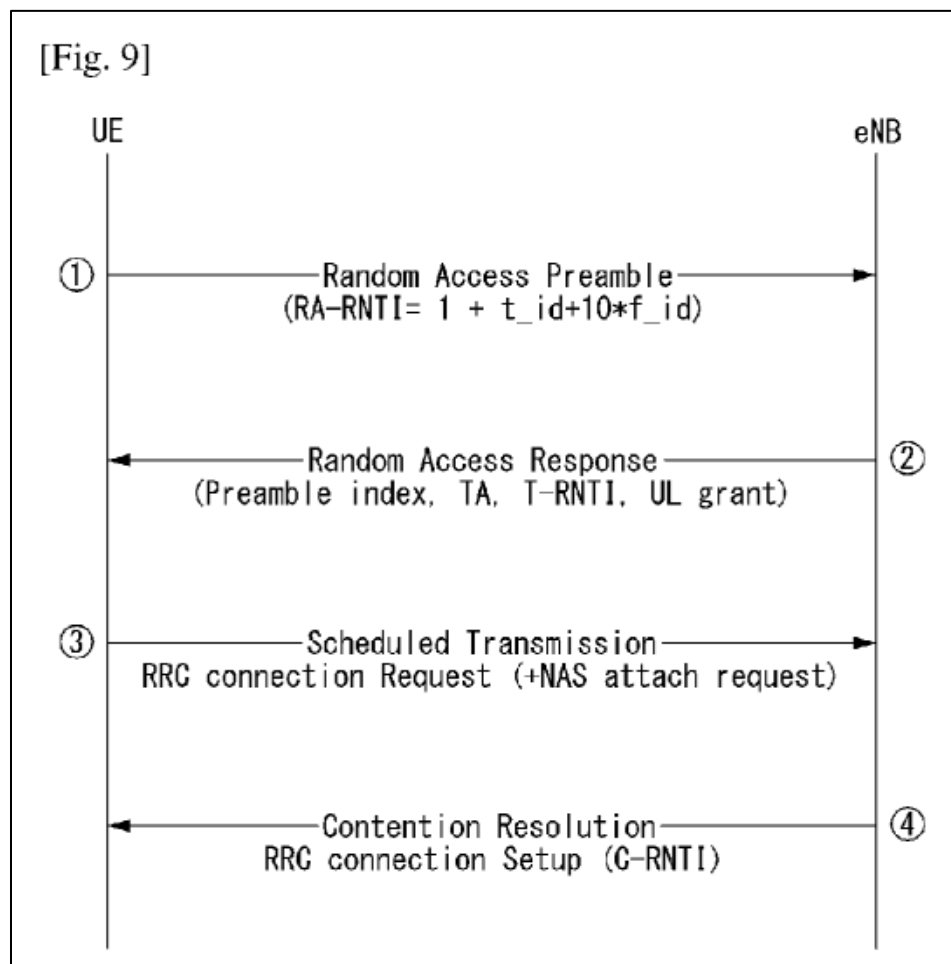
IX. PRIOR ART

A. *Lee1*

U.S. Patent Pub. No. 2017/0019930 (“Lee1”) is entitled “Method for Allocating Temporary Identifier to Terminal in Random Access Procedure in Wireless Communication System and Apparatus Therefor.” *See* Ex-1005. Lee1 was filed as PCT App. No. PCT/KR2015/001416 and claims priority to U.S. Prov. App. No. 61/951,477, filed March 11, 2014. *Id.* According to PTO records, Lee1 is assigned to LG Electronics Inc.

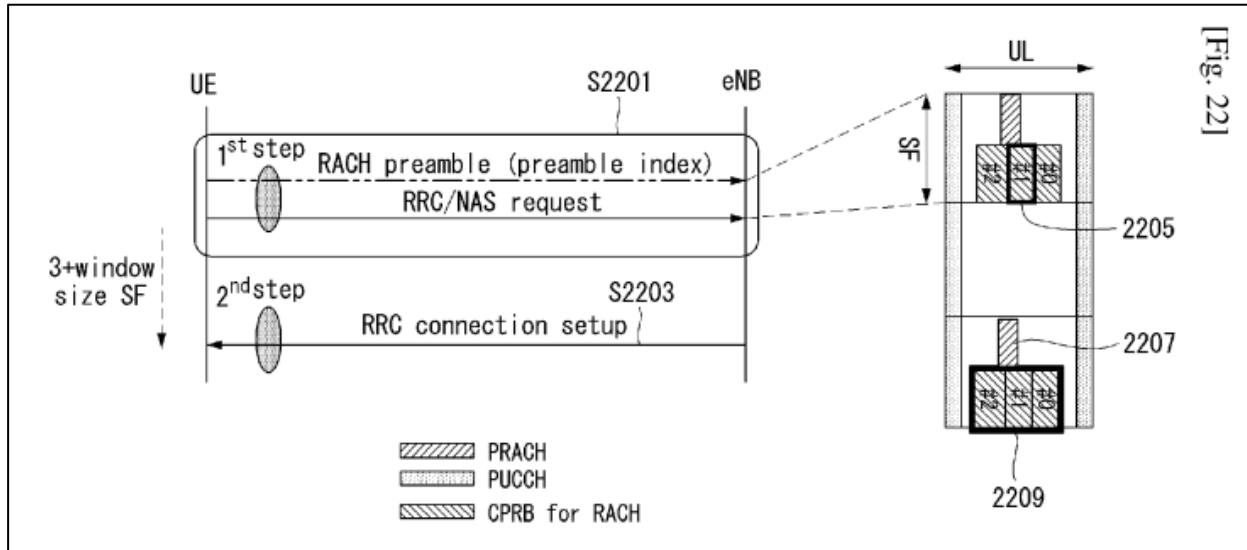
Lee1 generally describes methods and systems for “allocating a temporary radio network temporary identifier (T-RNTI) to a user equipment (UE) within a random access procedure in a wireless communication system, includ[ing] transmitting, by the UE, a random access preamble to a base station (BS).” *Id.* at Abstract. Lee1 discloses the “object of the present invention is to define a 2-step random access procedure in order to minimize latency of the related art 4-step random access procedure.” *Id.* at [0006]. Lee1 further discloses that the 2-step and 4-step random access procedures are contention-based procedures during which “the UE may transmit a preamble via a Physical Random Access Channel (PRACH)” *Id.* at [0093], [0150], [0241].

Lee1 describes the 4-step contention-based random access procedure in Figure 9, which is reproduced below:



Id. at Fig. 9, [0150].

In a similar vein, Lee1 describes the 2-step contention-based random access procedure in Figure 22, which is reproduced below:



Id. at Fig. 22, [0316]; *see also id.* at Figs. 23–27, [0046]–[0051], [249].

In addition to disclosing 2-step and 4-step contention-based random access procedures, Lee1 also teaches that the transmission power of random access preambles is set according to the industry-standard, power ramping technique:

The terminal sets transmission power of the random access preamble (PREAMBLE_RECEIVED_TARGET_POWER) to ('preambleInitialReceivedTargetPower' + 'DELTA_PREAMBLE' + ('PREAMBLE_TRANSMISSION_COUNTER'? 1) * 'powerRampingStep'), and transmits the same.

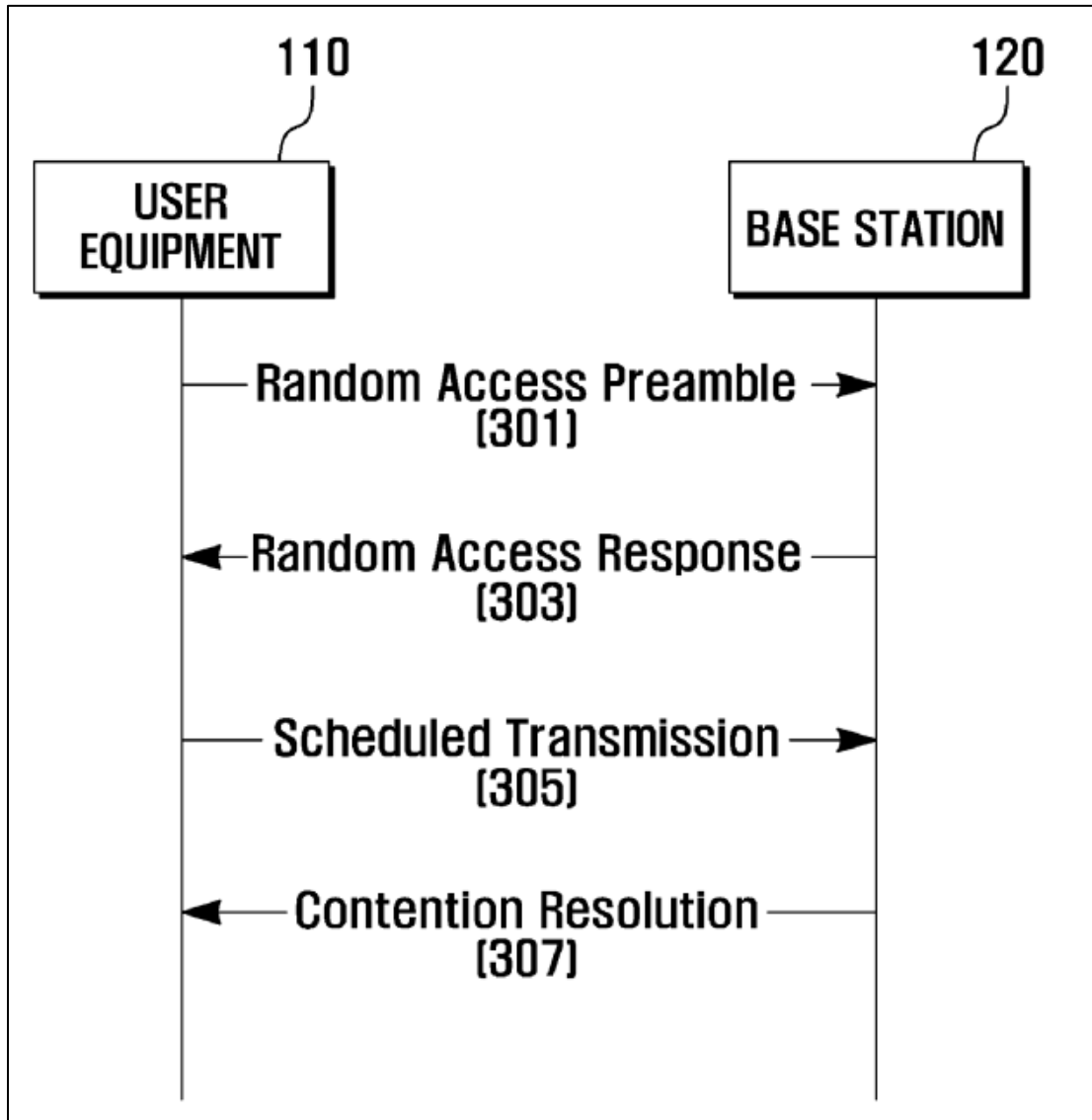
Id. at [0152], [0315]–[0317]. As explained in Lee1, “preambleInitialReceivedTargetPower” is the initial transmission power for a UE’s first random access attempt and “powerRampingStep” indicates the power ramping factor the UE should use each time it retransmits the preamble. *Id.* at [0151]; *see also* Ex-1003, ¶ 55. “These values are signaled as part of system information to the terminal.” Ex-1005 at [0152].

Thus, Lee1 teaches both 2-step and 4-step contention-based random access procedures and the conventional means for controlling the transmission power of random access preambles, including the variables for “preambleInitialReceivedTargetPower” and “powerRampingStep.” Ex-1003, ¶¶ 50–56.

B. *Lee2*

U.S. Patent Pub. No. 2010/0255847 (Lee2) is entitled “Apparatus and Method for Random Access in Wireless Communication System.” *See* Ex-1006. Lee2 was filed as U.S. Patent App. No. 12/752,749 and claims priority to Korean Patent App. No. 10-2009-0027958, filed April 1, 2009. *Id.* According to PTO records, Lee2 is assigned to Samsung Electronics Co., Ltd.

Lee2 generally describes a “method and an apparatus . . . that transmit and receive a random access preamble in a wireless communication system.” *Id.* at Abstract. Like Lee1, Lee2 discloses a 4-step contention-based random access procedure:



Id. at Fig. 3.

Lee2 further discloses “[i]n performing random access, user equipment transmits a preamble to a base station, using the initial transmission power of the preamble contained in random access information.” *Id.* at [0007]. “When the user equipment successfully transmits the preamble and receives a random access response regarding the preamble from the base station, it can continue performing

the procedure of random access. However, if the user equipment does not receive a response from the base station within a certain period of time, it re-transmits the preamble thereto using a transmission power that is higher than that of the previous transmission. This increase is referred to as power ramping.” *Id.* Higher transmission power may be necessary, for example, when the UE is located further away from the base station, while lower transmission power may be sufficient when the UE is located closer to the base station. *Id.* at [0010].

Lee2 further discloses that “parameters for performing the random access correspond[] to an event (or case) for triggering the random access.” *Id.* at [0028]. For example, these “events (or cases) include idle to connected mode transition (Case 1), RRC connection re-establishment (Case 2), handover (Case 3), and DL/UL data resume (Case 4).” *Id.* at [0029]. For example, if the event corresponds to a handover case, the user equipment transmits the preamble to the base station using relatively high transmission power in the initial transmission. *Id.* at [0045]. However, for other types of random access, Lee2 teaches the use of different parameters for controlling the transmission power of random access preambles. For example, if the event corresponds to an RRC connection re-establishment case, the user equipment transmits the preamble to the base station using a relatively low level of transmission power in the initial transmission. *Id.* The same is true for the power ramping step. *Id.* at [0048]–[0051].

Lee2 teaches that setting “different power ramping and initial transmission power of a random access preamble, according to the condition of user equipment that is performing random access and power ramping,” is beneficial because it “reduces the time delay due to random access, which enhances the performance of the wireless communication system.” *Id.* at [0109]. Thus, Lee2 teaches the use of different transmission parameters, including different values for the initial transmission power and the power ramping step, for different random access procedures. Ex-1003, ¶¶ 61–62.

X. ASSERTED GROUNDS OF UNPATENTABILITY

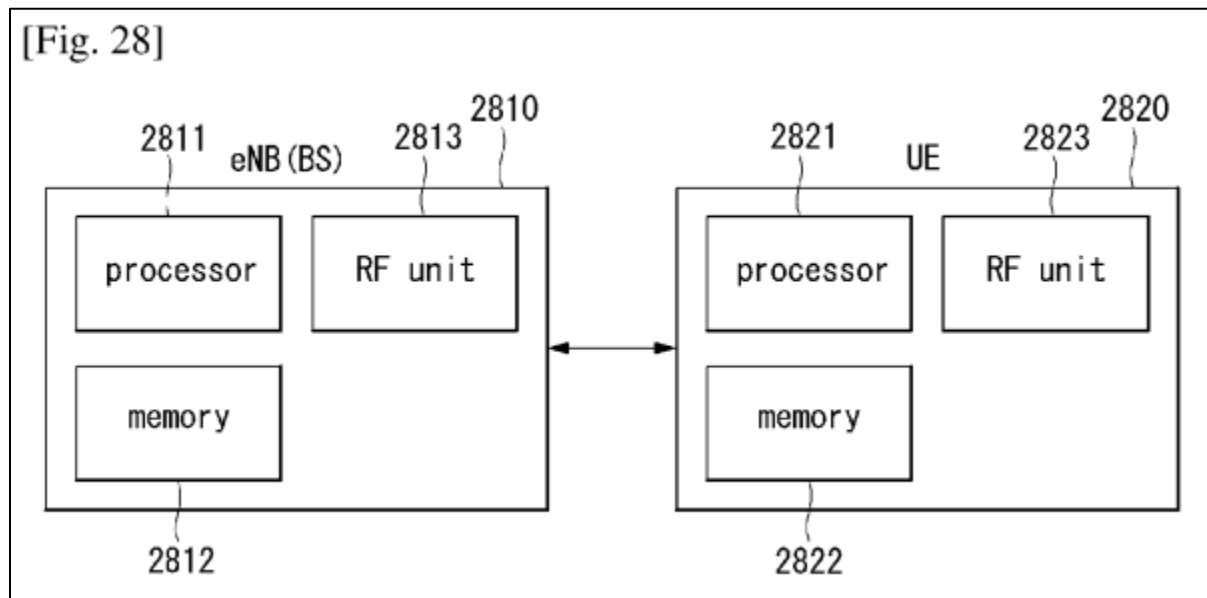
A. Ground 1 - Claims 4–6 and 8 of the '207 Patent Are Anticipated and/or Rendered Obvious By Lee1

1. Claim 4

- a. Lee1 discloses “A base station device comprising: control circuitry configured to control a 2-step contention-based random-access procedure and a 4-step contention-based random-access procedure; and”**

Lee1 discloses “a base station device.” Ex-1001 at Claim 4. For example, Lee1 discloses “an operational process of a terminal and a base station in a contention-based random access procedure.” Ex-1005 at [0033]. Lee1 further discloses the “base station (BS),” otherwise known as an “enhanced Node B (eNode B or eNB),” directly communicates with mobile devices to enable and facilitate random access procedure. *Id.* at [0055].

The base station disclosed in Lee1 comprises “control circuitry configured to control a 2-step contention based random-access procedure and a 4-step contention based random-access procedure.” Ex-1001 at Claim 4; Ex-1003, ¶¶ 63–65. For example, Figure 28 of Lee1 discloses “a wireless communication system [that] includes a eNB 2810 and a plurality of UEs 2820 belonging to the eNB 2810.” Ex-1005 at [0386]. As shown below, the eNB comprises a processor and a memory that are configured to control all operations disclosed in Lee1. *Id.* at [0387]; Ex-1003, ¶¶ 63–65.

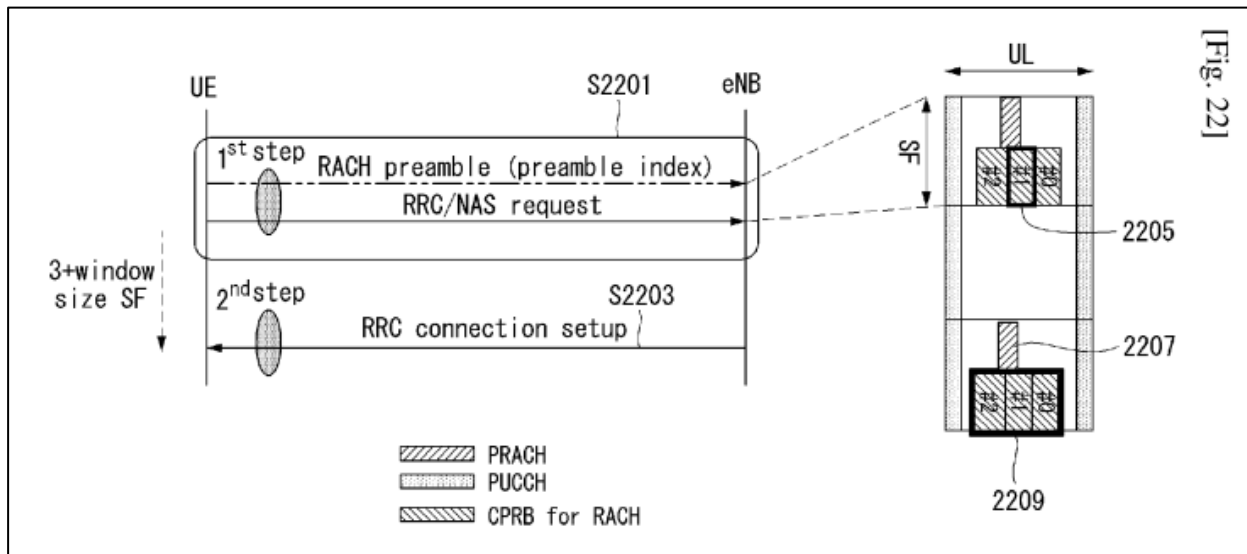


Ex-1005 at Fig. 28, [0387].

Lee1 also discloses a 2-step random access procedure and a 4-step random access procedure. For example, Lee1 teaches, “another object of the present invention is to define 2-step random access procedure in order to minimize latency

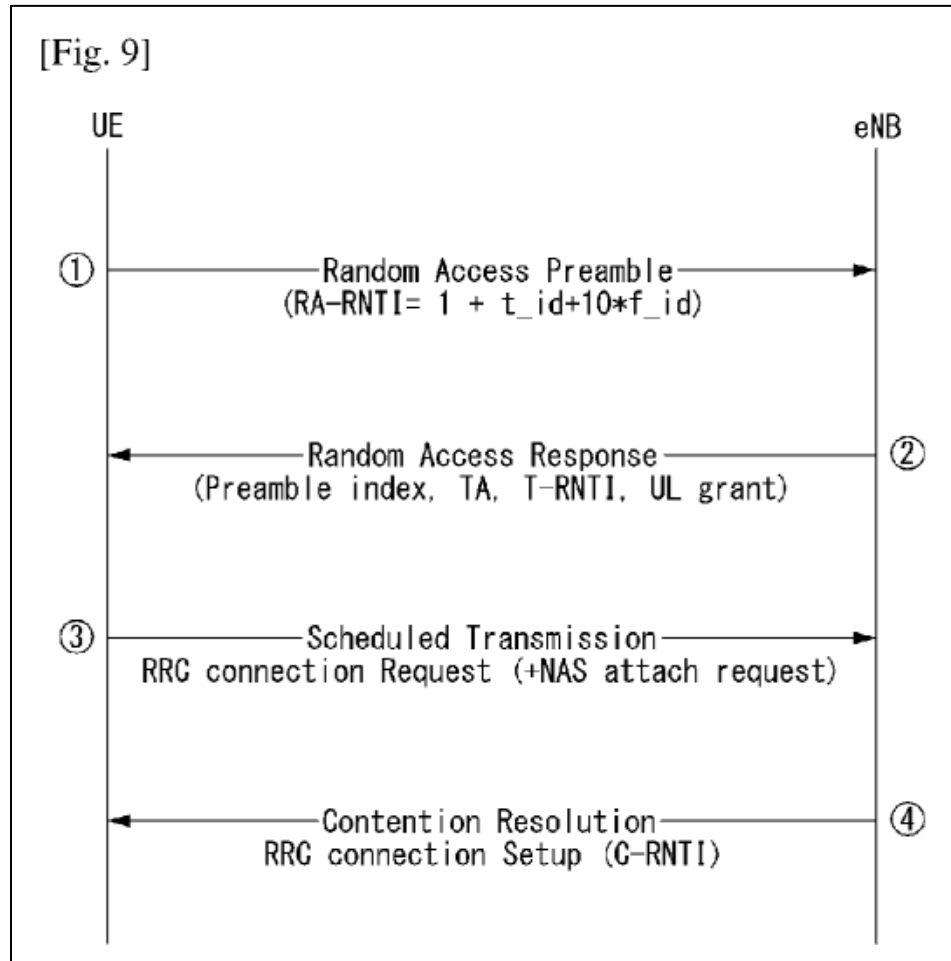
of the related art 4-step random access procedure.” *Id.* at [0006]. Lee1 explains that the benefit of performing random access procedure in two steps instead of four is a reduction in the overall latency of the procedure. *See, e.g., id.* at [0249] (“As described above, when performing the RACH procedure of 2 steps, the existing random access procedure of 4 steps may be decreased to 2 steps, thereby minimizing overall latency in an initial access procedure.”).

Figure 22 of Lee1 discloses “a 2-step contention based random-access procedure”:



Id. at Fig. 22, [0315]–[0316]; *see also id.* at Figs. 23–27, [0046]–[0051], [249].

Figure 9 of Lee1 discloses “a 4-step contention based random-access procedure”:



Id. at Fig. 9, [0150].

Lee1 discloses that the base station controls the 2-step and 4-step random access procedures by, for example, broadcasting a set of potential random access preambles that the UE can use when it is time to begin a random access procedure. *See id.* at [0152] (“First, the terminal randomly selects one random access preamble (RACH preamble) from an set of random access preambles indicated through system information or a handover command, and selects physical RACH (PRACH) resource for transmitting the random access preamble, and transmits the same.”); *see also id.*

at [0225]–[0229]; Ex-1003, ¶¶ 59, 63–65. After receiving the set of potential random access preambles from the base station, the UE randomly selects one of them and transmits the preamble to the base station using the transmission power specified by the standard equation for power ramping. Ex-1005 at [0152]. Like the set of potential random access preambles, the values used to calculate preamble transmission power are “signaled as part of system information to the terminal” by the base station. *Id.* As a result, Lee1 teaches a base station that controls 2-step and 4-step random access procedures by, at the very least, configuring the set of potential random access preambles that are available to the UE and controlling the transmission power of those random access preambles. Ex-1003, ¶ 60, 63–65.

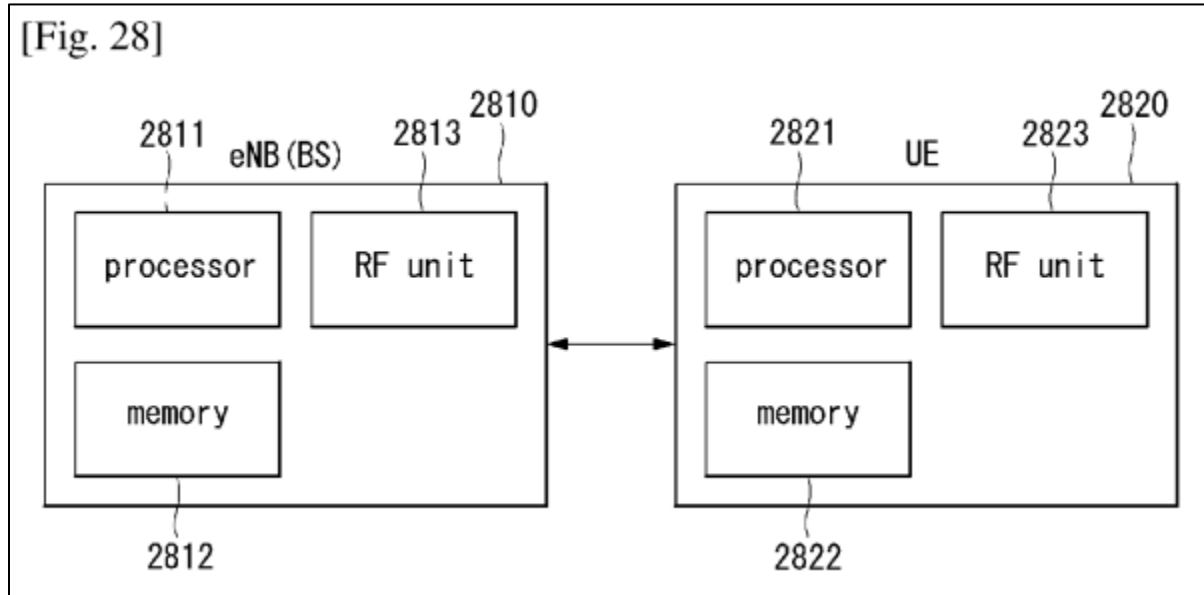
Thus, Lee1 discloses “[a] base station device comprising: control circuitry configured to control a 2-step contention based random-access procedure and a 4-step contention based random-access procedure.” Ex-1001 at Claim 4.

b. Lee1 discloses “reception circuitry configured to receive a physical random access channel with a random access preamble in a first step of the 2-step contention based random-access procedure or in a first step of the 4-step contention based random-access procedure; wherein”

Lee1 also discloses “reception circuitry configured to receive a physical random access channel with a random access preamble in a first step of the 2-step contention based random-access procedure or in a first step of the 4-step contention based random-access procedure.” Ex-1001 at Claim 4; Ex-1003, ¶¶ 66–67. For

example, Figure 28 of Lee1 discloses “a wireless communication system [that] includes a eNB 2810 and a plurality of UEs 2820 belonging to the eNB 2810.”

Ex-1005 at [0386].



Id. at Fig. 28.

To receive wireless signals from the UE, including but not limited to random access preambles, Lee1 teaches that the base station comprises an “RF unit” (*i.e.*, a radio-frequency unit) that is configured to receive such signals:

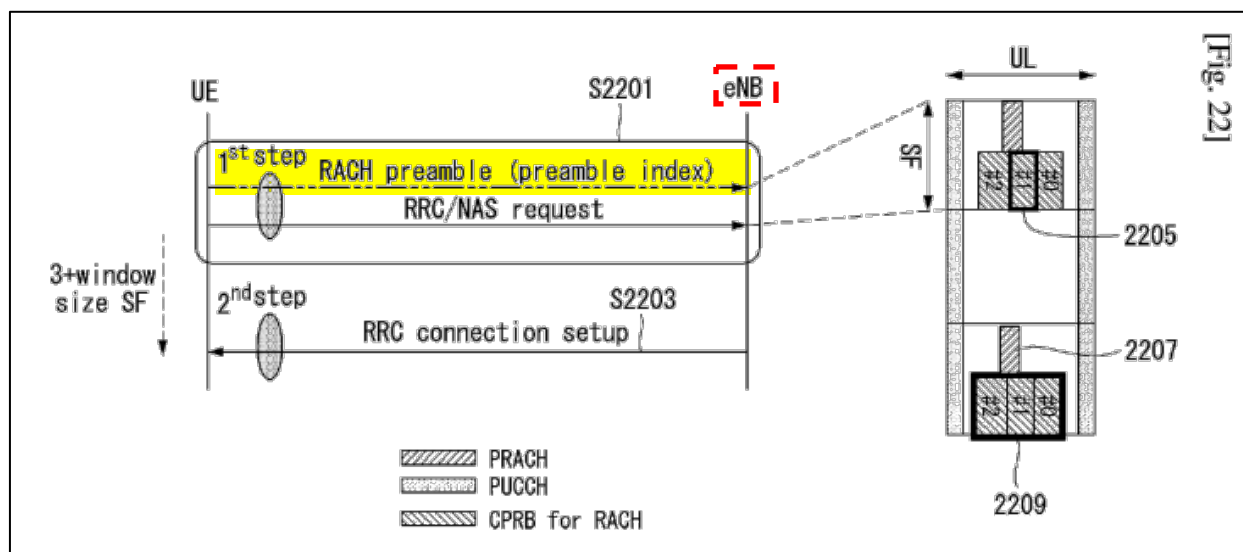
The eNB 2810 includes a processor 2811, a memory 2812, a radio frequency (RF) unit 2813. The processor 2811 may be configured to implement the functions, procedures and/or methods proposed by the present invention as described in FIG. 1-27. Layers of a wireless interface protocol may be implemented by the processor 2811. The memory 2812 is connected to the processor 2811 and stores various types of information for operating the processor 2811. **The RF unit 2813 is connected to the processor 2811, transmits and/or receives an RF signal.**

Id. at [0387] (emphasis added).

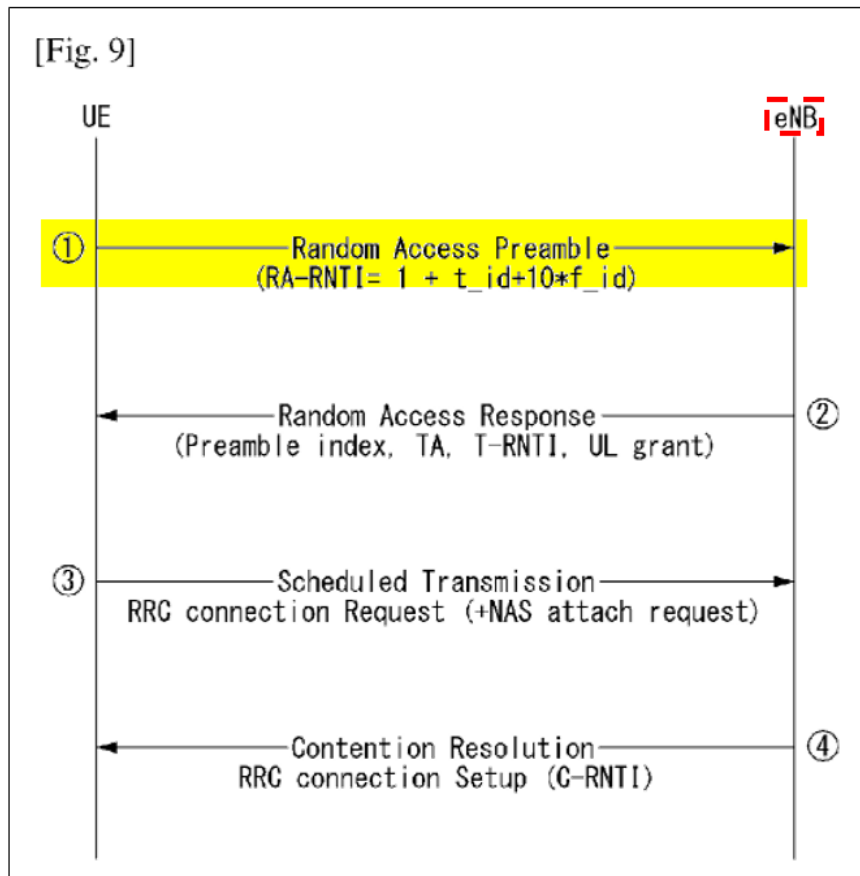
Lee1 further discloses a “random access procedure” during which “the UE may transmit a preamble via a Physical Random Access Channel (PRACH)” to the base station (*id.* at [0093]) and a contention-based random access procedure. *Id.* As explained in Lee1, “[w]hen the random access preamble is received from the terminal, the BS [*i.e.*, the base station] decodes the preamble and obtains an RA-RNTI.” *Id.* at [0153].

As explained above, Lee1 discloses a 2-step random access procedure and a 4-step random access procedure. *See, e.g., id.* at [0006], [0249]. In both the 2-step and 4-step random access procedures, Lee1 explains that the UE transmits a random access preamble to the base station over the physical random access channel (*i.e.*, the “PRACH” and “RACH” described in Lee1). *Id.* at [0093], [0152], [0317]; *see also* Ex-1003, ¶ 67 (explaining that Lee1 uses the terms “PRACH” and “RACH” interchangeably to refer to the physical random access channel over which the base station receives random access preambles from the UE).

Figures 9 and 22 of Lee1, annotated below, further show that the base station (*i.e.*, the “eNB”) is configured to receive a random access preamble in both 2-step and 4-step contention-based random access:



Ex-1005 at Fig. 22 (annotations added).



Id. at Fig. 9 (annotations added).

Thus, Lee1 discloses “reception circuitry configured to receive a physical random access channel with a random access preamble in a first step of the 2-step contention based random-access procedure or in a first step of the 4-step contention based random-access procedure.” Ex-1001 at Claim 4.

c. Lee1 discloses “transmission power for the physical random access channel is given based at least on a PREAMBLE_RECEIVED_TARGET_POWER;”

Lee1 discloses “transmission power for the physical random access channel is given based at least on a PREAMBLE_RECEIVED_TARGET_POWER.”

Ex-1001 at Claim 4; Ex-1003, ¶ 68. For example, Lee1 discloses setting the transmission power of the random access preamble to `PREAMBLE_RECEIVED_TARGET_POWER`, which is a calculated based on the values of “`preambleInitialReceivedTargetPower`,” “`powerRampingStep`,” and other inputs. Ex-1005 at [152]; Ex-1003, ¶ 68. Specifically, Lee1 teaches that `PREAMBLE_RECEIVED_TARGET_POWER` is determined according to the following equation:

[0152] First, the terminal randomly selects one random access preamble (RACH preamble) from an set of random access preambles indicated through system information or a handover command, and selects physical RACH (PRACH) resource for transmitting the random access preamble, and transmits the same. The terminal sets transmission power of the random access preamble (`PREAMBLE_RECEIVED_TARGET_POWER`) to (`'preambleInitialReceivedTargetPower' + 'DELTA_PREAMBLE' + ('PREAMBLE_TRANSMISSION_COUNTER' ? 1) * 'powerRampingStep'`), and transmits the same. Here, “`preambleInitialReceivedTargetPower`” indicate initial transmission power, and “`DELTA_PREAMBLE`” indicates a power offset value according to a preamble format. “`PREAMBLE_TRANSMISSION_COUNTER`” indicates the number of preamble transmissions. “`powerRampingStep`” indicates a power ramping factor. These values are signaled as part of system information to the terminal.

Ex-1005 at [0152] (highlighting added). As shown above, once the preamble transmission power is determined, the UE transmits the random access preamble to the base station over the physical random access channel (*i.e.*, the PRACH/RACH). Ex-1003, ¶ 68.

Thus, Lee1 discloses “transmission power for the physical random access channel is given based at least on a PREAMBLE_RECEIVED_TARGET_POWER.” Ex-1001 at Claim 4.

d. Lee1 discloses “for the 4-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(0) and a powerRampingStep(0); and”

Lee1 discloses “for the 4-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(0) and a powerRampingStep(0).” Ex-1001 at Claim 4; Ex-1003, ¶¶ 69–73.

As discussed above, *see supra* § X.A.1.a, Lee1 discloses 4-step contention-based random access procedure. To determine the transmission power for random access preambles, Lee1 teaches calculating PREAMBLE_RECEIVED_TARGET_POWER according to the below equation, which comprises as inputs a preambleInitialReceivedTargetPower and a powerRampingStep:

[0152] First, the terminal randomly selects one random access preamble (RACH preamble) from an set of random access preambles indicated through system information or a handover command, and selects physical RACH (PRACH) resource for transmitting the random access preamble, and transmits the same. The terminal sets transmission power of the random access preamble (PREAMBLE_RECEIVED_TARGET_POWER) to ($\text{preambleInitialReceivedTargetPower} + \text{DELTA_PREAMBLE} + (\text{PREAMBLE_TRANSMISSION_COUNTER} - 1) * \text{powerRampingStep}$), and transmits the same. Here, “preambleInitialReceivedTargetPower” indicate initial transmission power, and “DELTA_PREAMBLE” indicates a power offset value according to a preamble format. “PREAMBLE_TRANSMISSION_COUNTER” indicates the number of preamble transmissions. “powerRampingStep” indicates a power ramping factor. These values are signaled as part of system information to the terminal.

Ex-1005 at [152] (highlighting added).

Thus, Lee1 discloses “for the 4-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(0) and a powerRampingStep(0).”

Ex-1001 at Claim 4.

- e. Lee1 discloses “for the 2-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(1) and a powerRampingStep(1).”

Lee1 discloses “for the 2-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a

preambleInitialReceivedTargetPower(1) and a powerRampingStep(1).” Ex-1001 at Claim 4; Ex-1003, ¶¶ 74–77.

As discussed above, *see supra* § X.A.1.d, Lee1 discloses 2-step contention-based random access procedure. To determine the transmission power of random access preambles, Lee1 teaches calculating PREAMBLE_RECEIVED_TARGET_POWER according to the below equation, which comprises as inputs a preambleInitialReceivedTargetPower and a powerRampingStep:

[0152] First, the terminal randomly selects one random access preamble (RACH preamble) from an set of random access preambles indicated through system information or a handover command, and selects physical RACH (PRACH) resource for transmitting the random access preamble, and transmits the same. The terminal sets transmission power of the random access preamble (PREAMBLE_RECEIVED_TARGET_POWER) to ($\text{preambleInitialReceivedTargetPower} + \text{DELTA_PREAMBLE} + (\text{PREAMBLE_TRANSMISSION_COUNTER} - 1) * \text{powerRampingStep}$), and transmits the same. Here, “preambleInitialReceivedTargetPower” indicate initial transmission power, and “DELTA_PREAMBLE” indicates a power offset value according to a preamble format. “PREAMBLE_TRANSMISSION_COUNTER” indicates the number of preamble transmissions. “powerRampingStep” indicates a power ramping factor. These values are signaled as part of system information to the terminal.

Ex-1005 at [152] (highlighting added).

Patent Owner may argue that Lee1’s teachings regarding preamble transmission power are limited to the 4-step random access procedure, but a plain

reading of Lee1 refutes any such argument. Lee1 teaches that the 2-step random access procedure combines steps from the “existing random access procedure of 4 steps” to accomplish random access in fewer steps. *Id.* at [0249]. Specifically, Lee1 teaches that preamble transmission (*i.e.*, the first step of 4-step random access) and RRC transmission (*i.e.*, the third step of 4-step random access) are combined and transmitted to the base station as the first step of 2-step random access. *Id.* at [0241], [0315]; *see also* Ex-1003, ¶¶ 70–71 (highlighting the correlation between the various steps in 2-step and 4-step random access). Because preamble transmission is part of both 2-step and 4-step random access procedure, Lee1’s disclosure that preamble transmission power is based on `preambleInitialReceivedTargetPower` and a `powerRampingStep` applies to both types of random access procedure. Ex-1003, ¶¶ 72–73.

In addition and/or in the alternative, it would have been obvious to a POSITA to extend Lee1’s teaching of `preambleInitialReceivedTargetPower` and `powerRampingStep` to the 2-step contention-based random access procedure discussed at length in Lee1. Ex-1003, ¶ 77. As explained by Dr. Mahon, the power ramping operation disclosed in Lee1 has been an integral part of wireless standards for more than two decades. *Id.* at ¶¶ 48, 56, 77. A POSITA would have known that power ramping is necessary to minimize interference caused by the transmission of random access preambles and to achieve a connection in an energy efficient manner.

Id. at ¶¶ 46, 77. In light of these well-known benefits, a POSITA would have been motivated to use the industry-standard procedure for preamble power control—the power ramping technique disclosed in paragraph 152 of Lee1—in both the 2-step contention-based random access procedure and the 4-step contention-based random access procedure. *Id.* at ¶ 77.

Separately, to the extent Patent Owner contends that preambleInitialReceivedTargetPower(0) must differ from preambleInitialReceivedTargetPower(1) and/or powerRampingStep(0) must differ from powerRampingStep(1), Patent Owner would be incorrect. The '207 Patent unequivocally discloses that a “[c]ommon preambleInitialReceivedTargetPower may be used for the 2 step contention based random access response procedure [and] the 4 step contention based random access response procedure.” Ex-1001 at 30:3–5. The '207 Patent also discloses that a “[c]ommon powerRampingStep may be used for the 2 step contention based random access response procedure [and] the 4 step contention based random access response procedure.” *Id.* at 30:7–11. As a result, preambleInitialReceivedTargetPower(0) may be the same as preambleInitialReceivedTargetPower(1) and powerRampingStep(0) may be the same as powerRampingStep(1).

Thus, Lee1 discloses “for the 2-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at

least on a `preambleInitialReceivedTargetPower(1)` and a `powerRampingStep(1)`.”

Ex-1001 at Claim 4.

2. Claim 5

- a. **Lee1 discloses or renders obvious “The base station device according to claim 4, wherein the `preambleInitialReceivedTargetPower(0)` and the `preambleInitialReceivedTargetPower(1)` and the `powerRampingStep(0)` and the `powerRampingStep(1)` are given by radio resource control information.”**

Lee1 discloses “[t]he base station device according to claim 4” for the reasons discussed above. *See supra* § X.A.1. Lee1 further discloses “wherein the `preambleInitialReceivedTargetPower(0)` and the `preambleInitialReceivedTargetPower(1)` and the `powerRampingStep(0)` and the `powerRampingStep(1)` are given by radio resource control information.” Ex-1001 at Claim 5; Ex-1003, ¶¶ 78–80. For example, Lee1 discloses a “Radio Resource Control (RRC) layer located at the bottom of the third layer is defined only in the control plane and is responsible for control of logical, transport, and physical channels in association with configuration, re-configuration, and release of Radio Bearers (RBs).” Ex-1005 at [0073].

As shown below, Lee1 teaches that the values for `preambleInitialReceivedTargetPower` and `powerRampingStep` are broadcast to the “the terminal” (*i.e.*, the UE) by the base station as part of system information.

[0152] First, the terminal randomly selects one random access preamble (RACH preamble) from an set of random access preambles indicated through system information or a handover command, and selects physical RACH (PRACH) resource for transmitting the random access preamble, and transmits the same. The terminal sets transmission power of the random access preamble (PREAMBLE_RECEIVED_TARGET_POWER) to ('preambleInitialReceivedTargetPower'+DELTA_PREAMBLE'+('PREAMBLE_TRANSMISSION_COUNTER'? 1) * 'powerRampingStep'), and transmits the same. Here, "preambleInitialReceivedTargetPower" indicate initial transmission power, and "DELTA_PREAMBLE" indicates a power offset value according to a preamble format. "PREAMBLE_TRANSMISSION_COUNTER" indicates the number of preamble transmissions. "powerRampingStep" indicates a power ramping factor. These values are signaled as part of system information to the terminal.

Ex-1005 at [0152] (emphasis added).

A POSITA, reading Lee1 in view of the well-understood definition of radio resource control (RRC) information, would know that the "system information" discussed above is RRC information. Ex-1003, ¶ 79. As explained by Dr. Mahon, one of the functions that falls under the umbrella of RRC is broadcasting system information that mobile terminals need to establish a connection to the network. *Id.* at ¶¶ 79–81 (citing Ex-1010, which is a 3GPP technical specification for RRC protocol). This understanding is confirmed by the '207 Patent itself, which states that a base station's "radio resource control layer processing unit 36 manages various types of configuration information/parameters" and is responsible for "transmit[ting]/broadcast[ing]" such information to mobile devices. Ex-1001 at 11:61–12:3.

To the extent Patent Owner contends that Lee1 does not expressly disclose this limitation, it is obvious in view of Lee1 and the background knowledge of a POSITA. For example, Lee1 teaches that the UE performs random access based on various parameters received via RRC from the base station. Ex-1005 at [0073]. In light of Lee1's focus on random access preamble transmission power control, it would be obvious that the base station controls the transmission power of random access preambles by broadcasting the necessary parameters to the UE as RRC information, including `preambleInitialReceivedTargetPower` and `powerRampingStep`. Ex-1003, ¶¶ 79–82. In fact, a POSITA would know that these parameters have been broadcast as RRC information in every generation of wireless technology since 3G, including the initial release of the 3G standard, which was published more than 20 years ago. *Id.* at ¶ 80 (citing Ex-1011, which is the physical layer specification for Release 1999 of the 3G/WCDMA standard).

3. Claim 6

- a. Lee1 discloses “The base station device according to claim 4, wherein the `powerRampingStep(0)` is a step size for power ramping up for the `PREAMBLE_RECEIVED_TARGET_POWER` for the 4-step contention based random access procedure, and”

Lee1 discloses “[t]he base station device according to claim 4” for the reasons discussed above. *See supra* § X.A.1.b. Lee1 further discloses “wherein the `powerRampingStep(0)` is a step size for power ramping up for the `PREAMBLE_`

RECEIVED_TARGET_POWER for the 4-step contention based random access procedure.” Ex-1001 at Claim 6. For example, Lee1 teaches that “powerRampingStep,” used in determining the “PREAMBLE_RECEIVED_TARGET_POWER,” indicates a power ramping factor, which a POSITA would understand is “a step size for power ramping up.” Ex-1005 at [0152]; *see also* Ex-1003, ¶¶ 74, 83.

Thus, Lee1 discloses “[t]he base station device according to claim 4, wherein the powerRampingStep(0) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 4-step contention based random access procedure.” Ex-1001 at Claim 6.

b. Lee1 discloses “the powerRampingStep(1) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 2-step contention based random access procedure.”

Lee1 discloses “the powerRampingStep(1) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 2-step contention based random access procedure” for the reasons discussed above. *See supra* § X.A.1.d; Ex-1003, ¶¶ 69–77, 83.

4. Claim 8

Claim 8 of the ’207 Patent recites:

“A communication method used for a base station device comprising: controlling a 2-step contention based random-access procedure and a 4-step contention based random-access procedure; and

receiving a physical random access channel with a random access preamble in a first step of the 2-step contention based random-access procedure or in a first step of the 4-step contention based random-access procedure; wherein

transmission power for the physical random access channel is given based at least on a PREAMBLE_RECEIVED_TARGET_POWER;

for the 4-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(0) and a powerRampingStep(0); and

for the 2-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(1) and a powerRampingStep(1).

There is no material difference between the limitations of Claim 8 and those of Claim 4. Ex-1003, ¶¶ 84–85. Thus, Lee1 anticipates and/or renders obvious Claim 8 for the reasons discussed above. *See supra* § X.A.1; Ex-1003, ¶¶ 84–85.

B. Ground 2 – Lee1 in Combination with Lee2 Render Claims 4–6 and 8 of the '207 Patent Obvious

To the extent Patent Owner contends that preambleInitialReceivedTargetPower(0) must differ from preambleInitialReceivedTargetPower(1) and/or powerRampingStep(0) must differ from powerRampingStep(1), which, for the reasons discussed above is incorrect (*supra* § X.A.1.e), Lee1 in combination with Lee2 would nonetheless render Claims 4–6 and 8 of the '207 Patent obvious. Ex-1003, ¶¶ 86–89.

1. Motivation to Combine Lee1 and Lee2

A POSITA would have applied Lee2 to Lee1 to render the Challenged Claims obvious and would have had a reasonable expectation of success in doing so. Ex-1003, ¶¶ 86–89. For example, both Lee1 and Lee2 are directed to determining the transmission power of a random access preamble in a wireless communication system. *Compare* Ex-1005 at [0152] *with* Ex-1006 at [0007]. Both Lee1 and Lee2 likewise disclose calculating the transmission power of a random access preamble using an initial transmission power and a power ramping step. *Compare* Ex-1005 at [0152] *with* Ex-1006 at [0031]–[0032]. Similarly, both Lee1 and Lee2 disclose contention-based random access procedure, with both Lee1 and Lee2 disclosing a 4-step contention-based random access procedure. *Compare* Ex-1005 at Fig. 9 *with* Ex-1006 at Fig. 3. The interrelated teachings of these references would have a motivated a POSITA to combine Lee1 with Lee2.

Moreover, a POSITA would have been motivated to combine Lee1 with Lee2 to reduce the latency (*i.e.*, time delay) due to random access. Ex-1003, ¶¶ 88–89. As explained in Lee1, one of the key requirements of “the next-generation mobile communication system” (*i.e.*, 5G/NR) is “very low end-to-end latency.” Ex-1005 at [0003]. Lee1 addresses this requirement by reducing the number of steps needed to complete random access. *See, e.g., id.* at [0006] (“[A]nother object of the present invention is to define 2-step random access procedure in order to minimize latency

of the related art 4-step random access procedure.”). Lee2 is also directed to techniques for “reducing time delay due to random access,” but it approaches this issue from a different angle than Lee1. Ex-1006 at [0011], [0042]. Instead of reducing the number of steps needed for random access, Lee2 teaches that “set[ting] different power ramping and initial transmission power of a random access preamble, according to the condition of user equipment that is performing random access and power ramping . . . reduces the time delay due to random access, which enhances the performance of the wireless communication system.” *Id.* at [0109].

In light of Lee1’s teaching that “very low end-to-end latency” was a requirement of “the next-generation mobile communication system,” Ex-1005 at [0003], a POSITA would have been motivated to combine Lee1 with Lee2 to enable a larger reduction in time delay due to random access than either reference can achieve on its own. Ex-1003, ¶¶ 88–89. It would thus have been obvious to a POSITA to modify the transmission power of the random access preambles taught in Lee1 based on the case-dependent parameters for power ramping and initial transmission power taught in Lee2. *Id.*, ¶¶ 90–93; Ex-1006 at [0109]; Ex-1005 at [0249]. And, in light of the similarities between Lee1 and Lee2, a POSTIA would have had a reasonable expectation of success in such a modification. Ex-1003, ¶¶ 86–89.

2. Claim 4

- a. Lee1 discloses “A base station device comprising: control circuitry configured to control a 2-step contention based random-access procedure and a 4-step contention based random-access procedure; and”

This claim element is disclosed by the combined teachings of Lee1 and Lee2 (hereafter, “Lee1-Lee2”) for the same reasons discussed with respect to Lee1, *supra* § X.A.1.a.

- b. Lee1 discloses “reception circuitry configured to receive a physical random access channel with a random access preamble in a first step of the 2-step contention based random-access procedure or in a first step of the 4-step contention based random-access procedure; wherein”

This claim element is disclosed by Lee1-Lee2 for the same reasons discussed with respect to Lee1, *supra* § X.A.1.b.

- c. Lee1 discloses “transmission power for the physical random access channel is given based at least on a PREAMBLE_RECEIVED_TARGET_POWER;”

This claim element is disclosed by Lee1-Lee2 for the same reasons discussed with respect to Lee1, *supra* § X.A.1.c.

- d. Lee1 discloses “for the 4-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(0) and a powerRampingStep(0); and”

This claim element is disclosed by Lee1-Lee2 for the same reasons discussed with respect to Lee1 *supra* § X.A.1.d.

- e. Lee1 discloses “for the 2-step contention based random access procedure, the PREAMBLE_RECEIVED_TARGET_POWER is given based at least on a preambleInitialReceivedTargetPower(1) and a powerRampingStep(1).”

To the extent Patent Owner contends that preambleInitialReceivedTargetPower(0) must differ from preambleInitialReceivedTargetPower(1) and/or powerRampingStep(0) must differ from powerRampingStep(1), Lee1 in combination with Lee2 discloses this claim element.

As discussed above, Lee1 discloses both a 4-step and a 2-step contention-based random access procedure. *See supra* § X.A.1.e. Although Lee1 does not explicitly disclose the use of different “preambleInitialReceivedTargetPower” and/or “powerRampingStep” values for the 4-step and 2-step contention-based random access procedures, it would have been obvious to use different transmission power control parameters for different types of random access procedure in light of the combined teachings of Lee1-Lee2. Ex-1003, ¶¶ 77, 86–93.

Lee2 discloses that “parameters for performing the random access correspond[] to an event (or case) for triggering the random access.” Ex-1006 at [0028]. These “events (or cases) include idle to connected idle to connected mode transition (Case 1), RRC connection re-establishment (Case 2), handover (Case 3), and DL/UL data resume (Case 4).” Ex-1006 at [0029]. For example, if the event corresponds to a handover case, the user equipment transmits the preamble to the

base station using relatively high transmission power in the initial transmission. *Id.* at [0045]. If the event corresponds to an RRC connection re-establishment case, the user equipment transmits the preamble to the base station using a relatively low level of transmission power in the initial transmission. *Id.* The same is true for the ramping power. *Id.* at [0048]–[0051].

To configure different preamble transmission powers for different types of random access, Lee2 teaches that “[t]he random access parameters include initial transmission power Preamble_Intial_Power_n” and “ramping power Ramping_Power_n.” *Id.* at [0030]. “The initial transmission power Preamble_Intial_Power_n refers to a transmission power value of a preamble that is initially transmitted by each of the random access trigger events,” while “[t]he ramping power Ramping_Power_n refers to a transmission power value that is increased when ramping is performed.” *Id.* at [0031]–[0032]. The variable “n” in “Preamble_Intial_Power_n” and “Ramping_Power_n” signifies that the values of these parameters differ for different types of random access (*i.e.*, n = 1 corresponds to a first type of random access, n = 2 corresponds to a second type of random access, etc.). *Id.* at [0059]–[0060]; Ex-1003, ¶ 92. Although Lee2 uses slightly different terms for the claimed power ramping parameters, a POSITA would understand that “Preamble_Intial_Power_n” and “Ramping_Power_n” are equivalent to “preamble InitialReceivedTargetPower” and “powerRampingStep,” respectively. Ex-1003,

¶ 92; compare Ex-1006 at [0031]–[0032] with Ex-1005 at [0152] and Ex-1001 at 29:31–54.

Based on Lee2’s disclosure that using different transmission power control parameters for different types of random access procedure reduces time delay and improves system performance, *see, e.g.*, Ex-1006 at [0109], a POSITA would have been motivated to use values for `preambleInitialReceivedTargetPower(0)` and `powerRampingStep(0)` in Lee1’s 4-step contention-based random access procedure that differ from the values of `preambleInitialReceivedTargetPower(1)` and `powerRampingStep(1)` in Lee1’s 2-step contention-based random access procedure. Ex-1003, ¶¶ 59, 88–89. For example, to further reduce the time delay associated with 2-step random access procedure, a POSITA would have found it obvious to use a larger initial transmission power (*i.e.*, “`preambleInitialReceivedTargetPower(1)`”) and/or power ramping step (*i.e.*, “`powerRampingStep(1)`”) for preambles transmitted as part of a 2-step random access procedure than those transmitted as part of a 4-step random access procedure. Ex-1003, ¶¶ 88–89. This approach naturally follows from Lee1’s disclosure that the goal of the 2-step random access procedure is to facilitate low latency communications by completing random access in as little time as possible. Ex-1005 at [0006], [0019], [0313].

Thus, Lee1 in combination with Lee2 discloses “for the 2-step contention based random access procedure, the `PREAMBLE_RECEIVED_TARGET_`

POWER is given based at least on a preambleInitialReceivedTargetPower(1) and a powerRampingStep(1).” Ex-1001 at Claim 4.

3. Claim 5

- a. **Lee1 in combination with Lee2 discloses “The base station device according to claim 4, wherein the preambleInitialReceivedTargetPower(0) and the preambleInitialReceivedTargetPower(1) and the powerRampingStep(0) and the powerRampingStep(1) are given by radio resource control information.”**

For the reasons discussed above in § X.A.1.2, Lee1-Lee2 discloses Claim 5.

4. Claim 6

- a. **Lee1 in combination with Lee2 discloses “The base station device according to claim 4, wherein the powerRampingStep(0) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 4-step contention based random access procedure, and”**

For the reasons discussed above in § X.A.1.3, Lee1-Lee2 discloses Claim 6.

Lee1 in combination with Lee2 also discloses this claim element because, for example, Lee1 discloses “wherein the powerRampingStep(0) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 4-step contention based random access procedure.” Ex-1001 at Claim 6. Lee1 teaches that “powerRampingStep” indicates a power ramping factor, which a POSITA would understand is “a step size for power ramping up.” *Id.*; *see also* Ex-1003, ¶¶ 74, 83.

Lee2 likewise discloses “power ramping Ramping_Power_n refers to a transmission power value that is increased when ramping is performed.” Ex-1006 at

[0032]. A POSITA would understand that Lee2's "Ramping_Power_n" is "a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 4-step contention based random access procedure." *Id.* at [0032], [0048].

A POSITA would have been motivated to combine Lee1's disclosure with Lee2's disclosure for the reasons provided in § X.B.1.

Thus, Lee1 in combination with Lee2 discloses "The base station device according to claim 4, wherein the powerRampingStep(0) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 4-step contention based random access procedure." Ex-1001 at Claim 6.

b. Lee1 in combination with Lee2 discloses "the powerRampingStep(1) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 2-step contention based random access procedure."

Lee1 in combination with Lee2 discloses "the powerRampingStep(1) is a step size for power ramping up for the PREAMBLE_RECEIVED_TARGET_POWER for the 2-step contention based random access procedure" for the reasons discussed above in § X.A.3.b.

5. Claim 8

For the reasons discussed above in § X.A.4, Lee1-Lee2 discloses Claim 8.

XI. CONCLUSION

For the reasons given above, Petitioners request institution of *inter partes* review of the '207 Patent to cancel the Challenged Claims based on the grounds specified in this petition.

Respectfully submitted,

Dated: March 5, 2024

By: Matthew T. Cameron /

Matthew T. Cameron
Reg. No. 74,179
Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 10,932,207 contains, as measured by the word processing system used to prepare this paper, 6,923 words. This word count does not include the items excluded by 37 C.F.R. § 42.24 as not counting towards the word limit.

Dated: March 5, 2024

By: Matthew T. Cameron /

Matthew T. Cameron
Reg. No. 74,179
Counsel for Petitioners

CERTIFICATE OF SERVICE

I hereby certify that on March 5, 2024, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 10,932,207 and supporting exhibits were served on the following parties via Federal Express or Express Mail:

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*

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