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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* HAO XU, WANSHI CHEN, and TINGFANG JI

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Appeal 2019-000556  
Application 14/489,146  
Technology Center 2400

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Before ROBERT E. NAPPI, JAMES R. HUGHES, and  
MICHAEL T. CYGAN, *Administrative Patent Judges*.

CYGAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 18–37. Appeal Br. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as QUALCOMM Incorporated. Appeal Br. 3.

CLAIMED SUBJECT MATTER

The claimed invention generally relates to wireless communications, and more specifically, to coverage enhancements for physical broadcast channel (“PBCH”). Appeal Br. 5; Spec ¶ 2. A wireless multiple-access communication system generally supports communication between multiple wireless terminals, such as user equipment (“UE”), and base stations (“BS”), such as evolved Node Bs (“eNBs”). Spec. ¶¶ 4, 33. Figure 1 (reproduced below) illustrates an example wireless communication network in accord with the present invention.

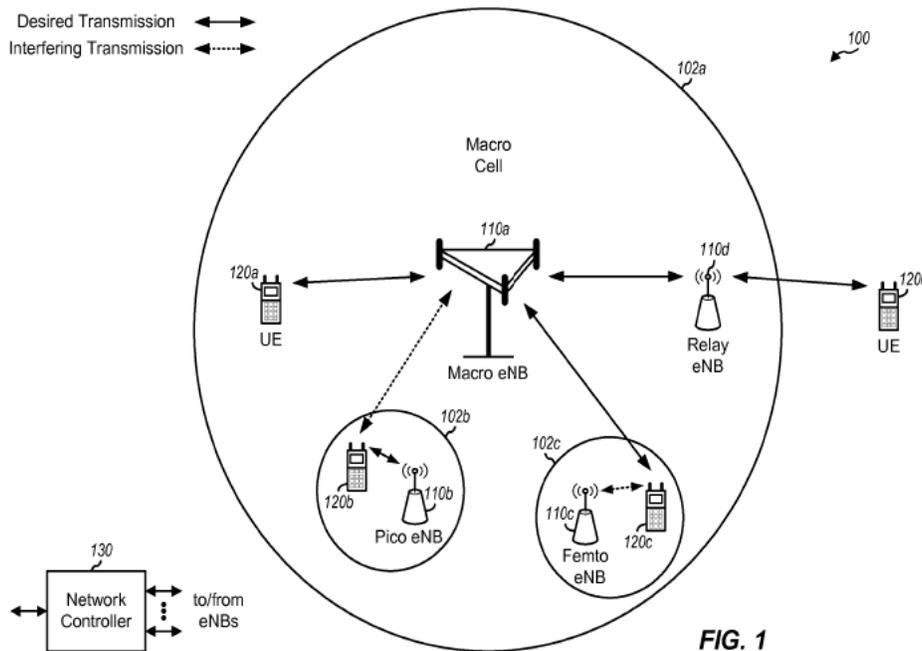


FIG. 1

Figure 1 is a block diagram of an example communications network, comprising user equipment communicating to different types of eNBs, including a Macro eNB, a Pico eNB, a Femto eNB, and a relay eNB. *Id.* ¶¶ 33–35. A base station may, in response to receiving a bundled random access channel (“RACH”) transmission, trigger bundled transmission of broadcast information via an associated controller or processor. *Id.* ¶ 11. A

bundled transmission may be a repeated series of PBCH transmissions, which are bundled (repeated) for the purpose of enhancing coverage. *Id.* ¶¶ 47, 61, Fig. 3. For example, a processor may receive a bundled transmission of a system information block (“SIB”) that indicates a bundled physical random access channel (“PRACH”) configuration. *Id.* ¶ 12. In response to receipt of this transmission, the processor may perform a bundled RACH transmission in accordance with the PRACH configuration. *Id.*

Independent claim 18 is illustrative:

18. A method for wireless communications by a base station (BS), comprising:

receiving a bundled random access channel (RACH) transmission from a user equipment (UE); and

triggering bundled transmission of broadcast information, in response to receiving the bundled RACH transmission.

Appeal Br. 18 (Claims App.).

Independent claims 24 and 34 recite an apparatus, and independent claim 30 recites a method, each having limitations commensurate in scope with claim 1. *Id.* Dependent claims 19–23, 25–29, 31–33, and 35–37 each incorporate the limitations of their respective independent claims. *Id.*

Claims 1–17 were cancelled during prosecution. Appeal Br. 18 (Claims App.).

#### REFERENCES

Name	Reference	Date
Jeong et al. (Jeong)	US 2012/0320842 A1	Dec. 20, 2012
LG Electronics	<i>Initial procedure and consideration points for the coverage enhancement of MTC UEs</i> , 3GPP DRAFT; R1-133370	Aug. 10, 2013

(LG) <sup>2</sup>	MTC COVERAGE (FINAL), 3RD GENERATION PARTNERSHIP PROJECT (3GPP), RAN WG1, no. 74, URL: <a href="http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_74/Docs/">http://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_74/Docs/</a> [retrieved on 2013-08-10] <sup>3</sup>	
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## REJECTIONS

Claims 18–22 are rejected under AIA 35 U.S.C. § 102(a)(1) as being anticipated by LG.

Claims 23–37 are rejected under AIA 35 U.S.C. § 103 as being obvious over the combined teachings and suggestions of LG and Jeong.

## OPINION

### *A. Anticipation*

Appellant contends that LG does not disclose “triggering bundled transmission of broadcast information, in response to receiving the bundled RACH transmission [from a user equipment]” as recited in independent claim 18. Appeal Br. 9.

The Examiner finds LG to disclose a user equipment (“UE”) that transmits a bundled RACH transmission, which is received by a base station. Final Act. 2; Ans. 3. Specifically, the Examiner finds LG to disclose that the UE transmits the RACH preamble, i.e., the PRACH, according to the configured repetition information. *Id.* (citing LG 4). The Examiner equates

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<sup>2</sup> We conform with Appellant’s use of “LG” to refer to this document, which the Examiner refers to either as “LG” or as “R1-133370.”

<sup>3</sup> The document information is that provided by Appellant in an Information Disclosure Statement filed on May 13, 2015.

the repetition to the claimed “bundling.” Ans. 3–4 (stating “bundling is synonymous with repetition in the art. Also, based on the phrasing, it is discussing the repetition of the PRACH (i.e.,] the repetition [or bundling] of the preamble) in the PRACH resource.”).

The Examiner finds LG to disclose the triggering of bundled transmission of broadcast information, in response to receiving the bundled RACH, in the form of LG’s “PBCH and coverage enhancement level.” Final. Act. 3 (citing LG 2 ¶ 4, (discussing the bundling of PBCH transmitted with additional repetition according to the coverage enhancement level supportable or required in a cell), 4 ¶¶ 4–5 (discussing that for a coverage-limited UE that transmits a bundled PRACH, enhanced repetition may be likely to be required for other transmitted and received channels as well)).

Appellant argues that LG does not explicitly teach the “triggering” aspect of the claim. Appeal Br. 9–10. Appellant does not contest the Examiner’s finding that LG teaches receiving a bundled random access channel (RACH) transmission from a user equipment (UE), or that LG teaches the base station having a bundled transmission of broadcast information. *Id.* However, Appellant argues that LG discusses bundling of transmitted information “independently” from the bundling of a received RACH transmission. *Id.* at 10. Appellant argues that although LG links the amount of bundling of the transmission (the “amount of additional PBCH within a PBCH bundle”) to the desired coverage enhancement level, LG does not mention triggering “bundling or no bundling” based on the received RACH transmission. *Id.* Further, Appellant disputes the Examiner’s contention that the PRACH resource indicates the desired enhancement

level, characterizing LG as instead disclosing that the PRACH resource is selected according to the desired enhancement level. *Id.* at 11.

We are not persuaded by Appellant's arguments. Each of Appellant's arguments relies upon an interpretation of claim 18 in which "triggering bundled transmission of broadcast information, in response to receiving the bundled RACH transmission" requires a determination of whether to bundle the outgoing transmission based on whether the received transmission was bundled. We do not read the claim as being so limiting. The claim requires "triggering bundled transmission of broadcast information," i.e., triggering the transmission of broadcast information that is bundled. To the extent that Appellant argues that LG does not teach "triggering bundling, or no bundling" (Appeal Br. 10), the claim does not recite such a limitation. We further agree with the Examiner's determination that the broadest reasonable interpretation of claim 18 does not require "opportunistically triggering (turning on or off) bundled broadcast transmission[s]" as argued by Appellant. Ans. 6–7. Consequently, we are not persuaded of error in the Examiner's rejection for lack of teaching a "bundling or no bundling" trigger.

With respect to Appellant's argument that bundling is determined independently for received and transmitted information, we further agree with the Examiner's determination that LG discloses a coverage enhancement technique involving an amount of bundling (repetition) to be applied across the PRACH, PBCH, and SIB sections. Ans. 10. LG provides a "specific scheme/procedure for the support of coverage enhancement on individual channels (e.g., [PSS/SSS, PBCH, PRACH]) . . . to be taken into account for [the] overall design on the coverage enhancement operation."

LG 2. Both the PBCH repetition duration (PBCH bundle) and the PRACH repetition duration are applied based on the coverage enhancement level supportable or required in a cell. LG 2, 4. We agree with the Examiner's explanation that the PRACH bundling and the PBCH bundling are to achieve the same result of supporting coverage enhancement. Ans. 8. Therefore, we are not persuaded by Appellant's argument that LG's discussion of receiving a bundled RACH (RACH preamble; i.e., PRACH) transmission is "independent" from LG's discussion of transmitting bundled broadcast information. Consequently, we are not persuaded of error in the Examiner's rejection for lack of teaching a bundling in the transmission based upon an amount of bundling set in the received RACH.

For the abovementioned reasons, Appellant has not persuaded us of error, and therefore we sustain the Examiner's rejection of claim 18. Appellant further argues that the rejections of claims 19–22 are erroneous for the same reasons as argued against the rejection of claim 18. Appeal Br. 12–14. For the same reasons as discussed with respect to claim 18, we sustain the Examiner's rejection of claims 19 and 21–22. 37 C.F.R. § 41.67(c)(iv). With respect to claim 20, Appellant further argues that LG is silent regarding the additional limitation of "a subset of available SIBs," but does not explain why the Examiner's anticipation rejection, relying on LG 3 ¶ 4 – 4 ¶ 1, is in error. Appeal Br. 13; Final Act 3. Because Appellant has not provided any reasoned explanation of why the Examiner's rejection is in error, we sustain the Examiner's rejection of claim 20.

*B. Obviousness*

Appellant further argues that the rejections of claims 23–37 are erroneous for the same reasons as argued against the rejection of claim 1, and further, that the addition of the teaching of Jeong does not cure the error. Appeal Br. 14–16. Appellant argues that, as discussed for claim 18, the combination of LG and Jeong does not teach or suggest “triggering bundled transmission of broadcast information, in response to receiving the bundled RACH transmission.” Appeal Br. 14 (emphasis omitted). For the same reasons as discussed with respect to claim 18, we are not persuaded of error in the obviousness rejection of claims 23–37. Additionally, Appellant alleges that neither LG nor Jeong teach or suggest the limitation of “a subset of available SIBs” as recited in claims 26, 32, and 36. Appeal Br. 16. For the same reasons as discussed with respect to claim 20, we are not persuaded of error, and sustain the obviousness rejection of claims 26, 32, and 36.

With respect to claims 23, 29, 30, and 34, Appellant argues that LG in view of Jeong does not disclose or suggest “transmitting a bundled transmission of a system information block (SIB) that indicates a bundled physical RACH (PRACH) configuration prior to receiving the bundled RACH transmission.” Appeal Br. 14 (emphasis omitted). Appellant contends that the Examiner concedes that LG does not teach this limitation. *Id.* at 15. Appellant further contends that Jeong teaches bundling for RACH can be indicated by system information, but does not teach a bundled system information block. *Id.* at 15. However, the Examiner relies upon LG for teaching bundled transmission of broadcast information comprising “at least one system information block (SIB).” Final Act. 3 (citing LG 3 ¶ 4); Ans. 15. LG discloses that SIBs may be transmitted as a bundle. LG 3 ¶ 4.

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Applicant has argued that Jeong does not teach every limitation of claims 23, 29, 30, and 34, but does not explain how the combination of LG and Jeong does not teach those limitations, such argument is unpersuasive. One cannot show nonobviousness by attacking references individually where the rejection is based on combinations of references. *In re Keller*, 642 F.2d 413 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091 (Fed. Cir. 1986). In view of the Examiner's reliance on LG, Appellant has not explained why the combination of LG and Jeong does not teach or suggest the claimed "bundled transmission of a system information block." Accordingly, we are not persuaded of error, and sustain the rejection of claims 23, 29, 30, and 34.

#### CONCLUSION

For the above-described reasons, we affirm the Examiner's rejection of claims 18–22 as being anticipated under 35 U.S.C. § 102(a)(1), and we affirm the Examiner's rejection of claims 23–37 as being obvious under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

DECISION SUMMARY

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>References/Grounds</b>	<b>Affirmed</b>	<b>Reversed</b>
18–22	102(a)(1)	LG	18–22	
23–37	103	LG, Jeong	23–37	
<b>Overall Outcome</b>			18–37	

AFFIRMED