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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XUDONG ZHU and JIN LIU

Appeal 2018-005596
Application 13/817,077[1]
Technology Center 2400

Before TERRENCE W. McMILLIN, KARA L. SZPONDOWSKI, and SCOTT B. HOWARD, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1, 3–8, and 10–14, which constitute all the claims pending in this application. Claims 2 and 9 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] According to Appellants, the real party in interest is Alcatel Lucent. App. Br. 1.

THE CLAIMED INVENTION

The present invention relates generally to "a wireless communication system, a method, an apparatus and a computer program, and more particularly, to non-adaptive retransmission in the uplink." Spec. 1. Independent claims 1 and 3 are directed to methods and independent claims 8 and 10 are directed to apparatus. App. Br. 33, 35.

Claim 1, reproduced below, is representative of the claimed subject matter:

> 1. A method for use in non-adaptive retransmission, the method comprising:
>
> receiving a cyclic shift indicator (CSI) in downlink control information (DCI), the cyclic shift indicator (CSI) indicating a configuration of an uplink (UL) demodulation reference signal (DM-RS);
>
> configuring the uplink (UL) demodulation reference signal (OM-RS) for retransmission in response to a retransmission request according to the received CSI, wherein said configuring comprises: configuring the demodulation reference signal (DMRS) to be the same as a demodulation reference signal for an initial transmission.

REJECTIONS ON APPEAL

Claims 1, 3–8, and 10–14 stand rejected under 35 U.S.C. § 112(b) as being indefinite. Final Act. 2; *see* Final Act. 3.

Claims 1, 3–8, and 10–14 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Final Act. 3; *see* Final Act. 5.

Claims 1, 3–6, 8, and 10–13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nayeb Nazar et al. (US 2011/0170499 A1;

published July 14, 2011) ("Nayeb"), Cho et al. (US 2011/0206089 A1; published Aug. 25, 2011) ("Cho"), and Ojala et al. (US 2009/0175233 A1; published July 9, 2009) ("Ojala"). Final Act. 5.

Claims 7 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nayeb, Cho, Ojala, and Frederiksen et al. (US 2012/0170683 A1; published July 5, 2012) ("Frederiksen"). Final Act. 17.

ANALYSIS

35 U.S.C. § 112 Rejection

The Examiner finds the claimed "cyclic shift indicator (CSI) indicating a configuration of an uplink (UL) demodulation reference signals (DM-RS)" is indefinite because "the CSI index solely indicates the CSI, not the configuration of the DMRS," and "the CSI is mapped to configuration parameters at both the eNB and the UE, but the index itself does not indicate the configuration." Final Act. 2–3 (citing Spec. 6–7). According to the Examiner, the description in the Specification that "3 bit field is included so as to send a cyclic shift indicator CSI indicating the DMRS" "should be part of the claim because the CSI index solely indicates the CSI, not the configuration of the DMRS," and adding the description from the Specification to the claim would make it "clear as for how the DMRS configuration is done or detected." Ans. 11 (citing Spec. 6–7).

Appellants argue the claims already recite "that the CSI *indicates* an uplink DM-RS," and the Specification supports "that a 3-bit field is included so as to send a cyclic shift indicator CSI *indicating the DM-RS configuration* for initial transmission" and the "3-bit field corresponds to a cyclic shift CS index, which is *mapped to the DM-RS configuration* for the first layer."

App. Br. 26 (citing Spec. 6–7). According to Appellants, "the relevant portion of the quoted text from the specification *is* part of the claim," which recites "the cyclic shift indicator (CSI) *indicating a configuration of an uplink (UL) demodulation reference signal (DM-RS)*." Reply Br. 9.

"A claim is indefinite if, when read in light of the specification, it does not reasonably apprise those skilled in the art of the scope of the invention." *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1342 (Fed. Cir. 2003). "As the statutory language of 'particular[ity]' and 'distinct[ness]' indicates, claims are required to be cast in clear – as opposed to ambiguous, vague, indefinite – terms. It is the claims that notify the public of what is within the protections of the patent, and what is not." *In re Packard*, 751 F.3d 1307, 1313 (Fed. Cir. 2014).

Applying the standard set forth in *Amgen* and *Packard*, we agree with Appellants that the claim, based on the claim language (i.e., "the cyclic shift indicator (CSI) indicating a configuration of an uplink (UL) demodulation reference signal (DM-RS)" and "configuring the uplink (UL) demodulation reference signal (DM-RS) . . . according to the received CSI") and in light of Appellants' Specification, is sufficiently clear. *See* App. Br. 26; Reply Br. 9.

Accordingly, we reverse the Examiner's rejection of claims 1, 3–8, and 10–14 under 35 U.S.C. § 112, second paragraph.

35 U.S.C. § 101 Rejection

Alice Corp. Pty. Ltd. v. CLS Bank Int'l, 134 S. Ct. 2347 (2014), identifies a two-step framework for determining whether claimed subject matter is judicially excepted from patent eligibility under 35 U.S.C. § 101.

In the first step, "[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept." *Alice*, 134 S. Ct. at 2355. In the second step, we "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Alice*, 134 S. Ct. at 2355 (quoting *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 78–79 (2012)). In other words, the second step is to "search for an 'inventive concept' – *i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Id.* (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

The Examiner determines the claims are "directed to an abstract idea as the claims simply describes [sic] the concept of receiving a configuration for an uplink demodulation reference signal and a configuration of a UL demodulation reference signal using the received configuration for non-adaptive retransmission." Final Act. 3. The Examiner further concludes the claimed invention "can be equated to collecting and comparing known information" and is directed to an abstract idea similar to *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014). Ans. 11–12.

Appellants contend the claimed invention is "not an example of merely 'comparing known information,'" but is instead "a new method for responding to retransmission requests when information in an initial transmission was not properly received." Reply Br. 10. Appellants argue that, unlike in *Digitech*, the claimed invention is "not directed toward an intangible collection of information," and is instead "directed toward a

particular set of methods associated with the retransmission of information that was not properly received in an initial transmission," which "are all observable and tangible." Reply Br. 10. Appellants further argue the claimed invention

> 1) *is* an improvement to the configuration process of a machine and thereby *improves the machine*, 2) *effects a transformation of the state of the machine* from un-configured to configured for retransmission with respect to DM-RS and 3) includes aspects that were not well-understood and routine and conventional in the field.

App. Br. 31; *see* Reply Br. 11–12.

We agree with Appellants. The Examiner has not sufficiently identified or explained the alleged abstract idea. Instead, the claimed invention is similar to the patent-eligible claims in *DDR Holdings*, where "the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks." *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014). Specifically, as identified by Appellants (Reply Br. 10), and without rebuttal by the Examiner, the claimed invention is directed to "a new method for responding to retransmission requests when information in an initial transmission was not properly received" (i.e., a claimed solution necessarily rooted in computer technology) which is a "solution for the problem of DMRS configuration in non-adaptive retransmission" (i.e., to overcome a problem specifically arising in the realm of non-adaptive retransmission) Reply Br. 10. Therefore, Appellants have persuasively established that the claimed invention is directed to a technologically-rooted solution to overcome a technologically-rooted problem and cannot be considered abstract.

Further, regarding the Examiner's finding that the "concept described in claim 1 is not meaningfully different than those in a CSI configuration for channel quality indication" (Final Act. 4), we agree with Appellants that the Examiner has conflated § 101 analysis with § 102 and § 103 analysis. App. Br. 28; *see* Reply Br. 11. Although the second step in the *Alice* framework is termed a search for an "inventive concept," the analysis is not an evaluation of novelty or non-obviousness. *Alice*, 134 S. Ct. at 2355.

Accordingly, we reverse the Examiner's 35 U.S.C. § 101 rejection of claims 1, 3–8, and 10–14.

35 U.S.C. § 103 Rejection

Claims 1, 5, 7, 8, 12, and 14

Claim 1 recites "configuring the demodulation reference signal (DM-RS) to be the same as a demodulation reference signal for an initial transmission."

The Examiner relies on Ojala's "resource used in a previous transmission being used" to teach "configuring the demodulation reference signal (DM-RS) to be the same as a demodulation reference signal for an initial transmission," as claimed. Final Act. 7 (citing Ojala ¶ 105); *see* Ans. 6 (citing Ojala ¶ 29).

Appellants contend the "claims do not recite *using* non-adaptive retransmission *to* configure UL DM-RS," but rather "the claims are related to configuring DM-RS during operating modes that include non-adaptive retransmission." App. Br. 16.

We are persuaded by Appellants' arguments. As Appellants point out, claim 1 recites "*configuring* the demodulation reference signal (DM-RS) to

be the same as a demodulation reference signal for an initial transmission." *See* App. Br. 16. As cited by the Examiner (*see* Final Act. 7), Ojala describes "[n]on-adaptive retransmissions . . . *use* the same resources as the previous allocated transmission," and the "PHICH *resource to be used to acknowledge a non-adaptive retransmission* should be the same as used for the previous allocated transmission (typically the initial transmission)." Ojala ¶ 105 (emphasis added). In other words, Ojala teaches retransmissions *using* initial transmissions, but the cited sections are silent to any *configuring*, and specifically the claimed *configuring the demodulation reference signal (DM-RS)* to be the same as a demodulation reference signal for an initial transmission.

We find the Examiner has not provided sufficient findings that Ojala teaches the argued claim limitation. Because we agree with at least one of the arguments advanced by Appellants, we need not reach the merits of Appellants' other arguments.

Accordingly, we are constrained, based on the record, to reverse the Examiner's rejection of independent claim 1 and commensurate independent claim 8, argued for the same reasons as claim 1, as well as dependent claims 5, 7, 12, and 14, which fall with the independent claims. *See* App. Br. 19–21.

Claims 3, 4, 6, 10, 11, and 13

Claim 3 recites "configuring the demodulation reference signal (DM-RS) with respect to a transmission situation in retransmission according to predetermined rules for an initial transmission."

The Examiner relies on Nayeb's "n(DMRS) mapping in the DMRS of the most recent downlink control information corresponding to the PUSCH transmission" to teach the claimed "configuring the demodulation reference signal (DM-RS) with respect to a transmission situation in retransmission according to predetermined rules for an initial transmission." Final Act. 8 (citing Nayeb ¶ 58).

Appellants contend Nayeb's "N_{DMRS} is mapped from the cyclic shift in a DMRS field in the most recent downlink control information format 0 for the transport block associated with the corresponding PUSCH transmission," which does not teach the claimed "configuring the demodulation reference signal (DM-RS) with respect to a transmission situation in *retransmission* according to predetermined rules for an initial transmission." App. Br. 16.

We are persuaded by Appellants' arguments. As Appellants point out, claim 3 requires *configuring* the demodulation reference signal with respect to a transmission situation *in retransmission* according to predetermined rules for an initial transmission. *See* App. Br. 16. As cited by the Examiner (*see* Final Act. 8), Nayeb describes "the PHICH index pair may be implicitly associated with the index of the lowest uplink resource block used for the corresponding PUSCH transmission and the cyclic shift of the corresponding UL demodulation reference signals (DMRS)" and "n_{DMRS} is mapped from the cyclic shift in a DMRS field in the most recent downlink control information (DCI) format 0." Nayeb ¶ 58. In other words, Nayeb teaches an equation to define the parameter n_{DMRS}, which is mapped to the cyclic shift in the DMRS, and therefore arguably teaches using predetermined rules. However, the cited section of Nayeb is silent to the *configuring* of the

demodulation reference signal with respect to a transmission situation in *retransmission*, as claimed.

We find the Examiner has not provided sufficient findings that Nayeb teaches the argued claim limitation. Because we agree with at least one of the arguments advanced by Appellants, we need not reach the merits of Appellants' other arguments.

Accordingly, we are constrained, based on the record, to reverse the Examiner's rejection of independent claim 3 and commensurate independent claim 10, argued for the same reasons as claim 3, as well as dependent claims 4, 6, 11, and 13, which fall with the independent claims. *See* App. Br. 22–23.

DECISION

The Examiner's rejection of claims 1, 3–8, and 10–14 under 35 U.S.C. § 112, second paragraph, is reversed.

The Examiner's rejection of claims 1, 3–8, and 10–14 under 35 U.S.C. § 101 is reversed.

The Examiner's rejections of claims 1, 3–8, and 10–14 under 35 U.S.C. § 103 are reversed.

REVERSED