



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/869,547	10/09/2007	J. Rodney Walton	030422D1	3196
23696	7590	06/30/2016	EXAMINER	
QUALCOMM INCORPORATED 5775 MOREHOUSE DR. SAN DIEGO, CA 92121			VARNDELL, ROSS E	
			ART UNIT	PAPER NUMBER
			2631	
			NOTIFICATION DATE	DELIVERY MODE
			06/30/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte J. RODNEY WALTON, JOHN W. KETCHUM, JOHN EDWARD SMEE, MARK S. WALLACE, and STEVEN J. HOWARD

Appeal 2014-006182
Application 11/869,547¹
Technology Center 2600

Before ELENI MANTIS MERCADER, JOHN P. PINKERTON, and STACY B. MARGOLIES, *Administrative Patent Judges*.

MARGOLIES, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal arises under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–4, 6–9, 11–14, and 16–19. No other claims are pending. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

¹ According to Appellants, the real party in interest is QUALCOMM Incorporated. App. Br. 3.

SUMMARY OF THE INVENTION

The invention is generally directed to a multi-input multi-output (MIMO) communication system that evaluates a performance metric for sets of transmitting entities and selects for transmission the set with the highest value for the metric. *See* Spec. ¶¶ 2 and 7 and Abstract.

Claims 1 is illustrative of the subject matter on appeal and is reproduced below, with a disputed limitation emphasized:

1. A method of receiving data in a multiple-input multiple-output (MIMO) communication system, comprising:

obtaining, from a plurality of receive antennas at a receiving entity, a plurality of received symbol streams for a plurality of data symbol streams sent by a plurality of transmitting entities, one data symbol stream for each transmitting entity;

evaluating each of a plurality of sets of transmitting entities for possible transmission based on a metric and steering vectors for the transmitting entities in the set; and

selecting a set of transmitting entities with a highest value of the metric for transmission, wherein the selected set of transmitting entities comprises the plurality of transmitting entities,

wherein the data symbol stream for each transmitting entity is spatially processed with a steering vector derived independently for the transmitting entity and is sent from a plurality of transmit antennas at the transmitting entity, and wherein the plurality of data symbol streams are transmitted simultaneously by the plurality of transmitting entities.

REFERENCES AND REJECTIONS

The Examiner rejected claims 16–19 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Non-Final Act. 2–3.

The Examiner rejected claims 1–4, 6–9, 11–14, and 16–19 under 35 U.S.C. § 103(a) as being unpatentable in view of Raleigh (US 2003/0072382 A1; published Apr. 17, 2003), Agee (U.S. 6,512,737 B1; issued Jan. 28, 2003), and Mouldsley (US 2002/0119799 A1; published Aug. 29, 2002). Non-Final Act. 3–9.

ISSUE ON APPEAL

Appellants do not challenge the Examiner’s rejection of claims 16–19 under 35 U.S.C. § 101. *See* App. Br. 6–13; *see also* Non-Final Act. 2–3. We therefore sustain the rejection of claims 16–19 under Section 101.

The pivotal issue raised in the Appeal Brief is whether the Examiner erred in finding that the combination of Raleigh, Agee, and Mouldsley teaches or suggests “evaluating each of a plurality of sets of transmitting entities for possible transmission based on a metric and steering vectors for the transmitting entities in the set,” as recited in independent claim 1 and similarly recited in independent claims 6, 11, and 16.

ANALYSIS

The Examiner finds that Raleigh teaches evaluating steering vectors and identifying a transmission channel to maximize the throughput, and that Agee teaches generating antenna array weights for data transmission based on steering vectors for the transmitting entities. Non-Final Act. 4–5; Ans. 2–3. The Examiner also finds that, as the demand for downloading data for cell phones from base stations increases, so does the need for increased throughput, and that it would be useful to evaluate how each base station performs based on steering vectors and throughput. Ans. 3. The Examiner further finds that Mousley teaches achieving improved system throughput by selecting the optimal base station. *Id.* The Examiner also finds that it would have been obvious to one skilled in the art to evaluate each base station based on the steering vectors and throughput and choose the base station with the highest throughput in order to satisfy the need for faster and more reliable download data in cell phones. *Id.*; *see also* Non-Final Act. 5.

Appellants argue that Raleigh’s bases 152A and 152B may be considered a set of transmitting entities, but not a *plurality of sets* of transmitting entities as claimed. App. Br. 11. Appellants also argue that Raleigh fails to teach or suggest evaluating bases 152A and 152B for possible transmission based on a metric such as transmission throughput. *Id.* Appellants also argue that even though Agee mentions a steering vector, the combination of Agee and Raleigh does not teach or suggest evaluating each of a plurality of sets of transmitting entities for transmission based on steering vectors for the transmitting entities. *Id.* at 11–12. Appellants further argue that Mousley—which discloses selecting an optimum base

station in a handover situation—fails to teach or suggest selecting a set of transmitting entities from a plurality of sets of transmitting entities with a highest value of a metric. *Id.* at 11–12.

We are persuaded that the Examiner erred. Although Appellants’ specification broadly uses the word “set” to include only one user terminal (Spec. ¶ 65), the claim requires “evaluating each of a plurality of *sets* of transmitting *entities* . . . based on a metric and steering vectors for *the transmitting entities in the set.*” The evaluating limitation thus requires each set to be comprised of more than one transmitting entity. In the Non-Final Office Action, the Examiner relied on the disclosure in Raleigh of bases 152A and 152B as meeting the “transmitting entities in the set” of the evaluating limitation. Non-Final Act. 4 (citing Raleigh ¶ 88). In the Answer, the Examiner relies on the array of antennas of each base as corresponding to the “transmitting entities.” Ans. 2. The claim, however, distinguishes between antennas and transmitting entities. Specifically, the final limitation of claim 1 recites that the data symbol stream for each transmitting entity “is sent from a plurality of transmit antennas at the transmitting entity.” Thus, the antenna arrays of Raleigh cannot correspond to the claimed transmitting entities. The Examiner thus fails to cite sufficient evidence of a teaching or suggestion in Raleigh of evaluating each of a plurality of *sets* of transmitting entities. *See* Non-Final Act. 4, 6; Ans. 2–3. The Examiner also does not cite sufficient evidence or explain that the combination of Raleigh, Agee, and Mousley teaches or suggests such a limitation. *See* Non-Final Act. 4, 6; Ans. 2–3.

We thus do not sustain the Examiner's obviousness rejection of independent claims 1, 6, 11, and 16, which each include a similarly-worded evaluating limitation, and dependent claims 2-4, 7-9, 12-14, and 17-19.

DECISION

We affirm the Examiner's rejection of claims 16-19 under 35 U.S.C. § 101.

We reverse the Examiner's rejection of claims 1-4, 6-9, 11-14, and 16-19 under 35 U.S.C. § 103(a) as being unpatentable in view of Raleigh, Agee, and Mousley.

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

AFFIRMED-IN-PART