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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PI-CHUN CHEN, SIGEN YE, and YIFEI YUAN

Appeal 2014-000207
Application 11/951,647
Technology Center 2400

Before ELENI MANTIS MERCADER, CARL W. WHITEHEAD JR., and JOHN G. NEW, *Administrative Patent Judges*.

MANTIS MERCADER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134(a) from a rejection of claims. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

THE INVENTION

The claimed invention is directed to estimating, at the access network, at least one signal-to-noise ratio associated with each access terminal and determining, at the access network, a format for the packet based upon the estimated signal-to-noise ratio. The method also includes ranking access terminals and allocating, at the access network, resources to access terminals for transmission based on each access terminal's priority and the determined format of the packet and transmitting, from the access network, information indicative of the resources allocated to each access terminal. Abstract.

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

> 1. A method of scheduling uplink transmissions from at least one access terminal to an access network, comprising:
>
> estimating, at the access network, at least one signal-to-noise ratio associated with said at least one access terminal, wherein estimating said at least one signal-to-noise ratio comprises estimating said at least one signal-to-noise ratio based upon a combination of a spectral power density requested by said at least one access terminal for transmission of at least one packet, at least one signal-to-noise ratio of a reference channel, and at least one measure of noise;
>
> determining, at the access network, a format for said at least one packet based upon said at least one estimated signal-to-noise ratio;
>
> allocating, at the access network, resources for transmission of said at least one packet over the uplink based on the determined format of said at least one packet; and
>
> transmitting, from the access network, information indicative of the resources allocated to said at least one access terminal.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Khandekar	US 2007/0041429 A1	Feb. 22, 2007
Ji	US 2008/0123520 A1	May 29, 2008 (filed Sept. 4, 2007)

REJECTION

The Examiner made the following rejection:

Claims 1, 3–5, and 9–17 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Ji in view of Khandekar.

ISSUES

The issue is whether Ji in view of Khandekar teaches the limitations of:

> estimating said at least one signal-to-noise ratio comprises estimating said at least one signal-to-noise ratio based upon a combination of a spectral power density requested by said at least one access terminal for transmission of at least one packet, at least one signal-to-noise ratio of a reference channel, and at least one measure of noise;
>
> determining, at the access network, a format for said at least one packet based upon said at least one estimated signal-to-noise ratio,

as recited in claim 1.

ANALYSIS

We adopt the Examiner's findings in the Answer and second Non-Final action and we add the following for emphasis.

Appellants argue the access terminal described by Khandekar does not *request* a power spectral density for a future transmission and the base station described by Khandekar does not estimate a signal-to-noise ratio [SNR] based upon the power spectral density *requested* by the access terminal (Br. 6). Appellants argue that Khandekar teaches the power spectral density used by the access terminal to transmit the data channel is determined by one or more neighboring base stations (Br. 6). For example, Khandekar (para. 114) teaches that the transmit power spectral density for the data channel may be set based on factors such as the amount of inter-sector interference the access terminal might cause to other terminals and neighbor sectors or the amount of intra-sector interference the terminal might cause to other terminals in the same sector (Br. 7). According to Appellants, Khandekar (para. 115) teaches the amount of inter-sector interference caused by a terminal may be estimated by each neighbor base station and sent to the terminal, which may then adjust its transmit power accordingly (Br. 7). Appellants conclude that Khandekar teaches that the power spectral density used to transmit the data channel from the access terminal is *determined by one or more neighboring base stations* (Br. 7).

We do not agree with Appellants' argument. "[O]ne cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references." *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). The Examiner relied on Ji, not on Khandekar, for the teaching of estimating SNR based upon the power spectral density (i.e., PSD) requested by the terminal for transmission of packets (Ans. 19; Non-Final act. 3–4). The Examiner finds, and we agree, that Ji teaches a resource assignment system (Fig. 2) wherein an access point (Fig. 2, AP 250) employs feedback information (projection of resources) (Fig. 2, feedback

249) received from an access terminal (Fig. 2, AT 220) to issue assignment (or reassignment) of resources (i.e., PSD [power spectral density]) that will satisfy, among other parameters, the SNR (Fig. 2, paras. 45–46) (Ans. 19). The feedback including a resource projection of a plurality of resources (i.e., PSD) necessary for the transmission of packets and that will satisfy specific channel conditions (i.e., SNR) (Figs. 7, 8, paras. 45–48, 66). Therefore, Ji discloses using a requested/projected PSD for estimating SNR (Ans. 20).

The Examiner further finds, and we agree, that Khandekar teaches:

> calculating SNR based upon a combination of the PSD, the SNR of a channel and at least one measure of noise, fig [sic]. 4, 8, paragraphs 0008, 0060, 0112, SNR of the data channel based upon the combination of a target SNR (SNR in a CQI/reference channel) and an assigned PSD, measure of noise can be read to already have been included in the target SNR (signal to noise ratio)].

(Ans. 21).

Appellants further argue that Khandekar's teaching of neighboring base stations determining the power spectral density for the access terminal teaches away from allowing the access terminal requesting a spectral power density, as set forth in the pending claims (Br. 7–8). The Examiner does not rely on Khandekar's teaching of neighboring base stations determining the power spectral density, and thus, we do not find persuasive Appellants' argument that the reference teaches away.

Accordingly, we affirm the Examiner's rejection of claim 1 and for the same reasons the Examiner's rejections of claims 3–5, and 9–17 for the same reasons.

CONCLUSION

The Examiner did not err in finding that Ji in view of Khandekar teaches the limitations of:

> estimating said at least one signal-to-noise ratio comprises estimating said at least one signal-to-noise ratio based upon a combination of a spectral power density requested by said at least one access terminal for transmission of at least one packet, at least one signal-to-noise ratio of a reference channel, and at least one measure of noise;
>
> determining, at the access network, a format for said at least one packet based upon said at least one estimated signal-to-noise ratio,

as recited in claim 1.

DECISION

For the above reasons, the Examiner's rejections of claims 1, 3–5, and 9–17 is affirmed.

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) (2009).

AFFIRMED