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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROBINDRA B. JOSHI, JEFFREY S. PUTMAN,
THUJI S. LIN and PAUL T. YANG

Appeal 2010-011368
Application 11/331,520
Technology Center 2600

Before JOSEPH L. DIXON, ST. JOHN COURTENAY III, and
CARLA M. KRIVAK, *Administrative Patent Judges*.

DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of claims 2-4. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellants' claimed invention is:

> [a] method of compensating for carrier frequency and phase errors of a received multi-carrier modulated signal. The received multi-carrier signal including modulated carriers for transmitting known data and unmodulated carriers for error correction, comprising, time domain down converting the received multi-carrier signal to base-band to provide a down-converted signal, the down-converted signal including a plurality of modulated carriers for transmitting known data and unmodulated carriers for error correction.

(Abstract)

Independent claim 2, reproduced below, is representative of the subject matter on appeal.

> 2. A multi-carrier modulated signal receiver that compensates for carrier frequency and phase errors in a received input signal, comprising:
>
> a training tone tracking circuit configured to accept the input signal and split the input signal into a first signal and a second signal, wherein the input signal includes an unmodulated carrier as a training tone;
>
> a mixer configured to receiver the first signal at a first input port of the mixer;
>
> a training tone tracking phase locked loop configured to receive the second signal and provide an output signal to a second input port of the mixer; and
>
> a multi-carrier demodulator and fast Fourier transformer configured to receive an output of the mixer and produce a demodulated output signal.

REFERENCES and REJECTIONS

The Examiner rejected claim 2 under 35 U.S.C. § 102(b) based upon the teachings of Murphy (US Patent 5,315,583, May 24, 1994).

The Examiner rejected claim 3 under 35 U.S.C. § 103(a) based upon the teachings of Murphy and Wang (US Patent 5,815,529, Sep. 29, 1998).

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) based upon the teachings of Murphy and Crowley (US Patent 4,468,632, Aug. 28, 1984).

ANALYSIS

With respect to independent claim 2, Appellants contend that the Murphy reference does not disclose every element of independent claim 2. (App. Br. 13; Reply Br. 2). Appellants repeat the language of claim 2 and emphasize the preamble reciting a "multi-carrier modulated signal receiver that compensates for carrier frequency and phase errors in a received input signal" and "wherein the input signal includes an unmodulated carrier as a training tone." We note that the preamble limitation does not limit the "receiver" since the function of compensating for carrier frequency and phase errors is not expressly achieved. Therefore, this field of use does not limit the claimed invention. Additionally, we note that the proffered distinction of "an unmodulated carrier as a training tone" is not expressly recited as performing any function in the structure of the claimed "receiver," "training tone tracking circuit," "mixer," "training tone tracking phase locked loop," or "multi-carrier demodulator and fast Fourier transformer." Therefore, we find the proffered distinctions do not limit the claimed structure of the receiver as recited in representative claim 2.

Appellants contend the modulated analog carrier f_A is created by frequency modulator 126 by modulating a first carrier of a composite baseband signal, that Murphy describes the analog carrier frequency f_A as being a modulated carrier, and nowhere does Murphy describe analog carrier f_A as being a pilot tone. (App. Br. 15). Appellants contend that the Examiner has ignored the claim language reciting "an unmodulated carrier." (Reply Br. 2). We disagree with Appellants' contentions and find that the Examiner has not ignored this limitation, but has expressly addressed the interpretation of this limitation and the interpretation of the limitation with respect to the prior art teachings of Murphy. (Ans. 8-14). We agree with the Examiner's claim interpretation and analysis. Furthermore, as discussed above, we find that the proffered distinctions do not structurally differentiate the claimed receiver from the structure described in Murphy in the context of anticipation.

Appellants argue that the Examiner improperly attempts to "selectively read limitations discussed in an illustrative example from the specification into the claims, while ignoring alternative disclosures in the specification." (Reply Br. 3). Appellants do not identify any express language in independent claim 2 which makes the Examiner's interpretation erroneous. Nor do Appellants identify the express portions of Appellants' Specification and provide a corresponding discussion which shows error in the Examiner's findings. Therefore, Appellants' argument does not show error in the Examiner's finding of anticipation of the claimed receiver.

Additionally, Appellants' arguments regarding the transmission side of Murphy (App. Br. 13-20; Reply Br. 2-3) do not necessarily show error in the Examiner's findings directed to the receiver side of Murphy. Appellants

also provide a definition of "carrier" and attempt to extrapolate a definition of "training tone" as a "pilot" with respect to a transmission system. (App. Br. 13-14). Again, we note that the field of use for independent claim 2 is a "receiver" and proffered distinctions on the transmission side necessarily do not distinguish the structure of the receiver.

Appellants' contend that Murphy does not describe digital carrier frequency f_D in the transmitter as an unmodulated carrier or as a pilot tone (App. Br. 15). Appellants' contend that Murphy teaches receiver 200 receives only modulated carriers f_A and f_D and does not teach or suggest receiving any other carrier let alone a carrier that is unmodulated. (App. Br. 16). We further note that the training tone tracking circuit merely performs the functions of "accepting an input signal" and "splitting the input signal" and does not recite any specific functions or operations differentiating the carriers of Murphy.

Appellants further contend that the Examiner's interpretation of the 19 kHz pilot tone as a carrier is clear error. (App. Br. 17-20). We disagree with Appellants and find that the Examiner's explanation and line of reasoning are reasonable in light of the broadest reasonable interpretation of independent claim 2. While the baseband pilot tone may be viewed as a carrier signal with respect to the higher frequency, it may also be viewed as a carrier signal with respect to the baseband. Additionally, Appellants' have identified no function or limitation in the language of independent claim 2 which expressly differentiates from a recovered pilot tone. Therefore, Appellants' arguments do not show error in the Examiner's finding of anticipation of representative claim 2.

With respect to the obviousness rejections of dependent claims 3 and 4, Appellants rely upon the arguments previously advanced with respect to independent claim 2. We do not find these arguments persuasive for the reasons discussed above. (App. Br. 21-24; Reply Br. 4-5).

CONCLUSION

The Examiner did not err in rejecting claim 2 under anticipation. The Examiner did not err in rejecting claims 3 and 4 under obviousness.

DECISION

The Examiner's decision rejecting claims 2-4 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)(2010).

AFFIRMED

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