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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BENGT LINDOFF and ANDERS ROSENQVIST

Appeal 2015-002856
Application 12/866,431¹
Technology Center 2600

Before JOSEPH P. LENTIVECH, SHARON FENICK, and
AARON W. MOORE, *Administrative Patent Judges*.

FENICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's non-final rejection of claims 1–19, all the pending claims in the present application. (Appeal Br. 6.) Claims 20–22 are cancelled. (*Id.* at 15.) We have jurisdiction over the appeal under 35 U.S.C. § 6(b)(1).

We REVERSE.

Invention

Appellants' invention relates to the processing of a received signal in the presence of interference by filtering the received signal using at least a

¹ According to Appellants, the real party in interest is Telefonaktiebolaget L M Ericsson. (Appeal Br. 2.)

first filter having at least a first filter characteristic to suppress the interference. A desired data stream from the filtered received signal is then determined, based on information about the first filter characteristic.

(Spec. Abstract.) The detection of the desired data stream from the filtered signal using knowledge of the filter makes it possible to (at least partly) compensate for the effects of the attenuation of the desired signal caused by the notch in the filtering step. (Spec. 8:25–28.)

Illustrative Claim

Claim 1, reproduced below with emphasis added, is illustrative:

1. A method for processing a received signal in the presence of an interference of a first type within the bandwidth of a desired signal of the received signal, the method comprising:

filtering the received signal using at least a first filter having at least a first filter characteristic to produce a filtered signal, wherein the interference of the first type is suppressed; and

determining a desired data stream from the filtered signal,

wherein the step of determining the desired data stream from the filtered signal comprises basing the determination at least on information about the first filter characteristic.

References

Nuutinen	US 7,016,439 B2	Mar. 21, 2006
Yoshida	US 2006/0268963 A1	Nov. 30, 2006
Doppler	US 2008/0070510 A1	Mar. 20, 2008
Hou	US 2008/0084940 A1	Apr. 10, 2008

Rejections

Claims 1–5, 8, 10–15, 17, and 19 are rejected under 35 U.S.C. § 102(e) as anticipated by Hou. (Final Action 4–6.)

Claims 6, 7, 9, 16, and 18 are rejected under 35 U.S.C. § 103(a) unpatentable over Hou in combinations with Doppler, Nuutinen, and Yoshida. (Final Action 6–8.)

ANALYSIS

*“determining a desired data stream” based at least on
“information about the first filter characteristic”*

Issue: Did the Examiner err in finding that Hou discloses the determination of a desired data stream from a filtered signal based on information about a filter characteristic of a filter used to filter the received signal, as in claim 1?

Hou teaches an emitted signal $s(t)$, which is an OFDM signal containing a number of separately-modulated sub-carriers, and which is processed to yield a decoded data channel free from the influence of co-channel interference. (Hou ¶¶ 23, 46, Fig. 3C.) Figure 3C of Hou is

reproduced below:

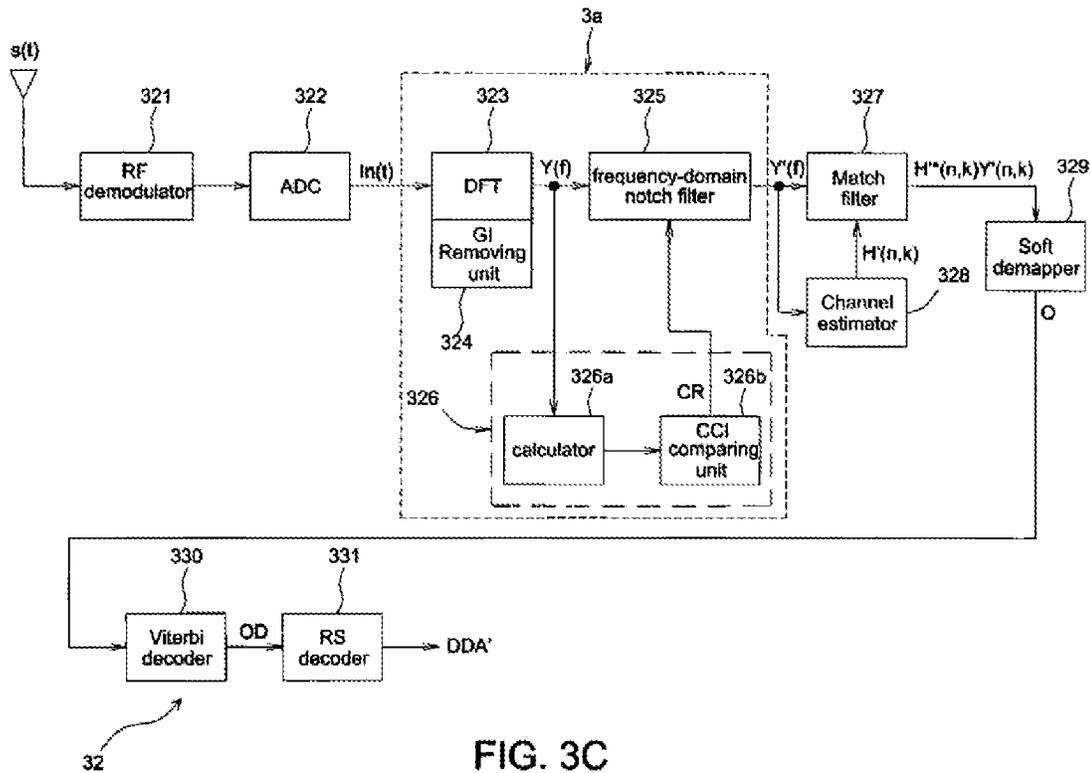


Figure 3C of Hou is a schematic diagram showing the emitted signal $s(t)$ being processed to produce a decoded data channel DDA' . (Hu ¶¶ 27–46.) An estimated error calculated by calculator 326a is used by CCI comparing unit 326b to provide a weighting coefficient $M(k)$ to frequency-domain notch filter 325. (*Id.* ¶¶ 31–41.)

The Examiner finds that Hou discloses the invention of claim 1. (Final Action 4.) Specifically, the Examiner finds that the determination of a desired data stream based on at least a first filter characteristic of a filter used to produce a filtered signal is disclosed by the use of the weighting coefficient $M(k)$ (mapped to the claimed first filter characteristic) of the frequency-domain notch filter 325 (mapped to the claimed first filter) during

subsequent processing of the signal by match filter 327 and/or channel estimator 328. (*Id.*)

Appellants argue that the Examiner erred in finding the disclosure of the disputed limitation in Hou:

The technology disclosed by Hou performs filtering (i.e., weighting of sub-carriers as performed by the frequency-domain notch filter 325), but the filtered signal is then provided to a match filter 327 and to a channel estimator 328, neither of which bases its output on any information about what the weighting coefficients are. [. . .] This can be seen in Hou's Fig. 3, which lacks any feed forwarding of information about the notch filter 325 to any of the components 327, 328, or 329.

(App. Br. 7.)

The Examiner finds that the weighting coefficient in Hou is provided to the match filter and soft demapper in the form of the channel parameter $H'(n,k)$ which is provided by the channel estimator 328. (Final Action 2–3; Answer 7–8.) The Examiner further finds that “in order to generate the channel parameter, information such as the value of the weighting coefficient $M(k)$ must be known.” (Final Action at 2.) The Examiner bases this conclusion on Equation 7 of Hou. (Final Action 2–3; Answer 7–8.)

Hou's Equation 7 states two relationships for the estimated channel parameter $H'(n,k)$: (a) it is equal to notched frequency domain data $Y'(n,k)/C(n)$, and (b) it is approximately equal (“ \approx ”) to the $M(k)H(n,k)$, where $M(k)$ is the weighting coefficient and $H(n,k)$ is the channel response in frequency-domain. (Hou ¶ 43.) We agree with Appellants (Appeal Br. 7–8) that Hou states that the channel parameters $H'(n,k)$ are generated based on the filtered signal $Y'(n,k)$ and not on the weighting coefficient $M(k)$. We find that the presence of the weighting coefficient $M(k)$ in Hou's Equation 7

does not disclose that the weighting coefficient $M(k)$ is known or used by the match filter or channel estimator.

Therefore, we find Appellants' arguments regarding the disputed limitation to be persuasive. 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 do not sustain the Examiner's anticipation rejection of independent claim 1, and independent claims 11 and 12 containing commensurate limitations. Additionally, we do not sustain the anticipation rejections of dependent claims 2–5, 8, 10, 13–15, 17, and 19. Additionally, we do not sustain the Examiner's obviousness rejections of claims 6, 7, 9, 16, and 18, based in part on the reasoning of the anticipation rejection.

DECISION

We reverse the Examiner's 35 U.S.C. § 102(e) rejection of claims 1–5, 8, 10–15, 17, and 19 as anticipated by Hou.

We reverse the Examiner's 35 U.S.C. § 103(a) rejection of claims 6, 7, 9, 16, and 18 as unpatentable over Hou in combination with various other prior art references.

REVERSED