

The opinion in support of the decision being entered today was not written for publication is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte AKI SHOHARA

Appeal No. 1998-2608
Application 08/570,439

ON BRIEF

Before THOMAS, HAIRSTON and HECKER, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

DECISION ON APPEAL

Appellant has appealed to the Board from the examiner's final rejection of claims 1 through 10, which constitute all the claims in the application.

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Representative claim 1 is reproduced below:

1. A cellular RF communication system having a plurality of base stations, each base station communicating with a plurality of assigned stationary RF subscriber stations, respectively, each base station constituting a cell having a plurality of sector beam antennas per cell, each sector beam antenna illuminating a predetermined sector of said cell with RF communication signals, a plurality of said assigned stationary RF subscriber stations being assigned to each sector of a cell, each assigned stationary RF subscriber station having an RF transceiver and a high gain antenna with a narrow beam width oriented toward the sector beam antenna oriented toward its assigned sector, said base stations having a database of measured co-channel interference characteristics of each said assigned stationary RF subscriber stations, and, with respect to each assigned stationary RF subscriber station, means at each said base station for accessing said database on demand for access to a communication channel by one of said assigned stationary RF subscriber stations and determine said access under predetermined channel quality criterion.

The following references are relied upon by the examiner:

Ohteru	5,157,709	Oct. 20, 1992
Wang	5,280,630	
Jan. 18, 1994		
Hamabe	5,475,864	Dec. 12,
1995		
		(filed July 19,
1994)		
Duque-Anton et al. (Duque-Anton)	5,475,868	Dec. 12,
1995		
		(filed Aug. 3, 1993)
Åkerberg et al. (Åkerberg)	5,533,027	Jul. 2,
1996		
		(effective filing date Nov. 19,
1993)		

Claims 1 through 10 stand rejected under 35 U.S.C. § 103.

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As evidence of obviousness, the examiner relies upon Hamabe in view of Wang, further in view of Åkerberg as to claim 1. As to claims 3 through 5, the examiner relies upon Hamabe, Åkerberg and Duque-Anton. As evidence of obviousness for claims 2 and 6, the examiner relies upon Hamabe in view of Åkerberg and Ohteru, with the addition of Wang as to claims 7 through 10.

Rather than repeat the positions of the appellant and the examiner, reference is made to the brief and the answer for the respective details thereof.

OPINION

For the reasons generally set forth by the examiner in the answer, with the following embellishments, we sustain the rejection of claims 1 through 8 and 10, and reverse the rejection of claim 9.

Turning first to the rejection of claim 1, the discussion at column 1, lines 19 through 26 of Hamabe indicates that co-channel interference may be decreased by the use of directional antennas at base stations, with each antenna illuminating or covering a sector of the cell, whereas

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omnidirectional antennas are used in non-sectorized cells.
On the basis of this teaching in Hamabe, we consider that it was proper for the examiner within 35 U.S.C. § 103 to have utilized the additional teachings of high gain directional antennas in subscriber stations as a means of complementing the use of the directional or sectorized base station antennas.

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On the basis of the collective teachings of both references, we therefore conclude that it would have been obvious to have applied the teachings of mobile cell radio systems well-known in the art as represented by Hamabe (and Wang as well as far as this rejection is concerned) in the subscriber fixed station arrangements in Figures 1 and 2 of Åkerberg. Figures 1 through 3 of this reference contrast land line and mobile and fixed subscriber stations with respect to fixed base stations 1. The discussion in the paragraph bridging columns 1 and 2 of Åkerberg even considers the fixed radio local loop (FRL) based subscriber stations as being analogous to the normal cellular technology represented by the subscriber mobile stations (SMS 5) represented in Figure 5. Since the Hamabe and Åkerberg references are utilized in each of the four separately stated rejections by the examiner, to the extent any claim on appeal recites a stationary subscriber station high gain antenna in some form, the applicability of well-known prior art cellular-base technology to such fixed station subscriber stations, is clearly suggested, and the collective teachings of these references meet these features. The central logic 27 of the base station in Figure 14 of

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Åkerberg contains the capability of switching the antenna diversity switch 22 in addition to switching channels if necessary to ensure the proper connectability to the remote fixed antennas 7 such as in Figure 2.

It is thus also apparent in the consideration of Hamabe and Åkerberg alone that the use of the word "stationary" in the claims on appeal to define the terminal stations' antennas is not patentably distinct since Åkerberg also teaches this feature for the antenna 7 such as in Figure 2. Furthermore, even a conventional cellular-based system may be considered stationary if it is not used in a mobile-sense or not moved.

This reasoning of the combinability of Hamabe and Åkerberg directly meets the arguments represented by appellant between pages 5 and 10 of the brief concerning the first stated rejection. The clear inference to the reader of the teachings and suggestions of Hamabe, Wang and Åkerberg is at least that the teachings of mobile interference minimization of various channels in a mobile cellular environment in Hamabe and Wang clearly would have been applicable in the environment of a fixed subscriber station as in Åkerberg. In contrast to the normal teachings in Hamabe and Wang of a mobile subscriber

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being used with respect to various different base stations,
the need obviously would have been present as shown and taught
in Åkerberg for a fixed-base station with respect to a fixed
subscriber. Simply

put, the antennas of the fixed base station, as well as its corresponding fixed subscriber station, must be directed to each other and therefore are considered assigned.

In contrast to appellant's view that there is no teaching and suggestion in Wang of a database of measured co-channel interference characteristics, we respectfully disagree. The examiner properly relies on the preferred channel list (PCL) of Wang as a basis from which to allocate communication channels, which are specifically ranked in accordance with the occurrence of prior events on the channels, or a channel history, which is in-part based upon the mean quality margin and current channel quality determinations. The discussion at column 1, lines 36-45 of Wang relied upon by the examiner indicates that the co-channel interference of the type discussed in Hamabe is also used as a measure of quality as discussed in this reference. Dynamic channel allocation methods are also taught in Wang to complement those in Hamabe to minimize or eliminate this co-channel interference.

In addition to the preferred channel list comprising a database of Wang comparable to the claimed database of claim 1 for example, Hamabe utilizes a list of candidate channels

which also comprises such a comparable database of the type claimed. The basis for the discussion of such a list in Hamabe is derived from the examiner-noted discussion of the middle paragraph of column 1 of this reference, which also teaches that a list of available channels according to past history of co-channel interference is kept in the prior art to Hamabe which is utilized as a basis for determining future dynamic channel allocations as taught in this reference. It is also taught in the context of uplink and downlink signals. As a measure of co-channel interference determinations to determine channel quality, the noise value associated with the respective channels is also determined as discussed in the latter portion of column 6 of Hamabe. These values must obviously be measured to the extent claimed as are the measurement of all values determined as expressed at the bottom of column 4 of Wang. The discussion at column 9 associated with Figure 8 of Wang also indicates that a signal-to noise-ratio and interference ratios are discussed as a measure of quality determinations in Wang. We are therefore unpersuaded by the appellant's argument at page 9 of the brief that Wang is not concerned with interference factors.

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The addition of Duque-Anton with the combined teachings of Hamabe and Åkerberg as applied to claims 3 through 5 is also proper in our view within 35 U.S.C. § 103. As noted earlier Hamabe specifically deals with noise determinations as a measure of quality in the context of co-channel interference determinations as well as set forth at the end of claim 3 on appeal. Duque-Anton buttresses the measurement aspect of various signal parameters to determine quality and goes well beyond those already discussed with respect to Hamabe. As the examiner noted, the bottom of column 2 of Duque-Anton again specifically deals with various signal to noise ratios, frame bit error rates, etc. which relate to co-channel interference problems as outlined in Hamabe and discussed in a more general way as a measure of co-channel interference determinations in Duque-Anton. Column 2, lines 16-29 of Duque-Anton discuss the use of field strength and interference measurements as a part of quality determinations which include the use of an exclusion matrix, comparable to a database. The details of Duque-Anton expand upon these considerations.

Appellant's argument as to this rejection at pages 14

through 16 have been considered. However, appellant merely lists certain features recited of each the claims 3 through 5 and continues this same line of reasoning regarding the alleged deficiencies of the mobile cellular system of Hamabe integrating with the fixed station cellular system of Åkerberg which has been addressed earlier in this opinion. Even though Duque-Anton is a mobile cellular-type system, his teachings obviously would have been applicable to a fixed-base system for the same reasons outlined earlier in this opinion.

Lastly, we turn to the two separate rejections of claims 2 and 6 through 10 under 35 U.S.C. § 103. We agree with the examiner's view as to the obviousness of claims 2 and 6 in view of the combined teachings and showings of Hamabe, Åkerberg and Ohteru. In addition to our earlier discussions in this opinion with respect to Hamabe and Åkerberg, the abstract of Ohteru is the best representation of the substance of the teachings of this reference, which clearly indicates that various sensing or measuring operations occur in using various polling signals or control signals of the type claimed that are periodically sent from the control station and the respective base stations comparable to what is done in a

normal cellular based environment anyway. More specifically, as to the co-channel interference problems discussed in Hamabe, Ohteru specifically collects data to form an interference matrix in Figure 4 to be used within the memory element 7 of the control station 1 in Figure 1. Ohteru therefore complements the teachings of a database list as we outlined earlier in Hamabe, as well as the measurement of various types of signals with respect to co-channel interference determinations set forth in that reference as well. Hamabe, as indicated earlier in this opinion, deals with the relationship of co-channel interference problems and noise. Again, the focus of appellant's arguments with respect to the rejection of claims 2 and 6 relates to arguments which we have found unpersuasive earlier in this opinion, focusing chiefly upon the mobile cellular environment of Ohteru and Hamabe in contrast to the fixed subscriber station environment of Åkerberg.

The addition of Wang to this combination of three references in the rejection of claims 7 through 10 buttresses the evidence of obviousness of claims 7, 8 and 10. It is not believed necessary for us to discuss further the details of

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Wang and the content of the features of claims 7, 8 and 10 since appellant's arguments with respect to the rejection of these claims merely point out the subject matter of the claims rather than argue the patentability of them in light of the collective teachings of the references. As with other rejections, appellant's arguments of the mobile cellular nature of Hamabe, Wang and Ohteru are not persuasive of patentability.

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We do, however, agree with appellant's view expressed at page 13 of the brief that the combination of the references does not teach the details of the channel assignment regime set forth in detail in claim 9 on appeal, which is a mirror of the logic presented in the flow chart of Figure 8 of the disclosed invention. The detail of the subject matter of this claim goes well beyond the examiner's assertions of unpatentability of it in light of the references relied upon either in the statement of the rejection portion in the answer or the responsive arguments portion of the answer. Therefore, we reverse the rejection of claim 9 under 35 U.S.C. § 103.

In view of the foregoing, we affirm the decision of the examiner rejecting claims 1 through 8 and 10 under 35 U.S.C. § 103, but reverse the rejection of claim 9. As such, the decision of the examiner is affirmed-in-part.

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

AFFIRMED-IN-PART

JAMES D. THOMAS)
Administrative Patent Judge)
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) BOARD OF PATENT
KENNETH W. HAIRSTON) APPEALS
Administrative Patent Judge) AND
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)
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INTERFERENCES

Appeal No. 1998-2608
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