

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte STEFAN BAHRENBURG, CHRISTOPH EUSCHER, TOBIAS WEBBER,
PAUL WALTER BAIER, JURGEN MAYER, AND JOHANNES SCHLEE

Appeal No. 2004-1573
Application No. 09/494,780

ON BRIEF

Before THOMAS, DIXON, and BARRY, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1-4, 6, 9, and 11-15. The appellants appeal therefrom under 35 U.S.C. § 134(a). We reverse.

BACKGROUND

The invention at issue on appeal concerns mobile radio communications. (Spec. at 1.) According to the appellants, a known radio communications system uses both Code Division Multiple Access ("CDMA") and Time Division Multiple Access ("TDMA") to separate subscribers. "Joint Detection" is used at the receiving end to detect

transmitted data. (*Id.* at 2.) At least two data channels can be assigned to the same connection, each data channel being distinguished by an individual spread code. (*Id.*)

In the Global System for Mobile Communications, explain the appellants, data are transmitted as radio blocks with "midambles" being transmitted within a radio block. The midambles may be used as training sequences for a receiver. More specifically, the receiver uses the midambles to estimate the channel impulse responses of different transmission channels. (*Id.* at 3.) The appellants explain that the number of channel impulse responses that can be estimated jointly represents a "capacity-limiting factor." (*Id.*) Because the number of symbols in the midamble is finite, and channel impulse response cannot be infinitely short, the number of channel impulse responses that can be estimated jointly is limited. In turn, this limits the number of channels that can be transmitted jointly.

The appellants' invention also assigns at least two data channels to the same connection, each data channel being distinguished by an individual spread code. Midambles having known symbols are also transmitted in the data channels, wherein the number of midambles used for the connection is less than the number of data channels assigned thereto. (*Id.* at 4.) Because the number of midambles is not rigidly linked to the number of data channels, assert the appellants, the capacity-limiting factor affects the number of connections but not the number of data channels. This allows the

capacity of the radio communications system to be utilized better. (*Id.* at 4-5.)

Furthermore, they add, "there is no need to make an estimate of the channel impulse response . . . for each data channel individually." (*Id.* at 5.)

A further understanding of the invention can be achieved by reading the following claims.

1. A method for data transmission via a radio interface in a radio communications system, which comprises the following steps:

 assigning one connection via a radio interface a given number of at least two data channels, whereby the data channels can be distinguished by an individual spreading code;

 transmitting in the data channels data symbols and, in addition, training sequences with known symbols; and

 utilizing for at least two of the data channels of the connection one common training sequence different from training sequences of other connections.

11. A radio station for data transmission in a radio communications system via a radio interface, comprising:

 a control device for assigning at least two data channels to a connection in a radio communications system;

 wherein each data channel can be distinguished by an individual spreading code, and

 wherein data symbols and, in addition, training sequences with known symbols are transmitted in a data channel;

 a signal processor using for at least two of the data channels of the connection one common training sequence different from training sequences of other connections.

Claims 1-4, 6, 9, and 11-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,511,068 ("Sato").

OPINION

Rather than reiterate the positions of the examiner or the appellants *in toto*, we focus on the main point of contention therebetween. "The examiner references Sato, Figure 7 and column 9 lines 18 to 34," (Examiner's Answer at 10), and concludes, "It is very clear from the above that Sato utilizes a training sequence that is common for each connection and different from all other connections." (*Id.* at 10-11.) The appellants argue, "Sato discloses (see col. 9, lines 26-29) that the training signal series differentiates a plurality of channels within the same time slot ('a common time slot TM')." (Reply Br. at 2.)

In addressing the point of contention, the Board conducts a two-step analysis. First, we construe claims at issue to determine their scope. Second, we determine whether the construed claims are anticipated.

1. CLAIM CONSTRUCTION

"Analysis begins with a key legal question — *what is the invention claimed?*" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed.

Cir. 1987). In answering the question, "[t]he Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994) (citing *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983)).

Here, independent claim 1 recites in pertinent part the following limitations: "utilizing for at least two of the data channels of the connection one common training sequence. . . ." Similarly, independent claim 11 recites in pertinent part the following limitations: "a signal processor using for at least two of the data channels of the connection one common training sequence. . . ." Considering these limitations, claims 1 and 11 require using a single training sequence for at least two of the data channels of a radio communication connection.

2. ANTICIPATION DETERMINATION

"Having construed the claim limitations at issue, we now compare the claims to the prior art to determine if the prior art anticipates those claims." *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349, 64 USPQ2d 1202, 1206 (Fed. Cir. 2002). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (citing *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 715, 223 USPQ 1264,

1270 (Fed. Cir. 1984); *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548, 220 USPQ 193, 198 (Fed. Cir. 1983); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771, 218 USPQ 781, 789 (Fed. Cir. 1983)). "[A]bsence from the reference of any claimed element negates anticipation." *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Here, Sato "relates to a mobile communication system which includes a base station and a mobile station communicable with the base station. . . ." Col. 1, ll. 10-12. In Figure 7 of the reference, a "transmission signal td is exemplified which is transmitted from the mobile station, such as MS1, to the base station, such as BS1. The transmission signal td is transmitted in the form of a burst as shown in FIG. 7 and includes a preceding signal series, a following signal series, and a training signal series intermediate between the preceding and the following signal series. The training signal series may have a pattern known in the art. . . ." Col. 9, ll. 18-27.

Although Sato allocates "a plurality of radio channels . . . to the mobile stations, such as MS1," col. 5, ll. 50-52, we are unpersuaded that the reference uses a single training series for at least two of the radio channels. To the contrary, the passage referenced by the examiner discloses that "[t]he training signal series . . . may be formed by **a code series peculiar to each channel** so as to distinguish among the channels which use a common time slot TM." Col. 9, ll. 26-29 (emphasis added). "For example, the training signal series for the respective channels may be given by preparing M sequences, namely, maximum-length-sequence codes and by successively shifting a phase of the M sequences at every channel to provide a plurality of **different training series.**" *Id.* at ll. 29-33 (emphasis added). In other words, Sato uses a different training series for each radio channel of a common time slot.

The absence of using a single training sequence for at least two of the data channels of a radio communication connection negates anticipation. Therefore, we reverse the anticipation rejection of claim 1; of claims 2-4, 6, 9, 12, and 14, which depend therefrom; of claim 11; and of claims 13 and 15, which depend therefrom.

CONCLUSION

In summary, the rejection of claims 1-4, 6, 9, and 11-15. under § 102(b) is reversed.

REVERSED

JAMES D. THOMAS
Administrative Patent Judge

JOSEPH L. DIXON
Administrative Patent Judge

LANCE LEONARD BARRY
Administrative Patent Judge

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