UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte YOUN-HYOUNG HEO, JU-HO LEE, and JOON-YOUNG CHO

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Appeal 2018-007551
Application 14/564,965
Technology Center 2400

_____

Before ALLEN R. MacDONALD, CAROLYN D. THOMAS, and
BETH Z. SHAW, *Administrative Patent Judges*.

MacDONALD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from a Final

Rejection of claims 1–28. Appeal Br. 4. We have jurisdiction under 35

U.S.C. § 6(b).

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37
C.F.R. § 1.42. Appellant identifies the real party in interest as Samsung
Electronics Co., Ltd. Appeal Br. 1.

We REVERSE.

CLAIMED SUBJECT MATTER

Claim 1 is illustrative of the claimed subject matter (emphasis, formatting, and bracketed material added):

1. A method for transmitting data and control information, the method comprising the steps of:

[A.] determining a number of symbols for control information based on a number of data bits and scheduled resources;

[B.] generating coded control information based on the number of symbols for the control information;

[C.] generating coded data based on a modulation scheme;

[D.] multiplexing the coded data and the coded control information;

[E.] modulating the multiplexed coded control information and coded data by the modulation scheme; and

[F.] transmitting the modulated coded control information and coded data on a channel based on the scheduled resources,

[G.] wherein **the number of symbols for the control information is decreased if the number of data bits is increased** within the scheduled resources.

REFERENCES[2]

The prior art relied upon by the Examiner is:

Name	Reference	Date
Ketchum	US 2004/0165684 A1	Aug. 26, 2004
Zhang	US 2008/0101326 A1	May 1, 2008

REJECTIONS

A.

The Examiner rejects claims 1, 2, 5, 7–9, 12, and 14 under 35 U.S.C. § 103 as being unpatentable over the combination of Ketchum and Zhang. Final Act. 4–8.

We select claim 1 as the representative claim for this rejection. The contentions discussed herein as to claim 1 are determinative as to this rejection. Therefore, except for our ultimate decision, we do not address claims 2, 5, 7–9, 12, and 14 further herein.

B.

The Examiner rejects claims 3, 4, 6, 10, 11, 13, and 15–28 under 35 U.S.C. § 103 as being unpatentable over various combinations of Ketchum, Zhang, and numerous other references. Final Act. 9–19.

The contentions discussed herein as to claim 1 are determinative as to these rejections. Therefore, except for our ultimate decision, we do not address claims 3, 4, 6, 10, 11, 13, and 15–28 further herein.

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[2] All citations herein to patent and pre-grant publication references are by reference to the first named inventor only.

OPINION

We have reviewed the Examiner's rejections in light of Appellant's arguments that the Examiner has erred. Appellant's contentions we discuss are determinative as to the rejections on appeal. Therefore, Appellant's other contentions are not discussed in detail herein.

A.

The Examiner finds as to above part G. of claim 1:

> Zhang teaches ***determining number of symbols for control information based on a number of data bits and scheduled resources*** [Figure 3 shows a data frame comprising data 314 and pilot, or control information, 316. ¶0041 teaches that pilot field 316 contains pilot symbols. ¶0041 also teaches the pilot field comprises a number of bits shown in 416 of Figure 4, and when the format is 1 there are 8 bits for the pilot considered to be a number of symbols, and when the format is 0 there are zero bits for the pilot which ¶0041 teaches means there is no pilot field, so there are no pilot symbols.] ***wherein the number of symbols for the control information is decreased if the number of data bits is increased within the scheduled resources*** [As stated above, when the number of bits as in format 1 of figure 4 is 12, there are eight pilot bits which corresponds to pilot symbols as in ¶0041, and when the format switches to 0 wherein there are 20 bits for the data, there is no pilot field as the number of pilot bits is zero and ¶0041 indicates this means there is no pilot field. Thus, the number of symbols for the pilot, or control information, changes from a number of symbols to zero as the field is removed when the data bits are increased and a constant number of bits is 20 as in formats 0 and 1 of Figure 4].

4

Final Act. 5 (emphasis omitted, alterations in original).

B.

Appellant contends that the Examiner erred in rejecting claim 1 under

35 U.S.C. § 103 because:

> *Zhang* fails to teach or suggest that the determined number of symbols for the control information is decreased if the number of data bits is increased within the scheduled resources.
>
> In addressing this recitation, in the Examiner alleges FIG. 4 of *Zhang* teaches, when a slot format is changed from 1 to 0, an increased number of data bits corresponds to a decrease in the control symbols. Appellants disagree.
>
> Referring to FIG. 4 and the description in *Zhang*, the number of pilot bits N_{pilot} may vary depending on a format selected for the slots. For example, N_{pilot} may be 8 or 16 according to MBMS specification, and alternatively, the S-CCPCH may not include a pilot field (e.g., $N_{pilot}=0$). Further, *Zhang* describes that the number of data bits N_{data} may vary depending on a format selected for slots, e.g., N_{data} may be $20*2^k$ (k= 0 to 6).
>
> Therefore, the relationship between N_{pilot} and N_{data} illustrated in FIG. 4 of *Zhang* is <u>not</u> an inverse type of relationship wherein when one is increased as another is decreased. Instead, N_{pilot} and N_{data} have a predetermined value depending on a type of slot format (0 to 17) as indicated in the table of FIG 4, as shown below. Further, N_{pilot} is not the value determined based on N_{data}.

Appeal Br. 5.

C.

The Examiner responds:

> The Examiner notes that ***a reference that shows this relationship in any one instance demonstrates this relationship*** since the claim language appears to teach no more than one instance of this relationship being shown. The claim does not

recite language requiring that the number of control symbols and data bits will always have this inverse relationship such that any time the data bits increases, the control symbols decrease. Merely that in any specific example of transmitting data, it can be shown that the number of data symbols decreases when the number of data bits increases.

Ans. 5 (emphasis added).

D.

As articulated by the Federal Circuit, the Examiner's burden of proving non-patentability is by a preponderance of the evidence. *See In re Caveney*, 761 F.2d 671, 674 (Fed. Cir. 1985) ("preponderance of the evidence is the standard that must be met by the PTO in making rejections"). "A rejection based on section 103 clearly must rest on a factual basis." *In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967). "The Patent Office has the initial duty of supplying the factual basis for its rejection. It may not . . . resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis." *Id.* We conclude the Examiner's analysis fails to meet this standard because the rejections do not adequately explain the Examiner's findings of fact.

Particularly, we agree with Appellant that the language of claim 1 requires a "relationship" (i.e., connection) between the increase and decrease of the bit values, and we disagree with the Examiner's reasoning that Zhang's two separate formats (8 pilot bits and 0 pilot bits) alone without more are sufficient to show such a "relationship." Our concern is that we find nothing in the Examiner's reasoning that shows a "relationship" between the increase and decrease of the bit values. That is, we see no

showing that the reason the pilot bits decreased *is because* the data bits increased.

Consistent with Appellant's arguments, we conclude that there is insufficient articulated reasoning to support the Examiner's finding that Zhang teaches, "the number of symbols for the control information is decreased if the number of data bits is increased," as required by claim 1. Therefore, we conclude that there is insufficient articulated reasoning to support the Examiner's final conclusion that claim 1 would have been obvious to one of ordinary skill in the art at the time of Appellant's invention.

CONCLUSION

The Appellant has demonstrated the Examiner erred in rejecting claims 1–28 as being unpatentable under 35 U.S.C. § 103.

The Examiner's rejections of claims 1–28 as being unpatentable under 35 U.S.C. § 103 are **reversed**.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–28	103	Ketchum, Zhang		1–28

REVERSED

7