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Paper 10
Entered: May 4, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Patent Owner.

IPR2023-00131
Patent 7,916,781 B2

Before KEN B. BARRETT, JOHN A. HUDALLA, and AMBER L. HAGY, *Administrative Patent Judges*.

HUDALLA, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 3–18 and 22 ("the challenged claims") of U.S. Patent No. 7,916,781 B2 (Ex. 1001, "the '781 patent"). Petitioner filed a Declaration of Matthew C. Valenti, Ph.D.

(Ex. 1002) with its Petition. California Institute of Technology ("Patent Owner") filed a Preliminary Response (Paper 7, "Prelim. Resp."). With our authorization, Petitioner filed a Preliminary Reply (Paper 8, "Pet. Reply") and Patent Owner filed a Preliminary Sur-reply (Paper 9, "PO Sur-reply") directed to the issue of discretionary denial under 35 U.S.C. § 314.

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2022). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the petition and the preliminary response "shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." For the reasons that follow, we do not institute an *inter partes* review.

I. BACKGROUND

A. Real Parties-in-Interest

Petitioner identifies Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., as the real parties-in-interest. Pet. 1. Patent Owner identifies California Institute of Technology as the real party-in-interest. Paper 5, 1.

B. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), the parties identify the following related matters (Pet. 1–2; Paper 5, 1–2):

Cal. Inst. of Tech. v. Samsung Elecs. Co., No. 2-21-cv-00446 (E.D. Tex. filed Dec. 3, 2021) ("the underlying litigation");

Cal. Inst. of Tech. v. Microsoft Corp., No. 6-21-cv-00276 (W.D. Tex. filed Mar. 19, 2021);

Cal. Inst. of Tech. v. HP Inc. f/k/a/ Hewlett-Packard Co., No. 6-20-cv-01041 (W.D. Tex. filed Nov. 11, 2020);

Cal. Inst. of Tech. v. Dell Techs. Inc., No. 6-20-cv-01042 (W.D. Tex. filed Nov. 11, 2020);

Cal. Inst. of Tech. v. Broadcom Ltd., No. 2:16-cv-03714 (C.D. Cal. filed May 26, 2016);

Cal. Inst. of Tech. v. Hughes Commc'ns, Inc., No. 2:15-cv-01108 (C.D. Cal. filed Feb. 17, 2015); and

Cal. Inst. of Tech. v. Hughes Commc'ns, Inc., 2:13-cv-07245 (C.D. Cal. filed Oct. 1, 2013).

The '781 patent was previously the subject of three *inter partes* reviews identified by the parties (Pet. 2; Paper 5, 2–3): IPR2015-00059 ("059 IPR"), IPR2017-00297 ("297 IPR"), and IPR2017-00423 ("423 IPR"). In the Final Written Decision from the 059 IPR, the Board determined that claims 1 and 2 of the '781 patent are unpatentable as anticipated by a reference known as "Divsalar." In the consolidated Final Written Decision for the 297 IPR and the 423 IPR, the Board determined that claims 19–21 of the '781 patent are unpatentable as anticipated by a reference known as "Ping." The Board also determined that claims 13–15, 18, and 22 of the '781 patent were not shown to be unpatentable over "Ping" and a reference known as "MacKay." The Board additionally determined that claim 16 of the '781 patent was not shown to be unpatentable over "Ping," "MacKay," and another reference known as "Coombes." None of those references are at issue in this proceeding.

Patent Owner also identifies the following prior *inter partes* review proceedings for patents related to the '781 patent (Paper 5, 2–3): IPR2015-00060, IPR2015-00061, IPR2015-00067, IPR2015-00068, IPR2015-00081, IPR2017-00210, IPR2017-00211, IPR2017-00219, IPR2017-00700, IPR2017-00701, IPR2017-00702, IPR2017-00703, and IPR2017-00728.

We additionally identify the following co-pending *inter partes* review proceedings between the parties: IPR2023-00130, IPR2023-00133, and IPR2023-00137.

C. The '781 Patent

The '781 patent describes the serial concatenation of interleaved convolutional codes forming turbo-like codes. Ex. 1001, code (54). It explains some of the prior art with reference to its Figure 1, reproduced below.

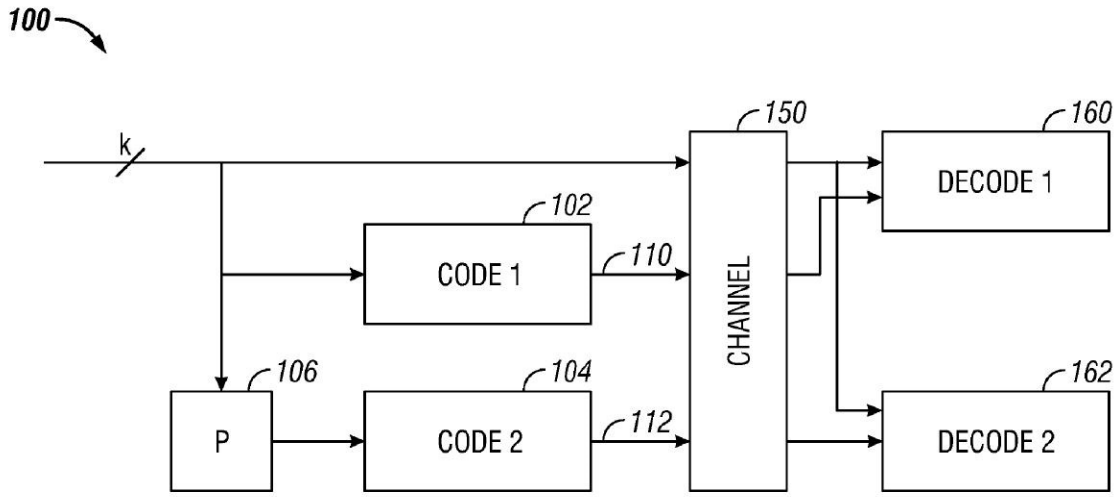

FIG. 1
(Prior Art)

Figure 1 is a schematic diagram of a prior "turbo code" system. *Id.* at 2:20–21. The '781 patent specification describes Figure 1 as follows:

> A block of k information bits is input directly to a first coder 102. A k bit interleaver 106 also receives the k bits and interleaves them prior to applying them to a second coder 104. The second coder produces an output that has more bits than its input, that is, it is a coder with rate that is less than 1. The coders 102, 104 are typically recursive convolutional coders.
>
> Three different items are sent over the channel 150: the original k bits, first encoded bits 110, and second encoded bits 112. At the decoding end, two decoders are used: a first constituent decoder 160 and a second constituent decoder 162. Each receives both the original k bits, and one of the encoded portions 110, 112. Each decoder sends likelihood estimates of the decoded bits to the other decoders. The estimates are used to decode the uncoded information bits as corrupted by the noisy channel.

Id. at 1:44–60.

A coder 200, according to a first embodiment of the invention, is described with respect to Figure 2, reproduced below.

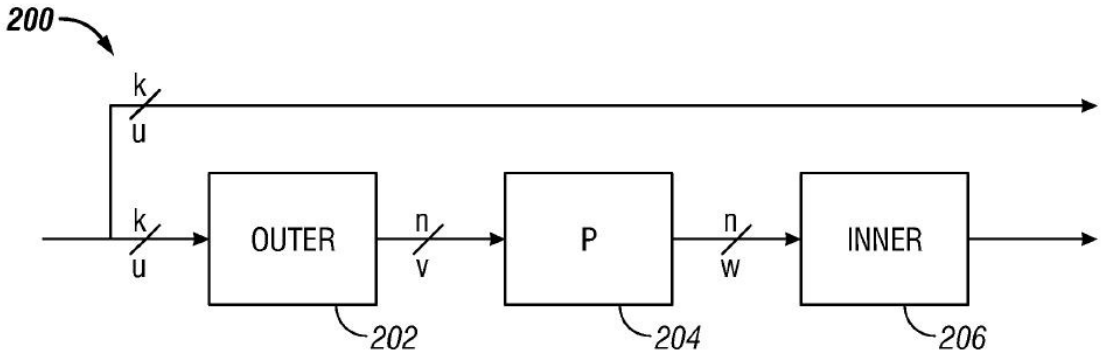

FIG. 2

Figure 2 of the '781 patent is a schematic diagram of coder 200. Ex. 1001, 2:39.

> The coder 200 may include an outer coder 202, an interleaver 204, and inner coder 206. . . . The outer coder 202 receives the uncoded data [that] may be partitioned into blocks of fixed size, [e.g.] k bits. The outer coder may be an (n,k) binary linear block coder, where n>k. The coder accepts as

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