Paper No. ___
Filed: January 29, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUGHES NETWORK SYSTEMS, LLC and
HUGHES COMMUNICATIONS, INC.,
Petitioner,

v.

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Patent Owner.

Case IPR2015-00060
Patent 7,421,032

PATENT OWNER'S PRELIMINARY RESPONSE PURSUANT TO 37 C.F.R. § 42.107

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I. INTRODUCTION

The Board should not institute *inter partes* review (IPR) on claims 1, 8, 10, 18, 19, and 22 of U.S. Patent No. 7,421,032 ("the '032 patent") because petitioner, Hughes Network Systems, LLC and Hughes Communications, Inc. ("Petitioner" or "Hughes"), has filed a fatally flawed petition and has not met its burden of showing it has a reasonable likelihood of prevailing on any of its proposed grounds of unpatentability.

The '032 patent represents a seminal improvement to coding systems and methods used for digital satellite transmission. It discloses an ensemble of codes called irregular repeat-accumulate (IRA) codes, which are specific types of error-correcting codes. These IRA codes enable a transmission rate close to the theoretical limit, while also providing the advantage of a low encoding complexity. *See, e.g.*, Ex. 2001 p. 1711 (noting inventors' unique contribution). Moreover, the current industry standard for digital satellite transmissions uses channel codes that are the claimed IRA codes. This digital satellite transmission standard is titled "Digital Video Broadcasting (DVB); Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications" (the "DVB-S2 standard"). Experts in the industry widely credit the involved inventors for the IRA codes that the DVB-S2 standard uses. *See*, *e.g.*, Ex. 2002 p. 0001, n.8; *see also* Ex. 2003 p. 0001, n.8.

The '032 patent is directed to serial concatenation of interleaved

convolutional codes forming turbo-like codes. For example, claim 1 of the '032 patent recites the following:

> A method comprising:
>
> receiving a collection of message bits having a first sequence in a source data stream;
>
> generating a sequence of parity bits, wherein each parity bit "x_j" in the sequence is in accordance with the formula
>
> $$x_j = x_{j-1} + \sum_{i=1}^{\lambda} v_{(j-1)\lambda+i},$$
>
> where
>
> "x_{j-1}" is the value of a parity bit "j-1," and
>
> $$\sum_{i=1}^{a} v_{(j-1)a+1}$$
>
> is the value of a sum of "a" randomly chosen irregular repeats of the message bits; a
>
> making the sequence of parity bits available for transmission in a transmission data stream.

As discussed further below, the petition can be dismissed for a number of reasons. For example, the petition fails to properly identify all real parties-in-interest, a fatal deficiency that cannot be cured, given that the earliest filing date that could be accorded to the corrected petition would not fall within the one-year period specified in 35 U.S.C. § 315(b).[1] While the Board can deny institution

[1] Petitioner has filed six petitions for *inter partes* review: IPR2015-00059, IPR2015-00060, IPR2015-00061, IPR2015-00067, IPR2015-00068, and IPR2015-00081. All six petitions similarly fail to properly name all real parties-in-interest.

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