

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**

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. THE PETITION FAILS TO IDENTIFY REAL PARTIES-IN-INTEREST	3
A. The Real Party-In-Interest Requirement	4
B. The Petition Fails To Identify Real Parties-In-Interest.....	5
1. EchoStar Is a Real Party-In-Interest	5
2. DISH Is a Real Party-In-Interest.....	7
C. Failure to Identify Real Parties-in-Interest Is Fatal to the Petition	13
III. EXPERT QUALIFICATIONS AND HINDSIGHT	14
IV. CLAIM CONSTRUCTION	17
V. PROPOSED GROUNDS OF CHALLENGE	20
A. Ground 1 Fails	20
1. The Petition Fails to Establish Frey Qualifies As Prior Art	20
2. The Petition Fails to Establish Divsalar Qualifies As Prior Art	23
3. Claim 1 is Not Obvious over Frey in View of Divsalar	27
a) The Petition Fails to Show Frey and Divsalar Teach a Data Stream, As Recited in Claim 1	27
b) Frey and Divsalar Fail to Teach or Suggest Generating a Sequence of Parity Bits, As Recited in Claim 1	29
c) Frey and Divsalar Fail to Teach or Suggest Making the Sequence Available for Transmission in a Data Stream	32
d) Insufficient and Illogical Rationale to Combine	32
B. Ground 2 Fails	36
1. Claim-by-Claim Undisclosed Limitations	37
2. Insufficient and Illogical Rationale to Combine.....	38
C. Ground 3 Fails	41
D. Ground 4 Fails	45

1.	Claim 18 is Not Obvious over Frey in View of Divsalar and Further in View of Kschischang	45
a)	Frey, Divsalar, and Kschischang Fail to Teach or Suggest a Data Stream, As Recited in Claim 18	45
b)	Frey, Divsalar, and Kschischang Fail to Teach or Suggest Two or More Check/Variable Nodes Operating in Parallel, As Recited in Claim 18	46
c)	Frey, Divsalar, and Kschischang Fail to Teach or Suggest the Tanner Graph, As Recited in Claim 18.....	48
2.	Claims 19 and 22 are Not Obvious over Frey in View of Divsalar and Further in View of Kschischang.....	51
3.	Insufficient and Illogical Rationale to Combine.....	51
E.	Ground 5 Fails	52
F.	Ground 6 Fails	53
G.	Ground 7 Fails	56
H.	Ground 8 Fails	57
I.	Ground 9 Fails	59
VI.	CONCLUSION.....	60
VII.	APPENDIX.....	61

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

$$" \sum_{i=1}^a v_{(j-1)a+i} "$$

is the value of a sum of "a" randomly chosen irregular repeats of the message bits; and
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.

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.