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UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

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THE CALIFORNIA INSTITUTE OF TECHNOLOGY, Plaintiff and Counter-Defendant, vs. HUGHES COMMUNICATIONS INC., HUGHES NETWORK SYSTEMS LLC, DISH NETWORK CORPORATION, DISH NETWORK LLC, and DISHNET SATELLITE BROADBAND LLC, Defendants and Counter-Plaintiffs.	Case No. 2:13-cv-07245-MRP-JEM **EXPERT REPORT OF DR. BRENDAN FREY REGARDING INVALIDITY OF PATENTS-IN-SUIT**

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EXPERT REPORT OF DR. BRENDAN FREY
REGARDING INVALIDITY OF PATENTS-IN-SUIT

3   **I.   SUMMARY OF REPORT**

4   1.   I have been retained as an expert in this case by counsel for Defendants and

5   Counter-Plaintiffs Hughes Communications Inc., Hughes Network Systems LLC,

6   DISH Network Corporation, DISH Network LLC, and dishNET Satellite

7   Broadband LLC (collectively, "Defendants"). I expect to testify at trial about the

8   matters set forth in this report, if asked about these matters by the Court or by the

9   parties' attorneys.

10 2.   I understand that the Plaintiff and Counter-Defendant in this proceeding, the

11 California Institute of Technology ("Plaintiff" or "Caltech") has asserted against

12 Defendants the following four patents:

- U.S. Patent No. 7,116,710 (the "'710 patent");
13
- U.S. Patent No. 7,421,032 (the "'032 patent");
14
- U.S. Patent No. 7,916,781 (the "'781 patent"); and
15
- U.S. Patent No. 8,284,833 (the "'833 patent").

16 3.   I further understand that Plaintiff has asserted the following claims:

17 - claims 1, 4, 6, 15, 20, and 22 of the '710 patent;

18 - claims 1, 18, 19, and 22 of the '032 patent;

19 - claims 16 and 19 of the '781 patent; and

    - claims 1, 2, 4, and 8 of the '833 patent.

20 4.   I have been asked for my expert opinion on whether the claims listed in the

21 preceding paragraph (the "asserted claims") are valid. In my opinion, all of the

22 asserted claims are invalid for the reasons stated below.

23 5.   I have also been asked for my opinion on whether various documents,

24 including an email from an inventor dated March 7, 2000, demonstrate conception

1 of the claimed invention. In my opinion, these documents do not demonstrate
2 conception for the reasons stated below.

3 6.   I have also been asked for my opinion regarding whether three references
4 (two by Luby et al. and one by Richardson et al.) were material to the claimed
5 invention. In my opinion, as explained below, these three references, none of
6 which were before the patent office during prosecution of the asserted patents,
   were material to the claimed invention.

7 **BACKGROUND**

8 **A.   Qualifications and Experience**

9 7.   I received a B.Sc. with Honors in Electrical Engineering from the University
10 of Calgary in 1990, a M.Sc. in Electrical and Computer Engineering from the
11 University of Manitoba in 1993, and a Ph.D. in Electrical and Computer
12 Engineering from the University of Toronto in 1997. Since July 2001, I have been
13 at the University of Toronto, where I am a Professor of Electrical and Computer
14 Engineering and Computer Science.

15 8.   During my career I have conducted research in the areas of graphical models,
16 error-correcting coding, machine learning, genome biology and computer vision. I
17 have authored more than 200 publications and am named as an inventor on nine
   patents issued by the U.S. Patent and Trademark Office.

18 9.   I have received a number of honors and awards for the research I have
19 conducted. In 2008, I was named a Fellow of the Institute for Electrical and
20 Electronic Engineers (IEEE), an honor given to a person with an "extraordinary
21 record or accomplishments" in the field of electrical engineering. In 2009, I was
22 named a Fellow of the American Association for the Advancement of Science
23 (AAAS), an honor that recognizes "efforts on behalf of the advancement of science
24 or its applications which are scientifically or socially distinguished."

10.	In 2009, I was awarded a Steacie Fellowship for my work on the theory and implementation of artificial and natural mechanisms for inferring patterns from data. The Steacie Fellowship is awarded by the Natural Sciences and Engineering Research Council of Canada (NSERC) to "outstanding and highly promising scientists and engineers" who are faculty members of Canadian universities. In 2011, I received the NSERC's John C. Polanyi Award, in recognition of my research on inferring genetic codes embedded in DNA that direct activities within cells.

11.	Throughout my career I have received funding from various governmental agencies to support my research, including the Natural Sciences and Engineering Research Council of Canada, the Canadian Institutes of Health Research, and the Canadian Institute for Advanced Research.

12.	A copy of my *curriculum vitæ* is attached to this report as Exhibit A.

### B.	Understanding of the Law

13.	I am not an attorney. For the purposes of this report, I have been informed about certain aspects of the law that are relevant to my analysis and opinions. My understanding of the law is as follows:

i)	Invalidity in General

14.	A patent is presumed valid, and a challenger to the validity of a patent must show invalidity of the patent by clear and convincing evidence. Clear and convincing evidence is evidence that makes a fact highly probable.

ii)	Anticipation

15.	A patent claim is invalid if it is "anticipated" by prior art. For the claim to be invalid because it is anticipated, all of its requirements must have existed in a single device or method that predates the claimed invention, or must have been described in a single publication or patent that predates the claimed invention.

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