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Counterclaim-Plaintiffs  
13 *Hughes Communications Inc.,*  
*Hughes Network Systems LLC,*  
14 *DISH Network Corporation,*  
*DISH Network L.L.C., and*  
15 *dishNET Satellite Broadband L.L.C.*

16 Additional Counsel Listed on Signature Page

17  
18 **UNITED STATES DISTRICT COURT**  
19 **CENTRAL DISTRICT OF CALIFORNIA**

20 The CALIFORNIA INSTITUTE OF  
TECHNOLOGY,

21 Plaintiff,

22 vs.

23 HUGHES COMMUNICATIONS INC.,  
HUGHES NETWORK SYSTEMS LLC,  
24 DISH NETWORK CORPORATION,  
DISH NETWORK L.L.C., and DISHNET  
25 SATELLITE BROADBAND L.L.C.,

26 Defendants.

Case No. 2:13-cv-07245-MRP-JEM

**DEFENDANTS' PRELIMINARY  
ELECTION OF ASSERTED  
PRIOR ART**

**JURY TRIAL DEMANDED**

CALTECH EXHIBIT 0014

1 **DEFENDANTS' PRELIMINARY ELECTION OF ASSERTED PRIOR ART**

2 Pursuant to this Court's Standing Order (Dkt. No. 20), the Discovery and  
3 Initial Scheduling Order (Dkt. No. 36), and Amended Scheduling Order (Dkt. No.  
4 47), Hughes Communications, Inc., Hughes Network Systems, LLC, DISH  
5 Network, L.L.C., and dishNET Satellite Broadband, L.L.C. (collectively,  
6 "Defendants"), without prejudice to their ability to modify this election of asserted  
7 prior art in light of the relatively small amount of fact discovery in this action to  
8 date, preliminarily elect to assert the following prior art references in this action:

9 **I. U.S. Patent No. 7,116,710**

10 With respect to U.S. Patent No. 7,116,710, Defendants elect the following  
11 prior art references:

12 1. D. Divsalar, H. Jin, and R. J. McEliece, "Coding theorems for 'turbo-  
13 like' codes." Proc. 36th Allerton Conf. on Comm., Control and Computing,  
14 Allerton, Illinois, pp. 201-210, Sept. 1998.

15 2. D. J. C. MacKay, S. T. Wilson, and M. C. Davey, "Comparison of  
16 constructions of irregular Gallager codes." IEEE Trans. Commun., Vol. 47, No.  
17 10, pp. 1449-1454, Oct. 1999.

18 3. L. Ping, W. K. Leung, N. Phamdo, "Low density parity check codes  
19 with semi-random parity check matrix." Electron. Letters, Vol. 35, No. 1, pp. 38-  
20 39, 7th Jan. 1999.

21 4. M. Luby, M. Mitzenmacher, A. Shokrollah, D. Spielman, "Analysis  
22 of low density codes and improved designs using irregular graphs." STOC '98  
23 Proceedings of the thirtieth annual ACM symposium on Theory of computing, pp.  
24 249-258, 1998.

25 5. U.S. Patent No. 6,081,909 (filed Nov. 6, 1997).

26 6. Brendan J. Frey and David J.C. MacKay, "Irregular Turbocodes."  
27 Proc. 37th Allerton Conf. on Comm., Control and Computing, Monticello, Illinois,  
28 Sep. 1999.

1           7.     D. J. C. MacKay, "Gallager codes — recent results." Proceedings of  
2 the International Symposium on Communication Theory and Applications,  
3 Ambleside, 1999, ed. by M. D. B. Honary and P. Farrell. Research Studies Press,  
4 1999.

5           8.     H. D. Pfister and P. H. Siegel, "The serial concatenation of rate-1  
6 codes through uniform random interleavers." Proc. 37th Allerton Conf. on  
7 Comm., Control and Computing, Monticello, Illinois, pp. 260-269, Sep. 1999.

8           9.     Source code file "RA.c," written by D. J. C. MacKay at the University  
9 of California at San Francisco and made available on or before Jan. 12, 1999

10          10.    R. J. McEliece, "Repeat-Accumulate Codes [A Class of Turbo-like  
11 Codes that we can analyse]." 1999 Summer Program: Codes, Systems, and  
12 Graphical Models, University of Minnesota, Institute for Mathematics and its  
13 Applications. Aug. 2-13, 1999.

14    **II.    U.S. Patent No. 7,421,032**

15           With respect to U.S. Patent No. 7,421,032, Defendants elect the following  
16 prior art references:

17           1.     D. Divsalar, H. Jin, and R. J. McEliece, "Coding theorems for "turbo-  
18 like" codes." Proc. 36th Allerton Conf. on Comm., Control and Computing,  
19 Allerton, Illinois, pp. 201-210, Sept. 1998.

20           2.     D. J. C. MacKay, S. T. Wilson, and M. C. Davey, "Comparison of  
21 constructions of irregular Gallager codes." IEEE Trans. Commun., Vol. 47, No.  
22 10, pp. 1449-1454, Oct. 1999.

23           3.     L. Ping, W. K. Leung, N. Phamdo, "Low density parity check codes  
24 with semi-random parity check matrix." Electron. Letters, Vol. 35, No. 1, pp. 38-  
25 39, 7th Jan. 1999.

26           4.     M. Luby, M. Mitzenmacher, A. Shokrollah, D. Spielman, "Analysis  
27 of low density codes and improved designs using irregular graphs." STOC '98  
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1 Proceedings of the thirtieth annual ACM symposium on Theory of computing, pp.  
2 249-258, 1998.

3 5. U.S. Patent No. 6,081,909 (filed Nov. 6, 1997).

4 6. Brendan J. Frey and David J.C. MacKay, "Irregular Turbocodes."  
5 Proc. 37th Allerton Conf. on Comm., Control and Computing, Monticello, Illinois,  
6 Sep. 1999.

7 7. D. J. C. MacKay, "Gallager codes — recent results." Proceedings of  
8 the International Symposium on Communication Theory and Applications,  
9 Ambleside, 1999, ed. by M. D. B. Honary and P. Farrell. Research Studies Press,  
10 1999.

11 8. H. D. Pfister and P. H. Siegel, "The serial concatenation of rate-1  
12 codes through uniform random interleavers." Proc. 37th Allerton Conf. on  
13 Comm., Control and Computing, Monticello, Illinois, pp. 260-269, Sep. 1999.

14 9. Source code file "RA.c," written by D. J. C. MacKay at the University  
15 of California at San Francisco and made available on or before Jan. 12, 1999

16 10. T. J. Richardson and R. L. Urbanke, "Encoding of Sparse Parity  
17 Check Codes." 1999 Summer Program: Codes, Systems, and Graphical Models,  
18 University of Minnesota, Institute for Mathematics and its Applications. Aug. 2-  
19 13, 1999.

20 11. R. J. McEliece, "Repeat-Accumulate Codes [A Class of Turbo-like  
21 Codes that we can analyze]." 1999 Summer Program: Codes, Systems, and  
22 Graphical Models, University of Minnesota, Institute for Mathematics and its  
23 Applications. Aug. 2-13, 1999.

24 **III. U.S. Patent No. 7,916,781**

25 With respect to U.S. Patent No. 7,916,781, Defendants elect the following  
26 prior art references:  
27  
28

- 1           1.     D. Divsalar, H. Jin, and R. J. McEliece, "Coding theorems for 'turbo-  
2 like' codes." Proc. 36th Allerton Conf. on Comm., Control and Computing,  
3 Allerton, Illinois, pp. 201-210, Sept. 1998.
- 4           2.     D. J. C. MacKay, S. T. Wilson, and M. C. Davey, "Comparison of  
5 constructions of irregular Gallager codes." IEEE Trans. Commun., Vol. 47, No.  
6 10, pp. 1449-1454, Oct. 1999.
- 7           3.     L. Ping, W. K. Leung, N. Phamdo, "Low density parity check codes  
8 with semi-random parity check matrix." Electron. Letters, Vol. 35, No. 1, pp. 38-  
9 39, 7th Jan. 1999.
- 10          4.     M. Luby, M. Mitzenmacher, A. Shokrollah, D. Spielman, "Analysis  
11 of low density codes and improved designs using irregular graphs." STOC '98  
12 Proceedings of the thirtieth annual ACM symposium on Theory of computing, pp.  
13 249-258, 1998.
- 14          5.     U.S. Patent No. 6,081,909 (filed Nov. 6, 1997) (the "'909 patent").
- 15          6.     Brendan J. Frey and David J.C. MacKay, "Irregular Turbocodes."  
16 Proc. 37th Allerton Conf. on Comm., Control and Computing, Monticello, Illinois,  
17 Sep. 1999.
- 18          7.     D. J. C. MacKay, "Gallager codes — recent results." Proceedings of  
19 the International Symposium on Communication Theory and Applications,  
20 Ambleside, 1999, ed. by M. D. B. Honary and P. Farrell. Research Studies Press,  
21 1999.
- 22          8.     H. D. Pfister and P. H. Siegel, "The serial concatenation of rate-1  
23 codes through uniform random interleavers." Proc. 37th Allerton Conf. on  
24 Comm., Control and Computing, Monticello, Illinois, pp. 260-269, Sep. 1999.
- 25          9.     Source code file "RA.c," written by D. J. C. MacKay at the University  
26 of California at San Francisco and made available on or before Jan. 12, 1999
- 27          10.    R. J. McEliece, "Repeat-Accumulate Codes [A Class of Turbo-like  
28 Codes that we can analyze]." 1999 Summer Program: Codes, Systems, and

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