

DOCKET NO.: 1033300-00287

**UNITED STATES PATENT AND TRADEMARK OFFICE**

PATENT: 7,116,710

INVENTORS: HUI JIN, AAMOD KHANDEKAR, ROBERT J. MCELIECE

FILED: MAY 18, 2001

ISSUED: OCTOBER 3, 2006

TITLE: SERIAL CONCATENATION OF INTERLEAVED  
CONVOLUTIONAL CODES FORMING TURBO-LIKE  
CODES

---

**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

---

Apple Inc.  
Petitioner

v.

California Institute of Technology  
Patent Owner

Case IPR2017-00211

**PETITIONERS' UPDATED EXHIBIT LIST**

### EXHIBITS

Exhibit	Description
1101	U.S. Patent 7,116,710
1102	Replacement copy of Frey, B. J. and MacKay, D. J. C., “Irregular Turbocodes,” <i>Proc. 37th Allerton Conf. on Comm., Control and Computing</i> , Monticello, Illinois, published on or before March 20, 2000
1103	Replacement copy of D. Divsalar, H. Jin, and R. J. McEliece, “Coding theorems for "turbo-like" codes,” <i>Proc. 36th Allerton Conf. on Comm., Control and Computing</i> , Allerton, Illinois, pp. 201-10, March, 1999
1104	Luby, M. <i>et al.</i> , “Analysis of Low Density Codes and Improved Designs Using Irregular Graphs,” <i>STOC '98</i> , pp. 249-59, published in 1998
1105	Pfister <i>et al.</i> , “The Serial Concatenation of Rate-1 Codes Through Uniform Random Interleavers” (Exhibit 1 to the Siegel Declaration)
1106	Declaration of Professor James Davis, Ph.D. (“Davis Declaration”)
1107	Gallager, R., <i>Low-Density Parity-Check Codes</i> , Monograph, M.I.T. Press, 1963
1108	Berrou <i>et al.</i> , “Near Shannon Limit Error-Correcting Coding and Decoding: Turbo Codes,” <i>ICC '93</i> , Technical Program, Conference Record 1064, Geneva 1993
1109	MacKay, D. J. C, and Neal, R. M. “Near Shannon Limit Performance of Low Density Parity Check Codes,” <i>Electronics Letters</i> , vol. 32, pp. 1645-46, 1996
1110	Benedetto, S. et al., <i>Serial Concatenation of Block and Convolutional Codes</i> , 32.10 <i>Electronics Letters</i> 887-8, 1996
1111	Luby, M. <i>et al.</i> , “Practical Loss-Resilient Codes,” <i>STOC '97</i> , 1997
1112	Declaration of Robin Fradenburgh Concerning the “Proceedings, 36th Allerton Conference on Communications, Control, and Computing” Reference

U.S. Patent 7,116,710  
Apple vs. California Institute of Technology

1113	Frey, B. J. and MacKay, D. J. C., “Irregular Turbo-Like Codes” presented at the 1999 Allerton Conference on Communications, Control, and Computing.
1114	Prosecution History of the ’710 Patent, Response Dated May 5, 2005
1115	Table of Contents of <i>Proceedings of the 37th Allerton Conference on Communication, Control and Computing</i> from September 22-24, 1999
1116	Joint Claim Construction Statement (Case No. 2:13-cv-07245, Dkt. No. 47)
1117	Expert Report of Dr. Brendan Frey (Case No. 2:13-cv-07245)
1118	Aamod Khandekar, “Graph-based Codes and Iterative Decoding,” Thesis submitted June 10, 2002
1119	Richardson, Shokrollahi, and Urbanke, “Design of Provably Good Low-Density Parity Check Codes”
1120	Replacement copy of the Declaration of Paul H. Siegel
1121	U.S. Provisional Application No. 60/205,095
1122	Mitzenmacher, M. “Studying balanced allocations with differential equations,” <i>Combinatorics, Probability &amp; Computing</i> 8.5, pp. 473-482, September 1999
1123	Barg <i>et al.</i> , “Linear-time Binary Codes Correcting Localized Erasures,” <i>IEEE Transactions on Information Theory</i> 45.7, pp. 2545-2550, November 1999
1124	Shokrollahi, “New Sequences of Linear Time Erasure Codes Approaching the Channel Capacity,” <i>Applied Algebra, Algebraic Algorithms and Error-Correcting Codes</i> , pp. 65-76, 1999
1125	Declaration Of Richard Goldenberg In Support Of Unopposed Motions To Submit Replacement Exhibits Pursuant To 37 C.F.R. § 42.104(c)
1126	Declaration Of Jonathan Barbee In Support Of Unopposed Motions To Submit Replacement Exhibits Pursuant To 37 C.F.R. § 42.104(c)

Dated: February 28, 2017

Respectfully Submitted,

/Dominic E. Massa/  
Dominic E. Massa  
Registration No. 44,905  
WILMER CUTLER PICKERING  
HALE AND DORR LLP  
60 State Street  
Boston, MA 02109  
Tel: (617) 526-6386  
Fax: (617) 526-5000

*Attorney for Petitioner*