EXHIBIT N

HAROLD J. MCELHINNY (CA SBN 66781)
hmcelhinny@mofo.com
MICHAEL A. JACOBS (CA SBN 111664)
mjacobs@mofo.com
RICHARD S.J. HUNG (CA SBN 197425)
rhung@mofo.com
MORRISON & FOERSTER LLP
425 Market Street
San Francisco, California 94105-2482
Telephone: (415) 268-7000
Facsimile: (415) 268-7522

WILLIAM F. LEE (*pro hac vice*)
william.lee@wilmerhale.com
WILMER CUTLER PICKERING
HALE AND DORR LLP
60 State Street
Boston, Massachusetts 02109
Telephone: (617) 526-6000
Facsimile: (617) 526-5000

MARK D. SELWYN (CA SBN 244180)
mark.selwyn@wilmerhale.com
WILMER CUTLER PICKERING
HALE AND DORR LLP
950 Page Mill Road
Palo Alto, California 94304
Telephone: (650) 858-6000
Facsimile: (650) 858-6100

Attorneys for Plaintiff and
Counterclaim-Defendant Apple Inc.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

APPLE INC., a California corporation,

Plaintiffs,

vs.

SAMSUNG ELECTRONICS CO., LTD., a Korean business entity, SAMSUNG ELECTRONICS AMERICA, INC., a New York corporation, and SAMSUNG TELECOMMUNICATIONS AMERICA, LLC, a Delaware limited liability company,

Defendants.

Civil Action No. 11-CV-01846-LHK

PLAINTIFF AND COUNTERCLAIM-DEFENDANT APPLE INC.'S INVALIDITY CONTENTIONS

stated herein shall be construed as an admission or a waiver of any particular construction of any claim term. Apple also reserves all of its rights to challenge any of the claim terms herein under 35 U.S.C. § 112, including by arguing that they are indefinite, not supported by the written description, and/or not enabled. Accordingly, nothing stated herein shall be construed as a waiver of any argument available under 35 U.S.C. § 112. Apple also reserves its right to challenge the patentability of any of the asserted claims under 35 U.S.C. § 101.

III. IDENTIFICATION OF PRIOR ART PURSUANT TO PATENT L.R. 3-3(a)

A. The '604 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. A-1 through A-12, anticipate and/or render obvious the asserted claims of the '604 patent.

	Patent No. / Application No.	Country of Origin	Date Issued/Published
1.	5,014,314 (Mulford)	US	May 7, 1991
2.	5,103,445 (Östlund)	US	April 7, 1992
3.	5,109,390 (Gilhousen)	US	April 28, 1992
4.	5,109,403 (Sutphin)	US	April 28, 1992
5.	5,386,588 (Yasuda)	US	Jan. 31, 1995
6.	5,455,823 (Noreen)	US	Oct. 3, 1995
7.	5,666,348 (Thornberg)	US	Sept. 9, 1997
8.	5,742,588 (Thornberg)	US	April 21, 1998
9.	5,907,582 (Yi)	US	May 25, 1999
10.	5,831,978 (Willars)	US	Nov. 3, 1998
11.	5,455,823 (Noreen)	US	Oct. 3, 1995
12.	4,312,070 (Coombes)	US	Jan. 19, 1982
13.	5,212,684	US	May 18, 1993
14.	5,307,351	US	April 26, 1994
15.	5,212,684	US	May 18, 1993
16.	5,307,351	US	April 26, 1994
17.	5,430,774	US	July 4, 1995
18.	5,442,646	US	August 15, 1995
19.	5,446,747	US	August 29, 1995
20.	5,936,972	US	August 10, 1999
21.	5.943,371	US	August 24, 1999
22.	5,991,454	US	November 23, 1999
23.	6,088,387	US	July 11, 2000

	Patent No. / Application No.	Country of Origin	Date Issued/Published
24.	6,289,486	US	September 11, 2001
25.	6,370,669	US	April 9, 2002
26.	EP 0 528 370	EP	February 24, 1993
27.	EP 0 652 680	EP	May 10, 1995
28.	JP 6 350575	Japan	December 22, 1994
29.	JP 7 254862	Japan	October 3, 1995
30.	JP 8 237146	Japan	September 13, 1996
31.	JP 9 298526	Japan	November 18, 1997
32.	WO 97/40582	PCT	October 30, 1997

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. A-1 through A-12, anticipate and/or render obvious the asserted claims of the '604 patent.

	Title	Date of Publication	Author or Publisher
1.	"Network and Customer Installation Interfaces - Asymmetric Digital Subscriber Line (ADSL) Metallic Interface"	1995	American National Standard for Telecommunications
2.	"A CDMA Radio Link with 'Turbo-Decoding': Concept and Performance Evaluation"	1995	L. Bomer, F. Burke, J. Eichinger, R. Half, W. Liegl, M. Werner
3.	"Report Concerning Space Data System Standards: Telemetry Summary of Concept and Rationale"	December 1987	Consultative Committee for Space Data Systems
4.	"Development of Turbo Code for Transmitting Voice on FPLMTS"	1997	Young Kim, Pil Joong Lee, Chang Bum Lee, Hyeon Woo Lee
5.	"Advances on the application of turbo-codes to data services in third generation mobile networks"	1997	Peter Jung, Jorg Plechinger, Markus Doetsch, and Friedbert Manfred Berens
6.	TR 101 146 V3.0.0	December 1997	Universal Mobile Telecommunications System
7.	"Variable Latency Turbo Codes for Wireless Multimedia Applications"	1997	Matthew C. Valenti and Brian D. Woerner
8.	GSM 05.03 v. 5.3.1, ETS 300 909	August 1997	ETSI

	Title	Date of Publication	Author or Publisher
9.	"Adaptive Error Correction for ATM Communications using Reed-Solomon Codes,"	1996	A. Almulhem, F. El-Guibaly, T.A. Gulliver
10.	"An algebraic model for computing the maximum throughput of pipelined protocol processors"	Nov. 29-Dec. 2, 1993	Cardona et al.; IEEE
11.	"An intrafield DCT-based HDTV coding for ATM networks"	June 1991	Tzou; IEEE
12.	"Performance of Turbo Codes with Short Frame Sizes	May 4, 1997	Koorapaty et al.; IEEE 47th Vehicular Technology Conference

B. The '410 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. B-1 through B-8, anticipate and/or render obvious the asserted claims of the '410 patent.

	Patent No. / Application No.	Country of Origin	Date Issued/Published
1.	5,486,825 (Cole)	US	Jan. 23, 1996
2.	6,804,995 (Smith)	US	Oct. 16, 2001
3.	6,704,368 (Nefedov)	US	Mar. 9, 2004
4.	6,553,539 (Markarian)	US	April 22, 2003
5.	6,370,670 (Le Dantec)	US	April 9, 2002
6.	5,771,229	US	June 23, 1998
7.	5,881,109	US	March 9, 1999
8.	5,978,365	US	November 2, 1999
9.	6,061,820	US	May 9, 2000
10.	6,088,387	US	July 11, 2000
11.	6,304,991	US	October 16, 2001
12.	6,400,703	US	June 4, 2002
13.	6,553,539	US	April 22, 2003
14.	6,615,387	US	September 2, 2003

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. B-1 through B-8, anticipate and/or render obvious the asserted claims of the '410 patent.

	Title	Date of Publication	Author or Publisher
1.	TS 25.212 v2.0.0	June 1999	3GPP
2.	Proposal for rate matching for Turbo Codes (TSGR1#4(99)467)	May 12, 1999	Nortel Networks
3.	TSGR1#6(99)919	July 1999	Samsung Electronics Co.
4.	TSGR1#6(99)948	July 1999	Samsung Electronics Co.
5.	TSGR1#6(99)967	July 1999	Nortel Networks
6.	TSGR1#6(99)A56	July 1999	Nortel Networks

C. The '055 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. C-1 through C-9, anticipate and/or render obvious the asserted claims of the '055 patent.

	Number	Country of origin	Date Issued/Published
1	GB 2 284 965 A	UK Patent Application	June 21, 1995
2	USPN 6,223,050	US	April 24, 2001
3	USPN 5,724,316	US	March 3, 1998
4	USPN 5,408,444	US	April 18, 1995
5	WO 95/27927	US (PCT/US95/04409)	October 19, 1995
6	EP 0 498 199 A2	US	August 12, 1992
7	JP Unexamined Patent App. Pub. H7-209448	Japan	August 11, 1995
8	JP Unexamined Patent App. Pub. S60-385	Japan	January 5, 1985
9	USPN 5,448,532	US	September 5, 1995
10	USPN 5,528,558	US	June 18, 1996
11	USPN 5,655,218	US	August 5, 1997
12	USPN 5,781,155	US	July 14, 1998
13	KR Laid-Open Patent Publication 1996-0043728	Korea	December 23, 1996
14	WO 98/14842	Australia (PCT/AU97/00659)	April 9, 1998
15	USPN 6,192,007	US	February 20, 2001
16	USPN 4,307,458	US	December 22, 1981
17	USPN 4,316,272	US	February 16, 1982
18	USPN 4,847,819	US	July 11, 1989
19	USPN 5,007,033	US	April 9, 1991
20	USPN 6,006,986	US	December 28, 1999

	Number	Country of origin	Date Issued/Published
21	USPN 6,546,084	US	April 8, 2003
22	WO 98/12883	US (PCT/IB97/01122)	March 26, 1998
23	USPN 5,901,115	US	May 4, 1999
24	WO 90/13983	US (PCT/US90/01801)	November 15, 1990
25	USPN 5,422,863	US	June 6, 1995
26	USPN 5,818,920	US	October 6, 1998
27	USPN 5,309,500	US	May 3, 1994
28	EP 0 475 298 A1	Japan	March 18, 1992
29	USPN 6,546,084 B1	US	April 8, 2003
30	EP 0 731 621 A2	US	September 11, 1996
31	USPN 4,204,398	US	May 27, 1980
32	EP 0 565 180 A2	US	October 13, 1993
33	USPN 6,205,089 B1	US	March 20, 2001
34	WO 99/40707	Germany	December 8, 1999
35	USPN 5,258,964	US	November 2, 1993
36	USPN 5,995,846	US	November 30, 1999
37	USPN 6,192,007 B1	US	February 20, 2001
38	USPN 5,835,061	US	November 10, 1998
39	USPN 5,089,814	US	February 18, 1992
40	USPN 4,117,661	US	October 3, 1978
41	JP 10-160870	Japan	June 19, 1998
42	GB 2 289 585 A	Japan	November 22, 1995
43	USPN 5,416,808	US	May 16, 1995
44	USPN 5,557,585	US	September 17, 1996
45	UK Patent App. GB 2 297 854 A	UK	August 14, 1996
46	USPN 5,319,581	US	June 7, 1994
47	DE 198 04 188 A1	Germany	August 5, 1999
48	USPN 6,278,660 B1	US	August 21, 2001
49	USPN 5,982,710	US	November 9, 1999
50	USPN 5,893,044	US	April 6, 1999
51	USPN 5,842,146	US	November 24, 1998
52	UK Patent App. GB 2 315 194 A	UK	January 21, 1998
53	UK Patent App. GB 2 315 197 A	UK	January 21, 1998
54	USPN 5,625,668	US	April 29, 1997
55	USPN 5,041,798	US	August 20, 1991
56	USPN 5,594,453	US	January 14, 1997
57	USPN 4,337,463	US	June 29, 1982
58	USPN 4,565,454	US	January 21, 1986
59	EP 0 682 302 A2	Germany	November 15, 1995
60	WO 95/30300	US (PCT/US95/05087)	November 9, 1995
61	JP 11-243583	Japan	July 7, 1999

	Number	Country of origin	Date Issued/Published
62	UK Patent App. GB 2 234 616 A	UK	February 6, 1991
63	USPN 5,285,496	US	February 8, 1994
64	JP 10160870 (A)	Japan	Jun 19, 1998
65	USPN 3,940,920	US	March 2, 1976
66	USPN 4,133,170	US	January 9, 1979
67	USPN 4,180,969	US	January 1, 1980
68	USPN 4,217,653	US	August 12, 1980
69	USPN 4,245,323	US	January 13, 1981
70	USPN 4,307,458	US	December 22, 1981
71	USPN 4,316,272	US	February 16, 1982
72	USPN 4,435,086	US	March 6, 1984
73	USPN 4,779,247	US	October 18, 1988
74	USPN 4,847,819	US	July 11, 1989
75	USPN 5,068,838	US	November 26, 1991
76	USPN 5,237,544	US	August 17, 1993
77	USPN 5,323,363	US	June 21, 1994
78	USPN 5,363,377	US	November 8, 1994
79	USPN 5,375,018	US	December 20, 1994
80	USPN 5,375,104	US	December 29, 1994
81	USPN 5,499,220	US	March 12, 1996
82	USPN 5,708,628	US	January 13, 1998
83	USPN 5,790,477	US	August 4, 1998
84	USPN 5,818,920	US	October 6, 1998
85	USPN 5,907,523	US	May 25, 1999
86	USPN 5,920,824	US	July 6, 1999
87	USPN 5,960,406	US	September 28, 1999
88	USPN 6,006,986	US	December 28, 1999
89	USPN 6,108,277	US	August 22, 2000
90	USPN 6,205,089 B1	US	March 20, 2001
91	USPN 6,321,158 B1	US	November 20, 2001
92	USPN 6,370,566 B2	US	April 9, 2002

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. C-1 through C-9, anticipate and/or render obvious the asserted claims of the ‘055 patent.

	Title	Date of Publication	Author or Publisher
1	Nokia 9000i Communicator User’s Manual	Not later than June 7, 1998	Nokia Corp.

	Title	Date of Publication	Author or Publisher
2	Samsung CDMA Portable Cellular Telephone SCH-370 User's Manual	1997	Samsung
3	Apple Newton Message Pad 2100 User's Manual	Approximately November 1997	Apple
4	TIA Interim Standard: Mobile Station-Base Station Compatibility for Dual-Mode Wideband Spread Spectrum Cellular System TIA/EIA/IS-95-A	May 1995	Telecommunications Industry Association
5	After Sales Technical Documentation Appendix 1 Quick Guide for Nokia 9000 Communicator	August 1996	Nokia
6	GPS-based Clock Synchronization in a Mobile, Distributed Real-Time System	1997	Sterzbach
7	Global Positioning System (GPS) Time Dissemination for Real-Time Applications	1997	Dana
8	Getting the Most Out of a Parallel Sysplex	December 1997	IBM
9	Network Time Protocol (version 1) specification	July 1998	RFC / NTP Working Group
10	Network Time Protocol (Version 2) Specification and Implementation	September 1989	RFC / Network Working Group
12	Network Time Protocol (Version 3) Specification, Implementation and Analysis	March 1992	RFC / Network Working Group
13	Simple Network Time Protocol (SNTP) Version 4	October 1996	RFC / Network Working Group
14	Alcatel One Touch Com Manual	December 1997	Alcatel
15	Retsik AccuSet	December 19, 1997	Retsik
16	Sharp Electronic Organizer Travel Organizer 600 EL-6330 Operation Manual	1992	Sharp
17	Psion Series 3 User Guide	1991 / December 1993	Psion
18	Psion Series 3 Programming Manual	November 1991	Psion

3. Non-Patent/Publication References

Apple also contends that the Patents-In-Suit are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) or (b), and/or prior inventions made in the United States by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the asserted claims.

The following lists each item of prior art under 35 U.S.C. § 102(a), (b), and/or (g) by the name of the item and, to the extent now known, when the item became publicly known or was used, offered for sale, or sold, the identities of the persons or entities that made the item public, publicly used it, or made the offer for sale, and the identities of the person(s) or entities involved in, and the circumstances surrounding the making of, the invention. Apple contends that the following descriptions are stated on information and belief, and are supported by the information and documents that will be produced by Apple and/or third parties. As discovery is not complete, Apple continues to investigate these events.

a) Nokia 9000i Communicator and User's Manual ("Nokia 9000i Manual")

The Nokia 9000i Communicator is a combination mobile telephone / Personal Digital Assistant ("PDA") offered for sale to the public or placed in public use by Nokia Corporation ("Nokia") beginning in 1996.

b) Samsung CDMA Portable Cellular Telephone SCH-370 and User's Manual ("Samsung SCH-370 Manual")

The Samsung CDMA Portable Cellular Telephone SCH-370 is a mobile telephone offered for sale to the public or placed in public use by Samsung by November 1997.

c) Apple Newton Message Pad 2100 and User's Manual ("Apple Message Pad 2100 Manual")

The Apple Newton Message Pad 2100 is a PDA or handheld computer offered for sale to the public or placed in public use by Apple beginning in late 1997.

d) Alcatel One Touch Com and User's Manual

The Alcatel One Touch Com is a combination mobile telephone / PDA offered for sale to the public or placed in public use by Alcatel by late 1997.

e) Restek AccuSet

Retsik AccuSet is software offered for sale to the public or placed in public use by Restik by late 1997.

f) Sharp Electronic Organizer Travel Organizer 600 EL-6330 and Operation Manual

The Sharp Electronic Organizer Travel Organizer 600 EL-6330 is a PDA offered for sale to the public or placed in public use by Sharp during 1992.

g) Psion Series 3 and associated manuals

The Psion Series 3 is a PDA offered for sale to the public or placed in public use by PSION beginning in 1996.

D. The '871 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. D-1 through D-11, anticipate and/or render obvious the asserted claims of the '871 patent.

	Number	Country of Origin	Date Issued/Published
1	05-316174	Japan	Nov. 26, 1993
2	5,327,479	US	Jul. 5, 1994
3	5,467,102	US	Nov. 14, 1995
4	5,590,178	US	Dec. 31, 1996
5	09-128192	Japan	May 16, 1997
6	11-282694	Japan	Mar. 26, 1998

	Number	Country of Origin	Date Issued/Published
7	5,799,151	US	Aug. 25, 1998
8	10-271472	Japan	Oct. 9, 1998
9	5,841,431	US	Nov. 24, 1998
10	5,905,476	US	May 18, 1999
11	5,920,316	US	Jul. 6, 1999
12	5,956,021	US	Sep. 21, 1999
13	EP 0946028	EP	Sep. 29, 1999
14	6,069,593	US	May 30, 2000
15	6,069,648	US	May 30, 2000
16	6,144,358	US	Nov. 7, 2000
17	6,173,194	US	Jan. 9, 2001
18	2001-36653	Japan	Feb. 9, 2001
19	6,279,945	US	Oct. 2, 2001
20	2002/0065111	US	May 30, 2002
21	6,408,191	US	Jun. 18, 2002
22	6,466,202	US	Oct. 15, 2002
23	6,486,890	US	Nov. 26, 2002
24	2002/0183099	US	Dec. 5, 2002
25	2003/0013439	US	Jan. 16, 2003
26	6,509,907	US	Jan. 21, 2003
27	2003/0078077	US	Apr. 24, 2003
28	6,570,596	US	May 27, 2003
29	6,588,012	US	Jul. 1, 2003
30	2003-209609	Japan	Jul. 25, 2003
31	6,662,244	US	Dec. 9, 2003
32	6,674,414	US	Jan. 6, 2004
33	6,819,268	US	Nov. 16, 2004
34	6,832,353	US	Dec. 14, 2004
35	6,850,780	US	Feb. 1, 2005
36	6,850,781	US	Feb. 1, 2005
37	6,915,137	US	Jul. 5, 2005
38	6,941,160	US	Sep. 6, 2005
39	6,771,974	US	Aug. 3, 2004
40	6,799,033	US	Sep. 28, 2004
41	6,915,138	US	Jul. 5, 2005
42	7,003,724	US	Feb. 21, 2006
43	7,177,665	US	Feb. 13, 2007
44	7,278,108	US	Oct. 2, 2007
45	7,911,451	US	Mar. 22, 2011

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. D-1 through D-11, anticipate and/or render obvious the asserted claims of the '871 patent.

	Title	Date of Publication	Author or Publisher
1.	Alternative Interfaces for Chat	1999	David Vronay, Marc Smith, and Steven Drucker
2.	Anchored Conversations: Chatting in the Context of a Document	April 2000	Elizabeth F. Churchill, Jonathan Trevor, Sara Bly, Les Nelson, Davor Cubranic
3.	AOL Online for Dummies, 4th ed.	1998	John Kaufeld, IDG Books Worldwide, Inc.
4.	Calls.calm: Enabling Caller and Callee to Collaborate	2001	Elin Renby Pedersen
5.	The Complete Idiot's Guide to Mac OS X	2001	Kate Binder, Alpha Books
6.	Constraint-Based Tiled Windows	May 1986	Ellis S. Cohen, Edward T. Smith, Lee A. Iverson
7.	Constraint-Based Tools for Building User Interfaces	October 1986	Alan Borning and Robert Duisberg
8.	Conversation Trees and Threaded Chats	December 2000	Marc Smith, JJ Cadiz, Byron Burkhalter
9.	Digital UNIX System Administrator's Guide	1999	Matthew Cheek, Digital Press
10.	Instant Messaging with Mobile Phones to Support Awareness	2001	Madoka Mitsuoka, Satoru Watanabe, Jun Kakuta, and Satoshi Okuyama
11.	Linux: The Complete Reference, 2nd Edition	1998	Richard Petersen, Osborne/McGraw Hill
12.	The ParcTab Ubiquitous Computing Experiment	1995	Roy Want, Bill N. Schilit, Norman I. Adams, Rich Gold, Karin Petersen, David Goldberg, John R. Ellis and Mark Weiser

	Title	Date of Publication	Author or Publisher
13.	The Social Life of Small Graphical Chat Spaces	April 2000	Marc A. Smith, Shelly D. Farnham, and Steven M. Drucker
14.	A Taxonomy of Multiple Window Coordinations	1997	Chris North and Ben Schneiderman
15.	Teach Yourself UNIX, 4th Edition	1999	Kevin Reichard and Eric Foster-Johnson, IDG Books Worldwide, Inc.
16.	Teach Yourself Windows 2000 Professional	1999	Brian Underdahl, IDG Books Worldwide, Inc.
17.	Universal Inbox: Providing Extensible Personal Mobility and Service Mobility in an Integrated Communication Network	2000	Bhaskaran Raman, Randy H. Katz, Anthony D. Joseph

E. The '792 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. E-1 through E-10, anticipate and/or render obvious the asserted claims of the '792 patent.

	Patent No. / Application No.	Country of Origin	Date Issued/Published
1.	6,543,013 (Li)	US	April 1, 2003
2.	60/232,357 (Provisional)	US	Sept. 14, 2000
3.	6,476,734 (Jeong)	US	Nov. 5, 2002
4.	2003/0079170 A1	US	April 24, 2003
5.	5,689,439	US	November 18, 1997
6.	6,351,832	US	February 26, 2002
7.	6,560,748	US	May 6, 2003
8.	6,631,491	US	October 7, 2003
9.	7,028,230	US	April 11, 2006
10.	2002/0159501	US	October 31, 2002
11.	2003/0079170	US	April 24, 2003
12.	1 248 404	EP	October 9, 2002
13.	2001-332980	Japan	November 30, 2001

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. E-1 through E-10, anticipate and/or render obvious the asserted claims of the '792 patent.

	Title	Date of Publication	Author or Publisher
1.	"The Union Bound for Turbo-Coded Modulation Systems over Fading Channels"	October 1999	Tolga M. Duman and Masoud Salehi
2.	"Turbo-Codes and High Spectral Efficiency Modulation"	1994	Stephane Le Goff, Alain Glavieux, and Claude Berrou
3.	R1-01-1231, entitled "Interleaver operation in conjunction with SMP" of TSG-RAN Working Group 1 held in Jeju, Korea November 19-23, 2001	November 2001	Siemens
4.	3GPP TR25.848: 3rd Generation Partnership Project Technical Specification Group Radio Access Network; Physical Layer Aspects of UTRA High Speed Downlink Packet Access	Feb. 27, 2001	3rd Generation Partnership Project
5.	3GPP TSG-RAN WG1&2 JM 12A010038: "Enhanced Symbol Mapping Method for the Modulation of Turbo-coded Bits based on Bit Priority"	Apr. 5-6, 2001	Samsung Electronics
6.	3GPP TSG-RAN WG1&2 JM 12A010044: "Enhanced Symbol Mapping Method for the Modulation of Turbo-coded Bits based on Bit Priority"	Apr. 5-6, 2001	Samsung Electronics
7.	3GPP TSGR1#20(01)-1025, "Channel Interleaver Modification for HSDPA"	Nov. 5-7, 2001	Nokia Oyj
8.	3GPP TSGR1#20(01)-0533, "Performance Evaluation of the Enhanced Symbol Mapping Method based on Priority (SMP) in HSDPA"	May 21-25, 2001	Samsung Electronics
9.	3GPP TSGR1#20(01)-0738, "FER Evaluation of SMP for Different TTI Sizes in HSDPA"	Jun. 26-28, 2001	Samsung Electronics

	Title	Date of Publication	Author or Publisher
10.	3GPP TSGR1#20(01)-0507, "Frame Error Rate Based Comparison of Full Bit Level Channel Interleaving, split bit level channel interleaving and symbol based channel interleaving"	May 21-25, 2001	Texas Instruments, Inc.

F. The '867 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. F1 through F4, anticipate and/or render obvious the asserted claims of the '867 patent.

	Patent No. / Application No.	Country of Origin	Date Issued/Published
1.	6,728,305 (Ogawa)	US	April 27, 2004
2.	4,320,513 (Lampert)	US	Mar. 16, 1982
3.	3,818,442	US	June 18, 1974
4.	4,707,839	US	November 17, 1987
5.	5,771,288	US	June 23, 1998
6.	6,108,369	US	August 22, 2000
7.	6,141,374	US	October 31, 2000
8.	6,339,646	US	January 15, 2002
9.	6,459,722	US	October 1, 2002
10.	6,496,474	US	December 17, 2002
11.	6,526,091	US	February 25, 2003
12.	6,542,478	US	April 1, 2003
13.	6,560,212	US	May 6, 2003
14.	6,574,205	US	June 3, 2003
15.	6,728,411	US	April 27, 2004
16.	59-047833	JP	March 17, 1984
17.	WO 9912284	WO	March 11, 1999
18.	WO 99/26369	WO	May 27, 1999

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. F1 through F4, anticipate and/or render obvious the asserted claims of the '867 patent.

	Title	Date of Publication	Author or Publisher
1.	TS 25.213 V2.1.0	June 1999	3GPP

	Title	Date of Publication	Author or Publisher
2.	TSGR1#5(99)724	June, 1999	Ericsson
3.	"Global Positioning System Standard Positioning Service Signal Specification"	June 2, 1995	GPS Navstar
4.	"Inmarsat-3 Navigation Signal C/A Code Selection and Interference Analysis"	Jan. 1992	Nagle, et. al.
5.	"Crosscorrelation Properties of Pseudorandom and Related Sequences"	May 1980	Sarwate and Pursley
6.	Supplementary European Search Report (0 963 070)	EP	August 20, 2001

G. The '001 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. G-1 through G-3, anticipate and/or render obvious the asserted claims of the '001 patent.

	Patent No. / App. No.	Country of Origin	Date Issued/Published
1.	4,679,191 (Nelson)	US	July 7, 1987
2.	4,987,570 (Almond)	US	Jan. 22, 1991
3.	5,177,742 (Herzberger)	US	Jan. 5, 1993
4.	5,729,526 (Yoshida)	US	Mar. 17, 1998
5.	5,793,744 (Kanerva)	US	Aug. 11, 1998
6.	5,831,978 (Willars)	US	Nov. 3, 1998
7.	5,896,368 (Dahlman)	US	Apr. 20, 1999
8.	6,236,647 (Amalfitano)	US	May 22, 2001
9.	6,269,126 (Toskala)	US	July 31, 2001
10.	6,307,850 (Watanabe)	US	Oct. 23, 2001
11.	6,363,058 (Roobol)	US	Mar. 26, 2002
12.	6,381,234 (Sakoda)	US	Apr. 30, 2002
13.	6,389,000 (Jou)	US	May 14, 2002
14.	6,397,367 (Park)	US	May 28, 2002
15.	6,493,666 (Wiese)	US	Dec. 10, 2002
16.	6,501,748 (Belaiche)	US	Dec. 31, 2002
17.	6,567,392 (Rubin)	US	May 20, 2003
18.	6,768,728 (Kim)	US	July 27, 2004
19.	6,795,506 (Zhang)	US	Sep. 21, 2004
20.	6,819,658 (Agarwal)	US	Nov. 16,2004
21.	6,868,075 (Narvinger)	US	Mar. 15, 2005

	Patent No. / App. No.	Country of Origin	Date Issued/Published
22.	7,593,380 (Ferguson)	US	Sep. 22, 2009
23.	WO 02/43332 (Petersen)	PCT	May 30, 2002
24.	WO 00/62465 (Beming)	PCT	Oct. 19, 2000
25.	WO 99/07076 (Park)	PCT	Feb. 11, 1999
26.	WO 99/16264 (Beming)	PCT	Apr. 1, 1997
27.	WO 97/00568 (Chevillat)	PCT	Jan. 3, 1997
28.	WO 94/14254 (Kaasinen)	PCT	June 23, 1994
29.	1156616 (Belaiche)	EP	Nov. 21, 2001
30.	1045521 (Tong)	EP	Oct. 18, 2000

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. G-1 through G-3, anticipate and/or render obvious the asserted claims of the '001 patent.

	Title	Date of Publication	Author or Publisher
1.	ARIB specification	January 1999	ARIB
2.	Transport Channel Multiplexing,	January 29, 1999	Ericsson
3.	Two Step Interleaver	March 10, 1999	Ericsson
4.	Kim email	August 26, 1999	Kim
5.	Kiran T email	August 26, 1999	Kiran T
6.	Moulsley email	March 16, 1999	Moulsley
7.	Narvinger email	January 28, 1999	Narvinger
8.	Narvinger email	March 10, 1999	Narvinger
9.	Okumura email	March 4, 1999	Okumura
10.	Okumura email,	January 28, 1999	Okumura
11.	Okumura email	March 18, 1999	Okumura
12.	Ovesjo email	June 23, 1999	Ovesjo
13.	TS 25.212, v1.0.0	April 1999	3GPP
14.	TS 25.212, v1.1.0	June, 1999	3GPP
15.	TS 25.212, v2.0.0 (TS 25.212)	June 1999	3GPP
16.	TS 25.222 v1.1.0	June 1999	3GPP
17.	TS 25.222, v 2.0.0 (TS 25.222)	June 1999	3GPP
18.	TSGR#4(99)323	June 1999	3GPP
19.	TSGR1#2(99)055 (R1-99055)	Feb. 1999	3GPP
20.	TSGR1#2(99)103 (R1-99103)	Feb. 1999	3GPP
21.	TSGR1#4(99)349	April 1999	3GPP
22.	Virtanen email	March 16, 1999	Virtanen
23.	Narvinger email	June 29, 1999	Narvinger
24.	European Search Report dated May 3, 2002 issued in EP Appln. No. 00940975.6	May 3, 2002	

	Title	Date of Publication	Author or Publisher
25.	"Design Study for a CDMA-Based Third-Generation Mobile Radio System," IEEE Journal on Selected Areas in Communications, vol. 12, No. 4	May 1994	Baier
26.	Japanese Office Action dated Jan. 6, 2004 issued in a counterpart application, namely, Appln. No. 2001-506182	Jan. 6, 2004	
27.	"Discussion on Segmentation of Block Between Radio Frame for TrCH with Transmission Time Interval Longer than 10ms," RAN WGI Meeting #4	Apr. 19-20, 1999	Mitsubishi Electric
28.	TSG-RAN Working Group 1 (Radio) Meeting #3, SI.12 (VI.1.0): Multiplexing and Channel Coding (FDD)	Mar. 22-26, 1999	3GPP
29.	European Search report dated Nov. 7, 2003 issued in a counterpart application, namely, Appln. No. EP03016891	Nov. 7, 2003	
30.	"An Integrated Transmission Protocol for Broadband Mobile Multimedia Communication Systems"; pp. 1346–50	Mar. 1997	Gang Wu
31.	Performance of Multi-Code CDMA Wireless Personal Communications Network: 1995 IEEE; pp. 907–11	1995	Chih-I
32.	Technical Specification 3GPP TS 25.212 v. 1.0.0	Apr. 1999	3GPP
33.	Technical Specification 3GPP TS 25.212 v. 2.0.0	July 1999	3GPP
34.	Vol. 3 Specifications of Air-Interference for 3G Mobile System Version 1.0	Dec. 1997	
35.	Notice of Opposition to a European Patent; European Patent No. 1,357,674	May 2007	Sony Ericsson Mobile Communications
36.	Notice of Opposition to a European Patent; European Patent No. 1,357,675	May 2007	Sony Ericsson Mobile Communications

	Title	Date of Publication	Author or Publisher
37.	WG1 Proposal relating to radio frame segmentation; 3GPP_LSG_RAN_WG1	Aug. 30–Sep. 3. 1999	Okumura
38.	"Adaptive Use of Parallel Serial Links"; IBM Technical Disclosure Bulletin; vol. 39 No	Jun. 1996	IBM

3. Section 102(f) Prior Art

Prior art under 35 U.S.C. § 102(f) shall be identified by providing the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived. The emails cited above as items 2-12 and 22 under "Prior Art Publications" were received by Samsung and at least '001 named inventor Kim through Samsung's participation in 3GPP, and were received from the respective authors. As indicated in the charts, some of these emails disclosed inventions now being claimed by Samsung. Further, the Narvinger email of June 29, 1999 was directed to named inventor Kim, pointing out that in a Samsung 3GPP submission, Samsung had not accounted for the possibility of a non-integer result from the segmentation. Named inventor Kim followed up with a new 3GPP submission that took this possibility into account, and then included filler bits.

H. The '516 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. H1 through H8, anticipate and/or render obvious the asserted claims of the '516 patent.

	Patent No. / App. No.	Country of Origin	Date Issued/Published
1.	Patent No. 6,510,148 (Honkasalo)	U.S.	Jan. 21, 2003
2.	Publ'n No. 2002/0119798 (Hamabe)	U.S.	August 29, 2002
3.	Publ'n No. 2002/0154610 (Tiedemann)	U.S.	Oct. 24, 2002

	Patent No. / App. No.	Country of Origin	Date Issued/Published
4.	Publ'n No. 2002/0137520 (Dillon)	U.S.	Sept. 26, 2002
5.	Publ'n No. 2003/0218993 (Moon),	U.S.	Nov. 27, 2003
6.	Publ'n No. 2001/0011011 (Kosugi)	U.S.	Aug. 2, 2001
7.	Kokai No. 2002-190774 (Hatta)	Japan	July 5, 2002
8.	Provisional Application No. 60/535426 (Zhang)	U.S.	

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. H1 through H8, anticipate and/or render obvious the asserted claims of the '516 patent.

	Title	Date of Publication	Author or Publisher
1	3GPP TS 25.896 version 6.0.0 Release 6 Technical Specification (3GPP Specification 1)	March 2004	3GPP
2	3GPP TS 25.214 version 6.1.0 Release 6 Technical Specification (3GPP Specification 2)	March 2004	3GPP
3	TIA/EIA/IS-95-A, entitled "Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System" (IS-95A Specification)	May 1995	Telecommunication Industry Association
4	The meeting minute R1-040022, entitled "Node B scheduling of HARQ retransmission," of 3GPP TSG-RAN Working Group 1 Ad Hoc Meeting by LG Electronics – held in Espoo, Finland on January 27-30, 2004. (LGE Proposal)	January 30, 2004	3GPP
5	The meeting minute of R1-040208, entitled "HARQ Retransmission Power for Enhanced Uplink DCH," of 3GPP TSG-RAN Working Group 1 Meeting No. 36 by Siemens – held in Malaga, Spain on February 16-20, 2004. (Siemens Proposal)	February 20, 2004	3GPP

	Title	Date of Publication	Author or Publisher
6	The CDMA 2000 Radio Transmission Technology Candidate Submission (RTT Submission)	June 2, 1998	3GPP
7	R1-040697	June 21-24, 2004	Samsung
8	TS 25.308, v 5.1.0	December 2001	3GPP
9	TS 25.858, v 1.0.0	December 2001	3GPP

I. The '893 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. I-1 through I-10, anticipate and/or render obvious the asserted claims of the '893 patent.

	Number	Country of Origin	Date Issued/Published
1	U.S. Patent No. 5,978,016 to Lourette et al.	US	11/2/1999
2	U.S. Patent No. 6,025,827 to Bullock et al.	US	2/15/2000
3	U.S. Patent No. 6,118,480 to Anderson et al.	US	9/12/2000
4	U.S. Patent No. 6,122,003 to Anderson	US	9/19/2000
5	U.S. Patent No. 6,137,534 to Anderson	US	10/24/2000
6	U.S. Patent No. 6,147,703 to Miller et al.	US	11/14/2000
7	U.S. Patent No. 6,512,548 to Anderson	US	1/28/2003
8	U.S. Patent No. 6,618,082 to Hayashi et al.	US	9/9/2003
9	U.S. Patent No. 6,683,650 to Yamamoto et al.	US	6/27/2004
10	U.S. Patent No. 6,847,783 to Sasaki et al.	US	1/25/2005
11	U.S. Patent No. 6,867,807 to Malloy Desormeaux	US	3/15/2005
12	U.S. Patent No. 6,943,842 to Stavely et al.	US	9/13/2005
13	U.S. Patent No. 6,970,200 to Boll	US	11/29/2005

	Number	Country of Origin	Date Issued/Published
14	U.S. Patent No. 7,053,951 to Miller et al.	US	5/30/2006
15	U.S. Patent No. 7,714,924 to Tanaka et al.	US	5/11/2010
16	U.S. Patent Application Publication No. 2004/0008970 A1 to Junkersfeld et al.	US	1/15/2004
17	U.S. Patent Application Publication No. 2004/0119876 A1 to Ohmori et al.	US	6/24/2004
18	U.S. Patent Application Publication No. 2004/0051784 A1 to Ejima et al.	US	3/18/2004
19	U.S. Patent Application Publication No. 2004/0109063 A1 to Kusaka et al.	US	6/10/2004
20	U.S. Patent Application Publication No. 2004/0169727 A1 to Romano et al.	US	9/2/2004
21	U.S. Patent Application Publication No. 2005/0073601 A1 to Battles et al.	US	4/7/2005
22	U.S. Patent Application Publication No. 2005/0012828 A1 to Oka	US	1/20/2005
23	U.S. Patent Application Publication No. 2005/0134708 A1 to Lee et al.	US	6/23/2005
24	Japanese Patent Publication No. 11-331739 to Canon Inc.	Japan	11/30/99
25	Japanese Patent Publication No. 2000-078518 to Konica Corp.	Japan	3/14/2000
26	Japanese Patent Publication No. 2004-112708 to Ricoh Co. Ltd.	Japan	8/4/2004

	Number	Country of Origin	Date Issued/Published
27	Japanese Patent Publication No. 2005-064927 to FujiFilm Corp.	Japan	3/10/2005
28	Korean Patent Publication No. P1998-0071372 to Hitachi Ltd.	Korea	10/26/1998
29	Korean Unexamined Patent Publication No. 10-2004-0013792 to LG Electronics Inc.	Korea	8/8/2002

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. I-1 through I-10, anticipate and/or render obvious the asserted claims of the '893 patent.

	Title	Date of Publication	Author or Publisher
1	"Canon EOS-1 D Mark II N Digital Instruction Manual,"	August 2005	Canon
2	"Canon Digital Photo Professional Instruction Manual,"	2005	Canon
3	"Canon EOS-1D Mark II N" Cannon Reviews	unknown	Canon
4	"MMM2: Mobile Medial Metadata for Sharing," CHI 2005, Portland, Oregon, USA	April 2-7, 2005	Davis et al.
5	*Mobile Interaction Design*, John Wiley & Sons, Ltd., Chapter 10	2006	Jones et al.
6	"An Evaluation of Techniques for Browsing Photograph Collections on Small Displays," MobileHCI 2004, LNCS 3160, pp. 132-143	2004	Patel et al.
7	"How Do People Manage Their Digital Photographs?" CHI 2003, Ft. Lauderdale, Florida USA, 2003	April 5-10, 2003	Rodden et al.
8	"Metadata Creation System for Mobile Images" MobiSYS '04, Boston, Massachusetts, USA, 2004	June 6-9, 2004	Sarvas et al.

	Title	Date of Publication	Author or Publisher
9	"GeoPix: Image Retrieval on the Geo Web, from Camera Click to Mouse Click" MobileHCI'06, Helsinki, Finland, 2006 ACM	September 12-15, 2006	Carboni et al.
10	"From Context to Content: Leveraging Context to Infer Media Metadata" MM'04, New York, New York, USA	October 10-16, 2004	Davis et al.
11	"PhotoTOC: Automatic Clustering for Browsing Personal Photographs" Microsoft Research, MSR-TR-2002-17	February 2002	Platt et al.
12	"Photo Annotation on a Camera Phone," CHI 2004, Vienna, Austria, 2004	April 24-29, 2004	Wilhelm et al.
13	iSight User's Guide	2003	Apple
14	Mac OS X 10.3 Panther manual	2003	Apple

3. Non-Patent/Publication References

Apple also contends that the Patents-In-Suit are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) or (b), and/or prior inventions made in the United States by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the asserted claims.

The following lists each item of prior art under 35 U.S.C. § 102(a), (b), and/or (g) by the name of the item and, to the extent now known, when the item became publicly known or was used, offered for sale, or sold, the identities of the persons or entities that made the item public, publicly used it, or made the offer for sale, and the identities of the person(s) or entities involved in, and the circumstances surrounding the making of, the invention. Apple contends that the

following descriptions are stated on information and belief, and are supported by the information and documents that will be produced by Apple and/or third parties. As discovery is not complete, Apple continues to investigate these events.

a) Apple iBook G3 800MHz laptop (2003) configured with an iSight video webcam (2003) (hereafter "iBook")

The iBook runs Mac OS X 10.3 Panther (2003), and includes iChat AV 2, iPhoto 2 and Preview 2.1.0. Both the iBook G3 laptop equipped as described and the iSight video webcam were offered for sale to the public by Apple in 2003.

J. The '460 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. J-1 through J-7, anticipate and/or render obvious the asserted claims of the '460 patent.

	Number	Country of Origin	Date Issued/Published
1	U.S. Patent No. 4,939,767 to Saito *et al.*	US	7/3/1990
2	U.S. Patent No. 5,381,460 to Ohashi *et al.*	US	1/10/1995
3	U.S. Patent No. 5,485,504 to Ohnsorge	US	1/16/1996
4	U.S. Patent No. 5,491,507 to Umezawa *et al.*	US	2/13/1996
5	U.S. Patent No. 5,537,608 to Beatty *et al.*	US	7/16/1996
6	U.S. Patent No. 5,550,754 to McNelley *et al.*	US	8/27/1996
7	U.S. Patent No. 5,612,732 to Yuyuma *et al.*	US	3/18/1997
8	U.S. Patent No. 5,619,684 to Goodwin *et al.*	US	4/8/1997
9	U.S. Patent No. 5,636,315 to Sugiyama *et al.*	US	6/3/1997
10	U.S. Patent No. 5,666,159 to Parulski *et al.*	US	9/9/1997
11	U.S. Patent No. 5,670,824 to Hicks, III	US	6/2/1998

	Number	Country of Origin	Date Issued/Published
12	U.S. Patent No. 5,737,491 to Allen *et al.*	US	4/7/1998
13	U.S. Patent No. 5,757,346 to Mita *et al.*	US	5/26/1998
14	U.S. Patent No. 5,806,005 to Hull *et al.*	US	9/8/1998
15	U.S. Patent No. 5,825,408 to Yuyuma *et al.*	US	10/20/1998
16	U.S. Patent No. 5,917,542 to Moghadam *et al.*	US	6/29/1999
17	U.S. Patent No. 5,956,681 to Yamakita *et al.*	US	9/21/1999
18	U.S. Patent No. 5,969,750 to Hsieh *et al.*	US	10/19/1999
19	U.S. Patent No. 6,009,336 to Harris *et al.*	US	12/28/1999
20	U.S. Patent No. 6,037,991 to Thro *et al.*	US	3/14/2000
21	U.S. Patent No. 6,038,257 to Brusewitz *et al.*	US	3/14/2000
22	U.S. Patent No. 6,038,295 to Mattes *et al.*	US	3/14/2000
23	U.S. Patent No. 6,044,403 to Gerzberg *et al.*	US	3/28/2000
24	U.S. Patent No. 6,069,648 to Suso *et al.*	US	5/30/2000
25	U.S. Patent No. 6,167,469 to Safai *et al.*	US	12/26/2000
26	U.S. Patent No. 6,169,911 to Wagner *et al.*	US	1/2/2001
27	U.S. Patent No. 6,177,950 to Robb *et al.*	US	1/23/2001
28	U.S. Patent No. 6,192,257 to Ray *et al.*	US	2/20/2001
29	U.S. Patent No. 6,219,560 to Erkkila *et al.*	US	4/17/2001
30	U.S. Patent No. 6,252,588 to Dawson *et al.*	US	6/26/2001
31	U.S. Patent No. 6,259,469 to Ejima *et al.*	US	7/10/2001
32	U.S. Patent No. 6,308,084 to Lonka et al.	US	10/23/2001
33	U.S. Patent No. 6,366,698 to Yamakita	US	4/2/2002

	Number	Country of Origin	Date Issued/Published
34	U.S. Patent No. 6,370,546 to Kondo *et al.*	US	4/9/2002
35	U.S. Patent No. 6,370,568 to Garfinkle	US	4/9/2002
36	U.S. Patent No. 6,377,818 to Irube *et al.*	US	4/23/2002
37	U.S. Patent No. 6,427,078 to Wilska *et al.*	US	7/30/2002
38	U.S. Patent No. 6,442,595 to Kelly	US	8/27/2002
39	U.S. Patent No. 6,469,731 to Saburi et al.	US	10/22/2002
40	U.S. Patent No. 6,501,968 to Ichimura *et al.*	US	12/31/2002
41	U.S. Patent No. 6,567,122 to Anderson *et al.*	US	5/20/2003
42	U.S. Patent No. 6,573,927 to Parulski *et al.*	US	6/3/2003
43	U.S. Patent No. 6,642,959 to Arai *et al.*	US	11/4/2003
44	U.S. Patent No. 6,661,529 to Sanbongi *et al.*	US	12/9/2003
45	U.S. Patent No. 6,690,417 to Yoshida *et al.*	US	2/10/2004
46	U.S. Patent No. 6,715,003 to Safai	US	3/30/2004
47	U.S. Patent No. 6,784,924 to Ward et al.	US	8/31/2004
48	U.S. Patent No. 6,812,954 to Priestman et al.	US	11/2/2004
49	U.S. Patent No. 7,173,651 to Knowles	US	2/6/2007
50	Great Britain App. Pub. No. 2 327 005 to Samsung Aerospace Industries	UK	1/6/1999
51	European Patent App. Pub. No. 0 614 305 to Hitachi Ltd.	EP	9/7/1994

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. J1 through J-7, anticipate and/or render obvious the asserted claims of the ‘460 patent.

	Title	Date of Publication	Author or Publisher
1	"Digital Camera Connectivity with Nokia 9110 Communicator"	1/26/1999	Nokia
2	"IBM Simon Users Manual"	February 1994	IBM
3	"Nokia 9110 Communicator User's manual"	1998	Nokia
4	"Pocket Computers Ignite OS Battle"	May 1998	Richard Comerford

3. Non-Patent/Publication References

Apple also contends that the Patents-In-Suit are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) or (b), and/or prior inventions made in the United States by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the asserted claims.

The following lists each item of prior art under 35 U.S.C. § 102(a), (b), and/or (g) by the name of the item and, to the extent now known, when the item became publicly known or was used, offered for sale, or sold, the identities of the persons or entities that made the item public, publicly used it, or made the offer for sale, and the identities of the person(s) or entities involved in, and the circumstances surrounding the making of, the invention. Apple contends that the following descriptions are stated on information and belief, and are supported by the information and documents that will be produced by Apple and/or third parties. As discovery is not complete, Apple continues to investigate these events.

a) IBM Simon

The IBM Simon mobile phone was offered for sale to the public or placed in public use by IBM Corporation and BellSouth Cellular Corporation by December 1994.

b) Nokia 9110 Communicator

The Nokia 9110 Communicator mobile phone was offered for sale to the public or placed in public use by Nokia Mobile Phones by March 18, 1998.

K. The '941 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. K-1 to K-6, anticipate and/or render obvious the asserted claims of the '941 patent.

	Number	Country of origin	Date Issued/Published
1.	0021253 (Rinne)	PCT	13 Apr. 2000
2.	0243332 (Petersen)	PCT	30 May 2002
3.	0479971 (Shvodian)	PCT	16 Sept. 2004
4.	0662665 (Kawan)	Europe	12 July 1995
5.	1276282 (Huo)	Europe	15 Jan. 2003
6.	2204215 (Khoon)	Russia	10 May 2003
7.	1395078 (Anderson)	Europe	3 Mar. 2004
8.	20020001314 (Yi)	United States	3 Jan. 2002
9.	20020016852 (Nishihara)	United States	7 Feb. 2002
10.	20020024972 (Yi)	United States	28 Feb. 2002
11.	20020025818 (Kang)	United States	28 Feb. 2002
12.	20020041567 (Yi)	United States	11 Apr. 2002
13.	20020048281 (Yi)	United States	25 Apr. 2002
14.	20020065093 (Yi)	United States	30 May 2002
15.	20020174276 (Jiang)	United States	21 Nov. 2002
16.	20030002532 (Huo)	United States	2 Jan. 2003
17.	20030156599 (Casaccia)	United States	21 Aug. 2003
18.	20030179712 (Kobayashi)	United States	25 Sept. 2003
19.	20040073939 (Ayyagari)	United States	15 Apr. 2004
20.	2004179917 (Fengqi)	Japan	24 June 2004
21.	20040160937 (Jiang)	United States	19 Aug. 2004
22.	20060072494 (Matusz)	United States	6 Apr. 2006
23.	20080002713 (Fujita)	United States	4 Mar. 2005
24.	5,692,127 (Devon)	United States	25 Nov. 1997
25.	5,822,321 (Petersen 2)	United States	13 Oct. 1998
26.	6,031,833 (Fickes)	United States	29 Feb. 2000
27.	6,088,342 (Cheng)	United States	11 July 2000
28.	6,373,861 (Lee)	United States	16 Apr. 2002
29.	6,466,795 (Ahn)	United States	15 Oct. 2002
30.	6,819,658 (Agarwal)	United States	16 Nov. 2004

	Number	Country of origin	Date Issued/Published
31.	7,359,403 (Rinne 2)	United States	15 Apr. 2008

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. K-1 to K-6, anticipate and/or render obvious the asserted claims of the '941 patent.

	Title	Date of Publication	Author or Publisher
1.	An Intelligent Cell Checking Policy for Promoting Data Transfer Performance in Wireless ATM Networks (Sheu)	May 1999	Sheu et al.
2.	B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2	Nov. 2000	Int'l Telecomm. Union
3.	3GPP Universal Mobile Telecomm. Sys. (UMTS) Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.3.0	Mar. 2005	ETSI
4.	3GPP Universal Mobile Telecomm. Sys. (UMTS); Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.1.0	June 2004	ETSI
5.	3GPP Universal Mobile Telecomm. Sys. (UMTS); Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.0.0	Dec. 2003	ETSI
6.	IEEE Standard 802.16-2004	24 June 2004	IEEE
7.	L2 Considerations for VoIP Support (Qualcomm R2-021645)	15-20 Aug. 2004	Qualcomm
8.	L2 Optimization for VoIP (Qualcomm R2-050969)	4-8 Apr. 2005	Qualcomm
9.	Packing Multiple Higher Layer SDUs into a Single MAC PDU (IEEE 802.16.1c-01/04r0)	16 Jan. 2001	Stanwood et al.
10.	RLC PDU Sizes for VoIMS (Samsung R2-041964)	4-8 Oct. 2004	Samsung

L. The ‘711 Patent

1. Prior Art Patent References

The following prior art patent references, including those patent references listed in Exs. L1-L5, anticipate and/or render obvious the asserted claims of the ‘711 patent.

	Number	Country of origin	Date Issued/Published
1	6407325	US	6/2002
2	6509716	US	1/2003
3	6526041	US	2/2003
4	6608637	US	8/2003
5	6889043	US	5/2005
6	6894213	US	5/2005
7	6928648	US	8/9/2005
8	6944287	US	9/2005
9	6947728	US	9/2005
10	6999802	US	2/2006
11	7009637	US	3/2006
12	7065324	US	6/2006
13	7119268	US	10/2006
14	7123945	US	10/2006
15	7166791	US	1/2007
16	7206571	US	4/2007
17	7222304	US	5/2007
18	7231175	US	6/2007
19	7251504	US	7/2007
20	7526585	US	4/2009
21	7594181	US	9/2009
22	2002/0067308	US	6/2002
23	2002/0070960	US	6/2002
24	2002/0156937	US	10/2002
25	2003/0083106	US	5/2003
26	2003/0119562	US	6/2003
27	2003/0218976	US	11/2003
28	2003/0219706	US	11/2003
29	2003/0236814	US	12/2003
30	2004/0021697	US	2/2004
31	2004/0077340	US	4/2004
32	2005/0054379	US	3/2005
33	2005/0083642	US	4/2005
34	2005/0097506	US	5/2005
35	2005/0164688	US	7/2005
36	2005/0172789	US	7/2005

	Number	Country of origin	Date Issued/Published
37	2005/0181826	US	8/2005
38	2006/0036569	US	2/2006
39	2006/0135198	US	6/2006
40	2006/0174307	US	8/2006
41	2006/0197753	US	9/2006
42	2006/0209036	US	9/2006
43	2006/0211454	US	9/2006
44	2006/0212853	US	9/2006
45	2006/0229106	US	10/2006
46	2006/0246955	US	11/2006
47	2007/0025311	US	2/2007
48	2007/0039005	US	2/2007
49	2007/0050778	US	3/2007
50	2007/0118870	US	5/2007
51	2007/0225022	US	9/2007
52	10-2003-0084799	KR	6/2005
53	10-2005-0051086	KR	6/2005
54	403866	TW	9/2000
55	200502940	TW	1/2005
56	M269546	TW	7/2005

2. Prior Art Publications

The following prior art publications, including those publications listed in Exs. L1-L5, anticipate and/or render obvious the asserted claims of the ‘711 patent.

	Title	Date of Publication	Author or Publisher
1	"AAS Feature: Getting more from your E61 Active Standby Screen"	Jun. 22, 2006	Litchfield
2	"Sony Ericsson K750i, User Manual Guide"	Feb. 2005	Sony Ericsson Mobile Comm. AB
3	"Synthesis of Time-Constrained Multitasking Embedded Software," ACM Transactions on Design Automation of Electronic Systems, , pp. 822-847, vol. 11, No. 4., ACM Press, New York, NY, USA	Oct. 2006	Nacul
4	"Multitasking on Reconfigurable Architectures: Microarchitecture Support and Dynamic Scheduling," ACM “Transactions on Embedded Computing Systems”, pp. 385-406, vol. 3, No. 2, ACM Press, New York, NY, USA	May 2004	Noguera

	Title	Date of Publication	Author or Publisher
5	"A Methodology and Algorithms for the Design of Hard Real-Time Multi-Tasking ASICs," ACM Transactions on Design Automation of Electronic Systems (TODAES) archive, , pp. 430-459, vol. 4, Issue 4, ACM Press, New York, NY, USA	Oct. 1999	Potkonjak
6	"Impromptu: Managing Networked Audio Applications for Mobile Users," MobiSys 2004--Second International Conference on Mobile Systems, Applications and Services, pp. 59-69.	2004	Schmandt
7	"Wireless Handheld Portable Communicator `mobileCyber`," NEC Technical Journal, pp. 214-218, vol. 51, No. 8, NEC, Japan.	Aug. 1998	Nakamura
8	"Operation Introduction to Windows Media Player" published online at www.microsoft.com/taiwan/windowsxp/windowsmediaplayer/getstarted.	Jun. 30, 2003	Microsoft Company
9	"The J2ME Mobile Media API" published online at http://developers.sun.com/mobility/midp/articles/mmapioverview	6/2003	Mahmoud
10	"Nokia 3300 Extended User's Guide"	2003	Nokia Corporation
11	"Sony W800i User Guide" (1st Ed.)	May 2005	Sony Ericsson Mobile Comm. AB
12	"Sony K700 User Guide" (1st Ed.)	March 2004	Sony Ericsson Mobile Comm. AB

3. Non-Patent/Publication References

Apple also contends that the Patents-In-Suit are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) or (b), and/or prior inventions made in the United States by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the asserted claims.

The following lists each item of prior art under 35 U.S.C. § 102(a), (b), and/or (g) by the name of the item and, to the extent now known, when the item became publicly known or was used, offered for sale, or sold, the identities of the persons or entities that made the item public, publicly used it, or made the offer for sale, and the identities of the person(s) or entities involved in, and the circumstances surrounding the making of, the invention. Apple contends that the following descriptions are stated on information and belief, and are supported by the information and documents that will be produced by Apple and/or third parties. As discovery is not complete, Apple continues to investigate these events.

a) Sony Ericsson W800i

The Sony Ericsson W800i mobile phone was offered for sale to the public or placed in public use by Sony Ericsson during the second quarter of 2005.

b) Sony Ericsson K700

The Sony Ericsson K700 mobile phone was offered for sale to the public or placed in public use by Sony Ericsson during the second quarter of 2004.

c) Nokia 3300

The Nokia 3300 mobile phone was offered for sale to the public or placed in public use by Nokia Corporation by August 10, 2003.

IV. CLAIM CHARTS PURSUANT TO PATENT L.R. 3-3 (C)

Individual claim charts that identify where each element of each asserted claim can be found in each item of prior art are attached hereto. A listing of these claim charts is provided below:

Exhibit A-1 through A-12: Claim charts for the ‘604 patent

Exhibit B-1 through B-8: Claim charts for the ‘410 patent

Exhibit C-1 through C-9: Claim charts for the ‘055 patent

Exhibit D-1 through D-11: Claim charts for the '871 patent

Exhibit E-1 through E-10: Claim charts for the '792 patent

Exhibit F-1 through F-4: Claim charts for the '867 patent

Exhibit G-1 through G-3: Claim charts for the '001 patent

Exhibit H-1 through H-8: Claim charts for the '516 patent

Exhibit I-1 through I-10: Claim charts for the '893 patent

Exhibit J-1 through J-7: Claim charts for the '460 patent

Exhibit K-1 through K-6: Claim charts for the '941 patent

Exhibit L-1 through L-5: Claim charts for the '711 patent

V. DISCLOSURE OF INVALIDITY DUE TO ANTICIPATION PURSUANT TO PATENT L.R. 3-3(B) AND (C)

Subject to the reservation of rights above and based on Apple's present understanding of the asserted claims of the Patents-In-Suit, and the apparent constructions Samsung is asserting based on Samsung's Infringement Contentions, the prior art references charted in Exhibits A-1 through L-10 identify items of prior art that anticipate the asserted claims. The charts identify where each element of each asserted claim can be found in each item of prior art. In particular:

A. The '604 Patent

1. Bömer, L. et al., A CDMA Radio Link with 'Turbo-Decoding': Concept and Performance Evaluation, IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications, PIMRC'95, September 27, 1995, pp. 788-793 anticipates claims 1-4, 6, 10-12, 17, 18, 20-22, and 24 of the '604 patent (Chart A-1).

2. Technical Report TR 101 146 v. 3.0.0, December 1997 anticipates claims 1-4, 6, 10-12, 17, 18, 20-22, and 24 of the '604 patent (Chart A-2).

B. The ’410 Patent

1. “Proposal for rate matching for turbo codes”, Nortel Networks, TSGR1#4(99)467, April 1999 anticipates claims 1, 5, 7, 11-13, 16, 20, 22-24, 27, 30-32, 34, 38, 40-42, 47, 48, 51, 52, and 55 of the ’410 patent (Chart B-1).

2. Samsung Electronics Co., “A method to classify the interleaved symbols of 1st MIL interleaver using some property,” TSG-RAN Working Group 1, Meeting #6, TSGR1#6(99)948, July 1999 (hereinafter “Samsung948”), anticipates claims 1-9, 11-49, 51-53, 55, and 56 of ‘410 patent (Chart B-5).

3. Samsung Electronics Co., “Unified rate matching scheme for Turbo/convolutional codes and up/down links”, TSG-RAN Working Group 1, Meeting #6, TSGR1#6(99)919, July 1999 (hereinafter “Samsung919”) anticipates claims 1-3, 5-9, 11-49, 51-53, 55, and 56 of ‘410 patent (Chart B-6).

C. The ’055 Patent

1. Alanara, GB 2,284,965A (“the GB ’965 publication”) anticipates claims 1-4, 6-8 of the ‘055 patent (Chart C-1).

D. The ’871 Patent

1. U.S. Patent No. 6,570,596 to Frederiksen anticipates claims 5, 9-11, and 20 of the ‘871 patent (Chart D-1).[1]

[1] European Patent Application No. EP 0946028 to Frederiksen (“the Frederiksen EP publication”), published September 29, 1999, also anticipates claims 5, 9-11, and 20 of the ‘871 patent. The Frederiksen EP publication contains nearly identical disclosures as the Frederiksen patent, and Apple’s citations to the Frederiksen patent throughout these Local Patent Rule 3-3

2. JP 2001-036653 to Komori anticipates claims 9-11, and 20 of the '871 patent (Chart D-4).

3. U.S. Patent No. 6,941,160 to Otsuka et al. anticipates claims 5, 9-11, and 20 of the '871 patent (Chart D-4).

4. U.S. Patent No. 6,771,974 to Sim et al. anticipates claims 9-11, and 20 of the '871 patent (Chart D-7).

E. The '792 Patent

1. Siemens, "Tdoc R1-01-1231: Interleaver operation in conjunction with SMP," TSG-RAN Working Group 1, Jeju, Korea, November 19-23, 2001 anticipates claims 11-16 of the '792 patent (Chart E-1).

2. U.S. Pat. App. Pub. No. 2003/0079170, "Block Puncturing for Turbo Code Based Incremental Redundancy," granted to Stewart et al. anticipates claims 11-16 of '792 patent (Chart E-2).

3. Duman, Tolga M., and Salehi, Masoud, "The Union Bound for Turbo-Coded Modulation Systems over Fading Channels," IEEE Transactions on Communications, Vol. 47, No. 10, October 1999 anticipates claims 11-16 of the '792 patent (Chart E-3).

4. U.S. Pat. No. 6,476,734 to Jeong et al. anticipates claims 11-16 of '792 patent (Chart E-4).

5. U.S. Provisional Pat. App. No. 60/232,357 to Jeong et al. anticipates claims 11-16 of '792 patent (Chart E-5).

---

disclosures and Exhibits D-1 through D-11 incorporate by reference the disclosures in the Frederiksen EP publication. Apple's invalidity contentions with respect to the Frederiksen patent apply equally to the Frederiksen EP publication.

6. Siemens, Interleaver operation in conjunction with SMP, R1-01-1231 anticipates claims 11-16 of the ’792 patent (Chart E-6).

7. U.S. Pat. Pub. No. 2003/0079170 A1 to Stewart et al. anticipates claims 11-16 of the ’792 patent (Chart E-7).

F. The ’867 Patent

1. “Multiple scrambling codes”, Ericsson, TSGR1#4(99)467, June 1-4 1999 (hereinafter “Ericsson724”), anticipates at least claims 25-27 and 30 of the ’867 patent (Chart F-1).

2. 3GPP TS 25.213 v2.1.0, June 1999 anticipates claims 25-27 and 30 of the ’867 patent (Chart F-2).

G. The ’001 Patent

1. Moulsley anticipates claims 1-5, 7-15, and 17-21 of the ’001 patent (Chart G-1).

2. 3GPP Prior Versions, including TS 25.212, v2.0.0 (TS 25.212), and TS 25.222, v 2.0.0 (TS 25.222), and substantially similar disclosures in TSGR#4(99)323 and TS 25.212, v1.0.0 (“Prior Versions”) anticipate claims 1-6 and 16 of the ’001 patent (Chart G-2).

3. Ericsson, Two Step Interleaver, included in Narvinger email, March 10, 1999 (“Two Step Interleaver”) anticipates claims 1-5 of the ’001 patent (Chart G-3).

H. The ’516 Patent

1. U.S. Patent No. 6,510,148 anticipates claims 1-3, 9, 15-17, and 23 of the ‘516 patent (Chart H-2).

2. U.S. Patent Application Publication No. 2002/0154610 anticipates claims 1-3, 9, 14-17, 23 and 28 of the ‘516 patent (Chart H-3).

3. U.S. Patent Application Publication No. 2002/0137520 anticipates claims 1 and 15 (Chart H-5).

4. U.S. Patent Application Publication No. 2002/0119798 anticipates claims 1, 3, 9, 15, 17, and 23 of the ‘516 patent (Chart H-8).

I. The ’893 Patent

1. The iBook anticipates claims 1-4, 6-8 and 10-16 of the ‘893 patent (Chart I-1).

2. U.S. Patent No. 6,867,807 to Malloy Desormeaux anticipates claims 1-4, 6-8 and 10-16 of the ‘893 patent (Charts I-2 - I-6).

3. U.S. Patent No. 6,512,548 to Anderson anticipates claims 1-4, 6-7 and 10-16 of the ‘893 patent (Charts I-2 and I-7).

4. U.S. Patent No. 6,118,480 to Anderson et al. anticipates claims 1-4, 6-7 and 10-16 of the ‘893 patent (Charts I-3 and I-8).

5. U.S. Patent No. 6,618,082 to Hayashi et al. anticipates claims 1-4, 6-8 and 10-16 of the ‘893 patent (Charts I-4 and I-7 - I-10).

6. Korean Unexamined Patent Publication No. 10-2004-0013792 to LG Electronics Inc. anticipates claims 1-4, 6-8 and 10-16 of the ‘893 patent (Charts I-5 and I-9).

7. Japanese Patent Publication No. 2005-064927 to FujiFilm Corp. anticipates claims 1-4, 6-8 and 10-16 of the ‘893 patent (Charts I-6 and I-10).

J. The ’460 Patent

1. U.S. Patent No. 6,069,648 to Suso et al. anticipates claim 1 of the ‘460 patent (Chart J-1).

2. U.S. Patent No. 6,167,469 to Safai et al. anticipates claim 1 of the ‘460 patent (Chart J-2).

3. U.S. Patent No. 6,573,927 to Parulski et al. anticipates claim 1 of the ‘460 patent (Chart J-3).

4. U.S. Patent No. 6,642,959 to Arai anticipates claim 1 of the ‘460 patent (Chart J-4).

5. The Nokia 9110 Communicator mobile phone together with “Nokia 9110 Communicator User’s Manual” and “Digital Camera Connectivity with Nokia 9110 Communicator” anticipates claim 1 of the ‘460 patent (Chart J-7).

K. The ’941 Patent

1. L2 Considerations for VoIP Support (Qualcomm R2-021645) anticipates claims 1-2, 4, 6-11, 13, and 15-18 of the ‘941 patent (Chart K-5).

L. The ’711 Patent

1. The Sony Ericsson W800i mobile phone together with associated Sony Ericsson W800i User Guide (1st Ed.) anticipates claims 1-2, 7-10, 15-18 of the ‘711 patent (Chart L-1).

2. The Sony Ericsson K700 mobile phone together with associated Sony Ericsson K700 User Guide (1st Ed.) anticipates claims 1-2, 7-10, 15-18 of the ‘711 patent (Chart L-3).

VI. DISCLOSURE OF INVALIDITY DUE TO OBVIOUSNESS PURSUANT TO PATENT L.R. 3-3(b) AND (c)

Subject to the reservation of rights above and based on Apple's present understanding of the asserted claims of the Patents-In-Suit, and the apparent constructions Samsung is asserting based on its Infringement Contentions, the prior art references identified above in Sections III and V, and charted in Exhibits A-1 through L-10, each anticipate the asserted claims.

To the extent a finder of fact finds that a limitation of a given claim was not disclosed by one of the references identified above pursuant to Patent L.R. 3-3(a), those claims are nevertheless unpatentable as obvious because the asserted claims contain nothing that goes beyond ordinary innovation. To the extent not anticipated, no asserted claim goes beyond combining known elements to achieve predictable results or does more than choose between clear alternatives known to those of skill in the art.

Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above pursuant to Patent L.R. 3-3(a). As explained herein and/or in the accompanying charts, it would have been obvious to a person of skill in the art at the time of the alleged invention of the asserted claims of the Patents-In-Suit to combine the various references cited herein so as to practice the asserted claims of the Patents-In-Suit. In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Apple reserves the right to rely on any other combination of any prior art references disclosed herein. Apple further reserves the right to rely upon combinations disclosed within the prosecution history of the references cited herein. These obviousness combinations reflect Apple's present understanding of the potential scope of the

claims that Samsung appears to be advocating and should not be construed as Apple's acquiescence to Samsung's interpretation of the patent claims.

A. The '604 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '604 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits A-1 through A-12. Exhibits A-1 through A-12 include exemplary claim charts for the '604 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits A-1 through A-12 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '604 patent would have been obvious in view of the prior art references identified above. For example, Exhibits A-1 through A-12 include exemplary claim charts that describe how the asserted claims of the '604 patent would have been obvious in view of the following references alone or in combination. The primary references cited in Apple's exemplary claim charts, Exhibits A-1 through A-12, are Bömer, L. et al., A CDMA Radio Link with 'Turbo-Decoding': Concept and Performance Evaluation, IEEE International Symposium on Personal, Indoor, and Mobile Radio Communications, PIMRC'95, September 27, 1995, pp. 788-793 ("Bömer"); "Telemetry: Summary of Concept and Rationale," Consultative Committee for Space Data Systems 100.0-G-1, December 1987 ("CCSDS 100.0-G-1" or "Telemetry"); ANSI T1.413-1995 ("ANSI95");

ETSI Technical Report TR 101 146 v. 3.0.0, December 1997 ("TR 101"); Almulhem et al., "Adaptive Error Correction for ATM Communications using Reed-Solomon Codes," Southeastcon '96. Bringing Together Education, Science and Technology, Proceedings of the IEEE 1996 ("Almulhem"); and U.S. Patent No. 5,831,978 to Willars et al. ("Willars"). Each of the primary references teaches all or, at a minimum, the vast majority of the limitations of the '604 patent asserted claims. To the extent any claim elements are found to missing from the primary references, secondary references are designated for combination with the primary references, including the following: Berrou et al., Near Shannon Limit Error-Correcting Coding and Decoding: Turbo-Codes, ICC, pp. 1064-1070, 1993 ("Berrou"); Valenti et al., Variable Latency Turbo Codes for Wireless Multimedia Applications, Proceedings of the International Symposium on Turbo Codes & Related Topics, Brest, France, September 1997, pp. 216-219 ("Valenti"); Jung et al., Advances on the Application of Turbo-Codes to Data Services in Third Generation Mobile Networks, Proceedings of the International Symposium on Turbo Codes & Related Topics, Brest, France, September 1997, pp. 135-142 ("Jung"); Young Kim et al., Development of Turbo Code for Transmitting Voice on FPLMTS, Institute of Electronics Engineers of Korea, Vol.7 No.1 1997.1, page(s) 423-427 ("Kim"); U.S. Pat. No. 4,312,070 ("Coombes"); U.S. Pat. No. 5,014,314 ("Mulford"); U.S. Pat. No. 5,103,445 ("Östlund"); U.S. Pat. No. 5,109,390 ("Gilhousen"); U.S. Pat. No. 5,109,403 ("Sutphin"); U.S. Pat. No. 5,386,588 ("Yasuda"); .S. Pat. No. 5,455,823 ("Noreen"); U.S. Pat. No. 5,666,348 ("Thornberg '348"); U.S. Pat. No. 5,742,588 ("Thornberg '588"); U.S. Pat. No. 5,907,582 ("Yi").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '604 patent asserted claims:

1. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over any one of Bömer, CCSDS 100.0-G-1, TR 101, ANSI95, Almulhem, and Willars (Exhibits A-1, A-2, A-3, A-4, A-7, and A-11).

2. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over Bömer, alone or in view of one or more of Berrou, Valenti, Yi, Jung, Kim, and TR 101 (Exhibits A-2 and A-5).

3. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over TR 101, alone or in view of one or more of Berrou, Valenti, Yi, Jung, Kim, and Bömer (Exhibits A-1 and A-9).

4. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over ANSI95, alone or in view of one or more of Berrou, Valenti, Yi, TR 101, Jung, Kim, and Bömer (Exhibits A-1, A-2, and A-8).

5. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over CCSDS 100.0-G-1, alone or in view of one or more of Berrou, Valenti, Yi, TR 101, Jung, Kim, and Bömer (Exhibits A-1, A-2, and A-6).

6. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over Willars, alone or in view of one or more of Berrou, Valenti, Yi, TR 101, Jung, Kim, and Bömer (Exhibits A-1, A-2, and A-10).

7. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over Almulhem, alone or in view of one or more of Berrou, Valenti, Yi, TR 101, Jung, Kim, and Bömer (Exhibits A-1, A-2, and A-12).

8. Claims 1-4, 18, 20, and 22 would have been obvious over Bömer, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-5).

9. Claims 1-4, 18, 20, and 22 would have been obvious over TR 101, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-9).

10. Claims 1-4, 18, 20, and 22 would have been obvious over CCSDS 100.0-G-1, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-6).

11. Claims 1-4, 18, 20, and 22 would have been obvious over ANSI95, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-8).

12. Claims 1-4, 18, 20, and 22 would have been obvious over Willars, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-10).

13. Claims 1-4, 18, 20, and 22 would have been obvious over Almulhem, alone or in view of one or more of Mulford, Östlund, Sutphin, Yasuda, Coombes, and Noreen (Exhibit A-12).

14. Claims 17-21 would have been obvious over Bömer, alone or in view of one or more of Thornberg ’588, Thornberg ’348, ANSI95, Almulhem, and Willars (Exhibits A-4, A-5, A-7, and A-11).

15. Claims 17-21 would have been obvious over TR 101, alone or in view of one or more of Thornberg ’588, Thornberg ’348, ANSI95, Almulhem, and Willars (Exhibits A-4, A-7, A-9, and A-11).

16. Claims 17-21 would have been obvious over CCSDS 100.0-G-1, alone or in view of one or more of Thornberg ’588, Thornberg ’348, ANSI95, Almulhem, and Willars (Exhibits A-4, A-6, A-7, and A-11).

17. Claims 17-21 would have been obvious over ANSI95, alone or in view of one or more of Thornberg ’588, Thornberg ’348, Almulhem, and Willars (Exhibits A-7, A-8, and A-11).

18. Claims 17-21 would have been obvious over Willars, alone or in view of one or more of Thornberg ’588, Thornberg ’348, Almulhem, and ANSI95 (Exhibits A-4, A-10, and A-11).

19. Claims 17-21 would have been obvious over Almulhem, alone or in view of one or more of Thornberg ’588, Thornberg ’348, and ANSI95 (Exhibits A-4, A-10, and A-12).

20. Claims 17-21 would have been obvious over Bömer, alone or in view of one or more of Gilhousen and Yi (Exhibit A-5).

21. Claims 17-21 would have been obvious over TR 101, alone or in view of one or more of Gilhousen, Yi, and Bömer (Exhibits A-1 and A-9).

22. Claims 17-21 would have been obvious over CCSDS 100.0-G-1, alone or in view of one or more of Gilhousen, Yi, and Bömer (Exhibits A-1 and A-6).

23. Claims 17-21 would have been obvious over ANSI95, alone or in view of one or more of Gilhousen, Yi, and Bömer (Exhibits A-1 and A-8).

24. Claims 17-21 would have been obvious over Willars, alone or in view of one or more of Gilhousen, Yi, and Bömer (Exhibits A-1 and A-10).

25. Claims 17-21 would have been obvious over Almulhem, alone or in view of one or more of Gilhousen, Yi, and Bömer (Exhibits A-1 and A-12).

26. Claims 1-4, 6, 10-12, 17-22, and 24 would have been obvious over any combination of Bömer, TR 101, CCSDS 100.0-G-1, ANSI95, Almulhem, and Willars, that combination standing alone, or in view of any combination of Mulford, Östlund, Sutphin, Yasuda, Coombes, Noreen, Yi, Gilhousen, Thornberg ‘588, Thornberg ‘348, Jung, Kim, Berrou, and Valenti (Exhibits A-1 through A-120).

B. The ’410 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '410 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits B-1 through B-8. Exhibits B-1 through B-8 include exemplary claim charts for the '410 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits B-1 through B-8 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '410 patent would have been obvious in view of the prior art references identified above. For example, Exhibits B-1 through B-8 include exemplary claim charts that describe how the asserted claims of the '410 patent would have been obvious in view of the following references alone or in combination. The primary references cited in Apple's exemplary claim charts, Exhibits B-1 through B-8, are "Proposal for rate matching for turbo codes", Nortel Networks, TSGR1#4(99)467, April 1999 ("Nortel467"); Samsung Electronics Co., "Unified rate matching scheme for Turbo/convolutional codes and up/down links", TSG-RAN Working Group 1, Meeting #6, TSGR1#6(99)919, July 1999 ("Samsung919"); Samsung Electronics Co., "A method to classify the interleaved symbols of 1st MIL interleaver using some property," TSG-RAN Working Group 1, Meeting #6, TSGR1#6(99)948, July 1999 ("Samsung948"); and 3GPP TS 25.212 v2.0.0, June 1999 ("TS 25.212v2.0.0"). Each of the primary reference teach all or, at a minimum, the vast majority of the limitations of the '410 patent asserted claims. To the extent any claim elements

are found to missing from the primary references, secondary references are designated for combination with the primary references, including the following: U.S. Patent No. 6,370,670 ("Le Dantec"); U.S. Patent No. 6,553,539 ("Markarian"); U.S. Patent No. 6,704,368 ("Nefedov"); U.S. Patent No. 6,304,995 ("Smith"); U.S. Patent No. 5,486,825 ("Cole").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '410 patent asserted claims:

1. Claims 1-57 would have been obvious over any one of Nortel467, TS 25.212v2.0.0, Samsung919, and Samsung948 (Exhibits B-1, B-2, B-5, and B-6).

2. Claims 8, 9 21, and 35 would have been obvious over Nortel467, alone or in view of one or more of Le Dantec and Samsung919 (Exhibits B-3 and B-6).

3. Claims 8, 9 21, and 35 would have been obvious over TS 25.212v2.0.0, alone or in view of one or more of Le Dantec and Samsung919 (Exhibits B-4 and B-6).

4. Claims 8, 9 21, and 35 would have been obvious over Samsung948, alone or in view of one or more of Le Dantec and Samsung919 (Exhibits B-6 and B-7).

5. Claims 8, 9 21, and 35 would have been obvious over Samsung919, alone or in view of Le Dantec (Exhibit B-8).

6. Claims 10, 50, 54, and 57 would have been obvious over Nortel467, alone or in view of TS 25.212v2.0.0 (Exhibit B-2).

7. Claims 10, 50, 54, and 57 would have been obvious over Samsung948, alone or in view of TS 25.212v2.0.0 (Exhibit B-7).

8. Claims 10, 50, 54, and 57 would have been obvious over Samsung919, alone or in view of TS 25.212v2.0.0 (Exhibit B-8).

9. Claims 1-7, 10-20, 22-34, and 36-57 would have been obvious over Nortel467 and TS 25.212v2.0.0, alone or in view of one or more of Markarian, Nefedov, Smith, and Cole (Exhibits B-2 and B-3).

10. Claims 1-7, 10-20, 22-34, and 36-57 would have been obvious over TS 25.212v2.0.0, alone or in view of one or more of Markarian, Nefedov, Smith, and Cole (Exhibit B-4).

11. Claims 1-7, 11-20, 22-34, 36-49, 51-53, 55, and 56 would have been obvious over Samsung948, alone or in view of one or more of Markarian, Nefedov, Smith, and Cole (Exhibit B-7).

12. Claims 1-3, 5-9 11-49, 51-53, 55, and 56 would have been obvious over Samsung919, alone or in view of one or more of Markarian, Nefedov, Smith, and Cole (Exhibit B-8).

13. Claim 4 would have been obvious over Nortel467, alone or in view of one or more of Samsung948 and TS 25.212v2.0.0 (Exhibits B-2 and B-5).

14. Claim 4 would have been obvious over Samsung919, alone or in view of one or more of Samsung948 and TS 25.212v2.0.0 (Exhibits B-2 and B-6).

15. Claims 1-57 would have been obvious over any combination of Nortel467, TS 25.212v2.0.0, Samsung919, and Samsung948, that combination standing alone, or in view of any combination of Le Dantec, Markarian, Nefedov, Smith, and Cole (Exhibits B-1 through B-8).

C. The ’055 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the ‘055 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits C-1 through C-9. Exhibits C-1 through C-9 include exemplary claim

charts for the ‘055 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits C-1 through C-9 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the ‘055 patent would have been obvious in view of the prior art references identified above. For example, Exhibits C-1 through C-9 include exemplary claim charts that describe how the asserted claims of the ‘055 patent would have been obvious in view of the following references alone or in combination. The primary references cited in Apple’s exemplary claim charts, Exhibits C-1 through C-9, are Alanara, GB 2,284,965A (“the GB ’965 publication”); Unexamined Japanese Patent Application Publication S60-385 (“the JP ‘385 application”); Brunts, U.S. Patent No. 5,724,316 (“the ’316 patent”); Weikel, International Publication No. WO95/27927 (“the WO ’927 application”); Unexamined Japanese Patent Application Publication H7-209448 (“the JP ‘448 application”); the Nokia 9000i Communicator and User’s Manual (“Nokia 9000i Manual”); the Samsung CDMA Portable Cellular Telephone SCH-370 and User’s Manual (“Samsung SCH-370 Manual”); the Apple Newton Message Pad 2100 and User’s Manual (“Apple Message Pad 2100 Manual”); and, Korean Laid-Open Patent Publication 1996-0043728 (“the KR ‘728 application”). Each of the primary references teaches all or, at a minimum, the vast majority of the limitations of the ‘055 patent asserted claims. To the extent any claim elements are found to be missing from the primary references, secondary references are designated for combination with the primary

references, including the following: Woo et al., U.S. Patent No. 5,781,155 ("the '155 patent"); Smolinske, U.S. Patent No. 5,655,218 ("the '218 patent"); Roberts, Jr., U.S. Patent No. 6,223,050 ("the '050 patent"); LaSalle, International Publication No. WO 98/14842 ("the WO '842 application"); Lauro, EP Patent Application 0 498 199 A2 ("the EP '199 application"); Kita and Kinoshita, U.S. Patent No. 5,408,444 ("the '444 patent"); and the TIA Interim Standard: Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System TIA/EIA/IS-95-A ("TIA IS-95-A Standard").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '055 patent asserted claims:

1. Claims 1 and 4 would have been obvious over Alanara, GB 2,284,965A alone or in view of ***any*** of a number prior art references that teach receiving a reference time from a remote system listed below:

- Woo et al., U.S. Patent No. 5,781,155;
- Smolinske, U.S. Patent No. 5,655,218;
- Roberts, Jr., U.S. Patent No. 6,223,050;
- LaSalle, International Publication No. WO 98/14842;
- Brunts, U.S. Patent No. 5,724,316;
- Lauro, EP Patent Application 0 498 199 A2;
- Kita and Kinoshita, U.S. Patent No. 5,408,444; or
- TIA Interim Standard: Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System TIA/EIA/IS-95-A.

Dependent claims 2 and 7 would have been obvious over the GB '965 publication or any of the above combinations alone or further in view of the Nokia 9000i Communicator and Manual or

the Samsung CDMA Portable Cellular Telephone SCH-370 and Manual. Dependent claims 3 and 8 would have been obvious over the GB ’965 publication or any of the above combinations, alone or further in view of the TIA IS-95-A Standard. Dependent claim 6 would have been obvious over the GB ’965 publication or any of the above combinations alone or further in view of the Nokia 9000i Manual or the Samsung SCH-370 Manual (Exhibit C-1).

2. Claims 1 and 4 would have been obvious over Unexamined Japanese Patent Application Publication S60-385 alone or in view of ***any*** of a number of prior art references that teach receiving a reference time from a remote system and listed above with Exhibit C-1. Dependent claims 2 and 7 would have been obvious over any of the above combinations alone or further in view of the GB ’965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the JP ’385 application in any of the above combinations, further in view of the GB 965 publication, the Nokia 900i Manual, or Samsung SCH-370 Manual, and further in view of the TIA IS-95-A Standard. Dependent claim 6 would have been obvious over the JP ’385 application in any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual (Exhibit C-2).

3. Claims 1 and 4 would have been obvious over Brunts, U.S. Patent No. 5,724,316 alone or in view of the GB ’965 publication or the JP ‘385 application. Dependent claims 2 and 7 would have been obvious over the ’316 patent or any of the above combinations, further in view of the GB ’965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the ‘316 patent or any of the above combinations, further in view of the GB ’965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual, and further in view of the GB ’965 publication or the TIA IS-95-A

Standard. Dependent claim 6 would have been obvious over the '316 patent or any of the above combinations alone or further in view of the GB '965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual (Exhibit C-3).

4. Claims 1 and 4 would have been obvious over Weikel, International Publication No. WO95/27927 alone or in view of the GB '965 publication ***or*** the JP '385 application. Dependent claims 2 and 7 would have been obvious over the WO '927 application or any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the WO '927 application or any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual, and further in view of the GB '965 publication or the TIA IS-95-A Standard. Dependent claim 6 would have been obvious over the WO '927 application or any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual (Exhibit C-4).

5. Claims 1 and 4 would have been obvious over Unexamined Japanese Patent Application Publication H7-209448 alone or in view of the GB '965 publication ***or*** the JP '385 application. Dependent claims 2 and 7 would have been obvious over the JP '448 application or any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the JP '448 application or any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual, and further in view of the GB '965 publication or the TIA IS-95-A Standard. Dependent claim 6 would have been obvious over the JP '448 application or any of the above combinations alone or further in view

of the GB ‘965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual (Exhibit C-5).

6. Claims 1, 4, 2, 6, and 7 would have been obvious over the Nokia 9000i Communicator and User’s Manual alone or in view of the JP ‘385 application ***or*** the GB ’965 publication, combined with ***any*** of a number of prior art references that teach receiving a reference time from a remote system listed above with Exhibit C-1. Dependent claims 3 and 8 would have been obvious over the Nokia 9000i Manual in any of the above combinations alone or further in view of TIA IS-95-A Standard (Exhibit C-6).

7. Claims 1, 4, 2, 6, and 7 would have been obvious over Samsung CDMA Portable Cellular Telephone SCH-370 and User’s Manual alone or in view the JP ‘385 application ***or*** the GB ’965 publication, combined with ***any*** of a number of prior art references that teach receiving a reference time from a remote system listed above with Exhibit C-1. Dependent claims 3 and 8 would have been obvious over the Samsung SCH-370 Manual in any of the above combinations alone or further in view of TIA IS-95-A Standard (Exhibit C-7).

8. Claims 1, 4 and 6 would have been obvious over Apple Newton Message Pad 2100 and User’s Manual alone or in view of the JP ‘385 application ***or*** the GB ’965 publication, combined with ***any*** of a number of prior art references that teach receiving a reference time from a remote system listed above under Exhibit C-1. Dependent claims 2 and 7 would have been obvious over the Apple Message Pad 2100 Manual in any of the above combinations, further in view of the GB ‘965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the Apple Message Pad 2100 Manual in any of the above combinations, further in view of the GB ’965 publication, the Nokia 9000i

Manual, or the Samsung SCH-370 Manual, alone or further in view of the TIA IS-95-A Standard (Exhibit C-8).

9. Claims 1, 4 and 6 would have been obvious over Korean Laid-Open Patent Publication 1996-0043728 alone or in view of the JP '385 application ***or*** the GB '965 publication, combined with ***any*** of a number of prior art references that teach receiving a reference time from a remote system listed above with Exhibit C-1. Dependent claims 2 and 7 would have been obvious over the KR '728 application in any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual or the Samsung SCH-370 Manual. Dependent claims 3 and 8 would have been obvious over the KR '728 application in any of the above combinations, further in view of the GB '965 publication, the Nokia 9000i Manual, or the Samsung SCH-370 Manual, alone or further in view of the TIA IS-95-A Standard (Exhibit C-9).

D. The '871 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '871 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits D-1 through D-11. Exhibits D-1 through D-11 include exemplary claim charts for the '871 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits D-1 through D-11 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '871 patent would have been obvious in view of the prior art references identified above. For example, Exhibits D-1 through D-11 include exemplary claim charts that describe how the asserted claims of the '871 patent would have been obvious in view of the following references alone or in combination. The primary references cited in Apple's exemplary claim charts, Exhibits D-1 through D-11, are U.S. Patent Nos. 6,570,596 to Frederiksen ("Frederiksen patent"), 6,771,974 to Sim et al. ("Sim patent"), 6,941,160 to Otsuka et al. ("Otsuka patent"), and Japanese Published Application No. JP 2001-36653 to Komori ("Komori JP patent"). Each of the primary reference teaches all or, at a minimum, the vast majority of the limitations of the '871 patent asserted claims. To the extent any claim elements are found to missing from the primary references, secondary references are designated for combination with the primary references, including the following: U.S. Patent No. 5,920,316 to Oran et al. ("Oran patent"); U.S. Patent No. 6,915,138 to Kraft ("Kraft patent"); U.S. Patent No. 7,177,665 to Ishigaki ("Ishigaki patent"); U.S. Patent No. 7,278,108 to Duarte et al. ("Duarte patent"); Japanese Published Application No. JP 11-282694 to Hidekazu ("Hidekazu JP patent"); the Binder book "The Complete Idiot's Guide to Mac OS X" ("Mac OS X book"); the Cohen et al. article "Constraint-Based Tiled Windows" ("Cohen article"); the Petersen book "Linux: The Complete Reference, 2nd Edition" ("Petersen Linux book"); the Reichard et al. book "Teach Yourself UNIX, 4th Edition" ("Reichard UNIX book"); and the Underdahl book "Teach Yourself: Windows 2000 Professional" ("Underdahl Windows 2000 book").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '871 patent asserted claims:

1. Claims 5, 9-11, and 20 would have been obvious over U.S. Patent No. 6,570,596 to Frederiksen and U.S. Patent No. 6,941,160 to Otsuka et al., each taken alone or in combination (Exhibit D-2).

2. Claims 5, 9-11 and 20 would have been obvious over U.S. Patent No. 6,941,160 to Otsuka et al., alone or in view of U.S. Patent No. 7,177,665 to Ishigaki (Exhibit D-3).

3. Claims 5, 9-11 and 20 would have been obvious over U.S. Patent No. 6,941,160 to Otsuka et al. and Japanese Published Application No. JP 2001-036653 to Komori, each taken alone or in combination (Exhibit D-4).

4. Claims 5, 9-11 and 20 would have been obvious over U.S. Patent No. 6,941,160 to Otsuka et al., alone or in view of one or more of (i) the Cohen article, (ii) the Petersen Linux book, and/or (iii) the Reichard UNIX book (Exhibit D-5).

5. Claims 5, 9-11 and 20 would have been obvious over U.S. Patent No. 6,941,160 to Otsuka et al., alone or in view of one or more of (i) Japanese Published Application No. JP 11-282694 to Hidekazu, (ii) U.S. Patent No. 5,920,316 to Oran et al., (iii) the Underdahl Windows 2000 book, and/or (iv) the Mac OS X book (Exhibit D-6).

6. Claims 5, 9-11, and 20 would have been obvious over U.S. Patent No. 771,974 to Sim et al. and U.S. Patent No. 6,570,596 to Frederiksen, each taken alone or in combination (Exhibit D-8).

7. Claims 9-11 and 20 would have been obvious over U.S. Patent No. 6,771,974 to Sim et al., alone or in view of U.S. Patent No. 6,915,138 to Kraft and/or U.S. Patent No. 7,278,108 to Duarte et al. (Exhibit D-9).

8. Claims 5, 9-11, and 20 would have been obvious over U.S. Patent No. 6,771,974 to Sim et al. and U.S. Patent No. 6,941,160 to Otsuka et al., each taken alone or in combination (Exhibit D-10).

9. Claims 5, 9-11 and 20 would have been obvious over U.S. Patent No. 6,771,974 to Sim et al., alone or in view of one or more of (i) Japanese Published Application No. JP 11-282694 to Hidekazu, (ii) U.S. Patent No. 5,920,316 to Oran et al., (iii) the Underdahl Windows 2000 book, and/or (iv) the Mac OS X book (Exhibit D-11).

E. The '792 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '792 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits E-1 through E-10. Exhibits E-1 through E-10 include exemplary claim charts for the '792 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits E-1 through E-10 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '792 patent would have been obvious in view of the prior art references identified above. For example, Exhibits E-1 through E-10 include exemplary claim charts that describe how the asserted claims of the '792 patent would have been obvious in view of the following references alone or in combination. The primary references cited in Apple's exemplary claim charts, Exhibits E-1 through E-10, are U.S.

Provisional Patent. App. No. 60/232,357 to Jeong et al. ("Jeong '357"); U.S. Patent No. 6,476,734 to Jeong et al. ("Jeong '734"); Siemens, "Interleaver operation in conjunction with SMP," R1-01-1231 ("Siemens"); Duman, Tolga M., and Salehi, Masoud, "The Union Bound for Turbo-Coded Modulation Systems over Fading Channels," IEEE Transactions on Communications, Vol. 47, No. 10, October 1999 ("Duman-Salehi"); U.S. Patent App. Pub. No. 2003/0079170 ("Stewart"). Each of the primary reference teaches all or, at a minimum, the vast majority of the limitations of the '792 patent asserted claims. To the extent any claim elements are found to missing from the primary references, secondary references are designated for combination with the primary references, including the following: U.S. Pat. No. 6,543,013 (hereinafter, "Li"); Bömer, L. et al., A CDMA Radio Link with 'Turbo-Decoding', IEEE PIMRC '95 (hereinafter, "Bömer"); Le Goff et al., Turbo-Codes and High Spectral Efficiency Modulation, 1994 IEEE (hereinafter, "Le Goff"); U.S. Pat. No. 5,109,390 ("Gilhousen"); 3GPP TS 25.212 version 2.0.0 ("TS 25.212v2.0.0"); and U.S. Patent No. 5,907,582 ("Yi").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '792 patent asserted claims:

1. Claims 11-16 would have been obvious over any one of Jeong '734, Jeong '357, Stewart, Duman-Salehi, and Siemens (Exhibits E-1, E-2, E-3, E-4, and E-5).

2. Claims 11-16 would have been obvious over Siemens, alone or in view of one or more of Bömer, Jeong '734, Jeong '357, Le Goff, Gilhousen, and Yi (Exhibits E-4, E-5, and E-6).

3. Claims 11-16 would have been obvious over Stewart, alone or in view of one or more of Bömer, Jeong '734, Jeong '357, Le Goff, Gilhousen, and Yi (Exhibits E-4, E-5, and E-7).

4. Claims 11-16 would have been obvious over Duman-Salehi, alone or in view of one or more of Bömer, Jeong ‘734, Jeong ‘357, Le Goff, Gilhousen, and Yi (Exhibits E-4, E-5, and E-8).

5. Claims 11-16 would have been obvious over Jeong ‘734, alone or in view of one or more of Bömer, Jeong ‘357, Le Goff, Gilhousen, and Yi (Exhibits E-5 and E-9).

6. Claims 11-16 would have been obvious over Jeong ‘357, alone or in view of one or more of Bömer, Jeong ‘734, Le Goff, Gilhousen, and Yi (Exhibits E-4 and E-10).

7. Claims 11-16 would have been obvious over Siemens, alone or in view of one or more of Stewart, TS 25.212v2.0.0 and Li (Exhibit E-6).

8. Claims 11-16 would have been obvious over Stewart, alone or in view of one or more of Li and TS 25.212v2.0.0 (Exhibit E-7).

9. Claims 11-16 would have been obvious over Duman-Salehi, alone or in view of one or more of Stewart, TS 25.212v2.0.0 and Li (Exhibit E-8).

10. Claims 11-16 would have been obvious over Jeong ‘734, alone or in view of one or more of Stewart, TS 25.212v2.0.0 and Li (Exhibit E-9).

11. Claims 11-16 would have been obvious over Jeong ‘357, alone or in view of one or more of Stewart, TS 25.212v2.0.0 and Li (Exhibit E-10).

12. Claims 12, 13, 15, and 16 would have been obvious over Siemens, alone or in view of one or more of Jeong ‘734, Jeong ‘357, and Stewart (Exhibits E-4, E-5, and E-6).

13. Claims 12, 13, 15, and 16 would have been obvious over Stewart, alone or in view of one or more of Jeong ‘734 and Jeong ‘357 (Exhibits E-4, E-5, and E-7).

14. Claims 12, 13, 15, and 16 would have been obvious over Duman-Salehi, alone or in view of one or more of Jeong ‘734, Jeong ‘357, and Stewart (Exhibits E-4, E-5, and E-8).

15. Claims 12, 13, 15, and 16 would have been obvious over Jeong '734, alone or in view of one or more of Jeong '357 and Stewart (Exhibits E-5, and E-9).

16. Claims 12, 13, 15, and 16 would have been obvious over Jeong '357, alone or in view of one or more of Jeong '734 and Stewart (Exhibits E-4 and E-10).

17. Claims 11-16 would have been obvious over any combination of Jeong '734, Jeong '357, Stewart, Duman-Salehi, and Siemens, that combination standing alone, or in view of any combination of Li, Bömer, Le Goff, Gilhousen, Yi, and TS 25.212v2.0.0 (Exhibits E-1 through E-10).

F. The '867 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '867 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits F-1 through D-4. Exhibits F-1 through D-4 include exemplary claim charts for the '867 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits F-1 through F-4 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '867 patent would have been obvious in view of the prior art references identified above. For example, Exhibits F-1 through F-4 include exemplary claim charts that describe how the asserted claims of the '867 patent would have been obvious in view of the following references alone or in combination. The

primary references cited in Apple's exemplary claim charts, Exhibits F-1 through F-4, are Ericsson, Multiple scrambling codes, TSGR1#5(99)724 ("Ericsson724") and 3GPP, Spreading and Modulation, TS 25.213 v2.1.0 ("TS 25.213v2.1.0"). Each of the primary reference teaches all or, at a minimum, the vast majority of the limitations of the '867 patent asserted claims. To the extent any claim elements are found to missing from the primary references, secondary references are designated for combination with the primary references, including the following: U.S. Patent No. 4,320,513 to Lampert ("Lampert"); U.S. Patent No. 6,728,305 to Ogawa et al. ("Ogawa"); Sarwate, D. and Pursley, M., "Crosscorrelation Properties of Pseudorandom and Related Sequences," Proceedings of the IEEE, Vol. 68, No. 5, May 1980 ("Sarwate"); Nagle et al., "Inmarsat-3 Navigation Signal C/A Code Selection and Interference Analysis," Navigation, Vol. 39, No. 4, Winter 1992-1993, pp. 445-462 ("Nagle"); Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, Global Positioning System Standard Positioning Service Signal Specification: GPS NAVSTAR, Washington, D.C., U.S. Department of Defense, June 1995 ("NAVSTAR").

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '867 patent asserted claims:

1. Claims 25-27 would have been obvious over either one of Ericssson724 and 25.213v2.1.0 (Exhibits F-1 and F-2).

2. Claims 25-27 and 30 would have been obvious over Ericsson724, alone or in view of one or more of Lampert, Ogawa, Sarwate, NAVSTAR, and Nagle (Exhibit F-3).

3. Claims 25-27 and 30 would have been obvious over 25.213v2.1.0, alone or in view of one or more of Lampert, Ogawa, Sarwate, NAVSTAR, and Nagle (Exhibit F-4).

4. Claims 25-27 and 30 would have been obvious over either or both of Ericsson724 and 25.213v2.1.0, standing alone or in view of any combination of Lampert, Ogawa, Sarwate, NAVSTAR, and Nagle (Exhibits F-1, F-2, F-3 and F-4).

G. The '001 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '001 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits G1 through G3. Exhibits G1 through G3 include exemplary claim charts for the '001 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits G1 through G3 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '001 patent would have been obvious in view of the prior art references identified above. For example, Exhibits G1 through G3 include exemplary claim charts that describe how the asserted claims of the '001 patent would have been obvious in view of the following references alone or in combination:

1. Claims 1-5 would have been obvious over Moulsley in view the 3GPP specification documents as of March 1999, namely (1) ARIB specification, January 1999, Section 3.2.3, Figure 3.2.3-1, and Section 3.2.4; (2) Narvinger email, January 28, 1999, including Ericsson, "Transport Channel Multiplexing, 01-28-99, pp. 5-7, Figure 4-5 and descriptions thereof, and Section 4; (3) Okumura email of January 28, 1999 with document "Ad Hoc 4

Transport Channel Multiplexing" showing radio frame segmentation; (4) TSGR1#2(99)103 (R1-99103), showing segmentation as a result of interleaving, with resulting blocks shown as C0 up to C8; and (5) Narvinger email, March 10, 1999, including "Two Step Interleaving," FIGS. 2-4.

2. Claims 6 and 16 would have been obvious over Moulsley in view of any one or more of the Physical Channel Segmentation References; or in the alternative, over Moulsley in view the 3GPP specification documents as of March 1999, and further in view of any one or more of the Physical Channel Segmentation References, namely (1) pre-June 25, 1999 versions of TS 25.212, "Physical Channel Segmentation," indicated that "multiple physical channels [ ] are transmitted in parallel during 10 ms intervals"; (2) Ovesjo email, June 23, 1999 states that the rules for radio frame segmentation and physical channel segmentation are "simple" and "straightforward"; (3) the generally known use of segmenting by providing a first group of bits into a first data unit and a group of bits into a second data unit as shown, for example, in Agarwal, U.S. Patent No. 6,819,658 and Petersen, WO 02/43332; (4) Herzberger, U.S. Patent No. 5,177,742, 2:32-2:57, Fig. 2; (5) Willars, U.S. Patent No. 5,831,978, Figs. 3-5, and 4:38-5:37; (6) Ferguson, U.S. Patent No. 7,593,380, Figs. 3-6 and 6:62-9:23; (7) Jou, U.S. Patent No. 6,389,000, Fig. 1 and 2:27-2:60; (8) Amalfitano, U.S. Patent No. 6,236,647, Figs. 2-5, 6:19-61; (9) Kanerva, U.S. Patent No. 5,793,744, Figs. 6-7, 7:23-11:63; (10) Narvinger email, March 10, 1999, including attachment at Figures 3-5; (11) Roobol, U.S. Patent No. 6,363,058; (12) Dahlman, U.S. Patent No. 5,896,368, Fig. 2A-2C, 5:45-4:49; (13) Watanabe, U.S. Patent No. 6,307,850, Figs. 2-4, 3:14-4:64; and (14) general knowledge of segmentation and demultiplexing.

3. Claims 7-15 and 17-21 would have been obvious over Moulsley in view of the 3GPP specification documents as of March 1999.

4. Claims 1-5 would have been obvious over the Prior Versions in view of any one or more of the Radio Frame Segmentation References, namely (1) Virtanen email, March 16, 1999; (2) TSGR1#2(99)103 (R1-99103), showing segmentation as a result of interleaving, with resulting blocks shown as C0 up to C8; (3) TSGR1#2(99)055 (R1-99055), p. 11; (4) Okumura email March 4, 1999; (5) Narvinger email, January 28, 1999, including Ericsson, "Transport Channel Multiplexing, January 29, 1999, pp. 5-7, Figure 4-5 and descriptions thereof, and Section 4; (6) Okumura email, March 18, 1999 regarding non-integer result leaving a fractional bit; (7) TSGR1#4(99)349, Fig. 2 and Section 3.6; (8) TS 25.222 v1.1.0, Section 6.2.4; (9) TSGR#4(99)323, Sections 4.2.4 and 4.26; (10) Kim email, August 26, 1999; (11) Kiran T email, August 26, 1999; and (12) Narvinger email, March 10, 1999, including "Two Step Interleaving," FIGS. 2-4.

5. Claims 6 and 16 would have been obvious over the Prior Versions in view of any one or more of the Physical Channel Segmentation References, namely (1) pre-June 25, 1999 versions of TS 25.212, "Physical Channel Segmentation," indicated that "multiple physical channels [ ] are transmitted in parallel during 10 ms intervals"; (2) Ovesjo email, June 23, 1999 states that the rules for radio frame segmentation and physical channel segmentation are "simple" and "straightforward"; (3) the generally known use of segmenting by providing a first group of bits into a first data unit and a group of bits into a second data unit as shown, for example, in Agarwal, U.S. Patent No. 6,819,658 and Petersen, WO 02/43332; (4) Herzberger, U.S. Patent No. 5,177,742, 2:32-2:57, Fig. 2; (5) Willars, U.S. Patent No. 5,831,978, Figs. 3-5, and 4:38-5:37; (6) Ferguson, U.S. Patent No. 7,593,380, Figs. 3-6 and 6:62-9:23; (7) Jou, U.S. Patent No. 6,389,000, Fig. 1 and 2:27-2:60; (8) Amalfitano, U.S. Patent No. 6,236,647, Figs. 2-5, 6:19-61; (9) Kanerva, U.S. Patent No. 5,793,744, Figs. 6-7, 7:23-11:63; (10) Narvinger email,

March 10, 1999, including attachment at Figures 3-5; (11) Roobol, U.S. Patent No. 6,363,058; (12) Dahlman, U.S. Patent No. 5,896,368, Fig. 2A-2C, 5:45-4:49; (13) Watanabe, U.S. Patent No. 6,307,850, Figs. 2-4, 3:14-4:64; and (14) general knowledge of segmentation and demultiplexing.

6. Claims 7-15 and 17-21 would have been obvious over the Prior Versions; or in the alternative, would have been obvious over the Prior Versions in view of any one or more of the Radio Frame Segmentation References, and further in view of any one or more of the Filler Bit References, namely (1) the Moulsley, March 16, 1999 email in TSG RAN Working group 1, which states that a way to handle an arbitrary number of bits includes "adjusting the number of bits in the channel coding" or "adding some dummy bits"; (2) TS 25.212 V.2, the description of code block segmentation at Section 4.2.3.1.2 discloses providing filler bits to ensure that the size of the data all have code blocks of length C; (3) in the EP '675 Opposition, Samsung's letter of December 21, 2007, including representations to the European Patent Office including representing at page 9 of 34, that the use of filler bits "is a natural and conventional approach which the skilled person would take, as he is familiar with the general use of filler bits"; (5) the generally known use of padding or filler when needed for segmentation as shown in Agarwal, U.S. Patent No. 6,819,658 ; (6) the generally known use of padding or filler when needed for segmentation as shown in Petersen, WO 02/43332 ; (7) WO 99/07076, pp. 7-8; and (8) WO 94/14254, pp. 6-8 and Figs. 1-2; and (9) general knowledge relating to filler bits and segmentation.

7. Claims 1-5 would have been obvious over Two Step Interleaver in view of the 3GPP References, namely, Narvinger email, January 29, 1999, and Ericsson, "Transport Channel

Multiplexing – comments on ARIB and ETSI scheme," and/or ARIB, "Specifications of Air-Interface for 3G Mobile."

8. Claims 6 and 16 would have been obvious over Two Step Interleaver in view of any one or more of the Physical Channel Segmentation References, or in the alternative, in view of Narvinger email, January 29, 1999, and Ericsson, "Transport Channel Multiplexing – comments on ARIB and ETSI scheme," and/or ARIB, "Specifications of Air-Interface for 3G Mobile" and further in view of the Physical Channel Segmentation References, namely (1) pre-June 25, 1999 versions of TS 25.212, "Physical Channel Segmentation," indicated that "multiple physical channels [ ] are transmitted in parallel during 10 ms intervals"; (2) Ovesjo email, June 23, 1999 states that the rules for radio frame segmentation and physical channel segmentation are "simple" and "straightforward"; (3) the generally known use of segmenting by providing a first group of bits into a first data unit and a group of bits into a second data unit as shown, for example, in Agarwal, U.S. Patent No. 6,819,658 and Petersen, WO 02/43332; (4) Herzberger, U.S. Patent No. 5,177,742, 2:32-2:57, Fig. 2; (5) Willars, U.S. Patent No. 5,831,978, Figs. 3-5, and 4:38-5:37; (6) Ferguson, U.S. Patent No. 7,593,380, Figs. 3-6 and 6:62-9:23; (7) Jou, U.S. Patent No. 6,389,000, Fig. 1 and 2:27-2:60; (8) Amalfitano, U.S. Patent No. 6,236,647, Figs. 2-5, 6:19-61; (9) Kanerva, U.S. Patent No. 5,793,744, Figs. 6-7, 7:23-11:63; (10) Narvinger email, March 10, 1999, including attachment at Figures 3-5; (11) Roobol, U.S. Patent No. 6,363,058; (12) Dahlman, U.S. Patent No. 5,896,368, Fig. 2A-2C, 5:45-4:49; (13) Watanabe, U.S. Patent No. 6,307,850, Figs. 2-4, 3:14-4:64; and (14) general knowledge of segmentation and demultiplexing.

9. Claims 7-15 and 17-21 would have been obvious over Two Step Interleaver in view of any one or more of the Physical Channel Segmentation References, or in the alternative,

in view of Narvinger email, January 29, 1999 and Ericsson, "Transport Channel Multiplexing – comments on ARIB and ETSI scheme," and/or ARIB, "Specifications of Air-Interface for 3G Mobile" and further in view of the in view of any one or more of the Filler Bit References, namely (1) the Moulsley, March 16, 1999 email in TSG RAN Working group 1, which states that a way to handle an arbitrary number of bits includes "adjusting the number of bits in the channel coding" or "adding some dummy bits"; (2) TS 25.212 V.2, the description of code block segmentation at Section 4.2.3.1.2 discloses providing filler bits to ensure that the size of the data all have code blocks of length C; (3) in the EP '675 Opposition, Samsung's letter of December 21, 2007, including representations to the European Patent Office including representing at page 9 of 34, that the use of filler bits "is a natural and conventional approach which the skilled person would take, as he is familiar with the general use of filler bits"; (5) the generally known use of padding or filler when needed for segmentation as shown in Agarwal, U.S. Patent No. 6,819,658 ; (6) the generally known use of padding or filler when needed for segmentation as shown in Petersen, WO 02/43332 ; (7) WO 99/07076, pp. 7-8; and (8) WO 94/14254, pp. 6-8 and Figs. 1-2; and (9) general knowledge relating to filler bits and segmentation.

H. The '516 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '516 patent obvious, alone or in combination with other references, are discussed below and included in Exhibit H. Exhibit H includes exemplary claim charts for the '516 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibit H include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary

skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '516 patent would have been obvious in view of the prior art references identified above. For example, Exhibit H includes exemplary claim charts that describe how the asserted claims of the '516 patent would have been obvious in view of the following references alone or in combination:

1. Claims 1-2 and 15-16 would have been obvious over Hatta in view of 3GPP Specification 1 (Exhibit H-1).

2. Claims 2 and 16 also would have been obvious over Hatta in view of 3GPP Specification 1 and further in view of 3GPP Specification 2 (Exhibit H-1).

3. Claims 3 and 17 would have been obvious over Hatta in view of 3GPP Specification 1 and further in view of any one of 3GPP Specification 2 or IS-95A Specification (Exhibit H-1).

4. Claims 4, 6, 14, 18, 20 and 28 would have been obvious over Hatta in view of 3GPP Specification 1 and further in view of 3GPP Specification 2 (Exhibit H-1).

5. Claims 5 and 19 would have been obvious over Hatta in view of 3GPP Specification 1 and further in view of 3GPP Specification 2 and Honkasalo (Exhibit H-1).

6. Claims 9 and 23 have been obvious over Hatta in view of 3GPP Specification 1 and further in view of any one of LGE Proposal, Tiedemann, or Siemens Proposal (Exhibit H-1).

7. Claims 10 and 24 would have been obvious over Hatta in view of 3GPP Specification 1 and further in view of LGE Proposal (Exhibit H-1).

8. Claims 1-2, and 15-16 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission and Moon (Exhibit H-2).

9. Claims 3 and 17 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission, IS-95A Specification and Moon (Exhibit H-2).

10. Claims 4-5, 6, 18-19 and 20 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission and Moon and further in view of 3GPP Specification 2 or Hatta (Exhibit H-2).

11. Claims 9 and 23 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission and Moon and further in view of 3GPP Specification 2, LGE Proposal, or Siemens Proposal (Exhibit H-2).

12. Claims 10 and 24 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission and Moon and further in view of LGE Proposal or 3GPP Specification 2 (Exhibit H-2).

13. Claims 14 and 28 would have been obvious over Honkasalo in view of Tiedemann, 3GPP Specification 1 or RTT Submission and Moon and further in view of 3GPP Specification 2 (Exhibit H-2).

14. Claims 3 and 17 would have been obvious over Tiedemann in view of 3GPP Specification 2 or IS-95A Specification (Exhibit H-3).

15. Claims 4-6 and 18-20 would have been obvious over Tiedemann in view of 3GPP Specification 2 or Hatta (Exhibit H-3).

16. Claims 9 and 23 would have been obvious over Tiedemann in view of Siemens Proposal (Exhibit H-3).

17. Claims 10 and 24 would have been obvious over Tiedemann in view of LGE Proposal or 3GPP Specification 2 (Exhibit H-3).

18. Claims 14 and 28 would have been obvious over Tiedemann in view of 3GPP Specification 2 (Exhibit H-3).

19. Claims 1 and 15 would have been obvious over 3GPP Specifications, including 3GPP Specifications 1 and 2, in view of any one of Honkasalo, Tiedemann, Dillon, Siemens Proposal, LGE proposal, or Hatta in view of Honkasalo, Tiedemann, Dillon, Siemens Proposal, Zhang, Hamabe, or LGE proposal (Exhibit H-4).

20. Claims 2, 6, 14, 16, 20, and 28 would have been obvious over 3GPP Specifications, including 3GPP Specifications 1 and 2, in view of any one of Tiedemann, Dillon, Siemens Proposal, Zhang, Hamabe, or Hatta in view of any one of Tiedemann, Dillon, Zhang, Hamabe, or Siemens Proposal (Exhibit H-4).

21. Claims 3 and 17 would have been obvious over 3GPP Specifications, including 3GPP Specifications 1 and 2, in view of any one of Tiedemann, Dillon, Siemens Proposal, Zhang, Hamabe, or Hatta in view of any one of Tiedemann, Dillon, Zhang, Hamabe, or Siemens Proposal, and further in view of IS-95A Specification (Exhibit H-4).

22. Claims 4-5 and 18-19 would have been obvious over 3GPP Specification 2 in view of any one of Tiedemann, Dillon, Zhang, Hamabe, Siemens Proposal, or Hatta in view of any one of Tiedemann, Dillon, Zhang, Hamabe, or Siemens Proposal (Exhibit H-4).

23. Claims 9-10 and 23-24 would have been obvious over 3GPP Specifications 1 and 2 in view of LGE Proposal and any one of Honkasalo, Hatta, Tiedemann, Dillon, Zhang, Hamabe, or Siemens Proposal (Exhibit H-4).

24. Claims 1 and 15, in the alternative, would have been obvious over Dillon in view of Tiedemann (Exhibit H-5).

25. Claims 2 and 16 would have been obvious over Dillon in view of Tiedemann and further in view of 3GPP Specifications, including 3GPP Specifications 1 and 2 (Exhibit H-5).

26. Claims 3 and 17 would have been obvious over Dillon in view of Tiedemann and further in view of 3GPP Specification 2 or IS-95A Specification (Exhibit H-5).

27. Claims 4-6 and 18-20 would have been obvious over Dillon in view of Tiedemann and further in view of 3GPP Specification 2 or Hatta (Exhibit H-5).

28. Claims 9 and 23 would have been obvious over Dillon in view of Tiedemann and further in view of LGE Proposal, 3GPP Specification 2, or Siemens Proposal (Exhibit H-5).

29. Claims 10 and 24 would have been obvious over Dillon in view of Tiedemann and further in view of LGE Proposal or 3GPP Specification 2 (Exhibit H-5).

30. Claims 14 and 28 would have been obvious over Dillon in view of Tiedemann and further in view of 3GPP Specification 2 (Exhibit H-5).

31. Claims 1 and 15 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification, or alternatively, further in view of Tiedemann. (Exhibit H-6).

32. Claims 2 and 16 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of 3GPP Specification 1, or alternatively, further in view of Tiedemann (Exhibit H-6).

33. Claims 3 and 17 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of IS-95A Specification or 3GPP Specification 2, or alternatively, further in view of Tiedemann (Exhibit H-6).

34. Claims 4-6 and 18-20 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of 3GPP Specification 2, or alternatively, further in view of Tiedemann (Exhibit H-6).

35. Claims 9 and 23 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of LGE Proposal or Siemens Proposal, or alternatively, further in view of Tiedemann (Exhibit H-6).

36. Claims 10 and 24 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of LGE Proposal, or alternatively, further in view of Tiedemann (Exhibit H-6).

37. Claims 14 and 28 would have been obvious over Kosugi in view of Hatta, 3GPP Specification 2, Zhang, Hamabe and/or IS-95B Specification and further in view of 3GPP Specification 2, or alternatively, further in view of Tiedemann (Exhibit H-6).

38. Claims 1-2, 6, 14-16, 20, and 28 would have been obvious over the Admitted prior art in view of any one of Hatta, Tiedemann, Dillon, Honkasalo, Zhang, Hamabe, or Siemens Proposal (Exhibit H-7).

39. Claims 3 and 17 would have been obvious over the Admitted prior art in view of any one of Hatta, Tiedemann, Dillon, Honkasalo, Zhang, Hamabe, or Siemens Proposal and further in view of 3GPP Specification or IS-95A Specification (Exhibit H-7).

40. Claims 4-5 and 18-19 would have been obvious over the Admitted prior art in view of any one of Hatta, Tiedemann, Dillon, Honkasalo, Zhang, Hamabe, or Siemens Proposal and further in view of 3GPP Specification (Exhibit H-7).

41. Claims 9 and 23 would have been obvious over the Admitted prior art in view of any one of Hatta, Tiedemann, Dillon, Honkasalo, Zhang, Hamabe, or Siemens Proposal and further in view of LGE Proposal or Siemens Proposal (Exhibit H-7).

42. Claims 10 and 24 would have been obvious over the Admitted prior art in view of any one of Hatta, Tiedemann, Dillon, Honkasalo, Zhang, Hamabe, or Siemens Proposal and further in view of LGE Proposal (Exhibit H-7).

43. Claims 1 and 15, if not anticipated, would have been obvious over Hamabe in view of the Other 3GPP Specification (Exhibit H-8).

44. Claims 2 and 17 would have been obvious over Hamabe in view of 3GPP Specification 2 (Exhibit H-8).

45. Claims 3 and 17 if not anticipated by Hamabe, in the alternative, would have been obvious over Hamabe in view of 3GPP Specification 2 (Exhibit H-8).

46. Claims 4-6 and 18-20 would have been obvious over Hamabe in view of 3GPP Specification 2 or Hatta (Exhibit H-8).

47. Claims 9 and 23, in the alternative, would have been obvious over Hamabe (Exhibit H-8).

48. Claims 10 and 24 would have been obvious over Hamabe in view of LGE Proposal or 3GPP Specification 2 (Exhibit H-8).

49. Claims 14 and 28 would have been obvious over Hamabe in view of 3GPP Specifications 1 or 3GPP Specification 2 (Exhibit H-8).

I. The ’893 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the ‘893 patent obvious, alone or in combination with other references, are discussed below

and included in Exhibit I. Exhibit I includes exemplary claim charts for the '893 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibit I include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '893 patent would have been obvious in view of the prior art references identified above. For example, Exhibit I includes exemplary claim charts that describe how the asserted claims of the '893 patent would have been obvious in view of the following references alone or in combination: the iBook, U.S. Patent No. 6,867,807 to Malloy Desormeaux, U.S. Patent No. 6,512,548 to Anderson, U.S. Patent No. 6,118,480 to Anderson et al., U.S. Patent No. 6,618,082 to Hayashi et al., Korean Unexamined Patent Publication No. 10-2004-0013792 to LG Electronics Inc. and Japanese Patent Publication No. 2005-064927.

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '893 patent asserted claims:

1. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,867,807 to Malloy Desormeaux and U.S. Patent No. 6,512,548 to Anderson, each taken alone or in combination (Exhibit I-2).

2. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,867,807 to Malloy Desormeaux and U.S. Patent No. 6,118,480 to Anderson et al., each taken alone or in combination (Exhibit I-3).

3. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,867,807 to Malloy Desormeaux and U.S. Patent No. 6,618,082 to Hayashi et al., each taken alone or in combination (Exhibit I-4).

4. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,867,807 to Malloy Desormeaux and Korean Unexamined Patent Publication No. 10-2004-0013792 to LG Electronics Inc., each taken alone or in combination (Exhibit I-5).

5. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,867,807 to Malloy Desormeaux and Japanese Patent Publication No. 2005-064927 to FujiFilm, each taken alone or in combination (Exhibit I-6).

6. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,618,082 to Hayashi et al and U.S. Patent No. 6,512,548 to Anderson, each taken alone or in combination (Exhibit I-7).

7. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,618,082 to Hayashi et al and U.S. Patent No. 6,118,480 to Anderson et al., each taken alone or in combination (Exhibit I-8).

8. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,618,082 to Hayashi et al and Korean Unexamined Patent Publication No. 10-2004-0013792 to LG Electronics Inc., each taken alone or in combination (Exhibit I-9).

9. Claims 1-4, 6-8 and 10-16 would have been obvious over U.S. Patent No. 6,618,082 to Hayashi et al and Japanese Patent Publication No. 2005-064927 to FujiFilm Corp., each taken alone or in combination (Exhibit I-10).

J. The ’460 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claim of the ‘460 patent obvious, alone or in combination with other references, are discussed below and included in Exhibits J-1 through J-7. Exhibits J-1 through J-7 include exemplary claim charts for the ‘460 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibits J-1 through J-7 include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claim of the ’460 patent would have been obvious in view of the prior art references identified above. For example, Exhibit J includes exemplary claim charts that describe how the asserted claim of the ‘460 patent would have been obvious in view of the following primary references alone or in combination:

- U.S. Patent No. 6,069,648 to Suso et al.
- U.S. Patent No. 6,167,469 to Safai et al.
- U.S. Patent No. 6,573,927 to Parulski et al.
- U.S. Patent No. 6,642,959 to Arai
- U.S. Patent No. 6,690,417 to Yoshida et al.
- U.S. Patent No. 7,173,651 to Knowles
- Nokia 9110 Communicator mobile phone, “Nokia 9110 Communicator User’s Manual,” and “Digital Camera Connectivity with Nokia 9110 Communicator”

Each primary reference teaches all or, at a minimum, the vast majority of the limitations of the '460 patent asserted claim. To the extent that any claim elements are found to be missing from the primary references, secondary references are designated for combination with the primary references, including the following:

- The IBM Simon mobile phone together with the "IBM Simon Users Manual"
- U.S. Patent No. 5,619,684 to Goodwin et al.
- U.S. Patent No. 6,009,336 to Harris et al.

Taken alone or together in the combinations set forth below, the primary prior art references include all limitations of the '460 patent asserted claim.

For example,

1. U.S. Patent No. 6,069,648 to Suso et al. alone or in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., or (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-1).

2. U.S. Patent No. 6,167,469 to Safai et al. alone or in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., or (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-2).

3. U.S. Patent No. 6,573,927 to Parulski et al. alone or in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., or (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-3).

4. U.S. Patent No. 6,642,959 to Arai alone or in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., or (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-4).

5. U.S. Patent No. 6,690,417 to Yoshida et al. in view of any one of (i) U.S. Patent No. 6,069,648 to Suso et al., (ii) U.S. Patent No. 6,167,469 to Safai et al., (iii) U.S. Patent No. 6,573,927 to Parulski et al., (iv) U.S. Patent No. 6,642,959 to Arai, and (v) the Nokia 9110 Communicator mobile phone, together with the "Nokia 9110 Communicator User's Manual" and the "Digital Camera Connectivity with Nokia 9110 Communicator," and further in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., and (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-5).

6. U.S. Patent No. 7,173,651 to Knowles in view of any one of (i) U.S. Patent No. 6,069,648 to Suso et al., (ii) U.S. Patent No. 6,167,469 to Safai et al., (iii) U.S. Patent No. 6,573,927 to Parulski et al., (iv) U.S. Patent No. 6,642,959 to Arai, and (v) the Nokia 9110 Communicator mobile phone, together with the "Nokia 9110 Communicator User's Manual" and the "Digital Camera Connectivity with Nokia 9110 Communicator," and further in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., and (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-6).

7. The Nokia 9110 Communicator mobile phone, "Nokia 9110 Communicator User's Manual," and "Digital Camera Connectivity with Nokia 9110 Communicator", alone or in view of any one of (i) the IBM Simon mobile phone together with the "IBM Simon Users Manual," (ii) U.S. Patent No. 5,619,684 to Goodwin et al., or (iii) U.S. Patent No. 6,009,336 to Harris et al. (Exhibit J-7).

K. The '941 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '941 patent obvious, alone or in combination with other references, are discussed below and included in Exhibit K. Exhibit K includes exemplary claim charts for the '941 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibit K include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art.

In particular, Apple contends that the asserted claims of the '941 patent would have been obvious in view of the prior art references identified above. For example, Exhibit K includes exemplary claim charts that describe how the asserted claims of the '941 patent would have been obvious in view of the following references alone or in combination:

1. Claims 1-2, 6-8, 10-11, and 15-17 would have been obvious over U.S. Patent No. 6,819,658 (Agarwal), alone or in view of one or more of the Mobile Communication References, the One-Bit Indicator References, and/or the Length Indicator References (Exhibit K-1).

2. Claims 4 and 13 would have been obvious over U.S. Patent No. 6,819,658 (Agarwal), alone or in view of one or more of the Mobile Communication References, the One-Bit Indicator References, the Length Indicator References, and/or the First and Last Segment Indicator References (Exhibit K-1).

3. Claims 9 and 18 would have been obvious over U.S. Patent No. 6,819,658 (Agarwal), alone or in view of one or more of the Mobile Communication References, the One-

Bit Indicator References, the Length Indicator References, and/or the Last Byte Indicator References (Exhibit K-1).

4. Claims 1-2, 6-7, and 10-11 would have been obvious over Japanese Patent Application Publication No. 2004/179917 (Fengqi), alone or in view of one or more of the One-Bit Indicator References and/or the Intermediate Segment Indicator References (Exhibit K-2).

5. Claims 4 and 13 would have been obvious over Japanese Patent Application Publication No. 2004/179917 (Fengqi), alone or in view of one or more of the One-Bit Indicator References, the Intermediate Segment Indicator References, and/or the First and Last Segment Indicator References (Exhibit K-2).

6. Claims 8 and 15-17 would have been obvious over Japanese Patent Application Publication No. 2004/179917 (Fengqi), alone or in view of one or more of the One-Bit Indicator References, the Intermediate Segment Indicator References, and/or the Reception Buffer References (Exhibit K-2).

7. Claim 9 would have been obvious over Japanese Patent Application Publication No. 2004/179917 (Fengqi), alone or in view of one or more of the One-Bit Indicator References, the Intermediate Segment Indicator References, the Reception Buffer References, and/or the Last Byte Indicator References (Exhibit K-2).

8. Claim 18 would have been obvious over Japanese Patent Application Publication No. 2004/179917 (Fengqi), alone or in view of one or more of the One-Bit Indicator References, the Intermediate Segment Indicator References, the Reception Buffer References, the Last Byte Indicator References, and/or the First and Last Segment Indicator References (Exhibit K-2).

9. Claims 1-2, 6-8, 10-11, and 15-17 would have been obvious over U.S. Patent Application Publication No. 2002/0016852 (Nishihara), alone or in view of one or more of the

Mobile Communication References, the Serial Number References, and/or the Length Indicator References (Exhibit K-3).

10. Claims 4 and 13 would have been obvious over U.S. Patent Application Publication No. 2002/0016852 (Nishihara), alone or in view of one or more of the Mobile Communication References, the Serial Number References, and/or the Length Indicator References (Exhibit K-3).

11. Claims 9 and 18 would have been obvious over U.S. Patent Application Publication No. 2002/0016852 (Nishihara), alone or in view of one or more of the Mobile Communication References, the Serial Number References, the Length Indicator References, and/or the Last Byte Indicator References (Exhibit K-3).

12. Claims 1-2, 4, and 6-7 would have been obvious over PCT Patent Application Publication No. 02/43332 (Petersen), alone or in view of one or more of the One-Bit Indicator References and/or the Serial Number References (Exhibit K-4).

13. Claims 10-11 and 13 would have been obvious over PCT Patent Application Publication No. 02/43332 (Petersen), alone or in view of one or more of the One-Bit Indicator References, the Serial Number References, and/or the Transmission Buffer References (Exhibit K-4).

14. Claims 8-9 and 15-18 would have been obvious over PCT Patent Application Publication No. 02/43332 (Petersen), alone or in view of one or more of the One-Bit Indicator References, the Serial Number References, and/or the Reception Buffer References (Exhibit K-4).

15. Claims 1-2, 6-8, and 10-11 would have been, in the alternative, obvious over L2 Considerations for VoIP Support (Qualcomm R2-021645), alone or in view of one or more of the

Alternative One-Bit Indicator References and/or the Intermediate Segment Indicator References (Exhibit K-5).

16. Claims 4, 13, and 15-17 would have been, in the alternative, obvious over L2 Considerations for VoIP Support (Qualcomm R2-021645), alone or in view of one or more of the Alternative One-Bit Indicator References, the Intermediate Segment Indicator References, and/or the First and Last Segment Indicator References (Exhibit K-5).

17. Claim 9 would have been, in the alternative, obvious over L2 Considerations for VoIP Support (Qualcomm R2-021645), alone or in view of one or more of the Alternative One-Bit Segment References, the Intermediate Segment Indicator References, and/or the Last Byte Indicator References (Exhibit K-5).

18. Claim 18 would have been, in the alternative, obvious over L2 Considerations for VoIP Support (Qualcomm R2-021645), alone or in view of one or more of the Alternative One-Bit Segment References, the Intermediate Segment Indicator References, the First and Last Segment Indicator References, and/or the Last Byte Indicator References (Exhibit K-5).

19. Claims 1-2, 6-8, and 10-11 would have been obvious over L2 Optimizations for VoIP (Qualcomm R2-050969), alone or in view of one or more of the Alternative One-Bit Indicator References and/or the Intermediate Segment Indicator References (Exhibit K-6).

20. Claims 4, 13, and 15-17 would have been obvious over L2 Optimizations for VoIP (Qualcomm R2-050969), alone or in view of one or more of the Alternative One-Bit Indicator References, the Intermediate Segment Indicator References, and/or the First and Last Segment Indicator References (Exhibit K-6).

21. Claim 9 would have been obvious over L2 Optimizations for VoIP (Qualcomm R2-050969), alone or in view of one or more of the Alternative One-Bit Segment References, the

Intermediate Segment Indicator References, and/or the Last Byte Indicator References (Exhibit K-6).

22. Claim 18 would have been obvious over L2 Optimizations for VoIP (Qualcomm R2-050969), alone or in view of one or more of the Alternative One-Bit Segment References, the Intermediate Segment Indicator References, the First and Last Segment Indicator References, and/or the Last Byte Indicator References (Exhibit K-6).

The exemplary claim charts in Exhibit K further describe the references identified by the following shorthand terms used above:

- "Mobile Communication References" include PCT Patent Application Publication No. 02/43332 (Petersen); U.S. Patent Application Publication No. 2002/0025818 (Kang); U.S. Patent No. 5,692,127 (Devon); U.S. Patent No. 6,031,833 (Fickes); U.S. Patent No. 6,373,861 (Lee); and U.S. Patent No. 6,466,795 (Ahn).

- "One-Bit Indicator References" include European Patent Application Publication No. 0662665 (Kawan); U.S. Patent Application Publication No. 2003/0156599 (Casaccia); U.S. Patent Application Publication No. 2004/0073939 (Ayyagari); U.S. Patent Application Publication No. 2008/0002713 (Fujita); U.S. Patent No. 6,088,342 (Cheng); U.S. Patent No. 7,359,403 (Rinne 2); An Intelligent Cell Checking Policy for Promoting Data Transfer Performance in Wireless ATM Networks (Sheu); Packing Multiple Higher Layer SDUs into a Single MAC PDU (IEEE 802.16.1c-01/04r0); and IEEE Standard 802.16-2004.

- "Alternative One-Bit Indicator References" include European Patent Application Publication No. 0662665 (Kawan); U.S. Patent Application Publication No. 2003/0156599 (Casaccia); U.S. Patent Application Publication No. 2004/0073939 (Ayyagari); U.S. Patent Application Publication No. 2008/0002713 (Fujita); U.S. Patent No. 6,088,342 (Cheng); U.S. Patent No. 7,359,403 (Rinne 2); An Intelligent Cell Checking Policy for Promoting Data Transfer Performance in Wireless ATM Networks (Sheu); Packing Multiple Higher Layer SDUs into a Single MAC PDU (IEEE 802.16.1c-01/04r0); RLC PDU Sizes for VoIMS (Samsung R2-041964); and IEEE Standard 802.16-2004.

- "Intermediate Segment Indicator References" include PCT Patent Application Publication No. 02/43332 (Petersen); PCT Patent Application Publication No. 04/79971 (Shvodian); European Patent Application No. 1395078 (Anderson); U.S. Patent Application Publication No. 2002/0016852 (Nishihara); U.S. Patent Application Publication No. 2003/0179712 (Kobayashi); U.S. Patent No. 5,822,321 (Petersen 2); U.S. Patent No. 6,819,658 (Agarwal); 3GPP Universal Mobile Telecomm. Sys. (UMTS)

Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.3.0; B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2; L2 Considerations for VoIP Support (R2-021645); L2 Optimizations for VoIP (Qualcomm R2-050969); Packing Multiple Higher Layer SDUs into a Single MAC PDU (IEEE 802.16.1c-01/04r0); and IEEE Standard 802.16-2004.

- "First and Last Segment Indicator References" include PCT Patent Application Publication No. 02/43332 (Petersen); PCT Patent Application Publication No. 04/79971 (Shvodian); European Patent Application No. 1395078 (Anderson); U.S. Patent Application Publication No. 2002/0016852 (Nishihara); U.S. Patent Application Publication No. 2003/0179712 (Kobayashi); U.S. Patent No. 5,822,321 (Petersen 2); U.S. Patent No. 6,819,658 (Agarwal); 3GPP Universal Mobile Telecomm. Sys. (UMTS) Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.3.0; B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2; L2 Considerations for VoIP Support (R2-021645); L2 Optimizations for VoIP (Qualcomm R2-050969); Packing Multiple Higher Layer SDUs into a Single MAC PDU (IEEE 802.16.1c-01/04r0); and IEEE Standard 802.16-2004.

- "Last Byte Indicator References" include PCT Patent Application Publication No. 02/43332 (Petersen); U.S. Patent Application Publication No. 2002/0016852 (Nishihara); U.S. Patent Application Publication No. 2002/0174276 (Jiang); U.S. Patent Application Publication No. 2006/0072494 (Matusz); U.S. Patent No. 5,822,321 (Petersen 2); U.S. Patent No. 6,819,658 (Agarwal); 3GPP Universal Mobile Telecomm. Sys. (UMTS) Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.3.0; B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2; L2 Considerations for VoIP Support (R2-021645); and L2 Optimizations for VoIP (Qualcomm R2-050969).

- "Length Indicator References" include PCT Patent Application Publication No. 02/43332 (Petersen); 3GPP Universal Mobile Telecomm. Sys. (UMTS) Radio Link Control (RLC) Protocol Specification TS 25.322 version 6.3.0; L2 Considerations for VoIP Support (R2-021645); and L2 Optimizations for VoIP (Qualcomm R2-050969).

- "Serial Number References" include PCT Patent Application Publication No. 00/21253 (Rinne); PCT Patent Application Publication No. 04/79971 (Shvodian); U.S. Patent Application Publication No. 2003/0002532 (Huo); U.S. Patent Application Publication No. 2003/0179712 (Kobayashi); U.S. Patent No. 6,819,658 (Agarwal); B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2; and IEEE Standard 802.16-2004.

- "Reception Buffer References" include PCT Patent Application Publication No. 04/79971 (Shvodian); U.S. Patent Application Publication 2002/0065093 (Yi); U.S. Patent No. 6,819,658 (Agarwal); and B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2.

- "Reception Buffer References" include U.S. Patent Application Publication 2002/0065093 (Yi); U.S. Patent No. 6,819,658 (Agarwal); and B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2.

L. The '711 Patent

In accordance with Patent L.R. 3-3(b), prior art references rendering the asserted claims of the '711 patent obvious, alone or in combination with other references, are discussed below and included in Exhibit L. Exhibit L includes exemplary claim charts for the '711 patent showing specific combinations of references, including citations to where in the references the teachings, suggestions, and motivations to combine the references are disclosed. Further reasons to combine the references identified in Exhibit L include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art. In particular, Apple contends that the asserted claims of the '711 patent would have been obvious in view of the prior art references identified above. For example, Exhibits L-1 through L-5 include exemplary claim charts that describe how the asserted claims of the '711 patent would have been obvious in view of the following references alone or in combination:

- Sony Ericsson W800i mobile phone and associated User Guide (1st Ed.)
- Sony Ericsson K700 mobile phone and associated User Guide (1st Ed.)
- Nokia 3300 mobile phone and associated Extended User's Guide
- US Patent No. 7,123,945 to Kokubo
- US Patent Publication No. 2005/0083642 to Senpuku et al.
- US Patent Publication No. 2003/0236814 to Miyasaka et al.
- US Patent Publication No. 2004/0077340 to Forsyth

- US Patent No. 6,928,648 to Wong et al.
- US Patent No. 6,526,041 to Shaffer et al.
- Qusay H. Mahmoud, "The J2ME Mobile Media API" article

To the extent Samsung may argue that one or more claim elements are not present in any single reference, combinations are provided below which would render the claim invalid as obvious under 35 U.S.C. §103. Specifically:

1. The Sony Ericsson K700 mobile phone together with the corresponding User Guide may be combined with either the Mahmoud article, Wong patent, or Shaffer patent to render the asserted claims obvious under 35 U.S.C. §103(a) (Exhibit L-3).

2. The Sony Ericsson W800i mobile phone together with the corresponding User Guide may be combined with either the Mahmoud article, Wong patent, or Shaffer patent to render the asserted claims obvious under 35 U.S.C. §103(a) (Exhibit L-1).

3. The Nokia 3300 mobile phone together with the corresponding Extended User Guide may be combined with the Miyasaka publication and/or Kokubo patent and any of the Mahmoud article, Wong patent, or Shaffer patent to render the asserted claims obvious under 35 U.S.C. §103(a) (Exhibit L-4).

4. The Kokubo patent may be combined with the Senpuku application in view of any of the Mahmoud article, Wong patent, or Shaffer patent to render the asserted claims obvious under 35 U.S.C. §103(a) (Exhibit L-2).

5. The Miysaka application and/or Kokubo patent may be combined with the Forsyth patent in view of any of the Mahmoud article, Wong patent, or Shaffer patent to render the asserted claims obvious under 35 U.S.C. §103(a) (Exhibit L-5).

Taken alone or together in the combinations set forth above, the identified prior art references include all limitations of the '711 patent asserted claims and render each of the asserted claims obvious.

Motivations to Combine

Apple believes that no showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts. There was a reason to make each combination; each combination of art would have produced no unexpected results; and each combination at most would simply represent a known alternative to one of ordinary sill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. Similarly, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one," *id.* at 417, and thus "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.* Indeed, the Supreme Court has held that a person of ordinary skill is "a person of creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420-21.

Nevertheless, in accordance with the Patent Local Rules, and in addition to the information contained elsewhere in these contentions, Apple hereby identifies below additional motivations and reasons to combine the cited art.

In order to determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can "look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art." *Id.* at 418. For example, obviousness can be demonstrated by showing "there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *Id.* at 420. "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* Common sense also teaches that "familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as each of the Patents-In-Suit was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

A. The '604 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim

because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '604 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit A. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit A, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

As stated above, each of Bömer and TR.101.146 v3.0.0 anticipate the asserted claims. To the extent Bömer and TR.101.146 v3.0.0 are found to not anticipate any asserted claim, they render the claims obvious standing alone or when combined with knowledge of the ordinary artisan and/or the nature of the problem to be solved. To the extent either of these references is found to lack particular claim elements, such elements would have represented mere obvious modifications.

To the extent any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars are found to lack an explicit teaching of the "processor" element of claims 1-4, 6, 18, 20 and 22, the ordinary artisan would understand use of a processor to be inherent in those references. Also, it would have been obvious to use the processor disclosed in any of U.S.

Pat. No. 5,014,314; U.S. Pat. No. 5,103,445; U.S. Pat. No. 5,109,403; U.S. Pat. No. 5,386,588; or U.S. Pat. No. 5,455,823 in any the systems disclosed in Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars. All of these references are in the same field of communication systems and use of processors in such systems is ubiquitous. Accordingly, use of such a processor in Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars would provide no unexpected results and required nothing more than ordinary skill.

To the extent that any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars is found to lack an explicit teaching of the "decoder/decoding" limitations of claims 17-21, use of a decoder in those references would have been obvious to the ordinary artisan. It is well understood that encoding and transmitting data is useless unless a receiver is able to receive and decode the data. Accordingly, any teaching of encoding necessarily implies the existence of a corresponding decoder. Therefore even if any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, and Willars lack an explicit teaching of a receiver or a decoder required by claims 17-21, the ordinary artisan would have understood that the systems disclosed in those references were intended to function with a corresponding "decoder," "frame reconstructor," etc. Also, U.S. Pat. No. 5,109,390, U.S. Pat. No. 5,907,582, and Bömer, explicitly teach an encoder/transmitter and the corresponding decoder/receiver. It would have been obvious to incorporate the teachings of those references into any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars to provide any missing decoder, decoding, frame reconstructor, or segmenting limitations of claims 17-21, as those limitations are nothing more than the corresponding operation found in the encoder/transmitter disclosed in those references.

To the extent that any of Telemetry, ANSI T1.413-1995, Almulhem, or Willars is found to lack an explicit teaching of turbo encoding or decoding, use of turbo encoding or decoding would have been obvious in view of the encoding and decoding taught on those references. Turbo coding has been well known since 1993. At the time of the '604 patent, use of turbo coding was well known and it was nothing more than a routine substitution for one of ordinary skill to replace one type of encoder or decoder with a turbo encoder or decoder. Use of turbo encoding, e.g., in place of Reed Solomon encoding provides no unexpected results and requires nothing more than ordinary skill. Also, turbo encoding is explicitly taught in Bomer, Valenti, Berrou et al., TR.101.146 v3.0.0, and U.S. Pat. No. 5,907,582 ("Yi"). It would have required no more than routine skill to incorporate the turbo coding of those references into any of Telemetry, ANSI T1.413-1995, Almulhem, or Willars.

To the extent that any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars is found to lack an explicit teaching of the "message information" limitations of claims 17-21, use of the required message information in those references would have been obvious to the ordinary artisan. It is well understood that receivers can benefit from receiving information from the transmitter describing parameters of data to be transmitted. To the extent such a teaching is explicitly lacking in any of these references, no more than ordinary skill would have been required to add any lacking message information limitations to them to provide the benefit of informing the receiver about parameters of the transmission, as was well known. Also, U.S. Pat. No. 5,742,588, U.S. Pat. No. 5,666,348, ANSI T1.413-1995, Almulhem, and Willars explicitly teach such message information. It would have been obvious to incorporate the teaching of message information from those references into any of Bömer, TR.101.146 v3.0.0, Telemetry, ANSI T1.413-1995, Almulhem, or Willars to provide the benefit

of informing the receiver about parameters of the transmission. Doing so would have caused no unexpected results and required nothing more than routine skill.

Finally, all of the references identified in charts A-1 to A-12 are in the same field of communication systems. To the extent that any limitation is missing in any of these references, it would have been obvious to combine any of these references together to provide the allegedly missing limitation.

B. The '410 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '410 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit B. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit B, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

As stated above, each of Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 anticipate the asserted claims. To the extent Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 are found to not anticipate any asserted claim, they render the claims obvious standing alone or when combined with knowledge of the ordinary artisan and/or the nature of the problem to be solved. To the extent either of these references is found to lack particular claim elements, such elements would have represented mere obvious modifications.

To the extent any of Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 are found to lack an explicit teaching of the "demultiplexer" element of the asserted claims, use of a demultiplexer would have been obvious to the ordinary artisan. Also, it would have been obvious to use the demultiplexer disclosed in any of U.S. Patent No. 6,553,539, U.S. Patent No. 6,704,368, or U.S. Patent No. 6,304,995 in any of the systems disclosed in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0. All of these references are in the same field of communication systems and the use of demultiplexers for separating streams of data is ubiquitous in such systems. Accordingly, use of such a demultiplexer in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0, would provide no unexpected results and would require nothing more than ordinary skill.

To the extent any of Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 are found to lack an explicit teaching of the "memory" element of claims 8, 9, 21, and 39, the ordinary artisan would understand use of a memory to be inherent in those references. Also, it would have been obvious to use the memory disclosed in any of U.S. Patent No. 6,370,670 or Samsung919 in any of the systems disclosed in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0. All of these references are in the same field of communication systems and use of memory in such systems is ubiquitous. Accordingly, use of such a memory in Nortel467,

Samsung919, Samsung948 or TS 25.212v2.0.0, would provide no unexpected results and would require nothing more than ordinary skill.

To the extent any of Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 are found to lack an explicit teaching of the "controller" element of claims 8, 9, 17, and 35, the ordinary artisan would understand use of a controller to be inherent in those references. Also, it would have been obvious to use the controller disclosed in any of U.S. Patent No. 6,370,670 or Samsung919 in any of the systems disclosed in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0. All of these references are in the same field of communication systems, and teach the use of a central processor for controlling or coordinating various components of a communication device based on a variety of factors. Accordingly, use of such a controller in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0, would provide no unexpected results and would require nothing more than ordinary skill.

To the extent any of Nortel467, Samsung919, Samsung948 and TS 25.212v2.0.0 are found to lack an explicit teaching of the "filler bits" element of claims 10, 50, 54, and 57, use of filler bits would have been obvious to the ordinary artisan. Also, it would have been obvious to use the filler bits disclosed in TS 25.212v2.0.0 in any of the systems disclosed in Nortel467, Samsung919, Samsung948. All of these references are in the same field of communication systems, and indeed they all relate to the 3GPP TS 25.212 standard. Accordingly, use of filler bits in Nortel467, Samsung919, Samsung948 or TS 25.212v2.0.0, would provide no unexpected results and would require nothing more than ordinary skill.

Finally, all of the references identified in charts B-1 to B-8 are in the same field of communication systems. To the extent that any limitation is missing in any of these references, it

would have been obvious to combine any of these references together to provide the allegedly missing limitation.

C. The ’055 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the ‘604 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibits C-1 through C-9. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibits C-1 through C-9, to meet the limitations of the asserted claims. As such, Apple’s identification of exemplary combinations is without limitation to Apple’s identifying other invalidating combinations as appropriate.

The primary prior art references--the GB ’965 publication, the JP ‘385 application, the ’316 patent, the WO ’927 application, the JP ‘448 application, the Nokia 9000i Manual, the Samsung SCH-370 Manual, the Apple Message Pad 2100 Manual, and the KR ‘728 application--include all or, at a minimum, the vast majority of the limitations of the ’055 patent asserted

claims. To the extent it is found that any of the JP '385 application, the GB '965 publication, the WO '927 application, the JP '448 application, the Nokia 9000i Manual, the Samsung SCH-370 Manual, the Apple Message Pad 2100 Manual, or the KR '728 application do not teach "receiving a reference time from a signal received from a remote system," other prior art including the '316 patent, the '155 patent, the '218 patent, the '050 patent, the WO '842 application, the EP '199 application, the '444 patent, and the TIA IS-95-A Standard taught this limitation. To the extent any of the '316 patent, the WO '927 application, the JP '448 application, the Nokia 9000i Manual, the Samsung SCH-370 Manual, the Apple Message Pad 2100 Manual, or the KR '728 application are found to not teach the claimed algorithm for "automatically calculating a local time of said selected city, said local time being based on a difference between the GMT of said selected city and the GMT of a present location of said apparatus, said reference time and said elapsed time," other prior art including the GB '965 and JP '385 references taught this limitation. Apple contends that it would have been obvious to combine the known elements of receiving a reference time from a signal received from a remote system and use that signal, together with a database of known world-time offsets, to calculate automatically the time in different cities based on the difference between the GMT offsets / UTC data of said selected city and the GMT offsets / UTC data of a present location.

Equipping the known references—including world clock devices with databases containing world time information and processors to automatically calculate world time—with means to receive a reference time from a signal received from a remote system would have been the result of combining prior art elements according to known methods to yield predictable results, the simple substitution of one known element (reference time provided by remote system / network) for another (user inputs time) to obtain predictable results, the use of known

techniques (receiving a reference time provided by a remote system / network) to improve similar devices in the same way, and applying a known technique to a known device. Mobile phones with world clock functions were known, including the Nokia Communicator 9000i and the Samsung CDMA Portable Cellular Telephone SCH-370. The ’316 patent, the ‘155 patent; the ’218 patent, the ’050 patent, the WO ‘842 application, the EP ’199 application, the ’444 patent, and the TIA IS-95-A Standard, among many other references, taught the ability to receive a reference time signal from a remote system, including a cellular network system. One of ordinary skill would have been motivated to provide a mobile phone capable of receiving a reference time provided by a remote system to provide additional functionality that was already known in the area of portable wireless communication devices.

Similarly, methods and apparatus for selecting a city, geographic location, or time zone and using time and GMT / UTC offset information stored in a database or memory together with an elapsed time in a local city to automatically calculate a time in the selected city was known in the art. To the extent Samsung contends the algorithm listed in the ’055 patent for calculating time confers patentability, this algorithm was taught by at least the GB ’965 publication and the JP ’385 application. It would have been obvious to one of skill in the art to combine the method for calculating time disclosed in the GB ’965 publication and the JP ’385 application with any one of a number of prior art devices that taught calculating world times and/or receiving a reference time from a signal received from a remote system. Such a combination would have been the result of combining prior art elements according to known methods to yield predictable results, the simple substitution of one known element (the “algorithm” for calculating time in a different time zone disclosed in the GB ’965 publication or the JP ’385 application) for another (any other “algorithm” for calculating time in a different time zone) to obtain predictable results.

Furthermore, the additional features recited in the asserted claims—*i.e.*, an apparatus for displaying time; storing Greenwich mean time (GMT) information for each of a plurality of cities; receiving a reference time from a signal received from a remote system; counting a duration of time that elapses from when said reference time is acquired; means for selecting at least one of said plurality of cities and automatically calculating a local time of said selected city, said local time being based on a difference between the GMT of said selected city and the GMT of a present location of said apparatus, said reference time and said elapsed time; and outputting or displaying said local time; mobile telephones; CDMA (Code Division Multiple Access) cellular systems; displaying and scrolling through a list to select an input—were also taught in the prior art listed above, and in any event, represent mere design choices that would have been obvious to a person of ordinary skill in the art. As the Supreme Court made clear in *KSR*, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417; *see also id.* at 419 ("[t]he obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation") and *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1260 (Fed. Cir. 2007) (noting that "'[a] person of ordinary skill is also a person of ordinary creativity'" (quoting *KSR*, 550 U.S. at 421)). These additional features would be well within the skill set of a person of ordinary skill in the art, and, would therefore have been merely the result of ordinary design efforts.

Under the standard set forth in *KSR* and the Federal Circuit's recent decisions, the asserted claims of the '055 patent (which issued ***before*** *KSR* was decided) are obvious.

These combinations reflect Apple's present understanding of the potential scope of the claims that Samsung appears to be advocating, and should not be seen as Apple's acquiescence to Samsung's interpretation of the asserted claims. Moreover, these examples are illustrative of the multitude of potential combinations of the prior art, and are not exhaustive. Apple reserves the right to rely on other combinations of the prior art, including other combinations of the prior art references identified above with each other and/or with the prior art references disclosed in the prosecution history of the '055 patent.

D. The '871 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '871 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibits D-1 through D-11. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibits D-1 through D-11, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary

combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

For example, the '871 patent claims are directed to devices and data displaying methods, including methods comprising "determining whether a window division selection has been selected," "determining what kind of function is selected," "dividing the one display window into first and second display windows," "displaying the character message to be transmitted on the first display window," and "displaying data corresponding to the selected function on the second display window." However, by January 2001, the date Korean priority application KR 2002-3248 was filed, it was well-known for cell phones and PDAs to have sophisticated LCD displays (*see e.g.*, Frederiksen col.2, ll.13-14 ("At present, the LCD displays are the preferred type of displays used for e.g. phones"); Sim col.2, ll.23-24 ("A display 60 usually comprises an LCD to display the characters and numbers entered by the user")), processors (*see e.g.*, Frederiksen col.5, ll.10-23; Kraft col.4, ll.27-30), and memories (*see e.g.*, Sim col.2, ll.12-22; Otsuka col.5, ll.24-30), and to support wireless messaging (*see generally* Frederiksen, Ishigaki, Kraft, Komori, Otsuka, and Sim). Moreover, it was a known goal (and necessity) for cell phones to support multi-tasking. (*See e.g.*, Frederiksen col.1, ll.7-17 ("The UI of a hand portable phones for cellular or cordless systems does not just support the call handling alone. In the recent generations of hand portable phones more and more new applications have been integrated into the phones. … The number of operations that may be performed by a hand portable phone continues to increase."). Apple contends that, under the standard articulated by the Supreme Court in *KSR*, it would have been obvious to generate the claimed devices and/or performed the claimed methods in view of the prior art cited above.

These combinations reflect Apple's present understanding of the potential scope of the claims that Samsung appears to be advocating, and should not be seen as Apple's acquiescence to Samsung's interpretation of the asserted claims. Moreover, these examples are illustrative of the multitude of potential combinations of the prior art, and are not exhaustive. Apple reserves the right to rely on other combinations of the prior art, including other combinations of the prior art references identified above with each other and/or with the prior art references disclosed in the prosecution history of the '871 patent.

Any of the primary references identified above provide most or all claim elements of the '871 patent asserted claims. For example, the Sim patent discloses all claim elements of the '871 patent asserted claims 9-11 and 20. To the extent the Sim patent is found to lack an explicit teaching of user selection of display window division "while the first character message to be transmitted is being displayed," Apple contends it would have been obvious to one skilled at the art in January 2002 to combine the teachings of Sim with those of any number of references underscoring the importance of multi-tasking on mobile devices, and teaching user selection of a request function while in the process of drawing up a character message on a portable telephone device, and a resulting change in the device's display. Such references include, but are not limited to, the Kraft patent, the Otsuka patent, the Frederiksen patent, and the Duarte patent. Furthermore, Sim, when combined with the teachings of the Otsuka patent and/or the Frederiksen patent, would have rendered claim 5 of the '871 patent obvious to the ordinary artisan.

In addition, the Otsuka patent discloses all claim elements of the '871 patent asserted claims. To the extent the Otsuka patent is found to lack an explicit teaching of "determining whether a window division function for dividing the display window is selected" and/or

"dividing the one display window into first and second display windows," Apple contends it would have been obvious to one skilled at the art in January 2002 to combine the teachings of Otsuka with those of any number of references teaching such functionality, including, but not limited to, the following: the Frederiksen patent; the Sim patent; the Ishigaki patent; the Komori JP patent; the Cohen article; the Petersen Linux book; and the Reichard UNIX book. For instance, the Frederiksen patent, the Sim patent, the Ishigaki patent, and the Komori JP patent each teach dividing a display window into first and second display windows in response to user selection on a portable telephone device, as well as implementing such division in the context of character messaging. Moreover, user-controlled dividing of windows was well-known on desktop computers far prior to the '871 patent, as demonstrated by the Cohen article, dated May 1986. It was also well-known for early desktop messaging interfaces to employ divided windows, including, as shown in the Petersen Linux book and the Reichard UNIX book, messaging windows dynamically divided on a user's request. Because early cell phones, such as that claimed in the '871, were miniature computers, complete with displays, processors, and memory, one of skill in the art in January 2002 would have been motivated to adapt cell phone's display window match user expectations from computers with large screens. As the Cohen article recognizes, it was known as early as 1986 that certain split windowing schemes were particularly useful in "systems with small screens." *See* Cohen article at 35-36. Accordingly, Apple contends it would have been obvious to the ordinary artisan to employ desktop divided window schemes for use on cell phones and/or PDAs, and to implement them in conjunction with texting and other multi-tasking functions.

To the extent that a multi-tasking icon bar that appears on the user's request is found to satisfy the limitations of the '871 patent asserted claims (as asserted by Samsung in its L.P.R. 3-

1(a) Disclosures, Ex. D), such multi-tasking icon bars were known to those skilled in the art in January 2002. As described in further detail in Exhibits D-6 and D-11, they are readily found in prior art to the '871 patent, including the following representative references: the Hidekazu JP patent; the Mac OS X book; the Underdahl Windows 2000 book; and the Oran patent. For instance, the Mac OS X book discloses that it was well-known, including in Apple prior art products, to have a multi-tasking icon bar that appears upon a user's request. The Oran patent and the Underdahl Windows 2000 book show that Microsoft incorporated similar functionality into its prior art multi-tasking operating systems. Finally, the Hidekazu JP patent provides an example of a prior art patent reference that teaches a multi-tasking menu on a cellular phone/PDA that appears in a portion of the display screen upon a user's request, including while the user is in the process of drawing up character messages to be transmitted. Therefore, under the standard asserted by the Supreme Court in *KSR*, Apple contends it would have been obvious to the ordinary artisan to put the multi-tasking bars disclosed in the aforementioned references on portable phone devices, including those devices disclosed in the Sim and Otsuka patents, and use it to achieve multi-tasking while messaging, including to show a search selection screen.

E. The '792 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the

priority date of the '792 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit E. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit E, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

As stated above, each of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi anticipate the asserted claims. To the extent Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi are found to not anticipate any asserted claim, they render the claims obvious standing alone or when combined with knowledge of the ordinary artisan and/or the nature of the problem to be solved. To the extent any of these references is found to lack particular claim elements, such elements would have represented mere obvious modifications.

To the extent any of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi are found to lack an explicit teaching of the "demodulator/deinterleaver/decoder" limitations, use of a "demodulator/deinterleaver/decoder" in those references would have been obvious to the ordinary artisan. It is well understood that encoding and transmitting data is useless unless a receiver is able to receive and decode the data. Accordingly, any teaching of encoding necessarily implies the existence of a corresponding decoder. Therefore even if any of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi disclose a transmitter but lack an explicit teaching of a receiver required by claims 11-16, the ordinary artisan would have understood that the systems disclosed in those references were intended to function with corresponding

demodulators, deinterleavers, and decoders. Also, Bömer, Jeong '734, Jeong '357, Le Goff, U.S. Pat. No. 5,109,390 (Gilhousen), and U.S. Pat. No. 5,907,582 (Yi) explicitly teach an encoder/transmitter and the corresponding decoder/receiver. It would have been obvious to incorporate the teachings of those references into any of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi to provide any missing demodulator, deinterleaver, or decoder limitations, as those limitations are nothing more than the corresponding operation found in the encoder/transmitter disclosed in those references. All of the references are in the same field of communication systems. The ordinary artisan would have been motivated to make such a combination to provide the receiver, without which the disclosed transmitter would be useless.

To the extent any of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi are found to lack an explicit teaching of writing into an interleaver on a row-by-row basis, use of such writing would have been obvious to the ordinary artisan. Interleaving by writing on a row-by-row basis and reading on a column-by-column basis, and its reverse, are notoriously well known. Accordingly, to the extent any references are silent as to the interleaving technique, that is the technique one of ordinary skill would have presumed was used. Also, TS 25.212 v2.0.0, Stewart and Li explicitly teach such interleaving. It would have been obvious to incorporate the teachings of those references into any of Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi to provide any missing details of the interleaving algorithm. Incorporation of an interleaving technique into a reference that discloses an interleaver, but not the specific interleaving technique, is obvious. All of the references are in the same field of communication systems. Siemens and TS 25.212 v2.0.0 both relate to the same communication standard. Use of such interleaving in Siemens, Stewart, Jeong '734, Jeong '357, and Duman-Salehi would provide no unexpected results and would require nothing more than ordinary skill.

Similarly, to the extent any of Siemens, Stewart, Jeong ‘734, Jeong ‘357, and Duman-Salehi are found to lack an explicit teaching of inter-column permutation, use of such permutation would have been obvious to the ordinary artisan. Inter-column permutation was well known before the ‘792 patent. Also, Stewart and Li explicitly teach such inter-column permutation. It would have been obvious to incorporate the teachings of those references into any of Siemens, Stewart, Jeong ‘734, Jeong ‘357, and Duman-Salehi to provide any missing details regarding inter-column permutation. All of the references are in the same field of communication systems. Use of such permutation in Siemens, Stewart, Jeong ‘734, Jeong ‘357, and Duman-Salehi would provide no unexpected results and would require nothing more than ordinary skill. The ordinary artisan would have been motivated to make such a combination to provide improved interleaving.

To the extent any of Siemens, Stewart, Jeong ‘734, Jeong ‘357, and Duman-Salehi are found to lack an explicit teaching of writing systematic bits next to, or prior to, parity bits in a single interleaver, it would have been obvious to write the bits in that fashion. Also, Jeong ‘734, Jeong ‘357, and Stewart teach writing the bits in that way. It would have been obvious to incorporate the teachings of those references into any of Siemens, Stewart, Jeong ‘734, Jeong ‘357, and Duman-Salehi to provide any missing details regarding the particular manner in which bits are written into the interleavers.

Finally, all of the references identified in charts E-1 to E-10 are in the same field of communication systems. To the extent that any limitation is missing in any of these references, it would have been obvious to combine any of these references together to provide the allegedly missing limitation.

F. The ‘867 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '867 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit F. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit F, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

As stated above, both of Ericsson724 and TS 25.213v2.1.0 anticipate the asserted claims of the '867 patent. To the extent Ericsson724 or TS 25.213v2.1.0 are found to not anticipate any asserted claim, they render the claims obvious standing alone or when combined with knowledge of the ordinary artisan and/or the nature of the problem to be solved. To the extent either of these references is found to lack particular claim elements, such elements would have represented mere obvious modifications.

To the extent either of Ericsson724 or TS 25.213v2.1.0 are found to lack an explicit teaching of the "shifted first m-sequence" element of the asserted claims or the "delaying"

element of claim 30, these elements would have been obvious to the ordinary artisan. This was confirmed by Samsung (see TSGR1#7(99)b58 at 2, "Initialization is of course easy, but we don't want to have separate generators, so initialization for second generator is not necessary. Using maskng function is pretty well known technic for this case" [sic]). Also, it would have been obvious to use shifting of m-sequences as taught by U.S. Patent No. 4,320,513 and U.S. Patent No. 6,728,305 in either of the systems disclosed in Ericsson724 or TS 25.213v2.1.0. All of these references are in the same field of code generation, and both U.S. Patent No. 4,320,513 and U.S. Patent No. 6,728,305 disclose systems and methods for generating shifted m-sequences – by, for example, masking a shift register – in order to achieve a desired delay. Accordingly, use of these techniques in Ericsson724 or TS 25.213v2.1.0 would provide no unexpected results and would require nothing more than ordinary skill.

To the extent either of Ericsson724 or TS 25.213v2.1.0 are found to lack an explicit teaching of the limitations of the asserted claims that involve the enumeration of Gold codes and/or scrambling codes (e.g., "generating a ((K-1)*M+K)th Gold code as a Kth primary scrambling code"), these elements would have been obvious to the ordinary artisan. Also, it would have been obvious to combine the enumeration of codes as taught by Nagle, NAVSTAR, and Sarwate with either of the systems disclosed in Ericsson724 or TS 25.213v2.1.0. All of these references are in the same field of code generation, and Nagle, NAVSTAR, and Sarwate teach the use of numbering schemes for enumerating Gold codes. Accordingly, use of these techniques in Ericsson724 or TS 25.213v2.1.0 would provide no unexpected results and would require nothing more than ordinary skill.

To the extent either of Ericsson724 or TS 25.213v2.1.0 are found to lack an explicit teaching of the limitations of the asserted claims that involve secondary scrambling codes, these

elements would have been obvious to the ordinary artisan. Also, it would have been obvious to combine the INMARSAT C/A codes as taught by Nagle with either of the systems disclosed in Ericsson724 or TS 25.213v2.1.0. All of these references are in the same field of code generation, and Nagle teaches generating Gold codes that constitute a secondary group of codes. Accordingly, use of these teachings in Ericsson724 or TS 25.213v2.1.0 would provide no unexpected results and would require nothing more than ordinary skill.

Finally, all of the references identified in charts F-1 to F-4 are in the same field of code generation. To the extent that any limitation is missing in any of these references, it would have been obvious to combine any of these references together to provide the allegedly missing limitation.

G. The ’001 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the ‘001 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit G. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art

references, including any combination of those identified in Exhibit G, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

The basic structure of the system shown in the '001 patent, including multiple processing paths with interleavers, segmentation, and rate matching; multiplexed together in a multiplexer; and then segmented into physical channels was known from prior versions of 3GPP specifications, including prior versions of TS 25.212 and 25.222, and other earlier documents such as (1) ARIB specification, January 1999, page 30; (2) Narvinger email, January 28, 1999, including Ericsson, "Transport Channel Multiplexing, 01-28-99, pp. 5-7, Figure 4-5 and descriptions thereof, and Section 4; (3) Okamura email of January 29, 1999 with document "Ad Hoc 4 Transport Channel Multiplexing" showing radio frame segmentation; (4) TSGR1#2(99)103 (R1-99103), showing segmentation as a result of interleaving, with resulting blocks shown as C0 up to C8; and (5) Narvinger email, March 10, 1999, including "Two Step Interleaving," FIGS. 2-4. To the extent that certain prior versions of TS 25.212 and 25.222 did not expressly show radio frame segmentation, such segmentation was understood and inherently after the interleaver and before the rate matching and multiplexing as of March 1999, as indicated by the listed documents above.

To the extent not explicitly or inherently shown, it would have been obvious to segment a data frame into radio frames based on the use of the number of 10 msec radio frames (n), such that the N bits in a data frame is divided into K radio frames, each with n bits. The prior art showed interleavers with n columns. To the extent that it is not inherent or explicit, it would have been obvious to use the n columns for segmentation because the data was already divided, and would provide data in radio frames as required by the rate matcher using NC bits from each

of the k radio frames (as required in 25.212, Section 4.2.6, and TS 25.222, Section 6.2.5). See, also, for example, the following "Radio Frame Segmentation References": (1) Virtanen email, March 16, 1999; (2) TSGR1#2(99)103 (R1-99103), showing segmentation as a result of interleaving, with resulting blocks shown as C0 up to C8; (3) TSGR1#2(99)055 (R1-99055), p. 11; (4) Okamura email March 4, 1999; (5) Narvinger email, January 28, 1999, including Ericsson, "Transport Channel Multiplexing, January 29, 1999, pp. 5-7, Figure 4-5 and descriptions thereof, and Section 4; (6) Okumua email, March 18, 1999 regarding non-integer result leaving a fractional bit; (7) TSGR1#4(99)349, Fig. 2 and Section 3.6; (8) TS 25.222 v1.1.0, Section 6.2.4; (9) TSGR#4(99)323, Sections 4.2.4 and 4.26; (10) Kim email, August 26, 1999; (11) Kiran T email, August 26, 1999; and (12) Narvinger email, March 10, 1999, including "Two Step Interleaving," FIGS. 2-4. It would have been obvious to perform segmentation with interleaving, as such an approach would constitute using a known method in a known way to yield predictable results. Interleaving and segmenting or demultiplexing are part of the general knowledge in the field. Further, there are a limited number of ways to segment, and they would have been known and within the general knowledge in the field. Moreover, with rows and columns in an interleaver, it would have been common sense in the field to segment in this manner.

To the extent not explicitly shown, it was generally known and would have been obvious that the segmenting could result in a non-zero remainder and that using filler bits, sometimes referred to in the prior art as "padding bits" or "dummy bits," when segmenting a larger block of data into smaller blocks of data, in order to equalize the sizes of resulting blocks of data. Filler bits are part of the general knowledge and skill in the field. Others in 3GPP recognized the

possible need to address uneven bits as a result of segmentation; e.g., Okumura email, March 18, 1999 regarding non-integer result leaving a fractional bit; SGR1#4(99)349, Section 3.6.

Examples of teaching the use of filler bits in conjunction with segmentation include the following Filler Bit References: (1) the Moulsley, March 16, 1999 email in TSG RAN Working group 1, which states that a way to handle an arbitrary number of bits includes "adjusting the number of bits in the channel coding" or "adding some dummy bits"; (2) TS 25.212 V.2, the description of code block segmentation at Section 4.2.3.1.2 discloses providing filler bits to ensure that the size of the data all have code blocks of length C; (3) in the EP '675 Opposition, Samsung's letter of December 21, 2007, including representations to the European Patent Office including representing at page 9 of 34, that the use of filler bits "is a natural and conventional approach which the skilled person would take, as he is familiar with the general use of filler bits"; (5) the generally known use of padding or filler when needed for segmentation as shown in Agarwal, U.S. Patent No. 6,819,658 ; (6) the generally known use of padding or filler when needed for segmentation as shown in Petersen, WO 02/43332 ; (7) WO 99/07076, pp. 7-8; and (8) WO 94/14254, pp. 6-8 and Figs. 1-2; and (9) general knowledge relating to filler bits and segmentation.

Thus, for any reference that discloses segmenting and/or interleaving, it would have been obvious to combine with any one or more of the references above in case the result of the segmentation does not result in segments of equal size. Such combinations would involve the use of known methods to achieve predictable results. Moreover, there are a limited number of options for handling segmentation. When segmenting bits into groups of bits, the resulting number of bits can have a remainder of zero, or not a remainder of zero. If there is a remainder

of zero, either filler bits can be used, or not used. Therefore, it would at least have been obvious to try the use of filler bits in a system where segmentation could produce unequal results.

With regard to physical channel segmentation, the use of such segmentation or demultiplexing was in the prior art and was part of the general knowledge and skill Methods for segmenting were generally well known in the art prior to June 25, 1999. For example: (1) pre-June 25, 1999 versions of TS 25.212, "Physical Channel Segmentation," indicated that "multiple physical channels [ ] are transmitted in parallel during 10 ms intervals"; (2) Ovesjo email, June 23, 1999 states that the rules for radio frame segmentation and physical channel segmentation are "simple" and "straightforward"; (3) the generally known use of segmenting by providing a first group of bits into a first data unit and a group of bits into a second data unit as shown, for example, in Agarwal, U.S. Patent No. 6,819,658 and Petersen, WO 02/43332; (4) Herzberger, U.S. Patent No. 5,177,742, 2:32-2:57, Fig. 2; (5) Willars, U.S. Patent No. 5,831,978, Figs. 3-5, and 4:38-5:37; (6) Ferguson, U.S. Patent No. 7,593,380, Figs. 3-6 and 6:62-9:23; (7) Jou, U.S. Patent No. 6,389,000, Fig. 1 and 2:27-2:60; (8) Amalfitano, U.S. Patent No. 6,236,647, Figs. 2-5, 6:19-61; (9) Kanerva, U.S. Patent No. 5,793,744, Figs. 6-7, 7:23-11:63; (10) Narvinger email, March 10, 1999, including attachment at Figures 3-5; (11) Roobol, U.S. Patent No. 6,363,058; (12) Dahlman, U.S. Patent No. 5,896,368, Fig. 2A-2C, 5:45-4:49; (13) Watanabe, U.S. Patent No. 6,307,850, Figs. 2-4, 3:14-4:64; and (14) general knowledge of segmentation and demultiplexing.

Segmenting by providing a first group of bits to a first channel and a second group of bits to a second channel would have been an obvious way to achieve the result identified in the prior version of TS 25.212, "Physical Channel Segmentation." With the prior version of TS 25.212, "Physical Channel Segmentation," indicating that "multiple physical channels [ ] are transmitted

in parallel during 10 ms intervals," there is a limited number of options for segmenting that input data into a plurality of outputs. It would have been obvious as this is a way that data is often segmented, and would have the predictable result of dividing the data into equal pieces. While there may be other ways, it would at least have been obvious to try to use any of these methods.

H. The '516 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '516 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit H. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit H, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

The admitted prior art and the prior art versions of the 3GPP specifications teach that a user equipment (UE) on an uplink can reduce the power of its data channels equally in case the power exceeds a maximum. It was also known that 3GPP was adding the ability to use also high

speed uplink data channels with HARQ. The addition of such channels was also known in 3GPP2 specifications, where they were referred to as supplemental channels.

For references describing data channels, it would have been obvious to use HARQ even if not stated. HARQ technology was generally well known in the art prior to June 9, 2004. *See e.g.*, 3GPP Specification 1 (3GPP TS 25.896 Release 6) and Tiedemann (US 2002/0154610). It was well known, for instance, that while HARQ improves accuracy of data transmission, it can introduce some added delays in part because it requires retransmission of data (e.g., data frames) if the initial transmission is not received successful. As indicated in the 3GPP Specification and Dillon (US 2002/0137520), it was also known that HARQ was desirable for certain types of data, such as cases in which reliability is a priority, and that not using HARQ or other retransmission approach was desirable for other types of data, such as packets carrying voice traffic, where latency and delay are undesirable. It would have been obvious to provide HARQ to provide additional reliability for data channels. This use of HARQ for this reason was well known.

As indicated in LGE Proposal (R1-040022 3GPP TSG RAN WG1 Ad Hoc Meeting minute), it was known that with HARQ, transmission power can be reduced to an appropriate level for retransmission in E-DCH so that the uplink interference can be reduced and Node B scheduling can be made more efficient. In other words, less power can be used, and this power reduction can be advantageous to reduce interference. Reducing power is a well-known concern in CDMA technologies.

Honkasalo (US 6510148) and Kosugi (US 2001/0011011) teach a CDMA cellular system in which multiple, parallel uplink data channels, such as a fundamental code channel (R-FCH) and one or more supplemental code channels (R-SCH), are used to support a range of different services (e.g., speech service and other services requiring reliable, high speed data transmission).

Neither Honkasalo nor Kosugi explicitly refers to the use of HARQ, but Tiedemann teaches the use of HARQ for R-SCHs and Dillon teaches that R-FCH is used to transmit voice data and R-SCH is used to transmit other types of data. 3GPP Specification also teaches the use of HARQ for enhanced-uplink dedicated channels (E-DCH) in a WCDMA cellular system, wherein E-DCH is the WCDMA counterpart of R-SCH for CDMA. Ones of ordinary skill in the art would have been motivate to use known technique (HARQ) for Honkasalo or Kosugi's R-SCH for the known advantage of enhancing transmission accuracy. Therefore, it would have been obvious to ones of ordinary skill in the art to combine Honkasalo or Kosugi with Tiedemann, Dillon, or 3GPP Specification for the predictable results.

Hatta (JP 2002-190774) teaches using multiple, parallel data channels in a CDMA mobile cellular system. Hatta also teaches reducing the transmit power for some channels carrying user data while maintaining a constant transmit power for other channels in order to keep the total transmit power below the maximum allowed power, but without degrading the transmit power of the "other channels" carrying delay-sensitive data that is important for conducting communication. It would have been obvious for ones of ordinary skill to combine Hatta and Tiedemann, Dillon, LGE Proposal or 3GPP Specification, because those of ordinary skill would have been motivated to use a known technique (HARQ) for the "some channels" of Hatta for a known advantage of enhancing transmission accuracy of the user data and/or efficient scheduling and reduced uplink interference for retransmission.

In cases where there are different channels, it would have been obvious to reduce the power on some channels and not others and to prioritize. Because multiple devices transmit across common spectrum of frequencies in a CDMA-based system, controlling the transmission power is useful for preventing multiple transmissions from interfering with one another. If the

total transmit power (for a mobile device) is too high (i.e., determined to be above the maximum allowed transmit power), there are only a limited number of approaches for reducing the power. All channels can be reduced equally, some channels can be suspended or reduced in power while others are not. Hatta, Honkasalo, Tiedemann, Dillon, Siemens Proposal (R1-040208 3GPP TSG RAN WG1 Meeting No. 36 minute), and Kosugi (hereinafter referred to together as "Selective Power Reduction References") teach the desirability of prioritizing the power reduction to some channels and not others. Combining to incorporate this feature would constitute using a known technique of reducing power on some channels and not others to achieve predictable results, *e.g.*, that the power would be reduced by reducing power on channels where it makes more sense to reduce. Further, there are a limited number of ways to reduce the sum of power from multiple sources, it would at least have been obvious to try prioritizing channels so that some channels are reduced and not others.

Document R1-040697 demonstrates the known relationship between selection of TFC and power in transmission, suggests the limited number of ways to address power if the amount is insufficient, and demonstrates that persons of skill in the field would have understood as part of general knowledge what the typical options would be. Section 2.3, for example, provides obvious alternatives, including equal scaling, not transmitting, or using the remaining power in E-DCH.

In deciding for which channels power should be reduced, it would have been obvious to reduce power on channels that use HARQ. If some channels need to have the transmit power reduced, it would have been obvious to select HARQ channels for reduction. As described, for example in Siemens Proposal, for example, a reduction of the retransmission power under HARQ operation is beneficial to avoid excessive noise rise and UE power consumption due to

unnecessarily spent retransmission energy. The LGE Proposal has similar disclosure. In addition, 3GPP describes soft combining wherein HARQ data can be retransmitted such that the receiver can use both transmissions to get good data. 3GPP Specification also teaches that rapid retransmission supported by HARQ reduce the amount of buffer memory required in the Node B for buffering soft bits when a retransmission has been requested. Reducing the power on such channels would be applying a known technique to achieve predictable result of reduced power and enhanced signal to interference ratio (SIR). The benefits of reducing power on the HARQ channels was thus understood in the prior art. Further, because there is a limited set of channels, it would at least have been obvious to try reducing the power on those channels.

In a system with power control, it would have been obvious to perform scaling on a slot-by-slot basis. If scaling transmit power or transmit power factor is necessary, it has to start at some point in time. There are only a limited number of points in time when the scaling can begin. The scaling can begin at the start of a transmission slot boundary or it can begin some time after the slot boundary but before the next slot begins. 3GPP Specification, Honkasalo, Dillon, and the admitted prior art teach desirability of scaling at the slot boundary. Combining to incorporate this feature would have constituted using a known technique to achieve predictable results, *e.g.*, that data frame(s) transmitted in each slot would be scaled. Further, because there are a limited number of points in time to begin scaling transmit power, it would at least have been obvious to try scaling at the slot boundary.

It would have been obvious to determine the total transmit power factors based on a Transmit Power Control command. Such commands are well known in the art, and are referenced in the admitted prior art. Receiving scheduling assignment information and determining the total transmit power or total transmit power factors based on a TPC command

received as part of the scheduling assignment was generally well known in the art well before June 9, 2004. *See e.g.*, IS-95A Specification (TIA/EIA/IS-95-A standard). 3GPP Specification 2 (3GPP TS 25.214 Release 6) also teaches and the Admitted prior art (Background of '516 patent) also teaches desirability of using a TPC command for power control of user equipments (UEs). Combining to incorporate this feature would have constituted using a known technique to achieve predictable results, *e.g.*, more efficient transmission scheduling and power control coordination.

It would have been obvious to equally scale the transmit power factor for the first channel when the transmit power factor for the second channel is scaled down below a predetermined minimum value. If the total transmit power still exceeds the maximum allowed power even after the transmit power factor for the second channel is scaled down to the minimum value, the power would need to be reduced in the remaining channels. 3GPP Specification 2 teaches the desirability of reducing the transmit power factor for the first channel; this is also identified in the admitted prior art. Combining to incorporate this feature would have constituted using a known technique to achieve predictable results, *e.g.*, that the total transmit power can be scaled down below the maximum allowed power. Further, because there is a limited set of approaches, it would at least have been obvious to try further reducing the transmit power factor for the first channel. Further, it is a matter of common sense that if one set of channels is reduced, something should be done with the other channels.

Even if not stated, it would have been obvious to use transport formats as they were well known in 3GPP.

Thus it would have been obvious based on the references cited, and based on the general knowledge and skill in the art, to use multiple types of channels for additional performance; to

use HARQ in data channels for which latency can be tolerated but reliability is desired; to reduce power on one of two types of channels if the power is too high to prioritize which channels get more power and/or because there are limited options; to prioritize channels for power reduction to try to obtain better performance; and if channels are to be prioritized, to reduce power on HARQ channels because the prior art taught that there were benefits to reducing power on HARQ channels.

I. The '893 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '893 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit I. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit I, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

Many of the prior art references include all of the limitations of the ‘893 patent asserted claims. The method and apparatus claims recite “using the digital image processing apparatus in the reproduction mode for displaying a single image file from the recording medium, the single image file being different from a most-recently stored image file . . . while the single image file is being displayed, switching from the reproduction mode to the photographing mode . . . irrespective of the duration [in photographing mode], first displaying again only the single image file . . .” The prior art listed above explicitly taught this alleged new feature. (*See, e.g.*, ‘807 patent, ‘082 patent, ‘KR ‘792 patent and JP ‘927 patent). Apple contends that to the extent any of the references is found not to explicitly teach performing the claimed method steps in sequential order and displaying a most-recently displayed image file (which is being displayed in a reproduction mode) that is different from a most-recently captured stored image file when switching between the reproduction mode and the photographing mode irrespective of a time or duration that the apparatus is used in the photographing mode, these limitations would have been obvious to one of ordinary skill in the art as taught by the prior art listed above and as explained below.

The prior art references, namely, iBook, ‘807 patent, ‘548 patent, ‘480 patent, ‘082 patent, KR ‘972 patent and JP ‘927 patent all disclose digital imaging apparatuses such as digital cameras or mobile phones, and describe their operations in terms of using the disclosed apparatuses to capture and store digital images and to display those images on the display screen of the apparatuses. In particular, the references disclose how the apparatuses can operate in different modes, e.g., photography mode to capture and store images, and display mode to display the stored images. Moreover, the references teach allowing a user of the apparatuses when in display mode and viewing a first image, to switch from display mode to photography

mode, capture and store a second image, and then switch back to display mode and view the first image again. (*See*, *e.g.*, '807 patent, 18:45-49, 18:6-11, 12:51-59, 4:29-33, 2:22-23, 10:46-53, 16:16-23, 18:4-18, 18:46-59, 2:66 - 3:6, 16:16-58, and Figs. 1(a), 1(b), 6 and 7; '082 patent, 3:62-63, 5:25-65, 2:30-33, 2:66 – 3:37 and Fig. 1; KR 972 Abstract, pp. 5-2 to 5-5, and Drawings 1-4, and JP '927 ¶¶ [0008], [0009], [0010], [0018], [0035], [0036], [0038], [0039], [0053], [0054], [0055], [0060] and Figs. 3-4.)

To the extent that the iBook, '807 patent, '548 patent, '480 patent, '082 patent, KR '972 patent and JP '927 patent prior art references are found to lack an explicit teaching of the "irrespective of the duration" limitation of the asserted claims, a person of ordinary skill in the art would recognize that feature to be inherent in the references. Also, it would have been obvious to a person of ordinary skill in the art to allow the apparatus disclosed in the prior art references to operate so that the same image viewed when in display mode is displayed again when returning to display mode from photography mode "irrespective of the duration," since doing so is a mere design choice, the application of common sense, and the application of familiar elements according to known methods that would yield predictable results.

Moreover, it would have resulted from combining prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the use of known techniques to improve similar devices in the same way, and applying a known technique to a known device to yield a predictable result. One of ordinary skill in the art would have been motivated to perform adopt the claim limitations identified above since the motivation to combine the teachings of these prior art references can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of

ordinary skill in the art, (5) the fact that the prior art is generally directed towards managing the display of images on a digital camera, and (6) the predictable results obtained in combining the elements of the prior art.

For example, in the 2004-2005 timeframe, digital cameras and camera phones were publicly available. At around the same time, the storage capacity of digital camera recording mediums, such as memory cards, increased from tens to hundreds of megabytes. Accordingly, hundreds of images could be stored in digital cameras. (*See, e.g.*, U.S. Patent Publication No. 2005/0134708 to Lee et al. at ¶ [0005].)

Digital cameras provided a viewing function for displaying a recorded image on a display screen that was provided in the digital camera. When viewed on the display screen of the digital camera, one approach was to display the image that was recorded last on the display screen. Typically images were viewed in sequential order. Because the recorded images were always displayed in reverse sequential order, even when viewing again after the viewing has been interrupted to perform image recording, there was the possibility that images that had been viewed the previous time will be displayed redundantly on the display screen. (*See, e.g.*, Japanese Unexamined Patent Application Publication No. 2005-064927 to FujiFilm Corp. at [0002] - [0005].) Thus, there was recognition that there were limitation with viewing images sequential and maintaining the order and ability to view the same image again upon interruption of viewing was desired. The prior art taught this precise feature as explained in the claim charts for the '807 patent, '082 patent, KR '972 patent and JP '927 patent. As discussed above, to the extent any of these references is found not to contain an explicit teaching of the "irrespective of the duration" limitation, using common sense and the teaching of the prior art, a person of ordinary skill in the art would recognize that it would be useful to display the same image a user

was viewing before interruption, e.g., to capture an image, when returning to view images no matter how long the user was using a digital camera to capture images.

In addition, the additional features recited in the asserted claims—*i.e.*, identifying the image file that is being displayed; setting in a memory of the digital image processing apparatus an index value of the single image file that is being displayed; reading the memory to retrieve the index value; setting a flag and setting a bookmark on the single image file that is being displayed; sequentially displaying single image files of the plurality; and updating the index value stored in the memory of the digital image processing apparatus each time a currently-displayed image file is changed; determining if the index value is in a reset state; the controller is operative to identify the single image file that was most recently displayed in the stored-image display mode; each image file stored in the recording medium includes a unique file index value and the controller causes the unique file index value of the single image file that was most recently displayed in a file index memory to be stored; the controller comprises at least one of a digital camera processor and a microcontroller; a user input including a mode-switching actuator for switching the controller between the stored-image display mode and the photographing mode; the user input further comprises at least one directional actuator for displaying a previous and a next image file in the stored-image display mode, the controller updating the file index memory with a different unique file index value each time the at least one directional actuator is pressed and the controller is operative to read the memory for retrieving the file index value in response to the mode-switching actuator being pressed when switching the controller from the photographing mode to the stored-image display mode—were also taught in the prior art listed above, and in any event, represent mere design choices that would have been obvious to a person of ordinary skill in the art. As the Supreme Court made clear in *KSR*, "if a technique has been

used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." 550 U.S. at 417; *see also id.* at 419 ("[t]he obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation") and *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1260 (Fed. Cir. 2007) (noting that "'[a] person of ordinary skill is also a person of ordinary creativity'" (quoting *KSR*, 550 U.S. at 421)). These additional features would be well within the skill set of a person of ordinary skill in the art, and, would therefore have been merely the result of ordinary design efforts.

Under the standard set forth in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), and the Federal Circuit's recent decisions, the asserted claims of the '893 patent (which issued ***before*** *KSR* was decided) would have been obvious.

These combinations reflect Apple's present understanding of the potential scope of the claims that Samsung appears to be advocating, and should not be seen as Apple's acquiescence to Samsung's interpretation of the asserted claims. Moreover, these examples are illustrative of the multitude of potential combinations of the prior art, and are not exhaustive. Apple reserves the right to rely on other combinations of the prior art, including other combinations of the prior art references identified above with each other and/or with the prior art references disclosed in the prosecution history of the '893 patent.

J. <u>The '460 Patent</u>

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the

time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '460 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibits J-1 through J-7. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibits J-1 through J-7, to meet the limitations of the asserted claim. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

U.S. Patent No. 6,069,648 to Suso *et al.* ("Suso"), U.S. Patent No. 6,167,469 to Safai *et al.* ("Safai"), U.S. Patent No. 6,573,927 to Parulski *et al.* ("Parulski"), U.S. Patent No. 6,642,959 to Arai ("Arai"), and the Nokia 9110 Communicator mobile phone, "Nokia 9110 Communicator User's Manual," and "Digital Camera Connectivity with Nokia 9110 Communicator" teach every limitation of claim 1 of the '460 patent. To the extent that any of these references is found not to anticipate, it would have been obvious to modify or combine the references to achieve the claimed method. Practicing a data transmitting method for a portable composite communication terminal which functions as both a portable phone and a camera, comprising the steps of: entering a first E-mail transmission sub-mode upon user request for E-mail transmission while operating in a portable phone mode, the first e-mail transmission sub-mode performing a portable phone function; entering a second E-mail transmission sub-mode upon user request for

E-mail transmission while operating in a display sub-mode, the second e-mail transmission sub-mode displaying an image most recently captured in a camera mode; sequentially displaying other images stored in a memory through the use of scroll keys; transmitting the address of the other party and a message received through a user interface in the first E-mail transmission sub-mode; and transmitting the address of the other party and the message received through the user interface and the image displayed on the display as an E-mail in the second E-mail transmission sub-mode, would have been the result of combining prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the use of known techniques to improve similar devices in the same way, and applying a known technique to a known device to yield a predictable result. One of ordinary skill in the art would have been motivated to perform a method for transmitting an email address of another party and a message body received through a user interface in a first E-mail transmission sub-mode; and transmitting the email address of the other party and the message body received through the user interface and an image displayed on a display as an E-mail in a second E-mail transmission sub-mode.

To the extent that any of Suso, Safai, Parulski, Arai, U.S. Patent No. 6,690,417 to Yoshida *et al.* ("Yoshida"), U.S. Patent No. 7,173,651 to Knowles ("Knowles"), or the Nokia 9110 Communicator mobile phone together with "Nokia 9110 Communicator User's Manual" and "Digital Camera Connectivity with Nokia 9110 Communicator" is found not to teach the claimed first E-mail transmission sub-mode, it would have been obvious to combine any of these references, which teach emailing images, with additional references teaching transmitting text email messages. Examples of such references include the IBM Simon mobile phone together with the "IBM Simon User's Manual," U.S. Patent No. 5,619,684 to Goodwin *et al.*

("Goodwin"), and U.S. Patent No. 6,009,336 to Harris *et al.* ("Harris"). Furthermore, to the extent that U.S. Patent No. 6,690,417 to Yoshida *et al.* ("Yoshida") or U.S. Patent No. 7,173,651 to Knowles ("Knowles") is found not to teach sequentially displaying other images stored in a memory through the use of scroll keys, it would have been obvious to combine these references with any of a large number of prior art reference teaching using scroll keys to move between images on a camera or portable phone, including Suso, Safai, Parulski, Arai, and the Nokia 9110 Communicator mobile phone together with the "Nokia 9110 Users Manual" and "Digital Camera Connectivity with the Nokia 9110 Communicator." All elements of claim 1 of the '460 patent were well known and readily combinable using known methods to obtain predictable results.

For example, in the 1997–1998 timeframe, digital cameras, cellular phones, camera phones, and personal computers were publicly available. *See, e.g.*, Suso col.1 ll.5–45; Safai col.1 l.12–col.2 l.25; Parulski col.1 l.28–col.2 l.27; Arai col.1 ll.7–48; Yoshida col.1 l.22–col.2 l.62; Knowles col.1 l.20–col.2 l.43; Harris col.1 ll.9–63. Digital cameras provided a playback function for displaying a recorded image on a display screen that was provided in the digital camera, and a review function for sequentially displaying other images stored in a memory through the use of scroll keys. *See, e.g.*, Safai col.1 ll.32–36; Arai col.1 ll.15–18; Yoshida col.1 ll.23–29, col.2 ll.15–19; Knowles col.1 ll.20–32. Emailing text and image attachments from personal computers and portable devices was also well-known. *See, e.g.*, Safai col.1 ll.37–47; Parulski col.1 ll.29–48; Arai col.1 ll.19–31; Knowles col.1 ll.20–32. Using common sense and the teaching of the prior art, a person of ordinary skill in the art would have recognized that it would be useful to send image attachments and text from a camera phone, and would have been able to implement the claimed method of the '460 patent by combining prior art elements

according to known methods and/or applying known techniques to known devices to yield predictable results.

K. The '941 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '941 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibit K. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibit K, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

It was generally known and within the level of ordinary skill in the art to receive RLC SDUs and to segment them into smaller blocks of data to be transmitted in PDUs with headers. It was also known in the field, as indicated, for example, in the versions of TS 25.322 prior to the '941 patent, Agarwal, Petersen, and Nishihara, there are different ways to arrange the headers and different fields that can be used in these headers; and that depending on the arrangement,

different header can be used in different ways. However, these different approaches often have in common some indication of whether there is segmentation; length information; serial number information; and data indicating whether the segment is first, last, or intermediate. These references, along with many others cited herein, show that it was well-known to convey this type of information through different means. These different means generally constitute a design choice of obvious alternatives.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to use a field, such as a one-bit field, to indicate that the PDU does or does not contain an entire SDU in the data field without segmentation, concatenation, or padding. It was known that RLC SDUs (*e.g.*, a voice frames or ROHC-compressed packets) are frequently mapped to the data field of an RLC PDU without segmentation, concatenation, or padding. *See, e.g.*, Samsung R2-041964 § 6 (Signaling Requirement) (showing that VoIMS communication generates ROHC-type-0-compressed packets with significant frequency, and that the RLC PDU size should be aligned with the sizes of those packets). Agarwal, for example, indicates the desirability of identifying ATM data, which has a fixed size, in a system that can handle data of multiple lengths.

To the extent it is not shown in a reference relating to segmentation that one could use a single bit to indicate segmentation or not, it would have been obvious to provide a header with a single bit for this purpose. It is generally well-known to use a bit to indicate polar conditions, including whether the underlying data has been segmented across two or more messages. *See, e.g.*, U.S. Patent No. 6,088,342 (Cheng) at cols. 1:57 to 2:39, 7:22-67, and Figs. 3A-3C (teaching a "CTL field" that indicates an unsegmented data frame with one bit set to 0 and indicates a segmented data frame with four bits coded to delineate first, middle, and last segments of the

segmented data); U.S. Patent Application Publication No. 2004/0073939 (Ayyagari) at ¶¶ 42-50 (teaching a 1-byte "Concatenation/Fragmenting" header field, which includes single bit flags to independently indicate (b0-b1) the transport layer format, (b2) concatenated packets, (b3) the first fragment of a fragmented packet, and (b4) the last fragment of a fragmented packet); U.S. Patent Application Publication No. 2003/0156599 (Casaccia) at ¶ 30, Fig. 8, and claims 1, 6, 11, and 16 (teaching a 3-bit "segment identifier" header field, which includes single bit flags to independently indicate (1) "whether message segmentation is used," (2) "whether the segment is the first segment of the message," and (3) "whether the segment is the end segment of the message."); U.S. Patent Application Publication No. 2008/0002713 (Fujita) at ¶¶ 34-41 and Fig. 3 (teaching single bit flags to independently identify (S) "whether or not the top position of the packet data is included in the data part," (P) "whether or not padding (a blank) is included in the data part," and (E) "whether the next octet is the header part of the data part"); IEEE 802.16.1c-01/04r0 at pp. 3 and 6-9 and Figs. 3 and 4 (teaching a "packing sub-header present (PSP)" bit that signals "[i]f more than one SDU is packed into the MAC PDU"); IEEE Standard 802.16-2004 at pp. 39-41 and 124-25 and Figs. 26-28 (teaching a one-bit packing flag).

See also U.S. Patent No. 7,359,403 (Rinne 2) at cols. 5:66 to 6:2 ("An alternative way for the use of specific values of the length indicator for noting continuation or end of the SDU, might be to use one bit in the length indicator for that purpose."); European Patent Application Publication No. 0662665 (Kawan) at col. 25:14-24 (teaching that a "value of 0 in bit 4 indicates that the present message is the last or only segment in a response while a value of 1 in bit 4 informs the receiving computer that the present message is the first or an intermediate segment of a multi-segment response"); An Intelligent Cell Checking Policy for Promoting Data Transfer Performance in Wireless ATM Networks (Sheu) at p. 240 (teaching "a single bit (denoted as

more flag) in payload type indicator (PTI) to indicate the cell position in CS-PDU. A cell with value '0' in this bit means the begging or continuation of a SAR-SDU. The cell containing the EOM (end of message) is identified by setting the more flag to '1'.").

Providing such information in a single bit would have been obvious as a way to let the receiver know whether there is segmented data or not, with a small number of bits. This constitutes a known method of signaling with a header to yielding predictable results of identifying the segmented nature of the packet, using known methods for providing a bit. Further, this is one of a number of obvious options for accomplishing the same known purpose of signaling when there has been segmentation or not.

To the extent not explicitly disclosed or inherently shown in other references, it would have been obvious to set an LI field in a PDU containing an intermediate segment of an SDU to a predefined value indicating that the PDU contains neither a first segment nor a last segment of the SDU. It was already known to use predefined (reserved or predetermined) LI values for signaling purposes. *See, e.g.*, 3GPP TS 25.322 version 6.3.0 at § 9.2.2.8 (Length Indicator (LI)). *See also* Qualcomm R2-050969 at §§ 3-3.2 (proposing to use an additional reserved LI value to indicate whether the first SDU is entirely included in the current PDU); Qualcomm R2-021645 at § 3.2. it was also known to use a reserved range of LI values to indicate that a data packet contains neither a first segment nor a last segment, but instead an intermediate segment. *See, e.g.*, Petersen at pp. 19:22 to 20:14. *See also id., e.g.*, at claims 29, 59, 88, and 100; Figs. 3A, 3B, 3D, 4A, 4B, 5A, and 5B. This approach has the obvious purpose of using unused values to provide signaling of information.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to set an LI field in a PDU comprising the first segment of an SDU to a value indicating that the

PDU includes the first segment of the SDU. In one instance, a range of LI values is reserved to indicate that a data packet contains a first segment. *See, e.g.*, Petersen at pp. 19:22 to 20:14, and 3GPP TS 25.322 version 6.3.0 at § 9.2.2.8 (Length Indicator (LI)).

Likewise, to the extent not explicitly disclosed or inherently shown, it would have been obvious to set an LI field in a PDU comprising the last segment of an SDU to a value indicating that the PDU includes the last segment of the SDU. *See* Petersen at p. 4:1-5. *See also id.* at pp. 10:14-23 and 28:7-11; Figs. 3A, 3B, 3D, 4A, 4B, 5A, and 5B, and 3GPP TS 25.322 version 6.3.0 at § 9.2.2.8 (Length Indicator (LI)).

Further, it was already known and part of the general knowledge in the field to use fields to indicate first, intermediate, and/or last segments. *See, e.g.*, Agarwal at cols. 10:18-20, 51-53 and 14:34-50 and Figs. 7A, 7B, 8A, and 12C; Nishihara at ¶¶ 120, 152-56, and 238; 3GPP TS 25.322 version 6.3.0 at §§ 4.2.1.2.2, 9.2.2.8, 9.4, and 11.2.3 and Figs. 4.3 and 4.3a; Qualcomm R2-05096 at §§ 3-3.2; Qualcomm R2-021645 at § 3.2; PCT Patent Application Publication No. 04/79971 (Shvodian) at pp. 17:21 to 18:4 and 24:5-11; Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, p. 9-10 and Fig. 4; IEEE 802.16.1c-01/04r0 at pp. 3-5 and 8-9 and Figs. 5 and 6 (teaching 2-bit fragment identifiers for the first, last, and continuing fragments); IEEE Standard 802.16-2004 at pp. 39-41 and 124-25 and Figs. 26-28; European Patent Application No. 1395078 (Anderson) at ¶ 389 (teaching header codes for first, middle, and last segments of a multi-segment message); U.S. Patent Application Publication No. 2003/0179712 (Kobayashi) at ¶¶ 1962-63, 2760-63, and 6341-43 and Figs. 245, 396, 529-33, 656, 674, and 783; U.S. Patent No. 5,822,321 (Petersen 2) at cols. 4:19-41 and 5:41-60 and Figs. 5-7c ("One skilled in the art will understand that other codes could be used to perform this function and that more or fewer codes could be assigned if

needed. However, the specific code values should be predefined in both the sending entity 401 and the receiving entity 403."). Whether and how these bits are arranged is a design choice, such as whether to use a first bit and a last bit, or to have a two bit field for first, intermediate, last, and no-segmentation. It would be obvious to use any arrangement of bits consistent with purposes and tradeoffs in the system to provide the signaling information in the header. Providing such information was known to be useful, and would have included using known methods with predictable results.

To the extent that fields for indicating first, intermediate, and last segments are not considered length indicators, it would have been obvious to use an LI field or a portion of an LI field as indicated in 3GPP TS 25.322 v.6.3.0 at § 9.2.2.8 and Petersen. Using such LI values would be the use of known methods to achieve predictable results of identifying the segment.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to set the first LI field of the last of the PDUs to a value indicating the position of the last byte of the SDU. *See, e.g.*, 3GPP TS 25.322 version 6.3.0 at § 9.2.2.8 (Length Indicator (LI)) ("A 'Length Indicator' is used to indicate the last octet of each RLC SDU ending within the PDU."); Petersen at pp. 4:1-5, 10:14-23, and 28:7-11; Figs. 3A, 3B, 3D, 4A, 4B, 5A, and 5B.

It was already known to use a field to indicate the position of the last byte of the SDU. *See, e.g.*, Agarwal at cols. 10:18-20, 51-53 and 14:34-50 and Figs. 7A, 7B, 8A, and 12C; Nishihara at ¶¶ 120, 152-56, and 238; 3GPP TS 25.322 version 6.3.0 at §§ 4.2.1.2.2, 9.2.2.8, 9.4, and 11.2.3 and Figs. 4.3 and 4.3a; Qualcomm R2-050969 at §§ 3-3.2; Qualcomm R2-021645 at § 3.2; Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, p. 9-10 and Fig. 4; U.S. Patent Application Publication No. 2002/0174276 (Jiang) at ¶¶ 15 and 30; U.S. Patent Application Publication No. 2006/0072494

(Matusz) at ¶¶ 17-21; Petersen 2 at col. 5:51-54 and Fig. 7c. This is one of a number of obvious design choices for indicating where a PDU is in a group of PDUs to provide the known benefit of providing information to a receiver.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to include a serial or sequence number in the PDU header. It was known to use serial or sequence numbers in the PDU headers to identify individual PDUs and thus maintain PDU sequence, facilitate SDU reassembly, and control errors. *See, e.g.*, Agarwal at cols. 10:10-53, 12:10-14, 14:26-28 and Figs. 7A, 7B, and 8A; Shvodian at pp. 19:14 to 20:22 and 23:3 to 24:11 (". . . As a result, it is preferable that the frame containing each SDU fragment 780 (i.e., each PDU 790) include a sequence number indicating the SDU 770 it belongs to, ..."); Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, p. 10-11 and Fig. 5; IEEE Standard 802.16-2004 at Tables 8 and 11 (teaching a sequence number for both fragmentation and packing); Kobayashi at ¶¶ 2760, 3316, and 3720 and Fig. 783; U.S. Patent Application Publication No. 2003/0002532 (Huo) at ¶ 36; PCT Patent Application Publication No. 00/21253 (Rinne) at pp. 5:34 to 6:5.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to store a PDU in a reception buffer according to the SN field of the PDU. It was already known to store PDUs in a reception buffer. *See, e.g.*, Agarwal at col. 14:26-28 and Fig. 12C ("There is one reassembly buffer per source terminal per packet. These are stored in a data structure keyed by Source Terminal and packet sequence number."); Shvodian at pp. 19:14 to 20:22 and 23:3 to 24:11; Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, pp. 22-24 (describing the INFO_buffer state variable, "The buffer is used to temporarily store or reassemble a split CPS-Packet payload," and the PH_buffer

state variable, "A buffer is maintained to assist in the analysis of a CPS-Packet header," of the CPS receiver); U.S. Patent Application Publication 2002/0065093 (Yi) at ¶¶ 48-49.

As indicated in the Serial Number References, it was generally known to have header structures that include and indicate sequence numbers. Further, it was known to store a PDU according to its serial or sequence number. *See, e.g.*, Agarwal at cols. 10:10-53, 12:10-14, 14:26-28 and Figs. 7A, 7B, 8A, and 12C; Shvodian at pp. 24:12 to 25:18; Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, p. 10-11 and Fig. 5.

To the extent not explicitly disclosed or inherently shown, it would have been obvious to receive an SDU in a transmission buffer. It was already known to receive SDUs from a higher layer in a transmission buffer. *See, e.g.*, Agarwal at cols. 7:65 to 8:19 ("There is one reassembly buffer per source terminal per packet. These are stored in a data structure keyed by Source Terminal and packet sequence number."); Int'l Telecomm. Union, B-ISDN ATM Adaptation Layer Specification: Type 2 AAL, ITU-T Recommendation I.363.2, p. 15 (describing the CPS-PDU state variable, "A buffer is maintained to fill a CPS-PDU before submitting it to the ATM layer," and the CPS-PH state variable, "A buffer is maintained to construct a CPS-Packet Header," of the CPS transmitter); Yi at ¶ 39 ("A data transmission device 201 in a wireless communication system having the RLC layer, as shown in FIG. 2, includes a transmission buffer 202 as a transmission data storage module, which stores service data units transmitted from a higher layer.").

As indicated in the Alternative One-Bit Indicator References, the Intermediate Segment Indicator References, the First and Last Segment Indicator References, the Last Byte Indicator References, and the Serial Number References, it was generally known to have header structures

that include and indicate sequence numbers; data length such as length indicators; indicators of first, intermediate, and last segments; indicators of whether data is segmented or not; and indicators of whether data completely fills a frame without padding or segmentation. It would have been a matter of obvious design choice as to which fields to use to communicate this information in a header. One of ordinary skill in the art would have known these different types of information. Selecting from among these pieces of header information would have been a matter of obvious design choices using known pieces of information in known ways to communicate information in a known and predictable manner.

L. The '711 Patent

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

Numerous prior art references, including those identified above pursuant to Patent L.R. 3-3(a) and in the Exhibits, reflect common knowledge and the state of the prior art before the priority date of the '711 patent. Because it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations below and in Exhibits L-1 through L-5. For at least the reasons described above and below in the examples provided, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in Exhibits L-1 through L-5, to meet the limitations of the asserted claims. As such, Apple's identification of exemplary

combinations is without limitation to Apple's identifying other invalidating combinations as appropriate.

By 2005, devices with digital music file playback capability and multitasking methods for using the same were available and widely known in the art. For example, US Publication No. 2005/0181826 to Yueh describes personal digital assistant devices (PDAs) that incorporate digital music play functions, including MP3 files. US Publication No. 2005/0164688 to Satake teaches mobile phones that execute multiple applications in parallel. US Publication No. 2005/0054379 to Cao et al. describes a cordless telephone with MP3 player capability. Furthermore, by 2005, mobile phones were known to feature idle or "standby" modes when no applications were in use by the operator. *See, e.g.*, US Publication No. 2004/0077340 to Forsyth describing "idle" or standby screens to convey updated information customizable by the user. Finally, programming modules known as "applets" were well known in the context of programming for mobile devices written in the Java language. *See, e.g.*, Wong, U.S. Patent No. 6,928,648, review of applets and description of the prior art at Col. 1:24-67.

Samsung's '711 patent claims a mobile device with background MP3 playback capability, including playback while in standby mode or during use of another application. Furthermore, the '711 patent claims are directed to devices and methods comprising "generating a music background play object, wherein the music background play object includes an application module including at least one applet." During prosecution of the '711 patent, the examiner found all elements of the '711 asserted claims were present in the prior art except this "applet" limitation. Apple contends that it would have been obvious to perform the claimed methods or generate the claimed devices in view of the prior art cited above.

These combinations reflect Apple's present understanding of the potential scope of the claims that Samsung appears to be advocating, and should not be seen as Apple's acquiescence to Samsung's interpretation of the asserted claims. Moreover, these examples are illustrative of the multitude of potential combinations of the prior art, and are not exhaustive. Apple reserves the right to rely on other combinations of the prior art, including other combinations of the prior art references identified above with each other and/or with the prior art references disclosed in the prosecution history of the '711 patent.

Any of the mobile phone products listed above, including but not limited to the Nokia 3300, Sony Ericsson W800i, or Sony K700 mobile devices and corresponding user guides and manuals, provide most or all claim elements of the asserted claims. To the extent Samsung might argue that any of these references lacks an explicit teaching of the "generating a music background play object, wherein the music background play object includes an application module including at least one applet" limitation, this limitation would have been inherent. Furthermore, any of these devices, when combined with the teachings in any of the above-identified secondary references available before 2005, would have rendered each claim of the '711 patent obvious to the ordinary artisan. The secondary references include, but are not limited to, the Mahmoud article, the Shaffer patent, or the Wong patent, which describe the use of "applets" for media applications including MP3 play.

Furthermore, during prosecution of the '711 patent, the examiner found the Kokubo patent in combination with the Senpuku published application rendered all relevant claims obvious under 35 U.S.C. §103(a) prior to Samsung's amendment requiring the "applet" limitation discussed above. However, references not before the examiner during prosecution,

including the Wong, Shaffer, and Mahmoud publications, would have shown that the "applet" limitation was also well known in the art and would have been obvious to the ordinary artisan.

Also during prosecution, Samsung admitted that many of the claim elements were present in the prior art. For example, Samsung admitted the Miyasaka patent publication teaches many elements of asserted independent claims 1, 9, and 17, including a multi-tasking method in a pocket-sized mobile communication device, the method comprising selecting and playing a music file in the pocket-sized mobile communication device, displaying an indication that the music file is being played, selecting and performing at least one function of the pocket-sized mobile communication device while the playing of the music continues, and continuing to display the indication that the music file is being played while performing the selected function. Further, Samsung admitted that Miyasaka taught selecting a message function as required by asserted claims 7 and 15, a controller for selecting and playing a music file in the pocket-sized mobile communication device and for selecting and performing at least one function of the pocket-sized mobile communication device while the playing of the music file continues as required by asserted independent claim 9. As to independent claim 17, Samsung admitted that Miyasaka teaches a multi-tasking apparatus in a pocket-sized mobile communication device comprising a controller for selecting and playing a music file in the pocket-sized mobile communication device, and a display unit for displaying an indication that the music file is being played. *See* Prosecution History File for the '711 patent, Accelerated Examination Support Document of July 16, 2007 at pp. 4-5. For at least these reasons, the Miyasaka publication in the combinations recited above, including the secondary "applet" references, would have rendered the asserted claims invalid as obvious. To the extent Samsung might argue that Miyasaka did

not teach a standby mode in a mobile communication device, this was also well-known in the art as shown by references such as Forsyth.

Further, Samsung admitted during prosecution that at least asserted dependent claims 7, 8, 15, and 16 "have no features that would define over the references deemed most closely related if claims 1, 9, and 17 were found unpatentable." *See* Prosecution History File for the '711 patent, Accelerated Examination Support Document of July 16, 2007 at p.9.

It would have been obvious to a person of ordinary skill in the art by August 2005, the date the Korean priority application 10-2005-0079921 was filed, to combine, modify, or use the teachings of the prior art to make the purported inventions of the '711 patent asserted, including by making each of the combinations identified above. The motivation to combine the teachings of these prior art references can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, and (5) the predictable results obtained in combining the elements of the prior art.

The limitation requiring an "applet" is present in all asserted claims of the '711 patent and would have been obvious to a person of ordinary skill in 2005 for any of the reasons listed below as motivations to combine the teachings in the art. For example, (1) each of the mobile devices cited as primary prior art references (Sony Ericsson W800i, Sony Ericsson K700, and Nokia 3300) supports running Java applications, which are commonly associated with "applets" for performing specific tasks, sometimes as part of larger applications. (2) The nature of the problem being solved, as articulated in the '711 patent itself, was "a need for an improved system and method to allow a user to simultaneously work on multiple menus of the portable terminal while listening to music" without the additional cost and complexity of a dedicated

control processor. '711 patent at Col. 1:49-51. The related prior art similarly identifies the problem to be solved.[2] The problem itself would have motivated the ordinary artisan in 2005 to look at Java-based applications which would obviate the need for additional hardware or software complexity. (3) The express teachings of the secondary prior art references, described below, would have further motivated the ordinary artisan to use a Java-based approach to a music player in a mobile device. (4) Using Java applets to run MP3 players on mobile devices was a well-established method in the art prior to 2005 and would have been obvious to combine with the Java-compatible devices identified above. Finally, (5) the results obtained by using the Java applet approach to generating a background music object on a mobile device would have been entirely predictable. Neither the specification of the '711 patent nor the associated file history indicates any unexpected results from the use of an applet to control the music player function.

Taken alone or together in the combinations set forth above, the identified prior art references include all limitations of the '711 patent asserted claims and render each of the asserted claims obvious. For example, the Mahmoud article would have motivated the ordinary artisan to employ applets for running MP3 music files on Java-enabled wireless mobile devices. *See*, e.g., Mahmoud at Abstract and pp. 1, 5, and 8-10. Mobile phones leading up to 2005 commonly provided support for the Java 2 Micro Edition (J2ME) and the Mobile Media API (MMAPI). J2ME was a Java Virtual Machine (JVM) specification specifically designed for resource-constrained mobile devices. In 2005, a person of ordinary skill in the art would have appreciated the benefits of supporting the J2ME, including an Object Oriented (OO)

[2] For example, the Kokubo patent (referenced above) notes that "in the next generation of portable telephones which will be more multi-functional than those presently available, it may be anticipated that there will arise a need for carrying out a plurality of processes at the same time (parallel processing), such as browsing a web site and listening to music at the same time, while writing an e-mail every now and then." US Patent No. 7,123,945 to Kokubo at Col. 2:6-12.

programming model and a device-independent Application Programming Interface (API) that facilitated rapid application design and deployment.

Likewise, the Wong patent would have motivated the ordinary artisan to combine Java-compatible mobile devices with MP3 players including an applet because it discloses methods of running small media applications, including applets, on top of the Java-enabled devices' native operating system. *See*, e.g., Wong patent at Col. 1:24-34 and Col. 9:16-20.

Further, the Shaffer patent would have motivated the ordinary artisan in 2005 to use an applet to generate a music background play object in any of the cited primary devices because Shaffer teaches a system for providing music on a network by providing an applet having a music file and a media player from the server to the client. *See*, e.g., Shaffer at Col. 1:61-2:8. The ordinary artisan in 2005 with either the teachings of Shaffer, Wong, or Mahmoud would have been motivated to combine MP3-playing, Java-enabled cell phones with programming including "applets" for music-playing functions.

The Forsyth published patent application would have motivated the ordinary artisan in 2005 to incorporate a standby screen into the operation of a mobile phone device. Forsyth includes multiple potential applications which can be executed from the standby screen on a mobile device, including MP3 music file functionality. *See, e.g.*, Forsyth at ¶¶ 002 and 123.

The Senpuku reference was cited by the examiner during prosecution as teaching a mobile communication device capable of multitasking and switching between applications. Further, when the sub-display in Senpuku is closed, the active screen on the display continues to execute the application other applications are continued in the background. *See, e.g.*, Senpuku publication at paragraphs ¶¶ 105, 106, 110.

In light of the above, one of ordinary skill in the art would have found it obvious to combine the prior art teaching mobile devices with multitasking music functions, including displaying icons indicating background music play, with routine programming of well-known Java 2 Micro Edition (J2ME) applications, including MP3 player functions. According to the Supreme Court's standard articulated in *KSR*, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 550 U.S. at 416. As described above, the asserted claims of the '711 patent represent the application of commonly known Java-based programming methods to existing mobile devices, with entirely predictable results.

VII. CONTENTIONS UNDER 35 U.S.C. § 112 PURSUANT TO PATENT L.R. 3-3(d)

In accordance with Patent L.R. 3-3(d), Apple includes below the grounds on which Apple contends the asserted claims of the Patents-In-Suit are invalid for failure to meet the requirements of the first two paragraphs of 35 U.S.C. § 112.

As noted above, Samsung has not yet provided a claim construction for many of the terms and phrases that Apple anticipates will be in dispute. Apple, therefore, cannot provide a complete list of its § 112 defenses because Apple does not know whether Samsung will proffer a construction for certain terms and phrases that is broader than, or inconsistent with, the construction that would be supportable by the disclosure set forth in the specification.

To the extent the following contentions reflect constructions of claim limitations consistent with or implicit in Samsung's Infringement Contentions, no inference is intended nor should any be drawn that Apple agrees with Samsung's claim constructions, and Apple expressly reserves the right to contest such claim constructions. Apple offers these contentions in response

to Samsung's Infringement Contentions and without prejudice to any position it may ultimately take as to any claim construction issues.

Accordingly, Apple reserves the right to supplement, amend, and/or modify these § 112 invalidity contentions as discovery progresses.

A. The '604 Patent

Claims 1-4, 6, 10-12, 17-22 and 24 of the '604 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "super frame" is indefinite because this term is used inconsistently throughout the claims of the '604 patent. In claim 1, for example, "super frame" is used to refer to a block of *unencoded* data that is encoded by the turbo encoder (*see*, '604 patent, claim 1: "… a turbo encoder for turbo encoding the super frame …"). However, in claim 17, the term "super frame" is apparently used to refer to a block of *encoded* data that is decoded by a turbo decoder (*see*, '604 patent, claim 17: "… a decoder for turbo decoding data being received as a super frame …"). Because of this inconsistent usage, the term "super frame" is insolubly ambiguous. Therefore, claims 1-4, 6, 10-12, 17-22 and 24, are indefinite under 35 U.S.C. §112, second paragraph.

Claims 1-4, 6, 10-12, 17-22 and 24 of the '604 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "input data frames" is indefinite because this term is used inconsistently throughout the claims of the '604 patent. In claim 1, for example, "input data frames" is used to refer to blocks of *unencoded* data that are concatenated to form a super frame, which is then encoded by a turbo encoder (*see*, *e.g.*, '604 patent, claim 1: "… determining the number of input data frames to concatenate to compose a

super frame; and a turbo encoder for turbo encoding the super frame …"). However, in claim 17, the term "input data frames" is apparently used to refer to blocks of *encoded* data that are decoded by the decoder (*see*, *e.g.*, '604 patent, claim 17: "… a decoder for turbo decoding data being received as a super frame including a plurality of original input data frames …"). Some claims also use the term in the context of "turbo encoder input data frames," which is ambiguous on its face (*see* '604 patent, claims 10, 17, 21, 22, and 24). Because of this inconsistent usage, the term "input data frame" is insolubly ambiguous. Therefore, claims 1-4, 6, 10-12, 17-22 and 24, are indefinite under 35 U.S.C. §112, second paragraph.

Claims 1-4, 6, and 10-12 of the '604 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "consisting of more than one input data frame," is indefinite because it is unclear how – and if – this term limits the scope of the '604 claims. Claim 1 separately recites "… determining the number of input data frames to concatenate to compose a super frame …" and claim 10 recites "determining the number of input data frames to construct a super frame" ('604 patent, claims 1, 10). One of skill in the art would be unable to ascertain whether the additional requirement that the super frame "consist[] of more than one input data frame" is intended to somehow limit the number of input data frames used to construct/compose a super frame, or to distinguish the "super frame" referenced earlier in the claims from the "super frame consisting of more than one input data frame," or to limit the scope of the claim in some other way. Thus, the term "consisting of more than one input data frame" is insolubly ambiguous and claims 1-4, 6, and 10-12 are indefinite under 35 U.S.C. §112, second paragraph.

Claim 6 of the ’604 patent is invalid under 35 U.S.C. §112, second paragraph, because it fails to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term “a frame,” as it appears in claim 6, is indefinite because one of skill in the art would not be able to ascertain whether “a frame” refers to one of the “input data frames,” or “the super frame”, or both, or neither. Thus, the term “a frame” is insolubly ambiguous and claim 6 is indefinite under 35 U.S.C. §112, second paragraph.

Claims 18 and 20 of the ’604 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term “received message information,” as it appears in claims 18 and 20, is indefinite. Those skilled in the art would not be able to ascertain whether this term is referring to the same “message information” that appears in claim 17, from which claims 18 and 20 depend. On the one hand, “received message information” (claims 18, 20) appears to serve roughly the same purpose as “a message information” (claim 17), which suggests that the two terms refer to the same thing. On the other hand, the message information of claims 18 and 20 is described as “received,” while the message information of claim 17 is not. Also, “a message information” (claim 17) is singular, while “received message information” (claims 18, 20) is a collective plural, which suggests that the two terms refer to different objects. Thus, the term “received message information” is insolubly ambiguous and claims 18 and 20 are indefinite under 35 U.S.C. §112, second paragraph.

Claim 24 of the ’604 patent is invalid under 35 U.S.C. §112, second paragraph, because it fails to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the phrase “comparing a data rate of input data frames to a turbo encoder with a predetermined value” is ambiguous on its face, and is not susceptible to any

reasonable construction. It is not clear here whether the data rate is being compared to "a turbo encoder" or to "a predetermined value." The contextual meaning of "predetermined value" (*see, e.g.*, '604 patent, claims 22 and 26) suggests the latter, but the plain meaning of claim 24 suggests the former (otherwise, the prepositional phrase "to the turbo encoder" is not grammatical). Also, if the "predetermined value" is compared to the data rate, one must construe "input data frames to a turbo encoder" to mean "data frames *input to* a turbo encoder." However, this is inconsistent with the rest of the claim, which appears to require instead that a *super frame* be input to the turbo encoder in the event that the data rate is less than a predetermined value. Thus, the term "comparing a data rate of input data frames to a turbo encoder with a predetermined value" is insolubly ambiguous and claim 24 is indefinite under 35 U.S.C. §112, second paragraph.

B. The '410 Patent

Claims 1-57 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "the interleaved stream," is indefinite. It lacks antecedent basis, and one of ordinary skill in the art would be unable to ascertain whether this term is intended to refer to the "first information bit stream," or the "second information bit stream," or the "first parity stream," or the "second parity stream," or none of these streams. Thus, the term "the interleaved stream" is insolubly ambiguous and claims 1-57 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 1-57 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "separating each of the at least one

radio frames … into a third information bit stream, and first and second parity streams" is indefinite. One of ordinary skill in the art would be unable to ascertain whether this term requires separating each of the radio frames into *three* separate streams or into only *two* separate streams. One reading of this limitation requires separating each radio frame into three streams: the third information bit stream, the first parity stream, and the second parity stream. Another reading of this limitation requires separating each radio frame into only two streams: the third information bit stream, and a single stream comprising the first and second parity streams. Thus, the term "separating each of the at least one radio frames … into a third information bit stream, and first and second parity streams" is insolubly ambiguous and claims 1-57 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 1-22, 31-40, and 48-57 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "from the demultiplexer," as it appears in the phrase "a demultiplexer for separating each of the at least one radio frames received from the radio frame segmenter into a third information bit stream, and first and second parity streams *from the demultiplexer*," is indefinite. One of ordinary skill in the art would be unable to ascertain what object the prepositional phrase "from the demultiplexer" is intended to modify. Grammatically, there are two objects this phrase might modify, but neither of them is reasonable in the context of the claim: first, the term cannot modify "first and second parity streams," because these streams do not come from the demultiplexer. Second, the term cannot modify "separating," (*i.e.* "a demultiplexer for separating each of the at least one radio frames … from the demultiplexer") because this interpretation is incorrect on its face. Thus, the term

"from the demultiplexer" is insolubly ambiguous and claims 1-22, 31-40, and 48-57 are indefinite under 35 U.S.C. §112, second paragraph.

Claim 3 of the '410 patent is invalid under 35 U.S.C. §112, second paragraph, because it fails to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "the transmission time interval," is indefinite. It lacks antecedent basis, and one of ordinary skill would be unable to ascertain what time interval this term refers to. The plain meaning of the term suggests that it refers to the time interval that occurs during "transmission," but none of the claims of the '410 patent refer to any particular "transmission." Thus, the term "the transmission time interval" is insolubly ambiguous and claim 3 is indefinite under 35 U.S.C. §112, second paragraph.

Claims 5, 7-9, 13-15, 21, 24-26, 32-35, 39, 42, and 43 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "regular pattern" is indefinite. A "pattern" must exhibit regularity by definition. It is therefore unclear how, if at all, the word "regular" is intended to further limit the scope of the claims listed above. Thus, the term "regular pattern" is insolubly ambiguous and claims 5, 7-9, 13-15, 21, 24-26, 32-35, 39, 42, and 43 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 10, 50, 54, and 57 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "equalize a size of the at least one radio frames" is indefinite. The phrase "at least one radio frames" may refer to a single radio frame, but it does not make sense to "equalize a size" of a single radio frame; the verb "equalize," by definition, refers to an action performed on a *group* of objects. Thus, the term

"equalize a size of the at least one radio frames" is insolubly ambiguous and claims 10, 50, 54, and 57 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 12-51 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "a number of the at least one component rate matcher being equal to a number of the parity streams" (claim 12) is indefinite. The use of the indefinite article in the phrases "*a* number of the at last one component rate matcher" and "*a* number of the parity streams" makes it impossible for one of ordinary skill in the art to determine precisely *which* numbers this claim term is intended to reference. The fact that "component rate matcher" is singular, while "parity streams" is plural exacerbates this ambiguity. Similar terms appear in claims 23, 31, and 41, to which the same arguments apply. Thus, claims 12-51 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 8, 21, and 39 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "symbol" is lacks antecedent basis and is indefinite. It is unclear whether the term "symbol" refers to a single bit, a collection of bits, or something else. Thus, claims 8, 21, and 39 are indefinite under 35 U.S.C. §112, second paragraph.

Claim 27 and 44 of the '410 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "by synchronizing the multiplexing with the demultiplexing by switching [in the / to the corresponding] rate matcher" is indefinite. For example, it is unclear how "switching in the rate matcher" can possibly accomplish the

required synchronization of the multiplexing with the demultiplexing. Thus, claims 27 and 44 are indefinite under 35 U.S.C. §112, second paragraph.

C. The '055 Patent

Apple contends that claims 1-4 and 6-8 are invalid as indefinite under 35 U.S.C. § 112, ¶ 2. Claim 1 includes the claim elements "means for storing Greenwich mean time (GMT) information for each of a plurality of cities; … means for selecting at least one of said plurality of cities and automatically calculating a local time of said selected city, said local time being based on a difference between the GMT of said selected city and the GMT of a present location of said apparatus, said reference time and said elapsed time…" Apple contends that independent claim 1 and independent claim 4, which contains similar language to claim 1, as well as the claims that depend from these claims are invalid as indefinite under 35 U.S.C. § 112, ¶ 2, as applied, for example, in *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004), where the Federal Circuit held that "courts may not redraft claims, whether to make them operable or to sustain their validity. … Even 'a nonsensical result does not require the court to redraft the claims of the … patent. Rather, where as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated.'" *Id.* at 1374. As written, the claims 1 and 4 are nonsensical: "GMT" refers to a specific time zone, so GMT of a city outside the GMT time zone has no meaning and one cannot take the "difference between the GMT of said selected city and the GMT of a present location of said apparatus."

D. The '871 Patent

Apple contends that '871 patent claims 5 and 20 are invalid as indefinite under 35 U.S.C. § 112, ¶ 2. Claims 5 and 20 are each apparatus claims that recite, among other things, a controller that "divides the display window into first and second display windows, displays

[character messages to be transmitted] on the first display window, and displays [data corresponding to a second function] on the second display window."[3]

Apple contends that these claims are invalid as indefinite pursuant to *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005), where the Federal Circuit held that a claim covering both a device and a method using the device is invalid as indefinite under 35 U.S.C. §112 ¶ 2. In *IPXL*, the claim at issue recited both an apparatus and a method for using the apparatus. As the Court explained, the combination of structural and method limitations made it unclear whether infringement occurs "when one creates a system that allows the user to change the predicted transaction information or accept the displayed transaction, or whether infringement occurs when the user uses the input means to accept a displayed transaction." *Id.*, at 1384. Because '871 patent claims 5 and 20 similarly combine structural and method limitations, it is unclear whether infringement of these claims occurs when one creates the apparatus (the portable telephone or the display device, respectively), or when one uses the apparatus' controller to divide the display window and display the data as indicated in each of the claim's final limitations. Thus, as in *IPXL*, these claims do not apprise a person of ordinary skill in the art of their scope, and they are invalid for indefiniteness under 35 U.S.C. § 112, ¶ 2.

E. The '792 Patent

[3] The full text of claims 5 and 20 are as follows:

Claim 5 recites: "A portable telephone comprising: an inputting unit which receives character messages to be transmitted and a division mode selection; a wireless transceiver which, if the character messages to be transmitted are completed, transmits the completed character messages; a data storage unit which stores the character messages to be transmitted; a display having a display window which displays the character messages to be transmitted; and a controller which, if the division mode selection is input using the inputting unit while the character messages to be transmitted are being drawn up, divides the display window into first and second display windows, displays the character messages to be transmitted on the first display window, and displays a search type selection screen on the second display window."

Claim 20 recites: "A display device comprising: an inputting unit which receives a first character message to be transmitted; a receiver and a transmitter to receive and transmit completed character messages; a display having a display window; and a controller that receives a request function while the first character message to be transmitted is being displayed, divides the display window into first and second display windows, displays on the first display window the first character message to be transmitted, and displays data corresponding to a selected function on the second display window."

Claims 11-16 of the '792 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the term "the de-interleaved systematic bits and parity bits" is indefinite. First, it lacks antecedent basis, and one of ordinary skill in the art would be unable to ascertain the meaning of this term, because the claim does not identify any group of bits – implicitly or explicitly – that has been "de-interleaved." Second, it is not clear whether the adjective "de-interleaved" modifies only "systematic bits," or applies to "parity bits" as well. Thus, the term "the de-interleaved systematic bits and parity bits" is insolubly ambiguous and claims 11-16 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 11-16 of the '792 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the terms "rate matcher," "rate matching," and "rate-matched" are indefinite. First, "rate matching" is apparently used in claims 1-10 to refer to a step in the encoding process, and in claims 11-16 the same term is used to refer to the inverse of this step. Second, "rate matcher" is apparently used in claims 1-10 to refer to a component that performs the aforementioned encoding step, while in claims 11-16, this term refers to a component that performs the inverse of this encoding step. Similarly, the adjective "rate-matched" seems to have one meaning in claims 11-16 in the context of decoding, and the opposite meaning in claims 1-10 in the context of encoding. Thus, the terms "rate matcher," "rate matching," and "rate-matched," are insolubly ambiguous and render claims 11-16 indefinite under 35 U.S.C. §112, second paragraph.

Claims 12, 13, 15, and 16 of the '792 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter

which the applicant regards as his invention. In particular, the term "if a number of the systematic bits is less than a number of the parity bits," is indefinite. The use of the indefinite article in, for example, the phrase "*a* number of the systematic bits," suggests that this phrase may refer to *any* number of systematic bits that is less than or equal to the total number of systematic bits. The same logic applies to the phrase "*a* number of the parity bits." It follows that the condition "if a number of the systematic bits is less than a number of the parity bits," may be arbitrarily true or false, depending on which numbers are chosen. Thus, the term is insolubly ambiguous and claims 12, 13, 15, and 16 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 12 and 15 of the '792 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the phrase "part of the parity bits is written next to systematic bits in the first deinterleaver" is not susceptible to any reasonable construction. This term cannot be construed to mean that some of the parity bits are written to the first deinterleaver *instead of* the second deinterleaver: claims 11 and 14, from which claims 12 and 15 depend, recite a second deinterleaver for writing "the plurality of parity bits" (*i.e.*, the *entire* plurality of parity bits). So, if claims 12 and 15 require a portion of the parity bits to be written to the first deinterleaver then that portion must be written to *both* deinterleavers, which would not make sense in the context of the claimed invention. Thus, the term "part of the parity bits is written next to systematic bits in the first deinterleaver" is insolubly ambiguous and claims 12 and 15 are indefinite under 35 U.S.C. §112, second paragraph.

Claims 13 and 16 of the '792 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the

applicant regards as his invention. In particular, the phrase "part of the systematic bits is written prior to the parity bits in the second deinterleaver" is not susceptible to any reasonable construction. This term cannot be construed to mean that some of the systematic bits are written to the second deinterleaver *instead of* the first deinterleaver: claims 11 and 14, from which claims 13 and 16 depend, recite a first deinterleaver for writing "the plurality of systematic bits" (*i.e.*, the *entire* plurality of systematic bits). So, if claims 13 and 16 require a portion of the systematic bits to be written to the second deinterleaver then that portion must be written to *both* deinterleavers, which would not make sense in the context of the claimed invention. Thus, the term "part of the systematic bits is written prior to the parity bits in the second deinterleaver" is insolubly ambiguous and claims 13 and 16 are indefinite under 35 U.S.C. §112, second paragraph.

F. The '867 Patent

Claims 25-27 and 30 of the '867 patent are invalid under 35 U.S.C. §112, first paragraph, because the specification of the '867 patent does not contain an adequate written description of the subject matter of these claims, and would not enable one of skill in the relevant art to make and use the same. In particular, these claims require "generating a $((K-1)*M+K)^{th}$ Gold code as a K^{th} primary scrambling code by adding a (((K-1)*M+K)-1)-times shifted first m-sequence and the second m-sequence" ('867 patent, claim 25). However, the specification only teaches generating primary scrambling codes by adding two *unshifted* m-sequences, and thus does not disclose any methods or systems for generating primary scrambling codes as required by claim 25 and its dependents (*see, e.g.*, '867 patent at 4:41-42; 4:62-64; 5:13-14; 5:29-31; 8:17-20 (with reference to Fig. 7); 9:57-58; 10:2-5 (with reference to Fig. 8); 11:43-45; 11:49-50 (with

reference to Fig. 10)). Thus, claims 25-27 and 30 fail to meet the written description and enablement requirements of 35 U.S.C. §112, first paragraph.

Claims 26 and 27 of the '867 patent are invalid under 35 U.S.C. §112, second paragraph, because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. In particular, the phrase "$((K-1)*M+K+1)^{th}$ through $(K*M+K)^{th}$ Gold codes" is indefinite. One of skill in the art would not be able to ascertain how ordinal numbers such as "$(K*M+K)^{th}$" are associated with Gold codes, and what purpose, if any, these ordinal numbers serve. For the same reason, one of skill in the art would not be able to determine whether there is some meaningful relationship between the "$((K-1)*M+K+1)^{th}$" Gold code and the "$(K*M+K)^{th}$" Gold code. Without this information, the assignment of ordinals to Gold codes is effectively arbitrary, and the phrase "$((K-1)*M+K+1)^{th}$ through $(K*M+K)^{th}$ Gold codes" is not susceptible to any reasonable construction. Thus, claims 26 and 27 are indefinite under 35 U.S.C. §112, second paragraph.

G. The '001 Patent

Claims 1-21 are invalid under Section 112, Section 2, because the term "radio frame matcher" does not particularly point out and distinctly claim the subject matter of the alleged invention. The scope of the term is unclear, making it insolubly ambiguous, and further not providing adequate notice to the public of what infringes and what does not. Claims 1-21 are invalid under Section 112, Section 1, because the specification does not provide adequate written description and/or enablement of the term "radio frame matcher."

H. The '516 Patent

Claims 1-6, 9-10, 14-20, 23-24, and 28 are invalid under 35 U.S.C. 112, second paragraph, and/or the specification fails to provide an adequate written description and/or

enablement because the claims are inconsistent in scope. For example, claim 1 suggests that data be transmitted over first channel with a transmit power factor, and over a second channel with a scaled-down transmit power factor, while claims 4 and 5 indicate that the second channel is not transmitted, and claim 6 indicates that the first channel is scaled down. Accordingly, claim 1 and all its dependent claims are invalid. Claim 15 and its dependent claims are invalid for similar reasons.

Claims 1-6, 9-10, 14-20, 23-24, and 28 are invalid under 35 U.S.C. 112, second paragraph, and/or the specification fails to provide an adequate written description and/or enablement because the claims are inconsistent in scope. For example, claim 1 recites in the preamble that the second channel supports HARQ, a technology that involves retransmission; claims 11 and 12 suggest that the second channel does no support retransmission. Claim 15 and its dependent claims are invalid for similar reasons.

Claims 16-20, 23, and 24 are invalid under section 101 and/or section 112 for reciting a mixed method and apparatus, and thus failing to recite a single statutory class, and for providing inadequate notice of what infringes and what does not.

I. The '893 Patent

1. Indefiniteness

Apple contends that claims 10-16 are invalid as indefinite under 35 U.S.C. § 112, ¶ 2. Independent claim 10 recites, among other things, "A digital image processing apparatus comprising: . . . a controller connected with the photoelectric conversion module, the recording medium and the display screen, the controller being operative in a photographing mode to process the image data for storage in the recording medium and, in a stored-image display mode, being operative to control the display screen for displaying a single image relative to the image

data, ***wherein upon a user performing a mode-switching operation defined by switching from the stored-image display mode to the photographing mode and back to the stored-image display mode*** the controller causes the display screen to first display a single image file that was most recently displayed before the mode-switching operation . . ." (emphasis added). Apple contends that claim 10, and the claims that dependent from it, are invalid as indefinite under 35 U.S.C. § 112, ¶ 2 as applied in *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005), where the Federal Circuit held that a claim covering both a device and a method using the device is invalid as indefinite under 35 U.S.C. §112 ¶ 2. In *IPXL*, the claim at issue recited both an apparatus and a method for using the apparatus --a "system of claim 2 [including an input means] wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction type, and ***the user uses the input means*** to either change the predicted transaction information or accept the displayed transaction type and transaction parameters." Because claim 10 of the '893 patent similarly recites an apparatus and a method for using the apparatus it is unclear whether infringement of claim 10 occurs when one creates an apparatus that allows the user to switch from the stored-image display mode to the photographing mode and back to the stored-image display mode, or whether infringement occurs when the user actually switches from the stored-image display mode to the photographing mode and back to the stored-image display mode. Accordingly, under *IPXL*, independent claim 10 and dependent claims 11-16 are invalid under section 112, second paragraph because the claims do not apprise a person of ordinary skill in the art of its scope.

2. Lack of Written Description

All of the '893 patent asserted claims are also invalid for failing to comply with the written description requirement of 35 U.S.C. § 112, ¶ 1, because the '893 patent fails to disclose

"***irrespective of the duration***, first displaying again only the single image file from step (c)" as recited in claim 1 (and claims that depend directly or indirectly on claim 1) and "the single image file being first displayed ***irrespective of a duration*** that the camera was used in the photographing mode during the mode-switching operation" as recited in claim 10 (and claims that depend directly or indirectly on claim 10). Samsung added this language to the claim by amendment in an attempt to overcome a rejection of the claims by the PTO. Samsung did not, however, identify support for this limitation when adding it by amendment.

The only disclosure that comes close to suggesting a "duration" suggests that the duration if anything is only temporary and not potentially indefinite as the claim language suggests:

> When the continuous mode as the second mode is selected, if the user ***temporarily*** switches to another operating mode while sequentially displaying the files stored in the recording medium and then returns to the stored-image display mode, the user can continue to perform a previous displaying operation. That is, in the continuous mode, the user can continue reviewing stored images at the point where he or she left off before switching to another operating mode.

('893 patent, col. 6:9-16; (emphasis added); *see also* col. 7:62-67 (emphasis added) ("When the continuous mode as the second mode is selected, if the user ***temporarily*** switches to another operating mode while sequentially displaying the files stored in the recording medium and then returns to the stored-image display mode, the user can continue to perform a previous displaying operation.").)

Indeed, the '893 patent specification describes situations where the image displayed after a duration in the photographing mode will not be the previously viewed image. For example, column 8, lines 28-51 explains that if the camera is turned off or the memory card is changed, the first photo shown in reproduction mode will be the last image captured and not the last image viewed, even in the "continuous" mode. Presumably if after viewing images, one uses the camera in photographing mode long enough, either the battery will run out or the memory card

will fill up and a user will have to power off and/or change the memory card. Indeed, many cameras will have the feature of powering off after a period of inactivity. Therefore, the specification indicates that the inventors did not have possession of a method in which the last-viewed image is always the first image displayed upon returning to a reproduction mode, irrespective of the duration since the image was previously displayed. Indeed, claims 5 and 9, which depend from claim 1, allude to the possibility that the last viewed image is not available in certain situations, which would be directly inconsistent with the "irrespective of the duration" claim language.

Thus, the asserted claims of the '893 patent are invalid for lack of written description.

J. The '460 Patent

1. Indefiniteness

Apple contends that '460 patent claim 1 is invalid as indefinite under 35 U.S.C. § 112, ¶ 2. The claim is insolubly ambiguous because one of ordinary skill in the art could not determine whether the claim requires (1) sending two separate email messages from two separate email transmission sub-modes (as proposed by Samsung in its infringement contentions), (2) sending one email message from the second E-mail transmission sub-mode, whereby the email is created by transmitting the address of the other party and a message received through a user interface in the first E-mail transmission sub-mode to the second E-mail transmission sub-mode, or (3) sending one email message from either the first or the second E-mail transmission sub-mode, whereby the email is sent from the second E-mail transmission sub-mode if the email has an image attachment, and whereby the email is sent from the first E-mail transmission sub-mode otherwise.

The indefiniteness of claim 1 is supported by the corresponding Korean parent, KR Patent No. 10-0350607. The corresponding Korean claim 20 explicitly requires "transmitting, as an E-mail, an address of another party and a message inputted through a user interface if [a user] proceeded to the first E-mail transmission mode; and transmitting, as an E-mail, the image being displayed on the display by attaching to an address of the another party and a message inputted through a user interface if [the user] proceeded to the second E-mail transmission mode." The "if" language that appears in the corresponding Korean claim 20 demonstrates how the '460 patent claim 1 is meaningless. In contrast to the '460 patent claim 1, the Korean claim makes clear that only one email is sent, and the sub-mode sending the email depends on whether or not an image is being attached. In contrast, in the '460 patent claim 1, one of skill in the art could not determine whether infringement happens by sending two separate email messages or one email message, and the claim is invalid for indefiniteness under 35 U.S.C. § 112, ¶ 2.

2. Lack of Written Description

Apple contends that '460 patent claim 1 is invalid for lack of written description under 35 U.S.C. § 112, ¶ 1.

First, the specification does not provide support for the "first E-mail transmission sub-mode" and "second E-mail transmission sub-mode" limitations. The specification only provides support for a single "E-mail transmission sub-mode." The '460 patent specification says "[u]pon request for E-mail transmission in the portable phone mode in step 608, the portable phone controller 32 enters an E-mail transmission sub-mode in step 610." *See* '460 patent col.9 ll.42–44 & FIG. 6. The specification continues, in the context of discussing the play mode, that "[u]pon user request for the E-mail transmission, the portable controller 32 returns to the E-mail transmission sub-mode in step 610." *See id.* col.11 ll.4–12 & FIG. 8. Furthermore, Figures 6

and 8, which illustrate the portable phone mode and the play mode, use the same reference number, E-mail transmission sub-mode 610, to refer to the single E-mail transmission sub-mode. The figures and text of the specification do not identify any other E-mail transmission sub-mode.

Second, '460 patent claim 1, if interpreted as proposed by Samsung in its infringement contentions, requires that two email messages are simultaneously composed and sent from a "first E-mail transmission sub-mode" and a "second E-mail transmission sub-mode." In contrast, the specification only provides support for one email message being sent, either having (1) a To address and message body, or (2) a To address, message body, and image attachment. In describing the E-mail transmission sub-mode, the specification discloses two alternate branches whereby one email message is sent from either branch but not from both. The specification discloses

> If the E-mail transmission sub-mode is selected in the play sub-mode of the camera mode, this implies that image data to be enclosed in the E-mail exists . . . . However, if only the E-mail transmission sub-mode is selected in the portable phone mode, this implies that no image data enclosed in the E-mail exists.
>
> In the presence of a still image to be enclosed in the E-mail in step 914, the portable phone controller 32 transmits the received message (title and contents) and the enclosed still image to the E-mail server 510 in packets, while displaying a message indicating E-mail transmission on the color LCD 48, in step 916. In the absence of a still image to be enclosed in the E-mail in step 914, the portable phone controller 32 transmits the received message (title and contents) to the E-mail server 510 in packets, while displaying the message indicating E-mail transmission on the color LCD 48 in step 918. *See id.* col.12 ll.30–51 & FIG. 9.

Figure 9, which illustrates the E-mail transmission sub-mode, shows that the method proceeds along step 916 in the presence of a still image, and alternatively, proceeds along step 918 in the absence of a still image. That is, the portable phone controller 32 transmits one email message, not two email messages, to the E-mail server 510, depending on the presence or absence of a still

image. As described above, claim 20 in the corresponding Korean patent explicitly requires the first transmitting limitation "if [the user] proceeded to the first E-mail transmission mode," and the second transmitting limitation "if [the user] proceeded to the second E-mail transmission mode." This further emphasizes that the specification does not support claim 1 of the '460 patent.

Third, '460 patent claim 1, if interpreted to require transmitting only one email, requires transmitting the address of the other party and a message received through a user interface in the first E-mail transmission sub-mode to the second E-mail transmission sub-mode, but the specification does not describe such transmission between two sub-modes. The final limitation of '460 patent claim 1 requires "transmitting the address of the other party and the message received through the user interface and the image displayed on the display as an E-mail in the second E-mail transmission sub-mode." The penultimate limitation of '460 patent claim 1, describing the first E-mail transmission sub-mode, does not require the information be transmitted "as an E-mail." Furthermore, the claim lacks any language signaling that either transmitting limitation might not happen. Accordingly, to send one email message via two limitations which transmit information, the first E-mail transmission sub-mode would have to transmit information to the second E-mail transmission sub-mode, where the information includes the address of the other party and the message received through the user interface. The specification provides no description supporting such transmission between two E-mail transmission sub-modes.

K. The '941 Patent

The '941 specification lacks adequate written description and/or enablement under 35 U.S.C. § 112 for claims 1-2, 6-7, 10-11, and 15-16.

The limitations of claim 1 are not supported by the specification of the '941 patent. Specifically, the specification does not support "a one-bit field indicating that the PDU does not contain an entire SDU in the data field." The further limitations of claim 2 are not supported by the specification of the '941 patent. Specifically, the specification does not support "if the SDU is comprised in one PDU" or "a one-bit field indicating that the PDU contains the entire SDU in the data field."

The limitations of claim 6 are not supported by the specification of the '941 patent. Specifically, the specification does not support "a one-bit field indicating whether the PDU contains the entire SDU in its data field" or "if the one-bit field indicates that the PDU does not contain an entire SDU in its data field." The further limitations of claim 7 are not supported by the specification of the '941 patent. Specifically, the specification does not support "if the one-bit field indicates that the PDU contains an entire SDU in its data field."

The limitations of claim 10 are not supported by the specification of the '941 patent. Specifically, the specification does not support "a one-bit field setter for setting the one-bit field of the at least one PDU to indicate whether the PDU contains an entire SDU in the data field." The further limitations of claim 11 are not supported by the specification of the '941 patent. Specifically, the specification does not support "a one-bit field indicating that the PDU contains the entire SDU in the data field."

The limitations of claim 15 are not supported by the specification of the ‘941 patent. Specifically, the specification does not support “a one-bit field indicating whether the PDU contains an entire service data unit (SDU) in its data field from the header” or “if the one-bit field indicates that the PDU does not contain an entire SDY in its data field.” The further limitations of claim 16 are not supported by the specification of the '941 patent. Specifically, the

specification does not support "if the one-bit field indicates that the PDU contains the entire SDU in its data field."

L. The '711 Patent

Apple contends that all asserted claims are invalid as failing to provide adequate written description of the claimed invention under 35 U.S.C. §112, paragraph 1. All claims of the '711 patent recite "generating a music background play object, wherein the music background play object includes an application module including at least one applet." However, the '711 specification contains only a single reference to an "applet" at Col. 3 ln. 12: "[a]pplication modules of the portable terminal include at least one applet and each of the application modules, that is each menu of the portable terminal, independently performs multi-tasking." This single recitation of "applet" would not convey to the person of ordinary skill in the art that the inventor was in possession of the full scope of the claimed invention, including the limitation above.

VIII. CONTENTIONS UNDER 35 U.S.C. § 101 PURSUANT TO PATENT L.R. 3-3(d)

In accordance with Patent L.R. 3-3(d), Apple includes below the grounds on which Apple contends the asserted claims of the Patents-In-Suit are invalid for failure to meet the requirements of 35 U.S.C. § 101.

As noted above, Samsung has not yet provided a claim construction for many of the terms and phrases that Apple anticipates will be in dispute. Apple, therefore, cannot provide a complete list of its § 101 defenses because Apple does not know whether Samsung will proffer a construction for certain terms and phrases that is broader than, or inconsistent with, the construction that would be supportable by the disclosure set forth in the specification. Accordingly, Apple reserves the right to supplement, amend, and/or modify these § 101 invalidity contentions as discovery progresses.

To the extent the following contentions reflect constructions of claim limitations consistent with or implicit in Samsung's Infringement Contentions, no inference is intended nor should any be drawn that Apple agrees with Samsung's claim constructions, and Apple expressly reserves the right to contest such claim constructions. Apple offers these contentions in response to Samsung's Infringement Contentions and without prejudice to any position it may ultimately take as to any claim construction issues.

A. The '055 Patent

Apple contends that claims 1-4 and 6-8 are invalid because they do not constitute patentable subject matter under 35 U.S.C. § 101. Claim 1 includes the claim elements "means for receiving a reference time from a signal received from a remote system; … means for selecting at least one of said plurality of cities and automatically calculating a local time of said selected city, said local time being based on a difference between the GMT of said selected city and the GMT of a present location of said apparatus, said reference time and said elapsed time…" Independent claims 1 and 4, as well as the claims that depend from these claims are invalid under 35 U.S.C. § 101, as applied, for example, in *Bilski v. Kappos*, 130 S. Ct. 3218 (U.S. 2010) and *Cybersource Corp. v. Retail Decisions, Inc.*, Fed. Cir., No. 2009-1358, ___ F.3d ___, 2011 U.S. App. LEXIS 16871 (Fed. Cir. Aug. 16, 2011). In *Cybersource*, the Federal Circuit determined that claims related to a method of fraud detection failed the machine-or-transformation test and were not rendered patentable by data-gathering steps. Further, the allegedly patentable step carried out by the computer was a mental process that could have simply been carried out by the human mind or a human using a pen and paper. It is not enough under the machine-or-transformation test that the method described in the patent merely gathers data from, for example, the Internet for analysis. *See Cybersource*, 2011 U.S. App. LEXIS

Upon entry of an appropriate protective order that addresses procedures for access to the parties' source code, and upon receiving the consent of any necessary non-parties, Apple will make available the source code in its possession sufficient to show the operation of the accused functionality.

Dated: October 7, 2011

/s/ Mark D. Selwyn

Mark D. Selwyn (SBN 244180)
(mark.selwyn@wilmerhale.com)
WILMER CUTLER PICKERING
HALE AND DORR LLP
950 Page Mill Road
Palo Alto, California 94304
Telephone: (650) 858-6000
Facsimile: (650) 858-6100

William F. Lee (admitted *pro hac vice*)
(william.lee@wilmerhale.com)
WILMER CUTLER PICKERING
HALE AND DORR LLP
60 State Street
Boston, Massachusetts 02109
Telephone: (617) 526-6000
Facsimile: (617) 526-5000

Harold J. McElhinny (SBN 66781)
(HMcElhinny@mofo.com)
Michael A. Jacobs (SBN 111664)
(MJacobs@mofo.com)
Richard S.J. Hung (CA SBN 197425)
rhung@mofo.com
MORRISON & FOERSTER LLP
425 Market Street
San Francisco, California 94105
Telephone: (415) 268-7000
Facsimile: (415) 268-7522

Attorneys for Plaintiff and
Counterclaim-Defendant Apple Inc.

CERTIFICATE OF SERVICE

I, Michael Waller, hereby certify that on October 7, 2011, true and correct copies of **PLAINTIFF AND COUNTERCLAIM-DEFENDANT APPLE INC.'S INVALIDITY CONTENTIONS** were served on the following counsel of record at the addresses and manner indicated:

VIA ELECTRONIC MAIL:

Kevin P.B. Johnson (Cal. Bar No. 177129)
(kevinjohnson@quinnemanuel.com)
Victoria F. Maroulis (Cal. Bar No. 202603)
(victoriamaroulis@quinnemanuel.com)
Quinn Emanuel Urquhart & Sullivan LLP
555 Twin Dolphin Drive 5th Floor
Redwood Shores, California 94065
Telephone: (650) 801-5000
Facsimile: (650) 801-5100

Charles Kramer Verhoeven (Cal. Bar No. 170151)
(charlesverhoeven@quinnemanuel.com)
Quinn Emanuel Urquhart & Sullivan LLP
50 California Street, 22nd Floor
San Francisco, California 94111
Telephone: (415) 875-6600
Facsimile: (415) 875-7600

Edward J. DeFranco (Cal. Bar No. 165596)
(eddefranco@quinnemanuel.com)
Quinn Emanuel Urquhart & Sullivan LLP
51 Madison Avenue, 22nd Floor
New York, New York 10010
Telephone: (212) 849-7000
Facsimile: (212) 849-7100

Michael T. Zeller (Cal. Bar No. 196417)
(michaelzeller@quinnemanuel.com)
Quinn Emanuel Urquhart & Sullivan LLP
865 S. Figueroa St., 10th Floor
Los Angeles, California 90017
Telephone: (213) 443-3000
Facsimile: (213) 443-3100

/s/ Michael Waller
Michael Waller