



US009532336B2

(12) **United States Patent**
Park et al.

(10) **Patent No.:** **US 9,532,336 B2**
(45) **Date of Patent:** ***Dec. 27, 2016**

(54) **DATA TRANSMISSION METHOD AND USER EQUIPMENT FOR THE SAME**

(58) **Field of Classification Search**
None
See application file for complete search history.

(71) Applicant: **EVOLVED WIRELESS LLC**, Austin, TX (US)

(56) **References Cited**

(72) Inventors: **Sung Jun Park**, Anyang-si (KR);
Seung June Yi, Anyang-si (KR);
Young Dae Lee, Anyang-si (KR); **Sung Duck Chun**, Anyang-si (KR)

U.S. PATENT DOCUMENTS

7,047,009 B2 5/2006 Laroia et al.
7,292,641 B2 11/2007 Suh et al.
(Continued)

(73) Assignee: **EVOLVED WIRELESS LLC**, Austin, TX (US)

FOREIGN PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 274 days.

CN 1437416 A 8/2003
CN 1596020 A 3/2005
(Continued)

This patent is subject to a terminal disclaimer.

OTHER PUBLICATIONS

(21) Appl. No.: **13/801,529**

Office Action (including translation) for Chinese Patent Application No. 200980120004.0, mailed May 28, 2014.

(22) Filed: **Mar. 13, 2013**

(Continued)

(65) **Prior Publication Data**
US 2013/0195060 A1 Aug. 1, 2013

Primary Examiner — Huy D Vu
Assistant Examiner — Teisha D Hall
(74) Attorney, Agent, or Firm — Jason H. Vick; Sheridan Ross, PC

Related U.S. Application Data

(63) Continuation of application No. 12/972,366, filed on Dec. 17, 2010, now Pat. No. 8,422,410, which is a (Continued)

Foreign Application Priority Data

Jun. 25, 2009 (KR) 10-2009-0057128

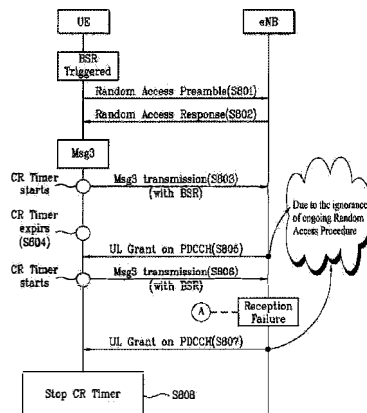
(51) **Int. Cl.**
H04W 72/04 (2009.01)
H04W 74/08 (2009.01)

(57) **ABSTRACT**

(52) **U.S. Cl.**
CPC **H04W 72/0406** (2013.01); **H04W 74/08** (2013.01); **H04W 74/0866** (2013.01)

A mobile communication technology, and, more particularly, a method for efficiently transmitting data stored in a message 3 (Msg3) buffer and a user equipment for the same is disclosed. The method of transmitting data by a user equipment in uplink includes receiving an uplink (UL) Grant signal from a base station on a specific message, determining whether there is data stored in a message 3 (Msg3) buffer when receiving the UL Grant signal on the specific message, determining whether the specific message is a random access response message, and transmitting the data stored in the Msg3 buffer to the base station using the UL Grant signal received on the specific message, if there is data stored in the

(Continued)



Apple v. Evolved Wireless
IPR2016-01228
Exhibit 2011

Msg3 buffer when receiving the UL Grant signal on the specific message and the specific message is the random access response message.

26 Claims, 11 Drawing Sheets

Related U.S. Application Data

continuation of application No. 12/538,514, filed on Aug. 10, 2009, now Pat. No. 7,881,236.

(60) Provisional application No. 61/087,988, filed on Aug. 11, 2008.

EP	1787414	B1	1/2012
JP	2008-103862	A	5/2008
KR	10-2006-0066595		6/2006
KR	10-062668		9/2006
KR	10-2007-0055004	A	5/2007
KR	10-2007-0107619	A	11/2007
KR	10-2008-0030941	A	4/2008
WO	WO 2004/030392		4/2004
WO	WO 2005/043791		5/2005
WO	WO 2005/088882		9/2005
WO	WO 2006/023536		3/2006
WO	WO 2007/082409		7/2007
WO	WO 2007/126301		11/2007
WO	WO 2007/138453		12/2007
WO	WO 2008/023932	A1	2/2008
WO	WO 2008/041824		4/2008

OTHER PUBLICATIONS

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,424,067	B2	9/2008	Vanderperren et al.
7,426,175	B2	9/2008	Zhuang et al.
7,433,418	B1	10/2008	Dogan et al.
7,447,504	B2	11/2008	Lohr et al.
7,496,113	B2	2/2009	Cai et al.
7,570,618	B2	8/2009	Son et al.
7,580,400	B2	8/2009	Sung et al.
7,590,183	B2	9/2009	Yonge, III et al.
7,599,327	B2	10/2009	Zhuang
7,623,439	B2	11/2009	Webster et al.
7,660,279	B2	2/2010	Brueck et al.
7,664,076	B2	2/2010	Kim et al.
7,675,841	B2	3/2010	Suh et al.
7,693,517	B2	4/2010	Etemad et al.
7,701,919	B2	4/2010	Ah Lee
7,702,028	B2	4/2010	Zhou et al.
7,881,236	B2	2/2011	Park et al.
7,961,696	B2	6/2011	Ma et al.
7,995,967	B2	8/2011	Li et al.
8,000,305	B2	8/2011	Tan et al.
8,098,745	B2	1/2012	Bertrand et al.
8,116,195	B2	2/2012	Hou et al.
8,121,045	B2	2/2012	Cai et al.
8,131,295	B2	3/2012	Wang et al.
8,180,058	B2	5/2012	Kitazoe
8,199,730	B2*	6/2012	Ou et al. 370/336
8,422,410	B2	4/2013	Park et al.
8,448,037	B2	5/2013	Bergquist et al.
9,094,202	B2	7/2015	Maheshwari et al.
9,204,468	B2	12/2015	Tynderfeldt et al.
2004/0131106	A1	7/2004	Kanterakis
2005/0084030	A1	4/2005	Zhou et al.
2005/0259567	A1	11/2005	Webster et al.
2006/0018336	A1	1/2006	Sutivong et al.
2006/0126570	A1	6/2006	Kim et al.
2006/0274843	A1	12/2006	Koo et al.
2007/0042784	A1	2/2007	Anderson
2007/0110172	A1	5/2007	Faulkner et al.
2007/0115871	A1	5/2007	Zhang et al.
2007/0253465	A1	11/2007	Muharemovic et al.
2007/0270273	A1	11/2007	Fukuta et al.
2007/0291696	A1	12/2007	Zhang et al.
2008/0095094	A1	4/2008	Innami
2008/0186911	A1	8/2008	Bachl et al.
2008/0198800	A1	8/2008	Zhang et al.
2009/0163211	A1	6/2009	Kitazoe et al.
2010/0034162	A1	2/2010	Ou et al.
2010/0037113	A1	2/2010	Maheshwari et al.
2010/0113057	A1	5/2010	Englund et al.
2011/0176513	A1	7/2011	Yi et al.

FOREIGN PATENT DOCUMENTS

EP	1404079	3/2004
----	---------	--------

Notification on the Grant of Patent Right for Invention (including translation) for Chinese Patent Application No. 200980120004.0, mailed Sep. 4, 2014.

Examination Report for Great Britain Patent Application No. GB0912850.5, mailed Aug. 20, 2009.

Official Action for Great Britain Patent Application No. GB0912850.5, mailed Jan. 8, 2010.

Official Action for Great Britain Patent Application No. GB0912850.5, mailed Jun. 7, 2010.

Official Action for Great Britain Patent Application No. GB0912850.5, mailed Jul. 21, 2010.

Notification of Grant for Great Britain Patent Application No. GB0912850.5, mailed Dec. 7, 2010.

Prior Art Search Report (including translation) for Korean Application No. 10-2009-0057128, mailed Oct. 27, 2009.

Decision to Grant for Korean Application No. 10-2009-0057128, mailed Jan. 11, 2010.

International Search Report for corresponding International Application No. PCT/KR2009/004002, mailed Mar. 9, 2010.

Written Opinion for corresponding International Application No. PCT/KR2009/004002, mailed Mar. 9, 2010.

International Preliminary Report on Patentability for corresponding International Application No. PCT/KR2009/004002, mailed Feb. 24, 2011.

Office Action for Canadian Patent Application No. 2,720,833, mailed Jun. 12, 2012.

Notice of Allowance for Canadian Patent Application No. 2,720,833, mailed Aug. 8, 2013.

Office Action for Chinese Patent Application No. 200980120004.0, mailed Mar. 5, 2013.

Office Action for Chinese Patent Application No. 200980120004.0, mailed Nov. 21, 2013.

European Search Report for European Patent Application No. 09166620.6, mailed Nov. 27, 2009.

Office Action for European Patent Application No. 09166620.6, mailed Jan. 19, 2010.

Official Action for U.S. Appl. No. 12/538,514, mailed Jun. 11, 2010.

Notice of Allowance for U.S. Appl. No. 12/538,514, mailed Sep. 20, 2010.

Notice of Allowance for U.S. Appl. No. 12/972,366, mailed Dec. 14, 2012.

U.S. Appl. No. 60/759,697, filed Jan. 17, 2006, Tan et al.

U.S. Appl. No. 60/815,246, filed Jun. 19, 2006, Zhang et al.

U.S. Appl. No. 60/815,023, filed Jun. 20, 2006, Chandra et al.

U.S. Appl. No. 60/015,159, filed Dec. 19, 2007, Kitazoe et al.

3GPP Meeting Registration; Meeting: RAN2#62; Kansas City; May 5, 2008 (6 pages).

3GPP Meeting Registration; Meeting: 3GPPRAN1#44; Mar. 10, 2016 (7 pages).

3GPP Meeting Registration; Meeting: 3GPPRAN1#44-bis; Mar. 12, 2016 (6 pages).

(56)

References Cited

OTHER PUBLICATIONS

3GPP TSG RAN WG1 Ad Hoc on LTE "On Allocation of Uplink Pilot Sub-Channels in EUTRA SC-FDMA" London, UK; R1-050822; Aug. 29-Sep. 2, 2005; (7 pages).

3GPP TSG RAN WG1 Ad Hoc on LTE "On Uplink Pilot in EUTRA SC-FDMA" San Diego, USA; R1-051062; Oct. 10-14, 2005 (7 pages).

3GPP TSG-RAN WG2 "Access Procedure" Shanghai, China; R2-061201; May 8-12, 2006 (3 pages).

3GPP TSG RAN WG1 #42 on LTE "Orthogonal Pilot Channel in the Same Node B in Evolved UTRA Uplink" London, UK; R1-050851; Aug. 29-Sep. 2, 2005; (9 pages).

3GPP TSG RAN1 #44 "RACH Design for EUTRA" Denver, USA; R1-060387; Feb. 13-17, 2006 (11 pages).

3GPP TSG RAN1 #44 "RACH Design for EUTRA" Denver, USA; R1-060387; Feb. 13-17, 2006 (11 pages).

3GPP TSG RAN WG1 #44 "Some Consideration for LTE RACH 13.2.3.1" Denver, USA; R1-060531; Feb. 13-17, 2006 (4 pages).

3GPP TSG WG1 Meeting #44bis "RACH Design for E-UTRA" R1-060797; Athens, Greece, Mar. 27-31, 2006 (9 pages).

3GPP TSG RAN1 #44-bis "Random Access Sequence Design" R1-060884; Athens, Greece, Mar. 24-26, 2006 (7 pages).

3GPP TSG-RAN WG3 #48 bis meeting "On Intra-Access Mobility for LTE_ACTIVE UEs" Cannes, France; R3-051108; Oct. 11-14, 2005 (4 pages).

3GPP TSG-RAN WG2 #50 "Intra-System Mobility" Sophia-Antipolis, France; R2-060013; Jan. 9-13, 2006 (7 pages).

3GPP TSG RAN WG2 #52 "Mobility in LTE Active" Athens, Greece; Tdoc R2-060915; Mar. 27-31, 2006 (4 pages).

3GPP TSG-RAN WG2 Meeting #53 "Cell Switching in LTE_Active State" Shanghai, China; R2-061196; May 8-12, 2006 (5 pages).

3GPP TSG-RAN WG1 Meeting #53 "UL Grant for Random Access Message 3" R1-082078; Kansas City, USA; May 5-9, 2008 (4 pages).

3GPP TSG-RAN WG2 Meeting #53 "Intra-LTE Handover Operation" Shanghai, PRC; R2-061135; May 8-13, 2006 (3 pages).

3GPP TSG-RAN WG3 #53bis "Intra-LTE Mobility Procedure" Seoul, Korea; R3-061489; Oct. 10-13, 2006 (4 pages).

3GPP TSG RAN WG2 #57 "Uplink Synchronization" R2-070781; St. Louis, USA; Feb. 12-16, 2007 (3 pages).

3GPP TSG-RAN WG2 #61bis "Control of HARQ for RACH message 3" R2-081764; Shenzhen, China; Mar. 31-Apr. 4, 2008 (5 pages).

3GPP TSG-RAN WG2 #62 "Update of MAC Random Access Procedure" Tdoc R2-082731; Kansas City, USA; May 5-9, 2008 (7 pages).

3GPP TSG-RAN2 Meeting #62bis "Clarification of DL- and UL-SCH Data Transfer" Warsaw, Poland, R2-083400; Marked-Up; Jun. 30-Jul. 4, 2008 (7 pages).

3GPP TSG-RAN2 Meeting #62bis "Clarification of DL- and UL-SCH Data Transfer" Warsaw, Poland, R2-083701 (revision of R2-083400); Marked-Up; Jun. 30-Jul. 4, 2008 (8 pages).

3GPP TSG-RAN2 Meeting #62bis "NDI and Msg3" Warsaw, Poland, R2-083703; Marked-Up; Jun. 30-Jul. 4, 2008 (3 pages).

3GPP TSG-RAN2 Meeting #63 "Corrections Relating to RACH Partitioning" Jeju, Korea; R2-084788; Aug. 18-22, 2008; (4 pages).

3GPP TSG-RAN WG2 63 "PCCH Configuration in SIB1" Jeju, Korea; R2-083882; Aug. 18-22, 2008; (4 pages).

3GPP TSG-RAN WG2 Meeting #64bis "Clarification on RA Preambles" Athens, Greece; R2-091523; Jan. 9-13, 2009 (3 pages).

3GPP TSG-RAN WG2 Meeting #64bis "Clarification on RA Preambles" Athens, Greece; R2-091523; Marked-Up; Jan. 9-13, 2009 (3 pages).

3GPP TS 25.302 V6.5.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Services Provided by the Physical Layer (Release 6)" Sep. 2005 (75 pages).

3GPP TR 25.813 V0.0.2 "3rd Generation Partnership Project;

trial Radio Access Network (UTRAN); Radio Interface Protocol Aspects (Release 7)"; Oct. 2005 (17 pages).

3GPP TR 25.813 V0.0.2 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (UTRA) and Universal Terrestrial Radio Access Network (UTRAN); Radio Interface Protocol Aspects (Release 7)"—Marked-Up; Oct. 2005 (18 pages).

3GPP TR 25.814 V0.3.1 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Physical Layer Aspects for Evolved UTRA (Release 7)" Oct. 2005 (51 pages).

3GPP TR 25.912 V7.0.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Feasibility Study for Evolved Universal Terrestrial Radio Access (UTRA) and Universal Terrestrial Radio Access Network (E-UTRAN) (Release 7)" Jun. 2006 (55 pages).

3GPP TS 36.300 V8.5.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall Description; Stage 2 (Release 8)" May 2008 (134 pages).

3GPP TS 36.300 V8.7.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall Description; Stage 2 (Release 8)" Dec. 2008 (144 pages).

3GPP TS 36.300 V8.8.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall Description; Stage 2 (Release 8)" Mar. 2009 (156 pages).

3GPP TS 36.300 V0.9.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall Description; Stage 2" Mar. 2007 (87 pages).

3GPP TS 36.321 V8.2.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) Protocol Specification (Release 8)" May 2008 (33 pages).

3GPP TS 36.321 V8.2.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) Protocol Specification (Release 8)" May 2008 (32 pages).

3GPP TS 36.321 V8.3.0 "3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) Protocol Specification (Release 8)" Sep. 2008 (36 pages).

Chu, David C. "Polyphase Codes with Good Periodic Correlation Properties" Information Theory IEEE Transaction on, vol. 18, Issue 4, pp. 531-532, Jul. 1972).

Ericsson "Clarification of DL- and UL-SCH Data Transfer" 3GPP TSG-RAN2 Meeting #62bis; R2-0837271 Warsaw, Poland; Jun. 30-Jul. 4, 2008 (7 pages).

ETSI TS 101 475 V1.3.1 "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Physical (PHY) Layer" Dec. 2001 (43 pages).

ETSI TS 101 761-1 V1.3.1 "Broadband Radio Access Networks (BRAN); HIPERLAN Type 2; Data Link Control (DLC) Layer; Part 1: Basic Data Transport Functions" Dec. 2001 (88 pages).

ETSI TS 136 321 V8.2.0 "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) Protocol Specification (3GPP TS 36.321 Version 8.2.0 Release 8)" Nov. 2008 (35 pages).

IEEE "Draft IEEE Standard for Local and Metropolitan Area Networks: Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems" IEEE P802.16e/D12, Oct. 14, 2005 (684 Pages).

IEEE "IEEE Standard for Local and Metropolitan Area Networks: Part 16: Air Interface for Fixed and Mobile Broadband Wireless Access Systems; Amendment 2: Physical and Medium Access

(56)

References Cited

OTHER PUBLICATIONS

IEEE "IEEE 802.16e Handoff Draft" IEEE C802.16e-03/20r1; Mar. 13, 2003 (22 pages).

IEEE "IEEE 802.16 Standard for Local and Metropolitan Area Networks: Part 16: Air Interface for Fixed Broadband Wireless Access Systems" Oct. 1, 2004 (895 pages).

IEEE "Signaling Methodologies to Support Closed-Loop Transmit Processing in TDD-OFDMA" IEEE C802.16e-04/103r2; Jul. 7, 2004 (35 pages).

Joint RAN2-RAN3 #48bis LTE "EUTRAN Handover Procedure for LTE_ACTIVE" Cannes, France; TSGR3(05)1106; Oct. 11-14, 2005 (3 pages).

Nuaymi, Loufi "WiMAX: Technology for Broadband Wireless Access" John Wiley & Sons, Ltd., 2007 (286 pages).

Sesia, Stefania "LTE: The UMTS Long Term Evolution: From Theory to Practice" Second Edition; Wiley; 2011 (794 pages).

TSG-RAN Meeting #41 "REL-8 CRs for LTE to TS 36.321 MAC" Kobe, Japan; RP-080690; Sep. 9-12, 2008; (3 pages).

TSG-RAN Meeting #43 "RAN2 REL-8 CRs for LTE to TS 36.300" Biarritz, France; RP-090123; Mar. 3-6, 2009 (1 page).

TSG-RAN WG1 Meeting #44 "RACH Preamble Evaluation in E-UTRA Uplink" Denver, USA; R1-060700; Feb. 13-17, 2006 (5 pages).

TSG-RAN WG1 Meeting #44bis "Random Access Burst Evaluation in E-UTRA Uplink" Athens, Greece; R1-060792I Mar. 27-31, 2006 (8 pages).

TSG-RAN WG1 Meeting #45 "Random Access Design for E-UTRA Uplink" Shanghai, China; R1-061114; May 8-12, 2006 (6 pages).

TSG-RAN WG1 Meeting #45 "Random Access Design for E-UTRA Uplink" Shanghai, China; R1-061114; Marked-Up; May 8-12, 2006 (5 pages).

TSG-RAN WG1 #46 "E-UTRA Scalability of Random Access Preamble with Cyclic Prefix" Tallinn, Estonia; R1-062274; Aug. 28-Sep. 1, 2006 (8 pages).

Wu, Yik-Chung et al. "Maximum-Likelihood Symbol Synchronization for IEEE 802.11a WLANs in Unknown Frequency-Selective Fading Channels" IEEE Transactions on Wireless Communications, vol. 4, No. 6, Nov. 2005 (123 pages).

Communication Under Rule 71(3) EPC for European Patent Application No. 09166620.6, mailed Mar. 8, 2016.

Defendants' Initial Invalidity Contentions; In the United States District Court for the District of Delaware; Civil Action Nos. 1:15-cv-00542-SLR-SRF; 1:15-cv-00543-SLR-SRF; 1:15-cv-00544-SLR-SRF; 1:15-cv-00545-SLR-SRF; 1:15-cv-00546-SLR-SRF; 1:15-cv-00547-SLR-SRF; filed Mar. 14, 2016 (1244 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Applie Inc.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00542-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 13, 2016 Docket Nos., 1-53; (1259 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. HTC Corporation et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00543-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 13, 2016 Docket Nos., 1-54; (1369 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Lenovo Group Ltd., et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00544-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 13, 2016 Docket Nos., 1-48; (993 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd., et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00545-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 17, 2016 Docket Nos., 1-56; (1202 pages).

Documents filed with U.S. District Court Proceedings for *Evolved*

00546-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 17, 2016 Docket Nos., 1-57; (1203 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Microsoft Corporation, et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00547-SLR-SRF; Includes documents filed from Jun. 25, 2015-May 17, 2016 Docket Nos., 1-57; (1273 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Applie Inc.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00542-SLR-SRF; Includes documents filed from May 17, 2016-Jul. 11, 2016—Docket Nos., 54-67; (4,028 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. HTC Corporation et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00543-SLR-SRF; Includes documents filed from May 17, 2016-Jul. 11, 2016—Docket Nos., 55-69; (4,029 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Lenovo Group Ltd., et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00544-SLR-SRF; Includes documents filed from May 17, 2016-Jul. 11, 2016; Docket Nos., 49-61; (4,026 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd., et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00545-SLR-SRF; Includes documents filed from May 26, 2016-Jul. 11, 2016; Docket Nos., 57-77; (4,713 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. ZTE Corporation*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00546-SLR-SRF; Includes documents filed from Jun. 1, 2016-Jul. 11, 2016; Docket Nos., 58-70; (4,001 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Microsoft Corporation, et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00547-SLR-SRF; Includes documents filed from May 18, 2016-Jul. 11, 2016—Docket Nos., 58-69; (3,996 pages).

Petition for Inter Partes Review of U.S. Pat. No. 7,881,236, including Exhibits 1001-1046, Case No. IPR2016-00757, filed May 31, 2016 (2,497 pages).

Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response for *ZTE (USA) Inc., et al. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-00757 filed Jun. 2, 2016 (5 pages).

Patent Owner's Mandatory Disclosures for *ZTE (USA) Inc., et al. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board. Case No. IPR 2016-00757 filed Jun. 14, 2016 (9 pages).

Petition for Inter Partes Review of U.S. Pat. No. 7,881,236, including Exhibits 1001-1021, Case No. IPR2016-01228, filed Jun. 20, 2016 (742 pages).

Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response for *Apple Inc. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-01228 filed Jun. 28, 2016, 2016 (5 pages).

Patent Owner's Mandatory Disclosures for *Apple Inc. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-01228 filed Jul. 11, 2016, 2016 (9 pages).

Petition for Inter Partes Review of U.S. Pat. No. 7,881,236, including Exhibits 1001-1021, Case No. IPR2016-01229, filed Jun. 20, 2016 (741 pages).

Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response for *Apple Inc. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-01229 filed Jun. 28, 2016, 2016 (5 pages).

Patent Owner's Mandatory Disclosures for *Apple Inc. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before

(56)

References Cited

OTHER PUBLICATIONS

Petition for Inter Partes Review of U.S. Pat. No. 7,881,236, including Exhibits 1001-1047, Case No. IPR2016-01345, filed Jul. 1, 2016 (2,570 pages).

3GPP Draft, 3rd Generation Partnership Project (3GPP), "Enforcing New Transmission After Flushing HARQ Process", 3GPP TSG-RAN 2 Meeting #65, pp. 1-6, Feb. 9-13, 2009, XP-050323002.

3GPP TS 36.321 V8.2.0., 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) protocol specification (Release 8), pp. 1-33, May 2008, XP-002555898.

LG Electronics, "Corrections to the Random Access Response Reception"; 3GPP TSG-RAN WG2 #62, May 5-9, 2008; pp. 3, Paragraph 5.1.4, XP-050140134.

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Applie Inc.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00542-SLR-SRF; Includes documents filed from Jul. 15, 2016-Aug. 19, 2016—; (308 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. HTC Corporation et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00543-SLR-SRF; Includes documents filed from Jul. 15, 2016-Aug. 19, 2016—; (336 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Lenovo Group Ltd., et al.*; U.S. District Court, for

the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00544-SLR-SRF; Includes documents filed from Jul. 15, 2016-Aug. 19, 2016; (310 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Samsung Electronics Co. Ltd., et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00545-SLR-SRF; Includes documents filed from Jul. 15, 2016-Aug. 19, 2016; (354 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. ZTE Corporation*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00546-SLR-SRF; Includes documents filed from Jul. 15, 2016-Aug. 19, 2016; (308 pages).

Documents filed with U.S. District Court Proceedings for *Evolved Wireless, LLC v. Microsoft Corporation, et al.*; U.S. District Court, for the District of Delaware (Wilmington); Civil Action No. 1:15-cv-00547-SLR-SRF; includes documents filed from Jul. 15-2016-Aug. 19, 2016; (305 pages).

Patent Owner's Mandatory Disclosures for *Samsung Electronics Co., Ltd., et al. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-01345 filed Jul. 22, 2016, 2016 (9 pages).

Notice of Filing Date Accorded to Petition and Time for Filing Patent Owner Preliminary Response for *Samsung Electronics Co., Ltd., et al. v. Evolved Wireless LLC*, United States Patent and Trademark Office—Before the Patent Trial and Appeal Board, Case No. IPR 2016-01345 filed Jul. 28, 2016, 2016 (4 pages).

* cited by examiner

Explore Litigation Insights

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

Real-Time Litigation Alerts



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

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

Advanced Docket Research



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

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

Analytics At Your Fingertips



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

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

API

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

LAW FIRMS

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

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

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.