

Appendix 1

Patent Prior Art

Patent/Application Number	Country	Date Issued/Published
KR20070009000A (“Ku-Chul”)	KR	1/18/2007
U.S. 2002/0114269 (“Onggosanusi”)	U.S.	8/22/2002
U.S. 2002/0161538 (“Chevalier”)	U.S.	10/31/2002
U.S. 2003/0153360 (“Burke”)	U.S.	8/14/2003
U.S. 2003/0231726 (“Schuchert”)	U.S.	12/18/2003
U.S. 2005/0113141 (“Felter”)	U.S.	5/26/2005
U.S. 2005/0135312 (“Montejo”)	U.S.	6/23/2005
U.S. 2005/0237923 (“Balakrishnan”)	U.S.	10/27/2005
U.S. 2005/0249266 (“Brown”)	U.S.	11/10/2005
U.S. 2006/0018249 (“Shearer-249”)	U.S.	1/26/2006
U.S. 2006/0022115 (“Byren”)	U.S.	2/2/2006
U.S. 2006/0210070 (“Reznik”)	U.S.	9/21/2006
U.S. 2006/0212773 (“Aytur”)	U.S.	9/21/2006
U.S. 2006/0233147 (“Karabinis”)	U.S.	10/19/2006
U.S. 2006/0276146 (“Suzuki”)	U.S.	12/7/2006
U.S. 2006/0286974 (“Gore”)	U.S.	12/21/2006
U.S. 2007/0070882 (“Kawauchi”)	U.S.	3/29/2007
U.S. 2007/0081613 (“Kim”).	U.S.	4/12/2007
U.S. 2007/0147533 (“Thomas”)	U.S.	6/28/2007
U.S. 2007/0177551 (“Joham”)	U.S.	8/2/2007
U.S. 2007/0280098 (“Bhatt”)	U.S.	12/6/2007
U.S. 2008/0080459 (“Kotecha”)	U.S.	4/3/2008
U.S. 2008/0132282 (“Liu”)	U.S.	6/5/2008
U.S. 2009/0042530 (“Wang”)	U.S.	2/12/2009
U.S. 2009/0052556 (“Fernandez”)	U.S.	2/26/2009
U.S. 2009/0111401 (“Itkin”)	U.S.	4/30/2009
U.S. 2009/0122854 (“Zhu”)	U.S.	5/14/2009
U.S. 2010/0008446 (“Netsell”)	U.S.	1/14/2010
U.S. 2010/0062726 (“Zheng”)	U.S.	3/11/2010
U.S. 2010/0087151 (“Auer”)	U.S.	4/8/2010
U.S. 2010/0159855 (“Hardacker-855”)	U.S.	6/24/2010
U.S. 2010/0215113 (“Lindgren”)	U.S.	8/26/2010
U.S. 2010/0272207 (“Zangi”)	U.S.	10/28/2010
U.S. 2010/0295731 (“Chong”)	U.S.	11/15/2010
U.S. 2011/0064152 (“Okino”)	U.S.	3/17/2011
U.S. 2011/0115680 (“Phan Huy”)	U.S.	5/19/2011
U.S. 2011/0170630 (“Silverman-630”)	U.S.	7/14/2011
U.S. 2011/0310810 (“Kenington”)	U.S.	12/22/2011
U.S. 2012/0114053 (“Karthik”)	U.S.	5/10/2012
U.S. 2013/0034135 (“Silverman-135”)	U.S.	2/7/2013

Patent/Application Number	Country	Date Issued/Published
U.S. 2013/0051434 (“Draganov”)	U.S.	2/28/2013
U.S. 2013/0077466 (“Takaoka”)	U.S.	3/28/2013
U.S. 2014/0010274 (“Medbo”)	U.S.	1/9/2014
U.S. 2014/0029952 (“Liu-952”)	U.S.	1/30/2014
U.S. 2018/0041294 (“Li”)	U.S.	2/8/2018
U.S. 5,649,308 (“Andrews”)	U.S.	7/15/1997
U.S. 6,154,661 (“Goldburg”)	U.S.	11/28/2000
U.S. 6,185,408 (“Leopold”)	U.S.	2/6/2001
U.S. 6,285,859 (“Fernandez Duran”)	U.S.	9/4/2001
U.S. 6,359,868 (“Chen”)	U.S.	3/19/2002
U.S. 6,516,206 (“Jantti”)	U.S.	2/4/2003
U.S. 6,529,715 (“Kitko”)	U.S.	3/4/2003
U.S. 6,697,436 (“Wright”)	U.S.	2/24/2004
U.S. 6,728,517 (“Sugar”)	U.S.	4/27/2004
U.S. 6,775,330 (“Bach”)	U.S.	8/10/2004
U.S. 6,876,645 (“Guey”)	U.S.	4/5/2005
U.S. 6,920,185 (“Hinson”)	U.S.	7/19/2005
U.S. 6,952,454 (“Jalali”)	U.S.	10/4/2005
U.S. 7,133,697 (“Judd”)	U.S.	11/7/2006
U.S. 7,136,430 (“Morris”)	U.S.	11/14/2006
U.S. 7,162,218 (“Axness”)	U.S.	1/9/2007
U.S. 7,460,615 (“Kunysz”)	U.S.	12/2/2008
U.S. 7,742,388 (“Shearer-388”).	U.S.	6/22/2010
U.S. 7,885,344 (“Nakayama”)	U.S.	2/8/2011
U.S. 8,036,702 (“Etemad”)	U.S.	10/11/2011
U.S. 8,195,103 (“Waheed”)	U.S.	6/5/2012
U.S. 8,204,452 (“Lin”)	U.S.	6/19/2012
U.S. 8,204,455 (“Hardacker”)	U.S.	6/19/2012
U.S. 8,385,391 (“Balasubramanian”)	U.S.	2/26/2013
U.S. 2007/0127590 (“Rofougaran”)	U.S.	6/7/2007
U.S. 8,416,879 (“Rofougaran”)	U.S.	4/9/2013
U.S. 8,509,334 (“Lindgreen”)	U.S.	8/13/2013
U.S. 8,654,815 (“Forenza”)	U.S.	2/18/2014
U.S. 8,693,525 (“Rick”)	U.S.	4/8/2014
U.S. 980,356 (“Squier-356”)	U.S.	1/3/1911
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WO 2005/109917 (“Laroia”)	WO	11/17/2005
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Non-Patent Literature Prior Art

Non-Patent Literature	Publication Date
3GPP TR 21.900 v10.0.0	4/4/2011
3GPP TR 21.905 v10.3.0	3/28/2011
3GPP TR 25.912 v9.0.0	10/1/2009
3GPP TR 25.913 v9.0.0	12/28/2009
3GPP TS 36.101 v10.2.1	4/27/2011
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3GPP TS 36.133 v 10.3.0	6/21/2011
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3GPP TS 36.133 v10.2.0	4/12/2011
3GPP TS 36.211 v10.1.0	3/30/2011
3GPP TS 36.211 v10.2.0	6/22/2011
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3GPP TS 36.212 v10.2.0	6/22/2011
3GPP TS 36.213 v10.1.0	3/30/2011
3GPP TS 36.213 v10.2.0	6/22/2011
3GPP TS 36.214 v10.1.0	3/30/2011
3GPP TS 36.300 v10.2.0	12/21/2010
3GPP TS 36.300 v10.3.0	4/5/2011
3GPP TS 36.300 v10.4.0	6/24/2011
3GPP TS 36.302 v10.2.0	6/24/2011
3GPP TS 36.321 v10.2.0	6/24/2011
3GPP TS 36.331 v.10.2.0	7/24/2011
3GPP TS 36.331 v10.1.0	3/30/2011
A 3.5 GHz 25 W Silicon LDMOS RFIC power amplifier for WiMAX applications ("Cassan")	2007
Analysis of Effects of Clipping and Filtering on the Performance of MB-OFDM UWB Signals ("Rao")	2007
Channel Estimation for Long Distance HF Communications based on OFDM Pilot Symbols ("Aquilue")	July 2006
Effects of Nonlinear Distortion on Switched Multibeam FDMA Systems ("Wennstrom")	Mar. 2003
Equipment for On-Board Processing Payloads - Developments in the Frame of the ESA OBP Program ("Garofalo")	2000
IEEE 802.11-1999 ("IEEE 802.11-1999")	1999
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IEEE 802.11n: Throughput, Robustness, and Reliability Enhancements to WLANs ("Perahia")	2006
Linearization of Multi-Carrier Power Amplifiers ("Johansson")	Oct. 2005
LTE - The UMTS Long Term Evolution - From Theory to Practice ("Sesia")	July 2011

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Modern Digital and Analog Communication Systems (“Lathi”)	1998
Multicarrier Modulation for Data Transmission: An Idea Whose Time Has Come (“Bingham”)	1990
Next Generation Wireless LANs (“Perahia”)	2013
Origins of Carrier Multiplexing - Major George Owen Squier and AT&T (“Schwartz”)	6/2008
Overview of the 3GPP Long Term Evolution Physical Layer (“Zyren”)	7/2007
The History of Orthogonal Frequency Division Multiplexing (“LaSorte”)	1/2008

Identification of Prior Art Sales/Public Use

Item Offered for Sale and/or Publicly Used	Author Person or Entity Who Made and Received Offer, Made Public Use, or Made Information Known
Nokia base station equipment	Nokia
Ericsson base station equipment	Ericsson
All systems or products that embody the technology described in any patent or publication identified in these Initial Non-Infringement, Unenforceability, and Invalidity Contentions.	