FCC Part 22H & 24E & 27F & H & L & 90S Test Report

Product Name	:	Wireless Module
Model No.	:	MC7354B
FCC ID	:	N7NMC7354B
IC	:	2417C-MC7354B

Applicant	:	Sierra Wireless Inc.
Address	:	13811 Wireless Way Richmond, British Columbia, Canada, V6V 3A4.

Date of Receipt	:	Jun. 08, 2015
Test Date	:	Jun. 08, 2015~ Jul. 01, 2015
Issued Date	:	Jul. 01, 2015
Report No.	:	1560266R-HP-US-P07V01
Report Version	:	V 1.0

Test Report Certification

Issued Date : Jul. 01, 2015
Report No. : 1560266R-HP-US-P07V01

Product Name	:	Wireless Module
Applicant	:	Sierra Wireless Inc.
Address	:	13811 Wireless Way Richmond, British Columbia, Canada, V6V 3A4.
Manufacturer	:	Sierra Wireless Inc.
Address	:	13811 Wireless Way Richmond, British Columbia, Canada, V6V 3A4.
Model No.	:	MC7354B
FCC ID	:	N7NMC7354B
IC	:	2417C-MC7354B
EUT Voltage	:	DC 5V
Applicable Standard	:	FCC CFR Title 47 Part 2,TIA/EIA 603-C FCC Part 22 Subpart H , FCC Part 24 Subpart E FCC Part 27 Subpart F&H&L, Industry Canada RSS-130, Issue 1 Industry Canada RSS-132, Issue 3 Industry Canada RSS-133, Issue 6 Industry Canada RSS-139, Issue 2
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By : _____

Reviewed By : _____

Approved By : _____

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC**
USA	**:**	**FCC**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory :
No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

Suzhou Testing Laboratory :
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

TABLE OF CONTENTS

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1560266R-HP-US-P07V01	V1.0	Initial Issued Report	Jul. 01, 2015

1. General Information

1.1. EUT Description

Product Name	Wireless Module
Model No.	MC7354B
EUT Voltage	DC 5V
2G	
Support Band	GSM850/PCS1900
GPRS Class	Class 12
Uplink	GSM 850: 824~849MHz PCS 1900: 1850~1910MHz
Downlink	GSM 850: 869~894MHz PCS 1900: 1930~1990MHz
Type of modulation	GMSK for GPRS; 8PSK for EDGE
Antenna Type	Dipole
Antenna Gain	GSM 850: 1dBi PCS1900: 1dBi
CDMA	
Support Band	BC1
Uplink	BC1: 1850~1910MHz
Downlink	BC1: 1930~1990MHz
Type of Modulation	QPSK
Antenna Type	Dipole
Peak Antenna Gain	BC1: 1dBi
3G	
Support Band	WCDMA Band 2/4
Uplink	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz
Downlink	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz
Release Version	Rel-8
Type of modulation	QPSK for Uplink
Antenna Type	Dipole
Antenna Gain	Band 2: 1dBi Band 4: 1dBi
1XEVDO	

Support Band	BC1
Uplink	BC1: 1850~1910MHz
Downlink	BC0: 869~894MHz BC1: 1930~1990MHz
Release Version	Rel-A
Type of Modulation	QPSK
Antenna Type	Dipole
Peak Antenna Gain	BC1: 1dBi
4G	
Support Band	LTE Band 2/4/5/13/17/25
Uplink	Band 2: 1850~1910MHz Band 4: 1710~1755MHz Band 5: 824~849MHz Band 13:777-787 MHz Band 17:704-716 MHz Band 25: 1850~1915MHz
Downlink	Band 2: 1930~1990MHz Band 4: 2110~2155MHz Band 5: 869~894MHz Band 13:746-756 MHz Band 17:734-746 MHz Band 25: 1930~1995MHz
Type of modulation	QPSK, 16QAM
Antenna Type	Dipole
Antenna Gain	Band 2: 1dBi Band 4: 1dBi Band 5: 1dBi Band 13: 1dBi Band 17: 1dBi Band 25: 1dBi

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: GSM 850
Mode 2: PCS 1900
Mode 3: GPRS 850
Mode 4: GPRS 1900
Mode 5: EDGE 850
Mode 6: EDGE 1900
Mode 7 :CDMA 2000 1X BC1
Mode 8 :CDMA 2000 1X EVDO BC1 Rel-0
Mode 9 :CDMA 2000 1X EVDO BC1 Rel-A
Mode 10: WCDMA Band 2
Mode 11: WCDMA Band 4
Mode 12: LTE Band 2
Mode 13: LTE Band 4
Mode 14: LTE Band 5
Mode 15: LTE Band 13
Mode 16: LTE Band 17
Mode 17: LTE Band 25

Note:

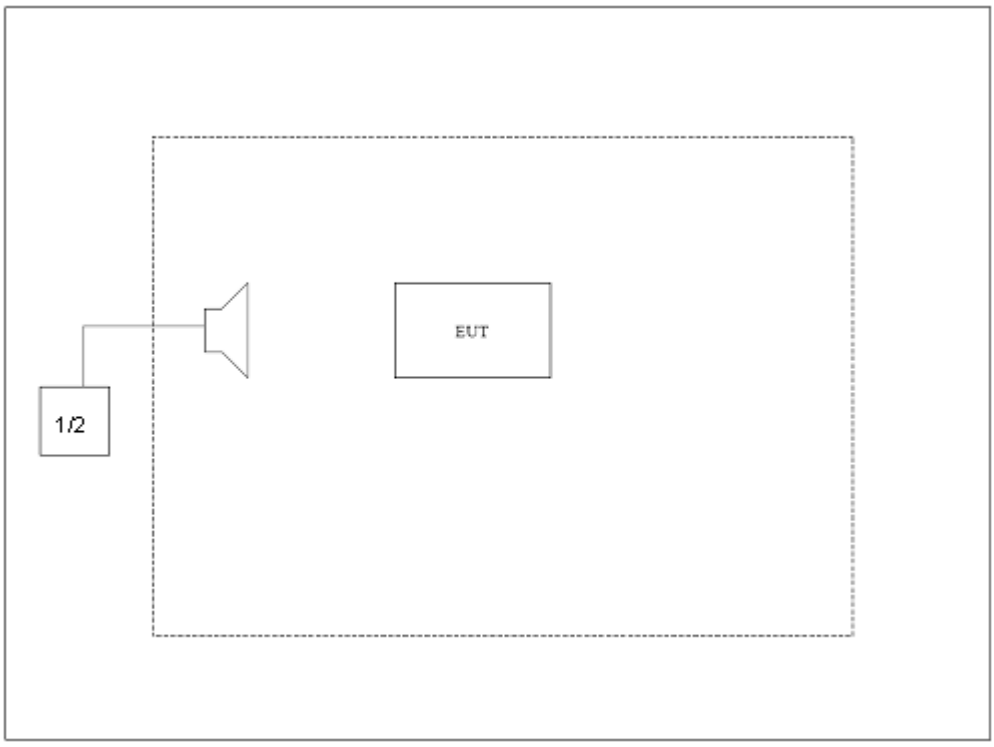
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For 2G,3G,4G spurious emission test, we will choose the highest power modulation and bandwidth to test.

1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Radio Communication Tester	Anritsu	MT8820C	6201181503	N/A
2	Radio Communication Tester	R&S	CMU 200	106388	N/A

1.4. Configuration of Tested System

Connection Diagram	
	
Signal Cable Type	Signal cable Description

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	EUT Communicate with MT8820C/CMU200, then select channel to test.

2. Technical Test

2.1. Summary of Test Result

For GSM 850/EDGE850/LTE Band 5

(FCC Part 22 Subpart H, Industry Canada RSS-132, Issue 3, Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §22.913	§5.4	< 7 Watts	Pass
Equivalent Isotropic Radiated Power	§22.913	§5.4	< 7 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §§22.917	§5.5	< -13dBm	Pass

For PCS1900/EDGE1900/WCDMA Band II/CDMA 2000 1X EVDO BC1/LET Band 2/ LTE Band 25

(FCC Part 24 Subpart E, Industry Canada RSS-133, Issue 6, Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §24.232	§6.4	< 2 Watts	Pass
Equivalent Isotropic Radiated Power	§24.232	§6,4	< 2 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §24.238	§6.5	< -13dBm	Pass

For LTE Band 4/WCDMA Band 4

(FCC Part 27 Subpart L, Industry Canada RSS-139, Issue 2，Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §27.50	§6.4	< 1 Watts	Pass
Equivalent Isotropic Radiated Power	§27.50	§6,4	< 1 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §27.53	§6.5	< -13dBm	Pass

For LTE Band 13

(FCC Part 27 Subpart F, Industry Canada RSS-130, Issue 1，Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §27.50	§4.4	< 3 Watts	Pass
Equivalent Isotropic Radiated Power	§27.50	§4,4	< 3 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §27.53	§4.6	< -13dBm	Pass

For LTE Band 17

(FCC Part 27 Subpart H, Industry Canada RSS-130, Issue 1，Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §27.50	§4.4	< 3 Watts	Pass
Equivalent Isotropic Radiated Power	§27.50	§4,4	< 3 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §27.53	§4.6	< -13dBm	Pass

For LTE Band 25

(FCC Part 24 Subpart E, Industry Canada RSS-133, Issue 6, Industry Canada RSS-GEN)

Performed Item	FCC Rule	IC Rule	Limit	Result
Maximum Output Power	§2.1033 §2.1046 §24.232	§6.4	< 2 Watts	Pass
Equivalent Isotropic Radiated Power	§24.232	§6,4	< 2 Watts	Pass
Field Strength of Spurious Radiation	§2.1053 §24.238	§6.5	< -13dBm	Pass

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	23
Humidity (%RH)	25-75	52
Barometric pressure (mbar)	860-1060	950-1000

3. Maximum Output Power and Effective Isotropic Radiated Power Measurement

3.1. Test Equipment

Peak Conducted Output Power / AC-6

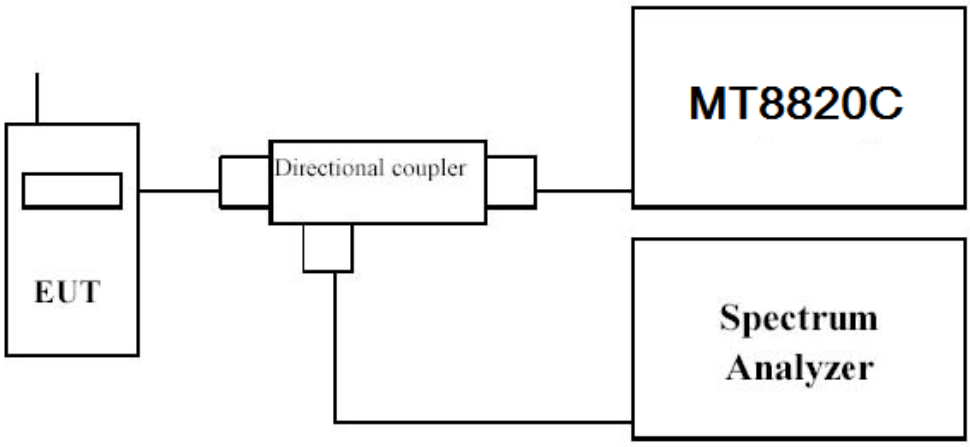
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2016/03/10
Radio Communication Tester	R&S	CMU 200	117088	2016/03/10
Dual Directional Coupler	Agilent	778D	20160	2016/03/10
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2016/03/10
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2016/01/07

Peak Radiated Output Power / AC-5

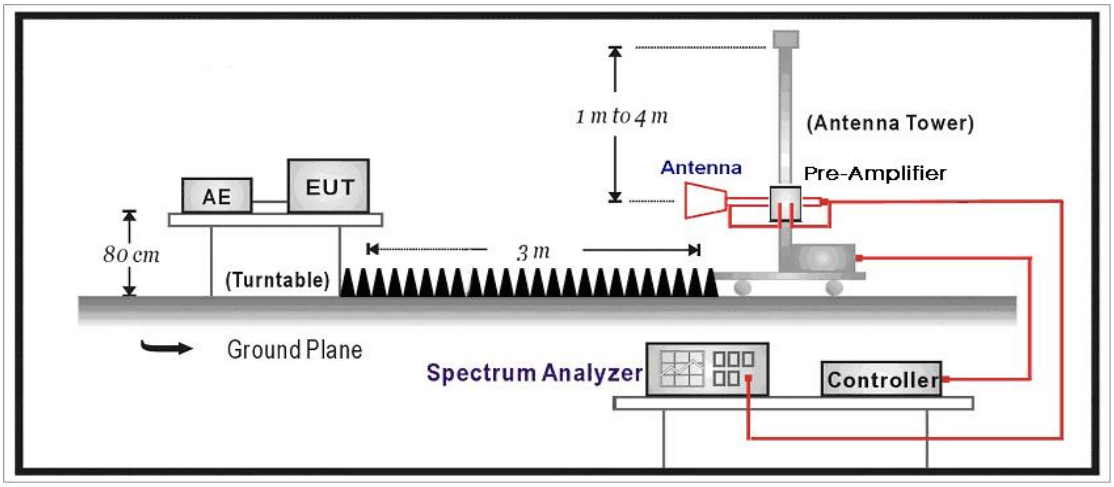
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
Radio Communication Tester	R&S	CMU 200	117088	2016/03/10
Preamplifier	Miteq	NSP1800-25	1364185	2016/05/03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2016/05/03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2016/10/15
DRG Horn	ETS-Lindgren	3117	00123988	2016/01/07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016/03/10
EMI Receiver	Agilent	N9038A	MY51210196	2015/08/07
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016/01/07

3.2. Test Setup

Conducted Power Measurement:



Radiated Power Measurement:



3.3. Test Procedure

For Conducted Power Measurement:

a) The RF output of the transmitter was connected to base station simulator.

b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement..

c) Set EUT at maximum average power by base station simulator.

d) Measure lowest, middle, and highest channels for each bandwidth and different modulation.

For Effective Isotropic Radiated Power Measurement:

e) The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
f) The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower
g) LTE operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use
h) channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
i) The table was rotated 360 degrees to determine the position of the highest radiated power.
j) The height of the receiving antenna is adjusted to look for the maximum EIRP.
k) Taking the record of maximum EIRP.
l) A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
m) The conducted power at the terminal of the dipole antenna is measured.
n) Repeat step 3 to step 5 to get the maximum EIRP of the substitution antenna.
o) EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs.
p) Ps (dBm)：Input power to substitution antenna
q) Gs (dBi or dBd)：Substitution antenna Gain.
r) Et = Rt + AF
s) Es = Rs + AF
t) AF (dB/m)：Receive antenna factor
u) Rt：The highest received signal in spectrum analyzer for EUT.
v) Rs：The highest received signal in spectrum analyzer for substitution antenna.

3.4. Uncertainty

The measurement uncertainty is defined as for Conducted Power Measurement ± 1.2 dB, for Radiated Power Measurement ± 3.2 dB

3.5. Test Result

Product	Wireless Module		
Test Item	Maximum Output Power		
Date of Test	2015/06/21	Test Site	AC-6

GSM/GPRS/EDGE

Band	Channel No.	Frequency (MHz)	Modulation	Conducted Power (dBm)
GSM850	128	824.2	GMSK	32.43
	189	836.4	GMSK	32.22
	251	848.8	GMSK	32.13
GSM1900	512	1850.2	GMSK	29.35
	661	1880.0	GMSK	29.21
	810	1909.8	GMSK	29.11
GPRS850	128	824.2	GMSK	32.46
	189	836.4	GMSK	32.24
	251	848.8	GMSK	32.15
GPRS1900	512	1850.2	GMSK	29.38
	661	1880.0	GMSK	29.27
	810	1909.8	GMSK	29.19
EDGE850	128	824.2	8PSK	26.77
	189	836.4	8PSK	26.38
	251	848.8	8PSK	26.25
EDGE1900	512	1850.2	8PSK	25.38
	661	1880.0	8PSK	25.25
	810	1909.8	8PSK	25.18

Note: The maximum PAR for GPRS1900 is 8.8dB less than 13 dB, and the maximum PAR for EDGE1900 is 8.3dB less than 13 dB.

CDMA 1X/CDMA 1X EVDO Rel-0/CDMA 1X EVDO Rel-A

Mode	Test Case			BC1 (1900MHz) Channel		
				Conducted Power (dBm)		
	Num.	FWD RC/TAP	REV RC/TAP	25	600	1175
1x	1	RC1	RC1 (SO2)	23.36	22.67	23.24
	2	RC1	RC1 (SO55)	23.45	22.59	23.39
	3	RC2	RC2 (SO9)	23.36	22.62	23.26
	4	RC2	RC2 (SO55)	23.41	22.54	23.40
	5	RC3	RC3 (SO55)	23.42	22.58	23.37
	6	RC3	RC3 (SO32)	23.37	22.62	23.18
1x EV-DO Rel0	7a	FTAP rate = 307kbps (2 slot, QPSK)	RTAP rate = 9.6kbps	23.46	23.25	23.37
	7b		RTAP rate = 19.2kbps	23.43	23.28	23.33
	7c		RTAP rate = 38.4kbps	23.38	23.24	23.35
	7d		RTAP rate = 76.8kbps	23.41	23.28	23.34
	7e		RTAP rate = 153.6kbps	23.35	23.21	24.32
1x EV-DO Rev A	8a	FETAP rate = 307kbps (2 slot, ACK channel is transmitted at all the slots)	RETAP – payload size = 128	22.75	22.62	22.69
	8b		RETAP – payload size = 256	22.69	22.61	22.65
	8c		RETAP – payload size = 512	22.78	22.54	23.68
	8d		RETAP – payload size = 768	22.68	22.59	22.63
	8e		RETAP – payload size = 1024	22.74	23.61	23.69
	8f		RETAP – payload size = 1536	22.73	22.62	23.64
	8g		RETAP – payload size = 2048	22.76	23.65	23.68
	8h		RETAP – payload size = 3072	22.74	22.59	22.63
	8i		RETAP – payload size = 4096	22.81	22.71	23.75
	8j		RETAP – payload size = 6144	22.83	22.72	22.74
	8k		RETAP – payload size = 8192	22.82	22.71	23.79
	8l		RETAP – payload size = 12288	22.89	23.75	23.81

Note: All conducted measurements are based on an average detector.

WCDMA/HSDPA/HSUPA/HSPA+

Mode	3GPP Subtest	Band II (1900MHz) Channel			MPR
		Conducted Power (dBm)			
		9262	9400	9538	
WCDMA R99	1	23.37	23.20	23.16	N/A
Rel5 HSDPA	1	23.15	23.11	23.09	0
	2	23.09	23.02	22.98	0
	3	22.58	22.50	22.47	0.5
	4	22.57	22.48	22.41	0.5
Rel6 HSUPA	1	22.46	22.38	22.31	0.0
	2	20.32	20.29	20.11	2.0
	3	21.43	21.36	21.28	1.0
	4	20.38	20.36	20.28	2.0
	5	22.45	22.36	22.35	0.0
Rel7 HSPA+	1	20.51	20.42	20.39	2.5
Rel8 DC-HSDPA	1	23.17	23.15	23.09	0
	2	22.96	22.92	22.89	0
	3	22.43	22.39	22.31	0.5
	4	22.44	22.36	22.29	0.5

Note: 1,The maximum PAR for WCDMA Band II is 8.4dB less than 13 dB.

2, All conducted measurements are based on a RMS detector.

Mode	3GPP Subtest	Band IV (1700MHz) Channel			MPR
		Conducted Power (dBm)			
		1312	1412	1862	
WCDMA R99	1	23.25	23.10	23.23	N/A
Rel5 HSDPA	1	24.13	23.01	23.05	0
	2	23.11	22.99	23.02	0
	3	22.71	22.58	22.69	0.5
	4	22.69	22.61	22.65	0.5
Rel6 HSUPA	1	23.09	22.98	23.05	0.0
	2	21.05	20.89	20.98	2.0
	3	22.02	21.91	21.99	1.0
	4	23.03	22.96	22.98	2.0
	5	23.06	22.96	23.01	0.0
Rel7 HSPA+	1	20.63	20.55	20.59	2.5
Rel8 DC-HSDPA	1	23.04	22.97	22.99	0
	2	23.02	22.91	22.96	0
	3	22.58	22.51	22.55	0.5
	4	22.60	22.52	22.56	0.5

Note: 1,The maximum PAR for WCDMA Band II is 8.7dB less than 13 dB.

2, All conducted measurements are based on a RMS detector.

LTE Band 2

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				18700	18900	19100
Frequency				1860	1880	1900
20	1	0	QPSK	23.56	23.53	23.50
20	1	49		23.52	23.50	23.49
20	1	99		23.34	23.20	23.18
20	50	0		22.24	22.11	22.13
20	50	24		22.25	22.12	22.15
20	50	49		22.23	22.02	22.10
20	100	0		22.28	22.25	22.13
20	1	0	16-QAM	22.75	22.32	22.37
20	1	49		22.68	22.28	22.27
20	1	99		22.61	21.98	22.47
20	50	0		21.20	20.90	20.92
20	50	24		21.15	20.91	20.94
20	50	49		21.18	20.81	20.89
20	100	0		21.22	21.04	20.92
Channel				18675	18900	19125
Frequency				1857.5	1880	1902.5
15	1	0	QPSK	23.41	23.76	23.35
15	1	37		23.40	23.41	23.32
15	1	74		23.41	23.21	23.34
15	36	0		22.26	22.19	22.19
15	36	18		22.24	22.18	22.11
15	36	37		22.28	22.13	22.21
15	75	0		22.26	22.10	22.13
15	1	0	16-QAM	22.51	22.53	22.43
15	1	37		22.45	22.19	22.10
15	1	74		22.51	21.99	22.42
15	36	0		21.37	20.98	20.98
15	36	18		21.30	20.97	20.90
15	36	37		21.26	20.92	21.00
15	75	0		21.20	20.89	20.92
Channel				18650	18900	19150

Frequency				1855	1880	1905
10	1	0	QPSK	23.43	23.79	23.44
10	1	24		23.39	23.33	23.31
10	1	49		23.42	23.20	23.48
10	25	0		22.22	22.26	22.29
10	25	12		22.28	22.37	22.18
10	25	24		22.25	22.22	22.29
10	50	0		22.09	22.10	22.31
10	1	0	16-QAM	22.44	22.56	22.38
10	1	24		22.33	22.11	22.09
10	1	49		22.35	21.98	22.35
10	25	0		21.21	21.05	21.26
10	25	12		21.25	21.16	21.33
10	25	24		21.20	21.01	21.08
10	50	0		21.01	20.89	21.10
Channel				**18625**	**18900**	**19175**
Frequency				**1852.5**	**1880**	**1907.5**
5	1	0	QPSK	23.41	23.77	23.88
5	1	12		23.38	23.31	23.68
5	1	24		23.31	23.16	23.59
5	12	0		22.16	22.36	22.37
5	12	6		22.26	22.34	22.43
5	12	11		22.31	22.45	22.51
5	25	0		22.19	22.26	22.33
5	1	0	16-QAM	22.36	22.54	22.65
5	1	12		22.35	22.09	22.45
5	1	24		22.27	21.94	22.36
5	12	0		21.09	21.15	21.16
5	12	6		21.14	21.13	21.22
5	12	11		21.25	21.24	21.29
5	25	0		21.11	21.05	21.12

LTE Band 4

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				20050	20175	20300
Frequency				1720	1732.5	1745
20	1	0	QPSK	23.54	23.24	23.26
20	1	49		23.39	23.15	23.04
20	1	99		23.45	23.24	23.15
20	50	0		22.21	21.96	21.78
20	50	24		22.26	21.73	22.02
20	50	49		22.12	21.98	21.56
20	100	0		22.19	21.77	21.37
20	1	0	16-QAM	22.36	22.18	22.21
20	1	49		22.49	21.93	21.82
20	1	99		22.41	22.02	21.93
20	50	0		21.16	20.75	20.57
20	50	24		21.14	20.52	20.81
20	50	49		20.88	20.77	20.35
20	100	0		20.87	20.56	20.17
Channel				20025	20175	20325
Frequency				1717.5	1732.5	1747.5
15	1	0	QPSK	23.25	22.96	23.01
15	1	37		23.33	23.01	23.16
15	1	74		23.12	23.08	22.88
15	36	0		22.02	21.79	21.78
15	36	18		21.88	21.76	21.37
15	36	37		22.04	21.92	21.59
15	75	0		21.99	21.74	21.96
15	1	0	16-QAM	22.26	21.74	21.79
15	1	37		22.31	21.79	21.94
15	1	74		22.33	21.86	21.66
15	36	0		21.04	20.58	20.57
15	36	18		21.01	20.55	20.17
15	36	37		20.94	20.71	20.38
15	75	0		20.95	20.53	20.75
Channel				20000	20175	20350

Frequency				1715	1732.5	1750
10	1	0	QPSK	23.39	23.31	23.39
10	1	24		23.31	23.09	23.27
10	1	49		23.11	23.35	23.11
10	25	0		21.96	21.87	22.07
10	25	12		22.31	21.85	21.73
10	25	24		22.32	21.88	21.68
10	50	0		22.17	21.76	21.58
10	1	0	16-QAM	22.28	22.09	22.17
10	1	24		22.27	21.87	22.05
10	1	49		22.33	22.13	21.89
10	25	0		20.91	20.66	20.86
10	25	12		21.36	20.64	20.52
10	25	24		20.99	20.67	20.47
10	50	0		20.76	20.55	20.37
Channel				**19975**	**20175**	**20375**
Frequency				**1712.5**	**1732.5**	**1752.5**
5	1	0	QPSK	23.16	23.14	23.09
5	1	12		23.02	23.24	22.77
5	1	24		23.13	22.99	22.57
5	12	0		22.01	21.95	21.78
5	12	6		22.02	21.94	21.81
5	12	11		22.02	22.36	21.73
5	25	0		21.83	21.85	21.68
5	1	0	16-QAM	22.31	21.92	21.87
5	1	12		22.06	22.02	21.55
5	1	24		22.08	21.77	21.35
5	12	0		21.01	20.74	20.57
5	12	6		21.13	20.73	20.60
5	12	11		21.14	21.15	20.52
5	25	0		20.91	20.64	20.47

LTE Band 5

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				20450	20525	20600
Frequency				829	836.5	844
10	1	0	QPSK	23.19	23.12	23.14
10	1	24		22.96	23.01	23.09
10	1	49		22.96	22.98	21.66
10	25	0		21.76	21.99	21.84
10	25	12		21.78	21.89	21.92
10	25	24		21.90	21.82	21.98
10	50	0		21.73	21.82	21.78
10	1	0	16-QAM	22.37	22.05	22.08
10	1	24		22.06	21.79	21.87
10	1	49		22.31	21.76	20.45
10	25	0		20.89	20.78	20.63
10	25	12		20.83	20.68	20.71
10	25	24		20.95	20.61	20.77
10	50	0		20.81	20.61	20.57
Channel				20425	20525	20625
Frequency				826.5	836.5	846.5
5	1	0	QPSK	22.98	23.01	23.08
5	1	12		22.95	22.96	23.15
5	1	24		22.92	23.02	21.53
5	12	0		22.05	21.99	22.07
5	12	6		21.93	21.95	22.06
5	12	11		21.98	22.01	22.22
5	25	0		21.80	21.91	21.93
5	1	0	16-QAM	22.21	21.79	21.86
5	1	12		22.31	21.74	21.93
5	1	24		22.04	21.80	20.32
5	12	0		21.26	20.78	20.86
5	12	6		21.13	20.74	20.85
5	12	11		21.05	20.80	21.01
5	25	0		20.89	20.70	20.72

LTE Band 13

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				----	23230	----
Frequency				----	782	----
10	1	0	QPSK	----	23.31	----
10	1	24		----	23.57	----
10	1	49		----	23.70	----
10	25	0		----	22.46	----
10	25	12		----	22.52	----
10	25	24		----	22.64	----
10	50	0		----	22.36	----
10	1	0	16-QAM	----	22.31	----
10	1	24		----	22.41	----
10	1	49		----	22.35	----
10	25	0		----	21.51	----
10	25	12		----	21.64	----
10	25	24		----	21.55	----
10	50	0		----	21.39	----
Channel				23205	20525	23255
Frequency				779.5	782.0	784.5
5	1	0	QPSK	23.62	23.65	23.61
5	1	12		23.51	23.57	23.50
5	1	24		23.62	23.64	23.23
5	12	0		22.41	22.53	22.61
5	12	6		22.43	22.57	22.62
5	12	11		22.62	22.62	22.53
5	25	0		22.41	22.54	22.49
5	1	0	16-QAM	22.64	22.49	22.38
5	1	12		22.68	22.34	22.28
5	1	24		22.63	22.54	22.01
5	12	0		21.45	21.31	21.39
5	12	6		21.53	21.35	21.40
5	12	11		21.74	21.40	21.31
5	25	0		21.37	21.32	21.28

LTE Band 17

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				23780	23790	23800
Frequency				709	710	711
10	1	0	QPSK	23.40	22.62	23.62
10	1	24		23.47	22.81	23.73
10	1	49		23.35	22.57	23.26
10	25	0		22.23	21.40	22.32
10	25	12		22.39	21.38	22.25
10	25	24		22.23	21.26	21.88
10	50	0		22.27	21.21	22.21
10	1	0	16-QAM	22.38	21.40	22.39
10	1	24		22.81	21.59	22.50
10	1	49		22.25	21.35	22.04
10	25	0		21.26	20.20	21.11
10	25	12		21.49	20.18	21.04
10	25	24		21.37	20.06	20.67
10	50	0		21.42	20.01	21.00
Channel				23755	23790	23825
Frequency				706.5	710	713.5
5	1	0	QPSK	23.31	23.47	23.51
5	1	12		23.34	23.44	23.12
5	1	24		23.43	23.26	22.76
5	12	0		22.33	22.40	22.13
5	12	6		22.41	22.51	22.08
5	12	11		22.42	22.31	22.01
5	25	0		22.26	22.25	22.04
5	1	0	16-QAM	22.28	22.25	22.28
5	1	12		22.49	22.22	21.90
5	1	24		22.87	22.04	21.54
5	12	0		21.67	21.19	20.92
5	12	6		21.71	21.29	20.87
5	12	11		21.55	21.10	20.80
5	25	0		21.35	21.04	20.83

LTE Band 25

BW [MHz]	RB Size	RB Offset	Mod	Maximum Average Power [dBm]		
				Low Ch. / Freq.	Mid Ch. / Freq.	High Ch. / Freq.
Channel				26140	26340	26590
Frequency				1860	1880	1905
20	1	0	QPSK	23.20	22.93	22.80
20	1	49		23.04	22.92	23.01
20	1	99		23.07	23.14	23.05
20	50	0		21.84	21.78	21.61
20	50	24		21.75	21.77	21.91
20	50	49		21.77	21.72	22.01
20	100	0		21.83	21.73	21.81
20	1	0	16-QAM	22.53	21.71	21.59
20	1	49		22.40	21.70	21.79
20	1	99		22.23	21.92	21.83
20	50	0		20.87	20.58	20.41
20	50	24		20.74	20.57	20.70
20	50	49		20.81	20.52	20.80
20	100	0		20.87	20.53	20.60
Channel				26115	26340	26615
Frequency				1857.5	1880	1907.5
15	1	0	QPSK	23.11	23.41	23.14
15	1	37		23.10	23.01	22.99
15	1	74		23.07	22.84	23.04
15	36	0		21.90	21.95	21.82
15	36	18		21.98	21.94	22.04
15	36	37		21.98	21.79	22.03
15	75	0		21.86	21.76	21.95
15	1	0	16-QAM	22.22	22.19	21.92
15	1	37		22.38	21.79	21.77
15	1	74		22.32	21.62	21.82
15	36	0		20.97	20.74	20.61
15	36	18		21.02	20.73	20.83
15	36	37		20.90	20.59	20.82
15	75	0		20.81	20.56	20.74
Channel				26090	26340	26640

Frequency				1855	1880	1910
10	1	0	QPSK	23.21	22.99	23.51
10	1	24		23.17	22.92	23.03
10	1	49		23.18	22.94	23.11
10	25	0		21.90	21.82	22.07
10	25	12		21.98	21.83	22.01
10	25	24		21.98	21.90	22.06
10	50	0		21.86	21.77	21.89
10	1	0	16-QAM	22.36	22.20	22.49
10	1	24		21.95	21.70	21.81
10	1	49		21.96	21.72	21.89
10	25	0		20.69	20.61	20.86
10	25	12		20.77	20.62	20.80
10	25	24		20.77	20.69	20.85
10	50	0		20.65	20.57	20.68
Channel				**26065**	**26340**	**26665**
Frequency				**1852.5**	**1880**	**1912.5**
5	1	0	QPSK	23.15	23.01	23.04
5	1	12		23.11	22.95	23.14
5	1	24		23.14	22.90	23.23
5	12	0		22.08	21.93	22.10
5	12	6		21.99	22.02	22.12
5	12	11		22.00	21.96	22.14
5	25	0		21.93	21.81	22.08
5	1	0	16-QAM	21.93	21.79	21.82
5	1	12		21.89	21.73	21.92
5	1	24		21.92	21.68	22.01
5	12	0		20.87	20.72	20.89
5	12	6		20.78	20.81	20.91
5	12	11		20.79	20.75	20.93
5	25	0		20.72	20.60	20.87

Note: All conducted measurements are based on a RMS detector.

Test Item	Wireless Module		
Test Item	Effective Isotropic Radiated Power Measurement		
Date of Test	2015/06/21	Test Site	AC-6

GSM/GPRS/EDGE

Radiated Power EIRP/ERP				
Band	**Modulation**	**Freq. (MHz)**	**EIRP (dBm)**	**H/V**
GSM850	GMSK	824.2	31.13	H
		836.4	31.33	H
		848.8	31.27	H
		824.2	33.51	V
		836.4	33.88	V
		848.8	33.69	V
PCS1900	GMSK	1850.2	25.56	H
		1880.0	25.71	H
		1909.8	25.83	H
		1850.2	30.34	V
		1880.0	30.39	V
		1909.8	30.66	V
GPRS850	GMSK	824.2	33.51	H
		836.4	33.39	H
		848.8	33.27	H
		824.2	30.27	V
		836.4	30.19	V
		848.8	30.06	V
GPRS1900	GMSK	1850.2	30.46	H
		1880.0	30.37	H
		1909.8	30.28	H
		1850.2	28.41	V
		1880.0	28.32	V

		1909.8	28.19	V
EDGE850	8PSK	824.2	27.43	H
		836.4	27.35	H
		848.8	27.25	H
		824.2	25.44	V
		836.4	25.32	V
		848.8	25.18	V
EDGE1900	8PSK	1850.2	26.46	H
		1880.0	26.38	H
		1909.8	26.25	H
		1850.2	24.22	V
		1880.0	24.12	V
		1909.8	24.03	V

CDMA 2000 1X /CDMA 2000 1XEVDO Rel-0/CDMA 2000 1XEVDO Rel-1

Radiated Power EIRP/ERP				
Band	**Modulation**	**Freq. (MHz)**	**EIRP (dBm)**	**H/V**
CDMA 2000 1X BC1	GMSK	1851.25	24.39	H
		1880.00	23.81	H
		1908.75	24.18	H
		1851.25	22.25	V
		1880.00	21.79	V
		1908.75	22.22	V
CDMA 2000 1X EVDO Rel-0 BC1	QPSK	1851.25	24.51	H
		1880.00	24.33	H
		1908.75	24.41	H
		1851.25	22.49	V
		1880.00	22.35	V
		1908.75	22.38	V
CDMA 2000 1X EVDO Rel-0 BC1	QPSK	1851.25	23.87	H
		1880.00	23.64	H
		1908.75	23.71	H
		1851.25	21.73	V
		1880.00	21.65	V
		1908.75	21.69	V

WCDMA Band 2

Radiated Power EIRP/ERP				
Band	**Modulation**	**Freq. (MHz)**	**EIRP (dBm)**	**H/V**
WCDMA Band 2	QPSK	1852.4	24.41	H
		1880.0	24.22	H
		1907.6	24.08	H
		1852.4	22.12	V
		1880.0	22.01	V
		1907.6	21.89	V

WCDMA Band IV

Radiated Power EIRP/ERP				
Band	**Modulation**	**Freq. (MHz)**	**EIRP (dBm)**	**H/V**
WCDMA Band 2	QPSK	1712.4	24.41	H
		1732.4	24.22	H
		1752.5	24.39	H
		1712.4	22.23	V
		1732.4	22.12	V
		1752.5	22.18	V

LTE Band 2

LTE Band 2 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
			RB Size	RB Offset			
2	10	QPSK	1	0	1855	24.51	H
2	10	QPSK	1	0	1880	24.69	H
2	10	QPSK	1	0	1905	24.53	H
2	10	QPSK	1	0	1855	22.39	V
2	10	QPSK	1	0	1880	22.45	V
2	10	QPSK	1	0	1905	22.37	V
2	10	16QAM	1	0	1855	23.50	H
2	10	16QAM	1	0	1880	23.59	H
2	10	16QAM	1	0	1905	23.41	H
2	10	16QAM	1	0	1855	21.42	V
2	10	16QAM	1	0	1880	21.45	V
2	10	16QAM	1	0	1905	21.52	V

LTE Band 4

LTE Band 4 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
4	20	QPSK	1	0	1720	24.61	H
4	20	QPSK	1	0	1732.5	24.37	H
4	20	QPSK	1	0	1745	24.42	H
4	20	QPSK	1	0	1720	22.52	V
4	20	QPSK	1	0	1732.5	22.23	V
4	20	QPSK	1	0	1745	22.28	V
4	20	16QAM	1	0	1720	23.46	H
4	20	16QAM	1	0	1732.5	23.29	H
4	20	16QAM	1	0	1745	23.31	H
4	20	16QAM	1	0	1720	21.37	V
4	20	16QAM	1	0	1732.5	21.29	V
4	20	16QAM	1	0	1745	21.35	V

LTE Band 7

LTE Band 5 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
5	10	QPSK	1	0	829	24.33	H
5	10	QPSK	1	0	836.5	24.18	H
5	10	QPSK	1	0	844	24.28	H
5	10	QPSK	1	0	829	22.19	V
5	10	QPSK	1	0	836.5	22.11	V
5	10	QPSK	1	0	844	22.17	V
5	10	16QAM	1	0	829	23.46	H
5	10	16QAM	1	0	836.5	23.18	H
5	10	16QAM	1	0	844	23.21	H
5	10	16QAM	1	0	829	21.38	V
5	10	16QAM	1	0	836.5	21.14	V
5	10	16QAM	1	0	844	21.22	V

LTE Band 13

LTE Band 13 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
13	5	QPSK	1	0	779.5	24.65	H
13	5	QPSK	1	0	782	24.78	H
13	5	QPSK	1	0	784.5	24.61	H
13	5	QPSK	1	0	779.5	22.44	V
13	5	QPSK	1	0	782	22.51	V
13	5	QPSK	1	0	784.5	22.39	V
13	5	16QAM	1	0	779.5	23.71	H
13	5	16QAM	1	0	782	23.52	H
13	5	16QAM	1	0	784.5	23.41	H
13	5	16QAM	1	0	779.5	21.55	V
13	5	16QAM	1	0	782	21.41	V
13	5	16QAM	1	0	784.5	21.32	V

LTE Band 17

LTE Band 17 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
17	10	QPSK	1	24	709	24.55	H
17	10	QPSK	1	24	710	23.98	H
17	10	QPSK	1	24	711	24.69	H
17	10	QPSK	1	24	709	22.37	V
17	10	QPSK	1	24	710	21.93	V
17	10	QPSK	1	24	711	22.58	V
17	10	16QAM	1	24	709	23.91	H
17	10	16QAM	1	24	710	22.49	H
17	10	16QAM	1	24	711	23.39	H
17	10	16QAM	1	24	709	21.81	V
17	10	16QAM	1	24	710	20.28	V
17	10	16QAM	1	24	711	21.27	V

LTE Band 25

LTE Band 25 Radiated Power EIRP							
LTE Band	Channel BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V
25	10	QPSK	1	0	1855	24.36	H
25	10	QPSK	1	0	1880	24.02	H
25	10	QPSK	1	0	1910	24.49	H
25	10	QPSK	1	0	1855	22.32	V
25	10	QPSK	1	0	1880	21.89	V
25	10	QPSK	1	0	1910	22.18	V
25	10	16QAM	1	0	1855	23.52	H
25	10	16QAM	1	0	1880	23.11	H
25	10	16QAM	1	0	1910	23.35	H
25	10	16QAM	1	0	1855	21.36	V
25	10	16QAM	1	0	1880	21.28	V
25	10	16QAM	1	0	1910	21.31	V

4. Spurious Emission

4.1. Test Equipment

Conducted Emission / AC-6

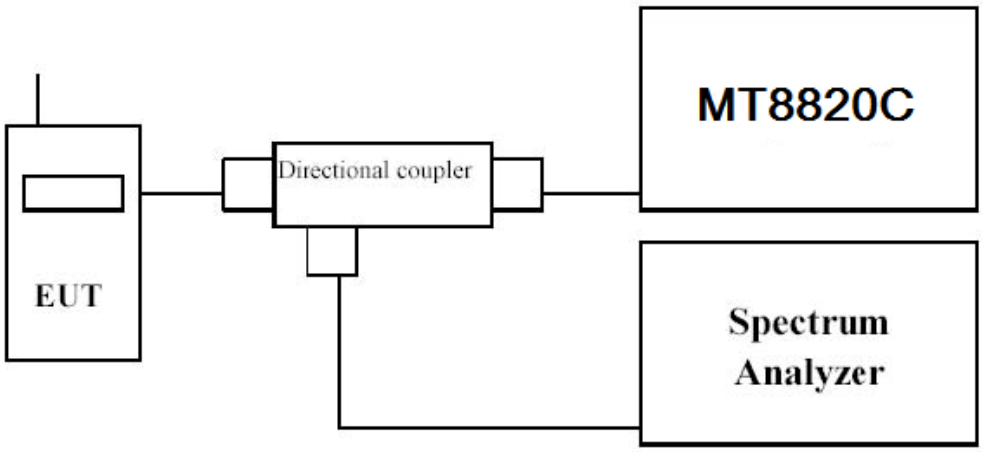
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
PSA Series Spectrum Analyzer	Agilent	E4440A	MY49420184	2016/03/10
Radio Communication Tester	R&S	CMU 200	117088	2016/03/10
Dual Directional Coupler	Agilent	778D	20160	2016/03/10
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2016/03/10
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC6-TH	2016/01/07

Radiated Spurious Emission / AC-5

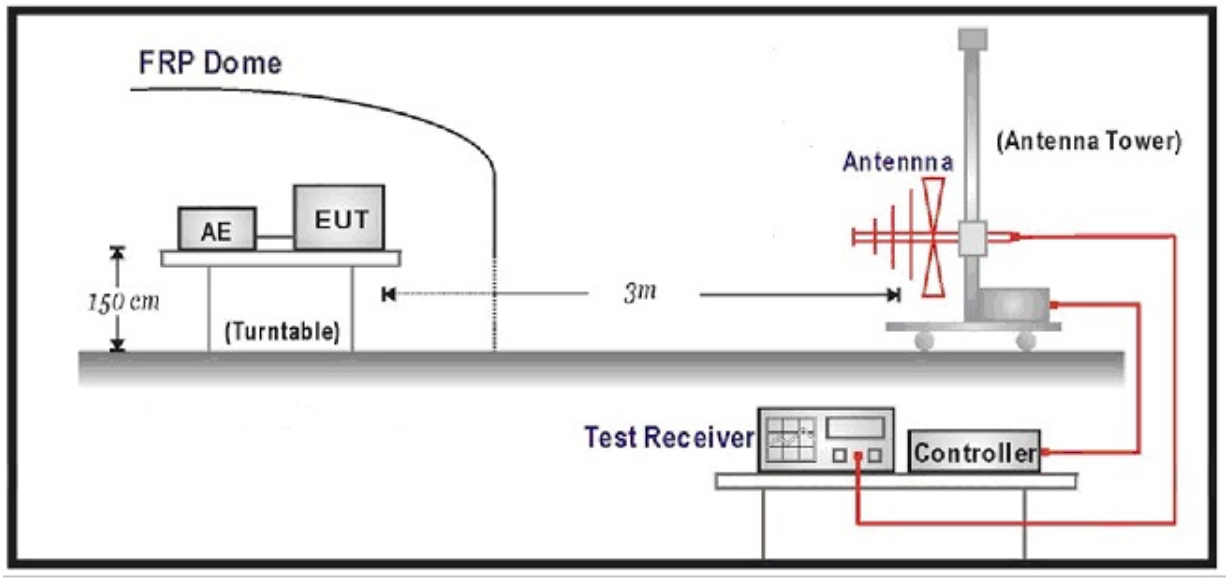
Instrument	Manufacturer	Type No.	Serial No	Cali. Due Date
EMI Receiver	Agilent	N9038A	MY51210196	2016/01/07
Radio Communication Tester	R&S	CMU 200	117088	2016/03/10
PSG Analog Signal Generator	Agilent	E8257D	MY44321116	2016/03/10
Preamplifier	QuieTek	AP-025C	CHM-0503006	2016/04/11
Preamplifier	Miteq	NSP1800-25	1364185	2016/05/03
DRG Horn	ETS-Lindgren	3117	00123988	2016/01/07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	737	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016/03/01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2016/03/10
EMI Receiver	Agilent	N9038A	MY51210196	2015/08/07
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016/01/07

4.2. Test Setup

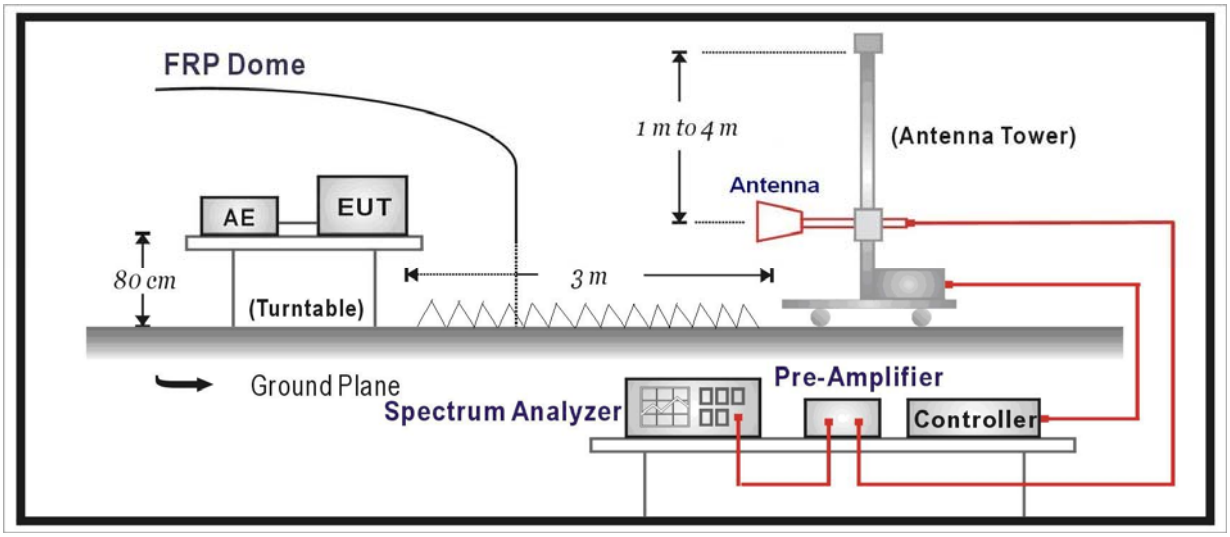
Conducted Spurious Measurement: below 1GHz



Radiated Spurious Measurement: below 1GHz



Radiated Spurious Measurement: above 1GHz



4.3. Test Procedure

Conducted Spurious Measurement:

a) The EUT was connected to spectrum analyzer and System Simulator via power divider.
b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
   The path loss was compensated to the results for each measurement.
c) The conducted spurious emission for the whole frequency range was taken.

Radiated Spurious Measurement:

d) The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
e) The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
f) The table was rotated 360 degrees to determine the position of the highest spurious emission.
g) The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
h) Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 1MHz, Sweep 500ms, Taking the record of maximum spurious emission.
i) A horn antenna was substituted in place of the EUT and was driven by a signal generator.
j) Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
k) Taking the record of output power at antenna port
l) Repeat step 7 to step 8 for another polarization.
m) EIRP = SG - Cable loss + Antenna Gain

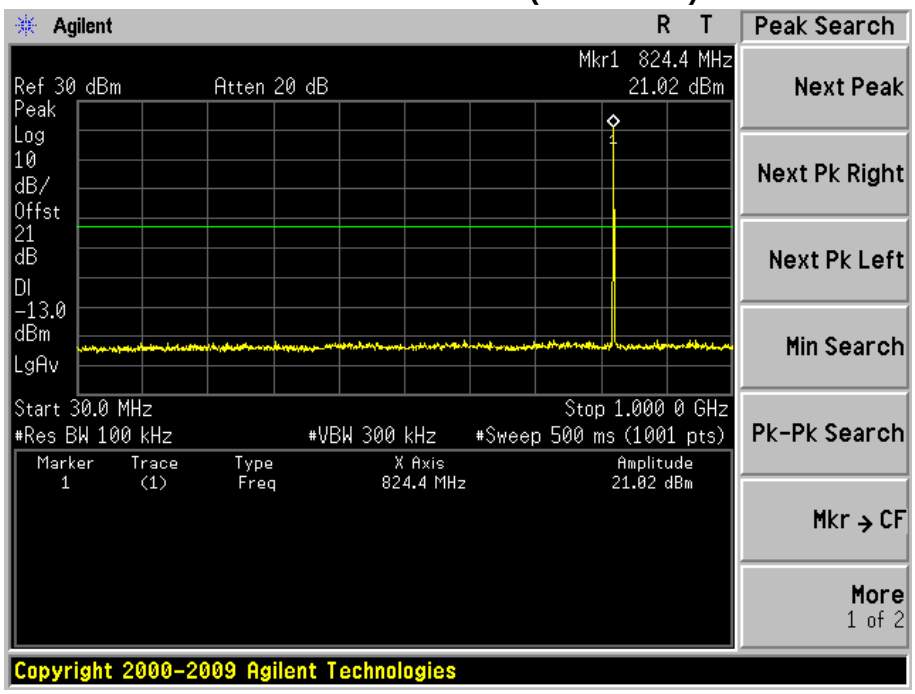
4.4. Uncertainty

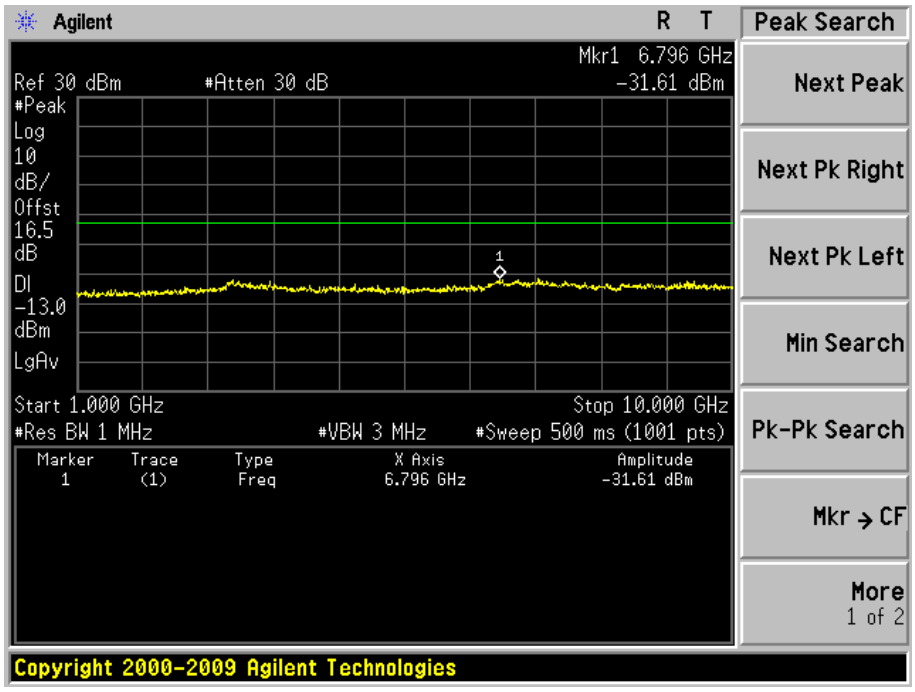
The measurement uncertainty is defined as 3.2 dB for Radiated Power Measurement.

4.5. Test Result

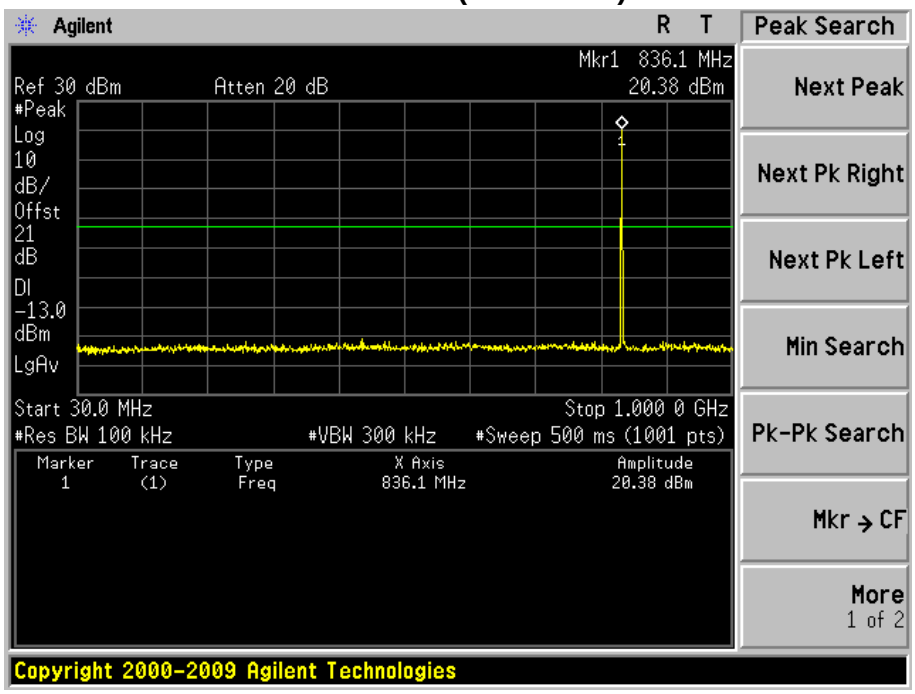
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 3: GPRS 850 Link		
Date of Test	2015/06/21	Test Site	AC-6

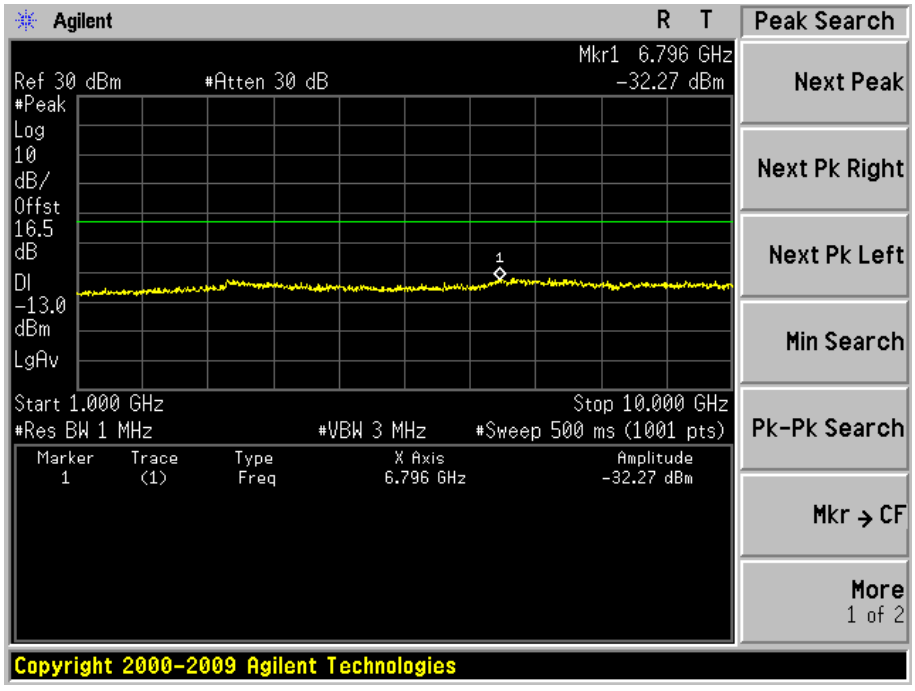
Low Channel 128(824.20MHz)



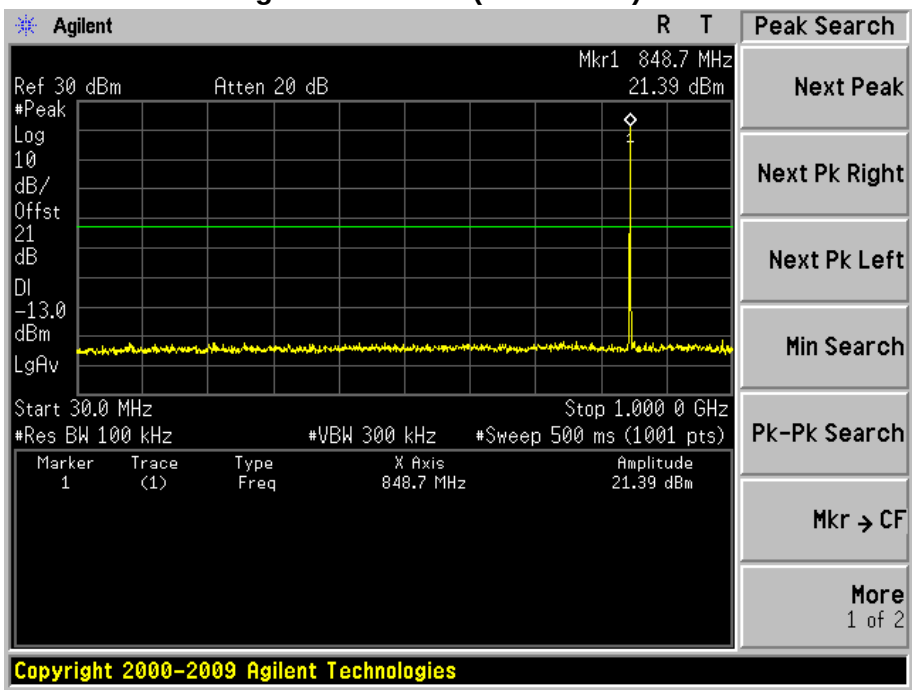


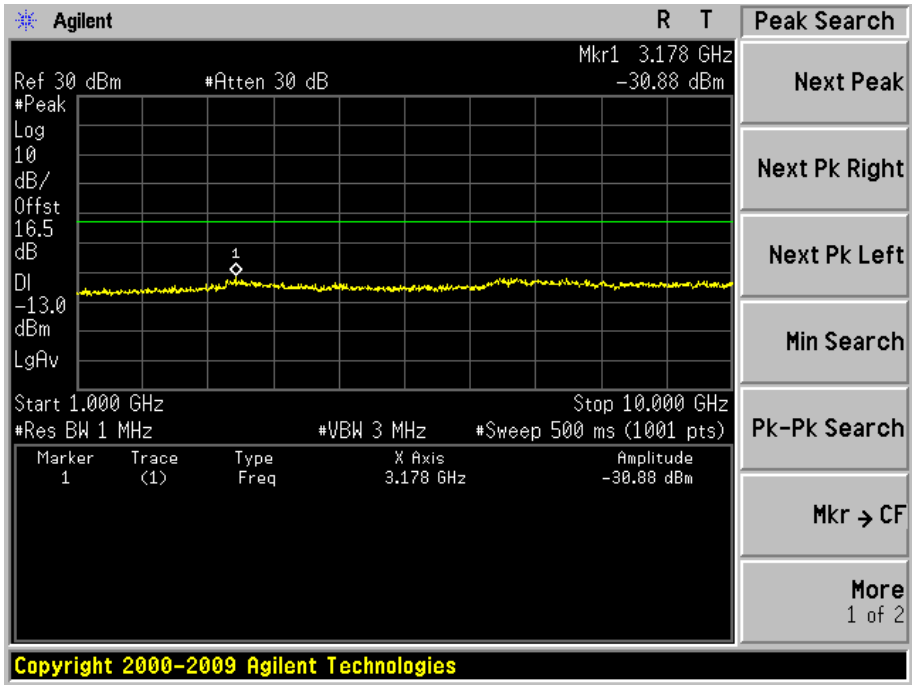
Mid Channel 189(836.40MHz)





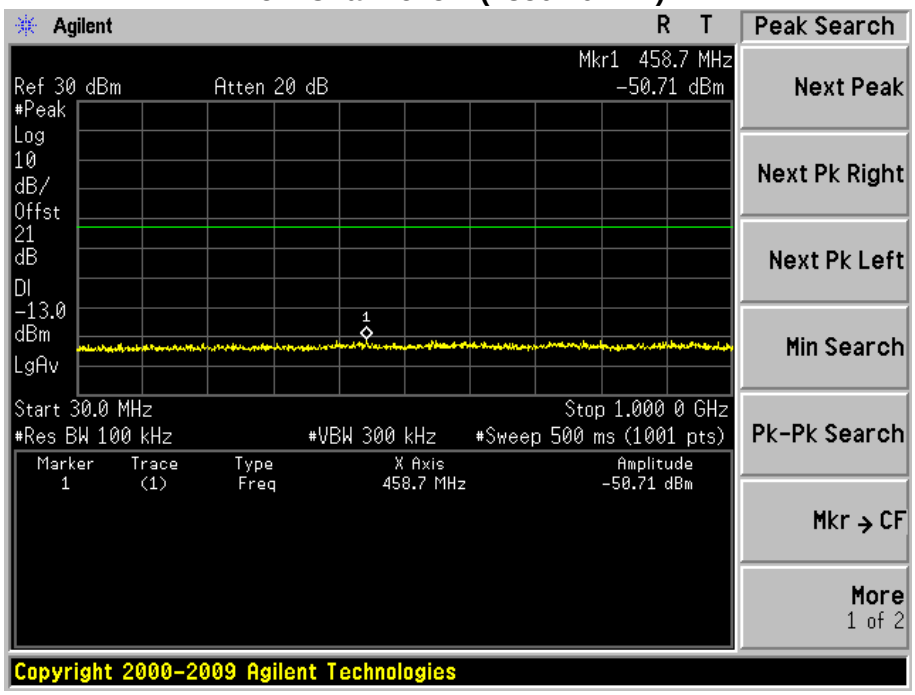
High Channel 251(848.80MHz)

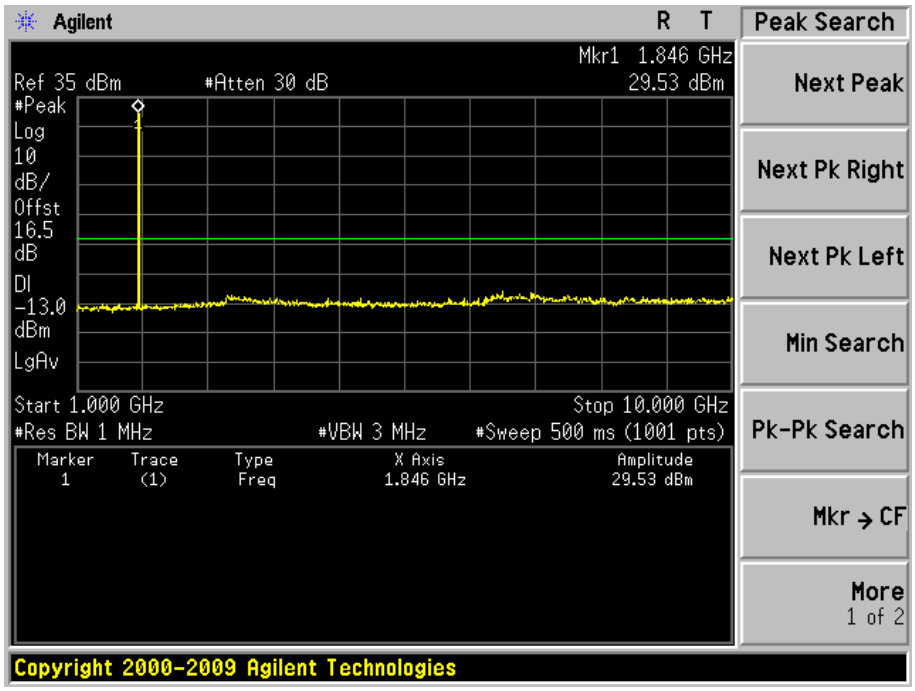




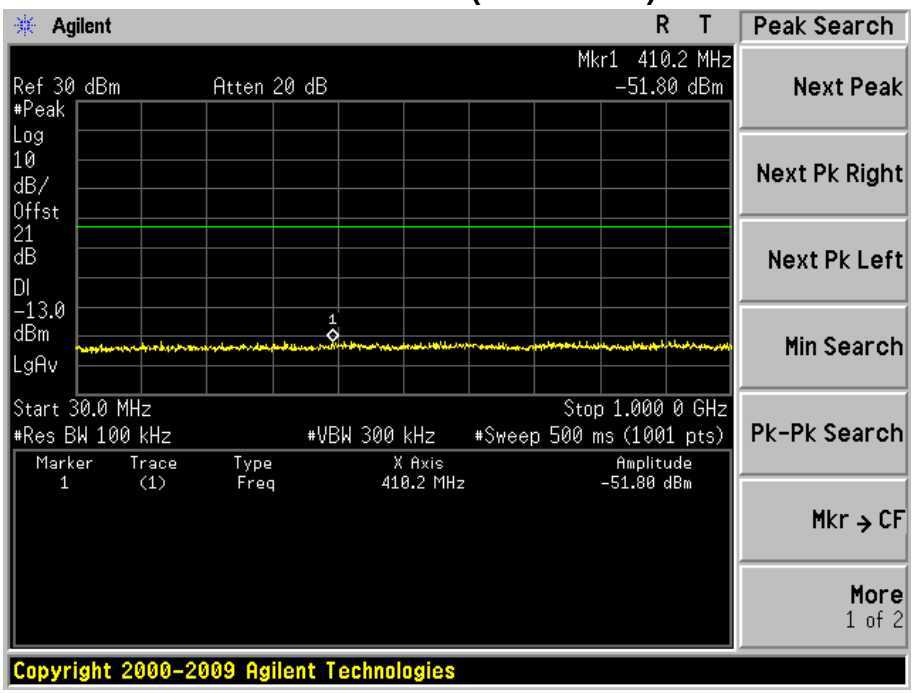
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 4: GPRS 1900 Link		
Date of Test	2015/06/21	Test Site	AC-6

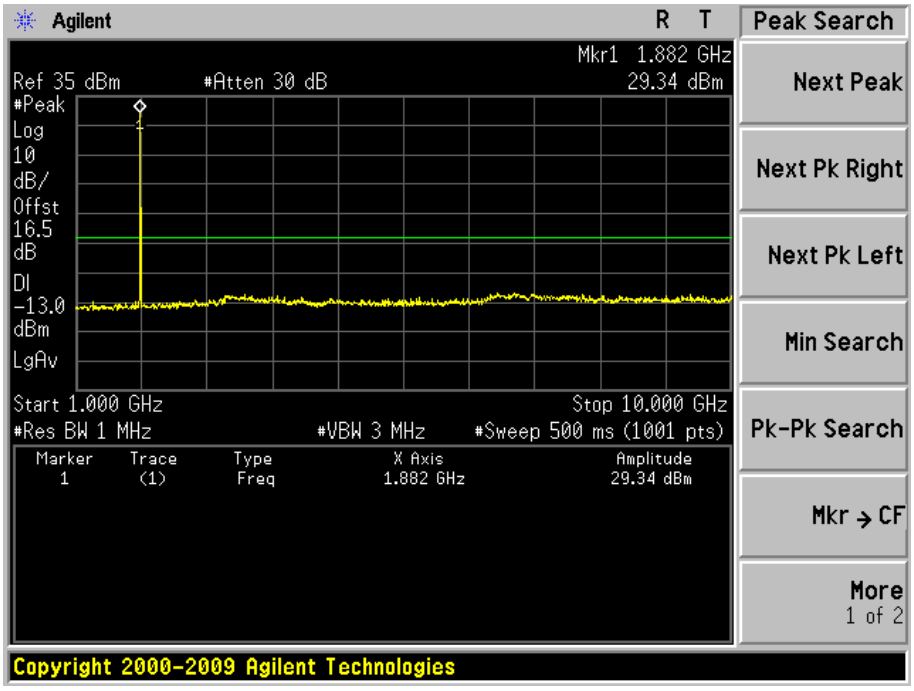
Low Channel 512(1850.20MHz)



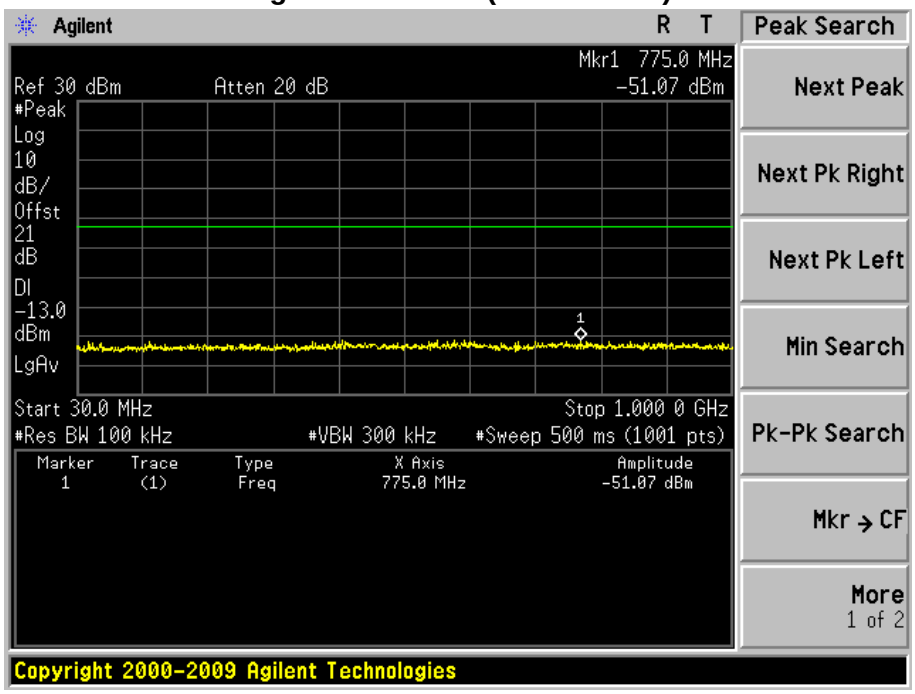


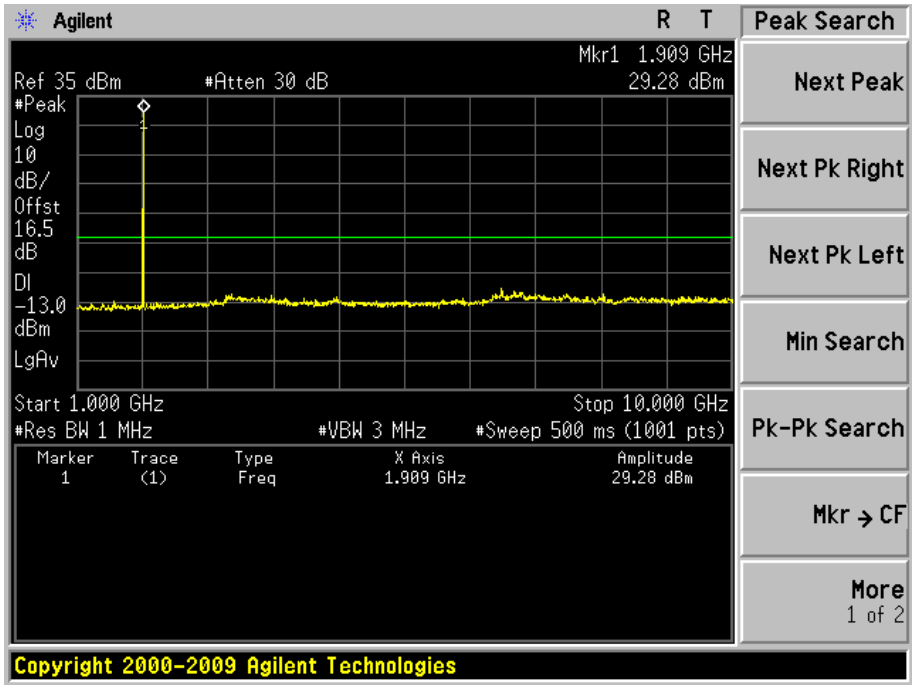
Mid Channel 661(1880.00MHz)





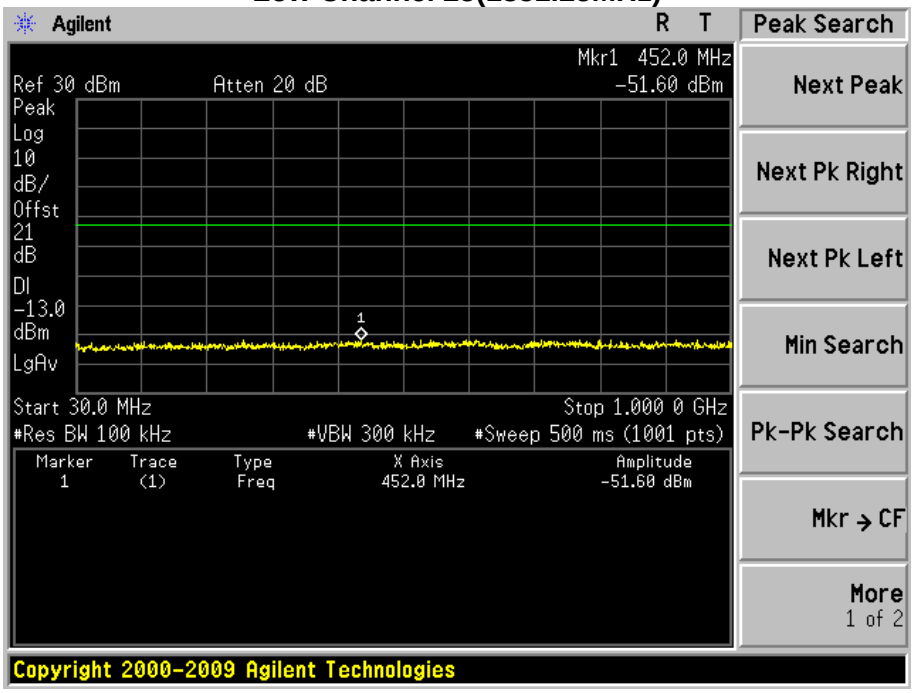
High Channel 810(1909.80MHz)

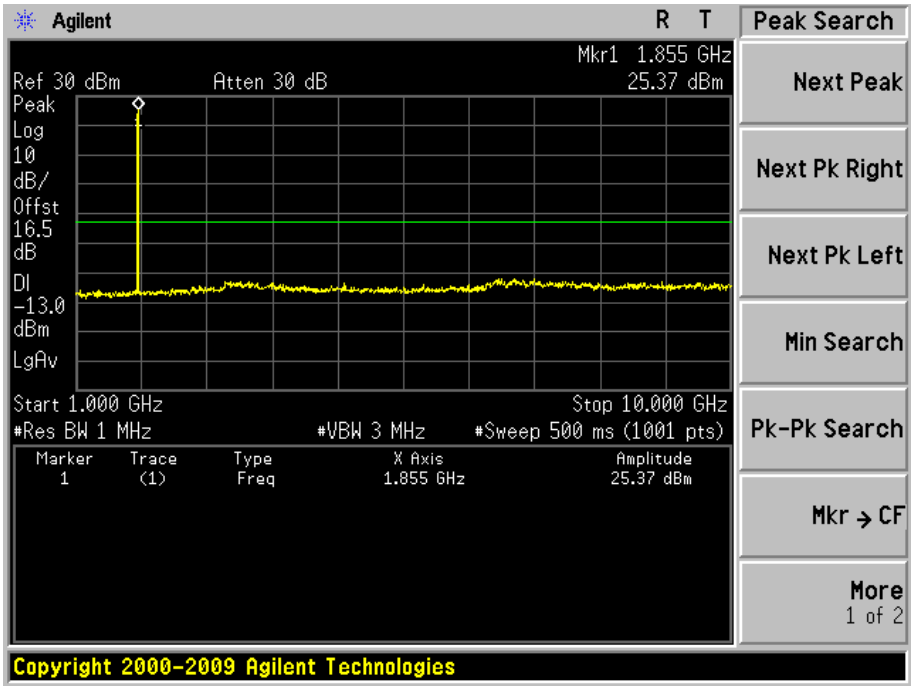




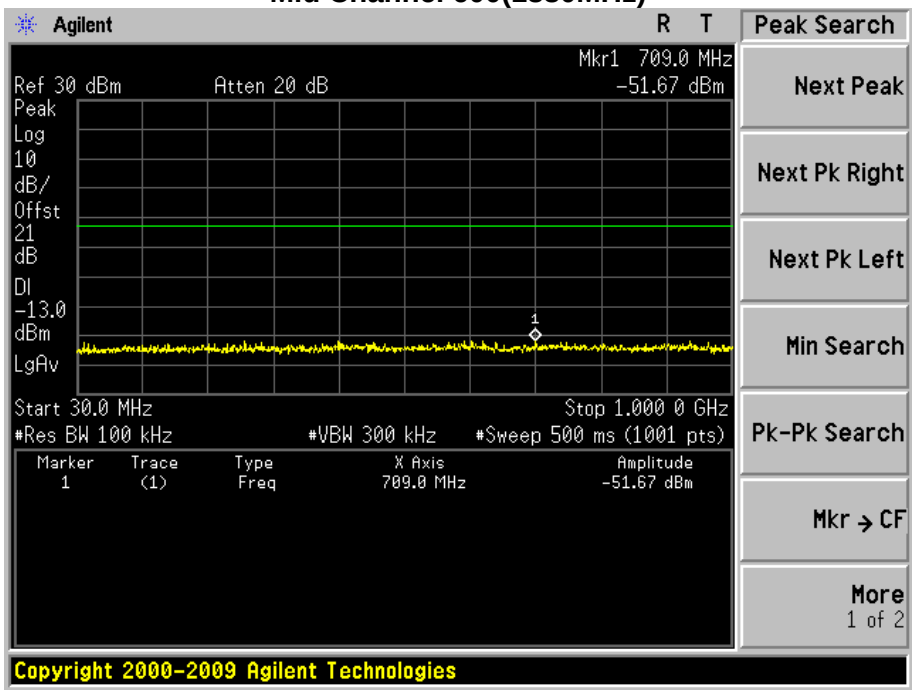
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 7: CDMA 2000 1X BC1 Link		
Date of Test	2015/06/21	Test Site	AC-6

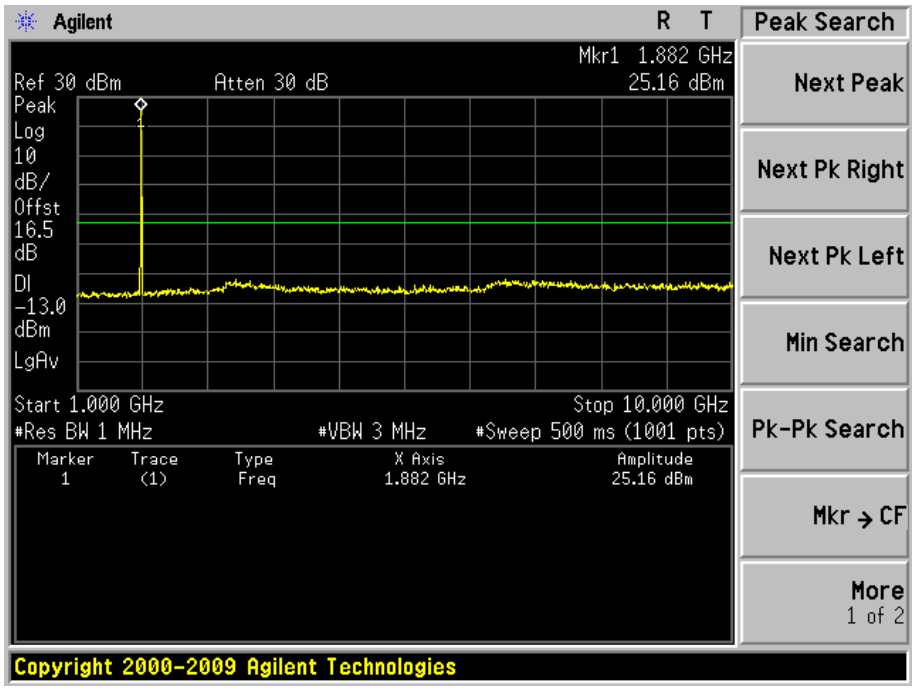
Low Channel 25(1851.25MHz)



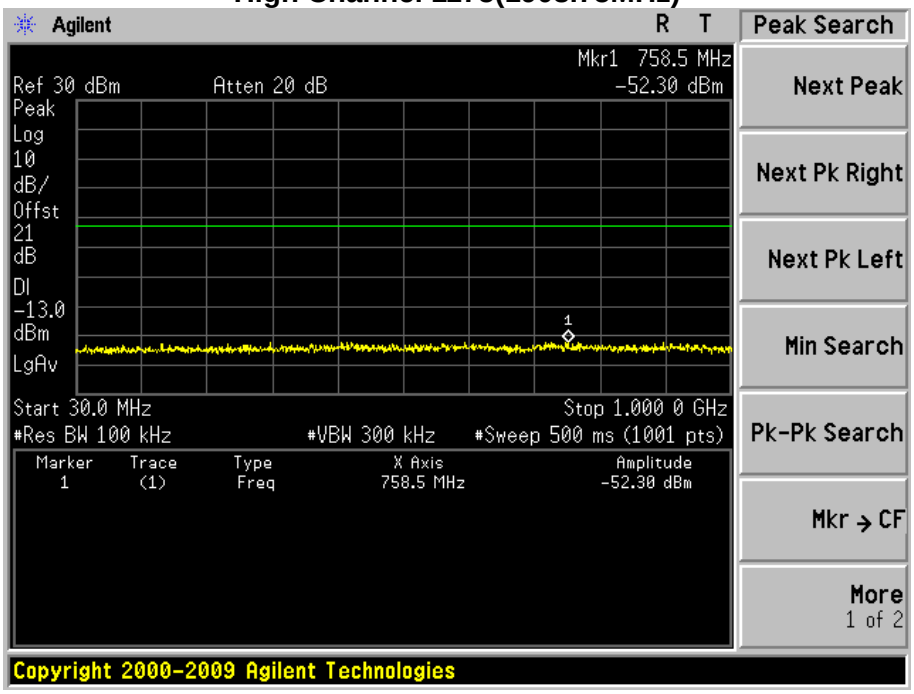


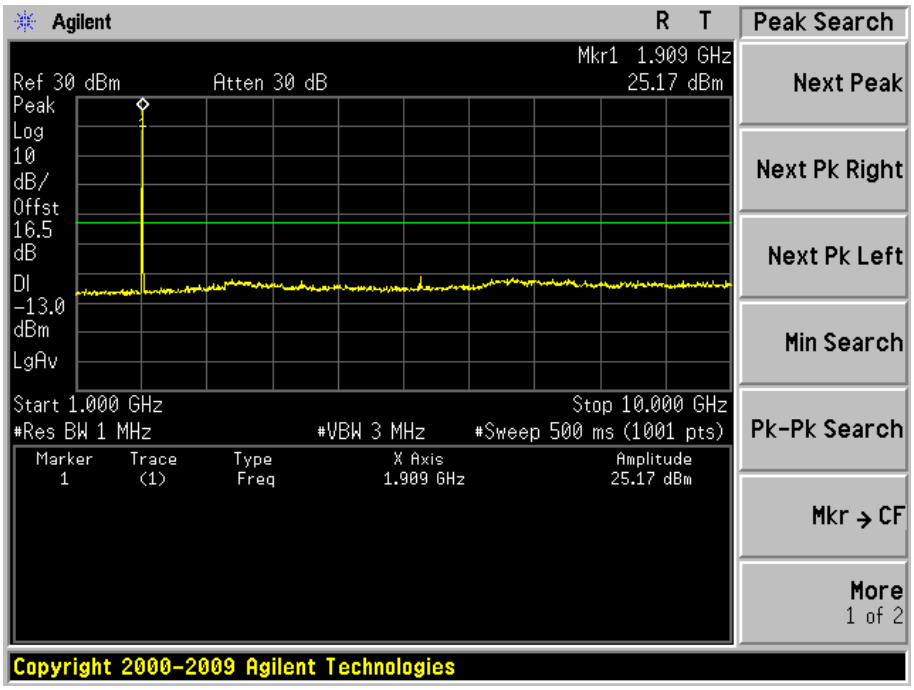
Mid Channel 600(1880MHz)





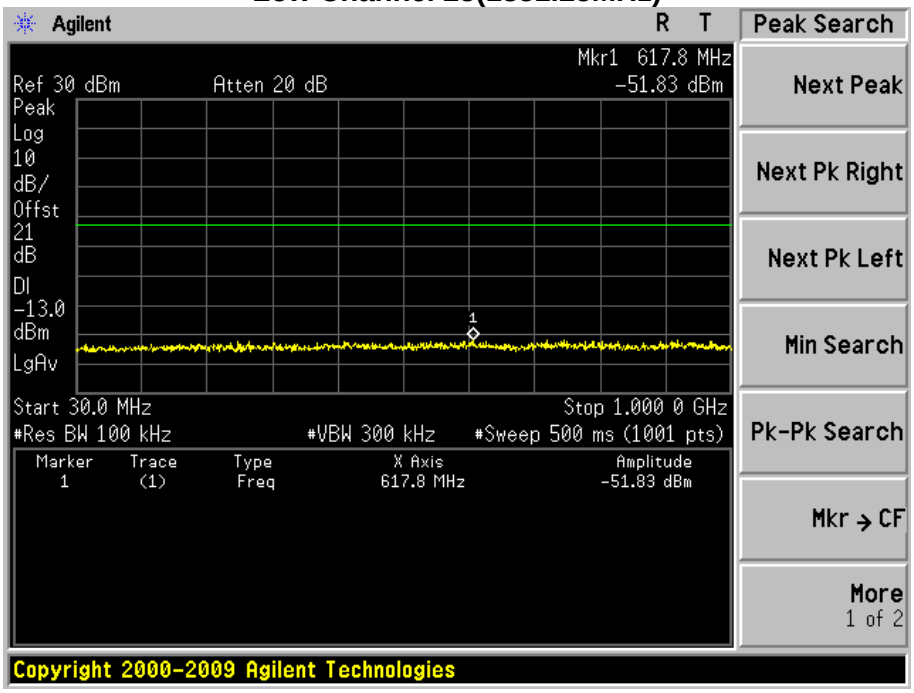
High Channel 1175(1908.75MHz)

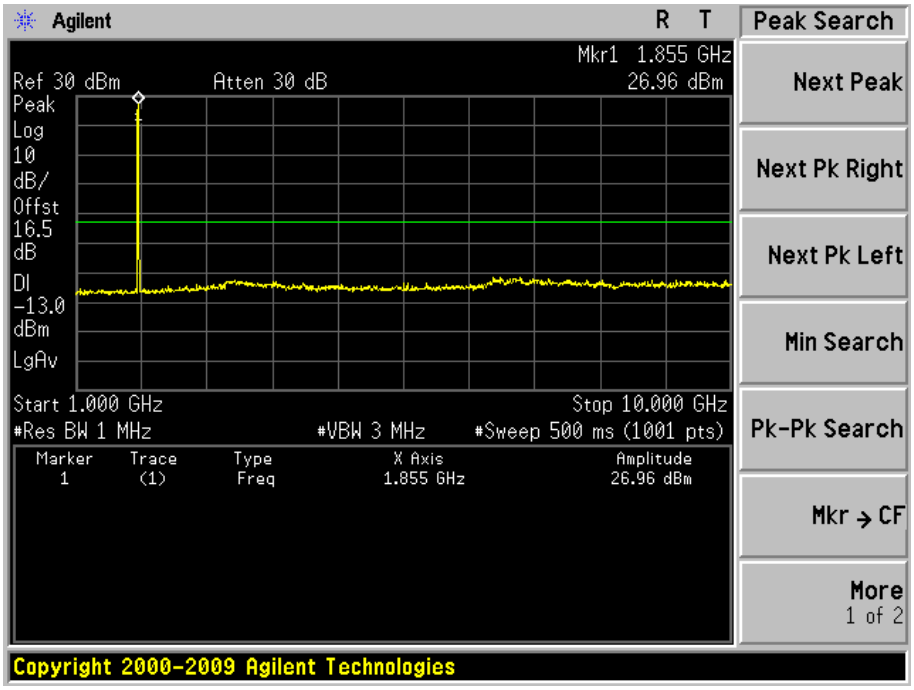




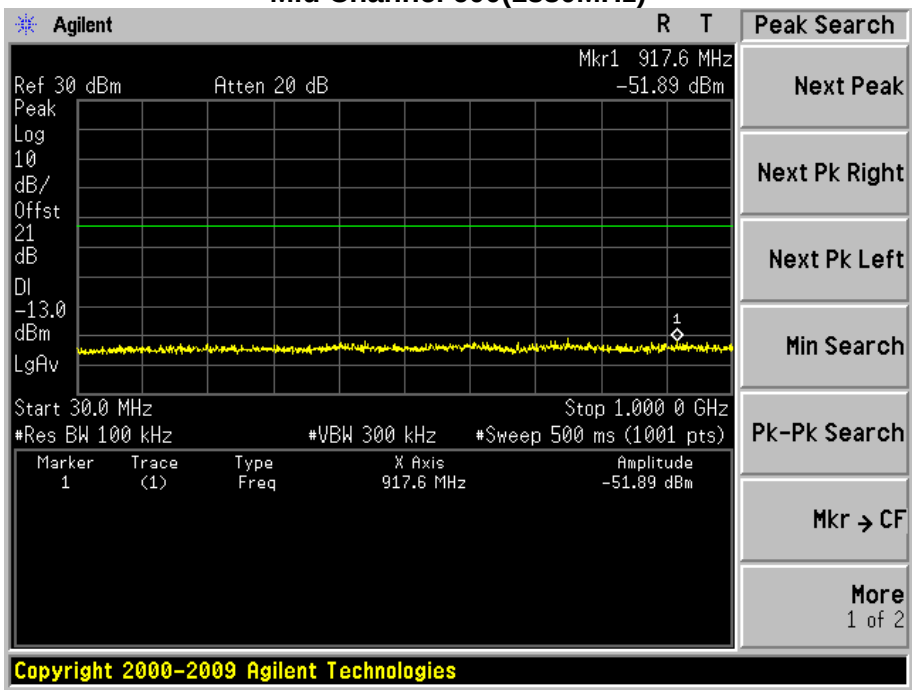
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 8: CDMA 2000 1X EVDO Rel-0 BC1Link		
Date of Test	2015/06/21	Test Site	AC-6

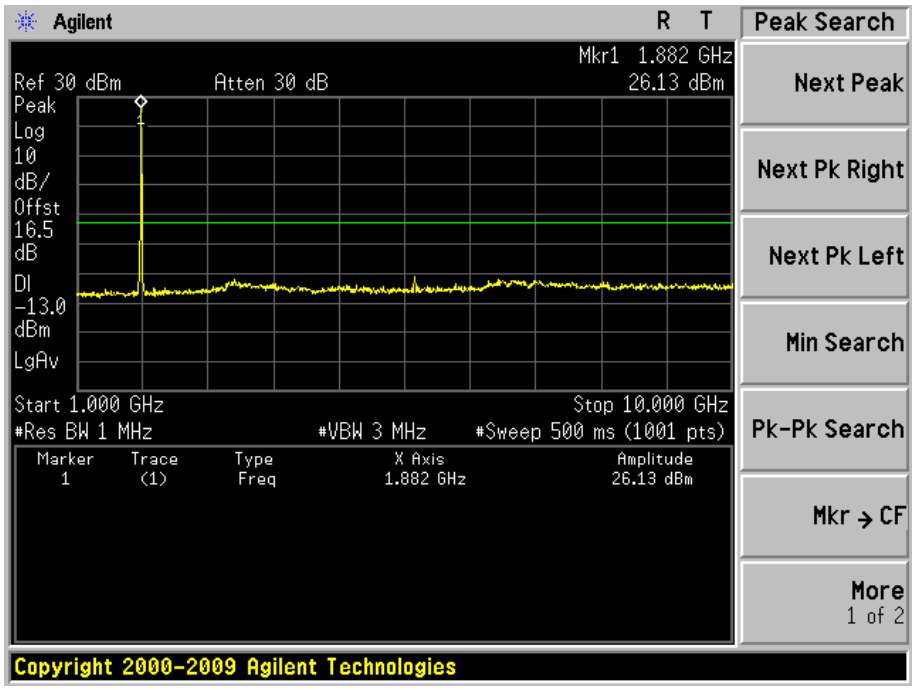
Low Channel 25(1851.25MHz)



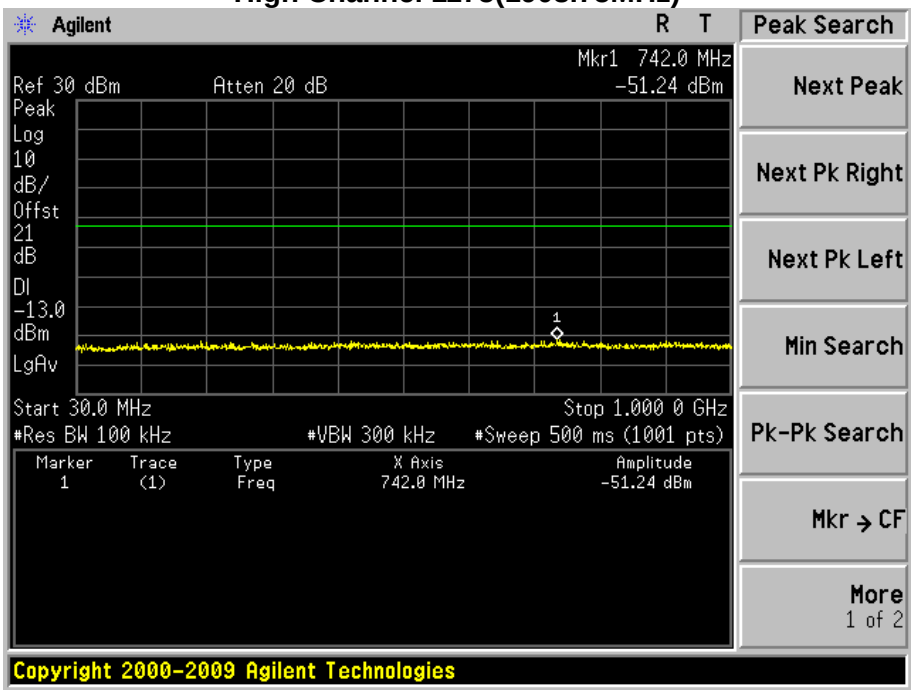


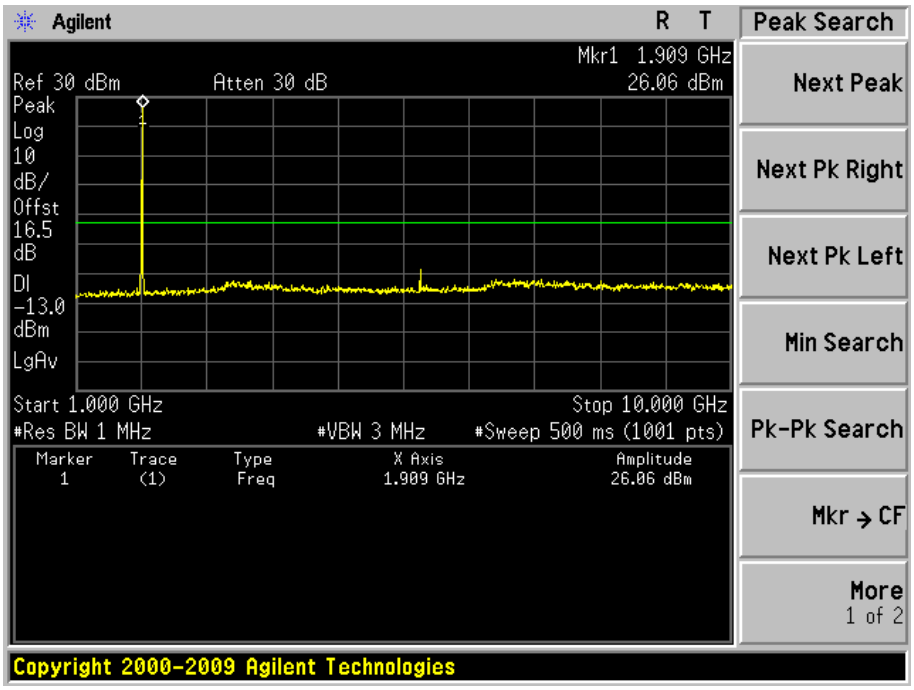
Mid Channel 600(1880MHz)





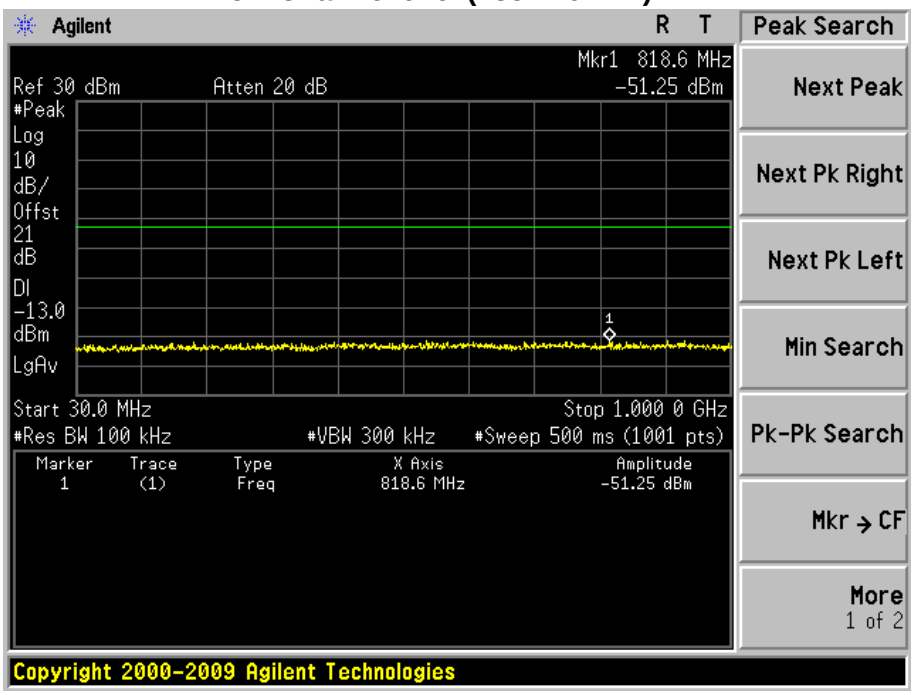
High Channel 1175(1908.75MHz)

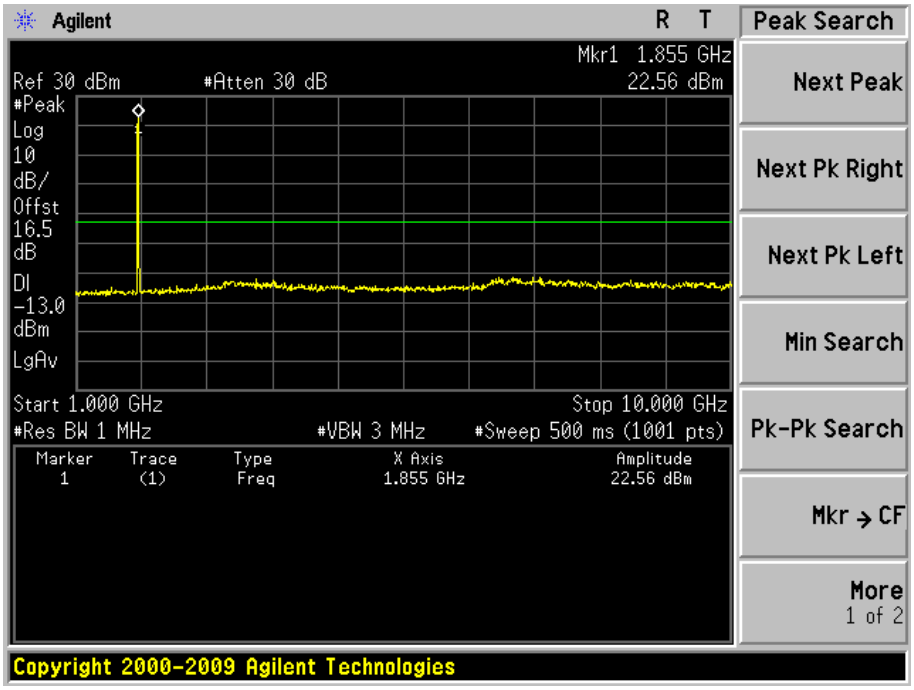




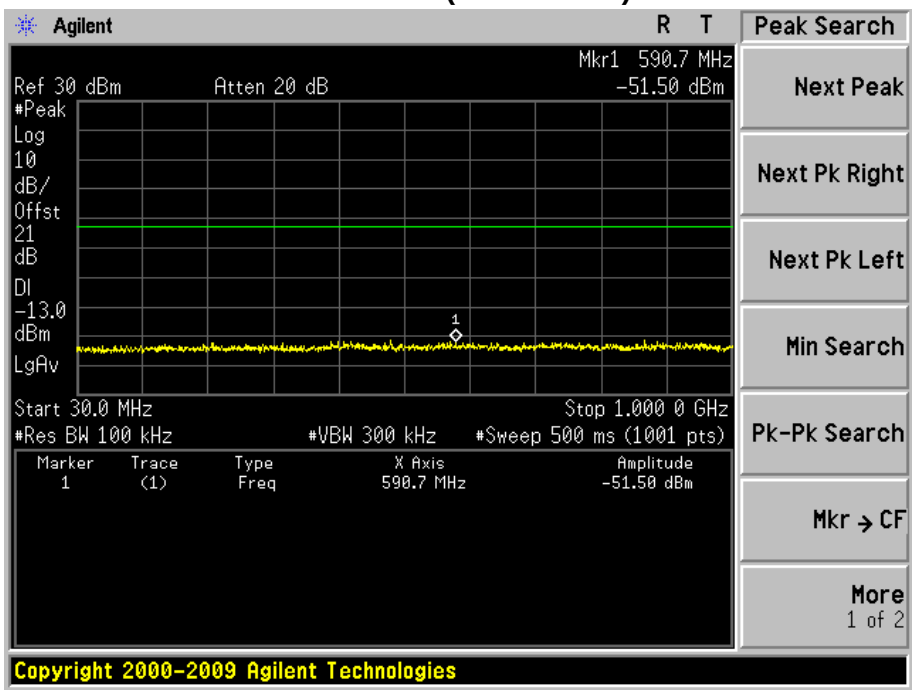
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 10: WCDMA Band 2 Link		
Date of Test	2015/06/21	Test Site	AC-6

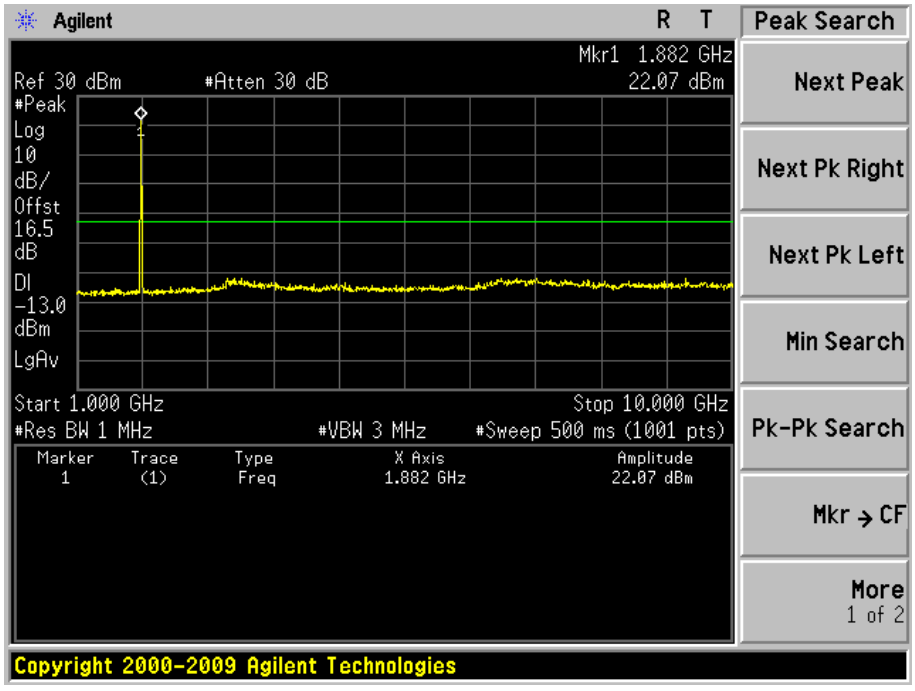
Low Channel 9262(1852.40MHz)



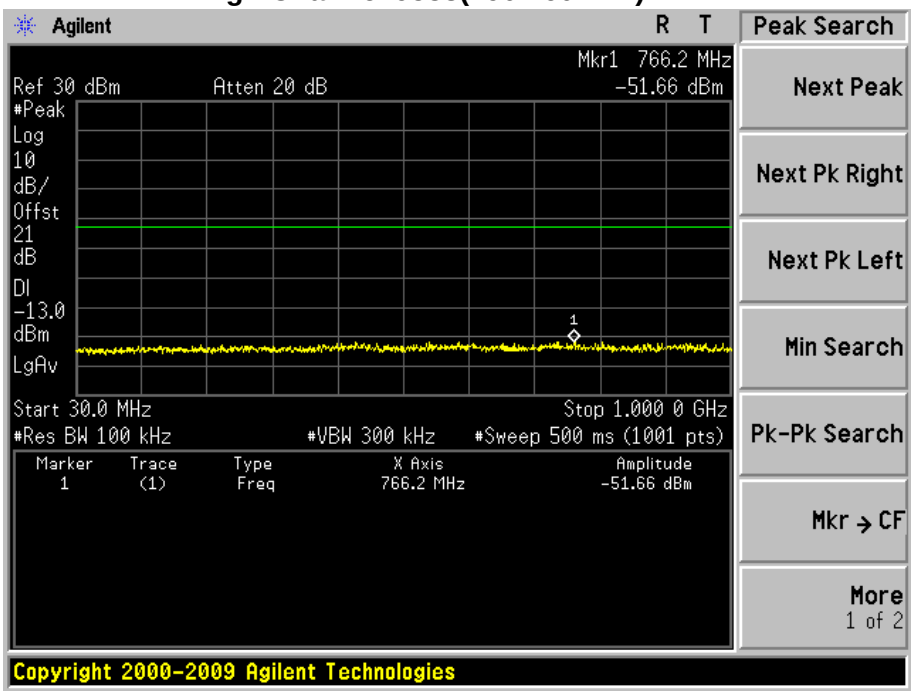


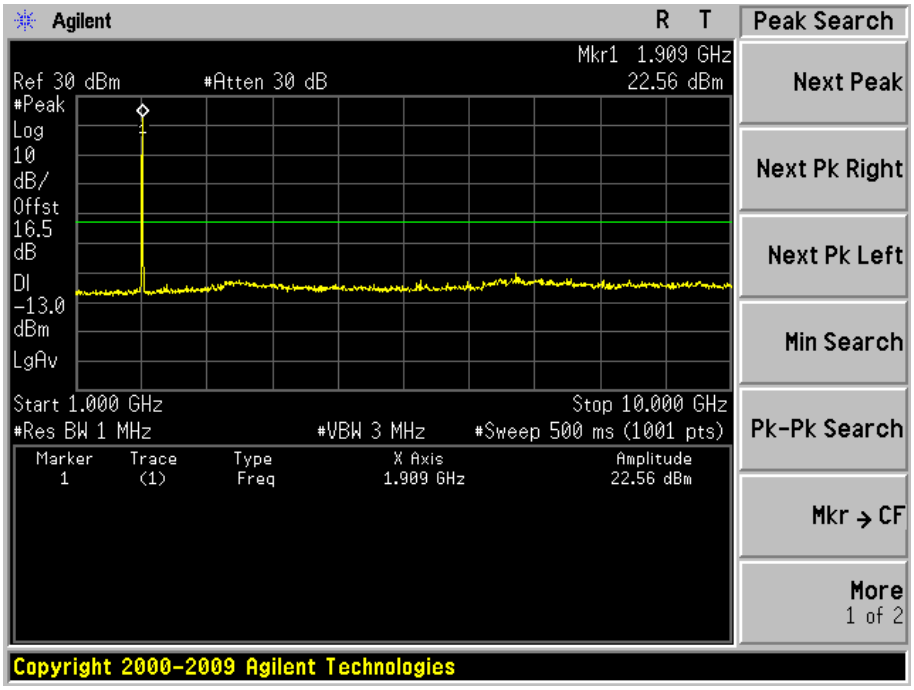
Mid Channel 9400(1880.00MHz)





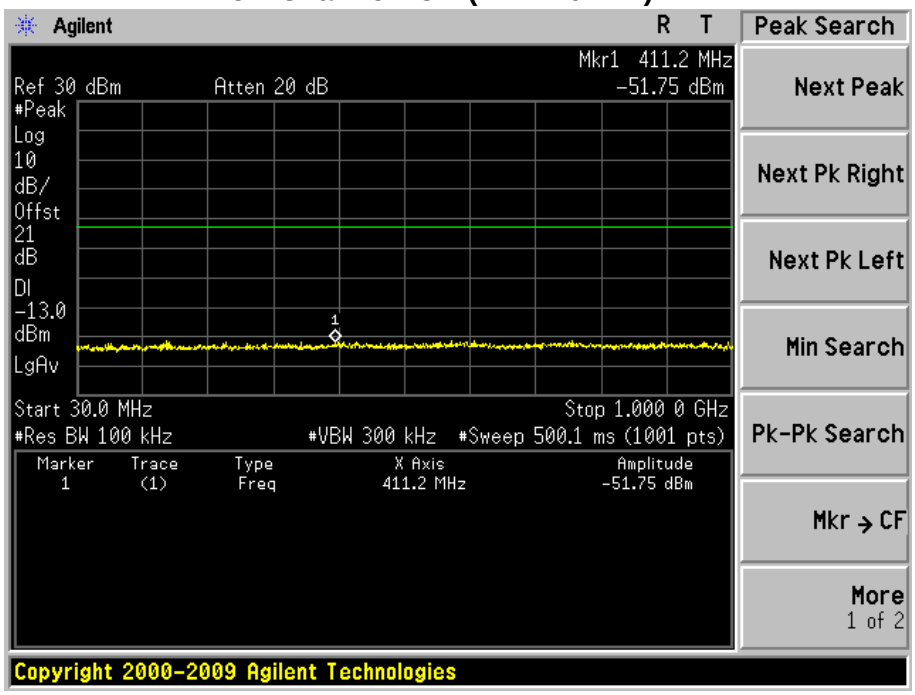
High Channel 9538(1907.60MHz)

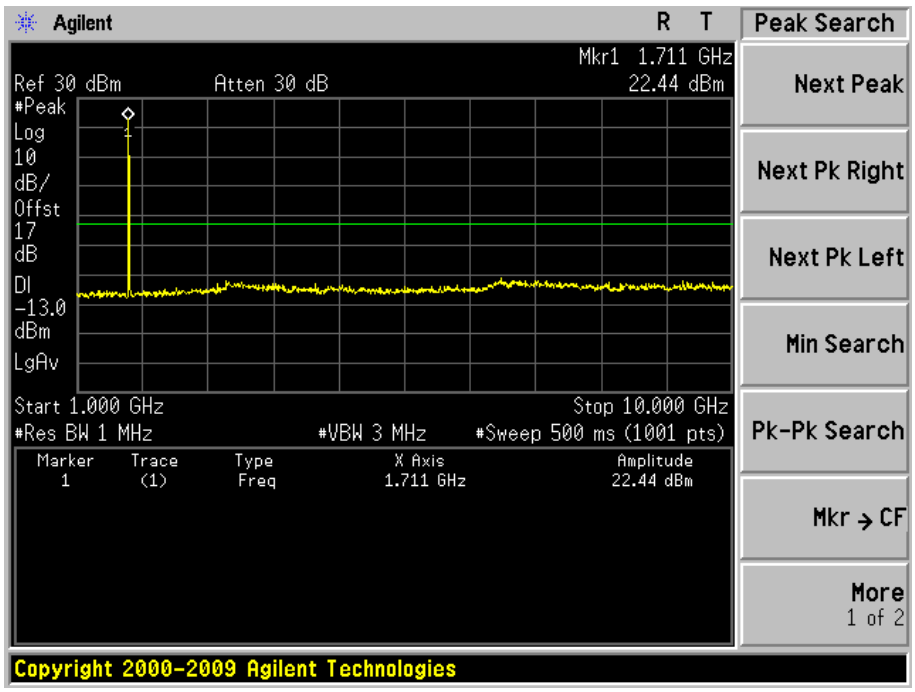




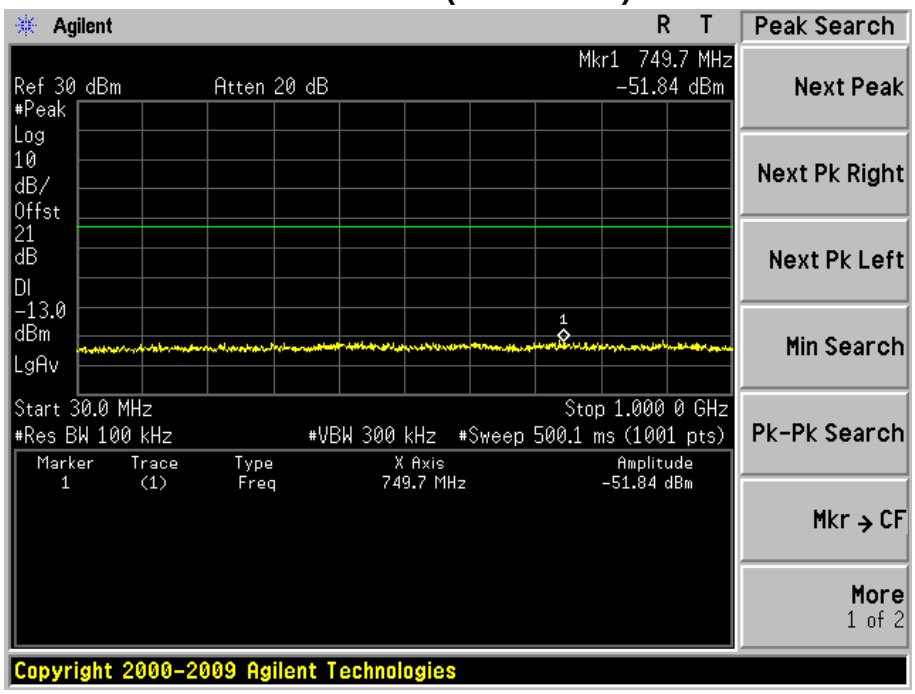
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 11: WCDMA Band 4 Link		
Date of Test	2015/06/30	Test Site	AC-6

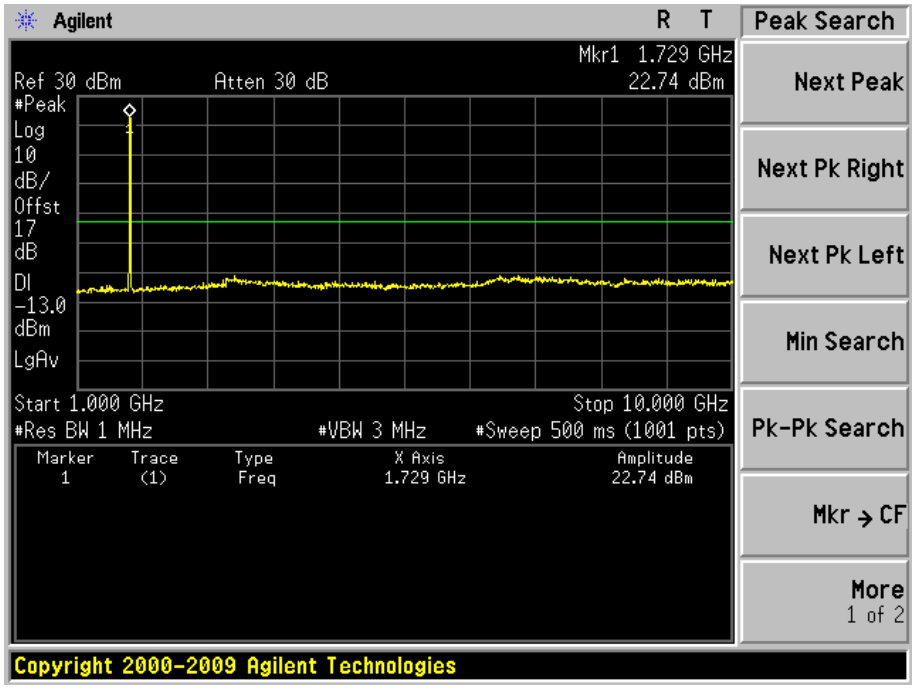
Low Channel 1312(1712.40MHz)



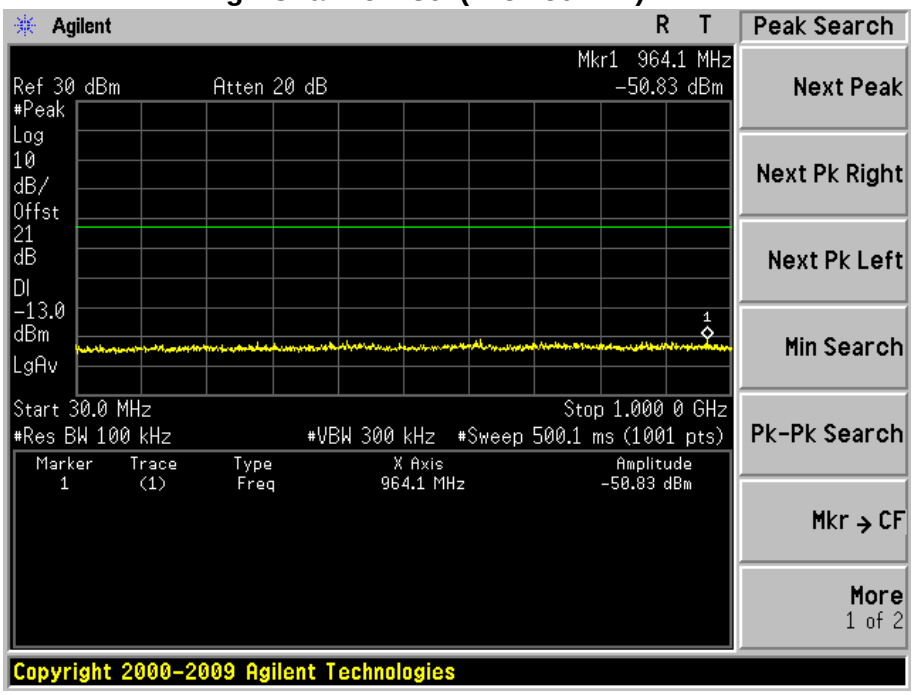


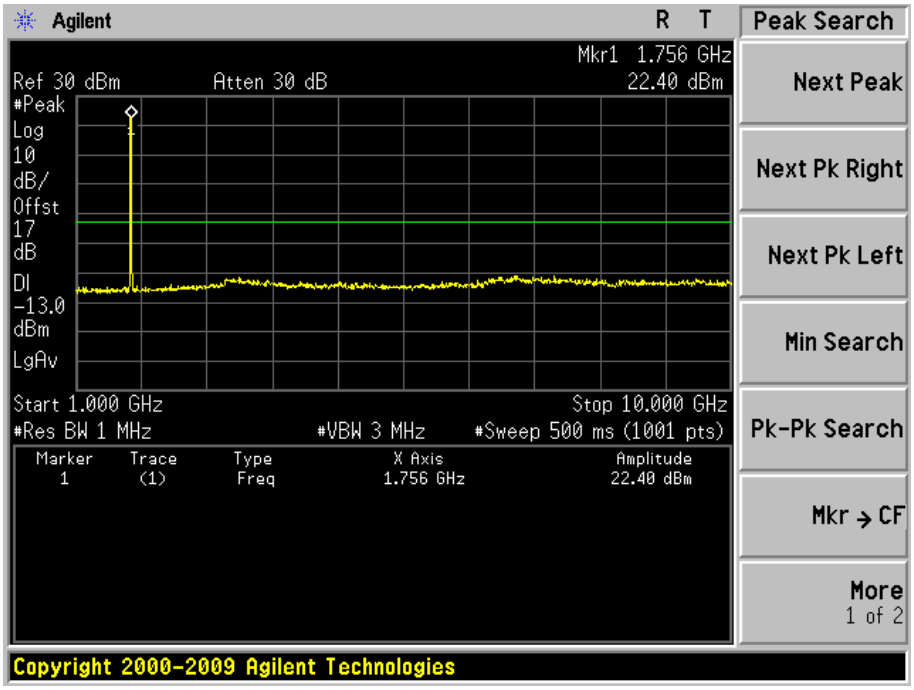
Mid Channel 1412(1732.40MHz)





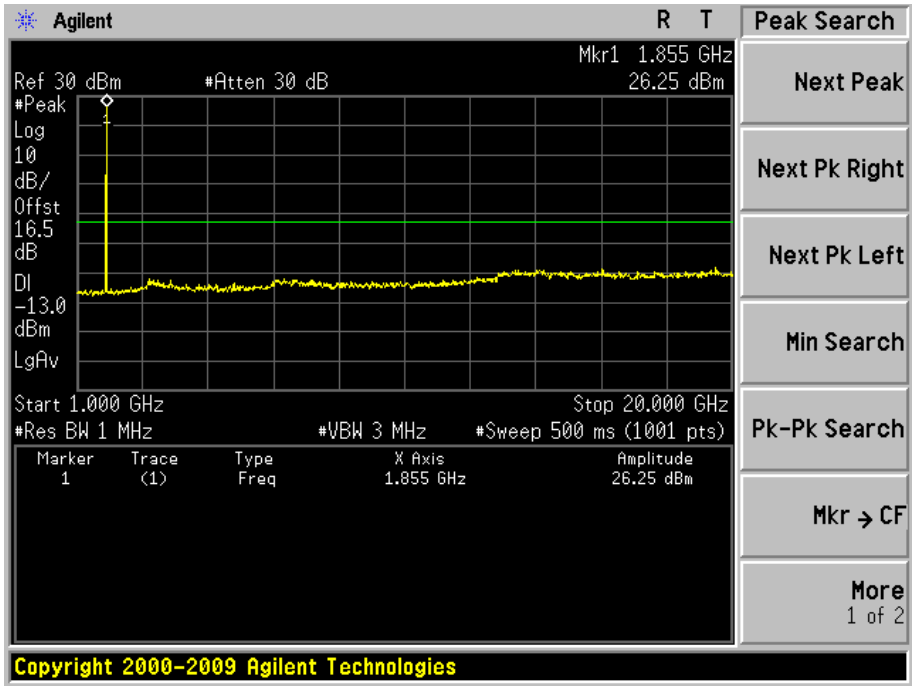
High Channel 1862(1752.50MHz)

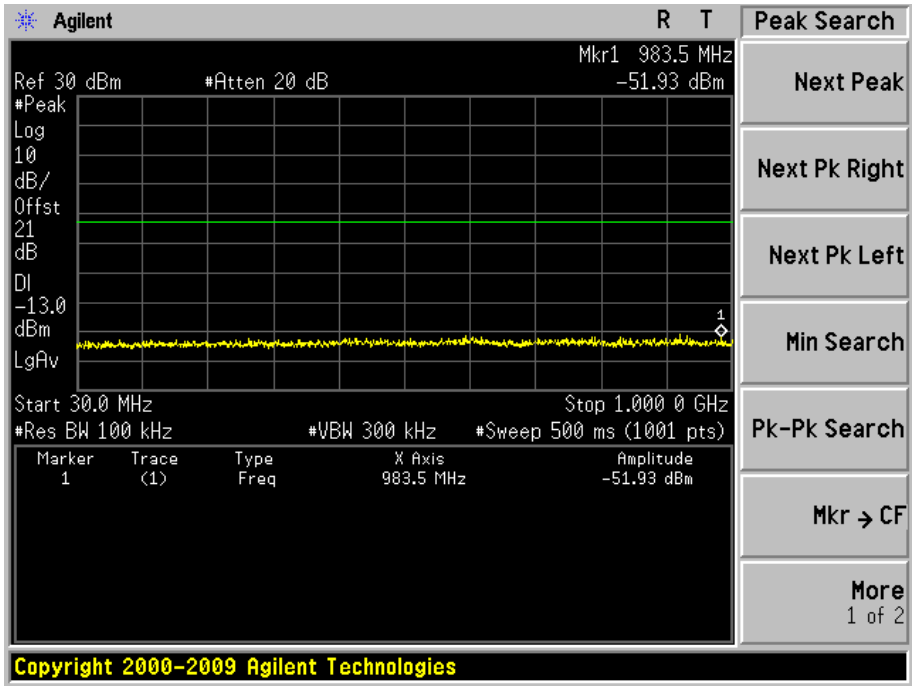




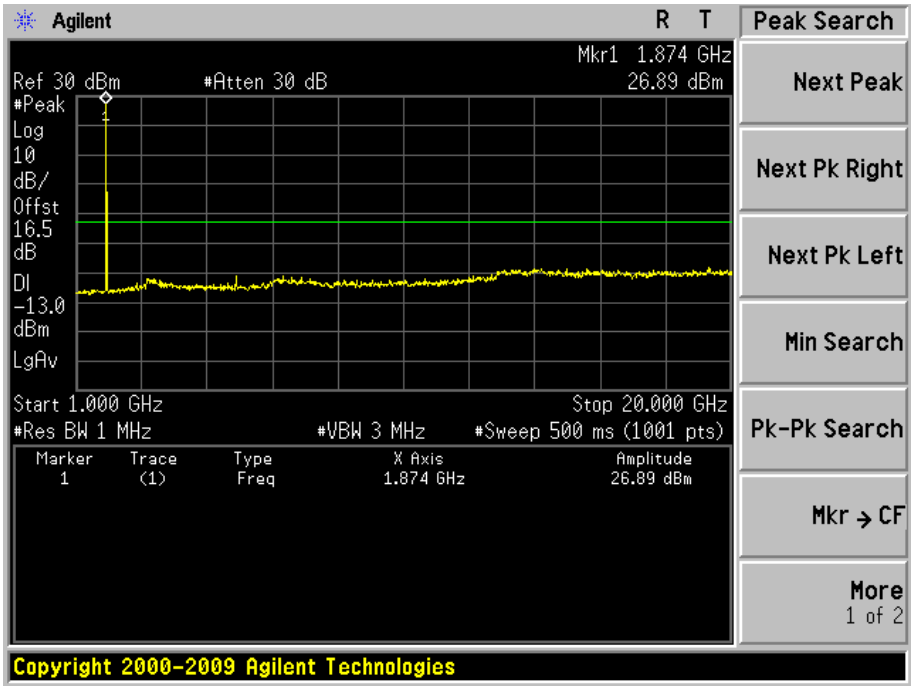
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 12: LTE Band 2(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

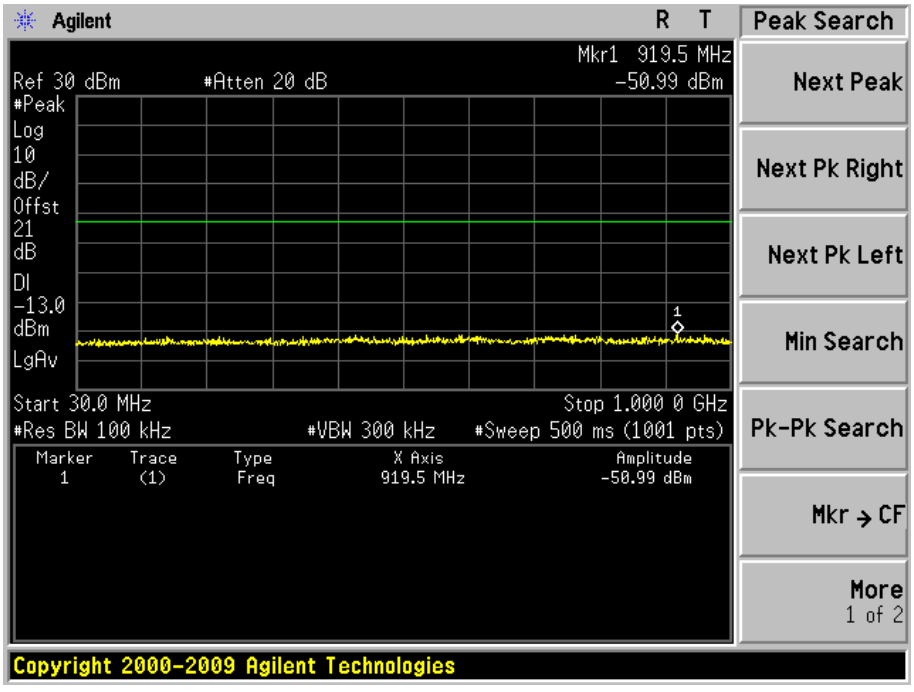
Low Channel 18650(1855.0MHz) 1RB0



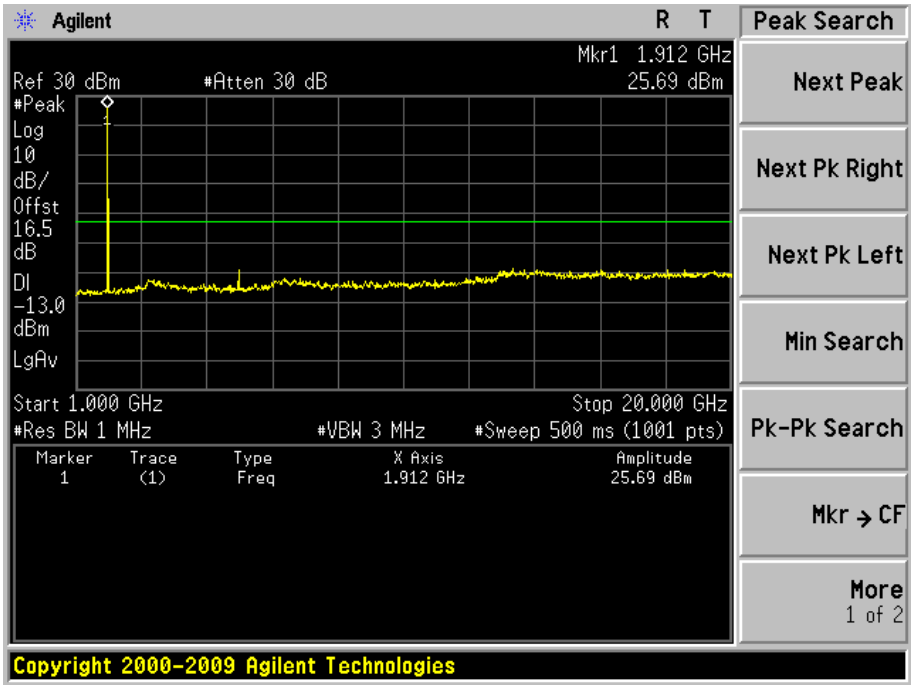


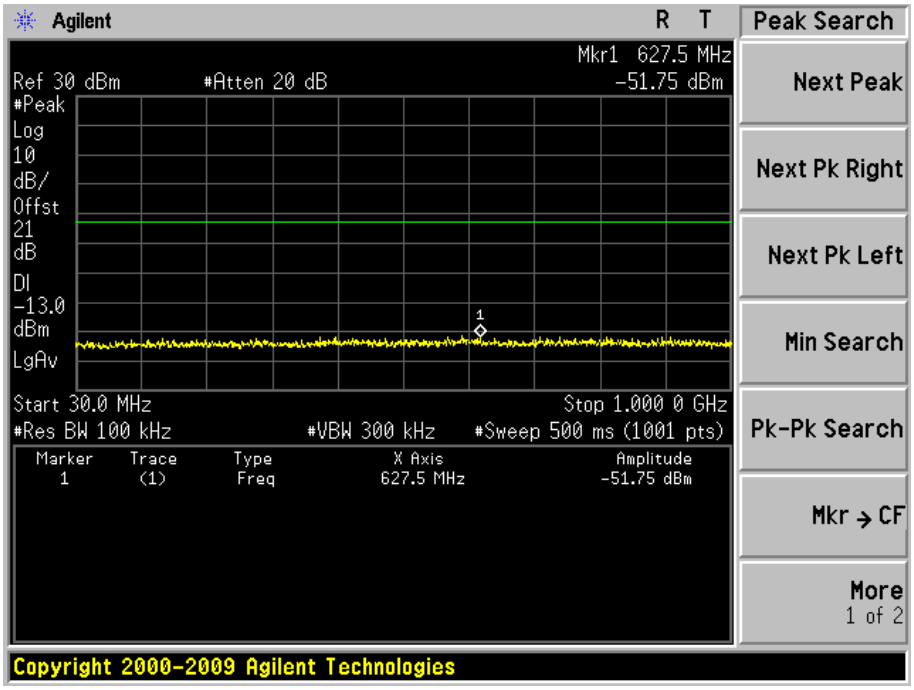
Mid Channel 18900(1880.0MHz) 1RB0





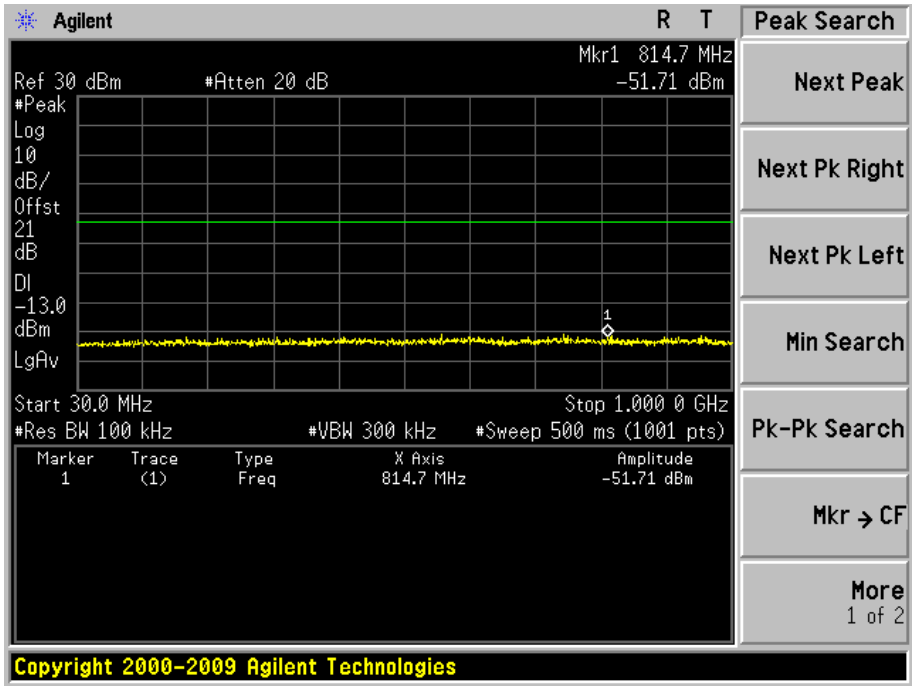
High Channel 19150(1905.00MHz) 1RB0

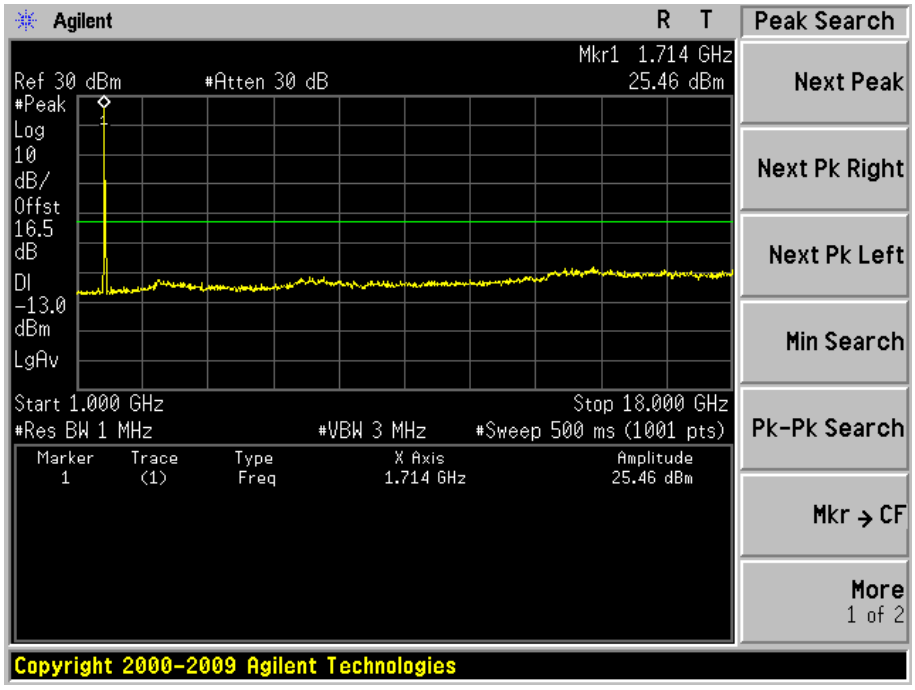




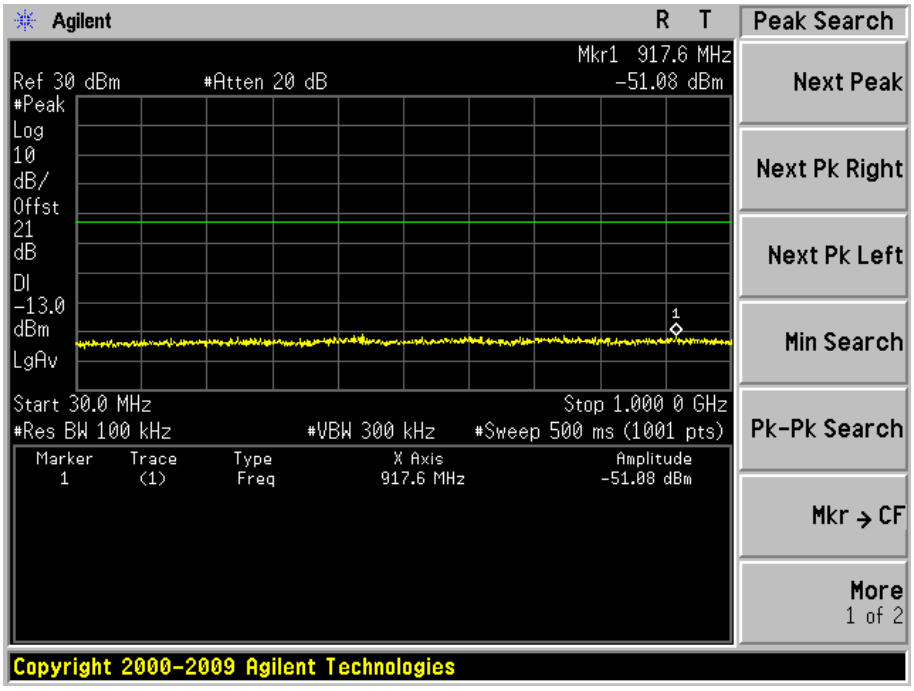
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 13: LTE Band 4(20M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

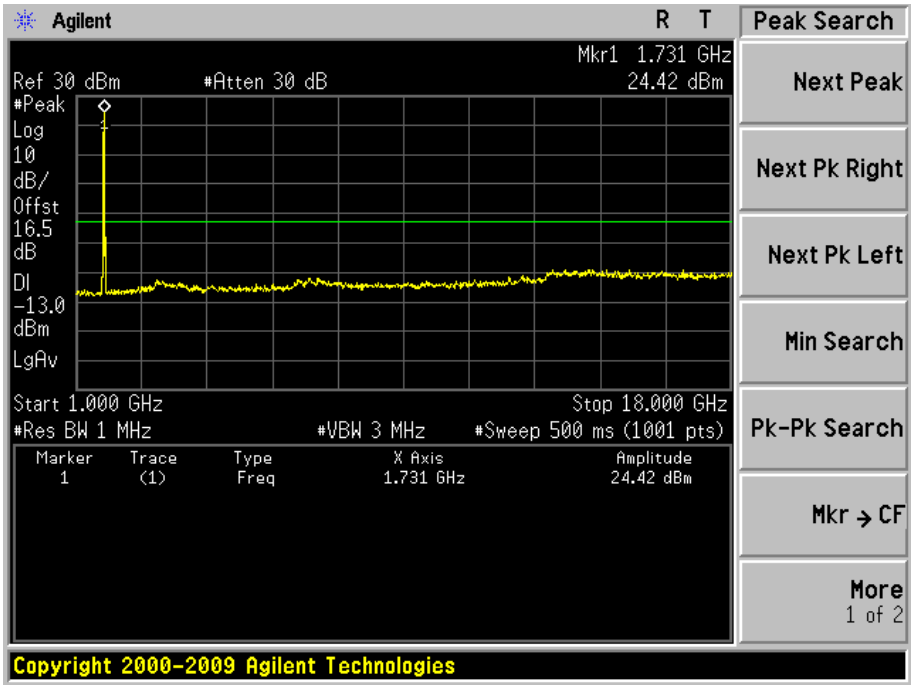
Low Channel 20050(1720.00MHz) 1RB0



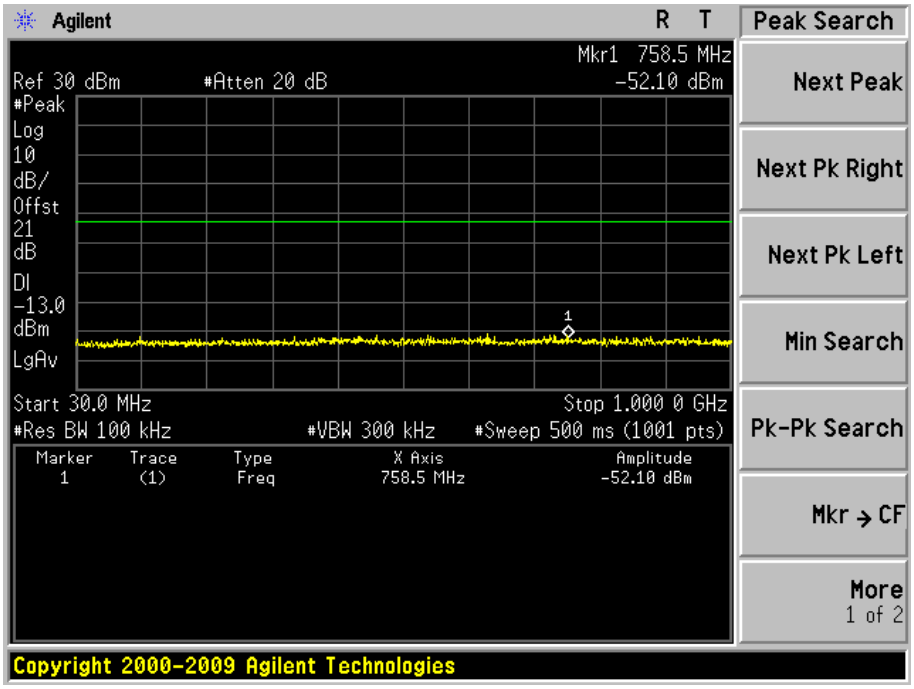


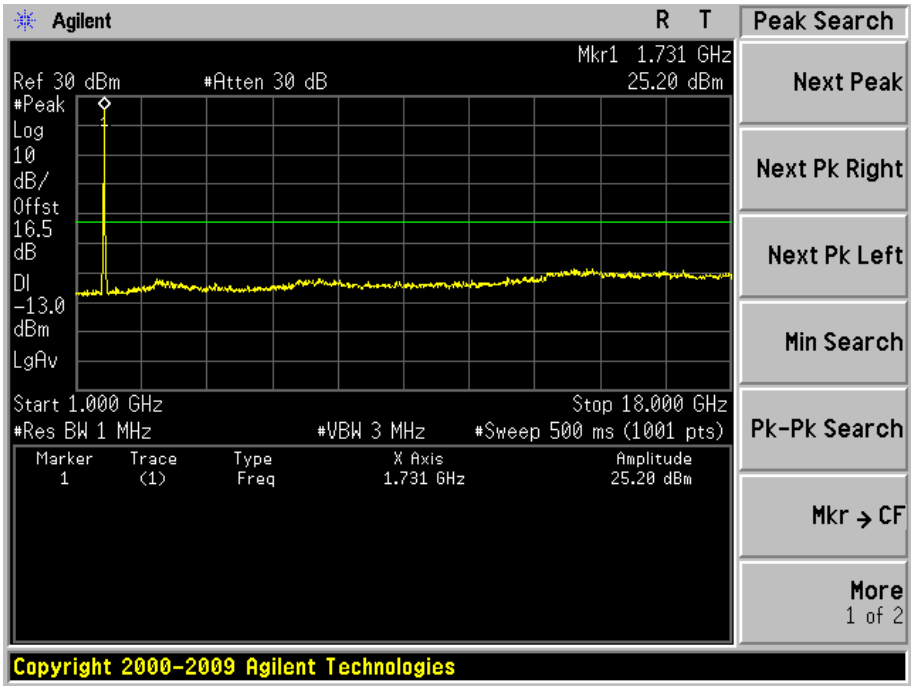
Mid Channel 20175(1732.5MHz) 1RB0





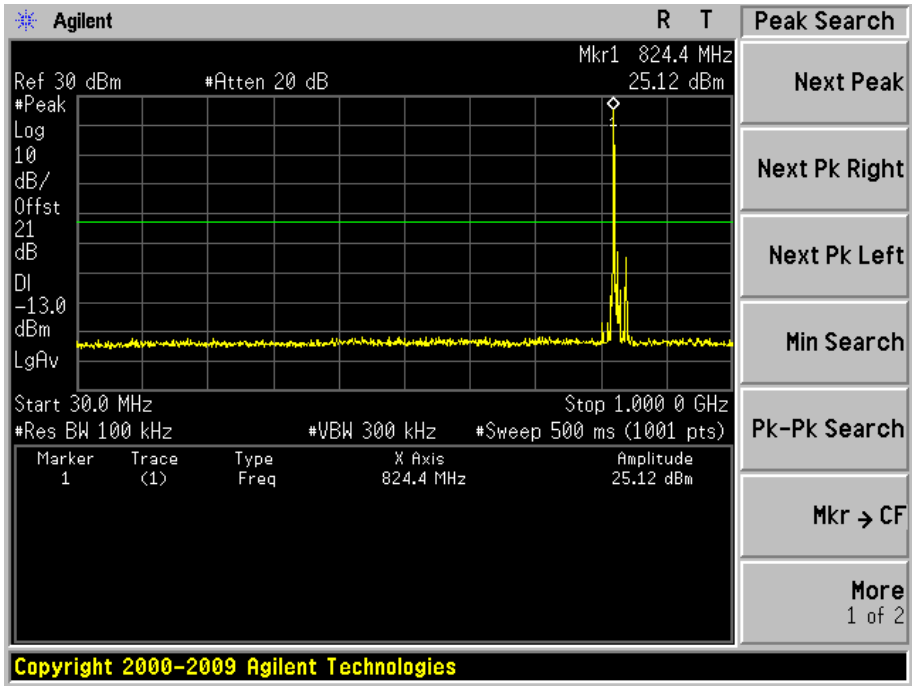
High Channel 20300(1745.00MHz) 1RB0

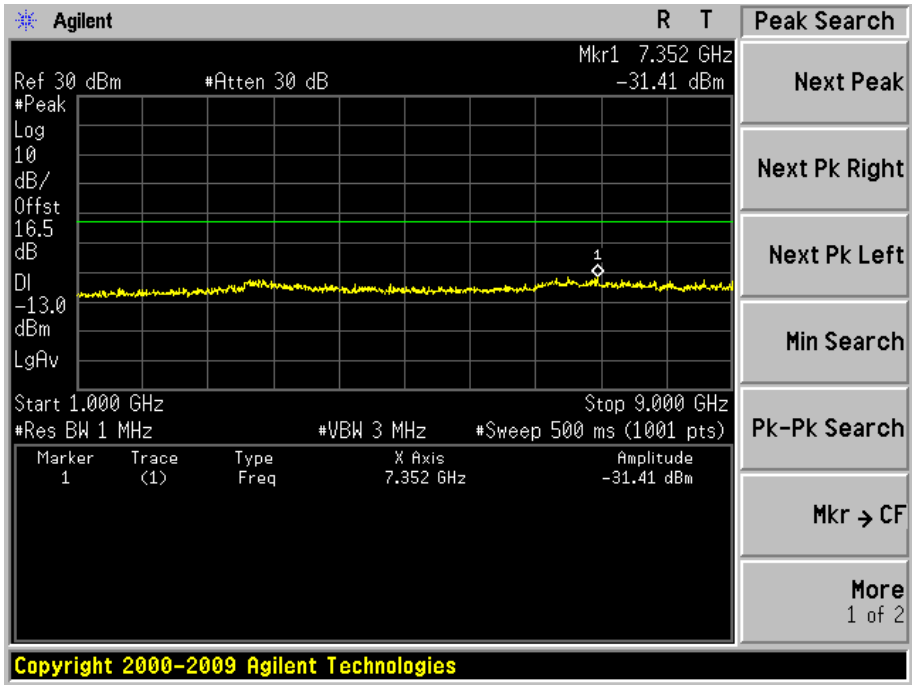




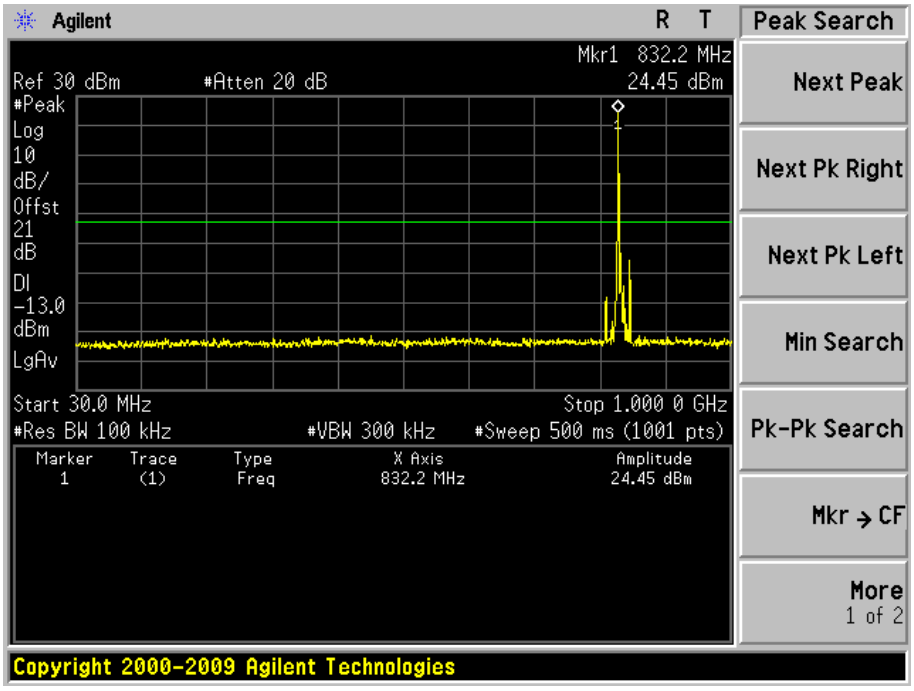
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 14: LTE Band 5(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

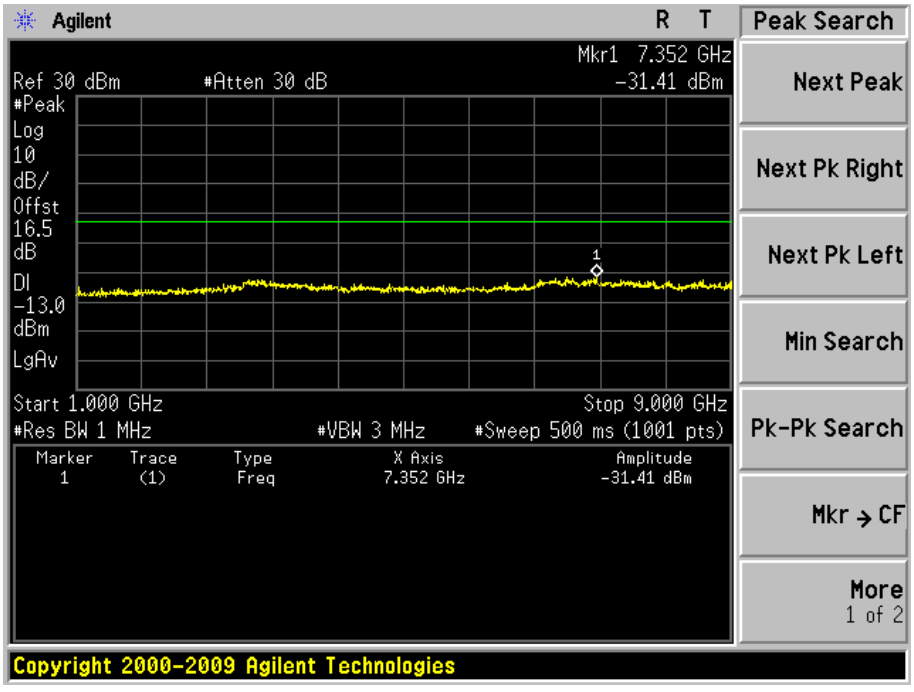
Low Channel 20450(82900MHz) 1RB0



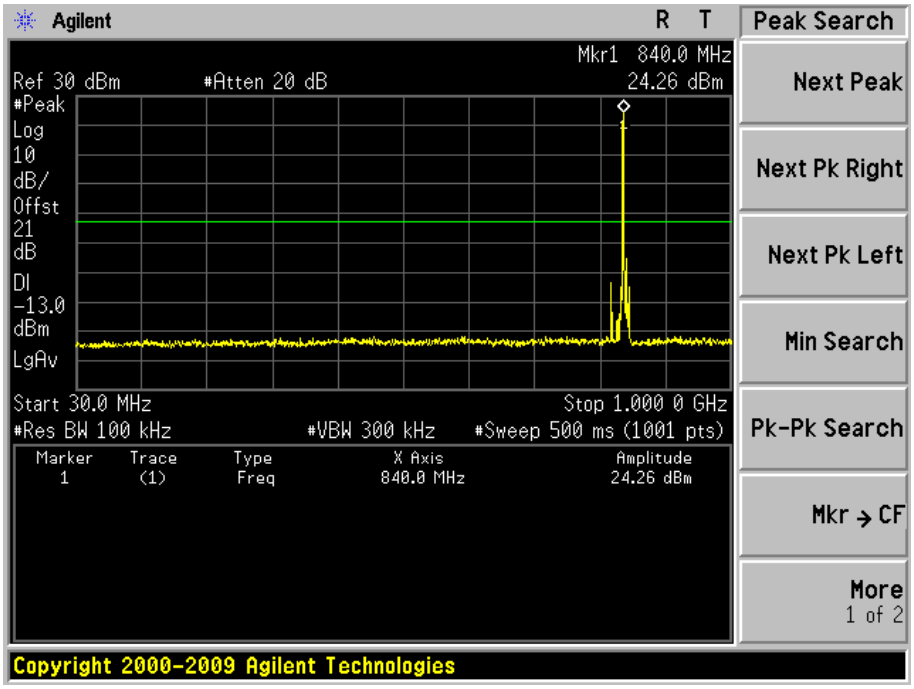


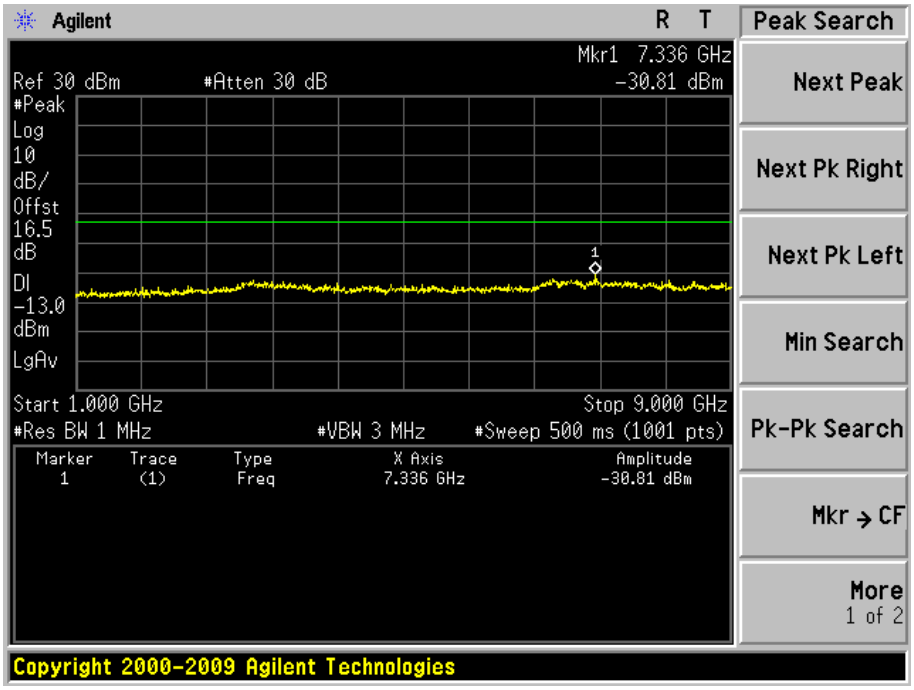
Mid Channel 20525(836.5MHz) 1RB0





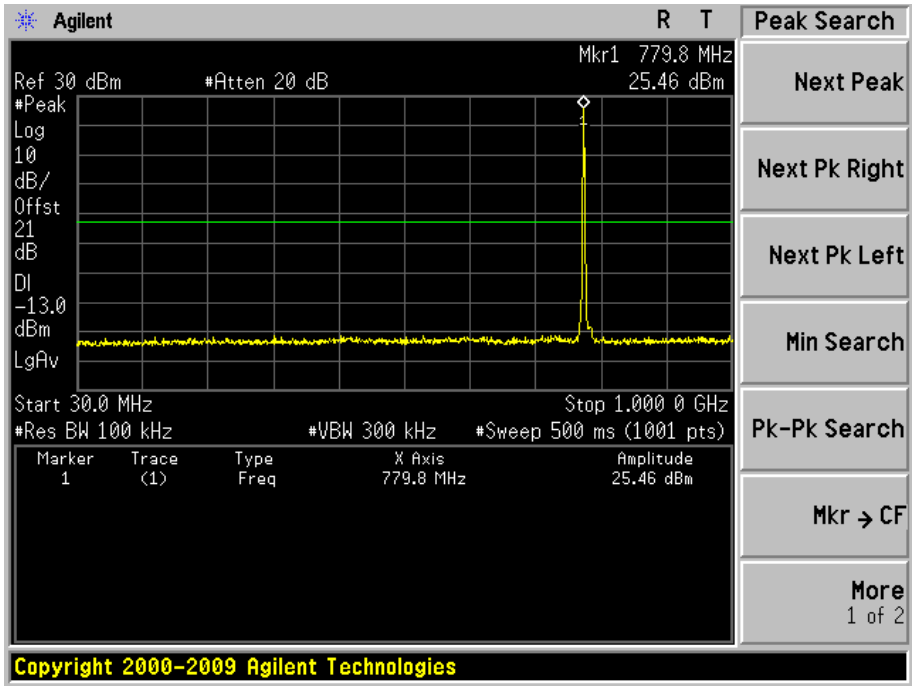
High Channel 20600(844.00MHz) 1RB0

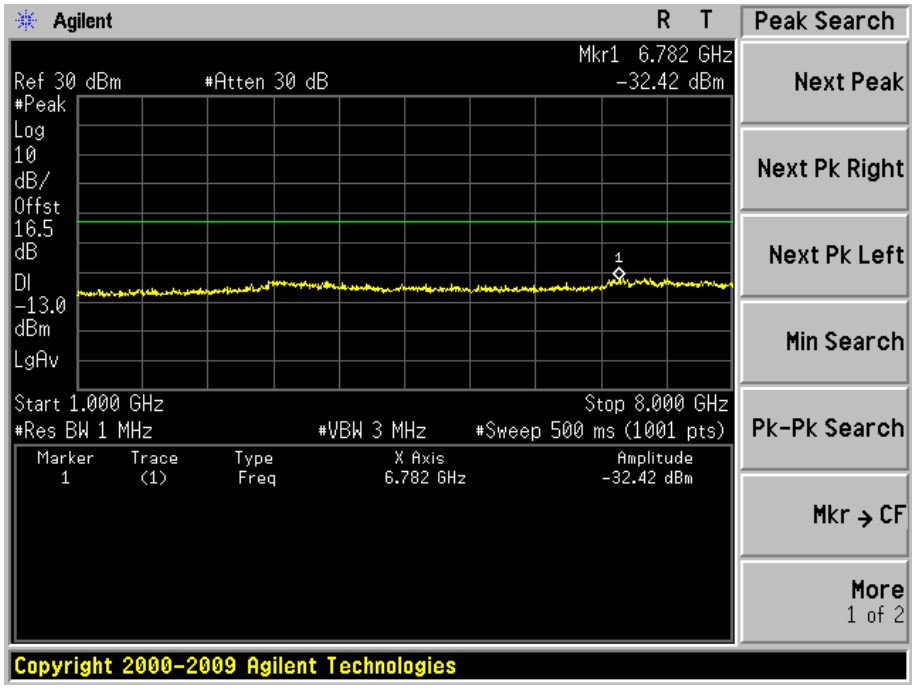




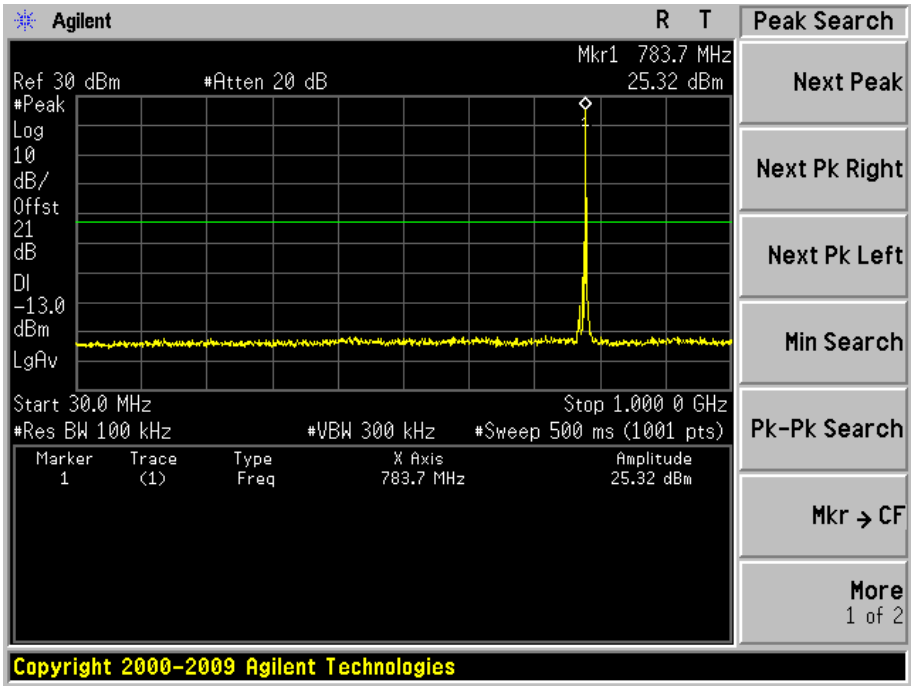
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 15: LTE Band 13(5M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

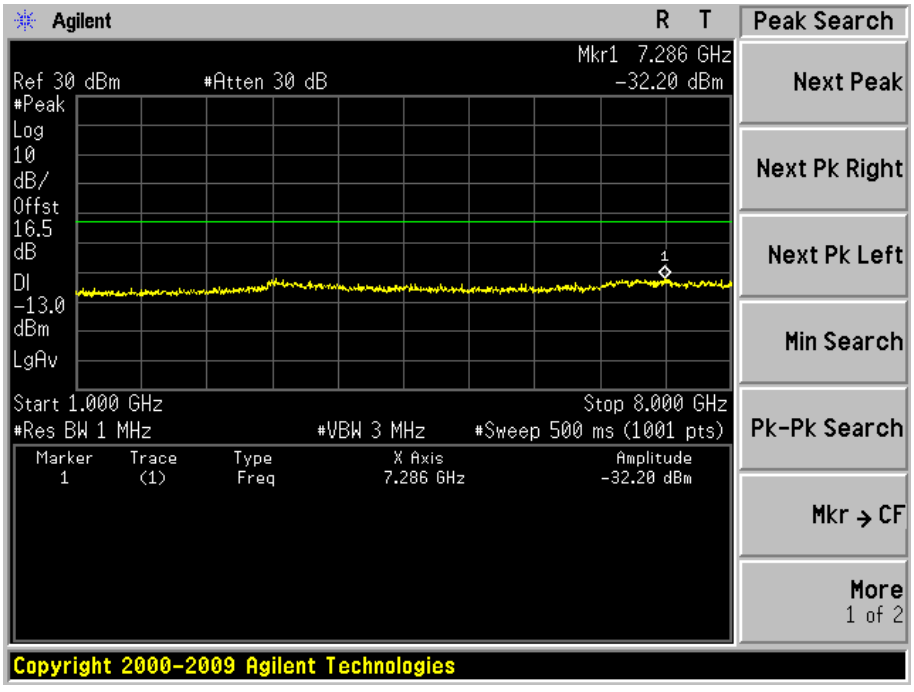
Low Channel 23205(779.5MHz) 1RB0



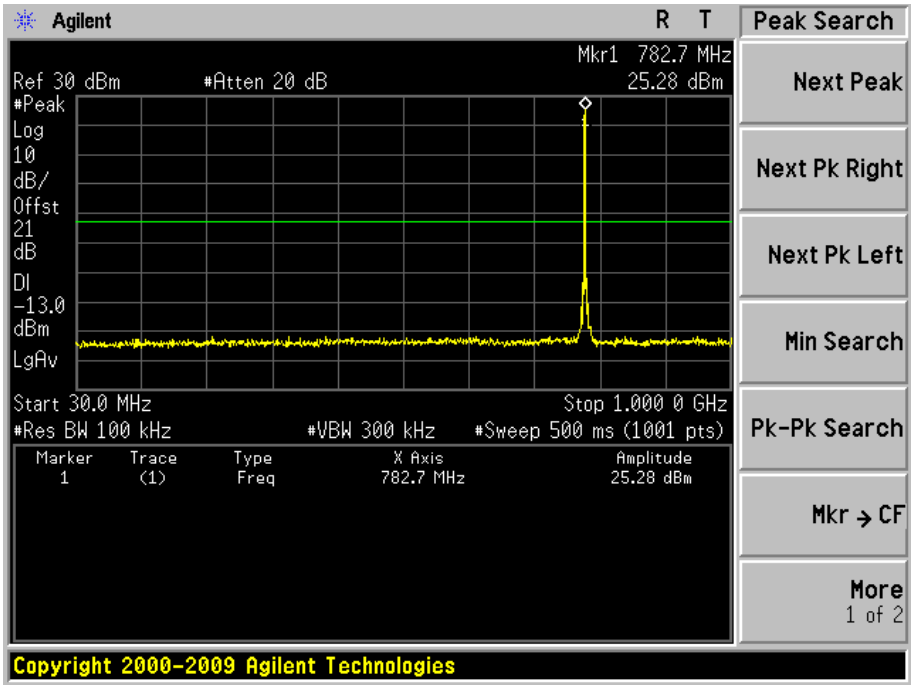


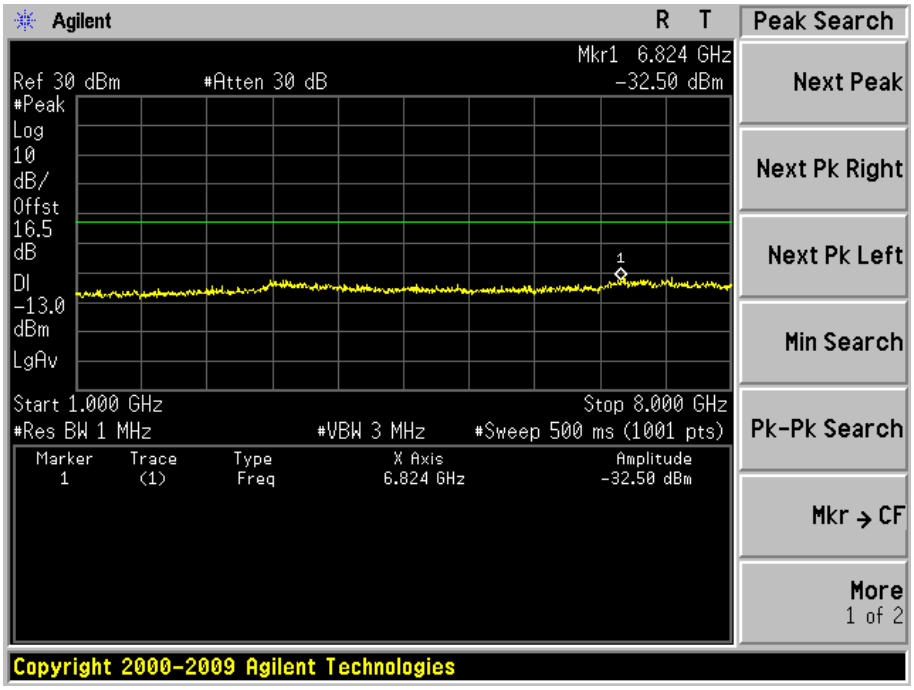
Mid Channel 20525(782.0MHz) 1RB0





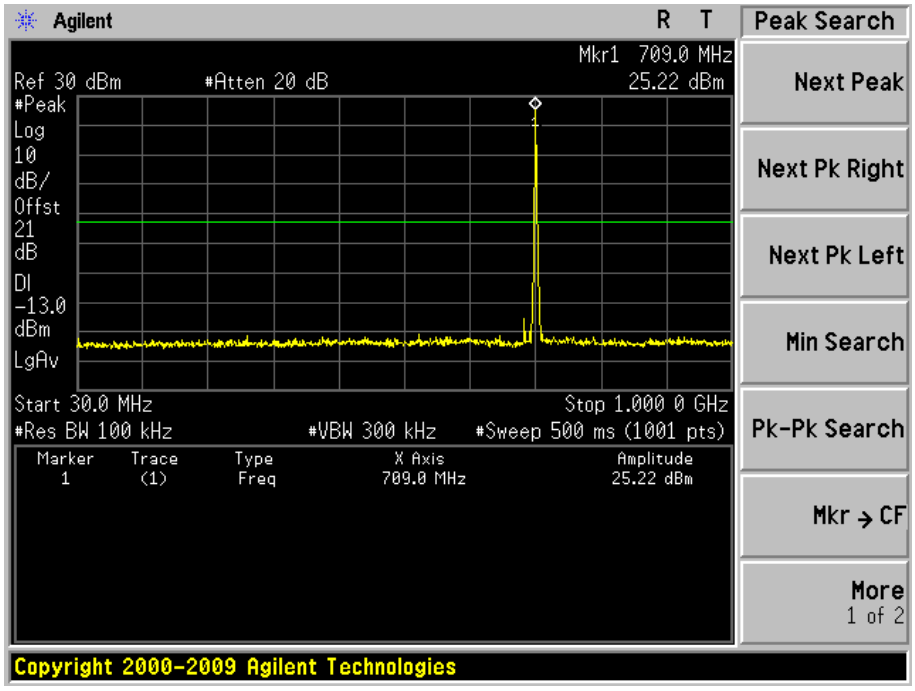
High Channel 23255(784.5MHz) 1RB0

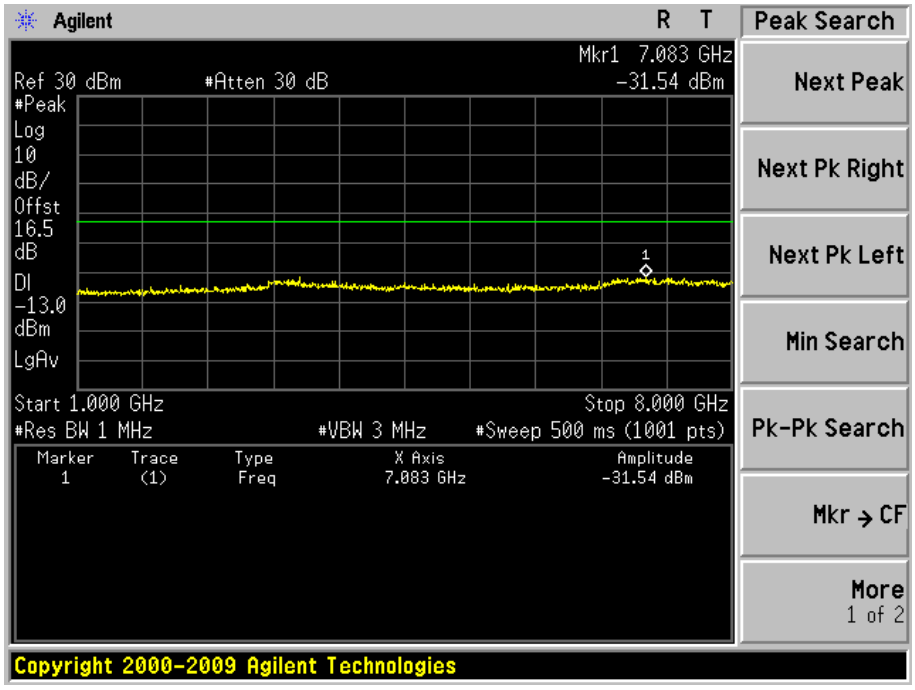




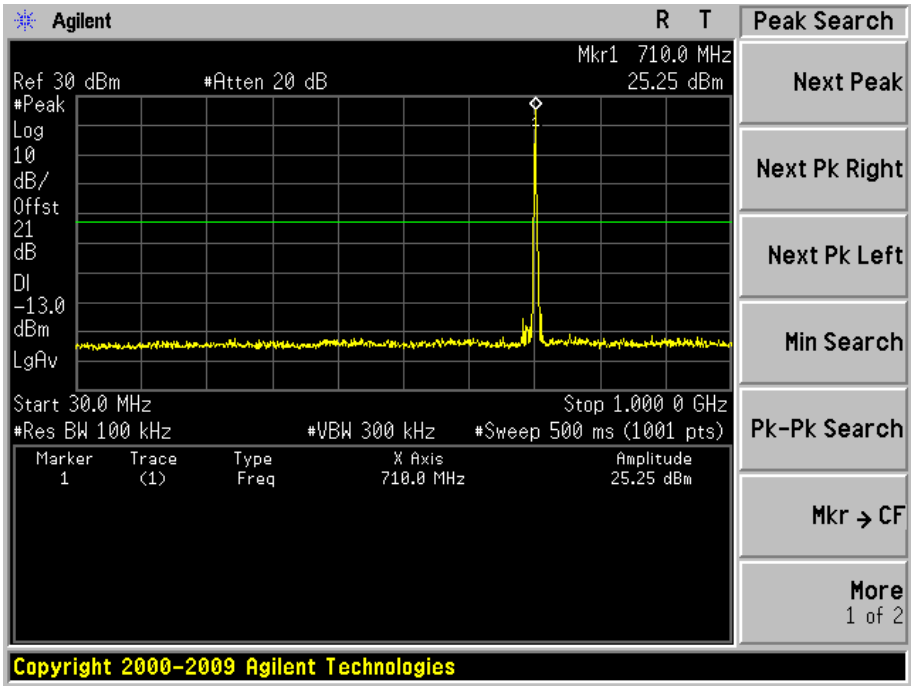
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 16: LTE Band 17(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

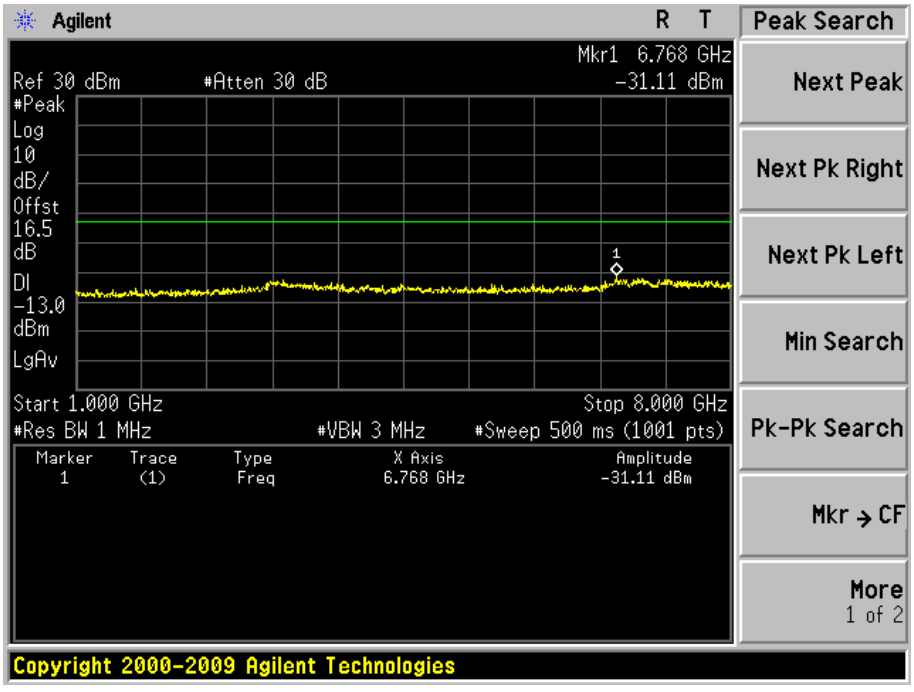
Low Channel 23780(709.0MHz) 1RB24



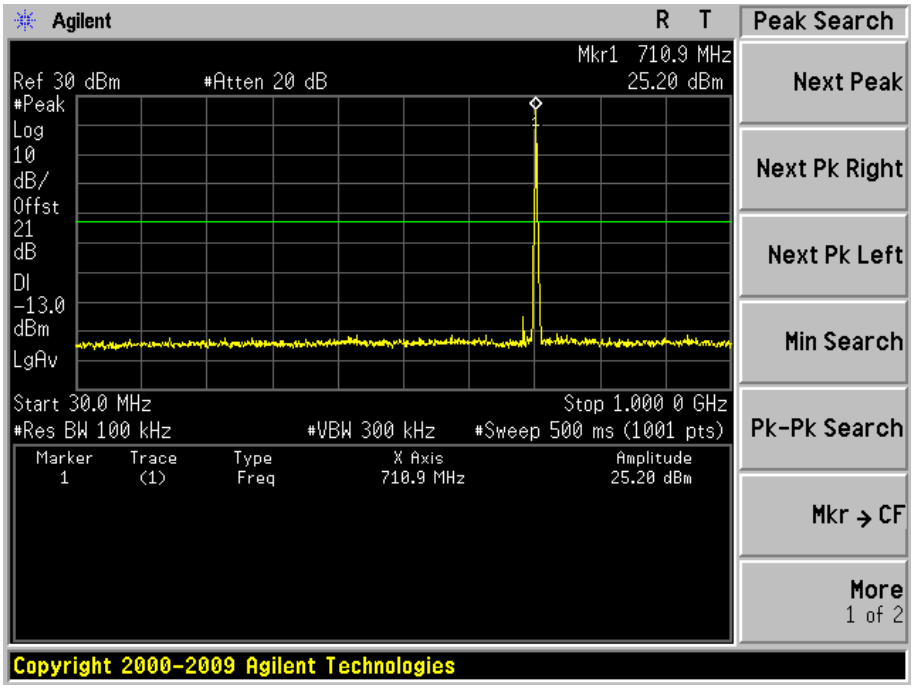


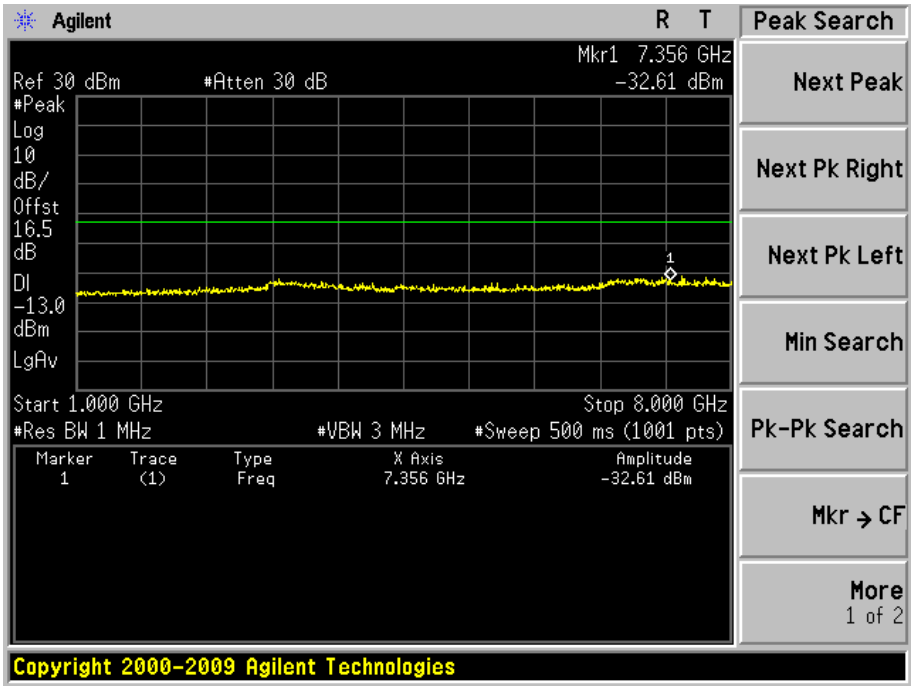
Mid Channel 23790(710.0MHz) 1RB24





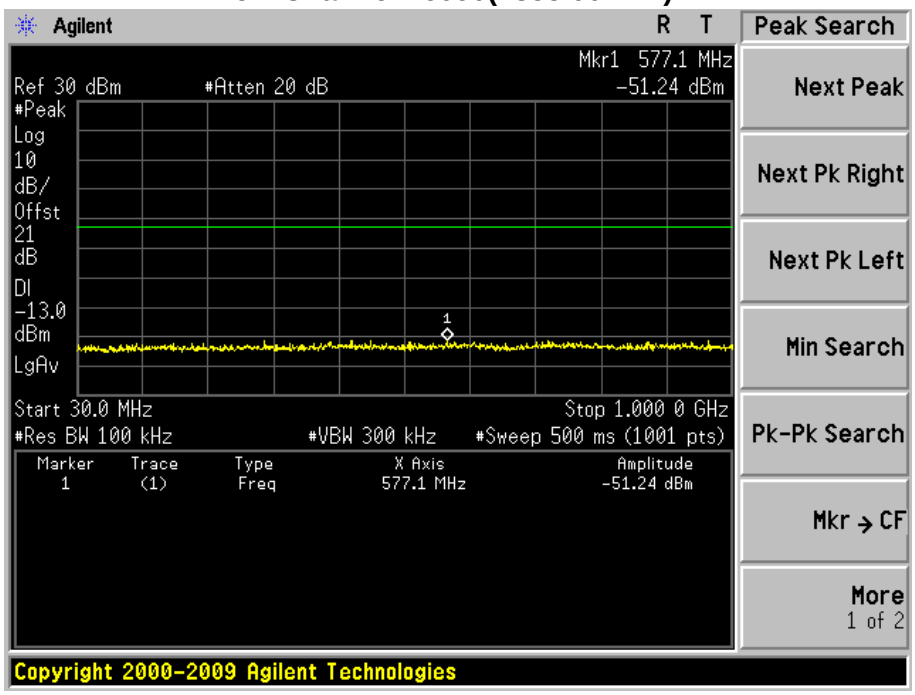
High Channel 23800(711.0MHz) 1RB0

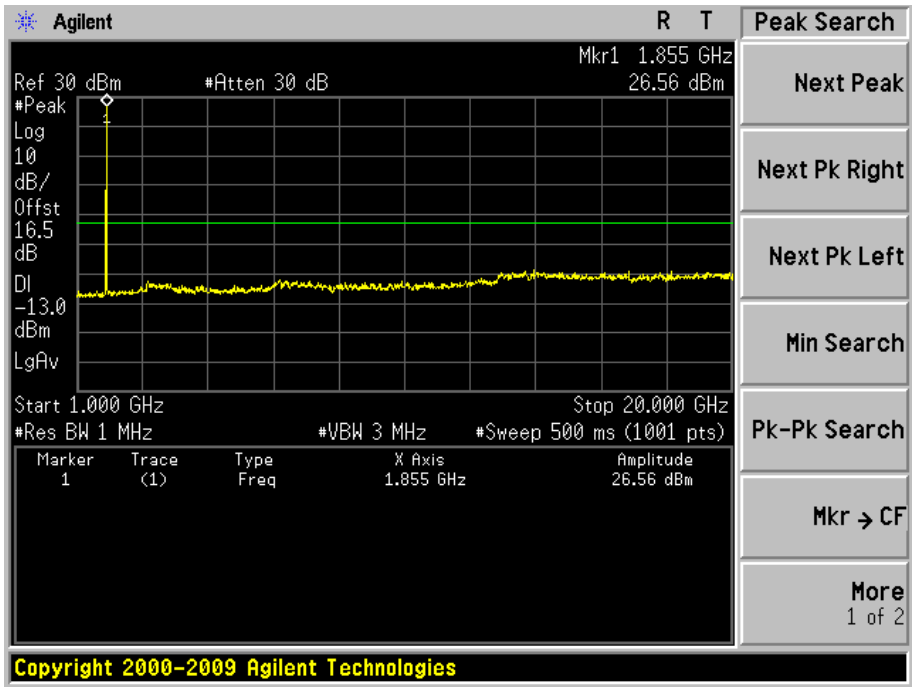




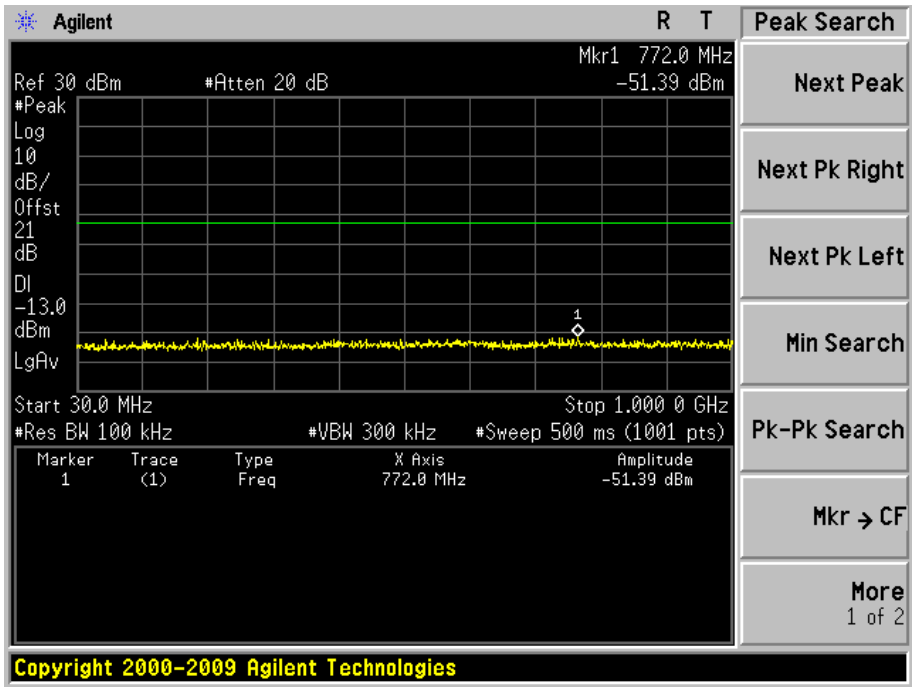
Product	Wireless Module		
Test Item	Conducted Spurious Emission		
Test Mode	Mode 17: LTE Band 25(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-6

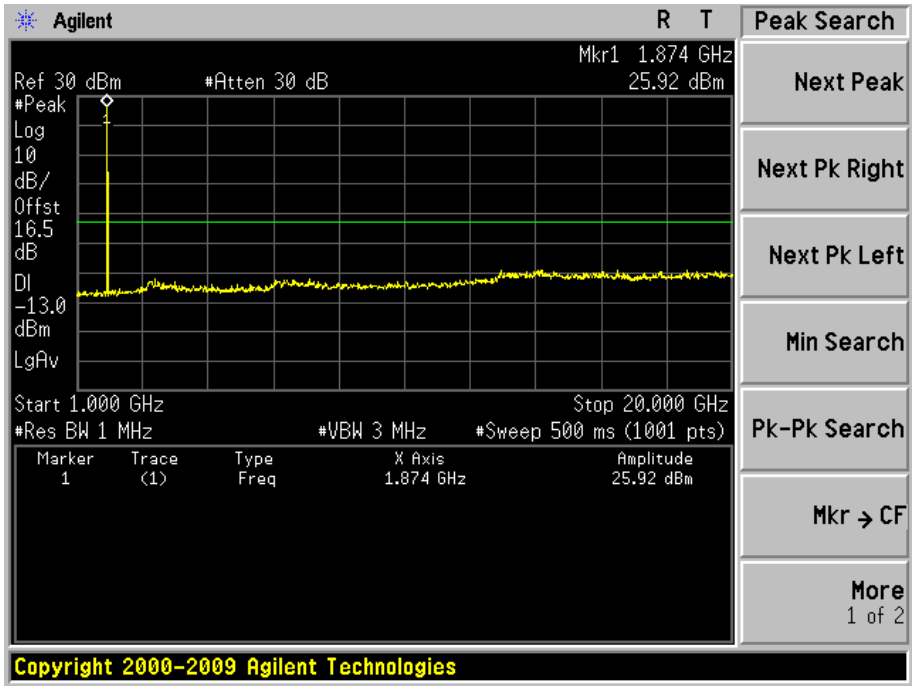
Low Channel 26090(1855.00MHz) 1RB24



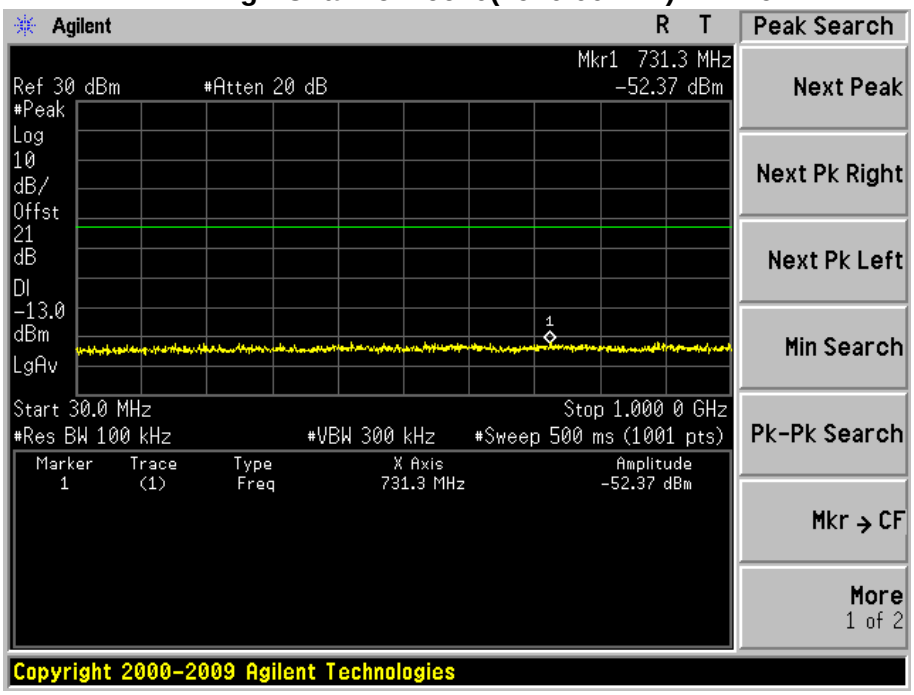


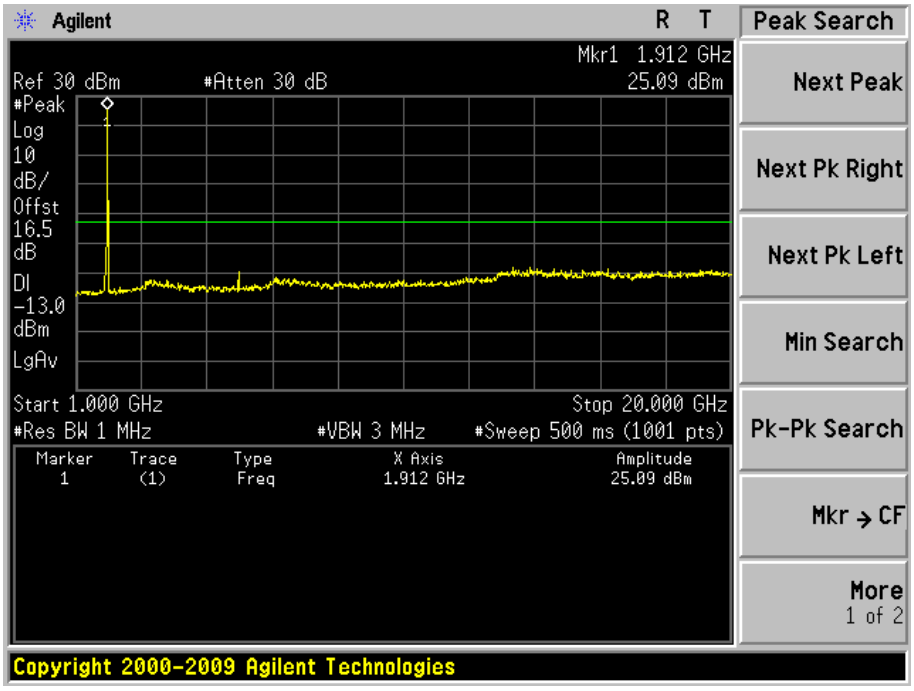
Mid Channel 26340(1880.00MHz) 1RB49





High Channel 26640(1910.00MHz) 1RB49





Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 3: GPRS 850 Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 128 (824.20MHz)								
1646.00	-53.60	V	-55.81	2.50	9.75	-48.56	-13.00	-35.56
2470.50	-51.48	V	-54.21	3.12	10.48	-46.85	-13.00	-33.85
1646.00	-56.36	H	-58.80	2.50	9.75	-51.55	-13.00	-38.55
2470.50	-55.26	H	-57.92	3.12	10.48	-50.56	-13.00	-37.56
Middle Channel 189 (836.40MHz)								
1671.50	-55.47	V	-57.80	2.52	9.95	-50.37	-13.00	-37.37
2513.00	-51.17	V	-53.57	3.18	10.62	-46.13	-13.00	-33.13
1671.50	-56.18	H	-58.80	2.52	9.95	-51.37	-13.00	-38.37
2513.00	-55.73	H	-58.41	3.18	10.62	-50.97	-13.00	-37.97
High Channel 251 (848.80MHz)								
1697.00	-57.63	V	-60.05	2.54	10.06	-52.53	-13.00	-39.53
2547.00	-49.63	V	-51.65	3.14	10.68	-44.11	-13.00	-31.11
1697.00	-55.77	H	-58.48	2.54	10.06	-50.96	-13.00	-37.96
2547.00	-53.23	H	-55.98	3.14	10.68	-48.44	-13.00	-35.44

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 4: GPRS 1900 Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 512 (1850.20MHz)								
3700.00	-64.93	V	-61.86	3.84	12.69	-53.01	-13.00	-40.01
5550.00	-66.69	V	-59.03	4.82	13.15	-50.70	-13.00	-37.70
3700.00	-64.87	H	-61.74	3.84	12.69	-52.89	-13.00	-39.89
5550.00	-65.56	H	-57.27	4.82	13.15	-48.94	-13.00	-35.94
Middle Channel 661 (1880.00MHz)								
3760.00	-64.86	V	-61.89	3.73	12.72	-52.90	-13.00	-39.90
5640.00	-66.98	V	-59.52	4.93	13.14	-51.31	-13.00	-38.31
3760.00	-65.35	H	-62.45	3.73	12.72	-53.46	-13.00	-40.46
5640.00	-66.97	H	-59.20	4.93	13.14	-50.99	-13.00	-37.99
High Channel 810 (1909.80MHz)								
3818.00	-63.87	V	-60.44	4.02	12.73	-51.73	-13.00	-38.73
5727.00	-66.08	V	-57.99	4.87	13.11	-49.75	-13.00	-36.75
3818.00	-65.09	H	-61.81	4.02	12.73	-53.10	-13.00	-40.10
5727.00	-66.03	H	-57.54	4.87	13.11	-49.30	-13.00	-36.30

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 7: CDMA 2000 1X BC1 Link		
Date of Test	2015/06/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 25 (1851.25MHz)								
3702.50	-56.01	V	-52.94	3.83	12.69	-44.08	-13.00	-31.08
5553.75	-63.45	V	-55.78	4.82	13.14	-47.46	-13.00	-34.46
3702.50	-56.89	H	-53.74	3.83	12.69	-44.88	-13.00	-31.88
5553.75	-56.06	H	-47.75	4.82	13.14	-39.43	-13.00	-26.43
Middle Channel 600 (1880MHz)								
3760.00	-59.74	V	-56.76	3.73	12.72	-47.77	-13.00	-34.77
5640.00	-59.36	V	-51.91	4.92	13.13	-43.70	-13.00	-30.70
3760.00	-59.60	H	-56.69	3.73	12.72	-47.70	-13.00	-34.70
5640.00	-53.66	H	-45.89	4.92	13.13	-37.68	-13.00	-24.68
High Channel 1175 (1908.75MHz)								
3817.50	-60.81	V	-57.42	3.98	12.73	-48.67	-13.00	-35.67
5726.25	-60.98	V	-52.91	4.86	13.11	-44.66	-13.00	-31.66
3817.50	-59.97	H	-56.75	3.98	12.73	-48.00	-13.00	-35.00
5726.25	-55.46	H	-47.01	4.86	13.11	-38.76	-13.00	-25.76

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 8: CDMA 2000 1XEVDO Rel-0 BC1 Link		
Date of Test	2015/06/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 25 (1851.25MHz)								
3702.50	-57.05	V	-53.98	3.83	12.69	-45.12	-13.00	-32.12
5553.75	-62.81	V	-55.13	4.82	13.14	-46.81	-13.00	-33.81
3702.50	-57.88	H	-54.72	3.83	12.69	-45.86	-13.00	-32.86
5553.75	-56.84	H	-48.53	4.82	13.14	-40.21	-13.00	-27.21
Middle Channel 600 (1880MHz)								
3760.00	-59.68	V	-56.71	3.73	12.72	-47.72	-13.00	-34.72
5640.00	-61.11	V	-53.66	4.92	13.13	-45.45	-13.00	-32.45
3760.00	-59.88	H	-56.98	3.73	12.72	-47.99	-13.00	-34.99
5640.00	-53.80	H	-46.02	4.92	13.13	-37.81	-13.00	-24.81
High Channel 1175 (1908.75MHz)								
3817.50	-61.28	V	-57.90	3.98	12.73	-49.15	-13.00	-36.15
5726.25	-60.64	V	-52.57	4.86	13.11	-44.32	-13.00	-31.32
3817.50	-59.69	H	-56.47	3.98	12.73	-47.72	-13.00	-34.72
5726.25	-55.20	H	-46.75	4.86	13.11	-38.50	-13.00	-25.50

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode10: WCDMA Band II Link		
Date of Test	2015/06/21	Test Site	AC5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 9262 (1852.40MHz)								
3704.80	-63.11	V	-59.08	4.78	12.69	-51.17	-13.00	-38.17
5557.20	-65.84	V	-58.16	4.82	13.15	-49.83	-13.00	-36.83
3704.80	-59.79	H	-55.69	4.78	12.69	-47.78	-13.00	-34.78
5557.20	-63.94	H	-55.63	4.82	13.15	-47.30	-13.00	-34.30
Middle Channel 9400 (1880.00MHz)								
3760.00	-63.39	V	-59.12	5.03	12.72	-51.43	-13.00	-38.43
5640.00	-64.44	V	-55.98	5.93	13.14	-48.77	-13.00	-35.77
3760.00	-59.16	H	-54.96	5.03	12.72	-47.27	-13.00	-34.27
5640.00	-58.53	H	-49.76	5.93	13.14	-42.55	-13.00	-29.55
High Channel 9538 (1907.60MHz)								
3815.20	-61.19	V	-56.76	5.03	12.73	-49.06	-13.00	-36.06
5722.80	-63.12	V	-55.04	4.87	13.11	-46.80	-13.00	-33.80
3815.20	-57.10	H	-52.83	5.03	12.73	-45.13	-13.00	-32.13
5722.80	-57.90	H	-49.47	4.87	13.11	-41.23	-13.00	-28.23

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode11: WCDMA Band IV Link		
Date of Test	2015/06/30	Test Site	AC5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 1312 (1712.40MHz)								
3424.80	-61.29	V	-60.80	1.52	12.82	-49.50	-13.00	-36.50
5137.20	-66.54	V	-61.83	1.91	12.82	-50.92	-13.00	-37.92
3424.80	-59.63	H	-59.32	1.52	12.81	-48.03	-13.00	-35.03
5137.20	-65.45	H	-60.73	1.91	12.81	-49.83	-13.00	-36.83
Middle Channel 1412 (1732.40MHz)								
3464.80	-63.35	V	-62.89	1.54	12.73	-51.70	-13.00	-38.70
5197.20	-66.39	V	-61.78	1.95	12.85	-50.88	-13.00	-37.88
3464.80	-62.60	H	-62.35	1.54	12.73	-51.16	-13.00	-38.16
5197.20	-66.41	H	-61.67	1.95	12.85	-50.77	-13.00	-37.77
High Channel 1862(1752.50MHz)								
3505.00	-61.83	V	-61.80	1.57	12.51	-50.86	-13.00	-37.86
5257.50	-66.43	V	-61.03	1.99	12.84	-50.18	-13.00	-37.18
3505.00	-60.18	H	-60.12	1.57	12.51	-49.18	-13.00	-36.18
5257.50	-66.19	H	-60.79	1.99	12.84	-49.94	-13.00	-36.94

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 12: LTE Band 2(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 18650 (1855.00MHz)1RB0								
3710.00	-65.60	V	-62.51	3.84	12.69	-53.66	-13.00	-40.66
5565.00	-67.22	V	-59.48	4.82	13.15	-51.15	-13.00	-38.15
3710.00	-65.90	H	-62.75	3.84	12.69	-53.90	-13.00	-40.90
5565.00	-67.34	H	-59.09	4.82	13.15	-50.76	-13.00	-37.76
Middle Channel 18900 (1880.00MHz) 1RB0								
3760.00	-65.63	V	-62.66	3.73	12.72	-53.67	-13.00	-40.67
5640.00	-67.01	V	-59.55	4.93	13.14	-51.34	-13.00	-38.34
3760.00	-65.77	H	-62.87	3.73	12.72	-53.88	-13.00	-40.88
5640.00	-66.95	H	-59.18	4.93	13.14	-50.97	-13.00	-37.97
High Channel 19150 (1905.00MHz) 1RB0								
3810.00	-65.86	V	-62.45	4.02	12.73	-53.74	-13.00	-40.74
5715.00	-66.60	V	-58.54	4.87	13.11	-50.30	-13.00	-37.30
3810.00	-65.74	H	-62.51	4.02	12.73	-53.80	-13.00	-40.80
5715.00	-67.08	H	-58.74	4.87	13.11	-50.50	-13.00	-37.50

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 13: LTE Band 4 (20M/QPSK) Link		
Date of Test	2015/06/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 20050 (1720.00MHz) 1RB0								
3440.00	-65.32	V	-66.11	1.54	12.82	-54.83	-13.00	-41.83
5160.50	-65.98	V	-60.96	1.93	12.82	-50.07	-13.00	-37.07
3440.00	-65.48	H	-62.51	1.54	12.81	-55.00	-13.00	-42.00
5160.50	-66.38	H	-58.74	1.93	12.81	-50.42	-13.00	-37.42
Middle Channel 20175 (1732.50MHz) 1RB0								
3465.00	-65.24	V	-65.52	1.54	12.73	-54.33	-13.00	-41.33
5197.50	-66.67	V	-62.26	1.95	12.85	-51.36	-13.00	-38.36
3465.00	-65.40	H	-65.89	1.54	12.73	-54.70	-13.00	-41.70
5197.50	-67.24	H	-62.70	1.95	12.85	-51.80	-13.00	-38.80
High Channel 20300 (1745.00MHz) 1RB0								
3490.00	-66.22	V	-66.34	1.54	12.64	-55.24	-13.00	-42.24
5235.50	-67.00	V	-62.38	1.96	12.90	-51.44	-13.00	-38.44
3490.00	-65.44	H	-65.77	1.54	12.64	-54.67	-13.00	-41.67
5235.50	-67.20	H	-62.63	1.96	12.90	-51.69	-13.00	-38.69

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 14: LTE Band 5(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 20450(829.00MHz) 1RB0								
1658.00	-63.21	V	-65.70	2.50	9.75	-58.45	-13.00	-45.45
2487.00	-64.55	V	-63.60	3.12	10.48	-56.24	-13.00	-43.24
1658.00	-63.44	H	-65.95	2.50	9.75	-58.70	-13.00	-45.70
2487.00	-64.49	H	-63.84	3.12	10.48	-56.48	-13.00	-43.48
Middle Channel 20525 (836.50MHz) 1RB0								
1673.00	-62.79	V	-65.18	2.52	9.95	-57.75	-13.00	-44.75
2509.50	-63.99	V	-62.98	3.18	10.62	-55.54	-13.00	-42.54
1673.00	-62.66	H	-65.32	2.52	9.95	-57.89	-13.00	-44.89
2509.50	-64.00	H	-63.37	3.18	10.62	-55.93	-13.00	-42.93
High Channel 20600(844.00MHz) 1RB0								
1688.00	-63.96	V	-66.14	2.54	10.06	-58.62	-13.00	-45.62
2532.00	-64.09	V	-62.65	3.14	10.68	-55.11	-13.00	-42.11
1688.00	-63.60	H	-66.34	2.54	10.06	-58.82	-13.00	-45.82
2532.00	-64.03	H	-62.90	3.14	10.68	-55.36	-13.00	-42.36

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 15: LTE Band 13(5M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 23205 (779.5MHz) 1RB0								
1559.00	-63.40	V	-65.41	2.43	9.19	-58.65	-13.00	-45.65
2338.50	-64.46	V	-62.65	3.05	9.86	-55.84	-13.00	-42.84
1559.00	-63.89	H	-66.18	2.43	9.19	-59.42	-13.00	-46.42
2338.50	-64.54	H	-62.81	3.05	9.86	-56.00	-13.00	-43.00
Middle Channel 20525(782.0MHz) 1RB0								
1564.00	-62.51	V	-64.54	2.44	9.22	-57.76	-13.00	-44.76
2546.00	-64.77	V	-62.95	3.10	9.90	-56.15	-13.00	-43.15
1564.00	-63.98	H	-66.28	2.44	9.22	-59.50	-13.00	-46.50
2546.00	-63.18	H	-61.44	3.10	9.90	-54.64	-13.00	-41.64
High Channel 23255 (784.5MHz) 1RB0								
1569.00	-63.22	V	-65.24	2.47	9.24	-58.47	-13.00	-45.47
2353.50	-61.65	V	-59.96	3.07	9.94	-53.09	-13.00	-40.09
1569.00	-63.04	H	-65.40	2.47	9.24	-58.63	-13.00	-45.63
2353.50	-62.36	H	-60.76	3.07	9.94	-53.89	-13.00	-40.89

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 16: LTE Band 17(10M/QPSK) Link		
Date of Test	2015/06/21	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 23780 (709.0MHz)1RB24								
1418.00	-62.83	V	-63.74	2.30	8.15	-57.89	-13.00	-44.89
2127.00	-64.34	V	-62.86	3.01	9.45	-56.42	-13.00	-43.42
1418.00	-62.89	H	-63.86	2.30	8.15	-58.01	-13.00	-45.01
2127.00	-63.54	H	-62.24	3.01	9.45	-55.80	-13.00	-42.80
Middle Channel 23790 (710.0MHz)1RB24								
1420.00	-62.44	V	-63.29	2.35	8.17	-57.47	-13.00	-44.47
2430.00	-64.02	V	-62.41	3.05	9.44	-56.02	-13.00	-43.02
1420.00	-62.72	H	-63.64	2.35	8.17	-57.82	-13.00	-44.82
2430.00	-58.86	H	-57.42	3.05	9.44	-51.03	-13.00	-38.03
High Channel 23800 (711.0MHz)1RB24								
1422.00	-63.16	V	-63.99	2.37	8.19	-58.17	-13.00	-45.17
2133.00	-63.83	V	-62.09	3.08	9.43	-55.74	-13.00	-42.74
1422.00	-62.16	H	-63.06	2.37	8.19	-57.24	-13.00	-44.24
2133.00	-63.29	H	-61.72	3.08	9.43	-55.37	-13.00	-42.37

Product	Wireless Module		
Test Item	Radiated Spurious Emission		
Test Mode	Mode 17: LTE Band 25 (10M/QPSK)		
Date of Test	2015/06/23	Test Site	AC-5

Frequency (MHz)	SA Reading (dBm)	Ant.Pol. (H/V)	SG Reading (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)
Low Channel 26090 (1855.00MHz) 1RB0								
3710.00	-65.11	V	-64.26	1.60	12.69	-53.17	-13.00	-40.17
5565.00	-66.79	V	-61.84	2.02	13.14	-50.72	-13.00	-37.72
3710.00	-63.60	H	-62.68	1.60	12.69	-51.59	-13.00	-38.59
5565.00	-57.87	H	-52.42	2.02	13.14	-41.30	-13.00	-28.30
Middle Channel 26340 (1880.00MHz) 1RB0								
3760.00	-64.43	V	-63.55	1.62	12.72	-52.45	-13.00	-39.45
5640.00	-63.94	V	-59.38	2.05	13.13	-48.30	-13.00	-35.30
3760.00	-62.24	H	-61.45	1.62	12.72	-50.35	-13.00	-37.35
5640.00	-60.89	H	-55.99	2.05	13.13	-44.91	-13.00	-31.91
High Channel 26640 (1910.00MHz) 1RB0								
3820.00	-65.59	V	-64.55	1.63	12.73	-53.45	-13.00	-40.45
5730.00	-64.15	V	-58.85	2.08	13.10	-47.83	-13.00	-34.83
3820.00	-63.88	H	-63.00	1.63	12.73	-51.90	-13.00	-38.90
5730.00	-62.90	H	-57.18	2.08	13.10	-46.16	-13.00	-33.16

The End