

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

### **INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 SUBPART C & SUBPART L CLASS II PC REPORT**

*OF*

**Product Name:** **LTE/HSPA+ VoIP Router**

**Brand Name:** **BandLuxe**

**Model Name:** **R505A**

**Marketing Name:** **LTE/HSPA+ VoIP Router**

**Model Difference:** **N/A**

**FCC ID:** **UZI-R505**

**Report No.:** **EH/2011/50010-01**

**Issue Date:** **Aug. 06, 2012**

**BandRich Inc.**

**Prepared for:** **6F., No. 71, Zhouzi St., Neihu Dist., Taipei**

**City 11493, Taiwan (R.O.C.)**

**SGS Taiwan Ltd.**

**Electronics & Communication Laboratory**

**No. 134, Wu Kung Rd., Wuku Industrial**

**Zone, Taipei County, Taiwan.**

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## VERIFICATION OF COMPLIANCE

**Applicant:** BandRich Inc.  
6F., No. 71, Zhouzi St., Neihu Dist., Taipei City 11493, Taiwan (R.O.C.)

**Product Name:** LTE/HSPA+ VoIP Router

**FCC ID:** UZI-R505

**Brand Name:** BandLuxe

**Model Name:** R505A

**Marketing Name:** LTE/HSPA+ VoIP Router

**Model Difference:** N/A

**File Number:** EH/2011/50010-01

**Date of test:** May. 10, 2011 ~ Aug. 03, 2011

**Date of EUT Received:** May. 10, 2011

**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C-2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 subpart H, PART 24 subpart E and PART 27.

The test results of this report relate only to the tested sample identified in this report.

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*Tai Wu*

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*Aug. 06, 2012**Tai Wu / Engineer*

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*Cherry Chen*

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*Aug. 06, 2012**Cherry Chen / Clerk*

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*Jim Chang*

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*Aug. 06, 2012**Jim Chang / Supervisor*

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## Version

Version No.	Date	Description
00	Aug. 06, 2012	Initial creation of document

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## 1. GENERAL PRODUCT INFORMATION

### General:

Product Name:	LTE/HSPA+ VoIP Router		
Brand Name:	BandLuxe		
Model Name:	R505A		
Marketing Name:	LTE/HSPA+ VoIP Router		
Model Difference:	N/A		
Data Cable:	Model: N/A, Supplier: N/A		
Power Supply	12 Vdc by AC/DC Power Supply		
	Adaptor:	Model: SAG024F4, Supplier: CWT	
Class II Permissive change	1. Additional model no.: R505A 2. Enabling addition E-UTRA Band 12 function (701.5~713.5Mhz) via software		

### GSM, WCDMA and LTE:

Cellular Phone Standards Frequency Range and Power:	Operating Frequency		Rated Power
	WCDMA/HSUPA/HSDPA /HSPA Band II	1852.4MHz – 1907.6MHz	23 dBm
	WCDMA/HSUPA/HSDPA /HSPA Band IV	1712.4MHz – 1752.6MHz	23 dBm
	WCDMA/HSUPA/HSDPA /HSPA Band V	826.4MHz – 846.6MHz	23 dBm
	5MHz BW LTE-Band 4	1712.5MHz – 1752.5MHz	22.5 dBm
	10MHz BW LTE-Band 4	1715MHz – 1750MHz	22.5 dBm
	5MHz BW LTE-Band 17	706.5MHz – 713.5MHz	22.5 dBm
	10MHz BW LTE-Band 17	709MHz – 711MHz	22.5 dBm
	5MHz BW LTE-Band 12	701.5MHz – 713.5MHz	22.5 dBm
	10MHz BW LTE-Band 12	704MHz – 711MHz	22.5 dBm
Hardware Version:	V04		
Software Version:	R826_4 QC_0_00016744_1_001_0230		
IMEI:	357817040000461		

This test report applies for WCDMA / HSDPA / HSUPA/HSPA Band II/IV/V and LTE Band 4/17/12.

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## Final Amplifier Voltage and Current Information:

Test mode	DC voltage (V)	DC current (mA)
WCDMA B2	12 Vdc	450
WCDMA B4	12 Vdc	430
WCDMA B5	12 Vdc	460
HSUPA B2	12 Vdc	400
HSUPA B4	12 Vdc	480
HUSPA B5	12 Vdc	430
HSDPA B2	12 Vdc	390
HSDPA B4	12 Vdc	510
HUDPA B5	12 Vdc	450
LTE B17 10M QPSK	12 Vdc	470
LTE B17 10M 16QAM	12 Vdc	460
LTE B17 5M QPSK	12 Vdc	470
LTE B17 5M 16QAM	12 Vdc	460
LTE B4 10M QPSK	12 Vdc	490
LTE B4 10M 16QAM	12 Vdc	480
LTE B4 5M QPSK	12 Vdc	490
LTE B4 5M 16QAM	12Vdc	480
LTE B12 10M QPSK	12 Vdc	450
LTE B12 10M 16QAM	12 Vdc	440
LTE B12 5M QPSK	12 Vdc	450
LTE B12 5M 16QAM	12 Vdc	440

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### 1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: UZI-R505** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part 27 subpart C & subpart L of the FCC CFR 47 Rules.

### 1.2. Test Methodology

Both conducted and radiated testing were performed according to the procedures document of TIA/EIA 603C and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSPA / LTE) was used for EUT and Base station setting.

### 1.3. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 94644.

All equipment is calibrated externally and traceable to SI (International System of Unit).

### 1.4. Special Accessories

Not available for this EUT intended for grant.

### 1.5. Equipment Modifications

Not available for this EUT intended for grant.

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## 2. SYSTEM TEST CONFIGURATION

### 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

### 2.3. Test Procedure

#### 2.3.1 AC Power Line Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4: 2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

#### 2.3.3 Radiated Emissions (ERP/EIRP):

The EUT is placed on a turn table which is 80 cm above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 2 of TIA/EIA 603C.

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## 2.4. Measurement Equipment Used:

For WCDMA / HSDPA / HSUPA/HSPA Band II/IV/V and LTE Band 4/17

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012
Spectrum Analyzer	Agilent	E4440A	US41160416	01/23/2010	01/22/2012
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2010	05/13/2012
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2011	01/04/2012
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2011	01/04/2012
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2010	04/13/2012
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2010	02/04/2012
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2010	07/04/2011
Splitter	Agilent	11636B	N/A	07/05/2010	07/04/2011
DC Power Supply	HP	6038A	2929A-07548	06/27/2010	06/26/2011
DC Power Supply	Topward	3303D	981327	10/26/2010	10/25/2011
Power Meter	Anritsu	ML2495A	1005007	02/17/2010	02/16/2012
Power Sensor	Anritsu	MA2411B	917032	01/21/2010	01/20/2012

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## ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2012
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2010	11/14/2011
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2010	07/09/2012
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2010	07/09/2012
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	01/22/2010	01/21/2012
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2010	05/08/2012
Signal Generator	R&S	SMR40	100210	01/22/2010	01/21/2012
Signal Generator	Agilent	E4438C	MY45093613	06/11/2011	06/10/2012
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2010	11/29/2011
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2011	01/04/2012
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2010	07/04/2011
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2010	05/12/2012
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2011	01/04/2012
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2011	01/04/2012
Filter 800-1000	Micro-Tronics	BRM13462	1	01/05/2011	01/04/2012
Filter 1800-2000	Micro-Tronics	BRM13463	1	01/05/2011	01/04/2012
3m Site	SGS	966 chamber	N/A	11/08/2010	11/09/2011

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## For LTE Band 12

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/15/2011	04/14/2013
Spectrum Analyzer	Agilent	E4440A	US41160416	03/17/2012	03/16/2014
Radio Communication Analyzer	R & S	CMU200	102189	08/12/2010	08/11/2012
WIDEB. RADIO COMIN. TESTER	R & S	CMW500	101582	07/12/2012	07/11/2013
Temperature Chamber	TERCHY	MHG-120LF	911009	04/16/2012	04/15/2014
DC Block	Mini-Circuits	BLK-18-S+	1	02/28/2012	02/27/2013
Attenuator	Mini-Circuit	BW-S10W2+	002	02/28/2012	02/27/2013
Splitter	Agilent	11636B	N/A	02/28/2012	02/27/2013
DC Power Supply	Agilent	E3640A	MY40005907	07/15/2011	07/14/2013

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/15/2011	04/14/2013
EXA Spectrum Analyzer	Agilent	N9010A	MY50420195	02/15/2011	02/14/2013
Spectrum Analyzer	R&S	FSV-30	101398	10/18/2011	10/17/2013
Bilog Antenna	SCHWAZBECK	VULB9168	378	01/10/2012	01/09/2014
Bilog Antenna	SCHWAZBECK	VULB9160	3158	11/24/2011	11/23/2013
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/17/2012	07/16/2014
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/17/2012	07/16/2014
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2011	05/18/2013
Horn antenna	ETS.LINDGREN	3117	123995	05/19/2011	05/18/2013
Horn Antenna	Schwarzbeck	BBHA9170	184	01/17/2012	01/17/2014
Horn Antenna	Schwarzbeck	BBHA9170	185	07/11/2011	07/10/2013
RF amplifier	Miteq	AMF-6F-2600 400-40-8P	971576	12/28/2011	12/27/2012

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Signal Generator	R&S	SMR40	100210	02/02/2012	02/01/2014
Signal Generator	Agilent	E4438C	MY45093613	07/15/2011	07/14/2013
Pre-Amplifier	Agilent	8447D	1937A02834	01/04/2012	01/03/2013
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/04/2012	01/03/2013
Attenuator	Mini-Circuit	BW-S10W2+	004	02/28/2012	02/27/2013
Radio Communication Analyzer	R & S	CMU200	102189	08/12/2010	08/11/2012
WIDEB. RADIO COMIN. TESTER	R & S	CMW500	101582	07/12/2012	07/11/2014
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	966_Tx	10m	01/04/2012	01/03/2013
Low Loss Cable	HUBER+SUHNER	966_Rx	3m	01/04/2012	01/03/2013
Filter 800-1000	Micro-Tronics	EWT	M2	02/28/2012	02/28/2013
Filter 1800-2000	Micro-Tronics	EWT	M2	02/28/2012	02/28/2013
1GHz High Pass Filter	Micro-Tronics	HPM50108	32	02/28/2012	02/27/2013
2GHz High Pass Filter	Micro-Tronics	HPM50110	36	02/28/2012	02/27/2013
3m Site NSA	SGS	966 chamber	N/A	07/15/2012	07/14/2013

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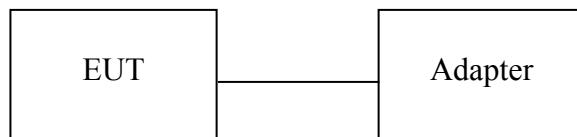
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## 2.5. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System (Fixed Channel)**



**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	N/A	CWT	SAG024F4	N/A	Un-shielded	Un-shielded

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a) §22.913(a)(2) §24.232(c) §27.50(c)(10) §27.50(d)(4)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c) §27.50(c)(10) §27.50(d)(4)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(c)(2) §27.53(g) §27.53(h)	Field Strength of Spurious Radiation	Compliant
§27.50(i)	Peak to Average Ratio	Compliant
§27.53f	Spurious emission in 1559 -1610MHz Band	N/A
§2.1055(a)(1) §22.355 §24.235 §27.54	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(2) §22.355 §24.235 §27.54	Frequency Stability vs. Voltage	Compliant

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Max ERP/EIRP measurement result:

	dBm		W
WCDMA Band II	18.24	EIRP	0.067
WCDMA Band IV	19.57	EIRP	0.091
WCDMA Band V	19.29	ERP	0.085
HSDPA Band II	21.94	EIRP	0.156
HSDPA Band IV	23.87	EIRP	0.244
HSDPA Band V	21.02	ERP	0.126
HSUPA Band II	21.79	EIRP	0.151
HSUPA Band IV	20.52	EIRP	0.113
HSUPA Band V	20.38	ERP	0.109
LTE Band 4/5MHz /QPSK RB 1 Offset 24	23.30	EIRP	0.214
LTE Band 4/5MHz /16QAM RB 1 Offset 24	23.34	EIRP	0.216
LTE Band 4/5MHz /QPSK RB 1 Offset 0	23.24	EIRP	0.211
LTE Band 4/5MHz /16QAM RB 1 Offset 0	23.17	EIRP	0.207
LTE Band 4/5MHz /QPSK RB 12 Offset 6	22.25	EIRP	0.168
LTE Band 4/5MHz /16QAM RB 12 Offset 6	23.03	EIRP	0.201
LTE Band 4/5MHz /QPSK RB 25 Offset 0	20.93	EIRP	0.124
LTE Band 4/5MHz /16QAM RB 25 Offset 0	21.41	EIRP	0.138
LTE Band 4/10MHz /QPSK RB 1 Offset 49	21.92	EIRP	0.156
LTE Band 4/10MHz /16QAM RB 1 Offset 49	23.22	EIRP	0.210
LTE Band 4/10MHz /QPSK RB 1 Offset 0	22.41	EIRP	0.174
LTE Band 4/10MHz /16QAM RB 1 Offset 0	23.73	EIRP	0.236
LTE Band 4/10MHz /QPSK RB 25 Offset 12	20.63	EIRP	0.116
LTE Band 4/10MHz /16QAM RB 25 Offset	21.67	EIRP	0.147
LTE Band 4/10MHz /QPSK RB 50 Offset 0	19.75	EIRP	0.094
LTE Band 4/10MHz /16QAM RB 50 Offset 0	20.33	EIRP	0.108

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LTE Band 17/5MHz /QPSK RB 1 Offset 0	17.26	ERP	0.053
LTE Band 17/5MHz /16QAM RB 1 Offset 0	19.04	ERP	0.080
LTE Band 17/5MHz /QPSK RB 12 Offset 6	17.69	ERP	0.059
LTE Band 17/5MHz /16QAM RB 12 Offset	19.10	ERP	0.081
LTE Band 17/5MHz /QPSK RB 25 Offset 0	14.81	ERP	0.030
LTE Band 17/5MHz /16QAM RB 25 Offset	13.93	ERP	0.025
LTE Band 17/10MHz /QPSK RB 1 Offset 49	14.93	ERP	0.031
LTE Band 17/10MHz /16QAM RB 1 Offset	16.60	ERP	0.046
LTE Band 17/10MHz /QPSK RB 1 Offset 0	14.93	ERP	0.031
LTE Band 17/10MHz /16QAM RB 1 Offset	16.99	ERP	0.050
LTE Band 17/10MHz /QPSK RB 25 Offset	15.40	ERP	0.035
LTE Band 17/10MHz /16QAM RB 25 Offset	16.55	ERP	0.045
LTE Band 17/10MHz /QPSK RB 50 Offset 0	11.01	ERP	0.013
LTE Band 17/10MHz /16QAM RB 50 Offset	12.95	ERP	0.020
LTE Band 12/5MHz /QPSK RB 1 Offset 24	18.88	ERP	0.077
LTE Band 12/5MHz /QPSK RB 1 Offset 0	20.61	ERP	0.115
LTE Band 12/5MHz /16QAM RB 1 Offset	21.20	ERP	0.132
LTE Band 12/5MHz /16QAM RB 1 Offset 0	20.72	ERP	0.118
LTE Band 12/10MHz /QPSK RB 1 Offset 49	19.18	ERP	0.083
LTE Band 12/10MHz /QPSK RB 1 Offset 0	19.22	ERP	0.084
LTE Band 12/10MHz /16QAM RB 1 Offset	21.02	ERP	0.126
LTE Band 12/10MHz /16QAM RB 1 Offset	21.29	ERP	0.135

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#### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for GPRS/EDGE, WCDMA/HSDPA/HSUPA Band II/V and LTE Band 4/17/12 with power adaptor. The worst-case of E2 position for all testing mode were reported.

In comparison among the RSE data of the all modulations (GPRS/EDGE/WCDMA/HSPA) we found that while the radiation is in GPRS mode, the spurious emission is found to be the worst, and therefore documenting the data of radiated spurious emission on GPRS 850/1900 mode would be representative sufficiently.

The RSE Data for all combinations have been measured, and only the results being measured close to the required limit are shown on the report by correlation.

In comparison among all CSE data of the variety of combination on LTE band 4 & 17, respectively, It's found to generate the highest emission at 5MHz, 10 MHz and 20 MHz Transmission Bandwidth while RB size = 1 with 0 offset. Be aware of that only CSE data that yields the worst measurement with supported modulation scheme (QPSK, 16QAM) are shown on the corresponding section.

For Peak to Average Ratio test, all combination (RB arrangement with different modulation scheme) has been evaluated, the data with the following setting: RB number = 25; Offset = 0 for 5MHz with 16QAM, RB number = 50; Offset = 0 for 10MHz with 16QAM and RB number = 100; Offset = 0 for 20MHz are shown as representative plot on the report.

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For Band edge, all combinations has been assessed and measured, only data output the emission close to limit are presented on the corresponding section of this report. The following lists the combinational setting of measurement representation as documents on the report.

<b>Band 4</b>		
<b>QPSK</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

<b>Band 4</b>		
<b>16QAM</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

<b>Band 17</b>		
<b>QPSK</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

<b>Band 17</b>		
<b>16QAM</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

<b>Band 12</b>		
<b>QPSK</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

<b>Band 12</b>		
<b>16QAM</b>		
	Low Channel	High Channel
5MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 24
10MHz	RB Size = 1 ; Offset = 0	RB Size = 1 ; Offset = 49

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## 5. MEASUREMENT UNCERTAINTY FOR FIELD STRENGTH OF SPURIOUS RADIATION

### For LTE band 12

Measurement uncertainty (Polarization : <b>Vertical</b> )	30MHz - 180MHz: 3.37dB
	180MHz -417MHz: 3.19dB
	0.417GHz-1GHz: 3.19dB
	1GHz - 18GHz: 4.04dB
	18GHz - 40GHz: 4.04dB

Measurement uncertainty (Polarization : <b>Horizontal</b> )	30MHz - 167MHz: 4.22dB
	167MHz -500MHz: 3.44dB
	0.5GHz-1GHz: 3.39dB
	1GHz - 18GHz: 4.08dB
	18GHz - 40GHz: 4.08dB

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## 6. RF POWER OUTPUT MEASUREMENT

### 6.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(c) Peak Power Measurement limited to 2W

Part 27, 50(c)(10) Portable stations are limited to 3W

Part 27, 50(d)(4) Portable stations are limited to 1W

3GPP Power limitation for HSDPA and HSUPA

#### Maximum Output Powers for HSDPA

Sub-test in table C.10.1.4	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-3.7	+21	+2.7/-2.7
2	+24	+1.7/-3.7	+21	+2.7/-2.7
3	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7
4	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7

#### Maximum Output Powers for HSUPA

Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

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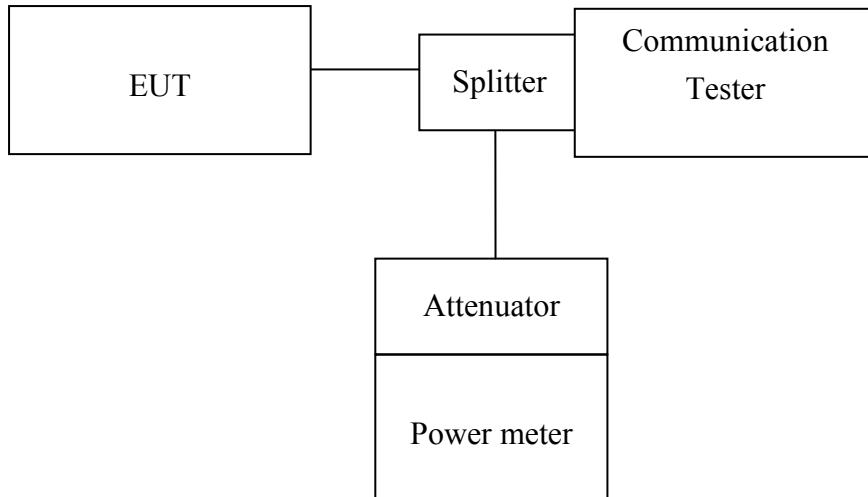
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## 6.2. Test Set-up:



*Note: Measurement setup for testing on Antenna connector*

## 6.3. Measurement Procedure:

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA/HSPA/LTE) was used for EUT and Base station setting. RMC 12.2kps is used for this testing

## 6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 6.5. Measurement Result:

### 6.5.1. RF Conducted Output Power

#### 6.5.1.1.: GPRS mode

Results: N/A

#### 6.5.1.2.: WCDMA mode

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

Results:

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
WCDMA Band II	1852.4	9262	26.01	22.55
	1880.0	9400	26.69	23.07
	1907.6	9538	26.06	22.64

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
WCDMA Band IV	1712.4	1312	27.12	23.46
	1732.6	1413	27.02	23.25
	1752.6	1513	27.48	23.78

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
WCDMA Band V	826.40	4132	26.06	22.60
	836.60	4183	26.26	22.75
	846.60	4233	25.77	23.02

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EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSDPA Band II	1852.40	9262	26.04	22.31
	1880.00	9400	26.18	22.71
	1907.60	9538	26.05	22.22

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSDPA Band IV	1712.4	1312	26.95	23.36
	1732.6	1413	26.75	23.10
	1752.6	1513	27.17	23.66

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSDPA Band V	826.40	4132	26.11	22.44
	836.60	4183	26.19	22.50
	846.60	4233	25.85	22.14

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EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSUPA Band II	1852.40	9262	26.14	22.41
	1880.00	9400	26.38	22.75
	1907.60	9538	26.15	22.32

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSUPA Band IV	1712.4	1312	26.99	23.40
	1732.6	1413	26.85	23.20
	1752.6	1513	27.28	23.76

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Avg Power (dBm)
HSUPA Band V	826.40	4132	26.15	22.52
	836.60	4183	26.28	22.55
	846.60	4233	25.99	22.20

B2&amp;B4 offset : 1.2 dB

B5 offset: 0.8dB

Note: The results above reflect max power with all up bits.

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### 6.5.1.3.: MPR Table

#### LTE Band 4 \_5 MHz

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
5	QPSK	19975	1712.5	1	24	22.59	22.5	0
				1	0	22.46	22.5	0
				12	6	21.66	22.5	0.5
				25	0	21.78	22.5	0.5
		20175	1732.5	1	24	22.62	22.5	0
				1	0	22.41	22.5	0
				12	6	21.62	22.5	0.5
				25	0	21.67	22.5	0.5
		20375	1752.5	1	24	23.02	22.5	0
				1	0	22.31	22.5	0
				12	6	21.7	22.5	0.5
				25	0	21.71	22.5	0.5
5	16 QAM	19975	1712.5	1	24	22.62	22.5	0
				1	0	22.39	22.5	0
				12	6	20.75	22.5	0.5
				25	0	21.47	22.5	0.5
		20175	1732.5	1	24	22.71	22.5	0
				1	0	22.5	22.5	0
				12	6	20.74	22.5	0.5
				25	0	21.36	22.5	0.5
		20375	1752.5	1	24	23.15	22.5	0
				1	0	22.41	22.5	0
				12	6	20.74	22.5	0.5
				25	0	21.45	22.5	0.5

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**LTE Band 4 \_10 MHz**

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
10	QPSK	2000	1715	1	49	23.24	22.5	0
				1	0	22.76	22.5	0
				25	12	21.66	22.5	0.5
				50	0	21.39	22.5	0.5
		20175	1732.5	1	49	23.14	22.5	0
				1	0	22.78	22.5	0
				25	12	21.81	22.5	0.5
				50	0	21.75	22.5	0.5
		20350	1750	1	49	22.83	22.5	0
				1	0	22.86	22.5	0
				25	12	21.75	22.5	0.5
				50	0	21.73	22.5	0.5
10	16 QAM	2000	1715	1	49	22.43	22.5	0.5
				1	0	22.87	22.5	0.5
				25	12	21.03	22.5	1
				50	0	20.61	22.5	1
		20175	1732.5	1	49	22.34	22.5	0.5
				1	0	22.88	22.5	0.5
				25	12	21.31	22.5	1
				50	0	20.95	22.5	1
		20350	1750	1	49	22.62	22.5	0.5
				1	0	22.59	22.5	0.5
				25	12	21.46	22.5	1
				50	0	20.79	22.5	1

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**LTE Band 17 \_5 MHz**

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
5	QPSK	23755	706.5	1	24	22.25	22.5	0
				1	0	21.83	22.5	0
				12	6	21.61	22.5	0.5
				25	0	22.06	22.5	0.5
		23790	710	1	24	21.58	22.5	0
				1	0	21.99	22.5	0
				12	6	22.51	22.5	0.5
				25	0	22.06	22.5	0.5
		23825	713.5	1	24	21.44	22.5	0
				1	0	22.06	22.5	0
				12	6	20.31	22.5	0.5
				25	0	20.24	22.5	0.5
5	16 QAM	23755	706.5	1	24	22.76	22.5	0.5
				1	0	22.56	22.5	0.5
				12	6	21.8	22.5	1
				25	0	22.19	22.5	1
		23790	710	1	24	22.31	22.5	0.5
				1	0	22.15	22.5	0.5
				12	6	21.89	22.5	1
				25	0	22.11	22.5	1
		23825	713.5	1	24	21.91	22.5	0.5
				1	0	22.25	22.5	0.5
				12	6	20.28	22.5	1
				25	0	20.46	22.5	1

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**LTE Band 17 \_10 MHz**

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
10	QPSK	23780	709	1	49	21.45	22.5	0
				1	0	21.85	22.5	0
				25	12	22.08	22.5	0.5
				50	0	21.57	22.5	0.5
		23790	710	1	49	21.47	22.5	0
				1	0	21.76	22.5	0
				25	12	21.96	22.5	0.5
				50	0	20.93	22.5	0.5
		23800	711	1	49	21.45	22.5	0
				1	0	21.6	22.5	0
				25	12	21.47	22.5	0.5
				50	0	21.58	22.5	0.5
10	16 QAM	23780	709	1	49	21.67	22.5	0.5
				1	0	22.33	22.5	0.5
				25	12	22.22	22.5	1
				50	0	21.72	22.5	1
		23790	710	1	49	21.74	22.5	0.5
				1	0	22.24	22.5	0.5
				25	12	22.14	22.5	1
				50	0	21.25	22.5	1
		23800	711	1	49	21.72	22.5	0.5
				1	0	22.08	22.5	0.5
				25	12	21.77	22.5	1
				50	0	21.35	22.5	1

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**LTE Band 12 \_5 MHz**

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
5	QPSK	23035	701.5	1	24	22.50	22.5	0
				1	0	22.40	22.5	0
				12	6	21.60	22.5	0.5
				25	0	21.70	22.5	0.5
		23095	707.5	1	24	22.40	22.5	0
				1	0	22.30	22.5	0
				12	6	21.50	22.5	0.5
				25	0	21.70	22.5	0.5
		23155	713.5	1	24	22.50	22.5	0
				1	0	22.40	22.5	0
				12	6	21.10	22.5	0.5
				25	0	21.60	22.5	0.5
5	16 QAM	23035	701.5	1	24	22.30	22.5	0.5
				1	0	22.20	22.5	0.5
				12	6	20.80	22.5	1
				25	0	21.10	22.5	1
		23095	707.5	1	24	22.50	22.5	0.5
				1	0	22.10	22.5	0.5
				12	6	20.70	22.5	1
				25	0	20.90	22.5	1
		23155	713.5	1	24	22.40	22.5	0.5
				1	0	22.00	22.5	0.5
				12	6	20.50	22.5	1
				25	0	20.90	22.5	1

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**LTE Band 12 \_10 MHz**

BW (MHz)	Modulation	Channel	Frequency (MHz)	RB Size	RB Offset	Conducted power(dBm)	Target Power(dBm)	MPR Target(dB)
10	QPSK	23060	704	1	49	22.55	22.5	0
				1	0	22.40	22.5	0
				25	12	21.80	22.5	0.5
				50	0	21.90	22.5	0.5
		23095	707.5	1	49	22.20	22.5	0
				1	0	22.10	22.5	0
				25	12	21.80	22.5	0.5
				50	0	21.90	22.5	0.5
		23130	711	1	49	22.50	22.5	0
				1	0	22.00	22.5	0
				25	12	21.30	22.5	0.5
				50	0	21.50	22.5	0.5
10	16 QAM	23060	704	1	49	22.20	22.5	0.5
				1	0	22.10	22.5	0.5
				25	12	20.80	22.5	1
				50	0	20.90	22.5	1
		23095	707.5	1	49	22.20	22.5	0.5
				1	0	22.10	22.5	0.5
				25	12	21.10	22.5	1
				50	0	21.40	22.5	1
		23130	711	1	49	22.10	22.5	0.5
				1	0	22.00	22.5	0.5
				25	12	20.70	22.5	1
				50	0	20.90	22.5	1

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#### 6.5.1.4.:HSDPA Release 6 mode

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

#### HSDPA SUB-TEST Setting

Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

**Note: The recommended HSDPA MPRs are implemented as per following sub-tests.**

#### Results:

Mode	Sub-test	RMS Power (dBm) Channel			Power Class 3 Limita- tion (dBm)	Comments
		9262	9400	9538		
HSDPA B2	1	23.17	23.35	23.62	20.3dBm – 25.7dBm	Pass
	2	23.34	23.11	23.63	20.3dBm – 25.7dBm	Pass
	3	22.69	22.90	23.09	19.8dBm – 25.7dBm	Pass
	4	22.76	22.91	23.21	19.8dBm – 25.7dBm	Pass

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Mode	Sub-test	RMS Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel	1312	1413	1513	
HSDPA B4	1	23.17	23.35	23.62	20.3dBm – 25.7dBm	Pass
	2	23.34	23.11	23.63	20.3dBm – 25.7dBm	Pass
	3	22.69	22.90	23.09	19.8dBm – 25.7dBm	Pass
	4	22.76	22.91	23.21	19.8dBm – 25.7dBm	Pass

Mode	Sub-test	RMS Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel	4132	4172	4233	
HSDPA B5	1	22.39	22.61	22.44	20.3dBm – 25.7dBm	Pass
	2	22.53	22.64	22.19	20.3dBm – 25.7dBm	Pass
	3	21.93	22.13	21.95	19.8dBm – 25.7dBm	Pass
	4	21.98	22.17	22.01	19.8dBm – 25.7dBm	Pass

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### 6.5.1.5.: HSPA (HSDPA & HSUPA) Release 6 mode

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

#### HSPA SUB-TEST Setting

Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

**Note: The recommended HSUPA MPRs are implemented as per following sub-tests.**

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**Results:**

Mode	Sub-test	RMS Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel	9262	9400	9538	
HSUPA B2	1	22.47	23.05	22.58	17.3dBm – 25.7dBm	Pass
	2	20.52	21.12	20.62	16.8dBm – 25.7dBm	Pass
	3	21.53	22.07	21.66	17.8dBm – 25.7dBm	Pass
	4	20.65	21.17	20.66	16.8dBm – 25.7dBm	Pass
	5	22.36	22.91	22.49	17.3dBm – 25.7dBm	Pass

Mode	Sub-test	RMS Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel	1312	1413	1513	
HSUPA B4	1	22.47	23.05	22.58	17.3dBm – 25.7dBm	Pass
	2	20.52	21.12	20.62	16.8dBm – 25.7dBm	Pass
	3	21.53	22.07	21.66	17.8dBm – 25.7dBm	Pass
	4	20.65	21.17	20.66	16.8dBm – 25.7dBm	Pass
	5	22.36	22.91	22.49	17.3dBm – 25.7dBm	Pass

Mode	Sub-test	RMS Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		Channel	4132	4172	4233	
HSUPA B5	1	23.38	23.23	23.72	17.3dBm – 25.7dBm	Pass
	2	21.43	21.30	21.76	16.8dBm – 25.7dBm	Pass
	3	22.44	22.25	22.80	17.8dBm – 25.7dBm	Pass
	4	21.56	21.35	21.80	16.8dBm – 25.7dBm	Pass
	5	23.27	23.09	23.63	17.3dBm – 25.7dBm	Pass

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## 7. PEAK TO AVERAGE RATIO

### 7.1. Standard Applicable:

FCC 27.50(i)

Peak transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of rms-equivalent voltage.

The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

To measure transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission shall not exceed 13 dB

### 7.2. Test SET-UP (Block Diagram of Configuration):

Refer to section 2.4 in this report

### 7.3. Measurement Procedure:

Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;

Set the number of counts to a value that stabilizes the measured CCDF curve;

### 7.4. Measurement Result:

Refer to next page for plot.

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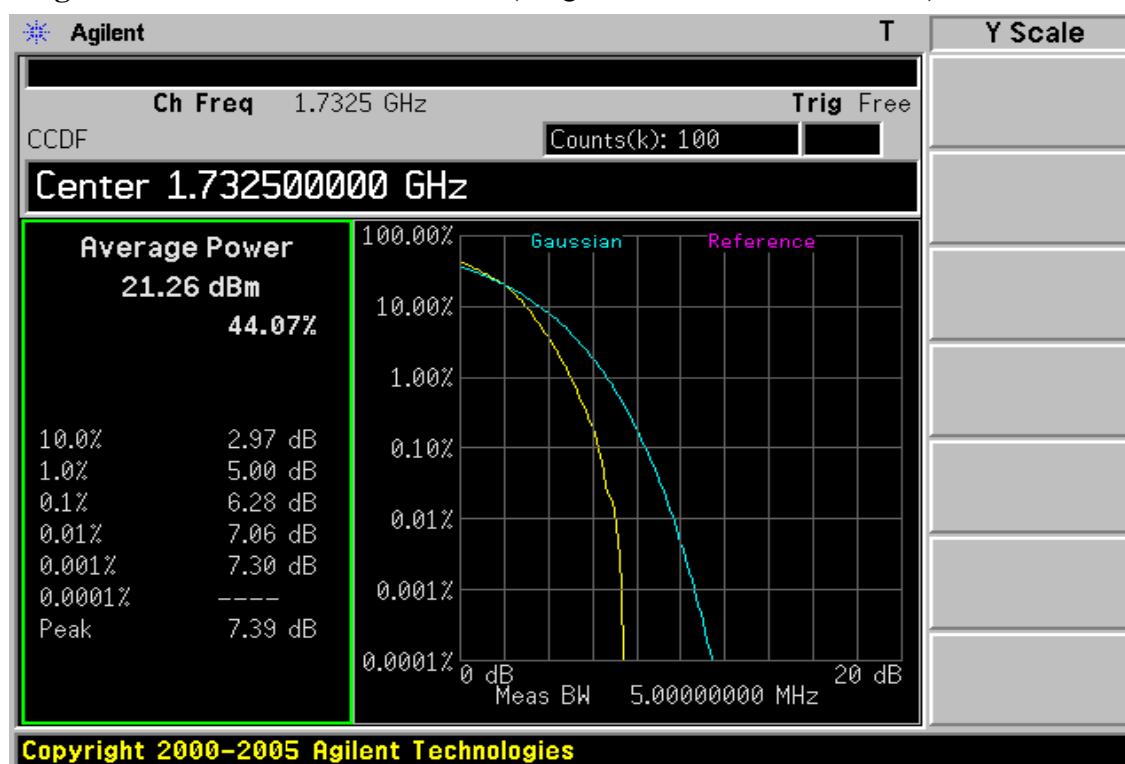
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Figure 7-1: 5MHz BW LTE-Band 4(16QAM Number: 25 Offset: 0) Channel Low



Figure 7-2: 5MHz BW LTE-Band 4(16QAM Number: 25 Offset: 0) Channel Mid



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Figure 7-3: 5MHz BW LTE-Band 4(16QAM Number: 25 Offset: 0) Channel High



Figure 7-4: 10MHz BW LTE-Band 4(16QAM Number: 50 Offset: 0) Channel Low



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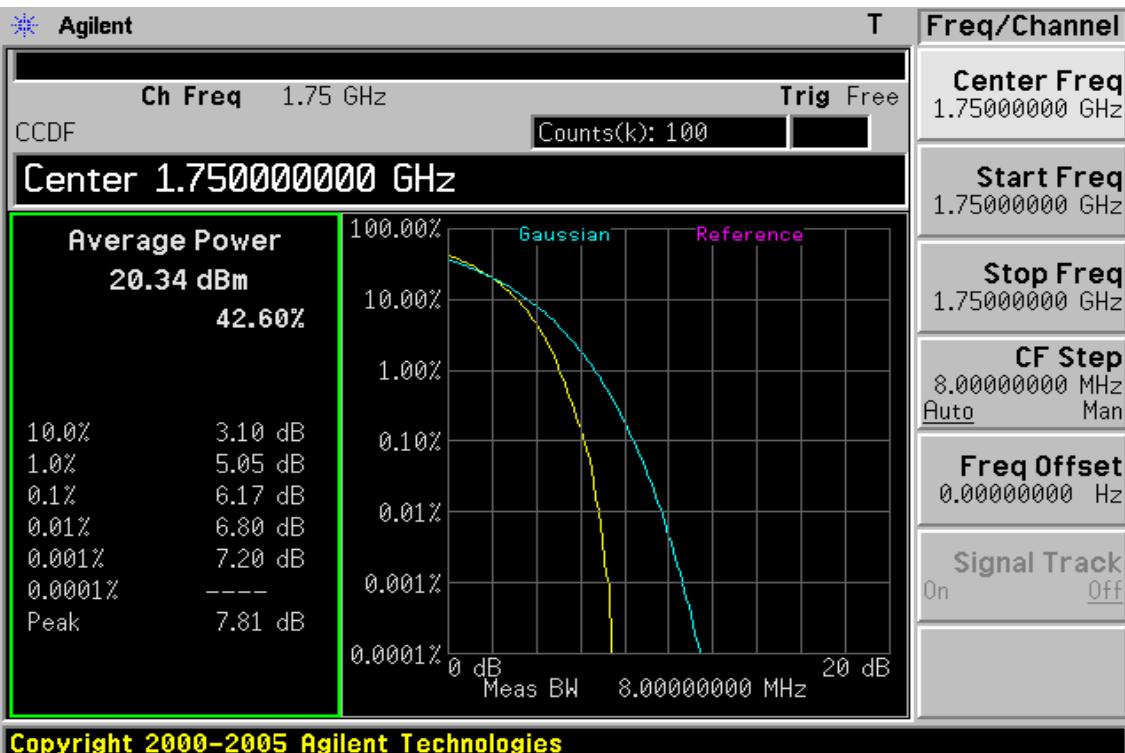
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Figure 7-5: 10MHz BW LTE-Band 4(16QAM Number: 50 Offset: 0) Channel Mid



Figure 7-6: 10MHz BW LTE-Band 4(16QAM Number: 50 Offset: 0) Channel High



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Figure 7-7: 5MHz BW LTE-Band 17(16QAM Number: 25 Offset: 0) Channel Low

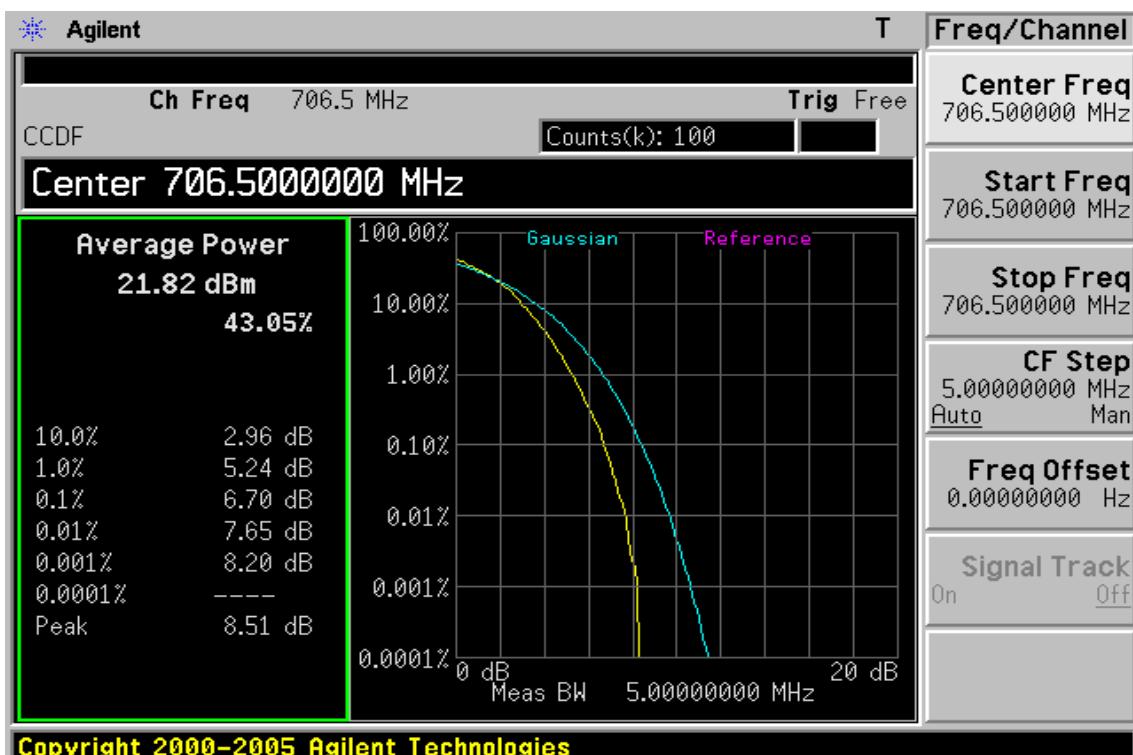


Figure 7-8: 5MHz BW LTE-Band 17(16QAM Number: 25 Offset: 0) Channel Mid



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Figure 7-9: 5MHz BW LTE-Band 17(16QAM Number: 25 Offset: 0) Channel High



Figure 7-10: 10MHz BW LTE-Band 17(16QAM Number: 50 Offset: 0) Channel Low



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Figure 7-11: 10MHz BW LTE-Band 17(16QAM Number: 50 Offset: 0) Channel Mid



Figure 7-12: 10MHz BW LTE-Band 17(16QAM Number: 50 Offset: 0) Channel High



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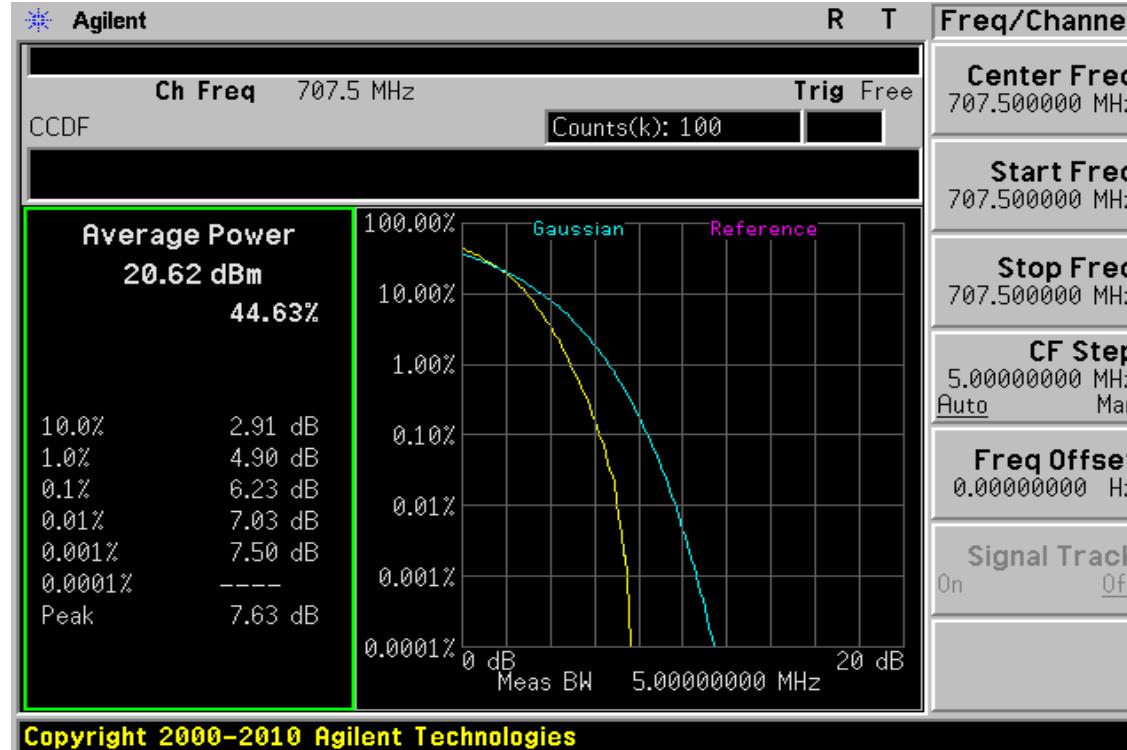
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Figure 7-13: 5MHz BW LTE-Band 12(16QAM Number: 25 Offset: 0) Channel Low



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Figure 7-14: 5MHz BW LTE-Band 12(16QAM Number: 25 Offset: 0) Channel Mid



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Figure 7-15: 5MHz BW LTE-Band 12(16QAM Number: 25 Offset: 0) Channel High



Figure 7-16: 10MHz BW LTE-Band 12(16QAM Number: 50 Offset: 0) Channel Low



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Figure 7-17: 10MHz BW LTE-Band 12(16QAM Number: 50 Offset: 0) Channel Mid



Figure 7-18: 10MHz BW LTE-Band 12(16QAM Number: 50 Offset: 0) Channel High



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## 8. ERP, EIRP MEASUREMENT

### 8.1. Standard Applicable:

According to FCC §2.1046

FCC 22.913(a) Mobile station are limited to 7W ERP.

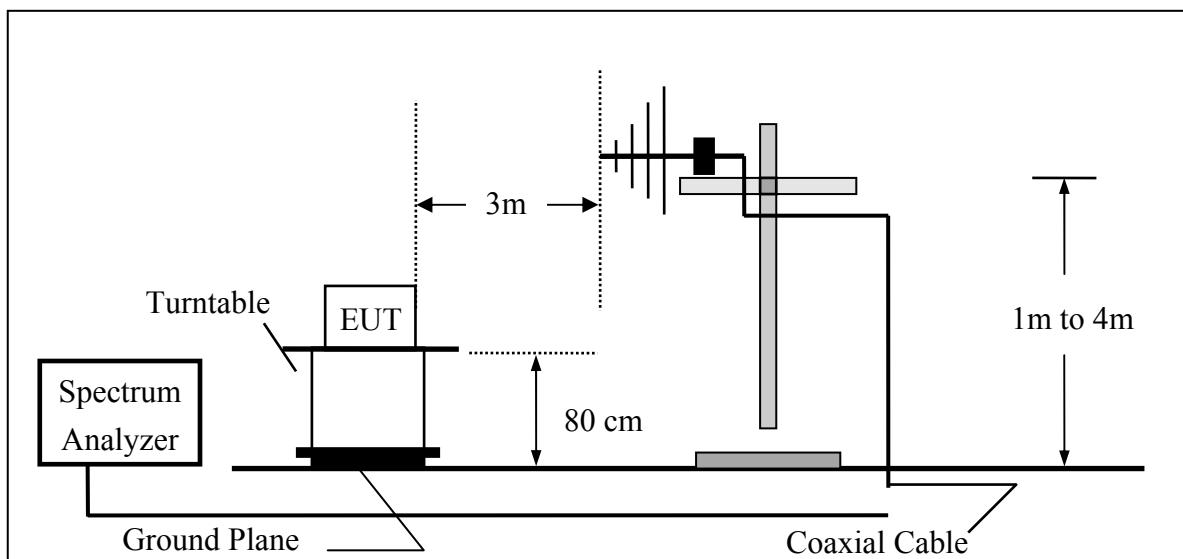
FCC 24.232(b) Mobile station are limited to 2W EIRP.

FCC 27.50(d)(2) Fixed, mobile, and portable (hand-held) stations are limited to 1W EIRP.

FCC 27.50(c)(10) Portable station are limited to 3W ERP.

### 8.2. Test SET-UP (Block Diagram of Configuration):

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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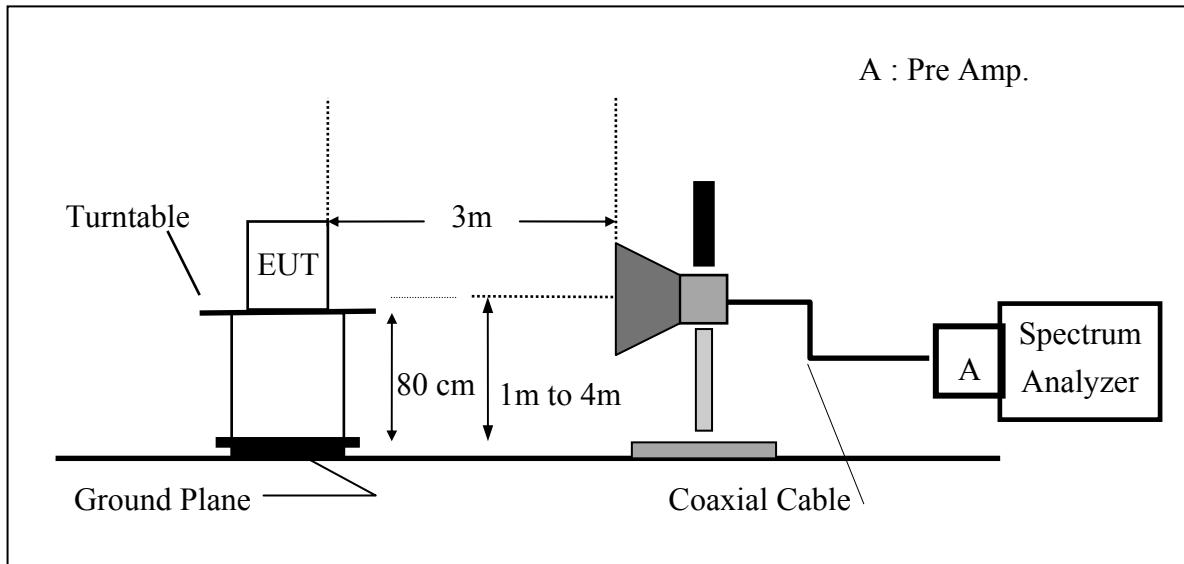
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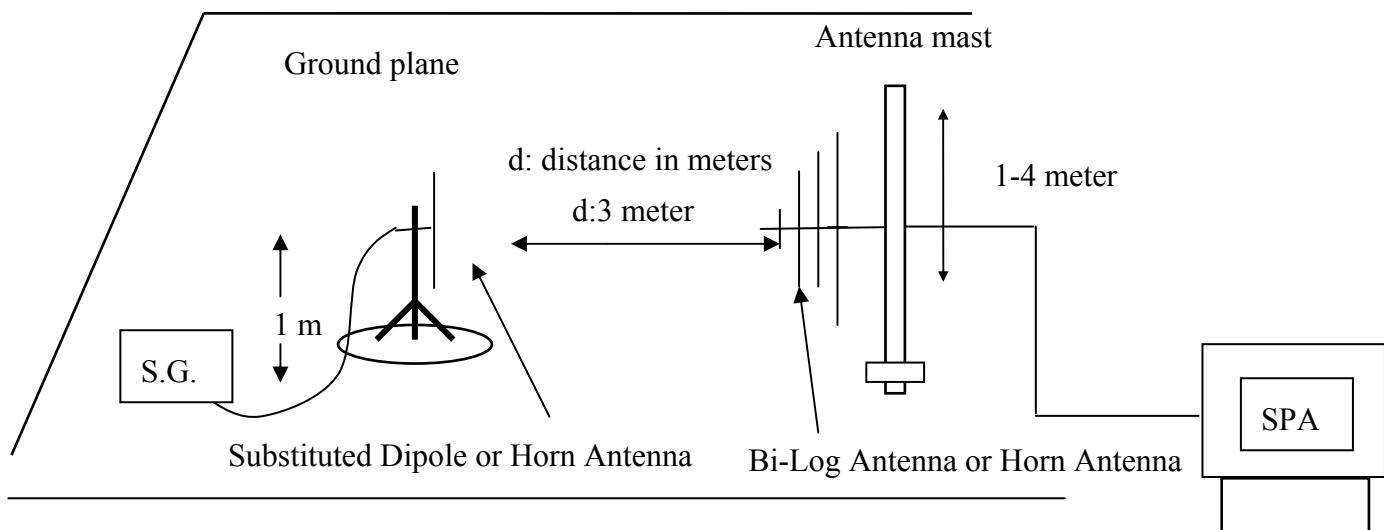
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## (B) Radiated Emission Test Set-UP Frequency Over 1 GHz



## (C) Substituted Method Test Set-UP



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### 8.3. Measurement Procedure:

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 704 - 716MHz, 824.2 –848.80MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1710-1755MHz and 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

### 8.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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### 8.5. Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA II	1852.40	9262	E2	V	109.94	5.56	9.90	5.56	9.89	33.00
				H	117.25	13.07	9.90	5.84	17.13	33.00
	1880.00	9400	E2	V	111.40	7.04	9.99	5.61	11.42	33.00
				H	118.01	13.87	9.99	5.61	<b>18.24</b>	33.00
	1907.60	9538	E2	V	111.94	7.61	10.07	5.66	12.02	33.00
				H	117.92	13.81	10.07	5.66	18.22	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA IV	1712.40	1312	E2	V	110.79	3.77	9.48	5.17	8.09	33.00
				H	121.92	14.95	9.90	5.84	19.01	33.00
	1732.60	1413	E2	V	112.41	5.40	9.54	5.20	9.74	33.00
				H	120.67	13.71	9.54	5.20	18.05	33.00
	1752.60	1513	E2	V	113.88	6.88	9.60	5.24	11.25	33.00
				H	122.15	15.20	9.60	5.24	<b>19.57</b>	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
WCDMA V	826.40	4132	E2	V	113.14	26.78	-10.02	3.63	13.13	38.45
				H	119.19	32.93	-10.02	3.63	<b>19.29</b>	38.45
	836.60	4183	E2	V	112.60	26.34	-10.02	3.65	12.67	38.45
				H	118.86	32.63	-10.02	3.65	18.96	38.45
	846.60	4233	E2	V	111.94	25.79	-10.02	3.67	12.10	38.45
				H	118.12	31.92	-10.02	3.67	18.23	38.45

#### Remark :

(1) The RBW, VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSDPA II	1852.40	9262	E2	V	114.23	9.85	9.90	5.56	14.18	33.00
				H	121.74	17.56	9.90	5.84	21.62	33.00
	1880.00	9400	E2	V	115.31	10.95	9.99	5.61	15.33	33.00
				H	121.71	17.57	9.99	5.61	<b>21.94</b>	33.00
	1907.60	9538	E2	V	115.20	10.87	10.07	5.66	15.28	33.00
				H	120.70	16.59	10.07	5.66	21.00	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSDPA IV	1712.40	1312	E2	V	117.27	10.25	9.48	5.17	14.57	33.00
				H	126.78	19.81	9.90	5.84	<b>23.87</b>	33.00
	1732.60	1413	E2	V	117.52	10.51	9.54	5.20	14.85	33.00
				H	125.55	18.59	9.54	5.20	22.93	33.00
	1752.60	1513	E2	V	118.01	11.01	9.60	5.24	15.38	33.00
				H	125.01	18.06	9.60	5.24	22.43	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
HSDPA V	826.40	4132	E2	V	115.37	29.01	-10.02	3.63	15.36	38.45
				H	120.92	34.66	-10.02	3.63	<b>21.02</b>	38.45
	836.60	4183	E2	V	114.30	28.04	-10.02	3.65	14.37	38.45
				H	120.54	34.31	-10.02	3.65	20.64	38.45
	846.60	4233	E2	V	114.21	28.06	-10.02	3.67	14.37	38.45
				H	120.20	34.00	-10.02	3.67	20.31	38.45

### Remark :

(1) The RBW, VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSUPA II	1852.40	9262	E2	V	115.44	11.06	9.90	5.56	15.39	33.00
				H	121.39	17.21	9.90	5.84	21.27	33.00
	1880.00	9400	E2	V	116.04	11.68	9.99	5.61	16.06	33.00
				H	121.30	17.16	9.99	5.61	21.53	33.00
	1907.60	9538	E2	V	117.02	12.69	10.07	5.66	17.10	33.00
				H	121.49	17.38	10.07	5.66	<b>21.79</b>	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSUPA IV	1712.40	1312	E2	V	115.66	8.64	9.48	5.17	12.96	33.00
				H	123.43	16.46	9.90	5.84	<b>20.52</b>	33.00
	1732.60	1413	E2	V	114.97	7.96	9.54	5.20	12.30	33.00
				H	122.86	15.90	9.54	5.20	20.24	33.00
	1752.60	1513	E2	V	115.33	8.33	9.60	5.24	12.70	33.00
				H	122.67	15.72	9.60	5.24	20.09	33.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
HSUPA V	826.40	4132	E2	V	114.01	27.65	-10.02	3.63	14.00	38.45
				H	120.28	34.02	-10.02	3.63	<b>20.38</b>	38.45
	836.60	4183	E2	V	113.57	27.31	-10.02	3.65	13.64	38.45
				H	119.96	33.73	-10.02	3.65	20.06	38.45
	846.60	4233	E2	V	113.25	27.10	-10.02	3.67	13.41	38.45
				H	119.44	33.24	-10.02	3.67	19.55	38.45

### Remark :

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (QPSK RB 1 Offset 24)	1712.5	19975	E2	V	113.82	9.30	9.48	5.33	13.45	30.00
				H	123.99	19.66	9.48	5.84	<b>23.30</b>	30.00
	1732.5	20175	E2	V	113.78	9.28	9.54	5.37	13.45	30.00
				H	122.69	18.38	9.54	5.37	22.56	30.00
	1752.5	20375	E2	V	113.91	9.43	9.60	5.40	13.63	30.00
				H	121.23	16.94	9.60	5.40	21.15	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (16QAM RB 1 Offset 24))	1712.5	19975	E2	V	114.59	10.07	9.48	5.33	14.22	30.00
				H	124.03	19.70	9.48	5.84	<b>23.34</b>	30.00
	1732.5	20175	E2	V	113.85	9.35	9.54	5.37	13.52	30.00
				H	122.80	18.49	9.54	5.37	22.67	30.00
	1752.5	20375	E2	V	114.61	10.13	9.60	5.40	14.33	30.00
				H	122.16	17.87	9.60	5.40	22.08	30.00

**Remark :**

(1) The RBW,VBW of SPA for frequency

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Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (QPSK RB 1 Offset 0) )	1712.5	19975	E2	V	113.77	9.25	9.48	5.33	13.40	30.00
				H	123.93	19.60	9.48	5.84	<b>23.24</b>	30.00
	1732.5	20175	E2	V	113.99	9.49	9.54	5.37	13.66	30.00
				H	122.82	18.51	9.54	5.37	22.69	30.00
	1752.5	20375	E2	V	113.85	9.37	9.60	5.40	13.57	30.00
				H	121.78	17.49	9.60	5.40	21.70	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (16QAM RB 1 Offset 0)	1712.5	19975	E2	V	114.59	10.07	9.48	5.33	14.22	30.00
				H	123.86	19.53	9.48	5.84	<b>23.17</b>	30.00
	1732.5	20175	E2	V	114.39	9.89	9.54	5.37	14.06	30.00
				H	123.06	18.75	9.54	5.37	22.93	30.00
	1752.5	20375	E2	V	114.69	10.21	9.60	5.40	14.41	30.00
				H	122.69	18.40	9.60	5.40	22.61	30.00

**Remark :**

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (QPSK RB 12 Offset 6)	1712.5	19975	E2	V	112.94	8.42	9.48	5.33	12.57	30.00
				H	122.94	18.61	9.48	5.84	22.25	30.00
	1732.5	20175	E2	V	112.11	7.61	9.54	5.37	11.78	30.00
				H	121.64	17.33	9.54	5.37	21.51	30.00
	1752.5	20375	E2	V	113.36	8.88	9.60	5.40	13.08	30.00
				H	121.15	16.86	9.60	5.40	21.07	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (16QAM RB 12 Offset 6)	1712.5	19975	E2	V	114.39	9.87	9.48	5.33	14.02	30.00
				H	123.72	19.39	9.48	5.84	23.03	30.00
	1732.5	20175	E2	V	113.56	9.06	9.54	5.37	13.23	30.00
				H	122.52	18.21	9.54	5.37	22.39	30.00
	1752.5	20375	E2	V	113.97	9.49	9.60	5.40	13.69	30.00
				H	121.20	16.91	9.60	5.40	21.12	30.00

**Remark :**

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (QPSK RB 25 Offset 0)	1712.5	19975	E2	V	111.52	7.00	9.48	5.33	11.15	30.00
				H	121.62	17.29	9.48	5.84	<b>20.93</b>	30.00
	1732.5	20175	E2	V	110.56	6.06	9.54	5.37	10.23	30.00
				H	119.54	15.23	9.54	5.37	19.41	30.00
	1752.5	20375	E2	V	111.50	7.02	9.60	5.40	11.22	30.00
				H	119.33	15.04	9.60	5.40	19.25	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
5MHz BW LTE-Band 4 (16QAM RB 25 Offset 0)	1712.5	19975	E2	V	110.91	6.39	9.48	5.33	10.54	30.00
				H	121.42	17.09	9.48	5.84	20.73	30.00
	1732.5	20175	E2	V	112.56	8.06	9.54	5.37	12.23	30.00
				H	121.54	17.23	9.54	5.37	<b>21.41</b>	30.00
	1752.5	20375	E2	V	112.81	8.33	9.60	5.40	12.53	30.00
				H	120.41	16.12	9.60	5.40	20.33	30.00

**Remark :**

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RBW= 5MHz , VBW= 8MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (QPSK RB 1 Offset 49)	1715	20000	E2	V	111.97	7.45	9.49	5.34	11.60	30.00
				H	120.39	16.06	9.49	5.84	19.71	30.00
	1732.5	20175	E2	V	113.14	8.64	9.54	5.37	12.81	30.00
				H	120.66	16.35	9.54	5.37	20.53	30.00
	1750	20350	E2	V	114.39	9.91	9.60	5.40	14.11	30.00
				H	122.01	17.72	9.60	5.40	21.92	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (16QAM RB 1 Offset 49)	1715	20000	E2	V	113.02	8.50	9.49	5.34	12.65	30.00
				H	121.25	16.92	9.49	5.84	20.57	30.00
	1732.5	20175	E2	V	113.19	8.69	9.54	5.37	12.86	30.00
				H	121.17	16.86	9.54	5.37	21.04	30.00
	1750	20350	E2	V	115.88	11.40	9.60	5.40	15.60	30.00
				H	123.31	19.02	9.60	5.40	23.22	30.00

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (QPSK RB 1 Offset 0)	1715	20000	E2	V	112.26	7.74	9.49	5.34	11.89	30.00
				H	120.79	16.46	9.49	5.84	20.11	30.00
	1732.5	20175	E2	V	113.34	8.84	9.54	5.37	13.01	30.00
				H	121.61	17.30	9.54	5.37	21.48	30.00
	1750	20350	E2	V	114.71	10.23	9.60	5.40	14.43	30.00
				H	122.50	18.21	9.60	5.40	22.41	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (16QAM RB 1 Offset 0)	1715	20000	E2	V	113.23	8.71	9.49	5.34	12.86	30.00
				H	121.55	17.22	9.49	5.84	20.87	30.00
	1732.5	20175	E2	V	114.11	9.61	9.54	5.37	13.78	30.00
				H	121.59	17.28	9.54	5.37	21.46	30.00
	1750	20350	E2	V	115.58	11.10	9.60	5.40	15.30	30.00
				H	123.82	19.53	9.60	5.40	23.73	30.00

**Remark :**

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (QPSK RB 25 Offset 12)	1715	20000	E2	V	109.42	4.90	9.49	5.34	9.05	30.00
				H	118.06	13.73	9.49	5.84	17.38	30.00
	1732.5	20175	E2	V	111.01	6.51	9.54	5.37	10.68	30.00
				H	118.87	14.56	9.54	5.37	18.74	30.00
	1750	20350	E2	V	112.79	8.31	9.60	5.40	12.51	30.00
				H	120.72	16.43	9.60	5.40	<b>20.63</b>	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (16QAM RB 25 Offset 12)	1715	20000	E2	V	110.87	6.35	9.49	5.34	10.50	30.00
				H	119.33	15.00	9.49	5.84	18.65	30.00
	1732.5	20175	E2	V	111.97	7.47	9.54	5.37	11.64	30.00
				H	119.68	15.37	9.54	5.37	19.55	30.00
	1750	20350	E2	V	113.87	9.39	9.60	5.40	13.59	30.00
				H	121.76	17.47	9.60	5.40	<b>21.67</b>	30.00

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (QPSK RB 50 Offset 0)	1715	20000	E2	V	108.35	3.83	9.49	5.34	7.98	30.00
				H	116.55	12.22	9.49	5.84	15.87	30.00
	1732.5	20175	E2	V	109.92	5.42	9.54	5.37	9.59	30.00
				H	116.98	12.67	9.54	5.37	16.85	30.00
	1750	20350	E2	V	111.65	7.17	9.60	5.40	11.37	30.00
				H	119.84	15.55	9.60	5.40	<b>19.75</b>	30.00

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
10MHz BW LTE-Band 4 (16QAM RB 50 Offset 0)	1715	20000	E2	V	109.34	4.82	9.49	5.34	8.97	30.00
				H	117.79	13.46	9.49	5.84	17.11	30.00
	1732.5	20175	E2	V	109.92	5.42	9.54	5.37	9.59	30.00
				H	117.83	13.52	9.54	5.37	17.70	30.00
	1750	20350	E2	V	112.46	7.97	9.60	5.40	12.18	30.00
				H	120.42	16.13	9.60	5.40	<b>20.33</b>	30.00

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5MHz BW LTE-Band 17 (QPSK RB 1 Offset 24)	706.5	23755	E2	V	114.03	24.89	-7.86	3.31	13.72	34.77
				H	120.59	31.74	-7.86	5.84	<b>18.04</b>	34.77
	710	23790	E2	V	110.67	21.70	-7.86	3.33	10.51	34.77
				H	117.30	27.80	-7.86	3.33	16.61	34.77
	713.5	23825	E2	V	112.21	23.40	-7.86	3.34	12.20	34.77
				H	118.90	28.75	-7.86	3.34	17.54	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (16 QAM RB 1 Offset 24)	706.5	23755	E2	V	114.80	25.66	-7.86	3.31	14.49	34.77
				H	121.60	32.75	-7.86	5.84	19.05	34.77
	710	23790	E2	V	112.59	23.62	-7.86	3.33	12.43	34.77
				H	120.56	31.06	-7.86	3.33	19.87	34.77
	713.5	23825	E2	V	113.61	24.80	-7.86	3.34	13.60	34.77
				H	121.88	31.73	-7.86	3.34	<b>20.52</b>	34.77

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (QPSK RB 1 Offset 0)	706.5	23755	E2	V	111.00	21.86	-7.86	3.31	10.69	34.77
				H	117.08	28.23	-7.86	5.84	14.53	34.77
	710	23790	E2	V	110.96	21.99	-7.86	3.33	10.80	34.77
				H	117.95	28.45	-7.86	3.33	<b>17.26</b>	34.77
	713.5	23825	E2	V	110.84	22.03	-7.86	3.34	10.83	34.77
				H	117.42	27.27	-7.86	3.34	16.06	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (16 QAM RB 1 Offset 0)	706.5	23755	E2	V	112.15	23.01	-7.86	3.31	11.84	34.77
				H	118.71	29.86	-7.86	5.84	16.16	34.77
	710	23790	E2	V	112.94	23.97	-7.86	3.33	12.78	34.77
				H	119.73	30.23	-7.86	3.33	<b>19.04</b>	34.77
	713.5	23825	E2	V	112.08	23.27	-7.86	3.34	12.07	34.77
				H	118.98	28.83	-7.86	3.34	17.62	34.77

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (QPSK RB 12 Offset 6)	706.5	23755	E2	V	109.07	19.93	-7.86	3.31	8.76	34.77
				H	116.39	27.54	-7.86	5.84	13.84	34.77
	710	23790	E2	V	111.65	22.68	-7.86	3.33	11.49	34.77
				H	118.38	28.88	-7.86	3.33	<b>17.69</b>	34.77
	713.5	23825	E2	V	107.86	19.05	-7.86	3.34	7.85	34.77
				H	114.22	24.07	-7.86	3.34	12.86	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (16 QAM RB 12 Offset 6)	706.5	23755	E2	V	110.71	21.57	-7.86	3.31	10.40	34.77
				H	117.52	28.67	-7.86	5.84	14.97	34.77
	710	23790	E2	V	113.10	24.13	-7.86	3.33	12.94	34.77
				H	119.79	30.29	-7.86	3.33	<b>19.10</b>	34.77
	713.5	23825	E2	V	109.06	20.25	-7.86	3.34	9.05	34.77
				H	115.31	25.16	-7.86	3.34	13.95	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (QPSK RB 25 Offset 0)	706.5	23755	E2	V	107.47	18.33	-7.86	3.31	7.16	34.77
				H	114.43	25.58	-7.86	5.84	11.88	34.77
	710	23790	E2	V	108.70	19.73	-7.86	3.33	8.54	34.77
				H	115.50	26.00	-7.86	3.33	<b>14.81</b>	34.77
	713.5	23825	E2	V	106.50	17.69	-7.86	3.34	6.49	34.77
				H	112.95	22.80	-7.86	3.34	11.59	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
5MHz BW LTE-Band 17 (16 QAM RB 25 Offset 0)	706.5	23755	E2	V	109.25	20.11	-7.86	3.31	8.94	34.77
				H	116.11	27.26	-7.86	5.84	13.56	34.77
	710	23790	E2	V	110.53	21.56	-7.86	3.33	10.37	34.77
				H	116.97	27.47	-7.86	3.33	<b>16.28</b>	34.77
	713.5	23825	E2	V	108.85	20.04	-7.86	3.34	8.84	34.77
				H	115.29	25.14	-7.86	3.34	13.93	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (QPSK RB 1 Offset 49)	709	23780	E2	V	107.26	18.24	-7.86	3.32	7.06	34.77
				H	113.03	23.72	-7.86	5.84	10.02	34.77
	710	23790	E2	V	107.86	18.89	-7.86	3.33	7.70	34.77
				H	114.15	24.65	-7.86	3.33	13.46	34.77
	711	23800	E2	V	109.76	20.83	-7.86	3.33	9.64	34.77
				H	115.81	26.12	-7.86	3.33	<b>14.93</b>	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (16 QAM RB 1 Offset 49)	709	23780	E2	V	108.79	19.77	-7.86	3.32	8.59	34.77
				H	115.86	26.55	-7.86	5.84	12.85	34.77
	710	23790	E2	V	109.79	20.82	-7.86	3.33	9.63	34.77
				H	115.92	26.42	-7.86	3.33	15.23	34.77
	711	23800	E2	V	111.33	22.40	-7.86	3.33	11.21	34.77
				H	117.48	27.79	-7.86	3.33	<b>16.60</b>	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 10MHz , VBW= 10MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (QPSK RB 1 Offset 0)	709	23780	E2	V	110.82	21.80	-7.86	3.32	10.62	34.77
				H	116.42	27.11	-7.86	5.84	13.41	34.77
	710	23790	E2	V	108.23	19.26	-7.86	3.33	8.07	34.77
				H	114.89	25.39	-7.86	3.33	14.20	34.77
	711	23800	E2	V	109.76	20.83	-7.86	3.33	9.64	34.77
				H	115.81	26.12	-7.86	3.33	<b>14.93</b>	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (16 QAM RB 1 Offset 0)	709	23780	E2	V	111.96	22.94	-7.86	3.32	11.76	34.77
				H	118.55	29.24	-7.86	5.84	15.54	34.77
	710	23790	E2	V	110.86	21.89	-7.86	3.33	10.70	34.77
				H	117.59	28.09	-7.86	3.33	16.90	34.77
	711	23800	E2	V	110.90	21.97	-7.86	3.33	10.78	34.77
				H	117.87	28.18	-7.86	3.33	<b>16.99</b>	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 10MHz , VBW= 10MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (QPSK RB 25 Offset 12)	709	23780	E2	V	109.44	20.42	-7.86	3.32	9.24	34.77
				H	115.46	26.15	-7.86	5.84	12.45	34.77
	710	23790	E2	V	109.44	20.47	-7.86	3.33	9.28	34.77
				H	116.09	26.59	-7.86	3.33	<b>15.40</b>	34.77
	711	23800	E2	V	108.01	19.08	-7.86	3.33	7.89	34.77
				H	114.64	24.95	-7.86	3.33	13.76	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (16 QAM RB 25 Offset 12)	709	23780	E2	V	110.41	21.39	-7.86	3.32	10.21	34.77
				H	116.82	27.51	-7.86	5.84	13.81	34.77
	710	23790	E2	V	110.76	21.79	-7.86	3.33	10.60	34.77
				H	117.24	27.74	-7.86	3.33	<b>16.55</b>	34.77
	711	23800	E2	V	110.34	21.41	-7.86	3.33	10.22	34.77
				H	116.76	27.07	-7.86	3.33	15.88	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 10MHz , VBW= 10MHz

Detector = Peak

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EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (QPSK RB 50 Offset 0)	709	23780	E2	V	105.02	16.00	-7.86	3.32	4.82	34.77
				H	111.77	22.46	-7.86	5.84	8.76	34.77
	710	23790	E2	V	105.08	16.11	-7.86	3.33	4.92	34.77
				H	111.70	22.20	-7.86	3.33	<b>11.01</b>	34.77
	711	23800	E2	V	105.39	16.46	-7.86	3.33	5.27	34.77
				H	111.89	22.20	-7.86	3.33	<b>11.01</b>	34.77

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
10MHz BW LTE-Band 17 (16 QAM RB 50 Offset 0)	709	23780	E2	V	107.68	18.66	-7.86	3.32	7.48	34.77
				H	114.14	24.83	-7.86	5.84	11.13	34.77
	710	23790	E2	V	107.17	18.20	-7.86	3.33	7.01	34.77
				H	113.64	24.14	-7.86	3.33	<b>12.95</b>	34.77
	711	23800	E2	V	107.13	18.20	-7.86	3.33	7.01	34.77
				H	113.70	24.01	-7.86	3.33	12.82	34.77

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW= 10MHz , VBW= 10MHz

Detector = Peak

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EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
5MHz BW LTE-Band 12 (QPSK RB 1 Offset 24)	E2	701.5	23035	V	17.97	4.12	-4.07	18.02	30.00
				H	18.77	4.12	-4.07	18.82	30.00
		707.5	23095	V	17.70	4.03	-3.98	17.74	30.00
				H	18.83	4.03	-3.98	<b>18.88</b>	30.00
		713.5	23155	V	15.25	3.95	-3.98	15.22	30.00
				H	18.43	3.95	-3.98	18.40	30.00

EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
5MHz BW LTE-Band 12 (QPSK RB 1 Offset 0)	E2	701.5	23035	V	17.82	4.15	-4.07	17.91	30.00
				H	18.41	4.15	-4.07	18.49	30.00
		707.5	23095	V	19.51	4.09	-3.98	19.61	30.00
				H	20.51	4.08	-3.98	<b>20.61</b>	30.00
		713.5	23155	V	17.46	4.01	-3.98	17.48	30.00
				H	19.12	4.01	-3.98	19.15	30.00

### Remark :

(1) The RBW,VBW of SPA for frequency RBW=300 KHz, VBW=1MHz

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EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
5MHz BW LTE-Band 12 (16 QAM RB 1 Offset 24)	E2	701.5	23035	V	18.79	4.12	-4.07	18.84	30.00
				H	19.77	4.12	-4.07	19.83	30.00
		707.5	23095	V	18.69	4.04	-3.98	18.74	30.00
				H	21.15	4.04	-3.98	<b>21.20</b>	30.00
		713.5	23155	V	17.52	3.95	-3.98	17.49	30.00
				H	21.02	3.95	-3.98	20.99	30.00

EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
5MHz BW LTE-Band 12 (16 QAM RB 1 Offset 0)	E2	701.5	23035	V	18.49	4.15	-4.07	18.58	30.00
				H	19.82	4.15	-4.07	19.90	30.00
		707.5	23095	V	18.70	4.09	-3.98	18.81	30.00
				H	20.61	4.09	-3.98	<b>20.72</b>	30.00
		713.5	23155	V	17.81	4.01	-3.98	17.84	30.00
				H	20.22	4.01	-3.98	20.25	30.00

### Remark :

(1) The RBW,VBW of SPA for frequency RBW=300 KHz, VBW=1MHz

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EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
10MHz BW LTE-Band 12 (QPSK RB 1 Offset 49)	E2	704.0	23060	V	17.74	4.06	-3.98	17.81	30.00
				H	19.11	4.06	-3.98	<b>19.18</b>	30.00
		707.5	23095	V	16.83	4.02	-3.98	16.87	30.00
				H	18.83	4.01	-3.98	18.85	30.00
		711.0	23130	V	15.53	3.96	-3.98	15.51	30.00
				H	17.94	3.96	-3.98	17.92	30.00

EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
10MHz BW LTE-Band 12 (QPSK RB 1 Offset 0)	E2	704.0	23060	V	17.09	4.15	-4.07	17.17	30.00
				H	17.45	4.15	-4.07	17.53	30.00
		707.5	23095	V	17.08	4.12	-4.07	17.13	30.00
				H	17.72	4.12	-4.07	17.77	30.00
		711.0	23130	V	18.61	4.07	-3.98	18.70	30.00
				H	19.13	4.07	-3.98	<b>19.22</b>	30.00

### Remark :

(1) The RBW,VBW of SPA for frequency RBW=300 KHz, VBW=1MHz

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EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
10MHz BW LTE-Band 12 (16 QAM RB 1 Offset 49)	E2	704.0	23060	V	19.80	4.06	-3.98	19.87	30.00
				H	20.95	4.06	-3.98	<b>21.02</b>	30.00
		707.5	23095	V	17.26	4.01	-3.98	17.29	30.00
				H	19.69	4.01	-3.98	19.71	30.00
		711.0	23130	V	17.19	3.96	-3.98	17.16	30.00
				H	20.59	3.96	-3.98	20.56	30.00

EUT				Measurement					
Operation Band	Pol.	Fundamental Frequency	CH	Antenna Pol.	S.G. Output	Antenna Gain	Cable Loss	ERP	Limit
		MHz		V/H	dBm	dBi	dB	dBm	dBm
10MHz BW LTE-Band 12 (16 QAM RB 1 Offset 0)	E2	704.0	23060	V	17.50	4.15	-4.07	17.59	30.00
				H	18.65	4.15	-4.07	18.74	30.00
		707.5	23095	V	17.54	4.12	-4.07	17.59	30.00
				H	18.61	4.12	-4.07	18.66	30.00
		711.0	23130	V	19.47	4.07	-3.98	19.56	30.00
				H	21.21	4.06	-3.98	<b>21.29</b>	30.00

### Remark :

(1) The RBW,VBW of SPA for frequency RBW=300 KHz, VBW=1MHz

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## 9. 99% OCCUPIED BANDWIDTH MEASUREMENT

### 9.1. Standard Applicable:

According to §FCC 2.1049.

### 9.2. Test Set-up:

Refer to section 6.2 in this report

### 9.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW (10/30KHz) was set to about 1% of emission BW, VBW= 3 times RBW(30/100KHz), -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

### 9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA II	1852.40	9262	4.1300
	1880.00	9400	4.1251
	1907.60	9538	4.1191

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA IV	1852.40	1312	4.1441
	1880.00	1413	4.1333
	1907.60	1513	4.1432

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
WCDMA V	826.40	4132	4.1203
	836.00	4180	4.1410
	846.60	4233	4.1181

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA II	1852.4	9262	4.1267
	1880.0	9400	4.1653
	1907.6	9538	4.1599

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
HSDPA IV	1852.4	9262	4.1633
	1880.0	9400	4.1520
	1907.6	9538	4.1435

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<b>EUT Mode</b>	<b>Frequency (MHz)</b>	<b>CH</b>	<b>99% Bandwidth (MHz)</b>
HSDPA V	826.40	4132	4.1534
	836.60	4183	4.1299
	846.60	4233	4.1317

<b>EUT Mode</b>	<b>Frequency (MHz)</b>	<b>CH</b>	<b>99% Bandwidth (MHz)</b>
HSUPA II	1852.4	9262	4.1754
	1880.0	9400	4.1464
	1907.6	9538	4.1503

<b>EUT Mode</b>	<b>Frequency (MHz)</b>	<b>CH</b>	<b>99% Bandwidth (MHz)</b>
HSUPA IV	1852.4	1312	4.1203
	1880.0	1413	4.1441
	1907.6	1513	4.1480

<b>EUT Mode</b>	<b>Frequency (MHz)</b>	<b>CH</b>	<b>99% Bandwidth (MHz)</b>
HSUPA V	826.40	4132	4.1493
	836.60	4183	4.1280
	846.60	4233	4.1110

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 4 (QPSK RB Number: 25 Offset: 0)	1712.5	19975	4.5116
	1732.5	20175	4.5128
	1752.5	20375	4.5041

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 4 (16QAM RB Number: 25 Offset: 0)	1712.5	19975	4.4967
	1732.5	20175	4.5064
	1752.5	20375	4.5124

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 4 (QPSK RB Number: 50 Offset: 0)	1715	20000	8.9860
	1732.5	20175	8.9668
	1750	20350	8.9702

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 4 (16QAM RB Number: 50 Offset: 0)	1715	20000	8.9690
	1732.5	20175	8.9524
	1750	20350	8.9630

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 17 (QPSK RB Number: 25 Offset: 0)	706.5	23755	4.5183
	710	23790	4.4783
	713.5	23835	4.5115

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 17 (16QAM RB Number: 25 Offset: 0)	706.5	23755	4.4961
	710	23790	4.4862
	713.5	23835	4.4938

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 17 (QPSK RB Number: 50 Offset: 0)	709	23780	8.9416
	710	23790	8.9399
	711	23800	8.9029

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 17 (16QAM RB Number: 50 Offset: 0)	709	23780	8.9102
	710	23790	8.9131
	711	23800	8.8951

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EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 12 (QPSK RB Number: 25 Offset: 0)	701.5	23035	4.5053
	707.5	23095	4.4756
	713.5	23155	4.5135

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
5MHz BW LTE-Band 12 (16QAM RB Number: 25 Offset: 0)	701.5	23035	4.5000
	707.5	23095	4.4847
	713.5	23155	4.5144

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 12 (QPSK RB Number: 50 Offset: 0)	704	23060	8.9944
	707.5	23095	8.9107
	711	23130	8.9396

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
10MHz BW LTE-Band 12 (16QAM RB Number: 50 Offset: 0)	704	23060	8.9445
	707.5	23095	8.8691
	711	23130	8.9255

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Figure 9-1: WCDMA II Channel Low

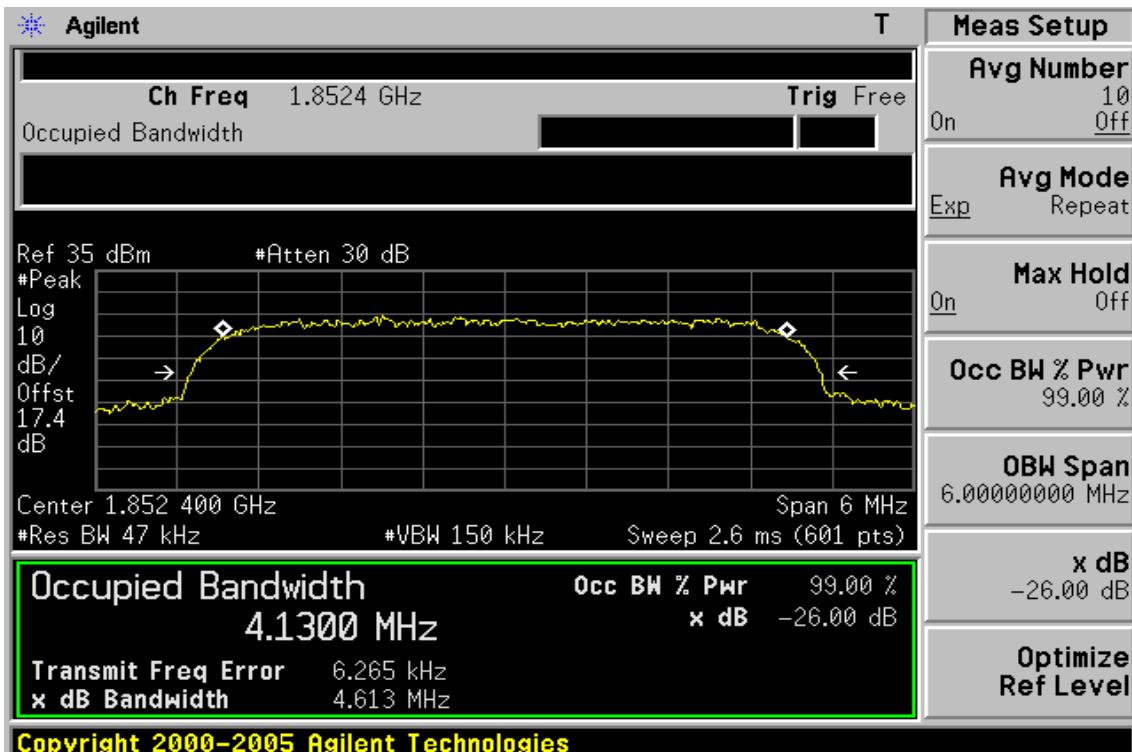
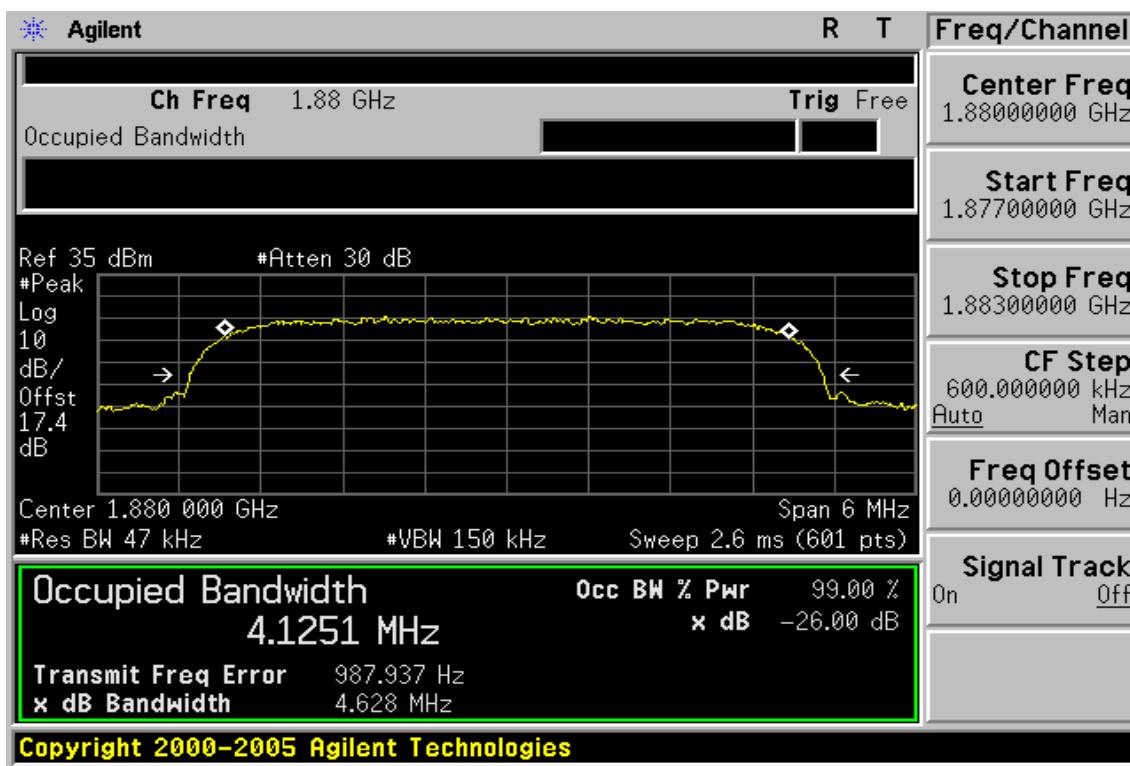


Figure 9-2 WCDMA II Channel Mid



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Figure 9-3: WCDMA II Channel High

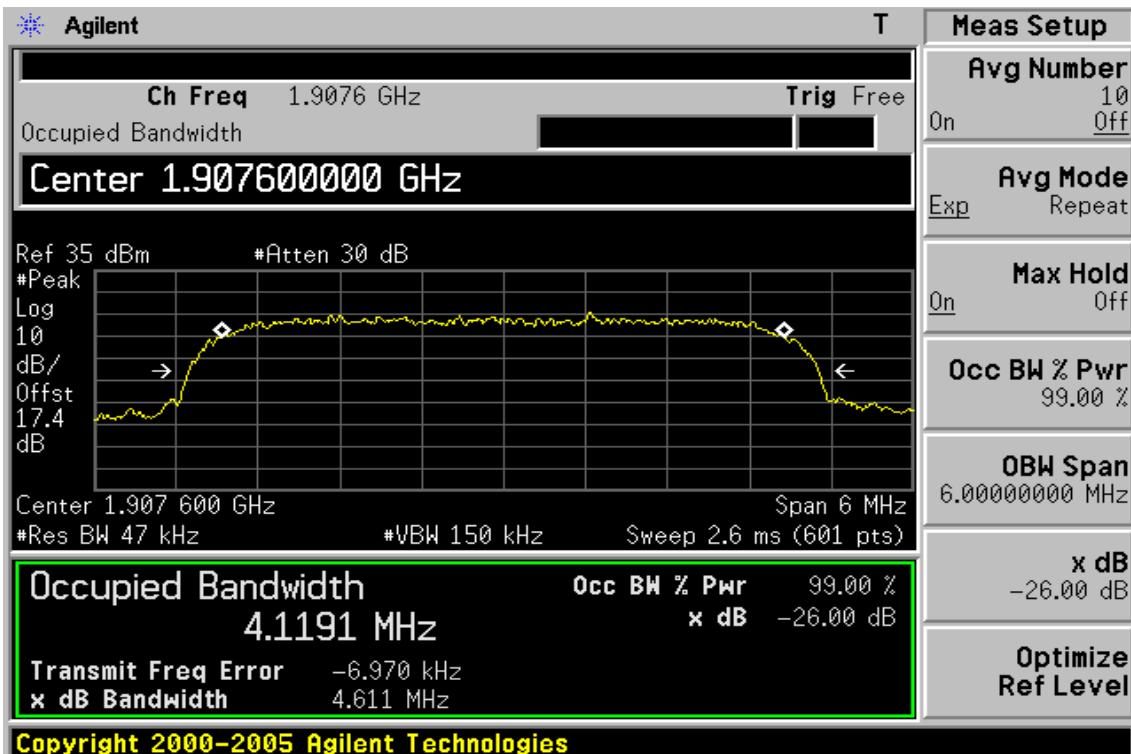
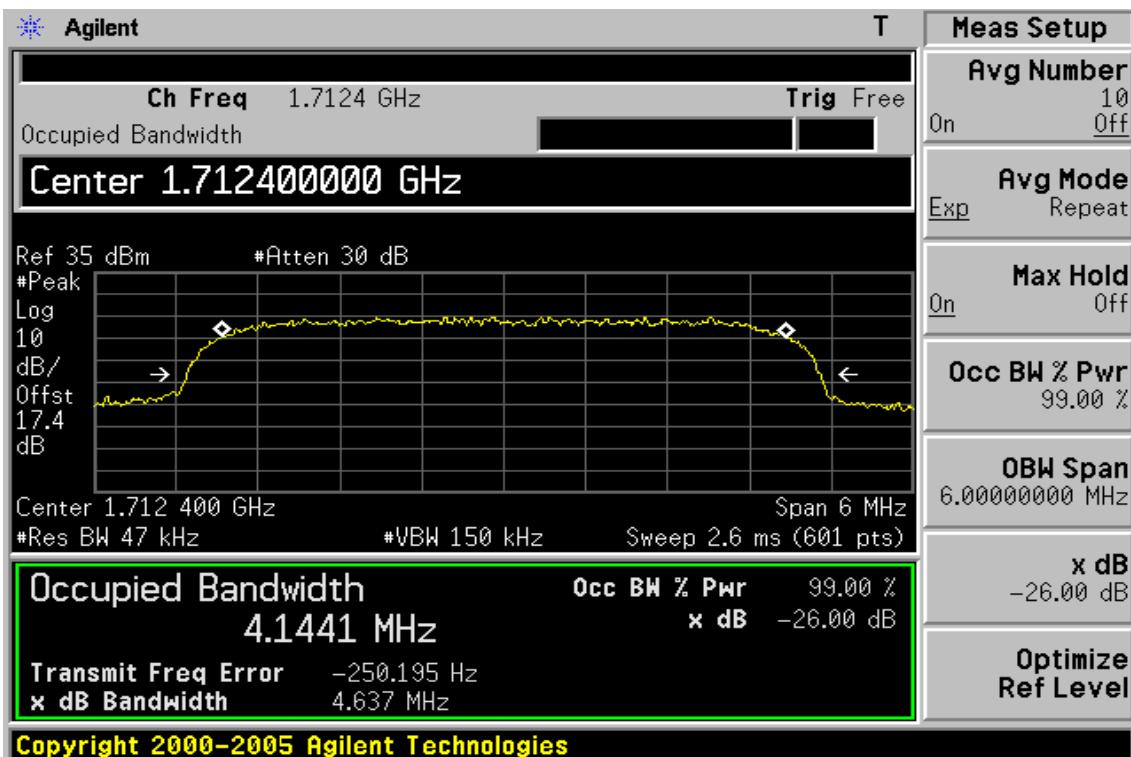


Figure 9-4: WCDMA IV Channel Low



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Figure 9-5 WCDMA IV Channel Mid

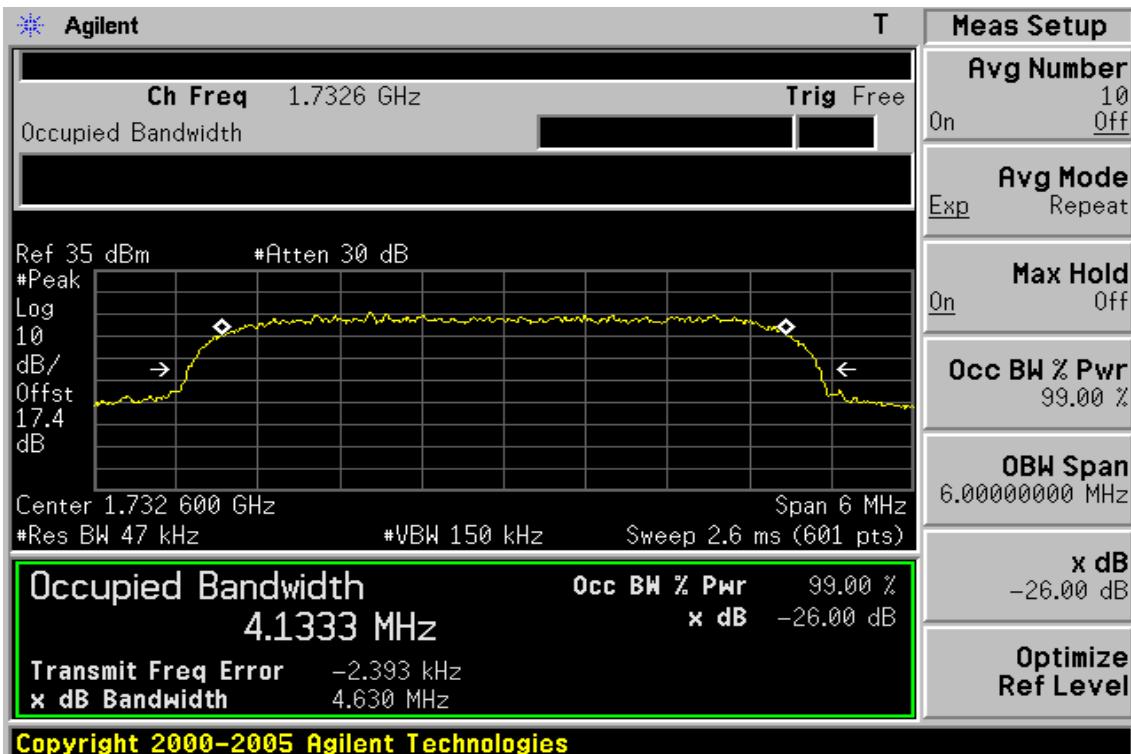
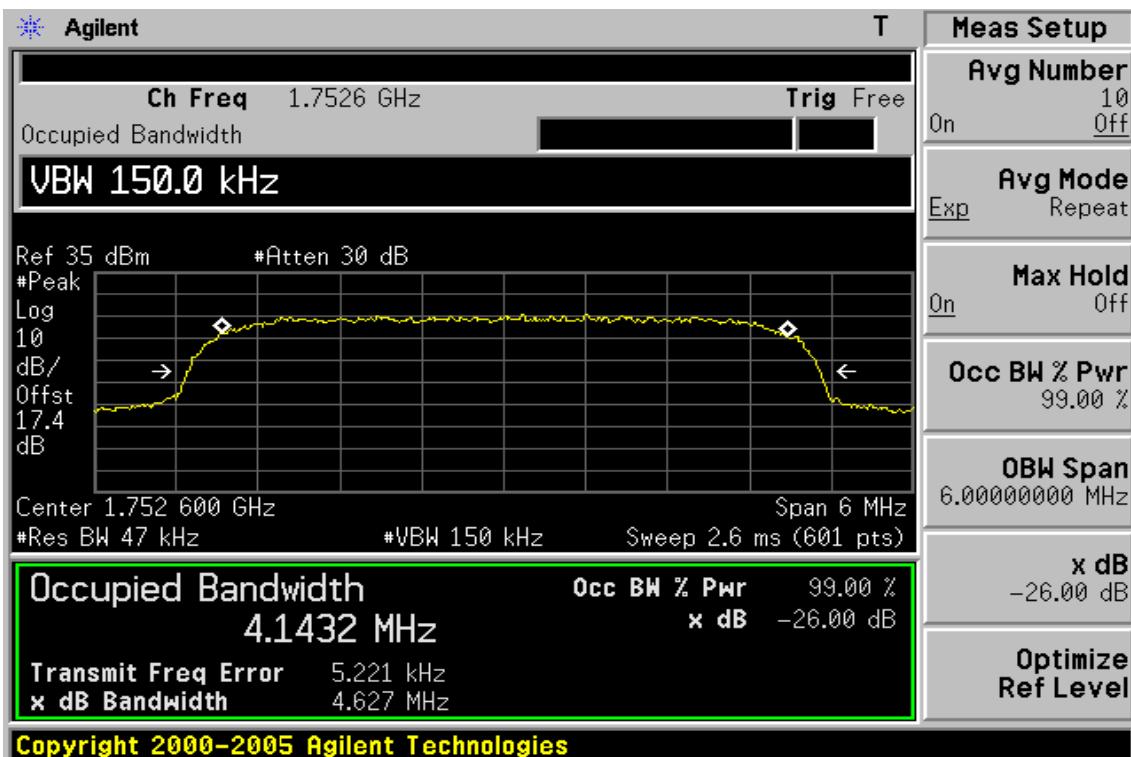


Figure 9-6: WCDMA IV Channel High



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Figure 9-7: WCDMA V Channel Low

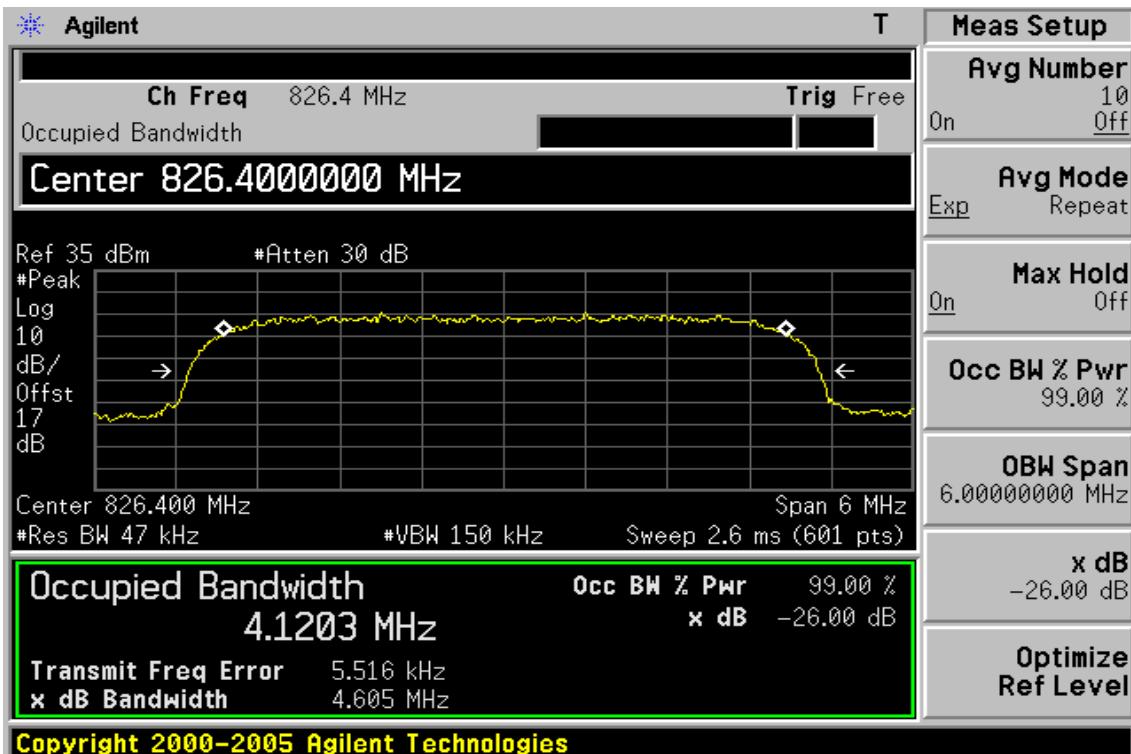
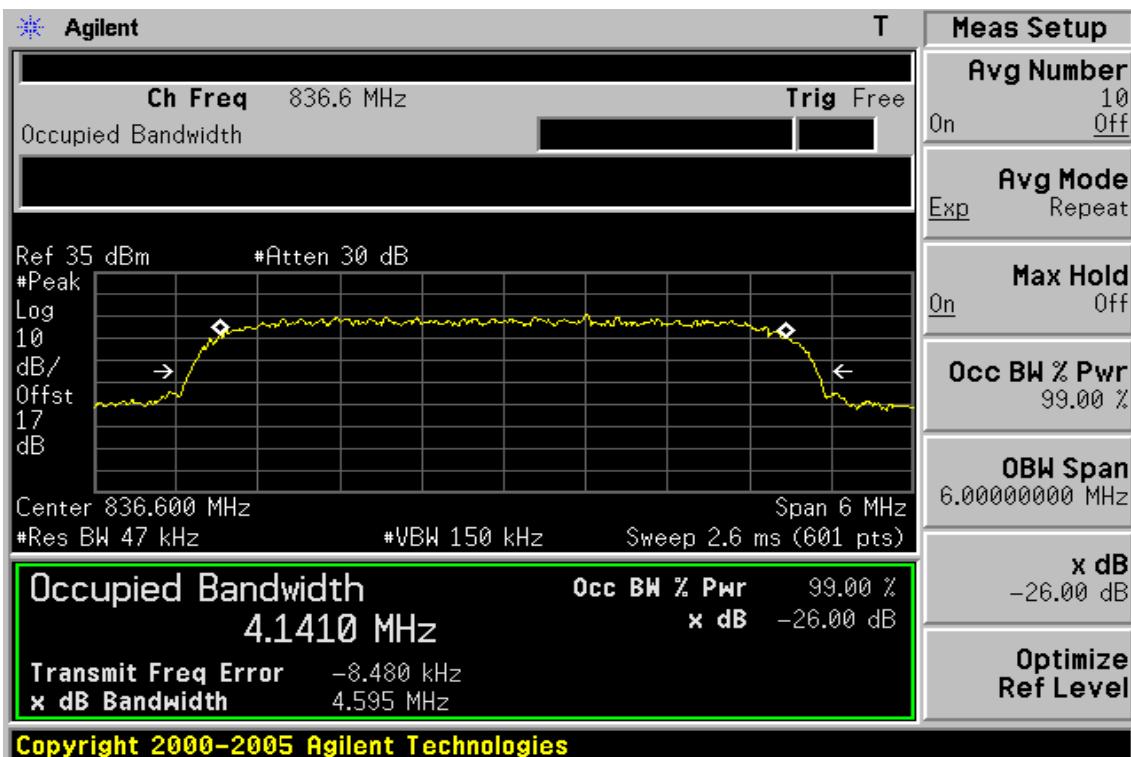


Figure 9-8 WCDMA V Channel Mid



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Figure 9-9: WCDMA V Channel High

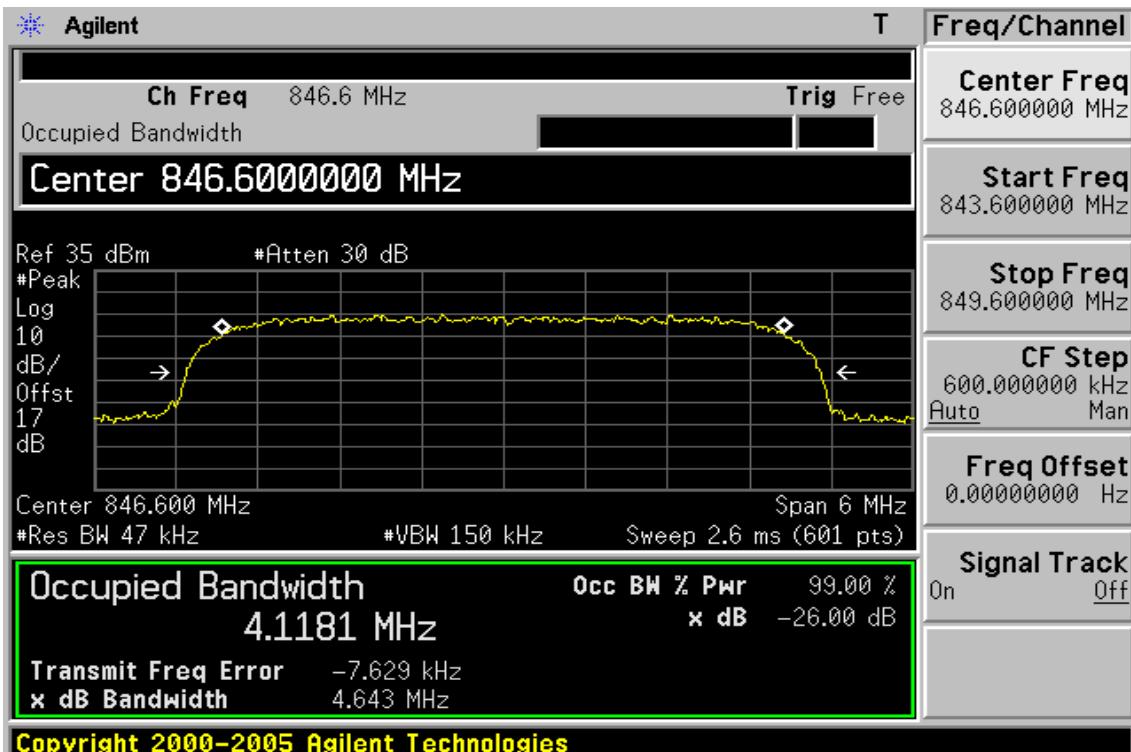
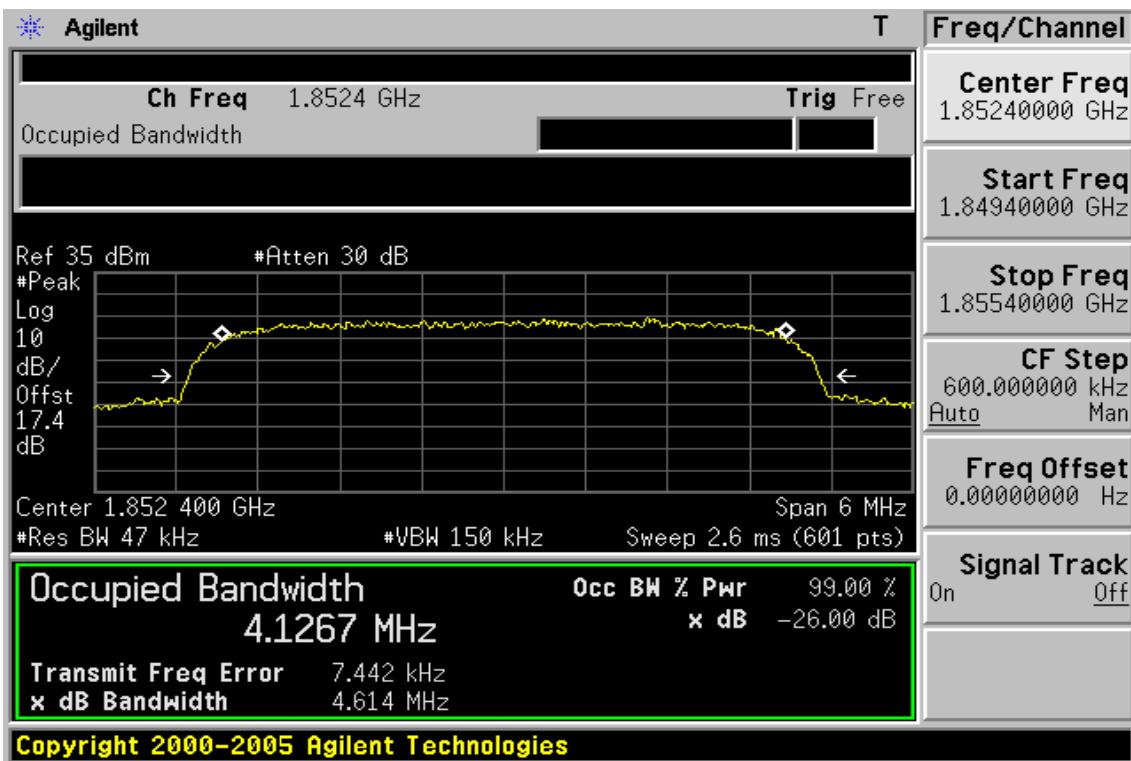


Figure 9-10: HSDPA II Channel Low



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Figure 9-11 HSDPA II Channel Mid

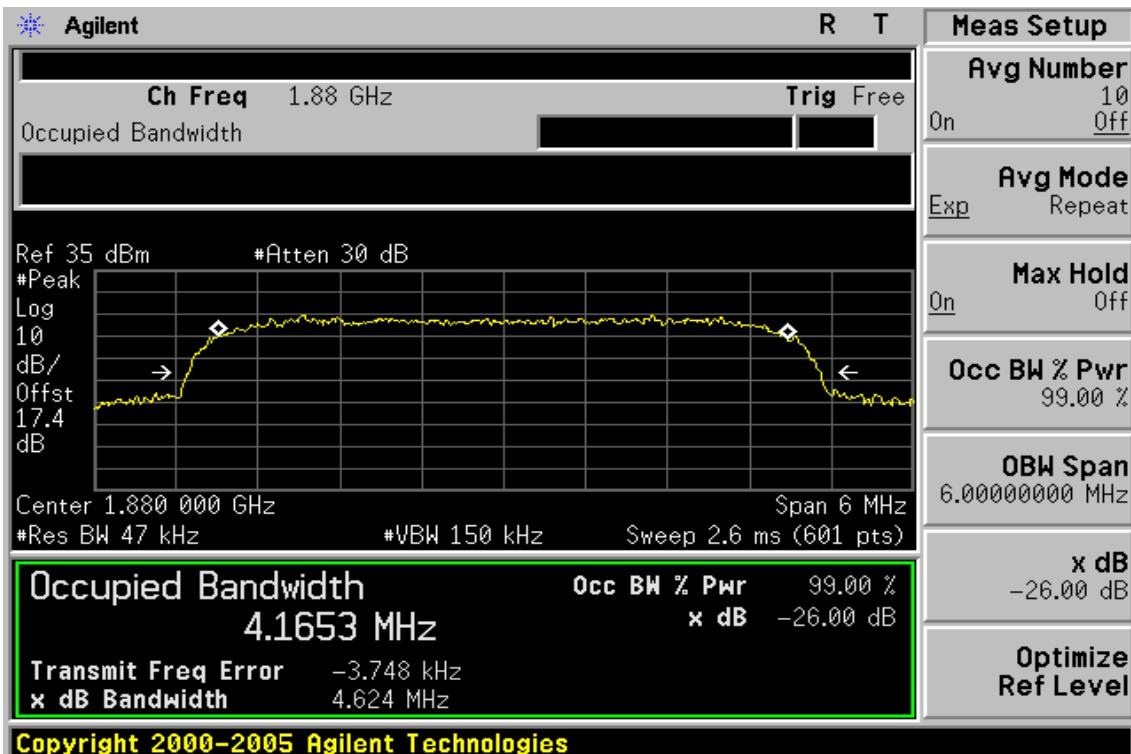
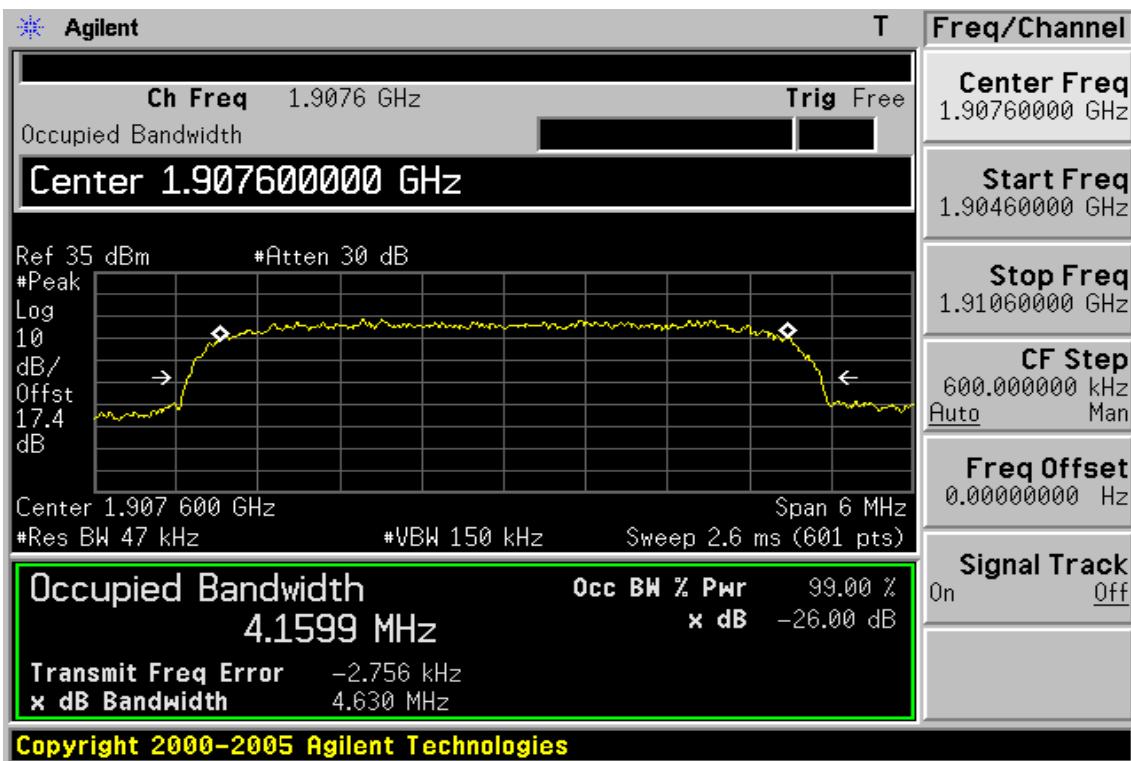


Figure 9-12: HSDPA II Channel High



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Figure 9-13: HSDPA IV Channel Low

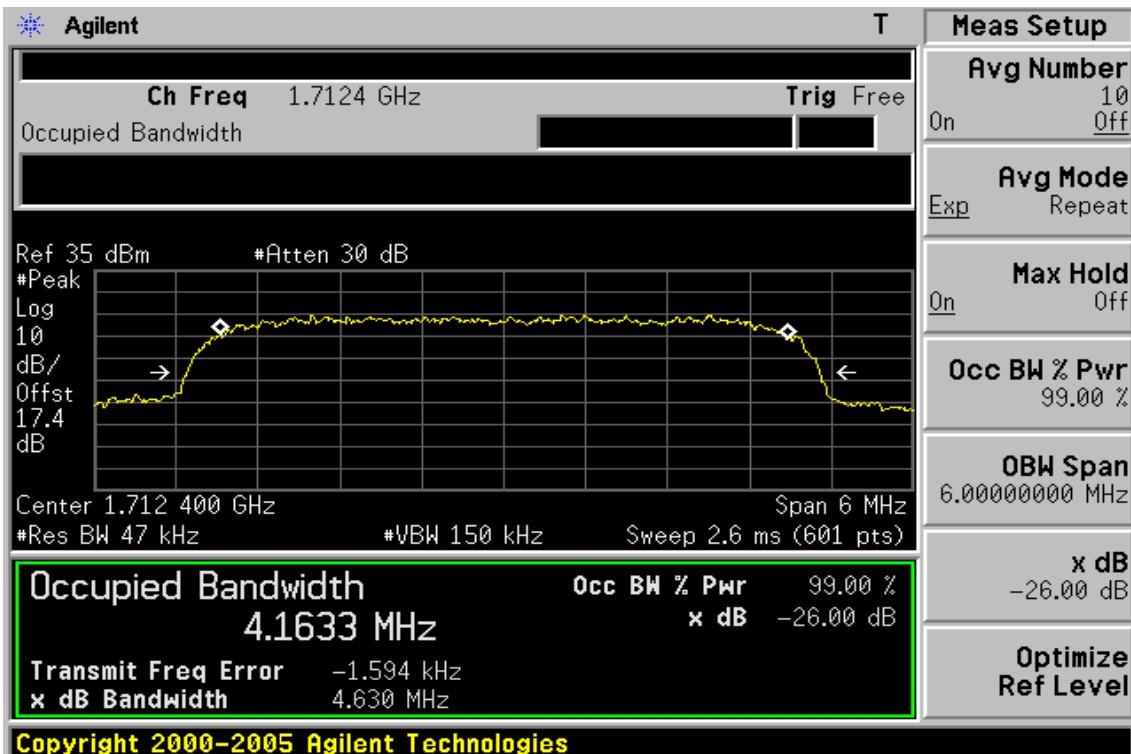
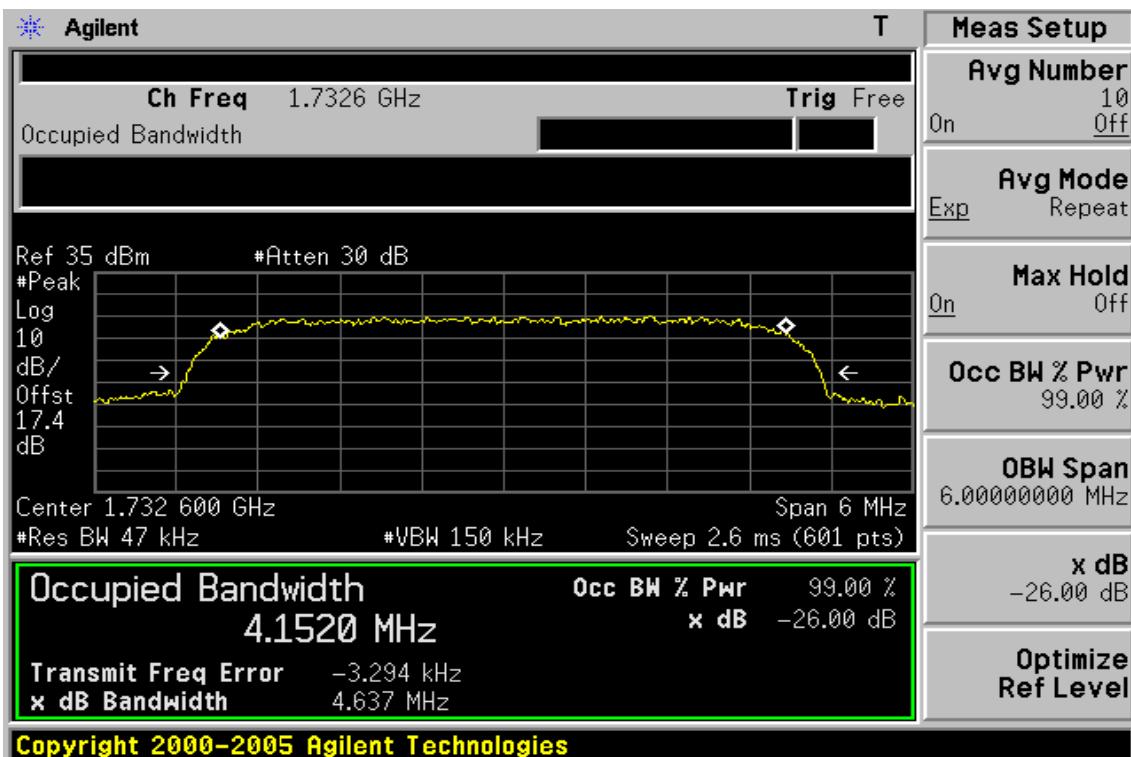


Figure 9-14 HSDPA IV Channel Mid



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Figure 9-15: HSDPA IV Channel High

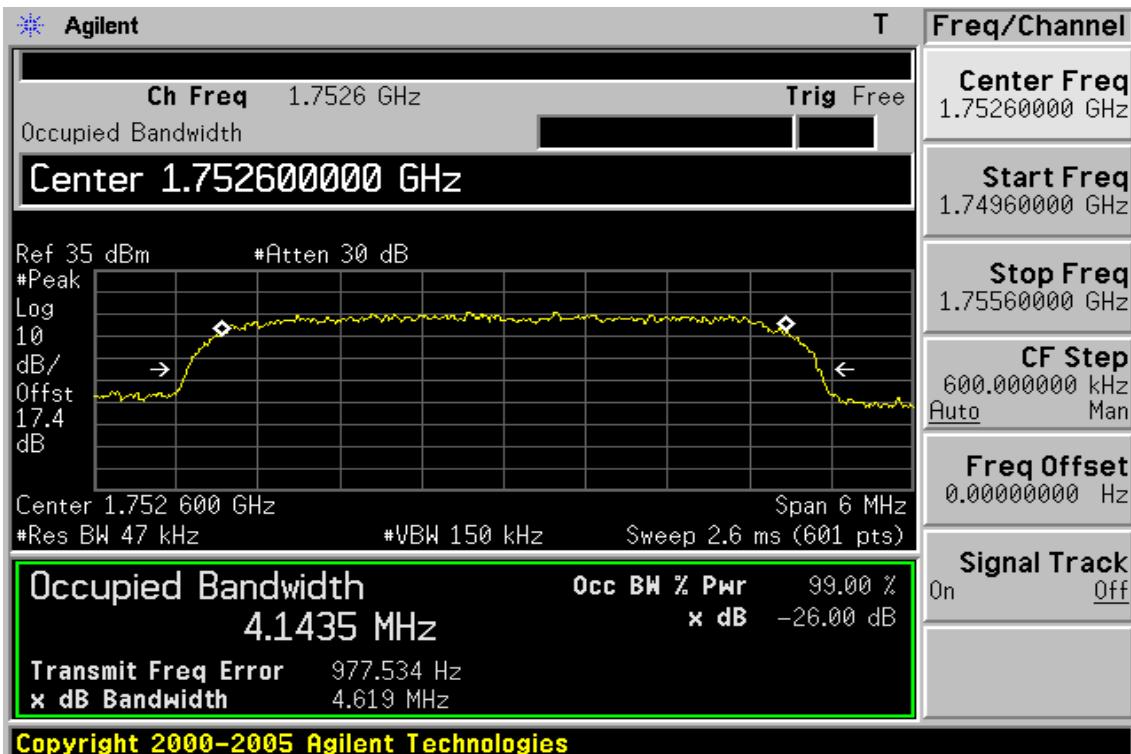
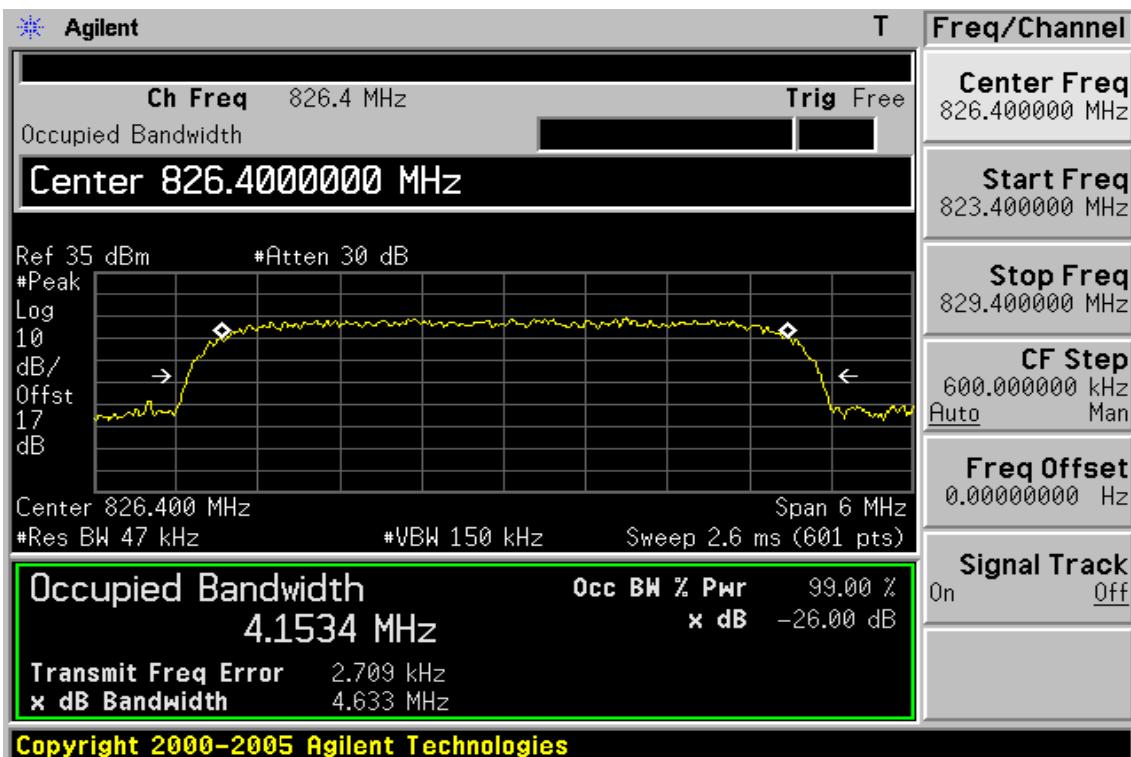


Figure 9-16: HSDPA V Channel Low



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Figure 9-17 HSDPA V Channel Mid

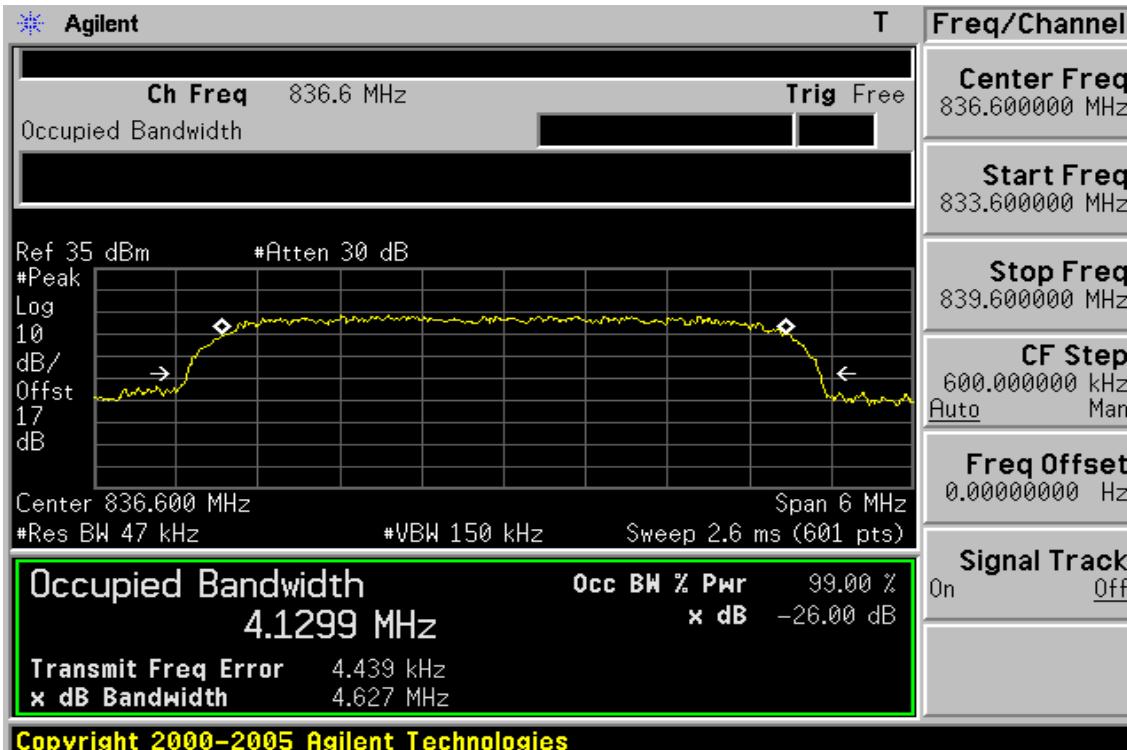
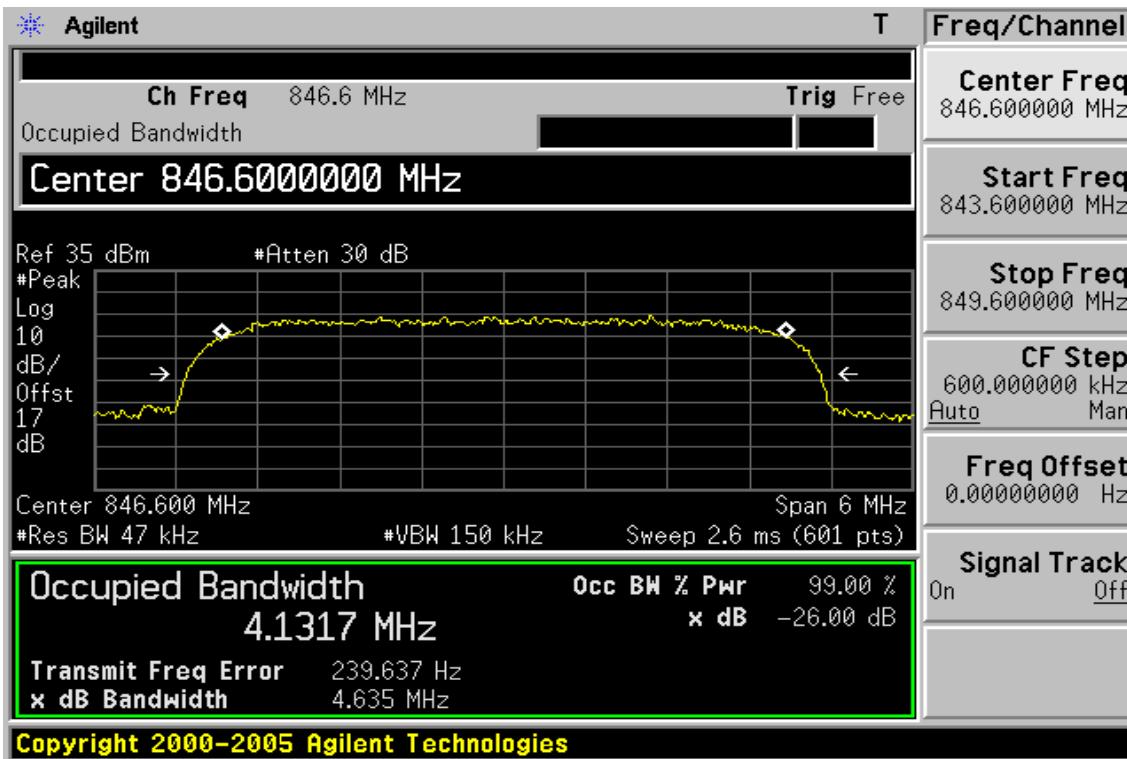


Figure 9-18: HSDPA V Channel High



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Figure 9-19: HSUPA II Channel Low

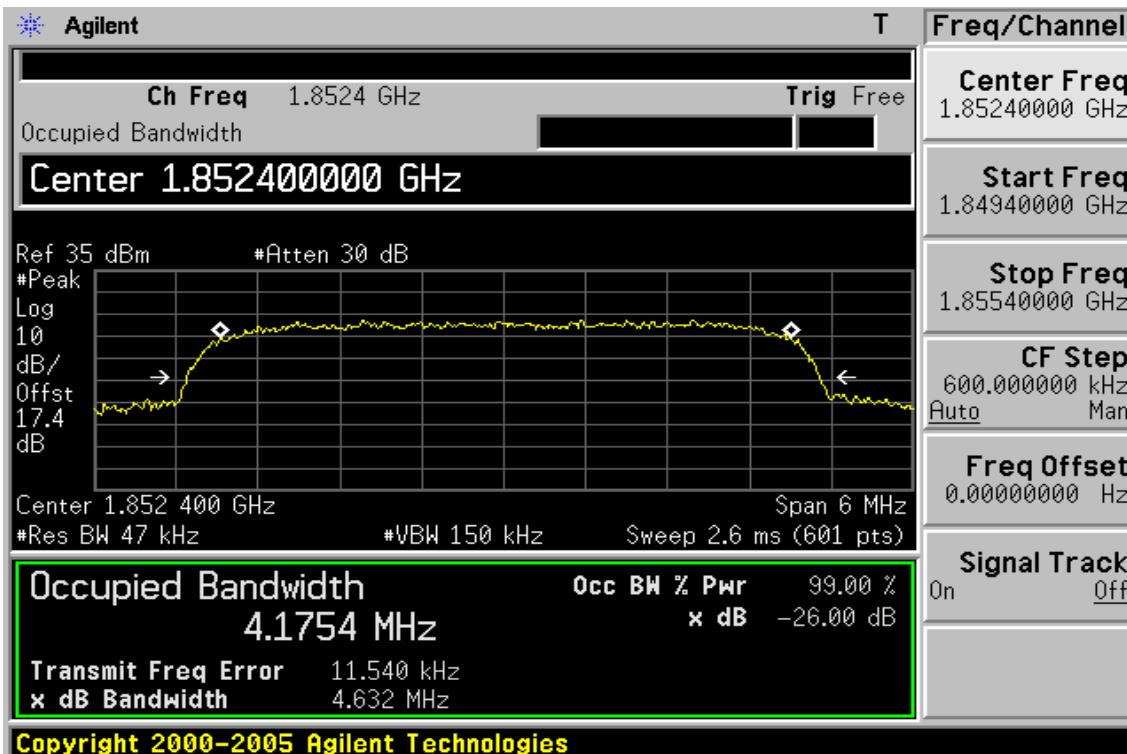
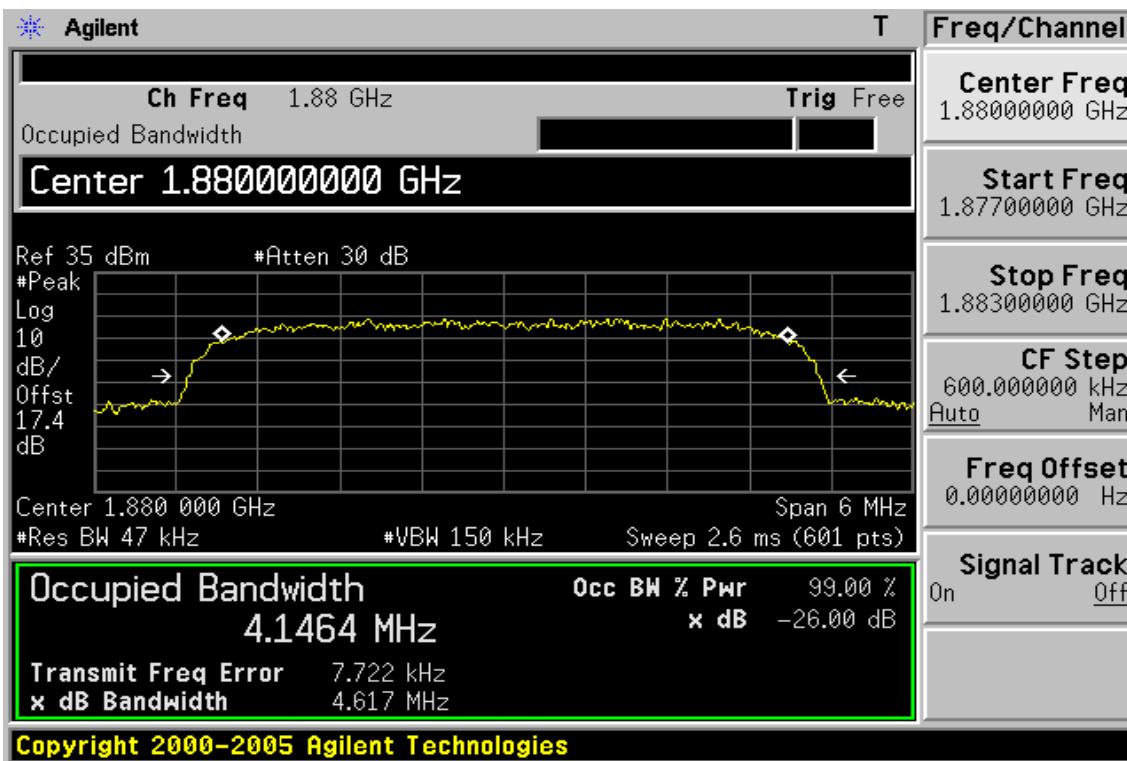


Figure 9-20 HSUPA II Channel Mid



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Figure 9-21: HSUPA II Channel High

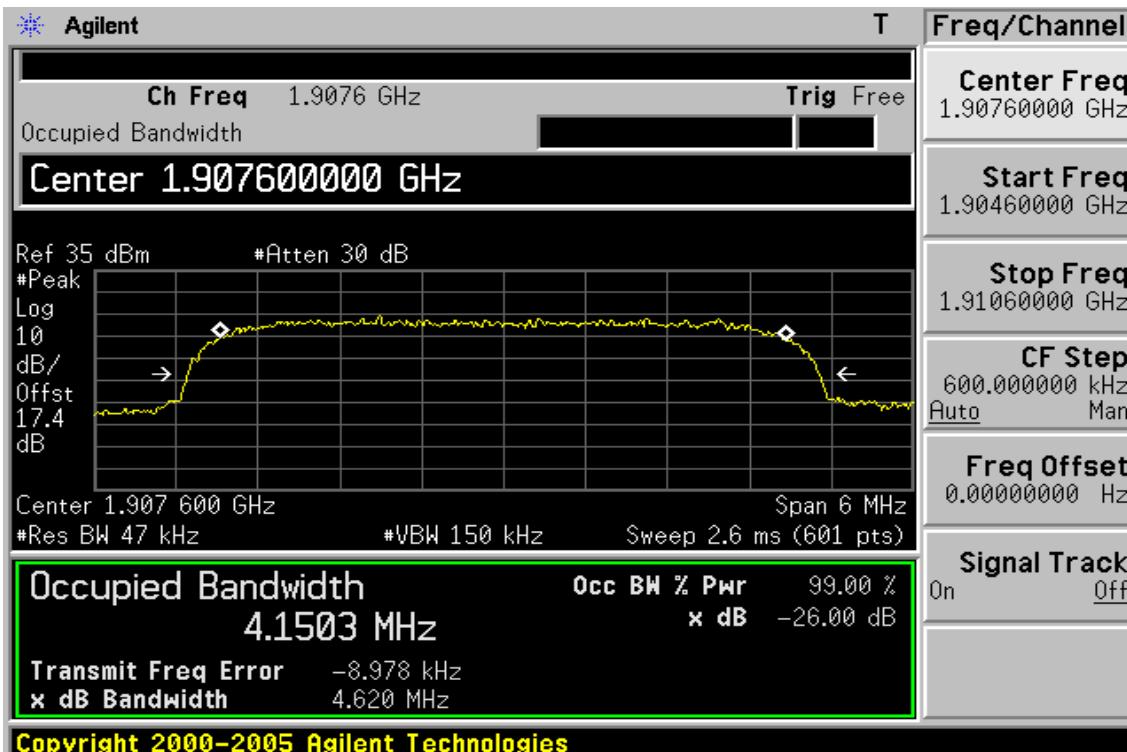
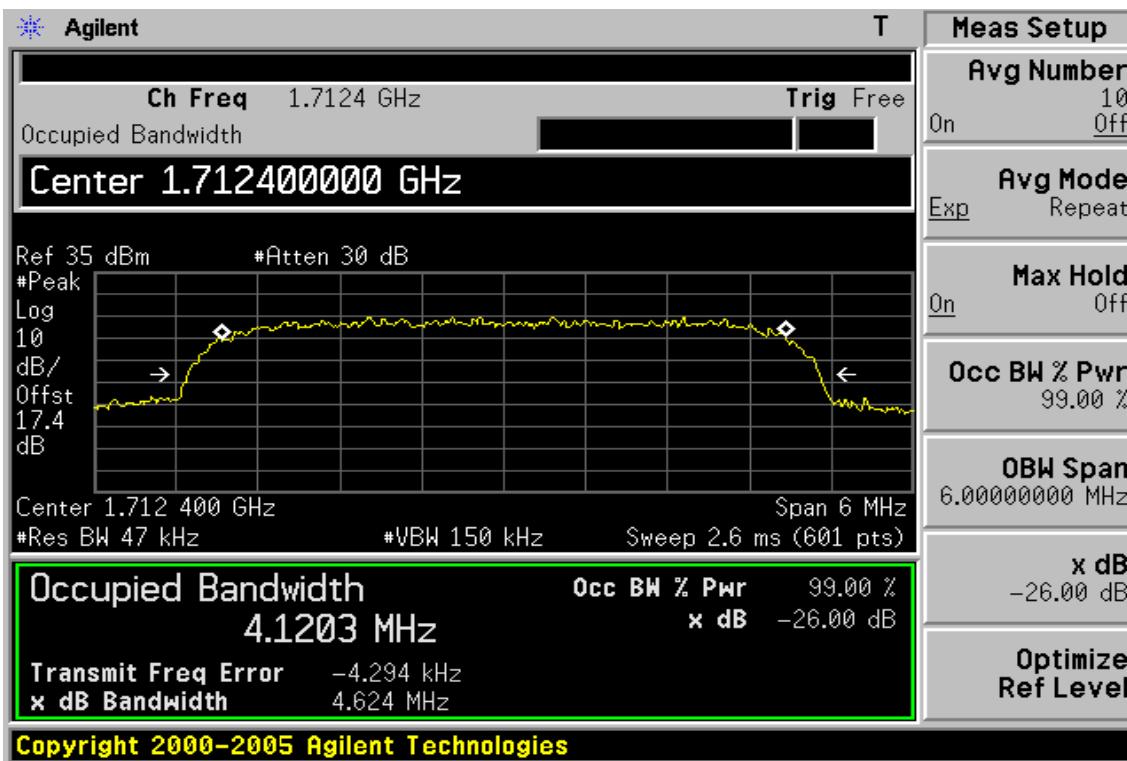


Figure 9-22: HSUPA IV Channel Low



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Figure 9-23 HSUPA IV Channel Mid

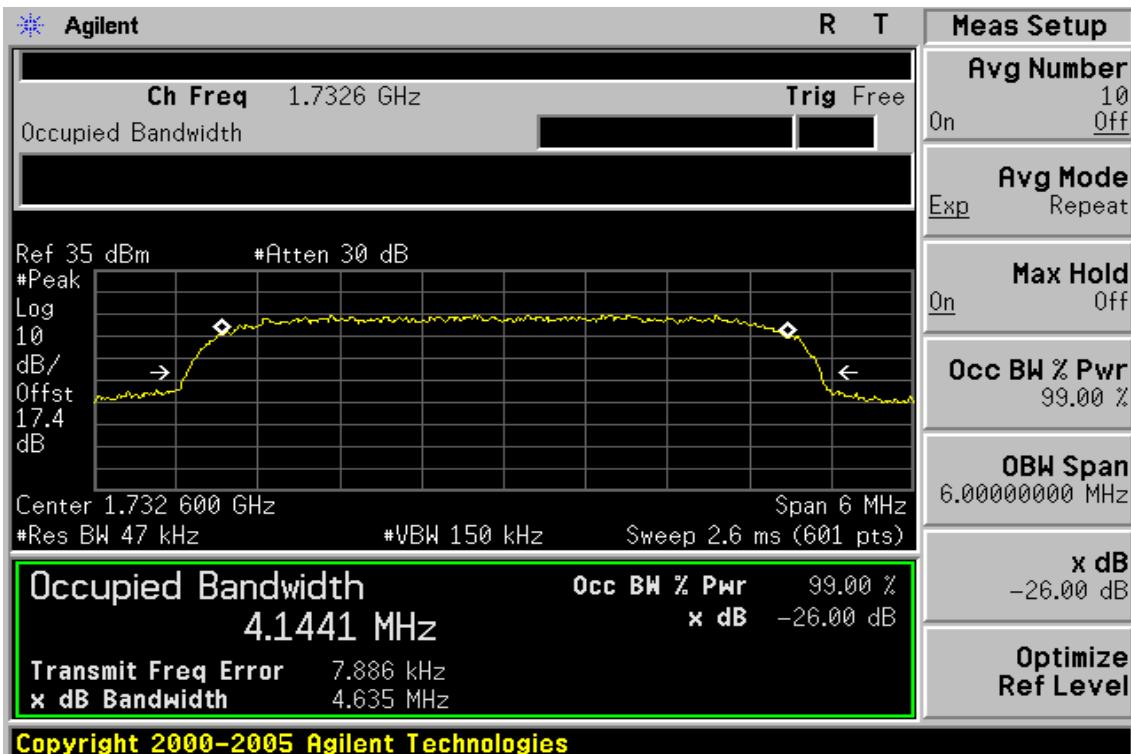
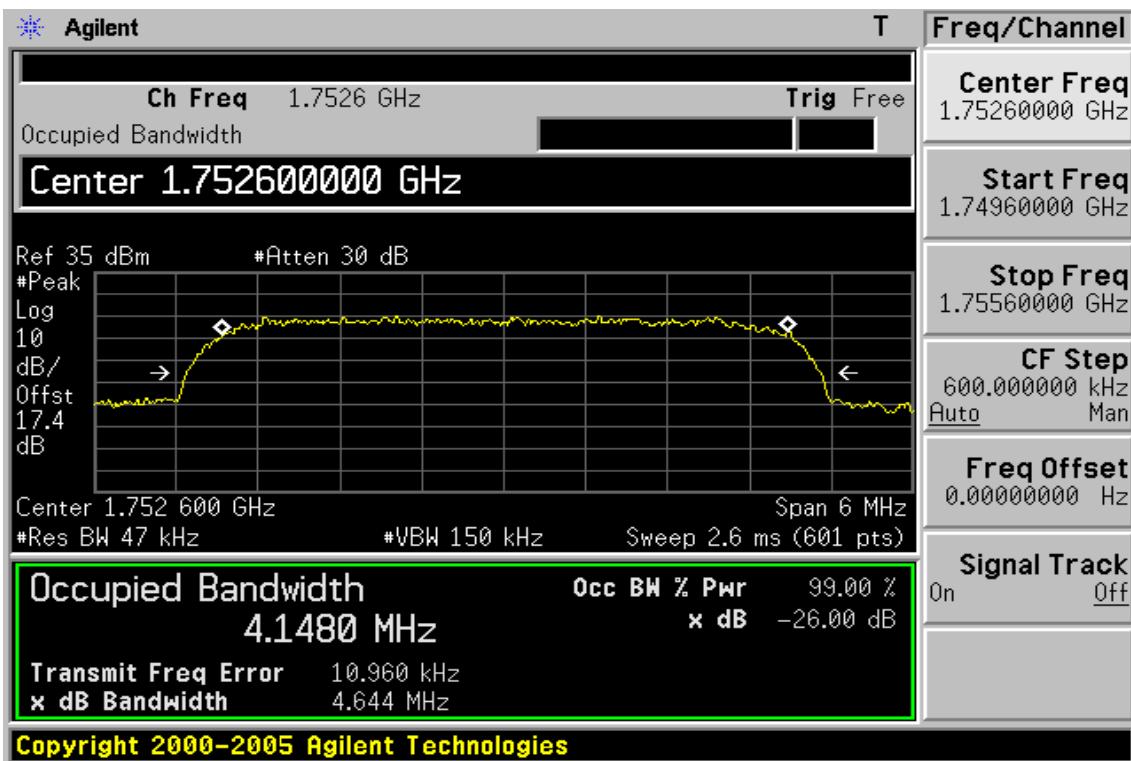


Figure 9-24: HSUPA IV Channel High



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Figure 9-25: HSUPA V Channel Low

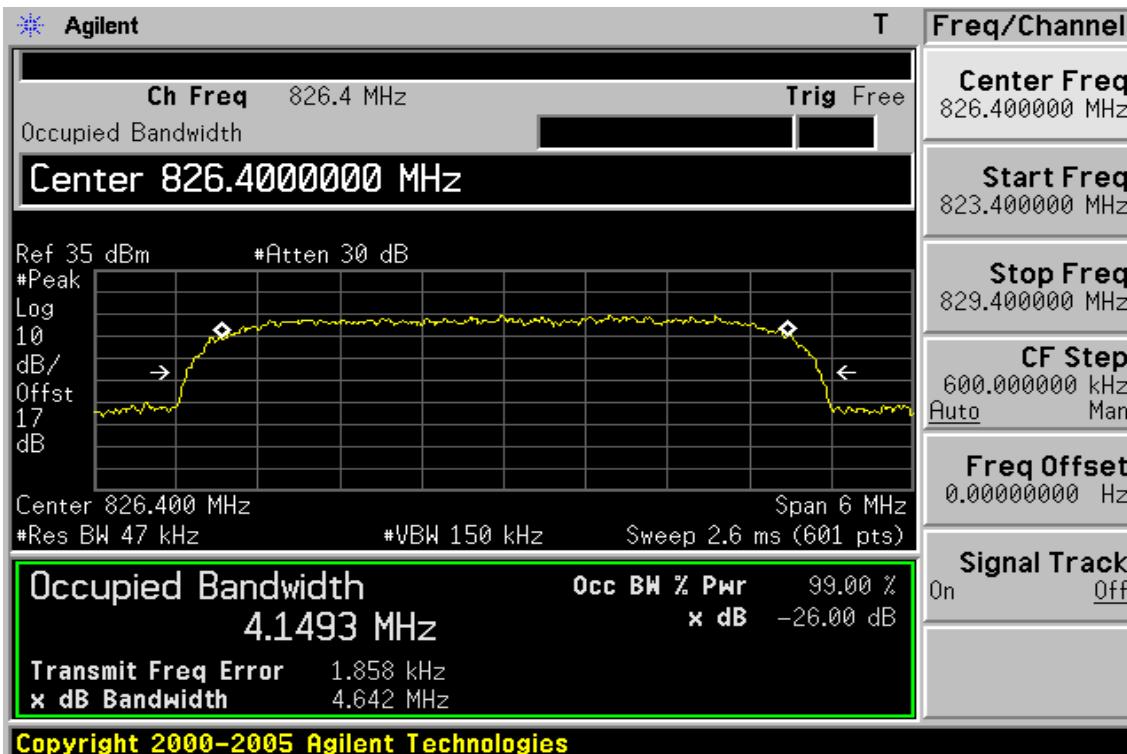
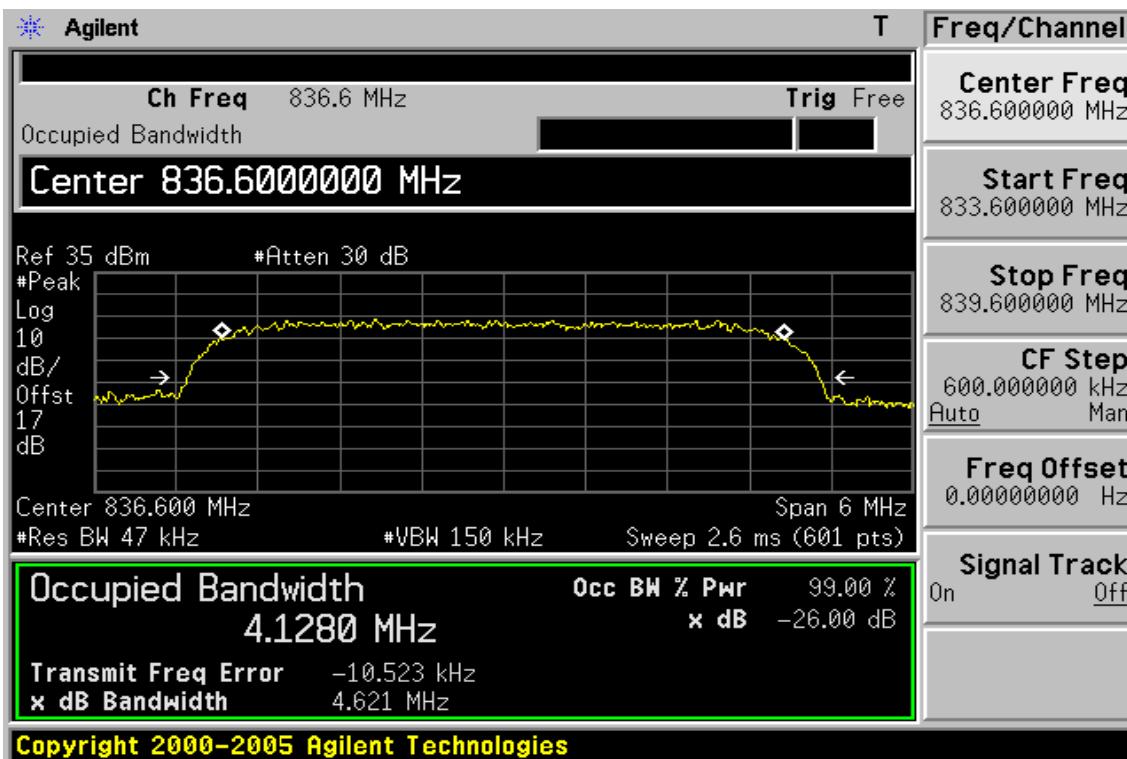


Figure 9-26 HSUPA V Channel Mid



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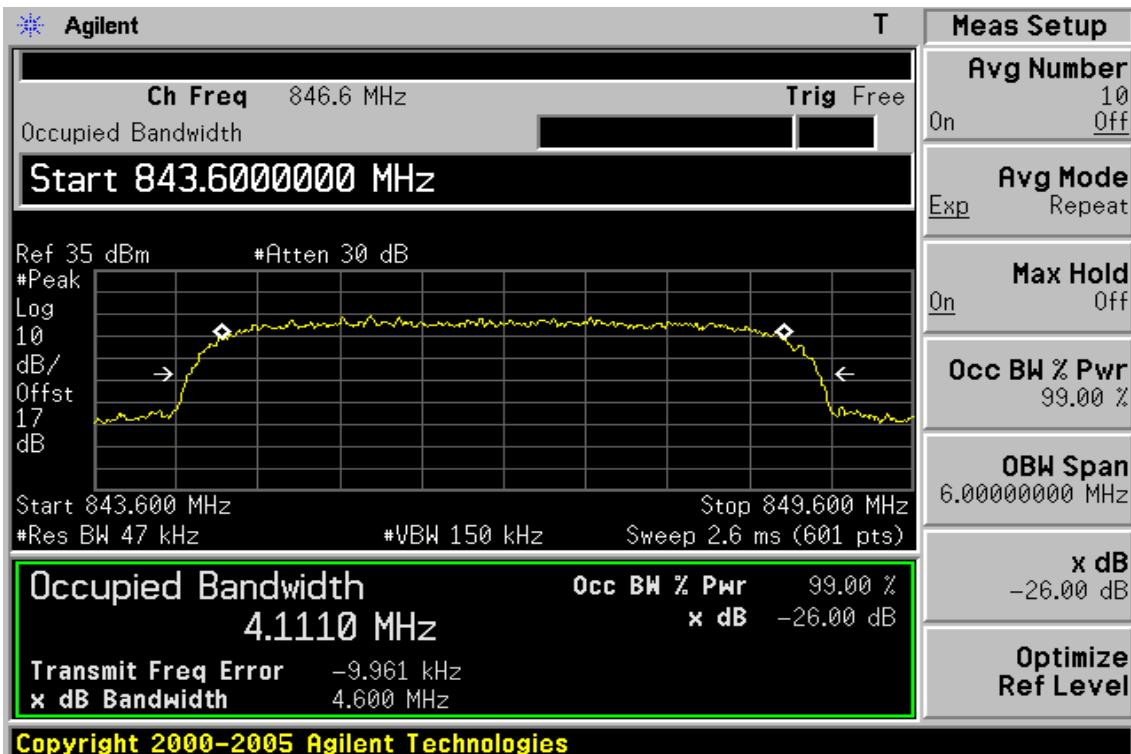
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Figure 9-27: HSUPA V Channel High



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Figure 9-28: 5MHz BW LTE-Band 4(QPSK RB Number: 25 Offset: 0) Channel Low

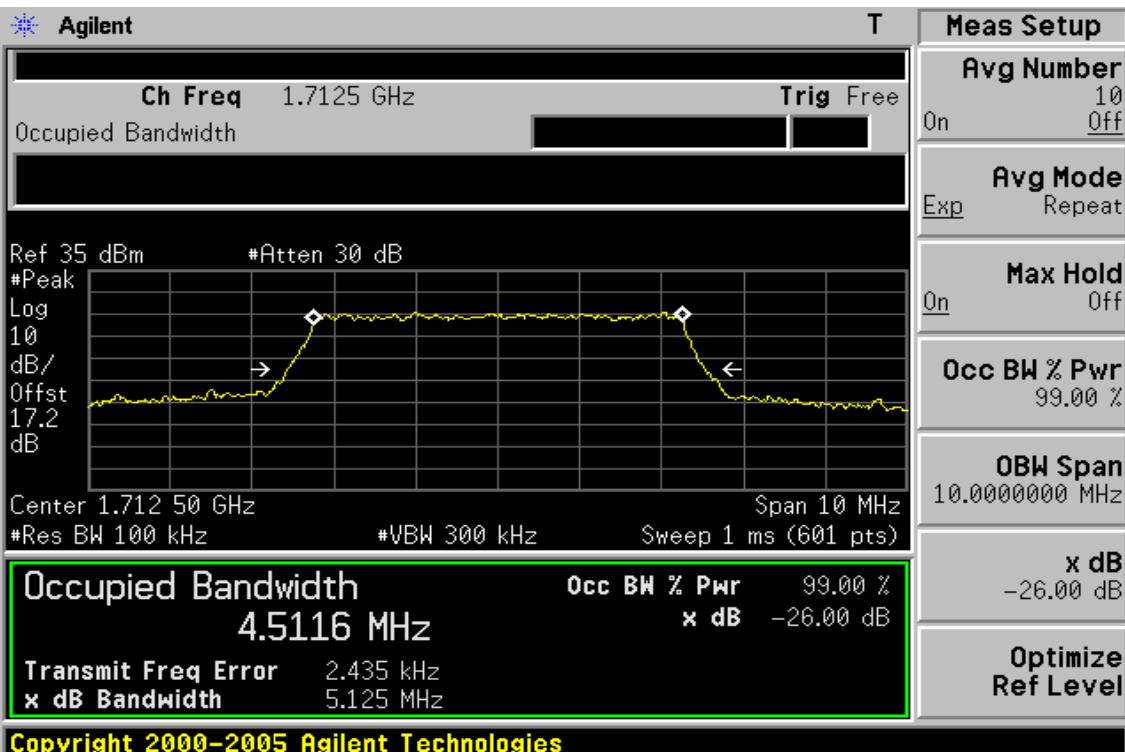
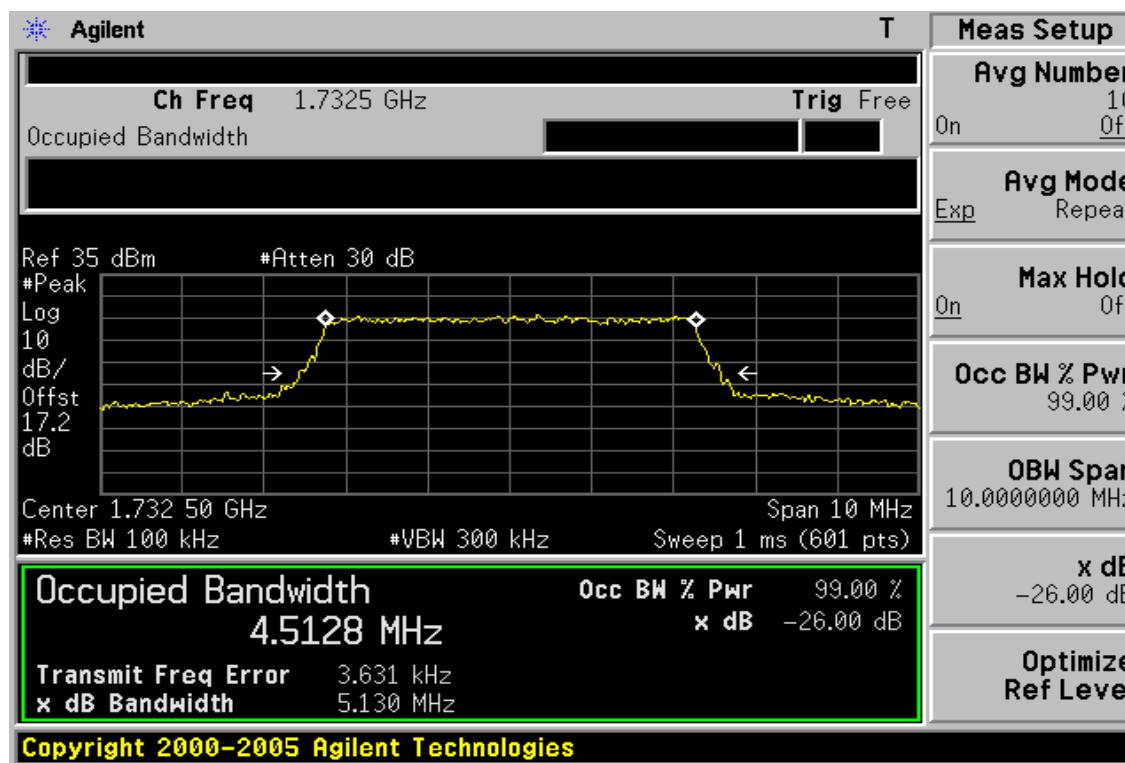


Figure 9-29: 5MHz BW LTE-Band 4(QPSK RB Number: 25 Offset: 0) Channel Mid



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Figure 9-30: 5MHz BW LTE-Band 4(QPSK RB Number: 25 Offset: 0) Channel High

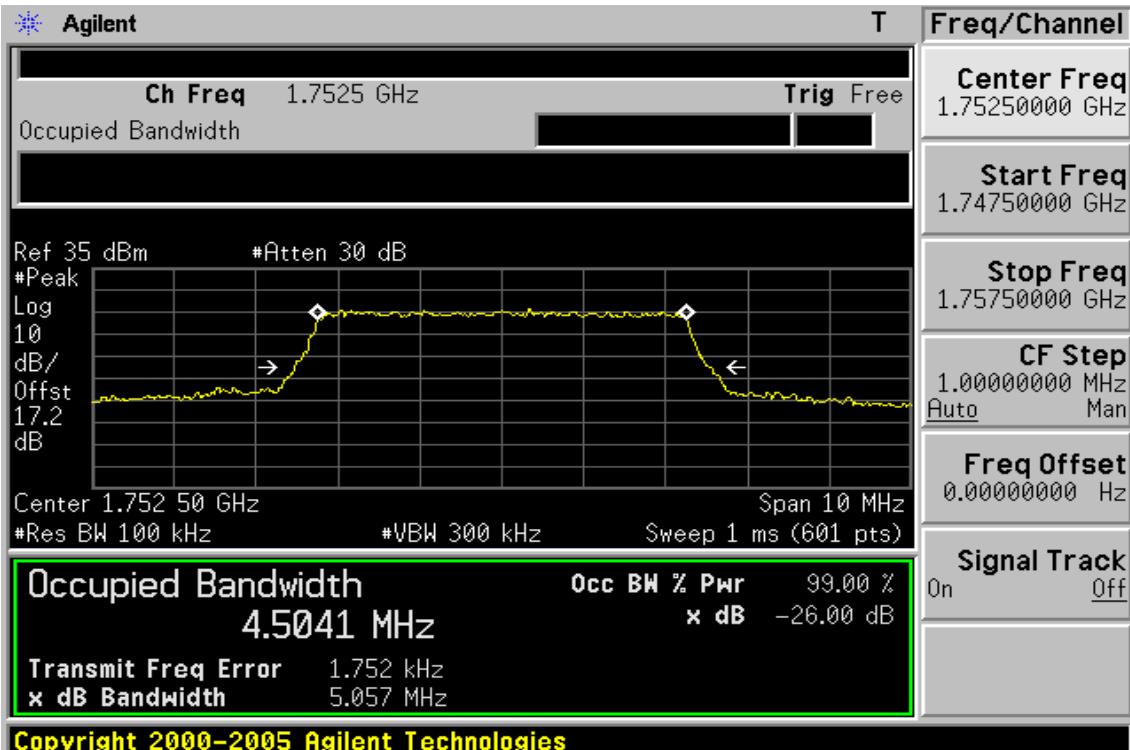
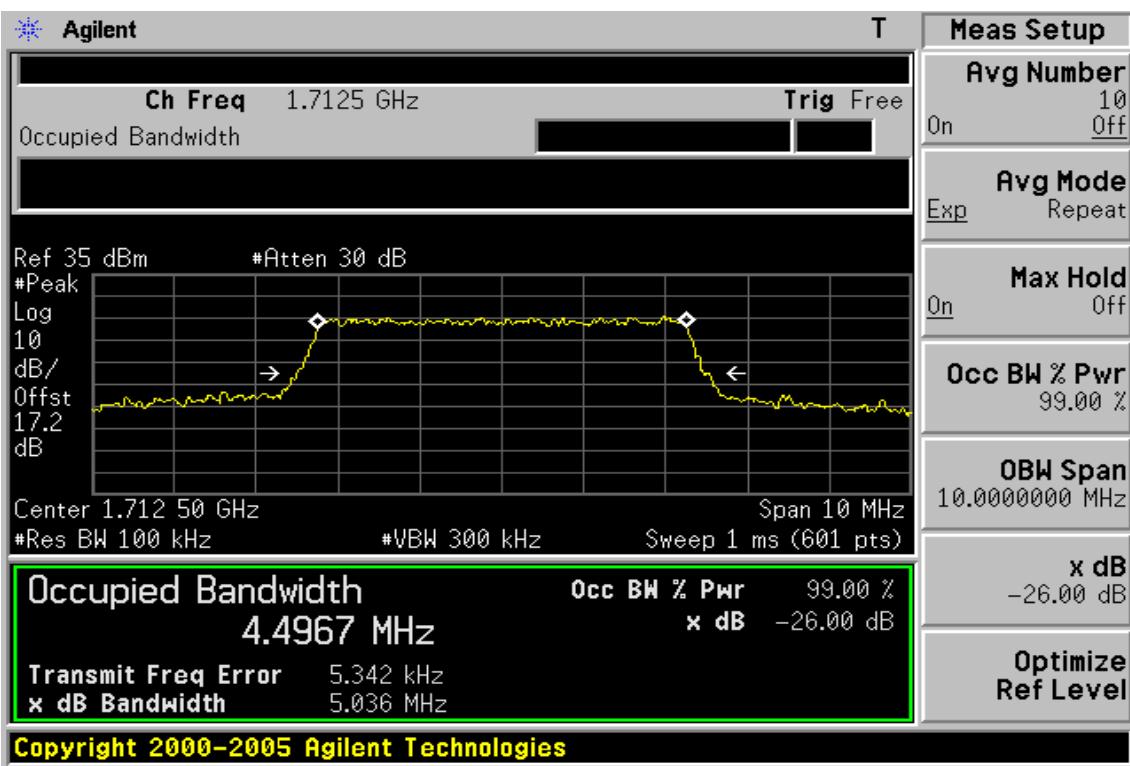


Figure 9-31: 5MHz BW LTE-Band 4(16QAM RB Number: 25 Offset: 0) Channel Low



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Figure 9-32: 5MHz BW LTE-Band 4(16QAM RB Number: 25 Offset: 0) Channel Mid

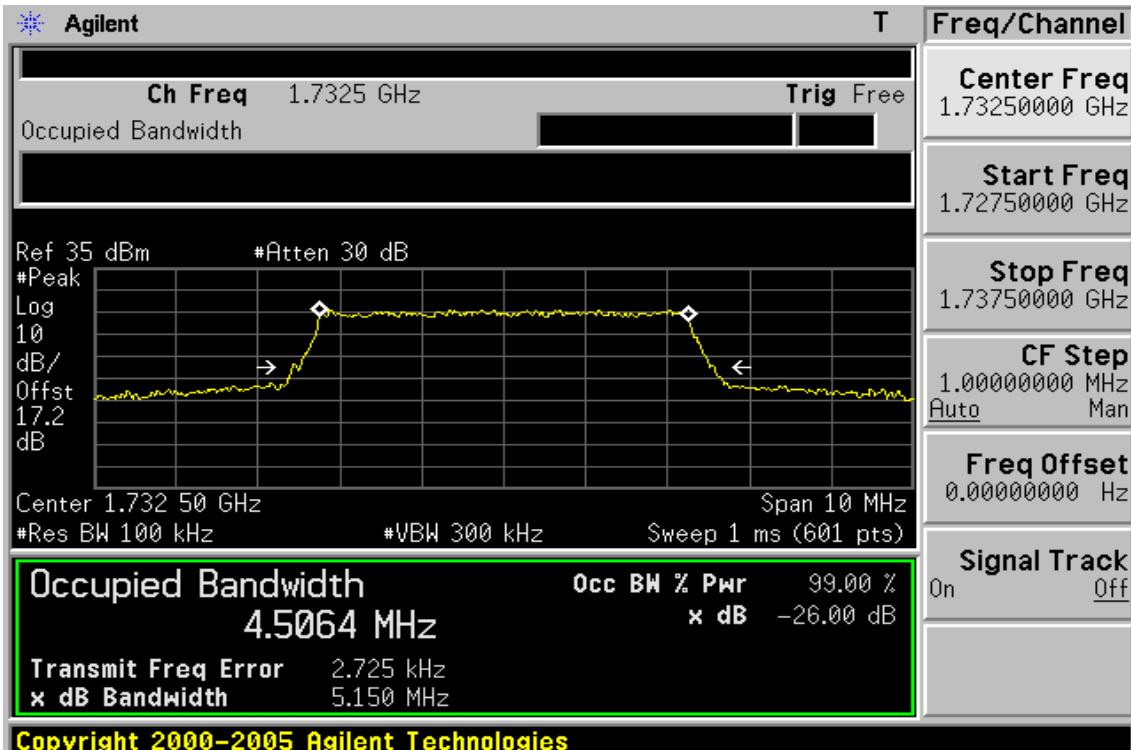
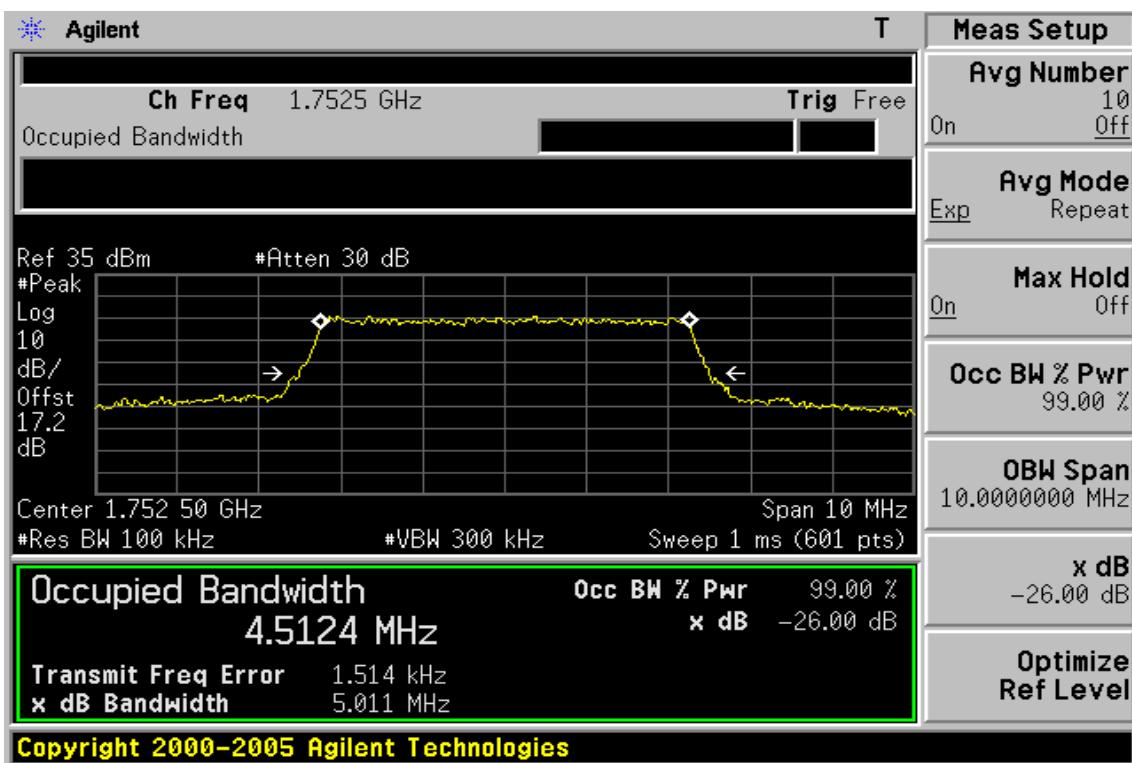


Figure 9-33: 5MHz BW LTE-Band 4(16QAM RB Number: 25 Offset: 0) Channel High



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Figure 9-34: 10MHz BW LTE-Band 4(QPSK RB Number: 50 Offset: 0) Channel Low

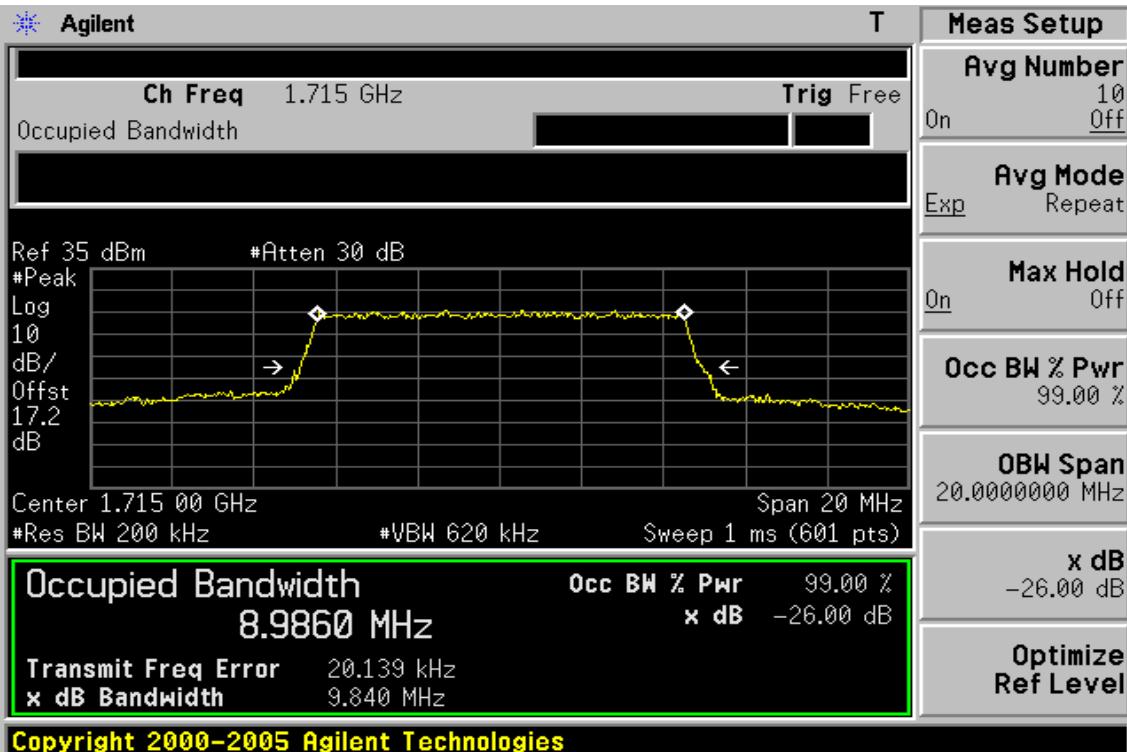
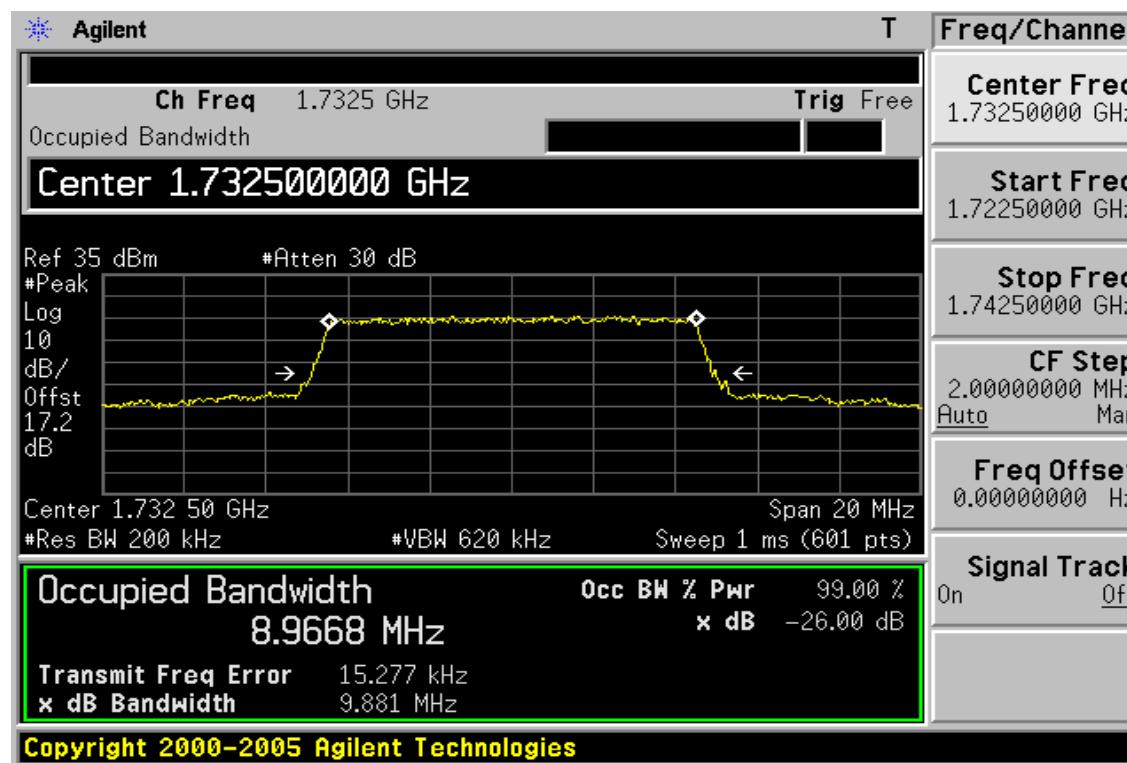


Figure 9-35: 10MHz BW LTE-Band 4(QPSK RB Number: 50 Offset: 0) Channel Mid



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Figure 9-36: 10MHz BW LTE-Band 4(QPSK RB Number: 50 Offset: 0) Channel High

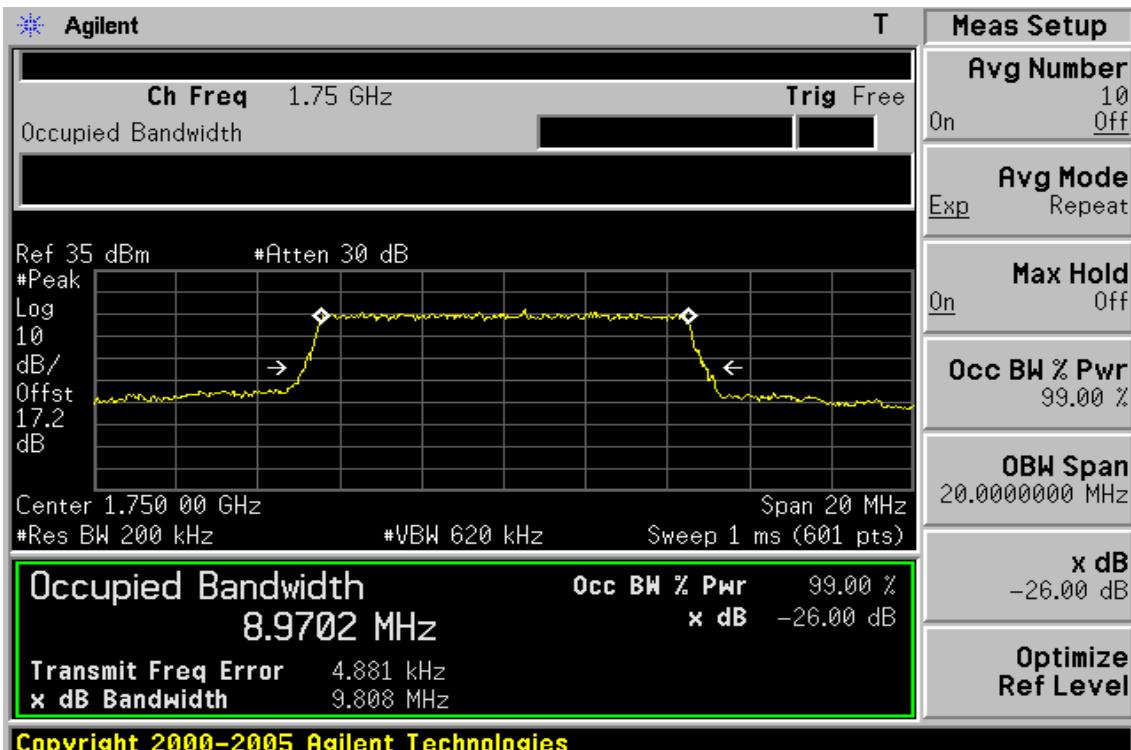
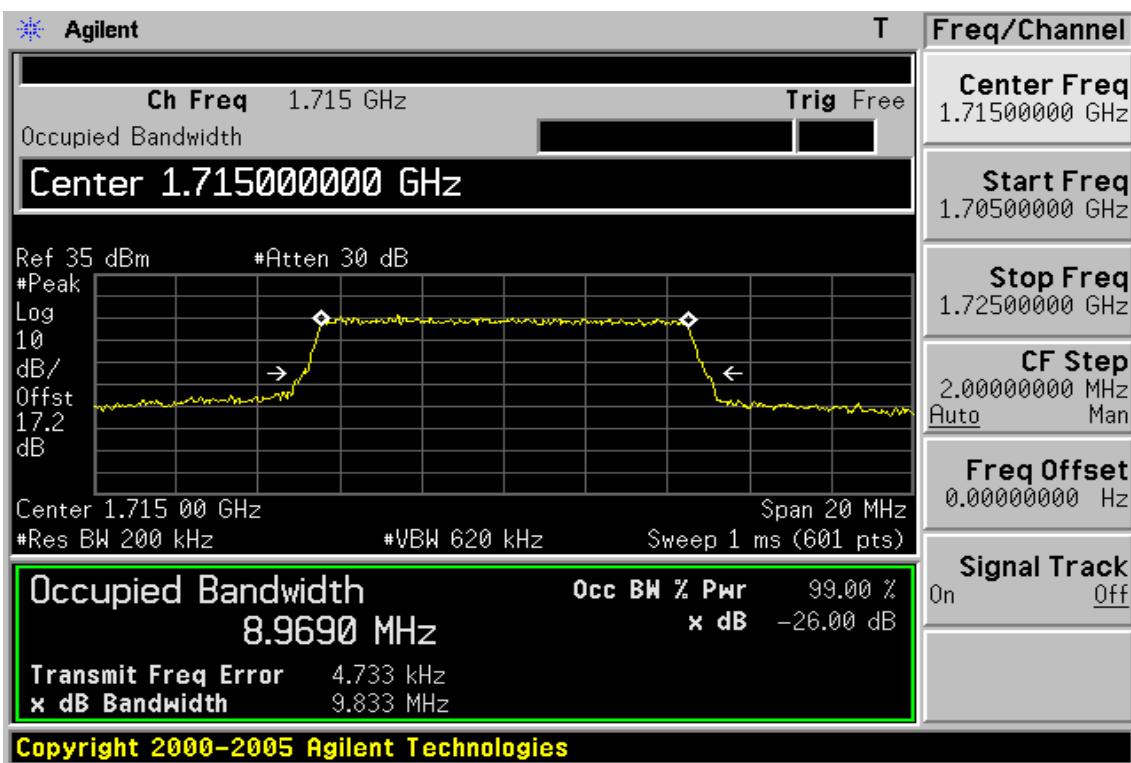


Figure 9-37: 10MHz BW LTE-Band 4(16QAM RB Number: 50 Offset: 0) Channel Low



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Figure 9-38: 10MHz BW LTE-Band 4(16QAM RB Number: 50 Offset: 0) Channel Mid

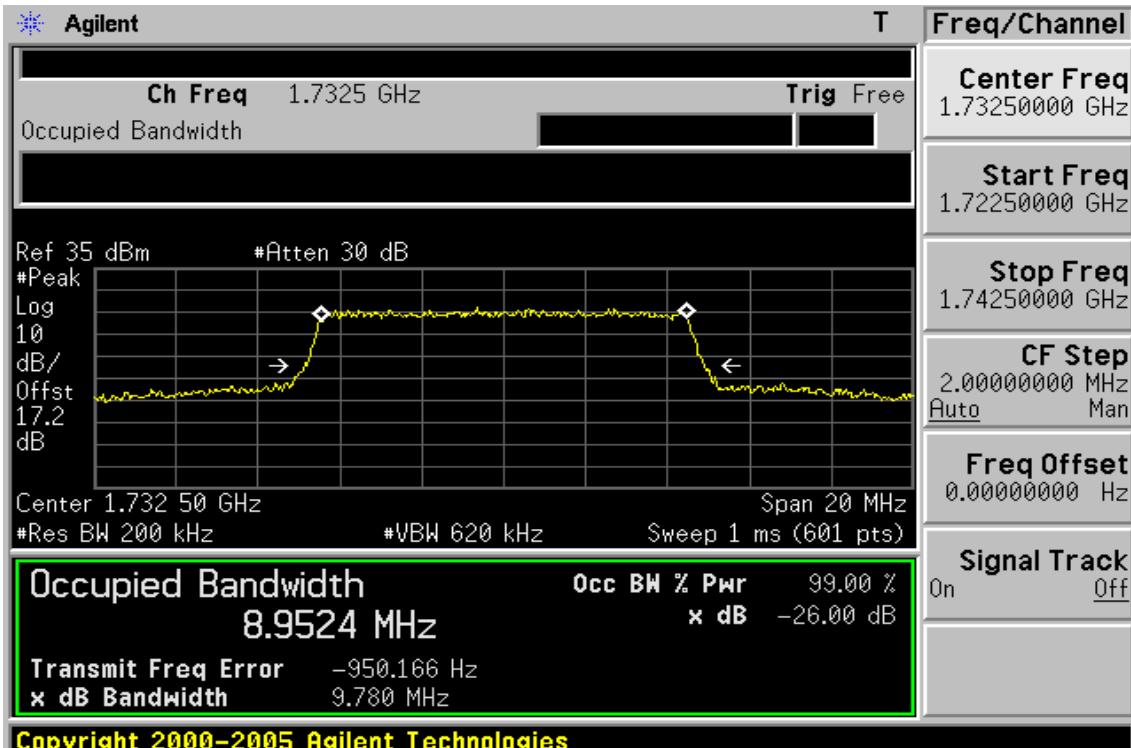
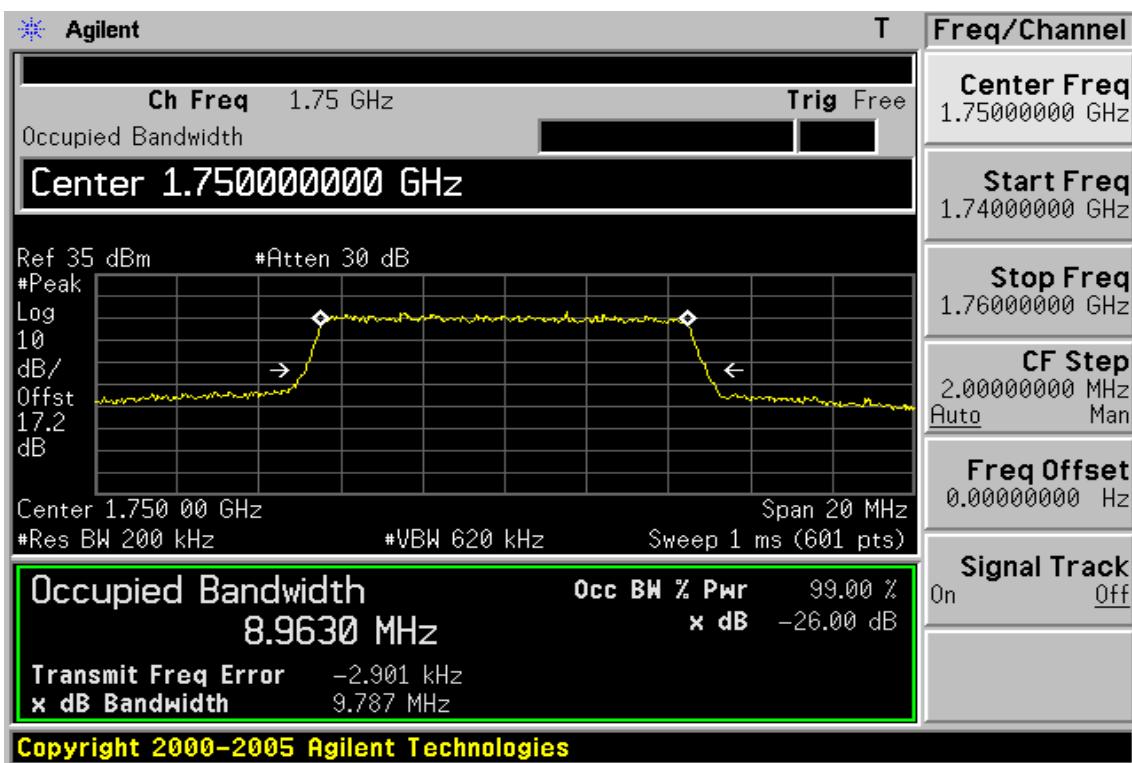


Figure 9-39: 10MHz BW LTE-Band 4(16QAM RB Number: 50 Offset: 0) Channel High



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Figure 9-40: 5MHz BW LTE-Band 17(QPSK RB Number: 25 Offset: 0) Channel Low

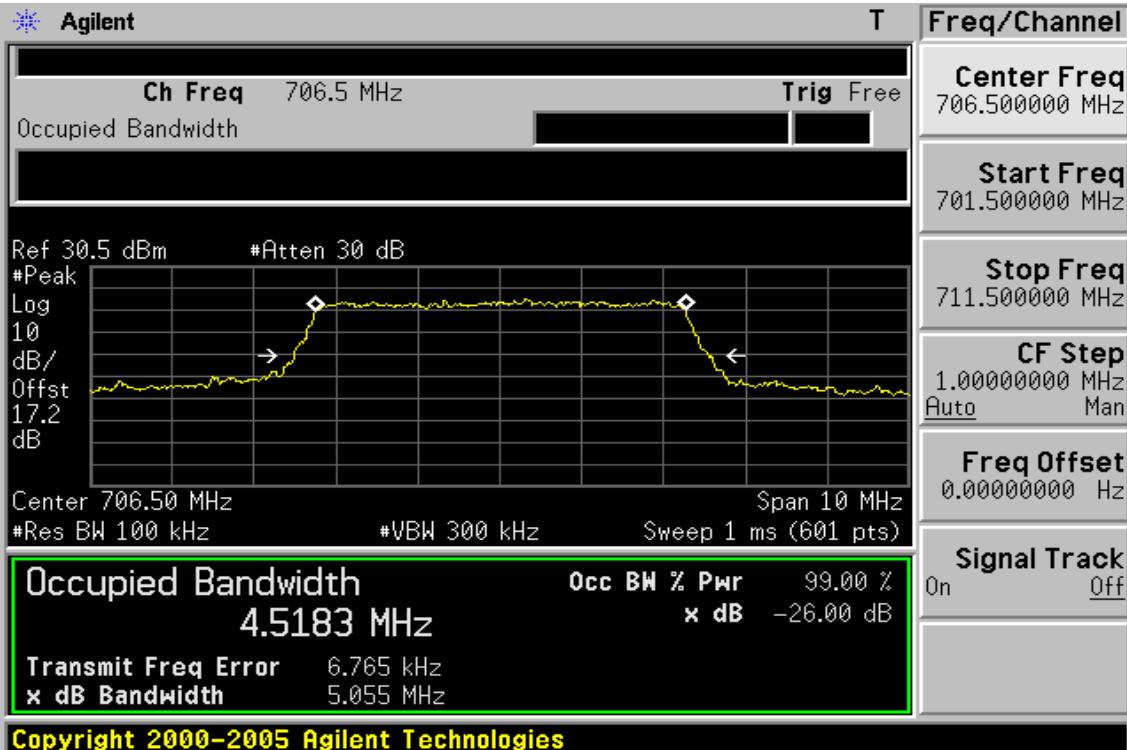
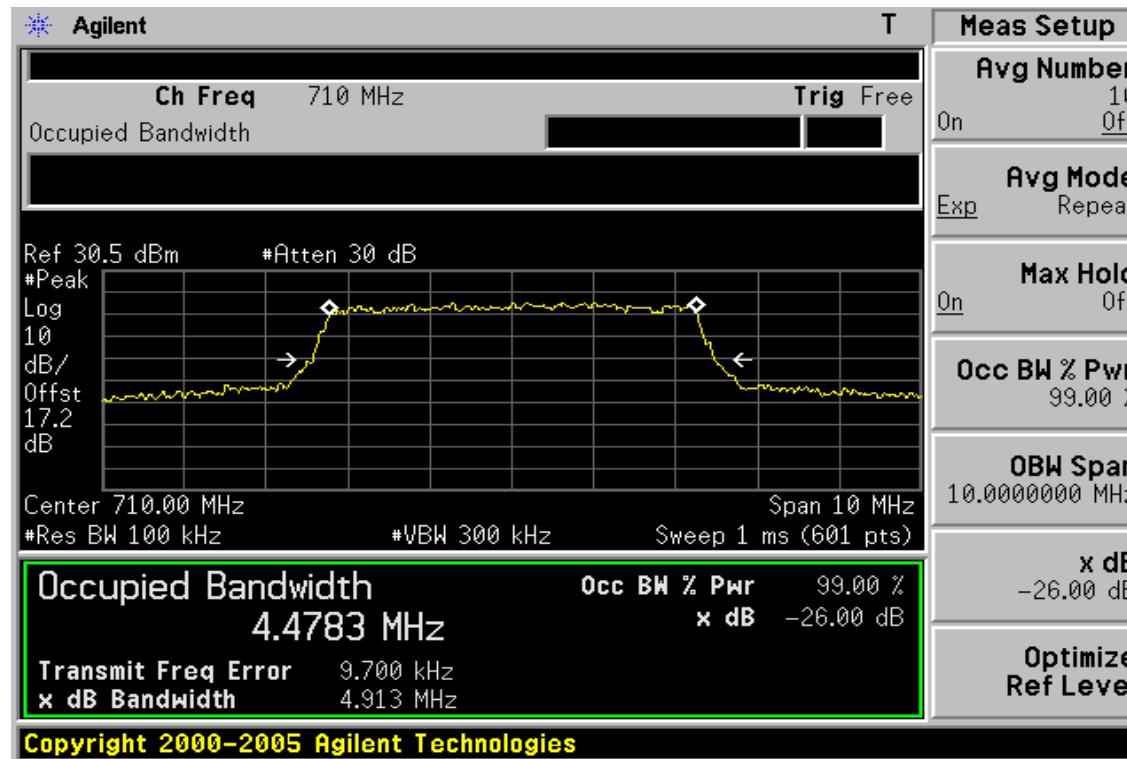


Figure 9-41: 5MHz BW LTE-Band 17(QPSK RB Number: 25 Offset: 0) Channel Mid



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Figure 9-42: 5MHz BW LTE-Band 17(QPSK RB Number: 25 Offset: 0) Channel High

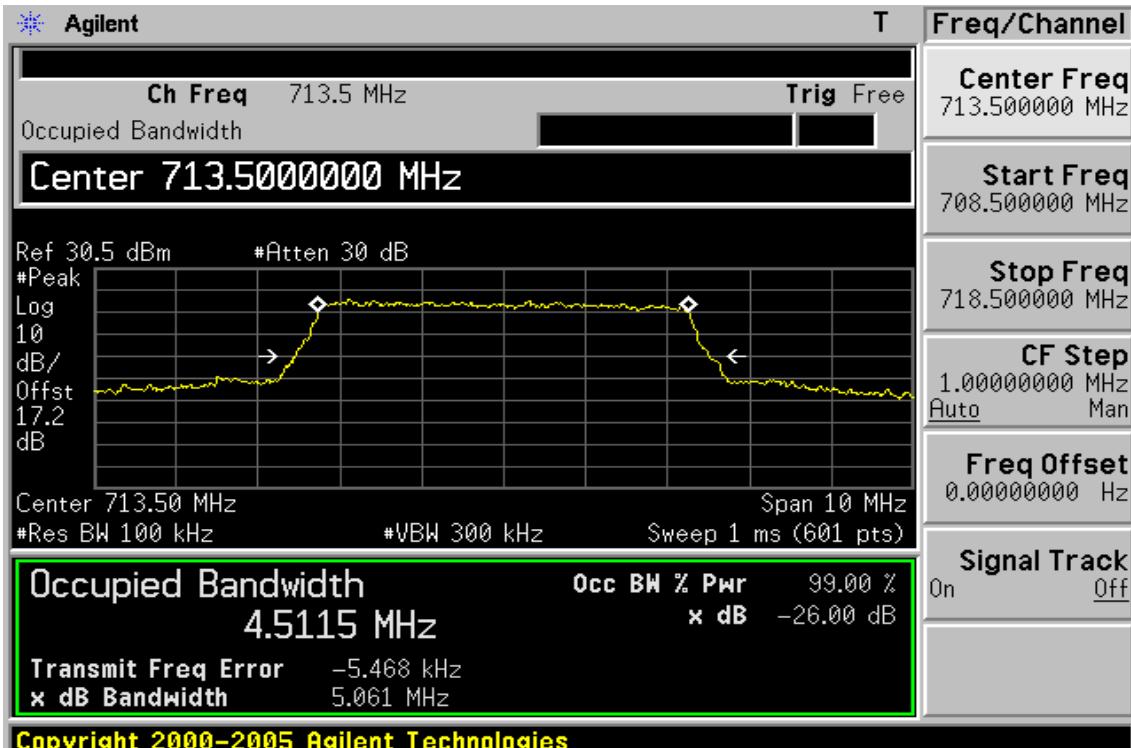
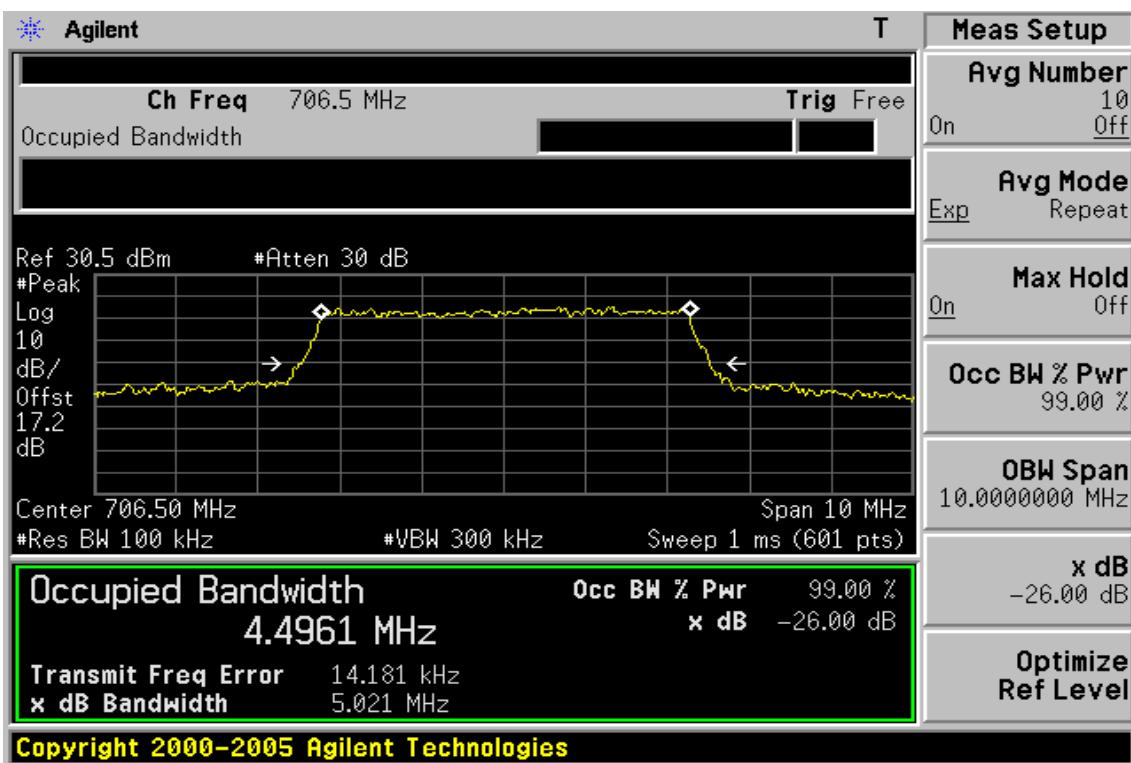


Figure 9-43: 5MHz BW LTE-Band 17(16QAM RB Number: 25 Offset: 0) Channel Low



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Figure 9-44: 5MHz BW LTE-Band 17(16QAM RB Number: 25 Offset: 0) Channel Mid

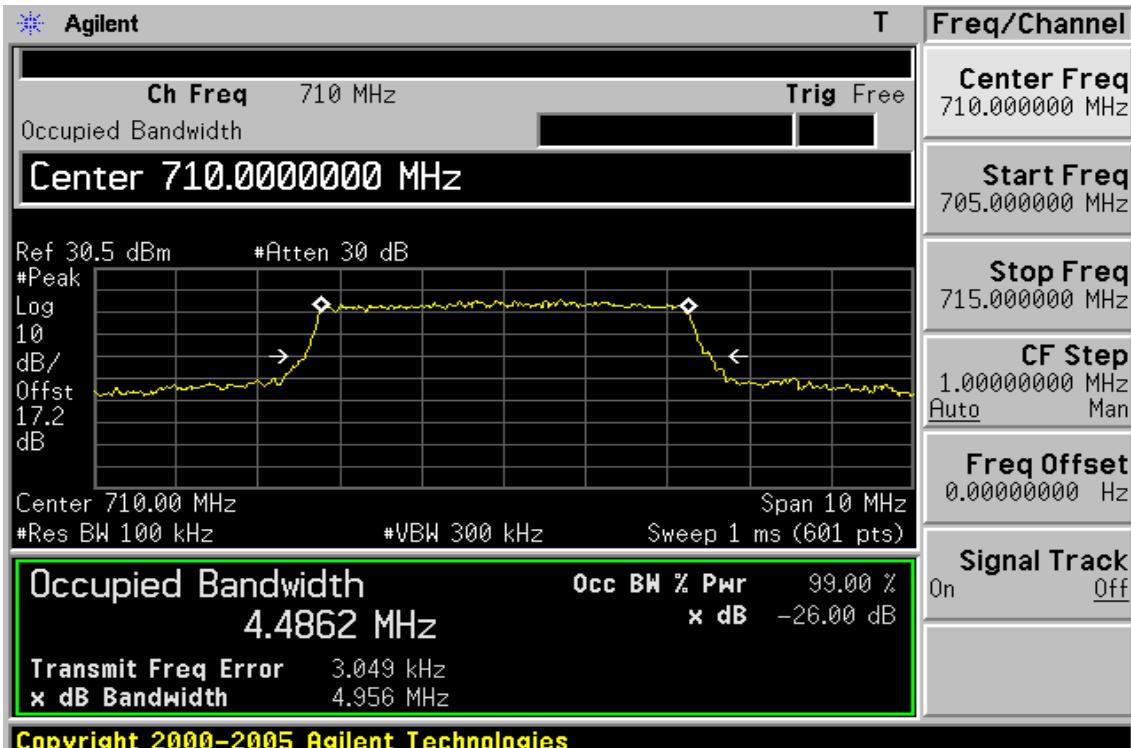
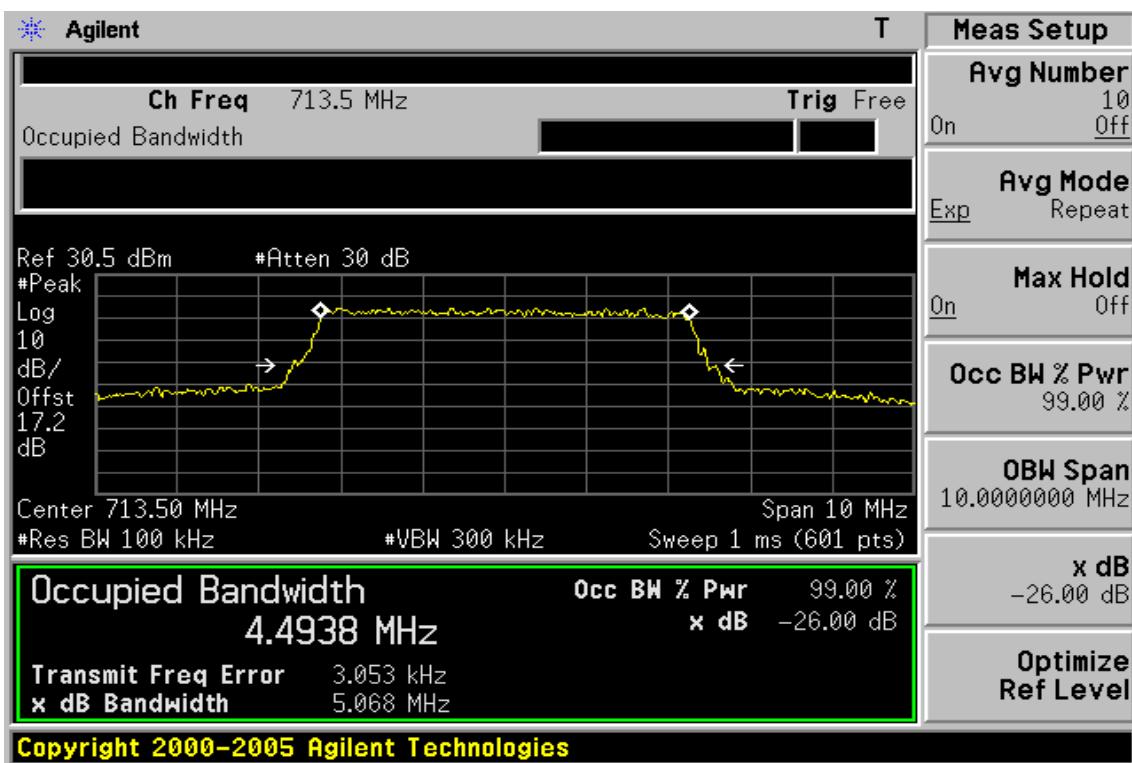


Figure 9-45: 5MHz BW LTE-Band 17(16QAM RB Number: 25 Offset: 0) Channel High



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Figure 9-46: 10MHz BW LTE-Band 17(QPSK RB Number: 50 Offset: 0) Channel Low

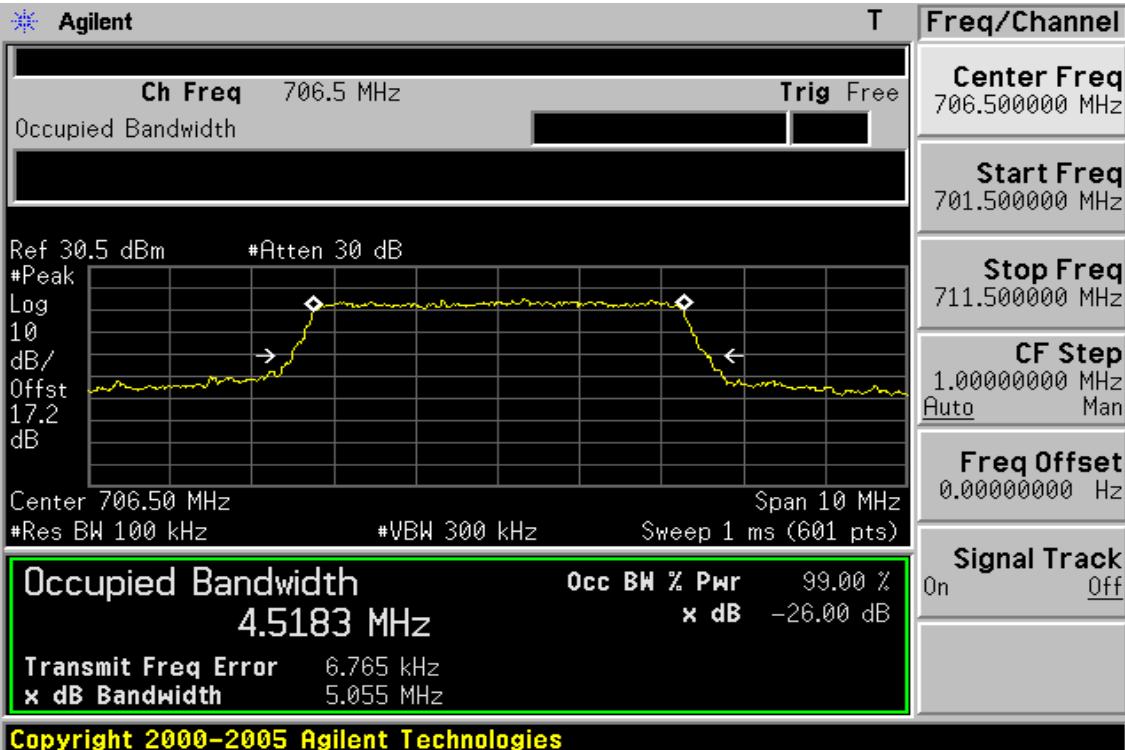
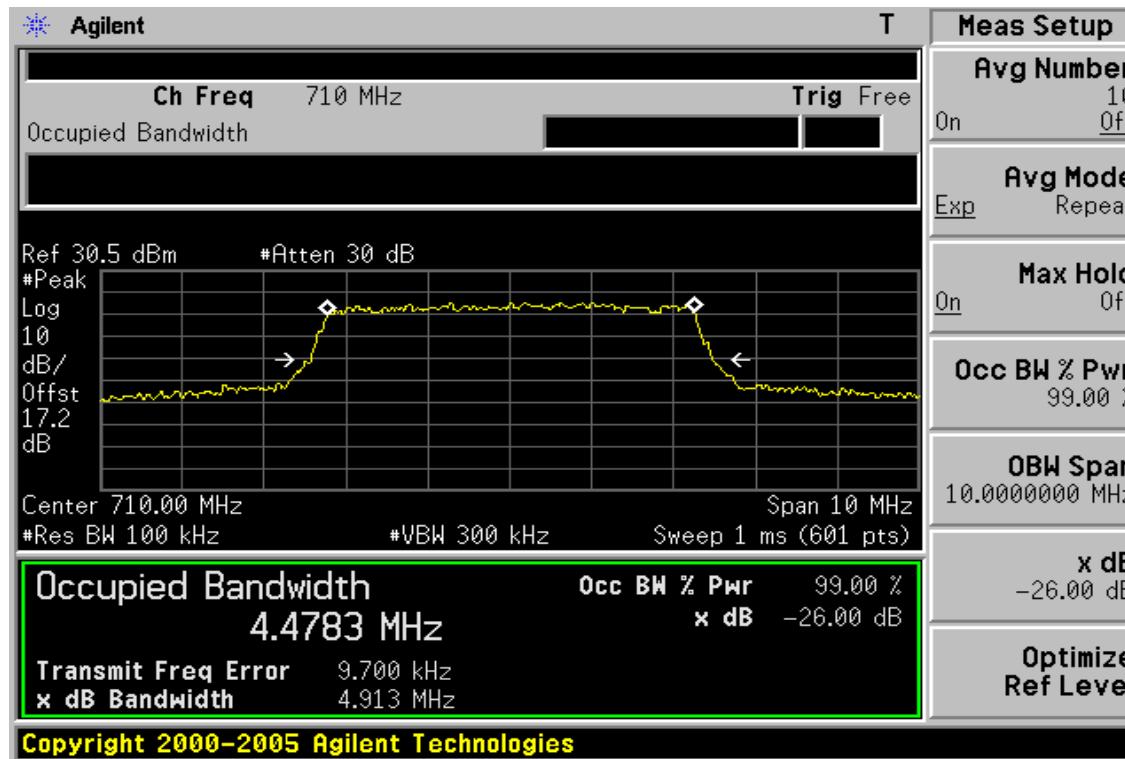


Figure 9-47: 10MHz BW LTE-Band 17(QPSK RB Number: 50 Offset: 0) Channel Mid



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Figure 9-48: 10MHz BW LTE-Band 17(QPSK RB Number: 50 Offset: 0) Channel High

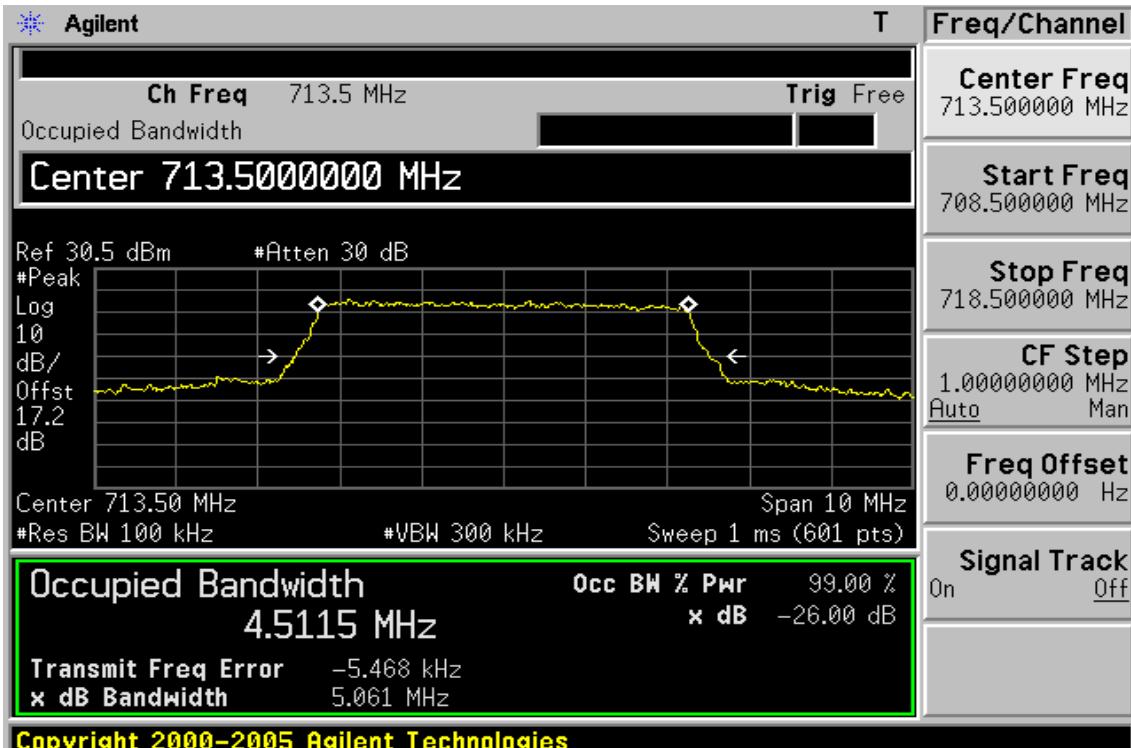
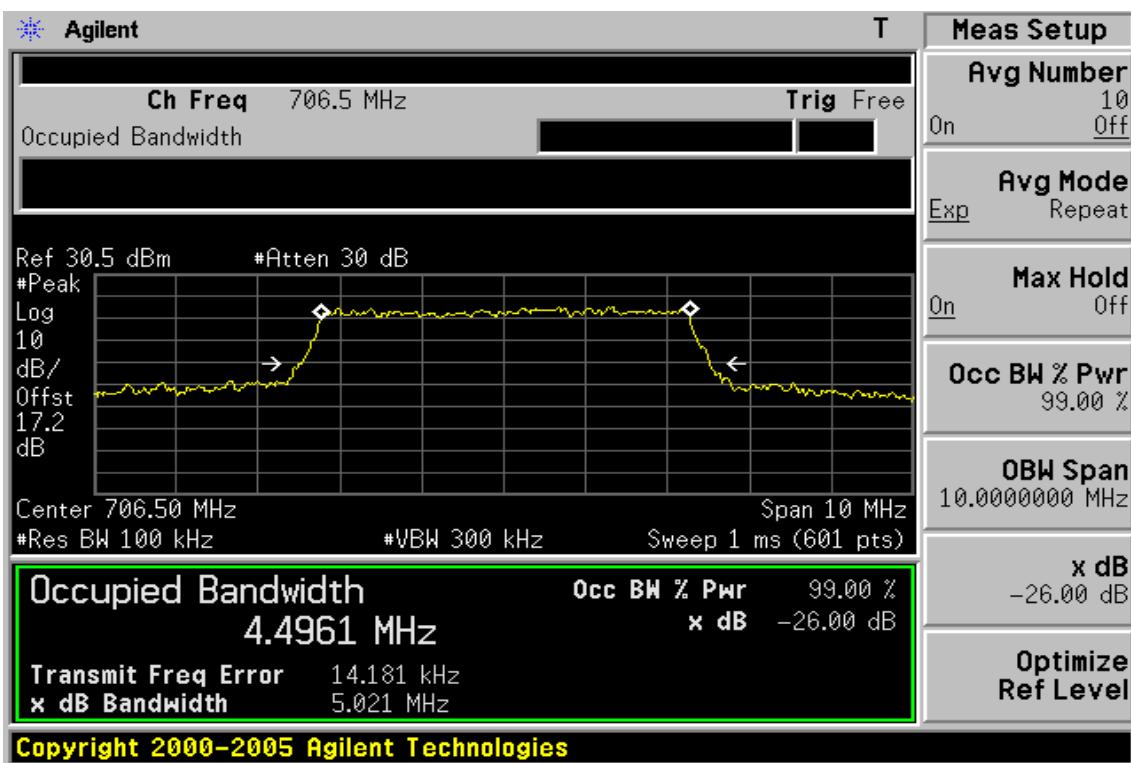


Figure 9-49: 10MHz BW LTE-Band 17(16QAM RB Number: 50 Offset: 0) Channel Low



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Figure 9-50: 10MHz BW LTE-Band 17(16QAM RB Number: 50 Offset: 0) Channel Mid

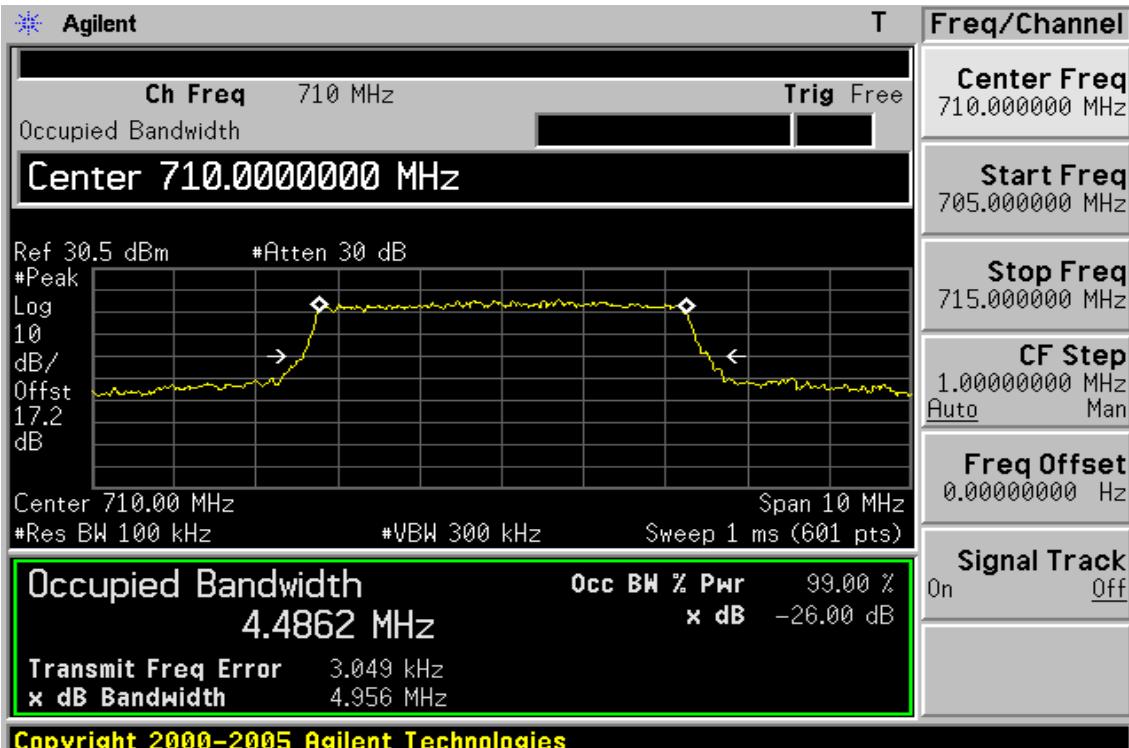
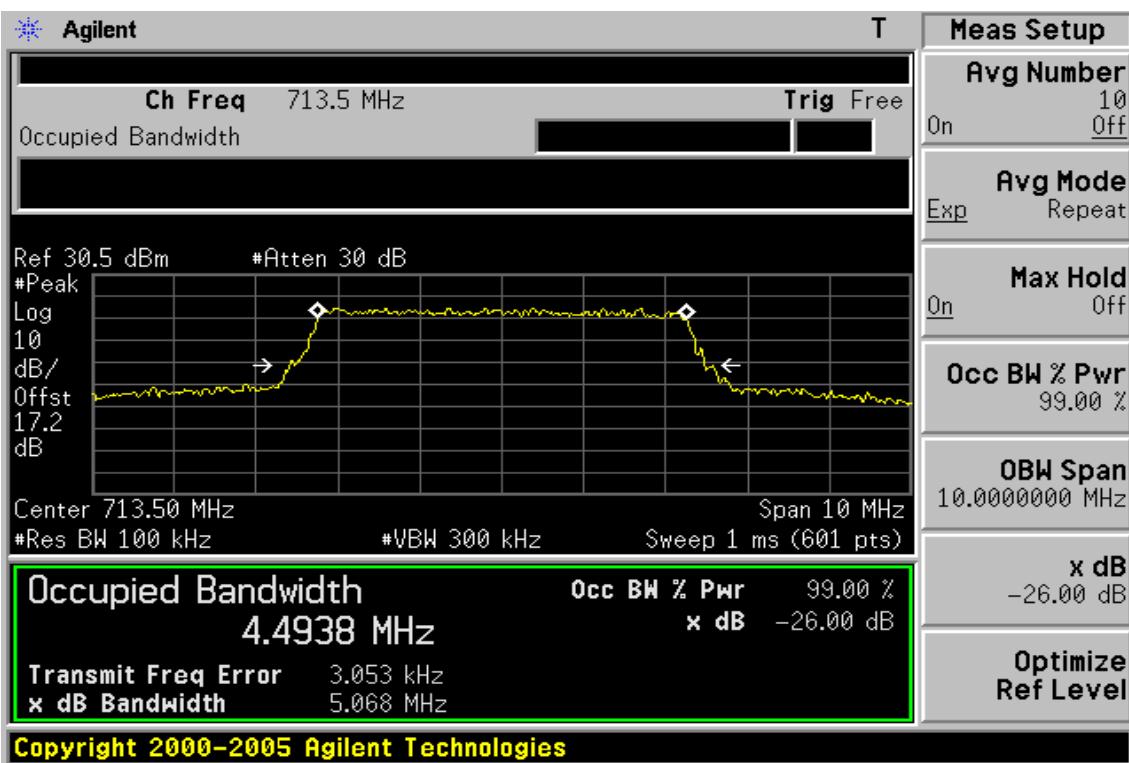


Figure 9-51: 10MHz BW LTE-Band 17(16QAM RB Number: 50 Offset: 0) Channel High



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Figure 9-52: 5MHz BW LTE-Band 12(QPSK RB Number: 25 Offset: 0) Channel Low

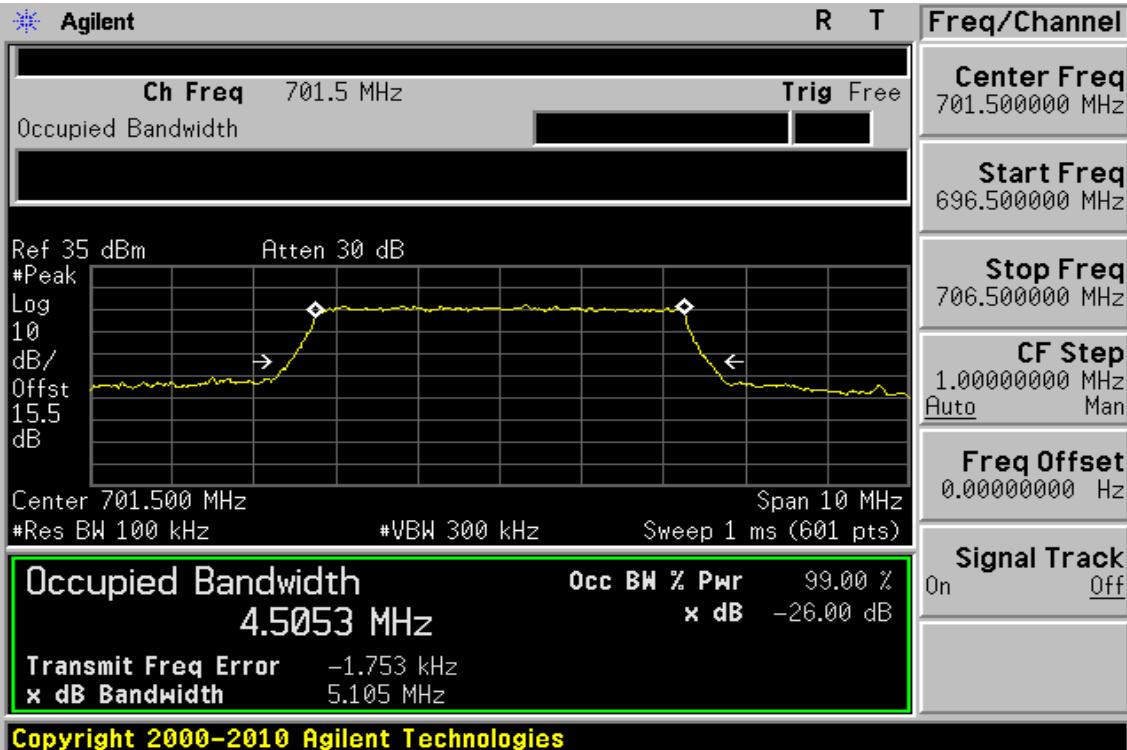
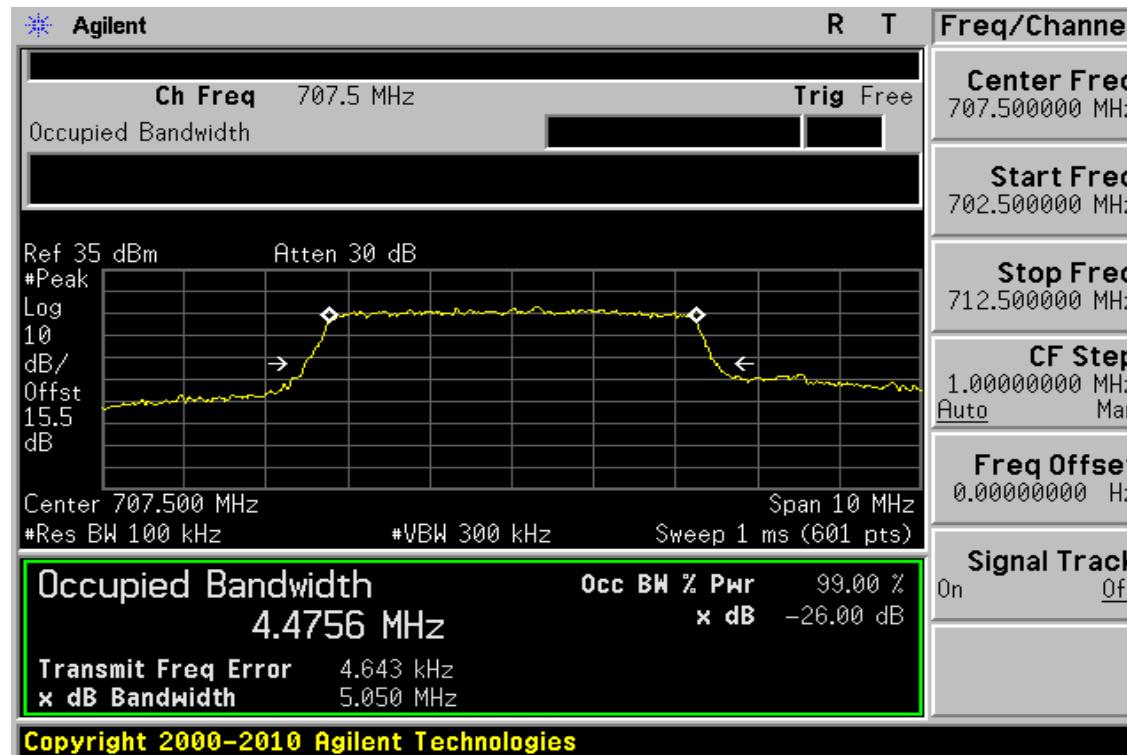


Figure 9-53: 5MHz BW LTE-Band 12(QPSK RB Number: 25 Offset: 0) Channel Mid



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Figure 9-54: 5MHz BW LTE-Band 12(QPSK RB Number: 25 Offset: 0) Channel High

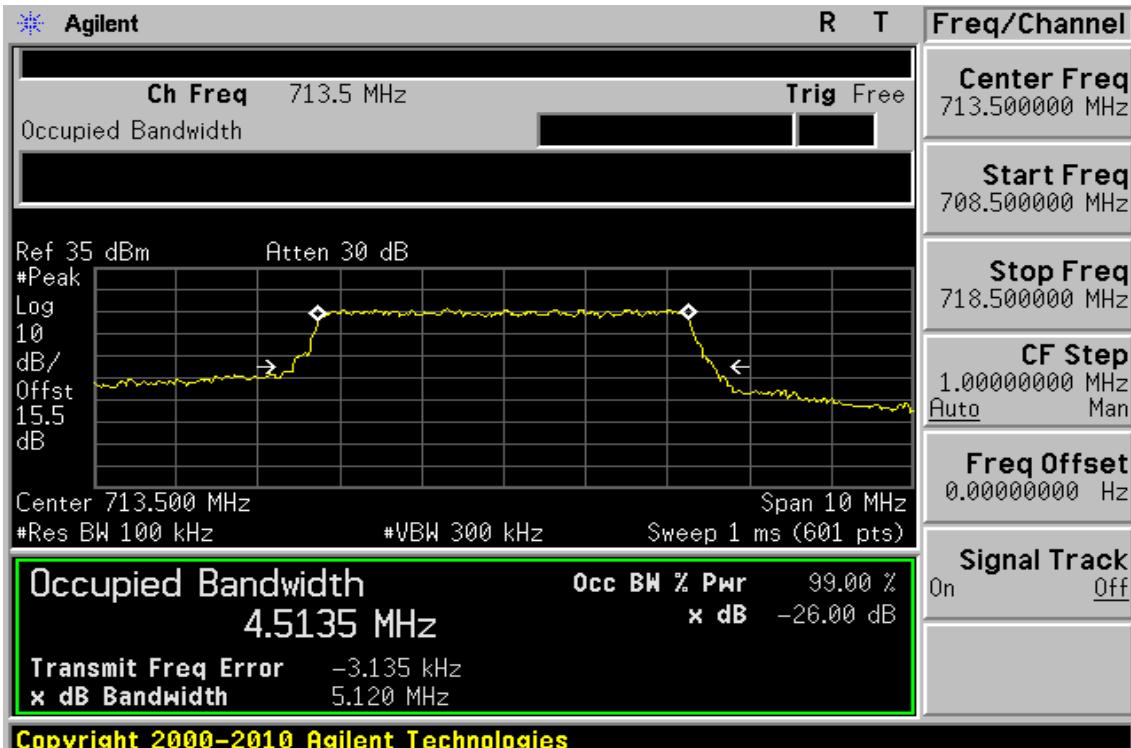
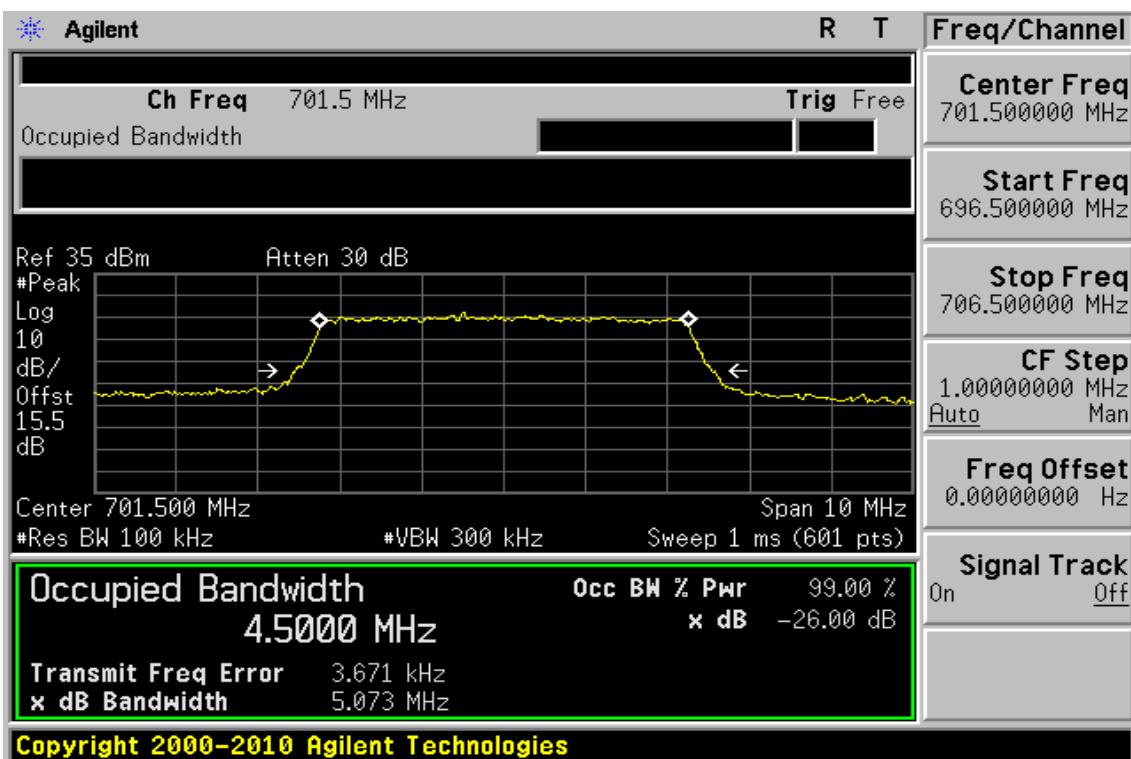


Figure 9-55: 5MHz BW LTE-Band 12(16QAM RB Number: 25 Offset: 0) Channel Low



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Figure 9-56: 5MHz BW LTE-Band 12(16QAM RB Number: 25 Offset: 0) Channel Mid

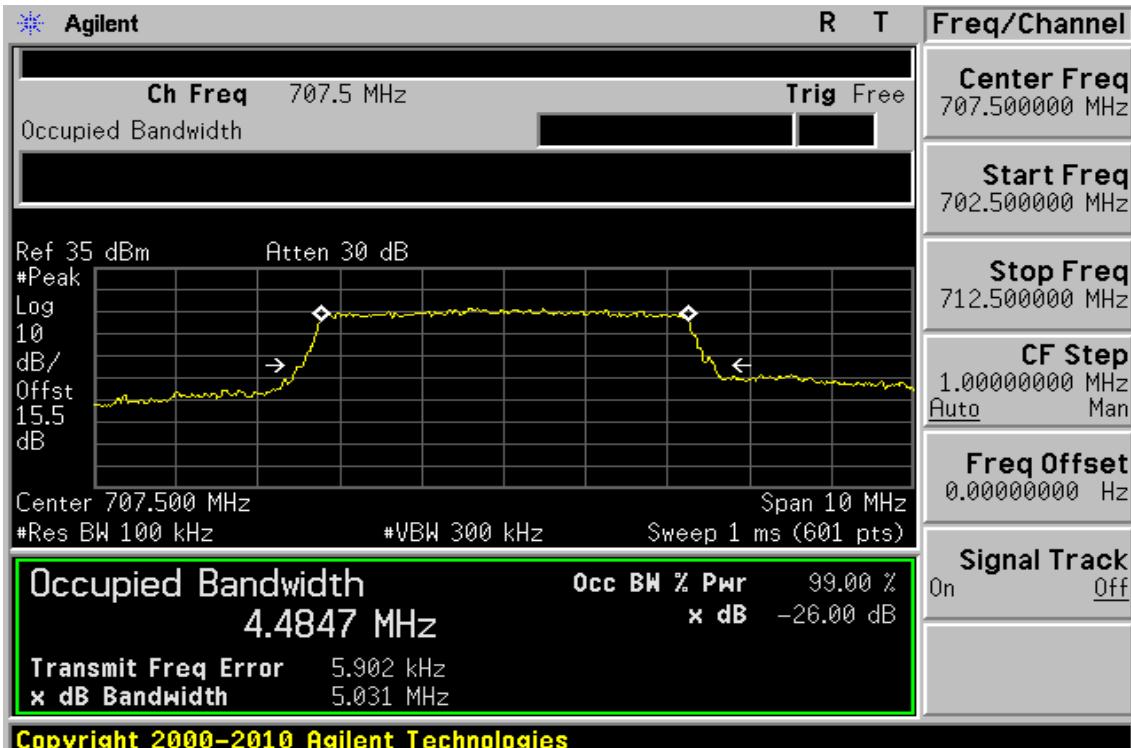
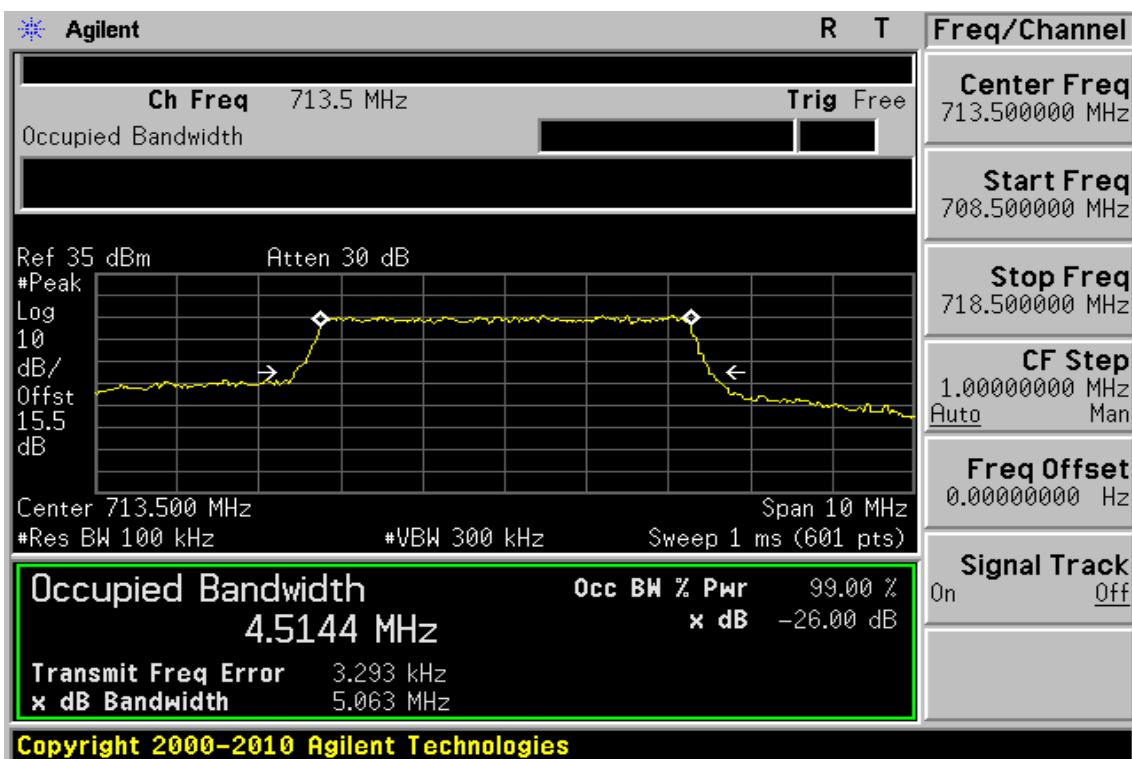


Figure 9-57: 5MHz BW LTE-Band 12(16QAM RB Number: 25 Offset: 0) Channel High



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Figure 9-58: 10MHz BW LTE-Band 12(QPSK RB Number: 50 Offset: 0) Channel Low

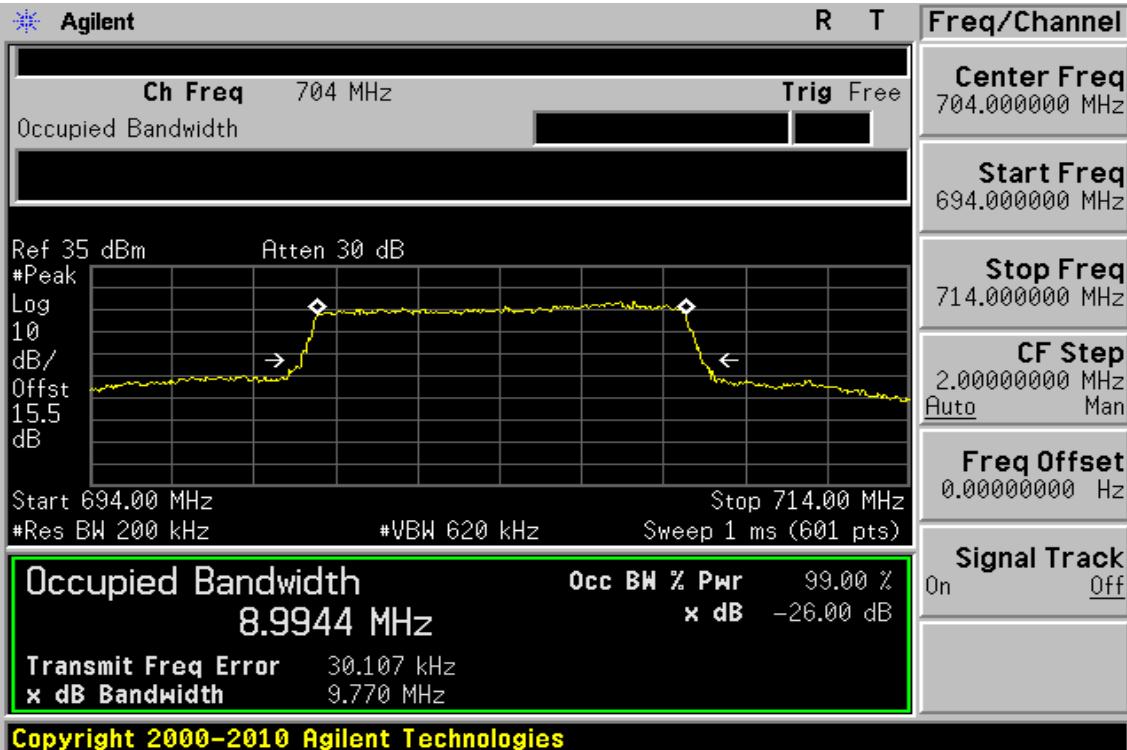
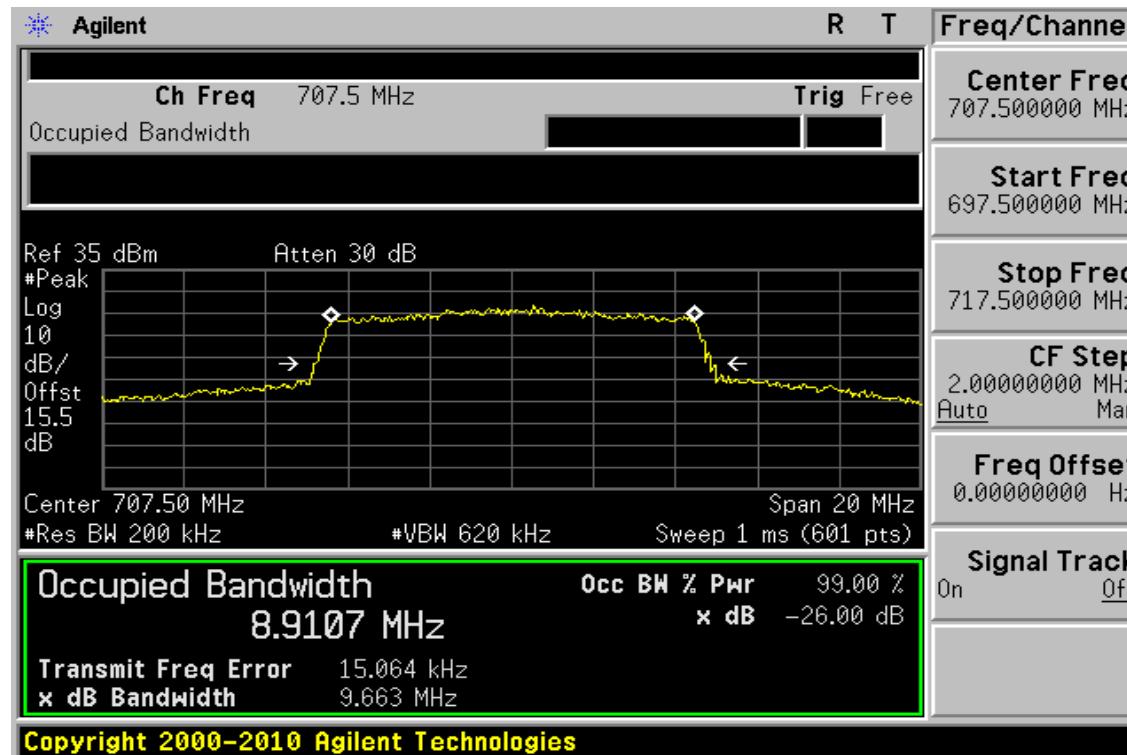


Figure 9-59: 10MHz BW LTE-Band 12(QPSK RB Number: 50 Offset: 0) Channel Mid



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Figure 9-60: 10MHz BW LTE-Band 12(QPSK RB Number: 50 Offset: 0) Channel High

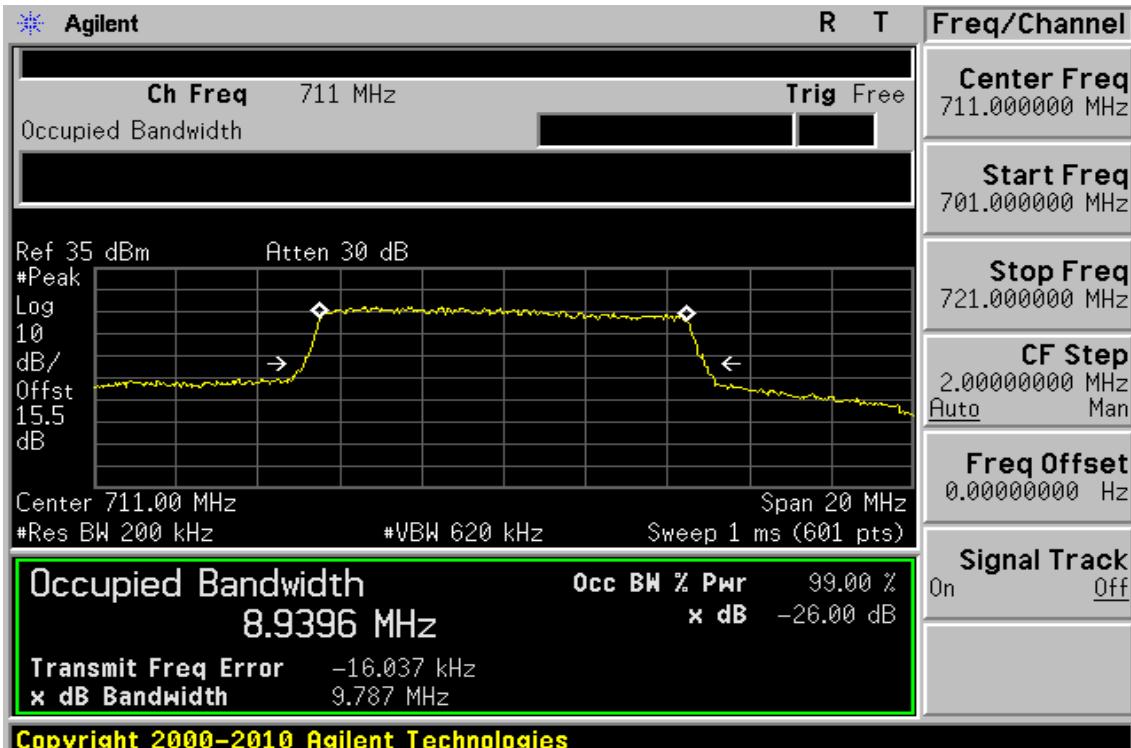
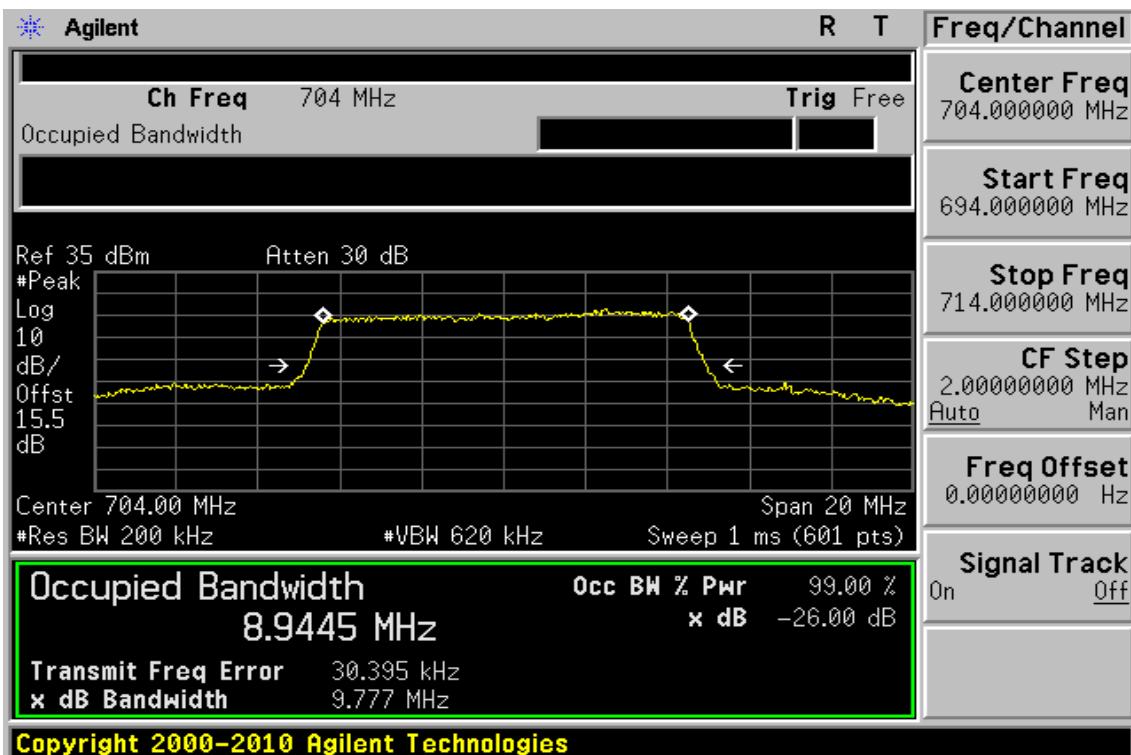


Figure 9-61: 10MHz BW LTE-Band 12(16QAM RB Number: 50 Offset: 0) Channel Low



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Figure 9-62: 10MHz BW LTE-Band 12(16QAM RB Number: 50 Offset: 0) Channel Mid

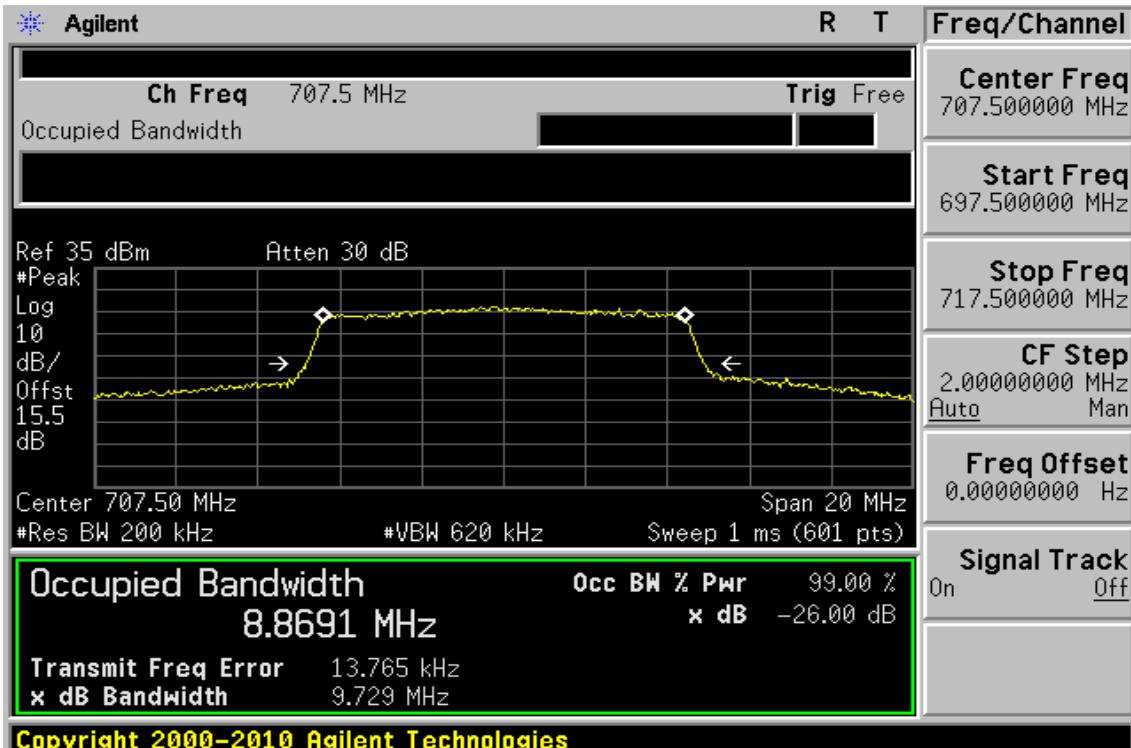
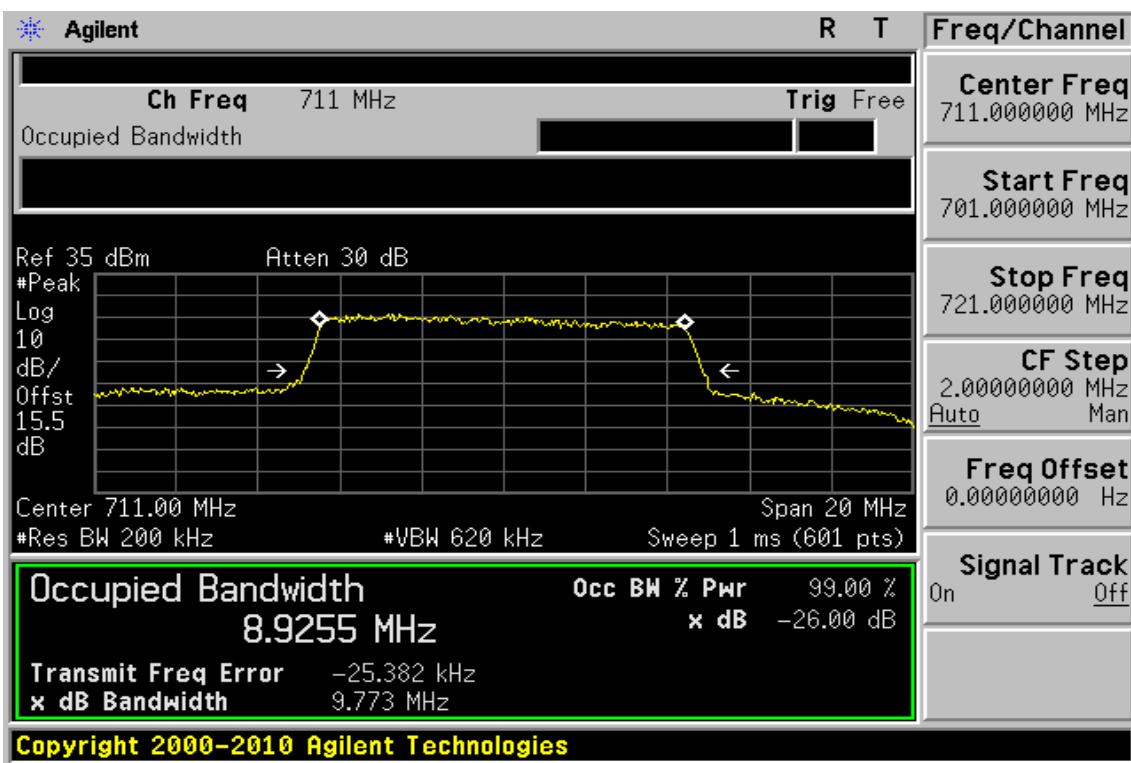


Figure 9-63: 10MHz BW LTE-Band 12(16QAM RB Number: 50 Offset: 0) Channel High



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## 10. OUT OF BAND EMISSION AT ANTENNA TERMINALS

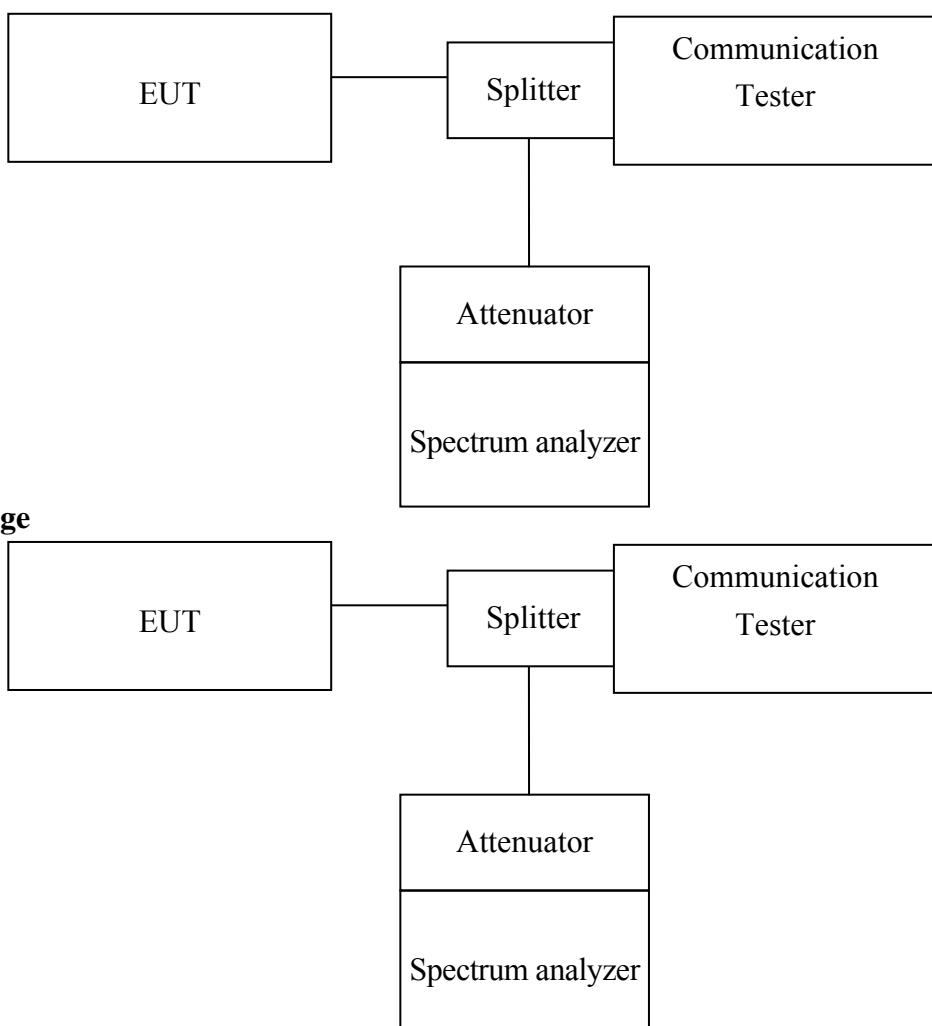
### 10.1. Standard Applicable:

According to FCC §2.1051.

FCC §22.917(a), §24.238(a), §27.53(g) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

### 10.2. Test SET-UP:

#### Out of band emission



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### 10.3. Measurement Procedure:

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. Limit = -13dBm

Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

For operations in the 698–746 MHz band, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed. Limit, -13dBm.

### Conducted Emission:

1. To connect Antenna Port of EUT to Spectrum.
2. Set RBW = 1MHz & VBW = 1MHz on Spectrum.
3. Sweep the frequency to determine spurious emission as seen on spectrum from span of 30 to 1G, 1G to 2.5G, 2.5G to 7.5G, 7.5G to 10G ,10G to 15G and 15G to 20GHz
4. Via Software, combine 6 spans of frequency range into one plot

### 10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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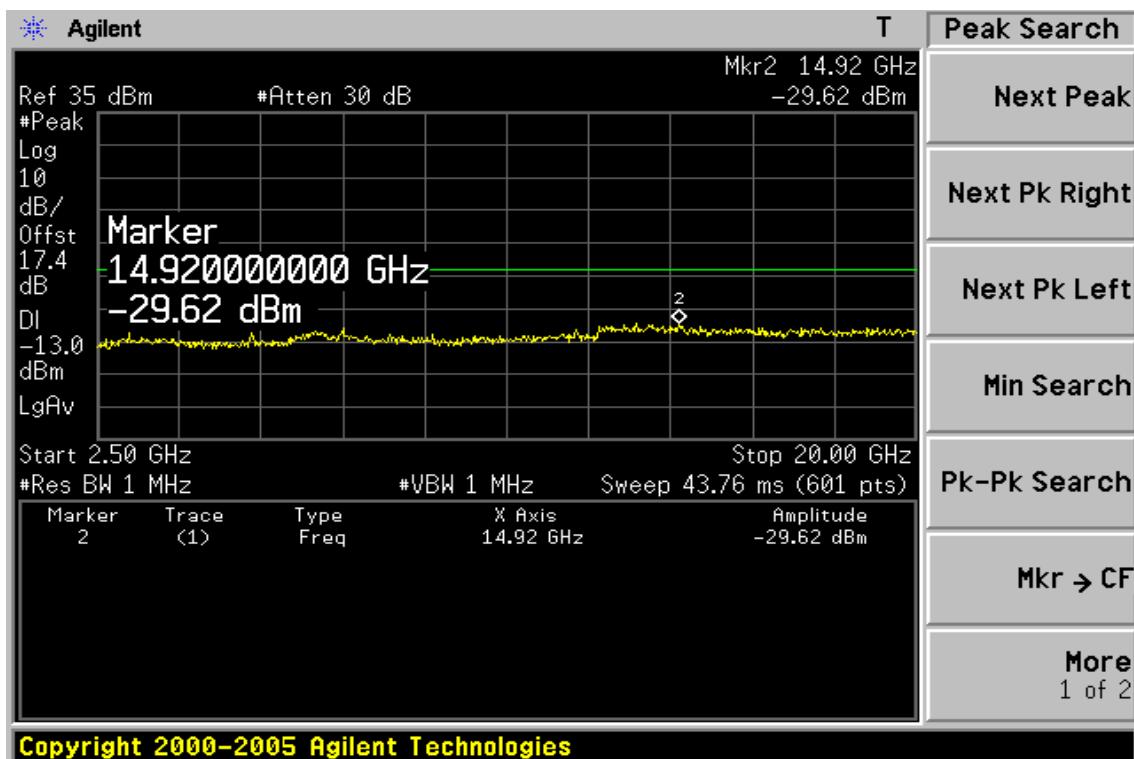
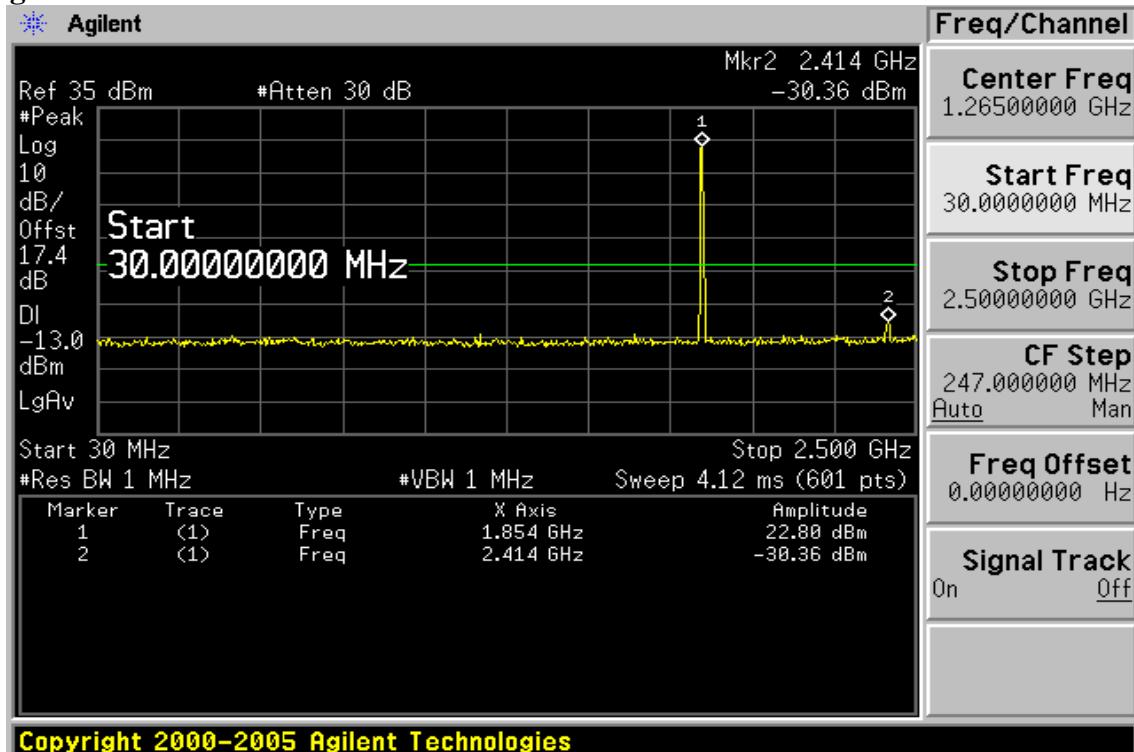
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## 10.5. Measurement Result:

Figure 10-1: Out of Band emission at antenna terminals – WCDMA II Channel Lowest



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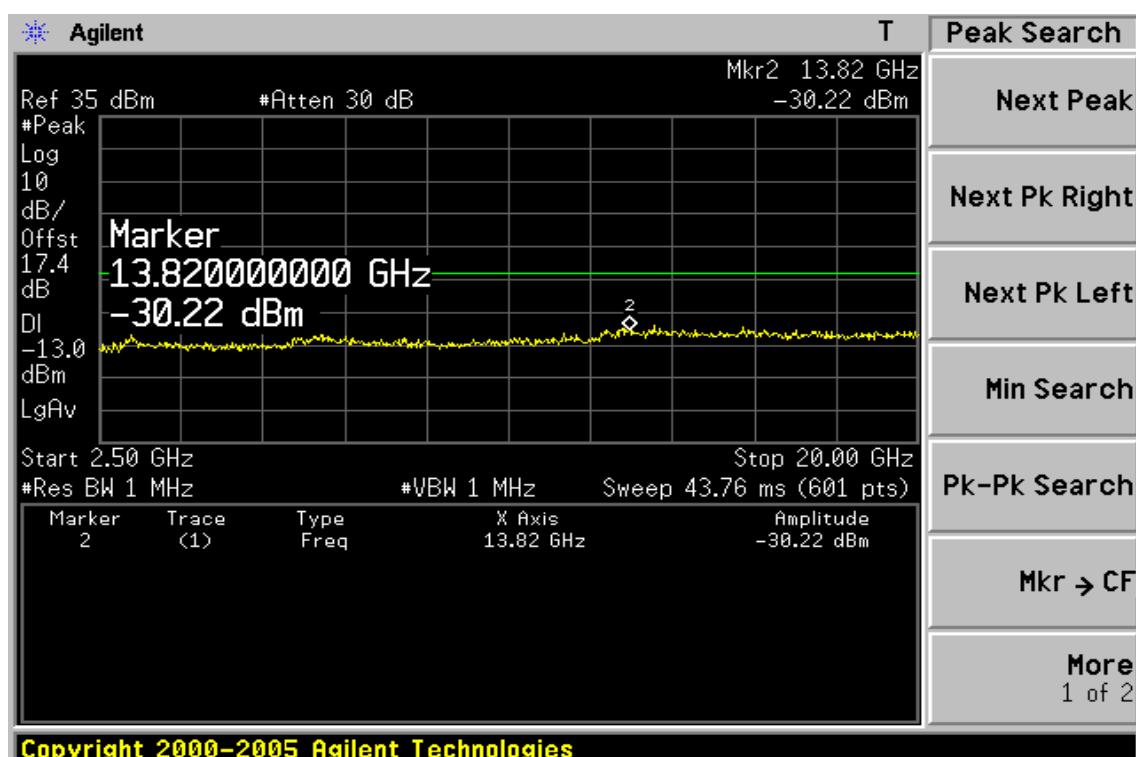
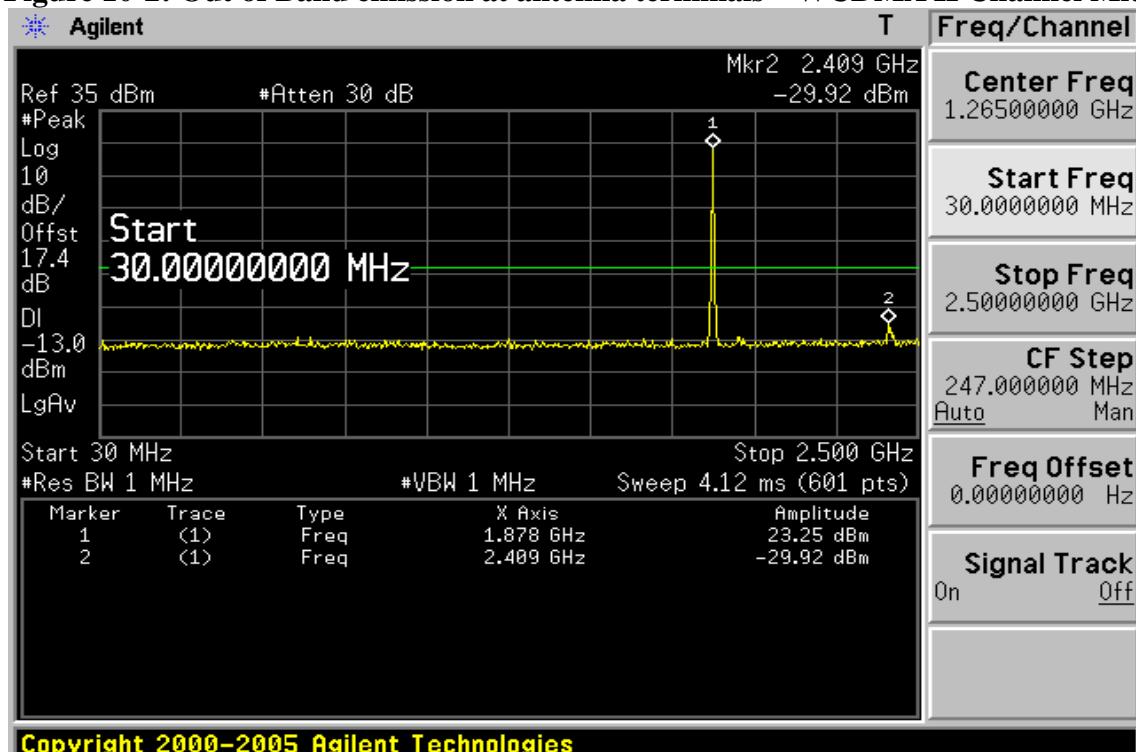
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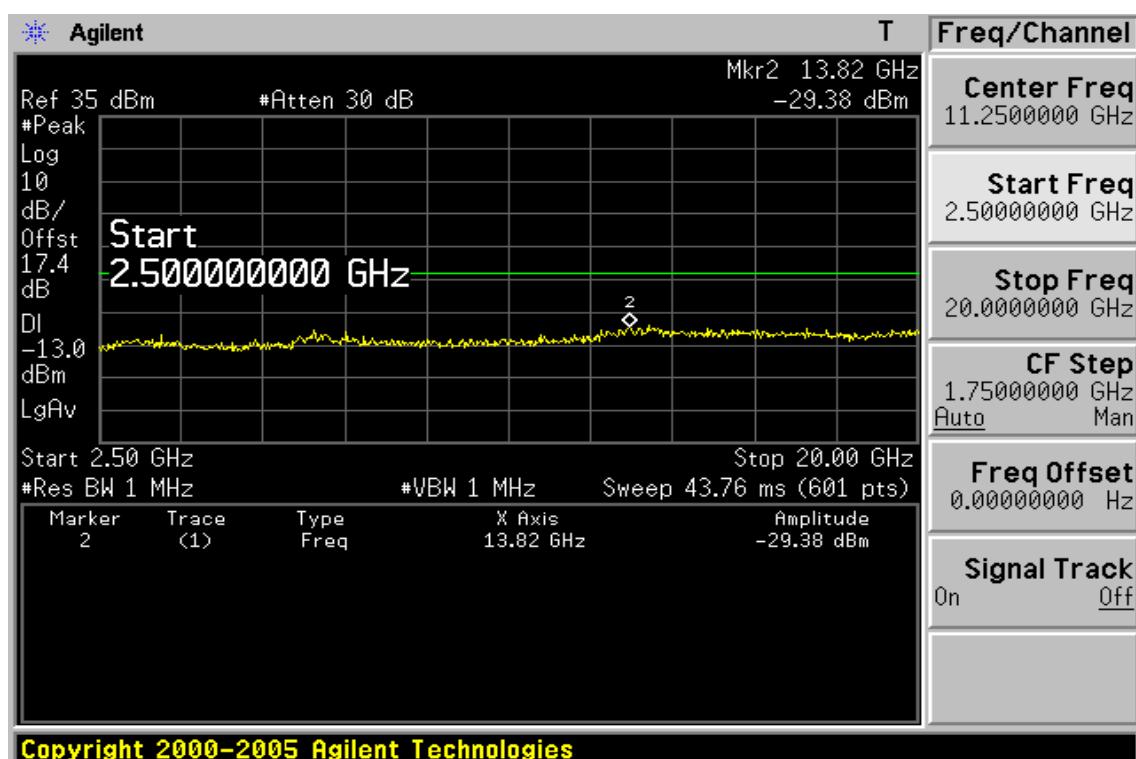
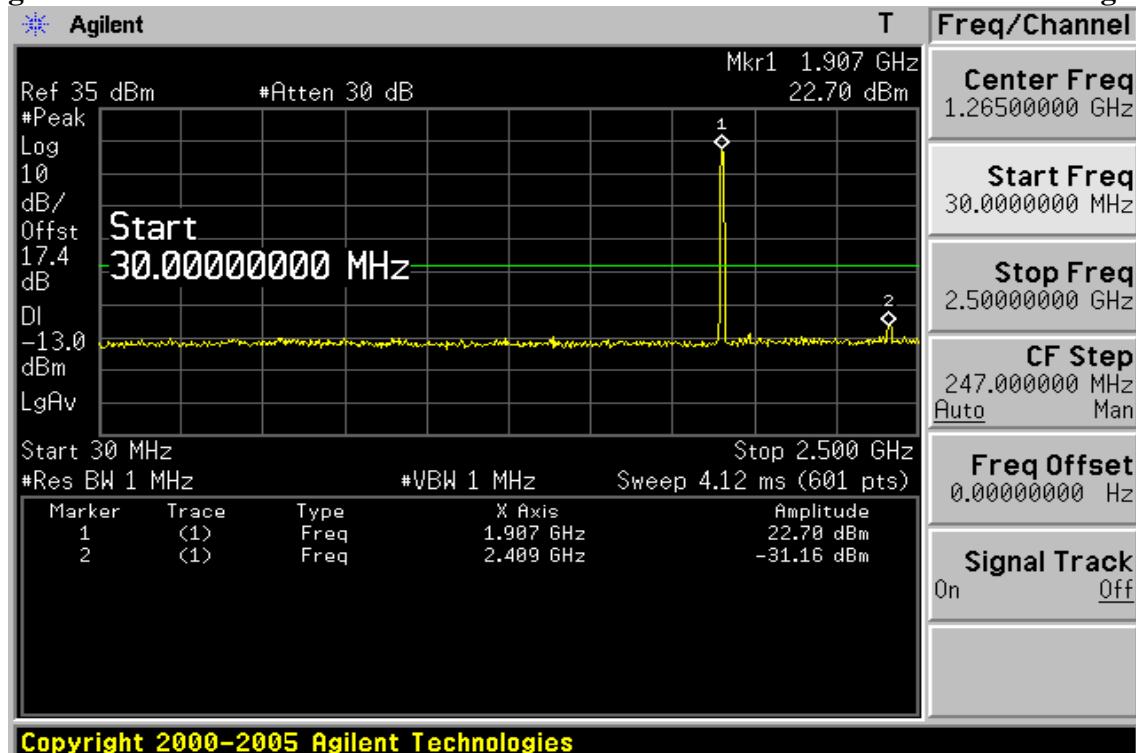
Figure 10-2: Out of Band emission at antenna terminals – WCDMA II Channel Mid



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Figure 10-3: Out of Band emission at antenna terminals – WCDMA II Channel Highest



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Figure 10-4: Band edge emission at antenna terminals – WCDMA II Channel Lowest

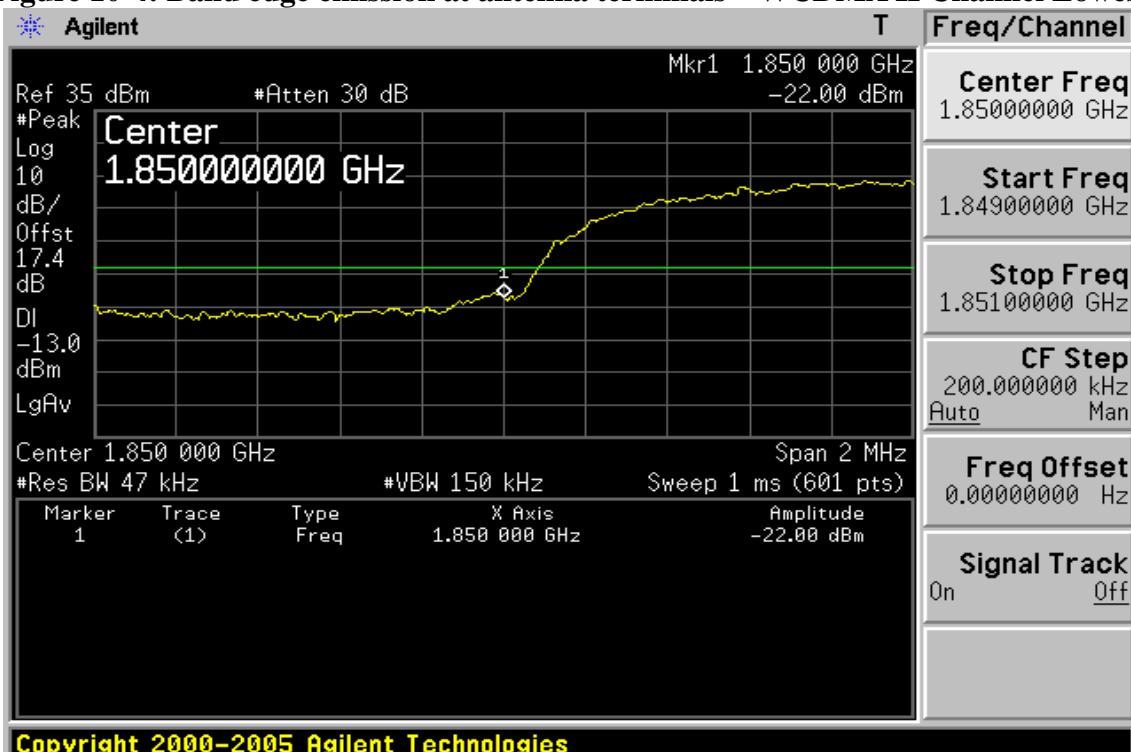


Figure 10-5: Band edge emission at antenna terminals – WCDMA II Channel Highest



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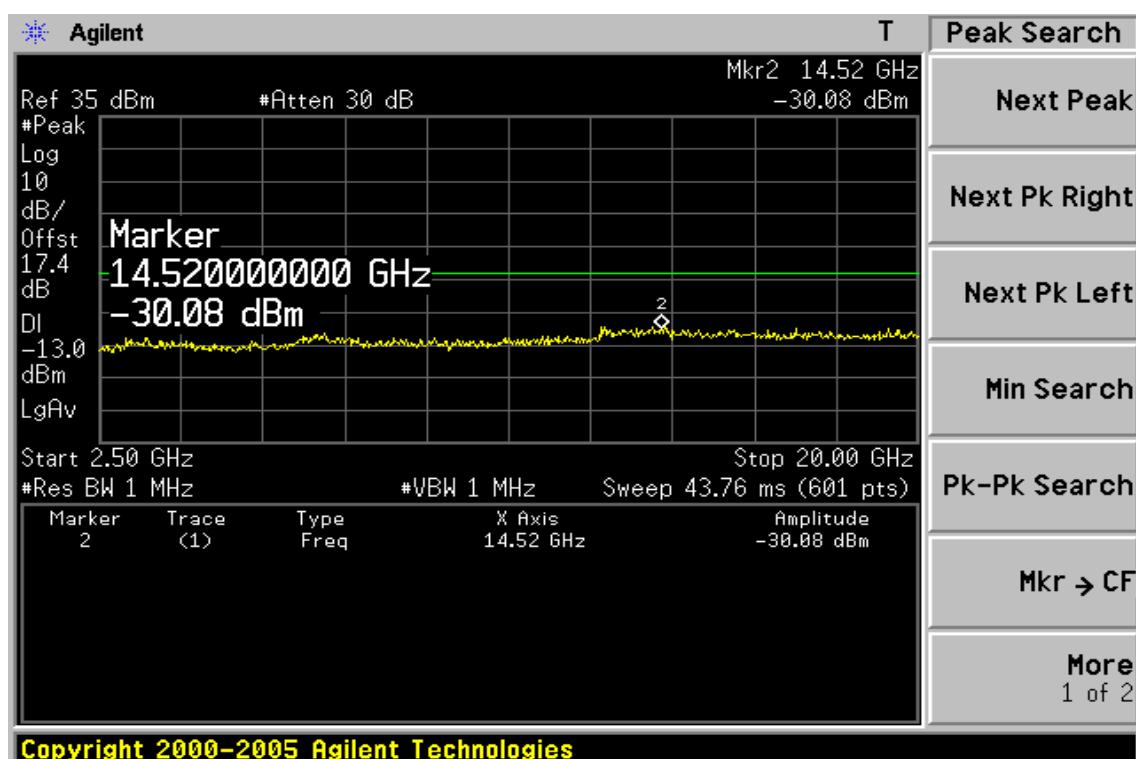
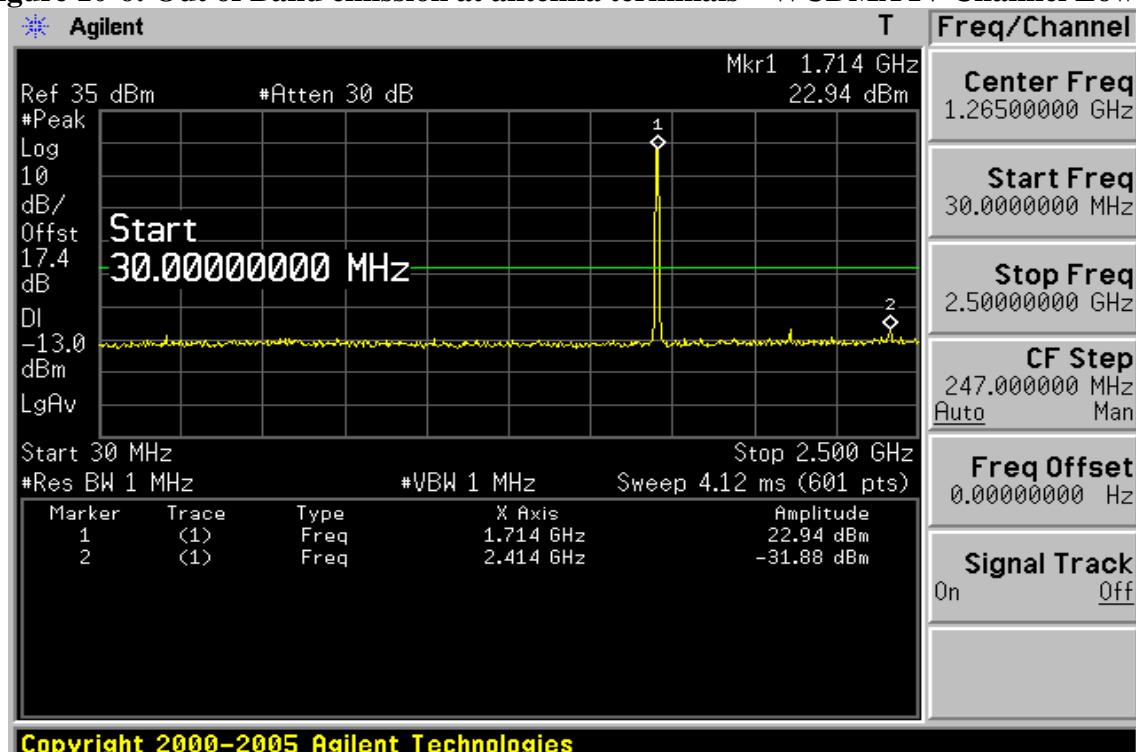
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Figure 10-6: Out of Band emission at antenna terminals – WCDMA IV Channel Lowest



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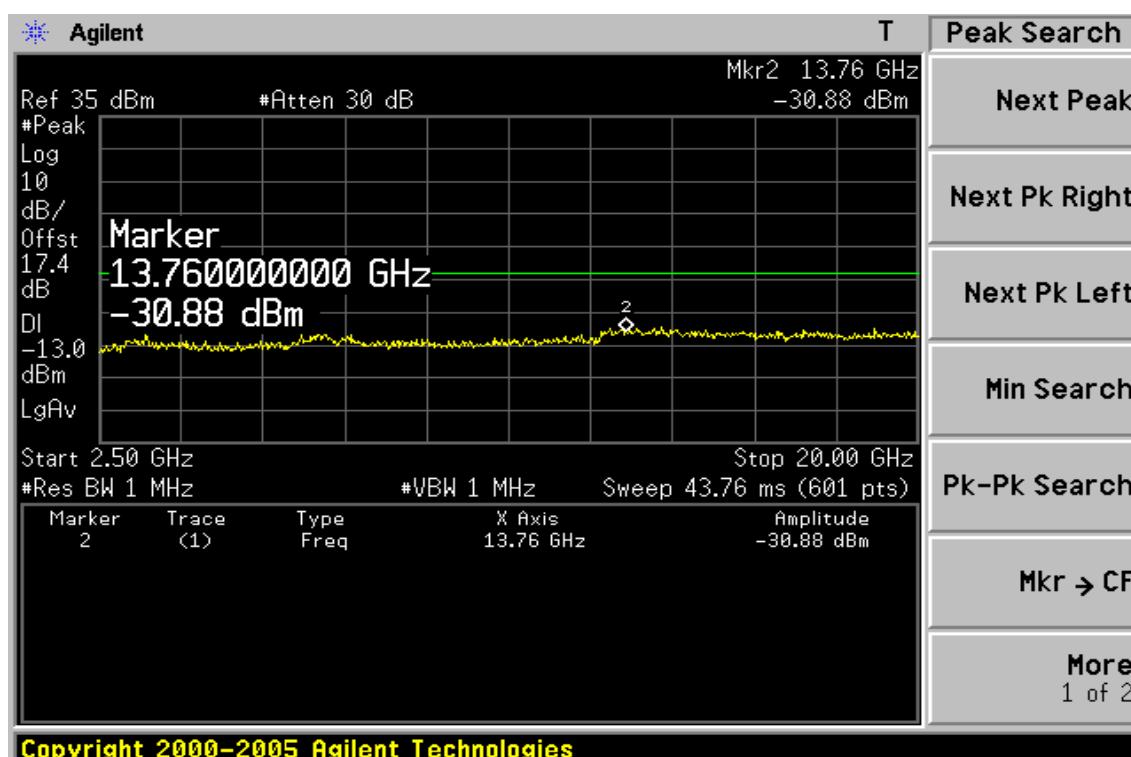
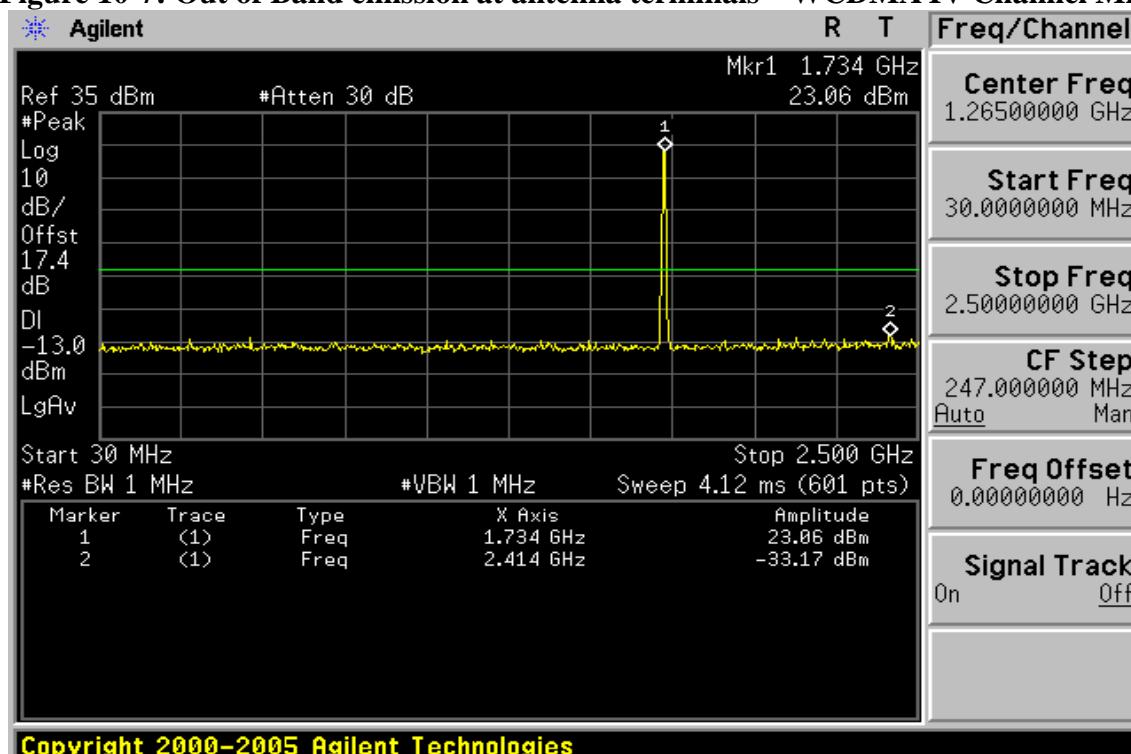
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Figure 10-7: Out of Band emission at antenna terminals – WCDMA IV Channel Mid



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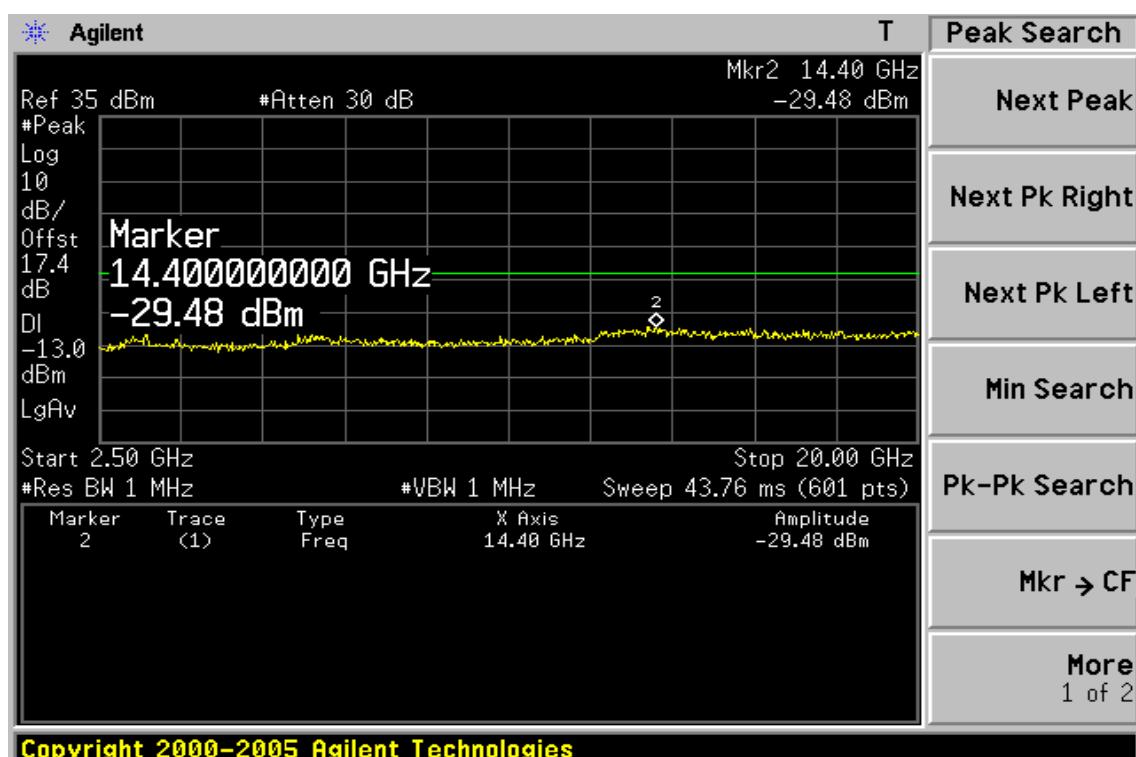
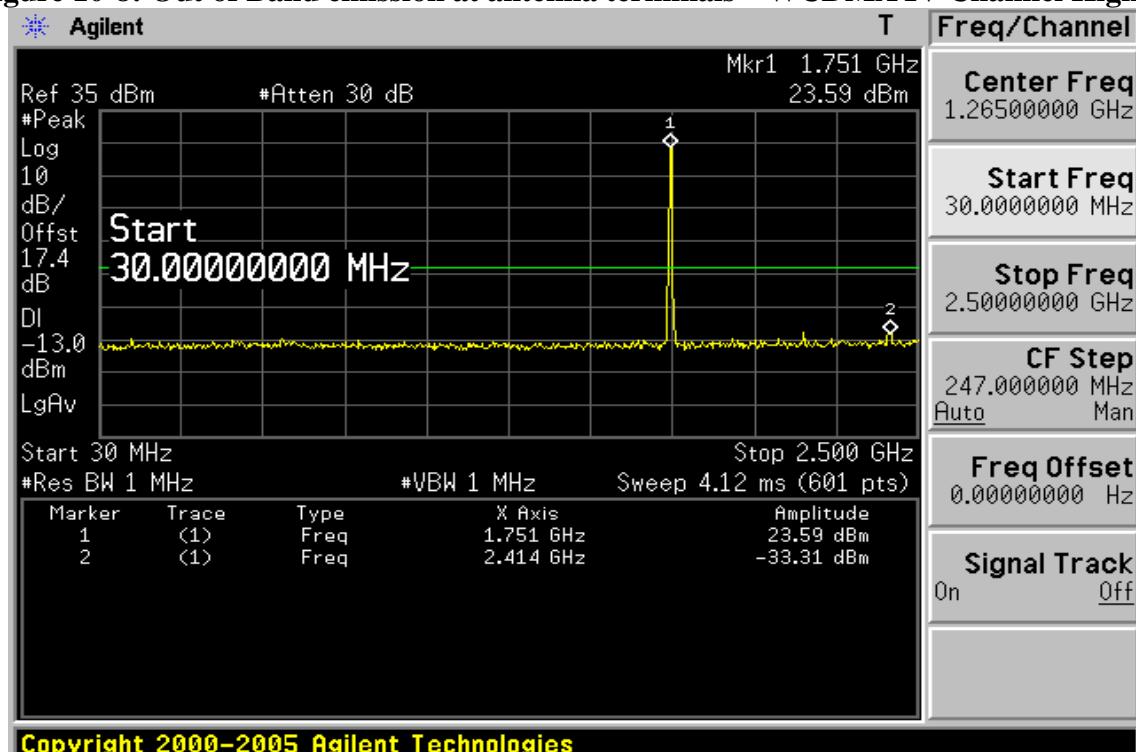
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Figure 10-8: Out of Band emission at antenna terminals – WCDMA IV Channel Highest



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Figure 10-9: Band edge emission at antenna terminals – WCDMA IV Channel Lowest



Figure 10-10: Band edge emission at antenna terminals – WCDMA IV Channel Highest



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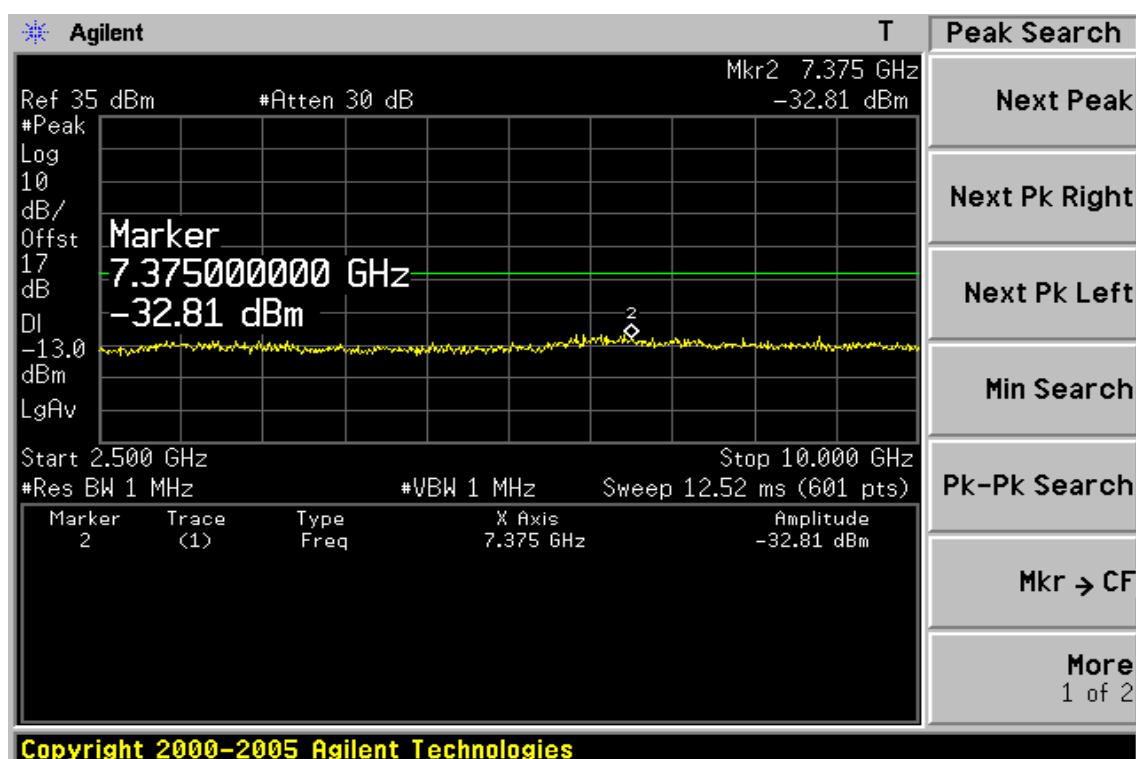
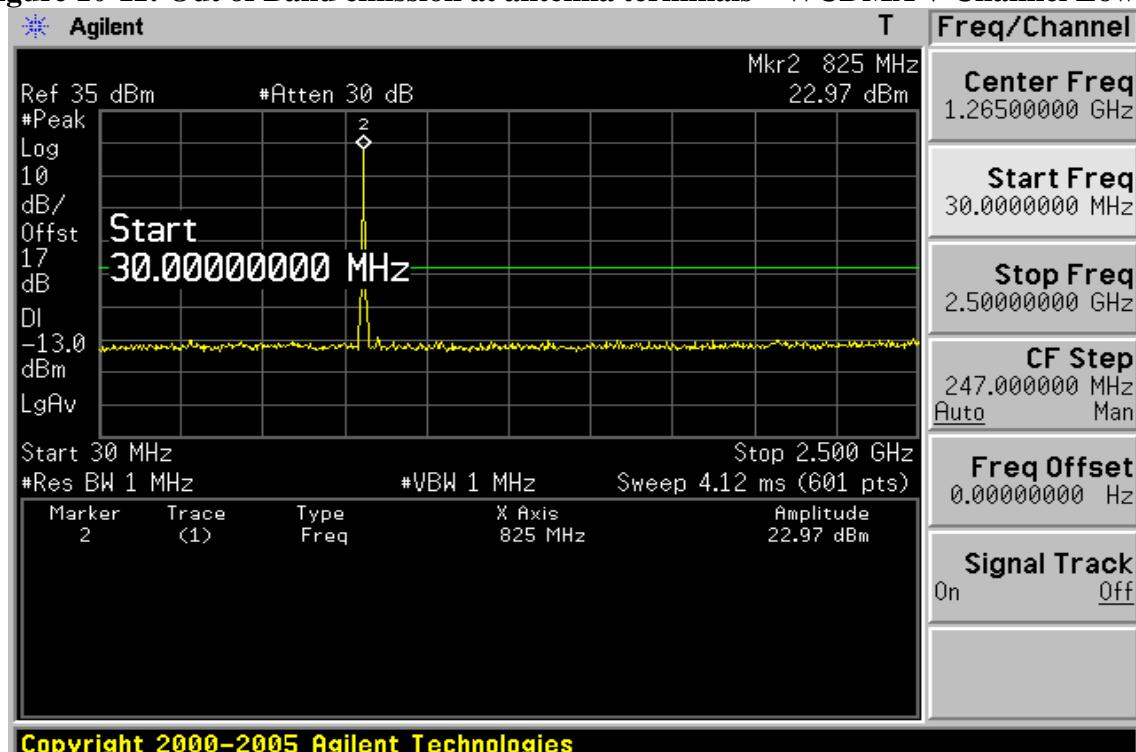
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Figure 10-11: Out of Band emission at antenna terminals – WCDMA V Channel Lowest



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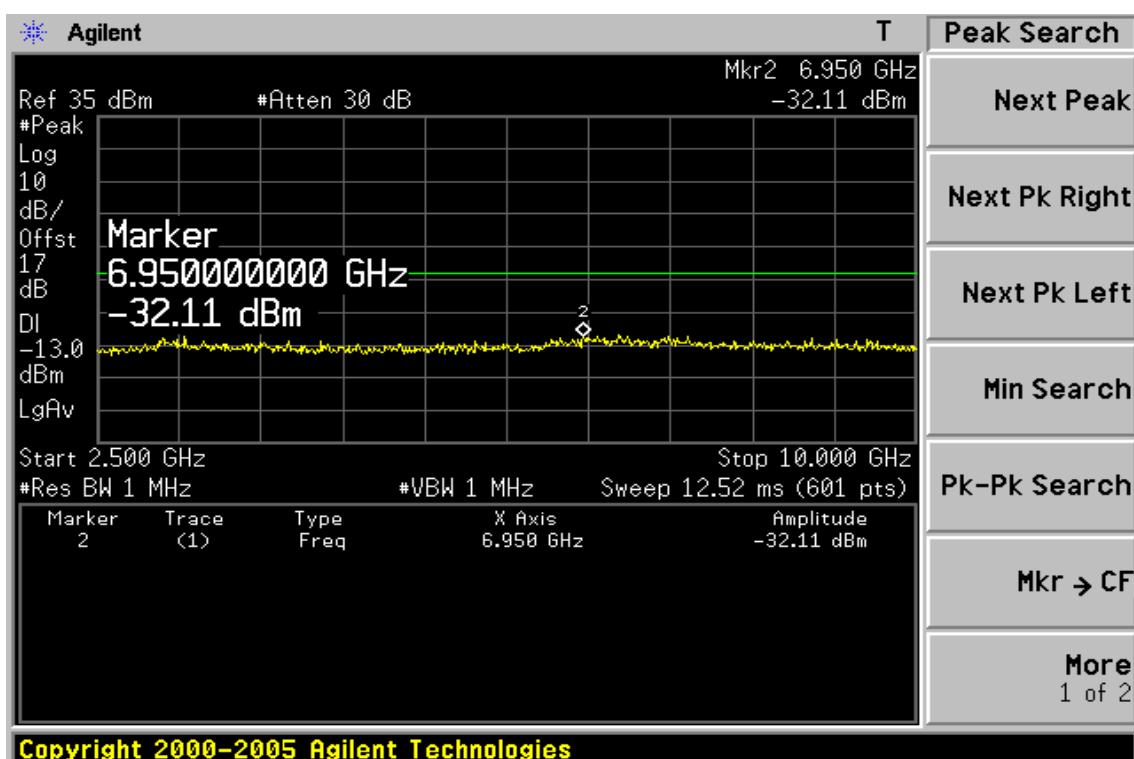
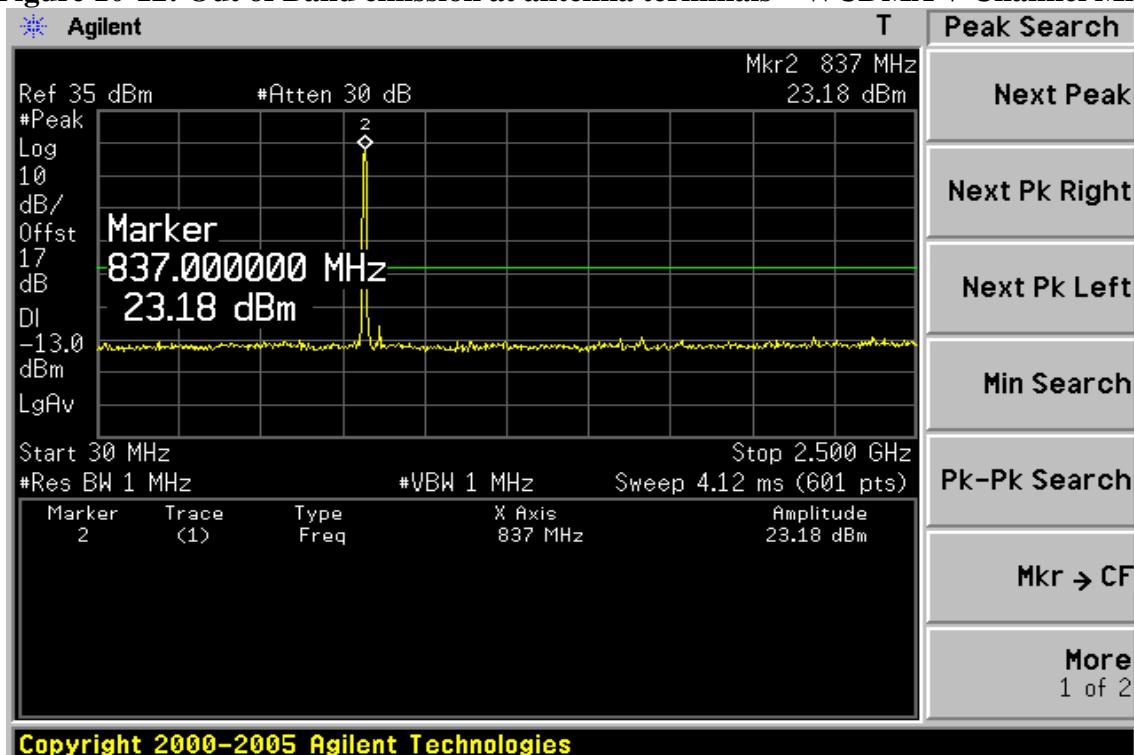
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Figure 10-12: Out of Band emission at antenna terminals – WCDMA V Channel Mid



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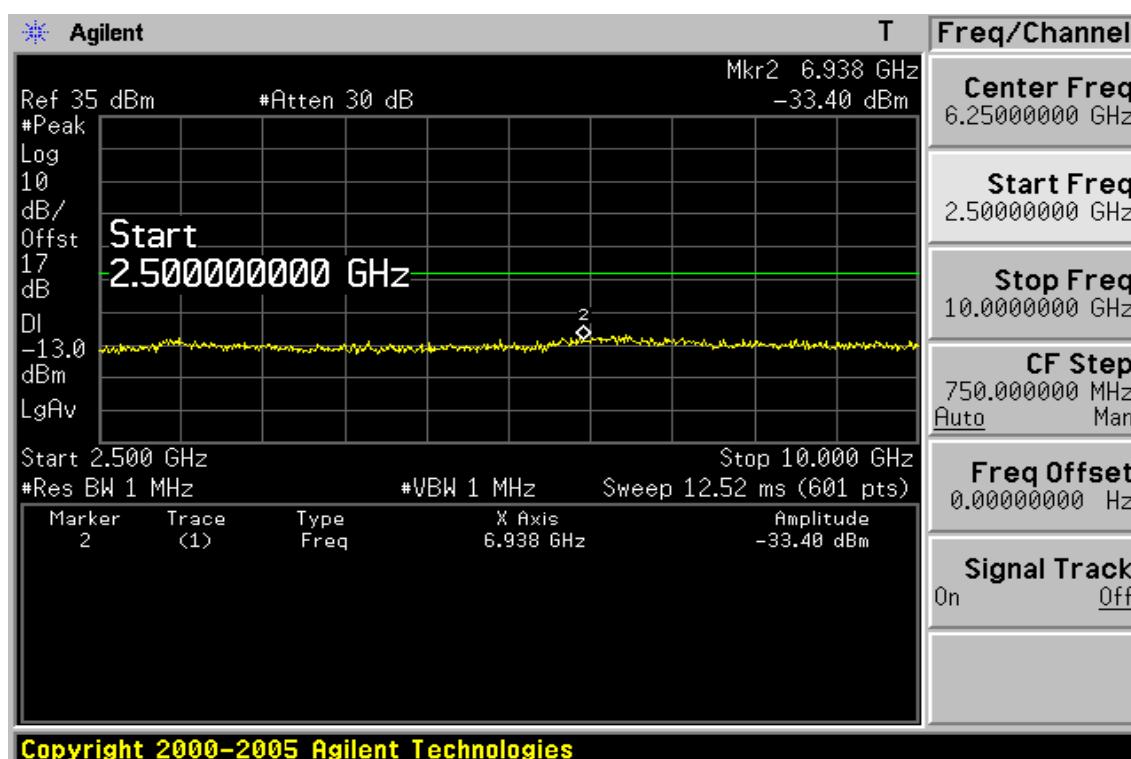
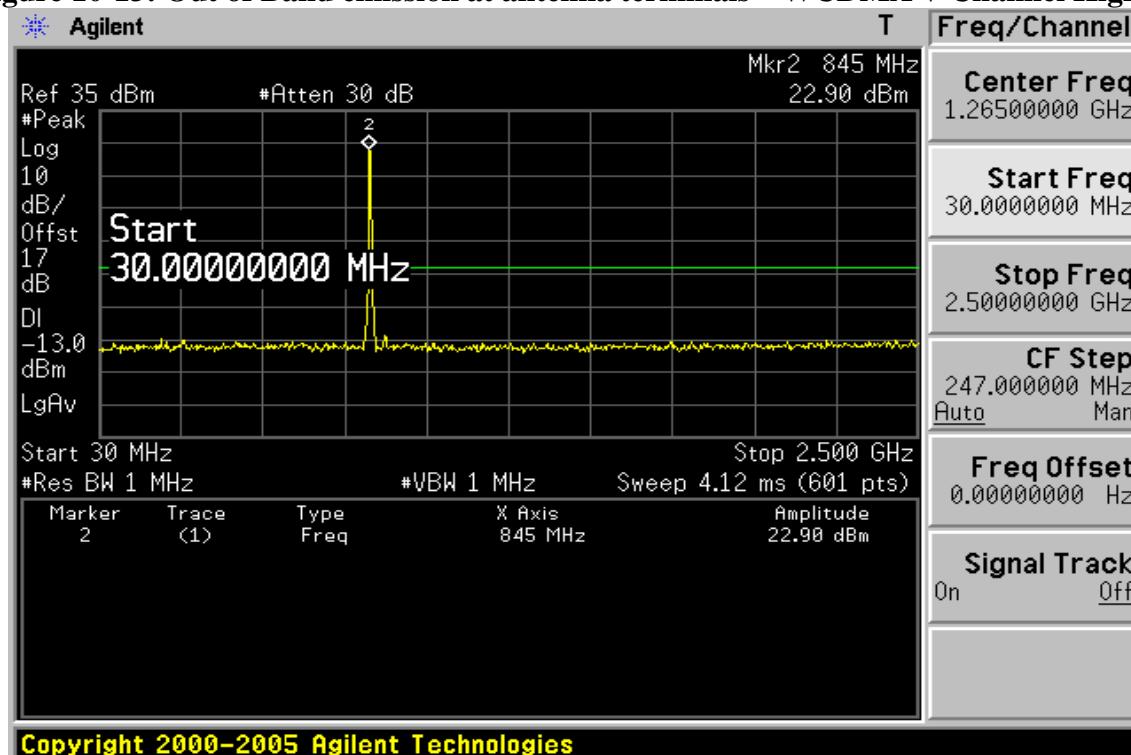
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Figure 10-13: Out of Band emission at antenna terminals – WCDMA V Channel Highest



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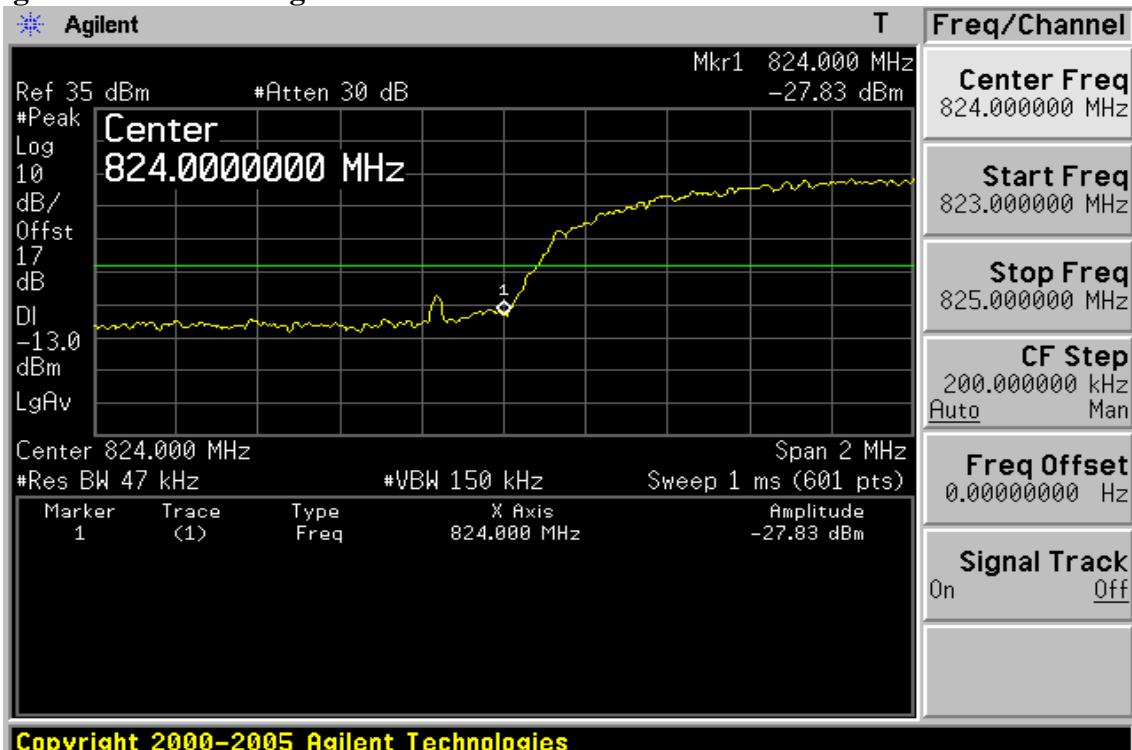
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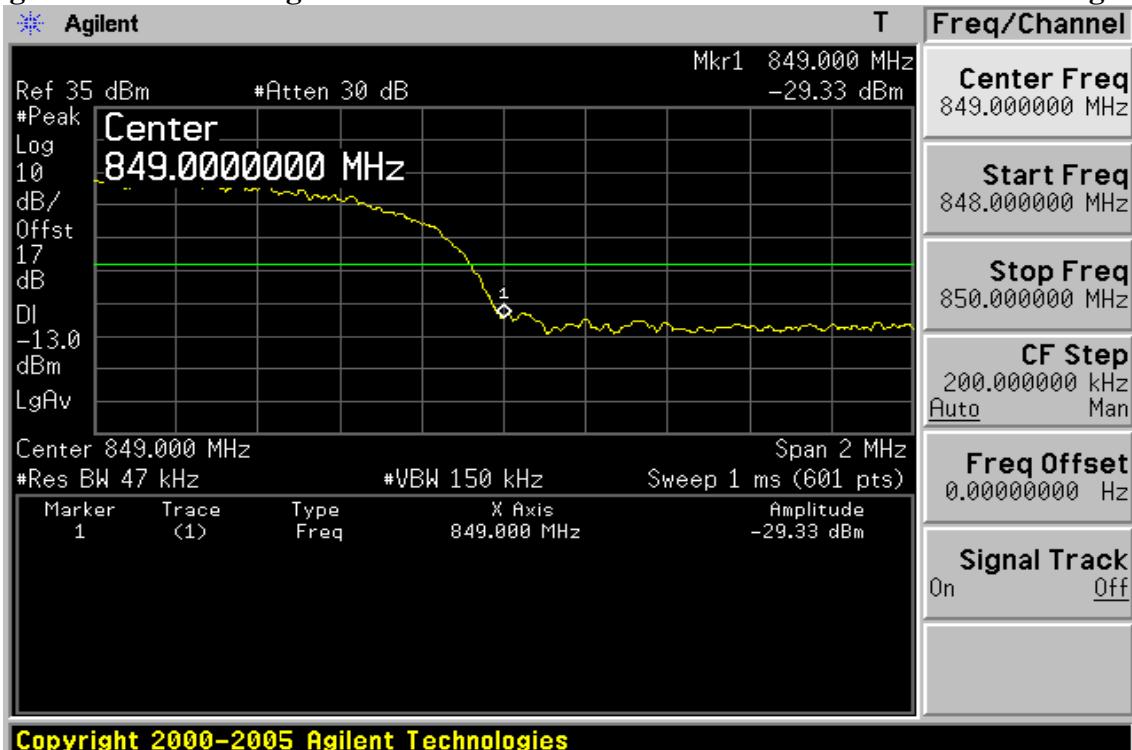
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Figure 10-14: Band edge emission at antenna terminals – WCDMA V Channel Lowest



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Figure 10-15: Band edge emission at antenna terminals – WCDMA V Channel Highest



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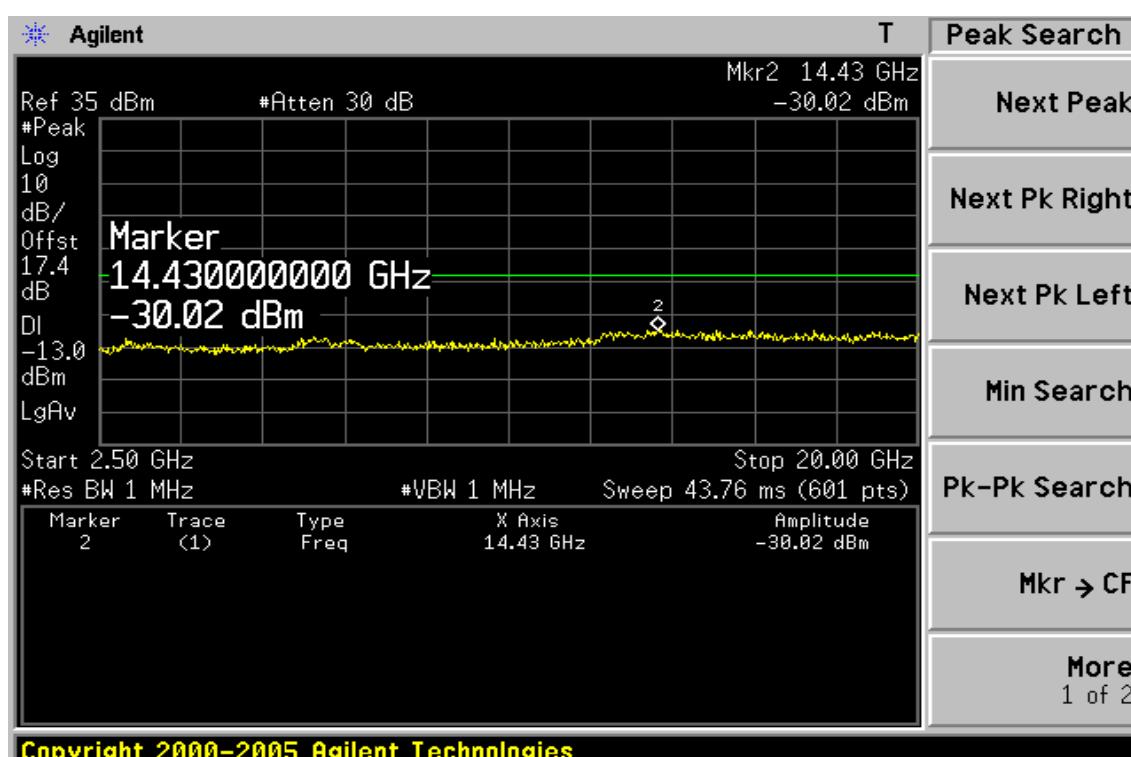
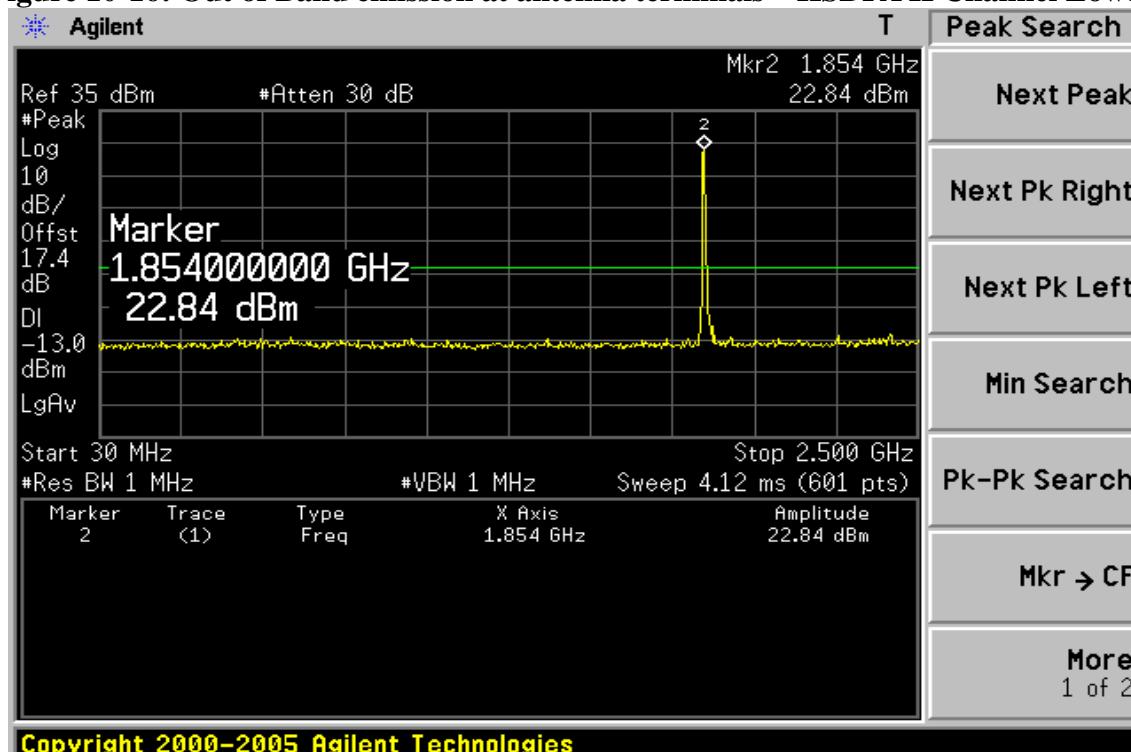
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**Figure 10-16: Out of Band emission at antenna terminals – HSDPA II Channel Lowest**

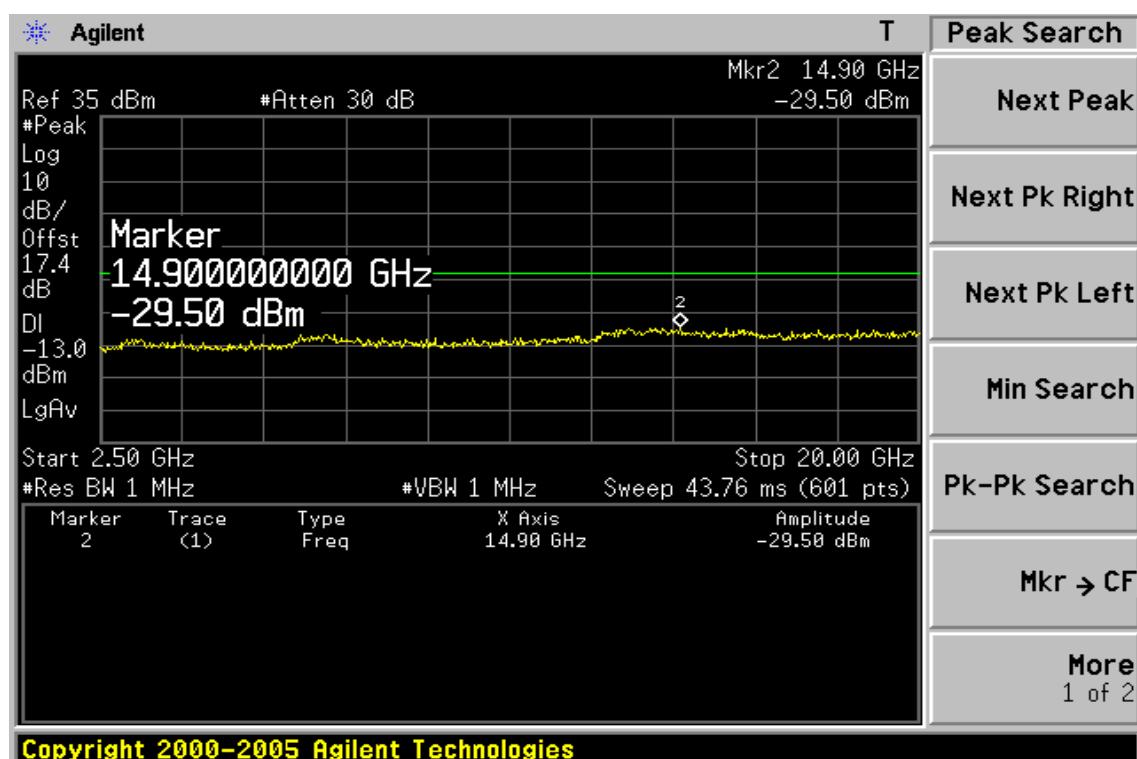
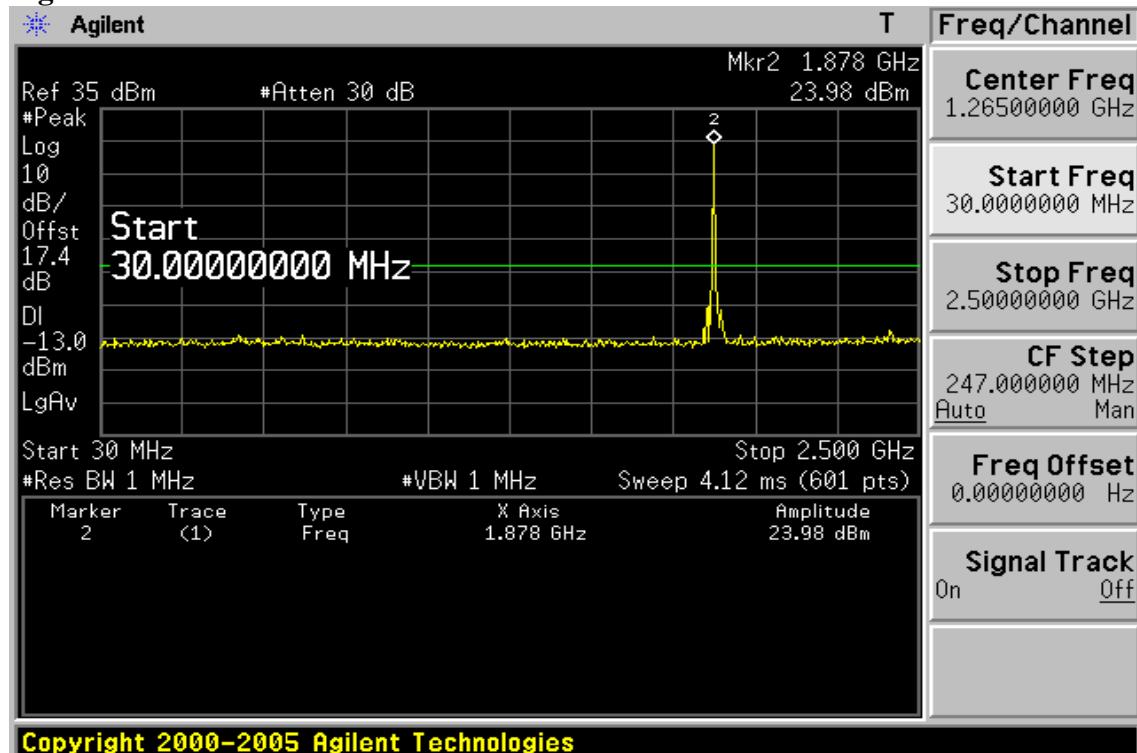


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Figure 10-17: Out of Band emission at antenna terminals – HSDPA II Channel Mid



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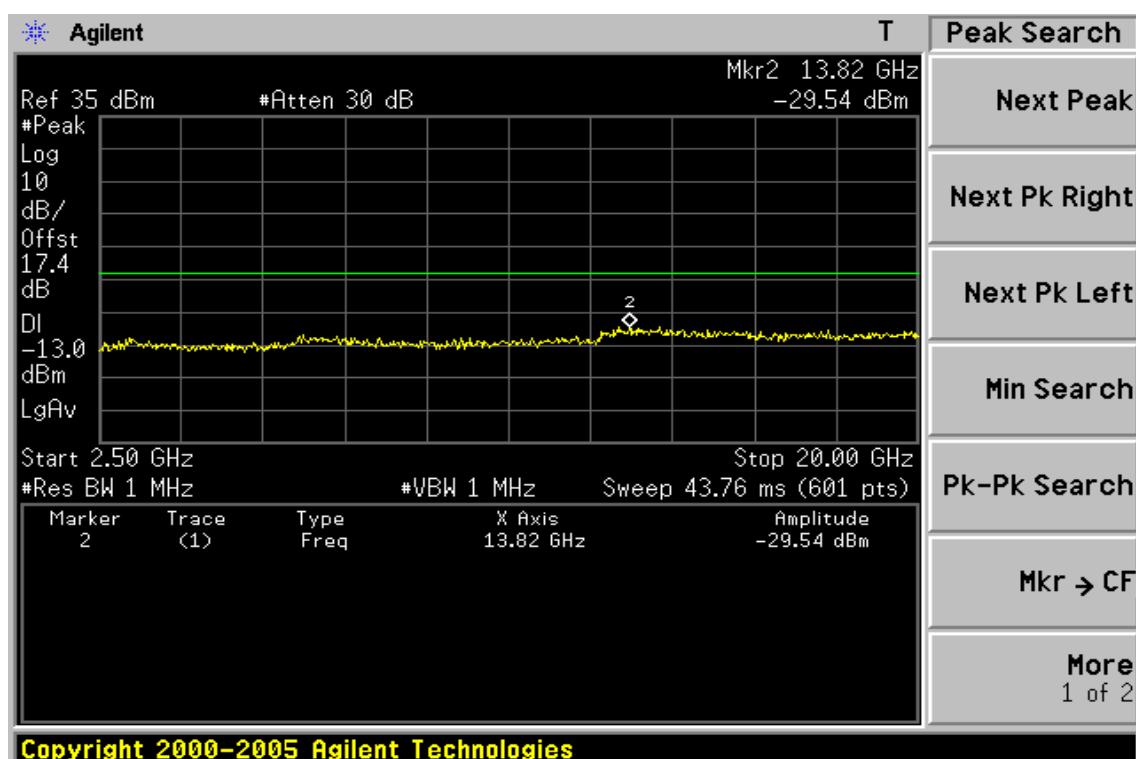
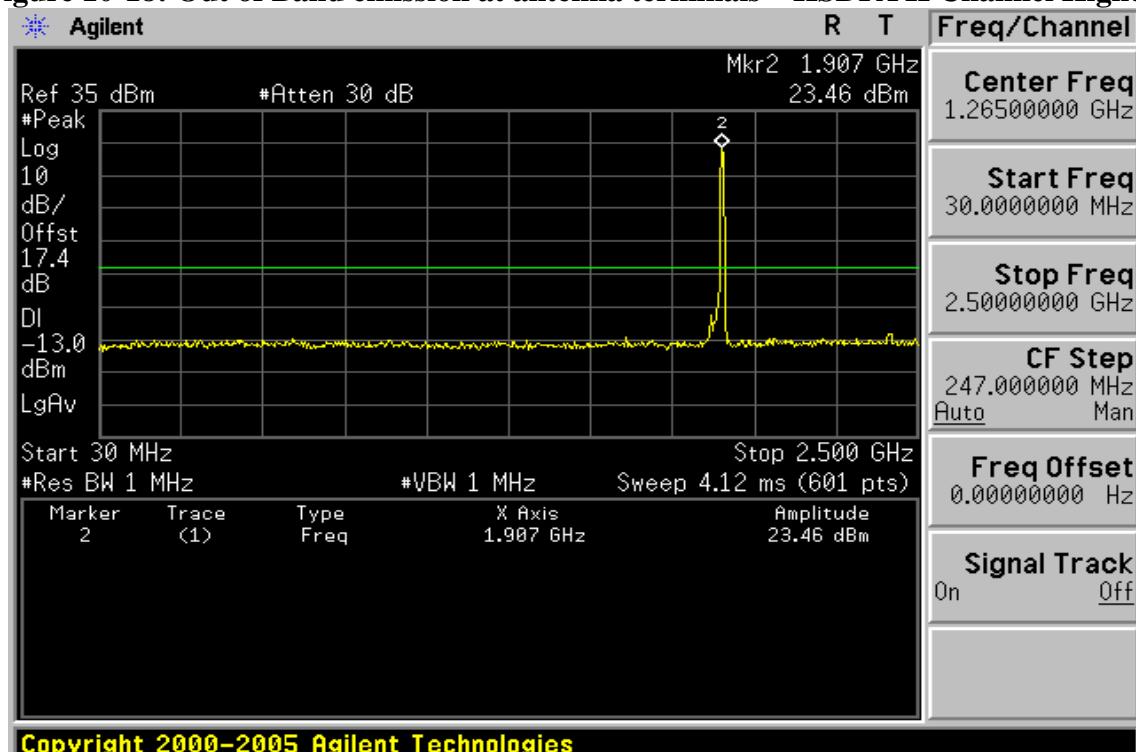
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Figure 10-18: Out of Band emission at antenna terminals – HSDPA II Channel Highest



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Figure 10-19: Band edge emission at antenna terminals – HSDPA II Channel Lowest

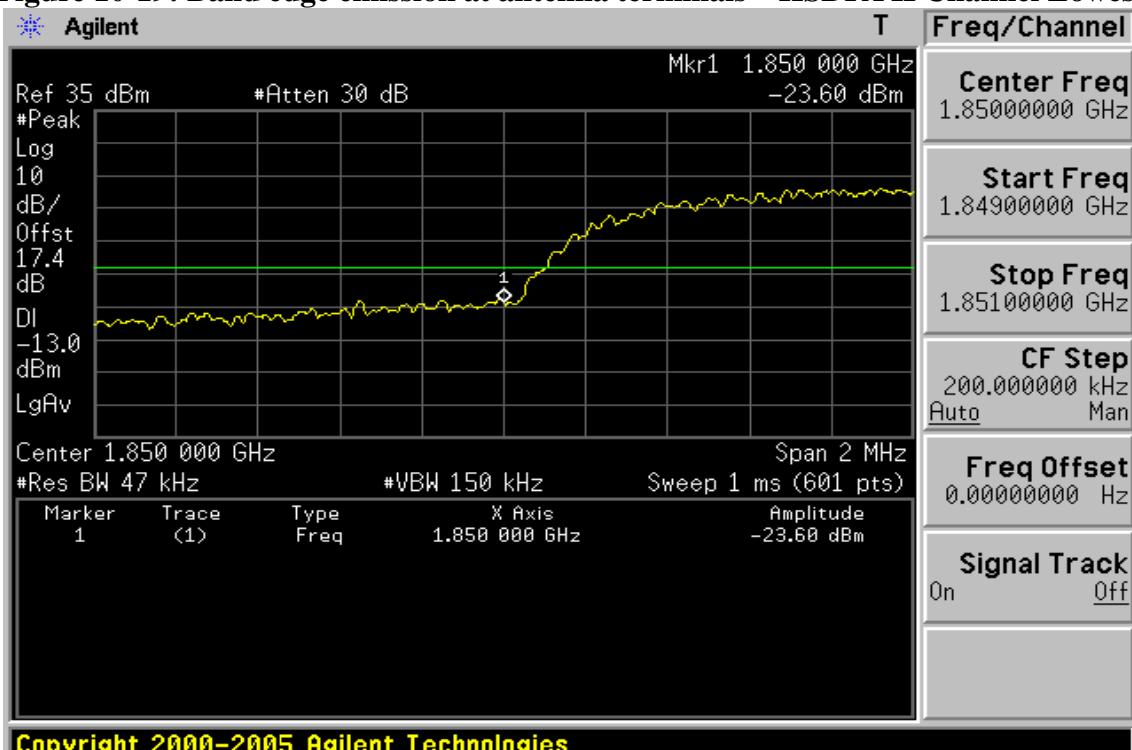


Figure 10-20: Band edge emission at antenna terminals – HSDPA II Channel Highest



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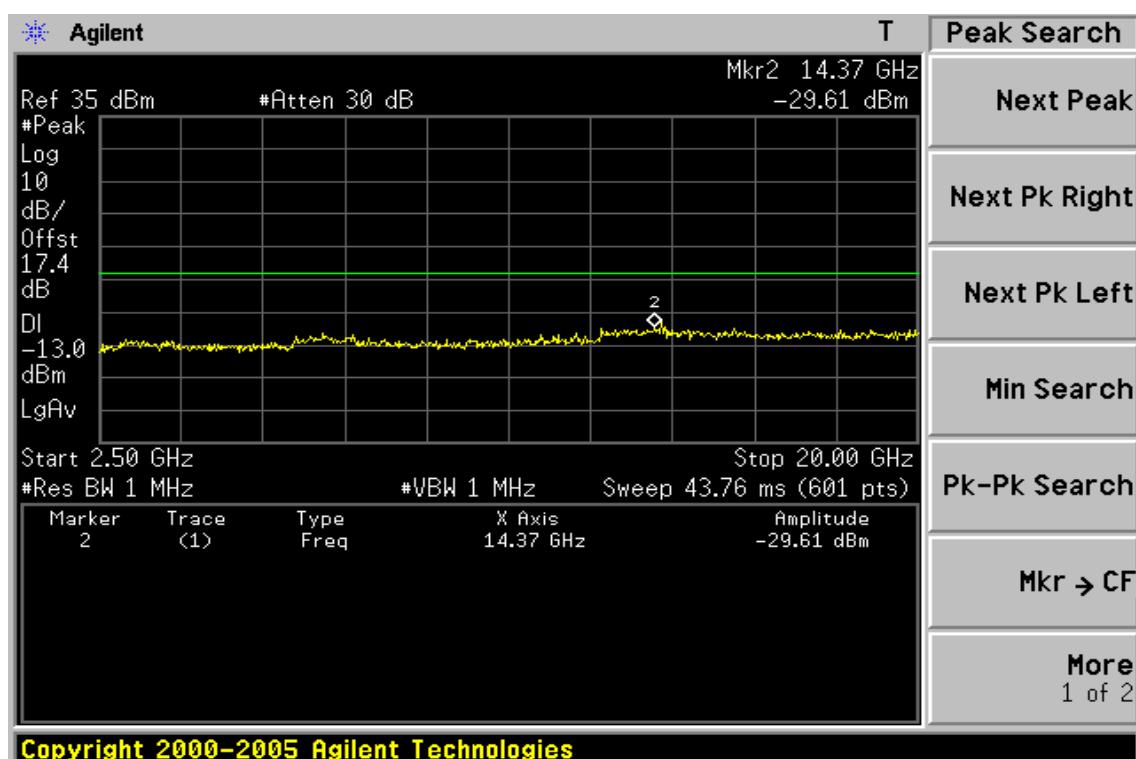
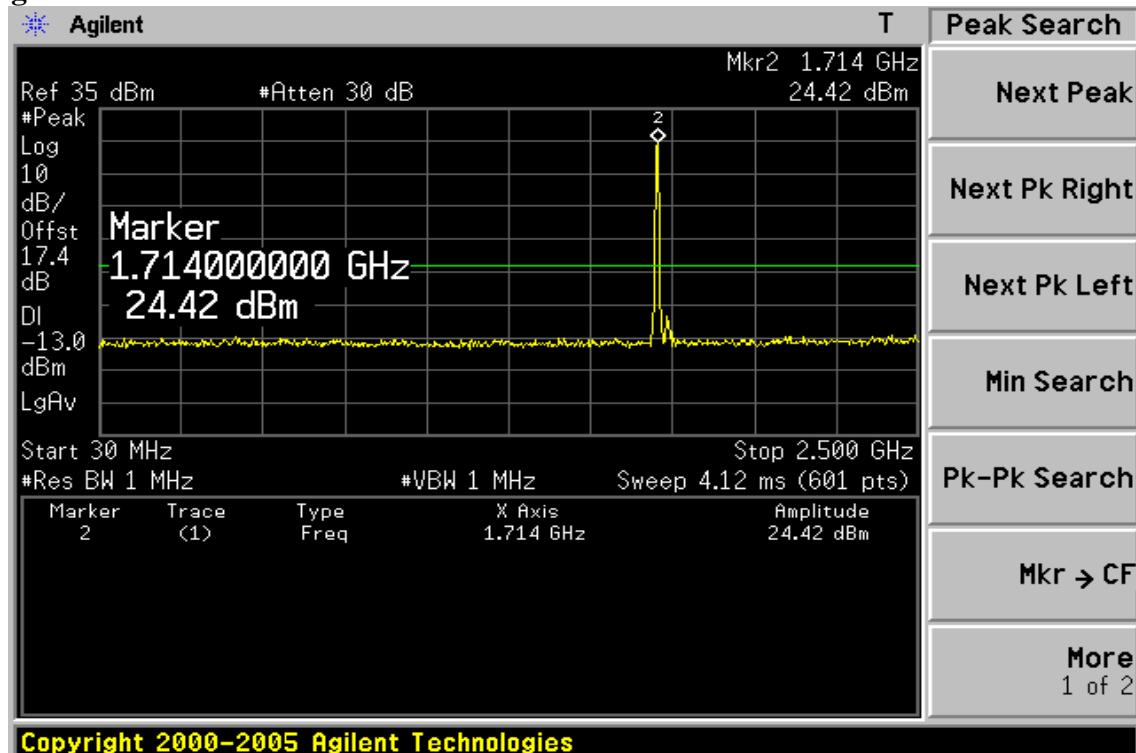
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Figure 10-21: Out of Band emission at antenna terminals – HSDPA IV Channel Lowest



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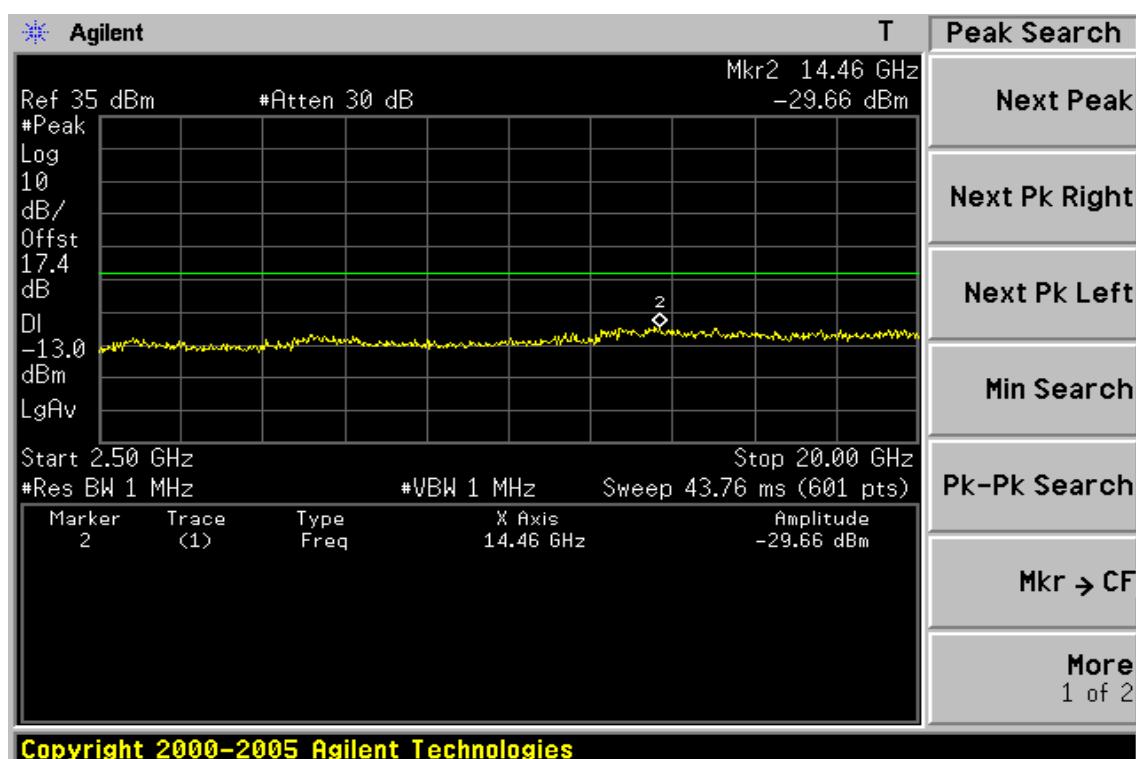
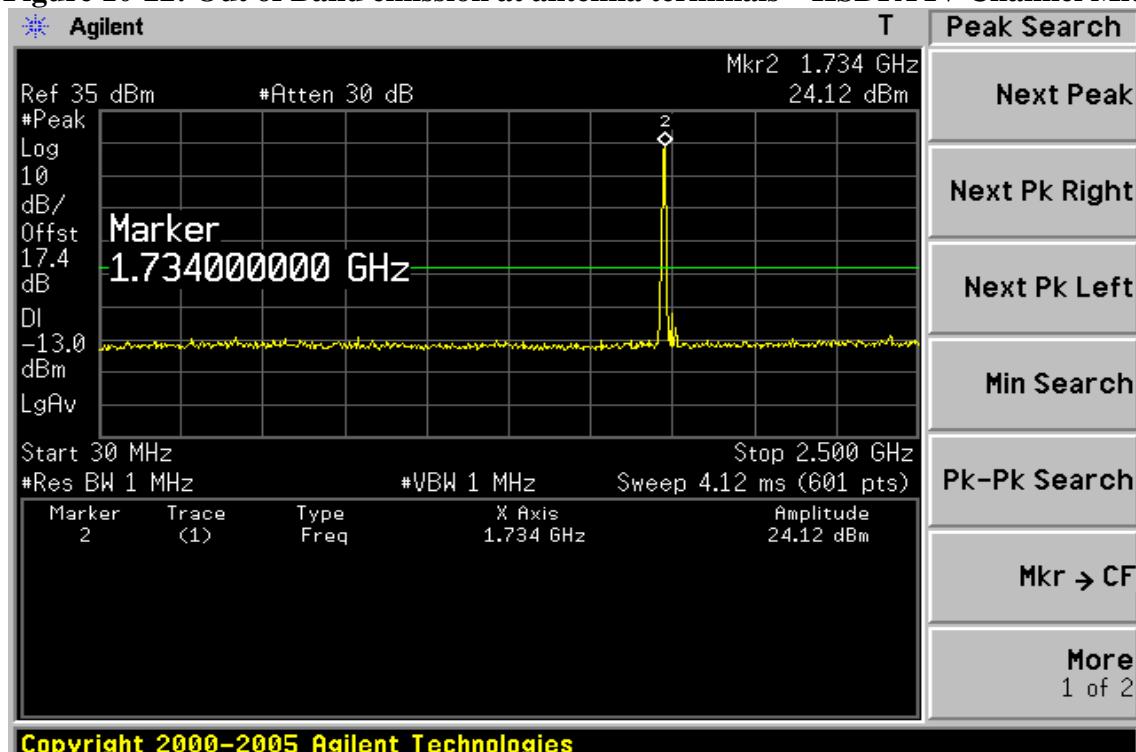
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Figure 10-22: Out of Band emission at antenna terminals – HSDPA IV Channel Mid



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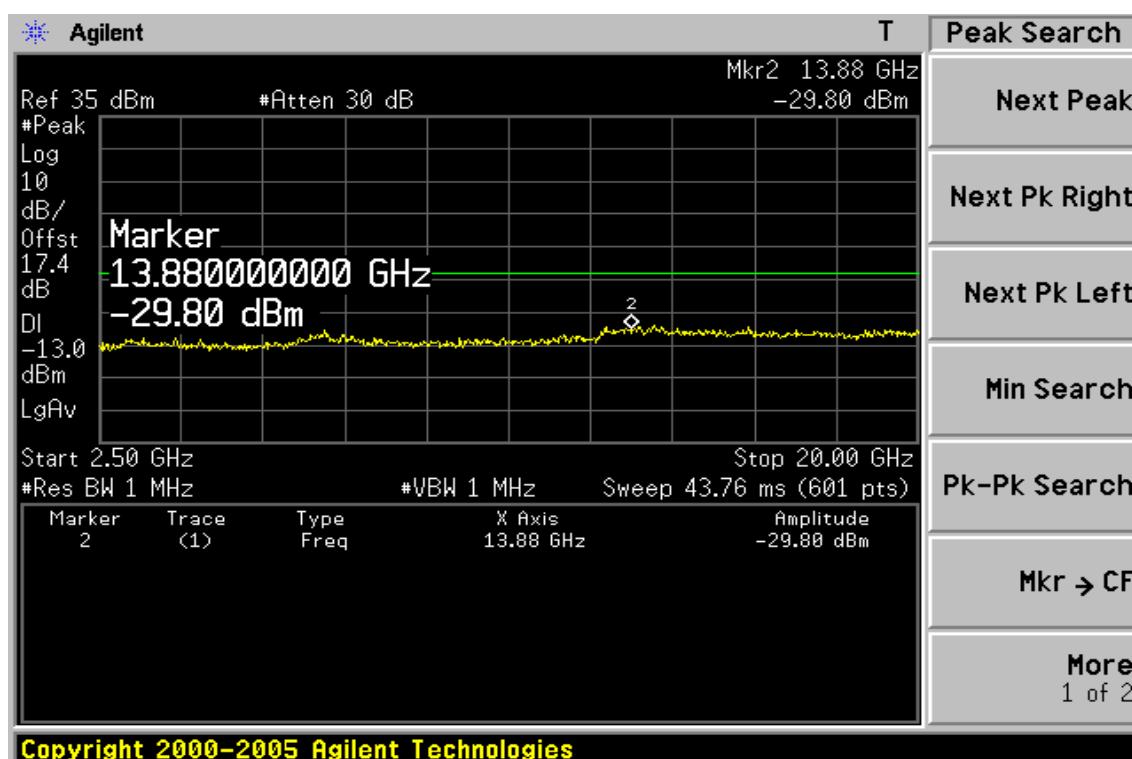
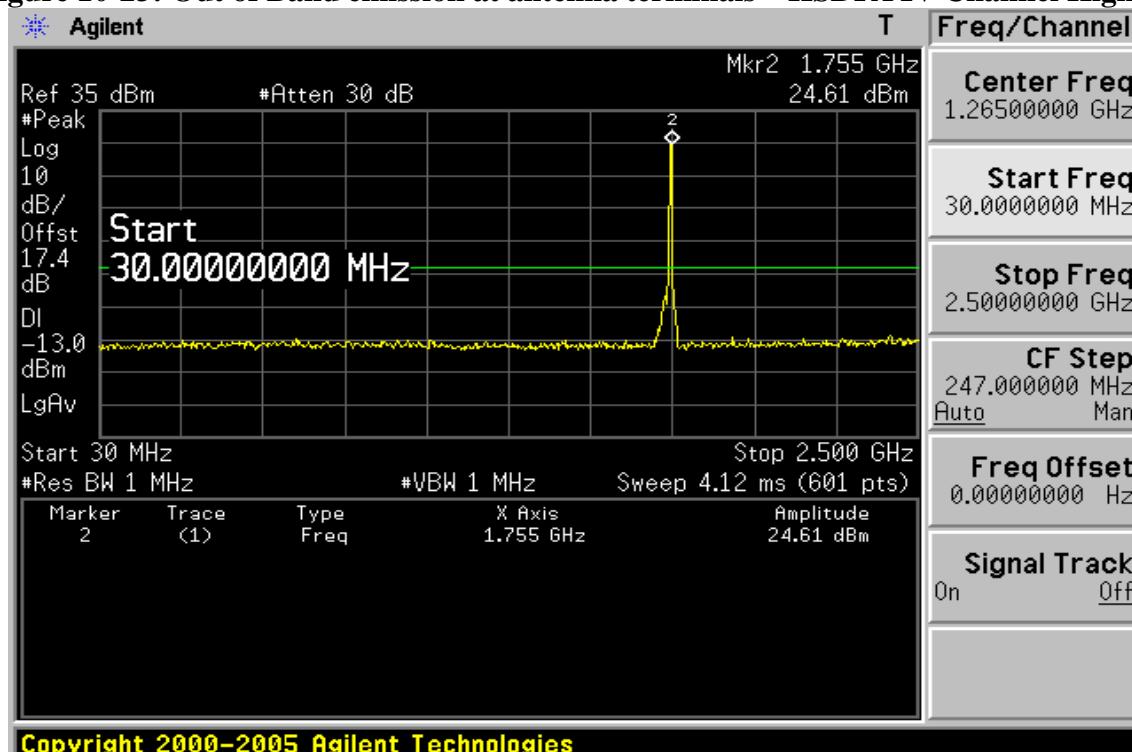
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Figure 10-23: Out of Band emission at antenna terminals – HSDPA IV Channel Highest



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Figure 10-24: Band edge emission at antenna terminals – HSDPA IV Channel Lowest

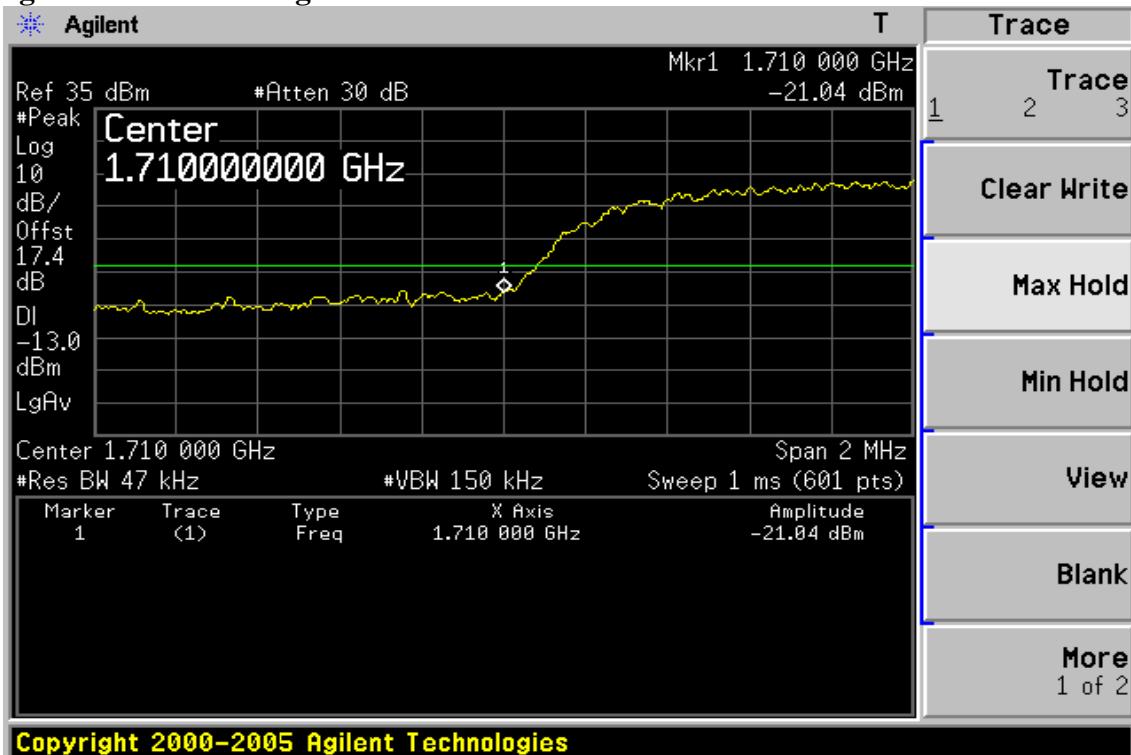
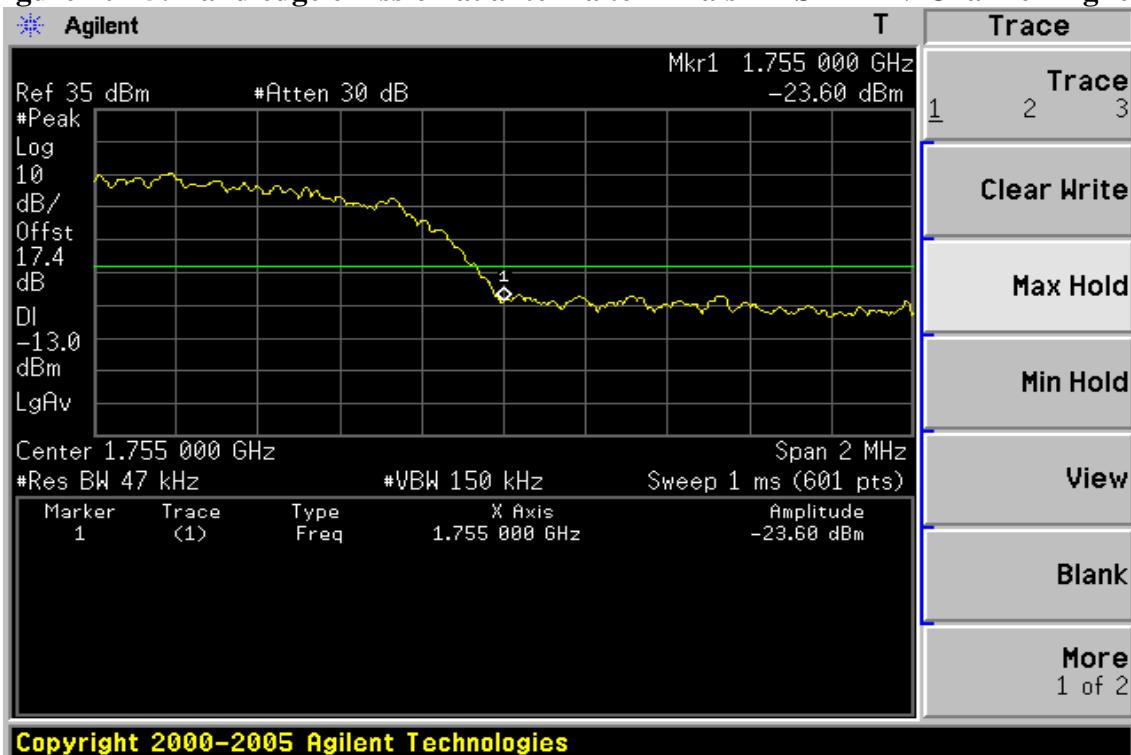


Figure 10-25: Band edge emission at antenna terminals – HSDPA IV Channel Highest



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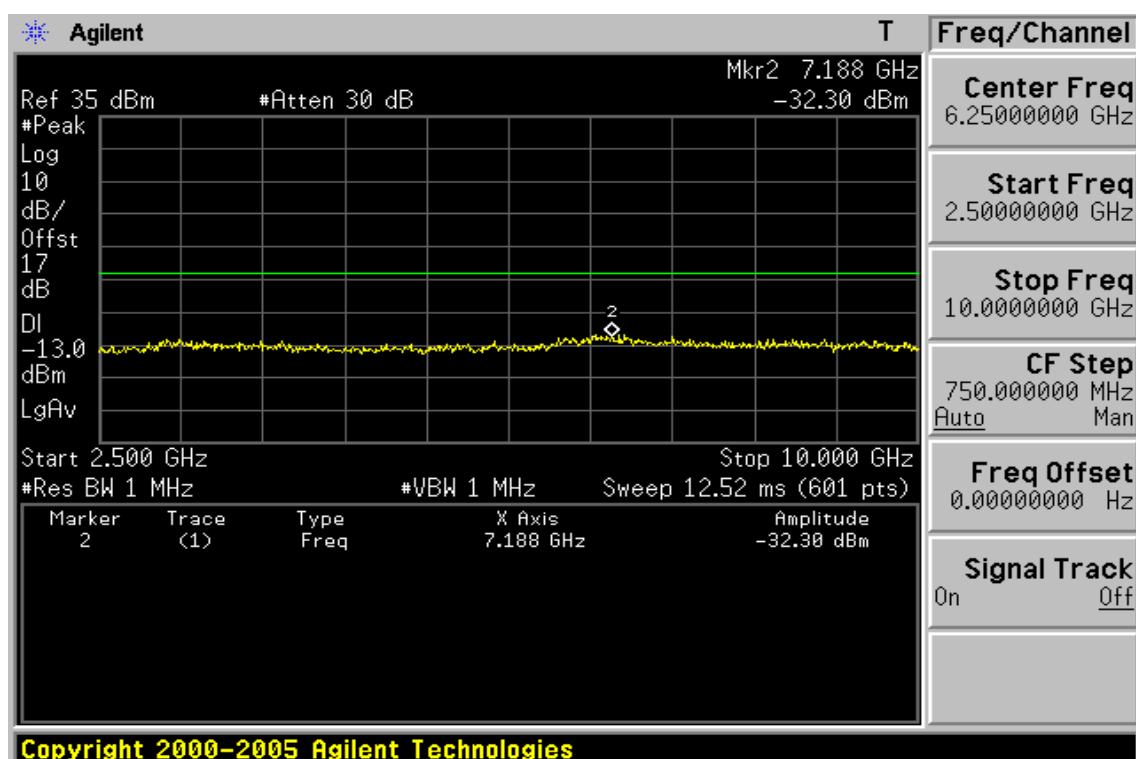
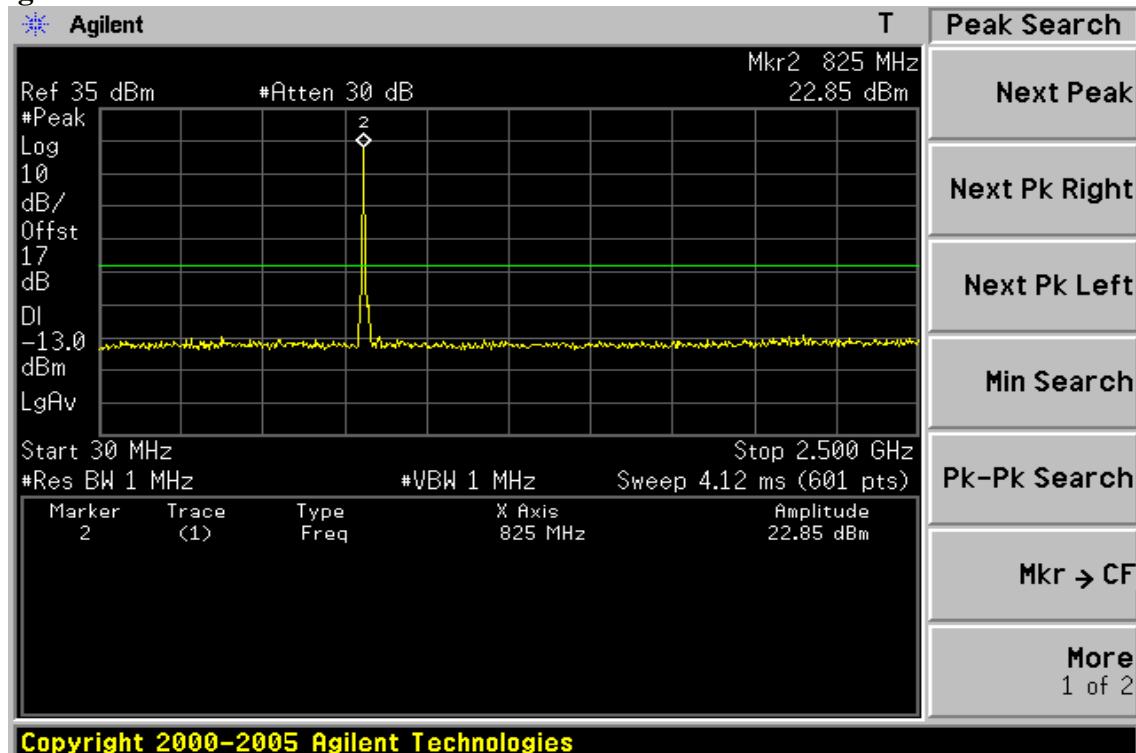
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Figure 10-26: Out of Band emission at antenna terminals – HSDPA V Channel Lowest



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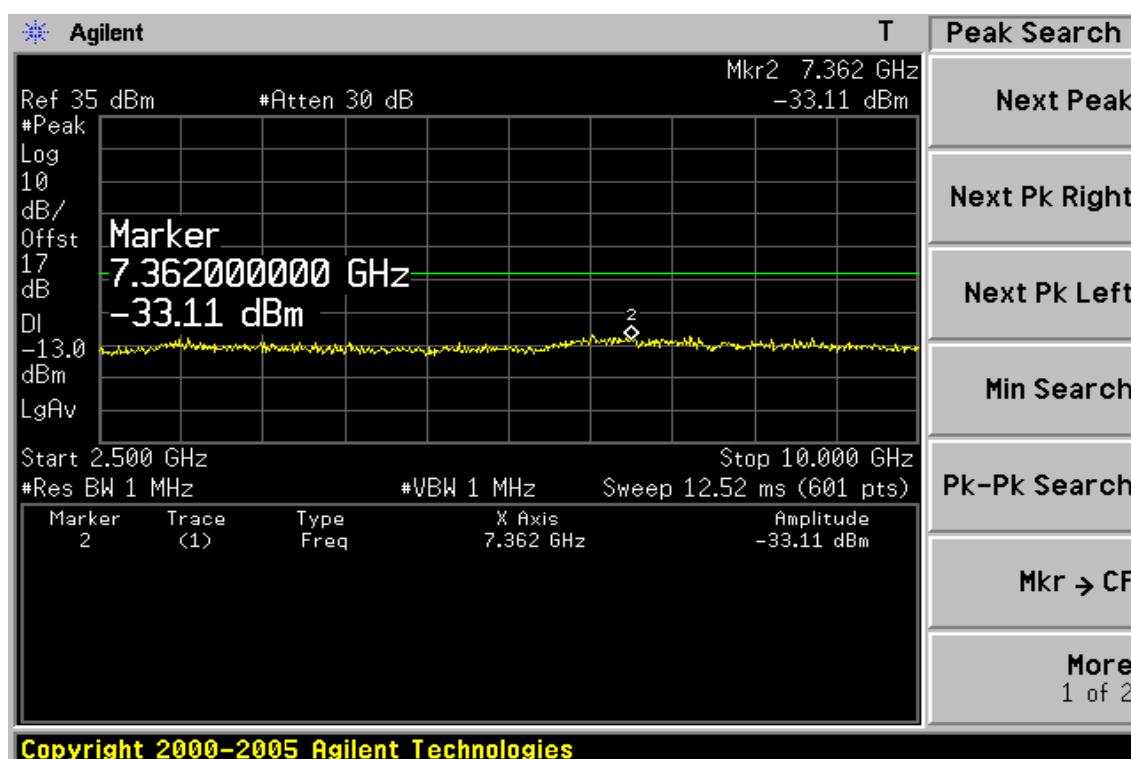
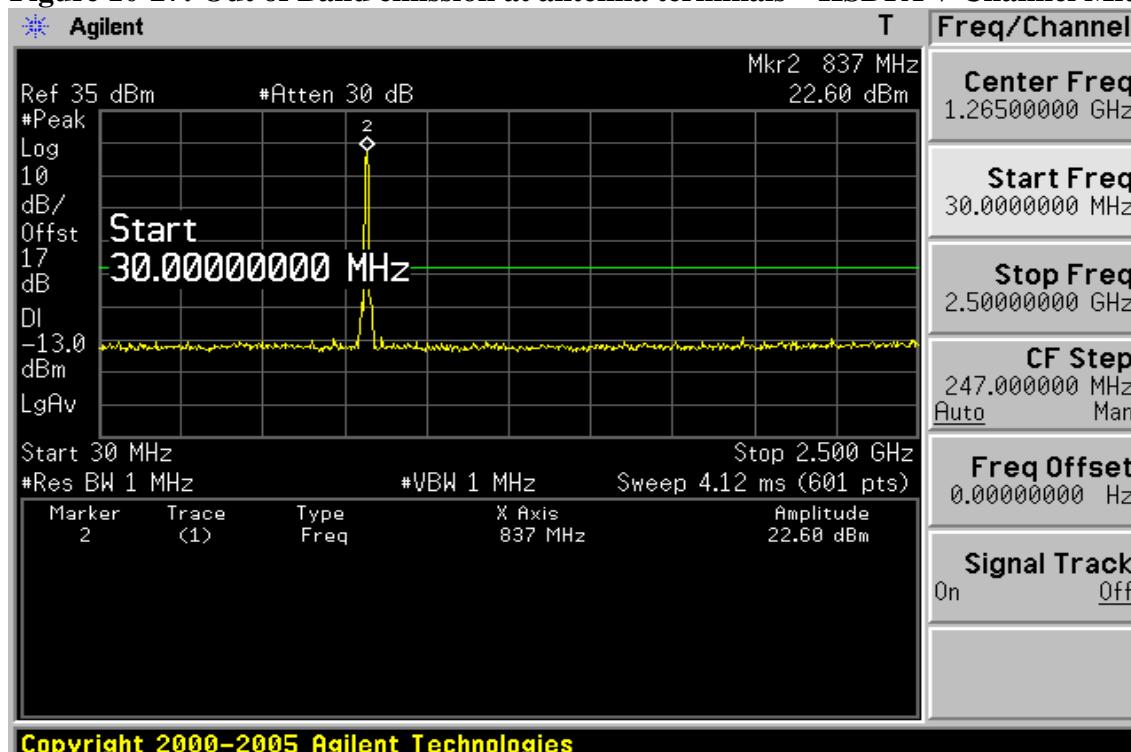
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Figure 10-27: Out of Band emission at antenna terminals – HSDPA V Channel Mid



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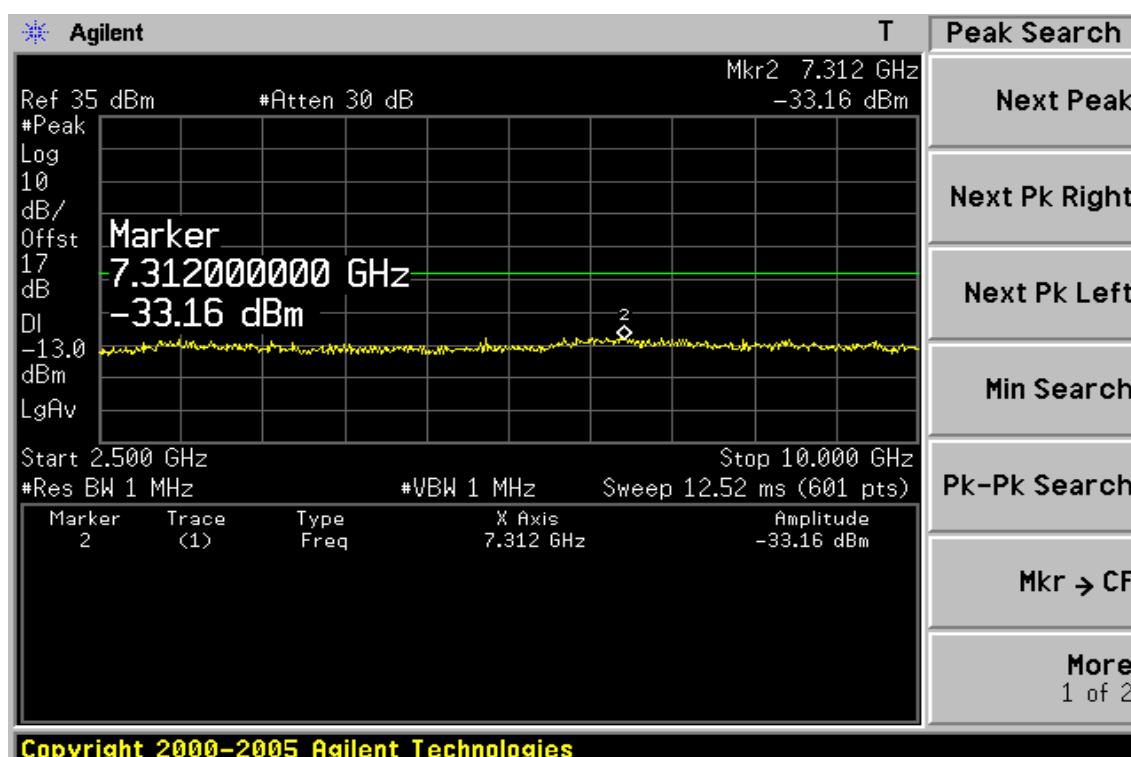
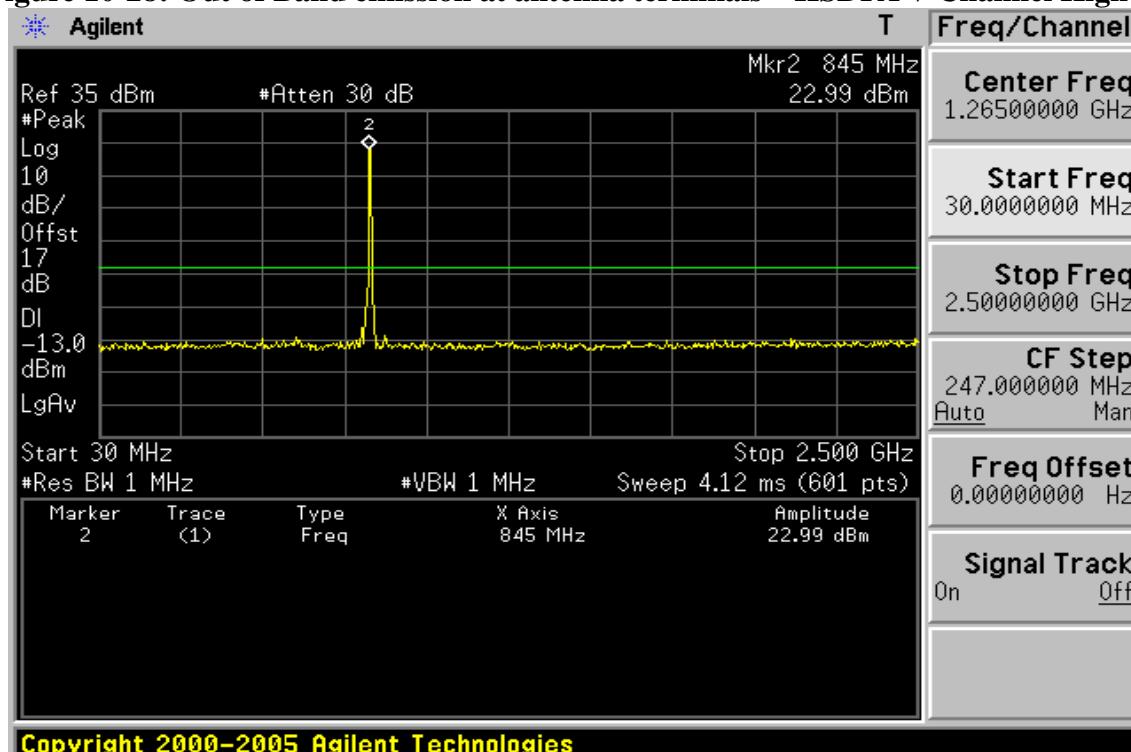
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Figure 10-28: Out of Band emission at antenna terminals – HSDPA V Channel Highest



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Figure 10-29: Band edge emission at antenna terminals – HSDPA V Channel Lowest

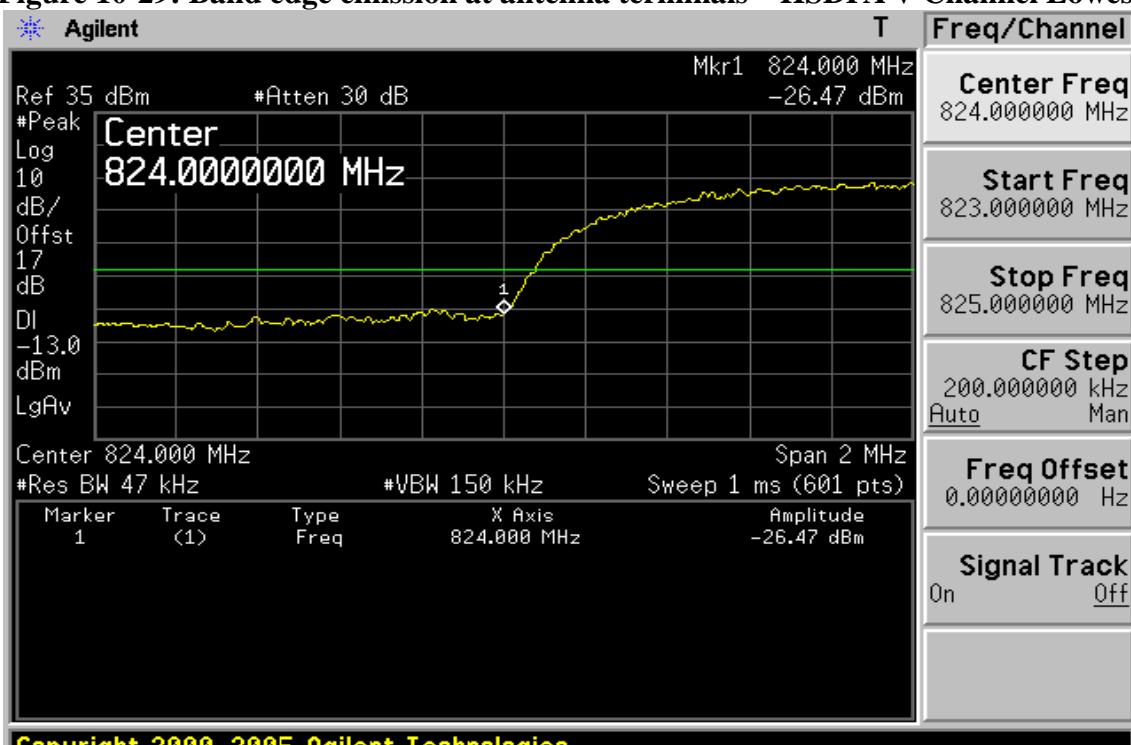
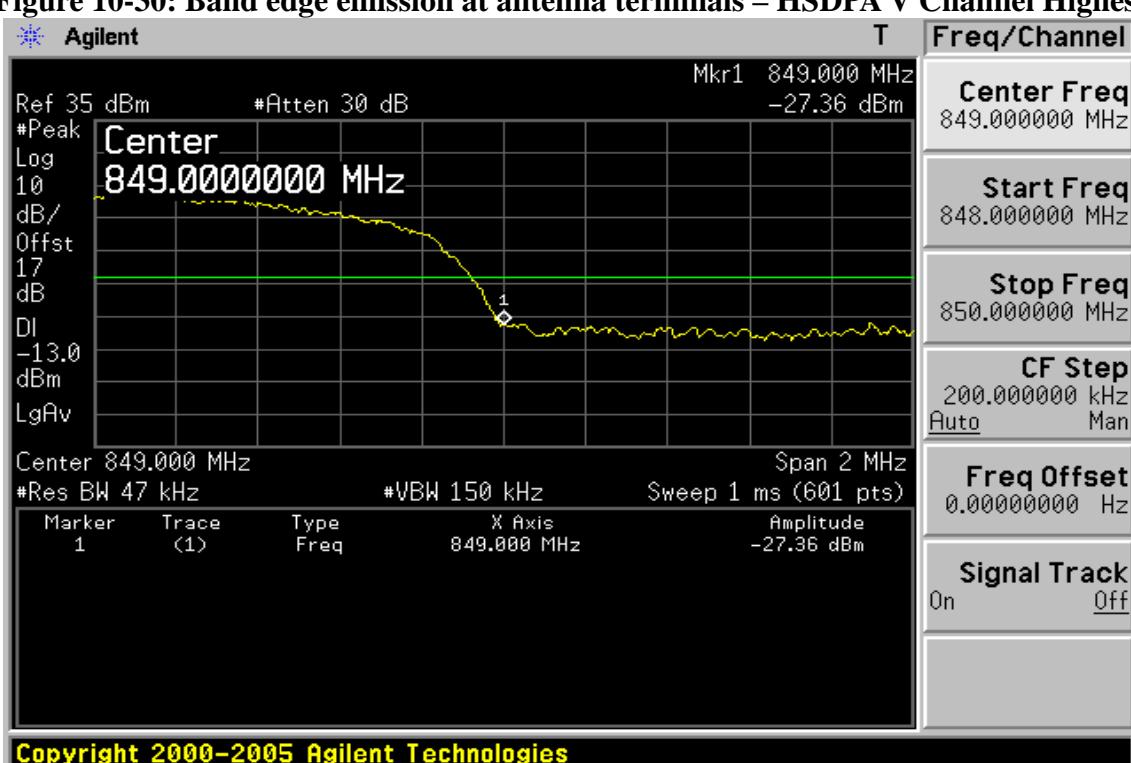


Figure 10-30: Band edge emission at antenna terminals – HSDPA V Channel Highest



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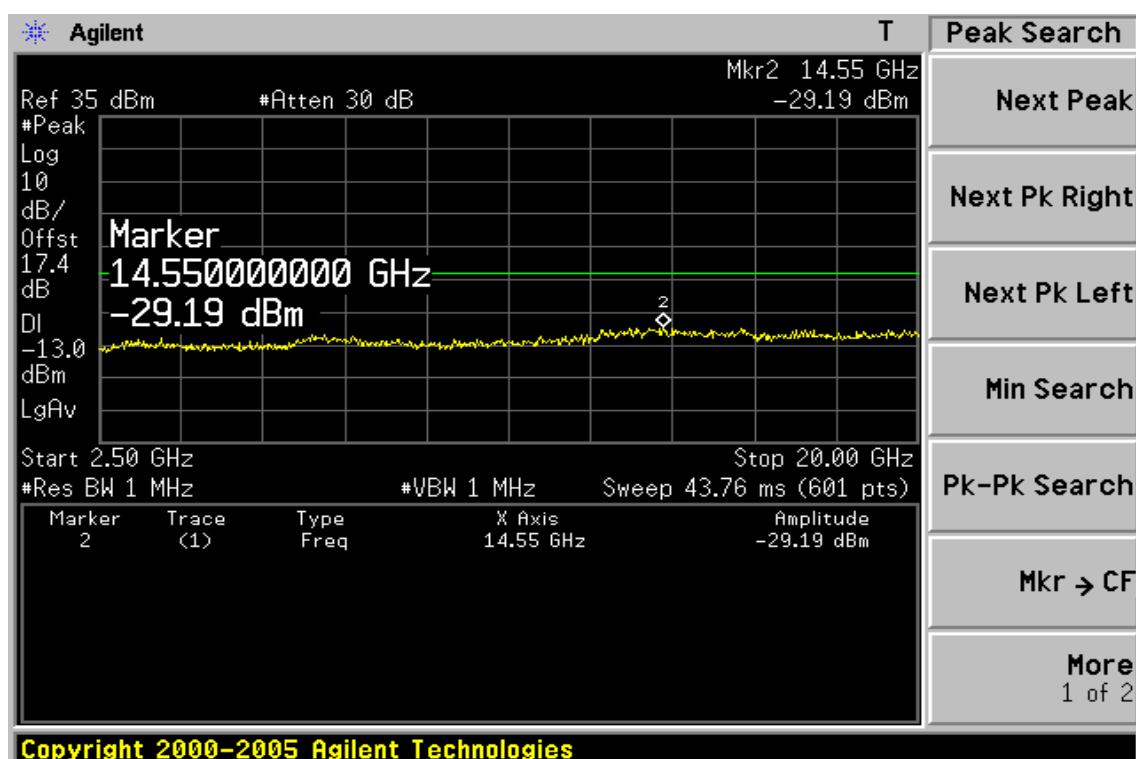
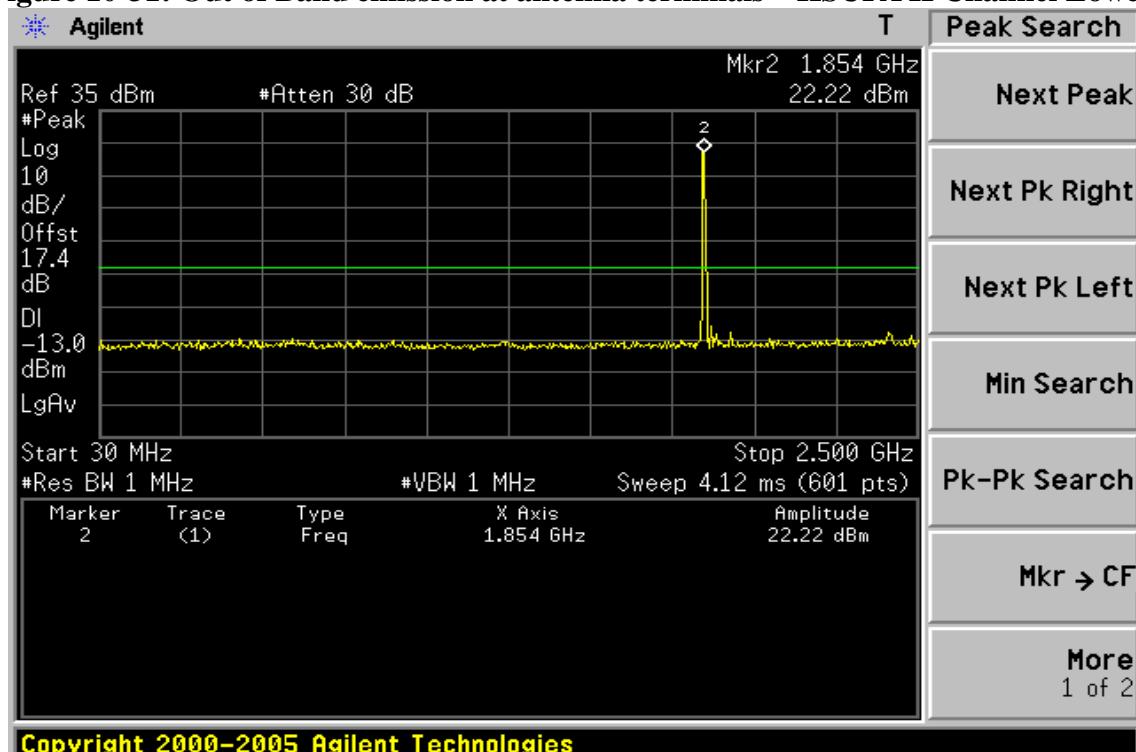
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Figure 10-31: Out of Band emission at antenna terminals – HSUPA II Channel Lowest



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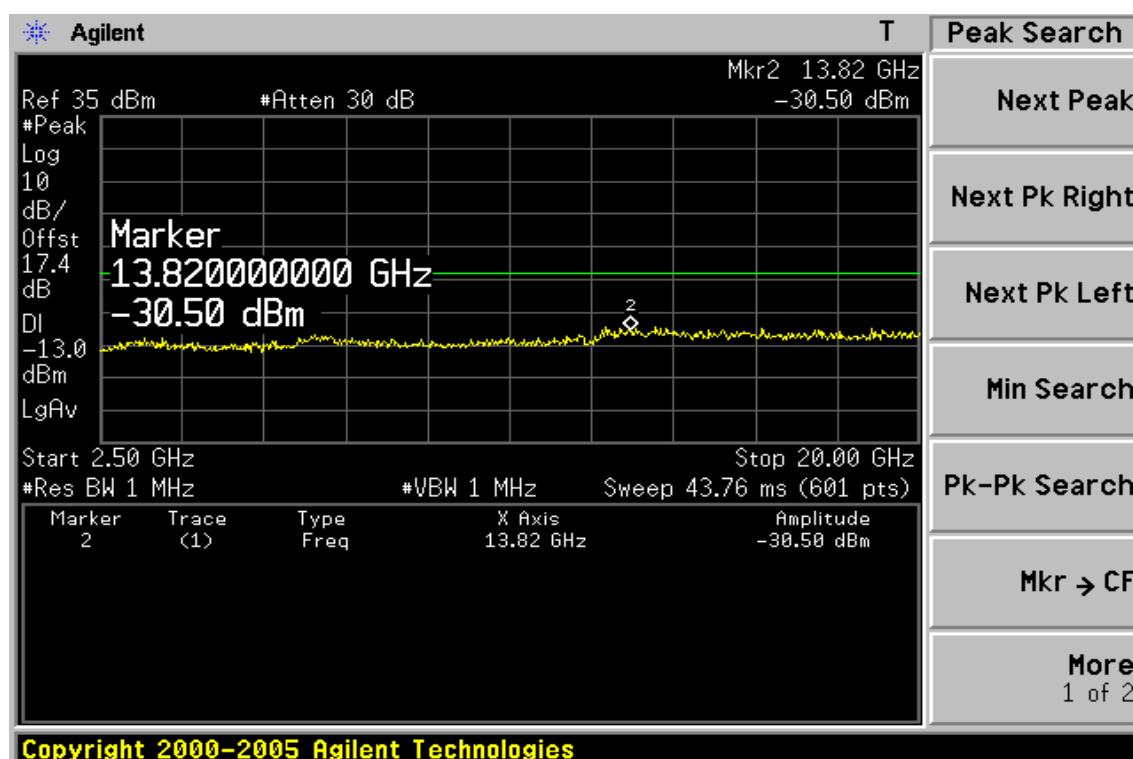
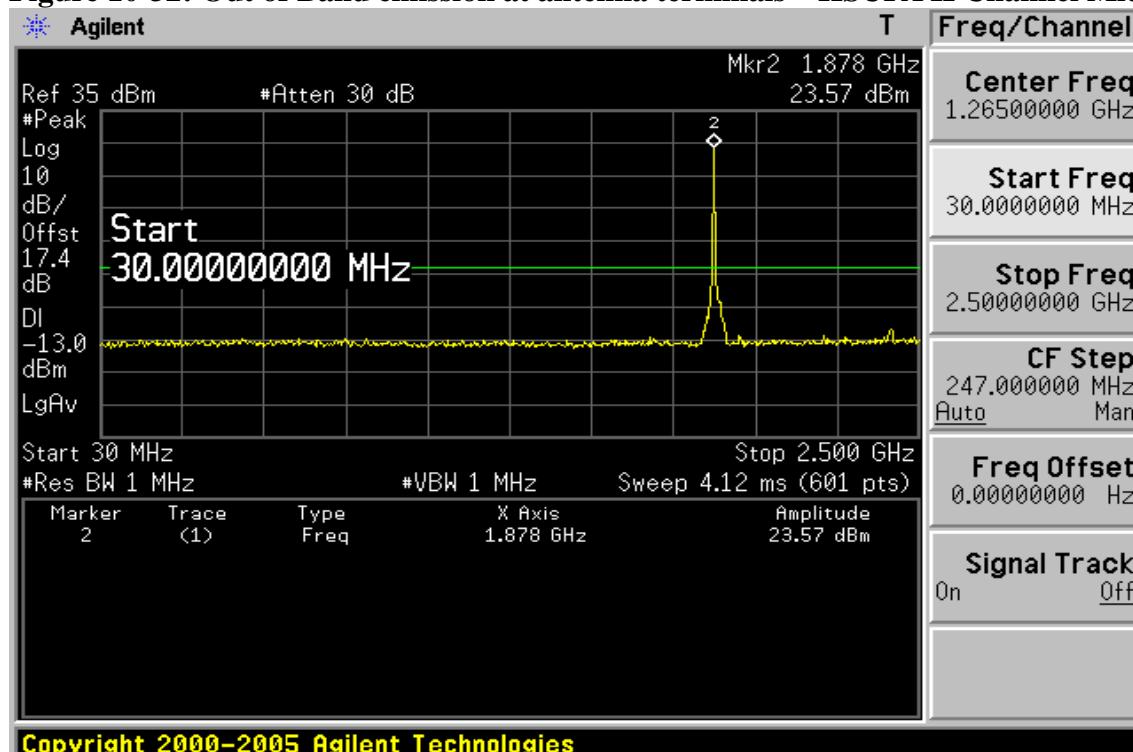
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Figure 10-32: Out of Band emission at antenna terminals – HSUPA II Channel Mid



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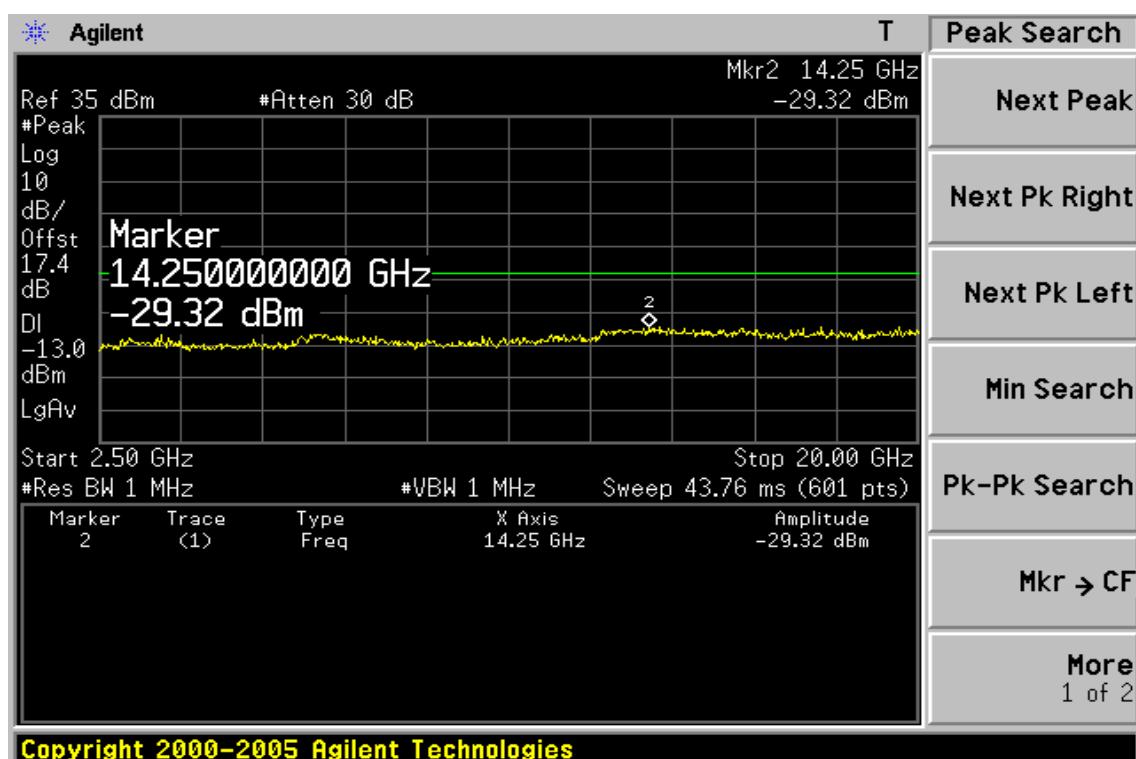
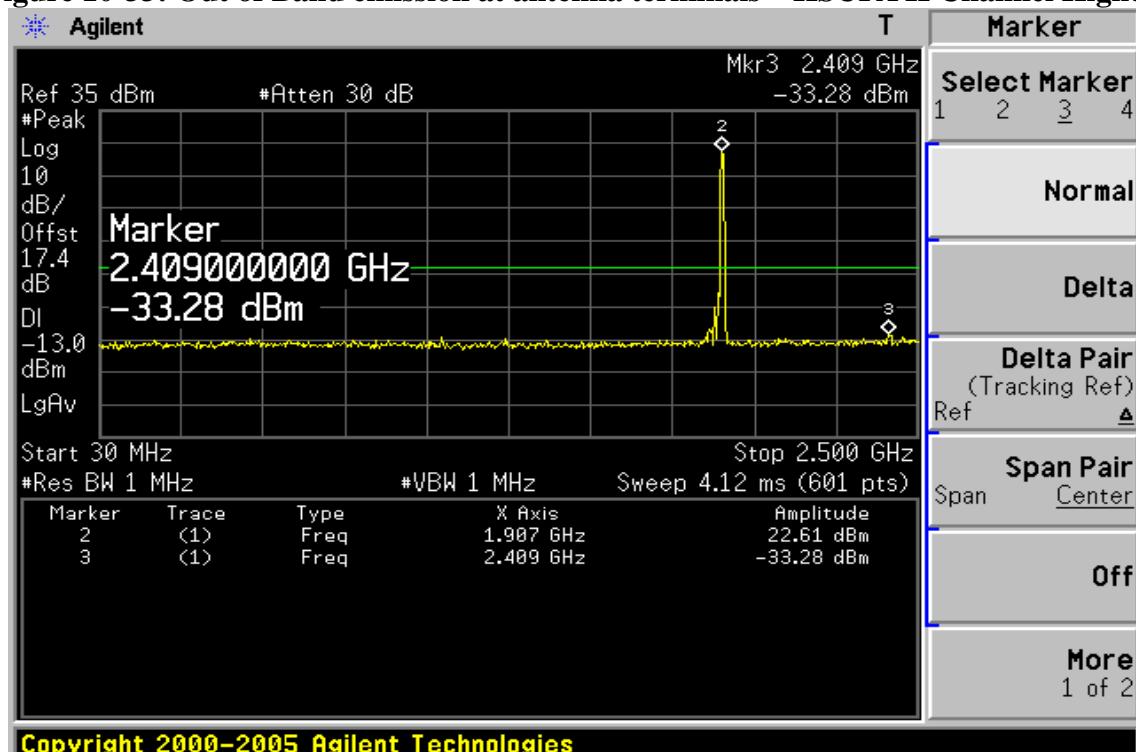
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Figure 10-33: Out of Band emission at antenna terminals – HSUPA II Channel Highest



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Figure 10-34: Band edge emission at antenna terminals – HSUPA II Channel Lowest

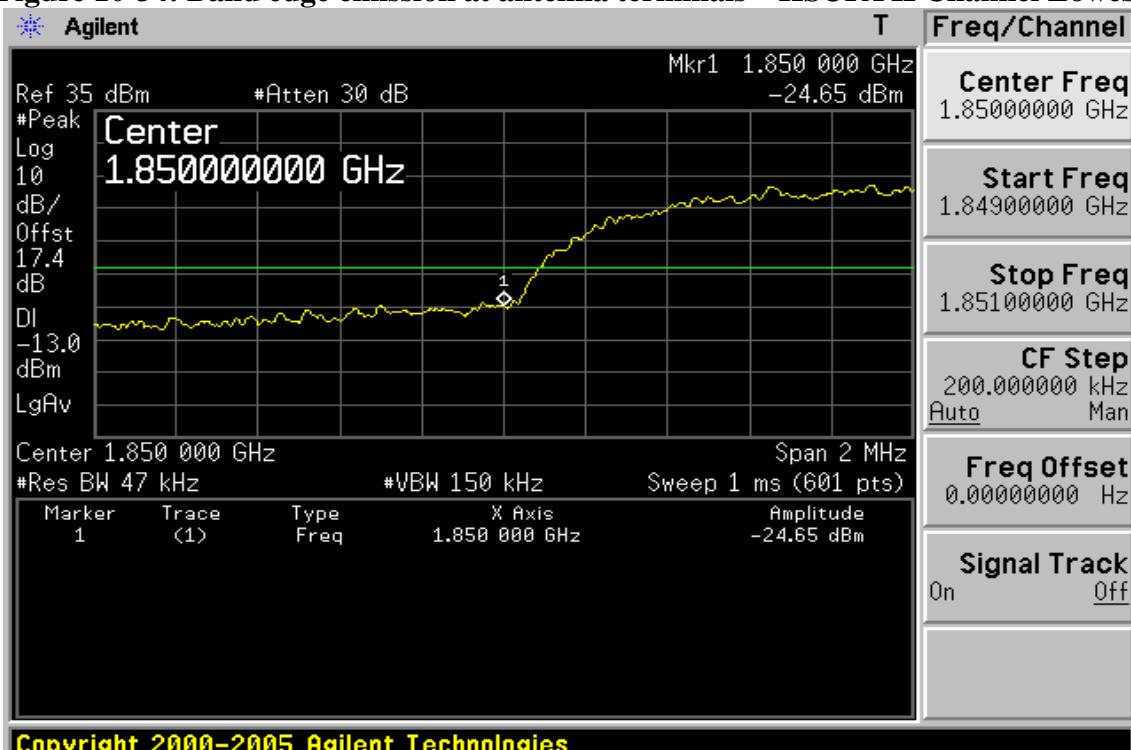
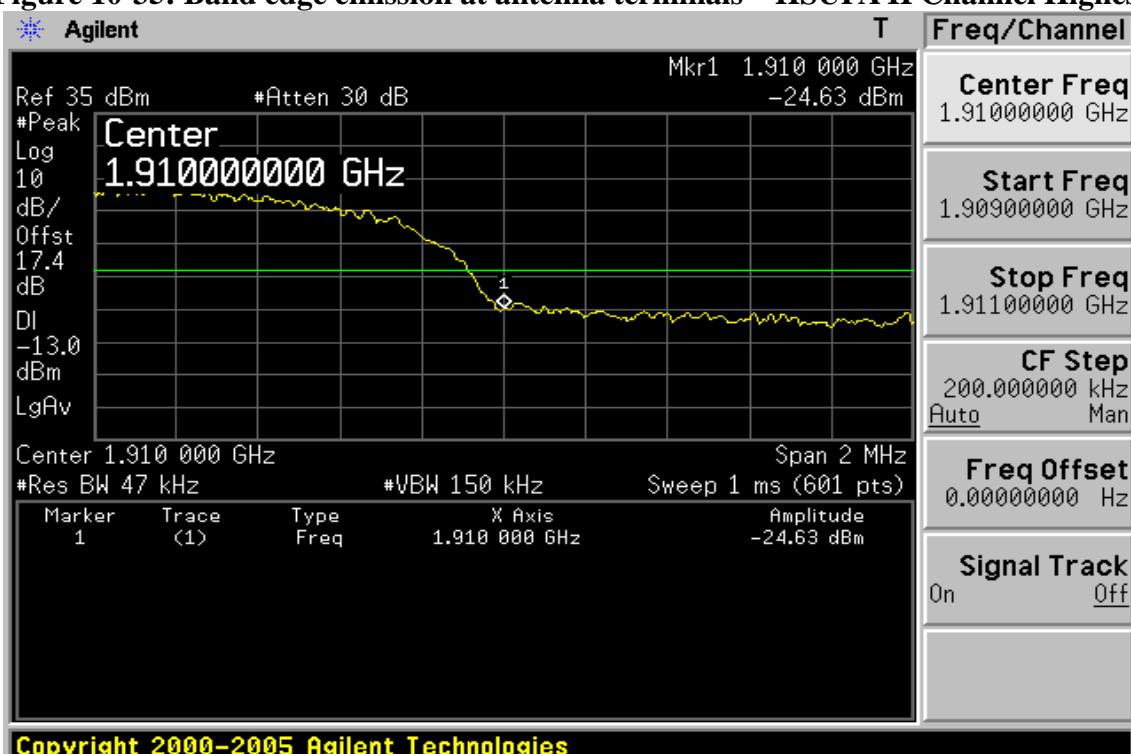


Figure 10-35: Band edge emission at antenna terminals – HSUPA II Channel Highest



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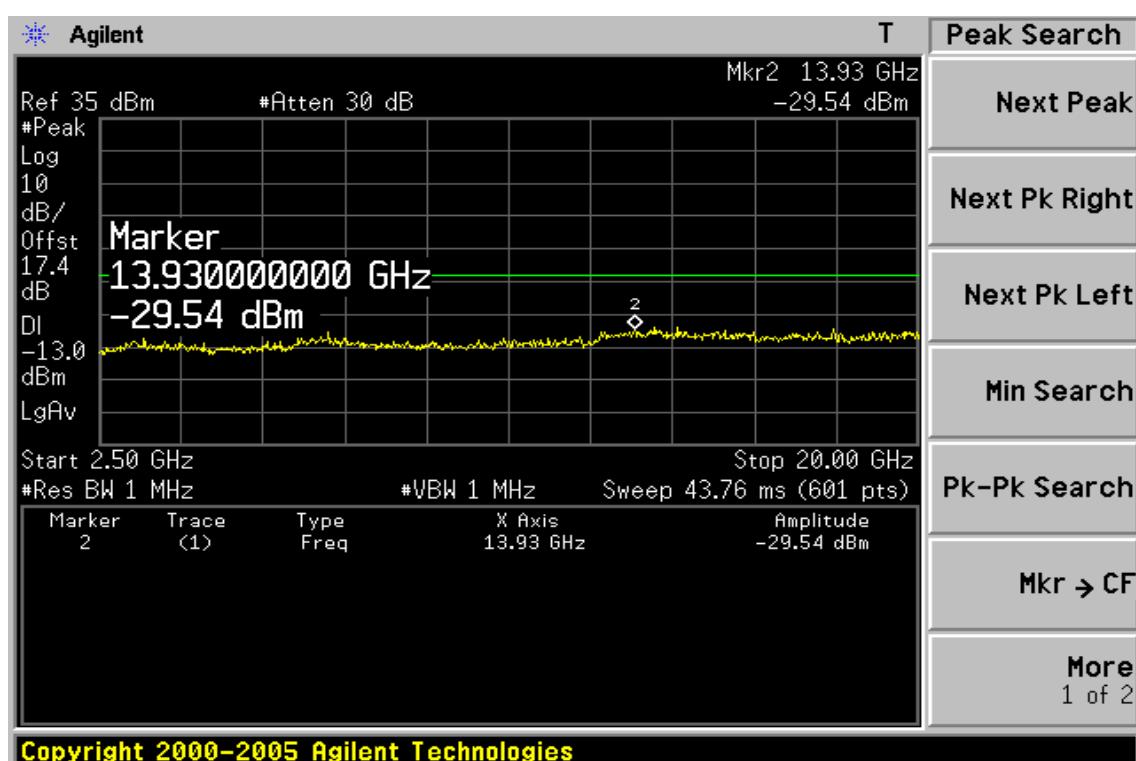
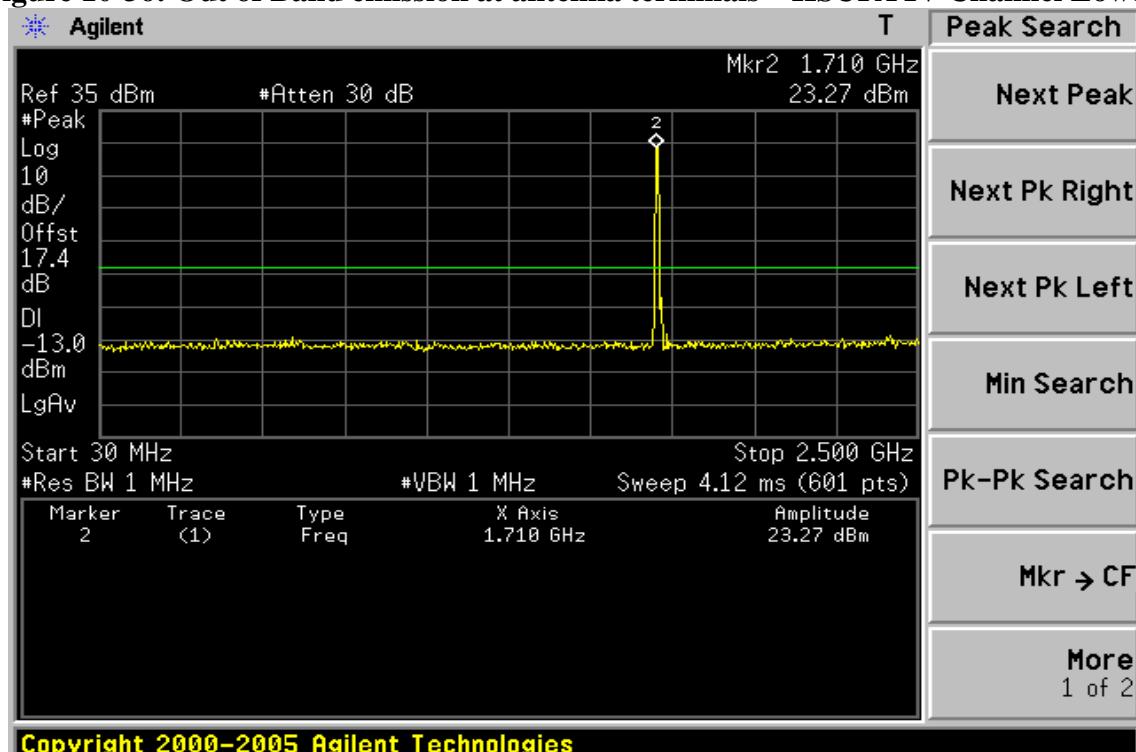
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Figure 10-36: Out of Band emission at antenna terminals – HSUPA IV Channel Lowest



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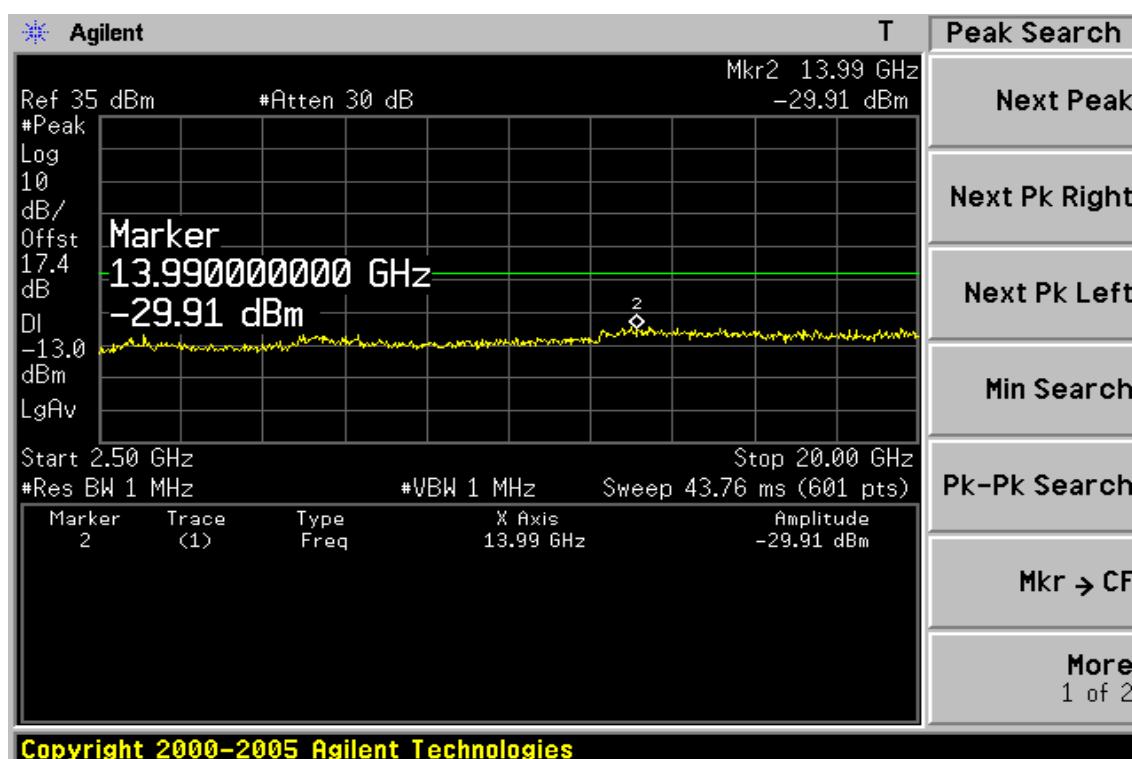
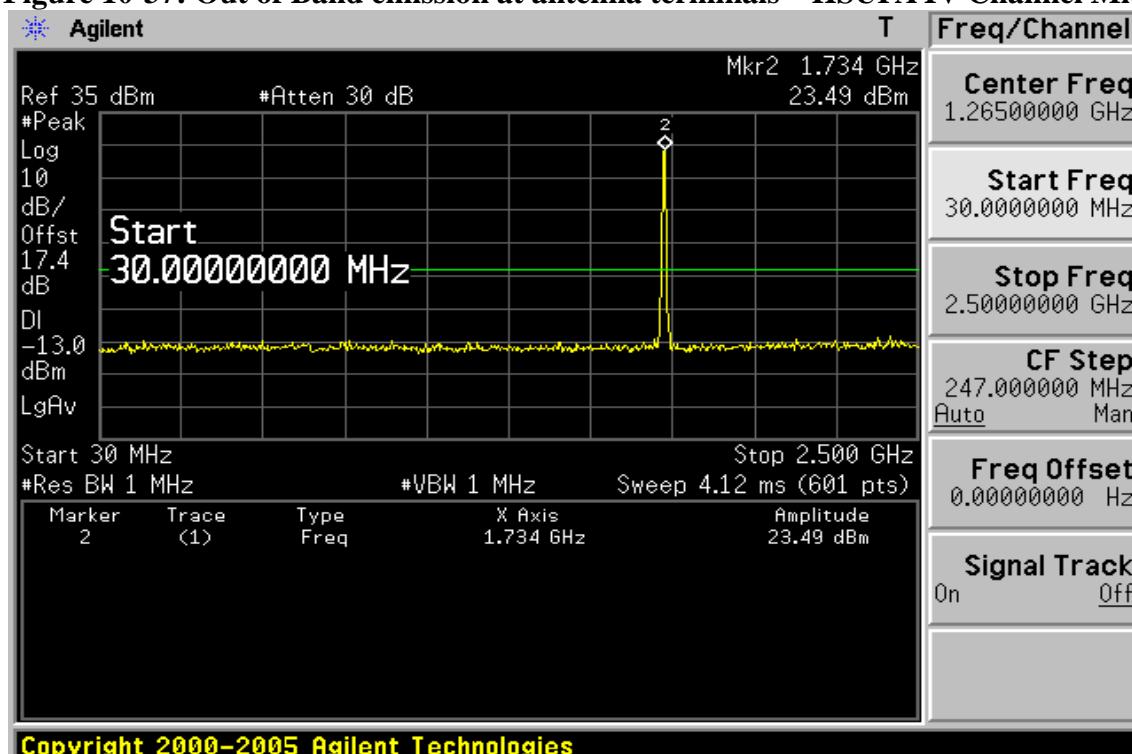
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Figure 10-37: Out of Band emission at antenna terminals – HSUPA IV Channel Mid



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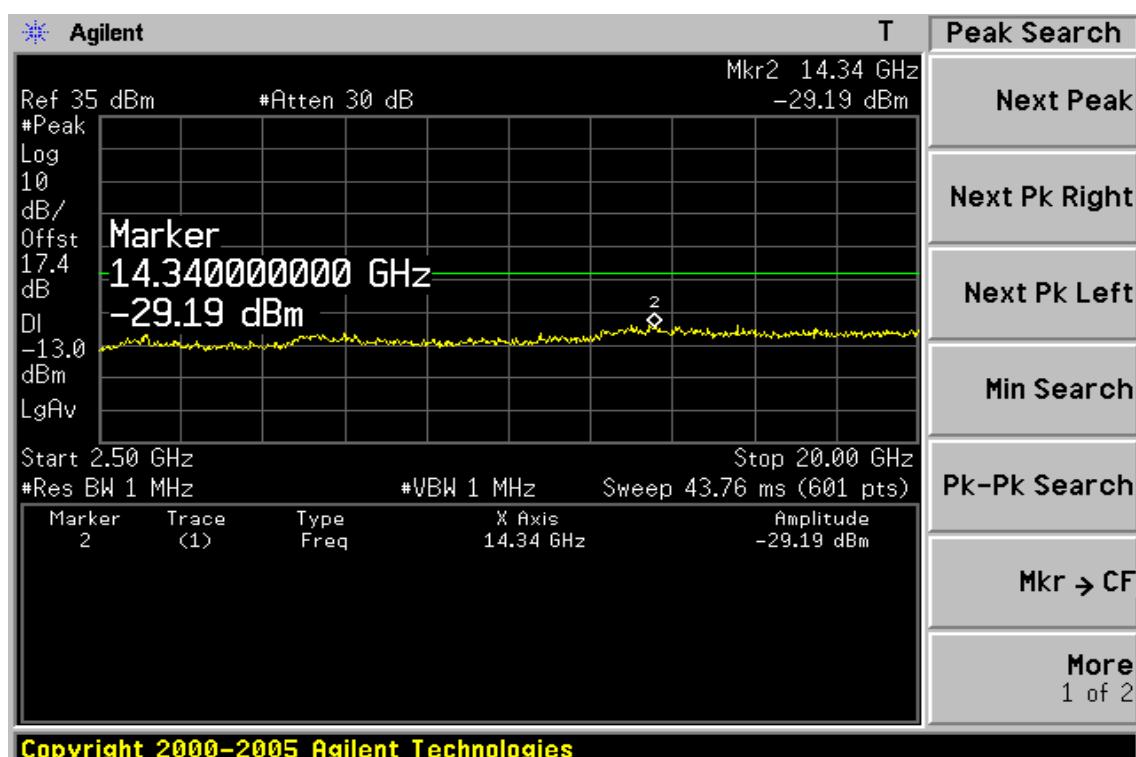
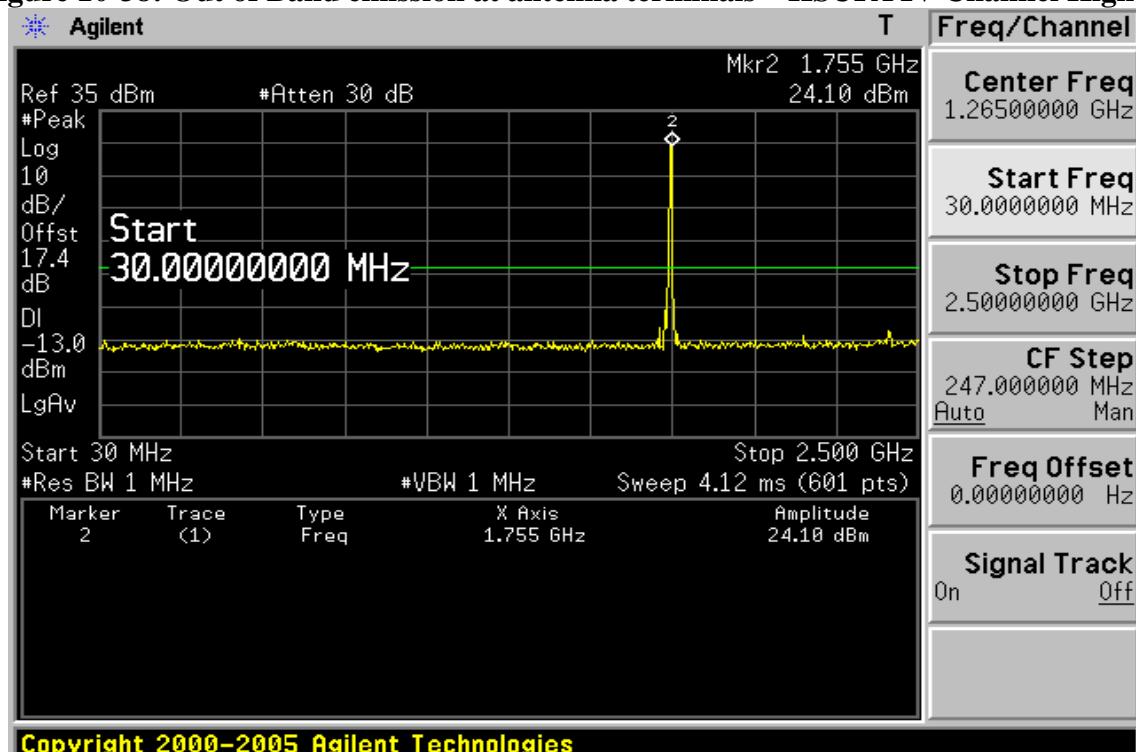
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Figure 10-38: Out of Band emission at antenna terminals – HSUPA IV Channel Highest



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Figure 10-39: Band edge emission at antenna terminals – HSUPA IV Channel Lowest

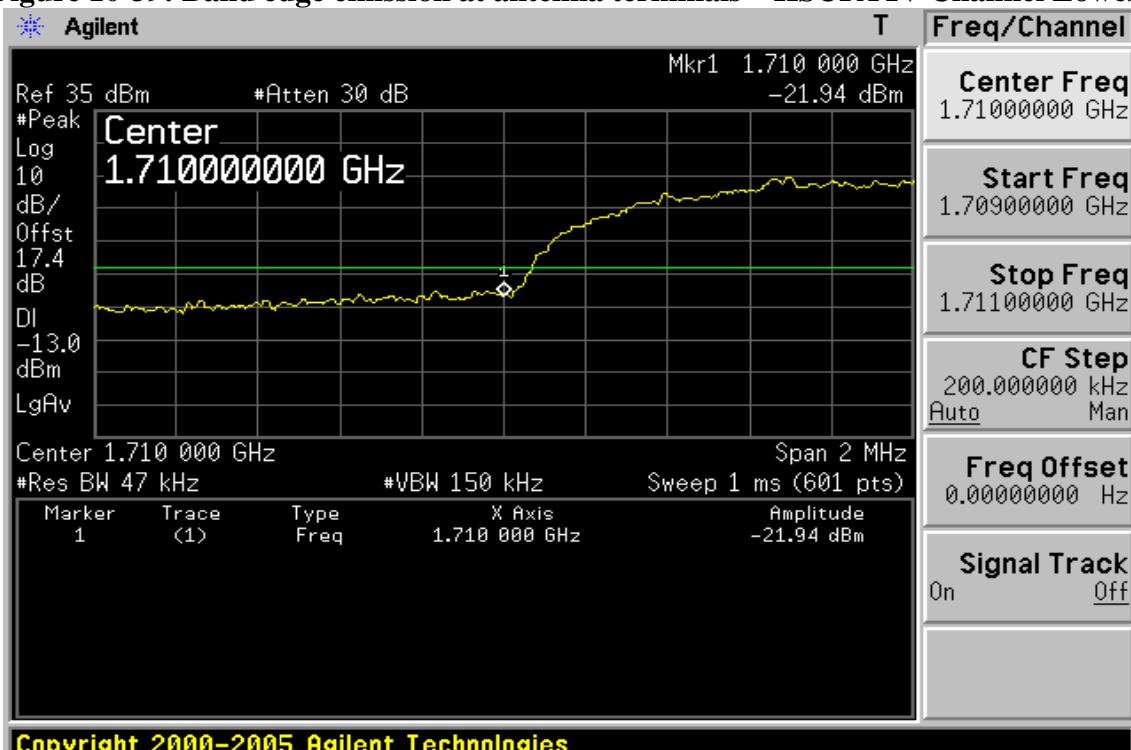
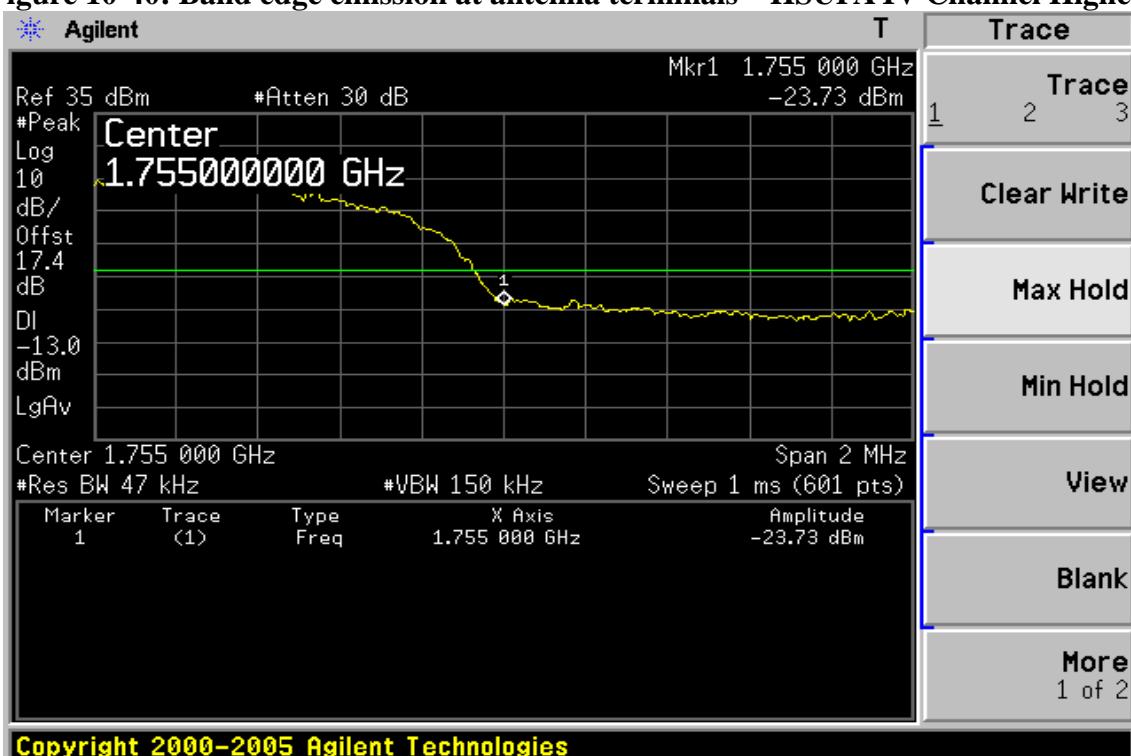


Figure 10-40: Band edge emission at antenna terminals – HSUPA IV Channel Highest



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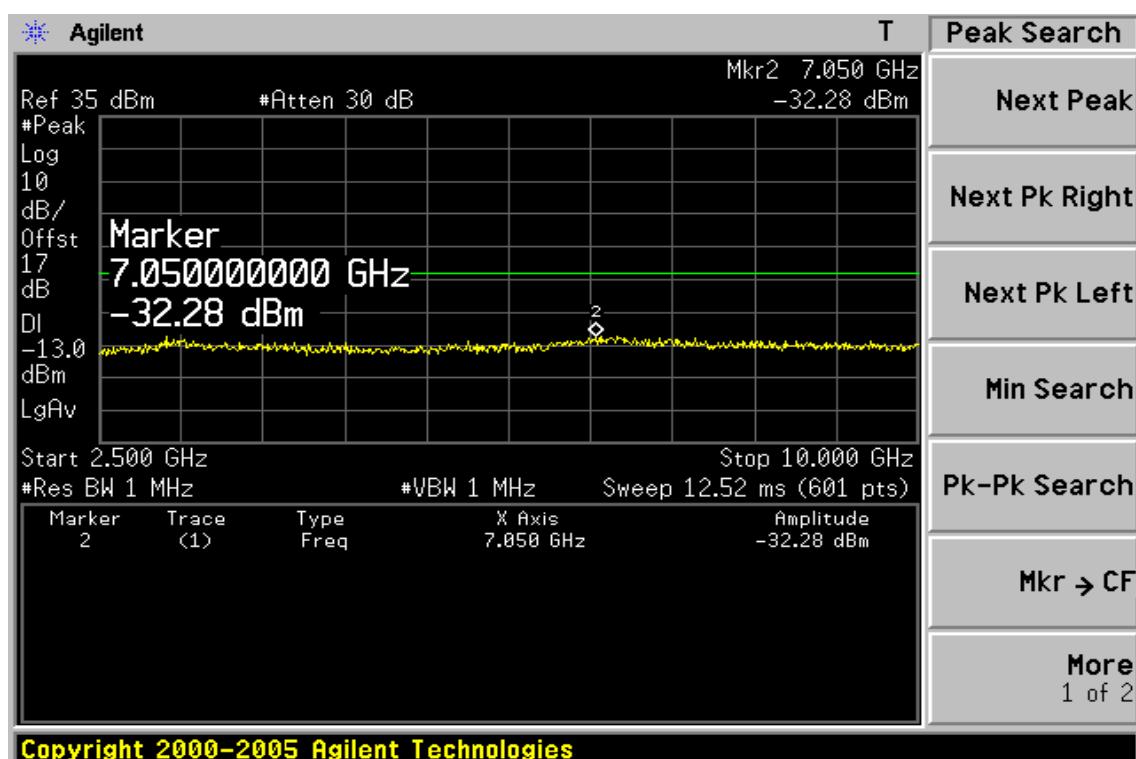
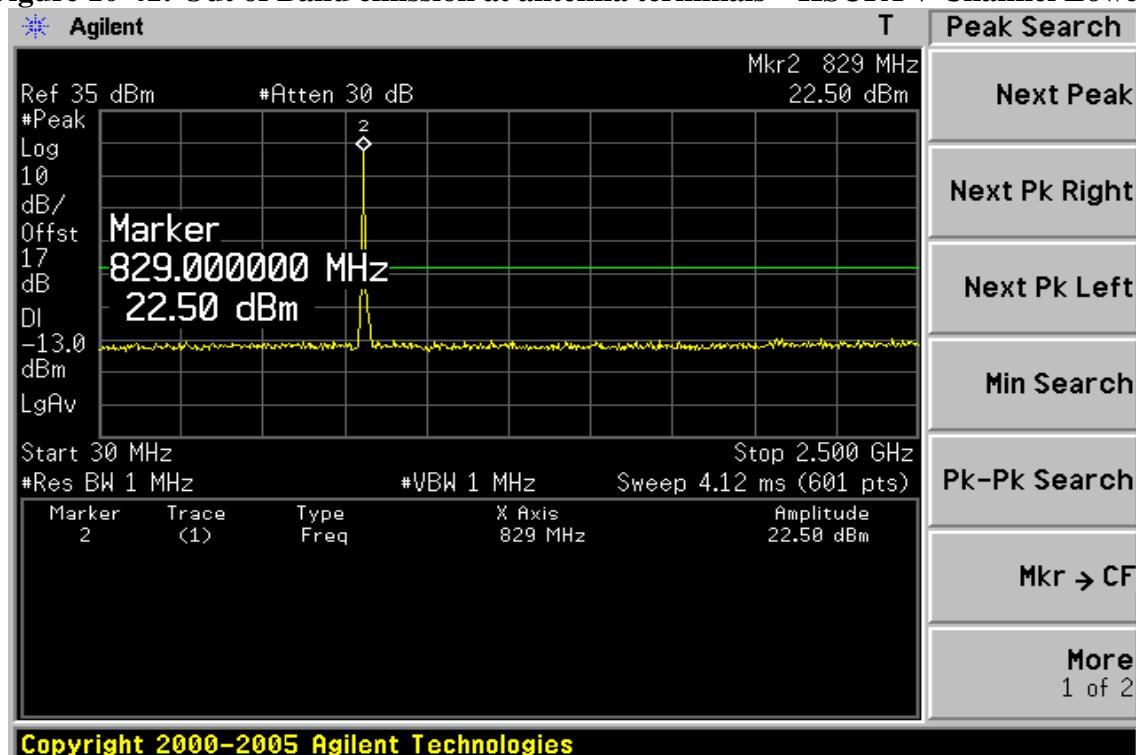
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Figure 10-41: Out of Band emission at antenna terminals – HSUPA V Channel Lowest



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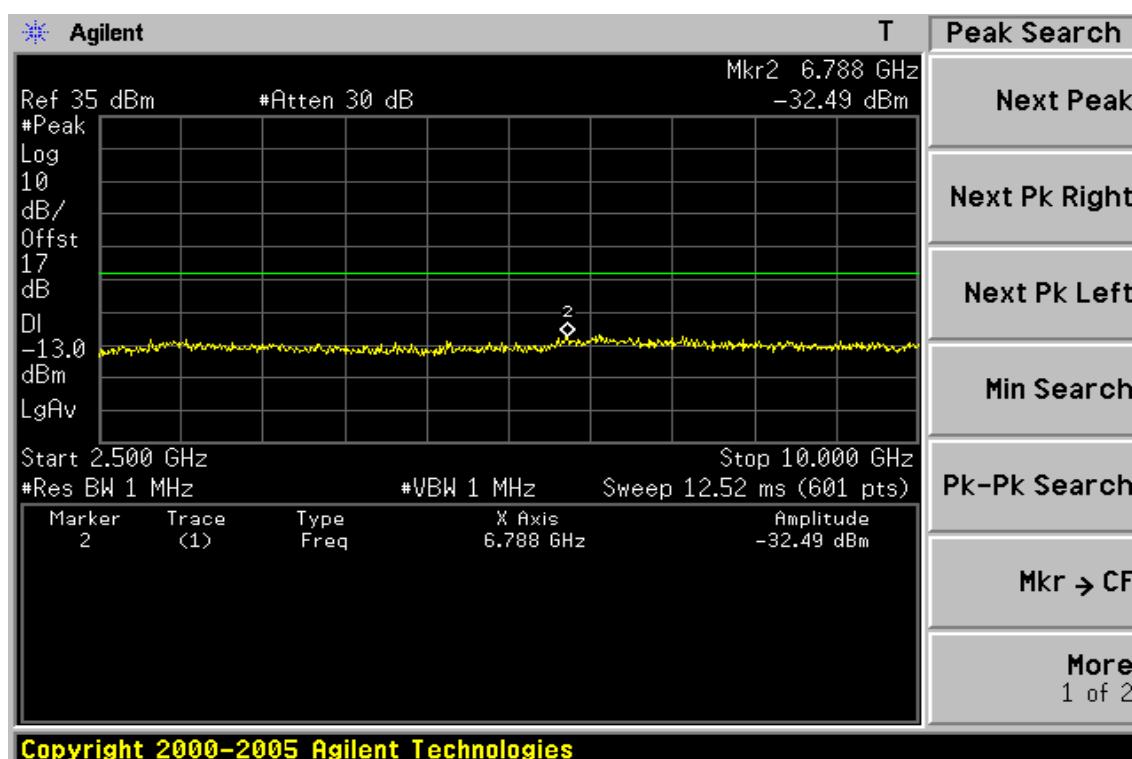
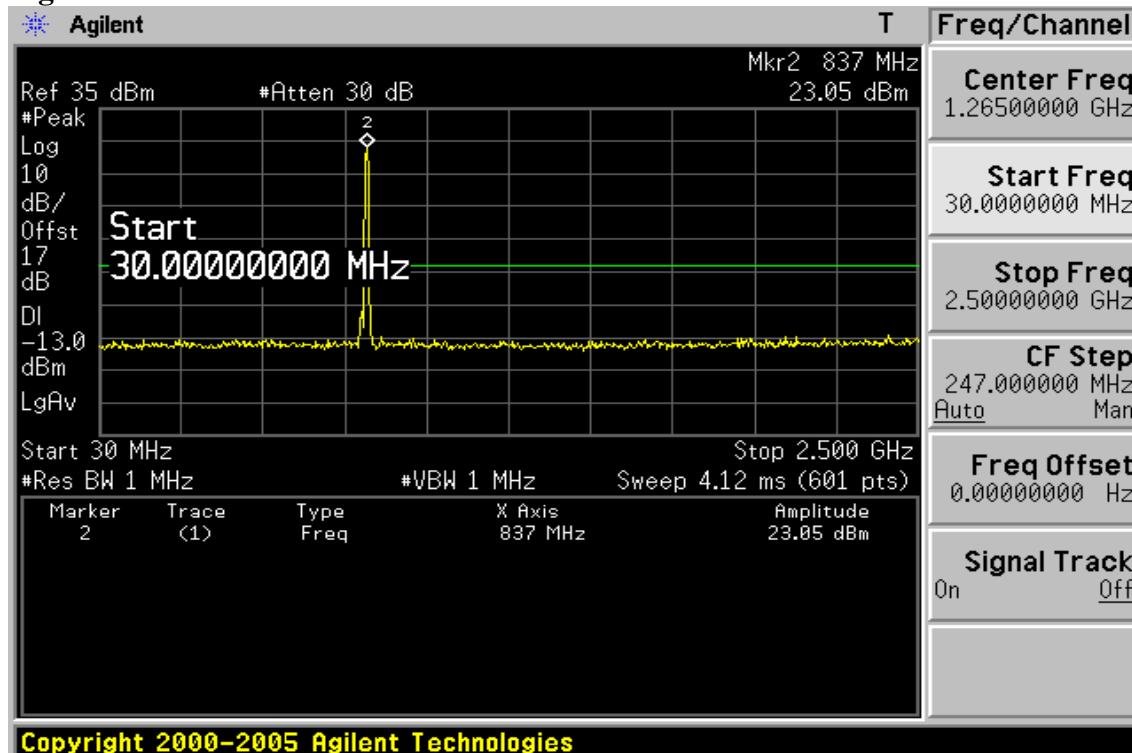
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Figure 10-42: Out of Band emission at antenna terminals – HSUPA V Channel Mid



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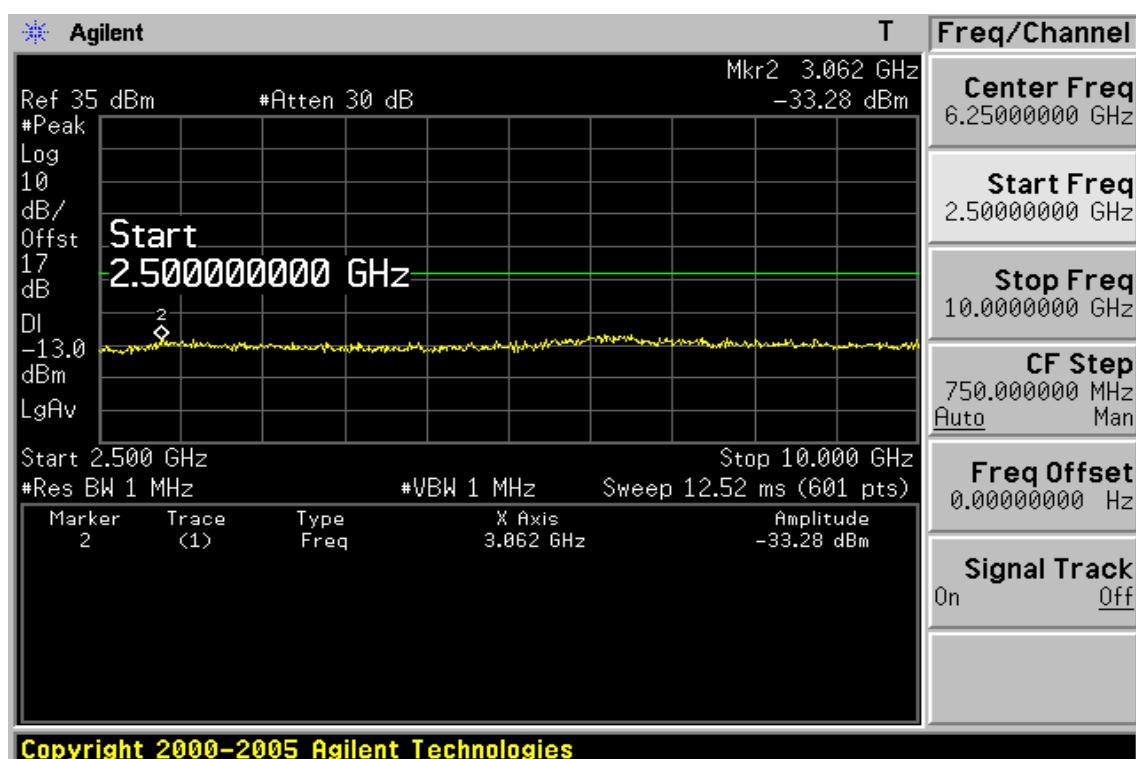
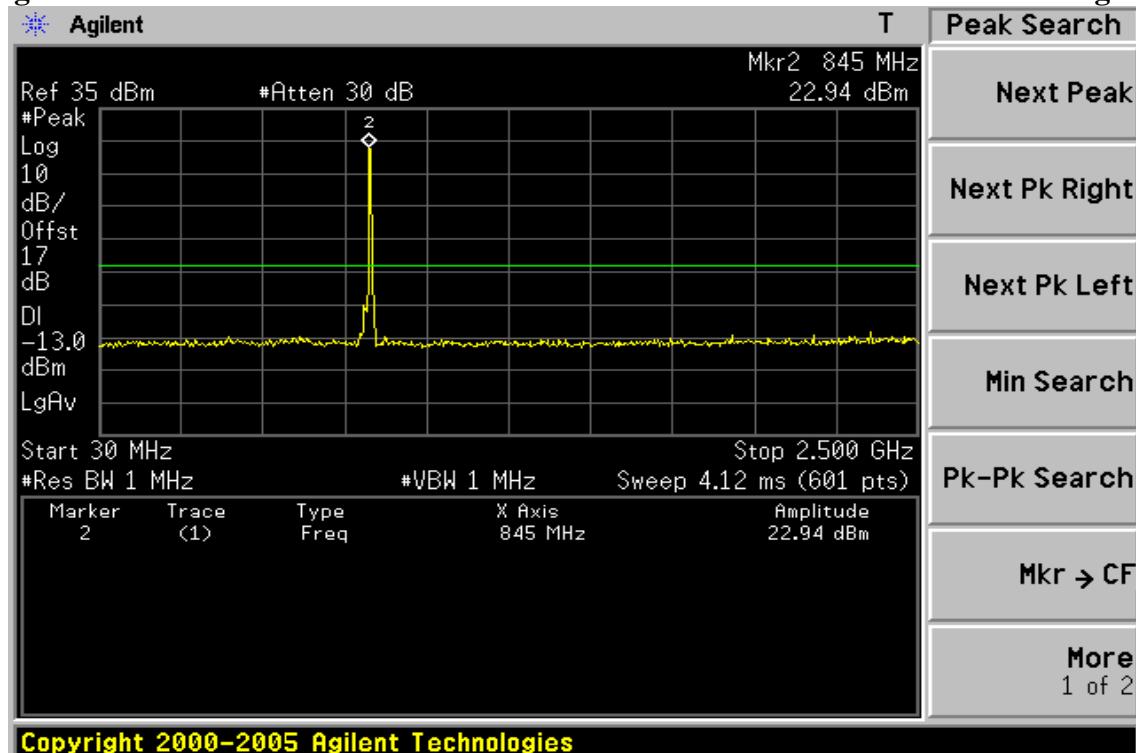
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Figure 10-43: Out of Band emission at antenna terminals – HSUPA V Channel Highest



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Figure 10-44: Band edge emission at antenna terminals – HSUPA V Channel Lowest

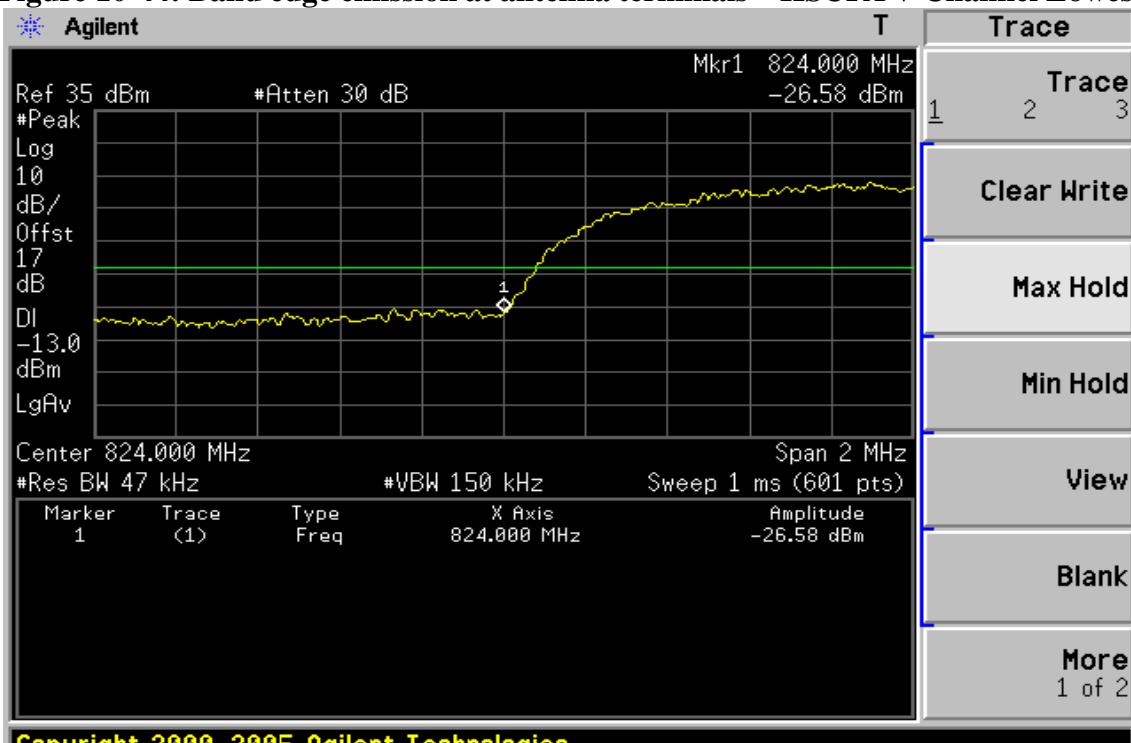
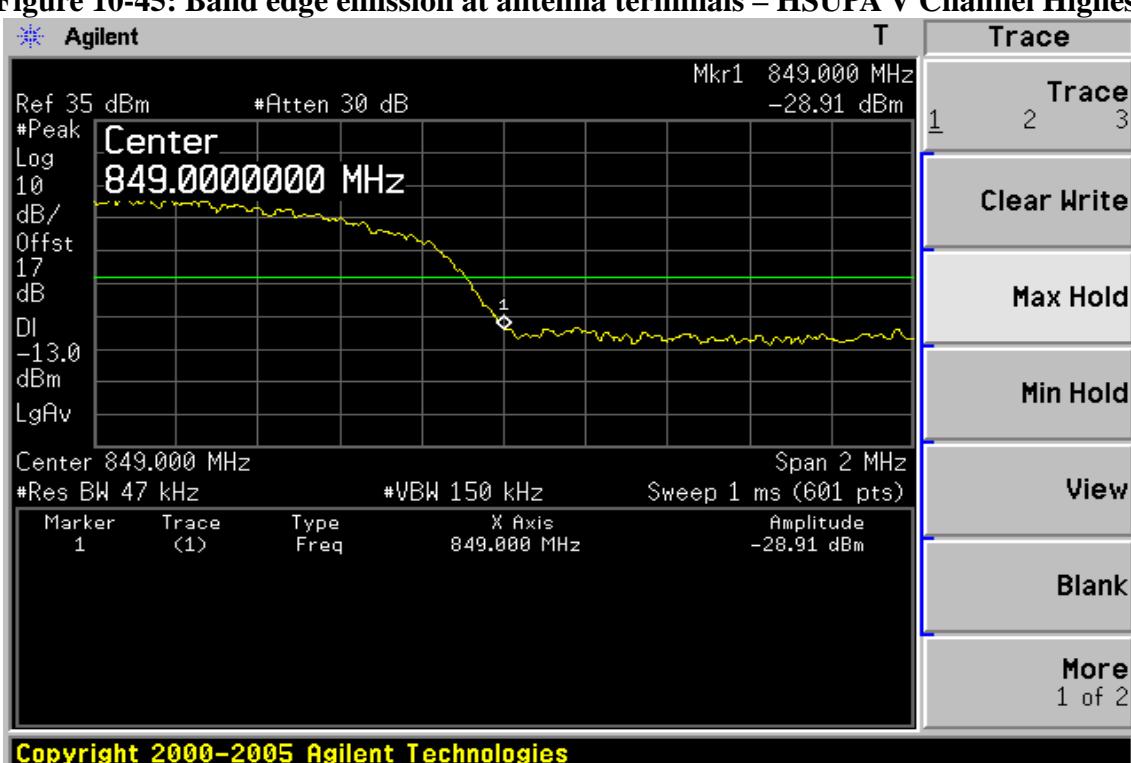


Figure 10-45: Band edge emission at antenna terminals – HSUPA V Channel Highest



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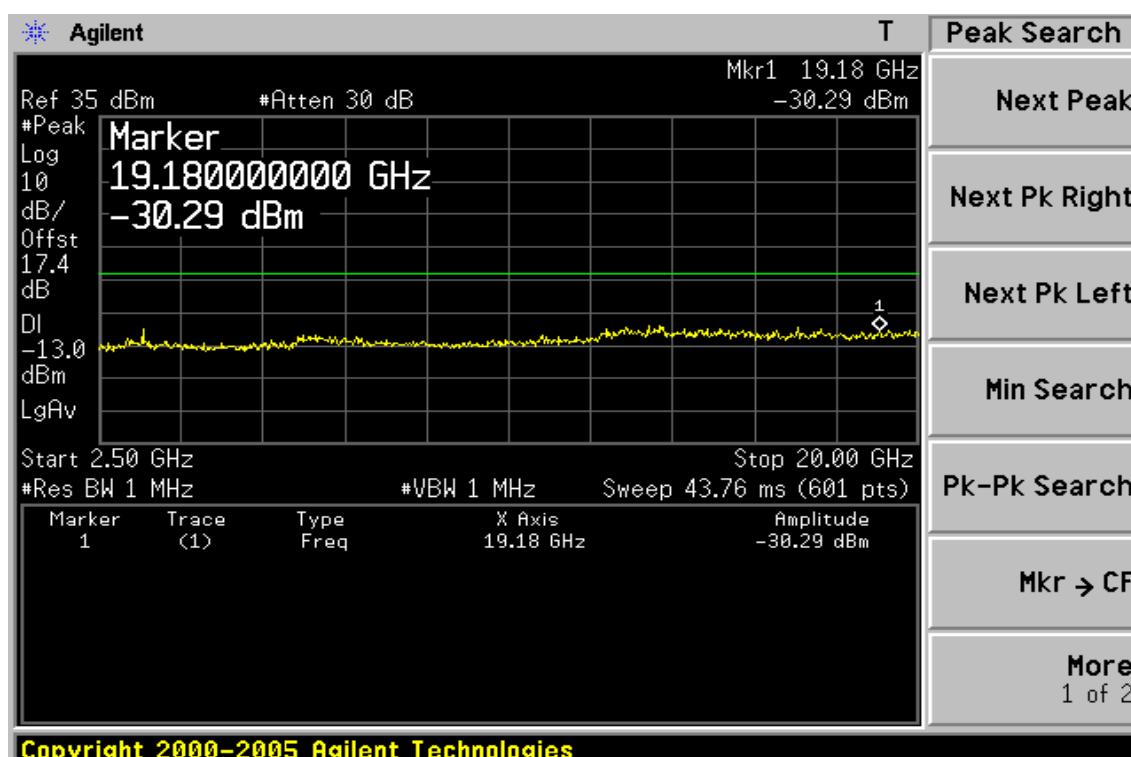
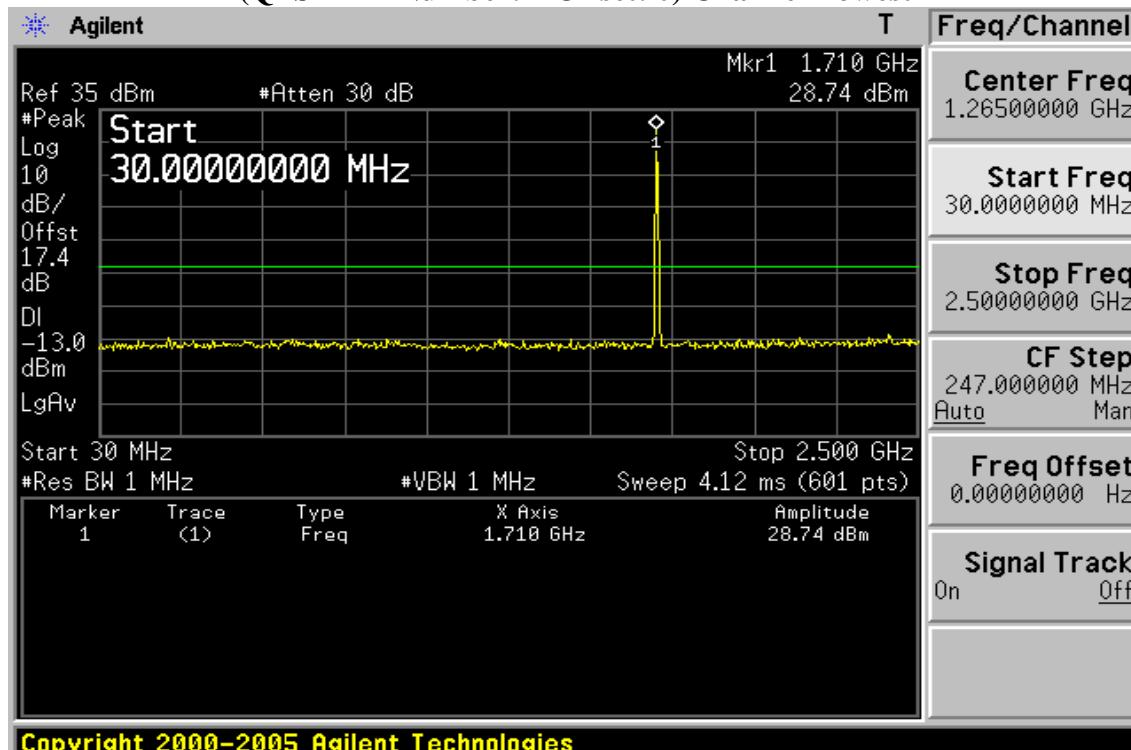
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**Figure 10-46: Out of Band emission at antenna terminals—5MHz BW LTE-Band 4  
(QPSK RB Number: 1 Offset: 0) Channel Lowest**



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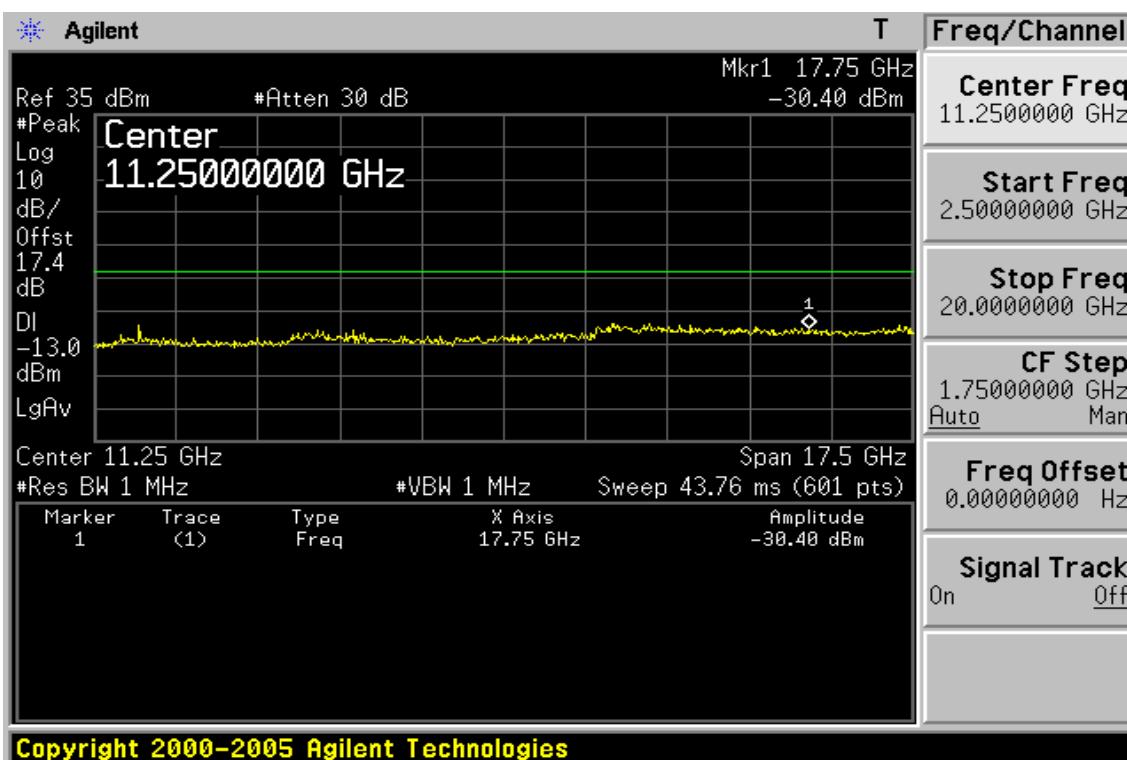
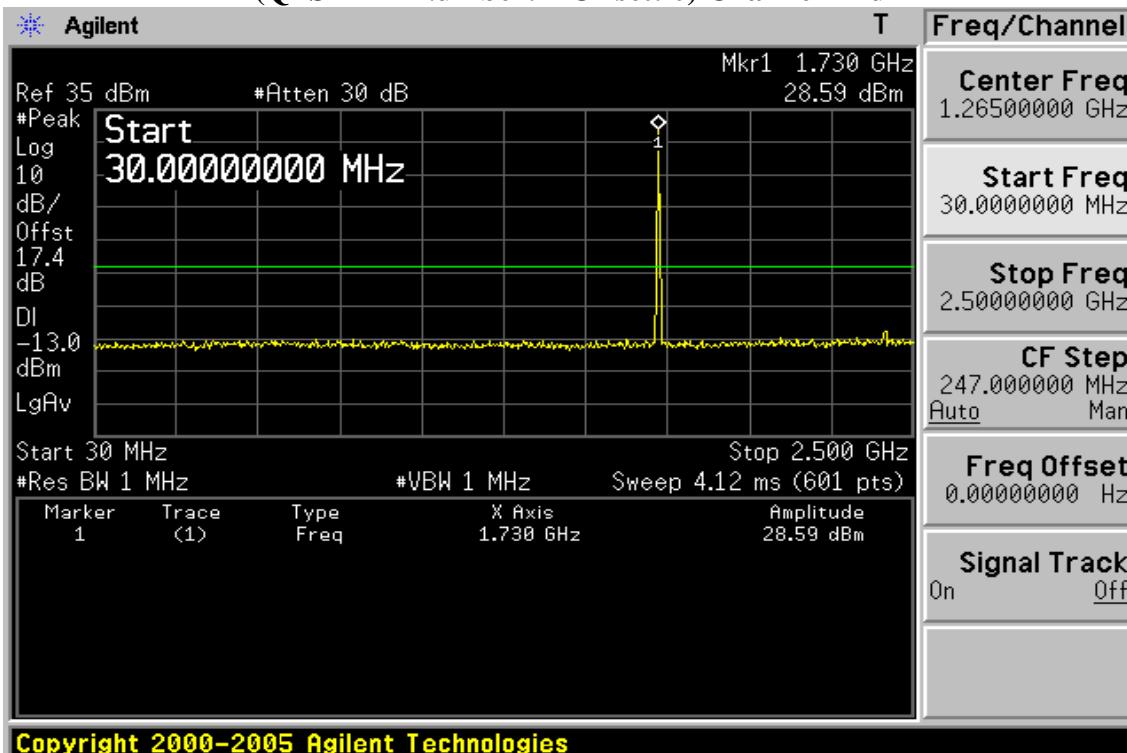
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**Figure 10-47: Out of Band emission at antenna terminals –5MHz BW LTE-Band 4  
(QPSK RB Number: 1 Offset: 0) Channel Mid**

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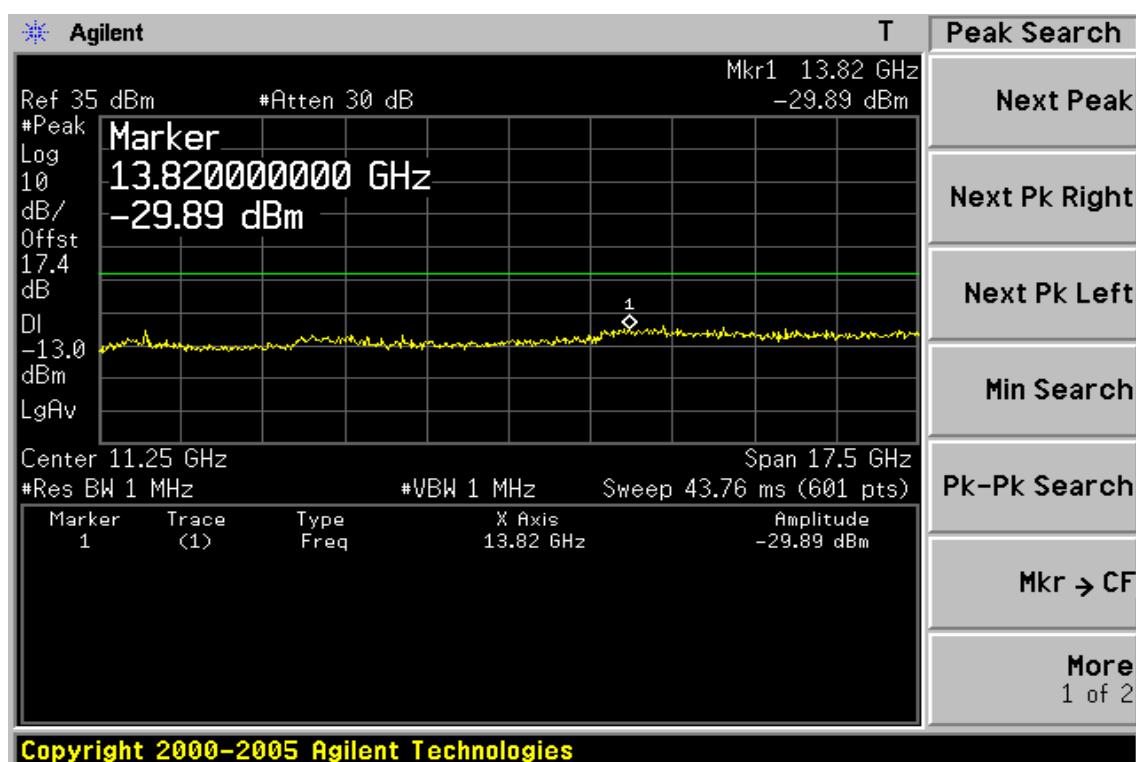
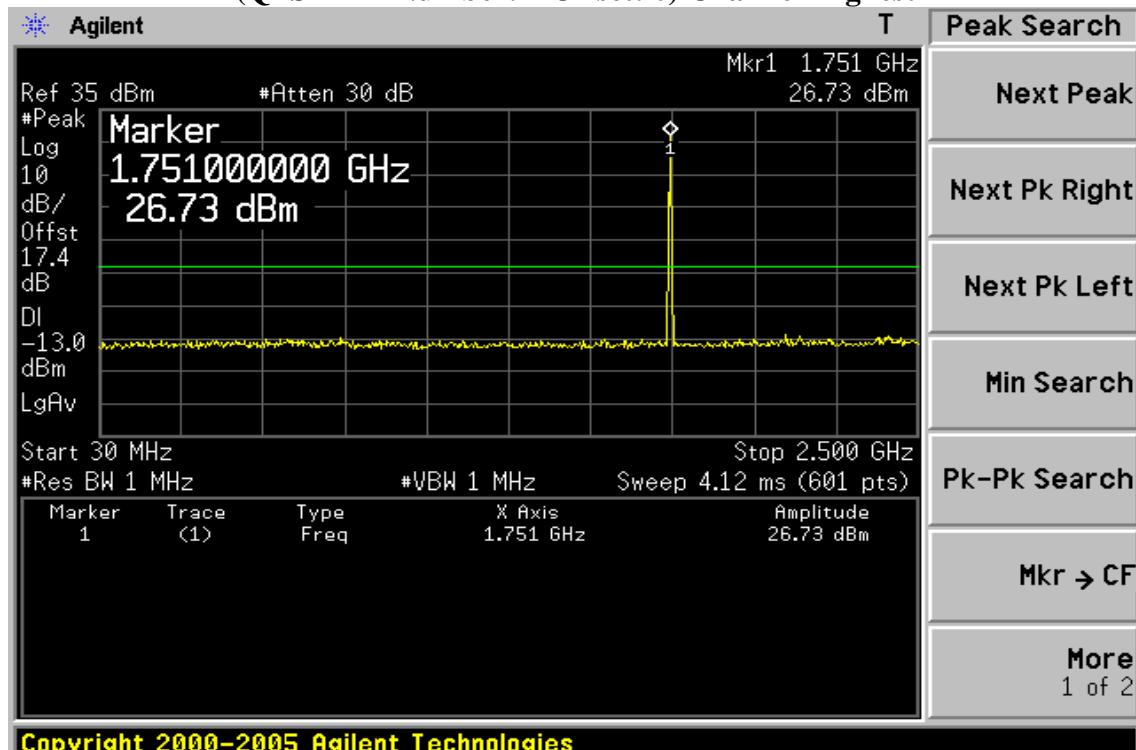
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**Figure 10-48: Out of Band emission at antenna terminals—5MHz BW LTE-Band 4  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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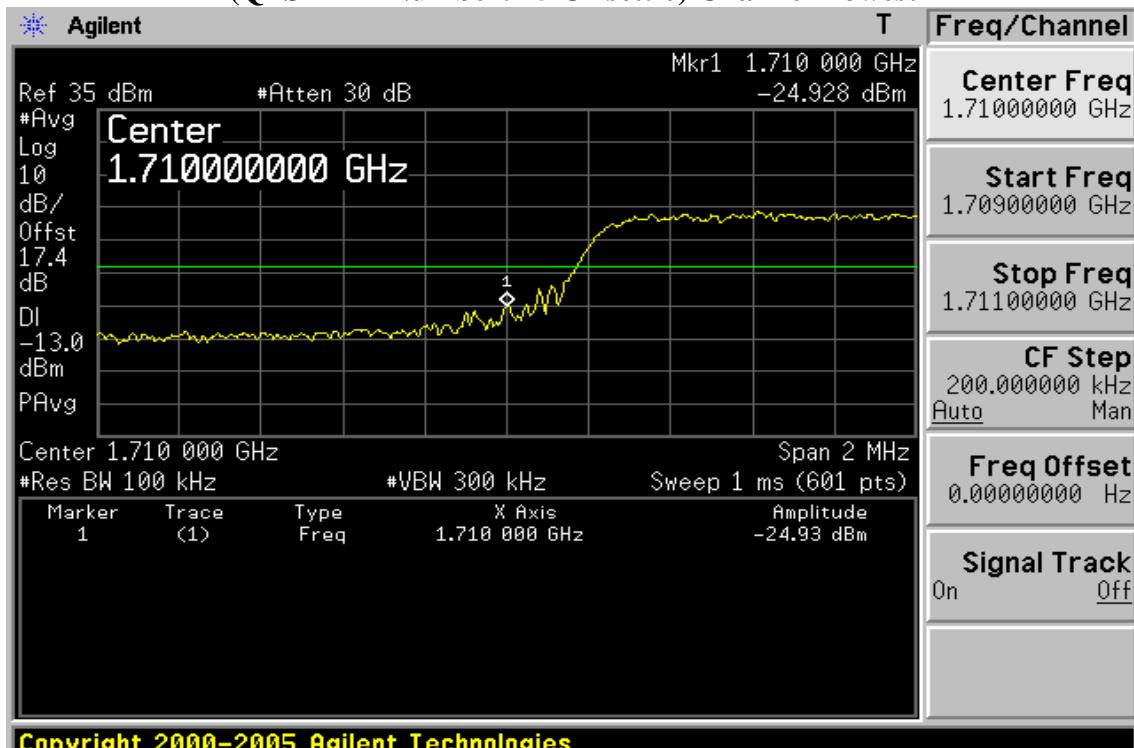
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**Figure 10-49: Band edge emission at antenna terminals –5MHz BW LTE-Band 4  
(QPSK RB Number: 25 Offset: 0) Channel Lowest**



**Figure 10-50: Band edge emission at antenna terminals –5MHz BW LTE-Band 4  
(QPSK RB Number: 25 Offset: 0) Channel Highest**



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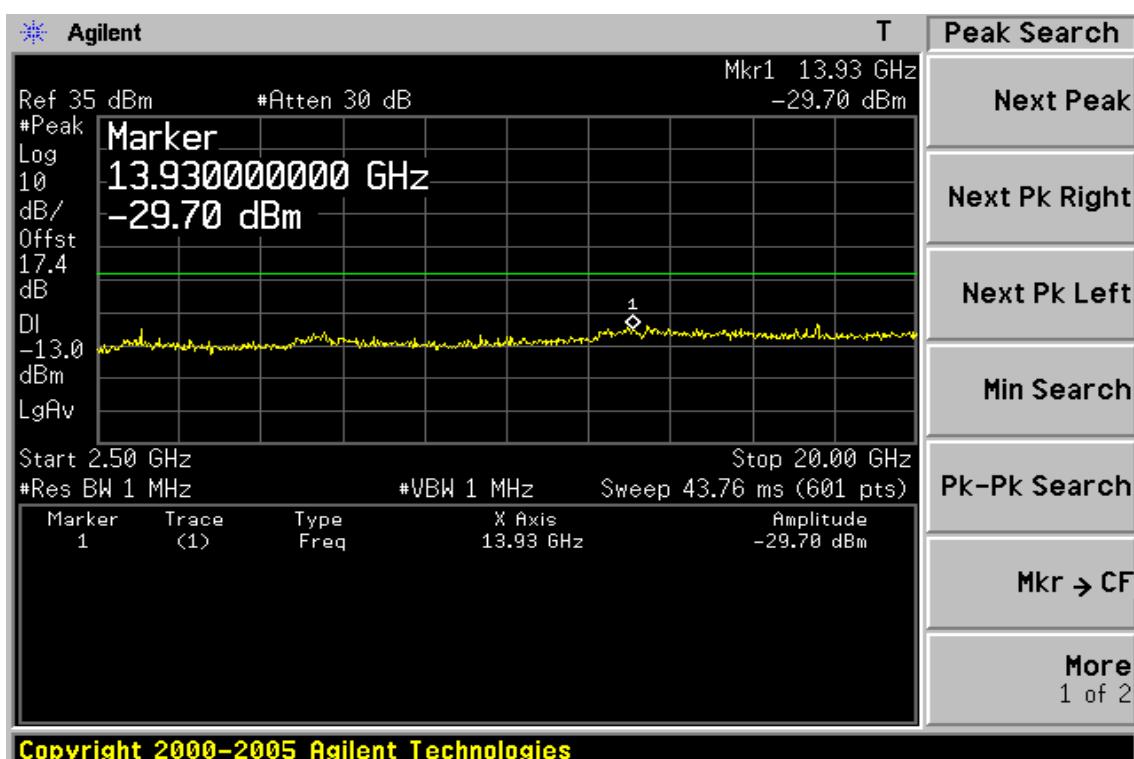
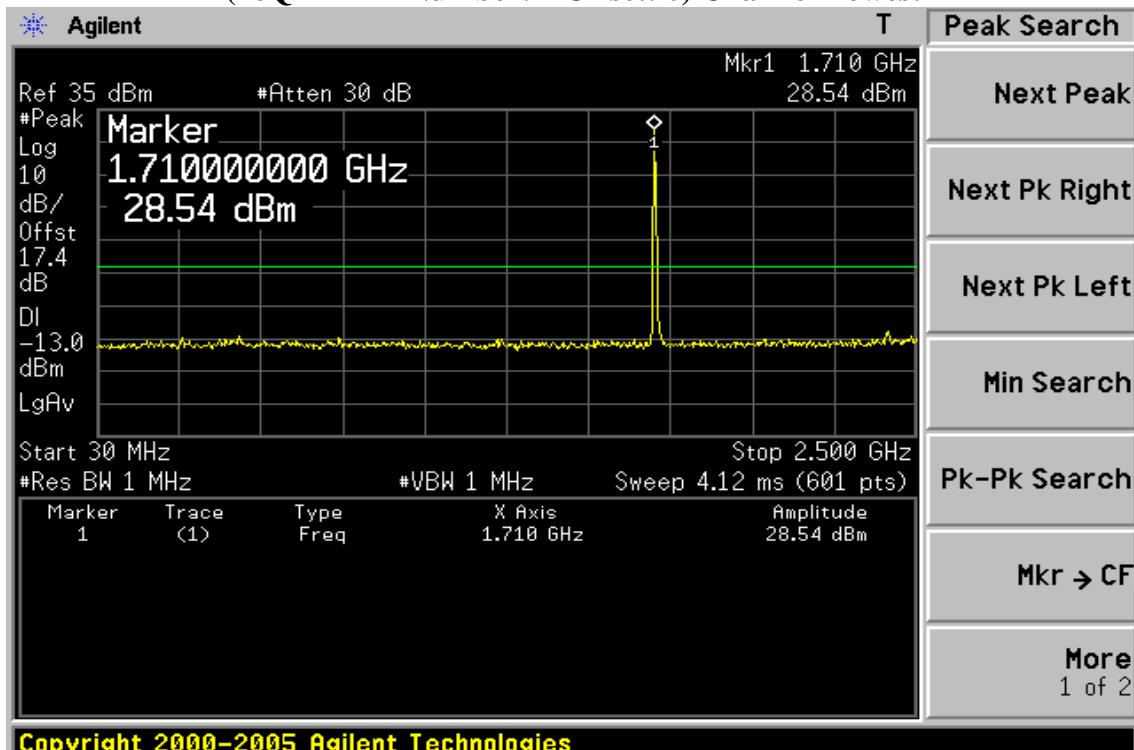
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**Figure 10-51: Out of Band emission at antenna terminals—5MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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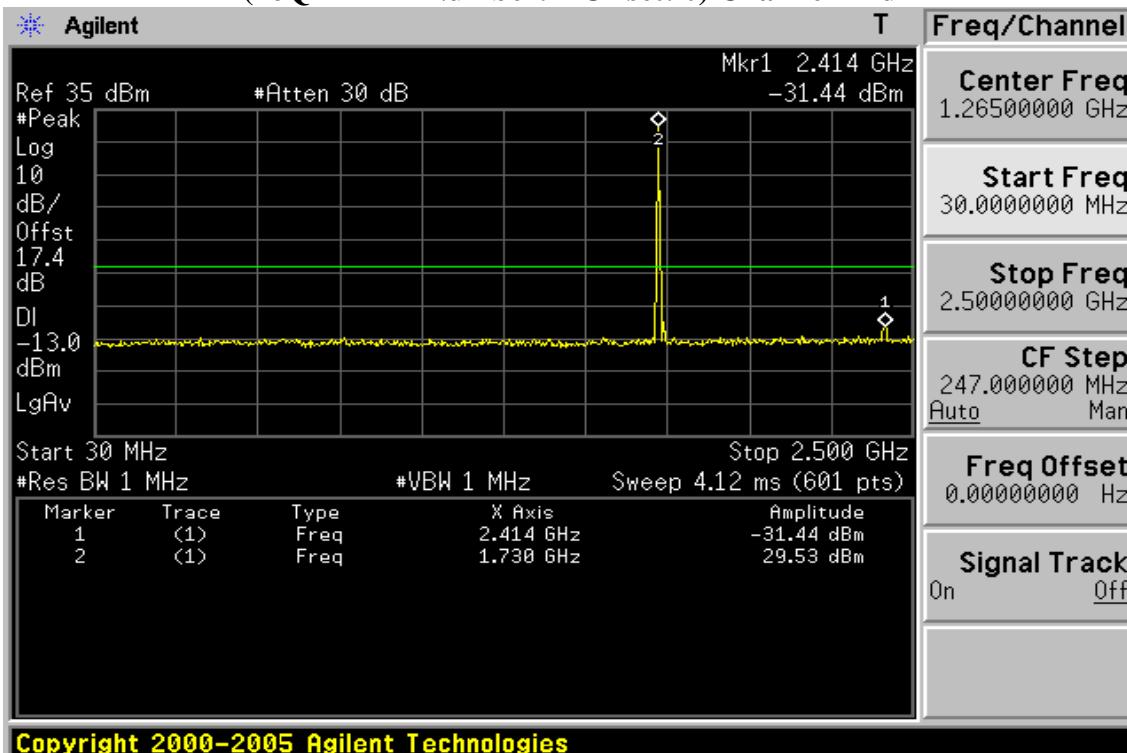
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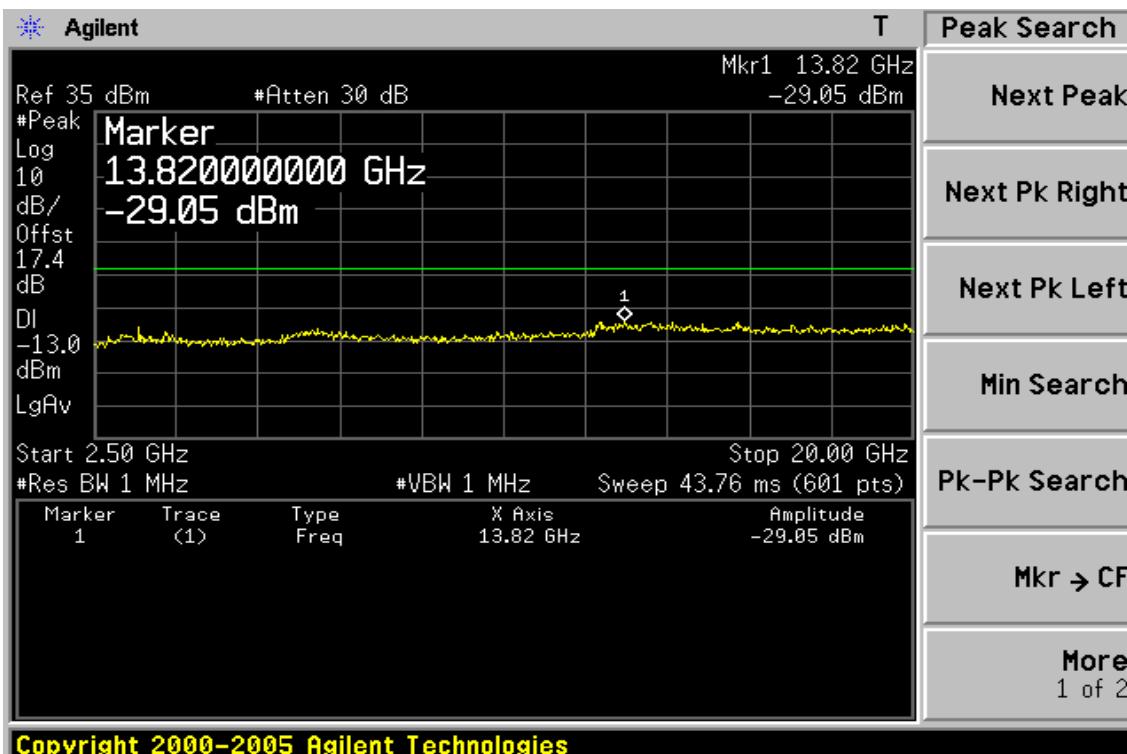
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**Figure 10-52: Out of Band emission at antenna terminals –5MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Mid**



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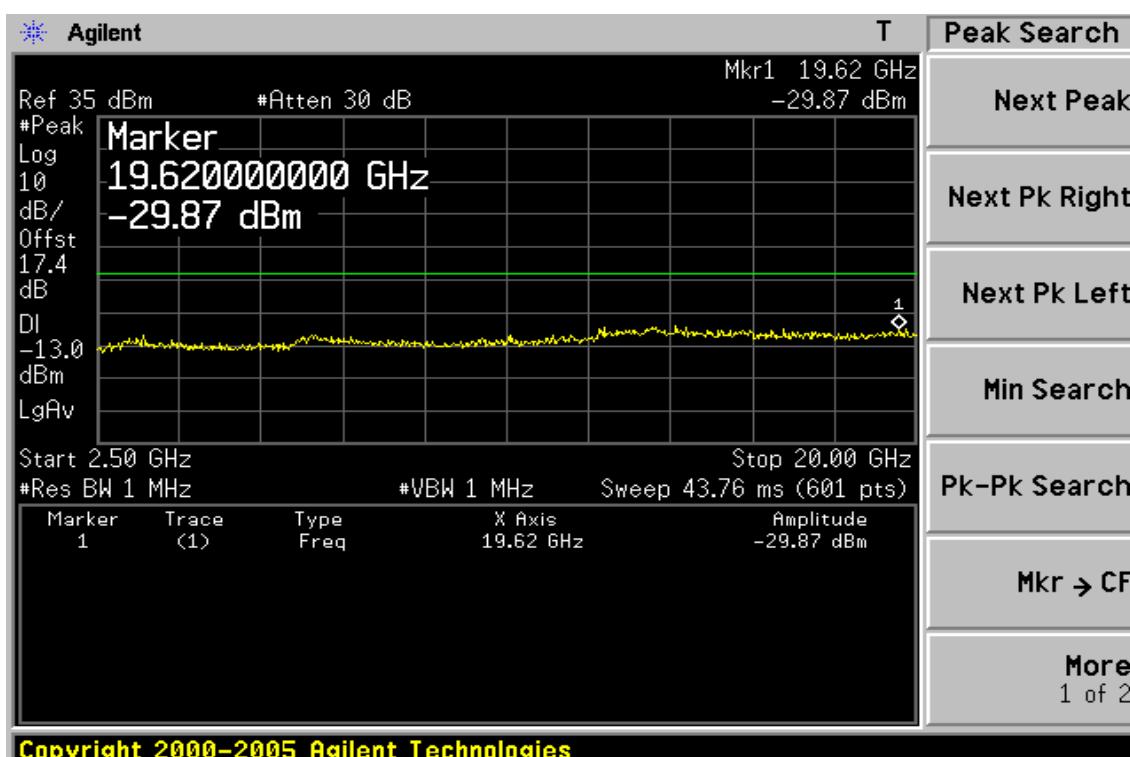
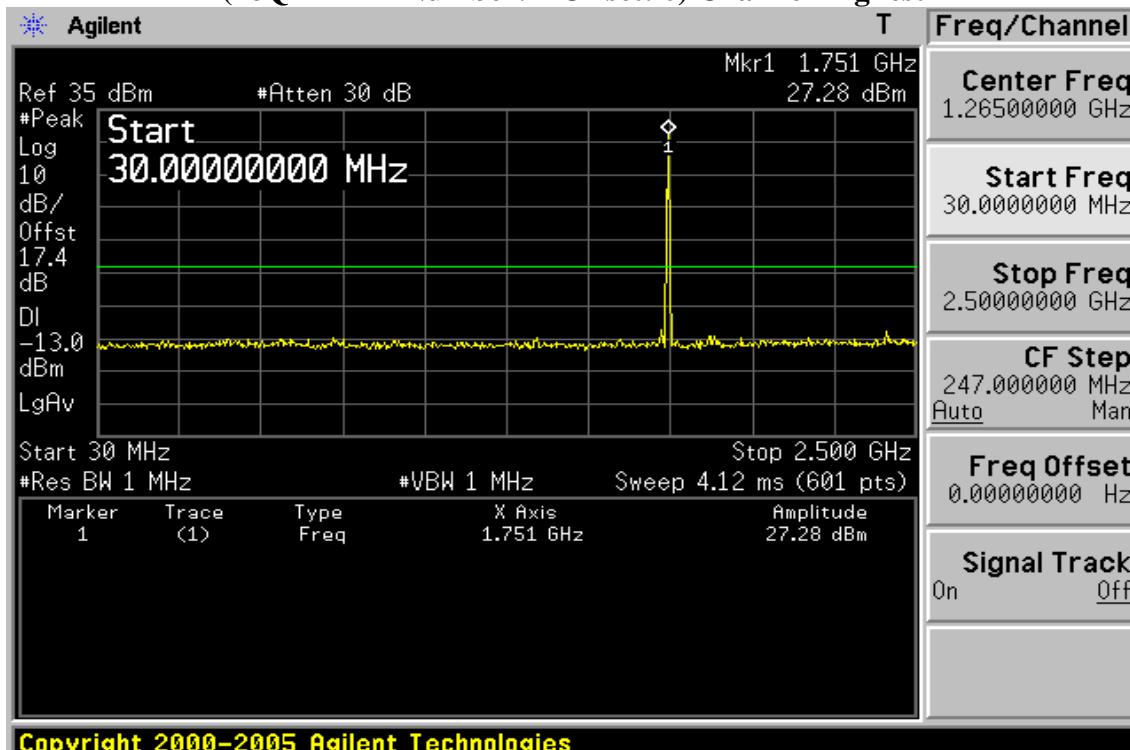
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**Figure 10-53: Out of Band emission at antenna terminals—5MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Highest**



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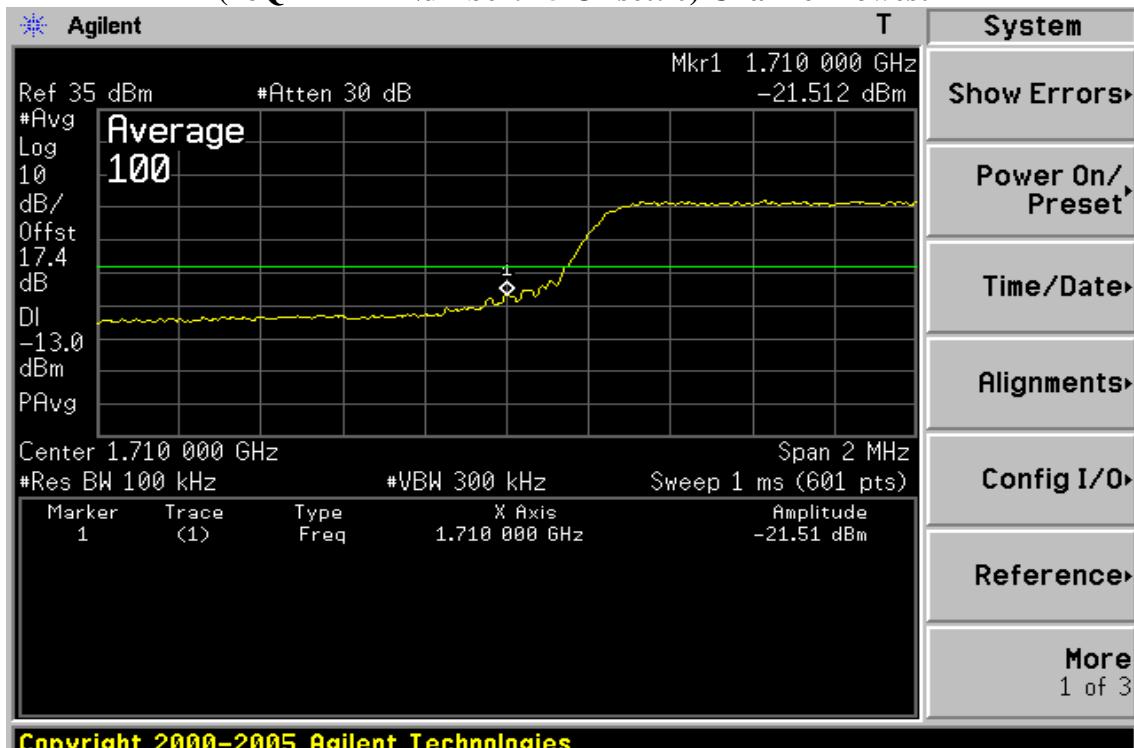
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**Figure 10-54: Band edge emission at antenna terminals –5MHz BW LTE-Band 4  
(16QAM RB Number: 25 Offset: 0) Channel Lowest**



**Figure 10-55: Band edge emission at antenna terminals –5MHz BW LTE-Band 4  
(16QAM RB Number: 25 Offset: 0) Channel Highest**



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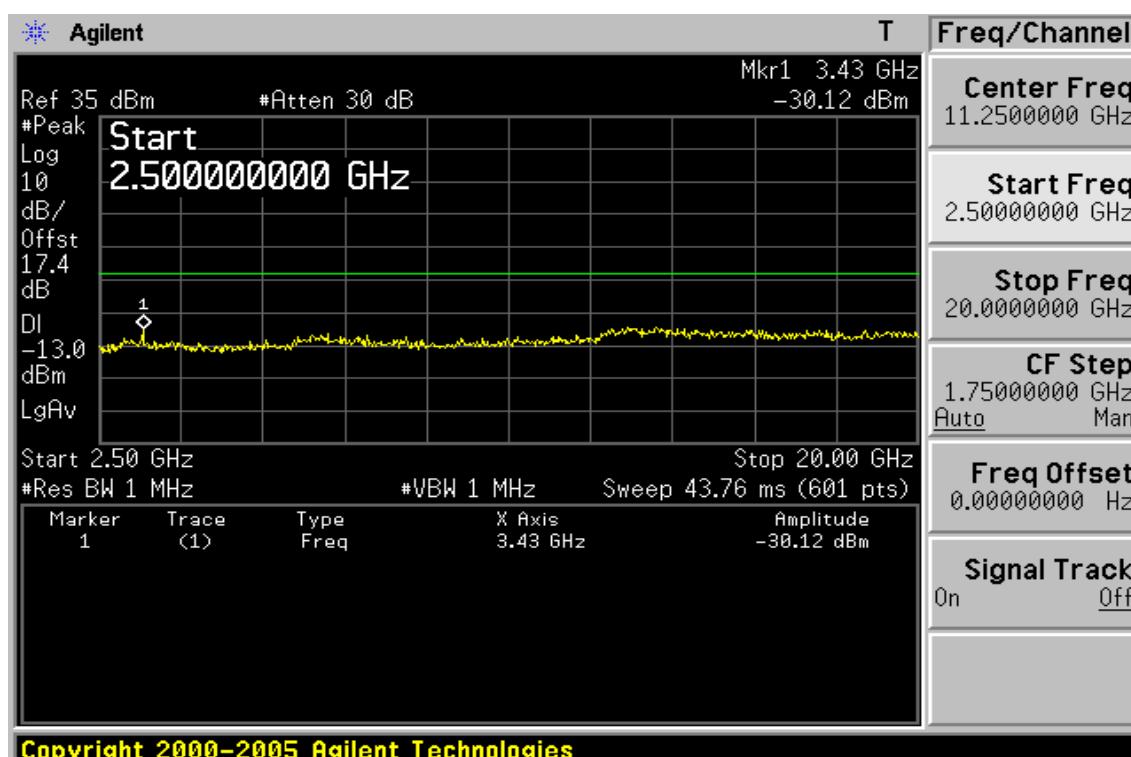
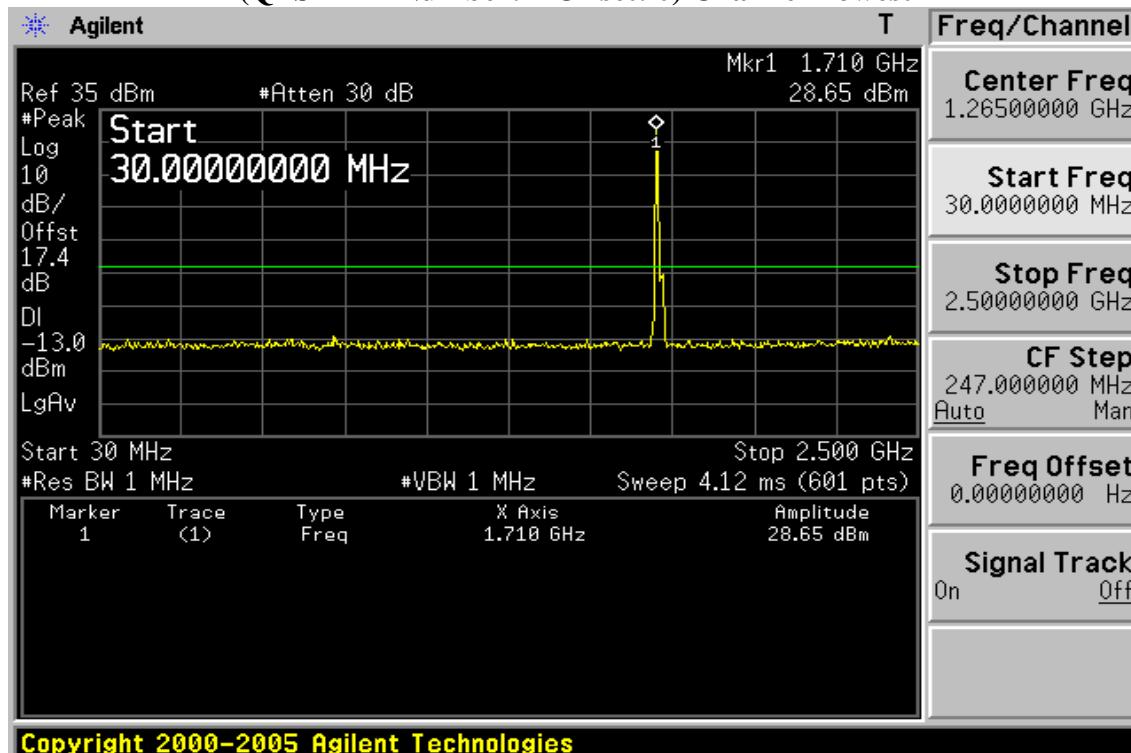
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**Figure 10-56: Out of Band emission at antenna terminals–10MHz BW LTE-Band 4 (QPSK RB Number: 1 Offset: 0) Channel Lowest**



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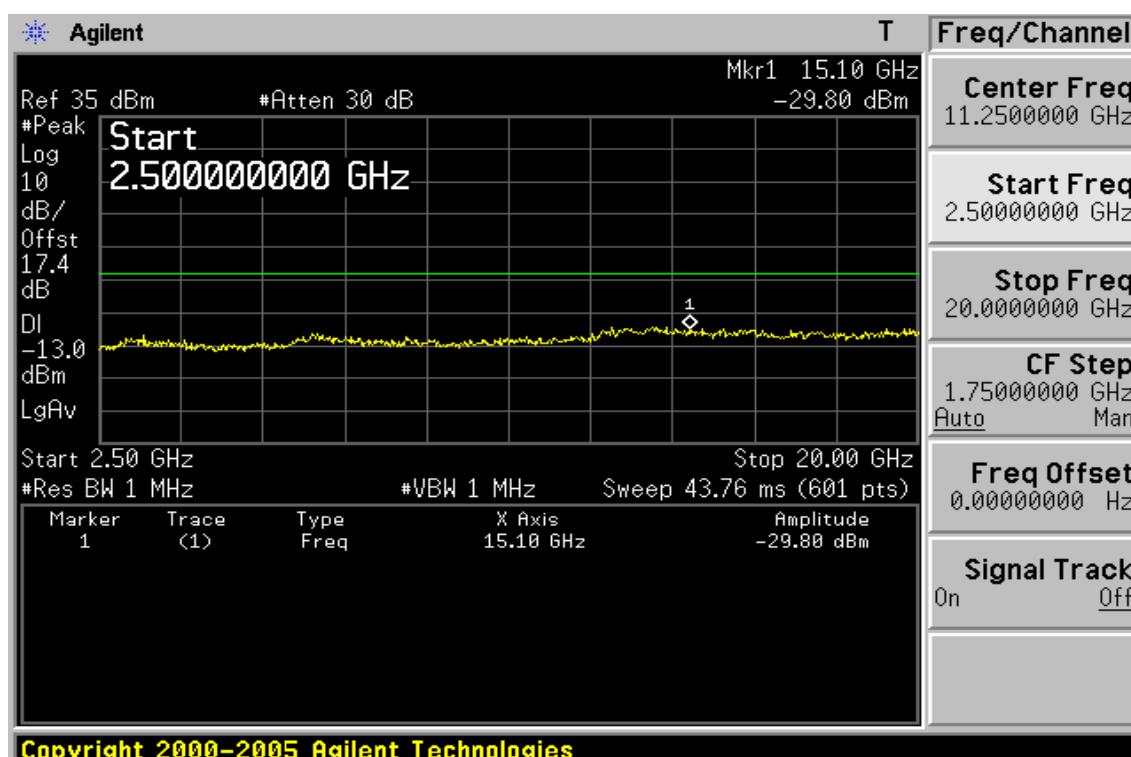
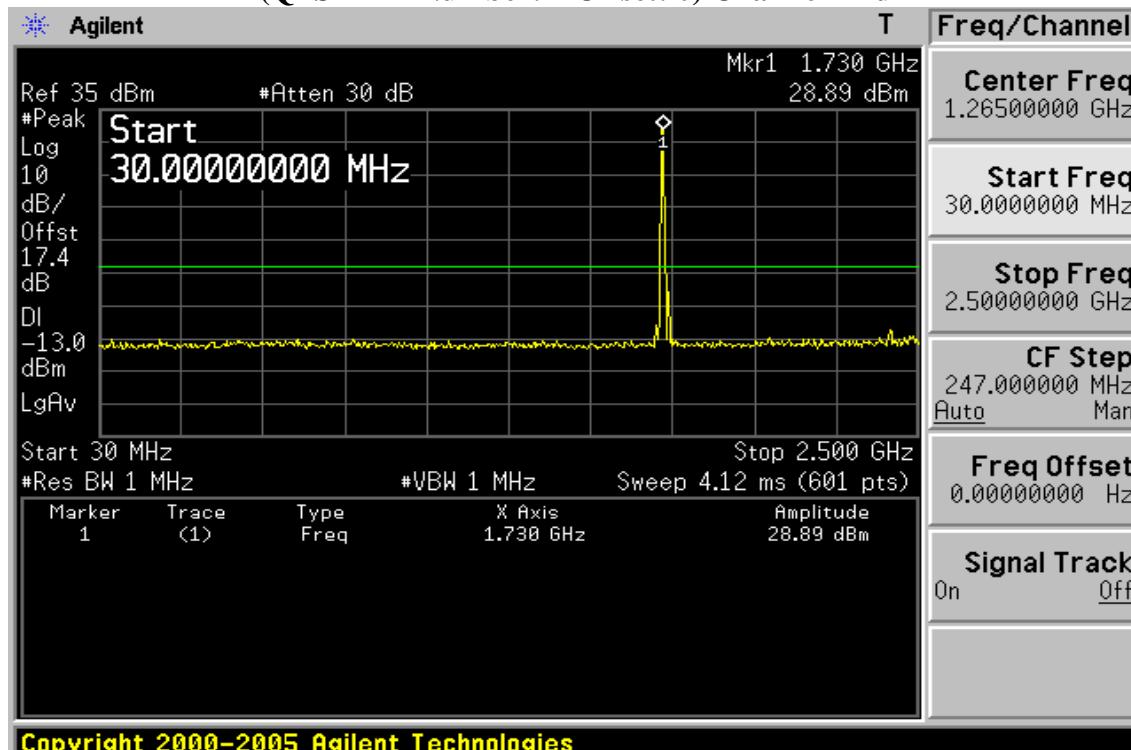
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**Figure 10-57: Out of Band emission at antenna terminals –10MHz BW LTE-Band 4  
(QPSK RB Number: 1 Offset: 0) Channel Mid**



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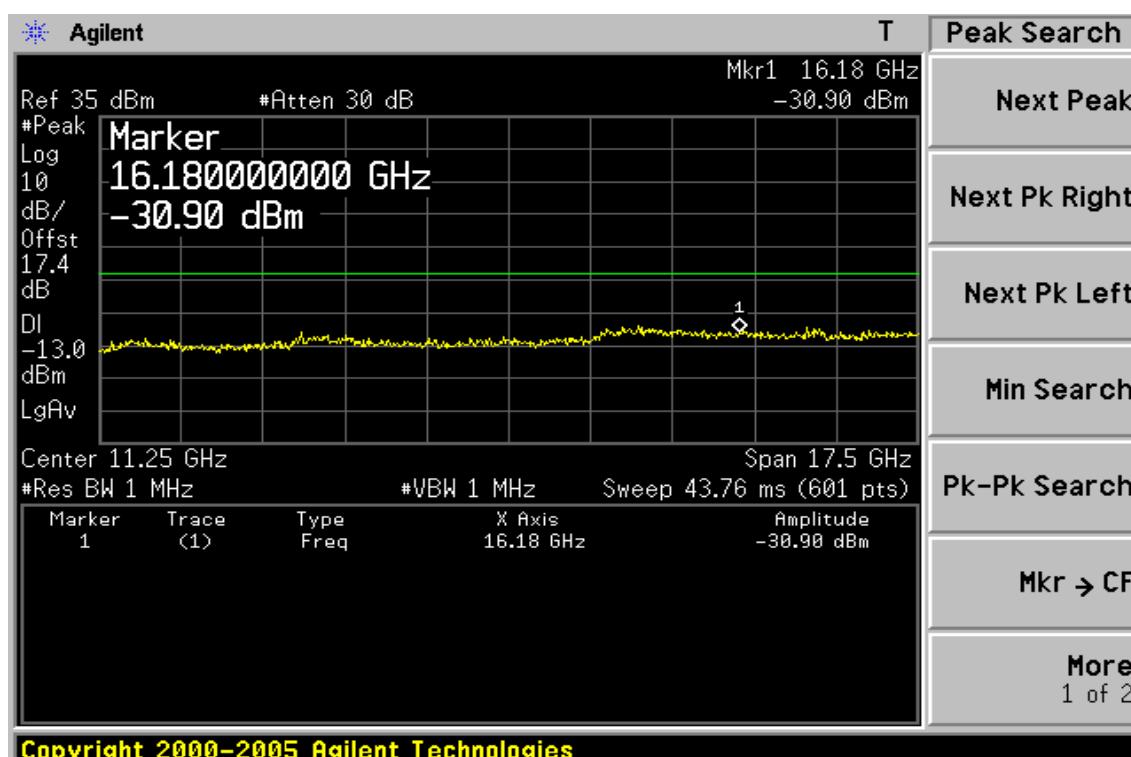
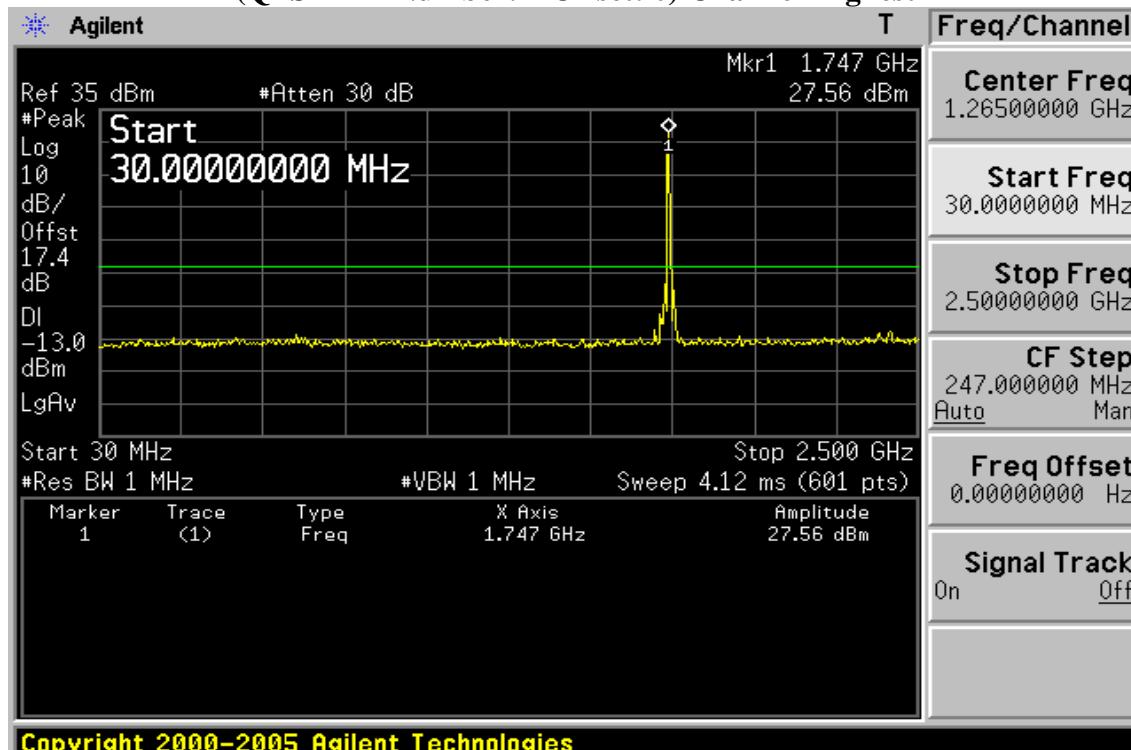
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**Figure 10-58: Out of Band emission at antenna terminals–10MHz BW LTE-Band 4  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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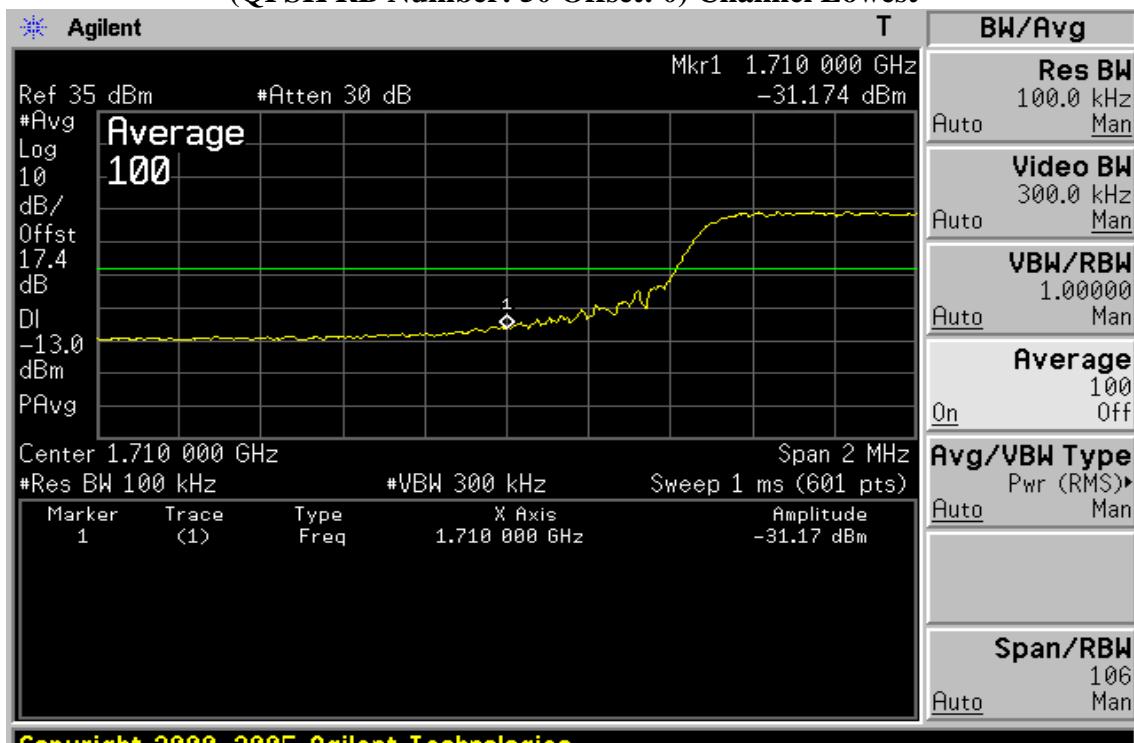
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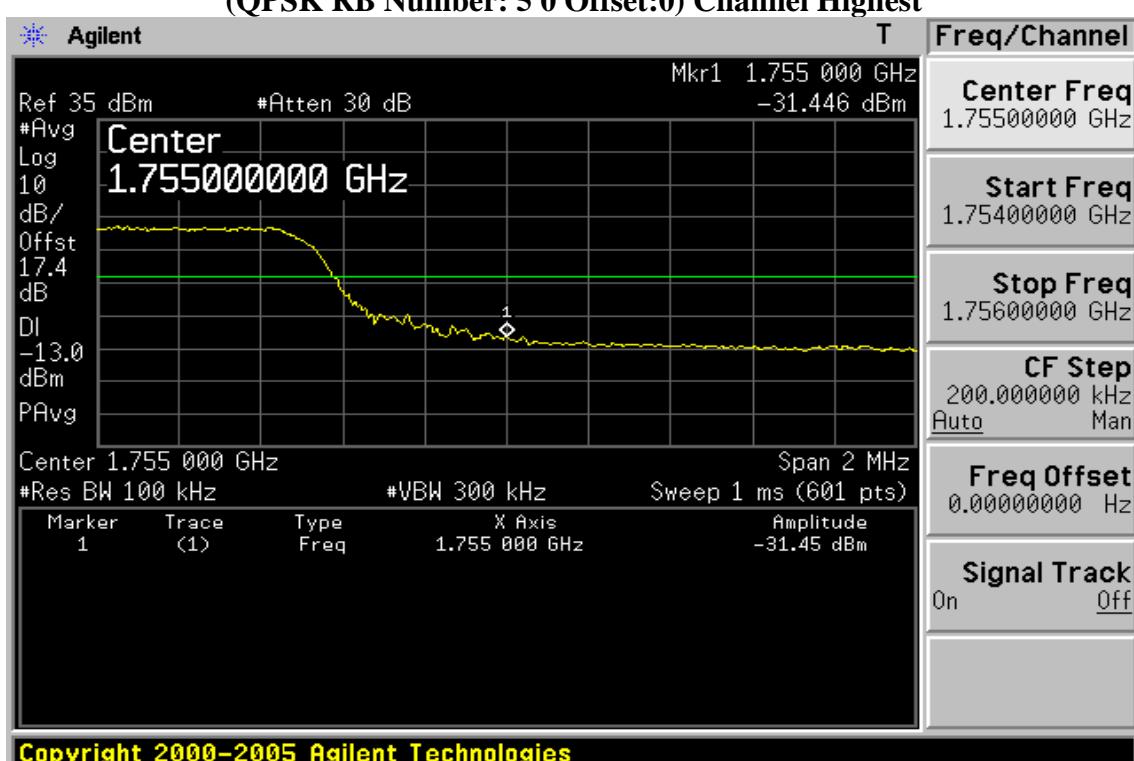
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**Figure 10-59: Band edge emission at antenna terminals –10MHz BW LTE-Band 4  
(QPSK RB Number: 50 Offset: 0) Channel Lowest**



**Figure 10-60: Band edge emission at antenna terminals –10MHz BW LTE-Band 4  
(QPSK RB Number: 5 0 Offset:0) Channel Highest**



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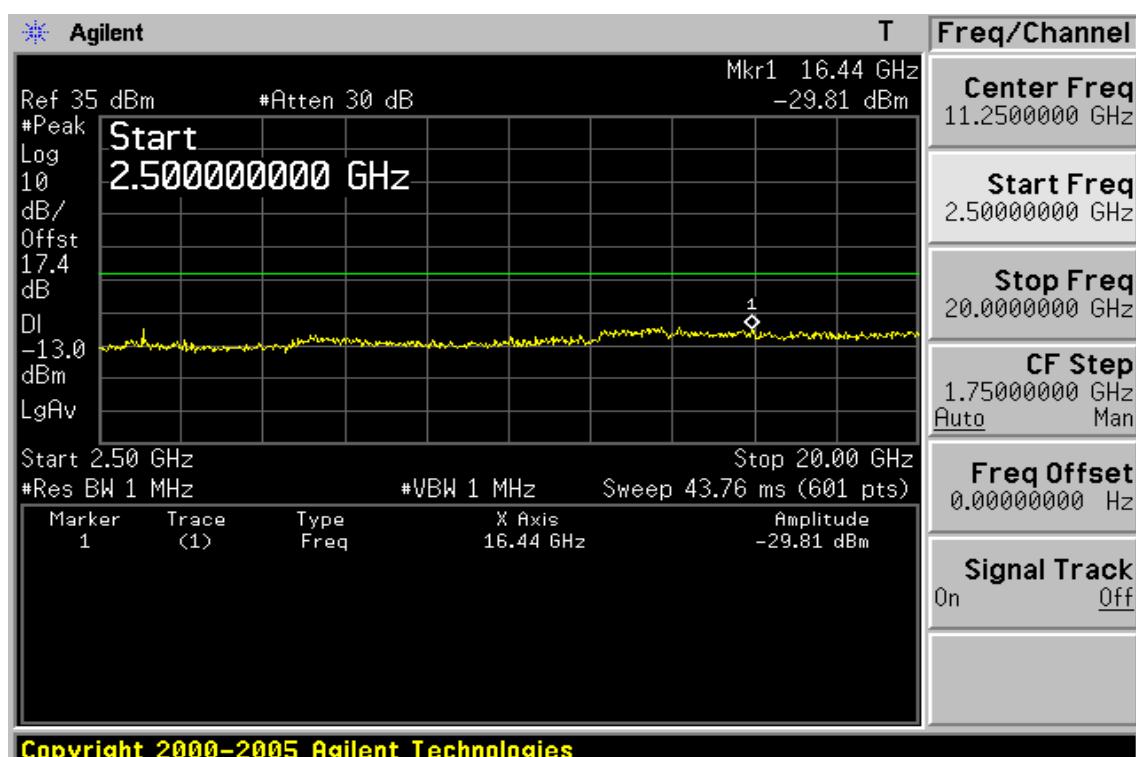
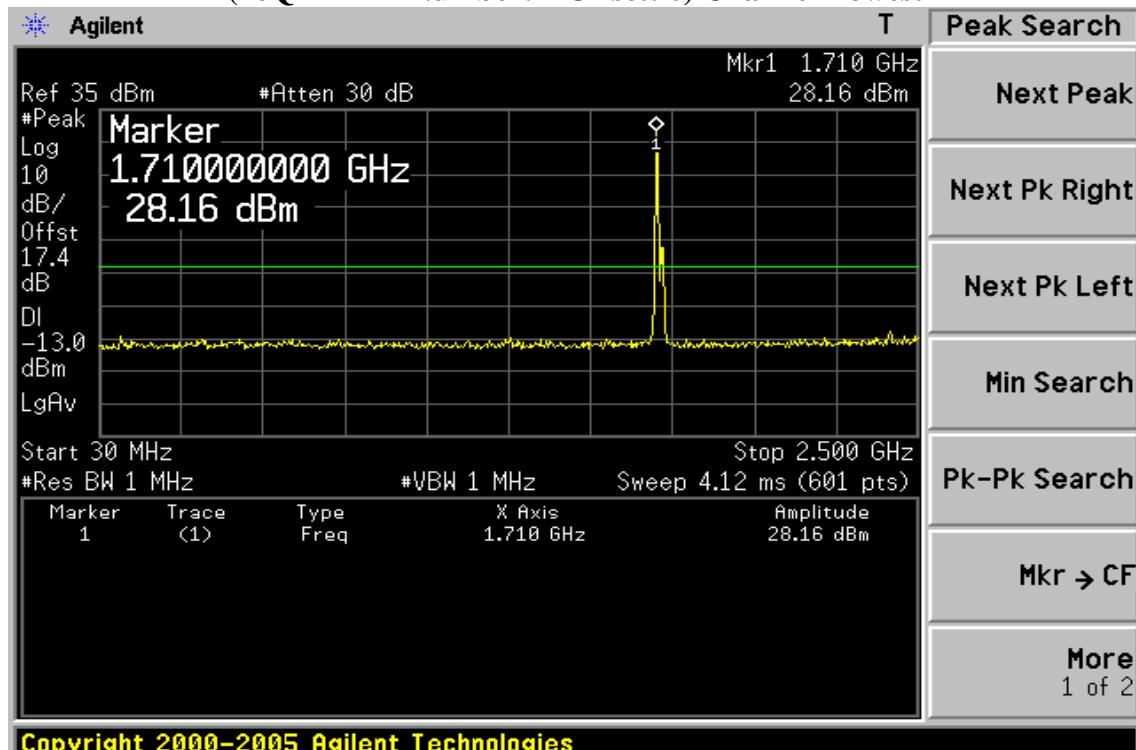
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**Figure 10-61: Out of Band emission at antenna terminals–10MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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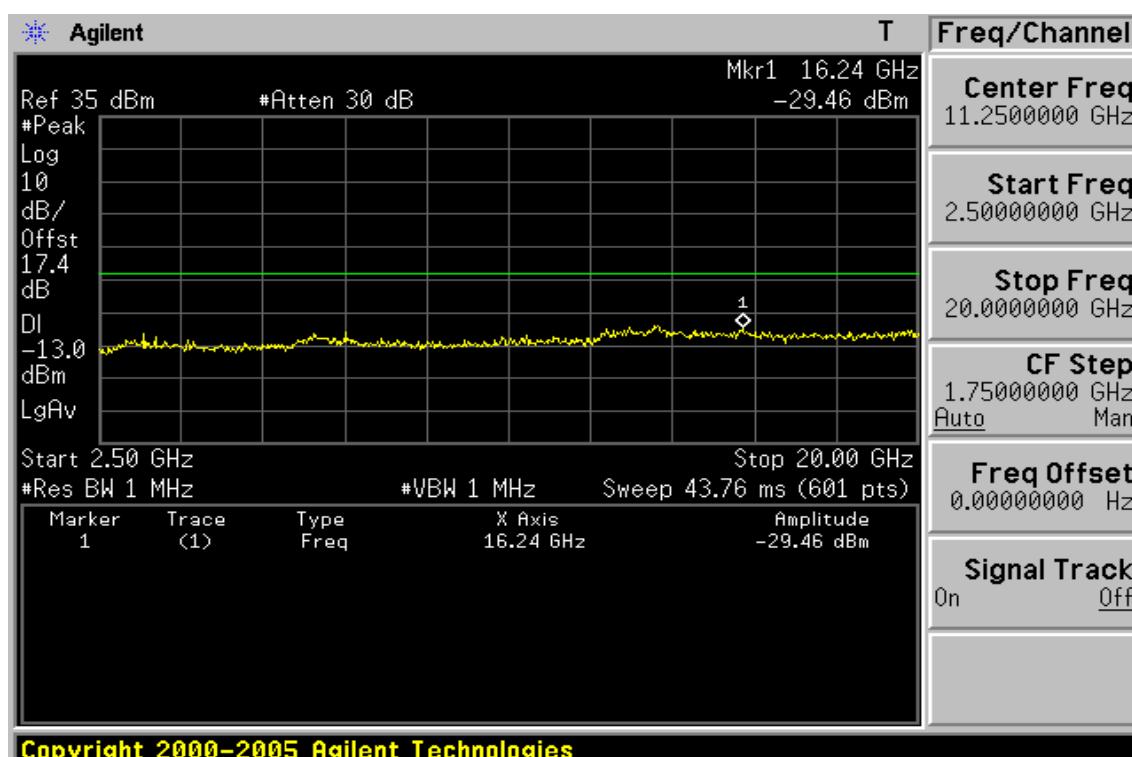
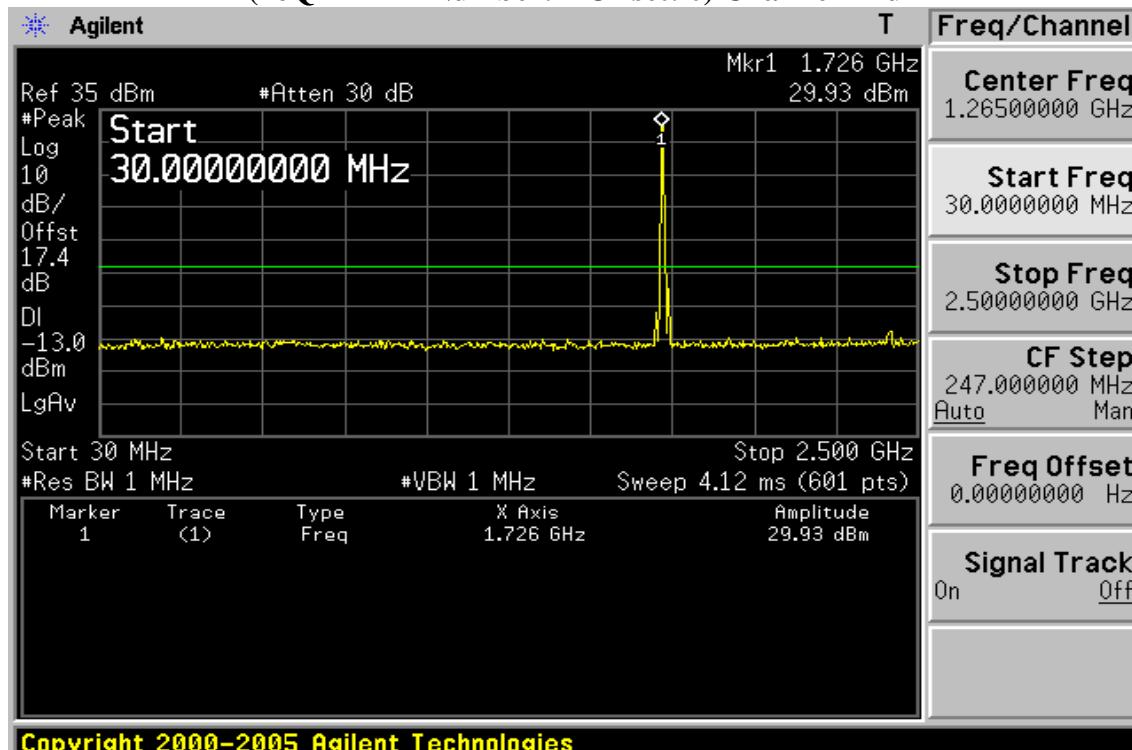
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**Figure 10-62: Out of Band emission at antenna terminals –10MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Mid**



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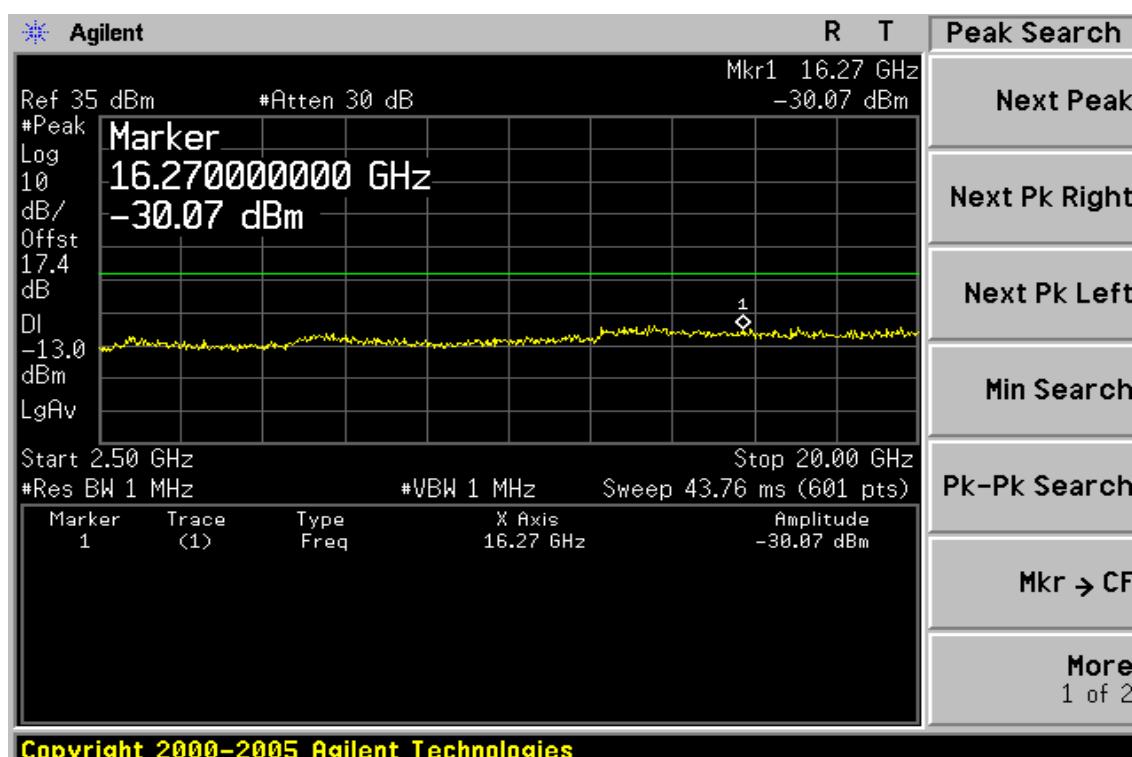
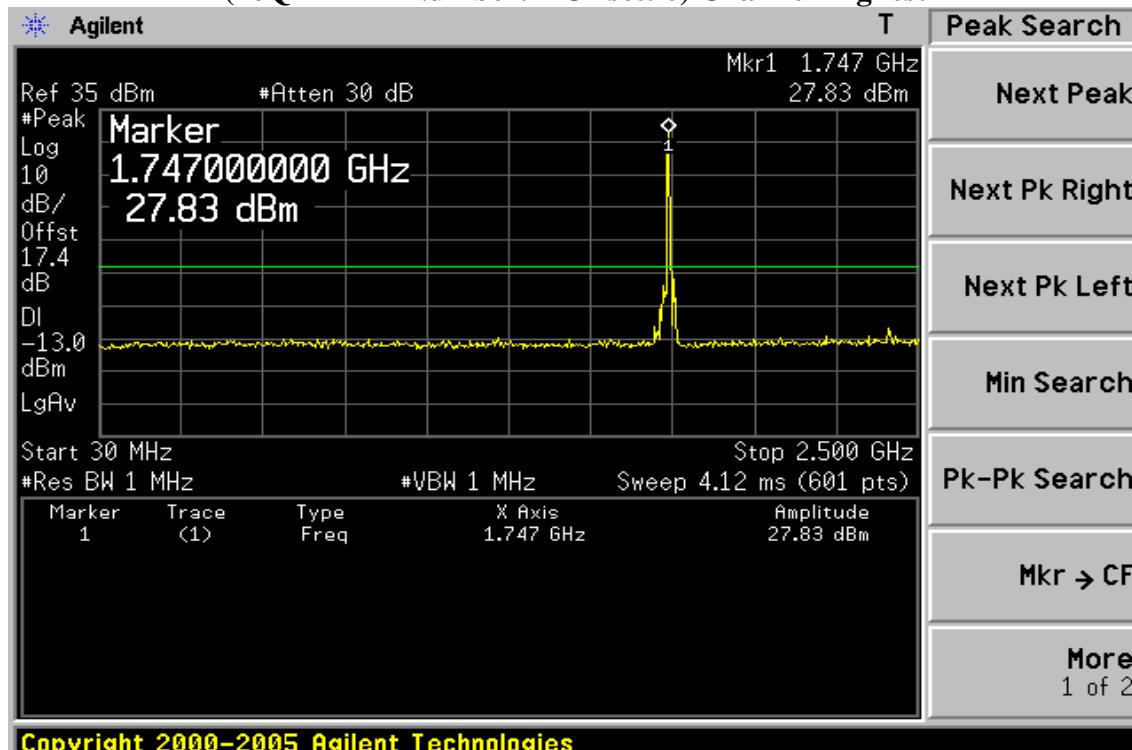
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**Figure 10-63: Out of Band emission at antenna terminals–10MHz BW LTE-Band 4  
(16QAM RB Number: 1 Offset: 0) Channel Highest**



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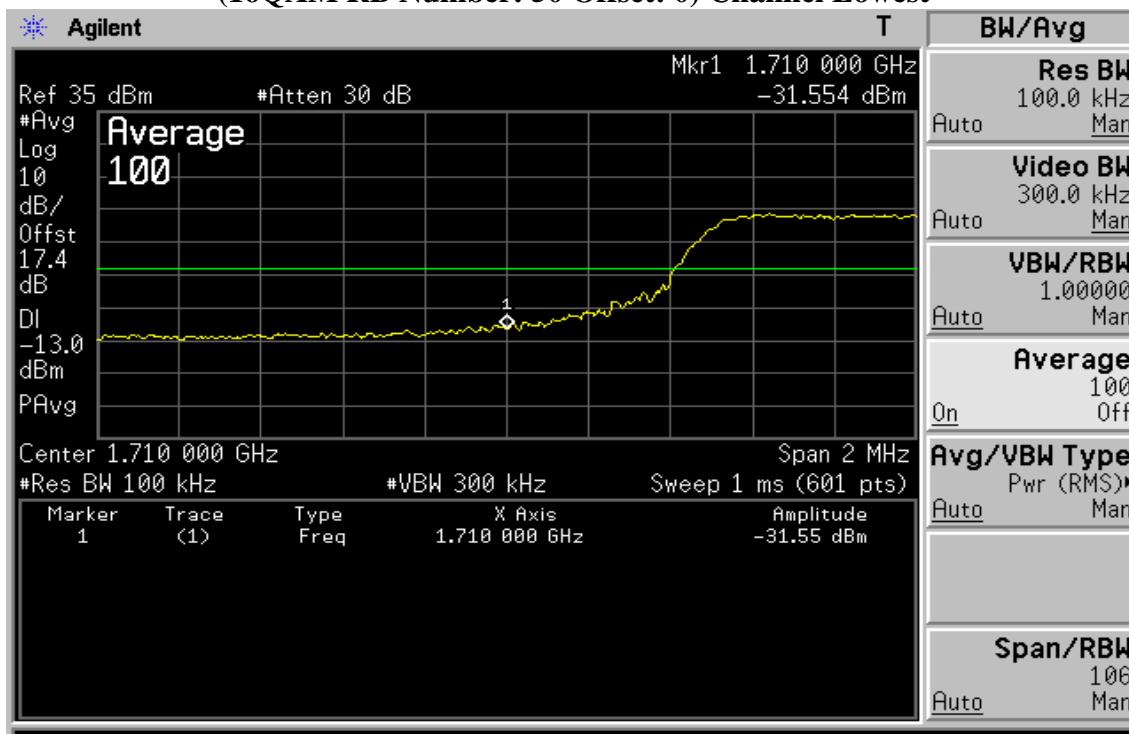
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**Figure 10-64: Band edge emission at antenna terminals –10MHz BW LTE-Band 4  
(16QAM RB Number: 50 Offset: 0) Channel Lowest**



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**Figure 10-65: Band edge emission at antenna terminals –10MHz BW LTE-Band 4  
(16QAM RB Number: 50 Offset: 0) Channel Highest**



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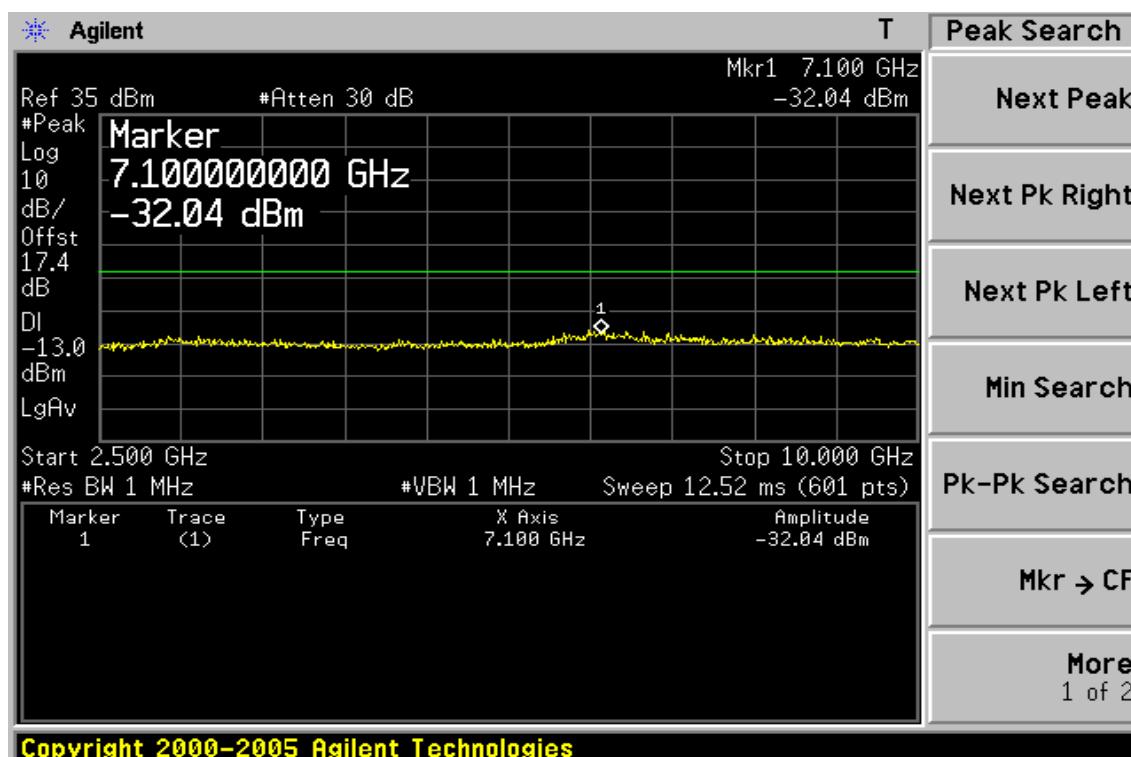
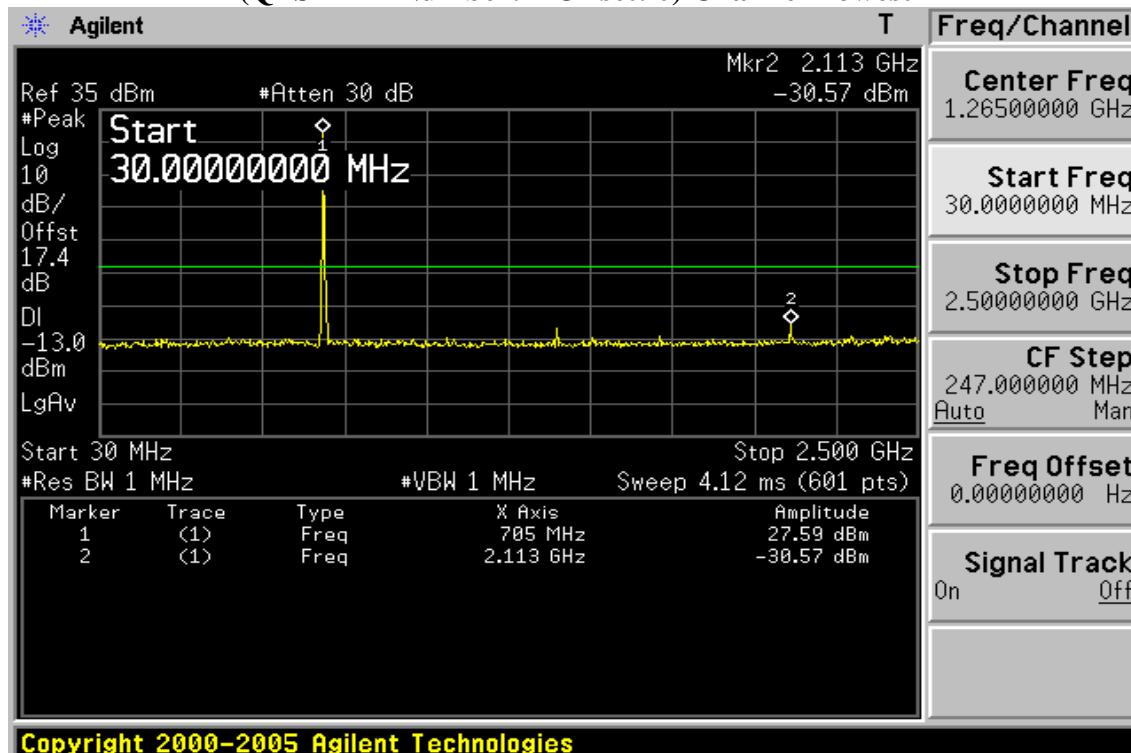
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**Figure 10-66: Out of Band emission at antenna terminals—5MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Lowest**



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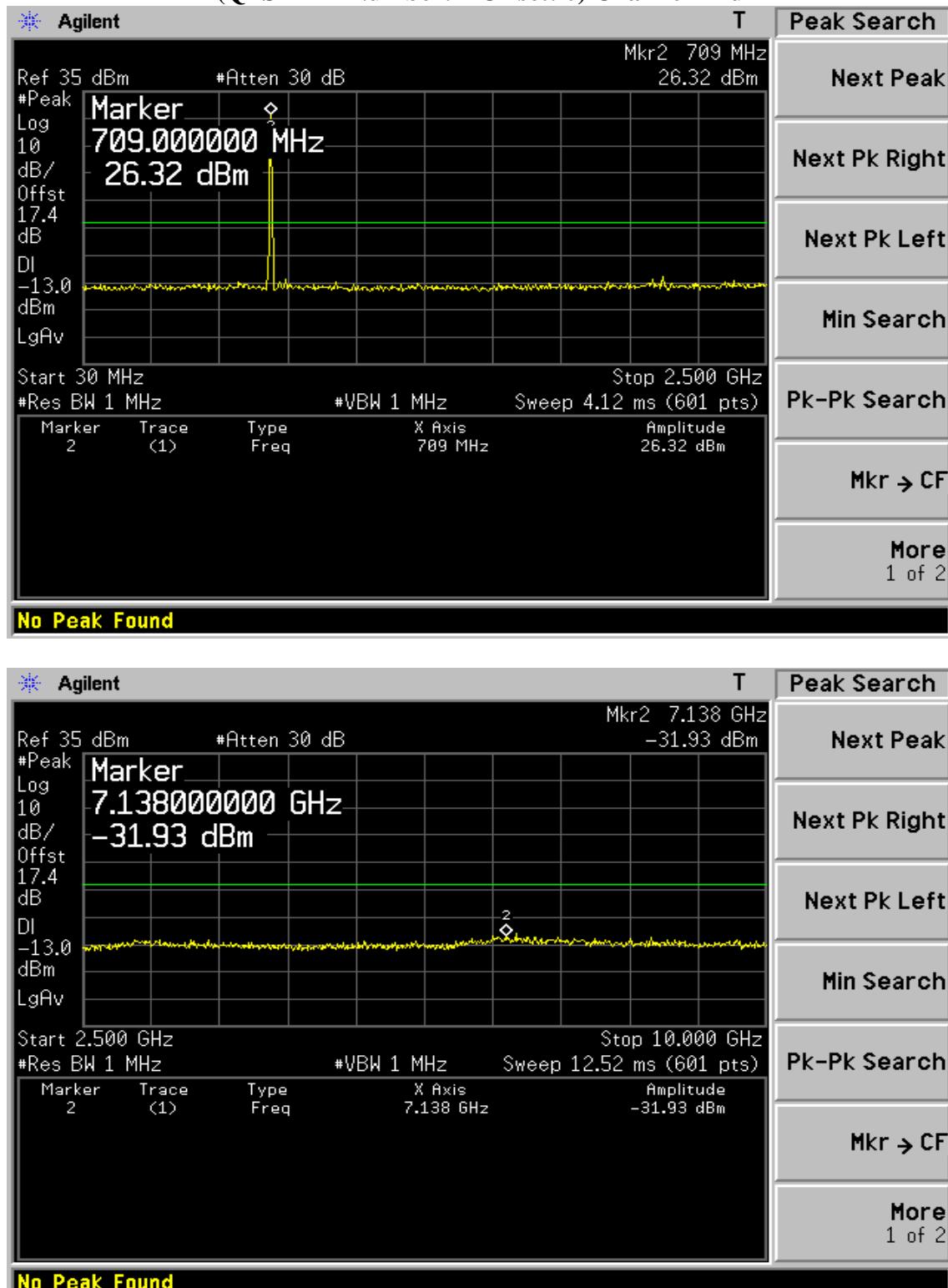
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**Figure 10-67: Out of Band emission at antenna terminals –5MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Mid**



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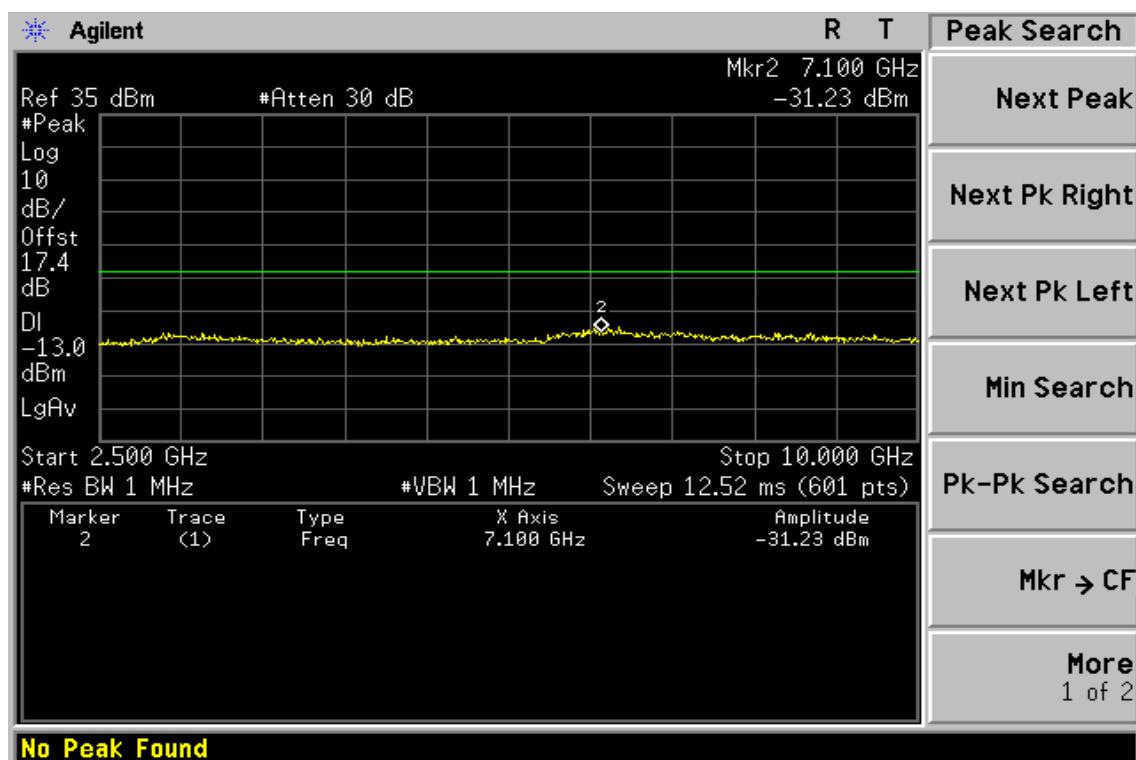
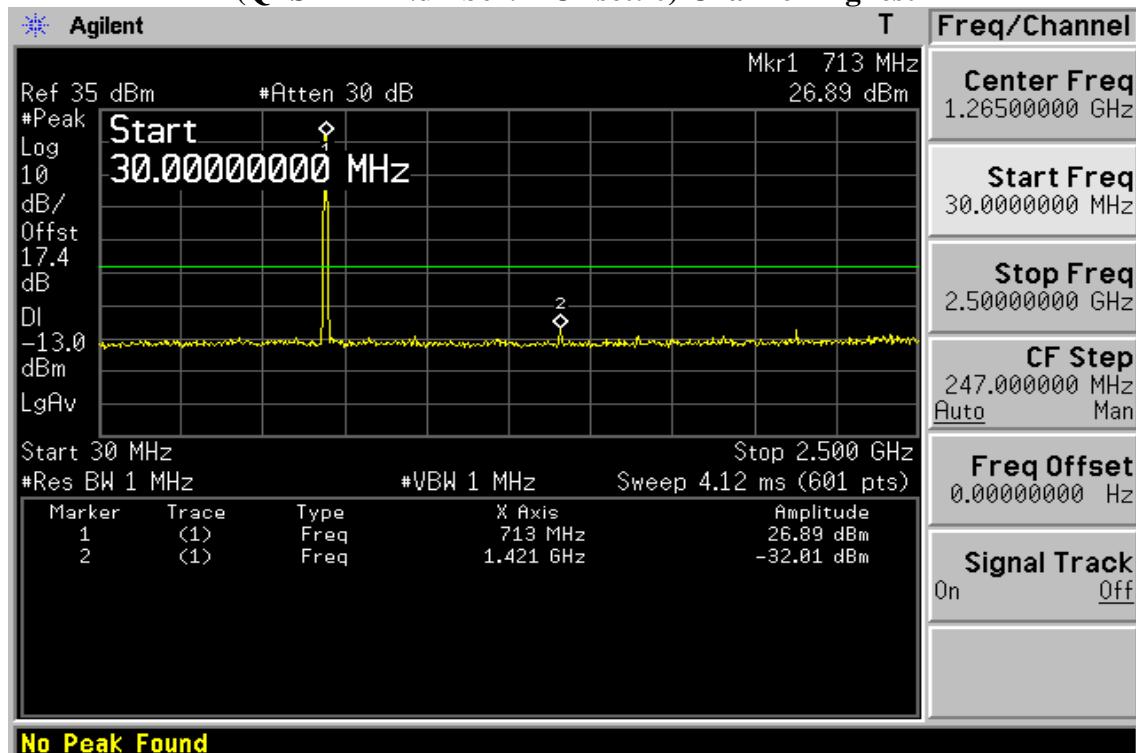
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**Figure 10-68: Out of Band emission at antenna terminals—5MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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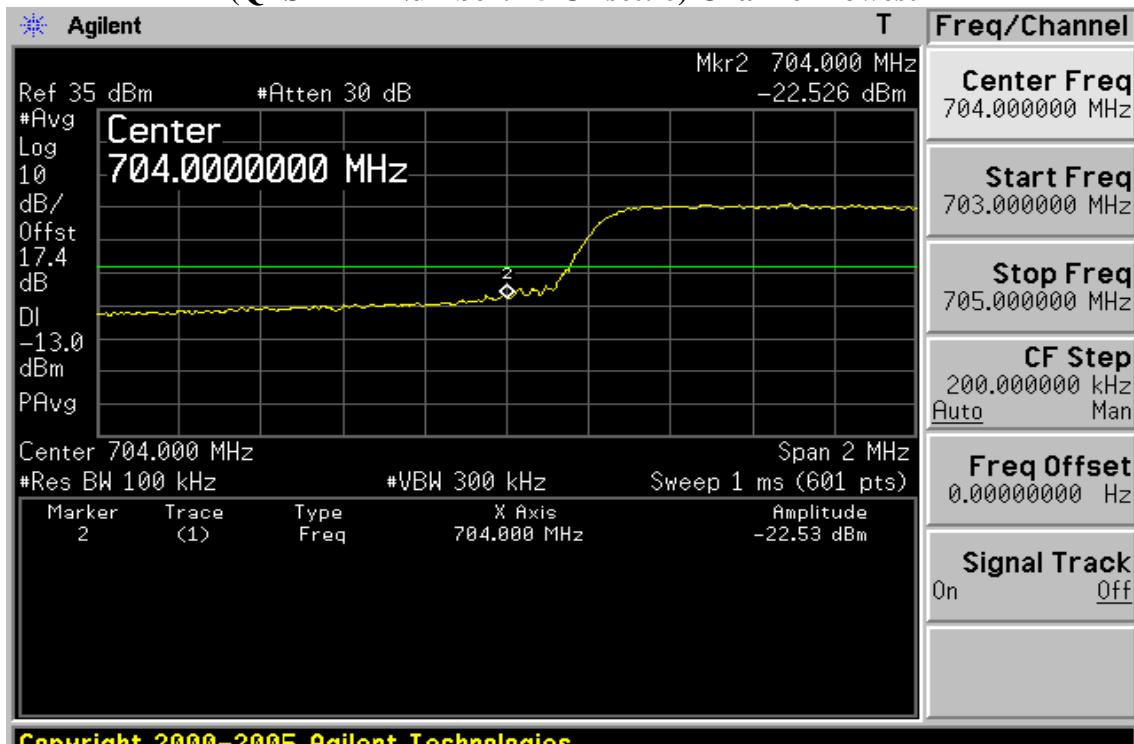
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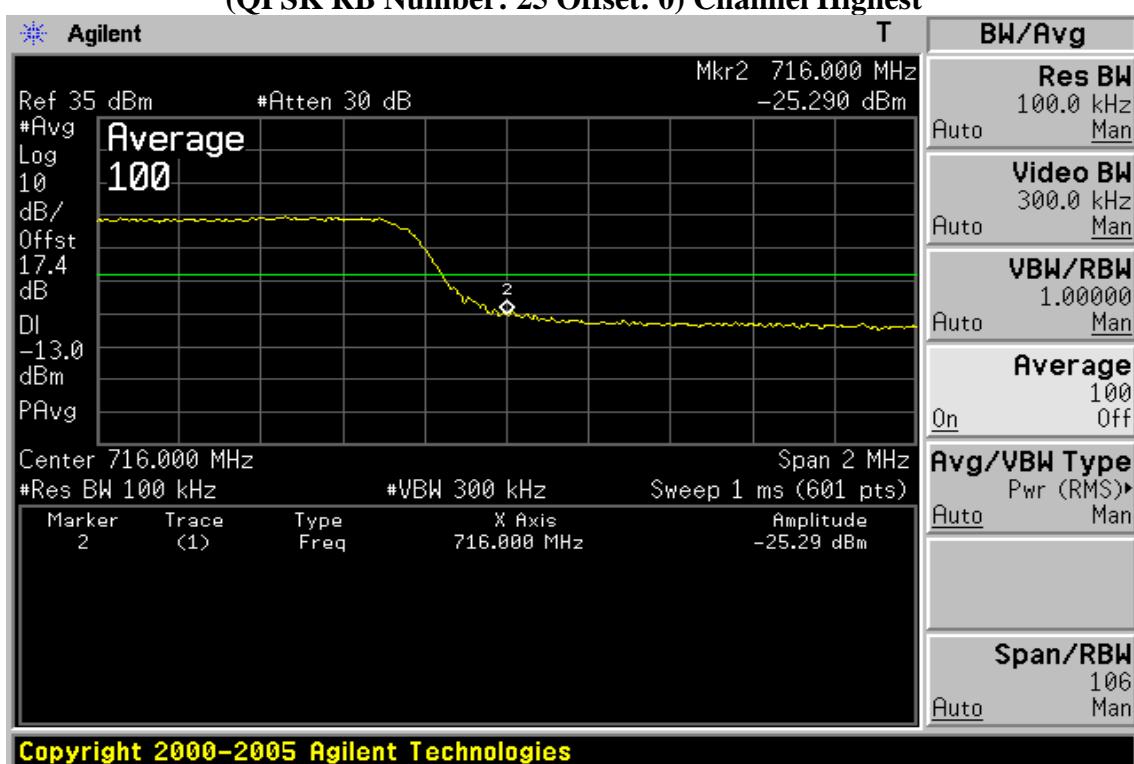
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**Figure 10-69: Band edge emission at antenna terminals –5MHz BW LTE-Band 17  
(QPSK RB Number: 25 Offset: 0) Channel Lowest**



**Figure 10-70: Band edge emission at antenna terminals –5MHz BW LTE-Band 17  
(QPSK RB Number: 25 Offset: 0) Channel Highest**



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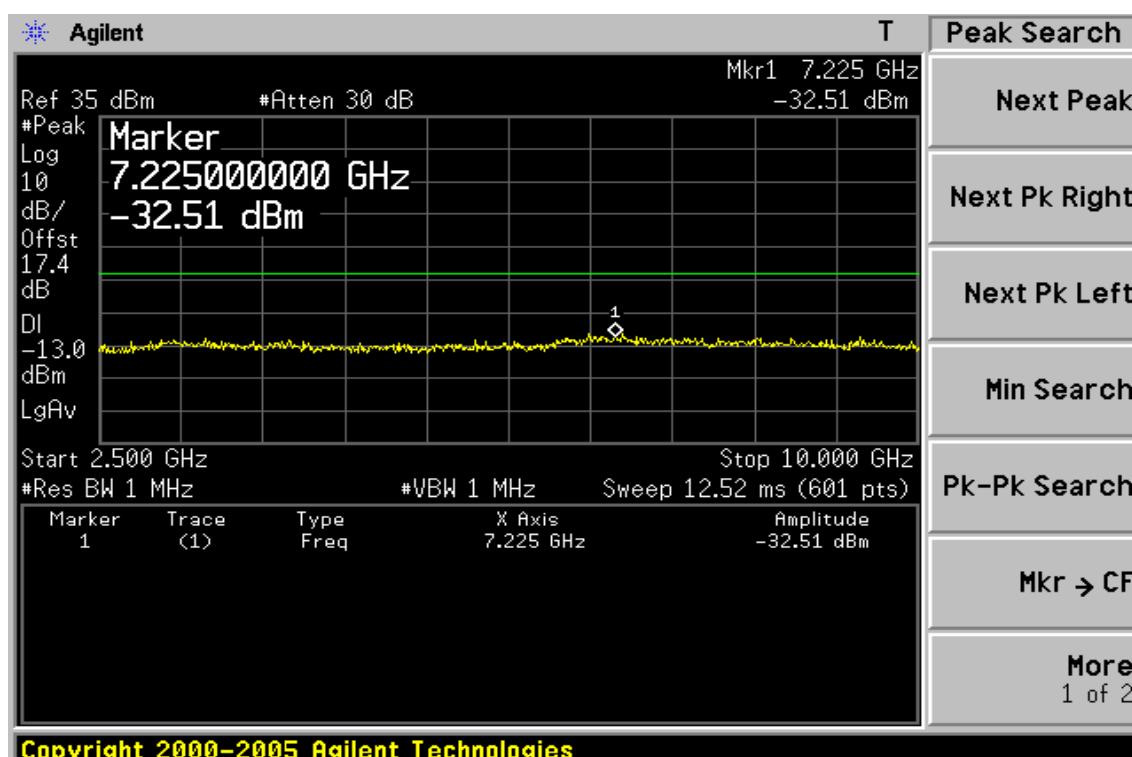
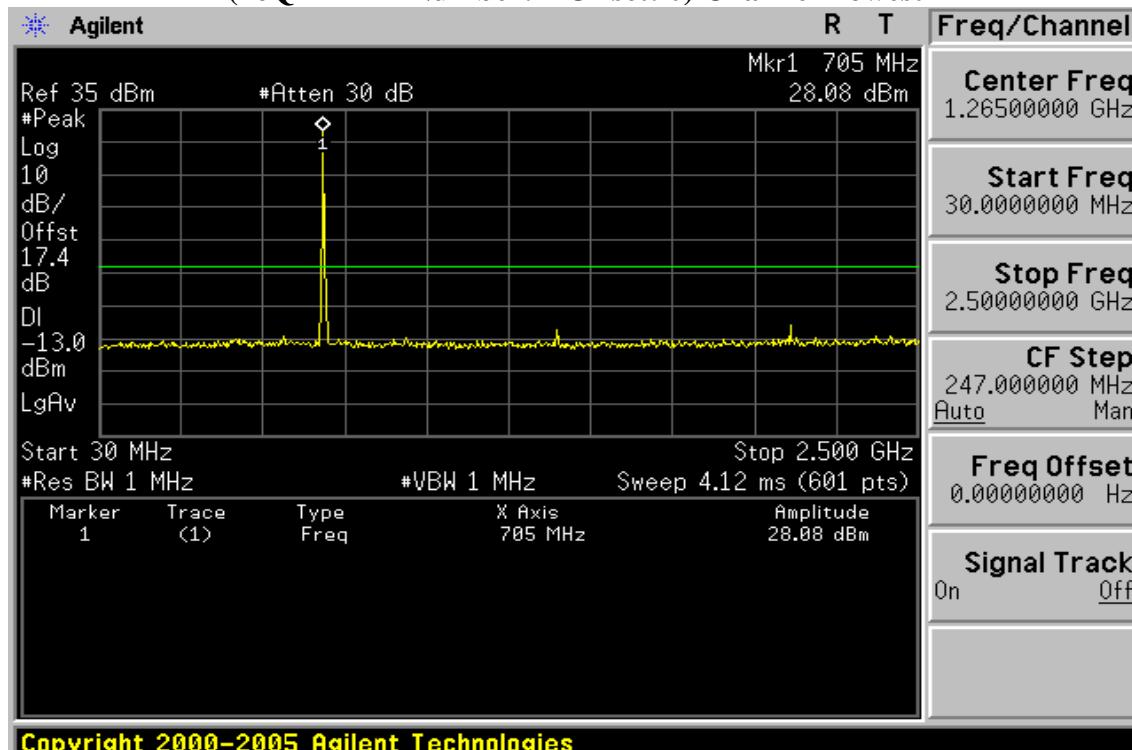
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**Figure 10-71: Out of Band emission at antenna terminals—5MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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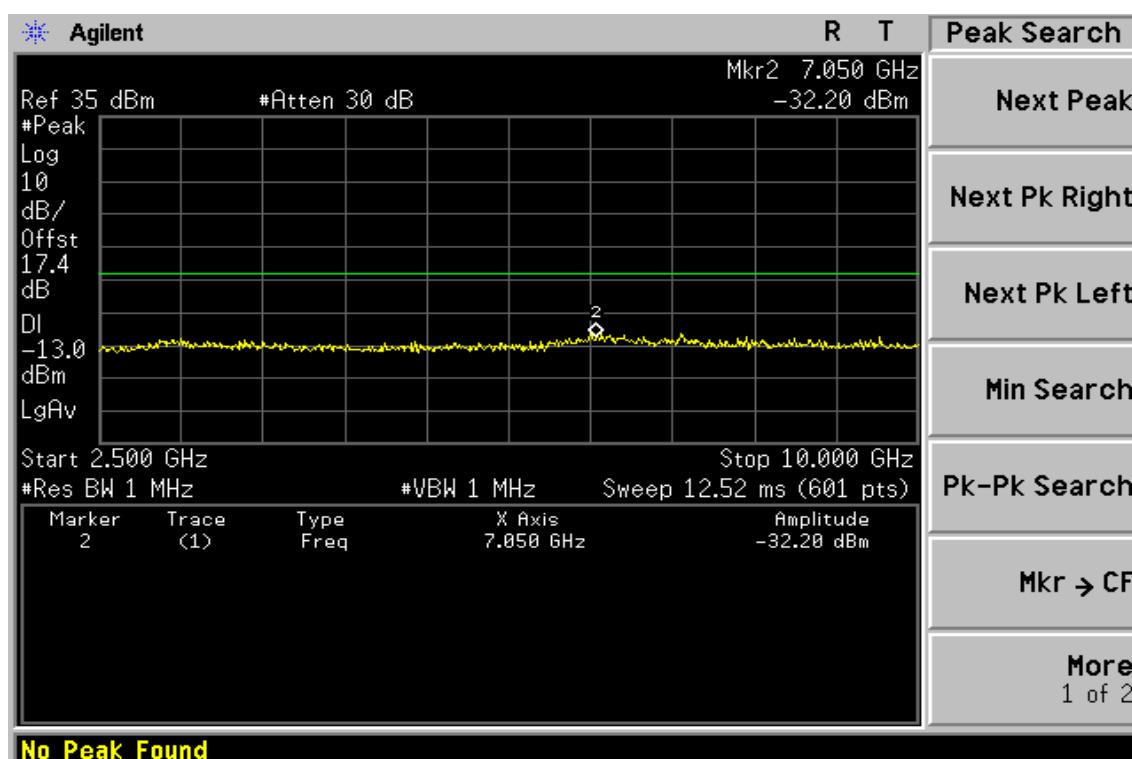
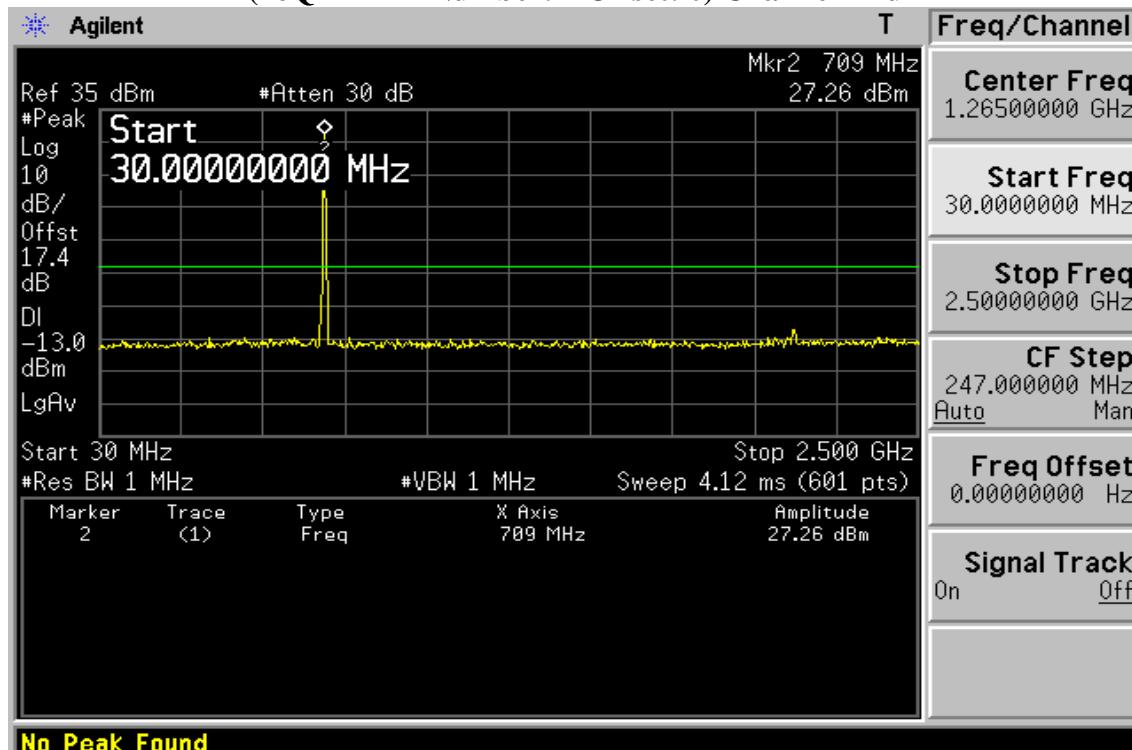
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**Figure 10-72: Out of Band emission at antenna terminals –5MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Mid**



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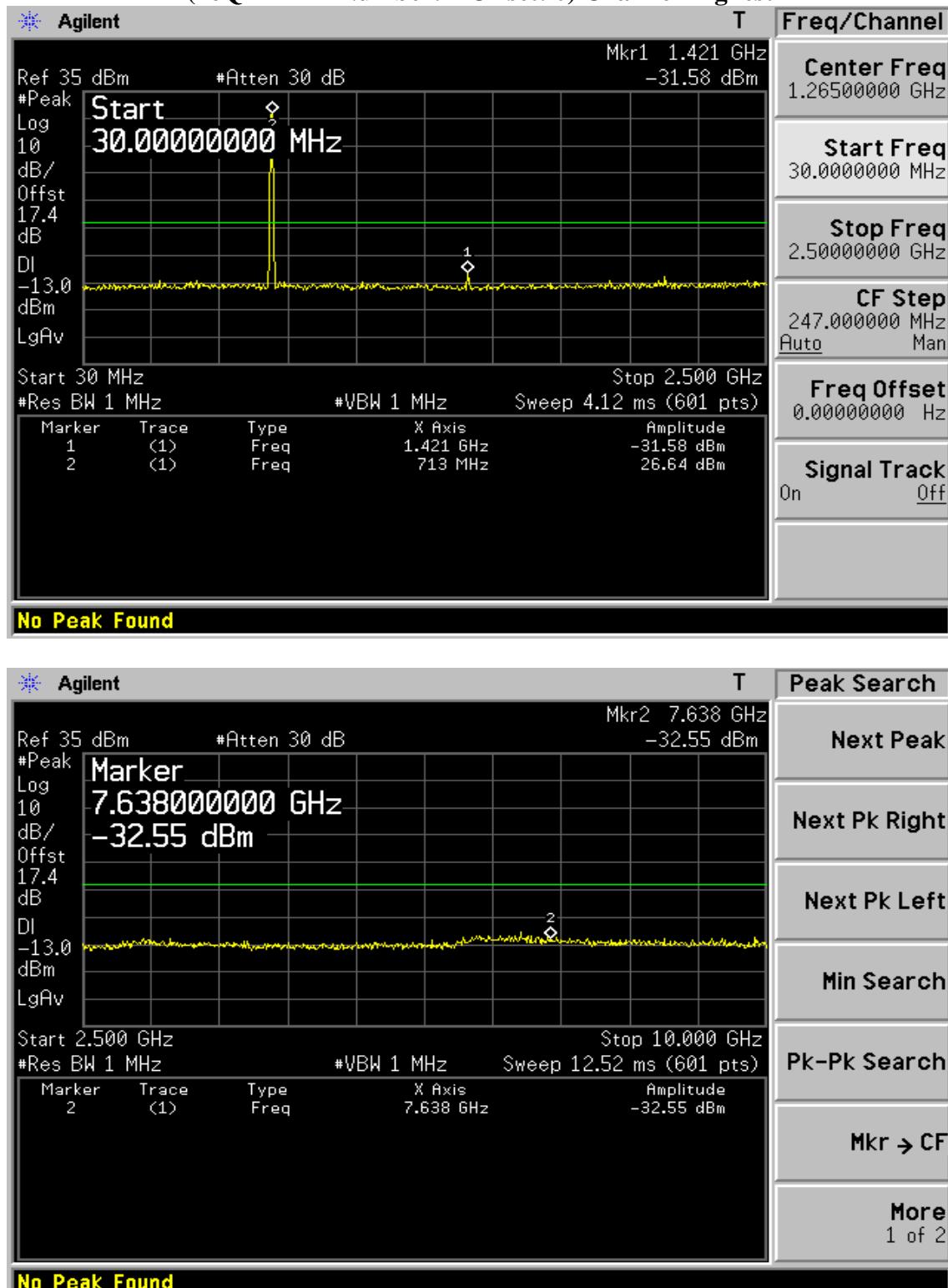
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**Figure 10-73: Out of Band emission at antenna terminals—5MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Highest**



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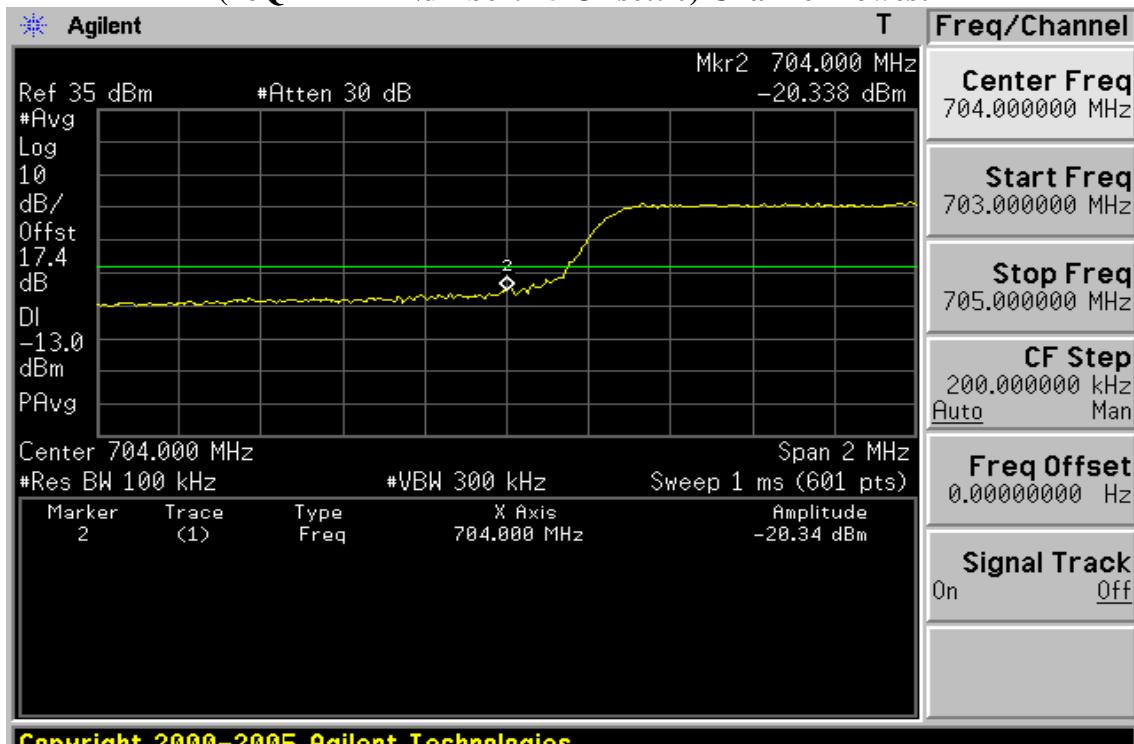
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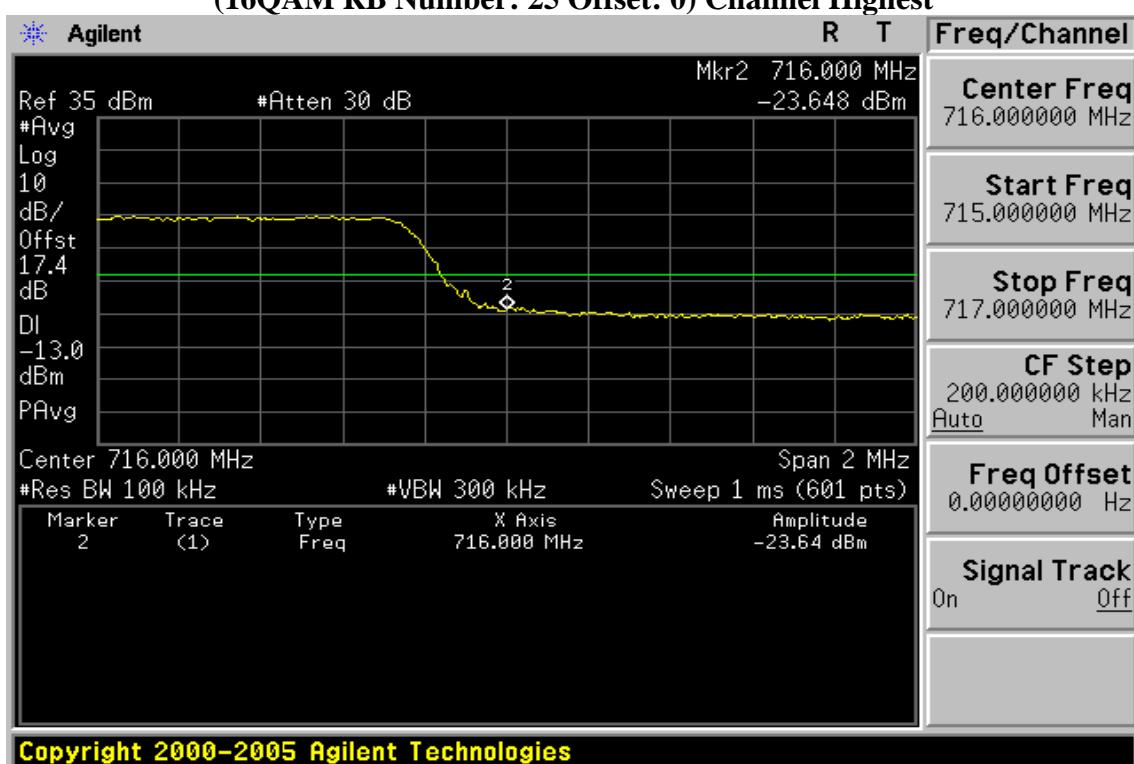
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**Figure 10-74 Band edge emission at antenna terminals –5MHz BW LTE-Band 17  
(16QAM RB Number: 25 Offset: 0) Channel Lowest**



**Figure 10-75: Band edge emission at antenna terminals –5MHz BW LTE-Band 17  
(16QAM RB Number: 25 Offset: 0) Channel Highest**



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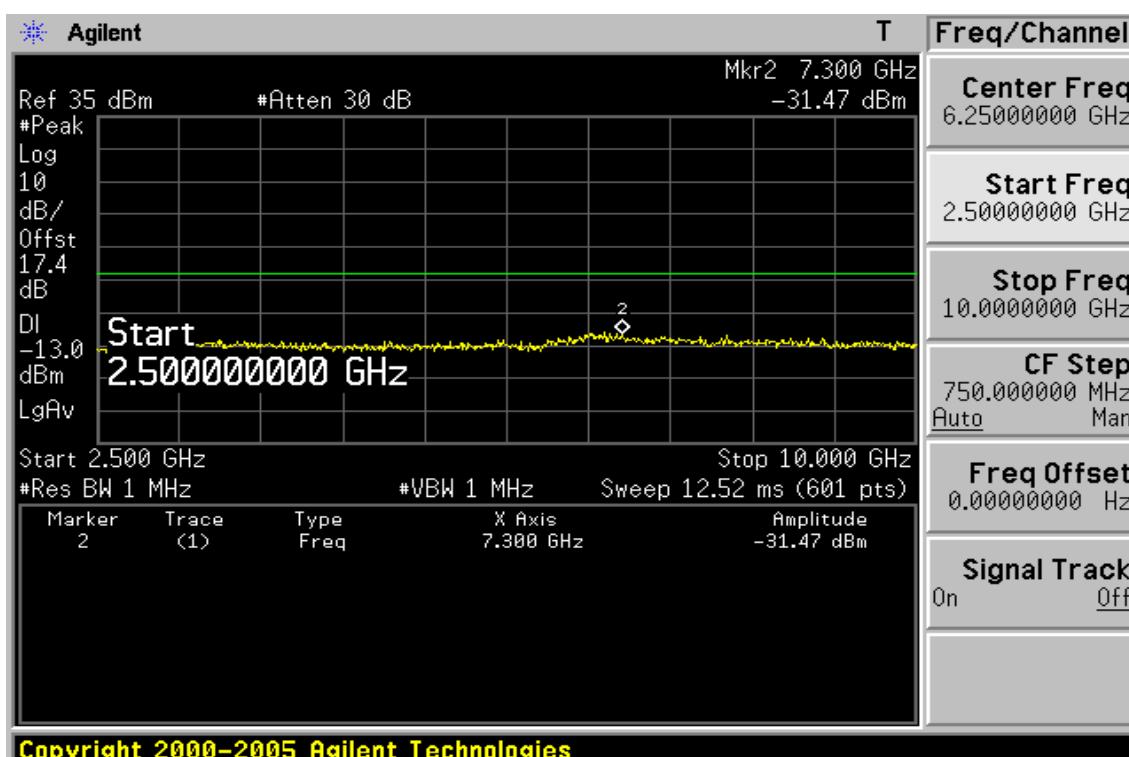
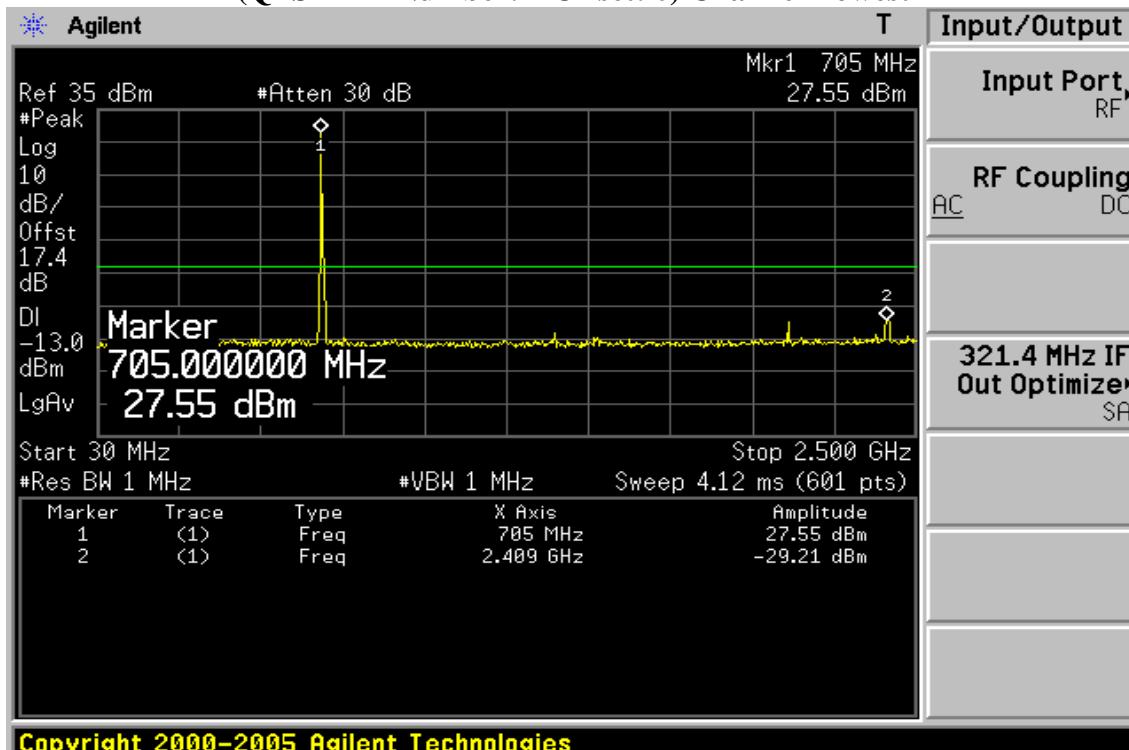
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**Figure 10-76: Out of Band emission at antenna terminals—10MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Lowest**



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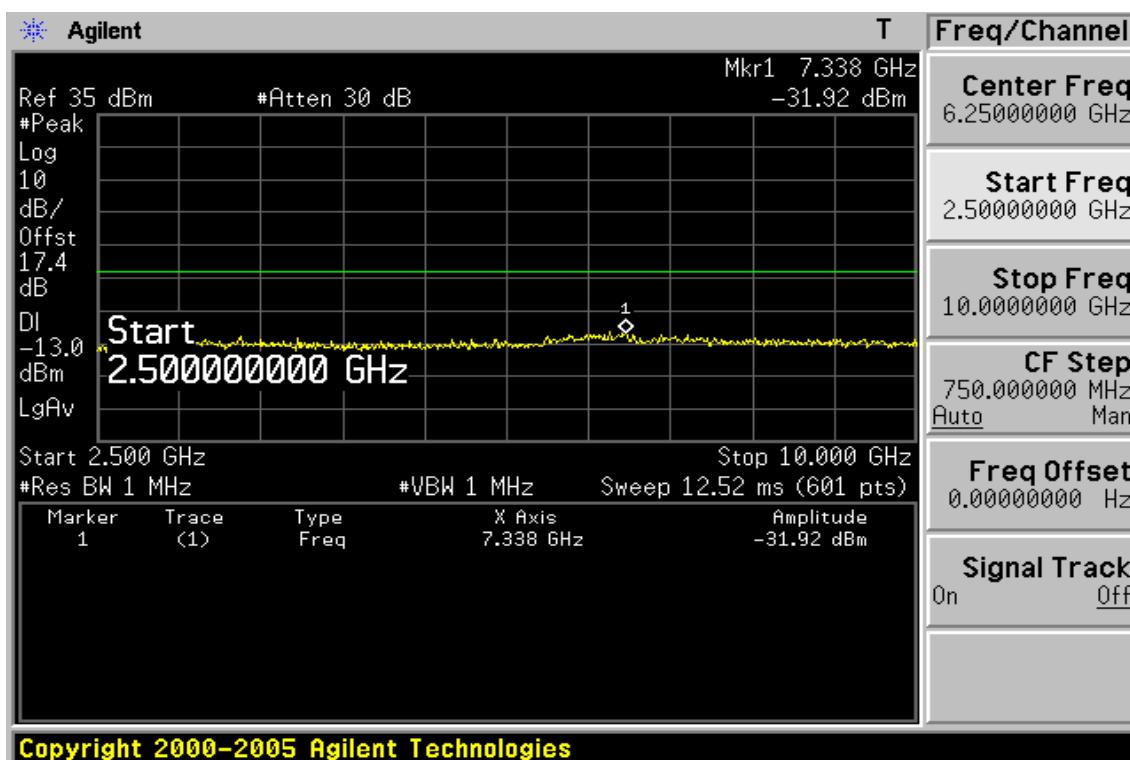
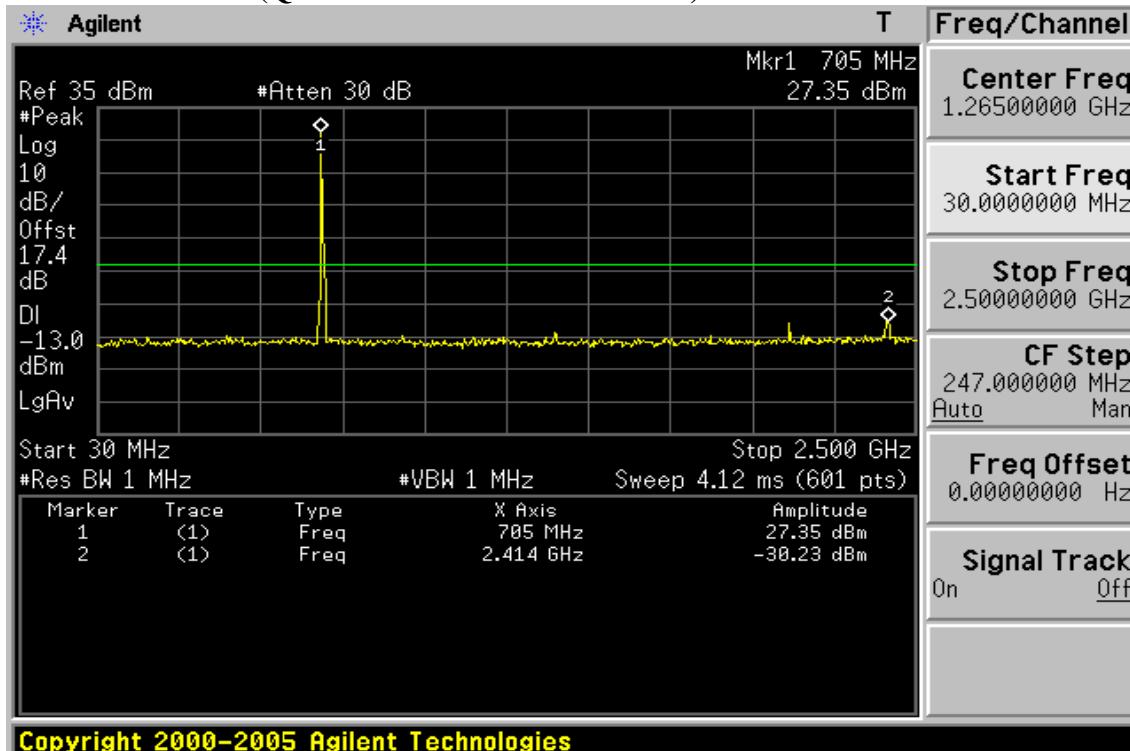
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Figure 10-77: Out of Band emission at antenna terminals –10MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Mid



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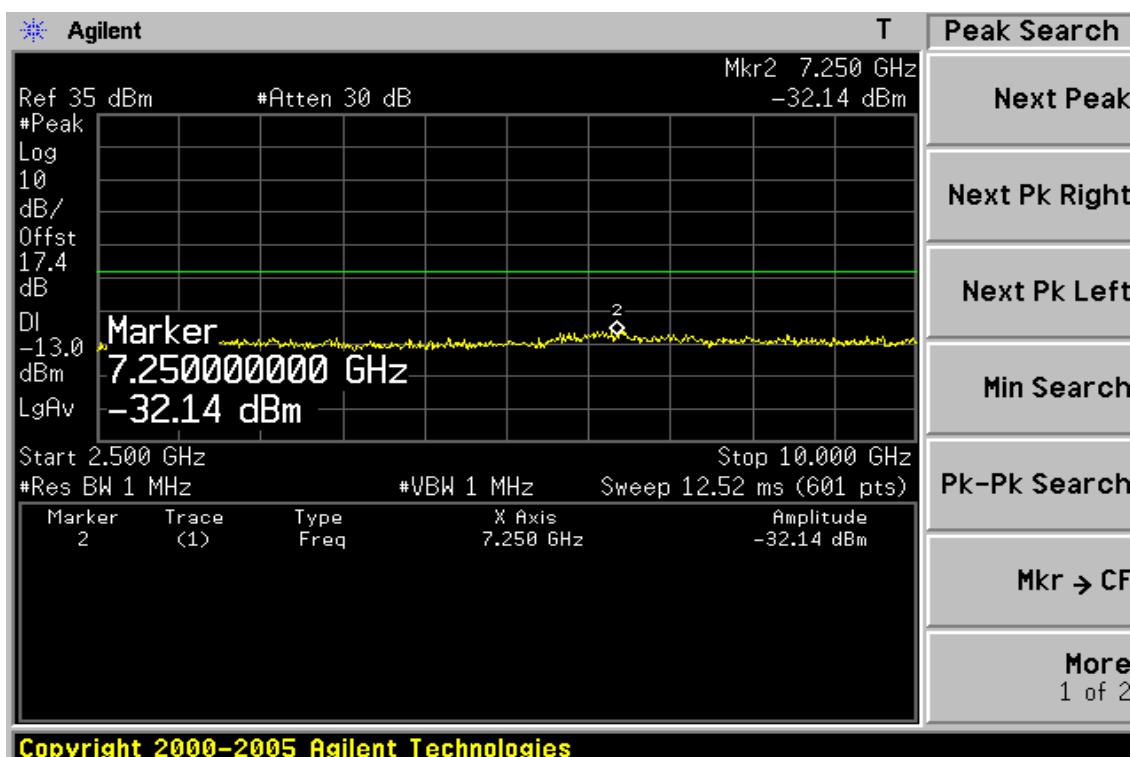
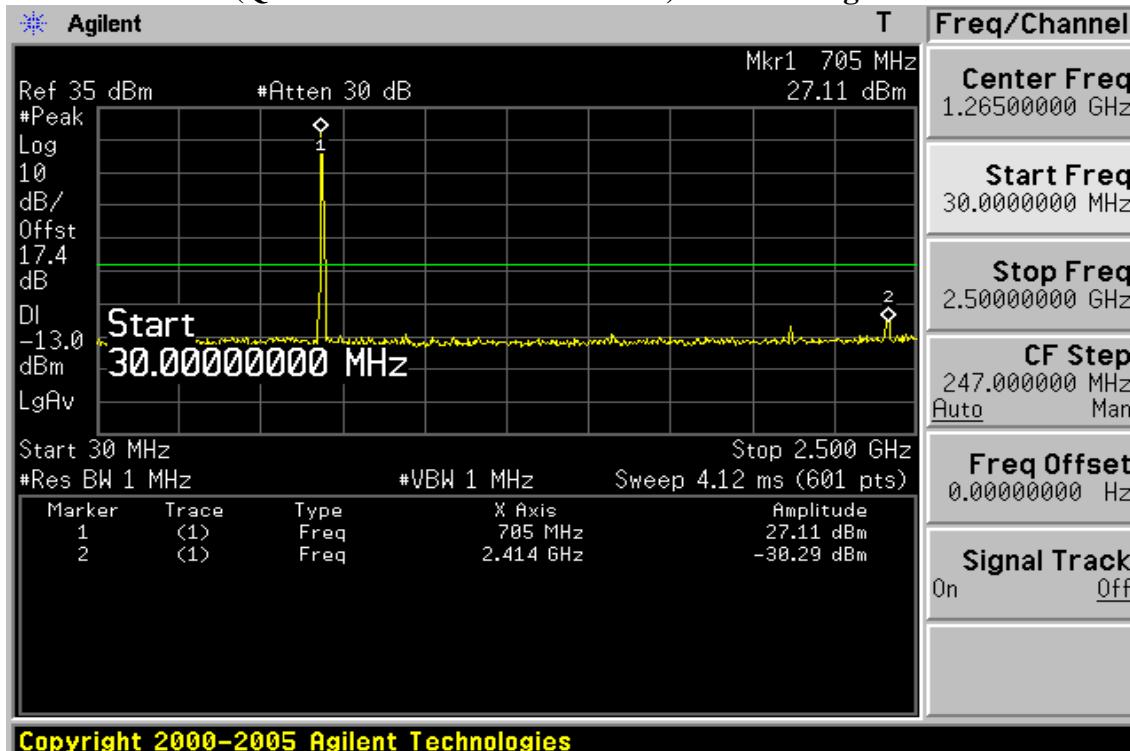
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**Figure 10-78: Out of Band emission at antenna terminals—10MHz BW LTE-Band 17  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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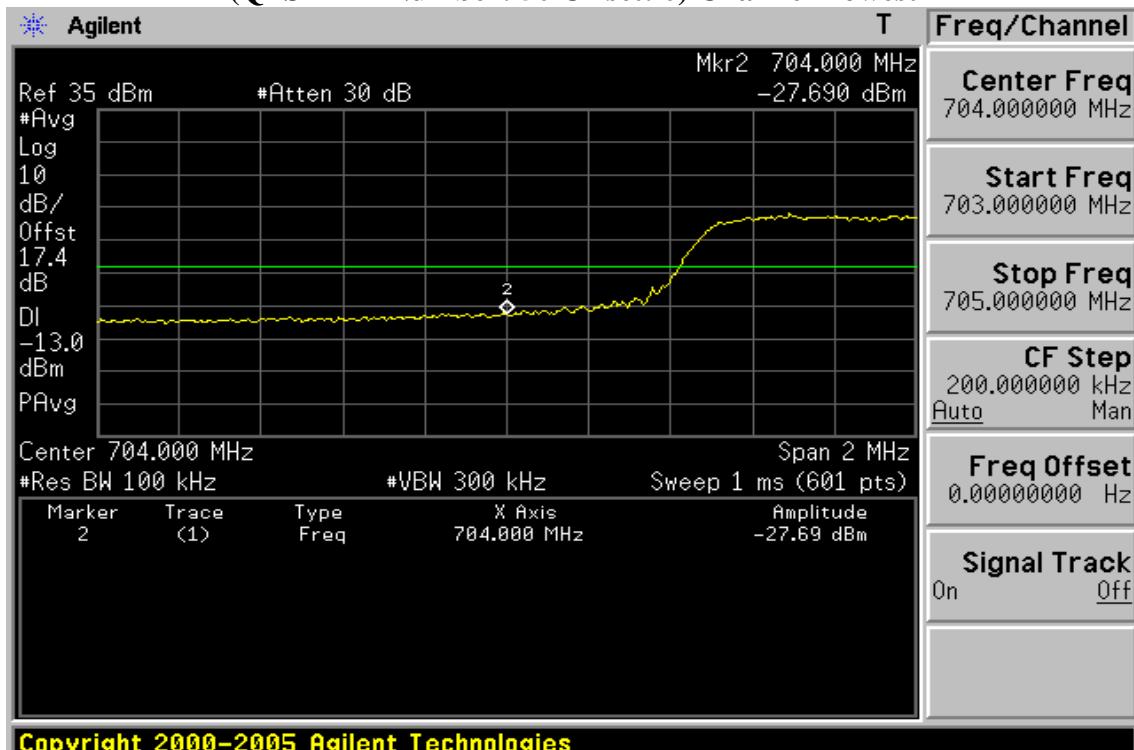
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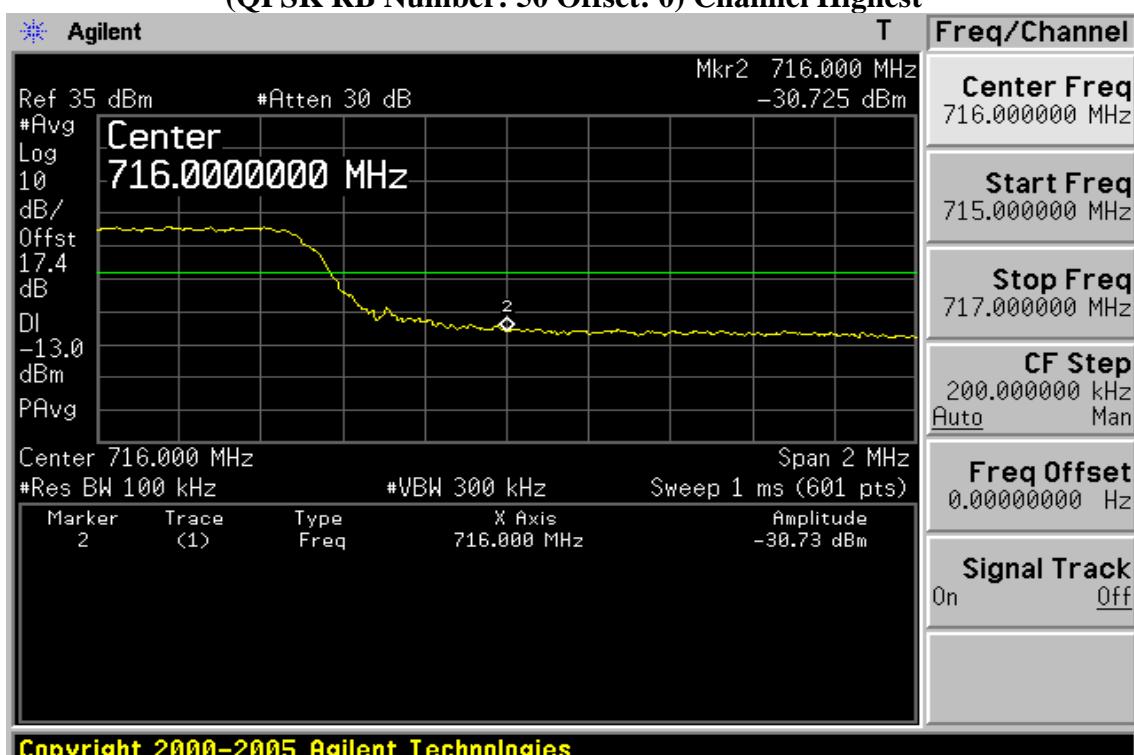
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**Figure 10-79: Band edge emission at antenna terminals –10MHz BW LTE-Band 17  
(QPSK RB Number: 50 Offset: 0) Channel Lowest**



**Figure 10-80: Band edge emission at antenna terminals –10MHz BW LTE-Band 17  
(QPSK RB Number: 50 Offset: 0) Channel Highest**



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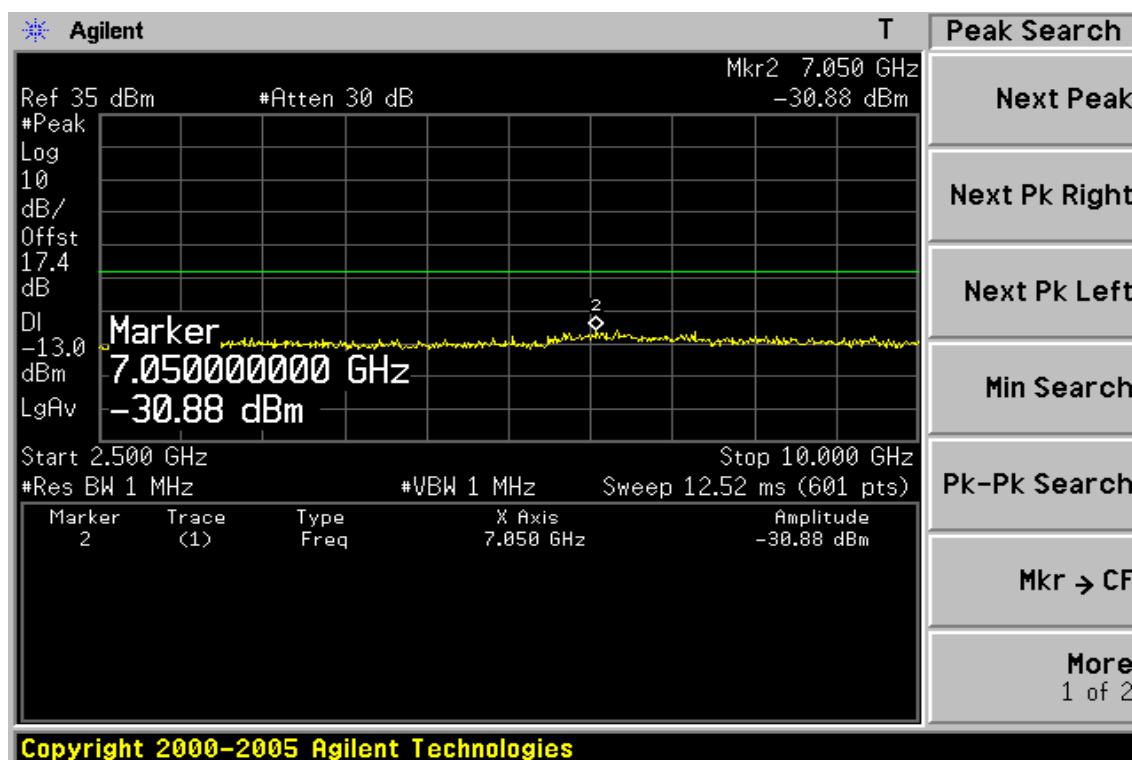
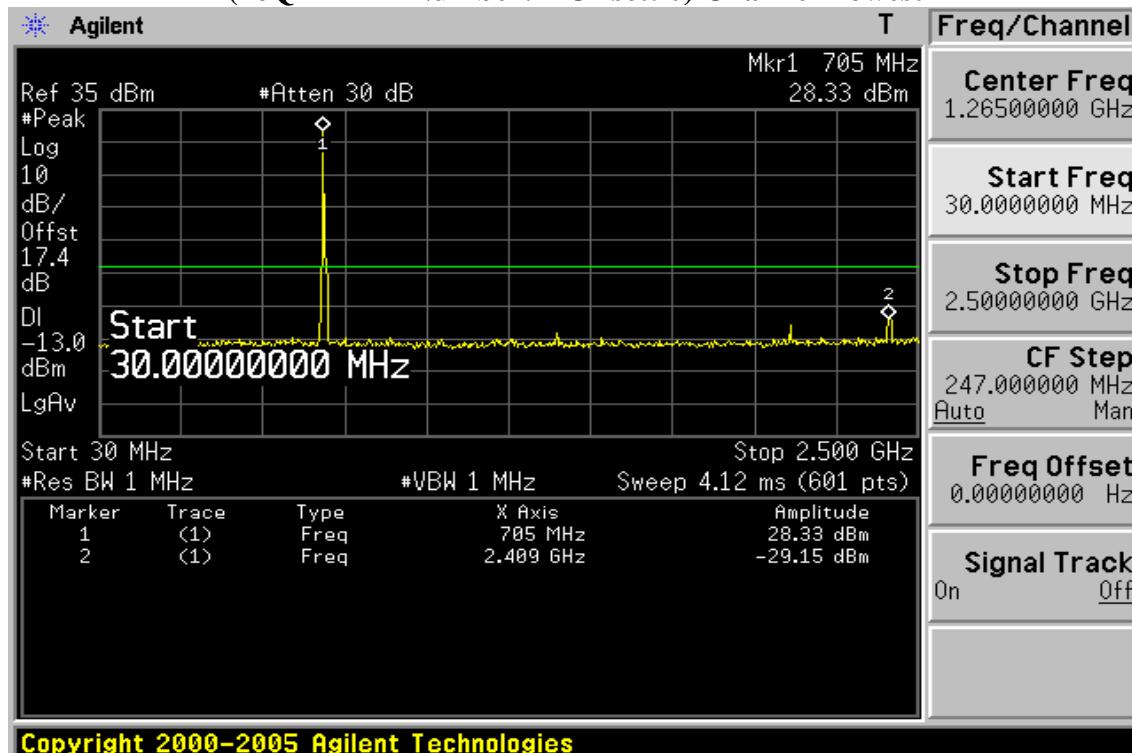
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**Figure 10-81: Out of Band emission at antenna terminals—10MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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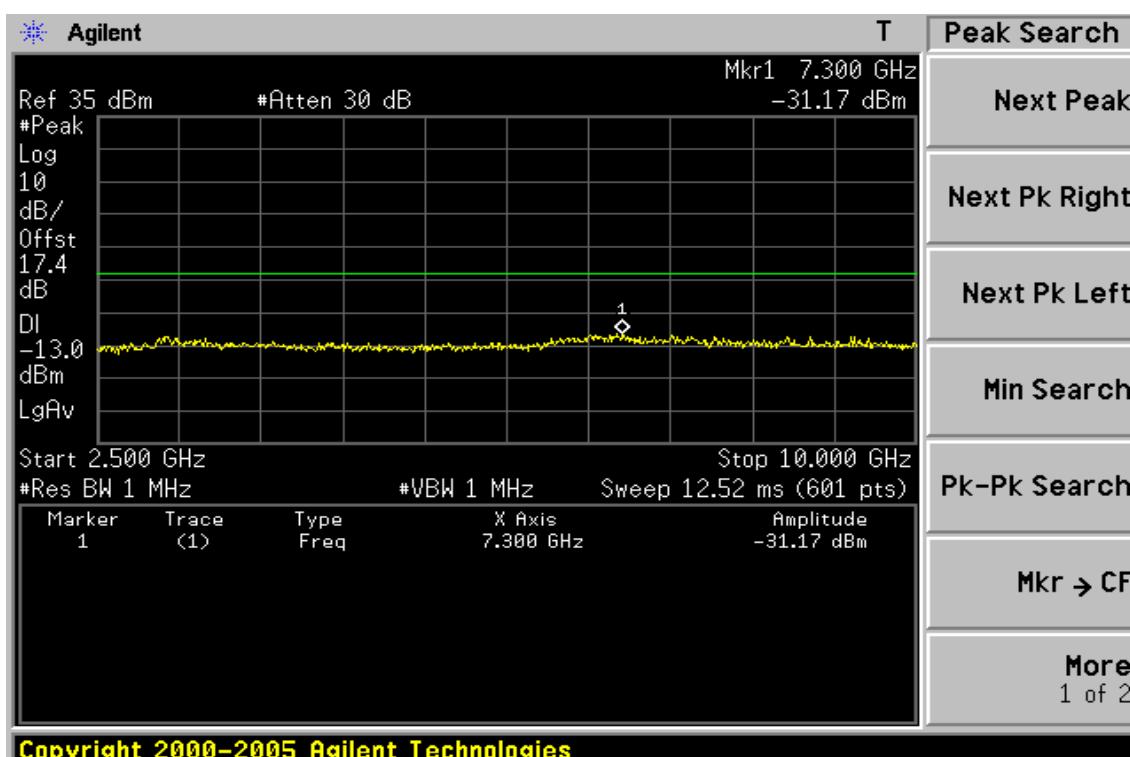
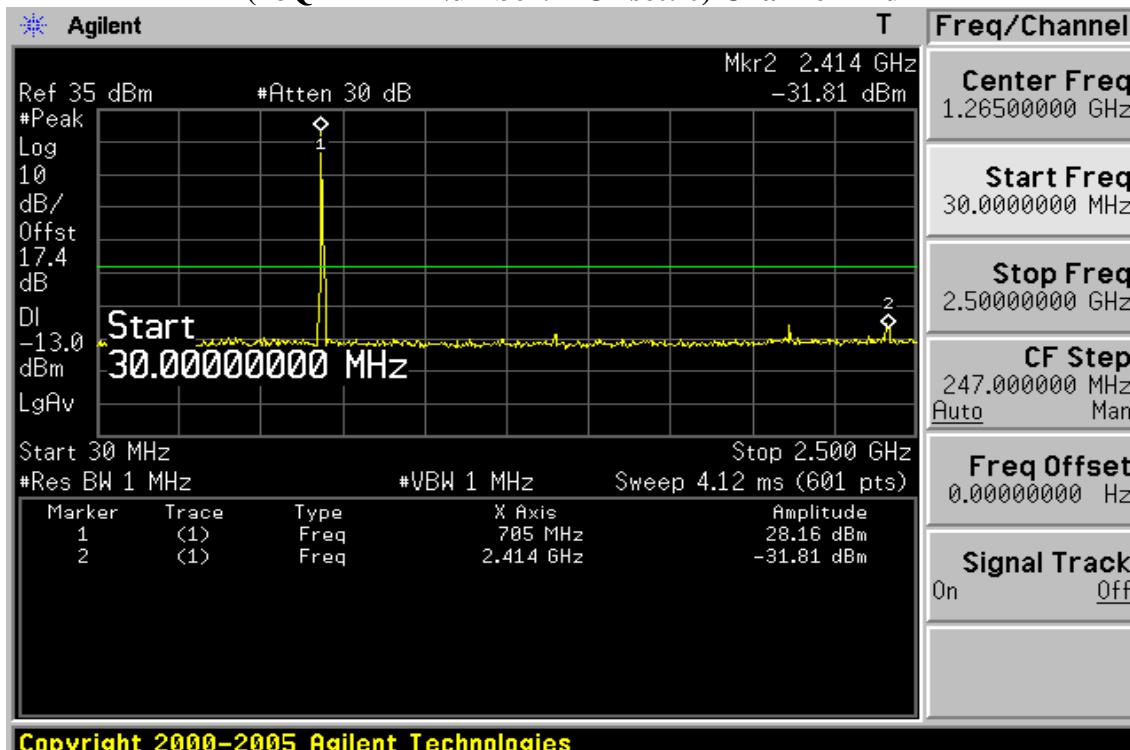
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Figure 10-82: Out of Band emission at antenna terminals –10MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Mid



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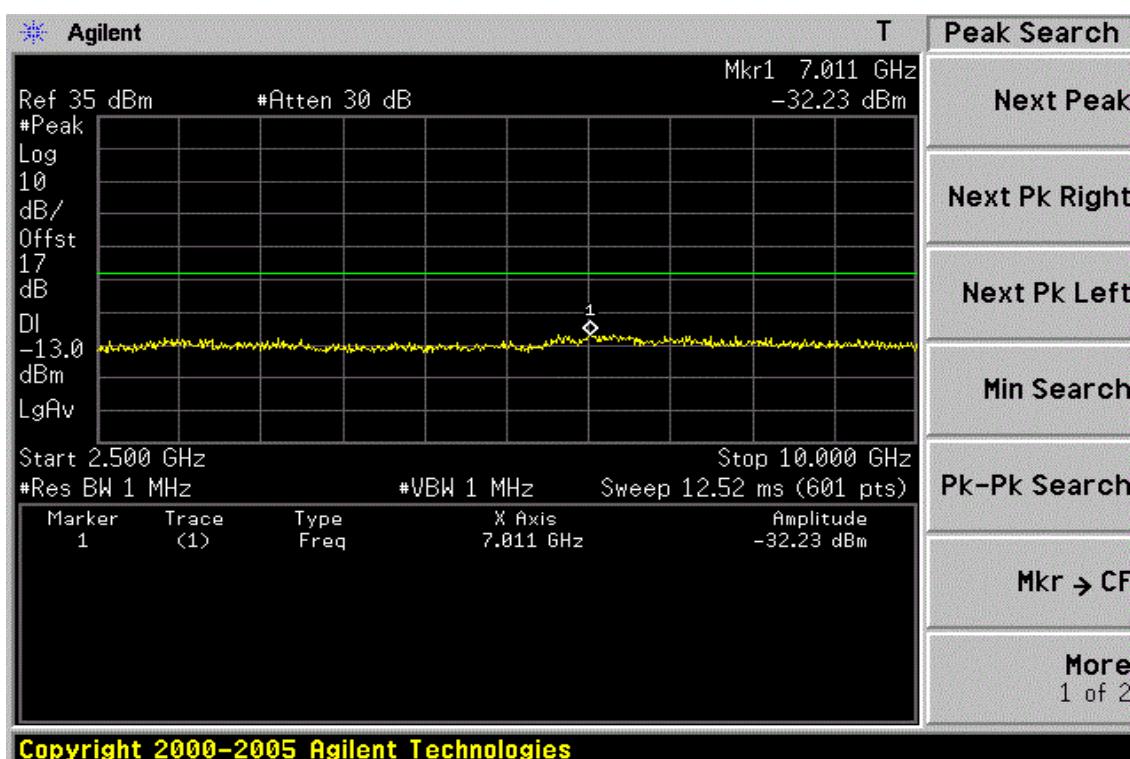
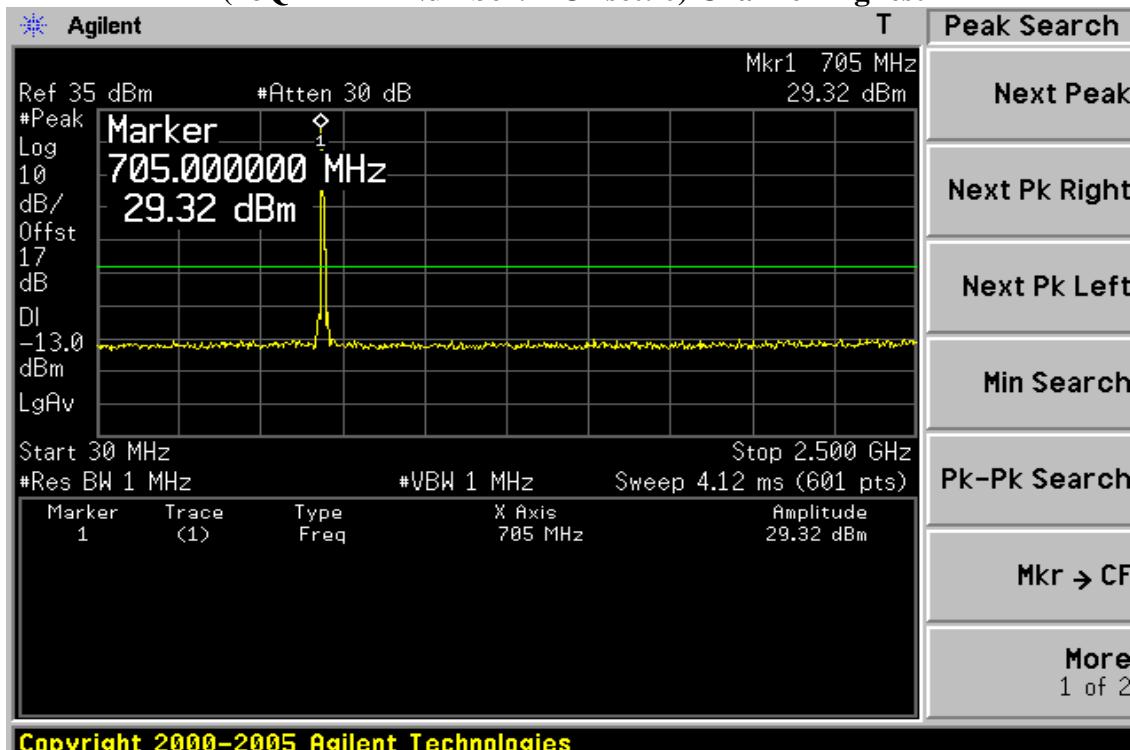
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**Figure 10-83: Out of Band emission at antenna terminals–10MHz BW LTE-Band 17  
(16QAM RB Number: 1 Offset: 0) Channel Highest**



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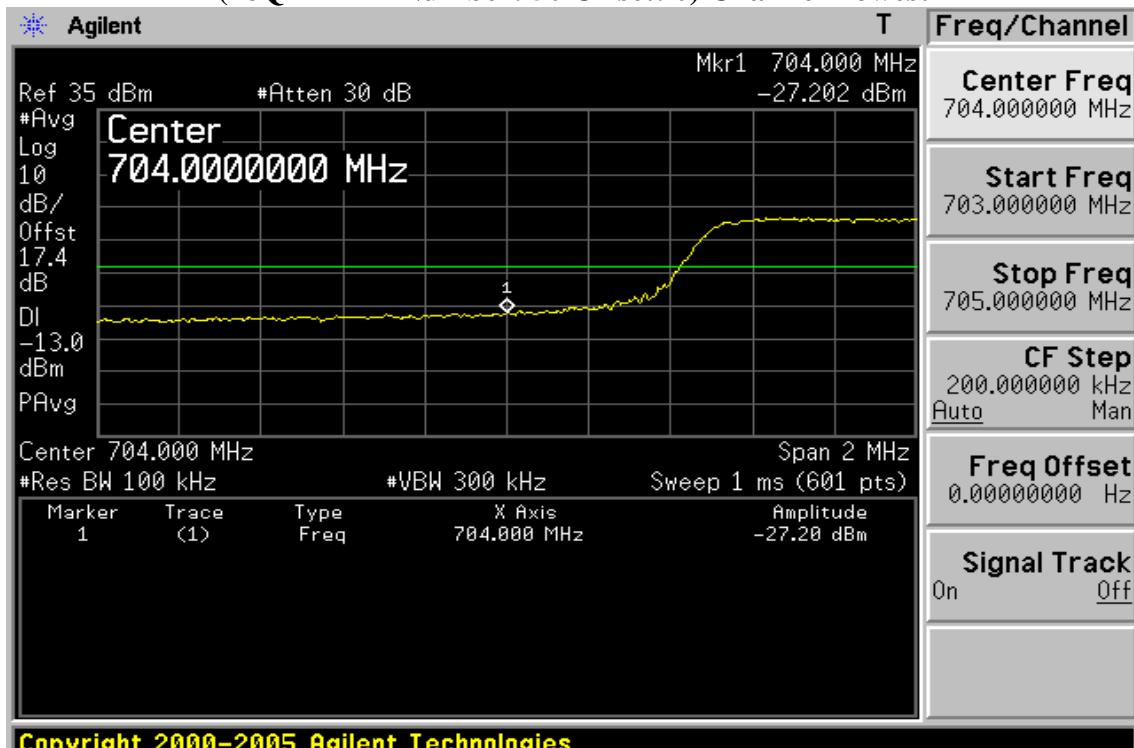
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**Figure 10-84: Band edge emission at antenna terminals –10MHz BW LTE-Band 17  
(16QAM RB Number: 50 Offset: 0) Channel Lowest**



**Figure 10-85: Band edge emission at antenna terminals –10MHz BW LTE-Band 17  
(16QAM RB Number: 50 Offset: 0) Channel Highest**



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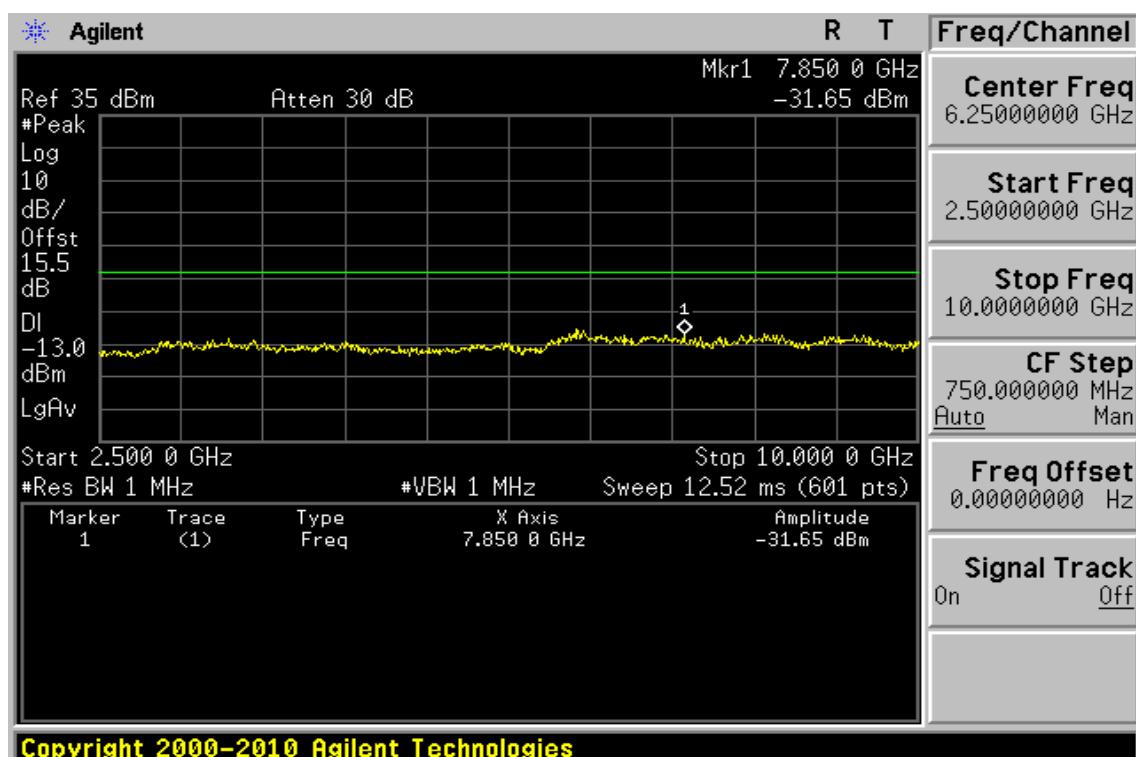
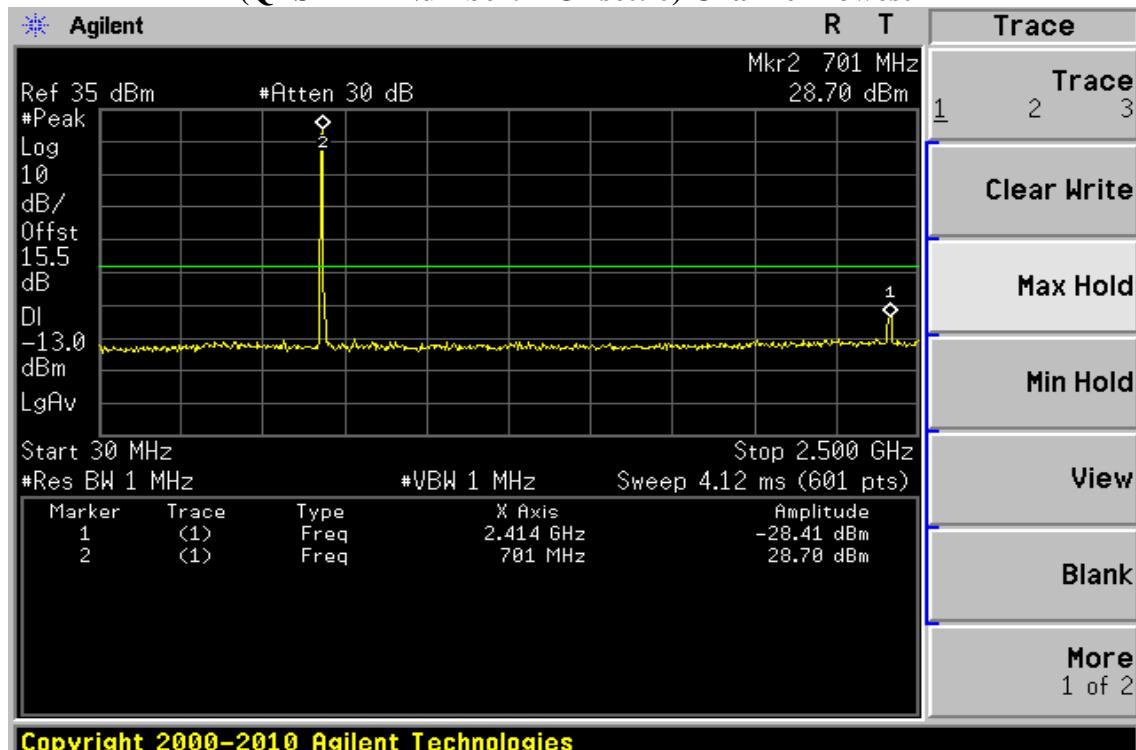
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**Figure 10-86: Out of Band emission at antenna terminals—5MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Lowest**



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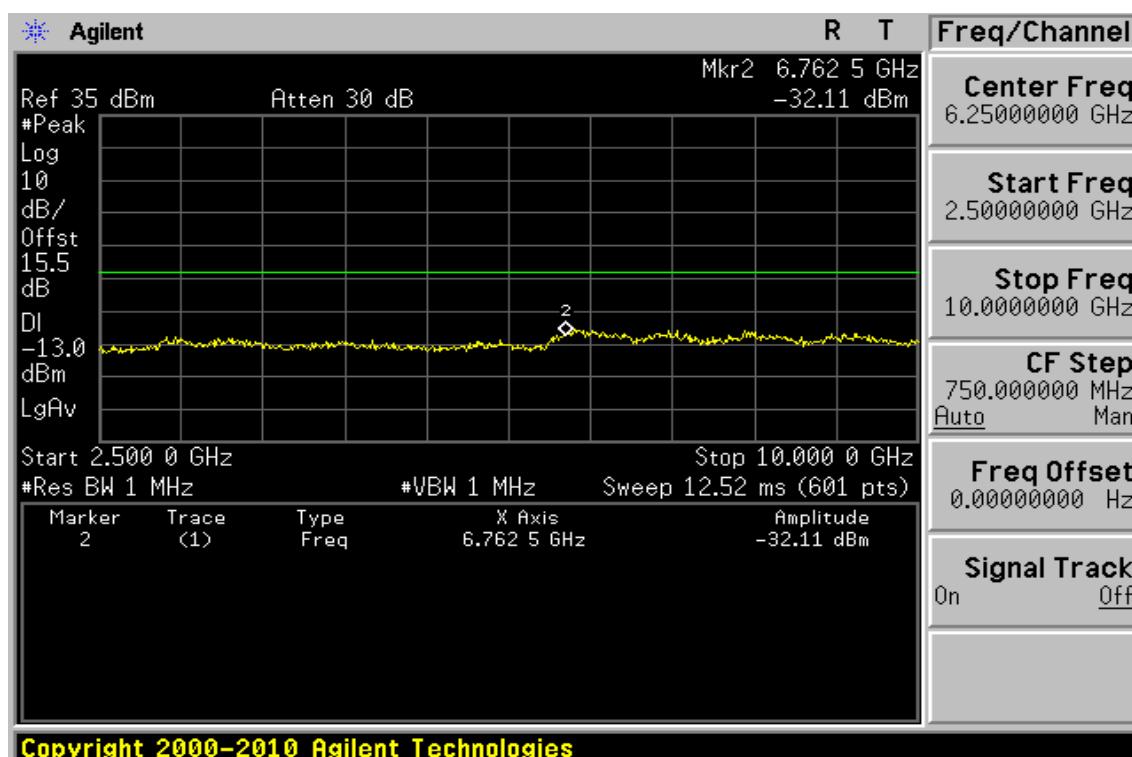
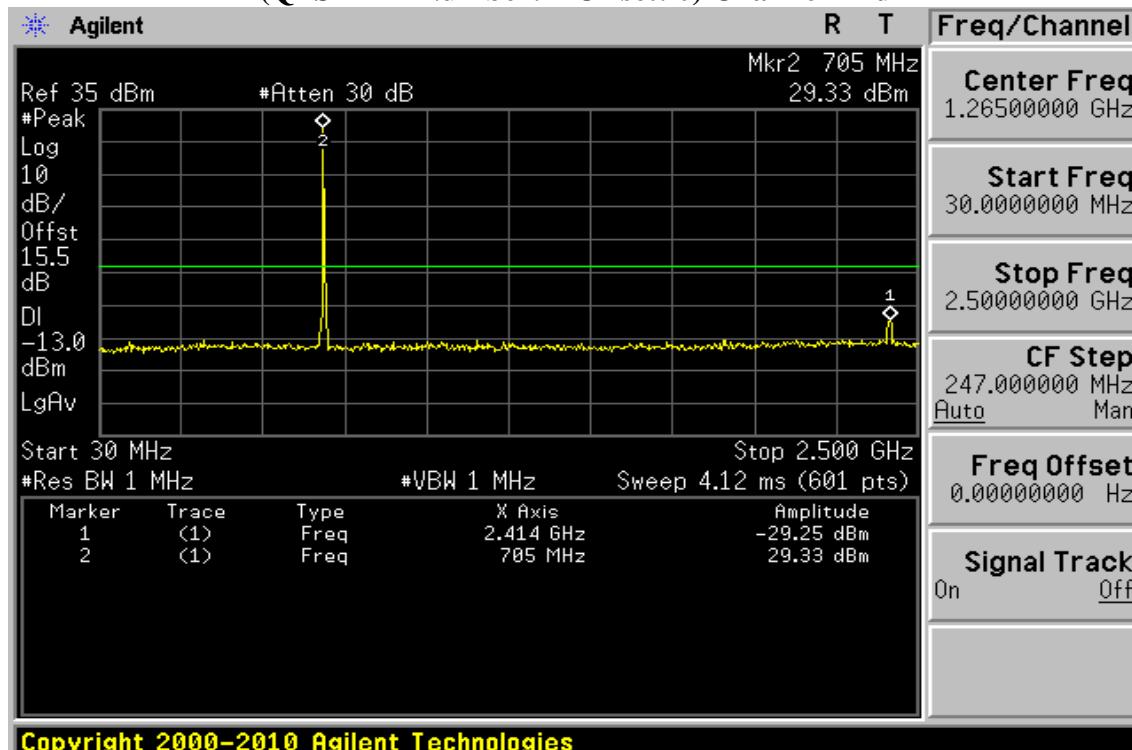
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**Figure 10-87: Out of Band emission at antenna terminals –5MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Mid**



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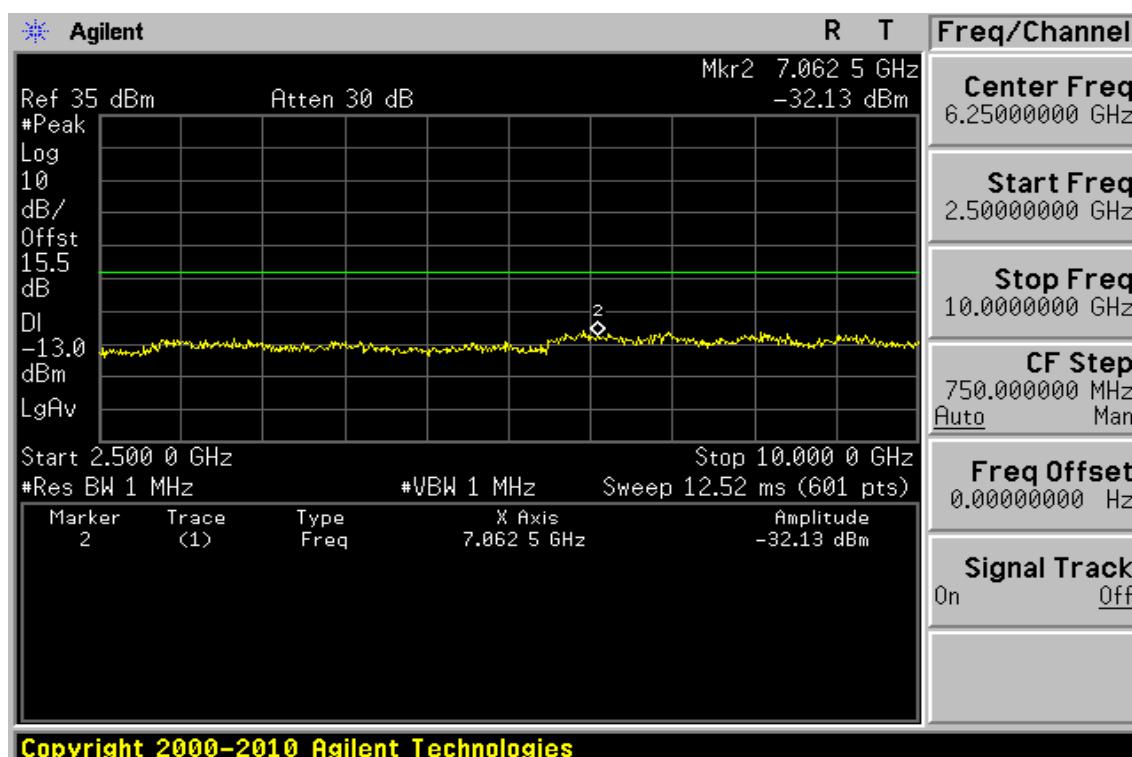
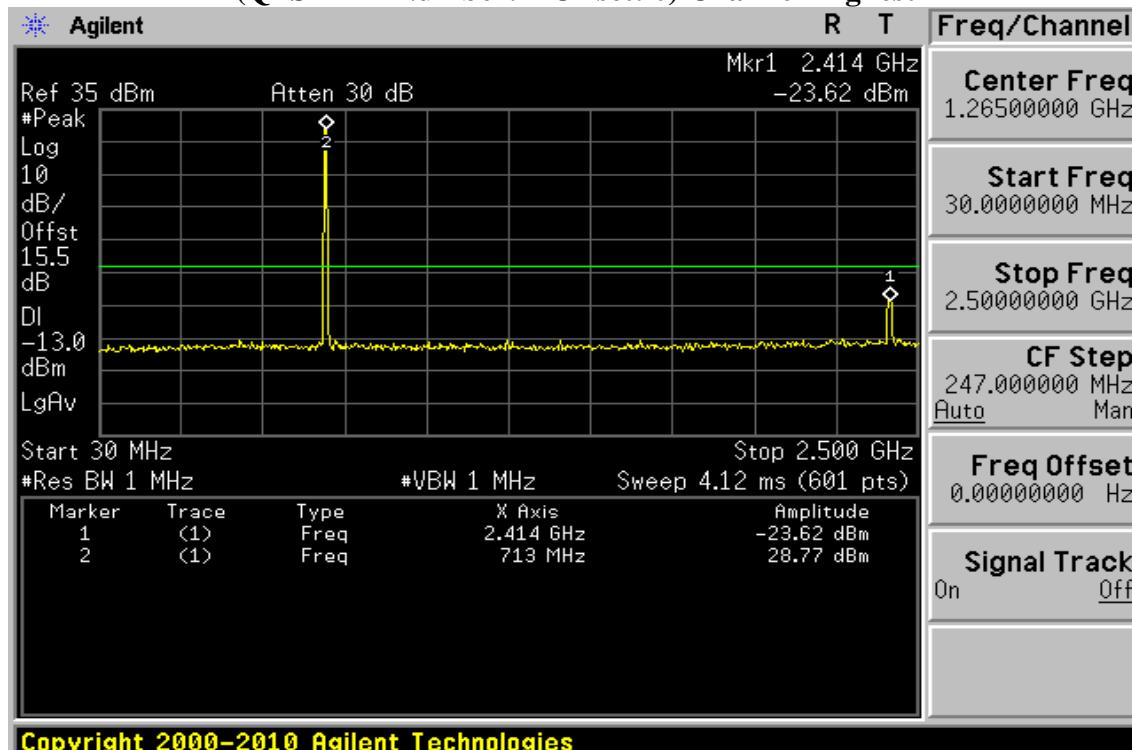
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**Figure 10-88: Out of Band emission at antenna terminals—5MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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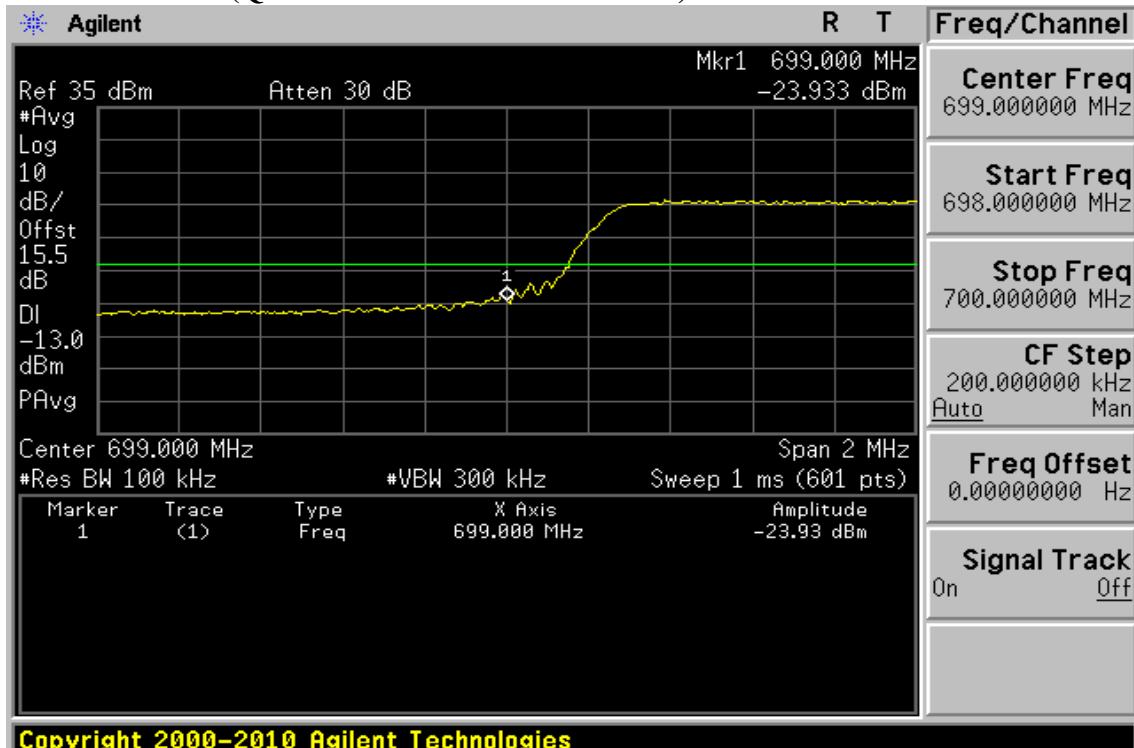
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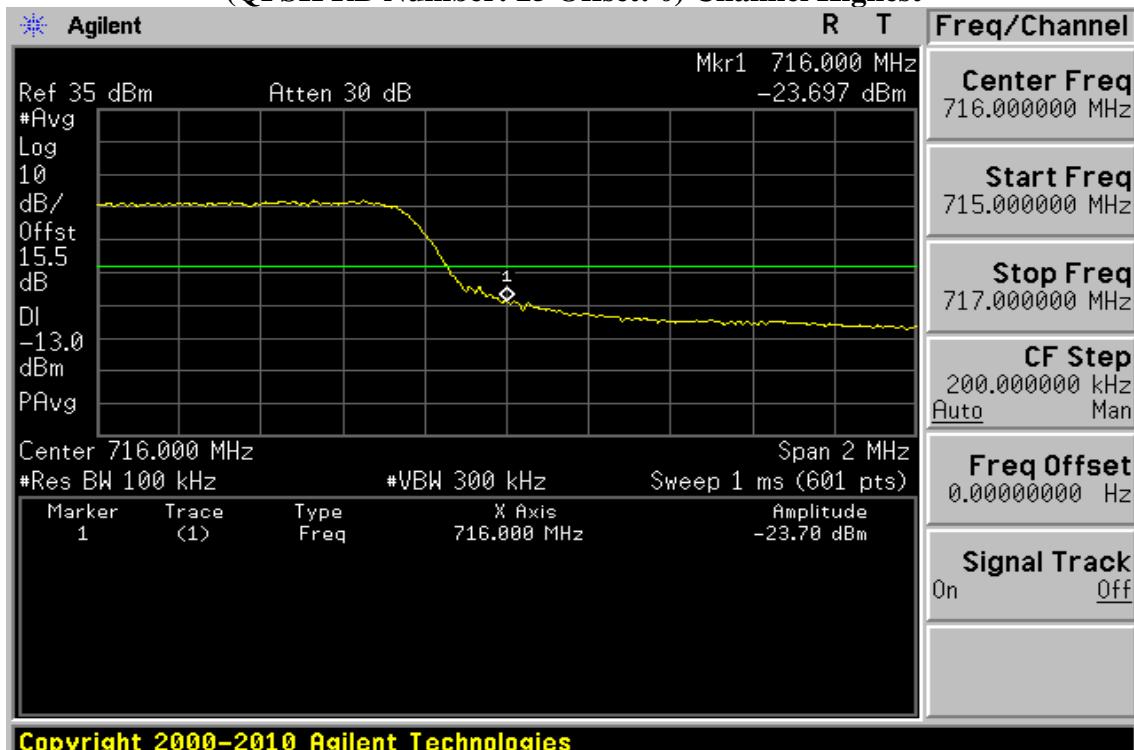
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**Figure 10-89: Band edge emission at antenna terminals –5MHz BW LTE-Band 12  
(QPSK RB Number: 25 Offset: 0) Channel Lowest**



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**Figure 10-90: Band edge emission at antenna terminals –5MHz BW LTE-Band 12  
(QPSK RB Number: 25 Offset: 0) Channel Highest**



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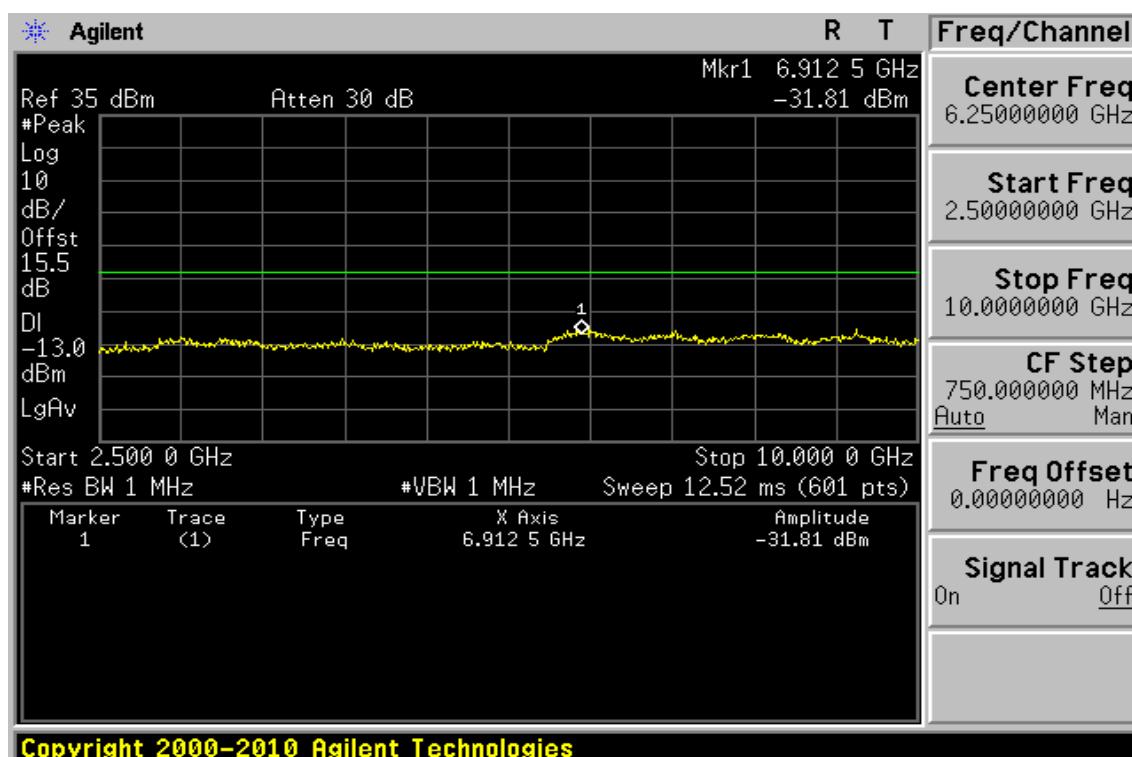
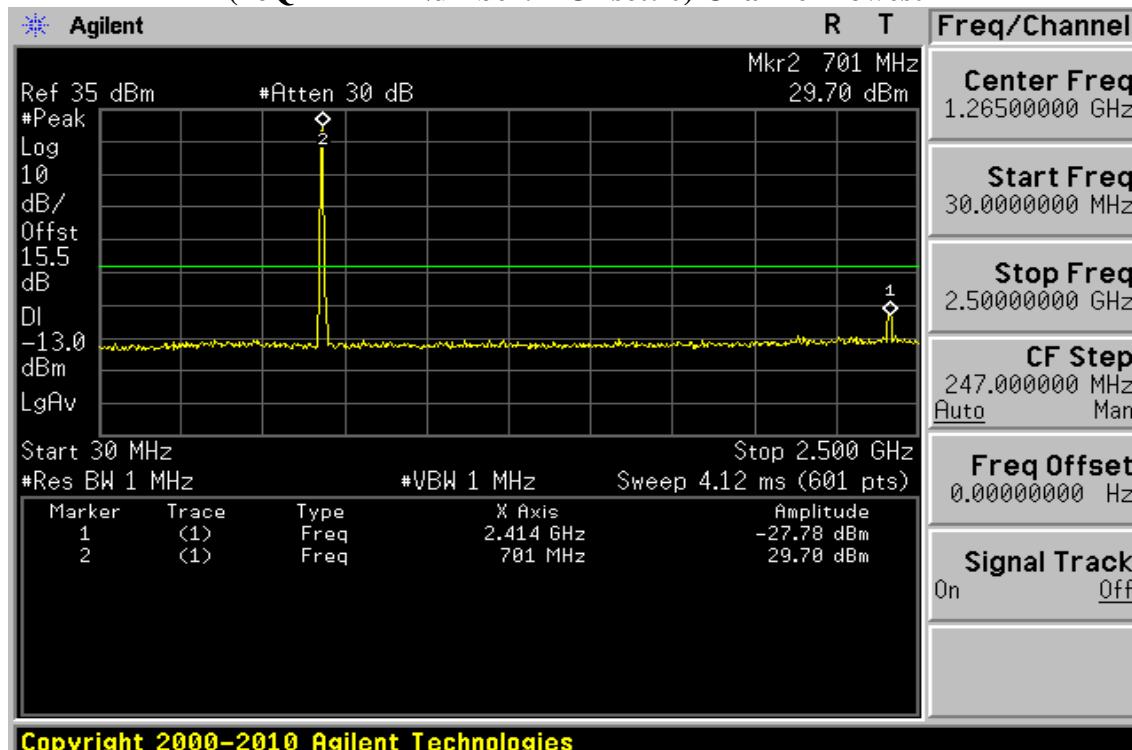
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**Figure 10-91: Out of Band emission at antenna terminals—5MHz BW LTE-Band 12  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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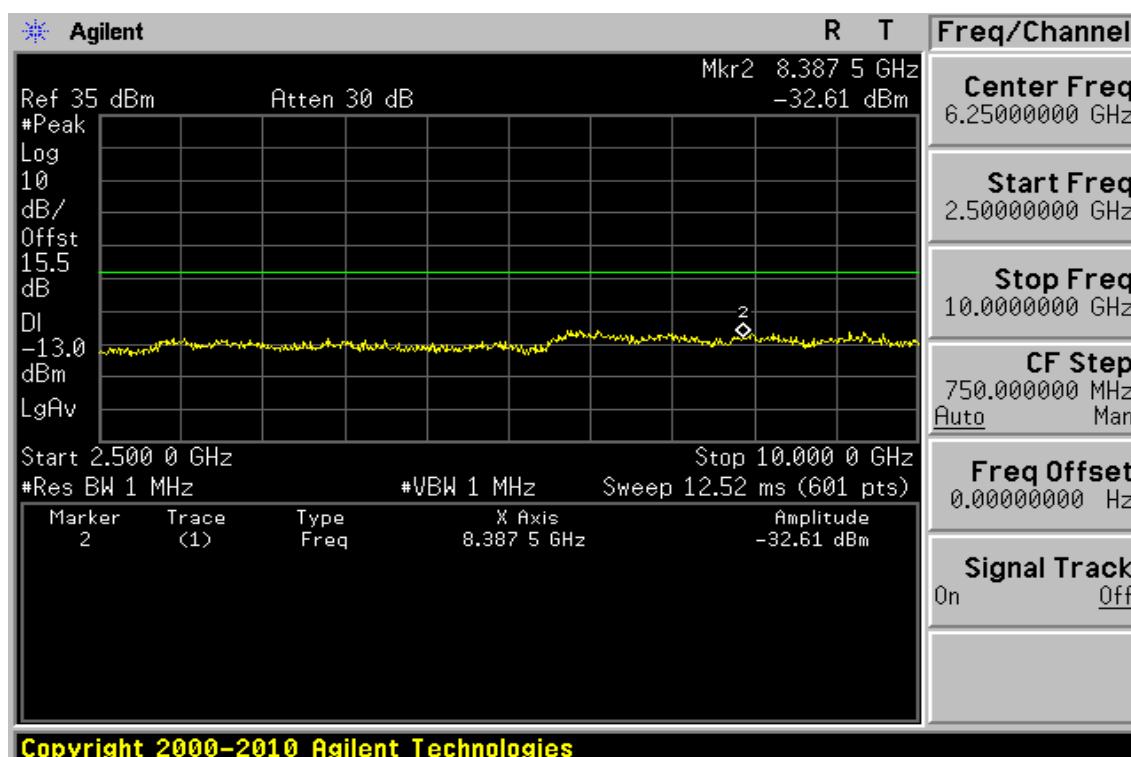
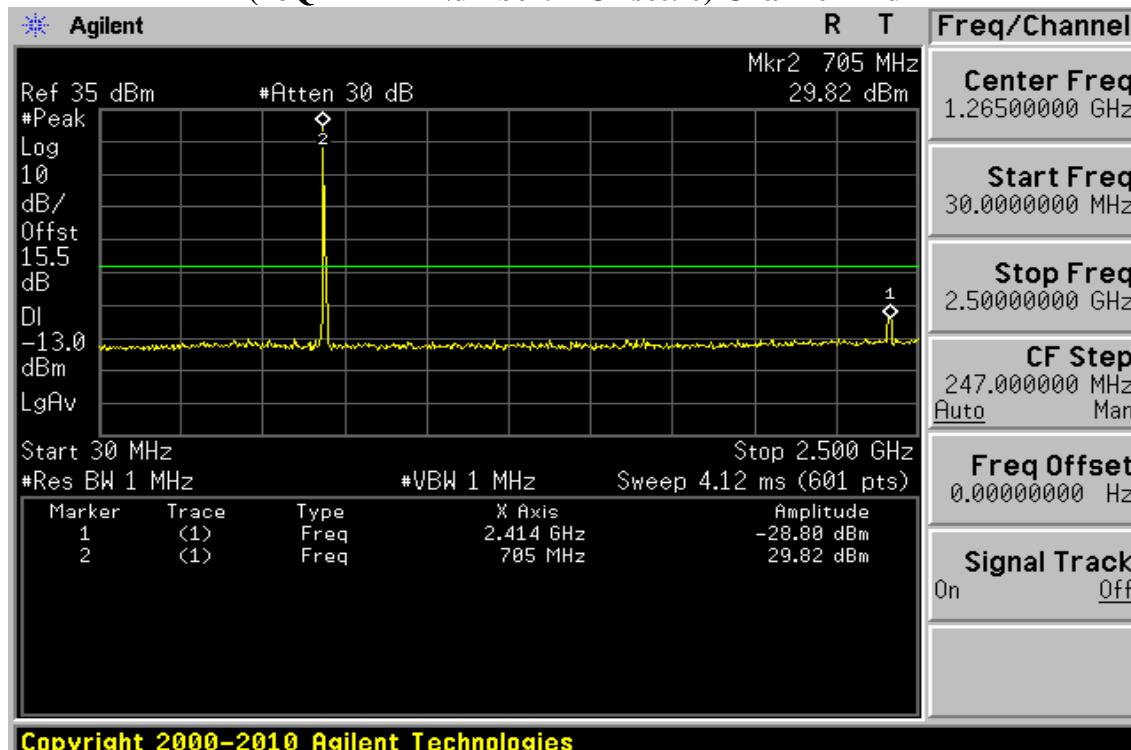
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**Figure 10-92: Out of Band emission at antenna terminals –5MHz BW LTE-Band 12  
(16QAM RB Number: 1 Offset: 0) Channel Mid**



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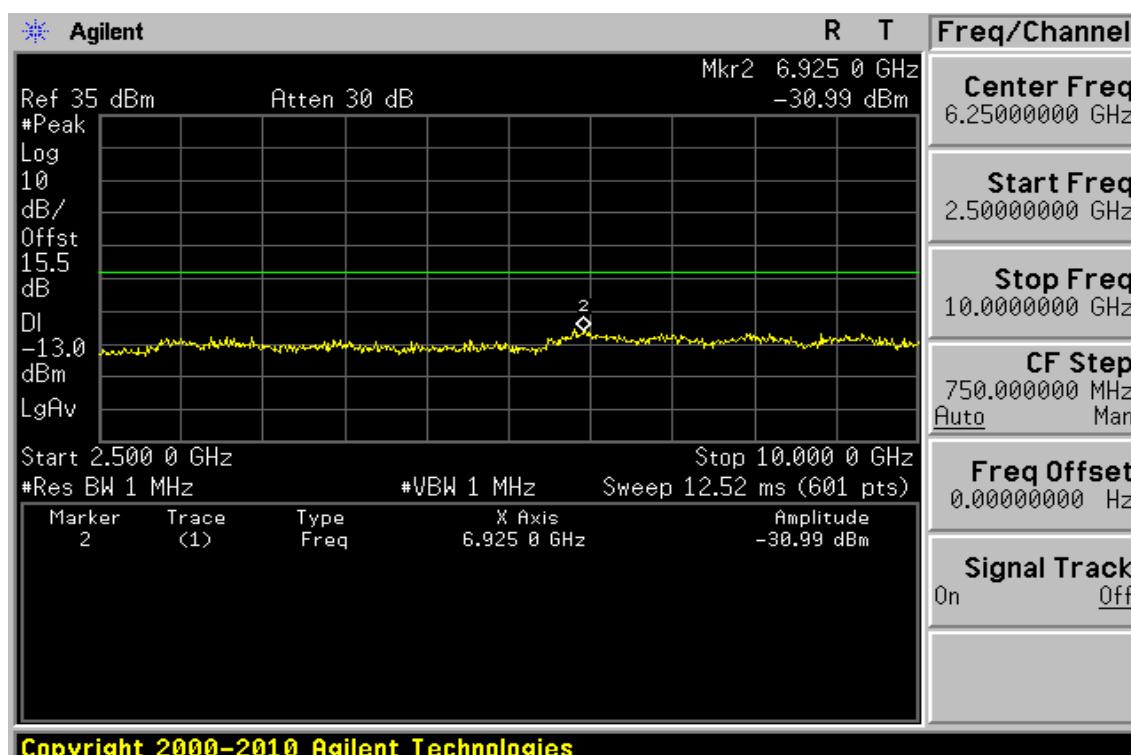
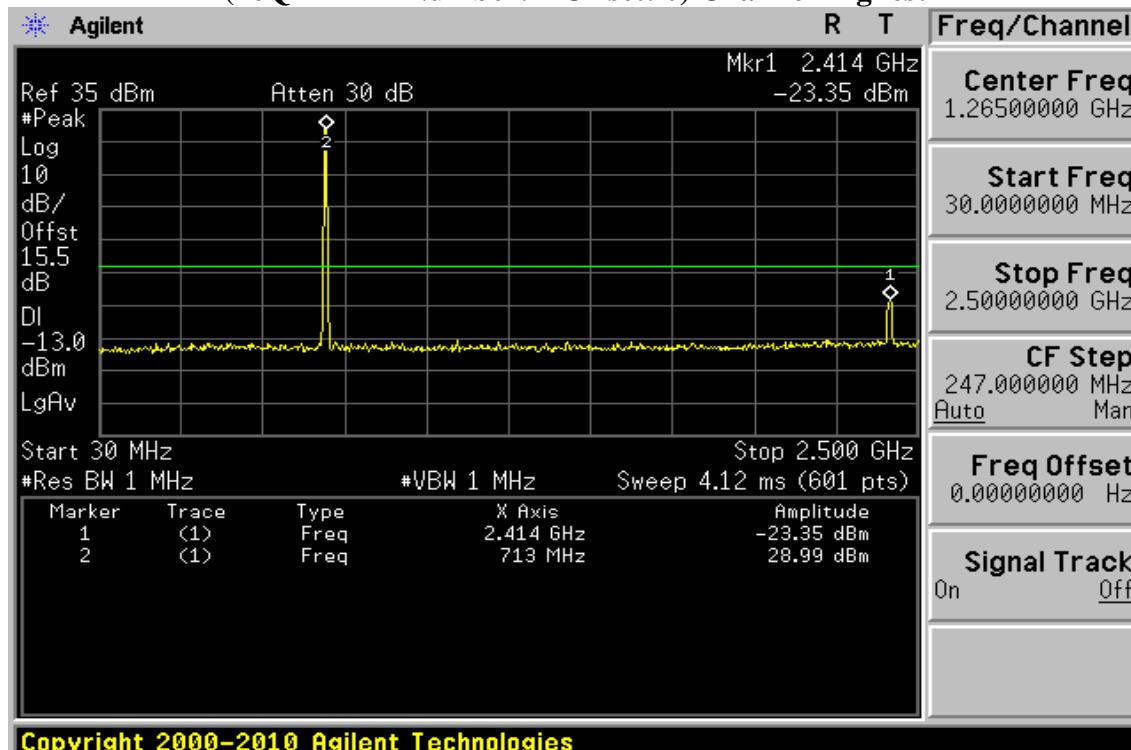
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**Figure 10-93: Out of Band emission at antenna terminals—5MHz BW LTE-Band 12  
(16QAM RB Number: 1 Offset: 0) Channel Highest**



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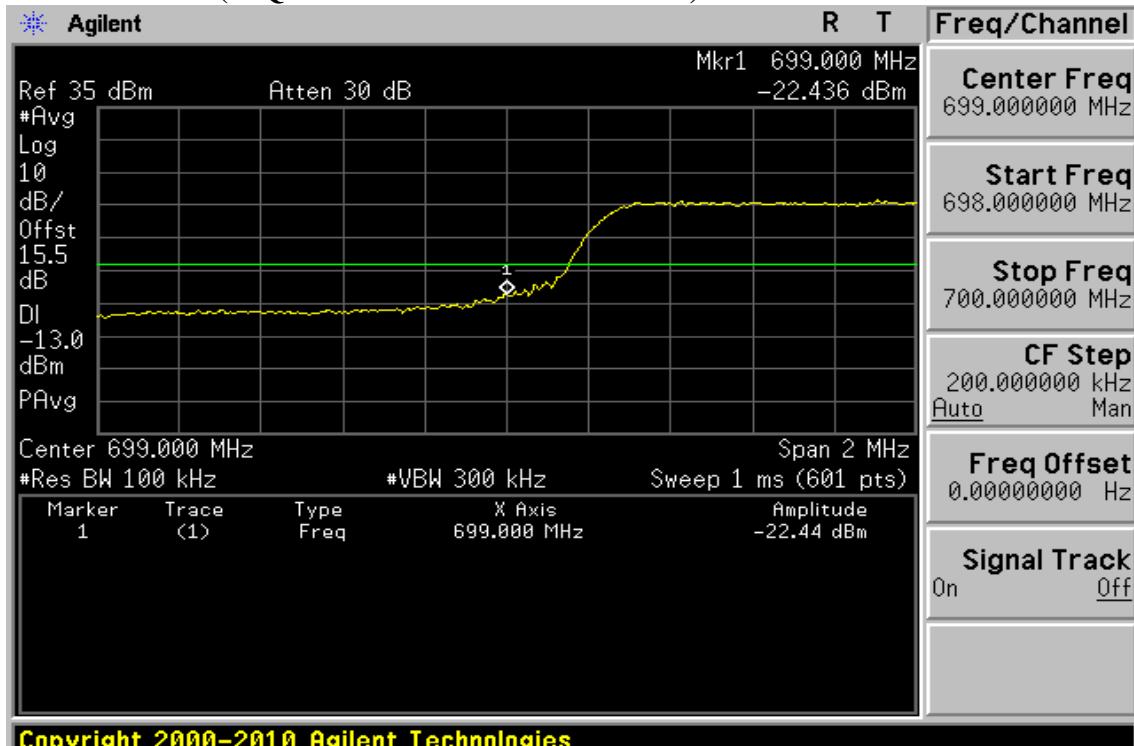
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**Figure 10-94 Band edge emission at antenna terminals –5MHz BW LTE-Band 12  
(16QAM RB Number: 25 Offset: 0) Channel Lowest**



**Figure 10-95: Band edge emission at antenna terminals –5MHz BW LTE-Band 12  
(16QAM RB Number: 25 Offset: 0) Channel Highest**



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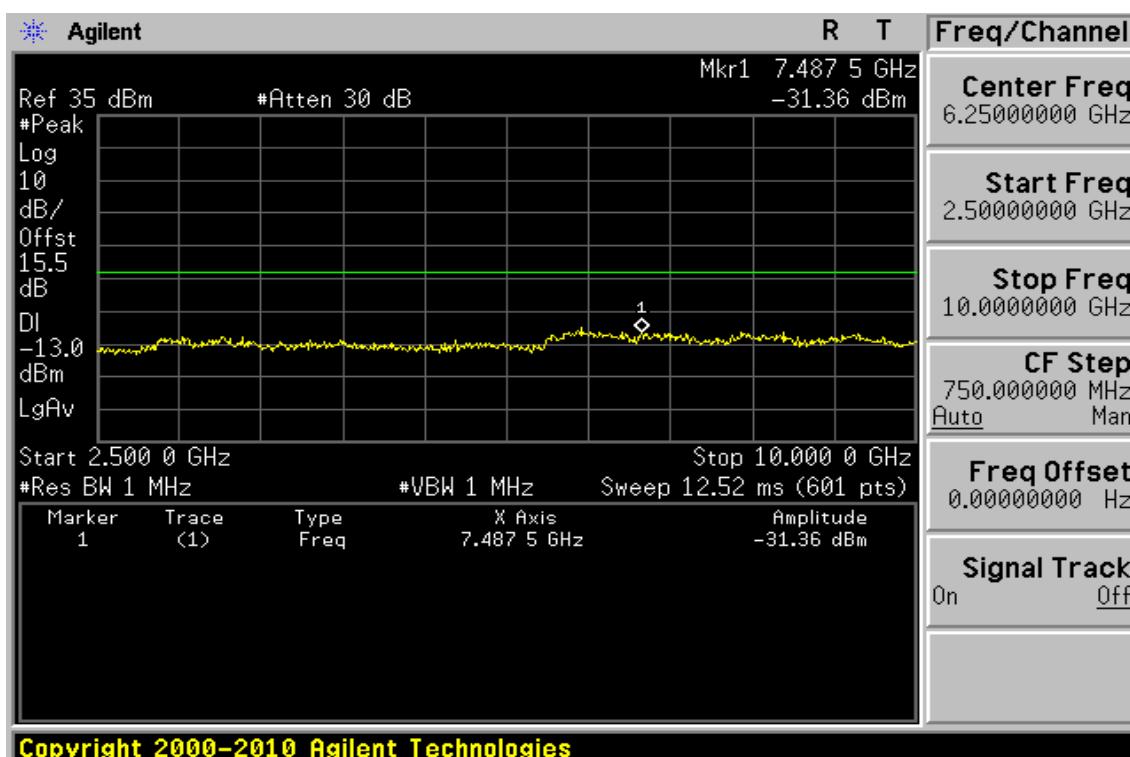
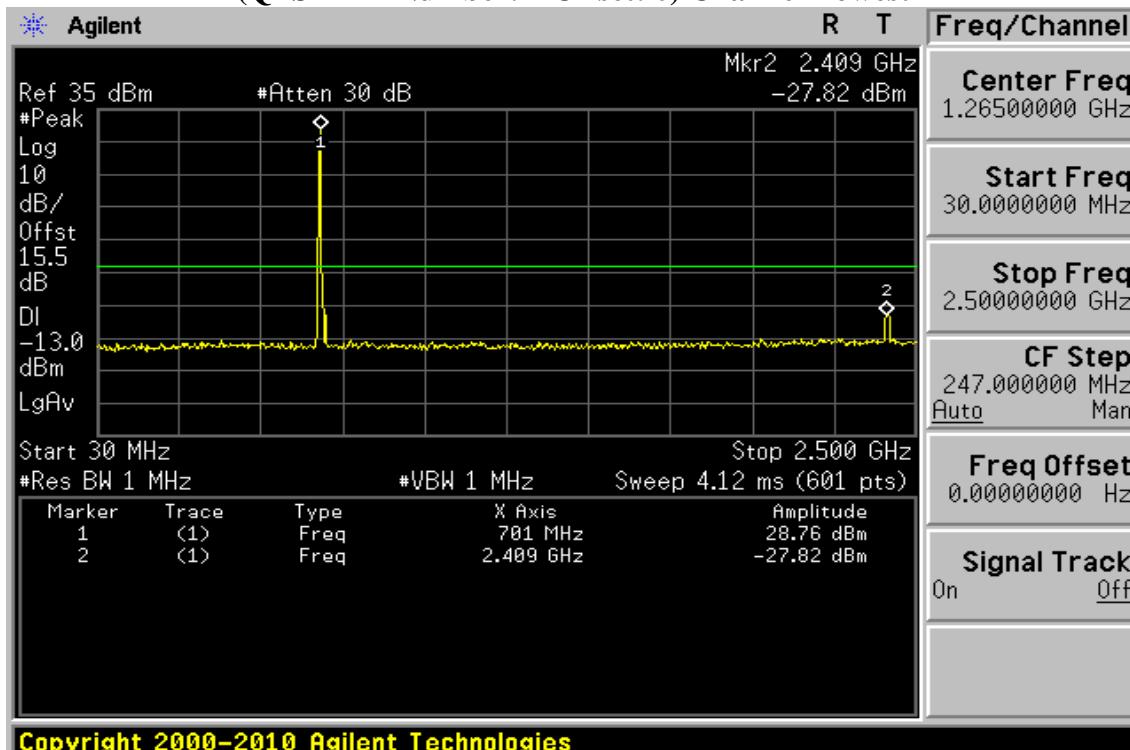
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**Figure 10-96: Out of Band emission at antenna terminals–10MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Lowest**



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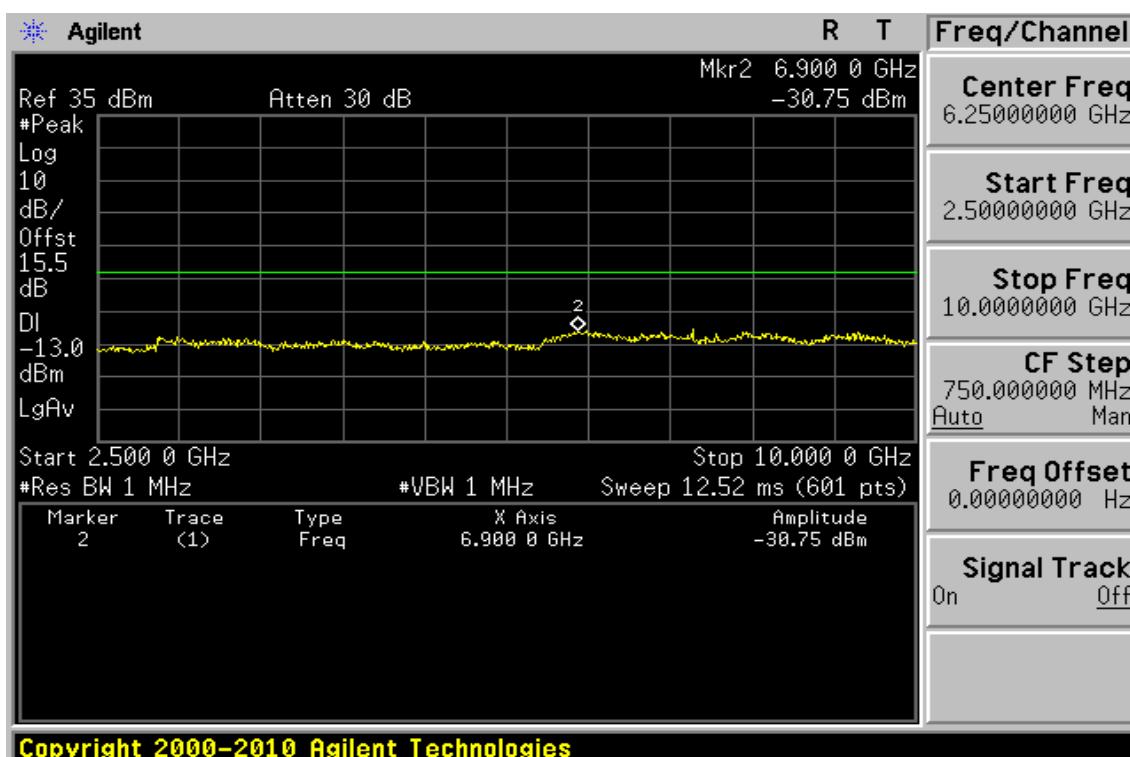
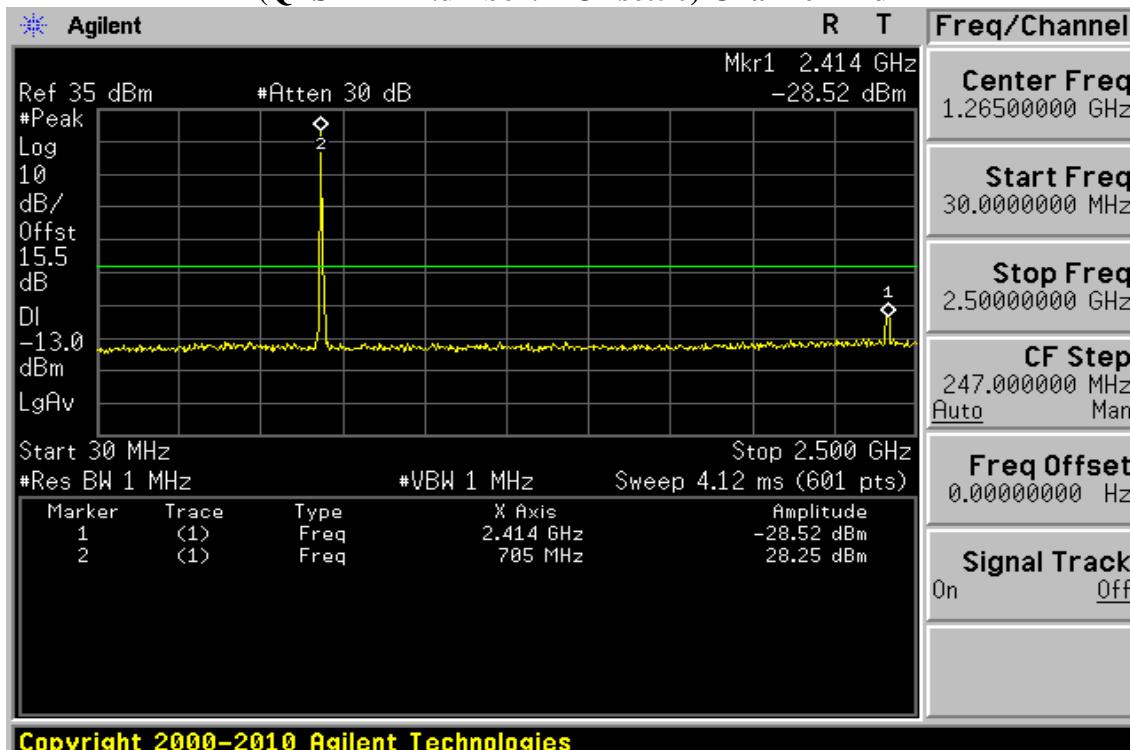
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**Figure 10-97: Out of Band emission at antenna terminals –10MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Mid**



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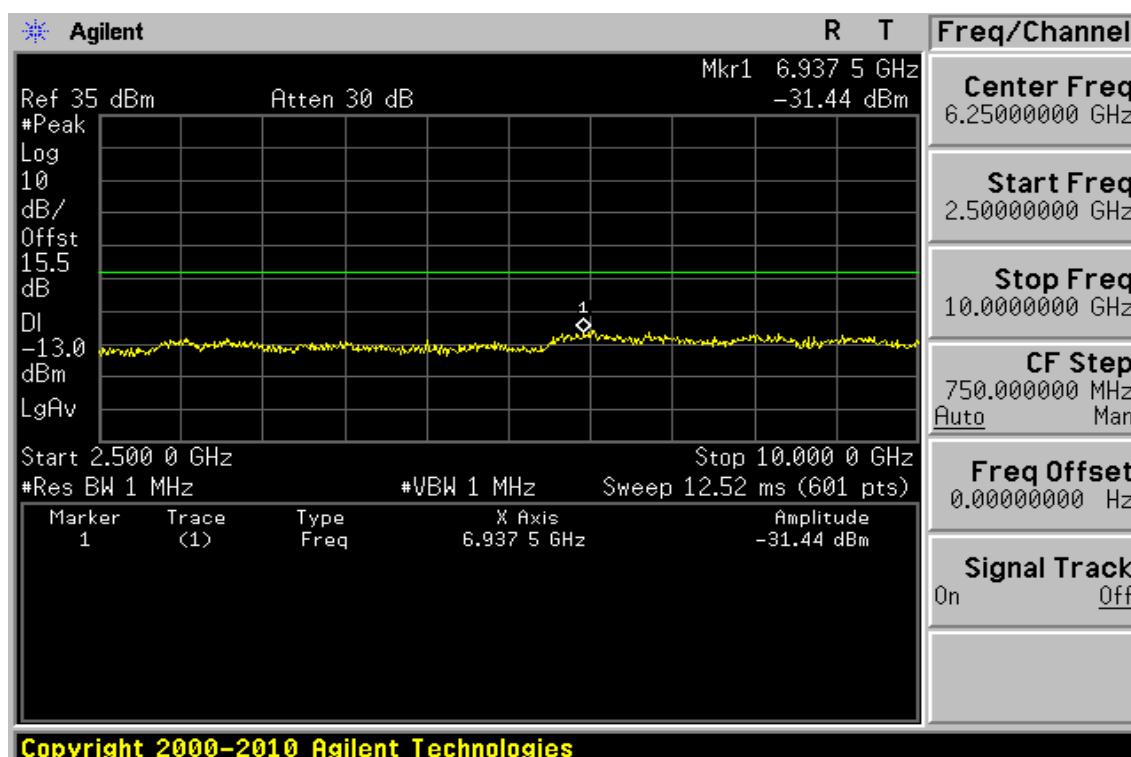
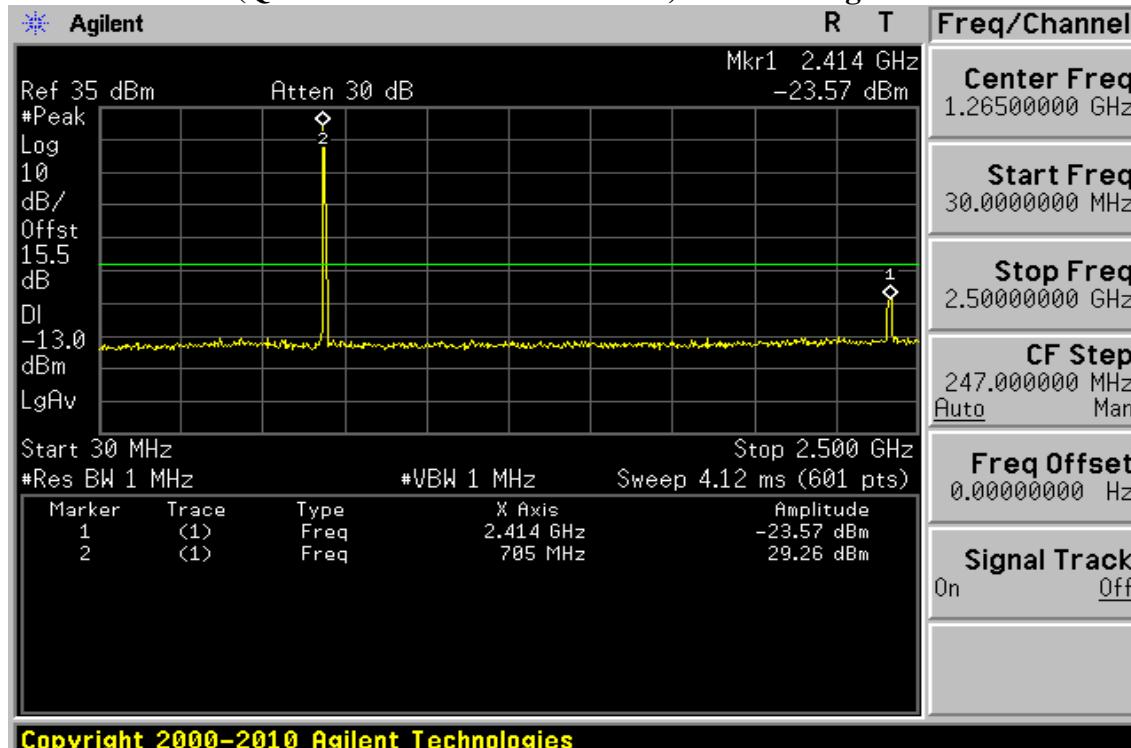
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**Figure 10-98: Out of Band emission at antenna terminals–10MHz BW LTE-Band 12  
(QPSK RB Number: 1 Offset: 0) Channel Highest**



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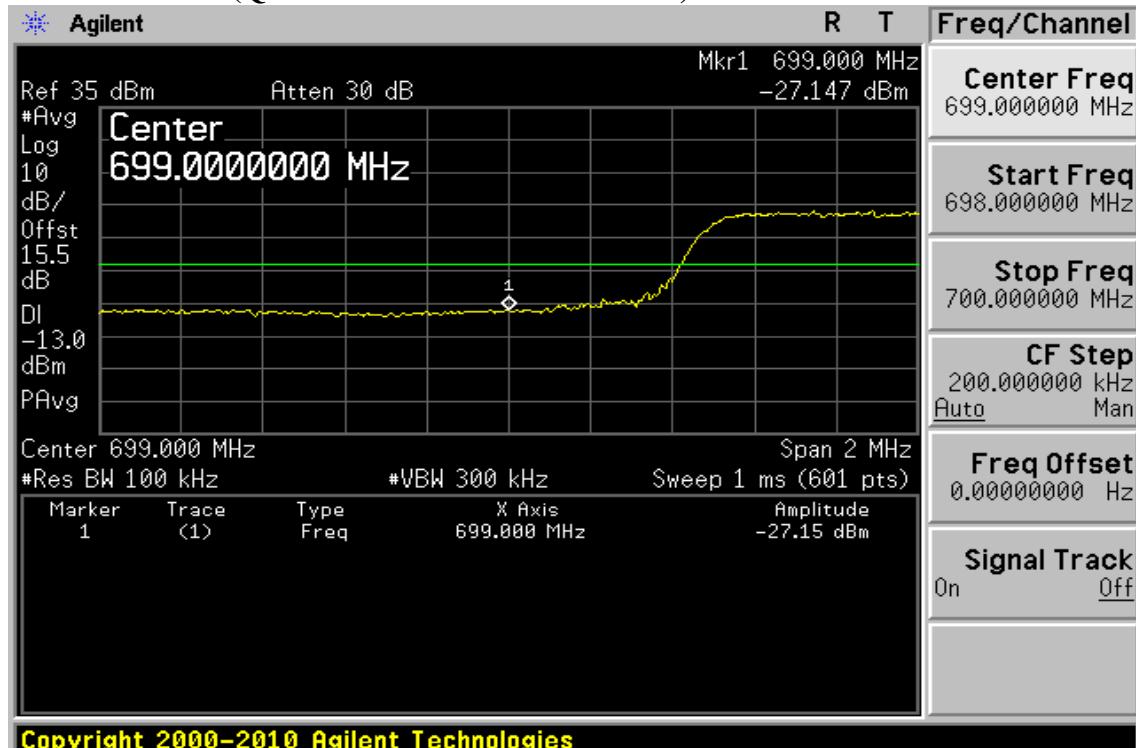
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**Figure 10-99: Band edge emission at antenna terminals –10MHz BW LTE-Band 12  
(QPSK RB Number: 50 Offset: 0) Channel Lowest**



**Figure 10-100: Band edge emission at antenna terminals –10MHz BW LTE-Band 12  
(QPSK RB Number: 50 Offset: 0) Channel Highest**



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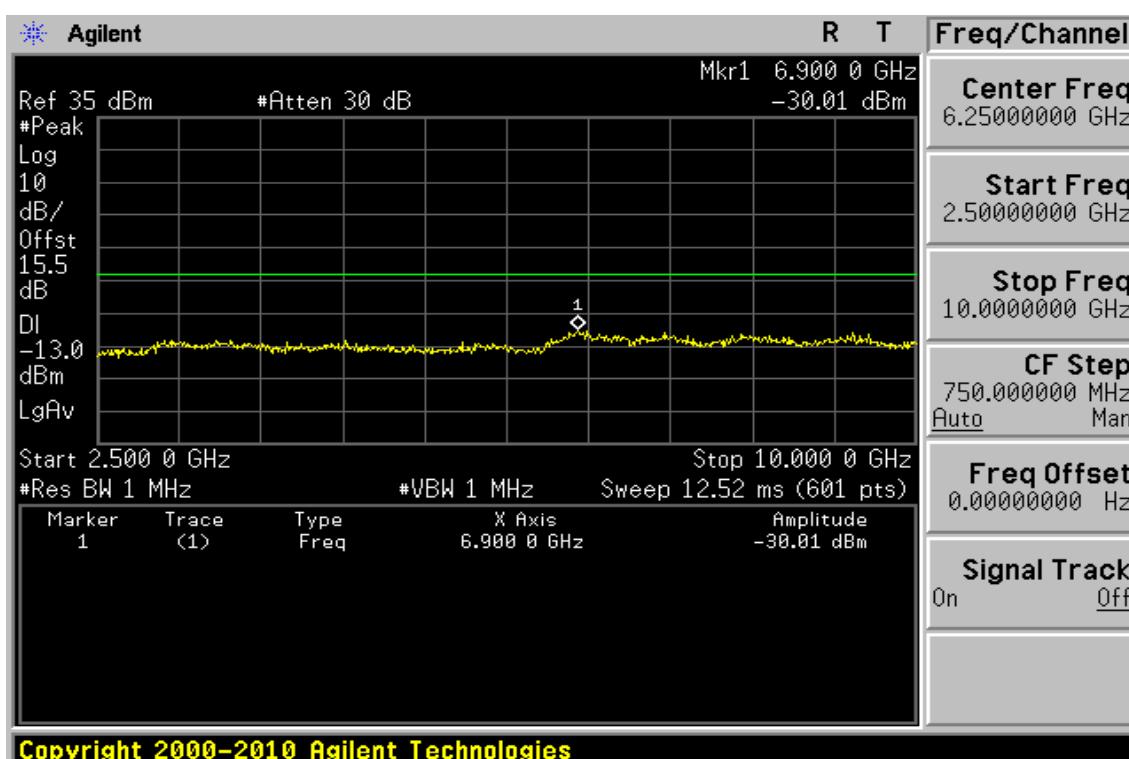
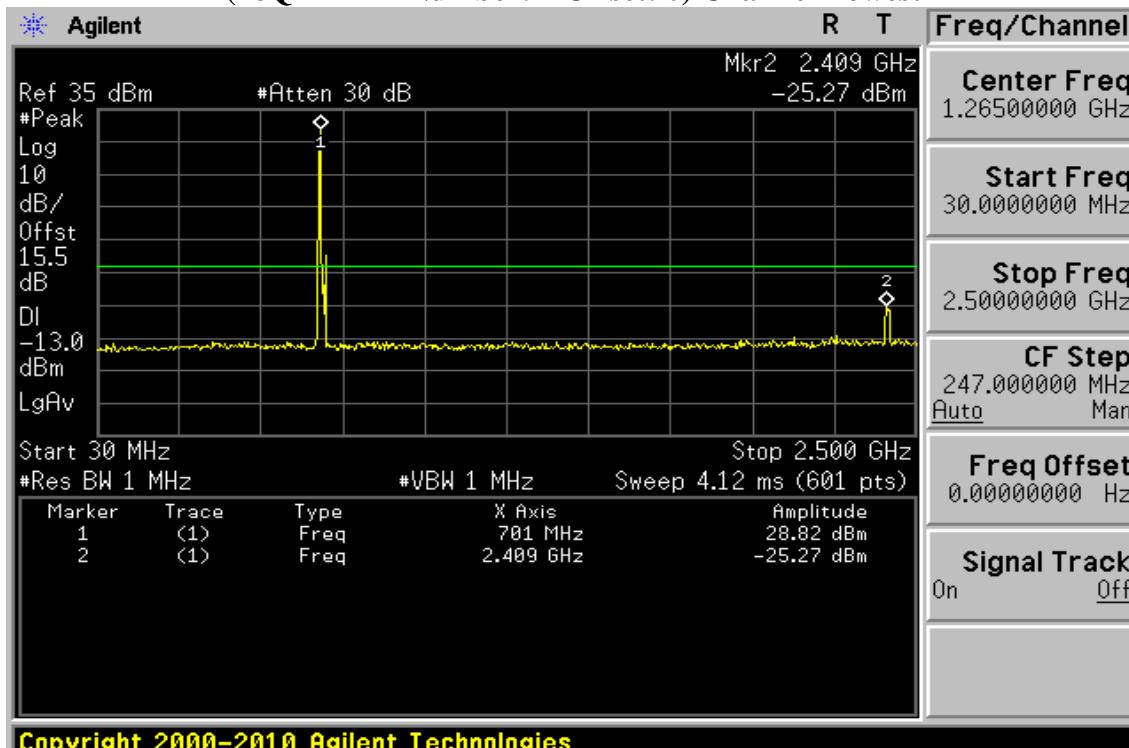
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**Figure 10-101: Out of Band emission at antenna terminals–10MHz BW LTE-Band 12  
(16QAM RB Number: 1 Offset: 0) Channel Lowest**



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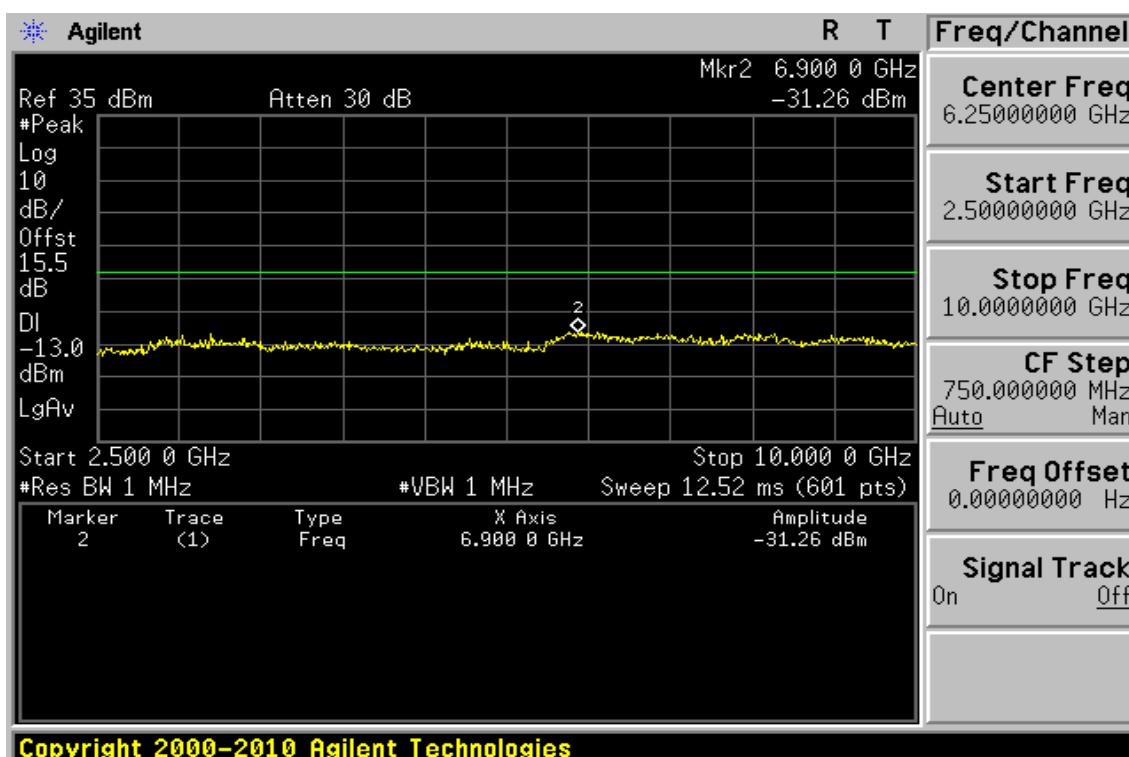
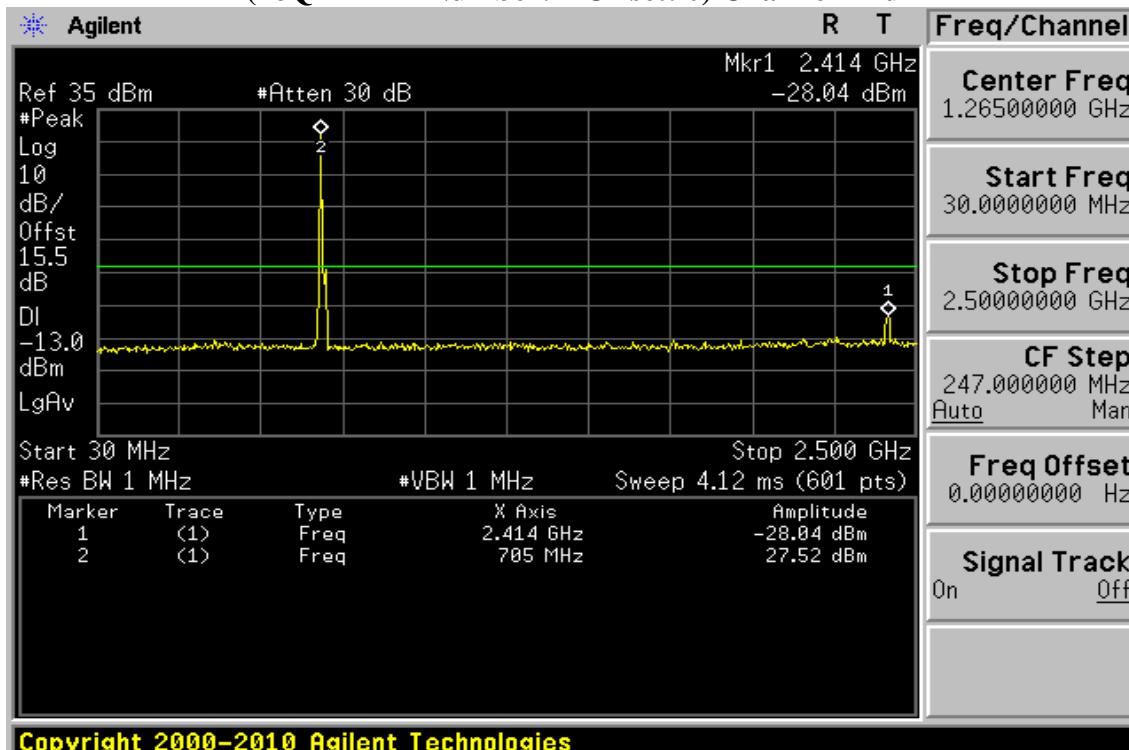
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Figure 10-102: Out of Band emission at antenna terminals –10MHz BW LTE-Band 12  
(16QAM RB Number: 1 Offset: 0) Channel Mid



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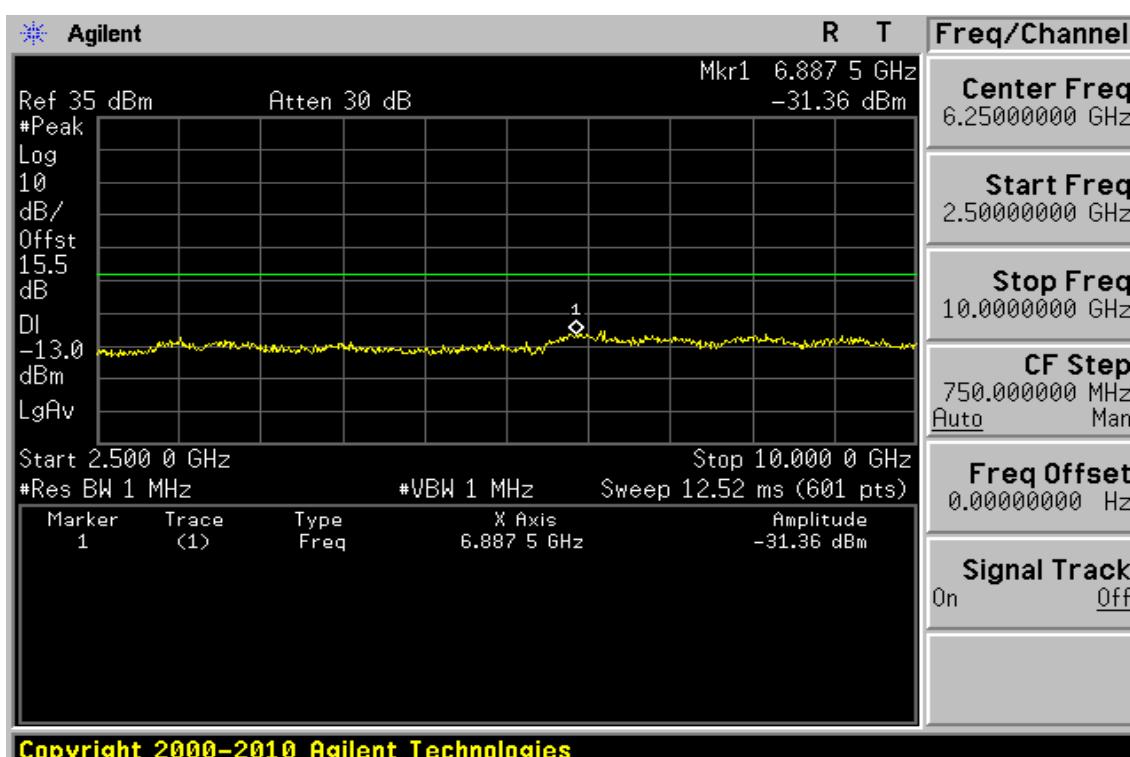
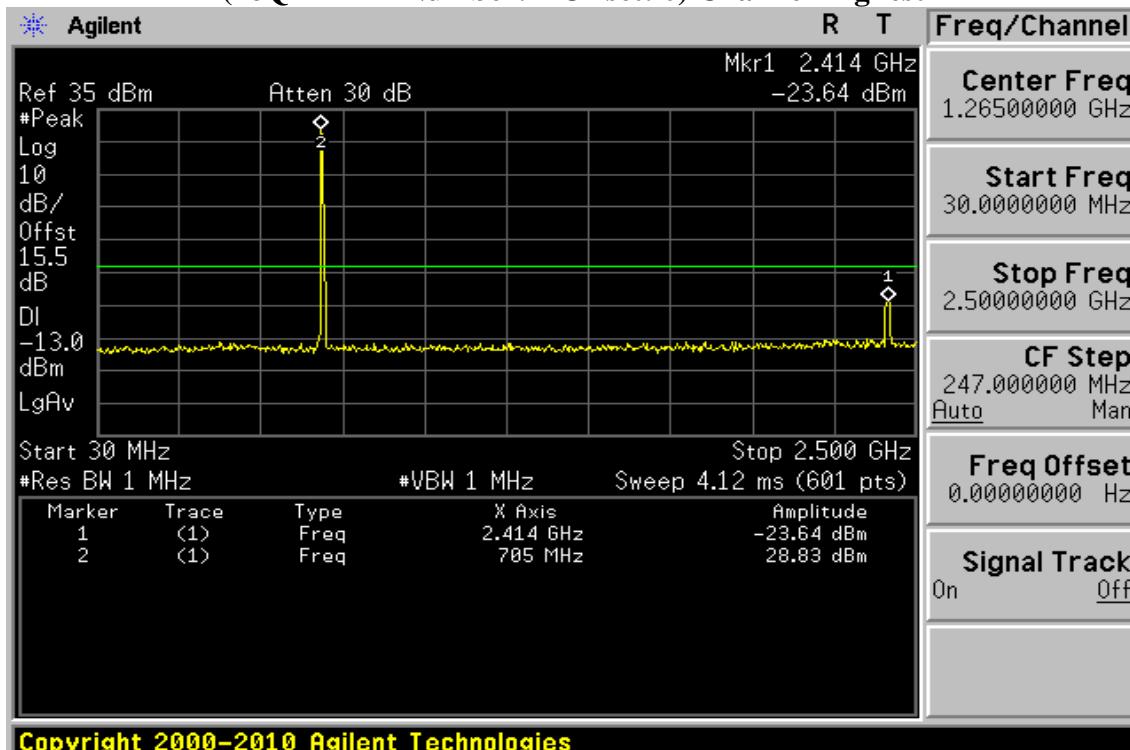
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**Figure 10-103: Out of Band emission at antenna terminals–10MHz BW LTE-Band 12 (16QAM RB Number: 1 Offset: 0) Channel Highest**



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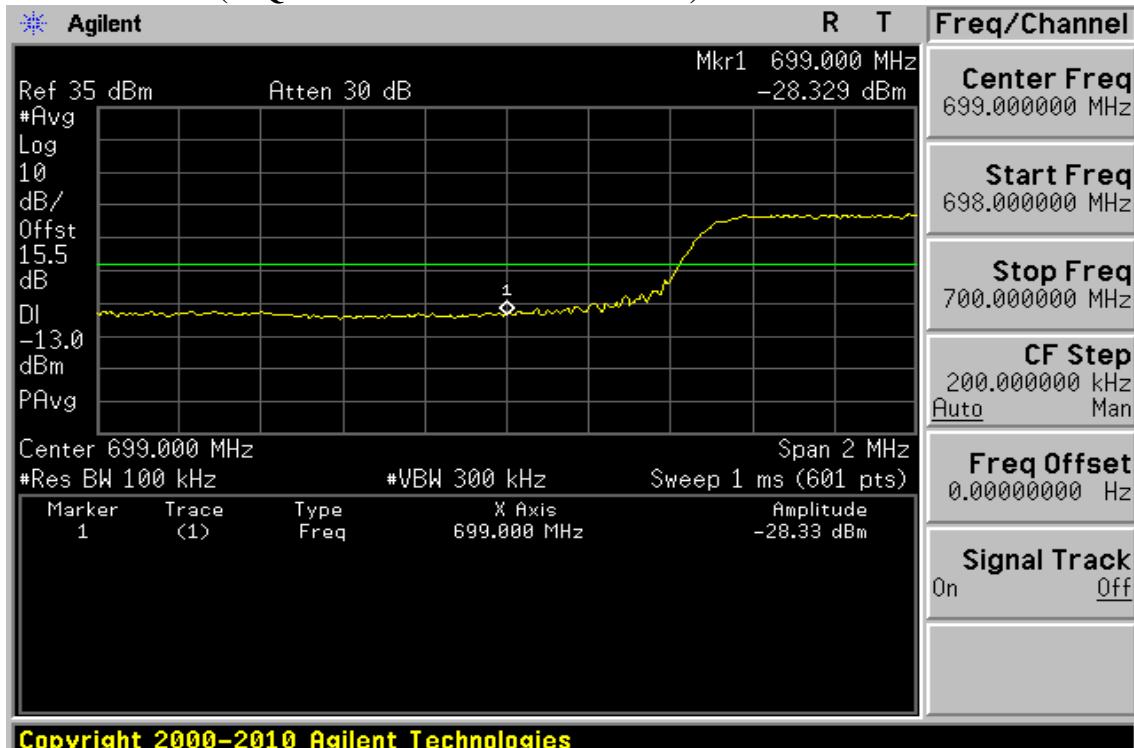
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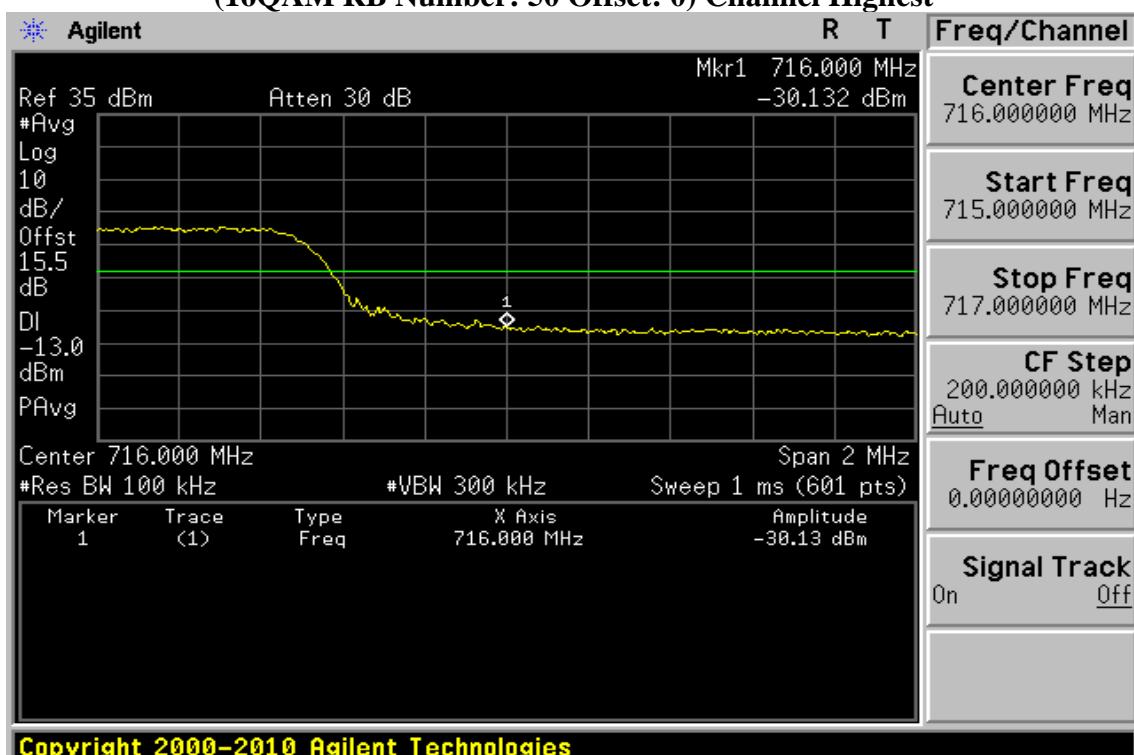
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**Figure 10-104: Band edge emission at antenna terminals –10MHz BW LTE-Band 12  
(16QAM RB Number: 50 Offset: 0) Channel Lowest**



**Figure 10-105: Band edge emission at antenna terminals –10MHz BW LTE-Band 12  
(16QAM RB Number: 50 Offset: 0) Channel Highest**



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## 11. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

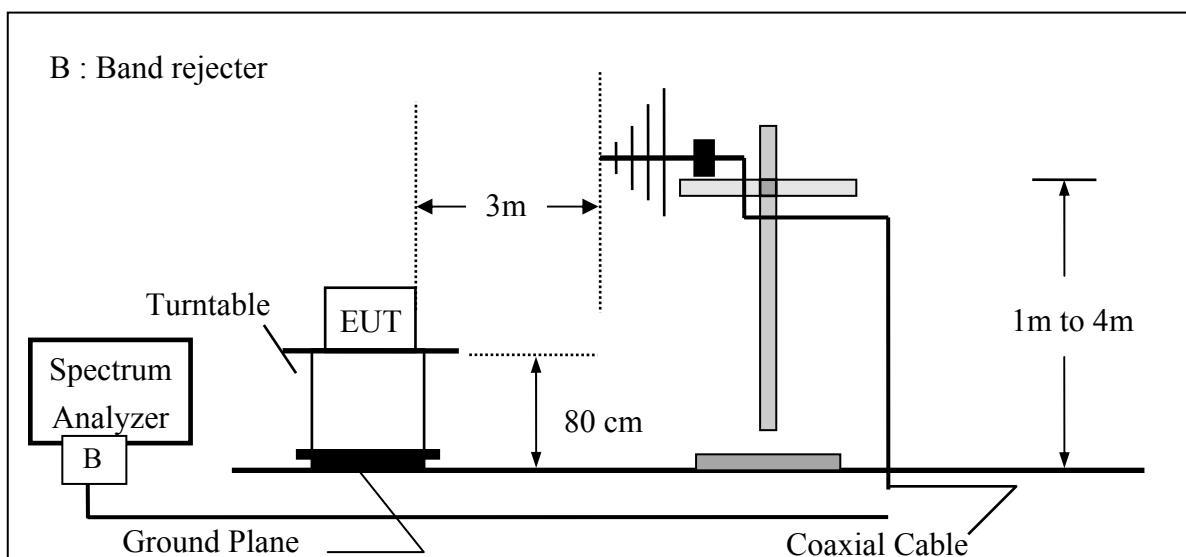
### 11.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a), §24.238(a), §27.53(g) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

### 11.2. EUT Setup (Block Diagram of Configuration):

Radiated Emission Test Set-Up, Frequency Below 1000MHz



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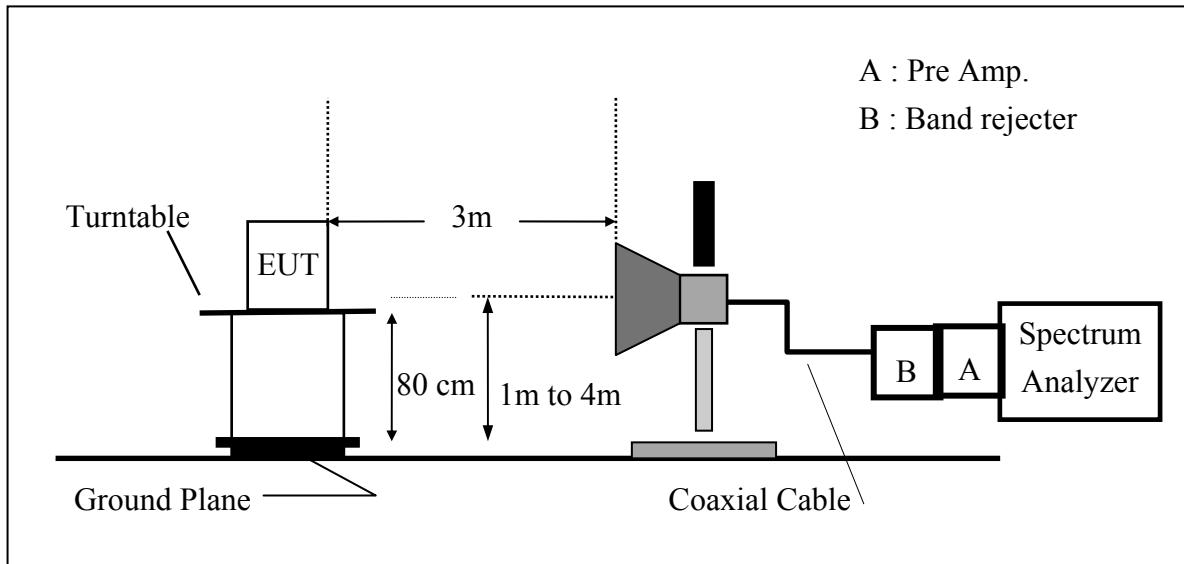
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## Radiated Emission Test Set-UP Frequency Over 1 GHz

**11.3. Measurement Procedure:**

The EUT was placed on a non-conductive; The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dBi)} - \text{Cable Loss (dB)}$$

**11.4. Measurement Equipment Used:**

Refer to section 2.4 in this report

**11.5. Measurement Result:**

Refer to attach tabular data sheets.

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**Test Result:****Radiated Spurious Emission Measurement Result: HSDPAII Mode**

Operation Mode : TX CH Low Mode Test Date: May 31, 2011  
 Fundamental Frequency : 1852.4MHz Test By: Lion  
 Temperature : 25°C Pol: Ver  
 Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
177.44	34.73	V	-65.02	-7.82	1.66	-74.50	-13.00	-61.50
250.19	41.85	V	-58.03	-7.89	1.99	-67.91	-13.00	-54.91
335.55	32.49	V	-65.32	-7.72	2.31	-75.35	-13.00	-62.35
559.62	33.34	V	-58.59	-7.77	2.97	-69.33	-13.00	-56.33
650.80	33.52	V	-55.41	-7.81	3.16	-66.38	-13.00	-53.38
972.84	33.07	V	-51.02	-8.00	3.95	-62.97	-13.00	-49.97
3697.50	42.12	V	-55.82	12.61	8.30	-51.52	-13.00	-38.52
5557.20	---	V		13.24	10.33		-13.00	
7409.60	---	V		11.49	12.09		-13.00	
9262.00	---	V		11.92	13.51		-13.00	
11114.40	---	V		11.68	15.12		-13.00	
12966.80	---	V		13.62	16.61		-13.00	
14819.20	---	V		12.83	17.96		-13.00	
16671.60	---	V		15.87	19.15		-13.00	
18524.00	---	V		18.74	10.86		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

**Remark:**

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) - Cable loss (dB)$

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Operation Mode : TX CH Low Mode  
Fundamental Frequency : 1852.4MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
149.31	33.42	H	-64.42	-7.80	1.59	-73.81	-13.00	-60.81
250.19	41.17	H	-58.04	-7.89	1.99	-67.92	-13.00	-54.92
322.94	32.63	H	-64.82	-7.79	2.26	-74.87	-13.00	-61.87
555.74	33.13	H	-58.47	-7.76	2.97	-69.20	-13.00	-56.20
655.65	33.71	H	-55.77	-7.82	3.17	-66.76	-13.00	-53.76
970.90	32.85	H	-51.23	-8.00	3.94	-63.17	-13.00	-50.17
3697.50	37.68	H	-60.38	12.61	8.30	-56.07	-13.00	-43.07
5557.20	---	H		13.24	10.33		-13.00	
7409.60	---	H		11.49	12.09		-13.00	
9262.00	---	H		11.92	13.51		-13.00	
11114.40	---	H		11.68	15.12		-13.00	
12966.80	---	H		13.62	16.61		-13.00	
14819.20	---	H		12.83	17.96		-13.00	
16671.60	---	H		15.87	19.15		-13.00	
18524.00	---	H		18.74	10.86		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1880MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
150.28	33.10	V	-64.22	-7.80	1.59	-73.61	-13.00	-60.61
250.19	41.83	V	-58.05	-7.89	1.99	-67.93	-13.00	-54.93
338.46	33.19	V	-64.58	-7.70	2.32	-74.60	-13.00	-61.60
558.65	33.06	V	-58.92	-7.77	2.97	-69.66	-13.00	-56.66
665.35	33.04	V	-56.04	-7.83	3.20	-67.06	-13.00	-54.06
963.14	32.75	V	-51.57	-8.00	3.92	-63.48	-13.00	-50.48
3762.50	39.90	V	-57.75	12.60	8.39	-53.54	-13.00	-40.54
5640.00	---	V		13.36	10.41		-13.00	
7520.00	---	V		11.45	12.19		-13.00	
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1880MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
165.80	35.49	H	-63.51	-7.81	1.63	-72.95	-13.00	-59.95
250.19	40.81	H	-58.40	-7.89	1.99	-68.28	-13.00	-55.28
322.94	32.99	H	-64.46	-7.79	2.26	-74.51	-13.00	-61.51
524.70	38.22	H	-54.38	-7.74	2.88	-64.99	-13.00	-51.99
655.65	33.81	H	-55.67	-7.82	3.17	-66.66	-13.00	-53.66
932.10	32.68	H	-51.76	-7.98	3.85	-63.59	-13.00	-50.59
3762.50	38.63	H	-59.13	12.60	8.39	-54.92	-13.00	-41.92
5640.00	---	H		13.36	10.41		-13.00	
7520.00	---	H		11.45	12.19		-13.00	
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH High Mode  
Fundamental Frequency : 1907.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
165.80	36.74	V	-61.97	-7.81	1.63	-71.41	-13.00	-58.41
250.19	41.96	V	-57.92	-7.89	1.99	-67.80	-13.00	-54.80
321.00	33.00	V	-64.99	-7.80	2.25	-75.04	-13.00	-62.04
555.74	33.06	V	-59.09	-7.76	2.97	-69.83	-13.00	-56.83
658.56	33.57	V	-55.44	-7.82	3.18	-66.44	-13.00	-53.44
956.35	33.27	V	-51.20	-8.00	3.90	-63.10	-13.00	-50.10
3808.00	43.25	V	-54.19	12.60	8.46	-50.05	-13.00	-37.05
5722.80	---	V		13.48	10.49		-13.00	
7630.40	---	V		11.41	12.27		-13.00	
9538.00	---	V		11.95	13.73		-13.00	
11445.60	---	V		12.15	15.42		-13.00	
13353.20	---	V		13.00	16.81		-13.00	
15260.80	---	V		14.91	18.28		-13.00	
17168.40	---	V		14.53	19.50		-13.00	
19076.00	---	V		18.65	20.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH High Mode  
Fundamental Frequency : 1907.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
149.31	33.26	H	-64.58	-7.80	1.59	-73.97	-13.00	-60.97
250.19	41.50	H	-57.71	-7.89	1.99	-67.59	-13.00	-54.59
335.55	32.54	H	-64.79	-7.72	2.31	-74.82	-13.00	-61.82
555.74	33.16	H	-58.44	-7.76	2.97	-69.17	-13.00	-56.17
643.04	33.17	H	-56.69	-7.81	3.14	-67.64	-13.00	-54.64
970.90	33.36	H	-50.72	-8.00	3.94	-62.66	-13.00	-49.66
3808.00	36.54	H	-61.02	12.60	8.46	-56.87	-13.00	-43.87
5722.80	---	H		13.48	10.49		-13.00	
7630.40	---	H		11.41	12.27		-13.00	
9538.00	---	H		11.95	13.73		-13.00	
11445.60	---	H		12.15	15.42		-13.00	
13353.20	---	H		13.00	16.81		-13.00	
15260.80	---	H		14.91	18.28		-13.00	
17168.40	---	H		14.53	19.50		-13.00	
19076.00	---	H		18.65	20.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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**Radiated Spurious Emission Measurement Result: HSDPA IV Mode**

Operation Mode : TX CH Low Mode Test Date: May 31, 2011  
Fundamental Frequency : 1712.4MHz Test By: Lion  
Temperature : 25°C Pol: Ver  
Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
158.04	33.69	V	-64.64	-7.81	1.48	-73.93	-13.00	-60.93
250.19	41.19	V	-59.51	-7.89	1.99	-69.38	-13.00	-56.38
340.40	33.38	V	-64.87	-7.69	2.38	-74.95	-13.00	-61.95
553.80	33.43	V	-59.43	-7.76	2.76	-69.94	-13.00	-56.94
660.50	33.02	V	-57.32	-7.82	3.07	-68.21	-13.00	-55.21
966.05	33.04	V	-51.89	-8.00	3.96	-63.85	-13.00	-50.85
3886.00	49.96	V	-50.76	12.60	8.02	-46.18	-13.00	-33.18
5137.20	---	V		12.79	9.36		-13.00	
6849.60	---	V		11.80	10.94		-13.00	
8562.00	---	V		11.73	12.66		-13.00	
10274.40	---	V		11.85	13.80		-13.00	
11986.80	---	V		13.15	15.25		-13.00	
13699.20	---	V		12.32	16.55		-13.00	
15411.60	---	V		15.69	18.06		-13.00	
17124.00	---	V		14.68	19.79		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

**Remark:**

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Low Mode  
Fundamental Frequency : 1712.4MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
158.04	34.13	H	-64.97	-7.81	1.48	-74.26	-13.00	-61.26
250.19	41.32	H	-59.58	-7.89	1.99	-69.45	-13.00	-56.45
330.70	32.87	H	-65.24	-7.75	2.29	-75.28	-13.00	-62.28
558.65	33.99	H	-58.16	-7.77	2.78	-68.70	-13.00	-55.70
613.94	33.66	H	-57.61	-7.80	2.96	-68.37	-13.00	-55.37
951.50	32.58	H	-52.40	-8.00	3.96	-64.35	-13.00	-51.35
3827.50	49.68	H	-51.14	12.60	7.93	-46.47	-13.00	-33.47
5137.20	---	H		12.79	9.36		-13.00	
6849.60	---	H		11.80	10.94		-13.00	
8562.00	---	H		11.73	12.66		-13.00	
10274.40	---	H		11.85	13.80		-13.00	
11986.80	---	H		13.15	15.25		-13.00	
13699.20	---	H		12.32	16.55		-13.00	
15411.60	---	H		15.69	18.06		-13.00	
17124.00	---	H		14.68	19.79		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1732.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
165.80	33.77	V	-65.26	-7.81	1.50	-74.57	-13.00	-61.57
250.19	41.43	V	-59.27	-7.89	1.99	-69.14	-13.00	-56.14
301.60	33.75	V	-65.78	-7.91	2.00	-75.69	-13.00	-62.69
524.70	38.68	V	-55.16	-7.74	2.73	-65.63	-13.00	-52.63
650.80	33.53	V	-56.89	-7.81	3.00	-67.71	-13.00	-54.71
963.14	33.27	V	-51.73	-8.00	3.96	-63.69	-13.00	-50.69
3795.00	50.31	V	-50.83	12.60	7.88	-46.11	-13.00	-33.11
5197.80	---	V		12.85	9.41		-13.00	
6930.40	---	V		11.72	11.05		-13.00	
8663.00	---	V		11.77	12.74		-13.00	
10395.60	---	V		11.75	13.95		-13.00	
12128.20	---	V		13.35	15.32		-13.00	
13860.80	---	V		11.98	16.77		-13.00	
15593.40	---	V		16.35	18.21		-13.00	
17326.00	---	V		14.02	19.68		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1732.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
165.80	36.34	H	-63.26	-7.81	1.50	-72.57	-13.00	-59.57
250.19	41.74	H	-59.16	-7.89	1.99	-69.03	-13.00	-56.03
322.94	33.54	H	-64.95	-7.79	2.21	-74.95	-13.00	-61.95
558.65	33.41	H	-58.74	-7.77	2.78	-69.28	-13.00	-56.28
648.86	32.95	H	-57.41	-7.81	3.00	-68.22	-13.00	-55.22
968.96	33.09	H	-51.71	-8.00	3.97	-63.67	-13.00	-50.67
3860.00	49.36	H	-51.33	12.60	7.98	-46.70	-13.00	-33.70
5197.80	---	H		12.85	9.41		-13.00	
6930.40	---	H		11.72	11.05		-13.00	
8663.00	---	H		11.77	12.74		-13.00	
10395.60	---	H		11.75	13.95		-13.00	
12128.20	---	H		13.35	15.32		-13.00	
13860.80	---	H		11.98	16.77		-13.00	
15593.40	---	H		16.35	18.21		-13.00	
17326.00	---	H		14.02	19.68		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

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Operation Mode : TX CH High Mode  
Fundamental Frequency : 1752.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
149.31	33.18	V	-64.51	-7.80	1.46	-73.78	-13.00	-60.78
250.19	41.99	V	-58.71	-7.89	1.99	-68.58	-13.00	-55.58
301.60	36.76	V	-62.77	-7.91	2.00	-72.68	-13.00	-59.68
558.65	33.83	V	-58.78	-7.77	2.78	-69.32	-13.00	-56.32
650.80	33.15	V	-57.27	-7.81	3.00	-68.09	-13.00	-55.09
982.54	33.69	V	-50.80	-7.99	3.97	-62.77	-13.00	-49.77
3827.50	49.77	V	-51.22	12.60	7.93	-46.55	-13.00	-33.55
5257.80	---	V		12.91	9.46		-13.00	
7010.40	---	V		11.65	11.14		-13.00	
8763.00	---	V		11.80	12.82		-13.00	
10515.60	---	V		11.66	14.08		-13.00	
12268.20	---	V		13.54	15.39		-13.00	
14020.80	---	V		11.67	16.95		-13.00	
15773.40	---	V		16.75	18.27		-13.00	
17526.00	---	V		13.21	19.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Member of SGS Group

Operation Mode : TX CH High Mode  
Fundamental Frequency : 1752.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
149.31	33.67	H	-64.97	-7.80	1.46	-74.24	-13.00	-61.24
250.19	42.59	H	-58.31	-7.89	1.99	-68.18	-13.00	-55.18
330.70	33.53	H	-64.58	-7.75	2.29	-74.62	-13.00	-61.62
558.65	33.58	H	-58.57	-7.77	2.78	-69.11	-13.00	-56.11
662.44	33.21	H	-56.97	-7.82	3.08	-67.87	-13.00	-54.87
930.16	32.81	H	-52.50	-7.98	3.90	-64.38	-13.00	-51.38
3827.50	50.33	H	-50.49	12.60	7.93	-45.82	-13.00	-32.82
5257.80	---	H		12.91	9.46		-13.00	
7010.40	---	H		11.65	11.14		-13.00	
8763.00	---	H		11.80	12.82		-13.00	
10515.60	---	H		11.66	14.08		-13.00	
12268.20	---	H		13.54	15.39		-13.00	
14020.80	---	H		11.67	16.95		-13.00	
15773.40	---	H		16.75	18.27		-13.00	
17526.00	---	H		13.21	19.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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**Radiated Spurious Emission Measurement Result: HSDPA V Mode**

Operation Mode : TX CH Low Mode Test Date: May 31, 2011  
Fundamental Frequency : 826.4MHz Test By: Lion  
Temperature : 25°C Pol: Ver  
Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
167.74	37.03	V	-61.85	-9.95	1.63	-73.44	-13.00	-60.44
250.19	42.24	V	-57.64	-10.03	1.99	-69.66	-13.00	-56.66
338.46	32.88	V	-64.89	-9.84	2.32	-77.05	-13.00	-64.05
558.65	32.46	V	-59.52	-9.91	2.97	-72.40	-13.00	-59.40
699.30	34.75	V	-54.68	-10.00	3.29	-67.97	-13.00	-54.97
978.66	33.75	V	-50.21	-10.13	3.97	-64.31	-13.00	-51.31
1650.00	38.56	V	-66.02	9.29	5.23	-61.96	-13.00	-48.96
2479.20	---	V		10.07	6.54		-13.00	
3305.60	---	V		12.19	7.73		-13.00	
4132.00	---	V		12.62	8.87		-13.00	
4958.40	---	V		12.65	9.75		-13.00	
5784.80	---	V		13.58	10.55		-13.00	
6611.20	---	V		12.03	11.31		-13.00	
7437.60	---	V		11.48	12.12		-13.00	
8264.00	---	V		11.50	12.73		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

**Remark:**

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Low Mode  
Fundamental Frequency : 826.4MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
165.80	34.70	H	-64.30	-9.95	1.63	-75.88	-13.00	-62.88
250.19	41.21	H	-58.00	-10.03	1.99	-70.02	-13.00	-57.02
332.64	33.31	H	-64.05	-9.88	2.29	-76.22	-13.00	-63.22
555.74	33.19	H	-58.41	-9.90	2.97	-71.28	-13.00	-58.28
658.56	33.99	H	-55.37	-9.96	3.18	-68.51	-13.00	-55.51
982.54	34.06	H	-49.95	-10.13	3.98	-64.07	-13.00	-51.07
1650.00	45.61	H	-58.79	9.29	5.23	-54.73	-13.00	-41.73
2479.20	---	H		10.07	6.54		-13.00	
3305.60	---	H		12.19	7.73		-13.00	
4132.00	---	H		12.62	8.87		-13.00	
4958.40	---	H		12.65	9.75		-13.00	
5784.80	---	H		13.58	10.55		-13.00	
6611.20	---	H		12.03	11.31		-13.00	
7437.60	---	H		11.48	12.12		-13.00	
8264.00	---	H		11.50	12.73		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Member of SGS Group

Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 836.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.29	V	-64.37	-9.94	1.60	-75.92	-13.00	-62.92
250.19	42.09	V	-57.79	-10.03	1.99	-69.81	-13.00	-56.81
335.55	32.83	V	-64.98	-9.86	2.31	-77.15	-13.00	-64.15
546.04	32.80	V	-59.82	-9.90	2.95	-72.66	-13.00	-59.66
691.54	34.24	V	-55.11	-9.99	3.27	-68.37	-13.00	-55.37
972.84	34.35	V	-49.74	-10.14	3.95	-63.83	-13.00	-50.83
1682.50	36.62	V	-67.93	9.39	5.28	-63.82	-13.00	-50.82
2508.00	---	V		10.08	6.58		-13.00	
3344.00	---	V		12.27	7.79		-13.00	
4180.00	---	V		12.62	8.93		-13.00	
5016.00	---	V		12.67	9.81		-13.00	
5852.00	---	V		13.68	10.62		-13.00	
6688.00	---	V		11.96	11.39		-13.00	
7524.00	---	V		11.45	12.20		-13.00	
8360.00	---	V		11.58	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 836.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.57	H	-64.52	-9.94	1.60	-76.07	-13.00	-63.07
250.19	41.74	H	-57.47	-10.03	1.99	-69.49	-13.00	-56.49
335.55	33.08	H	-64.25	-9.86	2.31	-76.42	-13.00	-63.42
558.65	34.08	H	-57.46	-9.91	2.97	-70.34	-13.00	-57.34
694.45	33.92	H	-53.94	-9.99	3.28	-67.21	-13.00	-54.21
949.56	34.52	H	-49.70	-10.14	3.88	-63.71	-13.00	-50.71
1682.50	42.95	H	-61.42	9.39	5.28	-57.31	-13.00	-44.31
2508.00	---	H		10.08	6.58		-13.00	
3344.00	---	H		12.27	7.79		-13.00	
4180.00	---	H		12.62	8.93		-13.00	
5016.00	---	H		12.67	9.81		-13.00	
5852.00	---	H		13.68	10.62		-13.00	
6688.00	---	H		11.96	11.39		-13.00	
7524.00	---	H		11.45	12.20		-13.00	
8360.00	---	H		11.58	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH High Mode  
Fundamental Frequency : 846.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.29	V	-64.37	-9.94	1.60	-75.92	-13.00	-62.92
250.19	41.96	V	-57.92	-10.03	1.99	-69.94	-13.00	-56.94
335.55	34.19	V	-63.62	-9.86	2.31	-75.79	-13.00	-62.79
553.80	33.01	V	-59.26	-9.90	2.97	-72.13	-13.00	-59.13
665.35	34.33	V	-54.75	-9.97	3.20	-67.91	-13.00	-54.91
932.10	33.91	V	-50.76	-10.12	3.85	-64.73	-13.00	-51.73
1702.00	37.81	V	-66.72	9.45	5.32	-62.59	-13.00	-49.59
2539.80	---	V		10.18	6.62		-13.00	
3386.40	---	V		12.36	7.85		-13.00	
4233.00	---	V		12.63	8.99		-13.00	
5079.60	---	V		12.73	9.87		-13.00	
5926.20	---	V		13.79	10.69		-13.00	
6772.80	---	V		11.87	11.47		-13.00	
7619.40	---	V		11.41	12.26		-13.00	
8466.00	---	V		11.68	12.89		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Member of SGS Group

Operation Mode : TX CH High Mode  
Fundamental Frequency : 846.6MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	34.29	H	-63.80	-9.94	1.60	-75.35	-13.00	-62.35
250.19	41.76	H	-57.45	-10.03	1.99	-69.47	-13.00	-56.47
309.36	33.40	H	-64.17	-10.01	2.21	-76.39	-13.00	-63.39
559.62	32.50	H	-59.02	-9.91	2.97	-71.90	-13.00	-58.90
660.50	34.00	H	-55.28	-9.96	3.19	-68.43	-13.00	-55.43
946.65	33.75	H	-50.50	-10.14	3.87	-64.51	-13.00	-51.51
1702.00	44.35	H	-59.99	9.45	5.32	-55.86	-13.00	-42.86
2539.80	---	H		10.18	6.62		-13.00	
3386.40	---	H		12.36	7.85		-13.00	
4233.00	---	H		12.63	8.99		-13.00	
5079.60	---	H		12.73	9.87		-13.00	
5926.20	---	H		13.79	10.69		-13.00	
6772.80	---	H		11.87	11.47		-13.00	
7619.40	---	H		11.41	12.26		-13.00	
8466.00	---	H		11.68	12.89		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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**Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 4****(16QAM RB 1 Offset 24) (Worst case for each band)**

Operation Mode : TX CH Low Mode Test Date: May 31, 2011  
Fundamental Frequency : 1712.5MHz Test By: Lion  
Temperature : 25°C Pol: Ver  
Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	33.63	V	-63.77	-7.80	1.59	-73.17	-13.00	-60.17
250.19	42.32	V	-57.56	-7.89	1.99	-67.44	-13.00	-54.44
321.00	35.83	V	-62.16	-7.80	2.25	-72.21	-13.00	-59.21
558.65	32.93	V	-59.05	-7.77	2.97	-69.79	-13.00	-56.79
660.50	33.26	V	-55.77	-7.82	3.19	-66.78	-13.00	-53.78
978.66	32.55	V	-51.41	-7.99	3.97	-63.37	-13.00	-50.37
3425.00	---	V		12.45	7.91		-13.00	
3437.50	47.42	V	-51.42	12.47	7.93	-46.88	-13.00	-33.88
5137.50	---	V		12.79	9.92		-13.00	
6850.00	---	V		11.80	11.54		-13.00	
8562.50	---	V		11.73	12.97		-13.00	
10275.00	---	V		11.85	14.50		-13.00	
11987.50	---	V		13.16	15.91		-13.00	
13700.00	---	V		12.32	17.04		-13.00	
15412.50	---	V		15.70	18.36		-13.00	
17125.00	---	V		14.67	19.47		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

**Remark:**

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Low Mode  
Fundamental Frequency : 1712.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	33.99	H	-63.88	-7.80	1.59	-73.27	-13.00	-60.27
250.19	40.89	H	-58.32	-7.89	1.99	-68.20	-13.00	-55.20
332.64	33.12	H	-64.24	-7.74	2.29	-74.27	-13.00	-61.27
555.74	32.55	H	-59.05	-7.76	2.97	-69.78	-13.00	-56.78
684.75	32.53	H	-55.74	-7.84	3.25	-66.83	-13.00	-53.83
961.20	32.83	H	-51.31	-8.00	3.91	-63.22	-13.00	-50.22
3425.00	---	H		12.45	7.91		-13.00	
3437.50	58.13	H	-40.87	12.47	7.93	-36.32	-13.00	-23.32
5137.50	---	H		12.79	9.92		-13.00	
6850.00	---	H		11.80	11.54		-13.00	
8562.50	---	H		11.73	12.97		-13.00	
10275.00	---	H		11.85	14.50		-13.00	
11987.50	---	H		13.16	15.91		-13.00	
13700.00	---	H		12.32	17.04		-13.00	
15412.50	---	H		15.70	18.36		-13.00	
17125.00	---	H		14.67	19.47		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1732.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
170.65	36.28	V	-62.86	-7.82	1.64	-72.32	-13.00	-59.32
250.19	41.91	V	-57.97	-7.89	1.99	-67.85	-13.00	-54.85
287.05	33.95	V	-64.72	-7.91	2.12	-74.76	-13.00	-61.76
539.25	34.59	V	-58.25	-7.75	2.93	-68.93	-13.00	-55.93
633.34	34.04	V	-55.10	-7.80	3.12	-66.02	-13.00	-53.02
985.45	32.16	V	-51.64	-7.99	3.99	-63.62	-13.00	-50.62
3465.00	49.75	V	-49.09	12.53	7.98	-44.53	-13.00	-31.53
5197.50	---	V		12.85	9.98		-13.00	
6930.00	---	V		11.72	11.61		-13.00	
8662.50	---	V		11.77	13.05		-13.00	
10395.00	---	V		11.75	14.59		-13.00	
12127.50	---	V		13.35	16.03		-13.00	
13860.00	---	V		11.98	17.16		-13.00	
15592.50	---	V		16.35	18.47		-13.00	
17325.00	---	V		14.02	19.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 1732.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
199.75	37.99	H	-63.64	-7.84	1.71	-73.19	-13.00	-60.19
250.19	41.25	H	-57.96	-7.89	1.99	-67.84	-13.00	-54.84
311.30	34.43	H	-63.13	-7.86	2.21	-73.20	-13.00	-60.20
553.80	33.19	H	-58.45	-7.76	2.97	-69.18	-13.00	-56.18
687.66	32.56	H	-55.59	-7.85	3.26	-66.69	-13.00	-53.69
975.75	32.55	H	-51.51	-7.99	3.96	-63.46	-13.00	-50.46
3465.00	51.12	H	-47.86	12.53	7.98	-43.30	-13.00	-30.30
5197.50	---	H		12.85	9.98		-13.00	
6930.00	---	H		11.72	11.61		-13.00	
8662.50	---	H		11.77	13.05		-13.00	
10395.00	---	H		11.75	14.59		-13.00	
12127.50	---	H		13.35	16.03		-13.00	
13860.00	---	H		11.98	17.16		-13.00	
15592.50	---	H		16.35	18.47		-13.00	
17325.00	---	H		14.02	19.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH High Mode  
Fundamental Frequency : 1752.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.90	V	-63.76	-7.80	1.60	-73.17	-13.00	-60.17
250.19	42.91	V	-56.97	-7.89	1.99	-66.85	-13.00	-53.85
291.90	33.79	V	-64.73	-7.92	2.14	-74.78	-13.00	-61.78
559.62	32.65	V	-59.28	-7.77	2.97	-70.02	-13.00	-57.02
660.50	32.80	V	-56.23	-7.82	3.19	-67.24	-13.00	-54.24
963.14	32.88	V	-51.44	-8.00	3.92	-63.35	-13.00	-50.35
3505.00	48.08	V	-50.73	12.61	8.04	-46.15	-13.00	-33.15
5257.50	---	V		12.91	10.04		-13.00	
7010.00	---	V		11.65	11.69		-13.00	
8762.50	---	V		11.80	13.13		-13.00	
10515.00	---	V		11.66	14.68		-13.00	
12267.50	---	V		13.54	16.14		-13.00	
14020.00	---	V		11.67	17.28		-13.00	
15772.50	---	V		16.74	18.60		-13.00	
17525.00	---	V		13.22	19.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH High Mode  
Fundamental Frequency : 1752.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
158.04	34.80	H	-63.59	-7.81	1.61	-73.01	-13.00	-60.01
250.19	40.94	H	-58.27	-7.89	1.99	-68.15	-13.00	-55.15
330.70	32.79	H	-64.59	-7.75	2.29	-74.62	-13.00	-61.62
558.65	32.73	H	-58.81	-7.77	2.97	-69.55	-13.00	-56.55
691.54	32.55	H	-55.43	-7.85	3.27	-66.55	-13.00	-53.55
982.54	32.44	H	-51.57	-7.99	3.98	-63.55	-13.00	-50.55
3505.00	49.49	H	-49.44	12.61	8.04	-44.86	-13.00	-31.86
5257.50	---	H		12.91	10.04		-13.00	
7010.00	---	H		11.65	11.69		-13.00	
8762.50	---	H		11.80	13.13		-13.00	
10515.00	---	H		11.66	14.68		-13.00	
12267.50	---	H		13.54	16.14		-13.00	
14020.00	---	H		11.67	17.28		-13.00	
15772.50	---	H		16.74	18.60		-13.00	
17525.00	---	H		13.22	19.76		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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**Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 17****(16QAM RB 1 Offset 24) (Worst case for each band)**

Operation Mode : TX CH Low Mode Test Date: May 31, 2011  
Fundamental Frequency : 706.5MHz Test By: Lion  
Temperature : 25°C Pol: Ver  
Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	33.67	V	-63.73	-7.80	1.59	-73.13	-13.00	-60.13
250.19	42.17	V	-57.71	-7.89	1.99	-67.59	-13.00	-54.59
280.26	36.65	V	-62.25	-7.91	2.10	-72.25	-13.00	-59.25
555.74	33.64	V	-58.51	-7.76	2.97	-69.25	-13.00	-56.25
621.70	33.47	V	-55.82	-7.80	3.09	-66.70	-13.00	-53.70
978.66	32.54	V	-51.42	-7.99	3.97	-63.38	-13.00	-50.38
1413.00	44.23	V	-60.86	8.34	4.11	-56.64	-13.00	-43.64
2119.50	---	V		10.28	5.99		-13.00	
2826.00	---	V		11.01	7.01		-13.00	
3532.50	---	V		12.61	8.07		-13.00	
4239.00	---	V		12.63	9.00		-13.00	
4945.50	---	V		12.65	9.74		-13.00	
5652.00	---	V		13.38	10.43		-13.00	
6358.50	---	V		12.64	11.08		-13.00	
7065.00	---	V		11.63	11.75		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

## Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Low Mode  
Fundamental Frequency : 706.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	34.02	H	-63.85	-7.80	1.59	-73.24	-13.00	-60.24
233.70	41.62	H	-58.39	-7.87	1.90	-68.16	-13.00	-55.16
335.55	33.17	H	-64.16	-7.72	2.31	-74.19	-13.00	-61.19
544.10	33.12	H	-58.80	-7.76	2.94	-69.50	-13.00	-56.50
672.14	33.15	H	-55.64	-7.83	3.22	-66.69	-13.00	-53.69
975.75	32.62	H	-51.44	-7.99	3.96	-63.39	-13.00	-50.39
1413.00	53.50	H	-51.47	8.34	4.11	-47.24	-13.00	-34.24
2119.50	---	H		10.28	5.99		-13.00	
2826.00	---	H		11.01	7.01		-13.00	
3532.50	---	H		12.61	8.07		-13.00	
4239.00	---	H		12.63	9.00		-13.00	
4945.50	---	H		12.65	9.74		-13.00	
5652.00	---	H		13.38	10.43		-13.00	
6358.50	---	H		12.64	11.08		-13.00	
7065.00	---	H		11.63	11.75		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 710MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.64	V	-64.02	-7.80	1.60	-73.43	-13.00	-60.43
250.19	42.48	V	-57.40	-7.89	1.99	-67.28	-13.00	-54.28
316.15	33.44	V	-64.61	-7.83	2.23	-74.67	-13.00	-61.67
559.62	32.16	V	-59.77	-7.77	2.97	-70.51	-13.00	-57.51
660.50	33.38	V	-55.65	-7.82	3.19	-66.66	-13.00	-53.66
972.84	33.59	V	-50.50	-8.00	3.95	-62.45	-13.00	-49.45
1420.00	42.02	V	-63.04	8.38	4.18	-58.85	-13.00	-45.85
2130.00	---	V		10.27	6.01		-13.00	
2840.00	---	V		11.05	7.03		-13.00	
3550.00	---	V		12.61	8.10		-13.00	
4260.00	---	V		12.63	9.02		-13.00	
4970.00	---	V		12.65	9.76		-13.00	
5680.00	---	V		13.42	10.45		-13.00	
6390.00	---	V		12.53	11.11		-13.00	
7100.00	---	V		11.61	11.78		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH Mid Mode  
Fundamental Frequency : 710MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
199.75	40.23	H	-61.40	-7.84	1.71	-70.95	-13.00	-57.95
250.19	41.77	H	-57.44	-7.89	1.99	-67.32	-13.00	-54.32
319.06	36.66	H	-60.82	-7.81	2.24	-70.88	-13.00	-57.88
559.62	32.79	H	-58.73	-7.77	2.97	-69.47	-13.00	-56.47
668.26	33.11	H	-55.85	-7.83	3.21	-66.88	-13.00	-53.88
975.75	33.01	H	-51.05	-7.99	3.96	-63.00	-13.00	-50.00
1420.00	53.35	H	-51.59	8.38	4.18	-47.39	-13.00	-34.39
2130.00	---	H		10.27	6.01		-13.00	
2840.00	---	H		11.05	7.03		-13.00	
3550.00	---	H		12.61	8.10		-13.00	
4260.00	---	H		12.63	9.02		-13.00	
4970.00	---	H		12.65	9.76		-13.00	
5680.00	---	H		13.42	10.45		-13.00	
6390.00	---	H		12.53	11.11		-13.00	
7100.00	---	H		11.61	11.78		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
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Operation Mode : TX CH High Mode  
Fundamental Frequency : 713.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	35.09	V	-62.31	-7.80	1.59	-71.71	-13.00	-58.71
250.19	42.48	V	-57.40	-7.89	1.99	-67.28	-13.00	-54.28
301.60	35.89	V	-62.34	-7.91	2.18	-72.43	-13.00	-59.43
558.65	33.57	V	-58.41	-7.77	2.97	-69.15	-13.00	-56.15
612.00	33.26	V	-56.15	-7.79	3.06	-67.01	-13.00	-54.01
980.60	32.11	V	-51.81	-7.99	3.97	-63.77	-13.00	-50.77
1427.00	44.11	V	-60.93	8.42	4.25	-56.76	-13.00	-43.76
2140.50	---	V		10.27	6.02		-13.00	
2854.00	---	V		11.09	7.05		-13.00	
3567.50	---	V		12.61	8.12		-13.00	
4281.00	---	V		12.63	9.05		-13.00	
4994.50	---	V		12.65	9.78		-13.00	
5708.00	---	V		13.46	10.48		-13.00	
6421.50	---	V		12.42	11.14		-13.00	
7135.00	---	V		11.60	11.82		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
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Operation Mode : TX CH High Mode  
Fundamental Frequency : 713.5MHz  
Temperature : 25°C  
Humidity : 65%

Test Date: May 31, 2011  
Test By: Lion  
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
160.95	35.57	H	-63.05	-7.81	1.62	-72.47	-13.00	-59.47
250.19	40.67	H	-58.54	-7.89	1.99	-68.42	-13.00	-55.42
321.00	33.06	H	-64.41	-7.80	2.25	-74.46	-13.00	-61.46
558.65	33.48	H	-58.06	-7.77	2.97	-68.80	-13.00	-55.80
670.20	33.03	H	-55.85	-7.83	3.21	-66.89	-13.00	-53.89
949.56	32.90	H	-51.32	-8.00	3.88	-63.19	-13.00	-50.19
1427.00	52.96	H	-51.94	8.42	4.25	-47.78	-13.00	-34.78
2140.50	---	H		10.27	6.02		-13.00	
2854.00	---	H		11.09	7.05		-13.00	
3567.50	---	H		12.61	8.12		-13.00	
4281.00	---	H		12.63	9.05		-13.00	
4994.50	---	H		12.65	9.78		-13.00	
5708.00	---	H		13.46	10.48		-13.00	
6421.50	---	H		12.42	11.14		-13.00	
7135.00	---	H		11.60	11.82		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark “---” means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dB/dBi) - Cable\ loss\ (dB)$

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**Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 12 QPSK**

Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.07	-64.84	-13.77	-2.47	-13.00	-68.07	
54.25	S	-81.46	-68.98	-9.75	-2.73	-13.00	-68.46	
89.17	S	-73.93	-70.06	-1.21	-2.67	-13.00	-60.93	
153.19	S	-72.82	-68.96	-0.93	-2.93	-13.00	-59.82	
224.00	S	-73.40	-74.99	4.76	-3.17	-13.00	-60.40	
250.19	S	-69.98	-71.31	4.55	-3.23	-13.00	-56.98	
1403.00	H	-62.64	-59.50	2.00	-5.14	-13.00	-49.64	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23035  
Fundamental Frequency :701.5 MHz  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
30.00	S	-85.60	-68.76	-14.37	-2.47	-13.00	-72.60	
54.25	S	-85.25	-72.77	-9.75	-2.73	-13.00	-72.25	
123.12	S	-84.69	-80.77	-1.16	-2.77	-13.00	-71.69	
159.98	S	-85.47	-81.97	-0.57	-2.93	-13.00	-72.47	
250.19	S	-69.79	-71.11	4.55	-3.23	-13.00	-56.79	
977.69	S	-77.06	-76.41	3.84	-4.49	-13.00	-64.06	
1403.00	H	-64.97	-61.83	2.00	-5.14	-13.00	-51.97	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23095  
Fundamental Frequency :707.5 MHz  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
54.25	S	-80.90	-68.42	-9.75	-2.73	-13.00	-67.90	
89.17	S	-73.39	-69.52	-1.21	-2.67	-13.00	-60.39	
138.64	S	-76.84	-72.79	-1.26	-2.79	-13.00	-63.84	
165.80	S	-72.03	-69.37	0.27	-2.93	-13.00	-59.03	
225.94	S	-74.21	-75.75	4.72	-3.17	-13.00	-61.21	
250.19	S	-71.56	-72.88	4.55	-3.23	-13.00	-58.56	
1415.00	H	-63.08	-60.02	2.08	-5.14	-13.00	-50.08	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23095  
Fundamental Frequency :707.5 MHz  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
30.00	S	-85.56	-68.72	-14.37	-2.47	-13.00	-72.56	
54.25	S	-85.09	-72.61	-9.75	-2.73	-13.00	-72.09	
91.11	S	-87.11	-83.32	-1.12	-2.67	-13.00	-74.11	
125.06	S	-83.59	-79.80	-1.03	-2.77	-13.00	-70.59	
250.19	S	-70.17	-71.49	4.55	-3.23	-13.00	-57.17	
970.90	S	-76.27	-75.61	3.79	-4.45	-13.00	-63.27	
1415.00	H	-65.03	-61.97	2.08	-5.14	-13.00	-52.03	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23155  
Fundamental Frequency :713.5 MHz  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
35.82	S	-80.93	-64.70	-13.77	-2.47	-13.00	-67.93	
89.17	S	-74.24	-70.37	-1.21	-2.67	-13.00	-61.24	
112.45	S	-78.16	-74.24	-1.15	-2.77	-13.00	-65.16	
159.01	S	-69.66	-66.11	-0.62	-2.93	-13.00	-56.66	
228.85	S	-74.26	-75.73	4.65	-3.17	-13.00	-61.26	
250.19	S	-71.94	-73.26	4.55	-3.23	-13.00	-58.94	
1427.00	H	-64.70	-61.78	2.17	-5.09	-13.00	-51.70	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23155  
Fundamental Frequency :713.5 MHz  
Operation Mode :5M QPSK RB1,24 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
30.00	S	-85.78	-68.94	-14.37	-2.47	-13.00	-72.78	
55.22	S	-85.69	-73.46	-9.49	-2.73	-13.00	-72.69	
91.11	S	-88.00	-84.21	-1.12	-2.67	-13.00	-75.00	
125.06	S	-83.30	-79.50	-1.03	-2.77	-13.00	-70.30	
142.52	S	-85.95	-81.88	-1.28	-2.79	-13.00	-72.95	
250.19	S	-70.19	-71.52	4.55	-3.23	-13.00	-57.19	
1427.00	H	-65.46	-62.54	2.17	-5.09	-13.00	-52.46	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.03	-64.79	-13.77	-2.47	-13.00	-68.03	
90.14	S	-74.61	-70.81	-1.14	-2.67	-13.00	-61.61	
165.80	S	-70.90	-68.24	0.27	-2.93	-13.00	-57.90	
224.97	S	-74.03	-75.60	4.74	-3.17	-13.00	-61.03	
250.19	S	-71.22	-72.54	4.55	-3.23	-13.00	-58.22	
999.03	S	-74.76	-74.26	3.99	-4.49	-13.00	-61.76	
1403.00	H	-63.60	-60.46	2.00	-5.14	-13.00	-50.60	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23035  
Fundamental Frequency :701.5 MHz  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	Level dBm				
30.00	S	-85.16	-68.33	-14.37	-2.47	-13.00	-72.16	
55.22	S	-85.74	-73.51	-9.49	-2.73	-13.00	-72.74	
124.09	S	-84.77	-80.91	-1.09	-2.77	-13.00	-71.77	
145.43	S	-85.42	-81.42	-1.21	-2.79	-13.00	-72.42	
250.19	S	-71.26	-72.58	4.55	-3.23	-13.00	-58.26	
989.33	S	-77.21	-76.64	3.92	-4.49	-13.00	-64.21	
1403.00	H	-65.60	-62.46	2.00	-5.14	-13.00	-52.60	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23095  
Fundamental Frequency :707.5 MHz  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-80.88	-64.64	-13.77	-2.47	-13.00	-67.88	
90.14	S	-74.32	-70.51	-1.14	-2.67	-13.00	-61.32	
158.04	S	-71.32	-67.71	-0.67	-2.93	-13.00	-58.32	
167.74	S	-70.83	-68.44	0.54	-2.93	-13.00	-57.83	
226.91	S	-73.53	-75.05	4.69	-3.17	-13.00	-60.53	
250.19	S	-71.30	-72.63	4.55	-3.23	-13.00	-58.30	
1415.00	H	-63.29	-60.24	2.08	-5.14	-13.00	-50.29	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-85.59	-68.75	-14.37	-2.47	-13.00	-72.59	
54.25	S	-85.38	-72.90	-9.75	-2.73	-13.00	-72.38	
125.06	S	-83.80	-80.01	-1.03	-2.77	-13.00	-70.80	
146.40	S	-85.72	-81.74	-1.19	-2.79	-13.00	-72.72	
250.19	S	-70.11	-71.43	4.55	-3.23	-13.00	-57.11	
970.90	S	-77.22	-76.56	3.79	-4.45	-13.00	-64.22	
1415.00	H	-65.27	-62.21	2.08	-5.14	-13.00	-52.27	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23155  
Fundamental Frequency :713.5 MHz  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	Level dBm				
35.82	S	-80.83	-64.60	-13.77	-2.47	-13.00	-67.83	
89.17	S	-74.24	-70.36	-1.21	-2.67	-13.00	-61.24	
151.25	S	-72.99	-69.02	-1.04	-2.93	-13.00	-59.99	
161.92	S	-72.91	-69.70	-0.29	-2.93	-13.00	-59.91	
230.79	S	-74.27	-75.69	4.60	-3.17	-13.00	-61.27	
250.19	S	-70.67	-71.99	4.55	-3.23	-13.00	-57.67	
1427.00	H	-64.91	-61.99	2.17	-5.09	-13.00	-51.91	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23155 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :713.5 MHz Engineer :Tai  
Operation Mode :5M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	Level dBm				
54.25	S	-84.86	-72.38	-9.75	-2.73	-13.00	-71.86	
88.20	S	-87.43	-83.47	-1.29	-2.67	-13.00	-74.43	
122.15	S	-84.33	-80.34	-1.22	-2.77	-13.00	-71.33	
145.43	S	-84.64	-80.64	-1.21	-2.79	-13.00	-71.64	
250.19	S	-69.55	-70.88	4.55	-3.23	-13.00	-56.55	
999.03	S	-76.73	-76.24	3.99	-4.49	-13.00	-63.73	
1427.00	H	-66.48	-63.56	2.17	-5.09	-13.00	-53.48	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 12 16QAM**

Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
89.17	S	-74.02	-70.15	-1.21	-2.67	-13.00	-61.02	
110.51	S	-76.93	-73.13	-1.09	-2.72	-13.00	-63.93	
159.98	S	-71.63	-68.13	-0.57	-2.93	-13.00	-58.63	
170.65	S	-74.04	-72.07	0.97	-2.93	-13.00	-61.04	
226.91	S	-74.54	-76.06	4.69	-3.17	-13.00	-61.54	
250.19	S	-70.89	-72.22	4.55	-3.23	-13.00	-57.89	
1403.00	H	-63.22	-60.08	2.00	-5.14	-13.00	-50.22	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
30.00	S	-85.01	-68.18	-14.37	-2.47	-13.00	-72.01
54.25	S	-85.67	-73.19	-9.75	-2.73	-13.00	-72.67
122.15	S	-84.66	-80.67	-1.22	-2.77	-13.00	-71.66
144.46	S	-85.84	-81.81	-1.24	-2.79	-13.00	-72.84
250.19	S	-70.18	-71.50	4.55	-3.23	-13.00	-57.18
971.87	S	-76.89	-76.23	3.79	-4.45	-13.00	-63.89
1403.00	H	-64.60	-61.46	2.00	-5.14	-13.00	-51.60
2104.50	H	---					
2806.00	H	---					
3507.50	H	---					
4209.00	H	---					
4910.50	H	---					
5612.00	H	---					
6313.50	H	---					
7015.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.17	-64.93	-13.77	-2.47	-13.00	-68.17	
89.17	S	-74.35	-70.48	-1.21	-2.67	-13.00	-61.35	
144.46	S	-78.22	-74.19	-1.24	-2.79	-13.00	-65.22	
162.89	S	-76.57	-73.49	-0.15	-2.93	-13.00	-63.57	
223.03	S	-75.12	-76.73	4.79	-3.17	-13.00	-62.12	
250.19	S	-76.19	-77.51	4.55	-3.23	-13.00	-63.19	
1415.00	H	-64.23	-61.17	2.08	-5.14	-13.00	-51.23	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.63	-67.79	-14.37	-2.47	-13.00	-71.63	
54.25	S	-84.25	-71.77	-9.75	-2.73	-13.00	-71.25	
91.11	S	-86.59	-82.80	-1.12	-2.67	-13.00	-73.59	
127.00	S	-84.52	-80.85	-0.90	-2.77	-13.00	-71.52	
250.19	S	-70.07	-71.40	4.55	-3.23	-13.00	-57.07	
995.15	S	-77.11	-76.59	3.97	-4.49	-13.00	-64.11	
1415.00	H	-65.47	-62.41	2.08	-5.14	-13.00	-52.47	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23155 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :713.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
35.82	S	-81.85	-65.62	-13.77	-2.47	-13.00	-68.85
89.17	S	-74.47	-70.59	-1.21	-2.67	-13.00	-61.47
140.58	S	-76.06	-71.95	-1.33	-2.79	-13.00	-63.06
159.98	S	-70.95	-67.45	-0.57	-2.93	-13.00	-57.95
226.91	S	-72.99	-74.51	4.69	-3.17	-13.00	-59.99
250.19	S	-71.34	-72.66	4.55	-3.23	-13.00	-58.34
1427.00	H	-64.20	-61.27	2.17	-5.09	-13.00	-51.20
2140.50	H	---					
2854.00	H	---					
3567.50	H	---					
4281.00	H	---					
4994.50	H	---					
5708.00	H	---					
6421.50	H	---					
7135.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23155 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :713.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,24 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
30.00	S	-84.99	-68.15	-14.37	-2.47	-13.00	-71.99
54.25	S	-86.03	-73.55	-9.75	-2.73	-13.00	-73.03
91.11	S	-87.76	-83.97	-1.12	-2.67	-13.00	-74.76
123.12	S	-84.45	-80.53	-1.16	-2.77	-13.00	-71.45
250.19	S	-69.15	-70.48	4.55	-3.23	-13.00	-56.15
968.96	S	-76.43	-75.75	3.77	-4.45	-13.00	-63.43
1427.00	H	-65.31	-62.39	2.17	-5.09	-13.00	-52.31
2140.50	H	---					
2854.00	H	---					
3567.50	H	---					
4281.00	H	---					
4994.50	H	---					
5708.00	H	---					
6421.50	H	---					
7135.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-80.58	-64.35	-13.77	-2.47	-13.00	-67.58	
89.17	S	-74.87	-71.00	-1.21	-2.67	-13.00	-61.87	
149.31	S	-73.93	-69.88	-1.13	-2.93	-13.00	-60.93	
167.74	S	-72.22	-69.83	0.54	-2.93	-13.00	-59.22	
226.91	S	-73.71	-75.23	4.69	-3.17	-13.00	-60.71	
250.19	S	-70.22	-71.55	4.55	-3.23	-13.00	-57.22	
1403.00	H	-62.67	-59.53	2.00	-5.14	-13.00	-49.67	
2104.50	H	---						
2806.00	H	---						
3507.50	H	---						
4209.00	H	---						
4910.50	H	---						
5612.00	H	---						
6313.50	H	---						
7015.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23035 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :701.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
30.00	S	-84.63	-67.79	-14.37	-2.47	-13.00	-71.63
54.25	S	-85.36	-72.88	-9.75	-2.73	-13.00	-72.36
125.06	S	-86.76	-82.96	-1.03	-2.77	-13.00	-73.76
144.46	S	-86.11	-82.09	-1.24	-2.79	-13.00	-73.11
250.19	S	-69.17	-70.49	4.55	-3.23	-13.00	-56.17
952.47	S	-77.00	-76.14	3.65	-4.51	-13.00	-64.00
1403.00	H	-64.55	-61.42	2.00	-5.14	-13.00	-51.55
2104.50	H	---					
2806.00	H	---					
3507.50	H	---					
4209.00	H	---					
4910.50	H	---					
5612.00	H	---					
6313.50	H	---					
7015.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
55.22	S	-81.83	-69.60	-9.49	-2.73	-13.00	-68.83	
89.17	S	-75.69	-71.81	-1.21	-2.67	-13.00	-62.69	
111.48	S	-80.20	-76.32	-1.12	-2.77	-13.00	-67.20	
136.70	S	-80.87	-76.95	-1.14	-2.79	-13.00	-67.87	
191.02	S	-79.42	-80.09	3.76	-3.09	-13.00	-66.42	
222.06	S	-76.66	-78.30	4.81	-3.17	-13.00	-63.66	
1415.00	H	-63.29	-60.23	2.08	-5.14	-13.00	-50.29	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-85.49	-68.65	-14.37	-2.47	-13.00	-72.49	
54.25	S	-85.30	-72.82	-9.75	-2.73	-13.00	-72.30	
125.06	S	-86.23	-82.44	-1.03	-2.77	-13.00	-73.23	
145.43	S	-87.86	-83.86	-1.21	-2.79	-13.00	-74.86	
250.19	S	-71.74	-73.06	4.55	-3.23	-13.00	-58.74	
953.44	S	-77.34	-76.49	3.66	-4.51	-13.00	-64.34	
1415.00	H	-65.76	-62.70	2.08	-5.14	-13.00	-52.76	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23155 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :713.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.28	-65.04	-13.77	-2.47	-13.00	-68.28	
89.17	S	-75.06	-71.19	-1.21	-2.67	-13.00	-62.06	
139.61	S	-76.43	-72.33	-1.32	-2.79	-13.00	-63.43	
159.98	S	-73.10	-69.60	-0.57	-2.93	-13.00	-60.10	
169.68	S	-78.32	-76.20	0.82	-2.93	-13.00	-65.32	
229.82	S	-74.43	-75.88	4.62	-3.17	-13.00	-61.43	
1427.00	H	-64.74	-61.82	2.17	-5.09	-13.00	-51.74	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23155 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :713.5 MHz Engineer :Tai  
Operation Mode :5M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-83.48	-66.64	-14.37	-2.47	-13.00	-70.48	
54.25	S	-85.35	-72.87	-9.75	-2.73	-13.00	-72.35	
91.11	S	-87.75	-83.96	-1.12	-2.67	-13.00	-74.75	
124.09	S	-85.04	-81.18	-1.09	-2.77	-13.00	-72.04	
250.19	S	-70.44	-71.77	4.55	-3.23	-13.00	-57.44	
937.92	S	-76.69	-75.82	3.63	-4.51	-13.00	-63.69	
1427.00	H	-66.10	-63.18	2.17	-5.09	-13.00	-53.10	
2140.50	H	---						
2854.00	H	---						
3567.50	H	---						
4281.00	H	---						
4994.50	H	---						
5708.00	H	---						
6421.50	H	---						
7135.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 12 QPSK**

Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.61	-65.37	-13.77	-2.47	-13.00	-68.61	
89.17	S	-74.68	-70.80	-1.21	-2.67	-13.00	-61.68	
161.92	S	-72.20	-68.98	-0.29	-2.93	-13.00	-59.20	
204.60	S	-76.81	-78.43	4.76	-3.14	-13.00	-63.81	
225.94	S	-73.86	-75.40	4.72	-3.17	-13.00	-60.86	
250.19	S	-71.82	-73.14	4.55	-3.23	-13.00	-58.82	
1408.00	H	-62.84	-59.74	2.04	-5.14	-13.00	-49.84	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-83.64	-66.80	-14.37	-2.47	-13.00	-70.64	
54.25	S	-85.51	-73.03	-9.75	-2.73	-13.00	-72.51	
125.06	S	-84.47	-80.68	-1.03	-2.77	-13.00	-71.47	
144.46	S	-86.21	-82.18	-1.24	-2.79	-13.00	-73.21	
250.19	S	-70.17	-71.50	4.55	-3.23	-13.00	-57.17	
970.90	S	-76.46	-75.79	3.79	-4.45	-13.00	-63.46	
1408.00	H	-65.31	-62.21	2.04	-5.14	-13.00	-52.31	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
54.25	S	-82.09	-69.61	-9.75	-2.73	-13.00	-69.09	
89.17	S	-74.94	-71.07	-1.21	-2.67	-13.00	-61.94	
150.28	S	-73.06	-69.04	-1.09	-2.93	-13.00	-60.06	
169.68	S	-75.57	-73.46	0.82	-2.93	-13.00	-62.57	
226.91	S	-76.16	-77.68	4.69	-3.17	-13.00	-63.16	
250.19	S	-78.45	-79.77	4.55	-3.23	-13.00	-65.45	
1415.00	H	-63.72	-60.67	2.08	-5.14	-13.00	-50.72	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.77	-67.93	-14.37	-2.47	-13.00	-71.77	
54.25	S	-85.02	-72.54	-9.75	-2.73	-13.00	-72.02	
126.03	S	-85.82	-82.09	-0.97	-2.77	-13.00	-72.82	
143.49	S	-86.09	-82.04	-1.26	-2.79	-13.00	-73.09	
250.19	S	-70.01	-71.33	4.55	-3.23	-13.00	-57.01	
961.20	S	-77.00	-76.26	3.71	-4.45	-13.00	-64.00	
1415.00	H	-65.38	-62.33	2.08	-5.14	-13.00	-52.38	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
35.82	S	-80.97	-64.73	-13.77	-2.47	-13.00	-67.97
89.17	S	-74.53	-70.66	-1.21	-2.67	-13.00	-61.53
140.58	S	-75.36	-71.25	-1.33	-2.79	-13.00	-62.36
159.01	S	-70.24	-66.69	-0.62	-2.93	-13.00	-57.24
222.06	S	-73.59	-75.23	4.81	-3.17	-13.00	-60.59
250.19	S	-71.67	-73.00	4.55	-3.23	-13.00	-58.67
1422.00	H	-64.50	-61.48	2.12	-5.14	-13.00	-51.50
2133.00	H	---					
2844.00	H	---					
3555.00	H	---					
4266.00	H	---					
4977.00	H	---					
5688.00	H	---					
6399.00	H	---					
7110.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.92	-68.08	-14.37	-2.47	-13.00	-71.92	
54.25	S	-85.07	-72.59	-9.75	-2.73	-13.00	-72.07	
126.03	S	-86.58	-82.84	-0.97	-2.77	-13.00	-73.58	
242.43	S	-85.95	-87.16	4.43	-3.23	-13.00	-72.95	
250.19	S	-71.89	-73.21	4.55	-3.23	-13.00	-58.89	
970.90	S	-77.79	-77.13	3.79	-4.45	-13.00	-64.79	
1422.00	H	-65.92	-62.90	2.12	-5.14	-13.00	-52.92	
2133.00	H	---						
2844.00	H	---						
3555.00	H	---						
4266.00	H	---						
4977.00	H	---						
5688.00	H	---						
6399.00	H	---						
7110.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23060  
Fundamental Frequency :704 MHz  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.70	-65.47	-13.77	-2.47	-13.00	-68.70	
89.17	S	-74.27	-70.40	-1.21	-2.67	-13.00	-61.27	
157.07	S	-71.39	-67.73	-0.72	-2.93	-13.00	-58.39	
166.77	S	-72.16	-69.63	0.41	-2.93	-13.00	-59.16	
225.94	S	-73.73	-75.27	4.72	-3.17	-13.00	-60.73	
250.19	S	-70.50	-71.83	4.55	-3.23	-13.00	-57.50	
1408.00	H	-63.64	-60.54	2.04	-5.14	-13.00	-50.64	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12      Test Date :2012-08-01  
ARFCN :CH 23060      Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz      Engineer :Tai  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN      Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.66	-67.82	-14.37	-2.47	-13.00	-71.66	
54.25	S	-85.36	-72.88	-9.75	-2.73	-13.00	-72.36	
124.09	S	-84.32	-80.46	-1.09	-2.77	-13.00	-71.32	
167.74	S	-87.06	-84.67	0.54	-2.93	-13.00	-74.06	
250.19	S	-69.59	-70.91	4.55	-3.23	-13.00	-56.59	
970.90	S	-76.80	-76.13	3.79	-4.45	-13.00	-63.80	
1408.00	H	-64.33	-61.24	2.04	-5.14	-13.00	-51.33	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23095  
Fundamental Frequency :707.5 MHz  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG Output Level dBm		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			SG Output Level dBm	Antenna Gain dBd				
35.82	S	-81.54	-65.30	-13.77	-2.47	-13.00	-68.54	
89.17	S	-74.20	-70.33	-1.21	-2.67	-13.00	-61.20	
155.13	S	-71.60	-67.84	-0.83	-2.93	-13.00	-58.60	
166.77	S	-73.27	-70.74	0.41	-2.93	-13.00	-60.27	
224.97	S	-73.97	-75.54	4.74	-3.17	-13.00	-60.97	
250.19	S	-70.91	-72.24	4.55	-3.23	-13.00	-57.91	
1415.00	H	-63.50	-60.45	2.08	-5.14	-13.00	-50.50	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12  
ARFCN :CH 23095  
Fundamental Frequency :707.5 MHz  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN  
Test Date :2012-08-01  
Temp./Humi. :27.1 deg\_C / 63 RH  
Engineer :Tai  
Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.47	-67.64	-14.37	-2.47	-13.00	-71.47	
54.25	S	-84.97	-72.49	-9.75	-2.73	-13.00	-71.97	
127.97	S	-83.74	-80.14	-0.84	-2.77	-13.00	-70.74	
144.46	S	-86.19	-82.16	-1.24	-2.79	-13.00	-73.19	
250.19	S	-68.81	-70.13	4.55	-3.23	-13.00	-55.81	
977.69	S	-76.83	-76.18	3.84	-4.49	-13.00	-63.83	
1415.00	H	-65.84	-62.78	2.08	-5.14	-13.00	-52.84	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.21	-64.97	-13.77	-2.47	-13.00	-68.21	
89.17	S	-74.13	-70.25	-1.21	-2.67	-13.00	-61.13	
139.61	S	-75.17	-71.07	-1.32	-2.79	-13.00	-62.17	
156.10	S	-72.12	-68.42	-0.78	-2.93	-13.00	-59.12	
224.97	S	-72.90	-74.47	4.74	-3.17	-13.00	-59.90	
250.19	S	-70.89	-72.22	4.55	-3.23	-13.00	-57.89	
1422.00	H	-64.54	-61.52	2.12	-5.14	-13.00	-51.54	
2133.00	H	---						
2844.00	H	---						
3555.00	H	---						
4266.00	H	---						
4977.00	H	---						
5688.00	H	---						
6399.00	H	---						
7110.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M QPSK RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.52	-67.69	-14.37	-2.47	-13.00	-71.52	
54.25	S	-85.57	-73.09	-9.75	-2.73	-13.00	-72.57	
87.23	S	-87.63	-83.60	-1.37	-2.67	-13.00	-74.63	
125.06	S	-84.71	-80.91	-1.03	-2.77	-13.00	-71.71	
250.19	S	-70.34	-71.67	4.55	-3.23	-13.00	-57.34	
964.11	S	-77.19	-76.48	3.74	-4.45	-13.00	-64.19	
1422.00	H	-66.03	-63.01	2.12	-5.14	-13.00	-53.03	
2133.00	H	---						
2844.00	H	---						
3555.00	H	---						
4266.00	H	---						
4977.00	H	---						
5688.00	H	---						
6399.00	H	---						
7110.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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**Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 12 16QAM**

Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.29	-65.05	-13.77	-2.47	-13.00	-68.29	
89.17	S	-74.18	-70.31	-1.21	-2.67	-13.00	-61.18	
159.01	S	-71.69	-68.14	-0.62	-2.93	-13.00	-58.69	
168.71	S	-74.57	-72.32	0.68	-2.93	-13.00	-61.57	
226.91	S	-72.65	-74.17	4.69	-3.17	-13.00	-59.65	
250.19	S	-71.40	-72.73	4.55	-3.23	-13.00	-58.40	
1408.00	H	-63.82	-60.72	2.04	-5.14	-13.00	-50.82	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
30.00	S	-85.12	-68.28	-14.37	-2.47	-13.00	-72.12
54.25	S	-85.45	-72.97	-9.75	-2.73	-13.00	-72.45
91.11	S	-86.41	-82.62	-1.12	-2.67	-13.00	-73.41
124.09	S	-84.14	-80.28	-1.09	-2.77	-13.00	-71.14
250.19	S	-69.79	-71.11	4.55	-3.23	-13.00	-56.79
967.02	S	-77.15	-76.46	3.76	-4.45	-13.00	-64.15
1408.00	H	-64.88	-61.78	2.04	-5.14	-13.00	-51.88
2112.00	H	---					
2816.00	H	---					
3520.00	H	---					
4224.00	H	---					
4928.00	H	---					
5632.00	H	---					
6336.00	H	---					
7040.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.62	-65.39	-13.77	-2.47	-13.00	-68.62	
89.17	S	-74.62	-70.74	-1.21	-2.67	-13.00	-61.62	
142.52	S	-76.79	-72.73	-1.28	-2.79	-13.00	-63.79	
159.01	S	-71.51	-67.95	-0.62	-2.93	-13.00	-58.51	
223.03	S	-73.18	-74.80	4.79	-3.17	-13.00	-60.18	
250.19	S	-69.05	-70.37	4.55	-3.23	-13.00	-56.05	
1415.00	H	-64.36	-61.30	2.08	-5.14	-13.00	-51.36	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-85.24	-68.40	-14.37	-2.47	-13.00	-72.24	
54.25	S	-85.67	-73.19	-9.75	-2.73	-13.00	-72.67	
91.11	S	-87.19	-83.40	-1.12	-2.67	-13.00	-74.19	
125.06	S	-84.71	-80.91	-1.03	-2.77	-13.00	-71.71	
250.19	S	-70.11	-71.43	4.55	-3.23	-13.00	-57.11	
968.96	S	-76.86	-76.18	3.77	-4.45	-13.00	-63.86	
1415.00	H	-63.90	-60.85	2.08	-5.14	-13.00	-50.90	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-80.87	-64.64	-13.77	-2.47	-13.00	-67.87	
89.17	S	-74.35	-70.48	-1.21	-2.67	-13.00	-61.35	
137.67	S	-75.28	-71.29	-1.20	-2.79	-13.00	-62.28	
159.01	S	-72.65	-69.10	-0.62	-2.93	-13.00	-59.65	
224.97	S	-73.31	-74.88	4.74	-3.17	-13.00	-60.31	
250.19	S	-72.42	-73.74	4.55	-3.23	-13.00	-59.42	
1422.00	H	-63.75	-60.73	2.12	-5.14	-13.00	-50.75	
2133.00	H	---						
2844.00	H	---						
3555.00	H	---						
4266.00	H	---						
4977.00	H	---						
5688.00	H	---						
6399.00	H	---						
7110.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,49 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
55.22	S	-85.91	-73.68	-9.49	-2.73	-13.00	-72.91
87.23	S	-88.57	-84.54	-1.37	-2.67	-13.00	-75.57
125.06	S	-83.80	-80.00	-1.03	-2.77	-13.00	-70.80
140.58	S	-86.13	-82.01	-1.33	-2.79	-13.00	-73.13
250.19	S	-68.80	-70.12	4.55	-3.23	-13.00	-55.80
998.06	S	-76.83	-76.33	3.99	-4.49	-13.00	-63.83
1422.00	H	-65.97	-62.95	2.12	-5.14	-13.00	-52.97
2133.00	H	---					
2844.00	H	---					
3555.00	H	---					
4266.00	H	---					
4977.00	H	---					
5688.00	H	---					
6399.00	H	---					
7110.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
35.82	S	-81.49	-65.26	-13.77	-2.47	-13.00	-68.49	
89.17	S	-74.72	-70.85	-1.21	-2.67	-13.00	-61.72	
154.16	S	-72.91	-69.09	-0.88	-2.93	-13.00	-59.91	
227.88	S	-74.06	-75.56	4.67	-3.17	-13.00	-61.06	
250.19	S	-71.21	-72.54	4.55	-3.23	-13.00	-58.21	
966.05	S	-75.13	-74.43	3.75	-4.45	-13.00	-62.13	
1408.00	H	-69.11	-65.84	1.88	-5.14	-13.00	-56.11	
2112.00	H	---						
2816.00	H	---						
3520.00	H	---						
4224.00	H	---						
4928.00	H	---						
5632.00	H	---						
6336.00	H	---						
7040.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23060 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :704 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
30.00	S	-84.95	-68.12	-14.37	-2.47	-13.00	-71.95
54.25	S	-85.05	-72.57	-9.75	-2.73	-13.00	-72.05
88.20	S	-87.15	-83.19	-1.29	-2.67	-13.00	-74.15
123.12	S	-84.02	-80.10	-1.16	-2.77	-13.00	-71.02
250.19	S	-70.23	-71.56	4.55	-3.23	-13.00	-57.23
975.75	S	-77.31	-76.64	3.82	-4.49	-13.00	-64.31
1408.00	H	-73.40	-70.13	1.88	-5.14	-13.00	-60.40
2112.00	H	---					
2816.00	H	---					
3520.00	H	---					
4224.00	H	---					
4928.00	H	---					
5632.00	H	---					
6336.00	H	---					
7040.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
35.82	S	-81.89	-65.65	-13.77	-2.47	-13.00	-68.89
89.17	S	-74.26	-70.38	-1.21	-2.67	-13.00	-61.26
110.51	S	-76.82	-73.01	-1.09	-2.72	-13.00	-63.82
159.98	S	-71.36	-67.86	-0.57	-2.93	-13.00	-58.36
227.88	S	-74.59	-76.09	4.67	-3.17	-13.00	-61.59
250.19	S	-72.99	-74.32	4.55	-3.23	-13.00	-59.99
1415.00	H	-72.55	-69.49	2.08	-5.14	-13.00	-59.55
2122.50	H	---					
2830.00	H	---					
3537.50	H	---					
4245.00	H	---					
4952.50	H	---					
5660.00	H	---					
6367.50	H	---					
7075.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23095 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :707.5 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.00	S	-84.12	-67.29	-14.37	-2.47	-13.00	-71.12	
54.25	S	-85.49	-73.01	-9.75	-2.73	-13.00	-72.49	
91.11	S	-86.43	-82.65	-1.12	-2.67	-13.00	-73.43	
124.09	S	-84.32	-80.46	-1.09	-2.77	-13.00	-71.32	
250.19	S	-69.49	-70.82	4.55	-3.23	-13.00	-56.49	
958.29	S	-76.37	-75.61	3.69	-4.45	-13.00	-63.37	
1415.00	H	-73.73	-70.67	2.08	-5.14	-13.00	-60.73	
2122.50	H	---						
2830.00	H	---						
3537.50	H	---						
4245.00	H	---						
4952.50	H	---						
5660.00	H	---						
6367.50	H	---						
7075.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :VERTICAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG	Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm				
35.82	S	-82.04	-65.81	-13.77	-2.47	-13.00	-69.04
89.17	S	-74.44	-70.57	-1.21	-2.67	-13.00	-61.44
165.80	S	-71.32	-68.66	0.27	-2.93	-13.00	-58.32
224.97	S	-74.82	-76.39	4.74	-3.17	-13.00	-61.82
250.19	S	-71.61	-72.93	4.55	-3.23	-13.00	-58.61
500.45	S	-79.70	-80.72	4.72	-3.70	-13.00	-66.70
1422.00	H	-71.95	-68.93	2.12	-5.14	-13.00	-58.95
2133.00	H	---					
2844.00	H	---					
3555.00	H	---					
4266.00	H	---					
4977.00	H	---					
5688.00	H	---					
6399.00	H	---					
7110.00	H	---					

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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Operation Band :BAND 12 Test Date :2012-08-01  
ARFCN :CH 23130 Temp./Humi. :27.1 deg\_C / 63 RH  
Fundamental Frequency :711 MHz Engineer :Tai  
Operation Mode :10M 16QAM RB1,0 TX  
EUT Pol. :E2 PLAN Measurement Antenna Pol. :HORIZONTAL

Freq. MHz	Note F/H/E/S	ERP dBm	SG		Antenna Gain dBd	Cable Loss dB	Limit dBm	Margin dB
			Output Level dBm	SG Output Level dBm				
30.97	S	-84.47	-67.74	-14.26	-2.47	-13.00	-71.47	
54.25	S	-85.85	-73.37	-9.75	-2.73	-13.00	-72.85	
91.11	S	-87.43	-83.64	-1.12	-2.67	-13.00	-74.43	
120.21	S	-84.33	-80.21	-1.36	-2.77	-13.00	-71.33	
166.77	S	-86.95	-84.42	0.41	-2.93	-13.00	-73.95	
250.19	S	-69.28	-70.61	4.55	-3.23	-13.00	-56.28	
1422.00	H	-73.92	-70.90	2.12	-5.14	-13.00	-60.92	
2133.00	H	---						
2844.00	H	---						
3555.00	H	---						
4266.00	H	---						
4977.00	H	---						
5688.00	H	---						
6399.00	H	---						
7110.00	H	---						

$$\text{ERP(dBm)} = \text{SG Level(dBm)} + \text{Antenna Gain(dBd)} + \text{Cable Loss(dB)}$$

Note : “F” : denotes Fundamental Frequency. ; “H” : denotes Harmonic Frequency.

“E” : denotes Band Edge Frequency. ; “S” : denotes Spurious Frequency.

“---” : denotes Noise Floor.

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## 12. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### 12.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: +/-2.5ppm for 850MHz band

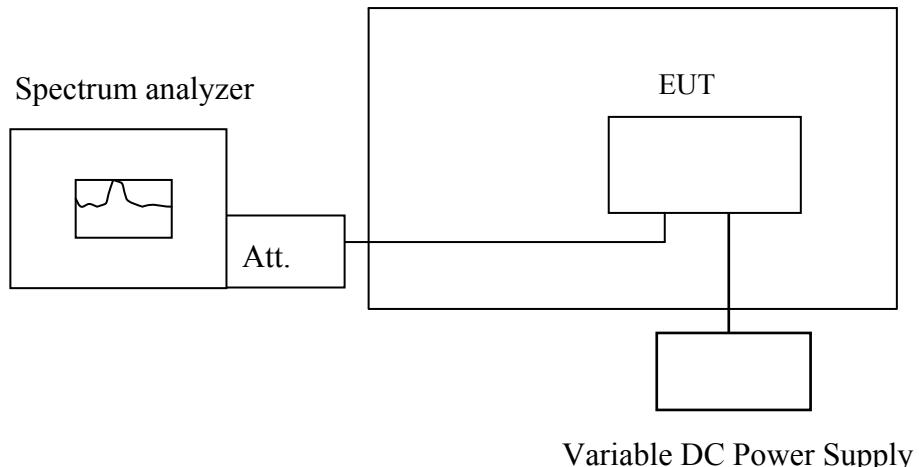
+/-2.5ppm for 1900MHz band

+/-2.5ppm for 1700MHz band

+/-2.5ppm for 700MHz band

### 12.2. Test Set-up:

Temperature Chamber



**Note :** Measurement setup for testing on Antenna connector

### 12.3. Measurement Procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

### 12.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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## 12.5. Measurement Result:

Reference Frequency: WCDMA II Mid Channel 1880 (ARFCN9400) MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1880.000009	-5.00	4700
12	-20	1880.000005	-1.00	4700
12	-10	1880.000004	0.00	4700
12	0	1880.000008	-4.00	4700
12	10	1880.000007	-3.00	4700
12	20	1880.000003	1.00	4700
12	30	1880.000004	0.00	4700
12	40	1880.000006	-2.00	4700
12	50	1880.000009	-5.00	4700

Reference Frequency: WCDMA IV Mid Channel 1732.5 (ARFCN1413) MHz @ 20°C				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1732.600008	-6.00	4331
12	-20	1732.599996	6.00	4331
12	-10	1732.600004	-2.00	4331
12	0	1732.599995	7.00	4331
12	10	1732.599998	4.00	4331
12	20	1732.600001	1.00	4331
12	30	1732.600002	0.00	4331
12	40	1732.600005	-3.00	4331
12	50	1732.600006	-4.00	4331

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Reference Frequency: WCDMA V Mid Channel 836.6 (ARFCN4183) MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	836.599988	8.00	2091
12	-20	836.599992	4.00	2091
12	-10	836.599994	2.00	2091
12	0	836.599995	1.00	2091
12	10	836.599998	-2.00	2091
12	20	836.599999	-3.00	2091
12	30	836.599996	0.00	2091
12	40	836.599995	1.00	2091
12	50	836.599993	3.00	2091

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Reference Frequency: LTE B4 Mid Channel 1732.5 MHz 5M QPSK CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1732.500005	-3.00	4331
12	-20	1732.500003	-1.00	4331
12	-10	1732.500003	-1.00	4331
12	0	1732.500001	1.00	4331
12	10	1732.500004	-2.00	4331
12	20	1732.500002	0.00	4331
12	30	1732.500002	0.00	4331
12	40	1732.500006	-4.00	4331
12	50	1732.500007	-5.00	4331

Reference Frequency: LTE B4 Mid Channel 1732.5 MHz 5M 16QAM CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1732.500012	-10.00	4331
12	-20	1732.500010	-8.00	4331
12	-10	1732.500008	-6.00	4331
12	0	1732.499998	4.00	4331
12	10	1732.500001	1.00	4331
12	20	1732.500002	0.00	4331
12	30	1732.500008	-6.00	4331
12	40	1732.500005	-3.00	4331
12	50	1732.500006	-4.00	4331

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Reference Frequency: LTE B4 Mid Channel 1732.5 MHz 10M QPSK CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1732.499991	5.00	4331
12	-20	1732.499994	2.00	4331
12	-10	1732.499998	-2.00	4331
12	0	1732.499997	-1.00	4331
12	10	1732.499997	-1.00	4331
12	20	1732.499996	0.00	4331
12	30	1732.499996	0.00	4331
12	40	1732.499999	-3.00	4331
12	50	1732.499999	-3.00	4331

Reference Frequency: LTE B4 Mid Channel 1732.5 MHz 10M 16QAM CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	1732.499998	-6.00	4331
12	-20	1732.499997	-5.00	4331
12	-10	1732.499992	0.00	4331
12	0	1732.499999	-7.00	4331
12	10	1732.499994	-2.00	4331
12	20	1732.499992	0.00	4331
12	30	1732.499997	-5.00	4331
12	40	1732.499993	-1.00	4331
12	50	1732.499985	7.00	4331

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Reference Frequency: LTE B17 Mid Channel 710 MHz @ 5M QPSK CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	710.000010	-8.00	1775
12	-20	710.000008	-6.00	1775
12	-10	710.000005	-3.00	1775
12	0	710.000004	-2.00	1775
12	10	710.000002	0.00	1775
12	20	710.000002	0.00	1775
12	30	710.000003	-1.00	1775
12	40	710.000006	-4.00	1775
12	50	710.000009	-7.00	1775

Reference Frequency: LTE B17 Mid Channel 710 MHz 5M 16QAM CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	709.999991	7.00	1775
12	-20	709.999993	5.00	1775
12	-10	709.999997	1.00	1775
12	0	709.999998	0.00	1775
12	10	709.999995	3.00	1775
12	20	709.999998	0.00	1775
12	30	710.000003	-5.00	1775
12	40	710.000005	-7.00	1775
12	50	710.000010	-12.00	1775

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Reference Frequency: LTE B17 Mid Channel 710 MHz 10M QPSK CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	710.000005	-4.00	1775
12	-20	710.000006	-5.00	1775
12	-10	710.000008	-7.00	1775
12	0	710.000002	-1.00	1775
12	10	710.000001	0.00	1775
12	20	710.000001	0.00	1775
12	30	710.000004	-3.00	1775
12	40	710.000005	-4.00	1775
12	50	710.000006	-5.00	1775

Reference Frequency: LTE B17 Mid Channel 710 MHz 10M 16QAM CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	710.000007	-6.00	1775
12	-20	710.000002	-1.00	1775
12	-10	710.000003	-2.00	1775
12	0	710.000006	-5.00	1775
12	10	710.000002	-1.00	1775
12	20	710.000001	0.00	1775
12	30	709.999995	6.00	1775
12	40	709.999993	8.00	1775
12	50	709.999990	11.00	1775

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Reference Frequency: LTE B12 Mid Channel 707.5MHz @ 5M QPSK CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	707.499995	5.00	1768.75
12	-20	707.499998	2.00	1768.75
12	-10	707.499999	1.00	1768.75
12	0	707.499999	1.00	1768.75
12	10	707.500001	-1.00	1768.75
12	20	707.500000	0.00	1768.75
12	30	707.500000	0.00	1768.75
12	40	707.500002	-2.00	1768.75
12	50	707.500003	-3.00	1768.75

Reference Frequency: LTE B17 Mid Channel 707.5MHz @ 5M 16QAM CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	707.499995	4.00	1768.75
12	-20	707.499997	2.00	1768.75
12	-10	707.499997	2.00	1768.75
12	0	707.499998	1.00	1768.75
12	10	707.499999	0.00	1768.75
12	20	707.499999	0.00	1768.75
12	30	707.500001	-2.00	1768.75
12	40	707.500001	-2.00	1768.75
12	50	707.500002	-3.00	1768.75

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Reference Frequency: LTE B17 Mid Channel 707.5 MHz @ 10M QPSK CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	707.499998	3.00	1768.75
12	-20	710.000001	-2500000.00	1768.75
12	-10	707.500000	1.00	1768.75
12	0	707.499999	2.00	1768.75
12	10	707.500000	1.00	1768.75
12	20	707.500001	0.00	1768.75
12	30	707.500001	0.00	1768.75
12	40	707.500002	-1.00	1768.75
12	50	707.500004	-3.00	1768.75

Reference Frequency: LTE B17 Mid Channel 707.5 MHz @ 10M 16QAM CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
12	-30	707.499996	5.00	1768.75
12	-20	707.499997	4.00	1768.75
12	-10	707.499999	2.00	1768.75
12	0	707.500001	0.00	1768.75
12	10	707.500001	0.00	1768.75
12	20	707.500001	0.00	1768.75
12	30	707.500000	1.00	1768.75
12	40	707.500001	0.00	1768.75
12	50	707.500003	-2.00	1768.75

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## 13. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

### 13.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

+/-2.5ppm for 1700MHz band

+/-2.5ppm for 700MHz band

### 13.2. Test Set-up:

Refer to section 10.2 in this report

### 13.3. Measurement Procedure:

Set chamber temperature to 25°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.

### 13.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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**13.5. Measurement Result:**

Reference Frequency: WCDMA II Mid Channel 1880 (ARFCN9400) MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	1880.000008	-5.00	4700
12.0	25	1880.000003	0.00	4700
10.2	25	1879.999995	8.00	4700
4.2 (End Point)	25	1879.999990	13.00	4700

Reference Frequency: WCDMA IV Mid Channel 1732.6 (ARFCN1413) MHz				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	1732.599998	3.00	4700
12.0	25	1732.600001	0.00	4700
10.2	25	1732.599996	5.00	4700
4.2 (End Point)	25	1732.599992	9.00	4700

Reference Frequency: WCDMA V Mid Channel 836.6 (ARFCN4183) MHz				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25.00	836.600002	-3.00	2091.00
12.0	25.00	836.599999	0.00	2091.00
10.2	25.00	836.599995	4.00	2091.00
4.2 (End Point)	25.00	836.599991	8.00	2091.00

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Reference Frequency: LTE B4 Mid Channel 1732.5 MHz @ 25°C 5M QPSK CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25.00	1732.5000030	-1.00	4331
12.0	25.00	1732.500002	0.00	4331
10.2	25.00	1732.5000050	-3.00	4331
4.2 (End Point)	25.00	1732.5000090	-7.00	4331

Reference Frequency: LTE B4 Mid Channel 1732.5 MHz @ 25°C 5M 16QAM CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	1732.4999950	7.00	4331
12.0	25	1732.500002	0.00	4331
10.2	25	1732.4999990	3.00	4331
4.2 (End Point)	25	1732.4999910	11.00	4331

Reference Frequency: LTE B4 Mid Channel 1732.5 MHz @ 25°C 10M QPSK CH 20175				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25.00	1732.5000002	-4.20	4331
12.0	25.00	1732.499996	0.00	4331
10.2	25.00	1732.5000005	-4.50	4331
4.2 (End Point)	25.00	1732.5000090	-13.00	4331

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Reference Frequency: LTE B4 Mid Channel 1732.5 MHz @ 25°C 10M 16QAM CH 20175

Limit: +/- 2.5 ppm = 4331 Hz

Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	1732.5000005	-8.50	4331
12.0	25	1732.499992	0.00	4331
10.2	25	1732.5000003	-8.30	4331
4.2 (End Point)	25	1732.5000019	-9.90	4331

Reference Frequency: LTE B17 Mid Channel 710 MHz @ 25°C 5M QPSK CH 23790

Limit: +/- 2.5 ppm = 1775 Hz

Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25.00	709.9999991	2.90	1775
12.0	25.00	710.000002	0.00	1775
10.8	25.00	710.0000050	-3.00	1775
4.2 (End Point)	25.00	709.9999900	12.00	1775

Reference Frequency: LTE B17 Mid Channel 710 MHz @ 25°C 5M 16QAM CH 23790

Limit: +/- 2.5 ppm = 1775 Hz

Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	710.0000030	-5.00	1775
12.0	25	709.999998	0.00	1775
10.2	25	710.0000040	-6.00	1775
4.2 (End Point)	25	710.0000120	-14.00	1775

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Reference Frequency: LTE B17 Mid Channel 710 MHz @ 25°C 10M QPSK CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25.00	709.9999950	6.00	1775
12.0	25.00	710.000001	0.00	1775
10.8	25.00	710.0000060	-5.00	1775
4.2 (End Point)	25.00	709.9999900	11.00	1775

Reference Frequency: LTE B17 Mid Channel 710 MHz @ 25°C 10M 16QAM CH 23790				
Limit: +/- 2.5 ppm = 1775 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25	710.0000060	-5.00	1775
12.0	25	710.000001	0.00	1775
10.8	25	710.0000030	-2.00	1775
4.2 (End Point)	25	710.0000150	-14.00	1775

Reference Frequency: LTE B12 Mid Channel 707.5 MHz @ 25°C 5M QPSK CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25.00	707.500002	-2.00	1768.75
12.0	25.00	707.500000	0.00	1768.75
10.8	25.00	707.499997	3.00	1768.75
4.2 (End Point)	25.00	707.499994	6.00	1768.75

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Reference Frequency: LTE B12 Mid Channel 707.5 MHz @ 25°C 5M 16QAM CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.8	25	707.499999	-1.00	1768.75
12.0	25	707.499998	0.00	1768.75
10.2	25	707.499993	5.00	1768.75
4.2 (End Point)	25	707.499991	7.00	1768.75

Reference Frequency: LTE B12 Mid Channel 707.5 MHz @ 25°C 10M QPSK CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25.00	707.500003	-2.00	1768.75
12.0	25.00	707.500001	0.00	1768.75
10.8	25.00	707.499999	2.00	1768.75
4.2 (End Point)	25.00	707.499996	5.00	1768.75

Reference Frequency: LTE B12 Mid Channel 707.5 MHz @ 25°C 10M 16QAM CH 23090				
Limit: +/- 2.5 ppm = 1768.75 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
13.2	25	707.500002	-1.00	1768.75
12.0	25	707.500001	0.00	1768.75
10.8	25	707.499998	3.00	1768.75
4.2 (End Point)	25	707.499997	4.00	1768.75

*~ End of Report ~*

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