



**FCC CFR47 PART 27 SUBPART C  
CERTIFICATION TEST REPORT  
FOR  
CELLULAR/ PCS CDMA AND LTE PHONE WITH BLUETOOTH & WLAN**

**MODEL NUMBER: VS840, LG-VS840, LGVS840  
FCC ID: ZNFVS840**

**REPORT NUMBER: 11U14141-2, Revision B**

**ISSUE DATE: DECEMBER 28, 2011**

*Prepared for*

**LG ELECTRONICS MOBILECOMM U.S.A., INC.  
10101 OLD GROVE ROAD  
SAN DIEGO, CA 92131**

*Prepared by*

**COMPLIANCE CERTIFICATION SERVICES (UL CCS)  
47173 BENICIA STREET  
FREMONT, CA 94538, U.S.A.  
TEL: (510) 771-1000  
FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Issue		
Rev.	Date	Revisions	Revised By
---	12/05/11	Initial Issue	T. Chan
A	12/15/11	Removed Average Power data from report.	A. Zaffar
B	12/28/11	Added data to the report	M. Menkuria

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS.....</b>	<b>4</b>
<b>2. TEST METHODOLOGY .....</b>	<b>5</b>
<b>3. FACILITIES AND ACCREDITATION.....</b>	<b>5</b>
<b>4. CALIBRATION AND UNCERTAINTY .....</b>	<b>5</b>
4.1. MEASURING INSTRUMENT CALIBRATION .....	5
4.2. SAMPLE CALCULATION.....	5
4.3. MEASUREMENT UNCERTAINTY .....	5
<b>5. EQUIPMENT UNDER TEST .....</b>	<b>6</b>
5.1. DESCRIPTION OF EUT.....	6
5.2. MAXIMUM OUTPUT POWER.....	6
5.3. SOFTWARE AND FIRMWARE.....	6
5.4. WORST-CASE CONFIGURATION AND MODE.....	7
5.5. DESCRIPTION OF TEST SETUP.....	8
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>11</b>
<b>7. RF POWER OUTPUT VERIFICATION .....</b>	<b>12</b>
7.1. RF POWER OUTPUT FOR LTE BAND 13 .....	12
<b>8. CONDUCTED TEST RESULTS.....</b>	<b>13</b>
8.1. OCCUPIED BANDWIDTH.....	13
8.2. BAND EDGE .....	18
8.3. OUT OF BAND EMISSIONS .....	35
8.4. FREQUENCY STABILITY.....	50
<b>9. RADIATED TEST RESULTS .....</b>	<b>52</b>
9.1. RADIATED POWER (ERP).....	52
9.2. FIELD STRENGTH OF SPURIOUS RADIATION .....	61
<b>10. SETUP PHOTOS .....</b>	<b>74</b>

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS MOBILECOMM U.S.A., INC.  
10101 OLD GROVE ROAD  
SAN DIEGO, CA 92131

**EUT DESCRIPTION:** CELLULAR/ PCS CDMA AND LTE PHONE WITH BLUETOOTH  
AND WLAN

**MODEL:** VS840, LG-VS840, LGVS840

**SERIAL NUMBER:** D92

**DATE TESTED:** NOVEMBER 27-30 and DECEMBER 1-18, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 27 C	Pass

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

Tested By:



THU CHAN  
ENGINEERING MANAGER  
UL CCS

CHIN PANG  
EMC ENGINEER  
UL CCS

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, and FCC CFR 47 Part 27.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a smart-phone that features Cellular/ PCS CDMA and PCS LTE with Bluetooth and WLAN.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak ERP output powers as follows:

Part 27 LTE Band 13

Frequency range (MHz)	Modulation	Conducted		ERP		
		dBm	mW	dBm	dBm	mW
782	QPSK	29.40	871.0	Standard Cover	26.40	436.5
				Inductive Cover	25.12	325.1
				Inductive Charger	20.96	124.7
782	16QAM	28.96	787.0	Standard Cover	26.60	457.1
				Inductive Cover	25.14	326.6
				Inductive Charger	20.80	120.2

### 5.3. SOFTWARE AND FIRMWARE

The EUT is linked with ANRITSU Test Set.

#### **5.4. WORST-CASE CONFIGURATION AND MODE**

The worst-case is EUT on the highest power. Based on Peak Power measurement investigations, the following modes should be considered as worst-case scenario for all other measurements

Worst-case modes:

- LTE Band 13, QPSK and 16QAM

The EUT is a portable device, to determine the worst case, X Y and Z position and EUT with AC Adapter and earphone has been investigated for the maximum power and the worst-case is determined to be at Y position without AC Adapter.

## 5.5. DESCRIPTION OF TEST SETUP

### I/O CABLES (RF CONDUCTED TEST)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	RFOut	1	Directional Coupler	Un-shielded	0.1m	NA
2	RF In/Out	1	Spectrum Analyzer	Un-shielded	None	NA
3	RF In/Out	1	Communications Test Set	Un-shielded	1.2m	NA

### I/O CABLES (RF RADIATED TEST)

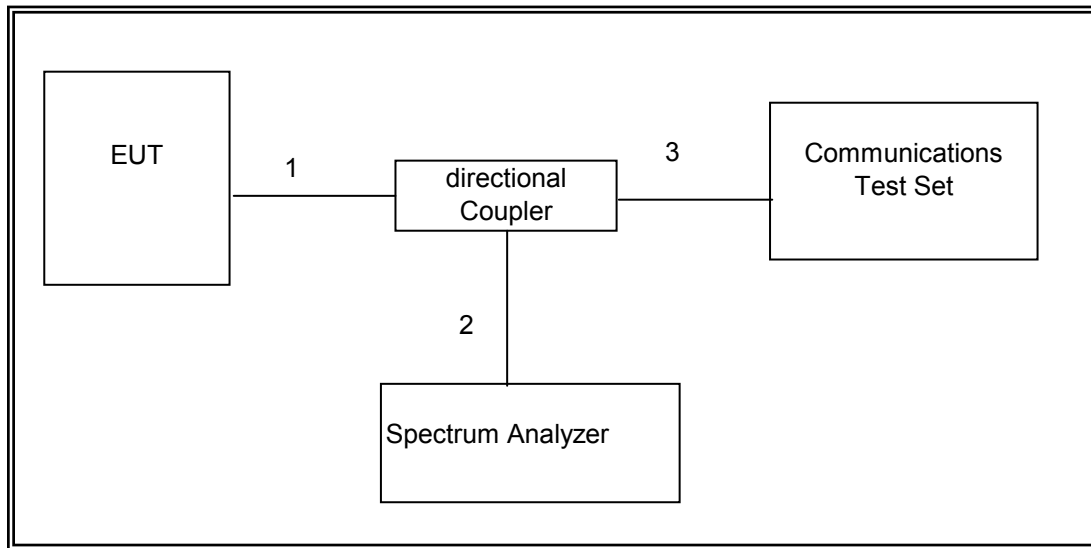
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	US 115V	Un-shielded	2m	NA
2	DC	1	US 115V	Un-shielded	1m	NA
3	Jack	1	Earphone	Un-shielded	0.5m	NA
4	RF In/Out	1	Antenna	Un-shielded	none	NA

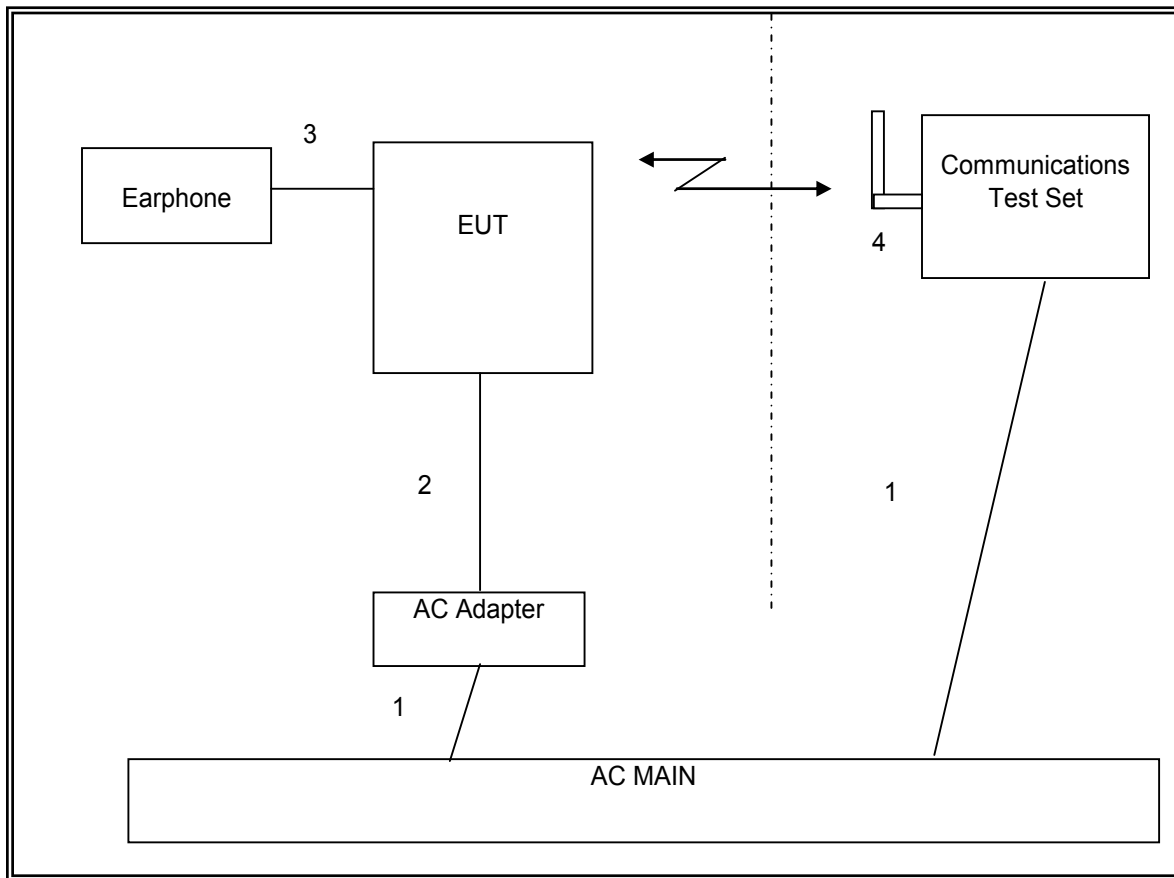
### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	Manufacturer	Model	Serial Number
Earphone	LG	NA	NA
AC Adaptor	LG	NMCS-02WR	RA190000023

### TEST SETUP

The EUT is a stand-alone device. The Wireless Communication test set exercised the EUT.

**SETUP DIAGRAM FOR RF CONDUCTED TESTS**

**SETUP DIAGRAM FOR RADIATED TESTS**

## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/30/12
Antenna, Horn, 18 GHz	EMCO	3115	C00872	06/29/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/27/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12
Wideband Communication Test Set	Anritsu	MT8820C	None	06/17/12
Communication Test Set	R & S	CMW500	N/A	01/25/12
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	10/20/12
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Directional Coupler	RF-Lambda	RFDC5M06G15	NA	CNR
Signal Generator, 20 GHz	Agilent / HP	83732B	C00774	07/14/12
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	07/10/12

## 7. RF POWER OUTPUT VERIFICATION

### 7.1. RF POWER OUTPUT FOR LTE BAND 13

#### 10MHz Bandwidth

Part 27 LTE Band 13				
Frequency range (MHz)	MODE	Start RB Offset	Peak	
			dBm	mW
782	QPSK	RB1-0	27.95	623.7
		RB1-49	27.50	562.3
		RB25-12	28.61	726.1
		RB50-0	<b>29.40</b>	871.0
782	16QAM	RB1-0	27.83	606.7
		RB1-49	27.38	547.0
		RB25-12	28.38	688.7
		RB50-0	<b>28.96</b>	787.0

## 8. CONDUCTED TEST RESULTS

### 8.1. OCCUPIED BANDWIDTH

#### RULE PART(S)

FCC: §2.1049

#### LIMITS

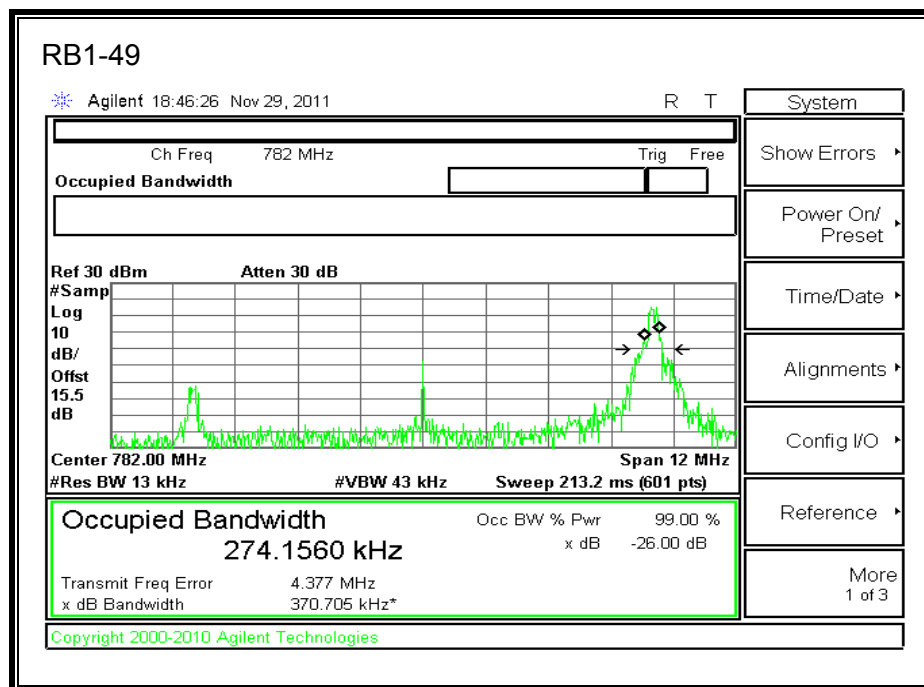
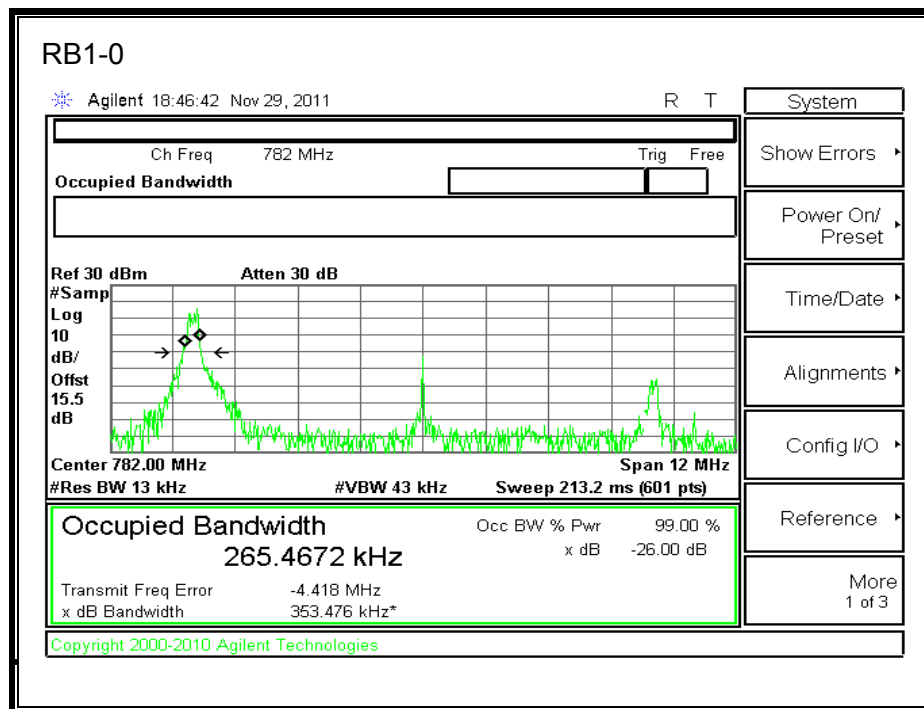
For reporting purposes only.

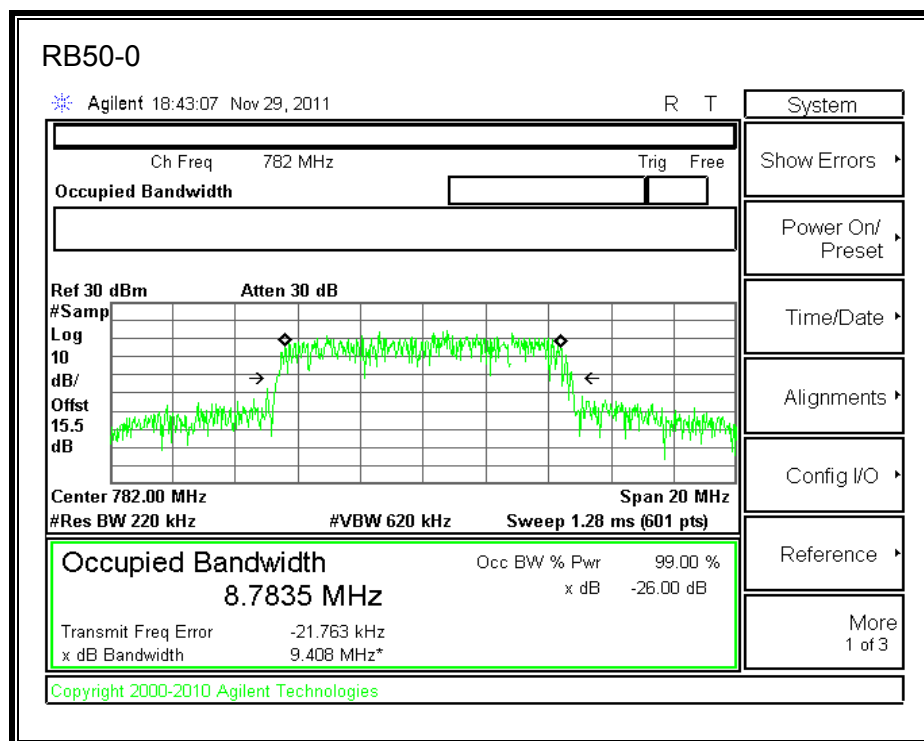
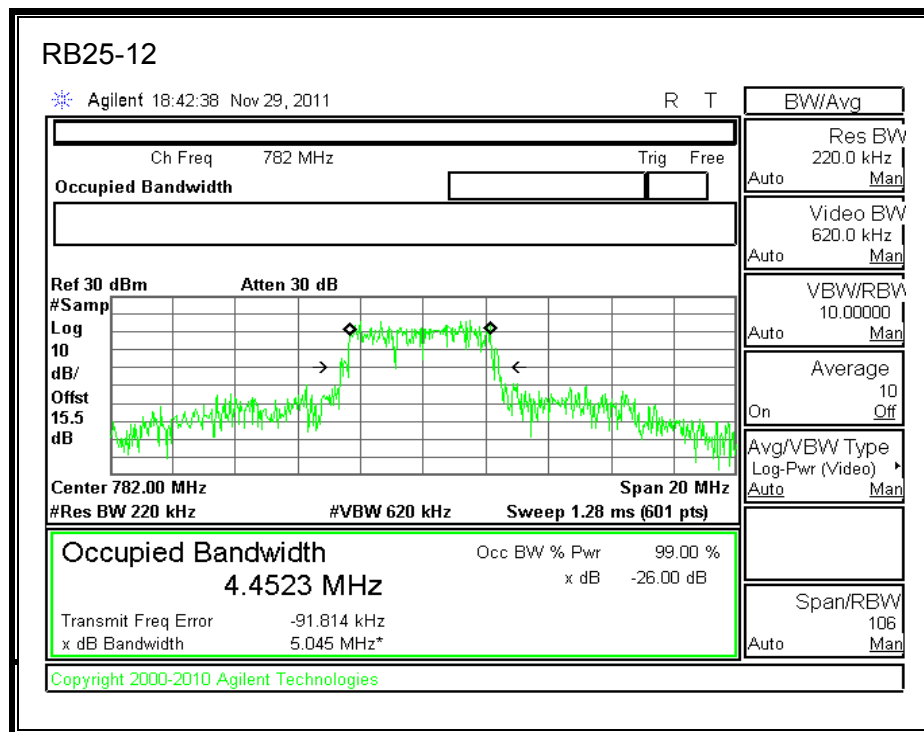
#### TEST PROCEDURE

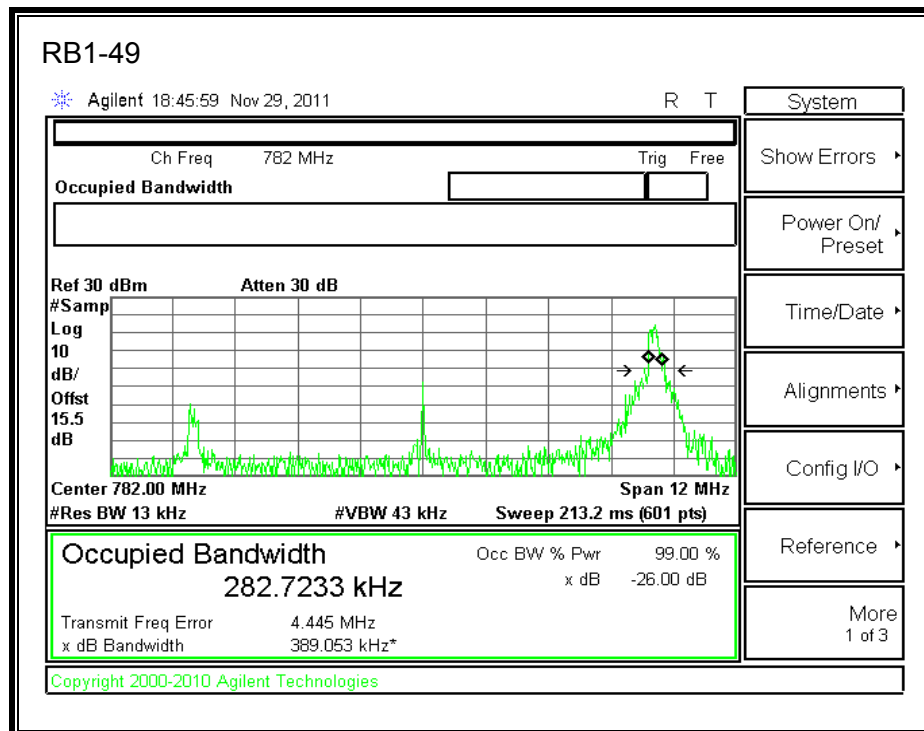
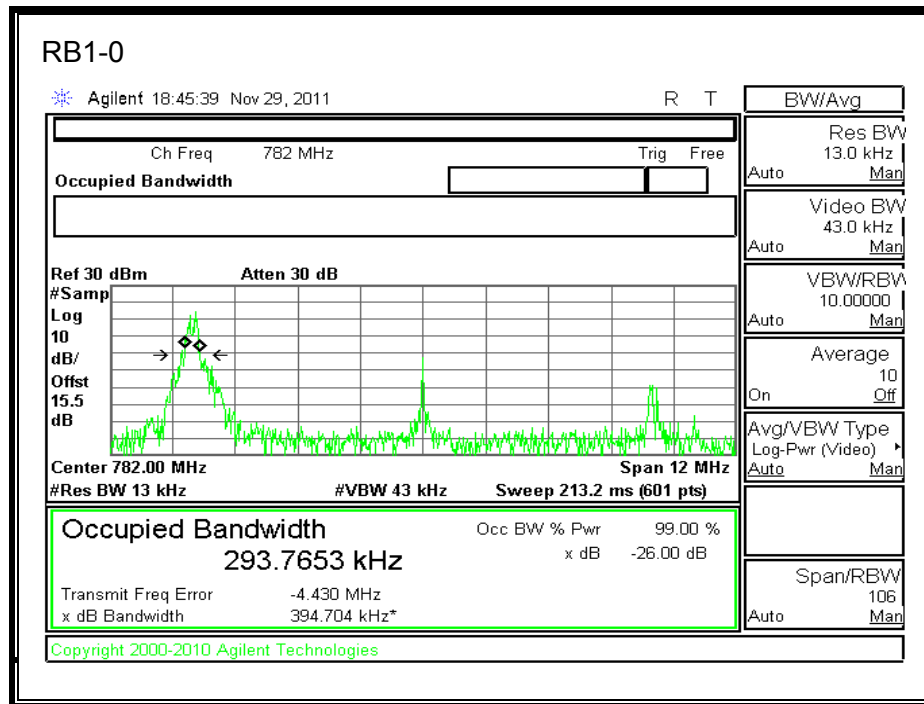
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

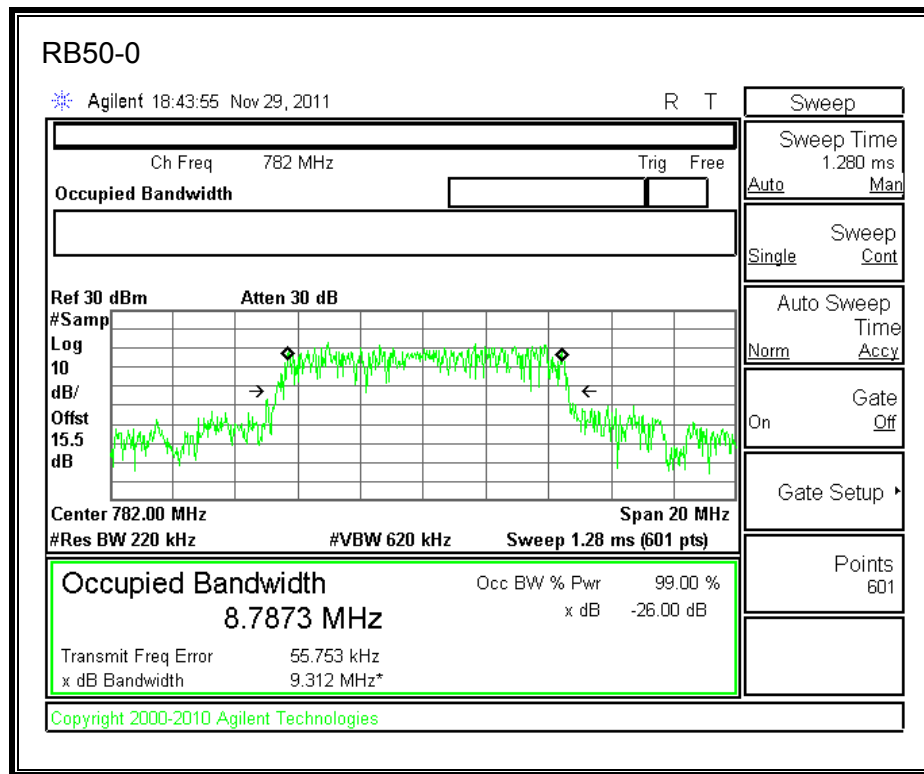
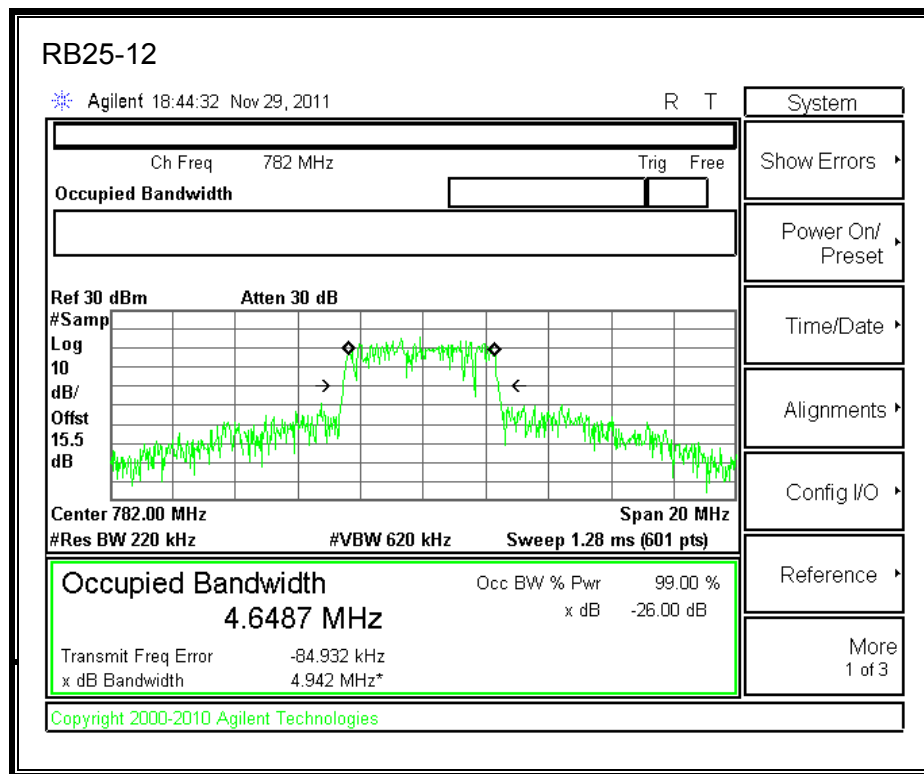
#### MODES TESTED:

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (KHz)
LTE	10 MHz BAND QPSK	1/0	782	265.4672	353.476
		1/49		274.1560	370.705
		25/12		4452.30	5045.00
		50/0		8783.50	9408.00
	10 MHz BAND 16QAM	1/0		293.7653	394.704
		1/49		282.7233	389.053
		25/12		4648.70	4942.00
		50/0		8787.30	9312.00

**LTE Band 13****Band 13 QPSK (10MHz Bandwidth)**



**Band 13 16QAM (10MHz Bandwidth)**



## **8.2. BAND EDGE**

### **RULE PART(S)**

FCC part 27.53(c)(2)

### **LIMITS**

On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;

On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.

### **TEST PROCEDURE**

The transmitter output was connected to an Anritsu Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

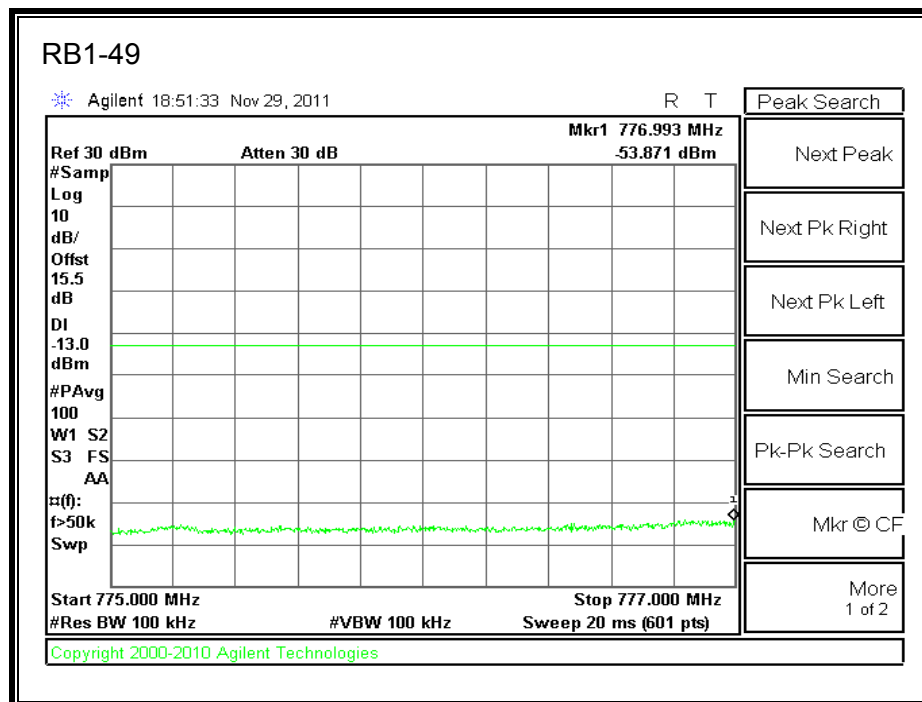
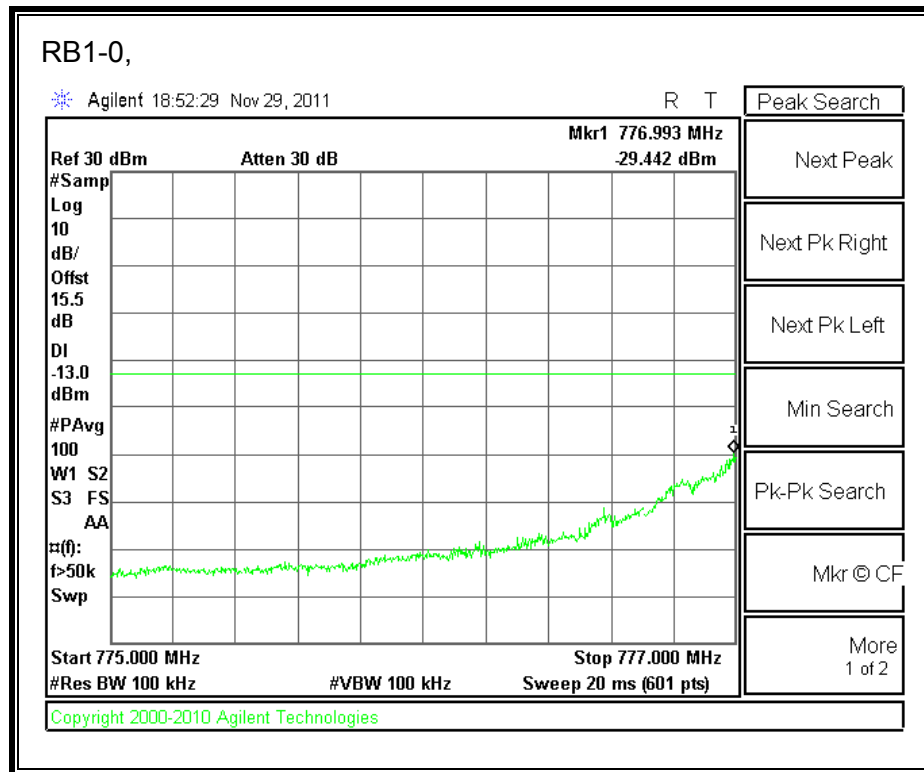
For each band edge measurement:

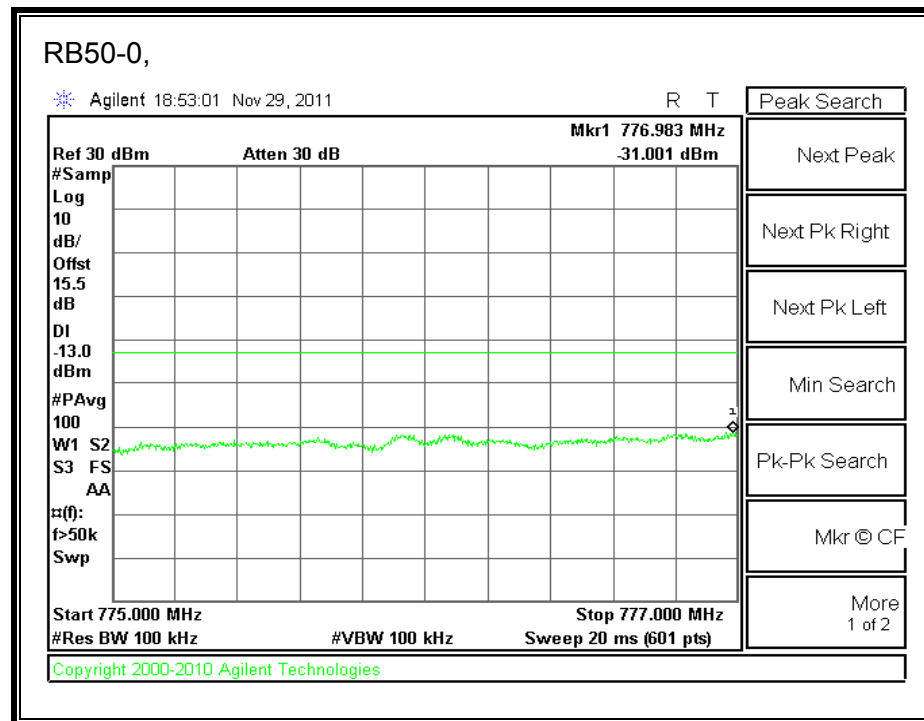
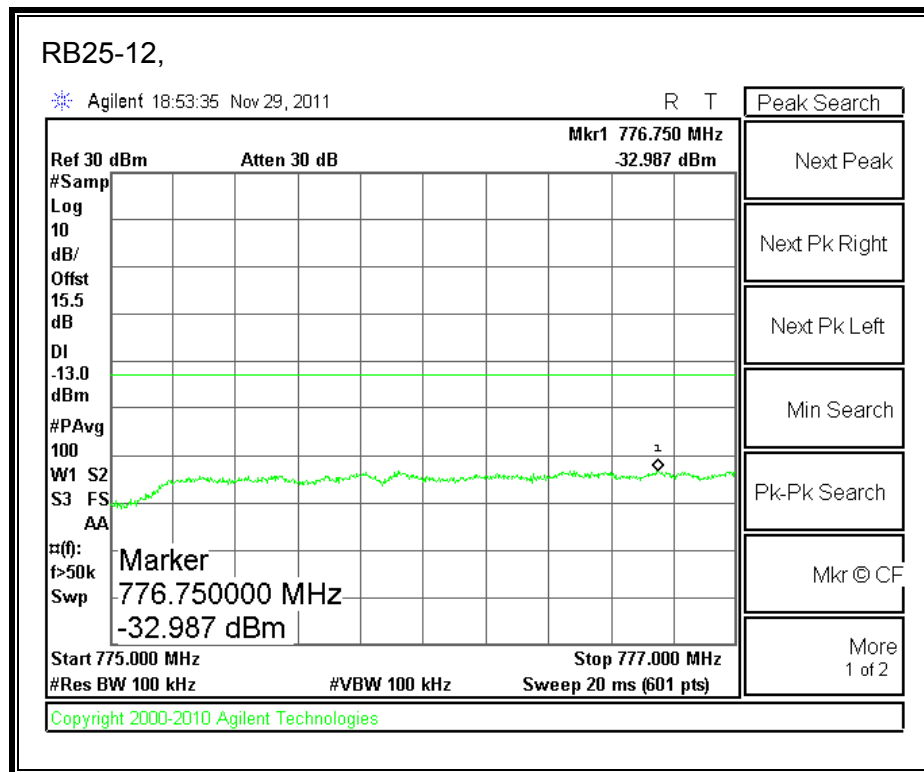
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

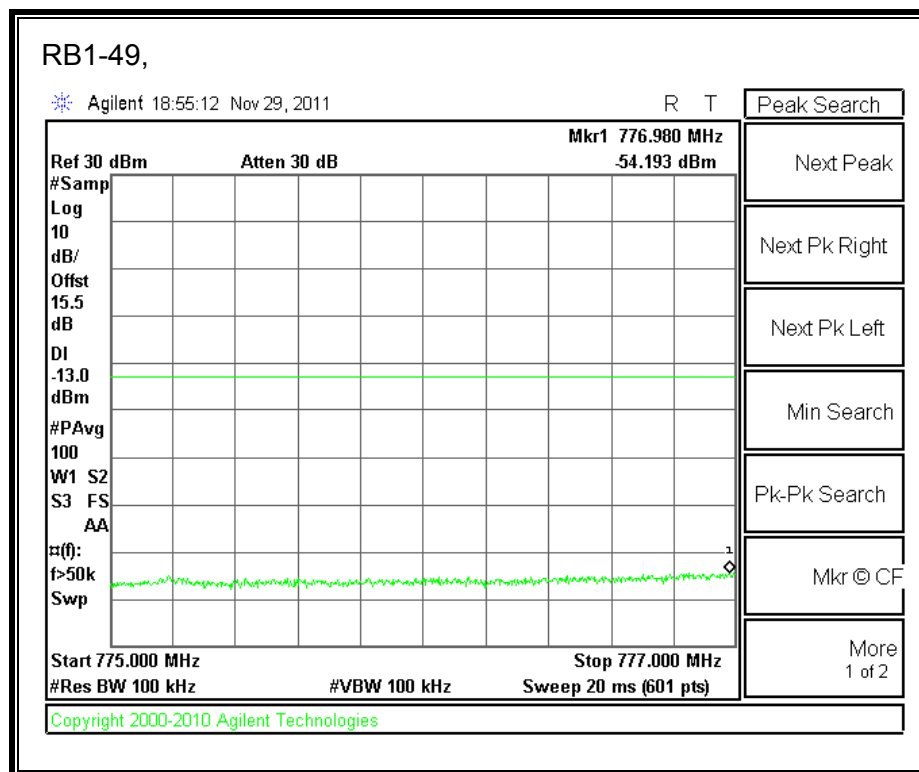
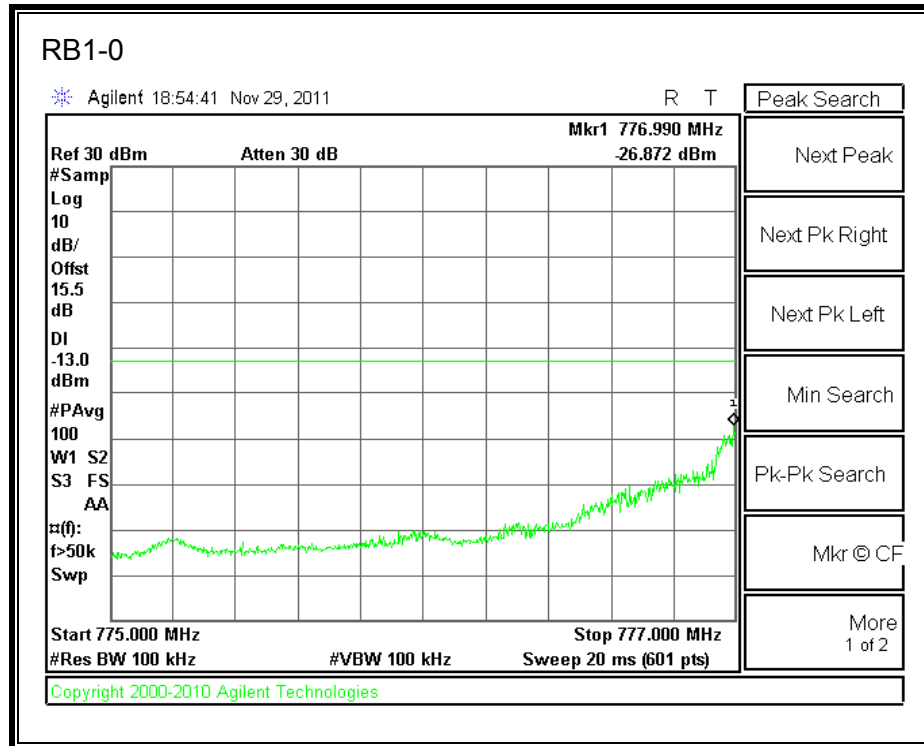
### **MODES TESTED**

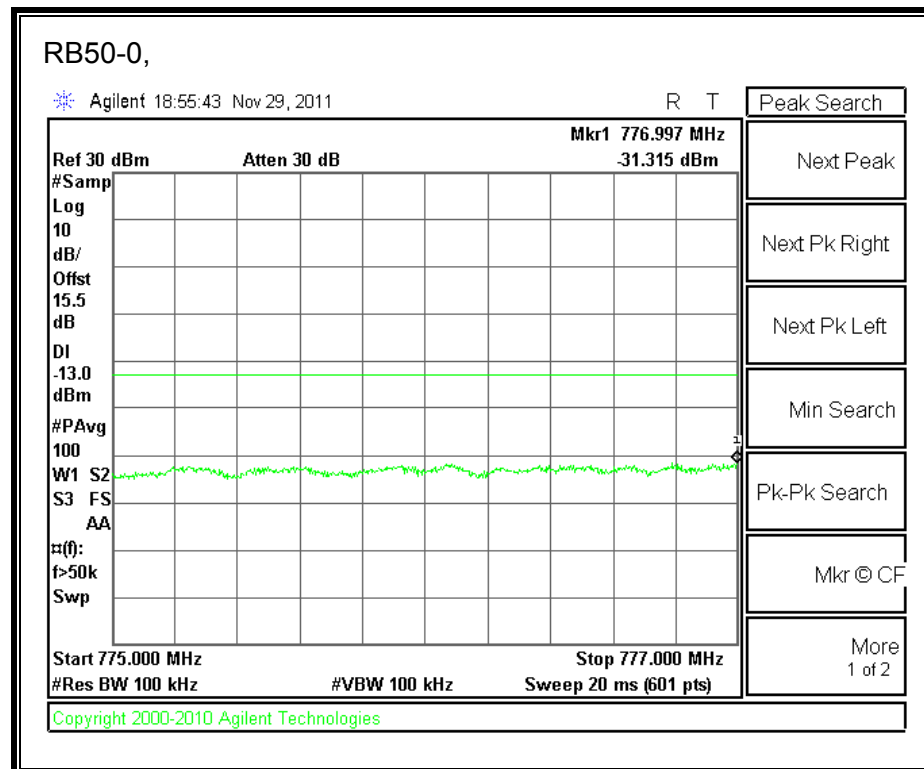
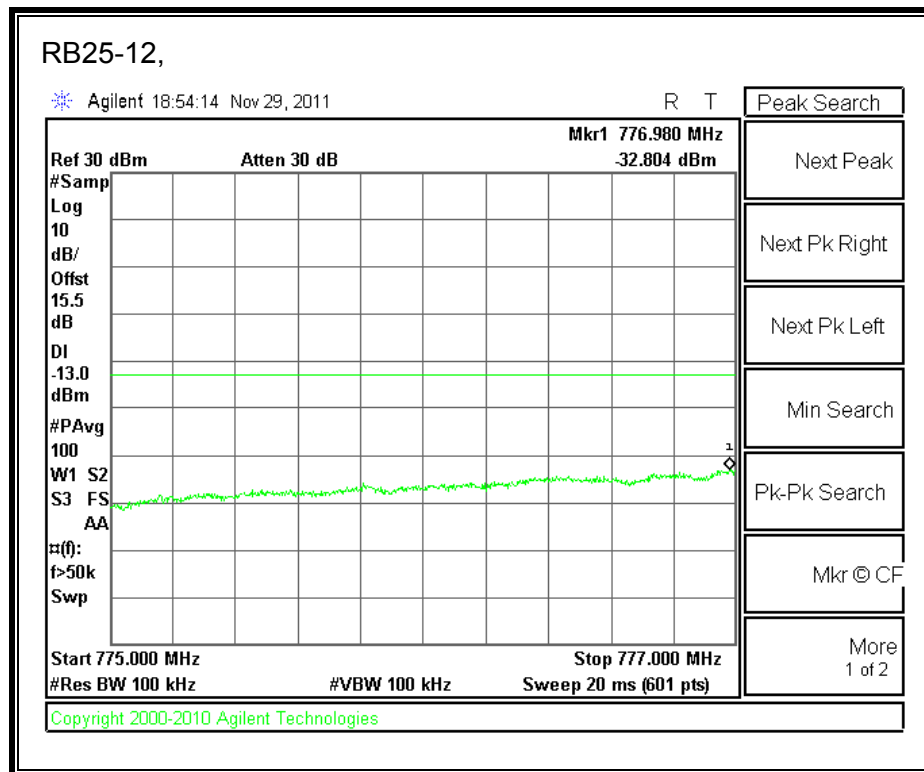
LTE BAND 13

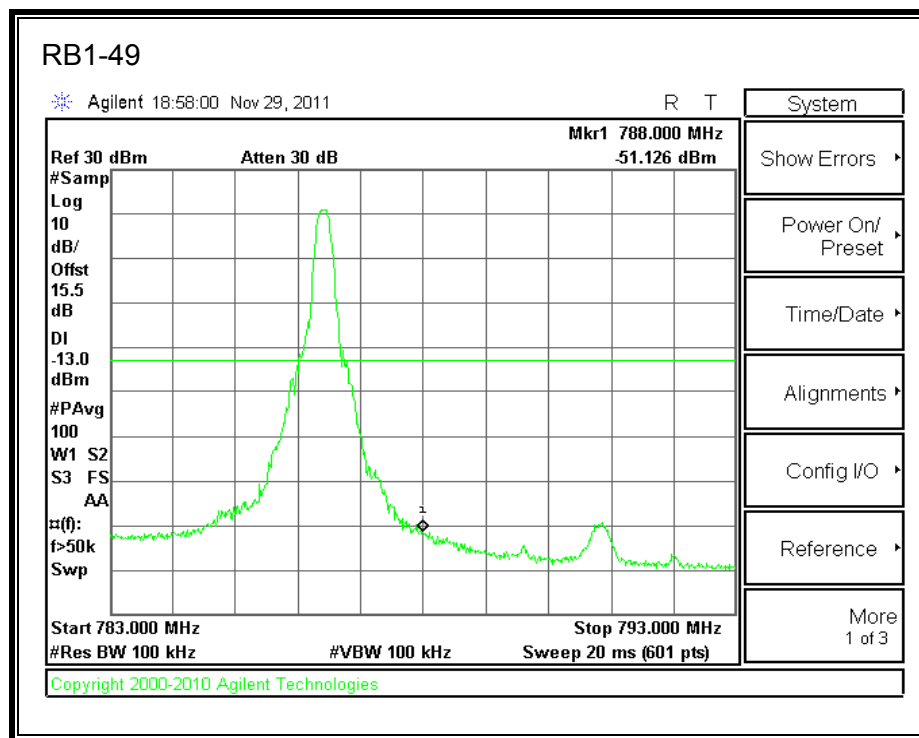
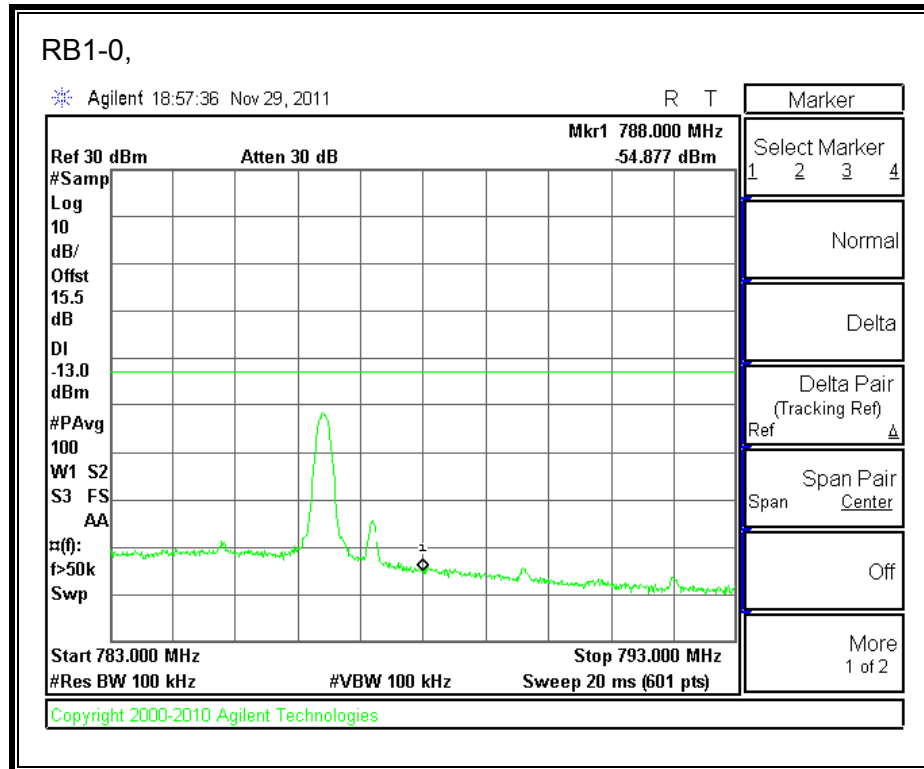
### **RESULTS**

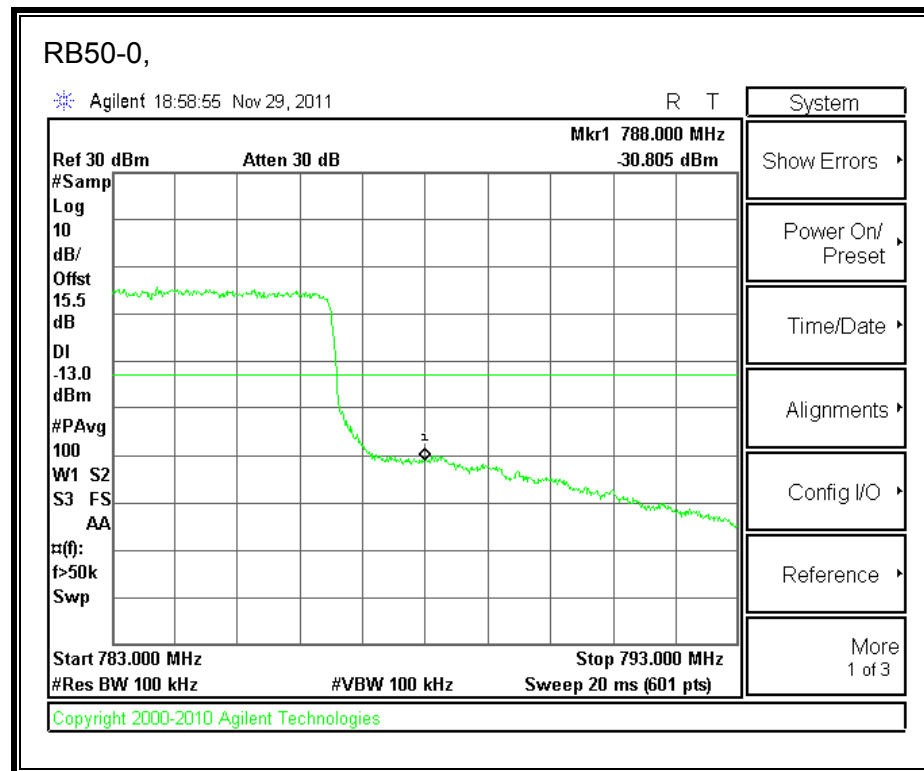
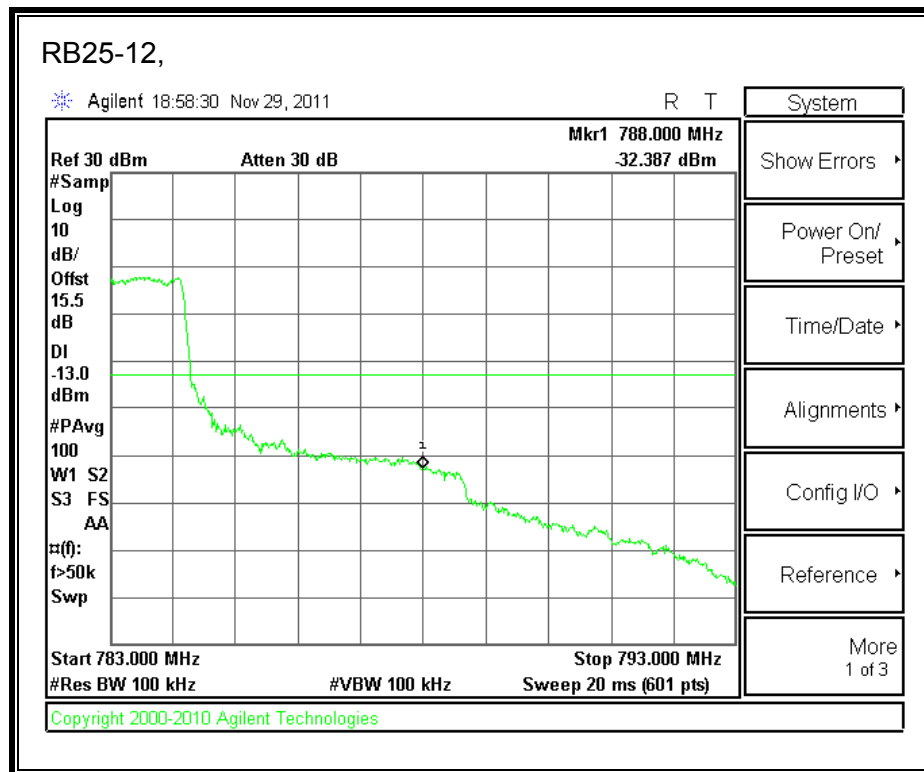
**LTE QPSK 782MHz Band 13, 775 - 777MHz (10MHz Bandwidth)**

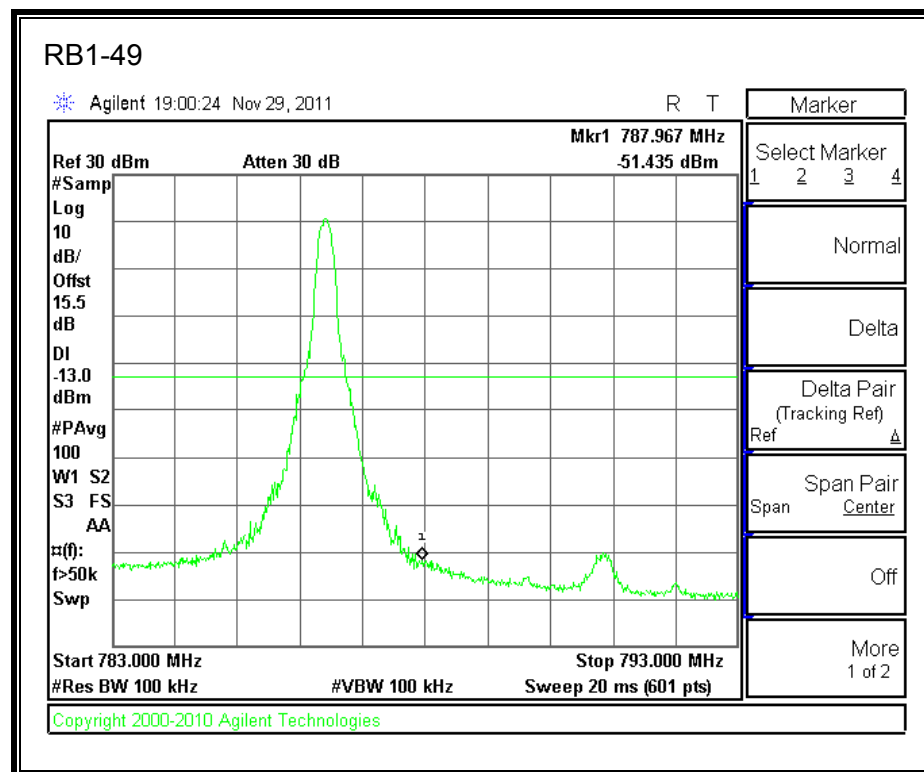
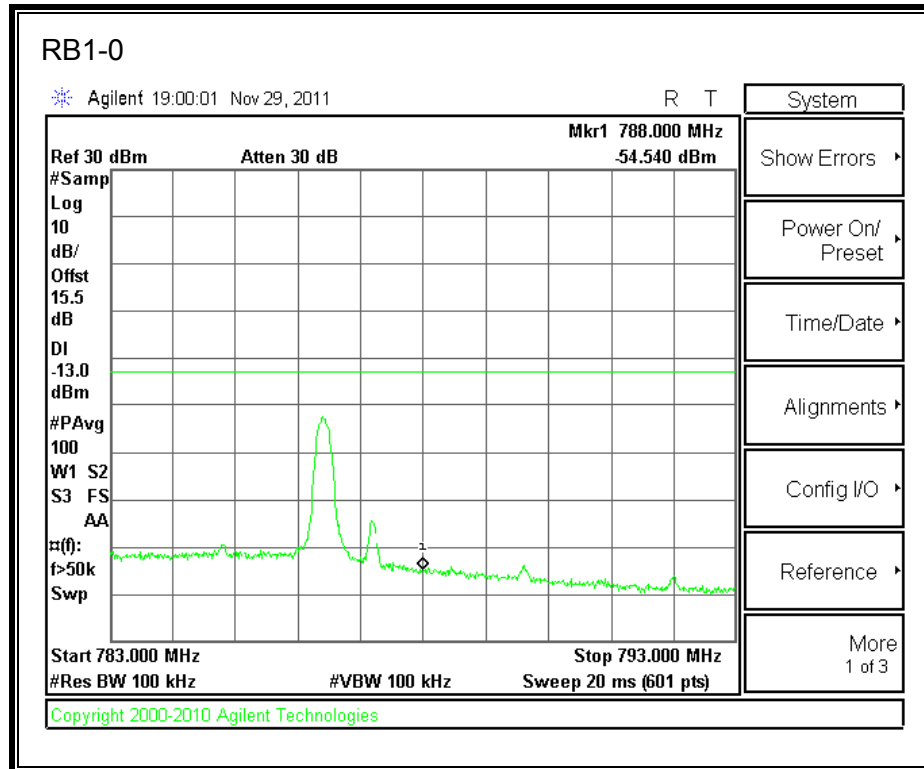


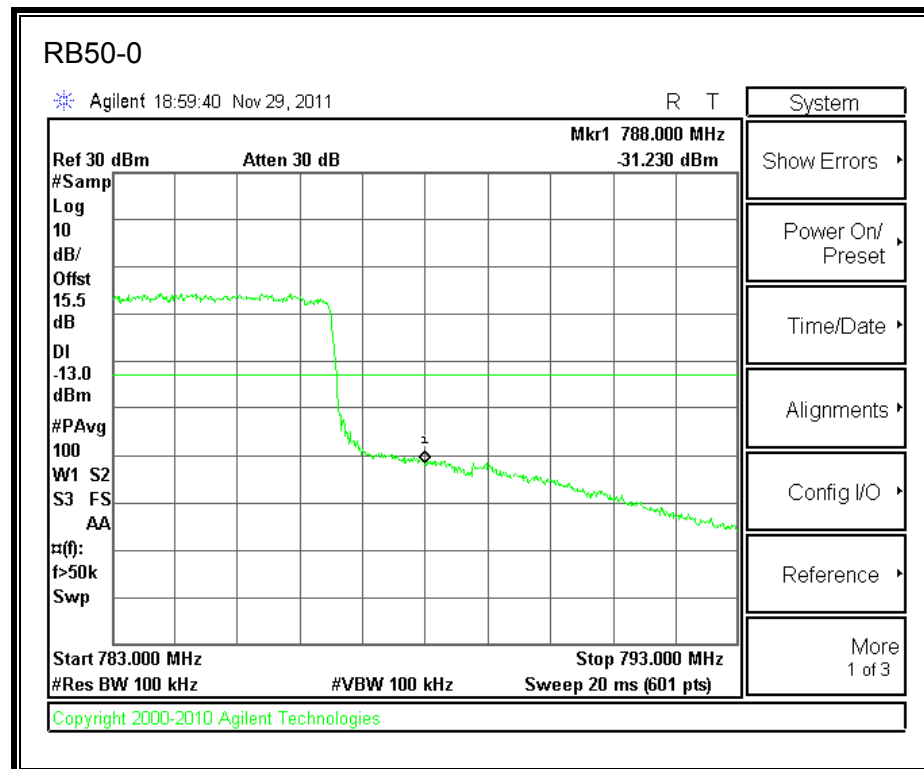
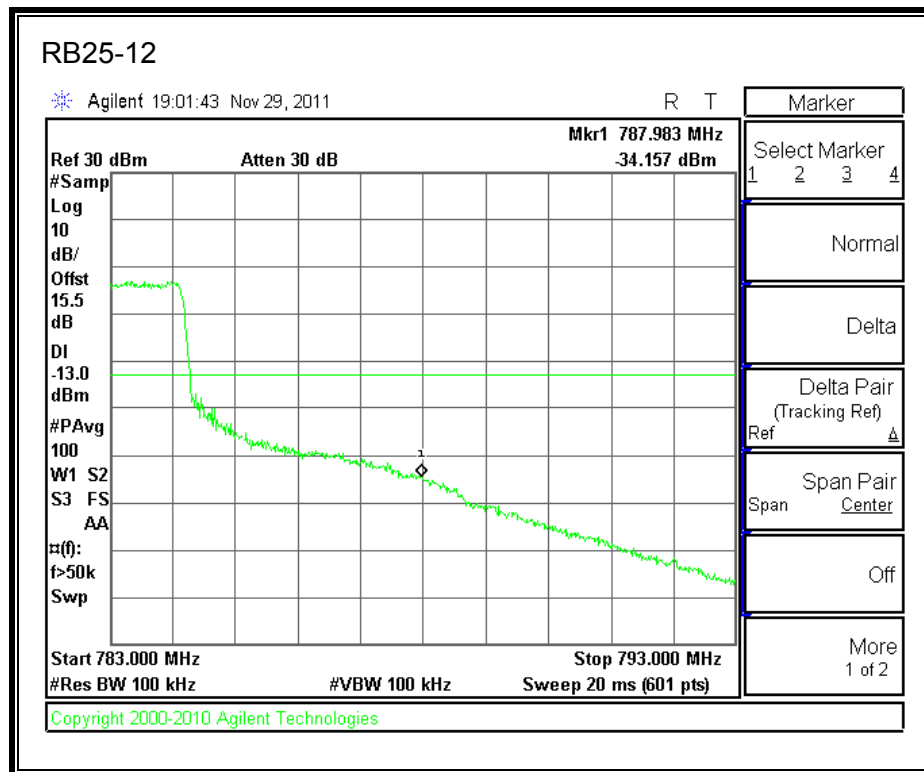
**LTE 16QAM Band 13, 775 - 777MHz (10MHz Bandwidth)**

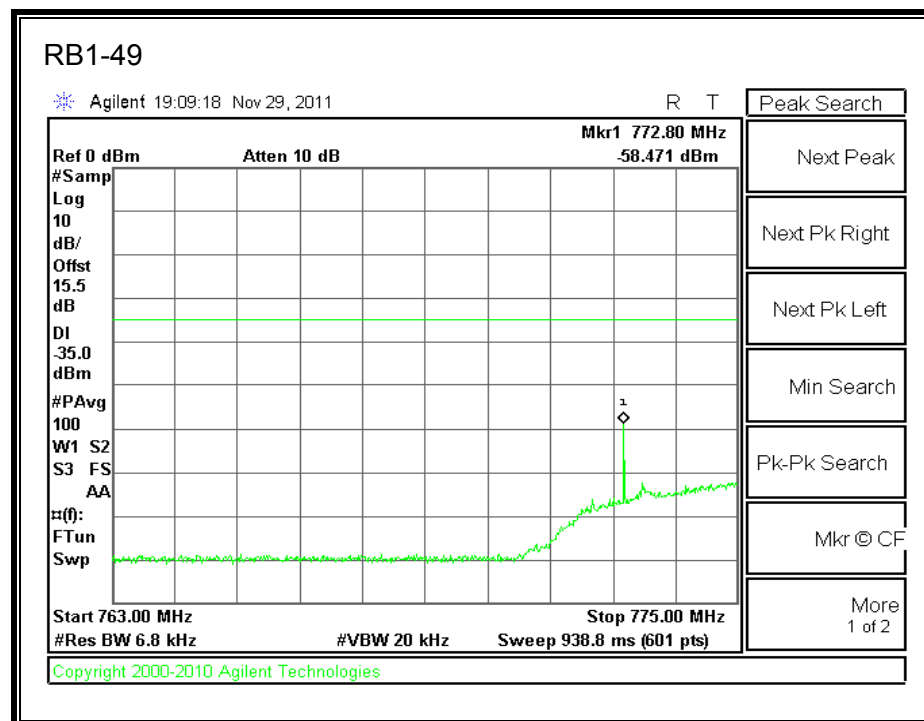
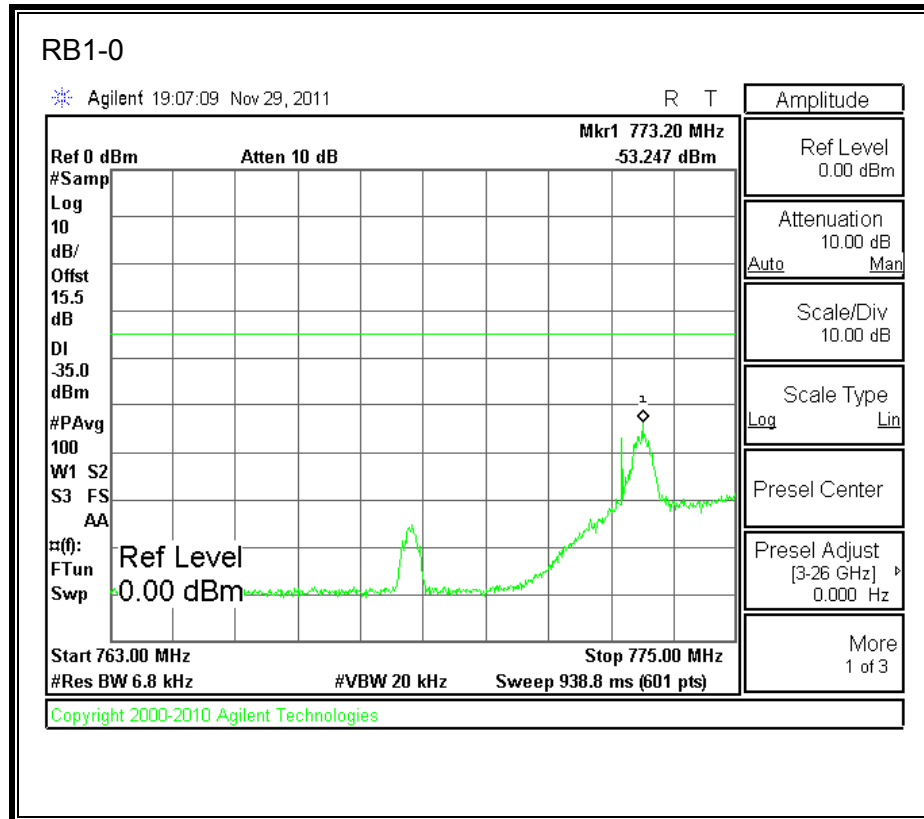


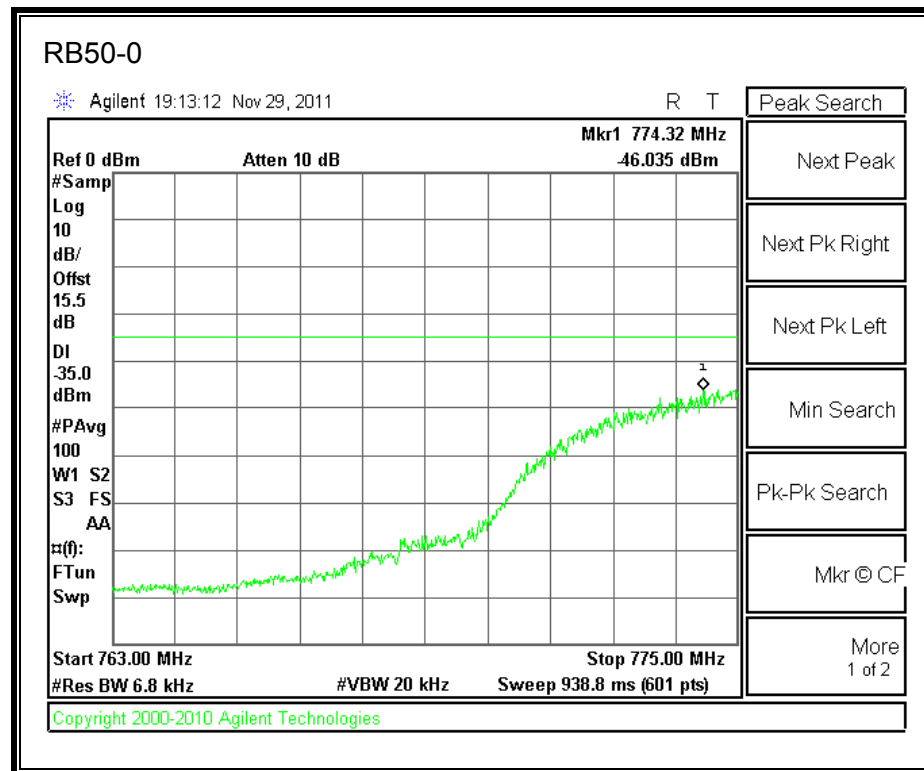
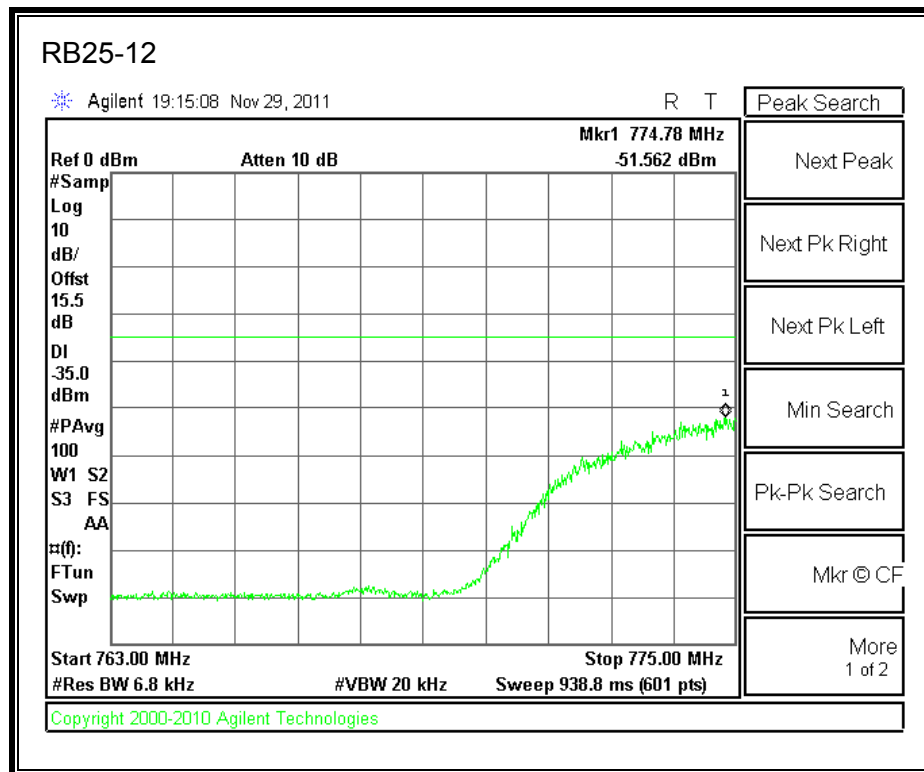
**LTE QPSK 782MHz Band 13, 783 - 793MHz (10MHz Bandwidth)**

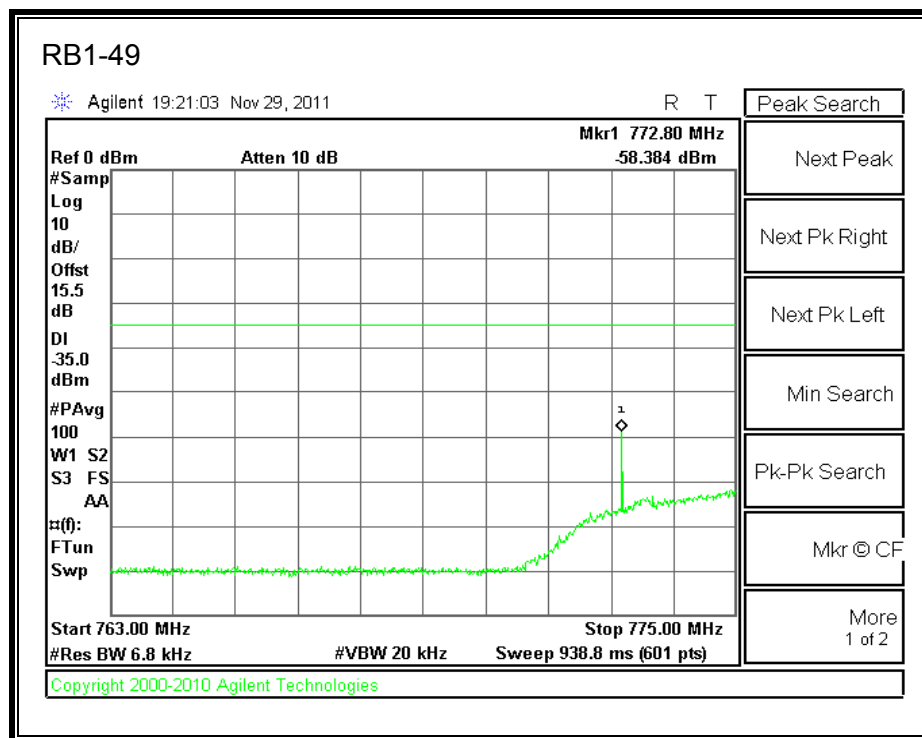
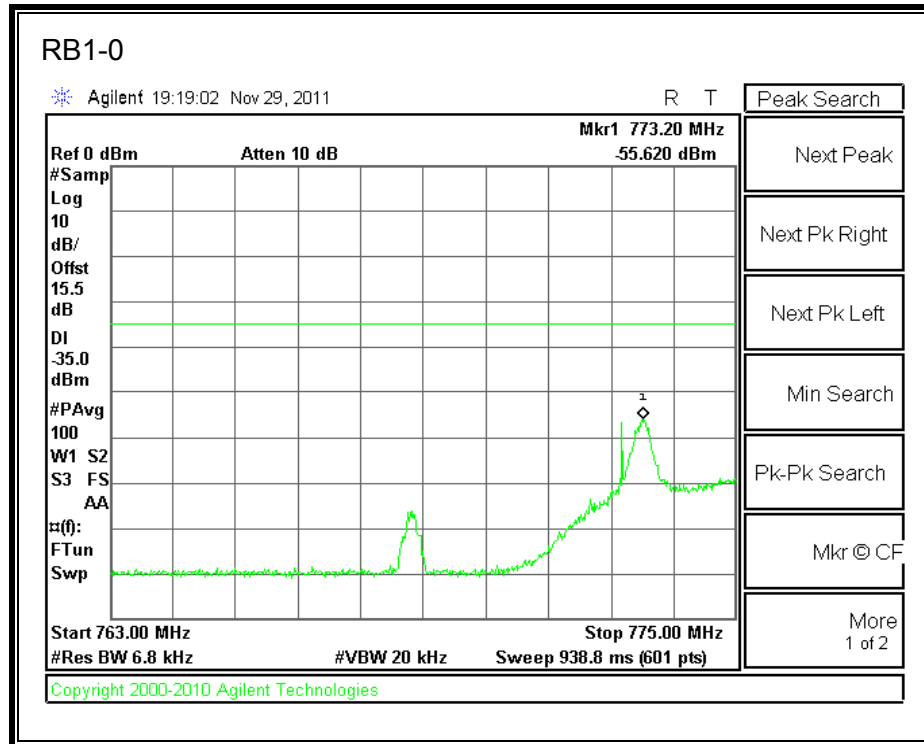


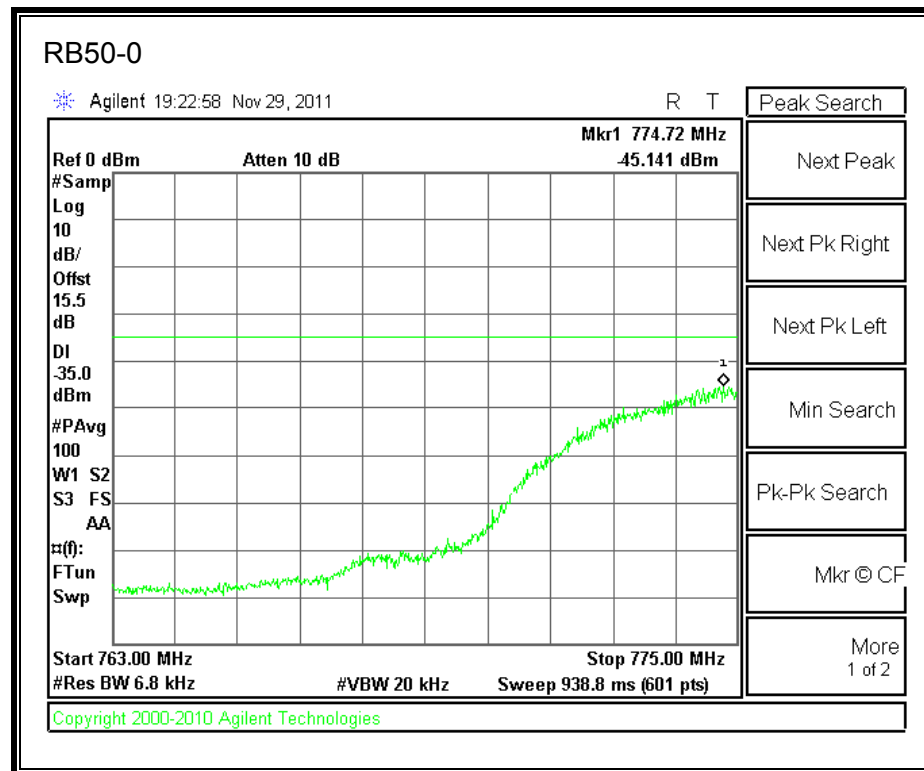
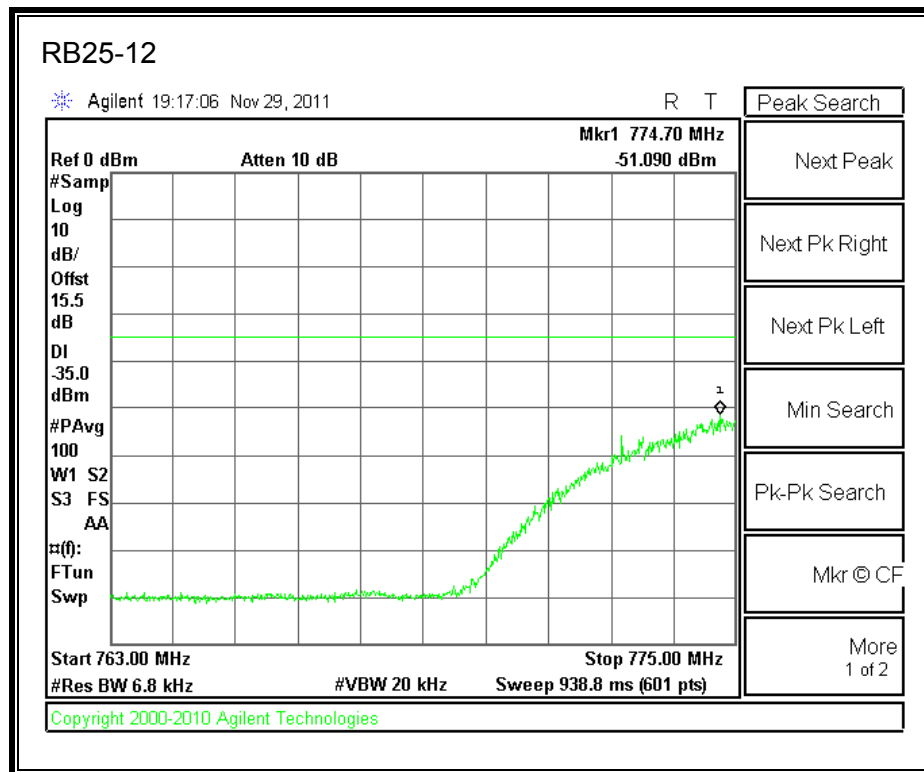
**LTE 16QAM Band 13, 782MHz 783 - 793MHz (10MHz Bandwidth)**

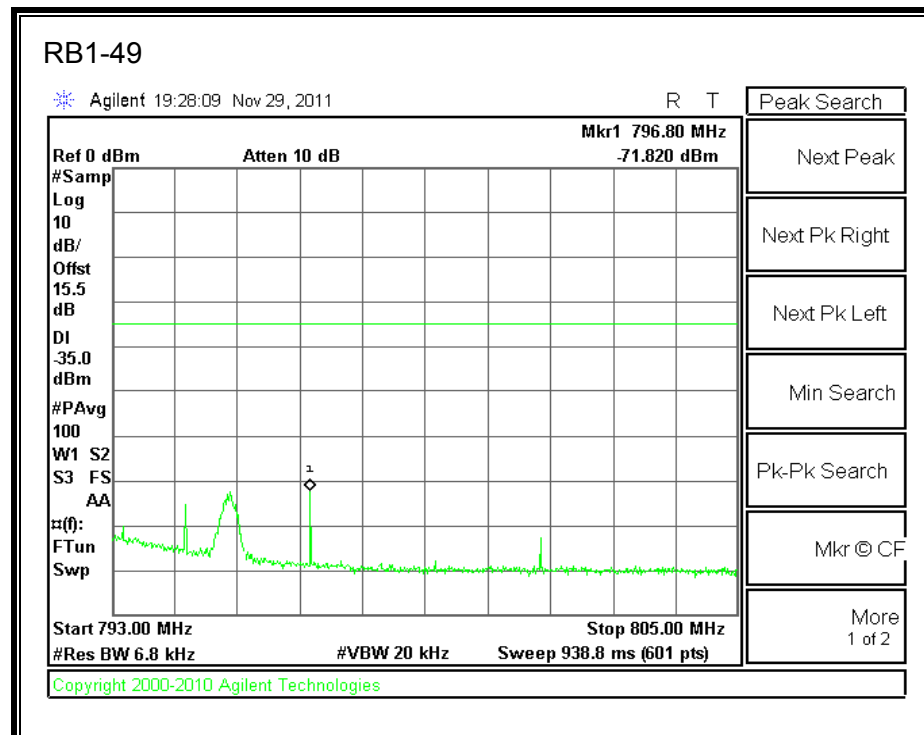
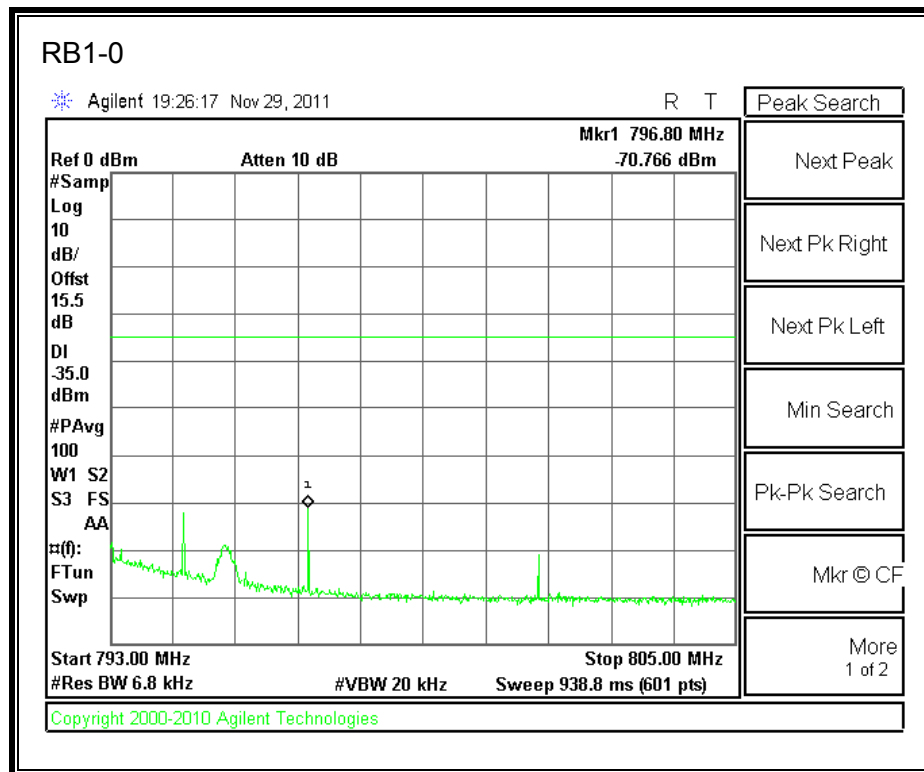


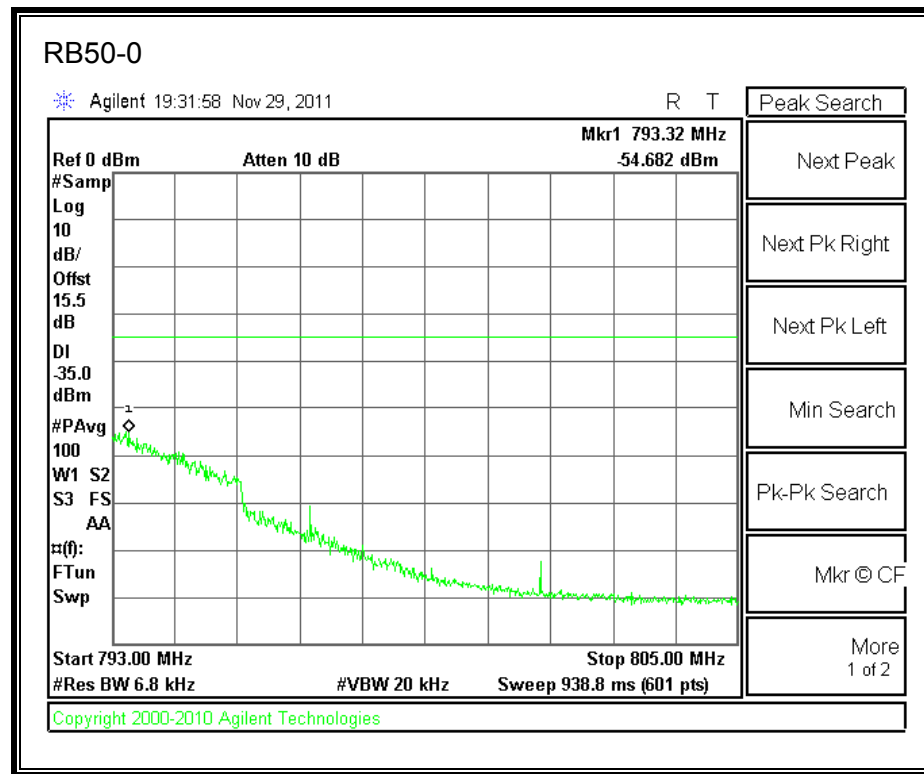
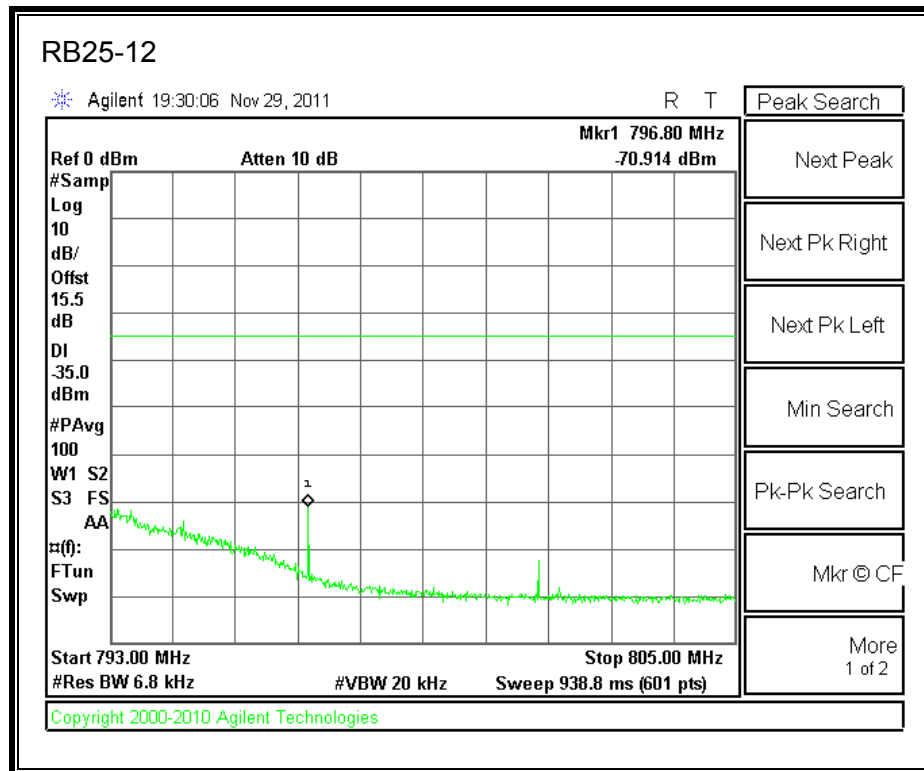
**LTE QPSK 782MHz Band 13, 763 - 775MHz (10MHz Bandwidth)**

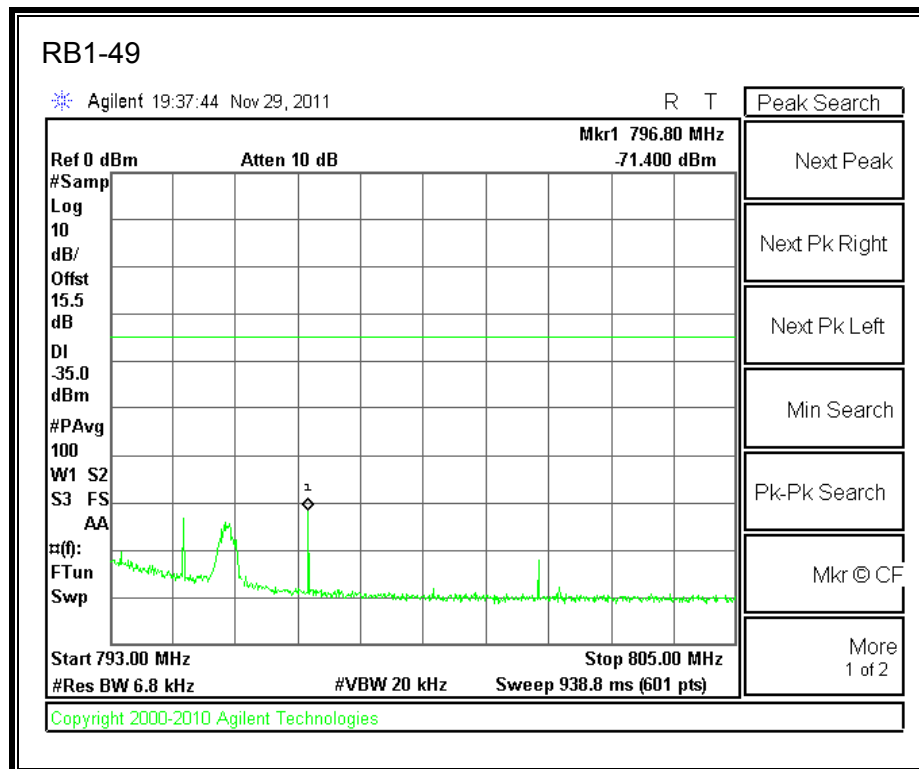
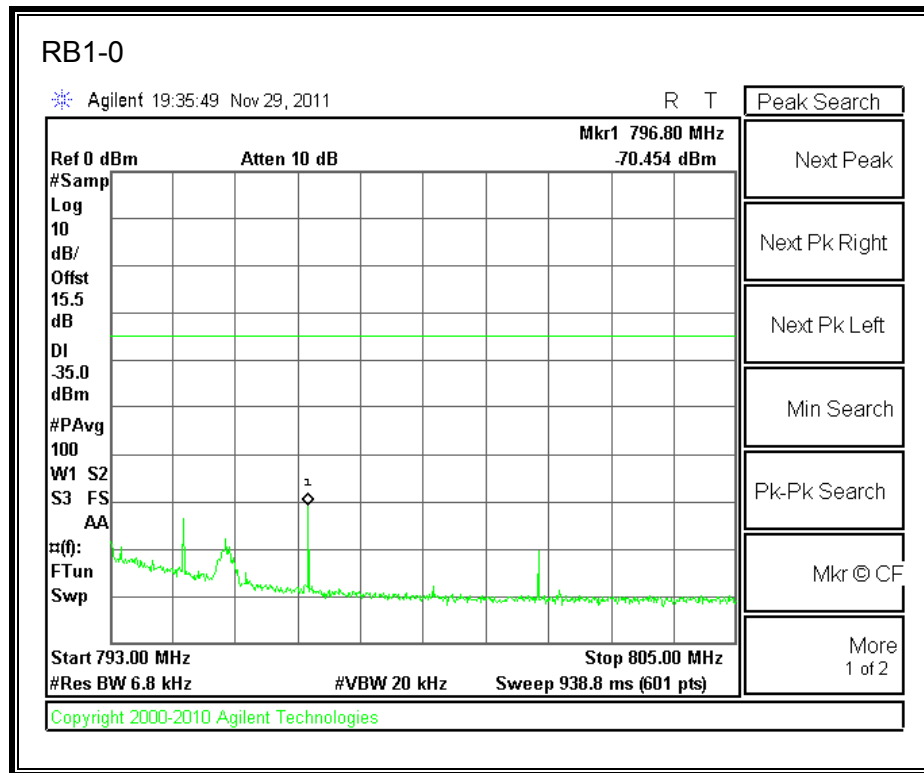


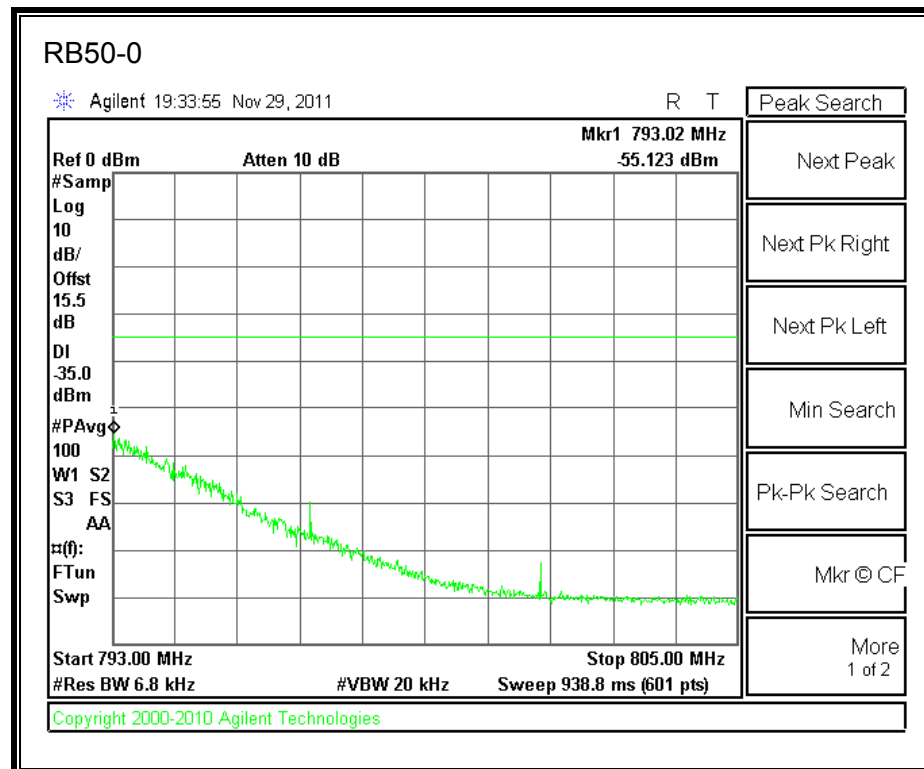
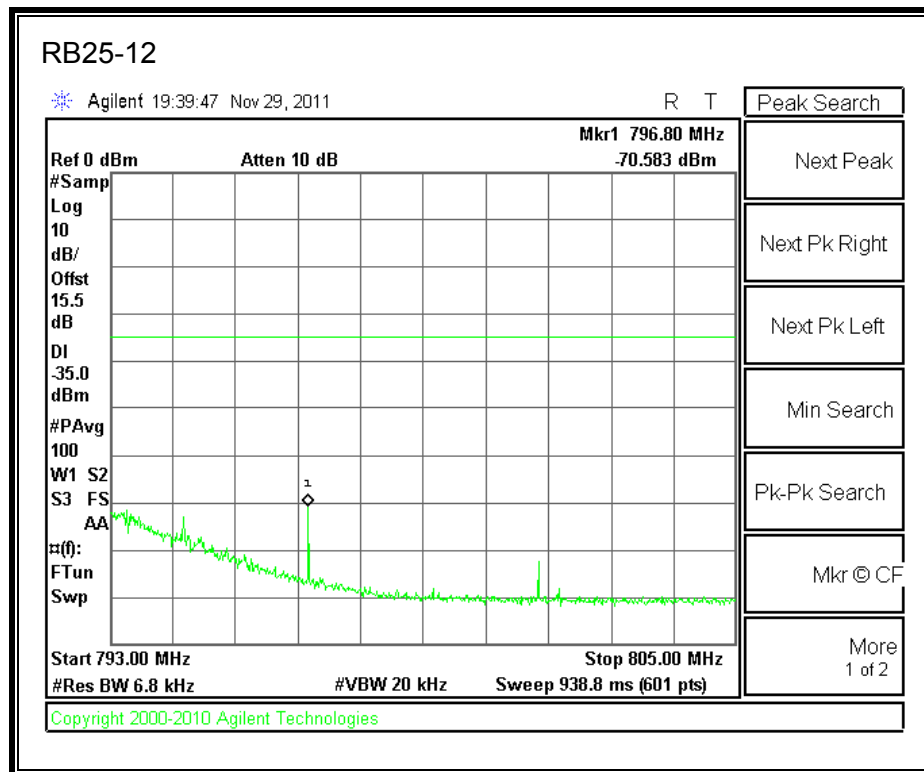
**LTE 16QAM Band 13, 782MHz 793 - 805MHz (10MHz Bandwidth)**



**LTE QPSK Band 13, 793 - 805MHz (10MHz Bandwidth)**



**LTE 16QAM Band 13, 793 - 805MHz (10MHz Bandwidth)**



### **8.3. OUT OF BAND EMISSIONS**

#### **RULE PART(S)**

FCC: §27.53

#### **LIMITS**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

#### **TEST PROCEDURE**

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

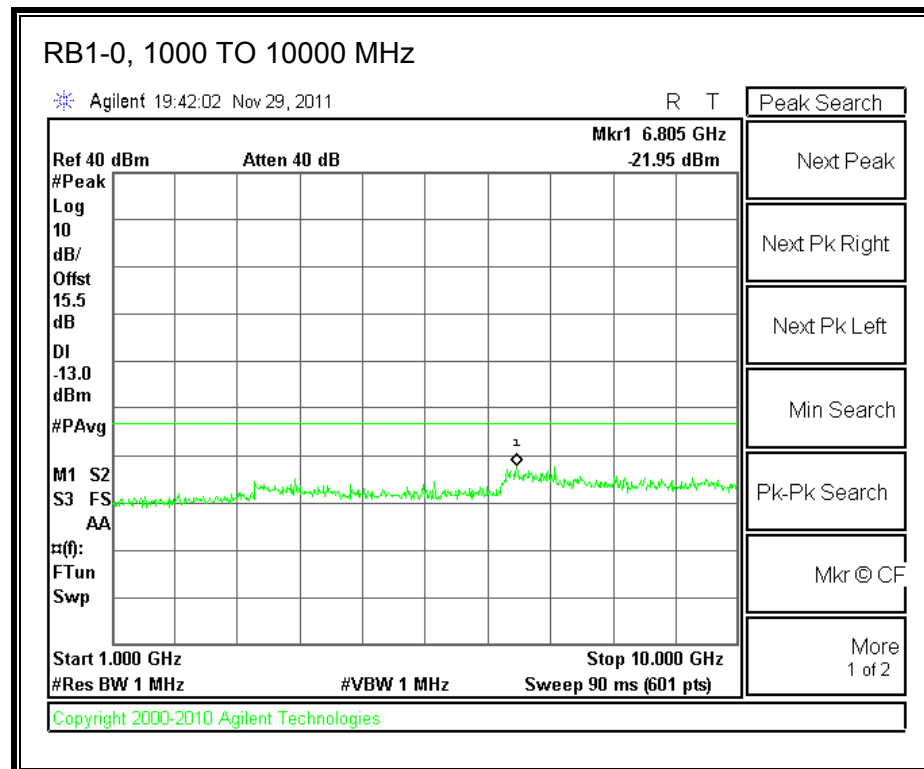
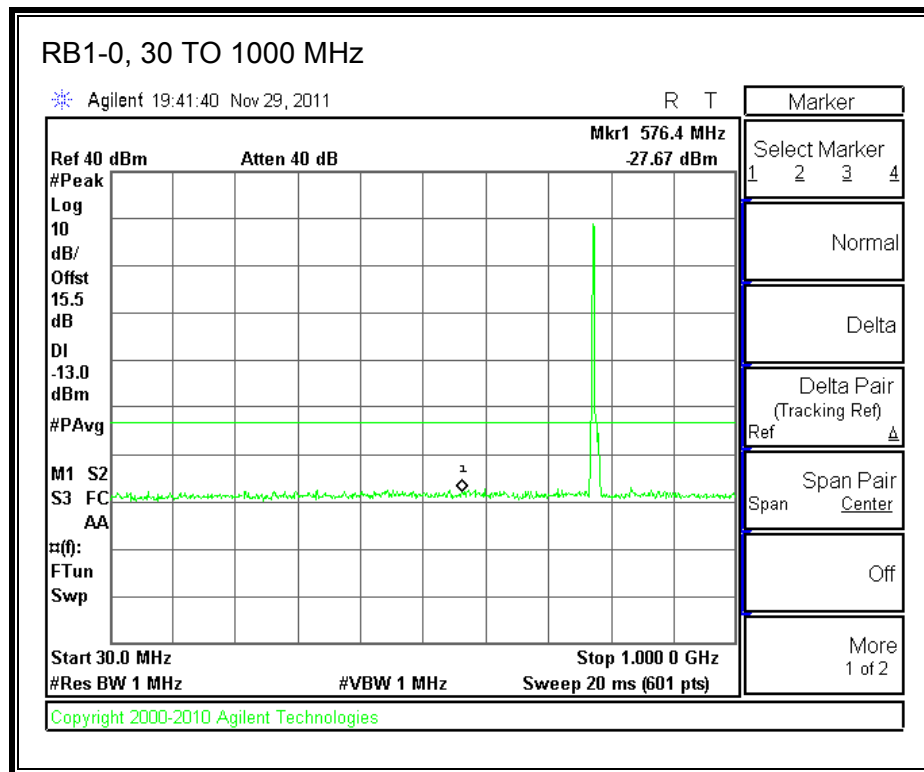
For each out of band emissions measurement:

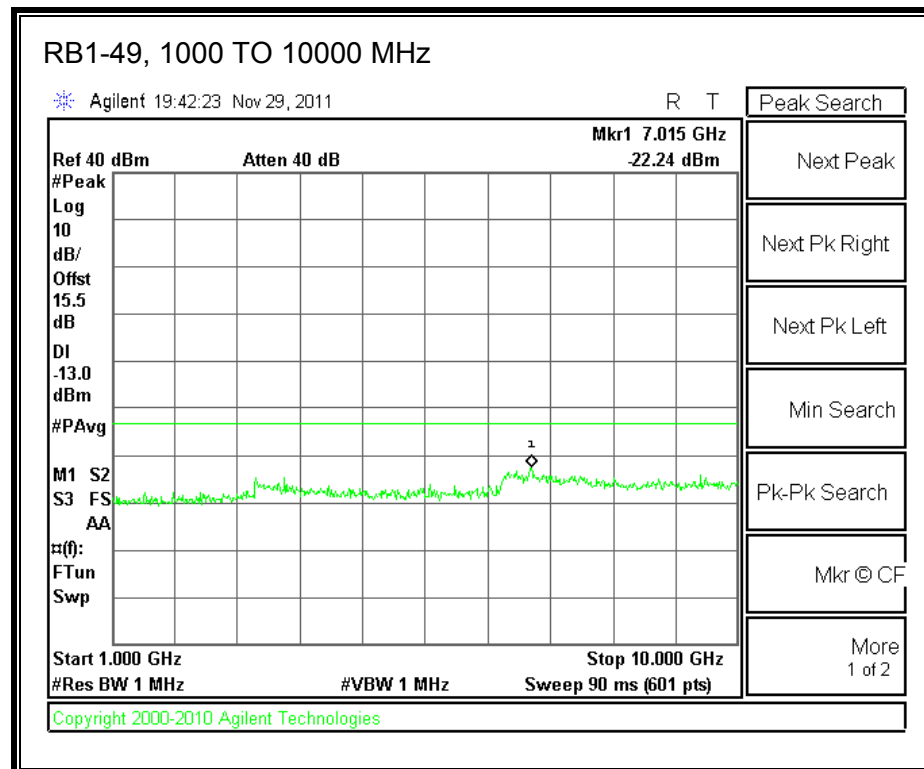
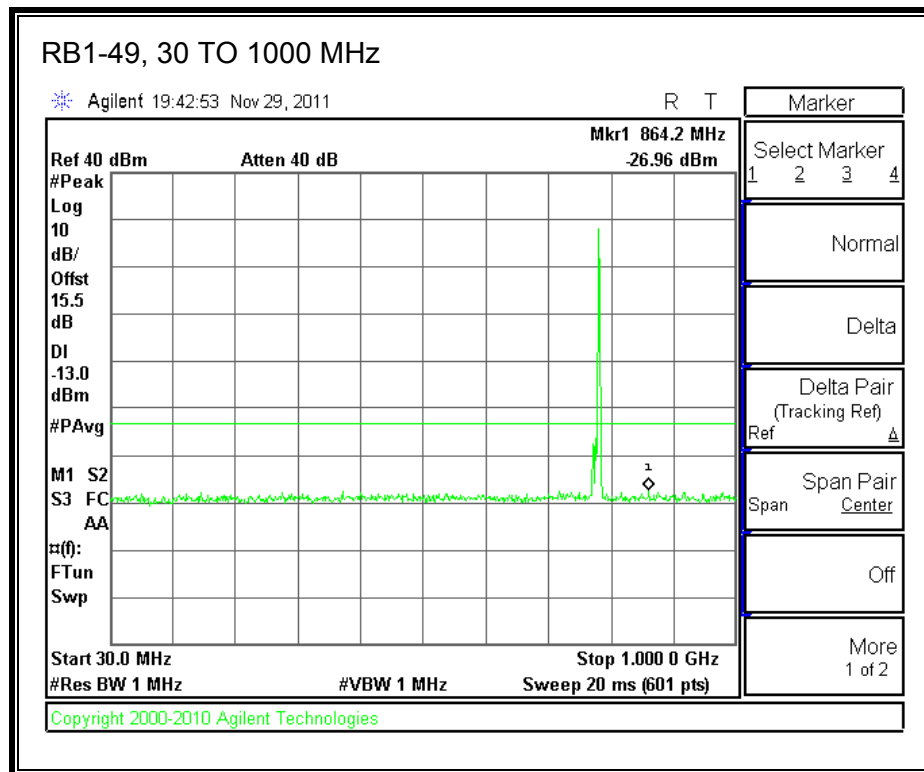
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

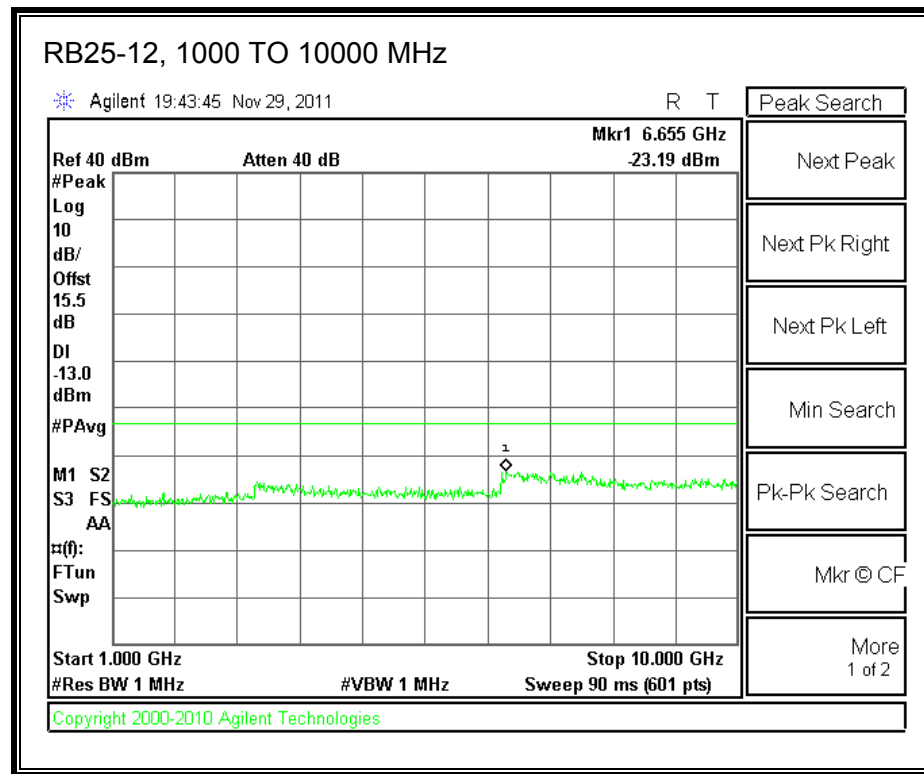
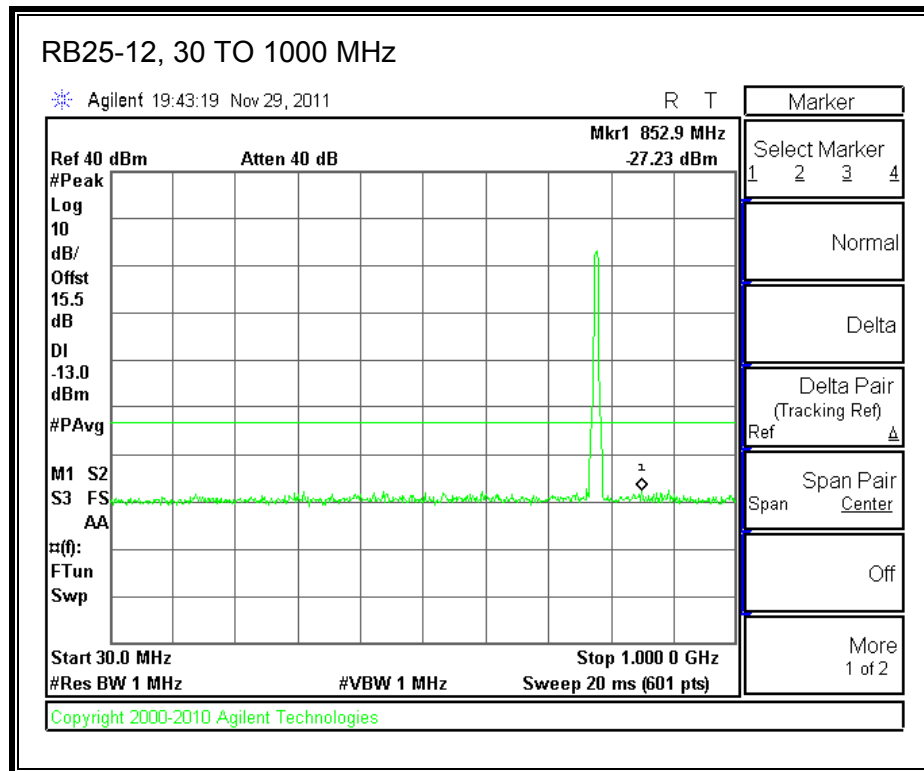
#### **MODES TESTED**

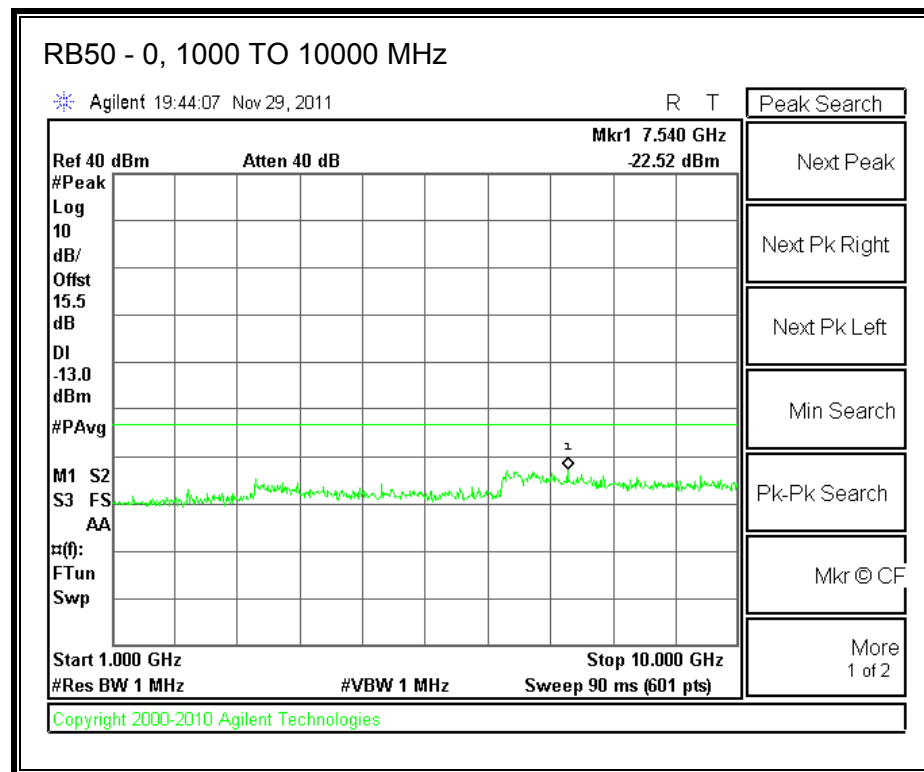
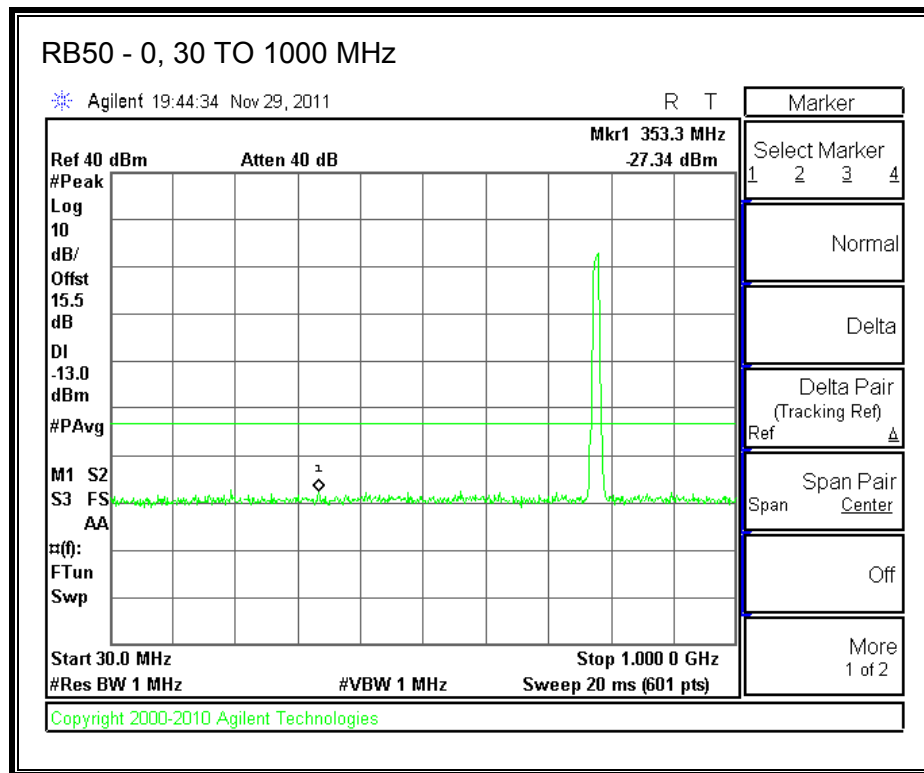
- LTE BAND 13
- 

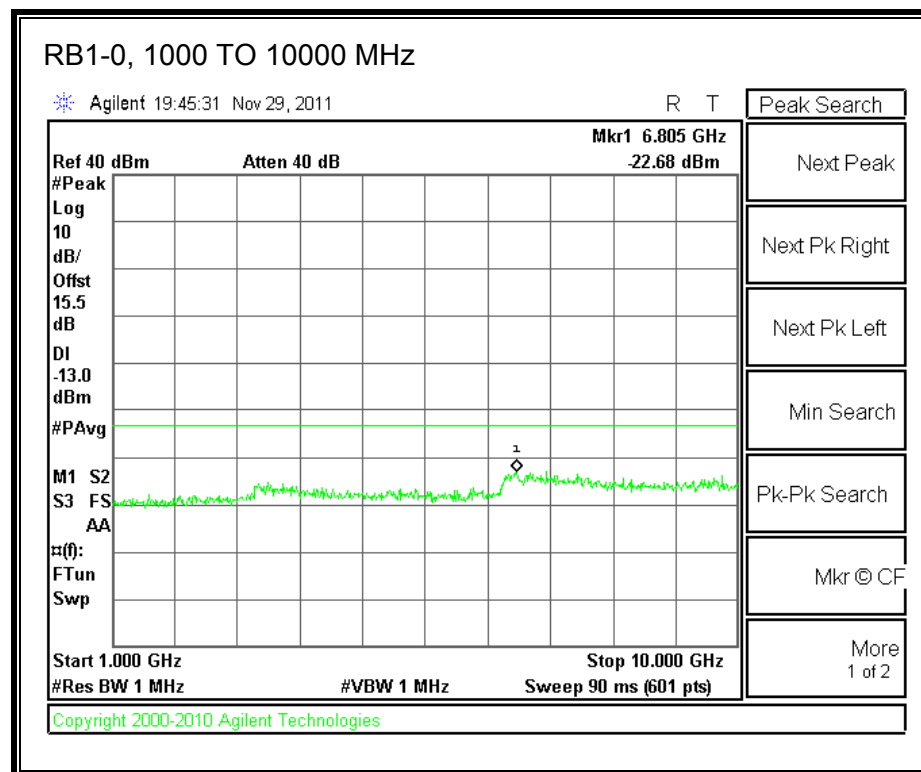
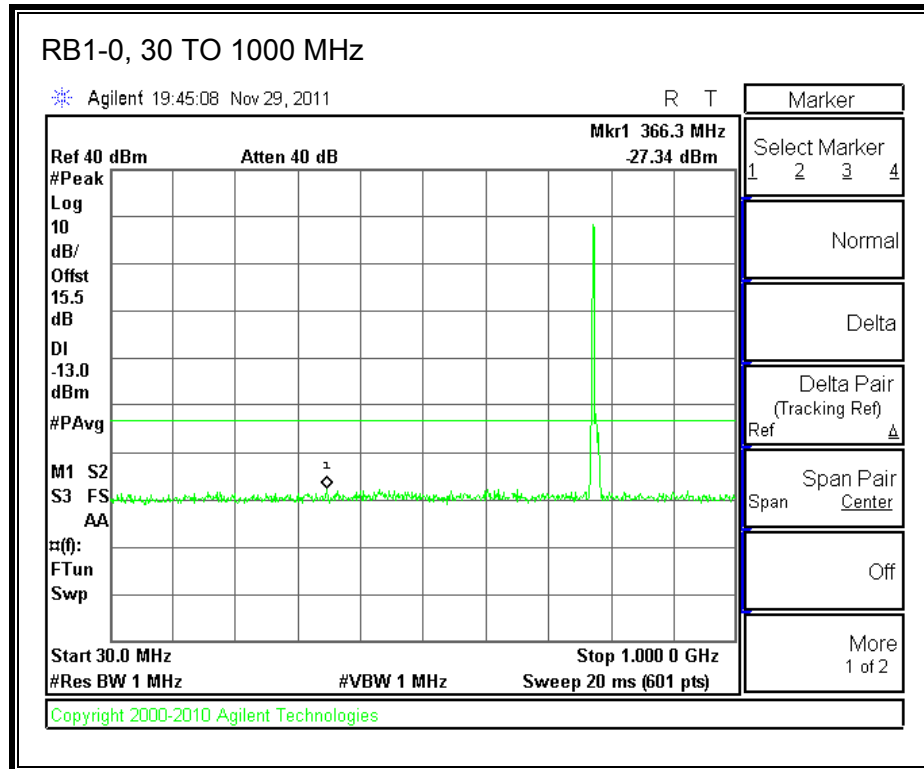
#### **RESULTS**

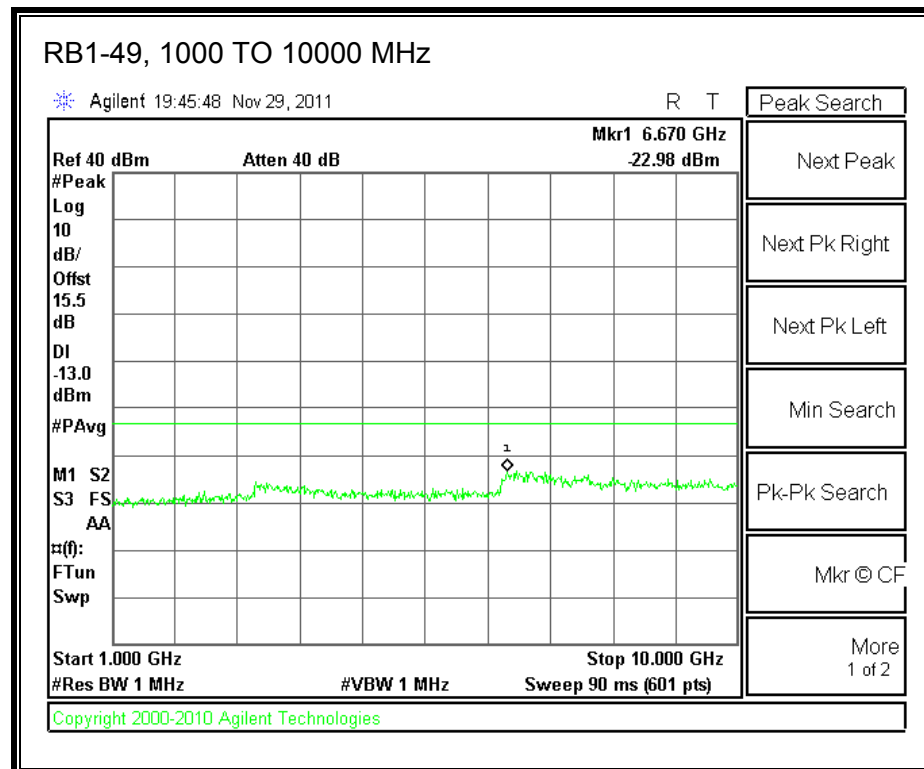
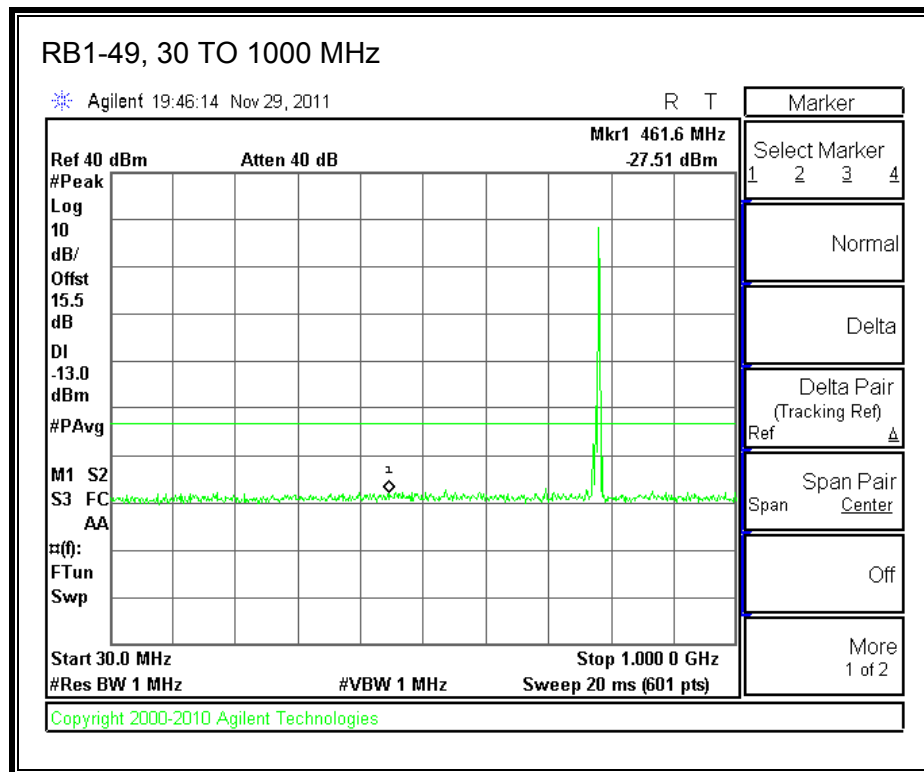
**LTE QPSK Band 13, 872MHz**

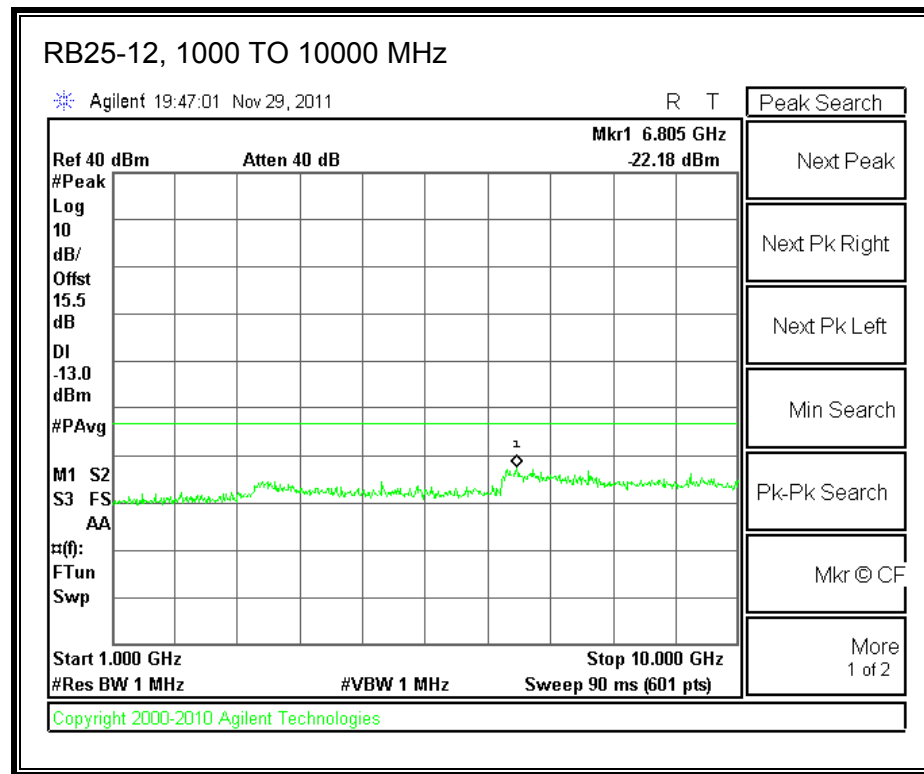
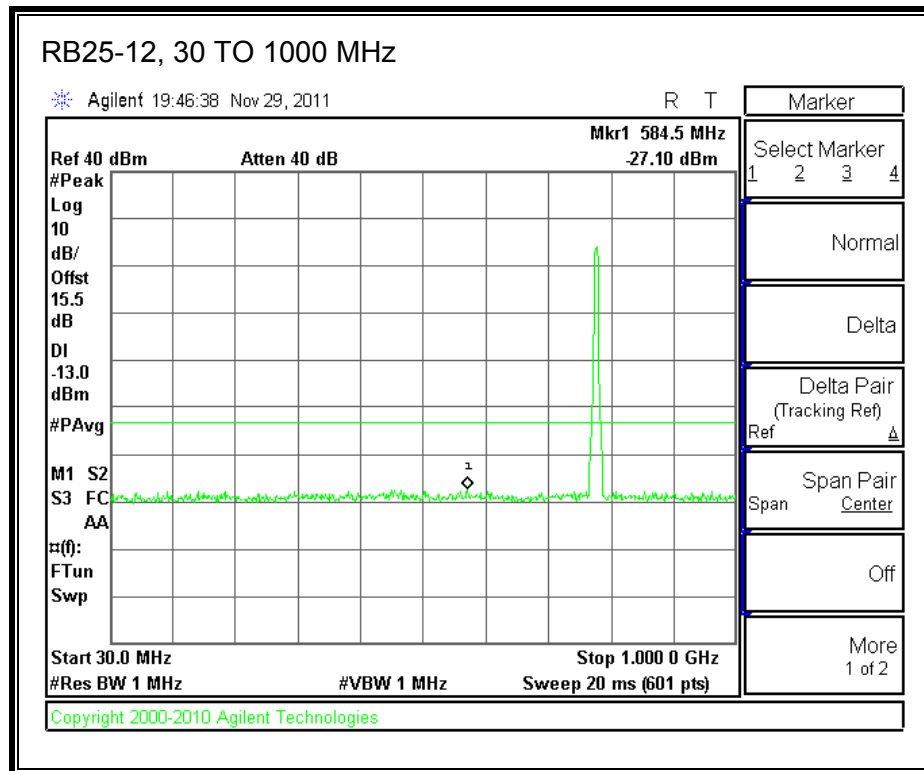


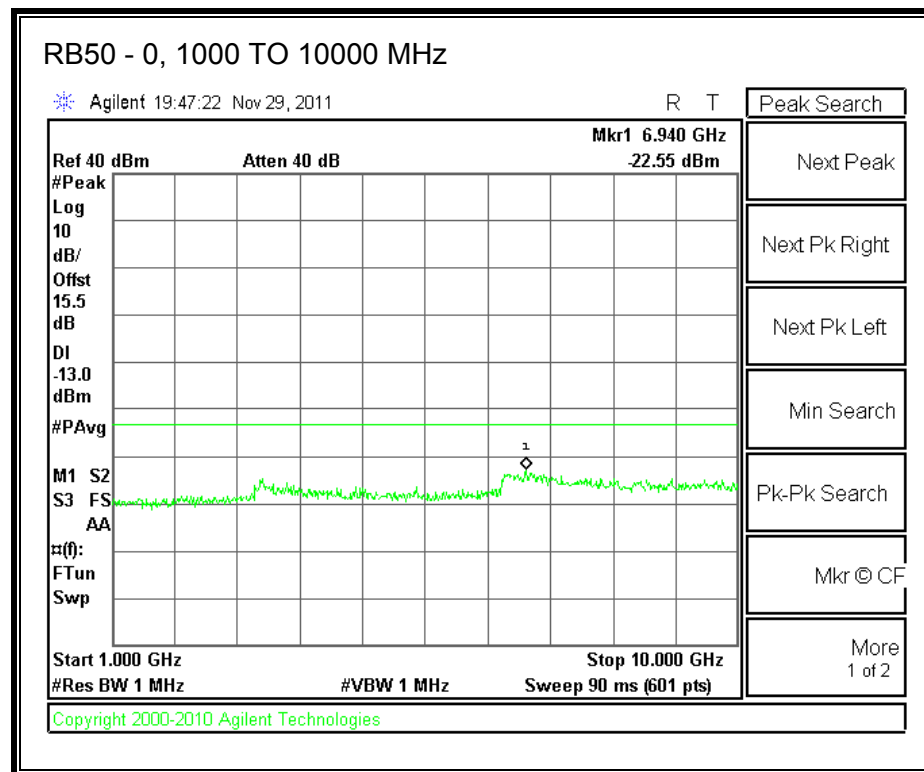
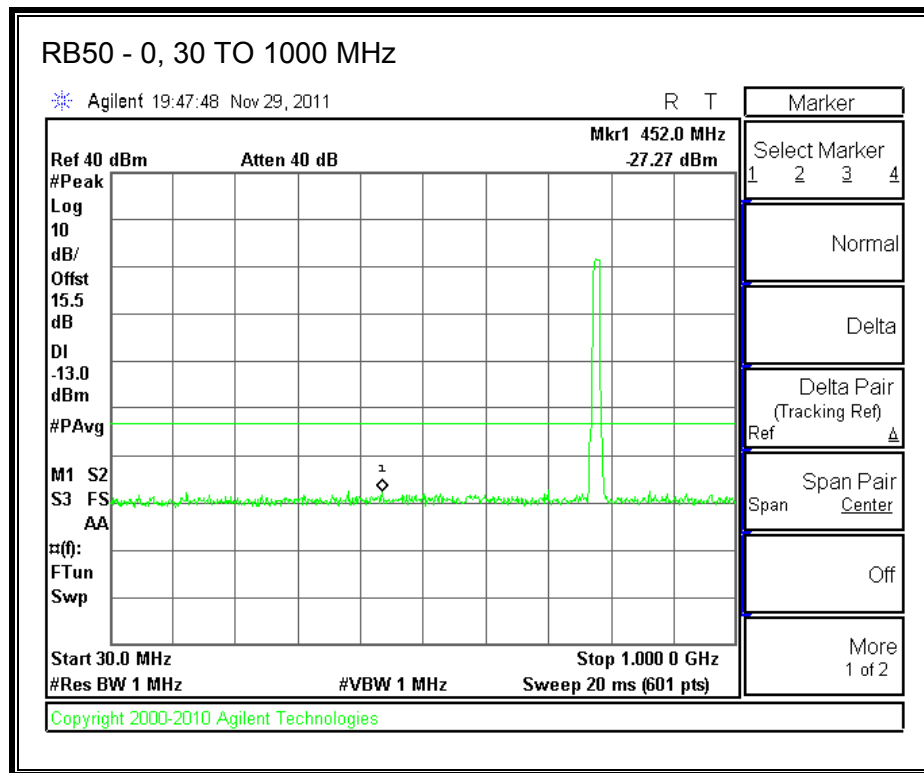




**LTE 16QAM Band 13, 782MHz**



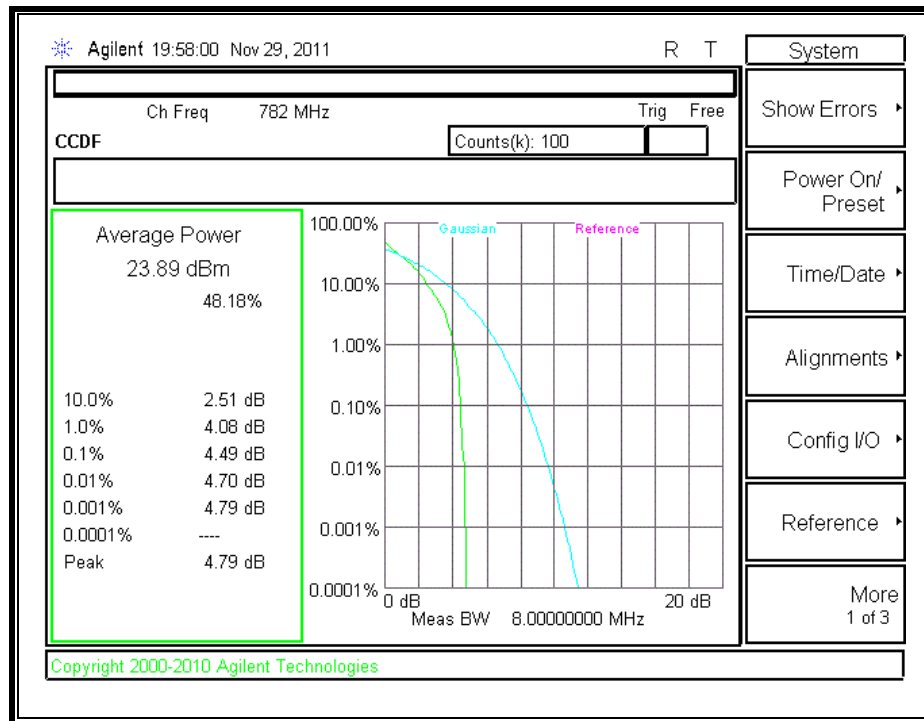
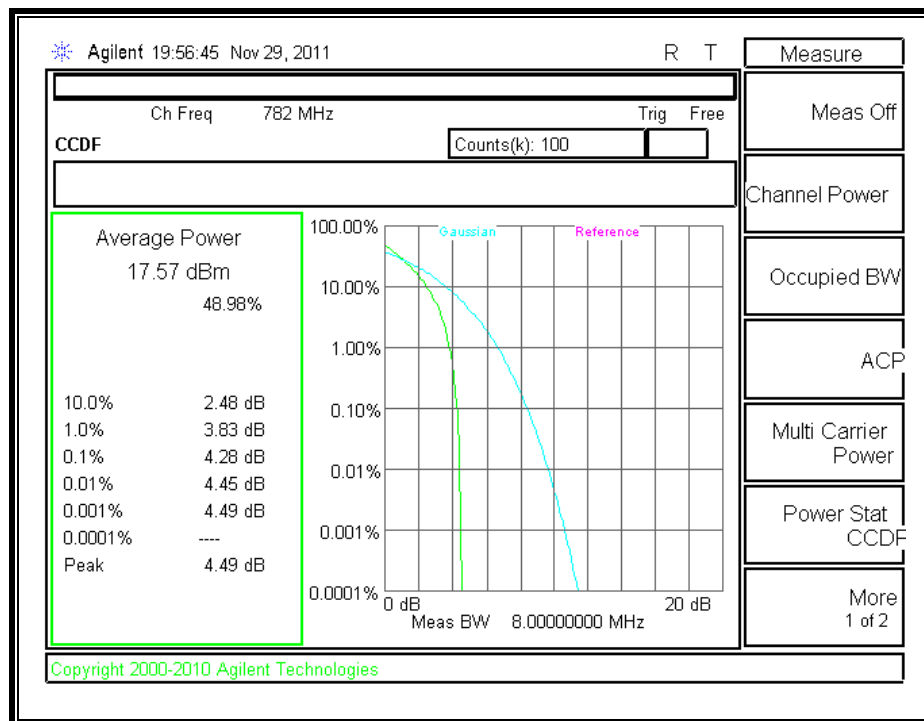


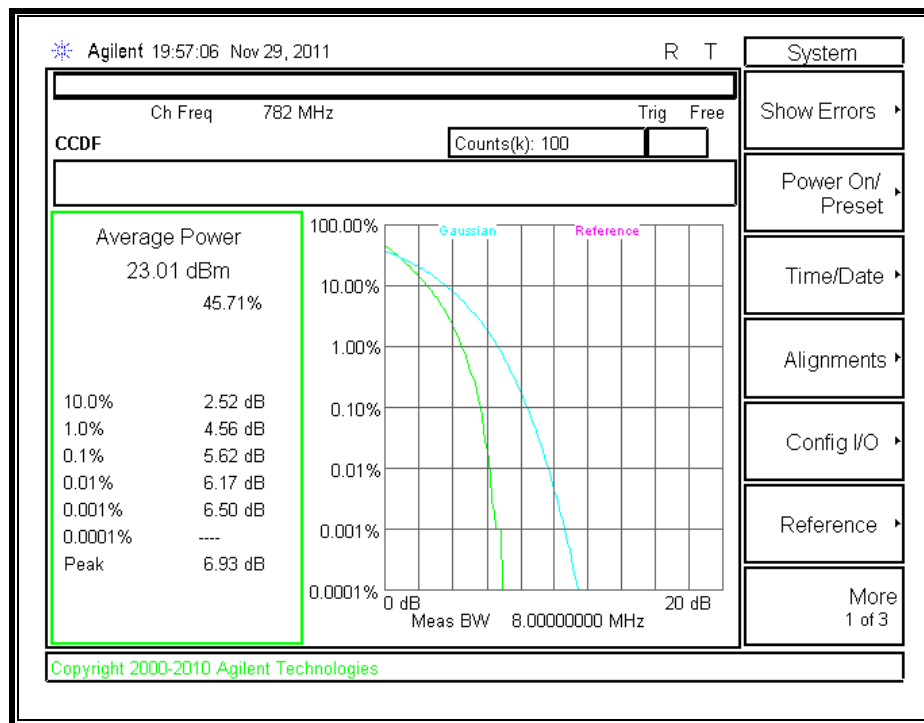
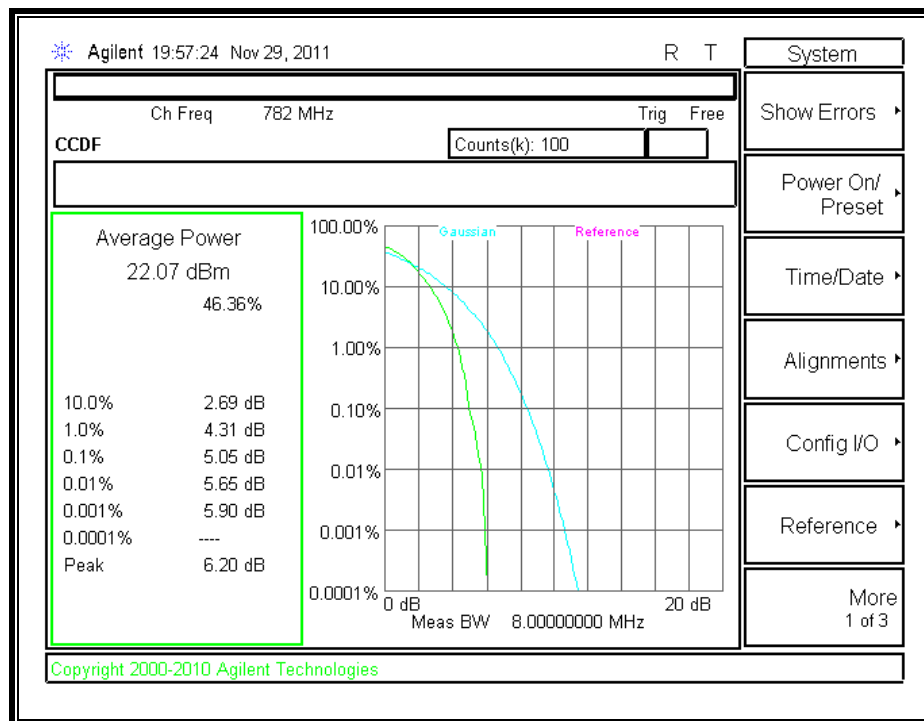


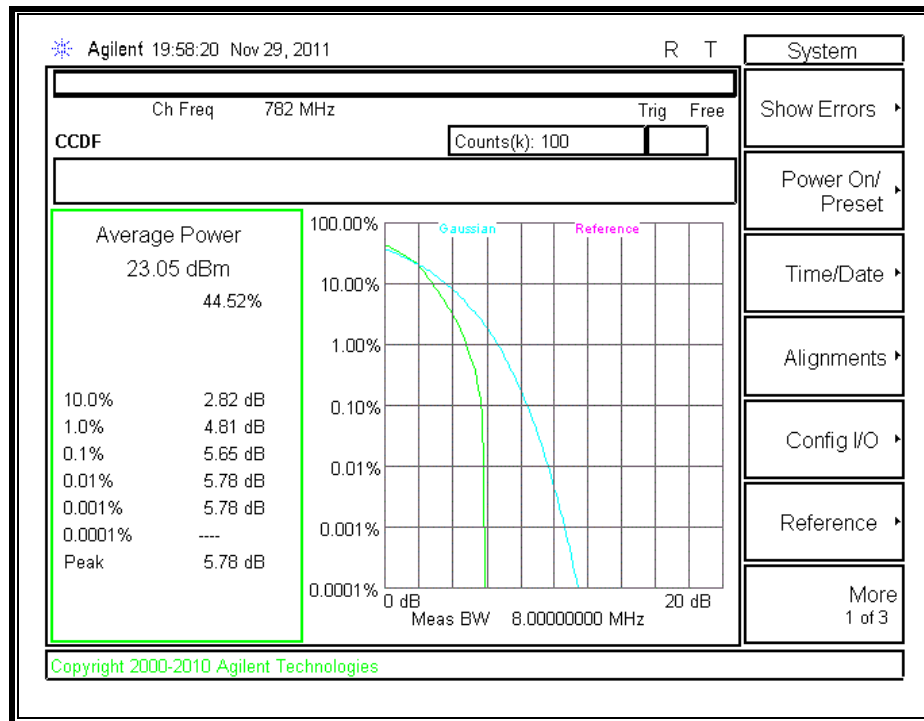
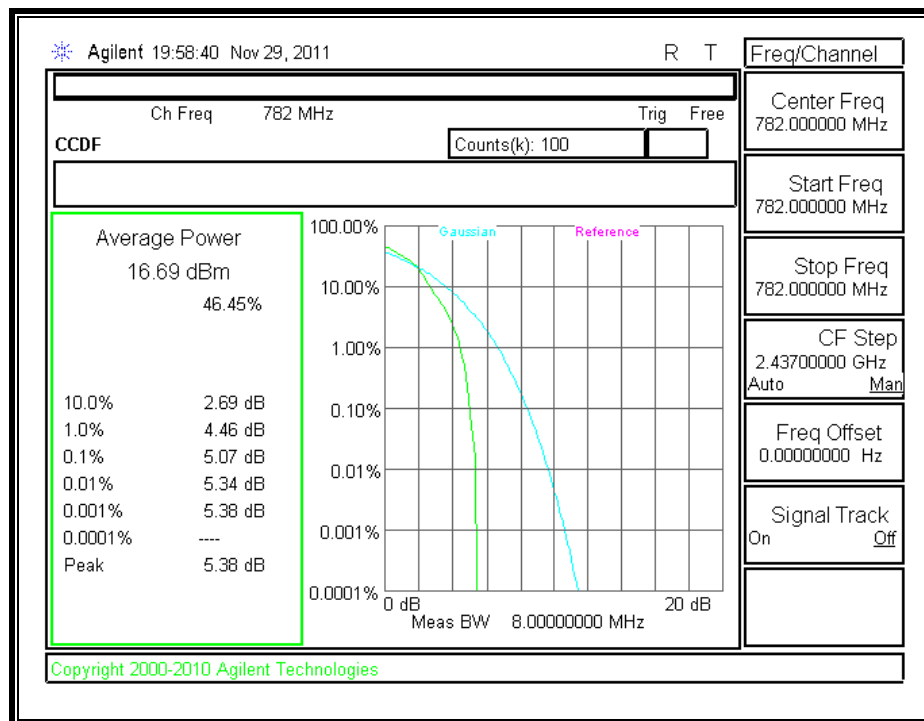
**Peak-To-Average Ratio:**

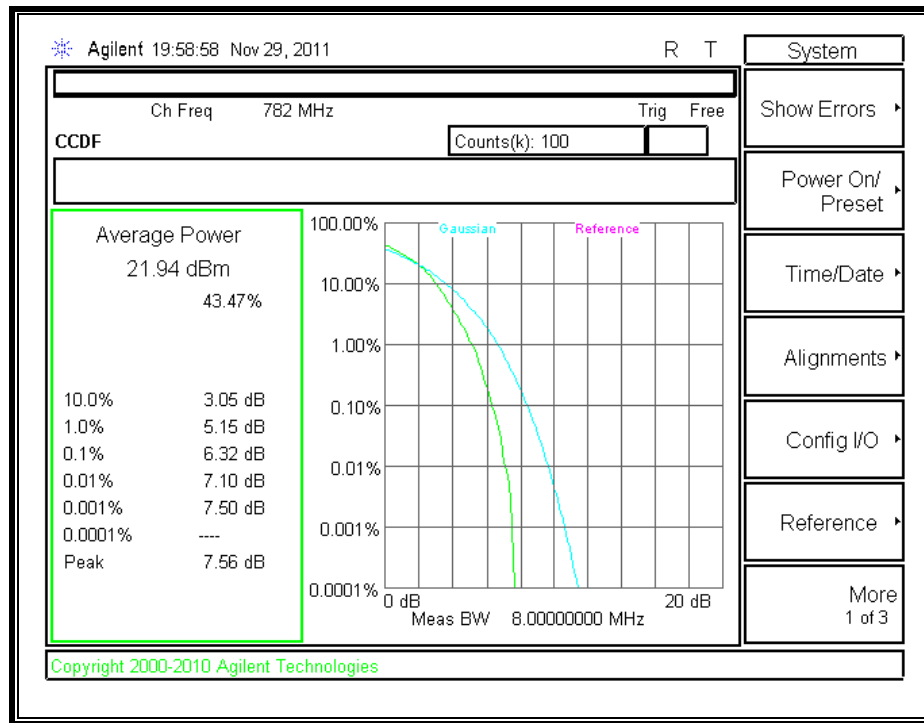
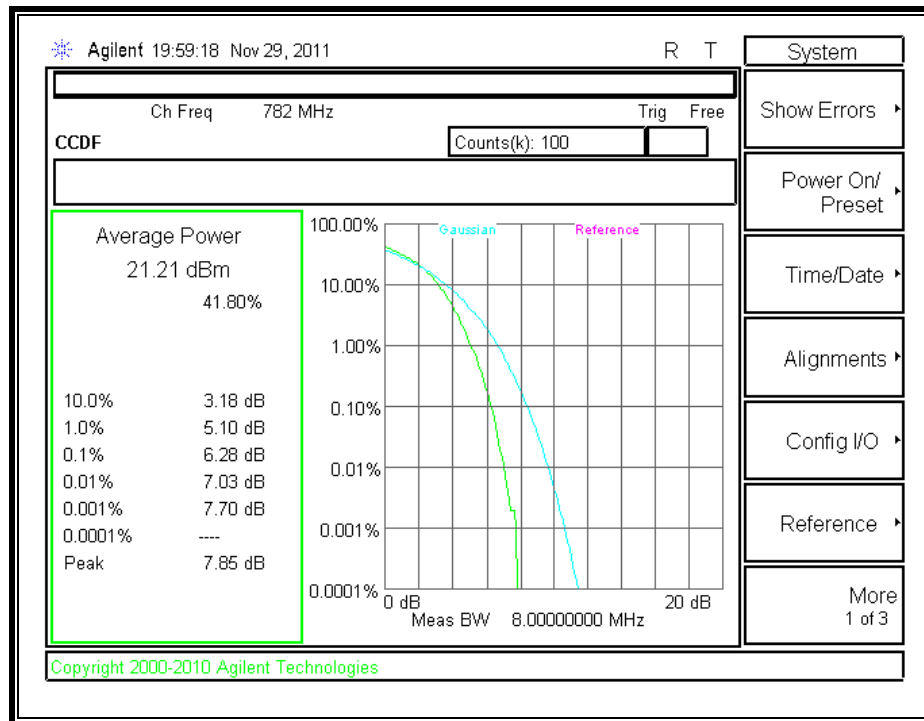
Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	10	RB1 0	782	28.68	23.89	4.79
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
QPSK	10	RB1 49	782	22.06	17.57	4.49
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
QPSK	10	RB25 12	782	29.94	23.01	6.93
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
QPSK	10	RB50 0	782	28.27	22.07	6.2
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
16QAM	10	RB1 0	782	28.83	23.05	5.78
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB1 49	782	22.07	16.69	5.38
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB25 12	782	29.5	21.94	7.56
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB50 0	782	29.06	21.21	7.85
*Peak Reading = Average Reading + Peak-to-Average Ratio						

**782MHz, 10MHz QPSK, RB1 0****782MHz, 10MHz QPSK, RB1 49**

**782MHz, 10MHz QPSK, RB25 12****782MHz, 10MHz QPSK, RB50 0**

**782MHz, 10MHz 16QAM, RB1 0****782MHz, 10MHz 16QAM, RB1 49**

**782MHz, 10MHz 16QAM, RB25 12****782MHz, 10MHz 16QAM, RB50 0**

## 8.4. FREQUENCY STABILITY

### RULE PART(S)

FCC: §27C

### LIMITS

- § 27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### TEST PROCEDURE

Use Agilent 8960 with Frequency Error measurement capability.

- Temp. = -30° to +50°C
- Voltage = 3.7Vdc

#### **Frequency Stability vs Temperature:**

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

#### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

### MODES TESTED

- LTE BAND 13

### RESULTS

See the following pages.

**LTE BAND 13 – QPSK, 782 MHz**

Reference Frequency: Mid Channel 782.000005MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	781.999990	0.019	2.5
3.70	40	781.999992	0.017	2.5
3.70	30	781.999999	0.008	2.5
3.70	<b>20</b>	<b>782.000005</b>	<b>0</b>	<b>2.5</b>
3.70	10	781.999997	0.010	2.5
3.70	0	782.000005	0.000	2.5
3.70	-10	782.000008	-0.004	2.5
3.70	-20	782.000012	-0.009	2.5
3.70	-30	782.000014	-0.012	2.5

Reference Frequency: Mid Channel 782.000005MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	<b>20</b>	<b>782.000005</b>	<b>0</b>	<b>2.5</b>
3.50	20	781.999995	0.013	2.5
4.26	20	782.000007	-0.003	2.5
3.0V (End Point)	20	781.999990	0.019	2.5

**LTE BAND 13 – 16QAM, 782 MHz**

Reference Frequency: Mid Channel 782.000008MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	781.999997	0.014	2.5
3.70	40	782.000005	0.004	2.5
3.70	30	782.000010	-0.002	2.5
3.70	<b>20</b>	<b>782.000008</b>	<b>0</b>	<b>2.5</b>
3.70	10	782.000003	0.007	2.5
3.70	0	782.000010	-0.002	2.5
3.70	-10	782.000013	-0.006	2.5
3.70	-20	782.000015	-0.009	2.5
3.70	-30	782.000015	-0.009	2.5

Reference Frequency: Mid Channel 781.999992MHz @ 20°C				
Limit: within the authorized block or +/- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	<b>20</b>	<b>782.000008</b>	<b>0</b>	<b>2.5</b>
3.50	20	782.000010	-0.003	2.5
4.26	20	781.999998	0.013	2.5
3.0V (End Point)	20	781.999990	0.023	2.5

## 9. RADIATED TEST RESULTS

### 9.1. RADIATED POWER (ERP)

#### RULE PART(S)

FCC: §27.50 (b) (10)

#### LIMITS

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

#### TEST PROCEDURE

ANSI / TIA / EIA 603C

KDB 971168 D01 Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems.

#### MODES TESTED

- LTE BAND 13

#### STANDARD COVER

#### LTE BAND 13 (ERP)

Mode	RB/RB SIZE	f (MHz)	ERP (PEAK)	
			dBm	mW
10 MHz BAND QPSK	1/0	782.0	26.40	436.52
	1/49		26.29	425.60
	25/12		24.80	302.00
	50/0		25.60	363.08
10 MHz BAND 16QAM	1/0		26.30	426.58
	1/49		26.60	457.09
	25/12		24.60	288.40
	50/0		25.50	354.81

**ERP LTE BAND 13 QPSK****782MHz**

High Frequency Substitution Measurement Compliance Certification Services Chamber B								
<b>Company:</b>		LG						
<b>Project #:</b>		11U14141						
<b>Date:</b>		11/30/11						
<b>Test Engineer:</b>		Chin Pang						
<b>Configuration:</b>		EUT only						
<b>Mode:</b>		TX, LTE BAND 13						
		10MHz BW						
		Peak						
<b>Test Equipment:</b>								
Receiving: Suno1 T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=1 & SRB=0, QPSK								
782.00	26.90	V	0.5	0.0	26.40	38.5	-12.0	
782.00	23.26	H	0.5	0.0	22.76	38.5	-15.7	
RB=1 & SRB=49, QPSK								
782.00	26.79	V	0.5	0.0	26.29	38.5	-12.2	
782.00	23.20	H	0.5	0.0	22.70	38.5	-15.7	
RB=25 & SRB=12, QPSK								
782.00	25.30	V	0.5	0.0	24.80	38.5	-13.6	
782.00	15.10	H	0.5	0.0	14.60	38.5	-23.8	
RB=50 & SRB=0 QPSK								
782.00	26.10	V	0.5	0.0	25.60	38.5	-12.8	
782.00	18.70	H	0.5	0.0	18.20	38.5	-20.2	
Rev. 3.17.11								

**ERP LTE BAND 13 16QAM****782MHz**

**High Frequency Substitution Measurement  
Compliance Certification Services Chamber B**

**Company:** LG  
**Project #:** 11U14141  
**Date:** 11/30/11  
**Test Engineer:** Chin Pang  
**Configuration:** EUT only  
**Mode:** TX, LTE BAND 13  
 10MHz BW, 16QAM

**Test Equipment:**

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>RB=1 &amp; SRB=0, 16QAM</b>								
782.00	26.80	V	0.5	0.0	26.30	38.5	-12.1	
782.00	23.40	H	0.5	0.0	22.90	38.5	-15.5	
<b>RB=1 &amp; SRB=49, 16QAM</b>								
782.00	27.10	V	0.5	0.0	26.60	38.5	-11.8	
782.00	22.90	H	0.5	0.0	22.40	38.5	-16.0	
<b>RB=25 &amp; SRB=12, 16QAM</b>								
782.00	25.10	V	0.5	0.0	24.60	38.5	-13.8	
782.00	14.90	H	0.5	0.0	14.40	38.5	-24.0	
<b>RB=50 &amp; SRB=0 16QAM</b>								
782.00	26.00	V	0.5	0.0	25.50	38.5	-12.9	
782.00	18.20	H	0.5	0.0	17.70	38.5	-20.7	

Rev. 3.17.11

**INDUCTIVE COVER****LTE BAND 13 (ERP)**

Mode	RB/RB SIZE	f (MHz)	ERP (PEAK)	
			dBm	mW
10 MHz BAND QPSK	1/0	782.0	25.07	321.37
	1/49		25.12	325.09
	25/12		23.92	246.60
	50/0		24.57	286.42
10 MHz BAND 16QAM	1/0		25.14	326.59
	1/49		25.02	317.69
	25/12		23.77	238.23
	50/0		24.83	304.09

**ERP LTE BAND 13 QPSK**

### High Frequency Substitution Measurement Compliance Certification Services Chamber B

**Company:** LG ELECTRONICS  
**Project #:** 11U14141  
**Date:** 12/18/11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH INDUCTIVE COVER  
**Mode:** TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE

**Test Equipment:**

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=1 & SRB=0, QPSK								
782.00	25.57	V	0.5	0.0	25.07	38.5	-13.4	
782.00	16.72	H	0.5	0.0	16.22	38.5	-22.2	
RB=1 & SRB=49, QPSK								
782.00	25.62	V	0.5	0.0	25.12	38.5	-13.3	
782.00	16.73	H	0.5	0.0	16.23	38.5	-22.2	
RB=25 & SRB=12, QPSK								
782.00	24.42	V	0.5	0.0	23.92	38.5	-14.5	
782.00	15.58	H	0.5	0.0	15.08	38.5	-23.4	
RB=50 & SRB=0 QPSK								
782.00	25.07	V	0.5	0.0	24.57	38.5	-13.9	
782.00	16.21	H	0.5	0.0	15.71	38.5	-22.7	

Rev. 3.17.11

**ERP LTE BAND 13 16QAM**

### High Frequency Substitution Measurement Compliance Certification Services Chamber B

**Company:** LG ELECTRONICS  
**Project #:** 11U14141  
**Date:** 12/18/11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH INDUCTIVE COVER  
**Mode:** TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE

**Test Equipment:**

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>RB=1 &amp; SRB=0, 16QAM</b>								
782.00	25.64	V	0.5	0.0	25.14	38.5	-13.3	
782.00	16.79	H	0.5	0.0	16.29	38.5	-22.2	
<b>RB=1 &amp; SRB=49, 16QAM</b>								
782.00	25.52	V	0.5	0.0	25.02	38.5	-13.4	
782.00	16.79	H	0.5	0.0	16.29	38.5	-22.2	
<b>RB=25 &amp; SRB=12, 16QAM</b>								
782.00	24.27	V	0.5	0.0	23.77	38.5	-14.7	
782.00	15.96	H	0.5	0.0	15.46	38.5	-23.0	
<b>RB=50 &amp; SRB=0 16QAM</b>								
782.00	25.33	V	0.5	0.0	24.83	38.5	-13.6	
782.00	17.10	H	0.5	0.0	16.60	38.5	-21.8	

Rev. 3.17.11

**INDUCTIVE CHARGER****LTE BAND 13 (ERP)**

Mode	RB/RB SIZE	f (MHz)	ERP (PEAK)	
			dBm	mW
10 MHz BAND QPSK	1/0	782.0	19.61	91.41
	1/49		20.96	124.74
	25/12		18.03	63.53
	50/0		19.97	99.31
10 MHz BAND 16QAM	1/0		19.54	89.95
	1/49		20.80	120.23
	25/12		18.23	66.53
	50/0		19.82	95.94

**ERP LTE BAND 13 QPSK****High Frequency Substitution Measurement  
Compliance Certification Services Chamber B**

**Company:** LG ELECTRONICS  
**Project #:** 11U14141  
**Date:** 12/18/11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH INDUCTIVE CHARGER  
**Mode:** TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE

**Test Equipment:**

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>RB=1 &amp; SRB=0, 16QAM</b>								
782.00	15.29	V	0.5	0.0	14.79	38.5	-23.7	
782.00	20.11	H	0.5	0.0	19.61	38.5	-18.8	
<b>RB=1 &amp; SRB=49, 16QAM</b>								
782.00	16.56	V	0.5	0.0	16.06	38.5	-22.4	
782.00	21.46	H	0.5	0.0	20.96	38.5	-17.5	
<b>RB=25 &amp; SRB=12, 16QAM</b>								
782.00	13.98	V	0.5	0.0	13.48	38.5	-25.0	
782.00	18.53	H	0.5	0.0	18.03	38.5	-20.4	
<b>RB=50 &amp; SRB=0 16QAM</b>								
782.00	16.38	V	0.5	0.0	15.88	38.5	-22.6	
782.00	20.47	H	0.5	0.0	19.97	38.5	-18.5	

Rev. 3.17.11

**ERP LTE BAND 13 16QAM****High Frequency Substitution Measurement  
Compliance Certification Services Chamber B**

**Company:** LG ELECTRONICS  
**Project #:** 11U14141  
**Date:** 12/18/11  
**Test Engineer:** MENGISTU MEKURIA  
**Configuration:** EUT WITH INDUCTIVE CHARGER  
**Mode:** TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE

**Test Equipment:**

Receiving: Sunol T130, and 3m Chamber N-type Cable (Setup this one for testing EUT)

Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=1 & SRB=0, QPSK								
782.00	15.18	V	0.5	0.0	14.68	38.5	-23.8	
782.00	20.04	H	0.5	0.0	19.54	38.5	-18.9	
RB=1 & SRB=49, QPSK								
782.00	16.37	V	0.5	0.0	15.87	38.5	-22.6	
782.00	21.30	H	0.5	0.0	20.80	38.5	-17.6	
RB=25 & SRB=12, QPSK								
782.00	54.18	V	0.5	0.0	53.68	38.5	15.2	
782.00	18.73	H	0.5	0.0	18.23	38.5	-20.2	
RB=50 & SRB=0 QPSK								
782.00	15.61	V	0.5	0.0	15.11	38.5	-23.3	
782.00	20.32	H	0.5	0.0	19.82	38.5	-18.6	

Rev. 3.17.11

## 9.2. FIELD STRENGTH OF SPURIOUS RADIATION

### RULE PART(S)

FCC: §27.53 (c)(2) & (f)

### LIMIT

(c) (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;

(f) For operations in the 746–763 MHz, 775–793 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to –70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and –80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

### TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### MODES TESTED:

- LTE Band 13

### RESULTS

**STANDARD COVER****ERP LTE BAND 13, QPSK**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG							
<b>Project #:</b>		11U14141							
<b>Date:</b>		11/30/11							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT only							
<b>Mode:</b>		TX, LTE BAND 13 10MHz BW QPSK							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.555	-17.5	V	3.0	35.6	1.0	-52.1	-13.0	-39.1	
2.333	-4.7	V	3.0	35.4	1.0	-39.1	-13.0	-26.1	
1.555	-15.7	H	3.0	35.6	1.0	-50.3	-13.0	-37.3	
2.333	-7.0	H	3.0	35.4	1.0	-41.5	-13.0	-28.5	
<b>RB 1 49</b>									
1.573	-19.2	V	3.0	35.6	1.0	-53.8	-13.0	-40.8	
2.360	-3.7	V	3.0	35.4	1.0	-38.1	-13.0	-25.1	
1.573	-14.5	H	3.0	35.6	1.0	-49.1	-13.0	-36.1	
2.360	-7.1	H	3.0	35.4	1.0	-41.5	-13.0	-28.5	
<b>RB 25 12</b>									
1.564	-22.4	V	3.0	35.6	1.0	-56.9	-13.0	-43.9	
2.346	-8.7	V	3.0	35.4	1.0	-43.1	-13.0	-30.1	
1.564	-22.6	H	3.0	35.6	1.0	-57.2	-13.0	-44.2	
2.346	-13.1	H	3.0	35.4	1.0	-47.5	-13.0	-34.5	
<b>RB50 0</b>									
1.564	-23.4	V	3.0	35.6	1.0	-57.9	-13.0	-44.9	
2.347	-9.7	V	3.0	35.4	1.0	-44.1	-13.0	-31.1	
1.564	-23.6	H	3.0	35.6	1.0	-58.2	-13.0	-45.2	
2.347	-10.1	H	3.0	35.4	1.0	-44.5	-13.0	-31.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**LTE BAND 13, 16QAM****782MHz**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG							
<b>Project #:</b>		11U14141							
<b>Date:</b>		11/30/11							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT only							
<b>Mode:</b>		TX, LTE BAND 13 10MHz BW 16QAM							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.556	-18.5	V	3.0	35.6	1.0	-53.1	-13.0	-40.1	
2.333	-2.7	V	3.0	35.4	1.0	-37.1	-13.0	-24.1	
1.556	-17.7	H	3.0	35.6	1.0	-52.3	-13.0	-39.3	
2.333	-6.0	H	3.0	35.4	1.0	-40.5	-13.0	-27.5	
<b>RB 1 49</b>									
1.573	-19.5	V	3.0	35.6	1.0	-54.1	-13.0	-41.1	
2.360	-4.5	V	3.0	35.4	1.0	-38.9	-13.0	-25.9	
1.573	-16.5	H	3.0	35.6	1.0	-51.1	-13.0	-38.1	
2.360	-6.1	H	3.0	35.4	1.0	-40.5	-13.0	-27.5	
<b>RB 25 12</b>									
1.564	-21.4	V	3.0	35.6	1.0	-55.9	-13.0	-42.9	
2.346	-14.7	V	3.0	35.4	1.0	-49.1	-13.0	-36.1	
1.564	-23.1	H	3.0	35.6	1.0	-57.7	-13.0	-44.7	
2.346	-17.1	H	3.0	35.4	1.0	-51.5	-13.0	-38.5	
<b>RB50 0</b>									
1.567	-23.9	V	3.0	35.6	1.0	-58.5	-13.0	-45.5	
2.349	-11.7	V	3.0	35.4	1.0	-46.1	-13.0	-33.1	
1.567	-24.6	H	3.0	35.6	1.0	-59.1	-13.0	-46.1	
2.349	-14.1	H	3.0	35.4	1.0	-48.5	-13.0	-35.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**LTE QPSK RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG							
<b>Project #:</b>		11U14141							
<b>Date:</b>		11/30/11							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT only							
<b>Mode:</b>		LTE band 13, 782MHz QPSK							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1 0									
1.592	-26.0	V	3.0	35.6	1.0	-60.6	-40.0	-20.6	
1.573	-26.5	H	3.0	35.6	1.0	-61.1	-40.0	-21.1	
RB1 49									
1.573	-22.7	V	3.0	35.6	1.0	-57.3	-40.0	-17.3	
1.573	-21.5	H	3.0	35.6	1.0	-56.1	-40.0	-16.1	
RB25 12									
1.584	-26.1	V	3.0	35.6	1.0	-60.7	-40.0	-20.7	
1.584	-26.4	H	3.0	35.6	1.0	-61.0	-40.0	-21.0	
RB50 0									
1.584	-27.1	V	3.0	35.6	1.0	-61.7	-40.0	-21.7	
1.600	-26.2	H	3.0	35.6	1.0	-60.8	-40.0	-20.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**LTE 16QAM RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG							
<b>Project #:</b>		11U14141							
<b>Date:</b>		11/30/11							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT only							
<b>Mode:</b>		LTE band 13, 782MHz 16QAM							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.585	-23.6	V	3.0	35.6	1.0	-58.2	-40.0	-18.2	
1.574	-26.5	H	3.0	35.6	1.0	-61.1	-40.0	-21.1	
<b>RB1 49</b>									
1.573	-25.2	V	3.0	35.6	1.0	-59.8	-40.0	-19.8	
1.573	-23.5	H	3.0	35.6	1.0	-58.1	-40.0	-18.1	
<b>RB25 12</b>									
1.585	-27.1	V	3.0	35.6	1.0	-61.7	-40.0	-21.7	
1.563	-26.6	H	3.0	35.6	1.0	-61.2	-40.0	-21.2	
<b>RB50 0</b>									
1.562	-27.4	V	3.0	35.6	1.0	-62.0	-40.0	-22.0	
1.585	-25.4	H	3.0	35.6	1.0	-60.0	-40.0	-20.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**INDUCTIVE COVER****ERP LTE BAND 13, QPSK**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG ELECTRONICS							
Project #:		11U14141							
Date:		12/18/11							
Test Engineer:		MENGI STU MEKURIA							
Configuration:		EUT WITH INDUCTIVE COVER							
Mode:		TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE							
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1 0									
1.555	-25.2	V	3.0	35.6	1.0	-59.8	-13.0	-46.8	
2.333	-6.9	V	3.0	35.4	1.0	-41.3	-13.0	-28.3	
3.889	-11.6	V	3.0	35.3	1.0	-45.8	-13.0	-32.8	
4.664	-15.9	V	3.0	35.3	1.0	-50.2	-13.0	-37.2	
5.442	-13.8	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
6.218	-11.7	V	3.0	35.6	1.0	-46.2	-13.0	-33.2	
6.995	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
1.555	-24.6	H	3.0	35.6	1.0	-59.2	-13.0	-46.2	
2.333	-6.2	H	3.0	35.4	1.0	-40.6	-13.0	-27.6	
3.111	-19.5	H	3.0	35.6	1.0	-54.1	-13.0	-41.1	
3.889	-9.4	H	3.0	35.3	1.0	-43.7	-13.0	-30.7	
4.664	-17.1	H	3.0	35.3	1.0	-51.4	-13.0	-38.4	
5.442	-13.1	H	3.0	35.4	1.0	-47.5	-13.0	-34.5	
6.218	-14.7	H	3.0	35.6	1.0	-49.3	-13.0	-36.3	
6.995	-11.3	H	3.0	35.7	1.0	-46.0	-13.0	-33.0	
RB 1 49									
1.555	-24.8	V	3.0	35.6	1.0	-59.4	-13.0	-46.4	
2.360	-8.5	V	3.0	35.4	1.0	-42.9	-13.0	-29.9	
3.889	-12.6	V	3.0	35.3	1.0	-46.9	-13.0	-33.9	
4.664	-17.2	V	3.0	35.3	1.0	-51.4	-13.0	-38.4	
5.505	-12.9	V	3.0	35.4	1.0	-47.3	-13.0	-34.3	
6.218	-15.6	V	3.0	35.6	1.0	-50.2	-13.0	-37.2	
6.995	-15.0	V	3.0	35.7	1.0	-49.7	-13.0	-36.7	
1.555	-24.6	H	3.0	35.6	1.0	-59.2	-13.0	-46.2	
2.360	0.7	H	3.0	35.4	1.0	-33.7	-13.0	-20.7	
3.111	-18.4	H	3.0	35.6	1.0	-53.0	-13.0	-40.0	
3.932	-7.5	H	3.0	35.3	1.0	-41.7	-13.0	-28.7	
4.664	-15.7	H	3.0	35.3	1.0	-50.0	-13.0	-37.0	
5.506	-12.4	H	3.0	35.4	1.0	-46.8	-13.0	-33.8	
6.218	-13.8	H	3.0	35.6	1.0	-48.3	-13.0	-35.3	
RB 25 12									
1.500	-26.3	V	3.0	35.6	1.0	-60.9	-13.0	-47.9	
2.347	-15.4	V	3.0	35.4	1.0	-49.8	-13.0	-36.8	
3.905	-18.1	V	3.0	35.3	1.0	-52.3	-13.0	-39.3	
1.500	-24.9	H	3.0	35.6	1.0	-59.6	-13.0	-46.6	
2.347	-13.0	H	3.0	35.4	1.0	-47.4	-13.0	-34.4	
3.128	-19.8	H	3.0	35.6	1.0	-54.4	-13.0	-41.4	
3.910	-17.3	H	3.0	35.3	1.0	-51.5	-13.0	-38.5	
RB50 0									
1.500	-25.7	V	3.0	35.6	1.0	-60.3	-13.0	-47.3	
2.347	-10.6	V	3.0	35.4	1.0	-45.1	-13.0	-32.1	
1.500	-24.1	V	3.0	35.6	1.0	-58.8	-13.0	-45.8	
2.347	-5.5	H	3.0	35.4	1.0	-39.9	-13.0	-26.9	
3.195	-18.6	H	3.0	35.6	1.0	-53.2	-13.0	-40.2	
4.043		H	3.0	35.2	1.0	-34.2	-13.0	-21.2	
Note: No other emissions were detected above the system noise floor.									

**LTE BAND 13, 16QAM**

**Compliance Certification Services**  
**Above 1GHz High Frequency Substitution Measurement**

Company: LG ELECTRONICS  
 Project #: 11U14141  
 Date: 12/18/11  
 Test Engineer: MENGISTU MEKURIA  
 Configuration: EUT WITH INDUCTIVE CHARGER  
 Mode: TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE

Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.555	-24.8	V	3.0	35.6	1.0	-59.4	-13.0	-46.4	
2.333	-8.1	V	3.0	35.4	1.0	-42.5	-13.0	-29.5	
3.889	-13.3	V	3.0	35.3	1.0	-47.6	-13.0	-34.6	
4.664	-17.5	V	3.0	35.3	1.0	-51.8	-13.0	-38.8	
5.442	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
6.218	-11.8	V	3.0	35.6	1.0	-46.3	-13.0	-33.3	
6.995	-12.2	V	3.0	35.7	1.0	-47.0	-13.0	-34.0	
7.772	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
1.555	-23.9	H	3.0	35.6	1.0	-58.5	-13.0	-45.5	
2.333	-4.9	H	3.0	35.4	1.0	-39.3	-13.0	-26.3	
3.889	-8.8	H	3.0	35.3	1.0	-43.1	-13.0	-30.1	
4.664	-16.7	H	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.442	-13.2	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
6.218	-14.8	H	3.0	35.6	1.0	-49.3	-13.0	-36.3	
6.995	-9.9	H	3.0	35.7	1.0	-44.6	-13.0	-31.6	
<b>RB 1 49</b>									
1.555	-24.7	V	3.0	35.6	1.0	-59.3	-13.0	-46.3	
2.360	-10.6	V	3.0	35.4	1.0	-45.0	-13.0	-32.0	
3.889	-14.2	V	3.0	35.3	1.0	-48.5	-13.0	-35.5	
4.664	-15.9	V	3.0	35.3	1.0	-50.2	-13.0	-37.2	
5.442	-13.5	V	3.0	35.4	1.0	-47.9	-13.0	-34.9	
6.218	-13.2	V	3.0	35.6	1.0	-47.7	-13.0	-34.7	
6.995	-14.7	V	3.0	35.7	1.0	-49.5	-13.0	-36.5	
1.555	-6.7	H	3.0	35.6	1.0	-41.3	-13.0	-28.3	
2.360	-4.3	H	3.0	35.4	1.0	-38.7	-13.0	-25.7	
3.111	-18.2	H	3.0	35.6	1.0	-52.8	-13.0	-39.8	
3.889	-8.8	H	3.0	35.3	1.0	-43.0	-13.0	-30.0	
4.664	-16.7	H	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.442	-13.7	H	3.0	35.4	1.0	-48.1	-13.0	-35.1	
6.218	-14.1	H	3.0	35.6	1.0	-48.7	-13.0	-35.7	
7.079	-12.1	H	3.0	35.7	1.0	-46.8	-13.0	-33.8	
<b>RB 25 12</b>									
1.500	-26.5	V	3.0	35.6	1.0	-61.1	-13.0	-48.1	
2.347	-17.5	V	3.0	35.4	1.0	-51.9	-13.0	-38.9	
1.500	-24.9	H	3.0	35.6	1.0	-59.5	-13.0	-46.5	
2.347	-15.7	H	3.0	35.4	1.0	-50.2	-13.0	-37.2	
3.128	-19.0	H	3.0	35.6	1.0	-53.6	-13.0	-40.6	
3.910	-16.3	H	3.0	35.3	1.0	-50.5	-13.0	-37.5	
<b>RB50 0</b>									
1.500	-25.9	V	3.0	35.6	1.0	-60.6	-13.0	-47.6	
2.347	-18.9	V	3.0	35.4	1.0	-53.4	-13.0	-40.4	
1.500	-25.6	V	3.0	35.6	1.0	-60.2	-13.0	-47.2	
2.347	-17.9	H	3.0	35.4	1.0	-52.4	-13.0	-39.4	
3.195	-19.4	H	3.0	35.6	1.0	-54.0	-13.0	-41.0	
3.905	-16.9	H	3.0	35.3	1.0	-51.2	-13.0	-38.2	

Note: No other emissions were detected above the system noise floor.

**LTE QPSK RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG ELECTRONICS							
<b>Project #:</b>		11U14141							
<b>Date:</b>		12/18/11							
<b>Test Engineer:</b>		MENGISTU MEKURIA							
<b>Configuration:</b>		EUT WITH INDUCTIVE COVER							
<b>Mode:</b>		TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE							
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1_0									
1.592	-25.4	V	3.0	35.6	1.0	-60.0	-40.0	-20.0	
1.573	-25.5	H	3.0	35.6	1.0	-60.1	-40.0	-20.1	
RB1_49									
1.573	-23.6	V	3.0	35.6	1.0	-58.2	-40.0	-18.2	
1.573	-23.0	H	3.0	35.6	1.0	-57.6	-40.0	-17.6	
RB25_12									
1.584	-22.8	V	3.0	35.6	1.0	-57.3	-40.0	-17.3	
1.584	-23.4	H	3.0	35.6	1.0	-57.9	-40.0	-17.9	
RB50_0									
1.584	-25.1	V	3.0	35.6	1.0	-59.7	-40.0	-19.7	
1.600	-24.7	H	3.0	35.6	1.0	-59.2	-40.0	-19.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**LTE 16QAM RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG ELECTRONICS							
<b>Project #:</b>		11U14141							
<b>Date:</b>		12/18/11							
<b>Test Engineer:</b>		MENGISTU MEKURIA							
<b>Configuration:</b>		EUT WITH INDUCTIVE COVER							
<b>Mode:</b>		TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber B		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.585	-25.0	V	3.0	35.6	1.0	-59.6	-40.0	-19.6	
1.574	-27.8	H	3.0	35.6	1.0	-62.4	-40.0	-22.4	
<b>RB1"49</b>									
1.573	-22.5	V	3.0	35.6	1.0	-57.1	-40.0	-17.1	
1.573	-24.5	H	3.0	35.6	1.0	-59.1	-40.0	-19.1	
<b>RB25 12</b>									
1.585	-25.1	V	3.0	35.6	1.0	-59.6	-40.0	-19.6	
1.563	-24.6	H	3.0	35.6	1.0	-59.2	-40.0	-19.2	
<b>RB50 0</b>									
1.562	-24.5	V	3.0	35.6	1.0	-59.1	-40.0	-19.1	
1.585	-24.4	H	3.0	35.6	1.0	-59.0	-40.0	-19.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**INDUCTIVE CHARGER****ERP LTE BAND 13, QPSK**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		LG ELECTRONICS							
Project #:		11U14141							
Date:		12/18/11							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT WITH INDUCTIVE CHARGER							
Mode:		TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE							
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 27			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1 0									
1.555	-18.8	V	3.0	35.6	1.0	-53.4	-13.0	-40.4	
2.333	-4.6	V	3.0	35.4	1.0	-39.0	-13.0	-26.0	
3.111	-20.5	V	3.0	35.6	1.0	-55.1	-13.0	-42.1	
3.889	-12.5	V	3.0	35.3	1.0	-46.8	-13.0	-33.8	
4.664	-14.9	V	3.0	35.3	1.0	-49.2	-13.0	-36.2	
5.442	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
6.218	-15.2	V	3.0	35.6	1.0	-49.7	-13.0	-36.7	
6.995	-13.8	V	3.0	35.7	1.0	-48.5	-13.0	-35.5	
1.555	-19.6	H	3.0	35.6	1.0	-54.2	-13.0	-41.2	
2.333	-2.8	H	3.0	35.4	1.0	-31.6	-13.0	-18.6	
3.111	-18.7	H	3.0	35.6	1.0	-53.3	-13.0	-40.3	
3.889	-9.4	H	3.0	35.3	1.0	-43.7	-13.0	-30.7	
4.664	-17.7	H	3.0	35.3	1.0	-52.0	-13.0	-39.0	
5.442	-14.4	H	3.0	35.4	1.0	-48.7	-13.0	-35.7	
6.218	-14.3	H	3.0	35.6	1.0	-48.9	-13.0	-35.9	
6.995	-12.6	H	3.0	35.7	1.0	-47.4	-13.0	-34.4	
RB 1 49									
1.555	-20.7	V	3.0	35.6	1.0	-55.3	-13.0	-42.3	
2.360	-14.3	V	3.0	35.4	1.0	-48.7	-13.0	-35.7	
3.111	-18.3	V	3.0	35.6	1.0	-53.0	-13.0	-40.0	
3.889	-14.6	V	3.0	35.3	1.0	-48.8	-13.0	-35.8	
4.664	-16.8	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.442	-12.1	V	3.0	35.4	1.0	-46.4	-13.0	-33.4	
6.218	-12.5	V	3.0	35.6	1.0	-47.0	-13.0	-34.0	
6.995	-15.3	V	3.0	35.7	1.0	-50.0	-13.0	-37.0	
7.772	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6	
1.555	-23.2	H	3.0	35.6	1.0	-57.8	-13.0	-44.8	
2.360	-2.9	H	3.0	35.4	1.0	-37.4	-13.0	-24.4	
3.111	-17.9	H	3.0	35.6	1.0	-52.5	-13.0	-39.5	
3.889	-10.1	H	3.0	35.3	1.0	-44.4	-13.0	-31.4	
4.664	-17.7	H	3.0	35.3	1.0	-52.0	-13.0	-39.0	
5.442	-15.0	H	3.0	35.4	1.0	-49.4	-13.0	-36.4	
6.218	-11.4	H	3.0	35.6	1.0	-45.9	-13.0	-32.9	
6.995	-13.9	H	3.0	35.7	1.0	-48.6	-13.0	-35.6	
RB 25 12									
1.500	-20.0	V	3.0	35.6	1.0	-54.6	-13.0	-41.6	
2.347	-17.7	V	3.0	35.4	1.0	-52.1	-13.0	-39.1	
4.692	-16.8	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
1.500	-22.6	H	3.0	35.6	1.0	-57.2	-13.0	-44.2	
2.347	-11.5	H	3.0	35.4	1.0	-45.9	-13.0	-32.9	
3.128	-19.9	H	3.0	35.6	1.0	-54.5	-13.0	-41.5	
3.910	-16.9	H	3.0	35.3	1.0	-51.2	-13.0	-38.2	
RB50 0									
1.500	-24.0	H	3.0	35.6	1.0	-58.7	-13.0	-45.7	
2.347	-8.9	H	3.0	35.4	1.0	-43.3	-13.0	-30.3	
1.500	-21.6	V	3.0	35.6	1.0	-56.2	-13.0	-43.2	
2.347	-20.2	V	3.0	35.4	1.0	-54.6	-13.0	-41.6	
3.195	-19.3	V	3.0	35.6	1.0	-53.9	-13.0	-40.9	
4.043	-18.1	V	3.0	35.2	1.0	-52.3	-13.0	-39.3	
Note: No other emissions were detected above the system noise floor.									

**LTE BAND 13, 16QAM**

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG ELECTRONICS							
<b>Project #:</b>		11U14141							
<b>Date:</b>		12/18/11							
<b>Test Engineer:</b>		MENGISTU MEKURIA							
<b>Configuration:</b>		EUT WITH INDUCTIVE CHARGER							
<b>Mode:</b>		TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE							

<b>Chamber</b>	<b>Pre-amplifier</b>	<b>Filter</b>	<b>Limit</b>
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>RB1 0</b>									
1.555	-20.3	V	3.0	35.6	1.0	-54.9	-13.0	-41.9	
2.333	-14.4	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
3.111	-19.3	V	3.0	35.6	1.0	-53.9	-13.0	-40.9	
3.889	-14.5	V	3.0	35.3	1.0	-48.7	-13.0	-35.7	
4.664	-16.0	V	3.0	35.3	1.0	-50.3	-13.0	-37.3	
5.442	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
6.218	-16.2	V	3.0	35.6	1.0	-50.8	-13.0	-37.8	
6.995	-12.8	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
1.555	-25.0	H	3.0	35.6	1.0	-59.6	-13.0	-46.6	
2.333	-4.9	H	3.0	35.4	1.0	-39.3	-13.0	-26.3	
3.111	-18.9	H	3.0	35.6	1.0	-53.5	-13.0	-40.5	
3.889	-8.4	H	3.0	35.3	1.0	-42.7	-13.0	-29.7	
4.664	-16.8	H	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.442	-14.0	H	3.0	35.4	1.0	-48.4	-13.0	-35.4	
6.218	-13.2	H	3.0	35.6	1.0	-47.7	-13.0	-34.7	
6.995	-13.2	H	3.0	35.7	1.0	-47.9	-13.0	-34.9	
<b>RB 1 49</b>									
1.555	-20.3	V	3.0	35.6	1.0	-54.9	-13.0	-41.9	
2.360	-17.8	V	3.0	35.4	1.0	-52.3	-13.0	-39.3	
3.889	-14.9	V	3.0	35.3	1.0	-49.2	-13.0	-36.2	
4.664	-16.8	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
5.442	-14.5	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	
6.218	-15.4	V	3.0	35.6	1.0	-49.9	-13.0	-36.9	
1.571	-23.4	H	3.0	35.6	1.0	-58.0	-13.0	-45.0	
2.360	-0.8	H	3.0	35.4	1.0	-35.2	-13.0	-22.2	
3.142	-17.2	H	3.0	35.6	1.0	-51.8	-13.0	-38.8	
3.889	-10.8	H	3.0	35.3	1.0	-45.1	-13.0	-32.1	
4.664	-17.3	H	3.0	35.3	1.0	-51.6	-13.0	-38.6	
5.442	-13.9	H	3.0	35.4	1.0	-48.3	-13.0	-35.3	
6.218	-12.7	H	3.0	35.6	1.0	-47.2	-13.0	-34.2	
<b>RB 25 12</b>									
1.500	-21.0	V	3.0	35.6	1.0	-55.6	-13.0	-42.6	
2.346	-20.8	V	3.0	35.4	1.0	-55.3	-13.0	-42.3	
3.128	-19.6	V	3.0	35.6	1.0	-54.2	-13.0	-41.2	
1.500	-24.3	V	3.0	35.6	1.0	-58.9	-13.0	-45.9	
2.346	-8.1	V	3.0	35.4	1.0	-42.5	-13.0	-29.5	
3.128	-17.8	V	3.0	35.6	1.0	-52.4	-13.0	-39.4	
3.910	-17.9	V	3.0	35.3	1.0	-52.1	-13.0	-39.1	
<b>RB50 0</b>									
1.500	-21.9	V	3.0	35.6	1.0	-56.5	-13.0	-43.5	
2.347	-17.5	V	3.0	35.4	1.0	-52.0	-13.0	-39.0	
1.500	-24.2	H	3.0	35.6	1.0	-58.9	-13.0	-45.9	
2.347	-9.3	H	3.0	35.4	1.0	-43.8	-13.0	-30.8	
4.877	-15.7	H	3.0	35.3	1.0	-50.0	-13.0	-37.0	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

**LTE QPSK RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG ELECTRONICS							
<b>Project #:</b>		11U14141							
<b>Date:</b>		12/18/11							
<b>Test Engineer:</b>		MENGISTU MEKURIA							
<b>Configuration:</b>		EUT WITH INDUCTIVE CHARGER							
<b>Mode:</b>		TX, LTE BAND 13, 10 MHz BANDWIDTH, QPSK MODE							
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1 0									
1.592	-25.2	V	3.0	35.6	1.0	-59.8	-40.0	-19.8	
1.573	-23.5	H	3.0	35.6	1.0	-58.1	-40.0	-18.1	
RB1 49									
1.573	-21.8	V	3.0	35.6	1.0	-56.4	-40.0	-16.4	
1.573	-17.2	H	3.0	35.6	1.0	-51.8	-40.0	-11.8	
RB25 12									
1.584	-25.5	V	3.0	35.6	1.0	-60.1	-40.0	-20.1	
1.584	-24.1	H	3.0	35.6	1.0	-58.7	-40.0	-18.7	
( RB50 0									
1.584	-24.7	V	3.0	35.6	1.0	-59.3	-40.0	-19.3	
1.600	-24.0	H	3.0	35.6	1.0	-58.6	-40.0	-18.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

**LTE 16QAM RADIATED MEASUREMENT IN 1559-1610MHZ BAND**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		LG ELECTRONICS							
<b>Project #:</b>		11U14141							
<b>Date:</b>		12/18/11							
<b>Test Engineer:</b>		MENGISTU MEKURIA							
<b>Configuration:</b>		EUT WITH INDUCTIVE CHARGER							
<b>Mode:</b>		TX, LTE BAND 13, 10 MHz BANDWIDTH, 16QAM MODE							
Chamber		Pre-amplifier		Filter		Limit			
5m Chamber B		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB1_0									
1.585	-25.3	V	3.0	35.6	1.0	-59.9	-40.0	-19.9	
1.574	-23.5	H	3.0	35.6	1.0	-58.1	-40.0	-18.1	
RB1_49									
1.573	-22.1	V	3.0	35.6	1.0	-56.7	-40.0	-16.7	
1.573	-23.5	H	3.0	35.6	1.0	-58.1	-40.0	-18.1	
RB25_12									
1.585	-25.6	V	3.0	35.6	1.0	-60.2	-40.0	-20.2	
1.563	-24.5	H	3.0	35.6	1.0	-59.1	-40.0	-19.1	
RB50_0									
1.562	-25.7	V	3.0	35.6	1.0	-60.3	-40.0	-20.3	
1.585	-24.3	H	3.0	35.6	1.0	-58.9	-40.0	-18.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									