FCC 47 CFR PART 22 SUBPART H
FCC 47 CFR PART 24 SUBPART E
FCC 47 CFR PART 27 SUBPART L
CERTIFICATION TEST REPORT

FOR

GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC

MODEL NUMBER: VS980, LGVS980 and LG-VS980

FCC ID: ZNFVS980

REPORT NUMBER: 13U15118-1, Revision C

ISSUE DATE: July 15, 2013

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	05/26/13	Initial Issue	P. Kim
A	07/05/13	Added 16QAM Mode in Maximum Power Section	I.Netto
B	07/09/13	Update labels and administrative information	P. Kim
C	07/15/13	Update accessory information, Section 5.6 Description of Test Set Up - Support Equipment	P. Kim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: **LG ELECTRONICS MOBILECOMM U.S. A. INC**

EUT DESCRIPTION: GSM/CDMA/WCDMA + LTE Phone Bluetooth, WLAN (2.4GHz & 5GHz) and NFC

MODEL: VS980, LGVS980 and LG-VS980

SERIAL NUMBER: (CONDUCTED) 990002590002174
(RADIATED) 9900026590002182

DATE TESTED: May 22 – June 8, 2013

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22H AND 24E	PASS

UL Verification Services Inc. 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 Verification Services Inc By:

PHILIP KIM
WiSE OPERATIONS MANAGER
UL Verification Services Inc

Tested By:

STEVEN TRAN
WiSE LAB TECHNICIAN
UL Verification Services Inc

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, and FCC CFR Part 24.

3. FACILITIES AND ACCREDITATION

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

UL Verification Services Inc. 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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 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 LTE Phone Bluetooth, WLAN(2.4GHz & 5GHz) and NFC

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak of both conducted and ERP / EIRP output powers as follows:

Part 22 Cellular Band					
Frequency range (MHz)	Modulation	Conducted		ERP	
		dBm	mW	dBm	mW
824.2 - 848.8	GPRS	33.20	2089.3	29.27	845.3
824.2 - 848.8	EGPRS	26.70	467.7	26.89	488.7

Part 24 PCS Band					
Frequency range (MHz)	Modulation	Conducted		EIRP	
		dBm	mW	dBm	mW
1850.2-1909.8	GPRS	30.60	1148.2	29.01	796.2
1850.2-1909.8	EGPRS	26.70	467.7	25.97	395.4

Part 22 Cellular Band					
Frequency range (MHz)	Modulation	Conducted		ERP	
		dBm	mW	dBm	mW
824.7 - 848.31	CDMA (1xRTT)	25.20	331.1	23.46	221.8
824.7 - 848.31	1xEVDO Rel 0	25.20	331.1	25.62	364.8

Part 24 PCS Band					
Frequency range (MHz)	Modulation	Conducted		EIRP	
		dBm	mW	dBm	mW
1851.25 - 1908.75	CDMA (1xRTT)	24.70	295.1	23.90	245.5
1851.25 - 1908.75	1xEVDO Rel 0	24.70	295.1	23.99	250.6

Part 22 Cellular Band					
Frequency range (MHz)	Modulation	Conducted		ERP	
		dBm	mW	dBm	mW
826.4 - 846.6	REL 99	23.70	234.4	20.73	118.3
826.4 - 846.6	HSUPA	23.70	234.4	22.00	158.5

Part 24 PCS Band					
Frequency range (MHz)	Modulation	Conducted		EIRP	
		dBm	mW	dBm	mW
1852.4 – 1907.6	REL 99	23.70	234.4	24.66	292.4
1852.4 – 1907.6	HSUPA	23.70	234.4	22.58	181.1

Part 27L LTE Band 4 MODE (5 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1712.5-1752.5	QPSK	1/0	23.50	223.9	20.63	115.6
	16QAM		22.70	186.2	19.63	91.8

Part 27L LTE Band 4 MODE (10.0- MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1715-1750	QPSK	1/0	23.60	229.1	21.61	144.9
	16QAM		22.60	182.0	20.61	115.1

Part 27L LTE Band 4 MODE (15.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1717.5-1747.5	QPSK	1/0	23.70	234.4	20.61	115.1
	16QAM		22.60	182.0	19.61	91.4

Part 27L LTE Band 4 MODE (20.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1720.0-1745	QPSK	100/0	23.60	229.1	20.33	107.9
	16QAM		22.60	182.0	19.43	87.7

Part 27 LTE Band 13 MODE (10 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		ERP	
			dBm	mW	dBm	mW
777.0 - 787.0	QPSK	1/0	23.60	229.1	21.20	131.8
	16QAM		22.60	182.0	20.10	102.3

5.3. SOFTWARE AND FIRMWARE

The test utility software used during was VS9800RA and firmware used was g2_vzw-userdebug 4.2.2 JDQ39B VS9800RA.1368678220.

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integral antenna with a maximum peak gain as follow:

Frequency (MHz)	Gain (dBi)
850MHz	-3.99
1900MHz	-0.27
1700MHz	-2.48
750MHz	-4.13

5.5. WORST-CASE CONFIGURATION AND MODE

Based on the investigation results, the highest peak power and enhanced data rate is the worst-case scenario for all measurements.

Worst-case modes: GPRS, UMTS WCDMA and UMTS HSUPA Sub-test 3.

Since the EUT is a portable device, to determine the worst/highest emissions, the X, Y, and Z orientations of the EUT with respect to the turntable and the worst among them with headset and an AC adapter were investigated. After the investigations, Y-Orientation without AC adapter and headset was the worst case for cell bands, and Z-Orientation for PCS bands.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	TEN PAO	MCS-04WT2	NA	NA
Headset	I-SOUND	EAB62729001	NA	NA

I/O CABLES (CONDUCTED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	RF	1	Antenna Port	Un-Shielded	0.2m	NA
2	RF In/Out	1	Call Box	Un-Shielded	0.5m	NA
3	RF Out	1	Spectrum Analyzer	None	None	NA

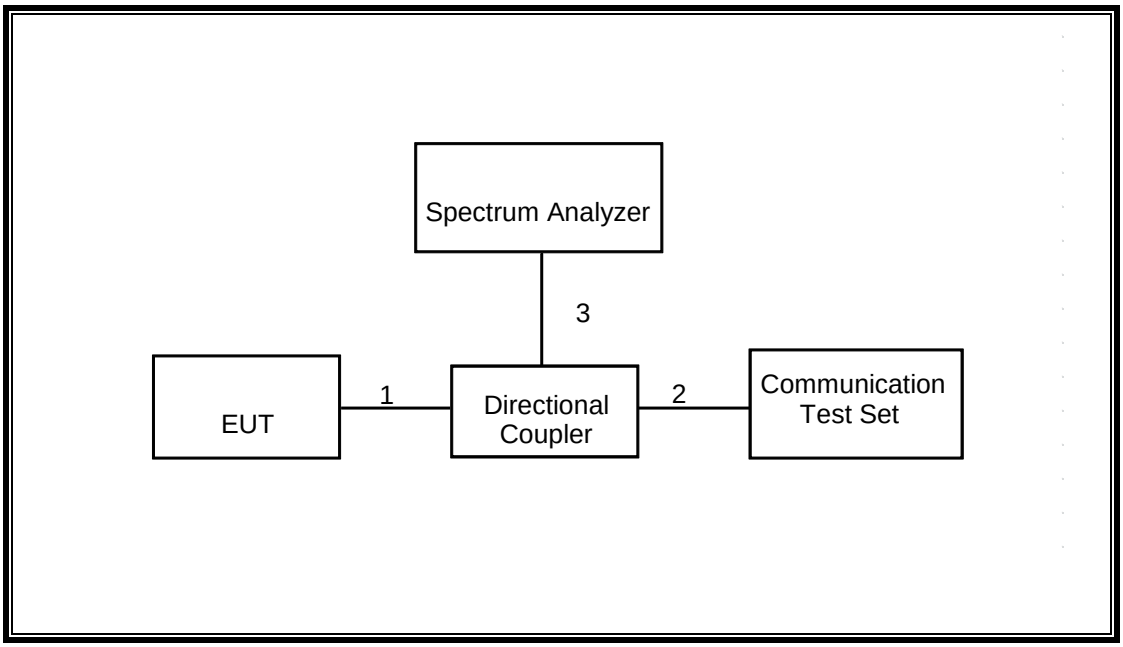
I/O CABLES (RADIATED SETUP)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	Un-shielded	1m	NA
2	Jack	1	Earphone	Un-shielded	1.2m	NA

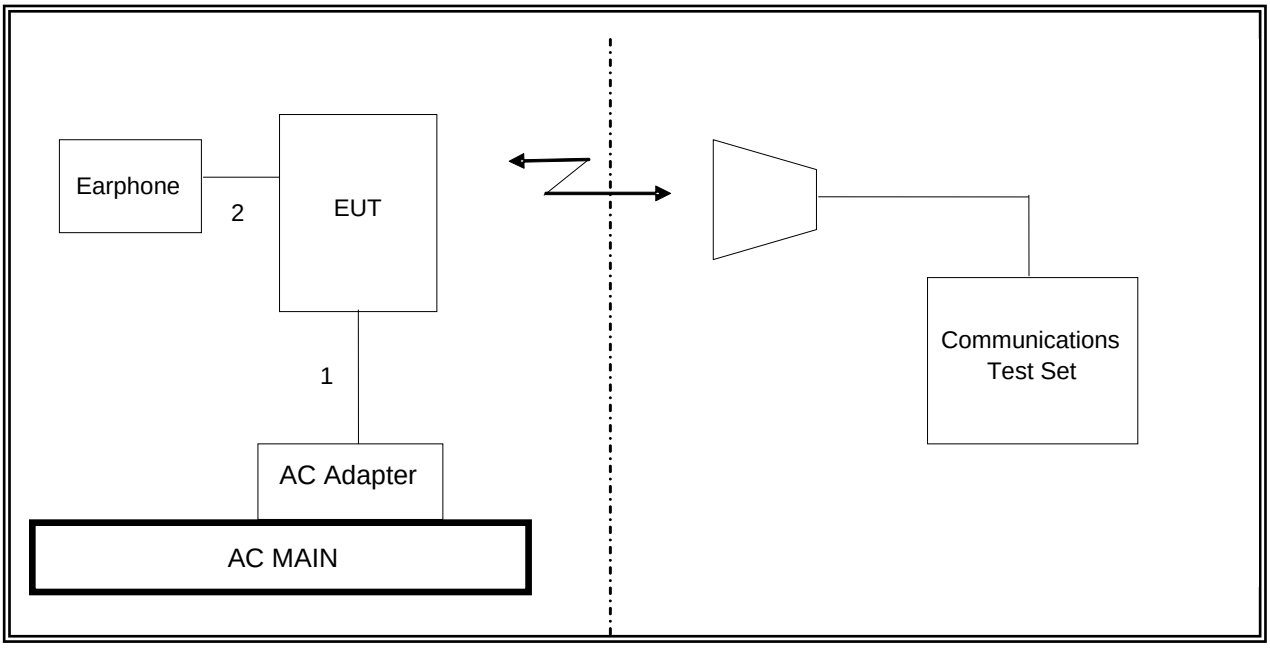
TEST SETUP

The EUT is a stand-alone device. A link is established between the EUT and the communications test set.

SETUP DIAGRAM FOR RF CONDUCTED TESTS



SETUP DIAGRAM FOR RF 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**
Antenna, Horn, 18 GHz	EMCO	3115	C00872	10/25/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	12/11/13
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01179	02/26/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/13
Communication Test Set	Agilent / HP	E5515C	C01086	06/20/13
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	01/09/14
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/13
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/13
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	02/14/14

7. RF POWER OUTPUT VERIFICATION

7.1. GPRS MODE

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW.≥ 26dB BW, typically 3MHz.
- Set a marker to point the corresponding peak value.

GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900
Press Connection control to choose the different menus
Press RESET > choose all to reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM+GPRS or GSM+EGPRS
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850/900
> 27 dBm for EGPRS 850/900
> 30 dBm for GPRS1800/1900
> 26 dBm for EGPRS1800/1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stable)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0> 4 dB
Slot Config > Unchanged (if already set under MS Signal)

TCH >	choose desired test channel	
Hopping >	Off	
Main Timeslot >	3 (Default)	
Network	Coding Scheme >	CS1 (GPRS) and MCS5 (EGPRS)
	Bit Stream >	2E9-1PSR Bit Pattern
AF/RF	Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input	
Connection	Press Signal On to turn on the signal and change settings	

RESULTS

7.1.1. GSM and GPRS

CELL

Mode	Ch.	f (MHz)	1 time slots Avg
GSM	128	824.2	33.1
	190	836.6	32.9
	251	848.8	33

	Ch.	f (MHz)	1 time slots Avg	2 time slots Avg
GPRS	128	824.2	32.70	31.00
	190	836.6	32.90	31.10
	251	848.8	33.00	31.20

PCS

Mode	Ch.	f (MHz)	1 time slots Avg
GSM	512	1850.2	30.5
	661	1880.0	30.6
	810	1909.8	30.6

	Ch.	f (MHz)	1 time slots Avg	2 time slots Avg
GPRS	512	1850.2	30.40	28.40
	661	1880.0	30.60	28.40
	810	1909.8	30.60	28.50

7.1.2. EGPRS

CELL

	Ch.	f (MHz)	1 time slots Avg	2 time slots Avg
GPRS	128	824.2	27.00	27.00
	190	836.6	27.00	27.00
	251	848.8	26.90	26.90

PCS

	Ch.	f (MHz)	1 time slots Avg	2 time slots Avg
GPRS	512	1850.2	26.60	26.50
	661	1880.0	26.50	26.50
	810	1909.8	26.60	26.50

7.2. CDMA MODE

7.2.1. CDMA 1xRtt

BC0

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 0	RC1 SO55 (Loopback)	1013	824.70	25.2
		384	836.52	25.1
		777	848.31	25.1
	RC3 SO55 (Loopback)	1013	824.70	25.1
		384	836.52	25.2
		777	848.31	25.2
	RC3 SO32 (+F-SCH)	1013	824.70	25.1
		384	836.52	25.1
		777	848.31	25.0

BC1

Band	Mode	Ch	Freq. (MHz)	Avg Pwr (dBm)
BC 1	RC1 SO55 (Loopback)	25	1851.25	24.6
		600	1880.00	24.6
		1175	1908.75	24.7
	RC3 SO55 (Loopback)	25	1851.25	24.6
		600	1880.00	24.6
		1175	1908.75	24.7
	RC3 SO32 (+F-SCH)	25	1851.25	24.7
		600	1880.00	24.7
		1175	1908.75	24.7

7.2.2. CDMA EV-DO

BC0

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC0	307.2 kbps (2 slot, QPSK)	1013	824.70	25.1
		384	836.52	25.0
		777	848.31	25.1

BC1

Band	FTAP Rate	Channel	f (MHz)	Avg Pwr (dBm)
BC 1	307.2 kbps (2 slot, QPSK)	25	1851.25	24.7
		600	1880.00	24.7
		1175	1908.75	24.7

7.3. UMTS REL 99 MODE

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW.≥ 26dB BW, typically 5MHz.
- Set a marker to point the corresponding peak value.

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel99
	Subtest	-
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	HSDPA FRC	Not Applicable
	HSUPA Test	Not Applicable
	Power Control Algorithm	Algorithm2
	βc	Not Applicable
	βd	Not Applicable
	βec	Not Applicable
	βc/βd	8/15
	βhs	Not Applicable
	βed	Not Applicable

RESULTS

7.3.1. WCDMA REL 99

CELL

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.6
		4183	836.6	23.6
		4233	846.6	23.6

PCS

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.5
		9400	1880.0	23.6
		9538	1907.6	23.5

7.4. HSDPA REL 7

The following 4 Sub-tests were completed according to Release 6 and later procedures in section 5.2 of 3GPP TS34.121.

Summary of settings are illustrated below:

	Mode	Rel5 HSDPA			
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Result

CELL

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band V	Subtest 1	4132	826.4	0	23.5
		4183	836.6	0	23.5
		4233	846.6	0	23.5
	Subtest 2	4132	826.4	0	23.6
		4183	836.6	0	23.5
		4233	846.6	0	23.4
	Subtest 3	4132	826.4	0.5	23.0
		4183	836.6	0.5	23.0
		4233	846.6	0.5	23.0
	Subtest 4	4132	826.4	0.5	23.0
		4183	836.6	0.5	23.0
		4233	846.6	0.5	23.1

PCS

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	23.5
		9400	1880.0	0	23.7
		9538	1907.6	0	23.7
	Subtest 2	9262	1852.4	0	23.5
		9400	1880.0	0	23.6
		9538	1907.6	0	23.5
	Subtest 3	9262	1852.4	0.5	23.0
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.0
	Subtest 4	9262	1852.4	0.5	23.1
		9400	1880.0	0.5	23.2
		9538	1907.6	0.5	23.0

Note * Maximum output power levels that are possible for all subtests reported.

7.5. HSUPA REL 6

TEST PROCEDURE

The following summary of these settings are illustrated below:

	Mode	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA	Rel6 HSUPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15 47/15	56/75	47/15
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

RESULTS

CELL

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
WCDMA Band V	Subtest 1	4132	826.4	0	22.7
		4183	836.6	0	22.9
		4233	846.6	0	23.0
	Subtest 2	4132	826.4	2	21.6
		4183	836.6	2	21.4
		4233	846.6	2	21.6
	Subtest 3	4132	826.4	1	22.4
		4183	836.6	1	22.7
		4233	846.6	1	22.2
	Subtest 4	4132	826.4	2	21.8
		4183	836.6	2	21.9
		4233	846.6	2	21.6
	Subtest 5	4132	826.4	0	23.6
		4183	836.6	0	23.6
		4233	846.6	0	23.6

PCS

Band	Mode	UL Ch No.	Freq. (MHz)	MPR	Avg Pwr (dBm)
W-CDMA Band II	Subtest 1	9262	1852.4	0	22.8
		9400	1880.0	0	23.1
		9538	1907.6	0	23.0
	Subtest 2	9262	1852.4	2	21.4
		9400	1880.0	2	21.6
		9538	1907.6	2	21.6
	Subtest 3	9262	1852.4	1	22.9
		9400	1880.0	1	23.0
		9538	1907.6	1	22.6
	Subtest 4	9262	1852.4	2	22.2
		9400	1880.0	2	21.8
		9538	1907.6	2	22.2
	Subtest 5	9262	1852.4	0	23.6
		9400	1880.0	0	23.7
		9538	1907.6	0	23.6

Note * Maximum output power levels that are possible for all subtests reported.

7.6. LTE BAND 4

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average Power (dBm)	
							Maximum Power	Power Reduction
20	20050	1720.0	QPSK	1	0	0	23.6	19.6
				1	49	0	23.6	19.5
				1	99	0	23.6	19.5
				50	0	1	22.3	19.4
				50	24	1	22.2	19.4
				50	49	1	22.2	19.4
				100	0	1	22.3	19.4
			16QAM	1	0	1	22.6	19.2
				1	49	1	22.6	19.5
				1	99	1	22.5	19.4
				50	0	2	21.3	19.4
				50	24	2	21.2	19.4
				50	49	2	21.2	19.4
				100	0	2	21.3	19.4
	20175	1732.5	QPSK	1	0	0	23.4	19.6
				1	49	0	23.3	19.5
				1	99	0	23.6	19.5
				50	0	1	22.3	19.5
				50	24	1	22.4	19.4
				50	49	1	22.3	19.5
				100	0	1	22.3	19.5
			16QAM	1	0	1	21.9	19.3
				1	49	1	21.8	19.2
				1	99	1	21.8	19.4
				50	0	2	21.3	19.5
				50	24	2	21.3	19.4
				50	49	2	21.4	19.5
				100	0	2	21.3	19.5
	20300	1745.0	QPSK	1	0	0	23.6	19.6
				1	49	0	23.6	19.6
				1	99	0	23.4	19.5
				50	0	1	22.4	19.5
				50	24	1	22.4	19.5
				50	49	1	22.3	19.5
				100	0	1	22.4	19.5
			16QAM	1	0	1	22.2	19.7
				1	49	1	22.2	19.6
				1	99	1	22.1	19.6
				50	0	2	21.5	19.5
				50	24	2	21.4	19.4
				50	49	2	21.3	19.4
				100	0	2	21.3	19.4

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)	
15	20025	1717.5	QPSK	1	0	0	23.7	19.7
				1	37	0	23.4	19.6
				1	74	0	23.5	19.7
				36	0	1	22.3	19.6
				36	18	1	22.3	19.6
				36	37	1	22.2	19.6
				75	0	1	22.2	19.6
			16QAM	1	0	1	22.6	19.6
				1	37	1	22.4	19.4
				1	74	1	22.5	19.5
				36	0	2	21.4	19.5
				36	18	2	21.3	19.5
				36	37	2	21.3	19.5
				75	0	2	21.3	19.5
	20175	1732.5	QPSK	1	0	0	23.6	19.6
				1	37	0	23.6	19.6
				1	74	0	23.5	19.4
				36	0	1	22.3	19.5
				36	18	1	22.3	19.4
				36	37	1	22.4	19.5
				75	0	1	22.3	19.5
			16QAM	1	0	1	22.5	19.5
				1	37	1	22.5	19.4
				1	74	1	22.5	19.3
				36	0	2	21.3	19.5
				36	18	2	21.3	19.5
				36	37	2	21.4	19.5
				75	0	2	21.3	19.4
	20325	1747.5	QPSK	1	0	0	23.5	19.6
				1	37	0	23.6	19.6
				1	74	0	23.4	19.6
				36	0	1	22.4	19.6
				36	18	1	22.4	19.6
				36	37	1	22.3	19.6
				75	0	1	22.3	19.6
			16QAM	1	0	1	22.3	19.7
				1	37	1	22.4	19.7
				1	74	1	22.3	19.7
				36	0	2	21.3	19.6
				36	18	2	21.3	19.6
				36	37	2	21.2	19.6
				75	0	2	21.2	19.6

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)	
10	20000	1715.0	QPSK	1	0	0	23.4	19.6
				1	24	0	23.4	19.7
				1	49	0	23.4	19.7
				25	0	1	22.3	19.6
				25	12	1	22.2	19.6
				25	24	1	22.2	19.6
				50	0	1	22.1	19.5
			16QAM	1	0	1	21.9	19.7
				1	24	1	21.8	19.7
				1	49	1	21.8	19.4
				25	0	2	21.3	19.6
				25	12	2	21.3	19.6
				25	24	2	21.3	19.6
				50	0	2	21.2	19.4
	20175	1732.5	QPSK	1	0	0	23.4	19.5
				1	24	0	23.4	19.4
				1	49	0	23.5	19.4
				25	0	1	22.3	19.4
				25	12	1	22.2	19.4
				25	24	1	22.2	19.4
				50	0	1	22.3	19.5
			16QAM	1	0	1	21.9	19.3
				1	24	1	21.8	19.2
				1	49	1	22.0	19.2
				25	0	2	21.3	19.5
				25	12	2	21.2	19.5
				25	24	2	21.2	19.5
				50	0	2	21.2	19.5
	20350	1750.0	QPSK	1	0	0	23.6	19.6
				1	24	0	23.5	19.5
				1	49	0	23.4	19.5
				25	0	1	22.3	19.6
				25	12	1	22.1	19.5
				25	24	1	22.2	19.6
				50	0	1	22.2	19.6
			16QAM	1	0	1	22.6	19.7
				1	24	1	22.4	19.7
				1	49	1	22.4	19.7
				25	0	2	21.3	19.6
				25	12	2	21.2	19.5
				25	24	2	21.2	19.6
				50	0	2	21.1	19.5

BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Avg Pwr (dBm)	
5	19975	1712.5	QPSK	1	0	0	23.5	19.7
				1	12	0	23.6	19.7
				1	24	0	23.5	19.7
				12	0	1	22.2	19.5
				12	6	1	22.3	19.6
				12	11	1	22.4	19.6
				25	0	1	22.2	19.6
			16QAM	1	0	1	22.5	19.5
				1	12	1	22.5	19.6
				1	24	1	22.5	19.6
				12	0	2	21.3	19.5
				12	6	2	21.3	19.6
				12	11	2	21.4	19.6
				25	0	2	21.3	19.6
	20175	1732.5	QPSK	1	0	0	23.5	19.6
				1	12	0	23.6	19.6
				1	24	0	23.5	19.5
				12	0	1	22.2	19.5
				12	6	1	22.3	19.5
				12	11	1	22.3	19.4
				25	0	1	22.3	19.5
			16QAM	1	0	1	22.5	19.6
				1	12	1	22.5	19.5
				1	24	1	22.5	19.5
				12	0	2	21.3	19.5
				12	6	2	21.4	19.5
				12	11	2	21.4	19.5
				25	0	2	21.3	19.5
	20375	1752.5	QPSK	1	0	0	23.4	19.6
				1	12	0	23.4	19.7
				1	24	0	23.4	19.6
				12	0	1	22.2	19.6
				12	6	1	22.3	19.6
				12	11	1	22.3	19.6
				25	0	1	22.2	19.6
			16QAM	1	0	1	22.7	19.6
				1	12	1	22.7	19.6
				1	24	1	22.6	19.6
				12	0	2	21.2	19.5
				12	6	2	21.2	19.6
				12	11	2	21.2	19.5
				25	0	2	21.1	19.6

7.7. LTE BAND 13

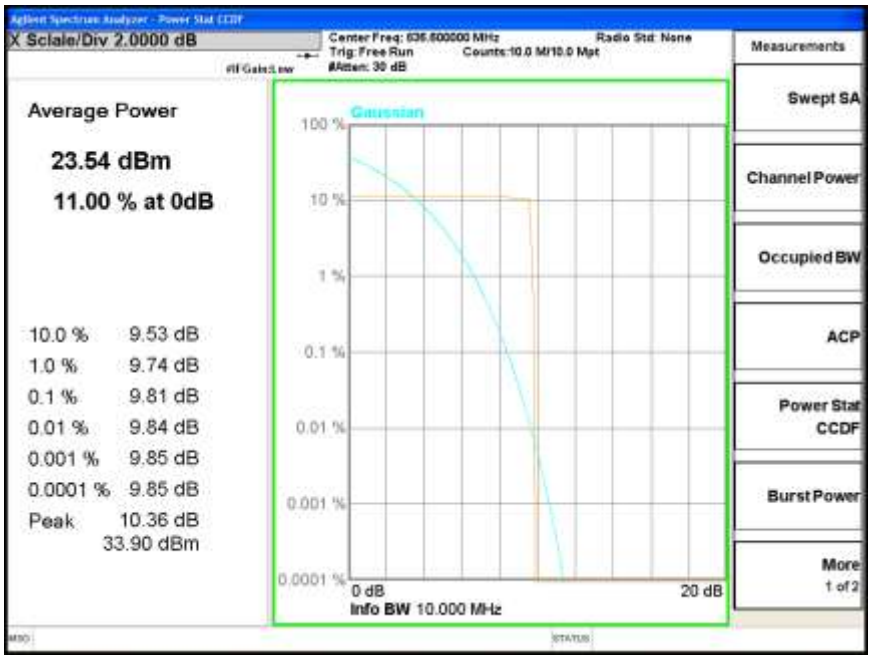
BW (MHz)	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average Power (dBm)	
							Maximum Power	Power Reduction
10	23230	782.0	QPSK	1	0	0	23.6	19.6
				1	24	0	23.6	19.5
				1	49	0	23.5	19.5
				25	0	1	22.3	19.5
				25	12	1	22.3	19.5
				25	24	1	22.3	19.4
				50	0	1	22.2	19.4
			16QAM	1	0	1	22.6	19.7
				1	24	1	22.6	19.7
				1	49	1	22.6	19.7
				25	0	2	21.4	19.5
				25	12	2	21.3	19.5
				25	24	2	21.3	19.4
				50	0	2	21.2	19.3

8. Peak to Average Power Ratio

8.1. GPRS

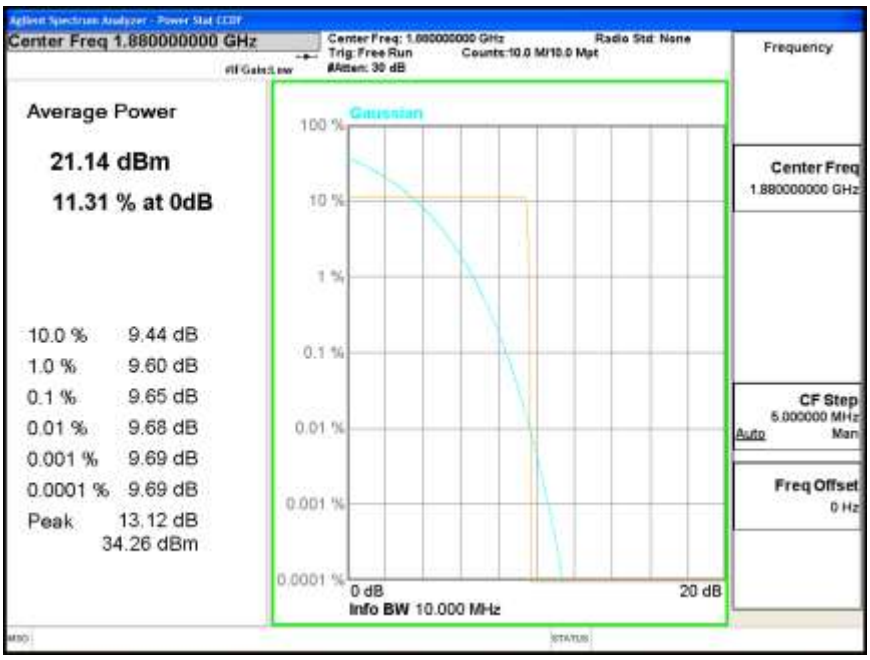
CELL

MID CH



PCS

MID CH



8.1. EGPRS

CELL

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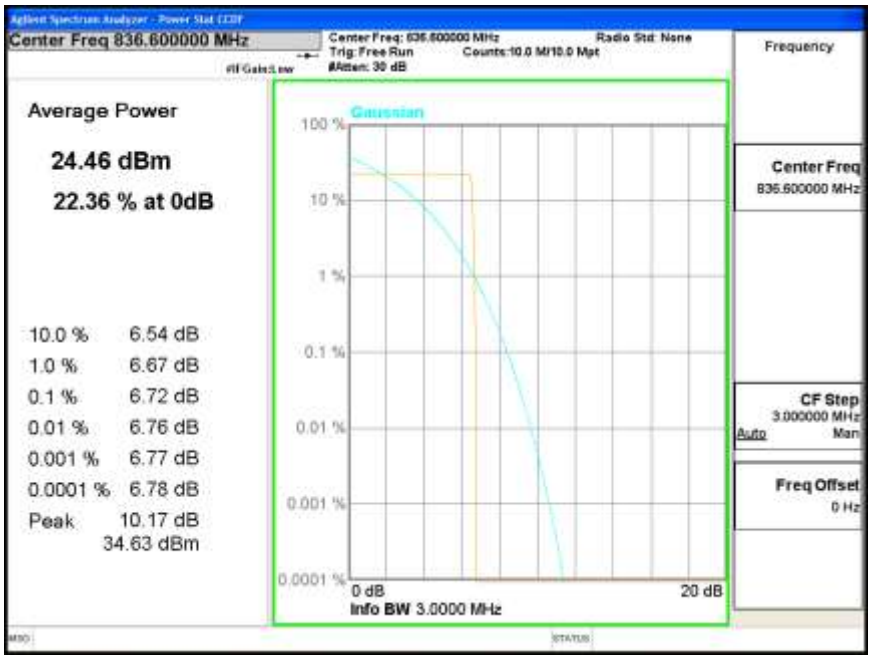

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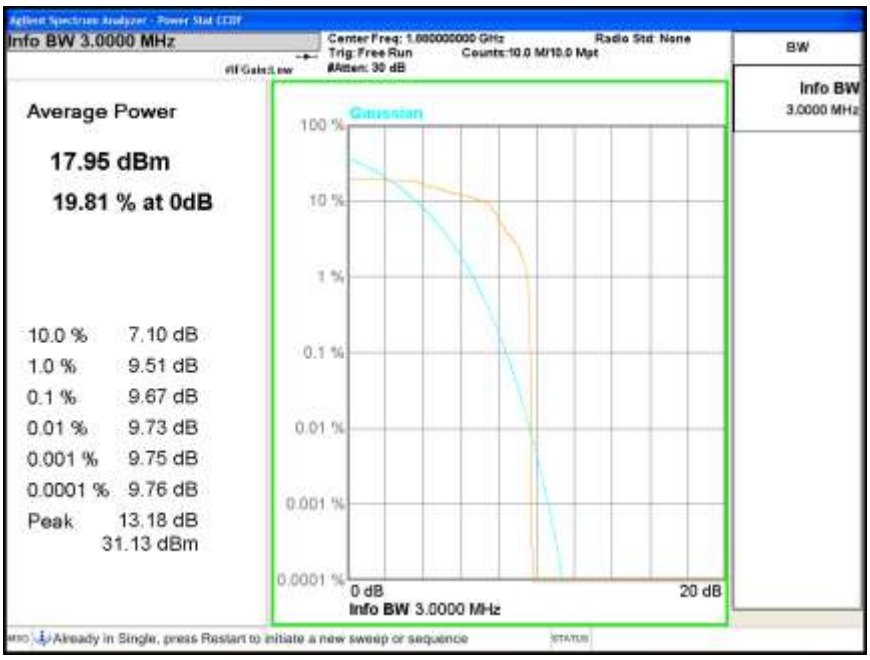

8.1. CDMA RTT

BC0

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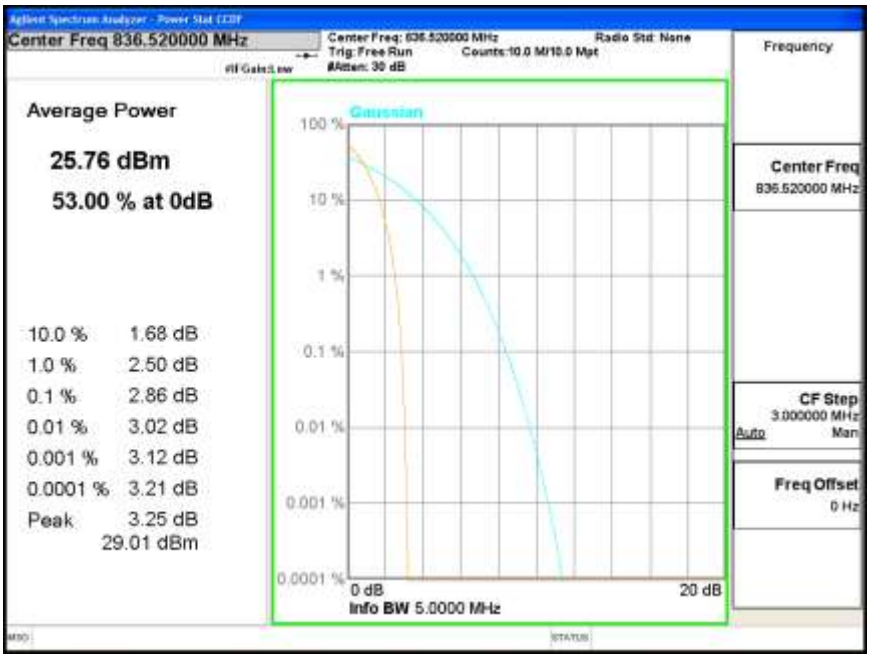
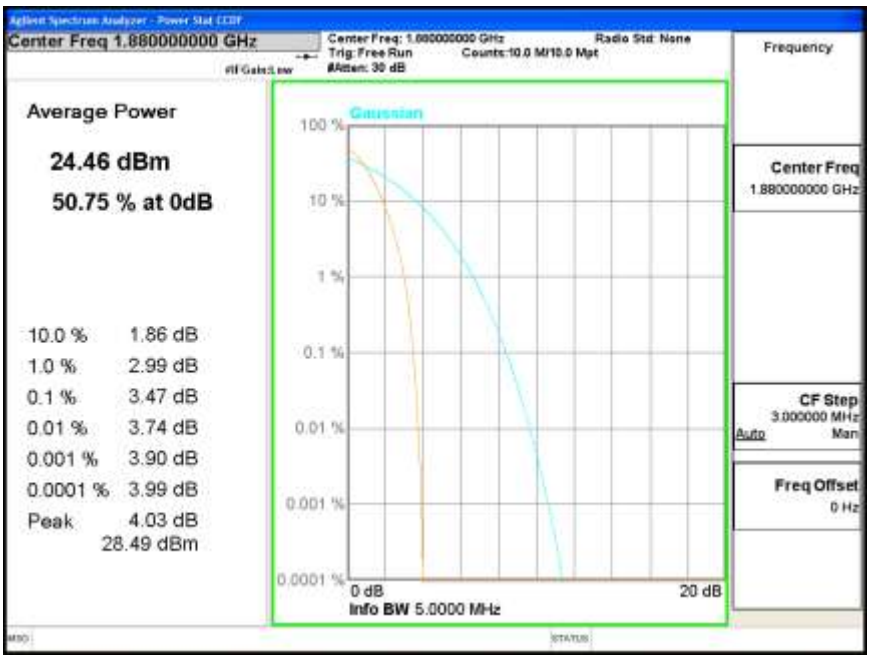


BC1

MID CH



8.1. CDMA EV-DO

BC0

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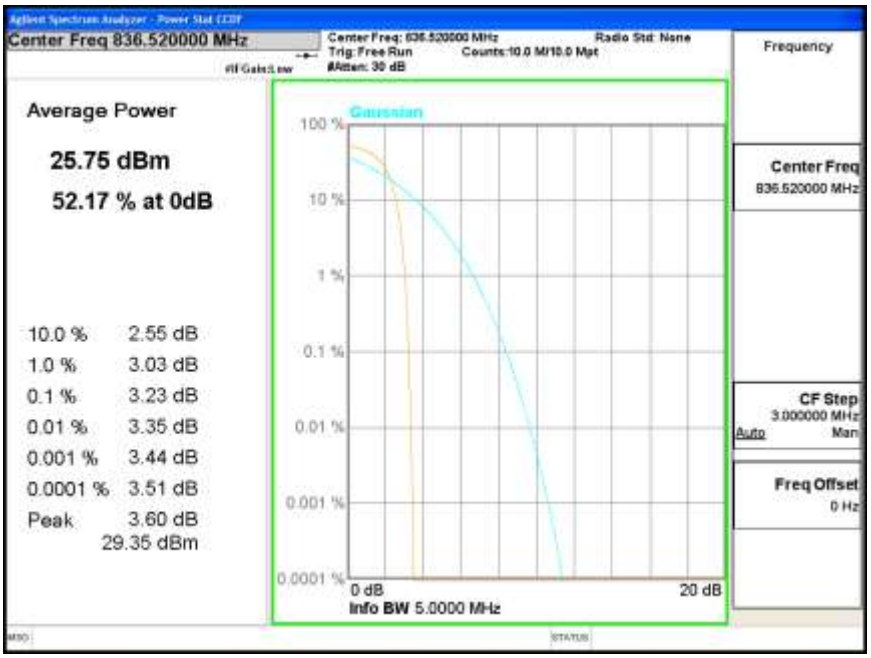
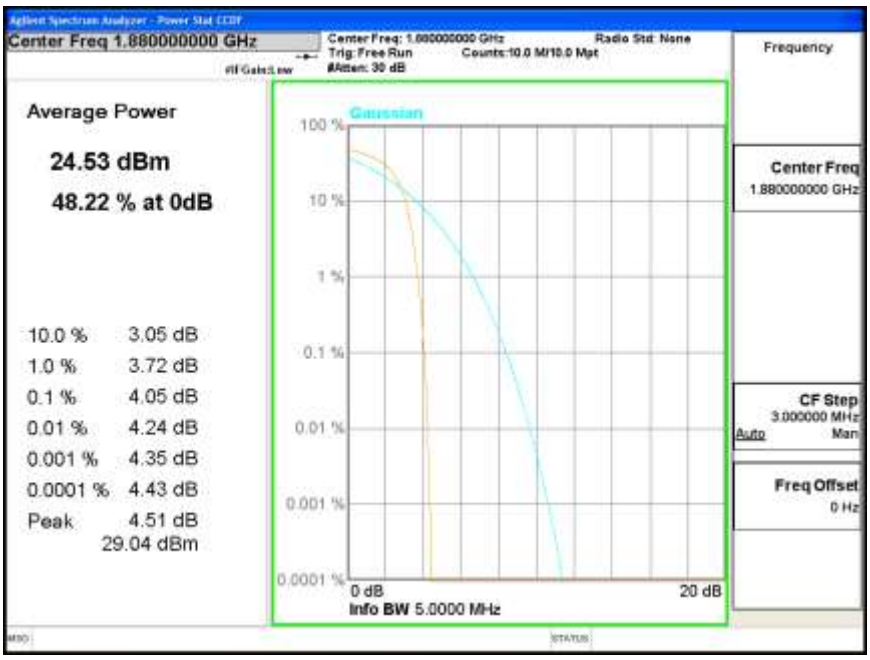


BC1

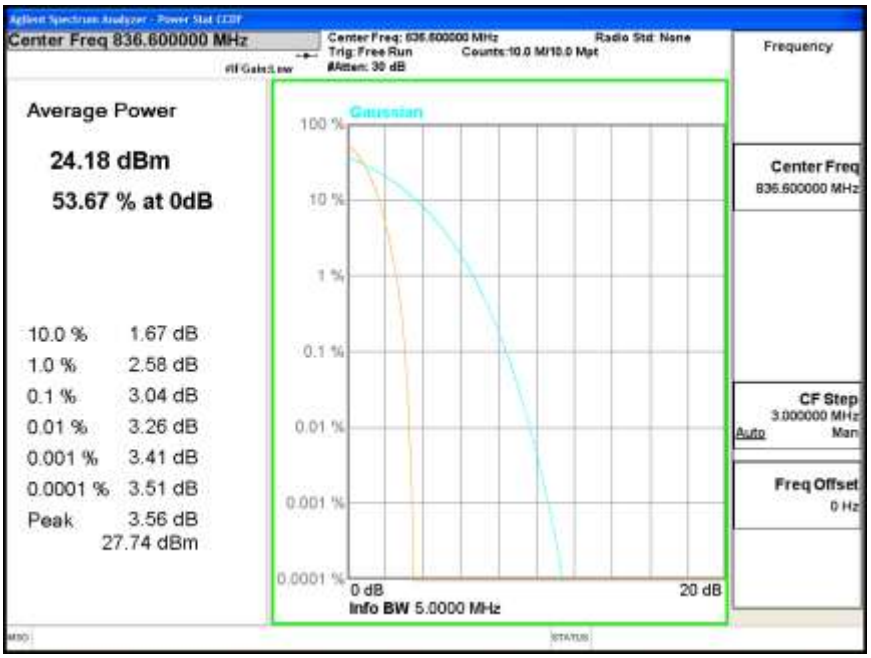
MID CH



8.1. WCDMA REL99

CELL

MID CH



PCS

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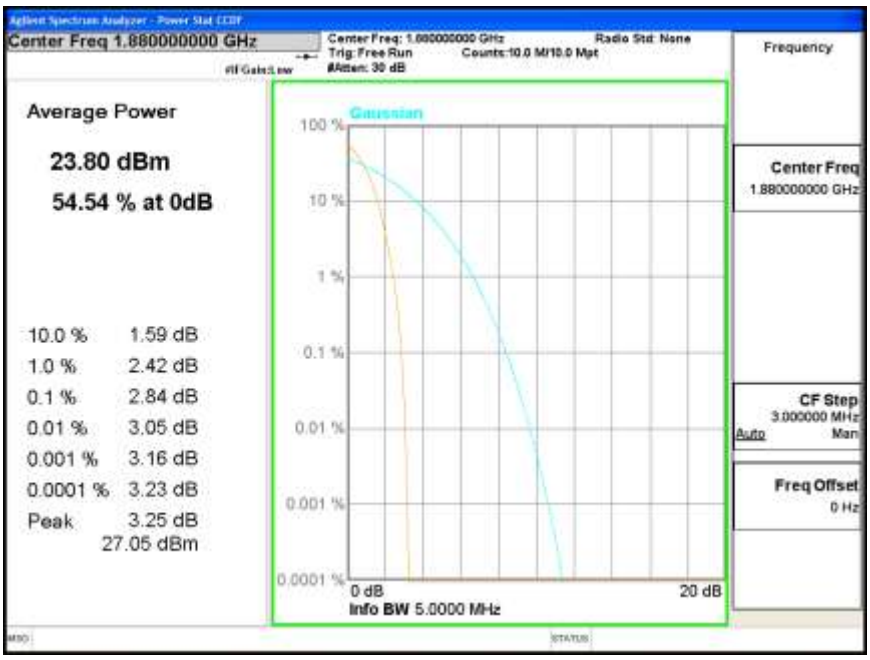
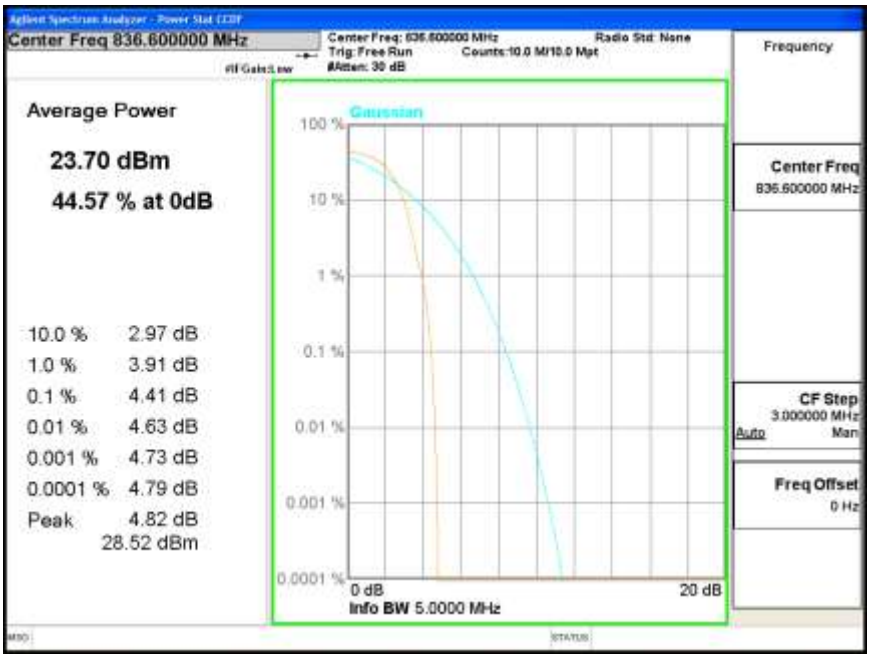


8.1. WCDMA HSUPA

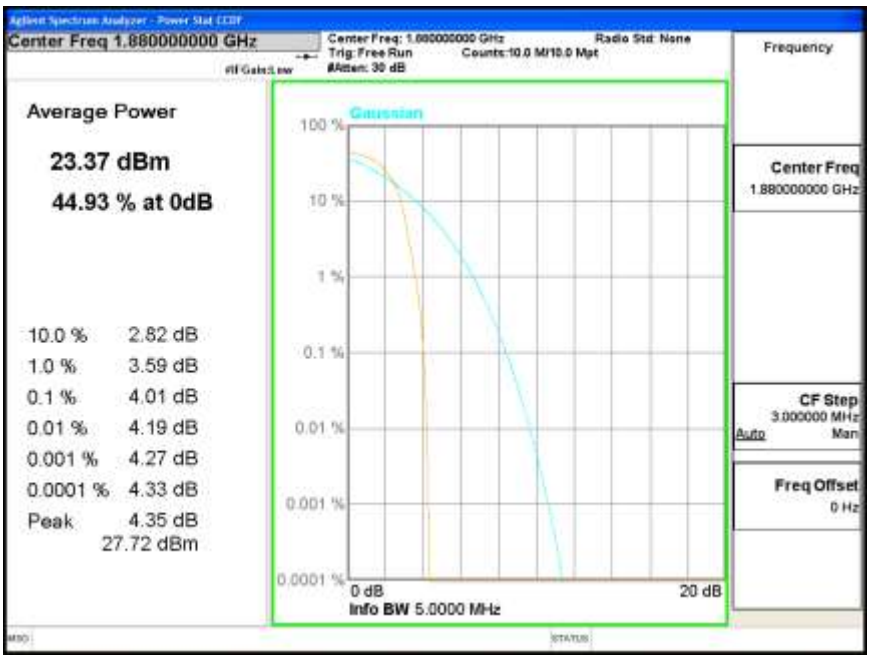
CELL

MID CH



PCS

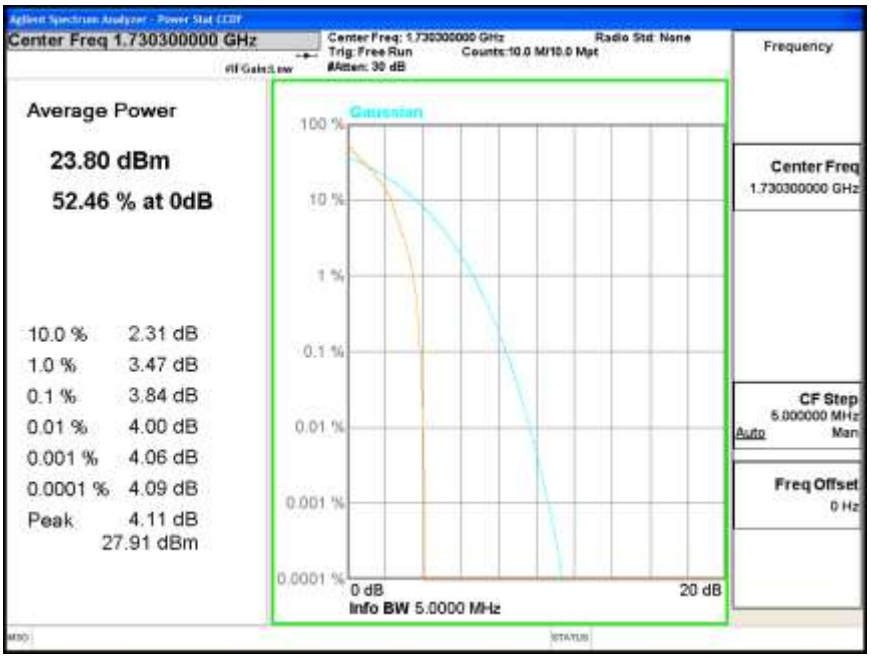
MID CH



8.1. LTE BAND 4 5MHz

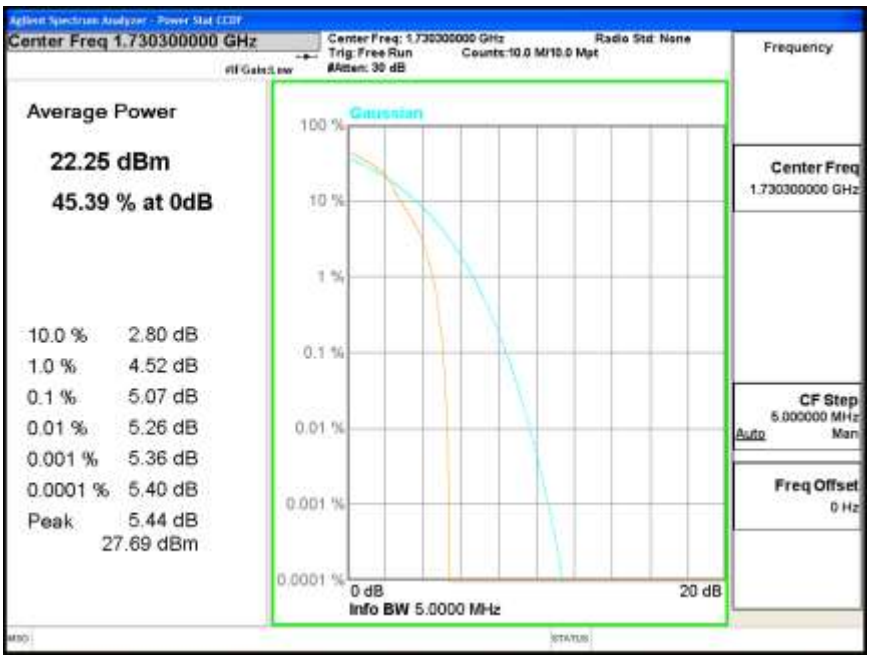
QPSK

MID CH



16QAM

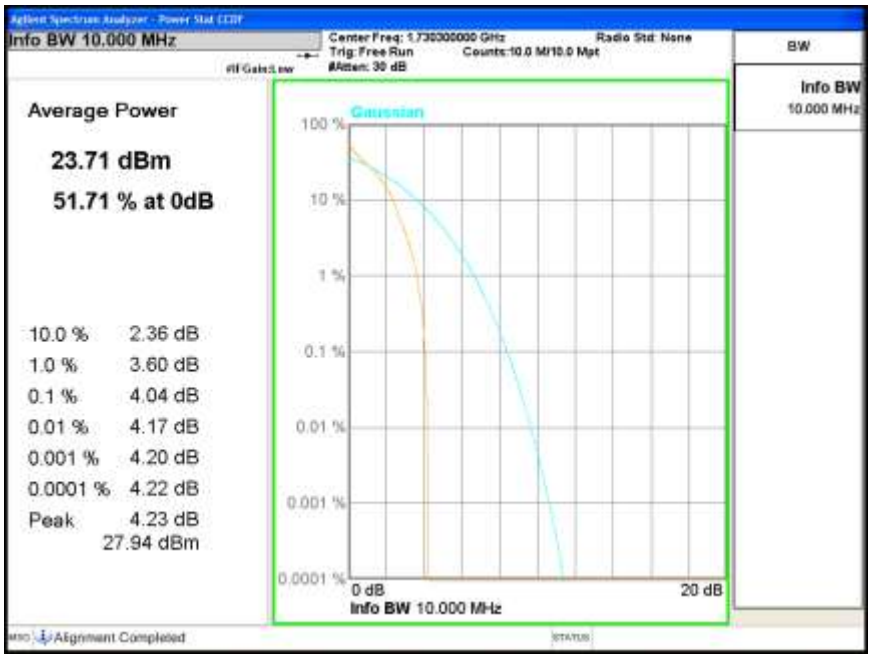
MID CH



8.1. LTE BAND 4 10MHz

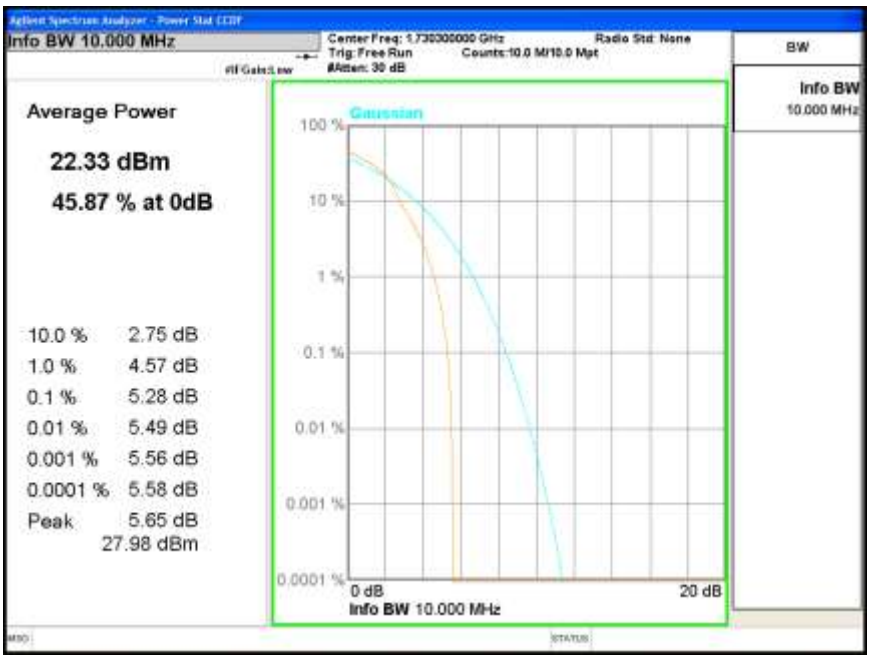
QPSK

MID CH



16QAM

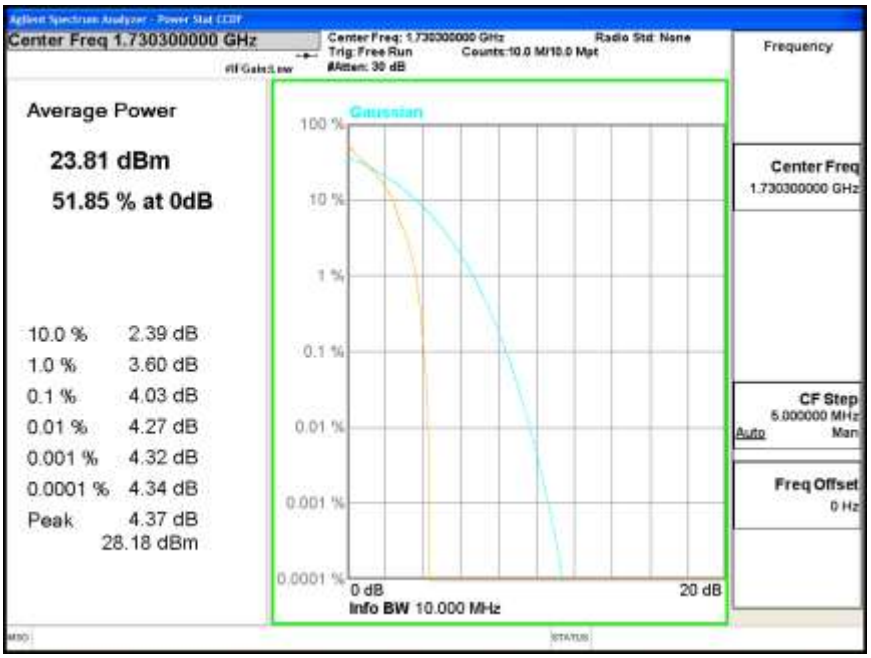
MID CH



8.1. LTE BAND 4 15MHz

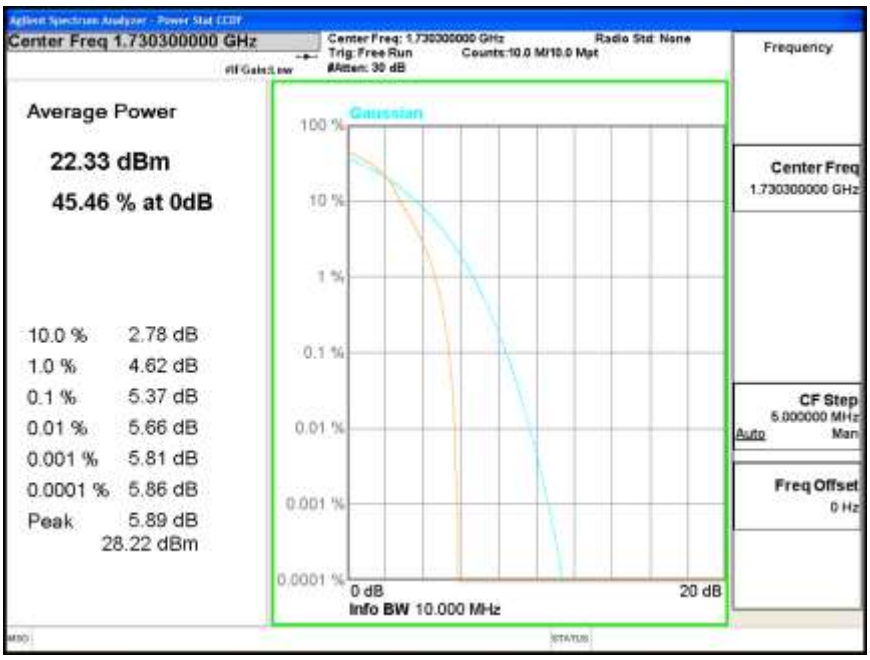
QPSK

MID CH



16QAM

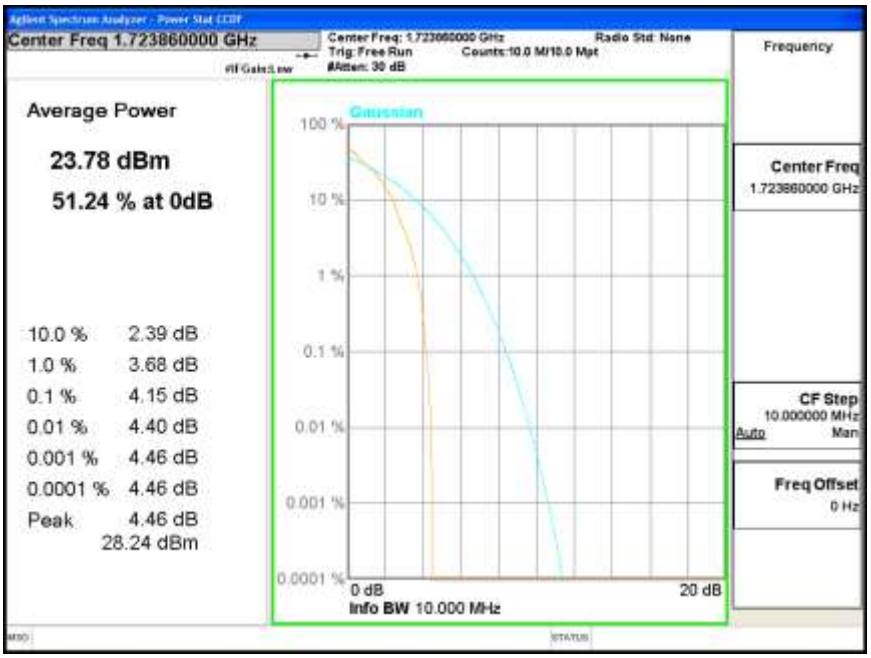
MID CH



8.1. LTE BAND 4 20MHz

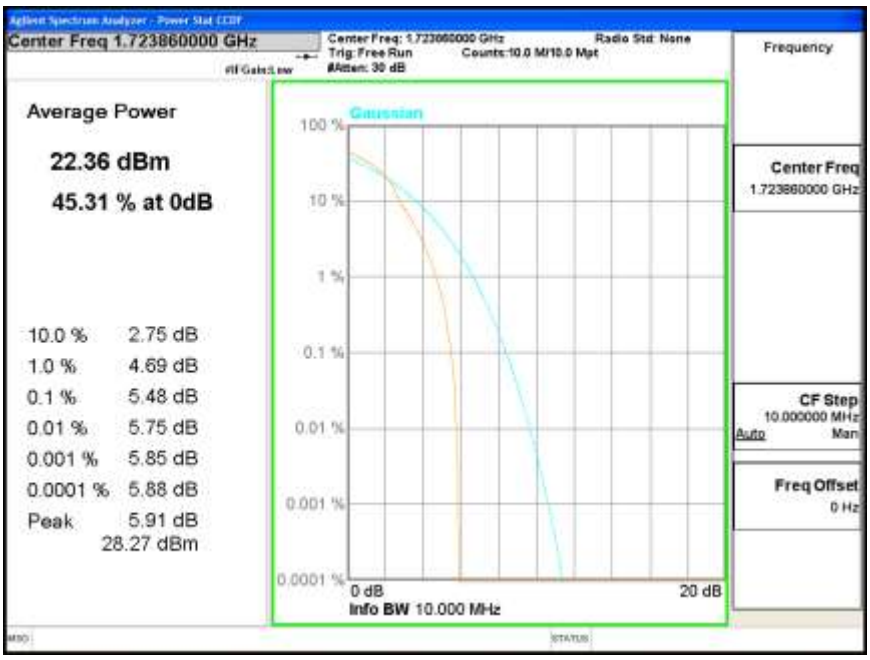
QPSK

MID CH



16QAM

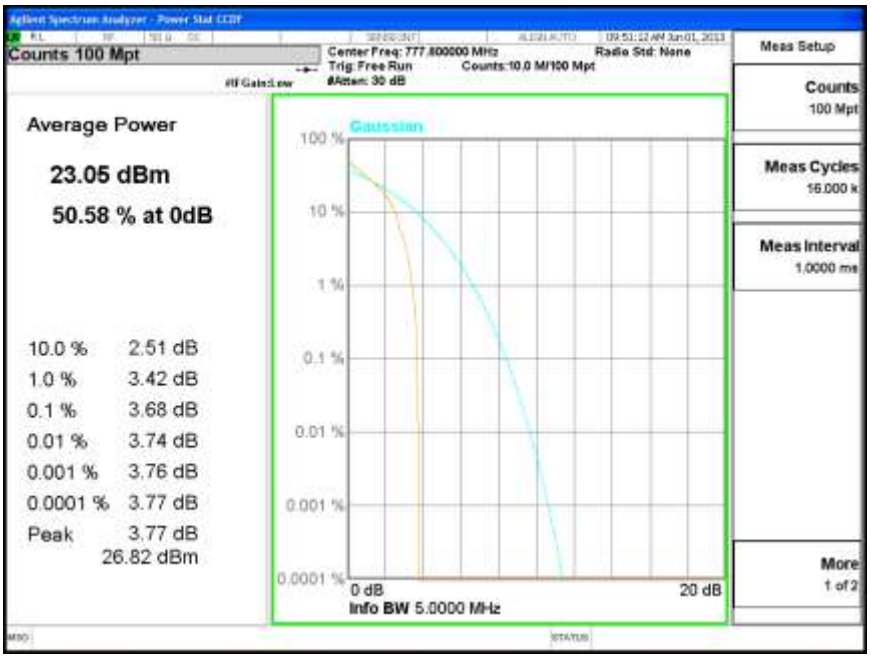
MID CH



8.1. LTE BAND 13 10MHz

QPSK

MID CH



16QAM

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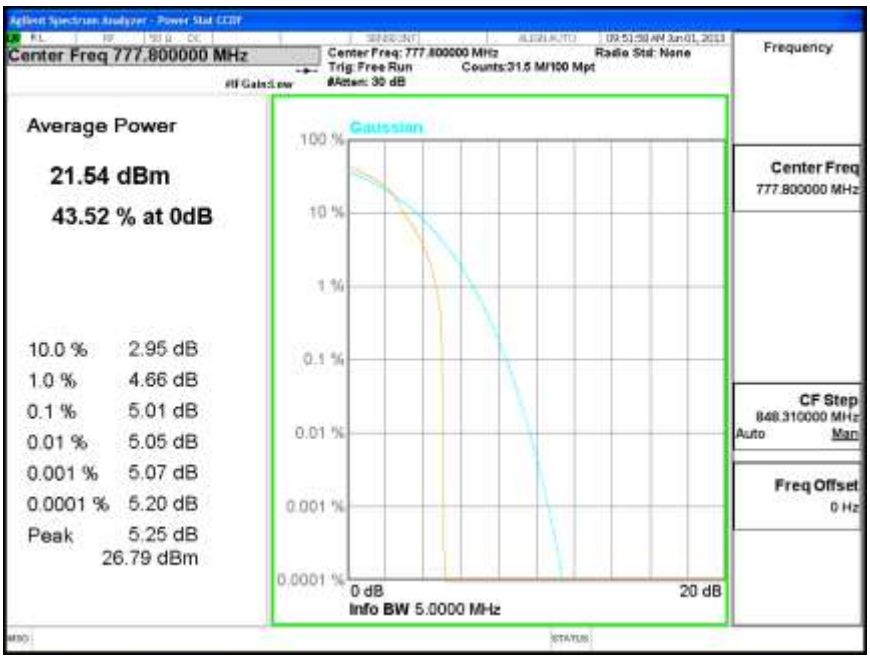


9. CONDUCTED TEST RESULTS

9.1. 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

- GPRS
- CDMA 2000, CDMA EV-DO
- UMTS REL 99, and HSUPA
- LTE Band 4 and Band 13

RESULTS

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
Cellular	GPRS	128	824.20	251.1908	313.718
		190	836.60	249.8958	312.290
		251	848.80	237.0533	319.434
PCS		512	1850.2	250.3149	313.234
		661	1880.0	239.9879	317.742
		810	1909.8	236.9014	301.649

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
Cellular	EGPRS	128	824.20	234.7905	308.489
		190	836.60	247.6150	315.780
		251	848.80	245.6720	314.796
PCS		512	1850.2	234.6144	308.196
		661	1880.0	251.0225	324.157
		810	1909.8	259.2402	313.888

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Cellular	CDMA 1xRtt	4357	826.4	1.2782	1.411
		4408	836.6	1.2795	1.394
		4458	846.6	1.2616	1.427
PCS		9662	1852.4	1.2897	1.415
		9800	1880	1.2522	1.391
		9938	1907.6	1.2905	1.404

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Cellular	CDMA EV-DO	4357	826.4	1.3334	2.573
		4408	836.6	1.2949	1.914
		4458	846.6	1.3007	1.627
PCS		9662	1852.4	1.2767	1.437
		9800	1880	1.2766	1.375
		9938	1907.6	1.2846	1.553

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Cellular	REL 99	4357	826.4	4.1808	4.619
		4408	836.6	4.1358	4.603
		4458	846.6	4.1228	4.536
PCS		9662	1852.4	4.1299	4.582
		9800	1880	4.1024	4.571
		9938	1907.6	4.0797	4.609

Band	Mode	Channel	f (MHz)	99% BW (MHz)	-26dB BW (MHz)
Cellular	HUSPA	4357	826.4	4.2672	4.507
		4408	836.6	4.1233	4.536
		4458	846.6	4.1630	4.550
PCS		9662	1852.4	4.1353	4.572
		9800	1880	4.1793	4.462
		9938	1907.6	4.2429	4.534

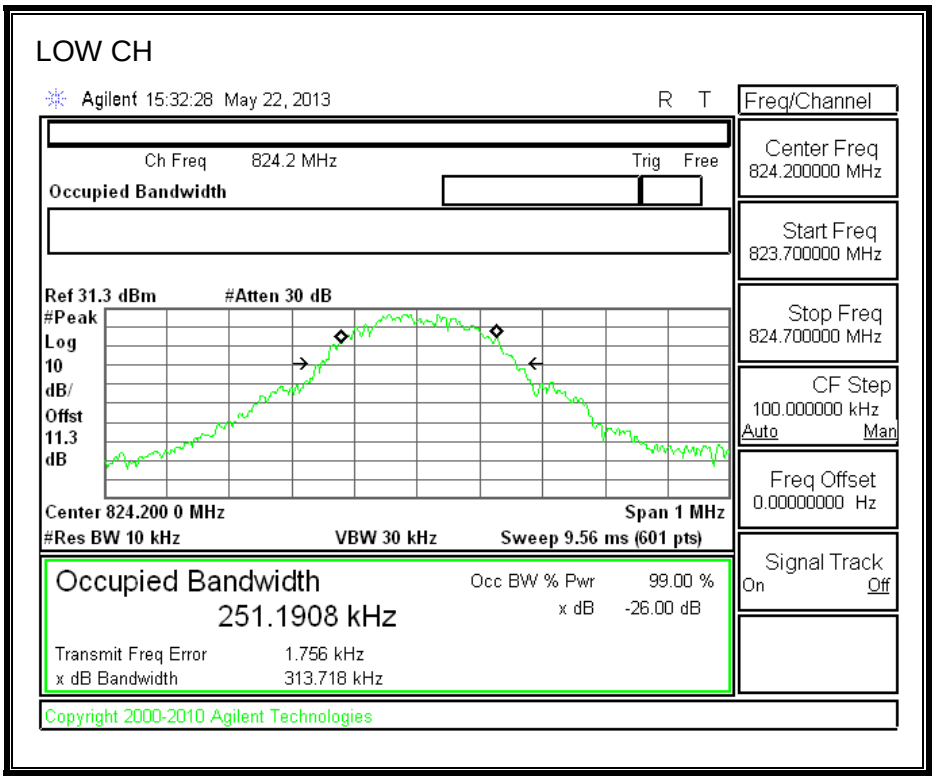
Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE Band 4	5.0 MHz BAND QPSK	12/6	1712.5	2.1610	2.511
		25/0		4.4585	4.693
	5.0 MHz BAND 16QAM	12/6		2.1506	2.591
		25/0		4.3955	4.676
	5.0 MHz BAND QPSK	12/6	1732.5	2.1300	2.447
		25/0		4.4817	4.671
	5.0 MHz BAND 16QAM	12/6		2.1536	2.591
		25/0		4.4420	4.790
	5.0 MHz BAND QPSK	12/6	1752.5	2.1485	2.364
		25/0		4.4955	4.670
	5.0 MHz BAND 16QAM	12/6		2.1480	2.486
		25/0		4.4280	4.728
	10 MHz BAND QPSK	25/12	1715.0	4.4372	4.618
		50/0		8.9944	9.603
	10 MHz BAND 16QAM	25/12		4.4065	5.159
		50/0		8.9222	9.215
	10 MHz BAND QPSK	25/12	1732.5	4.4839	4.977
		50/0		8.7718	9.188
	10 MHz BAND 16QAM	25/12		4.4562	4.911
		50/0		8.8889	9.159
	10 MHz BAND QPSK	25/12	1750.0	4.4373	4.912
		50/0		8.9203	9.456
	10 MHz BAND 16QAM	25/12		4.4706	5.034
		50/0		8.8600	9.209

Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE Band 4	15 MHz BAND QPSK	36/18	1717.5	6.4760	7.072
		75/0		13.4456	13.729
	15 MHz BAND 16QAM	36/18		6.4355	7.543
		75/0		13.3586	13.881
	15 MHz BAND QPSK	36/18	1732.5	6.3742	7.773
		75/0		13.4732	13.840
	15 MHz BAND 16QAM	36/18		6.4144	7.127
		75/0		13.2917	13.771
	15 MHz BAND QPSK	36/18	1747.5	6.4371	7.079
		75/0		13.2706	13.934
	15 MHz BAND 16QAM	36/18		6.4765	7.304
		75/0		13.3808	14.071
	20 MHz BAND QPSK	100/0	1720.0	17.8635	18.743
		50/25		9.0141	9.769
	20 MHz BAND 16QAM	100/0		18.0903	18.690
		50/25		8.8336	9.243
	20 MHz BAND QPSK	50/25	1732.5	8.9451	9.385
		100/0		17.6026	18.490
	20 MHz BAND 16QAM	50/25		8.8629	9.176
		100/0		17.6791	18.636
	20 MHz BAND QPSK	50/25	1745.0	8.9517	9.590
		100/0		17.9712	18.641
	20 MHz BAND 16QAM	50/25		8.7800	9.602
		100/0		17.5805	18.622

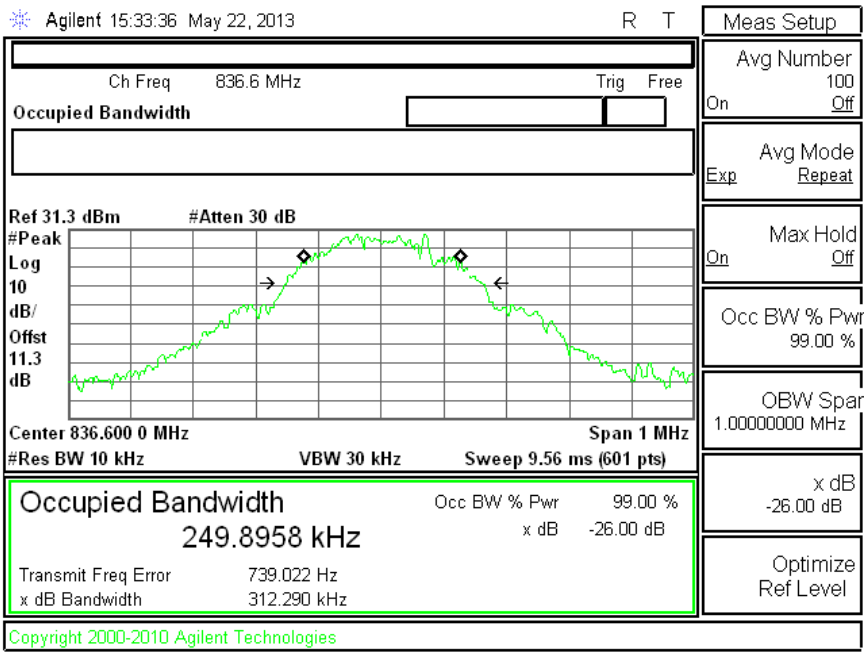
Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE Band 13	10 MHz BAND QPSK	25/12	782	4.4242	4.730
		50/0		8.8731	9.318
	10 MHz BAND 16QAM	25/12		4.4983	4.736
		50/0		8.9514	9.174

9.1.1. GPRS MODE

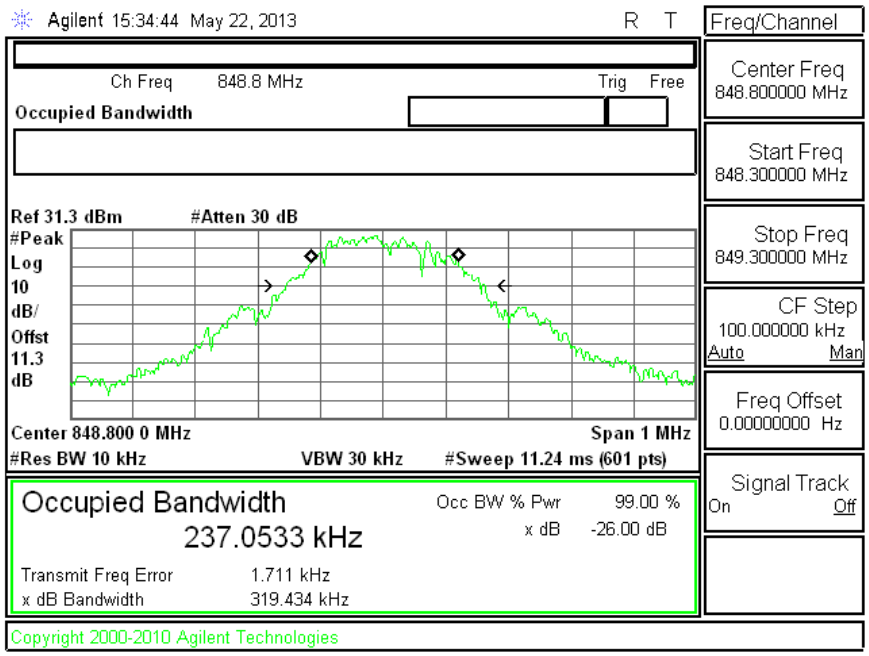
CELL BAND



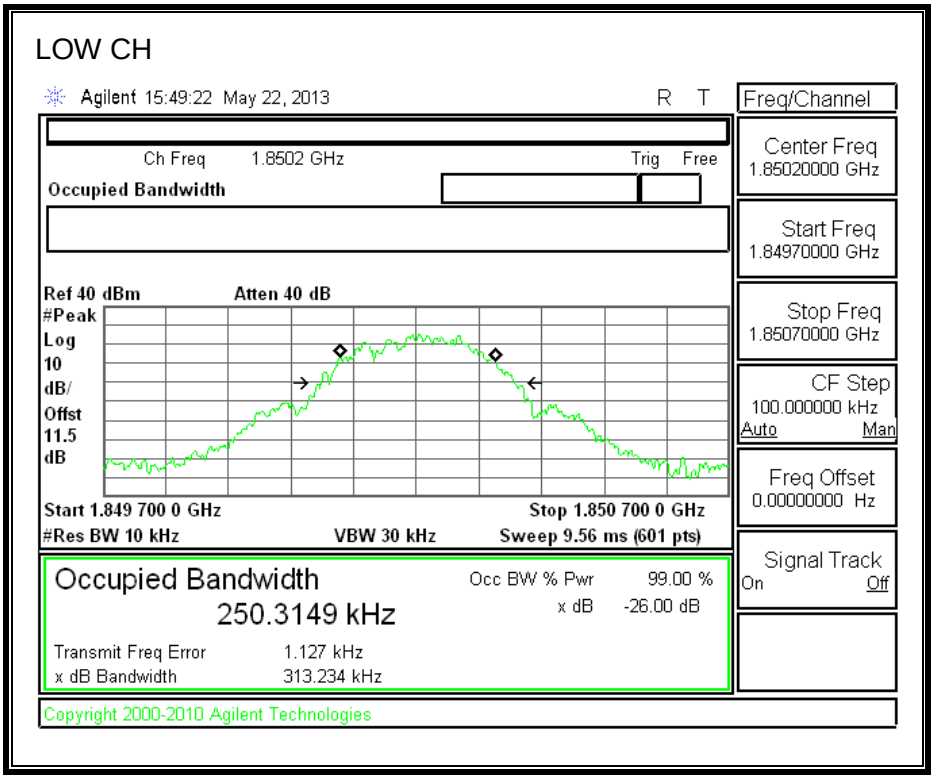
MID CH



HIGH CH



PCS Band



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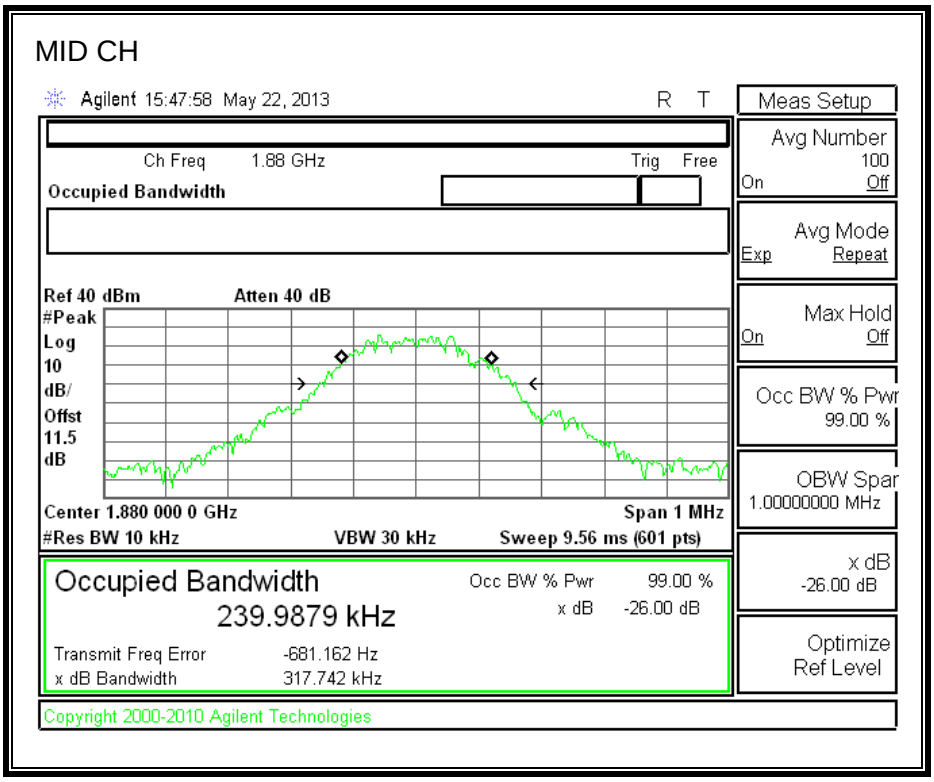

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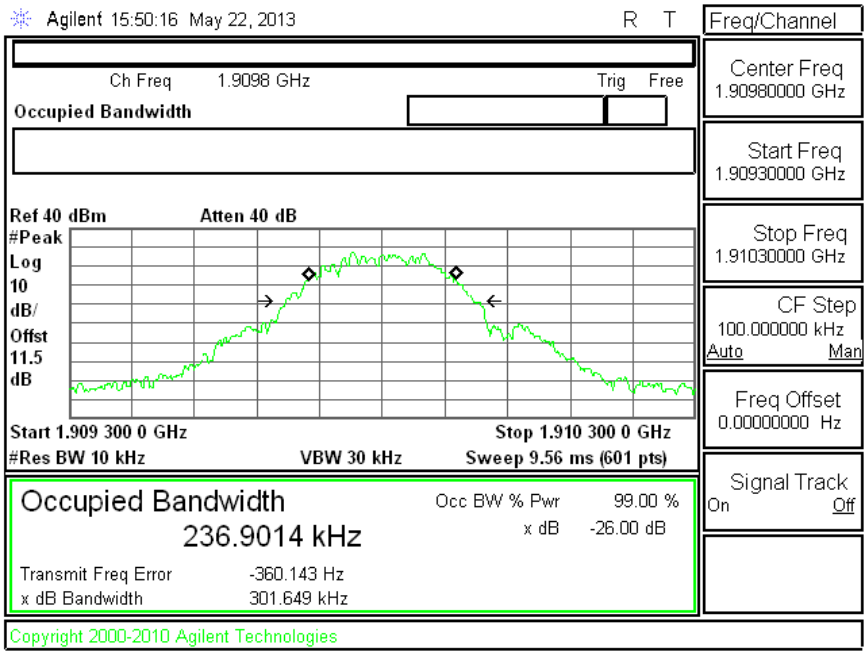
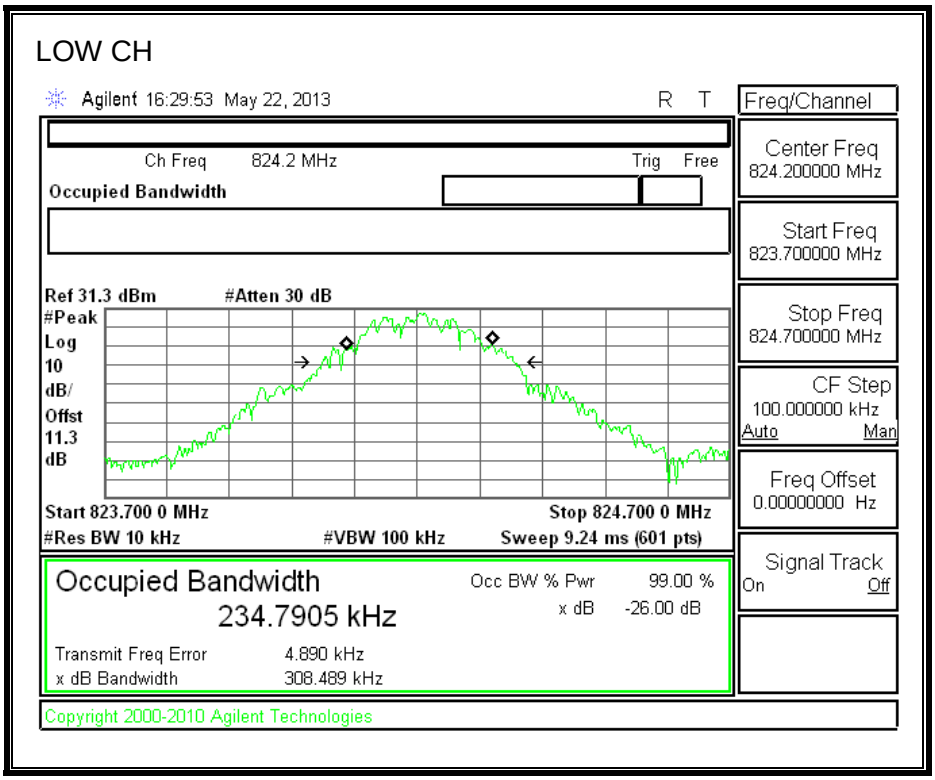
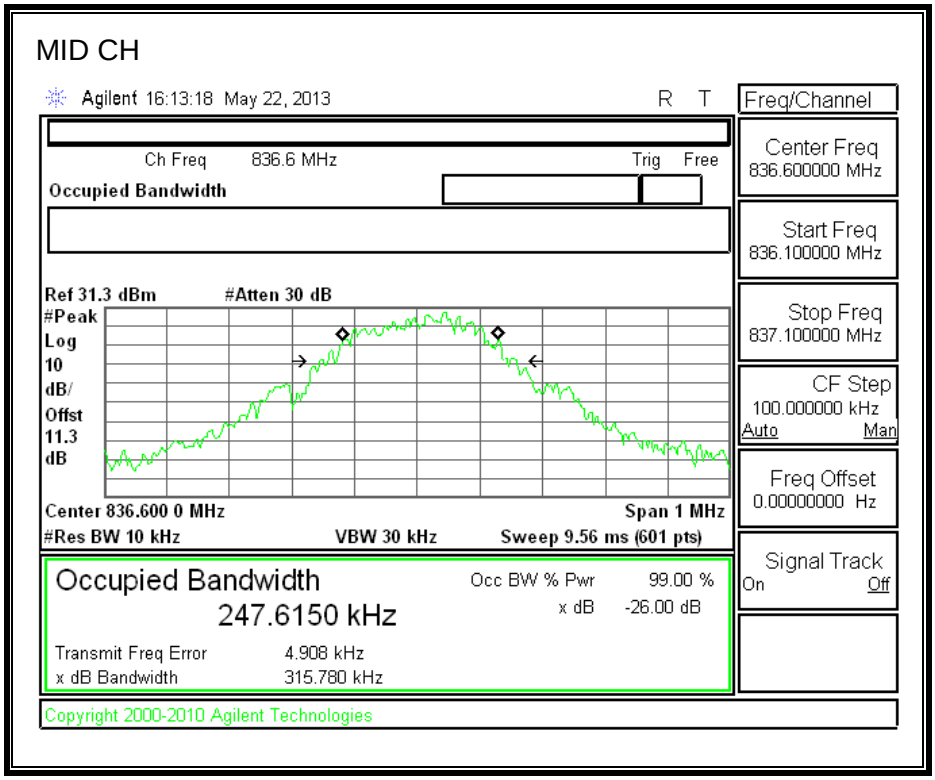


9.1.1. EGPRS MODE

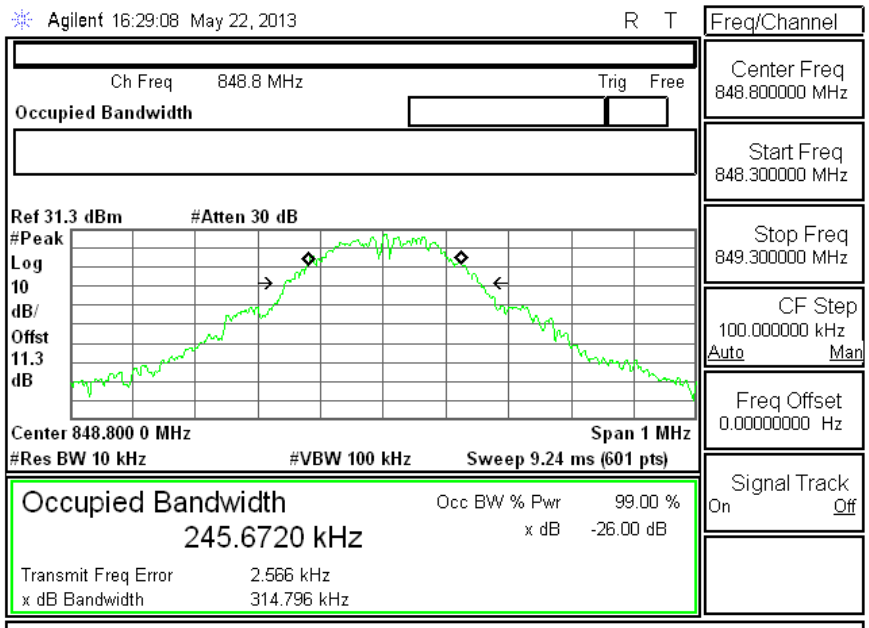
CELL BAND



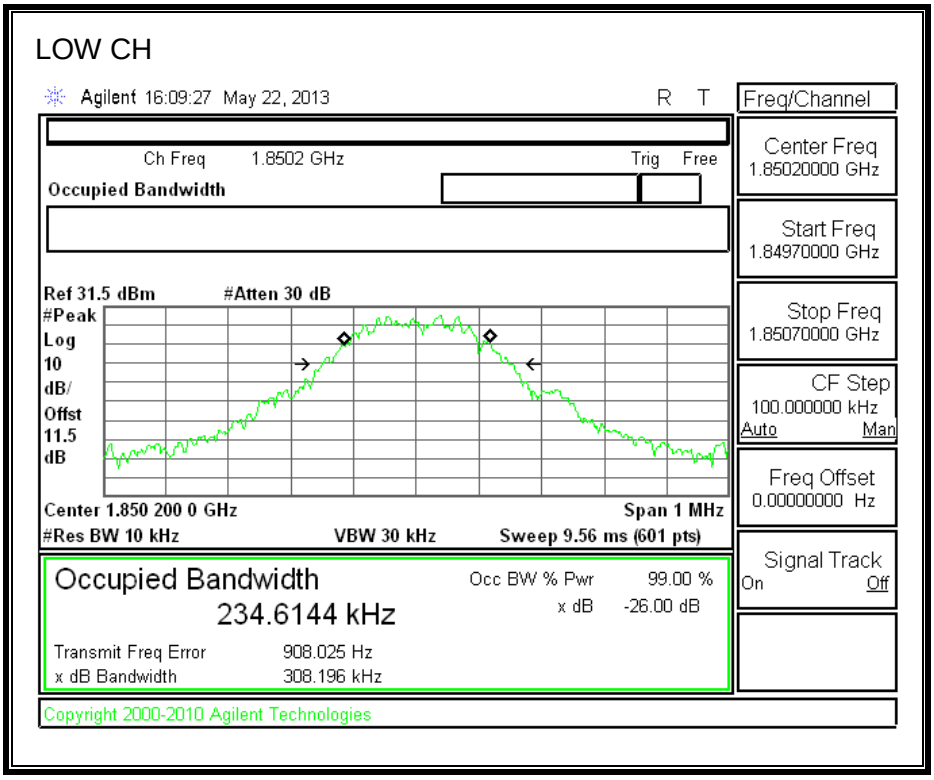
MID CH



HIGH CH



PCS Band



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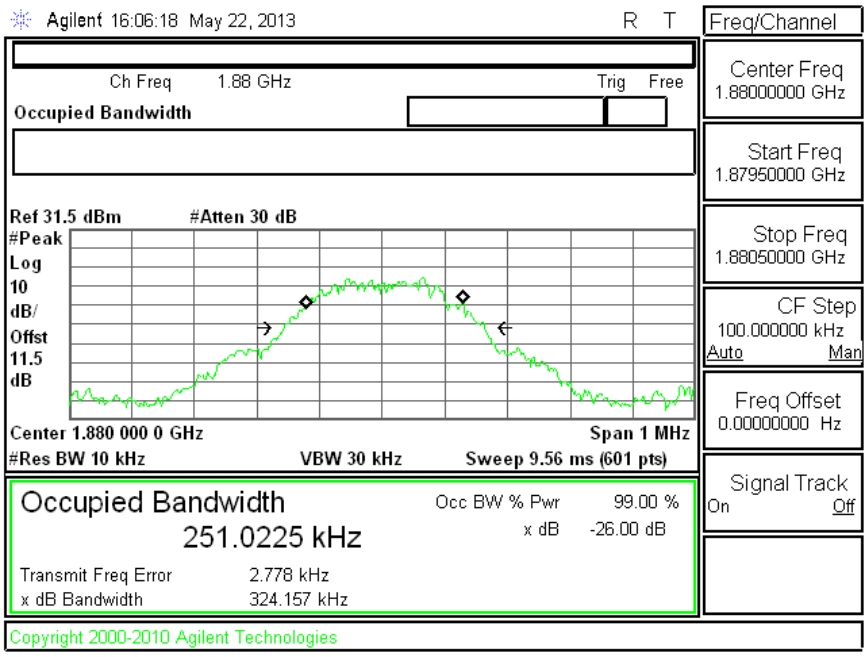
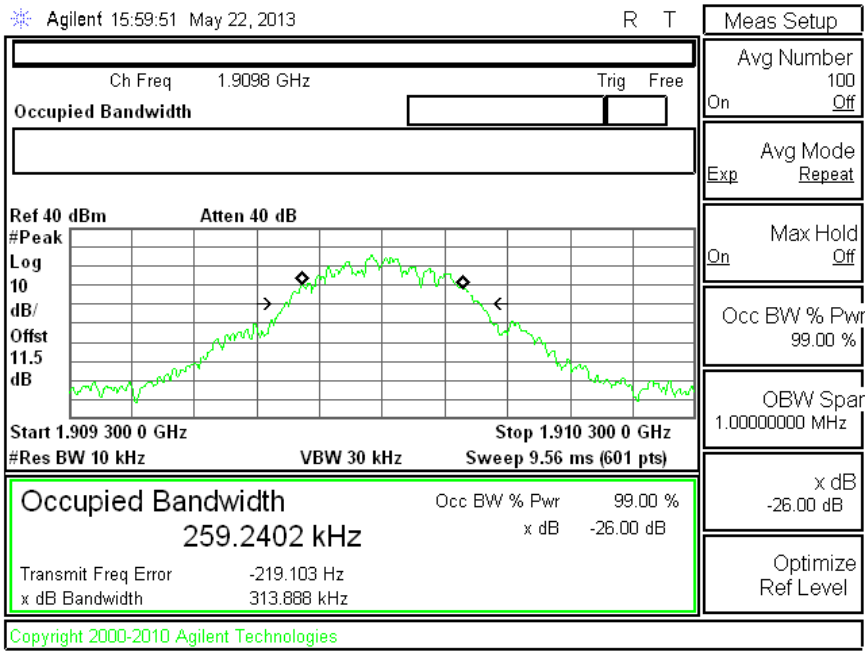
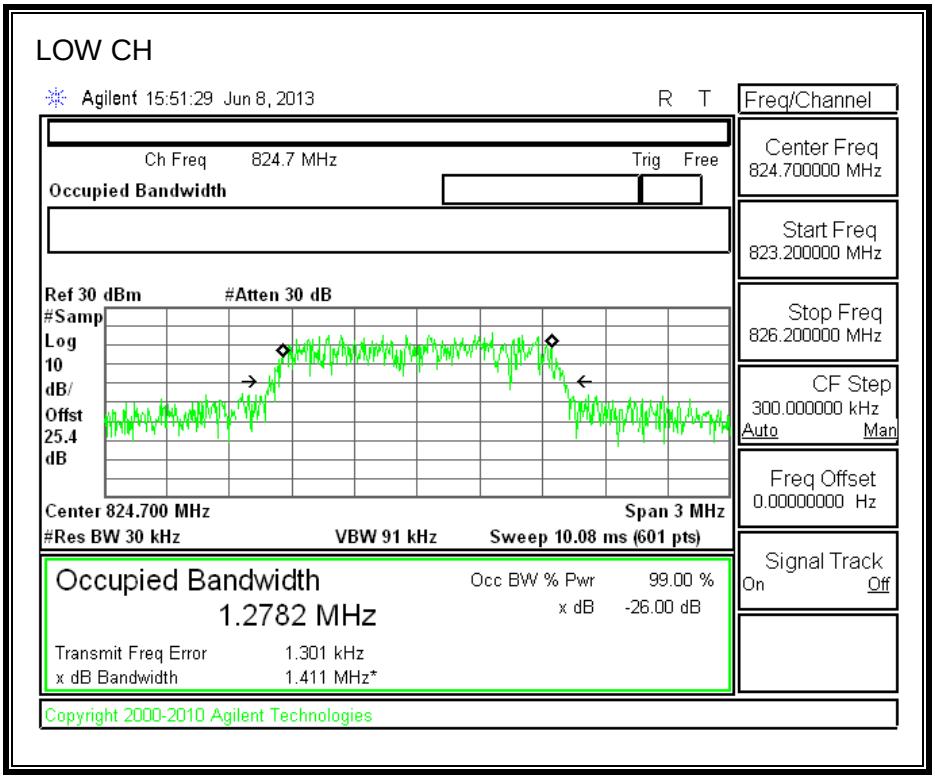


HIGH CH

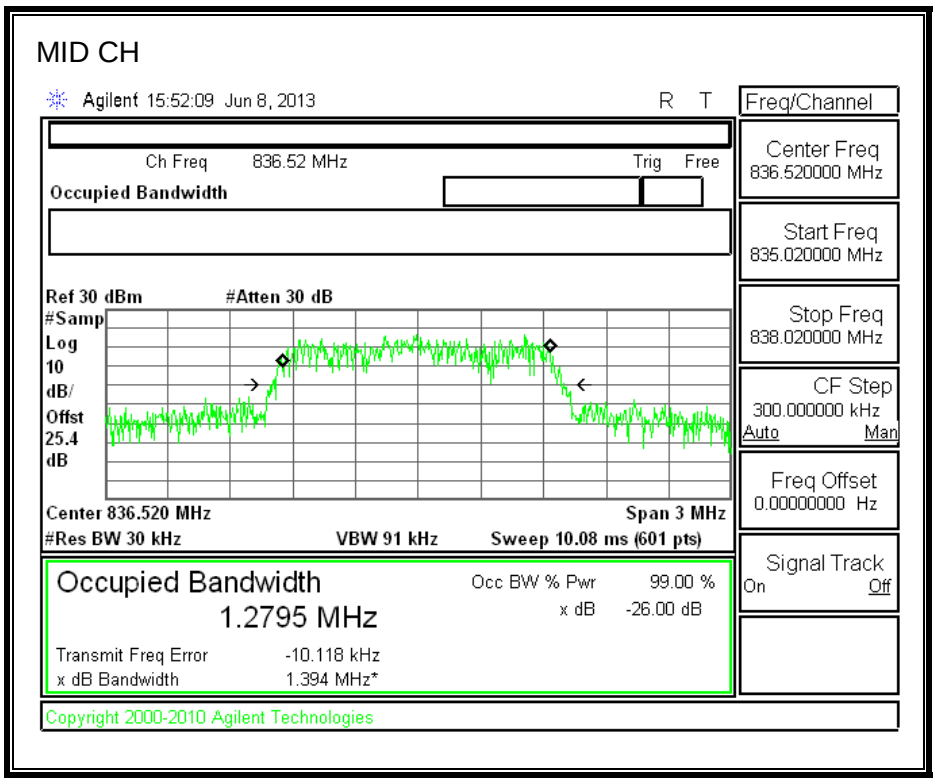


9.1.2. CMDA 2000 MODE

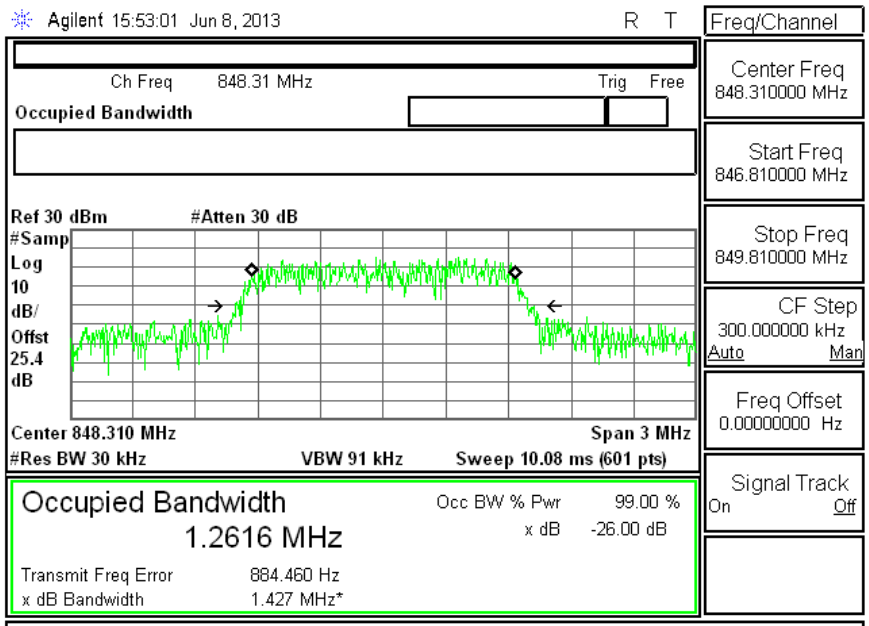
CELL Band



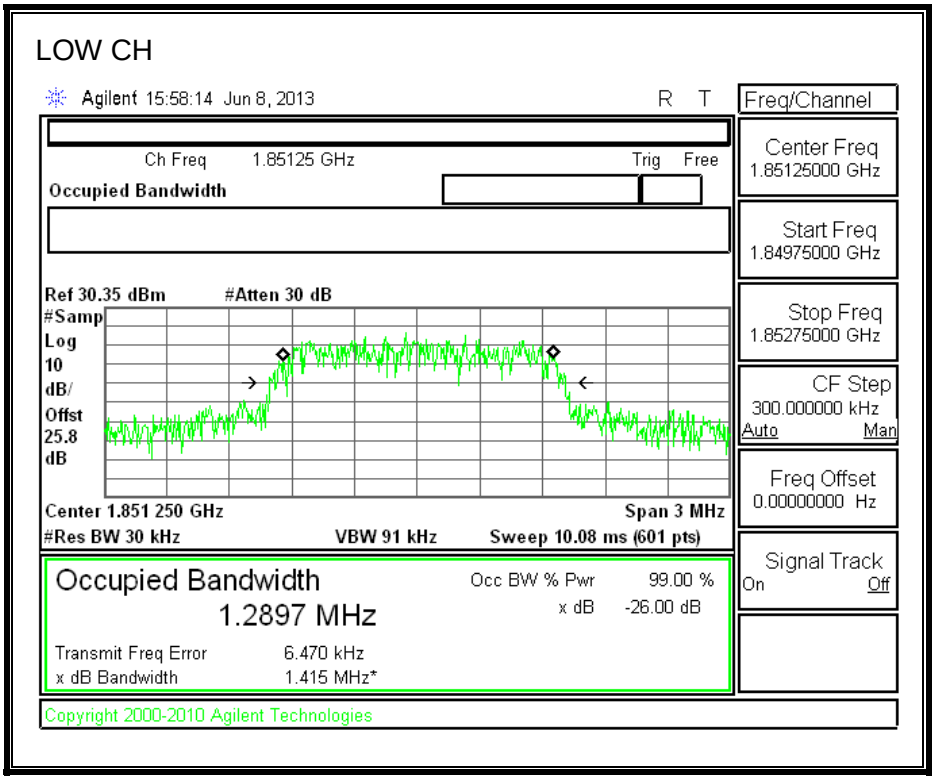
MID CH



HIGH CH



PCS Band



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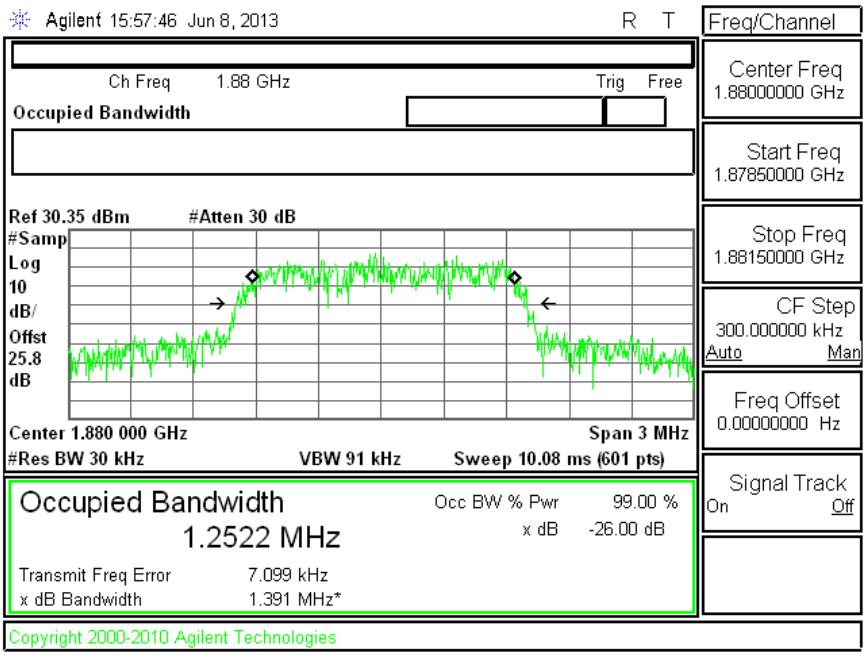
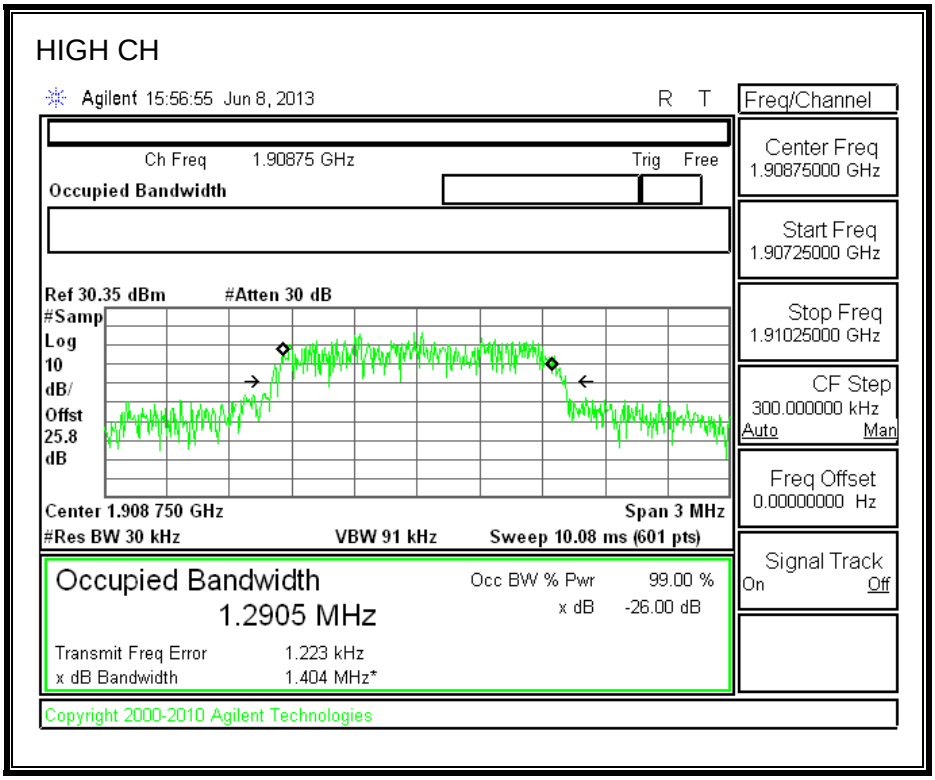
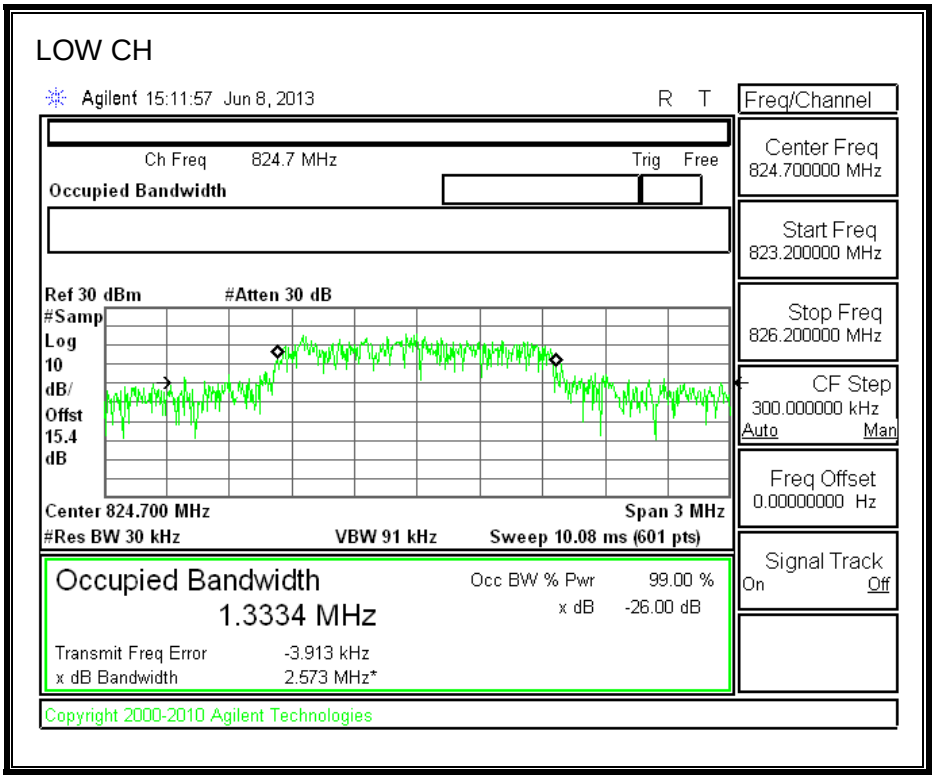


HIGH CH

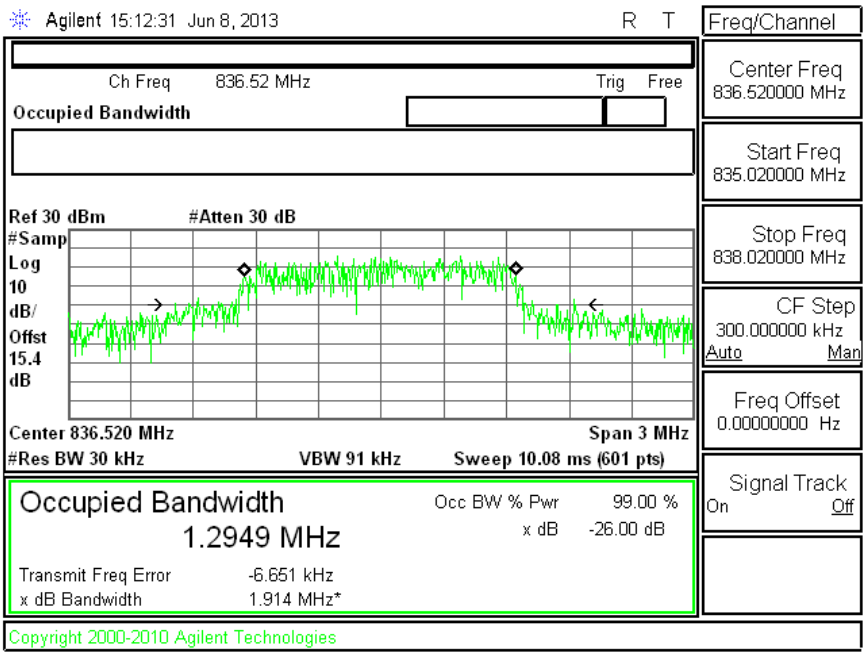


9.1.1. CDMA EV-DO MODE

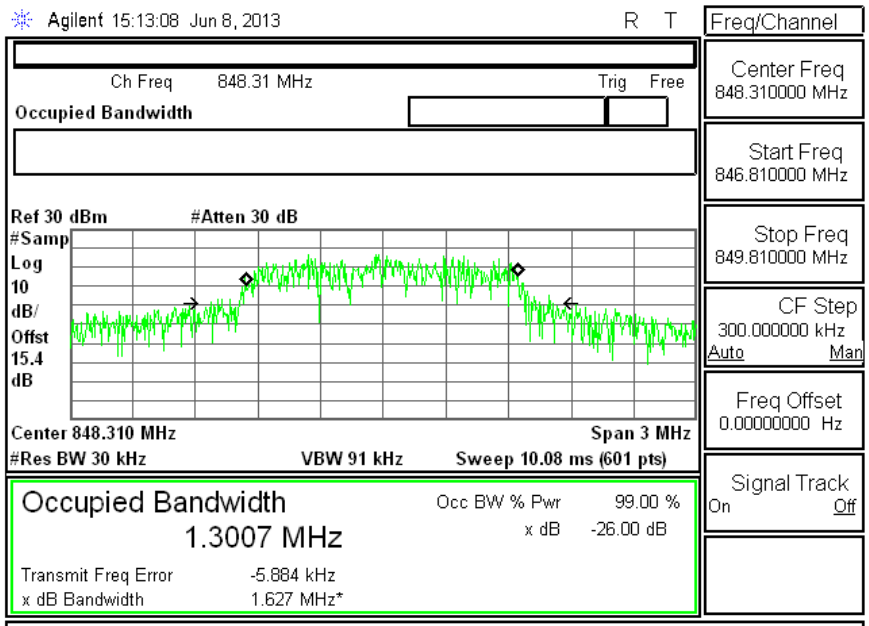
CELL Band



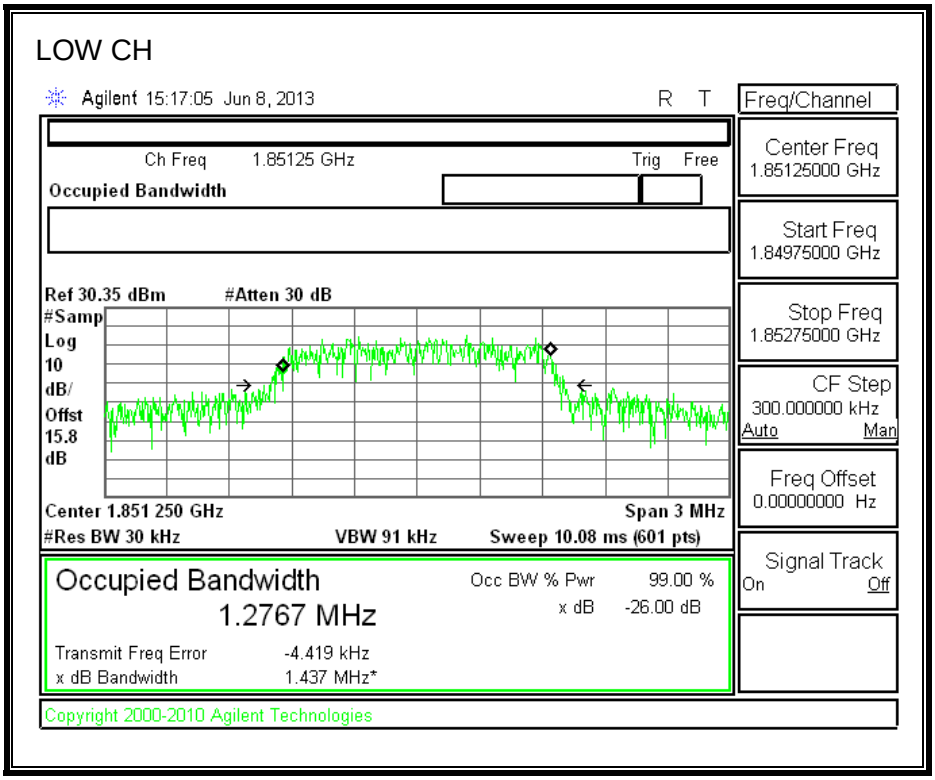
MID CH

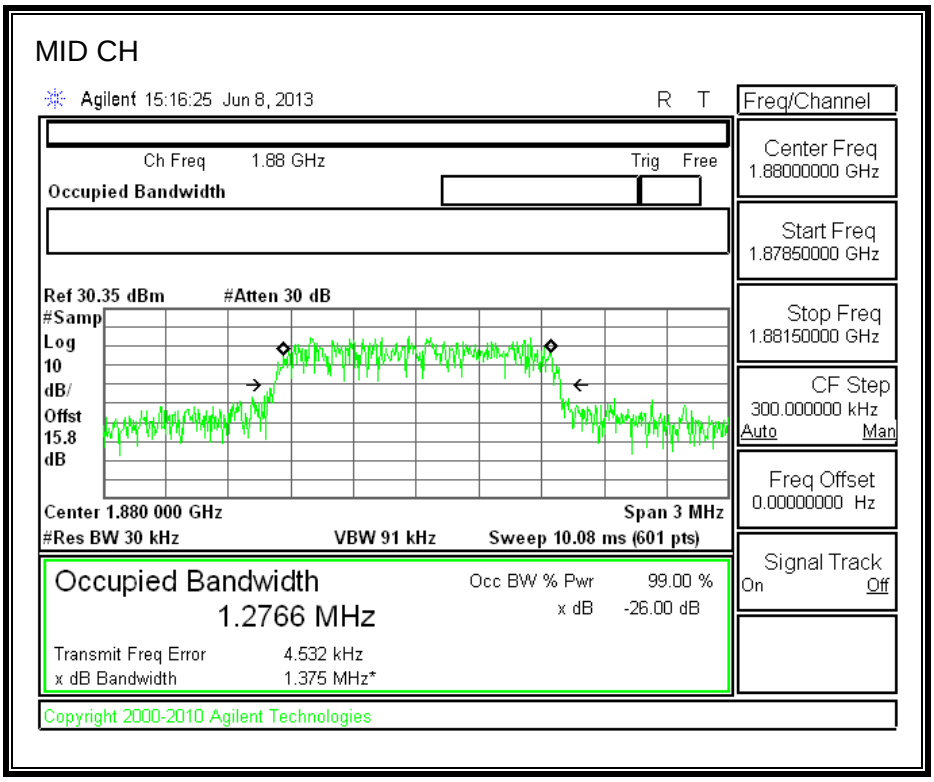


HIGH CH

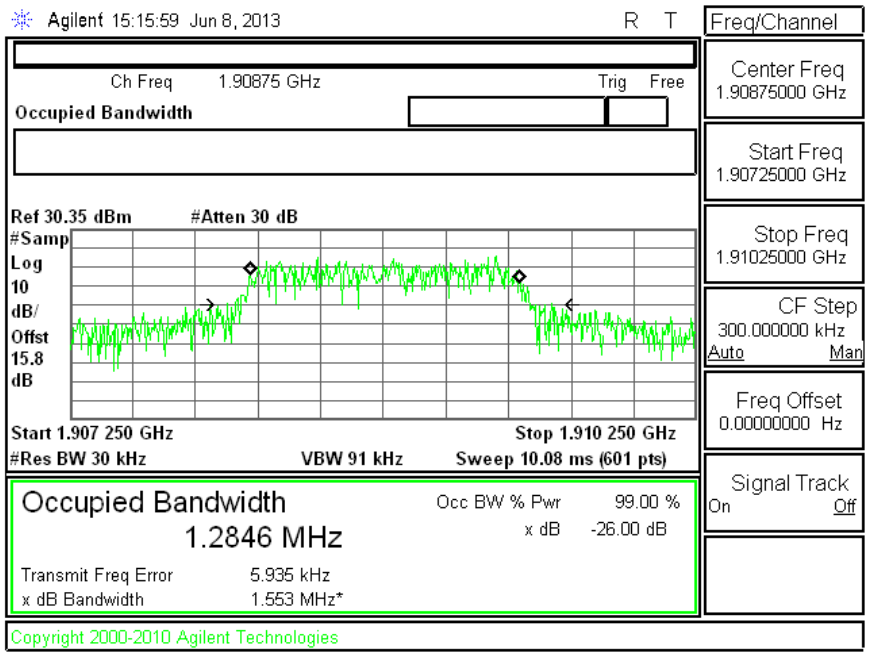


PCS Band



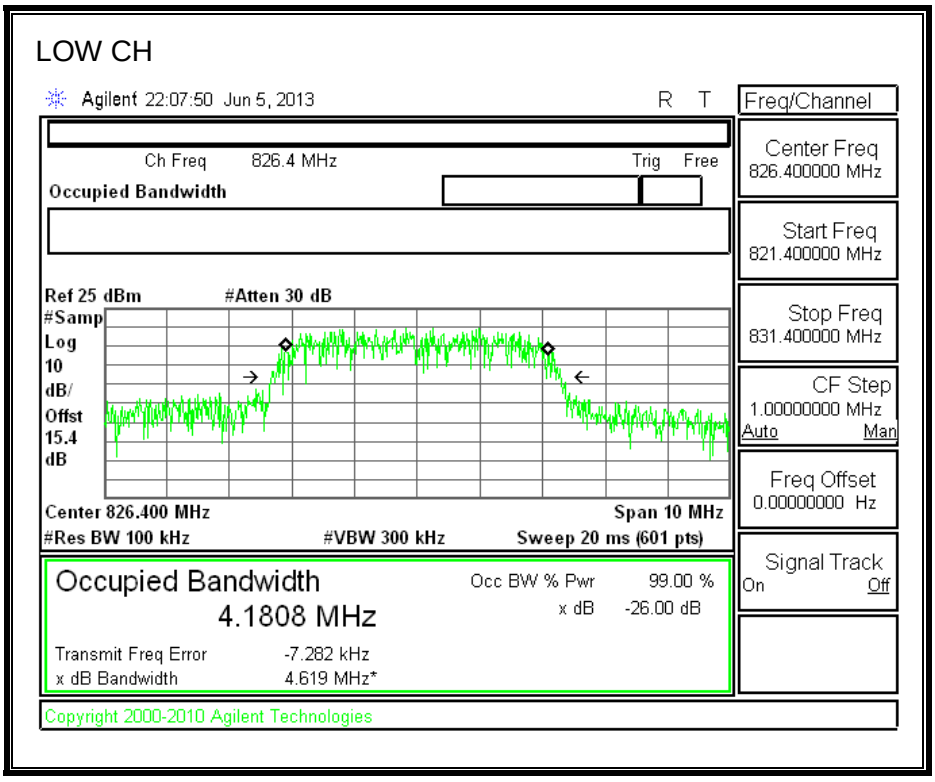


HIGH CH

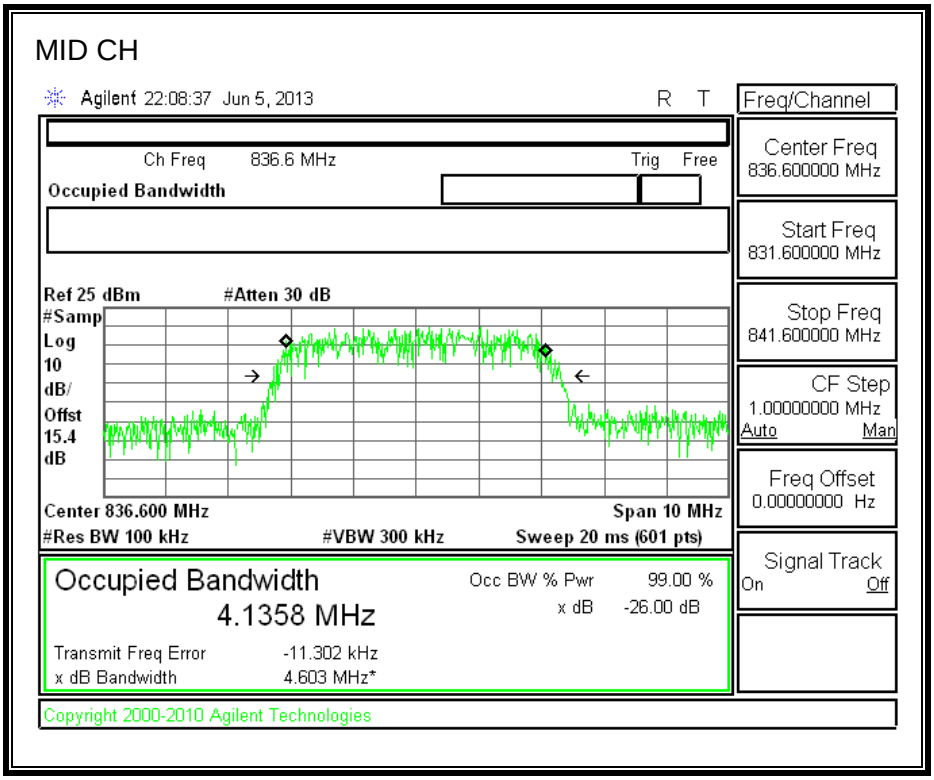


9.1.2. UMTS REL 99 MODE

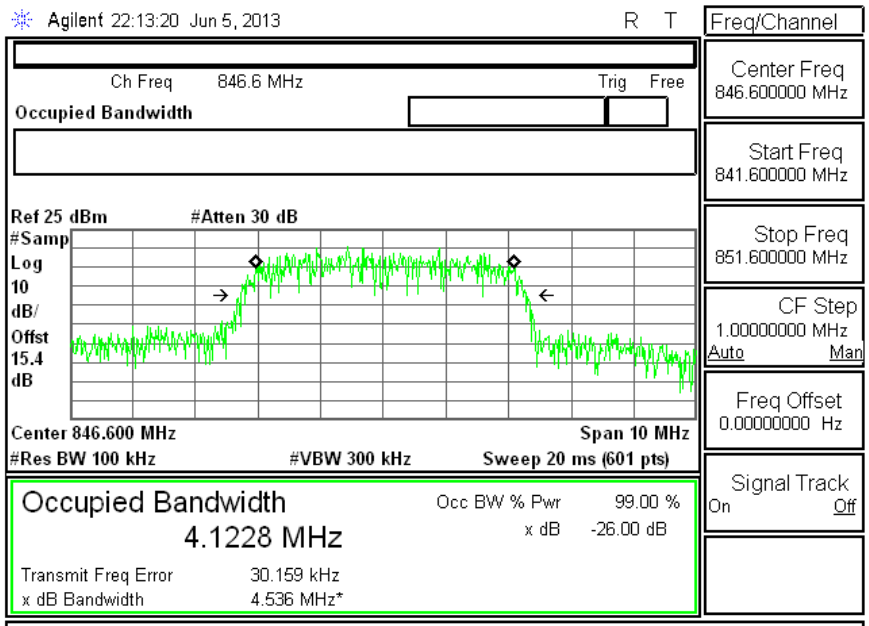
CELL Band



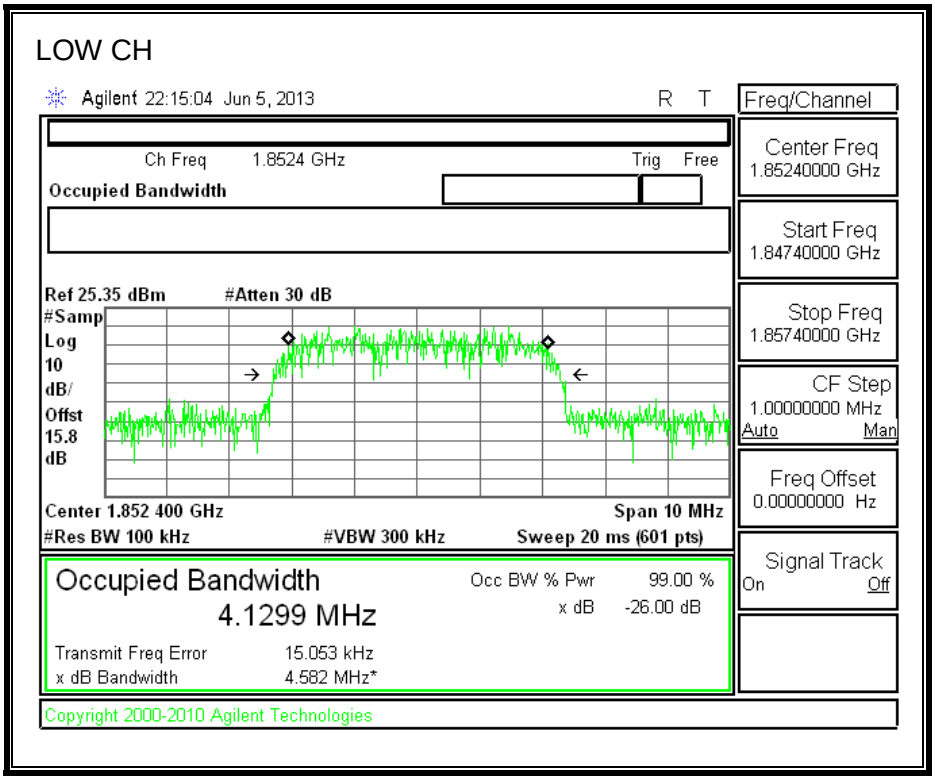
MID CH

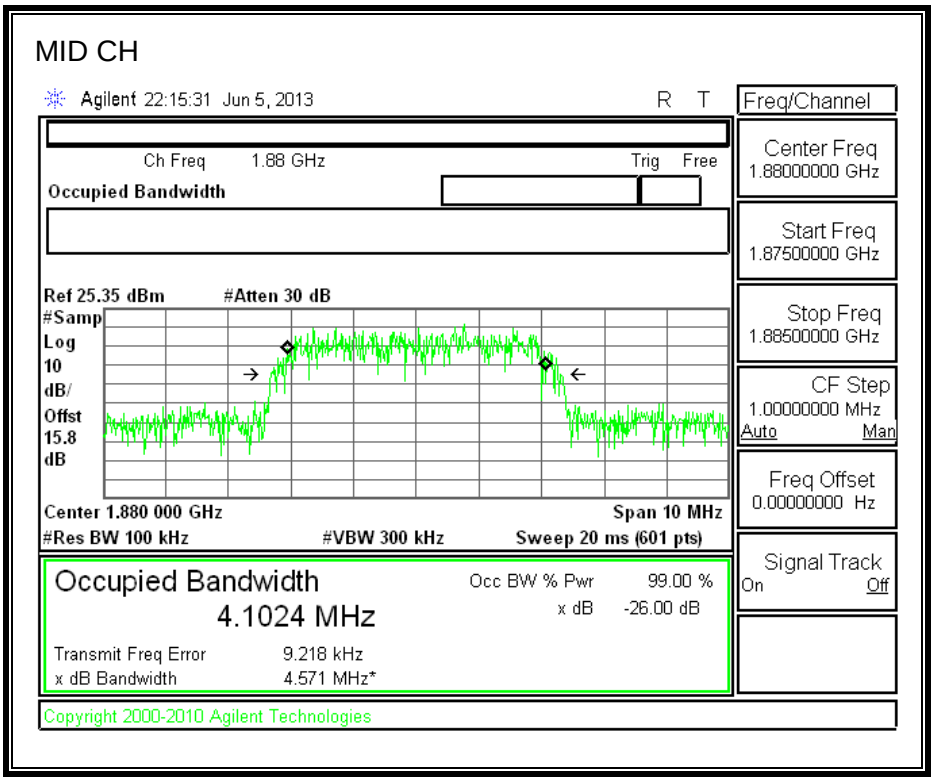


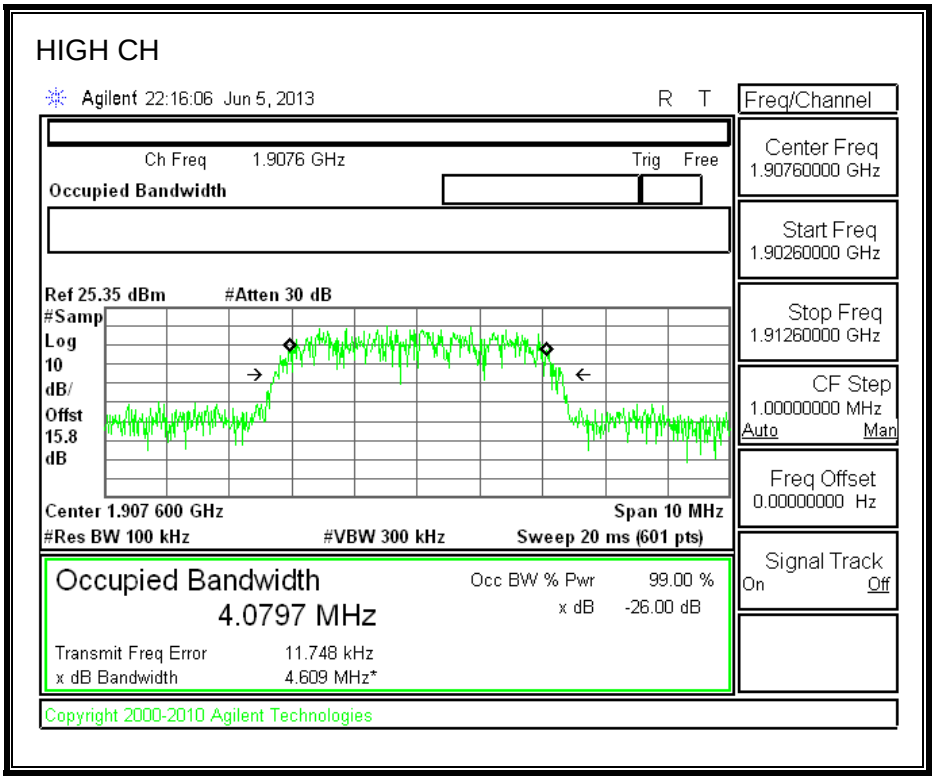
HIGH CH



PCS Band

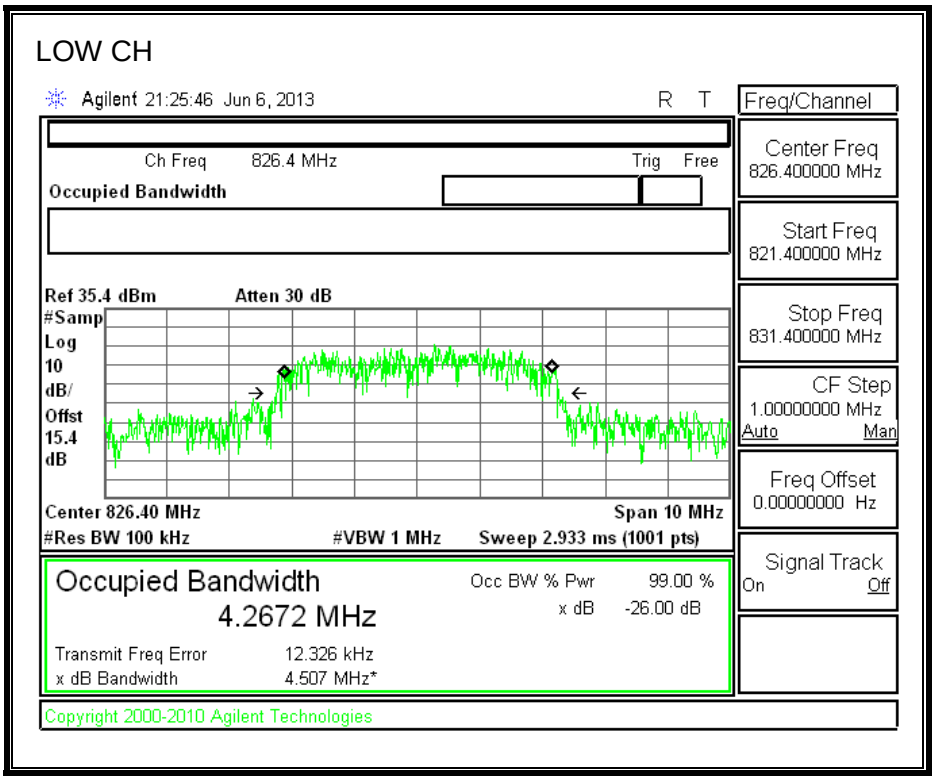




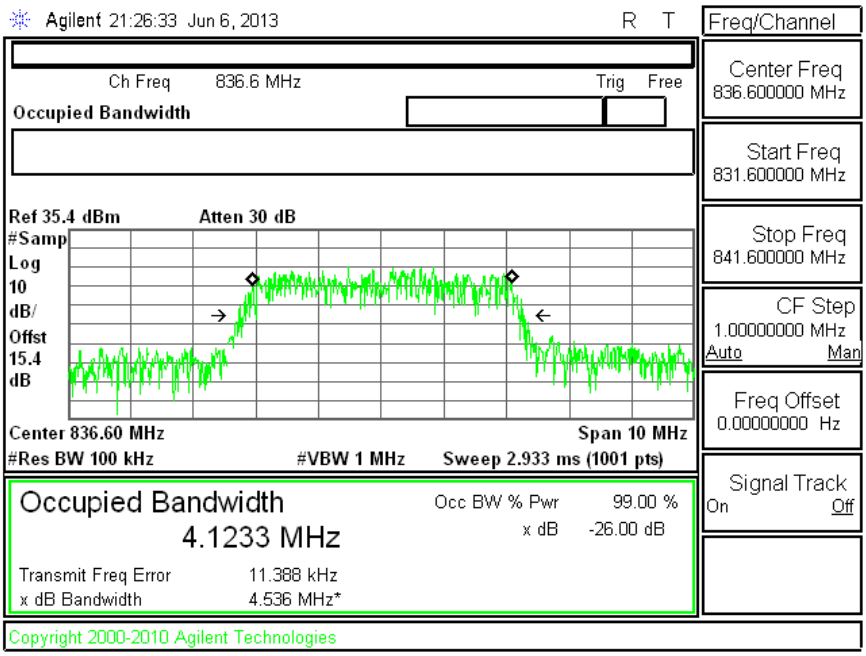


9.1.1. HSUPA MODE

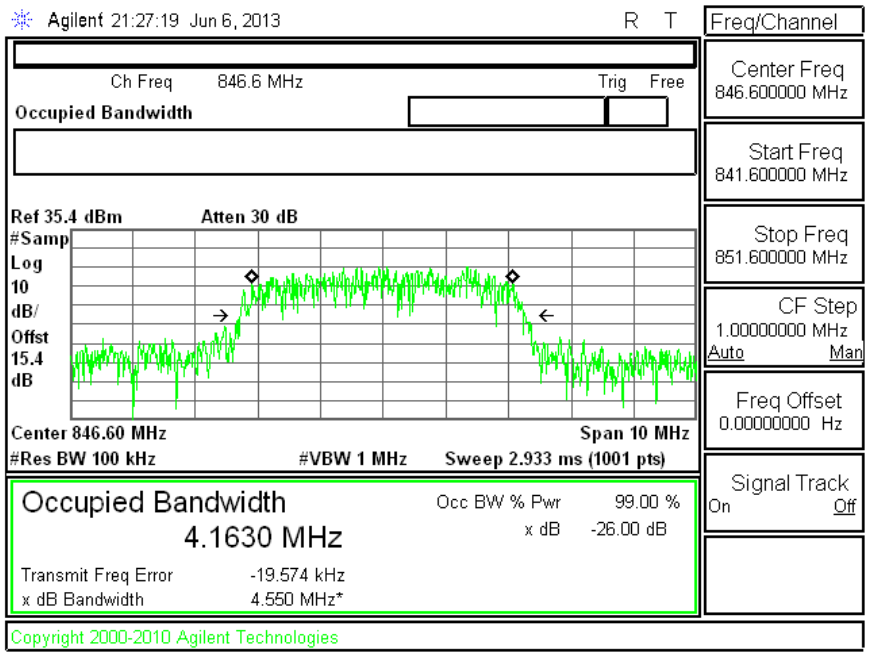
CELL Band



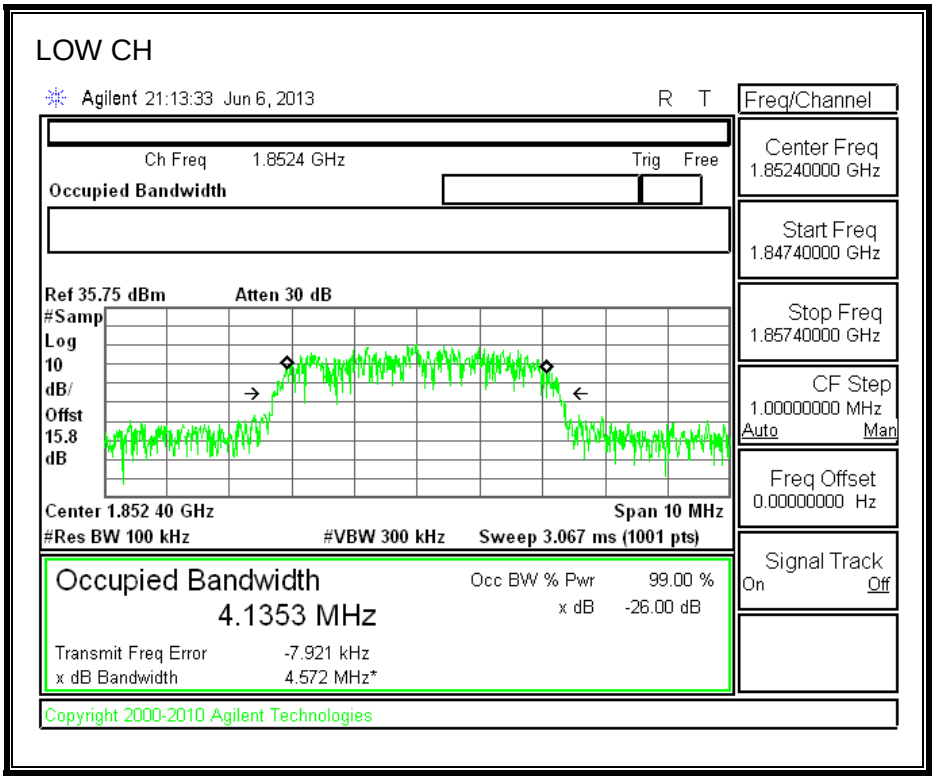
MID CH



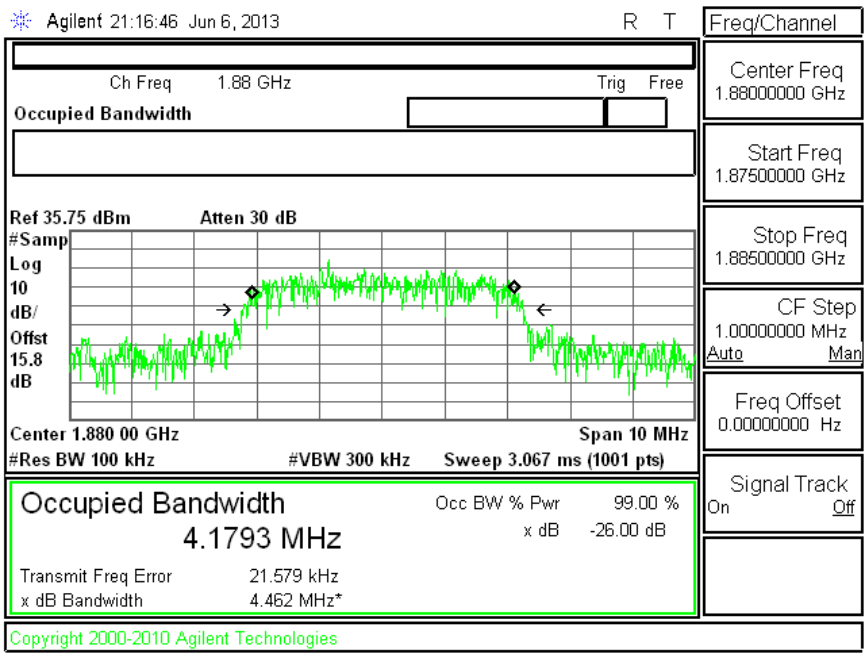
HIGH CH



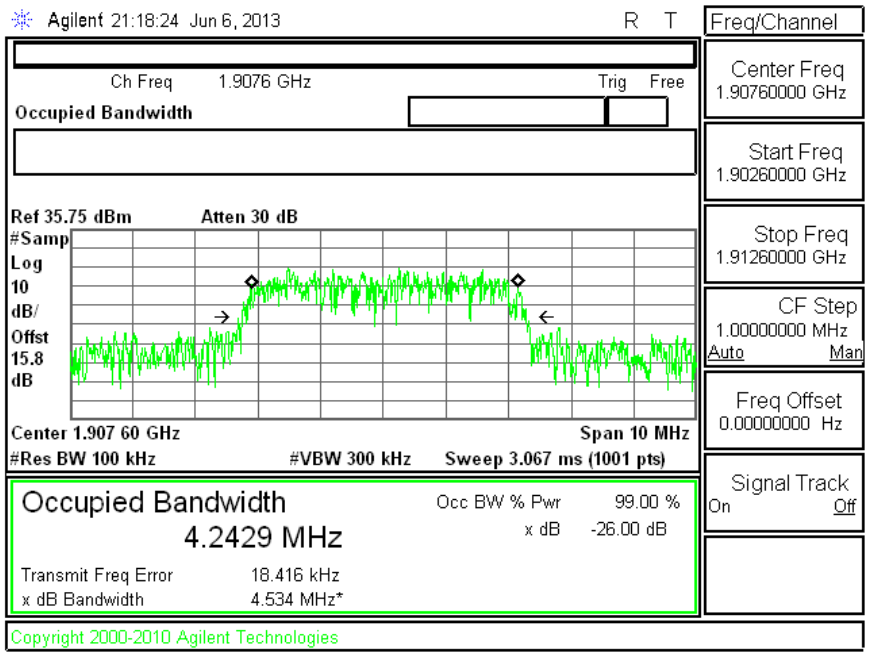
PCS Band



MID CH

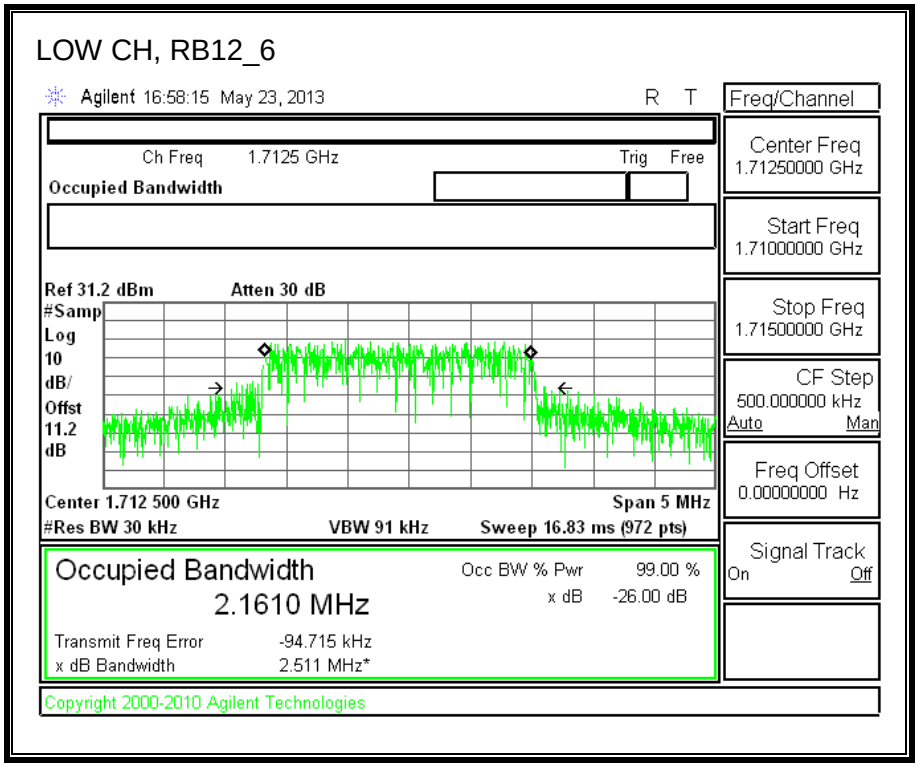


HIGH CH

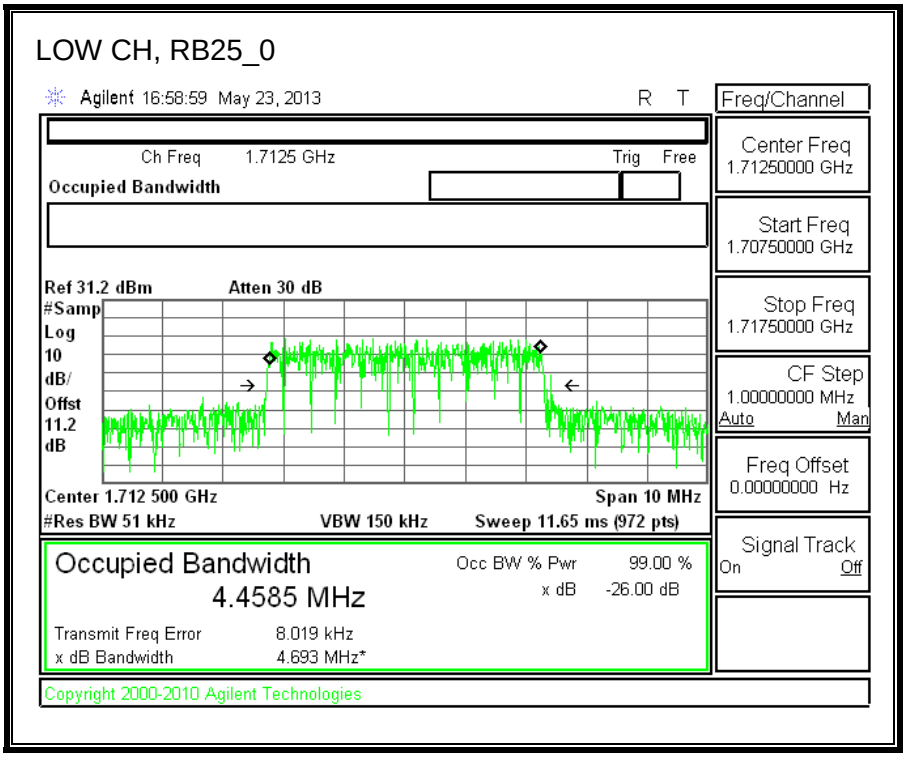


9.1.2. LTE BAND 4-5MHz BANDWIDTH

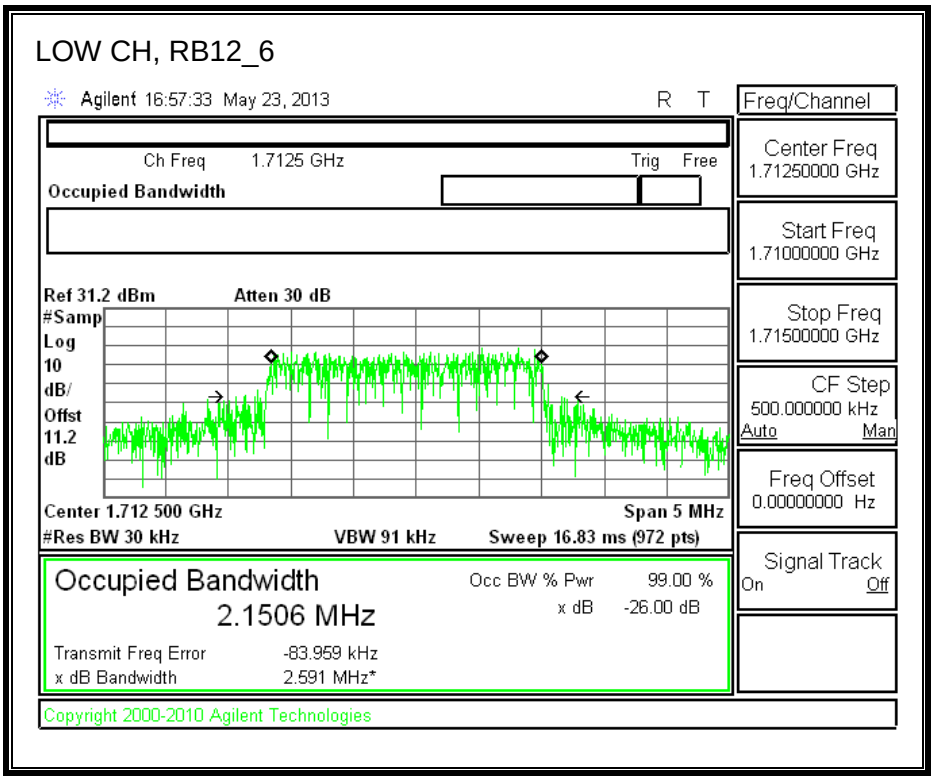
LOW-QPSK



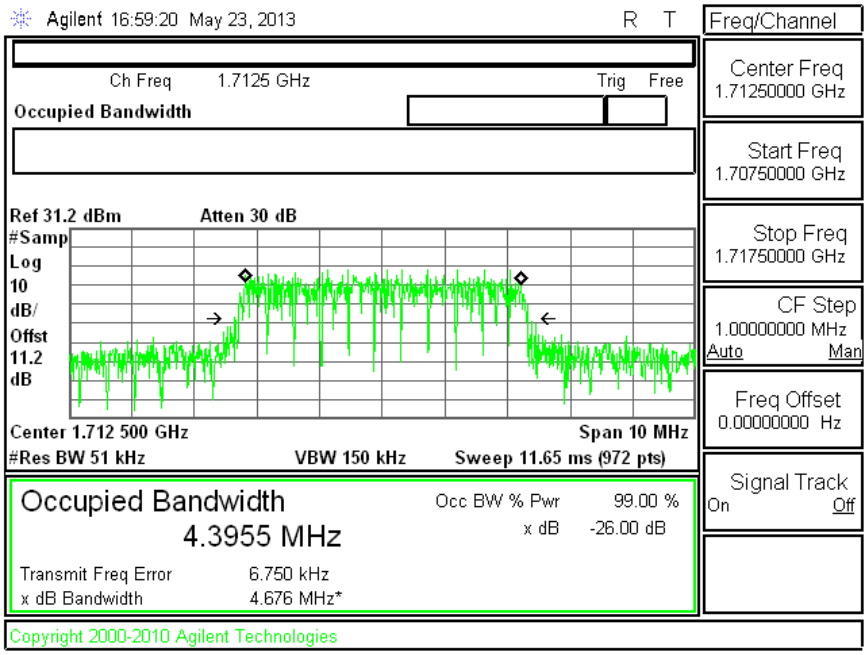
LOW CH, RB25_0



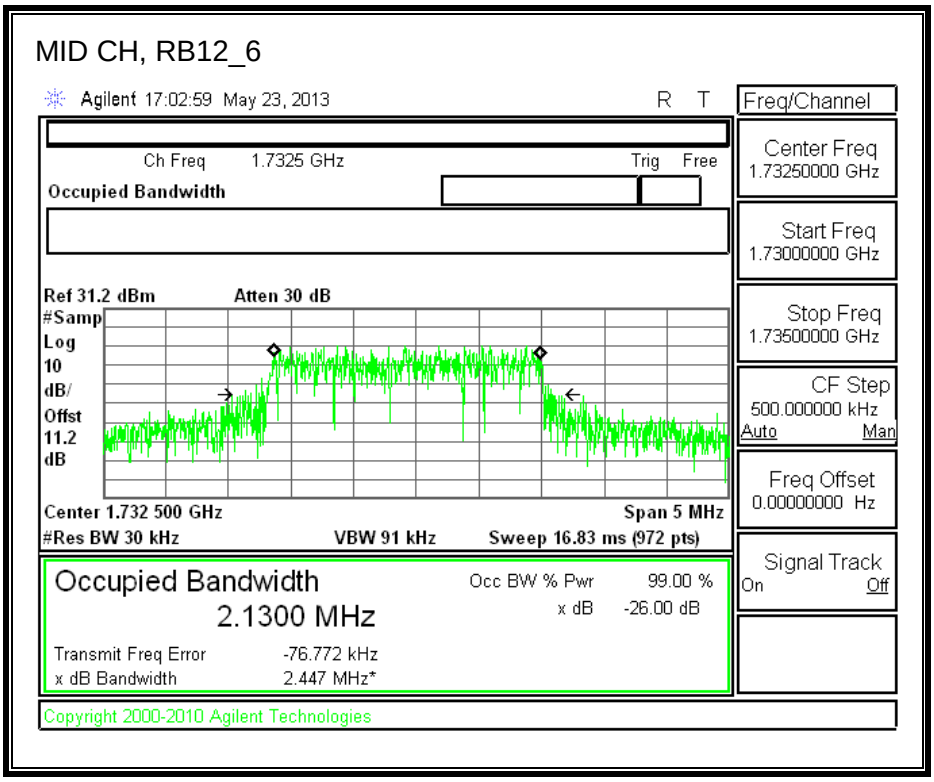
LOW-16QAM



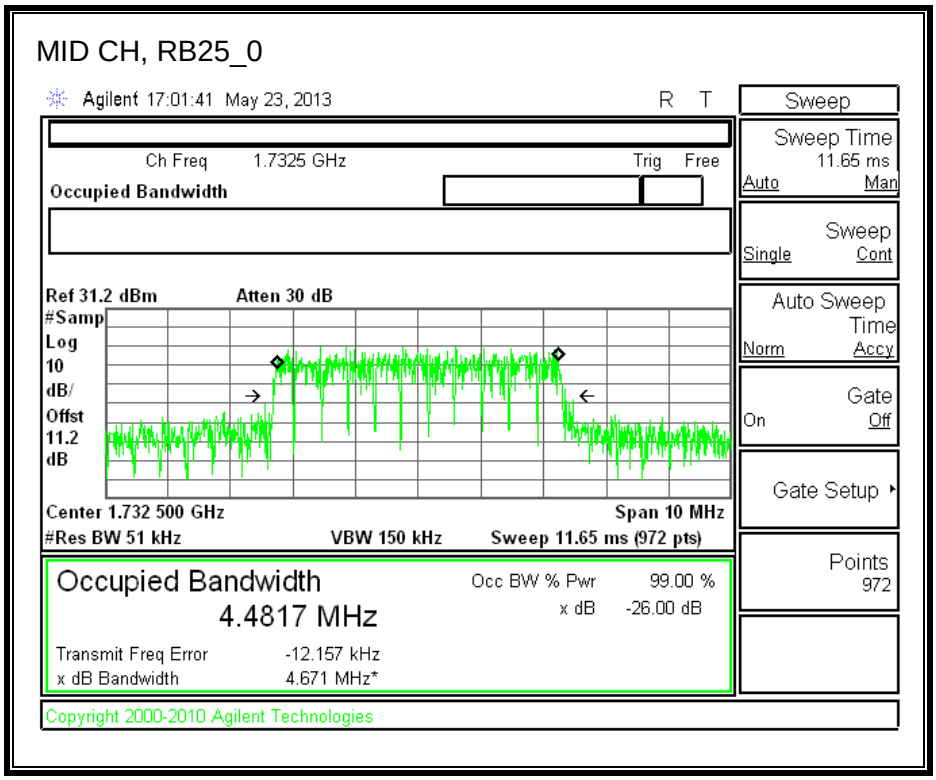
LOW CH, RB25_0



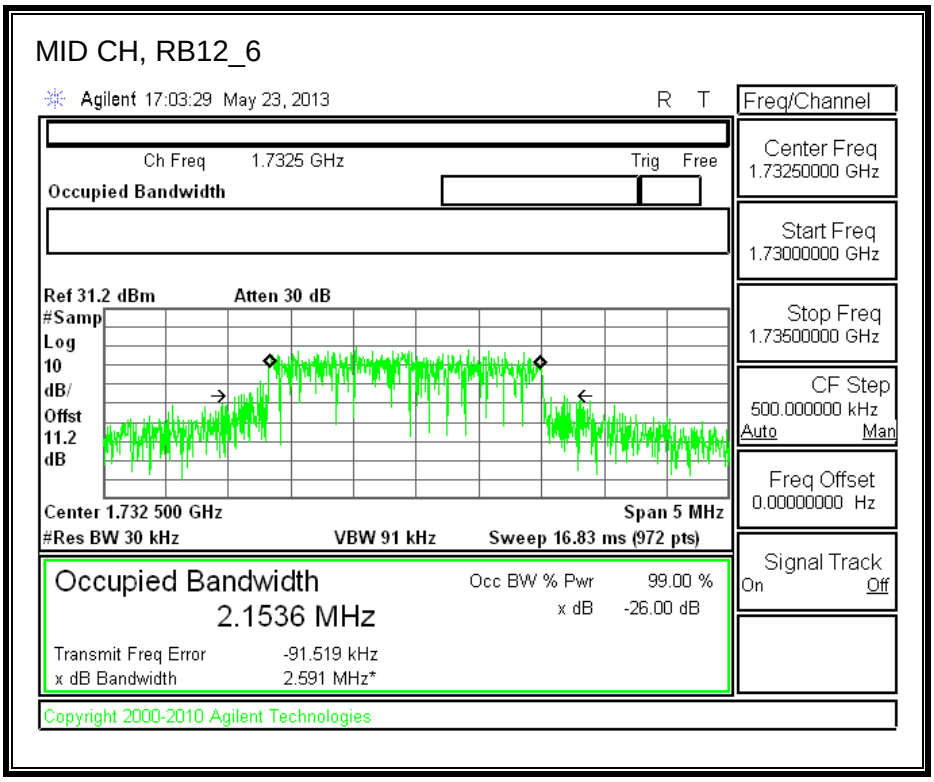
MID-QPSK



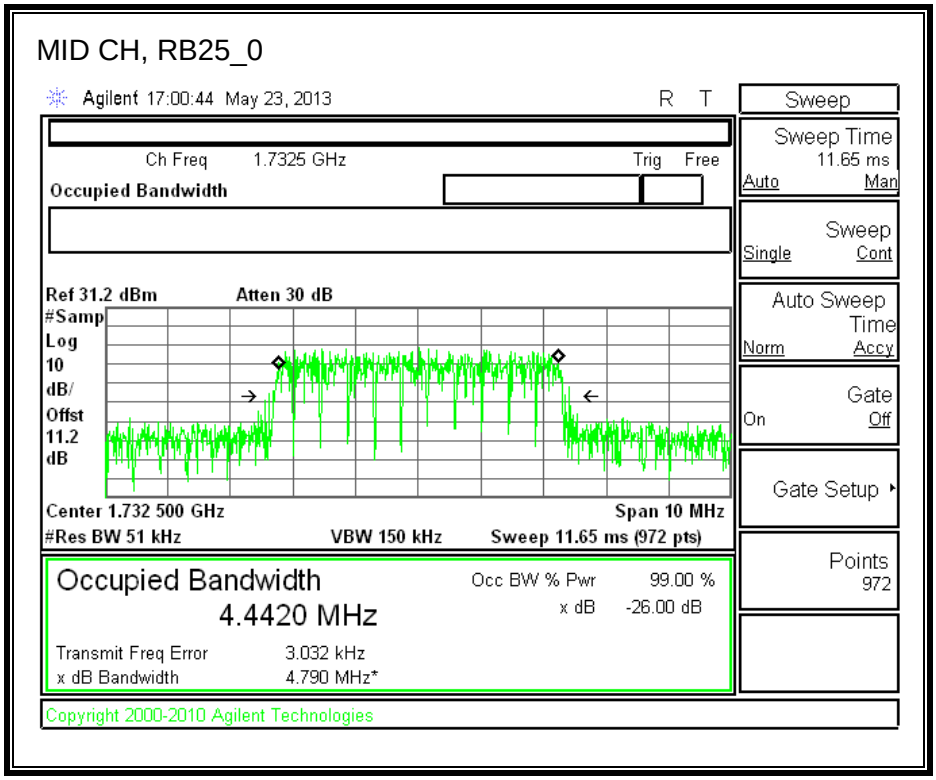
MID CH, RB25_0



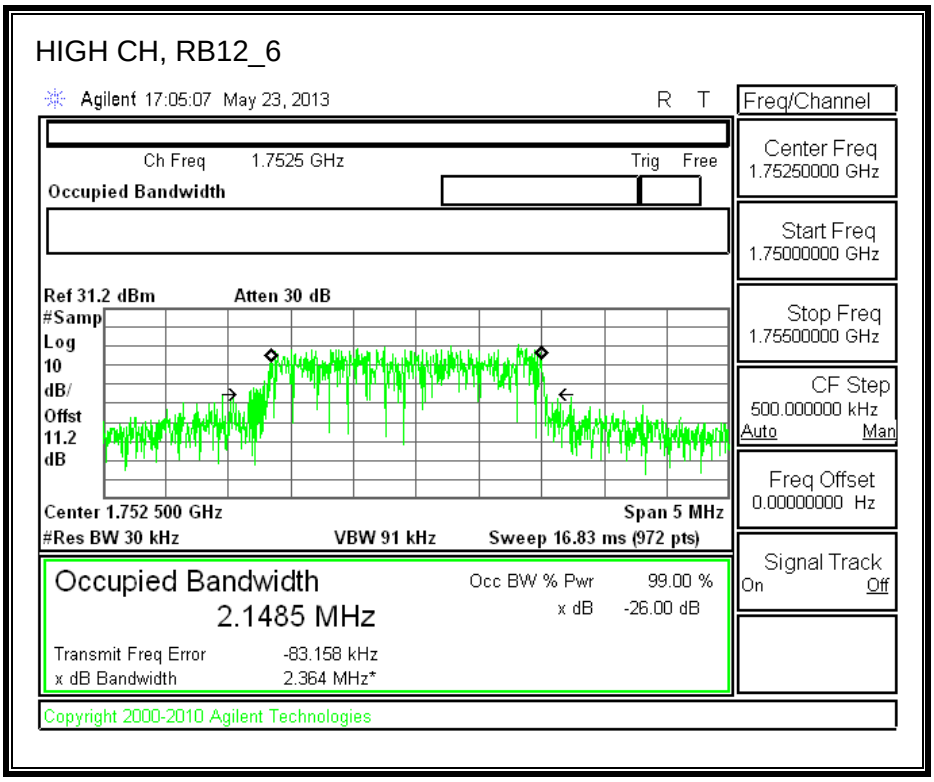
MID-16QAM



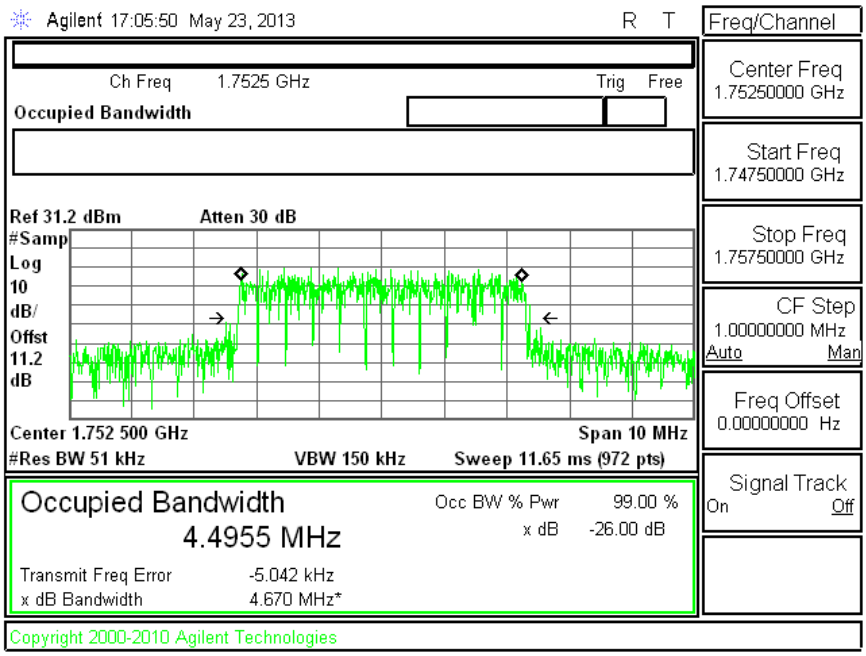
MID CH, RB25_0



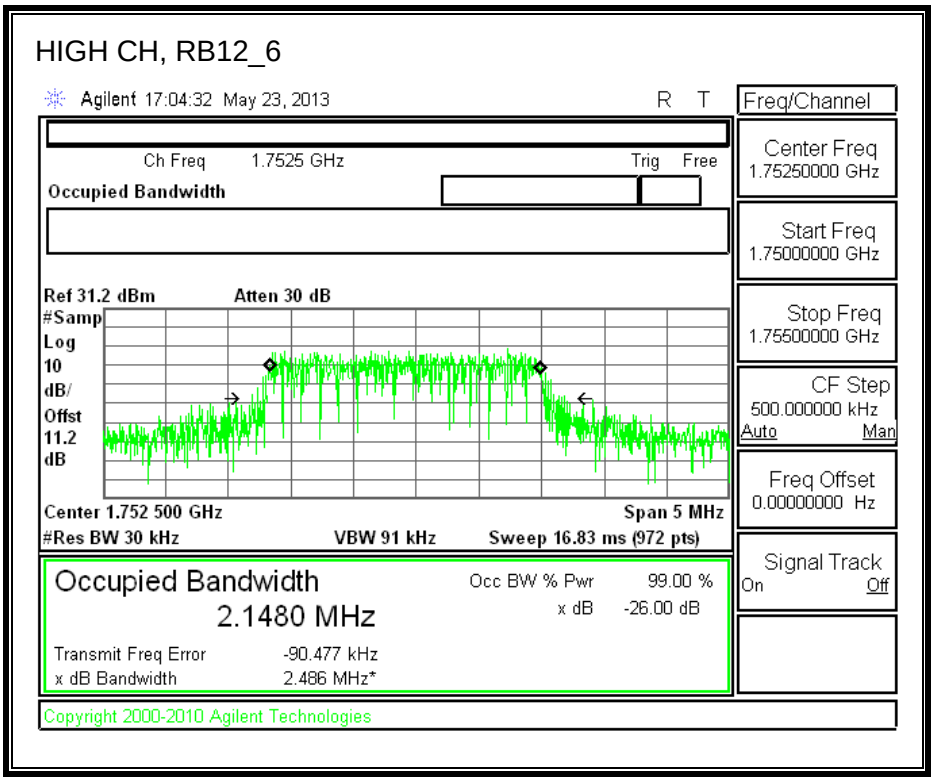
HIGH-QPSK



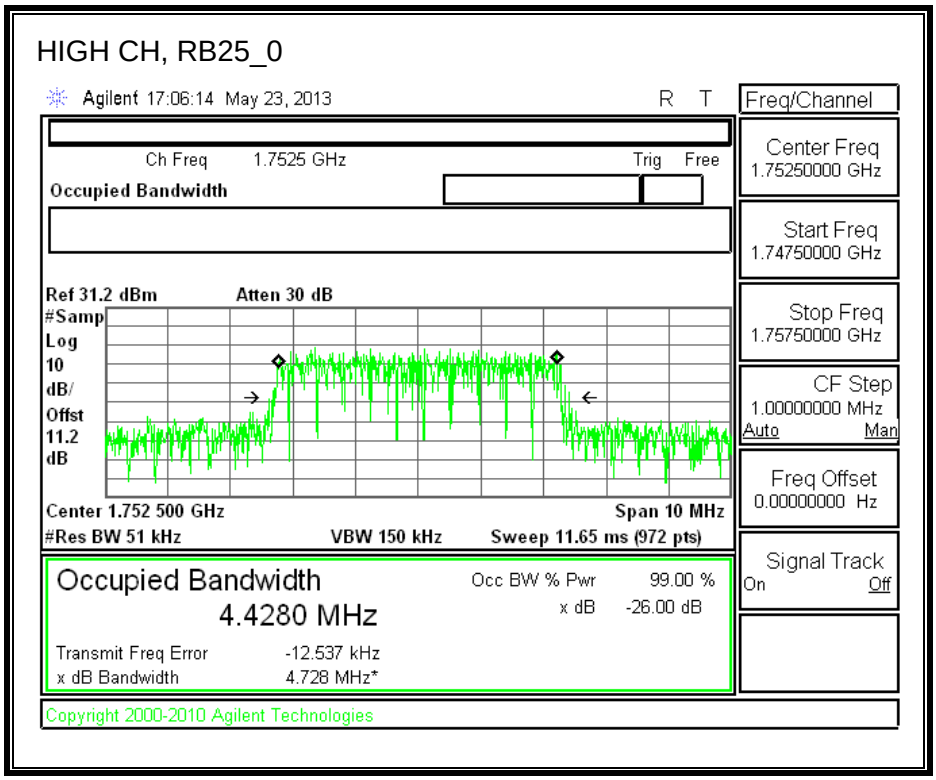
HIGH CH, RB25_0



HIGH-16QAM

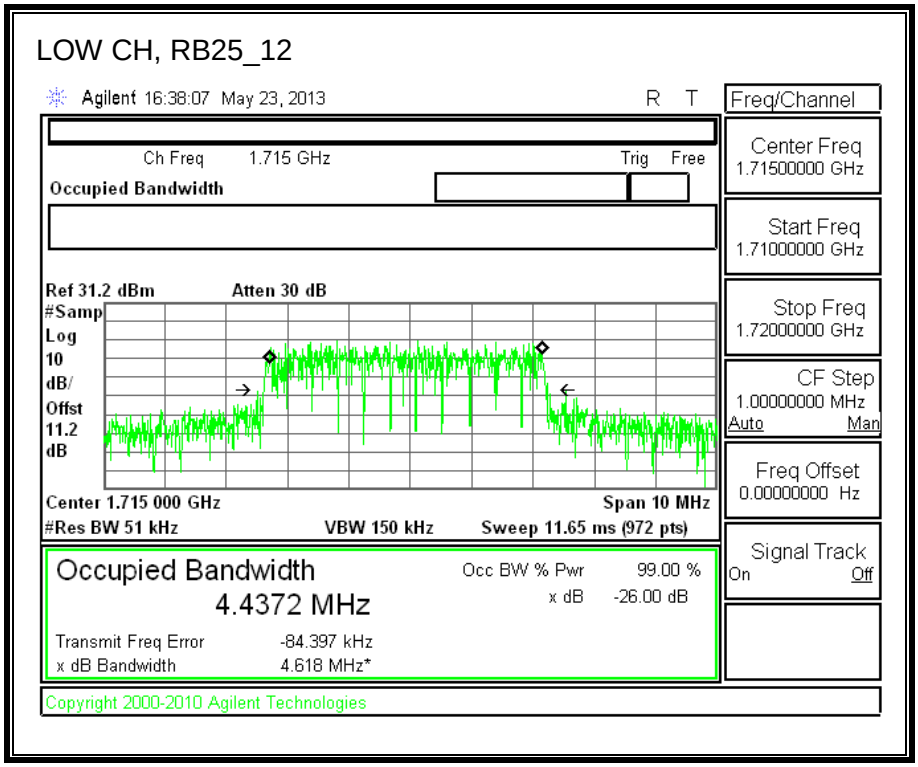


HIGH CH, RB25_0

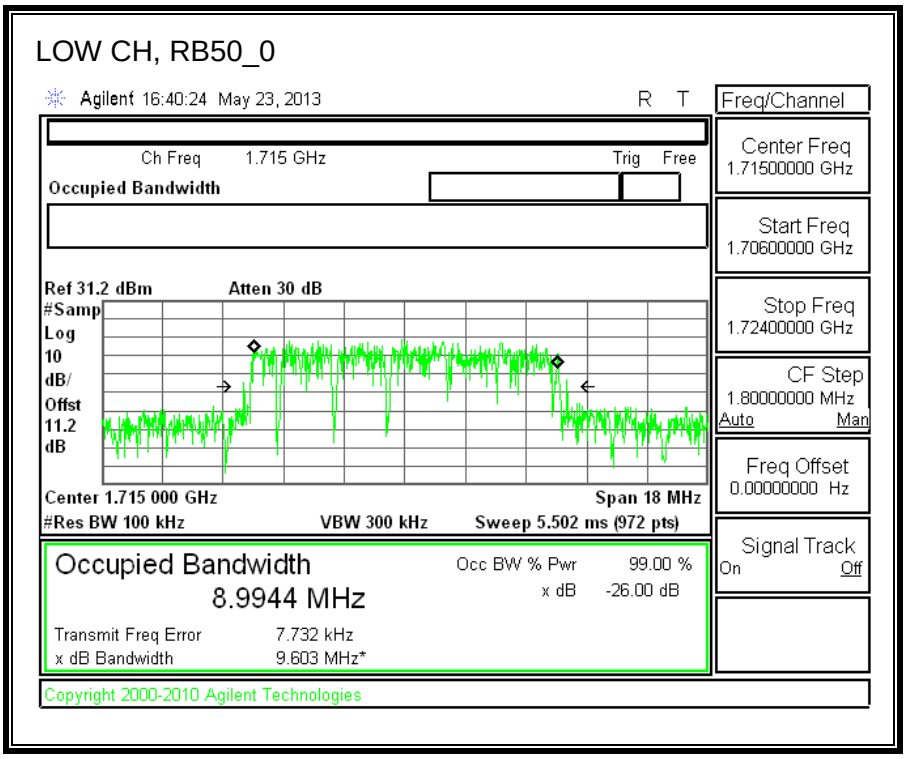


LTE BAND 4-10MHz BANDWIDTH

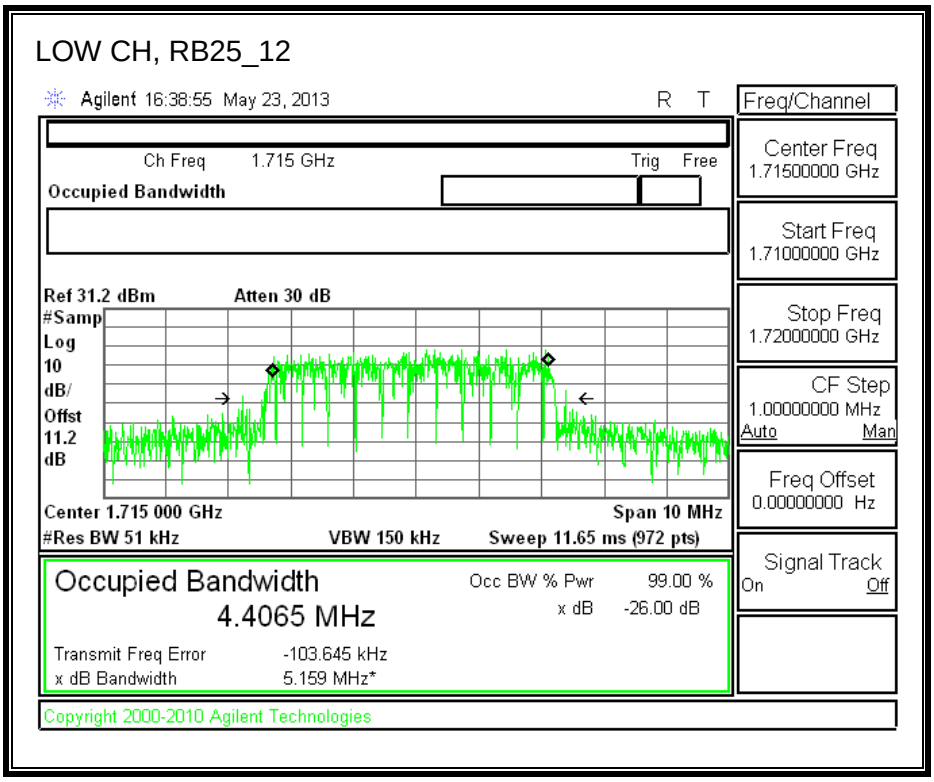
LOW-QPSK

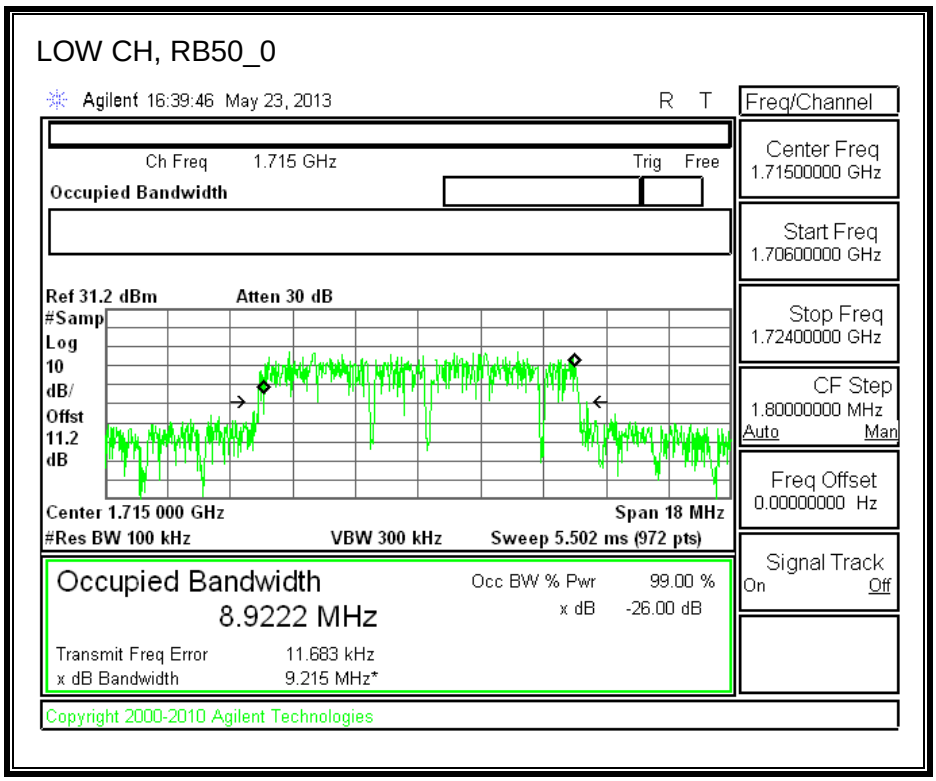


LOW CH, RB50_0

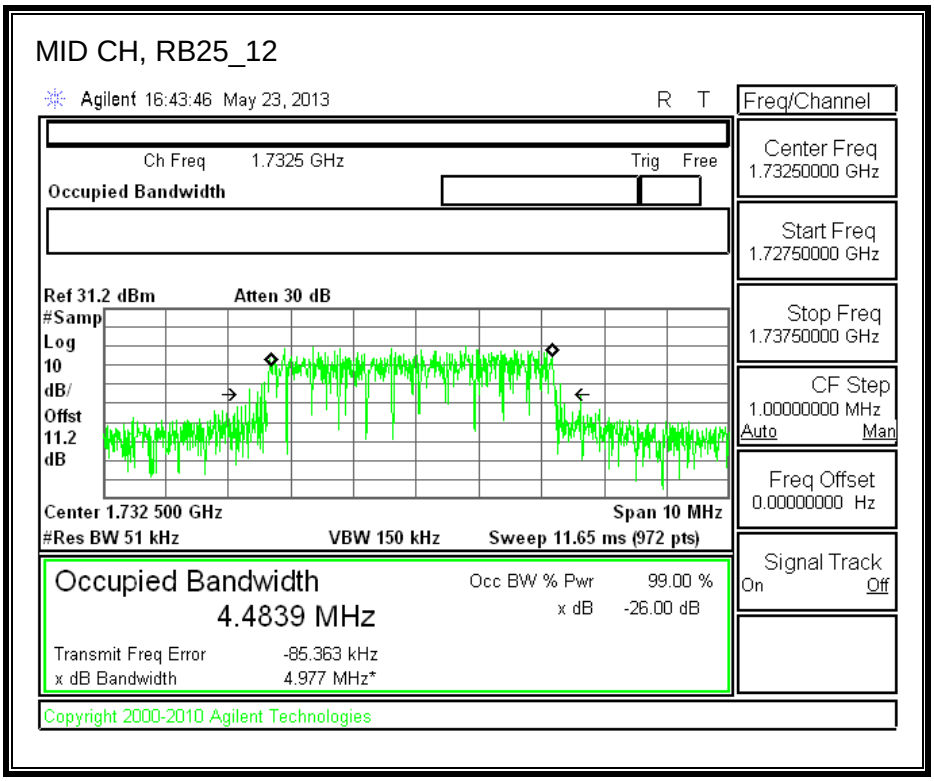


LOW-16QAM

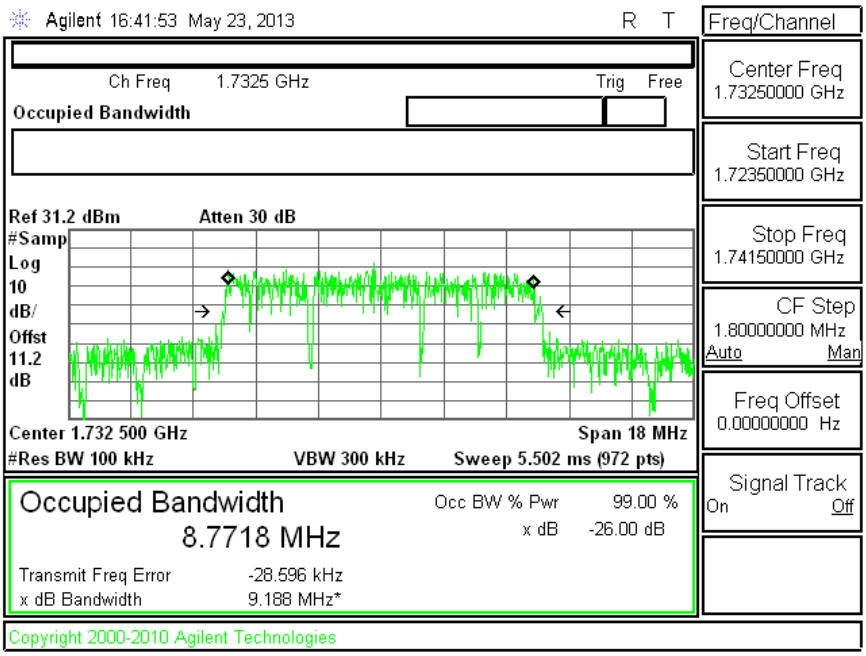




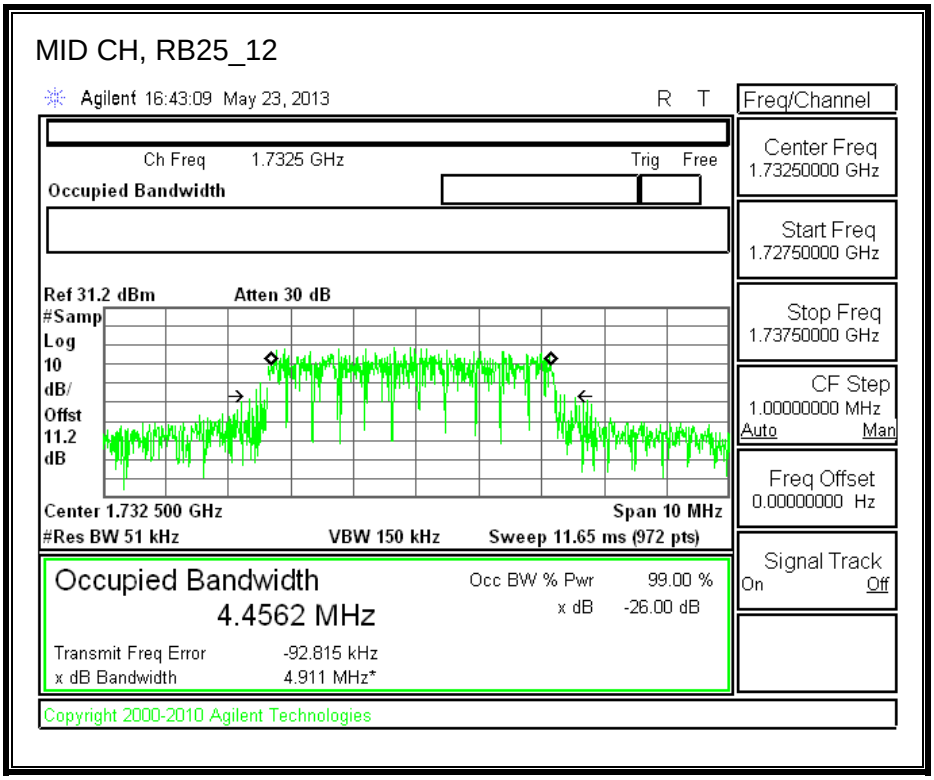
MID-QPSK



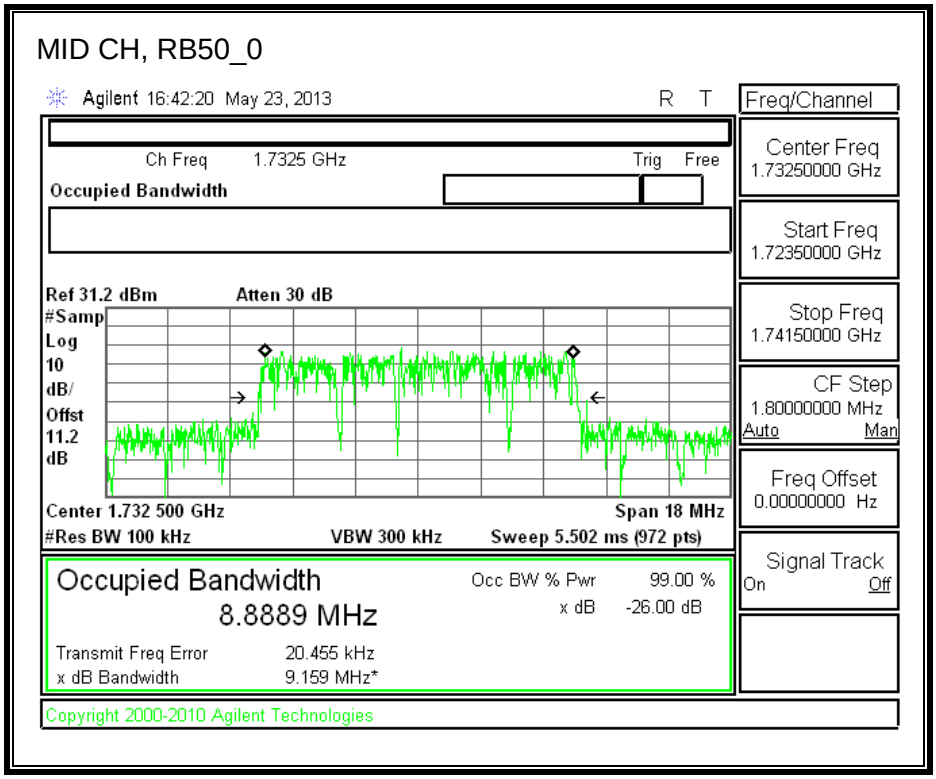
MID CH, RB50_0



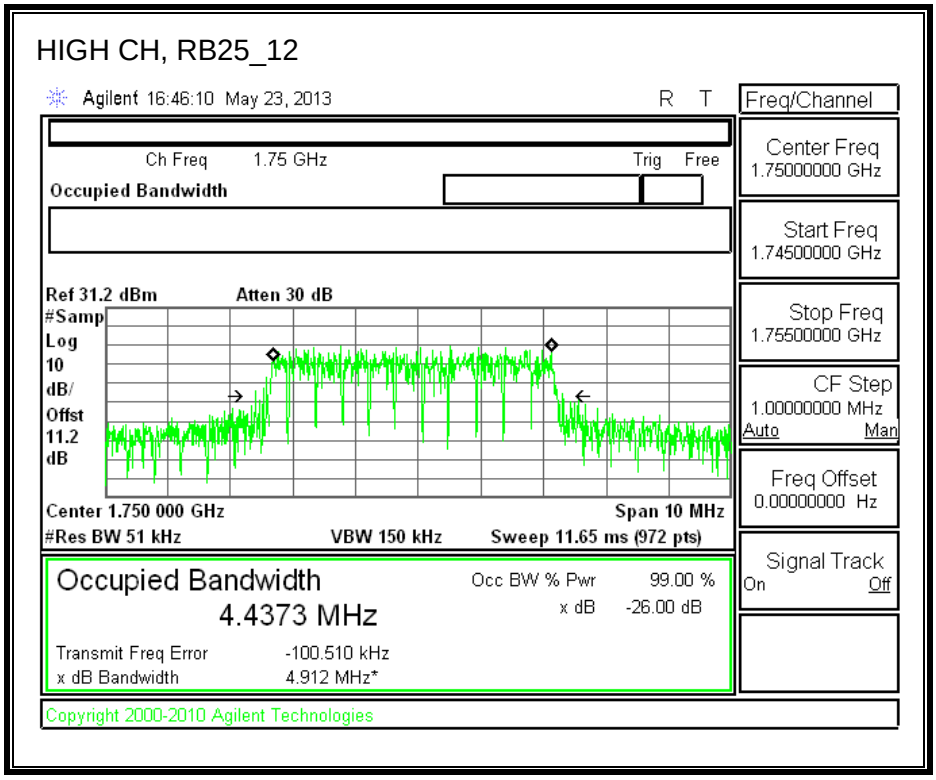
MID-16QAM



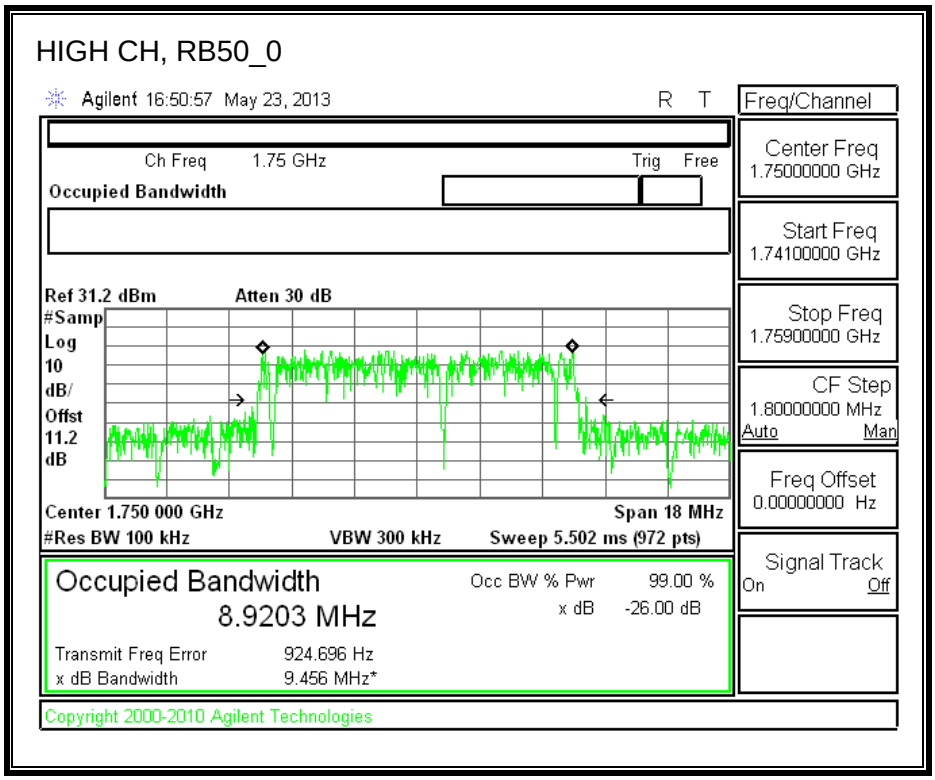
MID CH, RB50_0



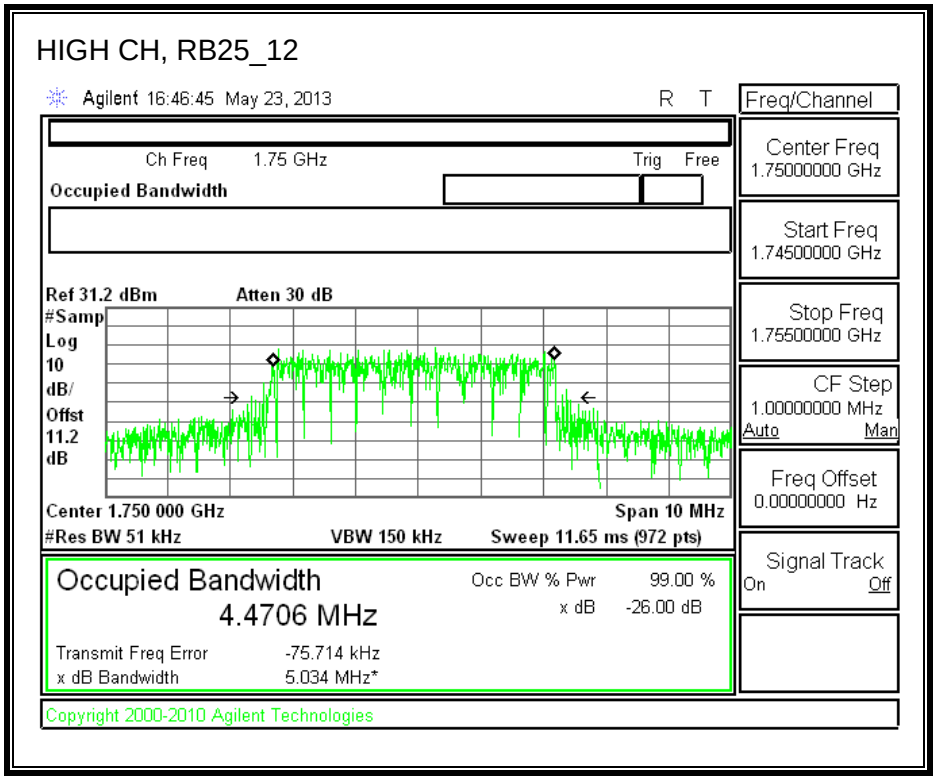
HIGH-QPSK



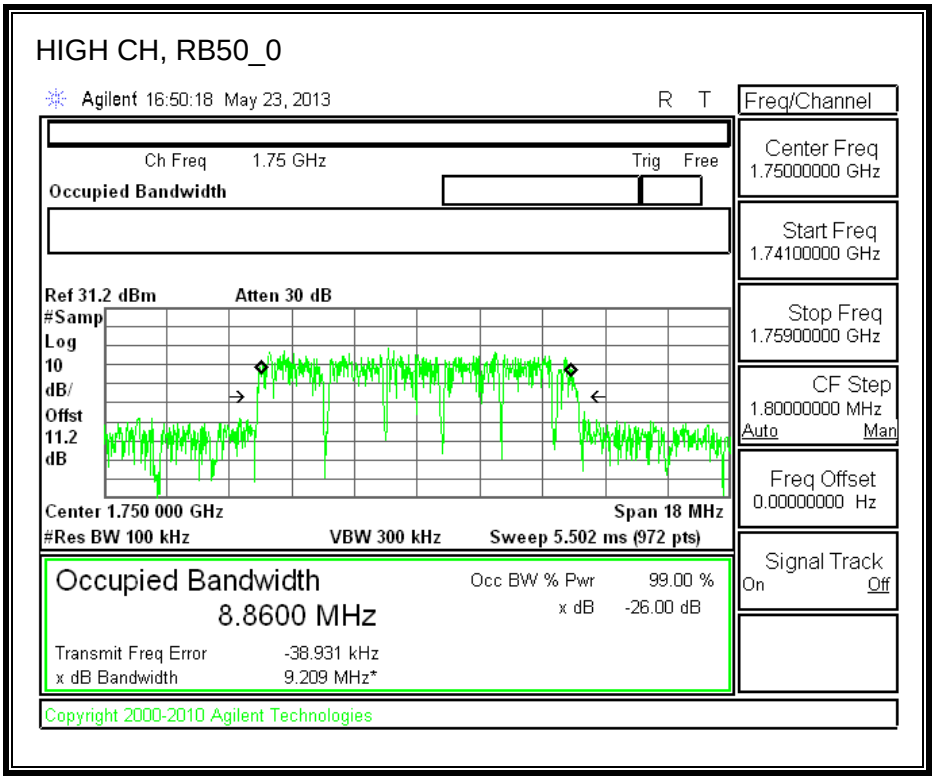
HIGH CH, RB50_0



HIGH-16QAM

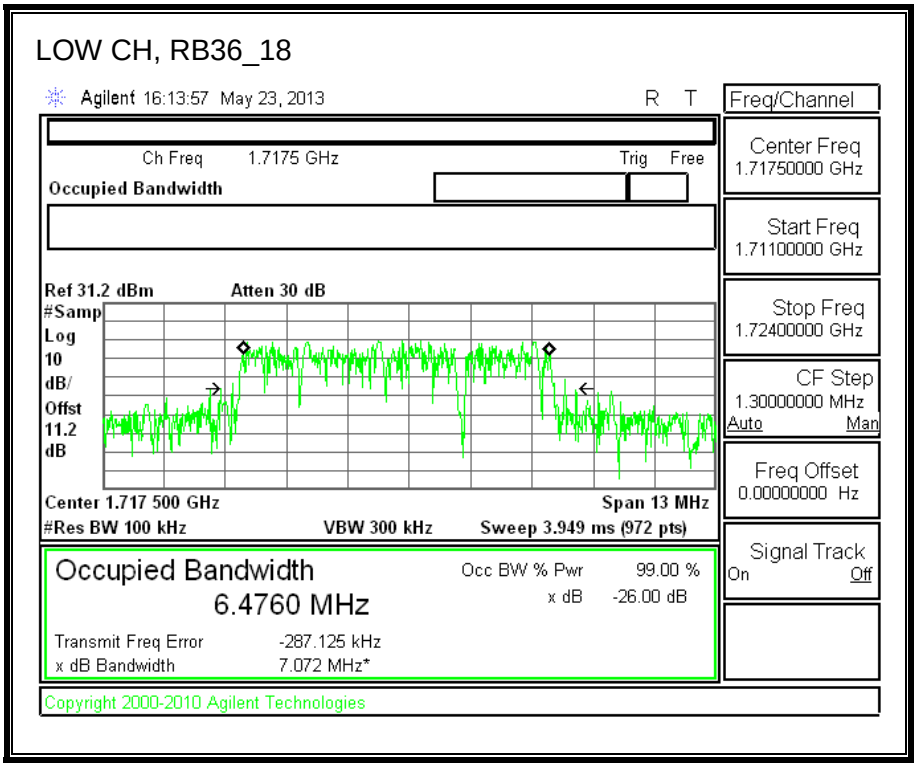


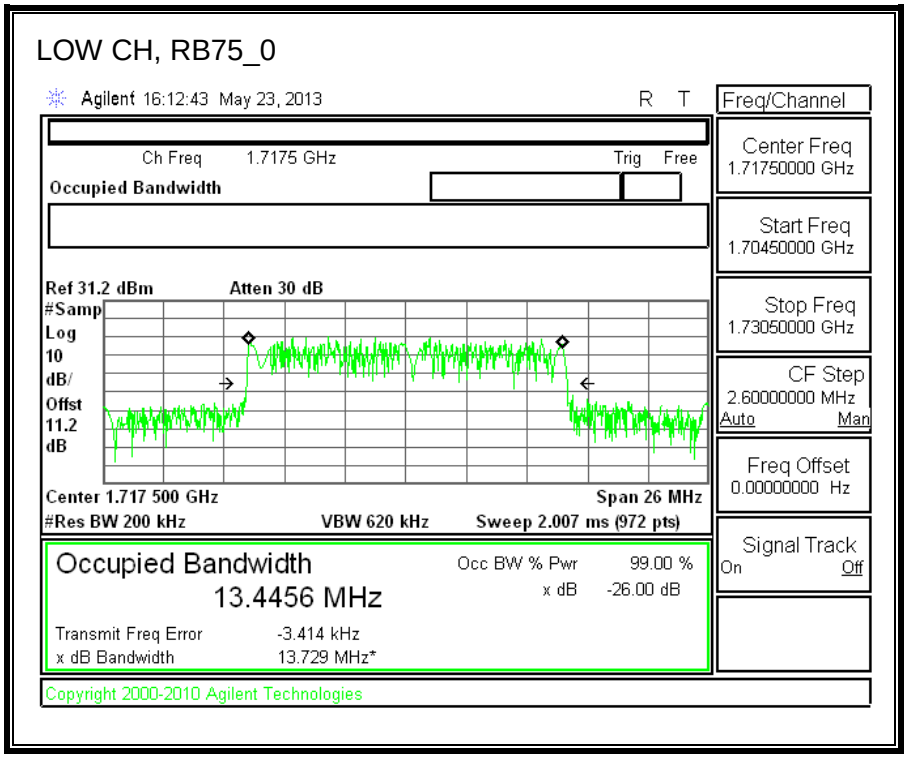
HIGH CH, RB50_0



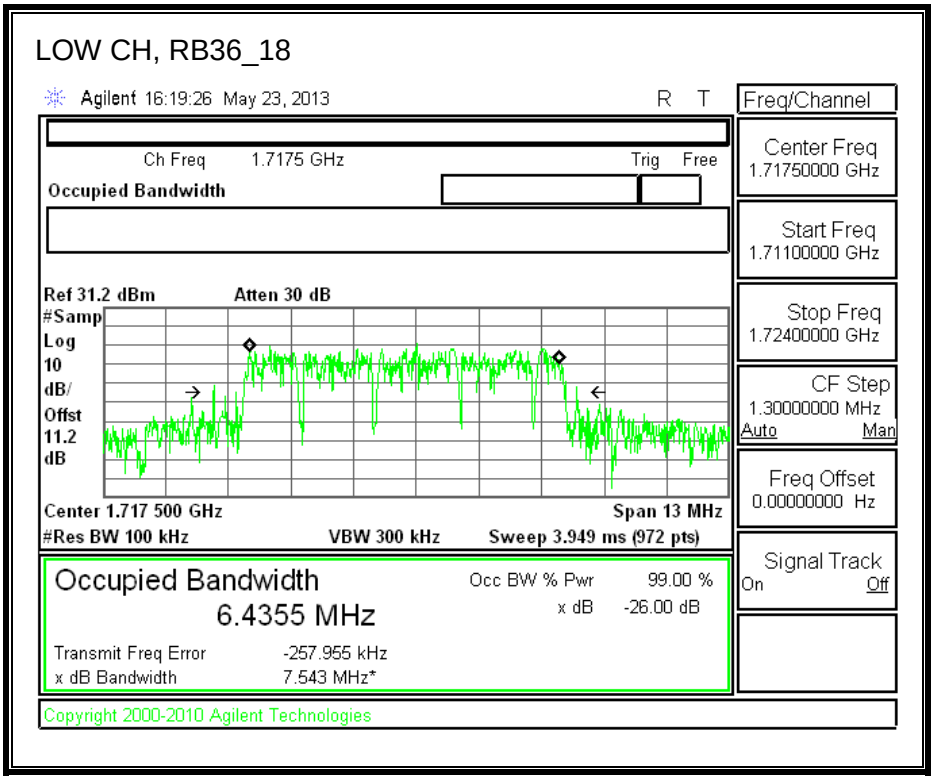
9.1.3. LTE BAND 4-15MHz BANDWIDTH

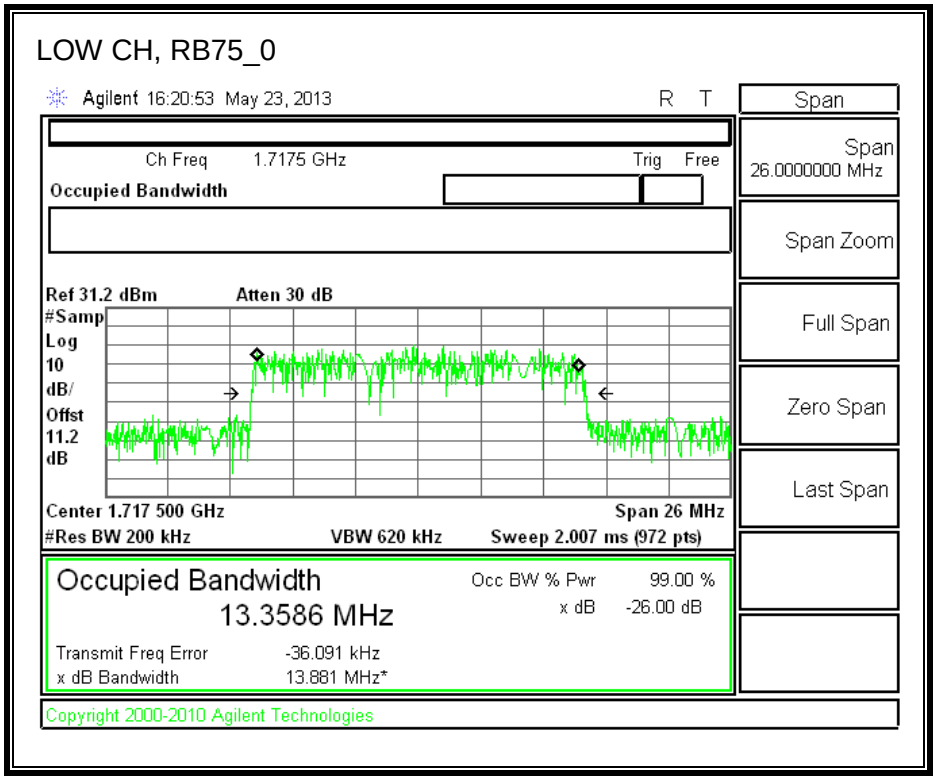
LOW-QPSK



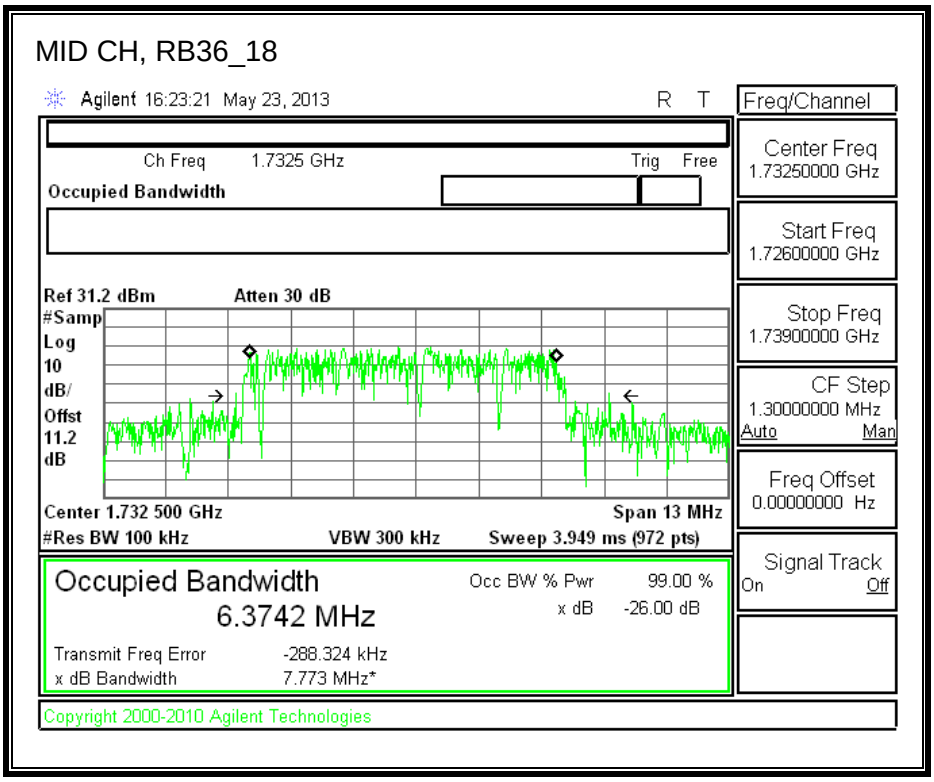


LOW-16QAM

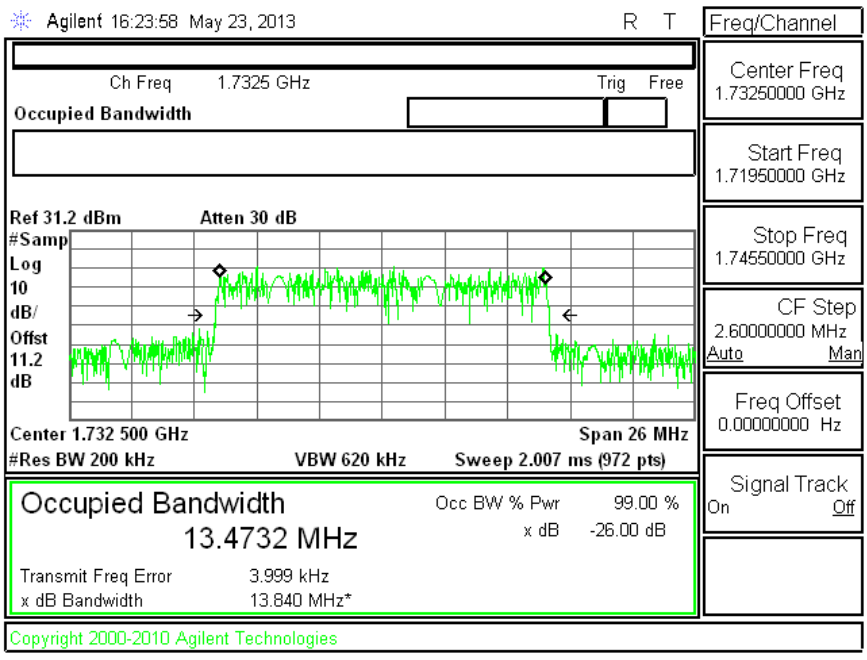




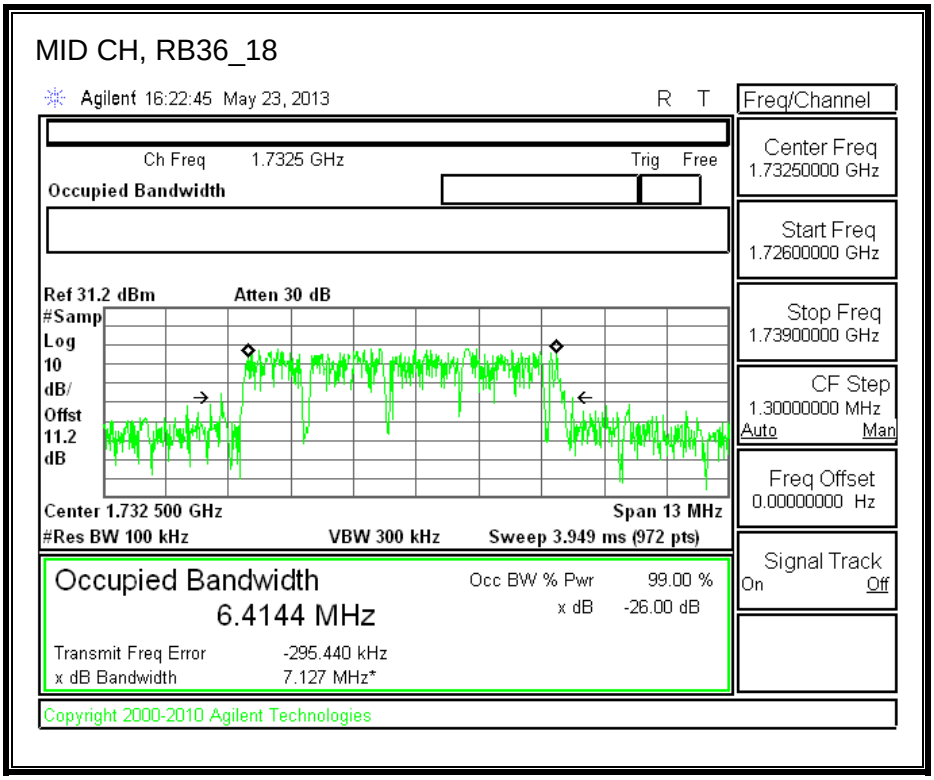
MID-QPSK



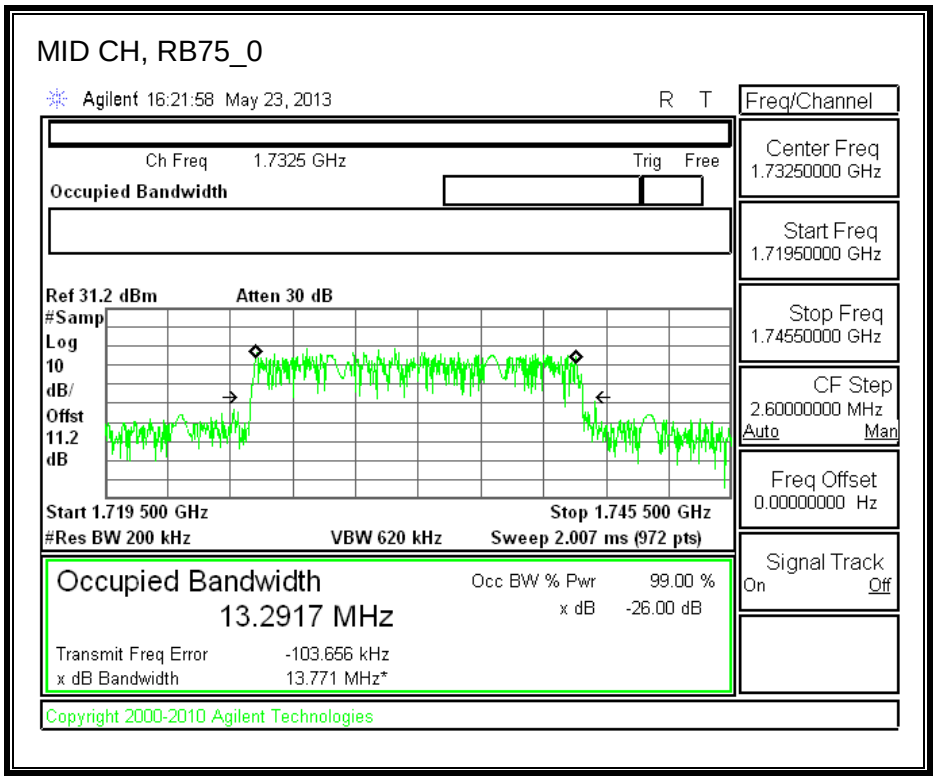
MID CH, RB75_0



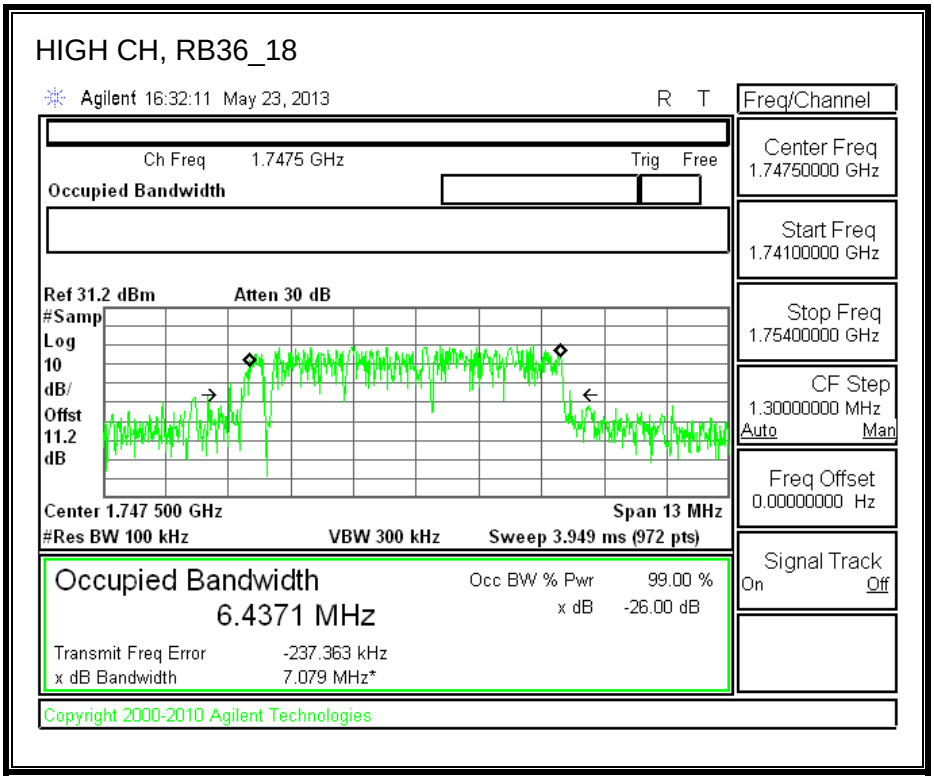
MID-16QAM



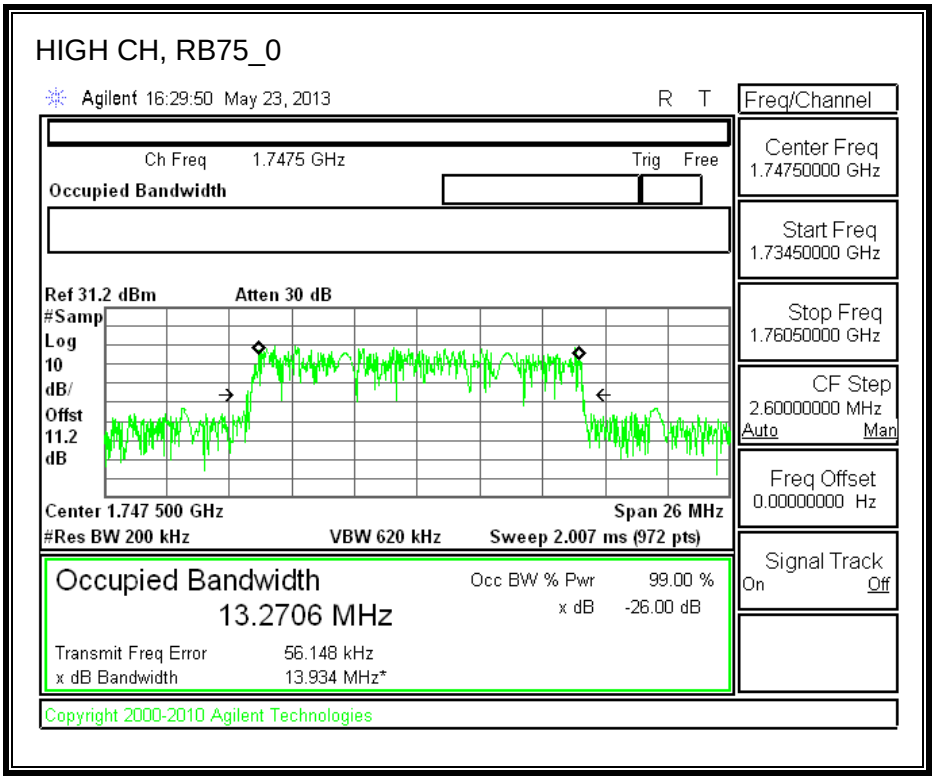
MID CH, RB75_0



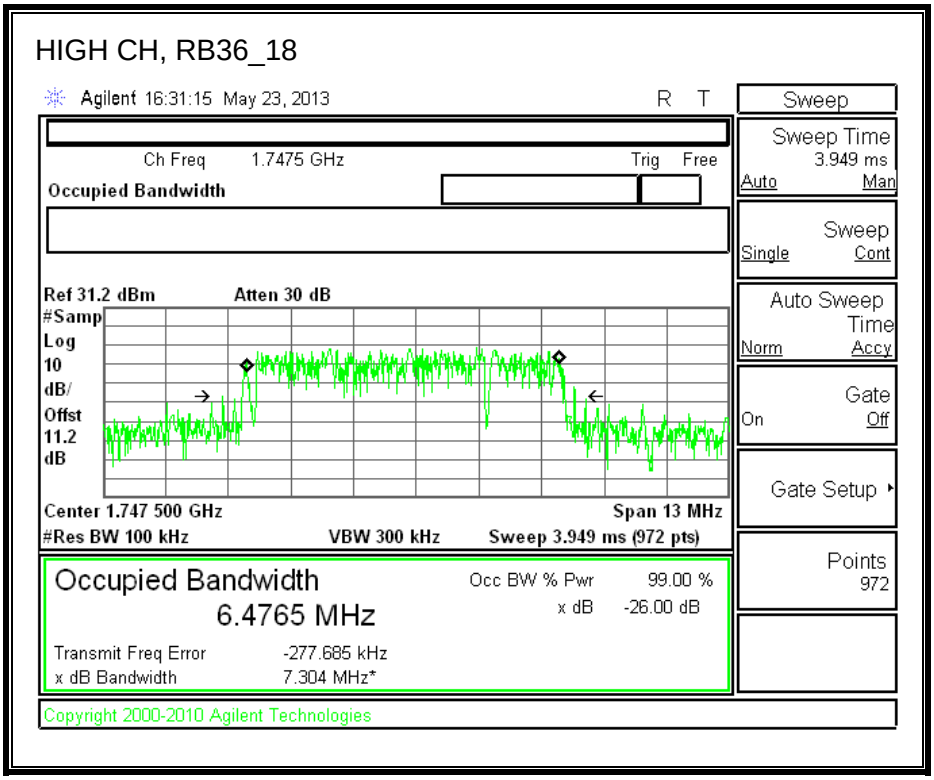
HIGH-QPSK



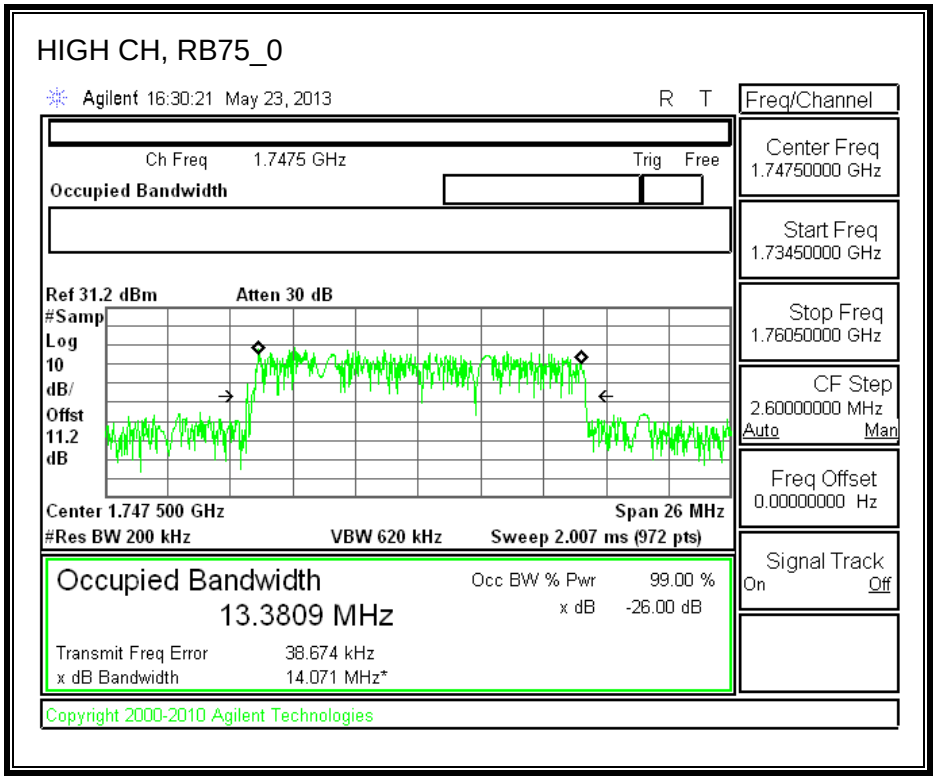
HIGH CH, RB75_0



HIGH-16QAM

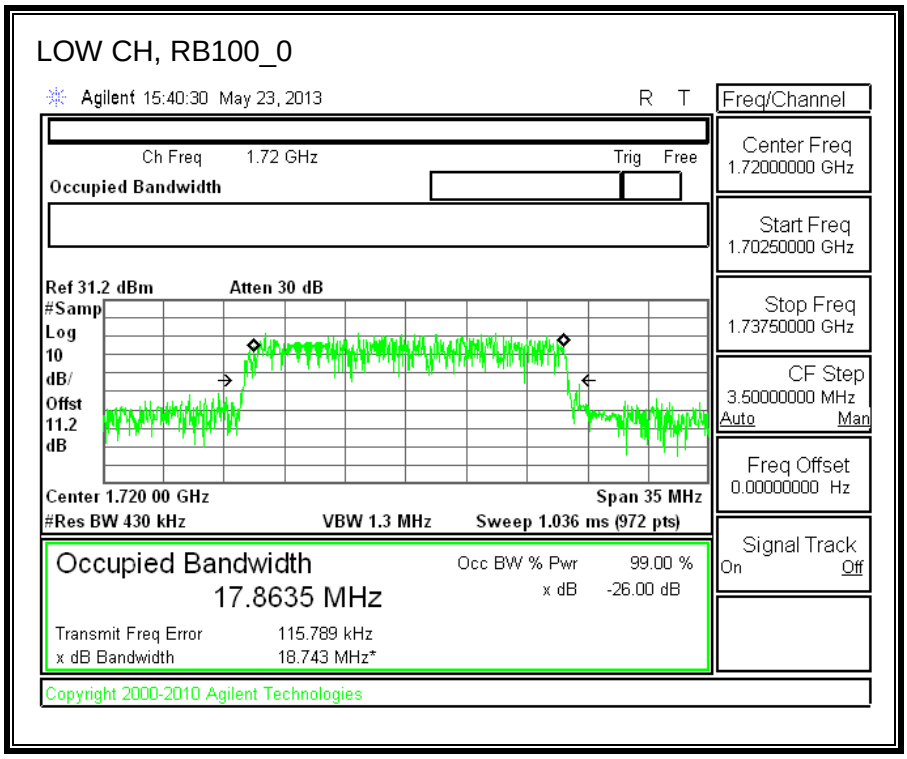


HIGH CH, RB75_0

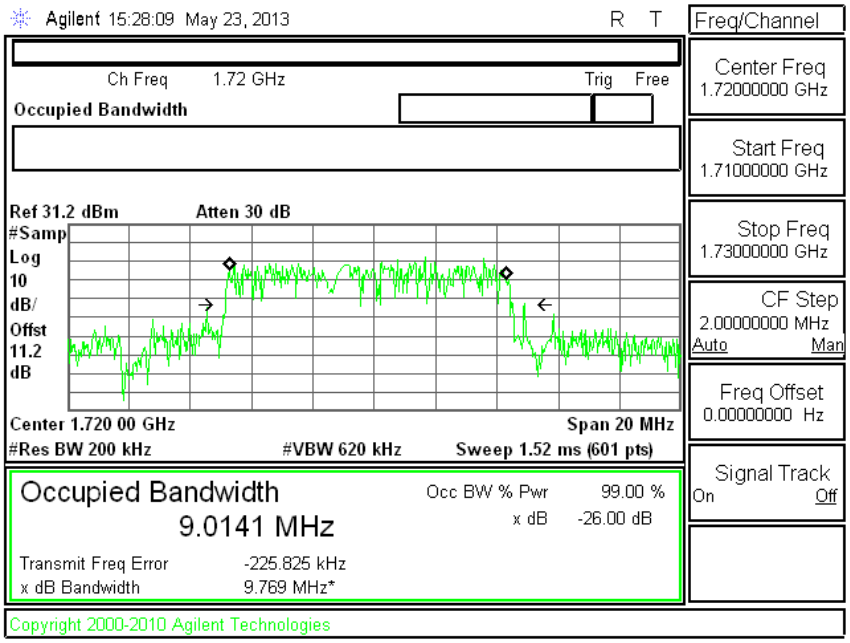


LTE BAND 4-20MHz BANDWIDTH

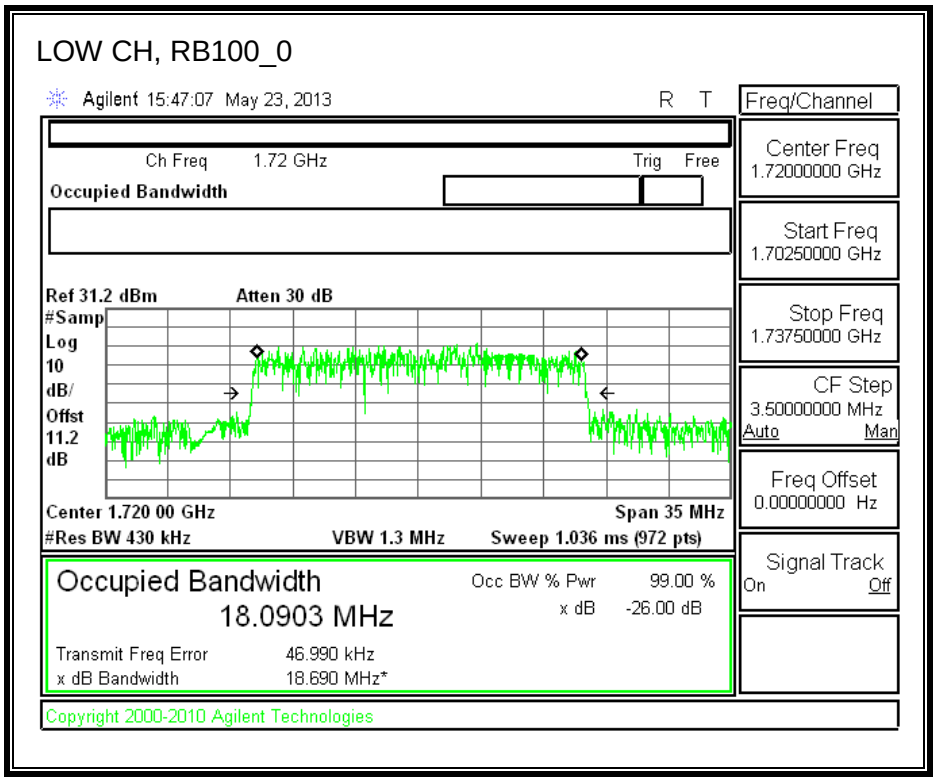
LOW-QPSK

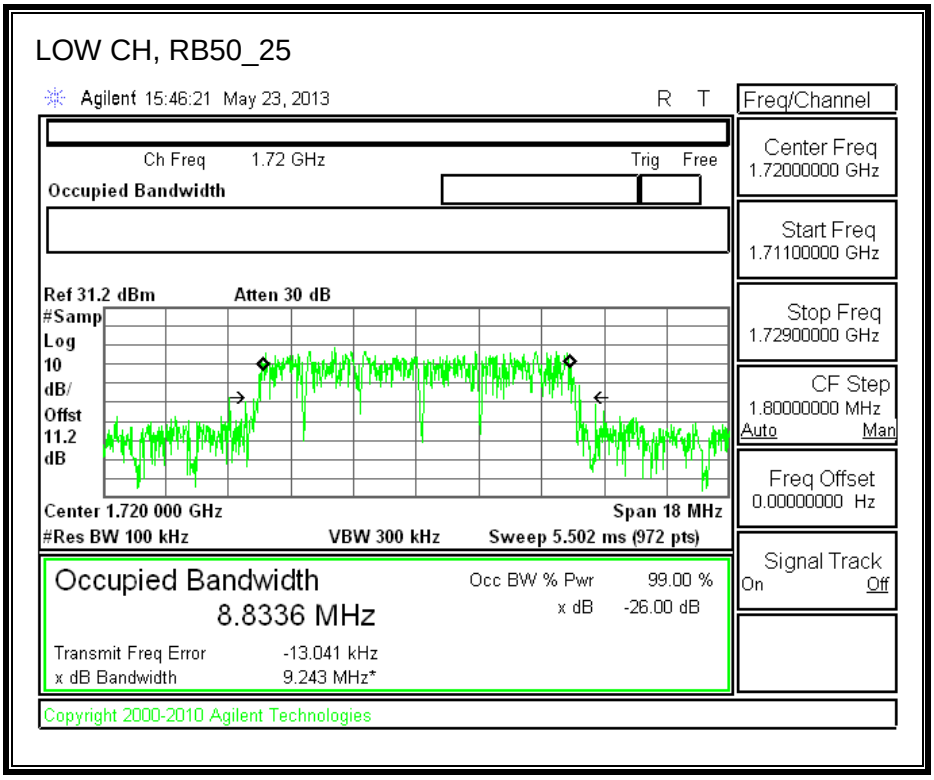


LOW CH, RB50_25

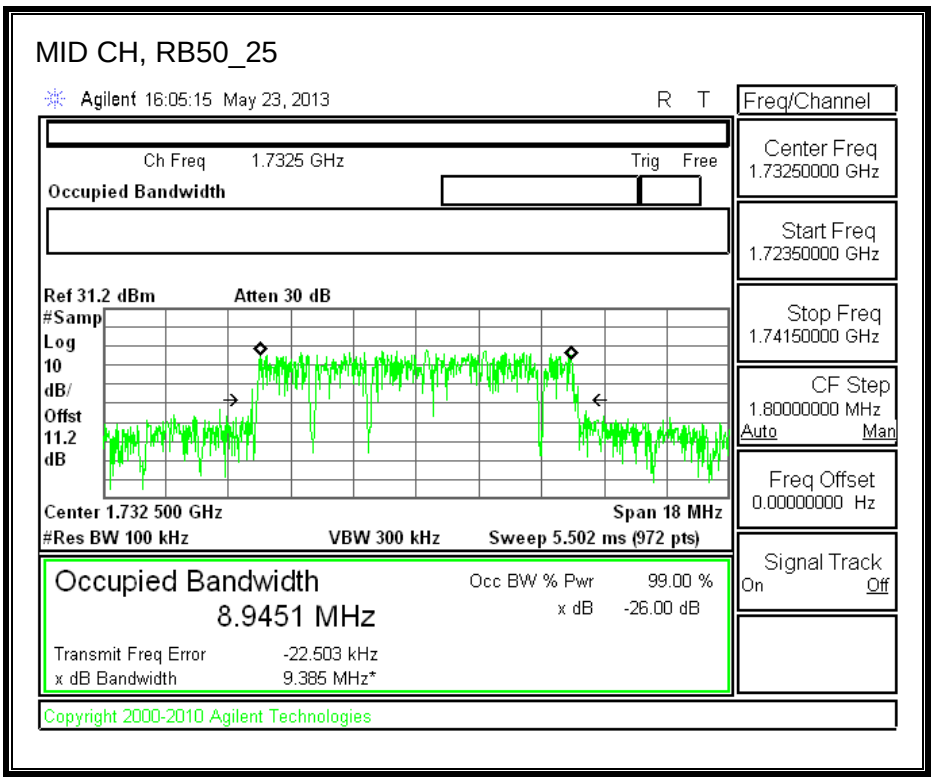


LOW-16QAM

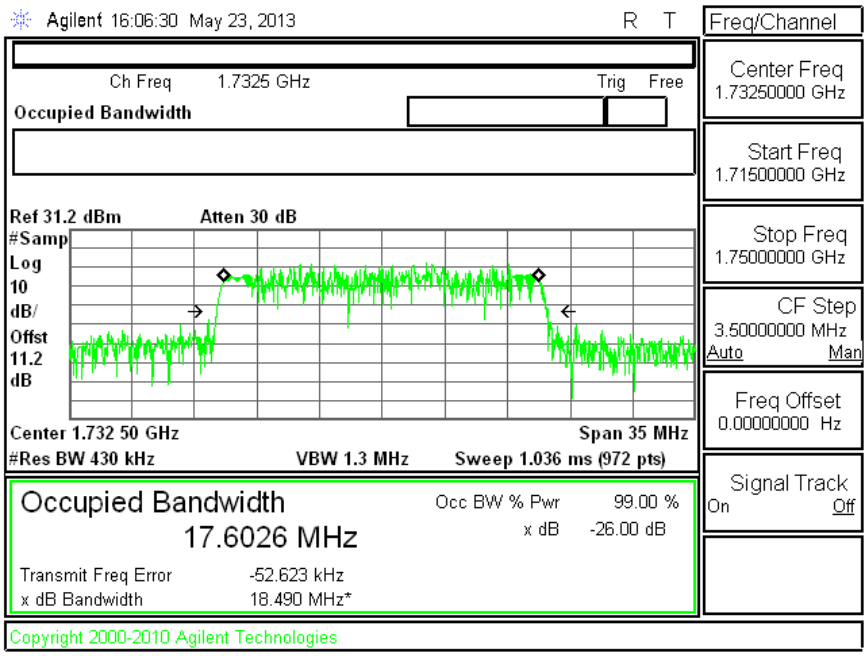




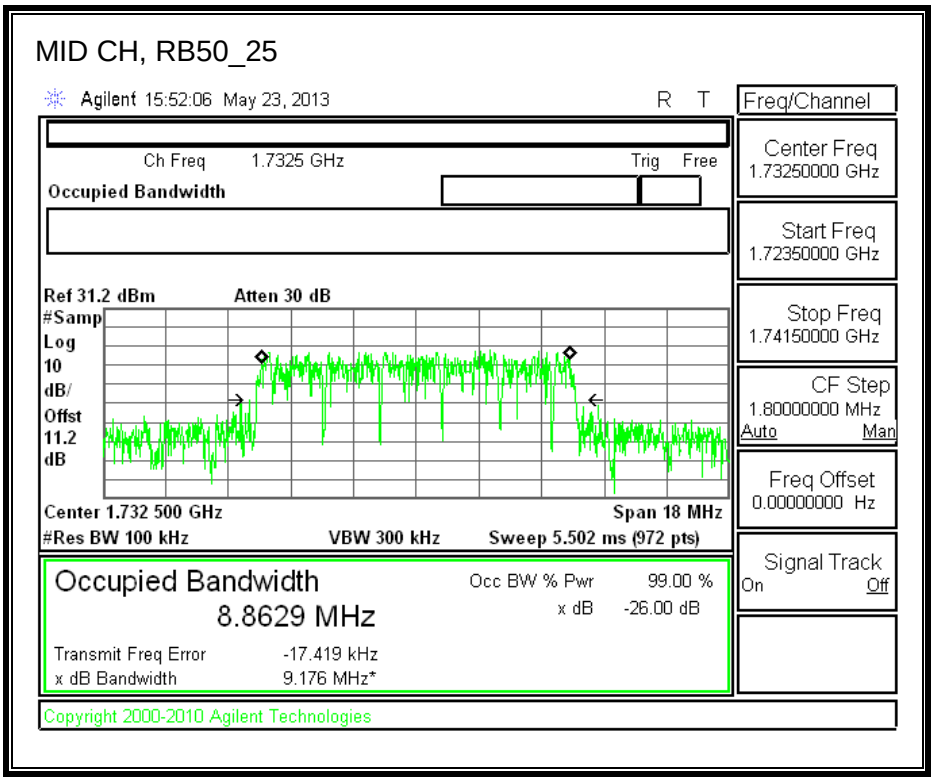
MID-QPSK



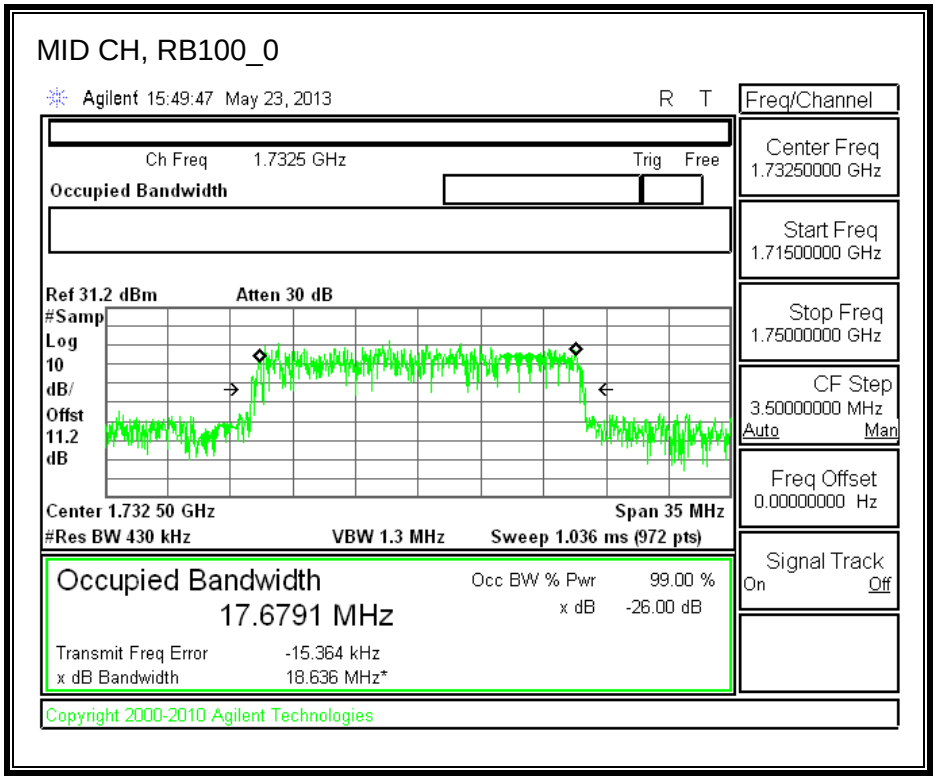
MID CH, RB100_0



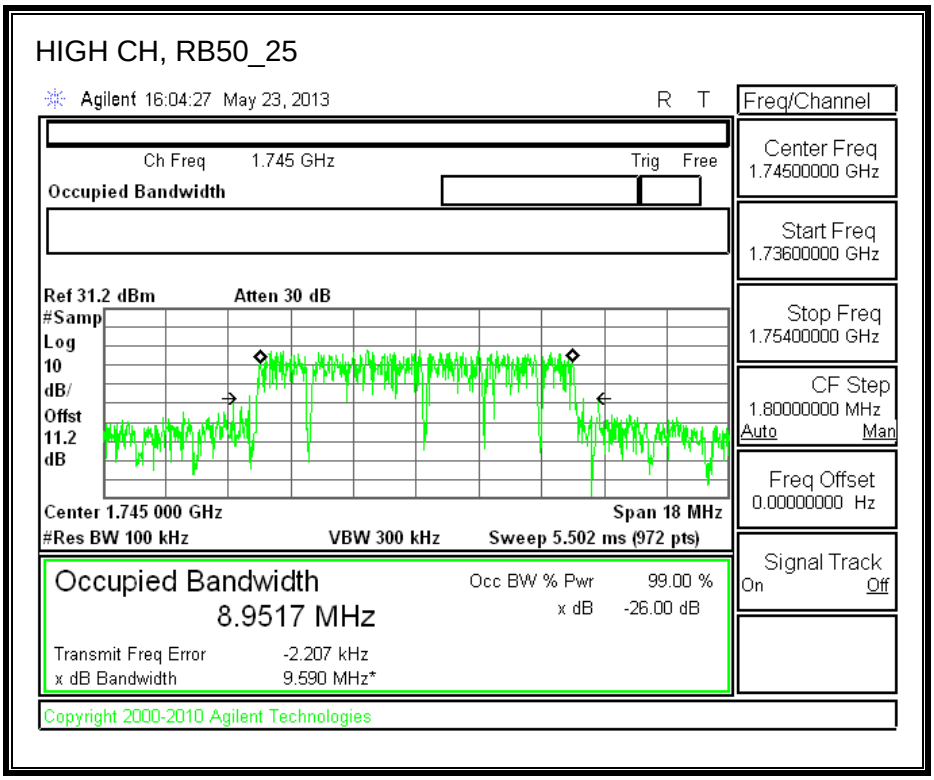
MID-16QAM

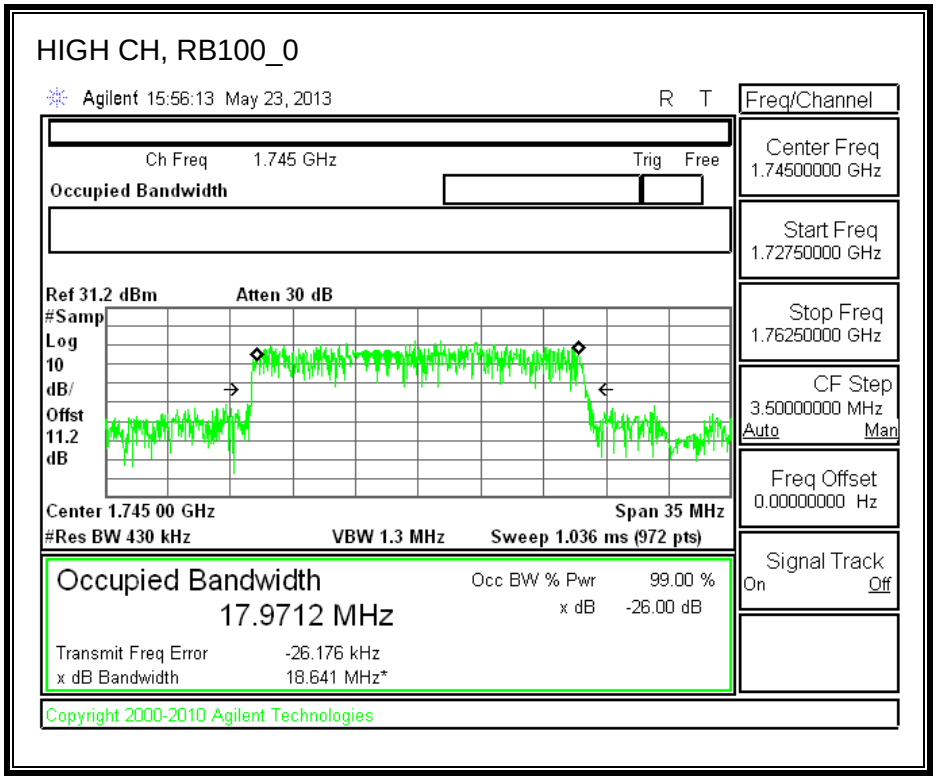


MID CH, RB100_0

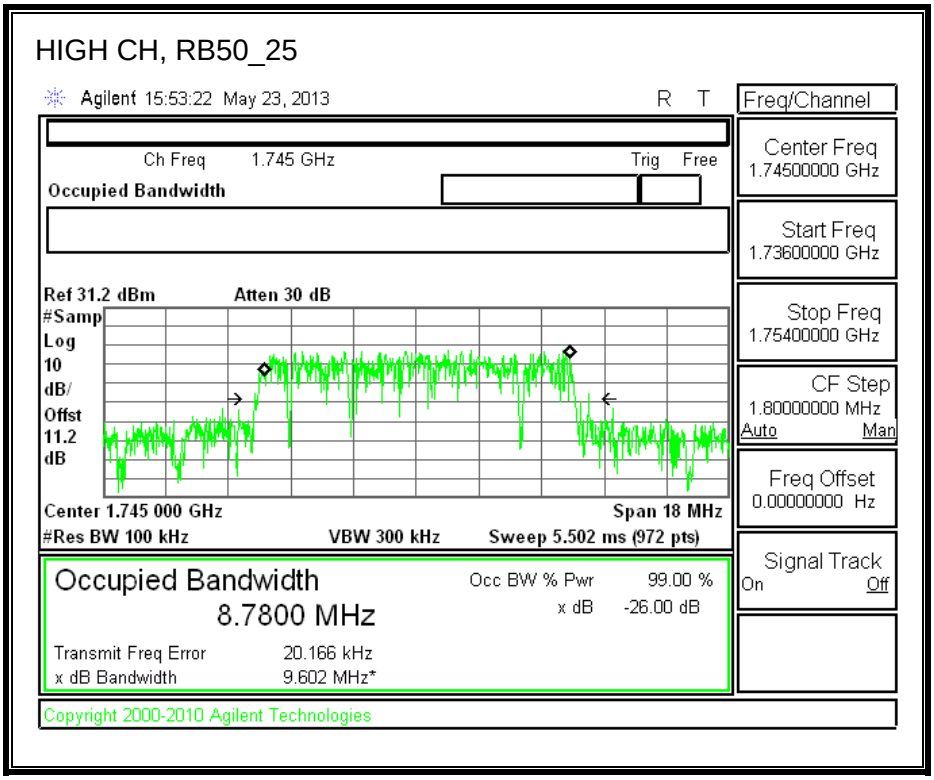


HIGH-QPSK

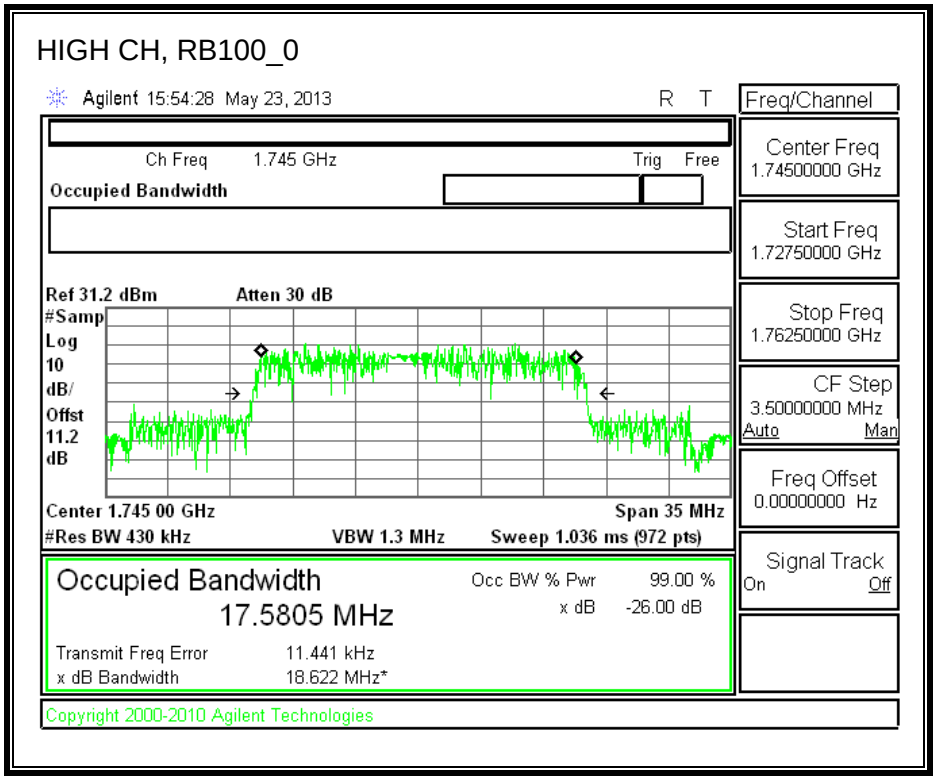




HIGH-16QAM

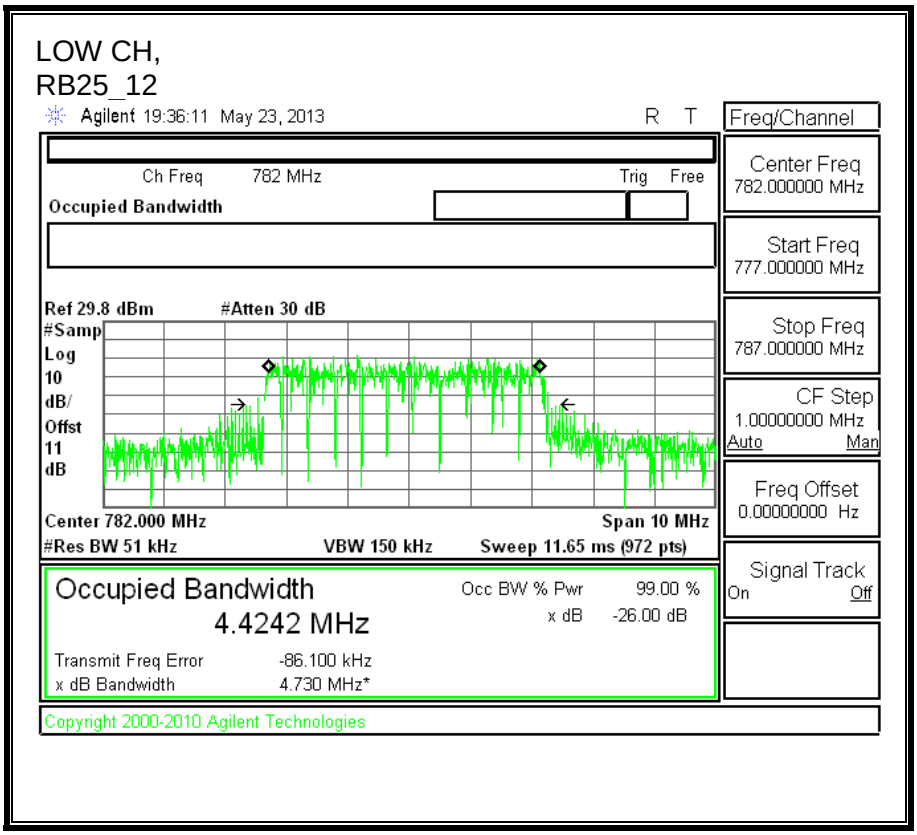


HIGH CH, RB100_0

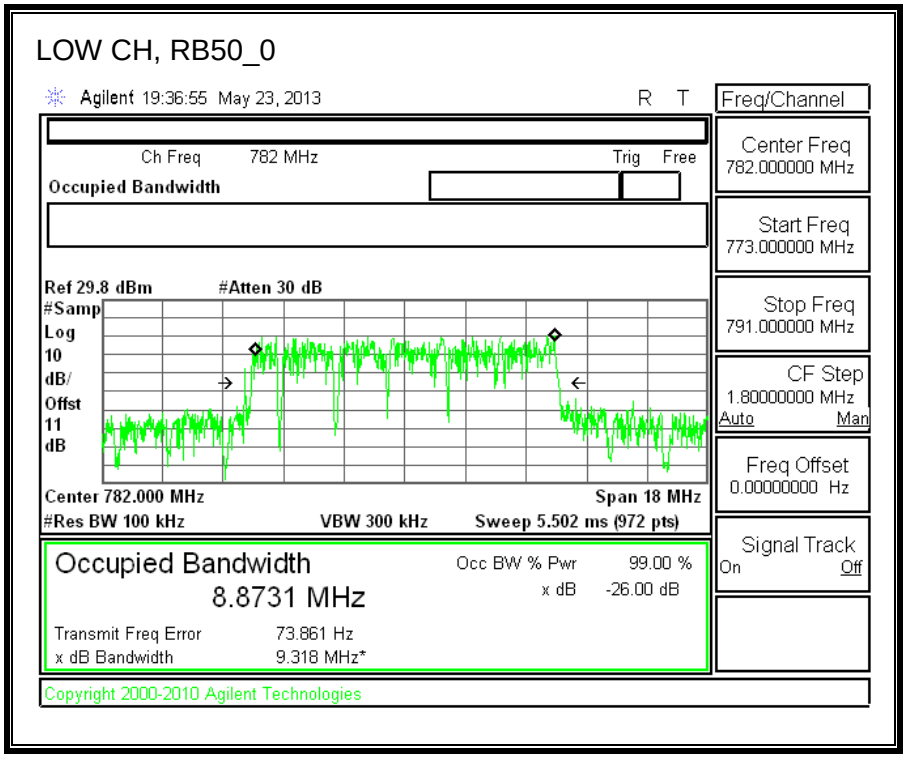


9.1.4. LTE BAND 13-10 MHz BANDWIDTH

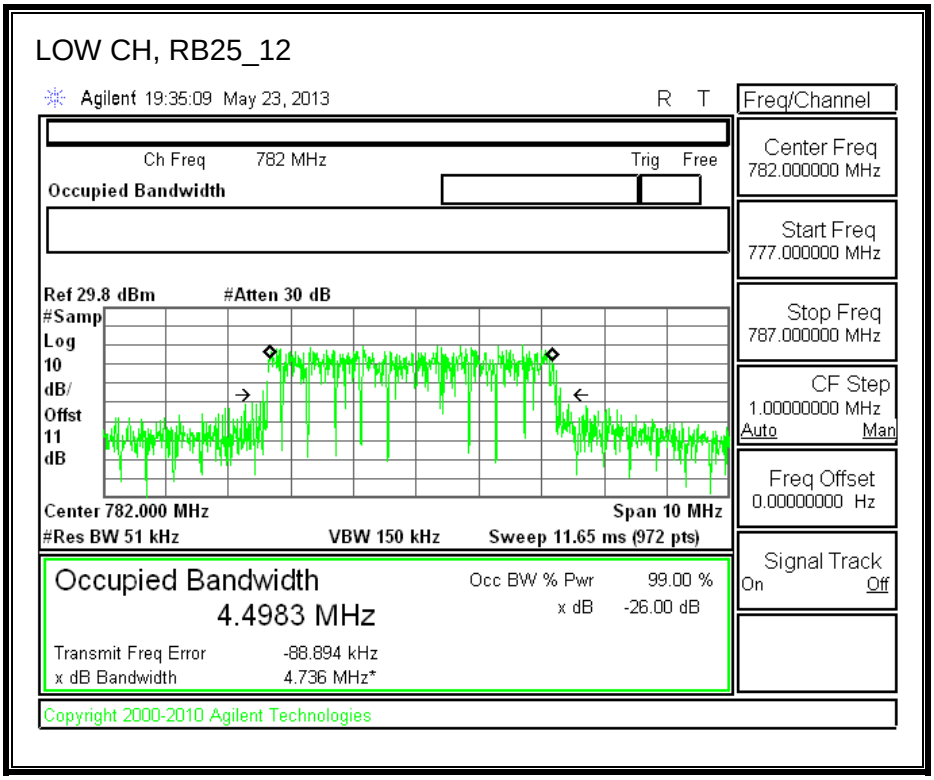
LOW-QPSK



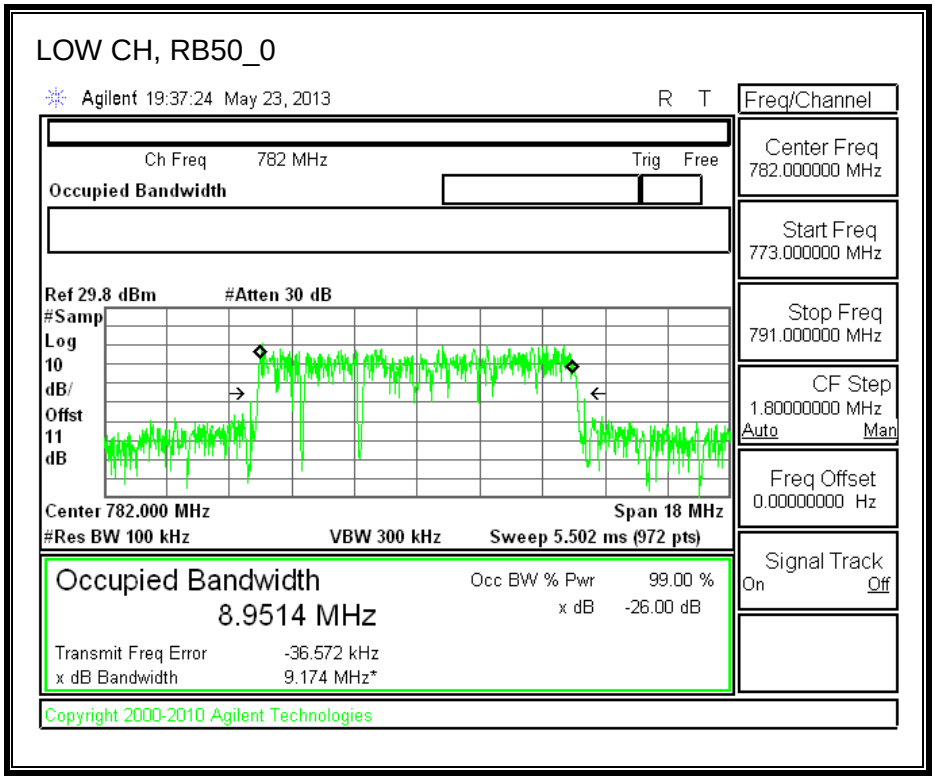
LOW CH, RB50_0



LOW-16QAM



LOW CH, RB50_0



9.2. BAND EDGE

RULE PART(S)

FCC: §22.359, 24.238

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 transmitter output was connected to a Agilent 8960 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 (824, 848, 1850, 1910MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

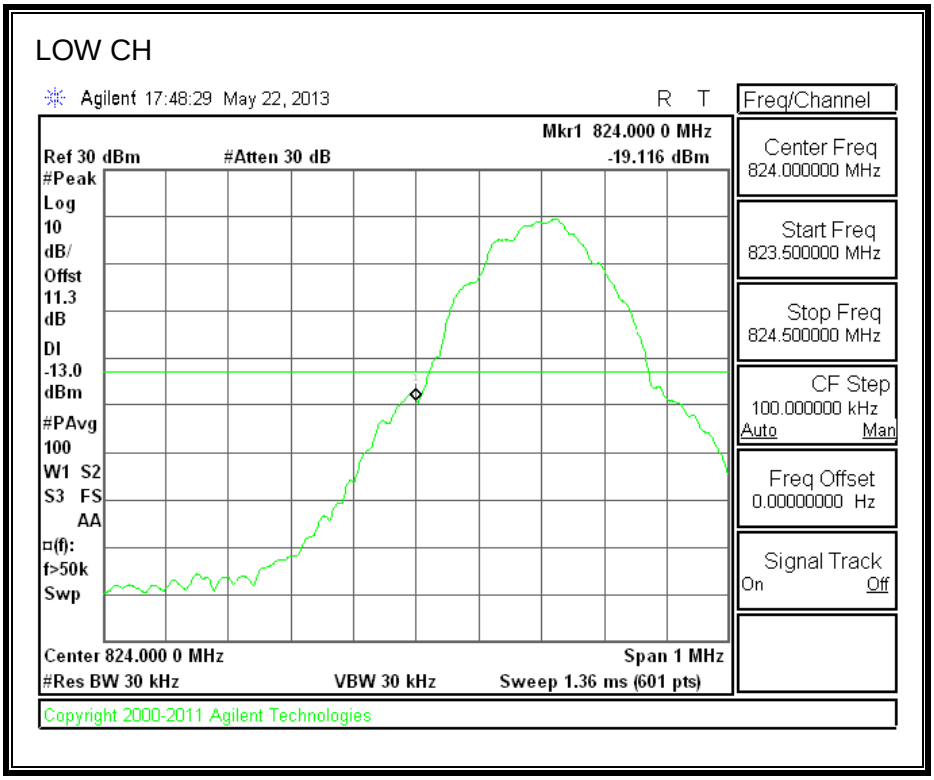
MODES TESTED

- GPRS
- UMTS REL 99, and HSUPA
- CDMA 1xRtt, CDMA EV-DO
- LTE Band 4 and Band 13

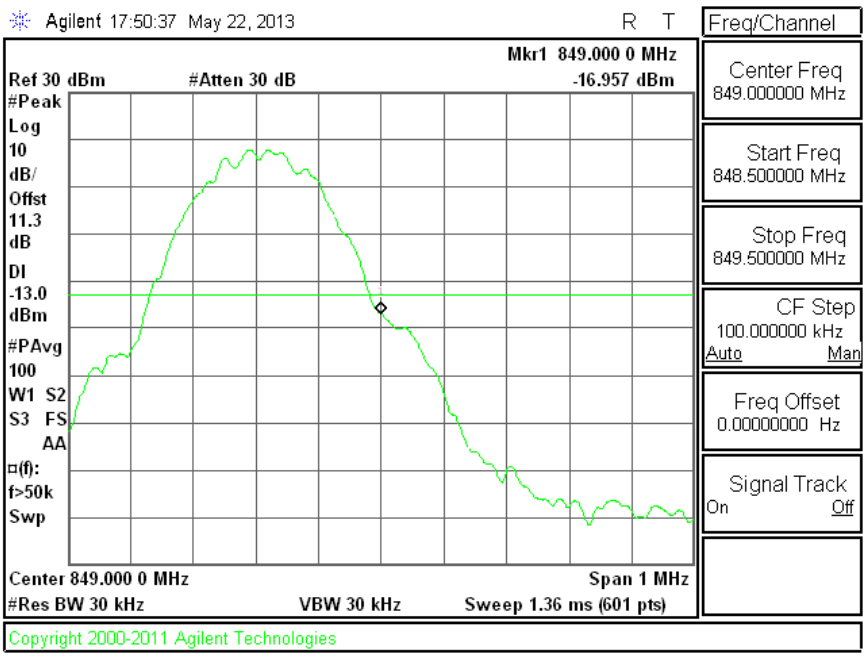
RESULTS

9.2.1. GPRS MODE

CELL BAND

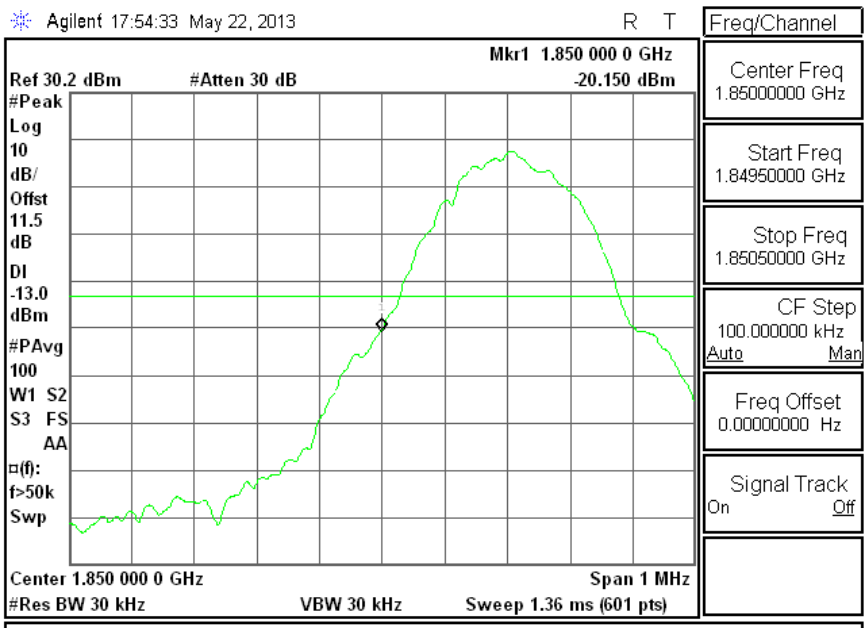


HIGH CH

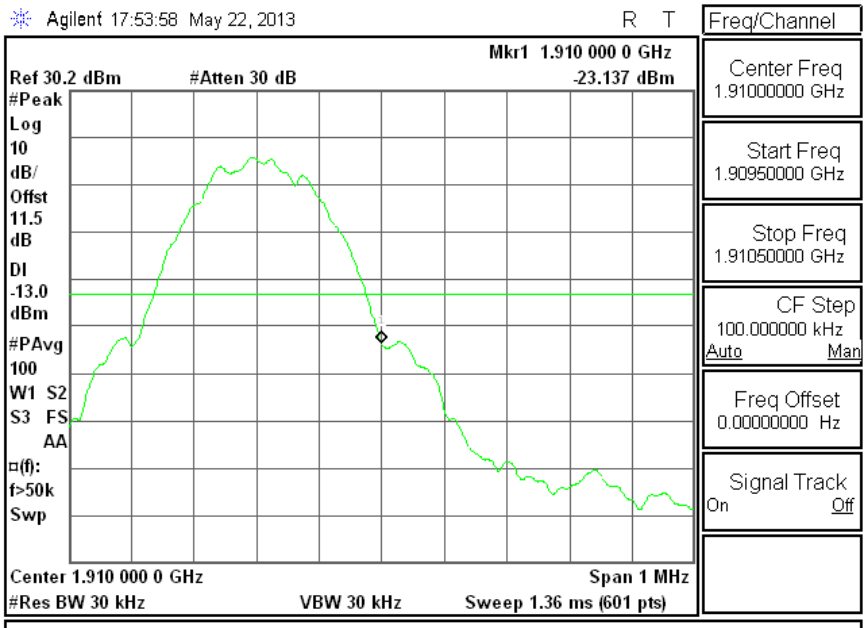


PCS BAND

LOW CH

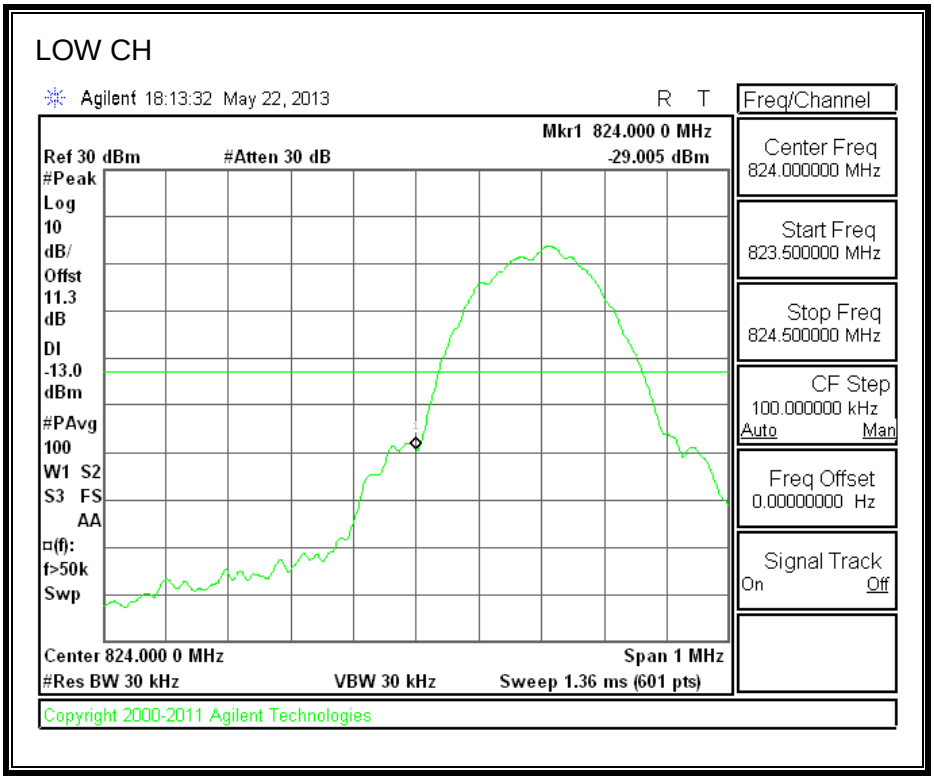


HIGH CH

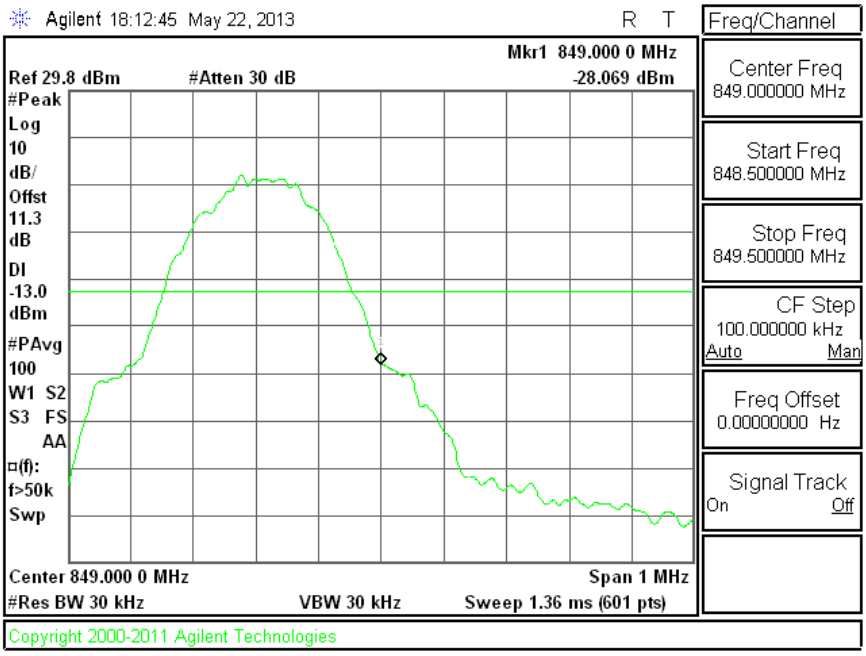


9.2.1. EGPRS MODE

CELL BAND

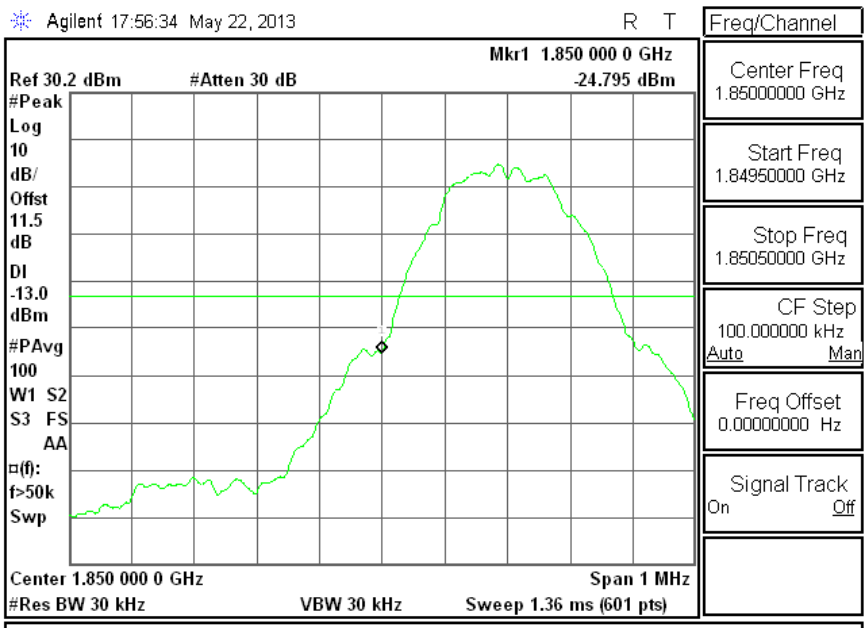


HIGH CH

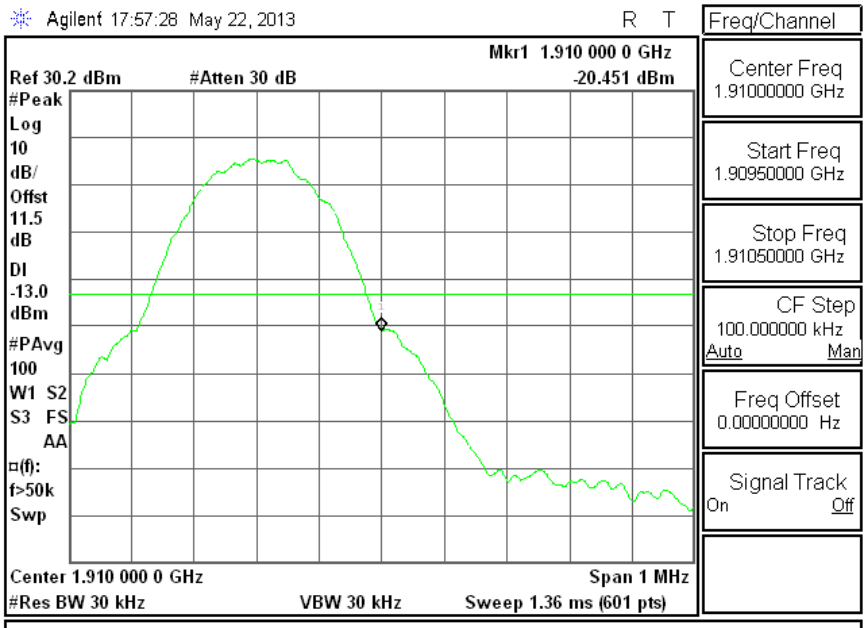


PCS BAND

LOW CH

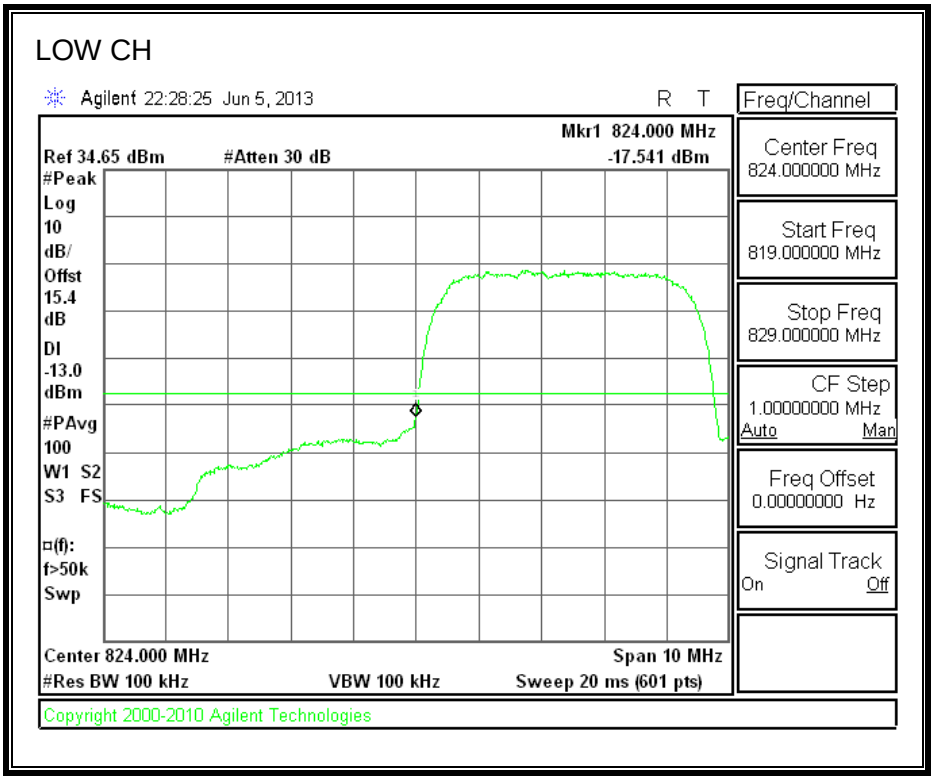


HIGH CH

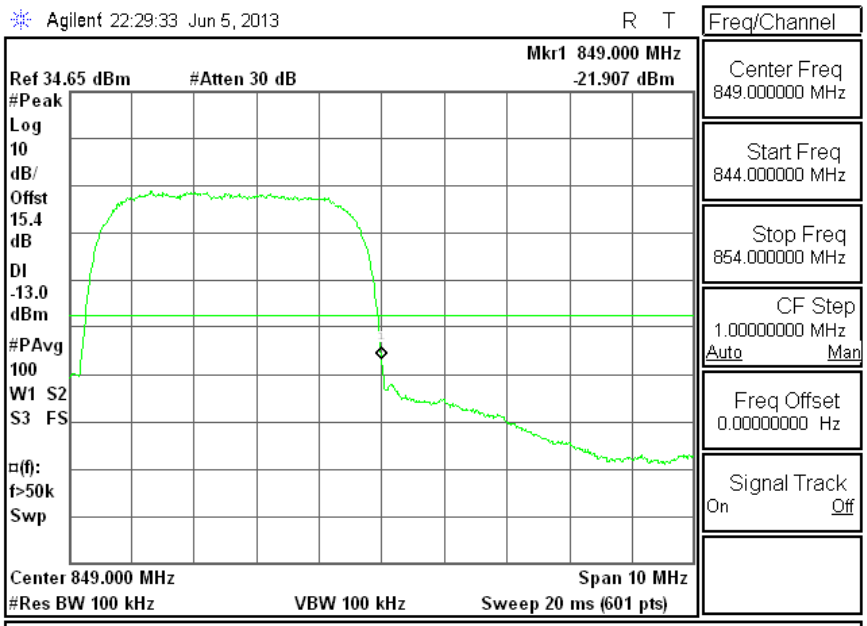


9.2.2. UMTS REL 99 MODE

CELL BAND

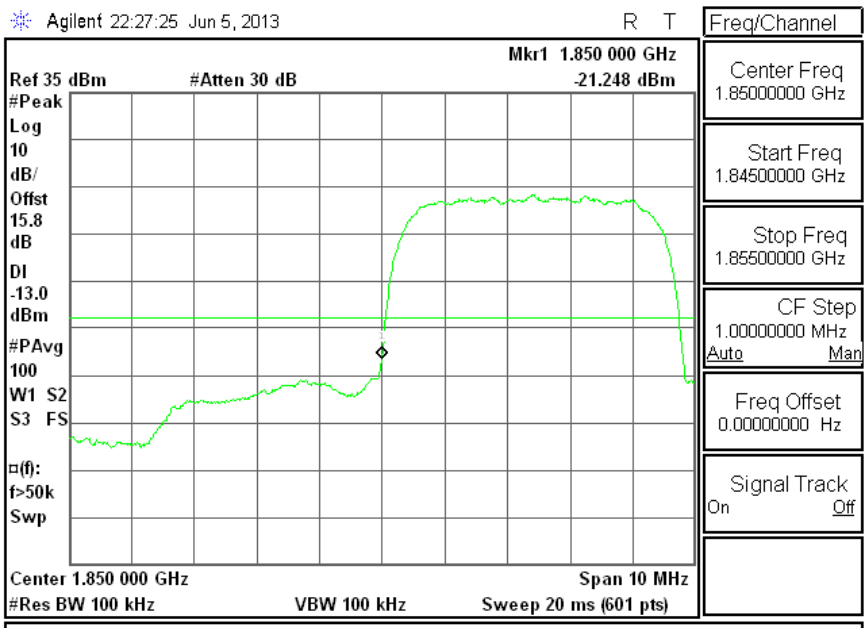


HIGH CH

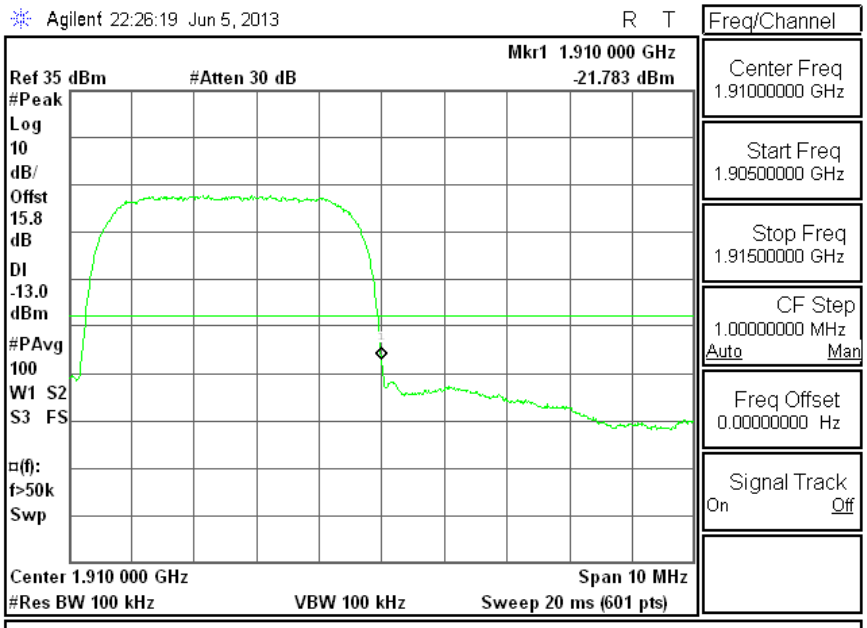


PCS BAND

LOW CH

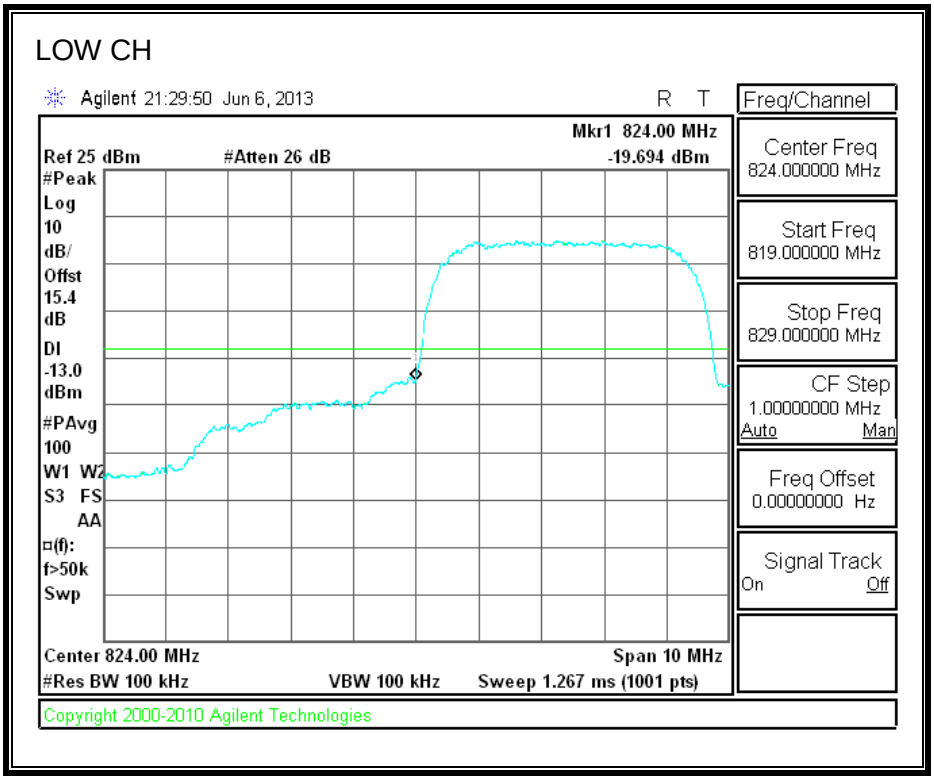


HIGH CH

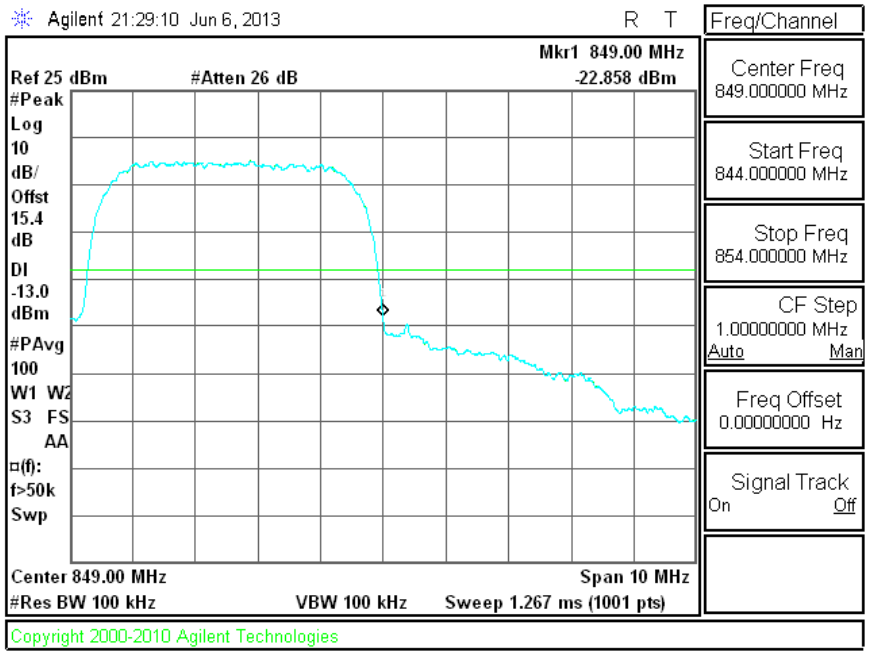


9.2.3. UMTS HSUPA MODE

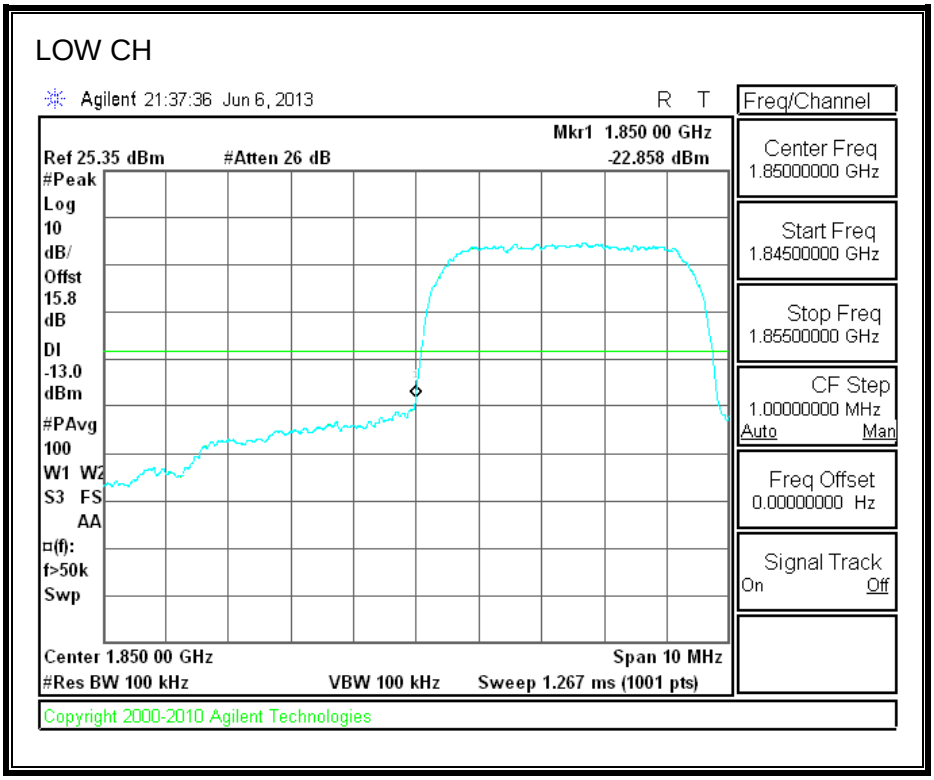
CELL BAND



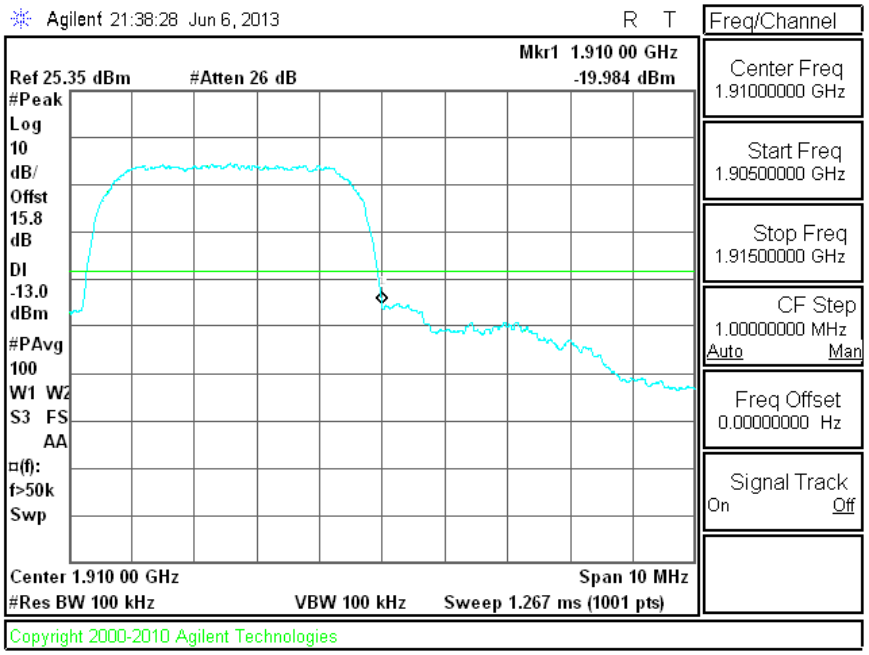
HIGH CH



PCS BAND



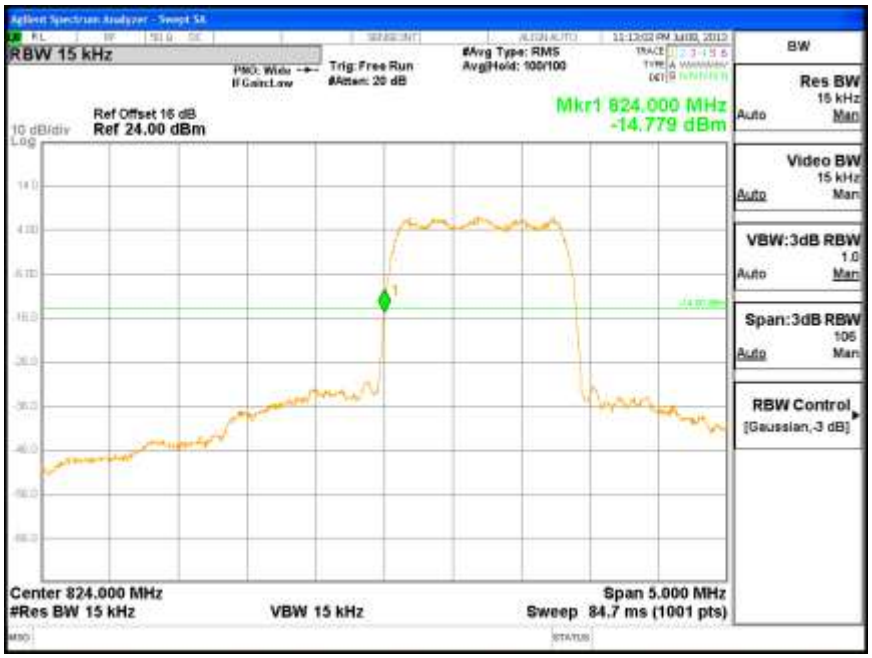
HIGH CH



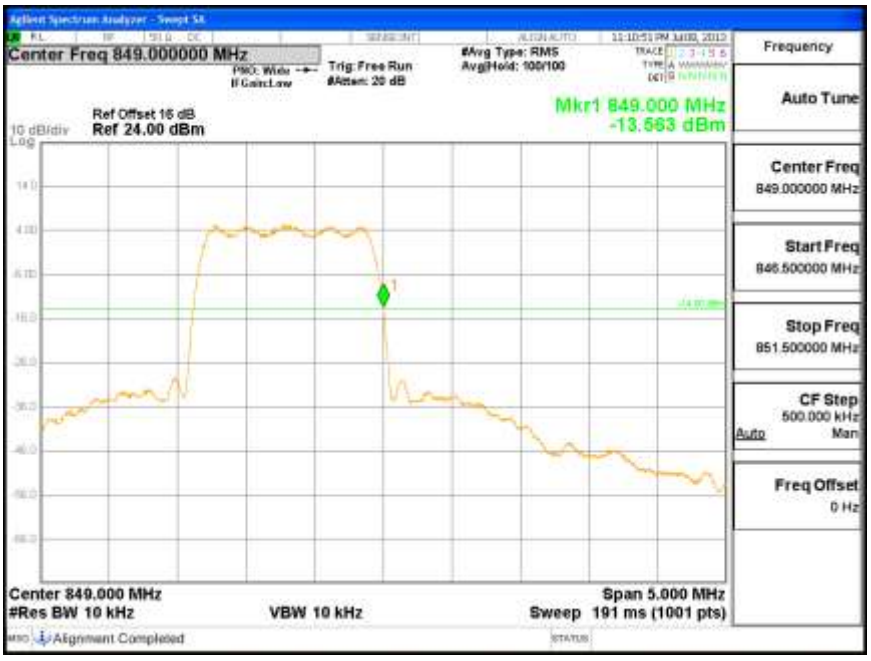
9.2.1. CDMA 1xRtt MODE

CELL Band

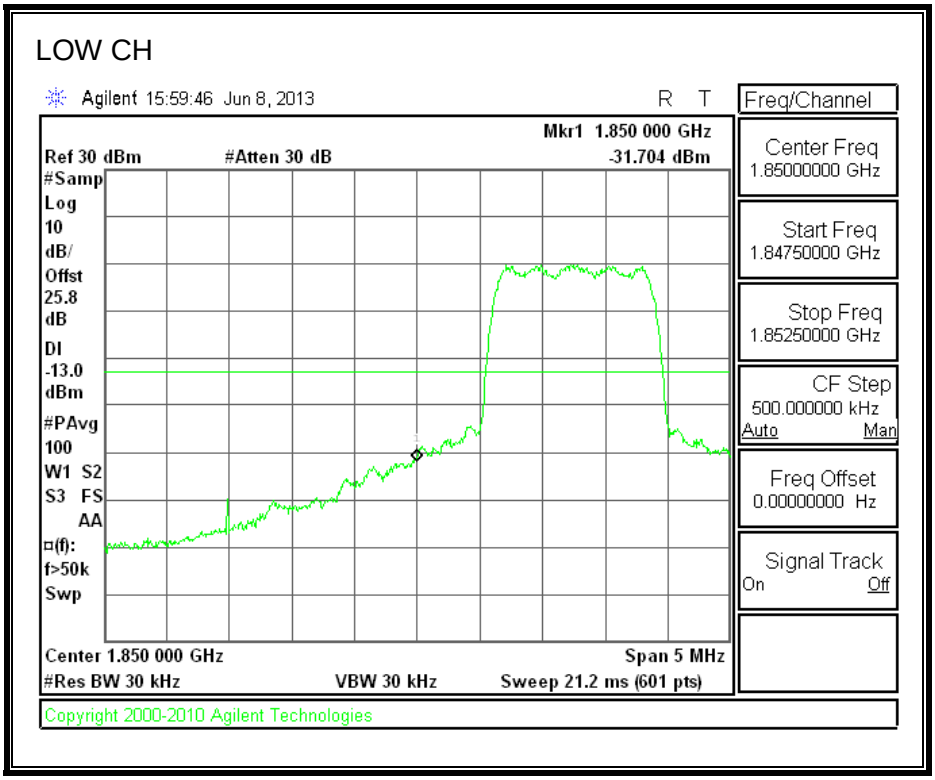
LOW CH



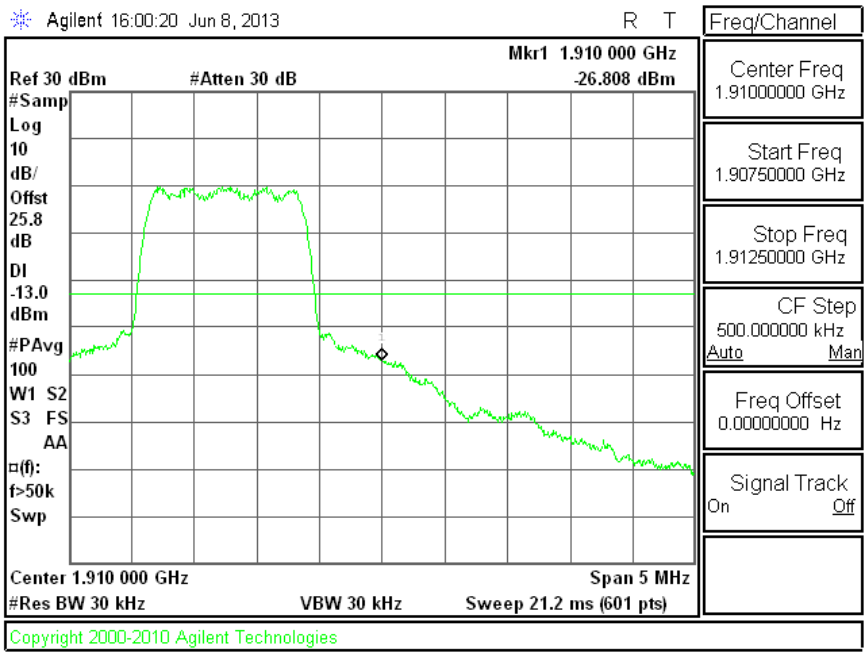
HIGH CH



PCS Band



HIGH CH

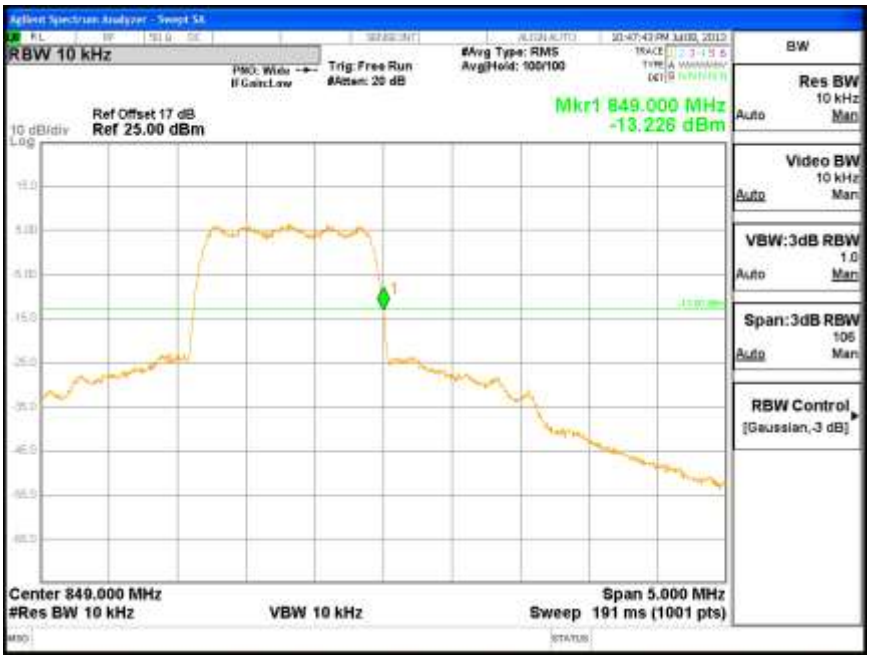


9.2.2. CDMA EV-DO MODE

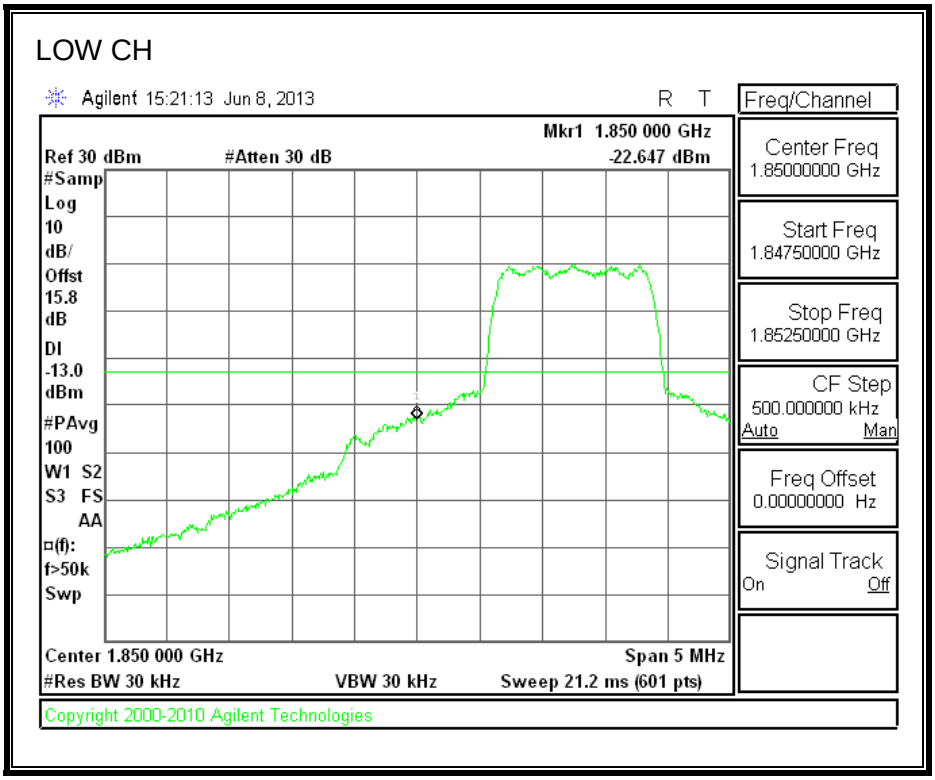
CELL Band

LOW CH

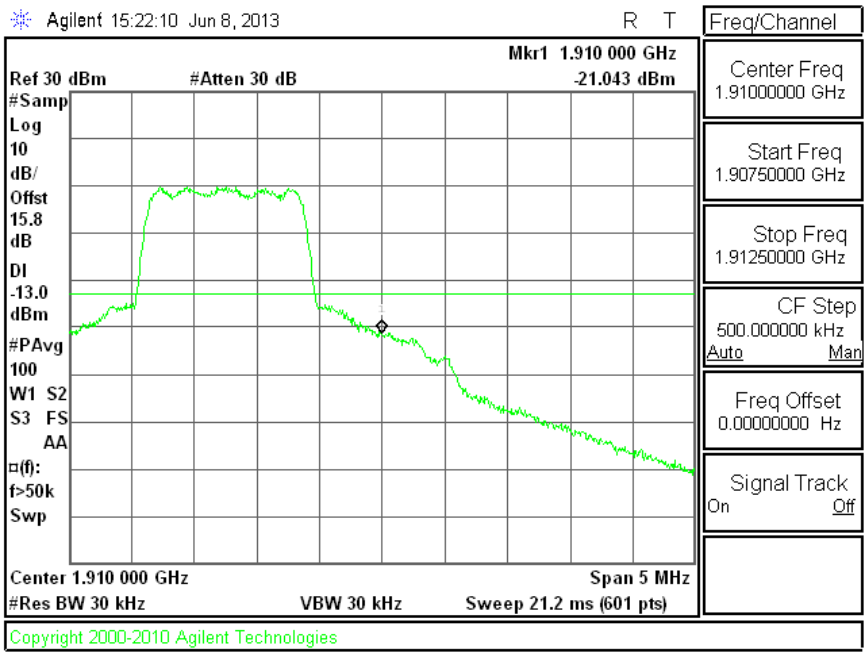
HIGH CH



PCS Band

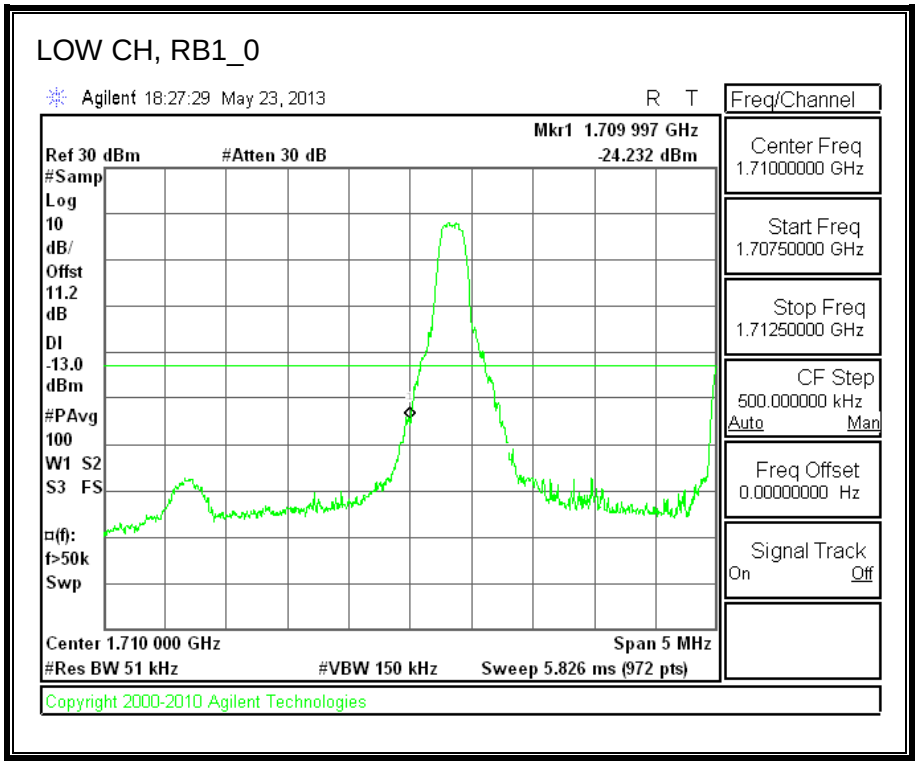


HIGH CH

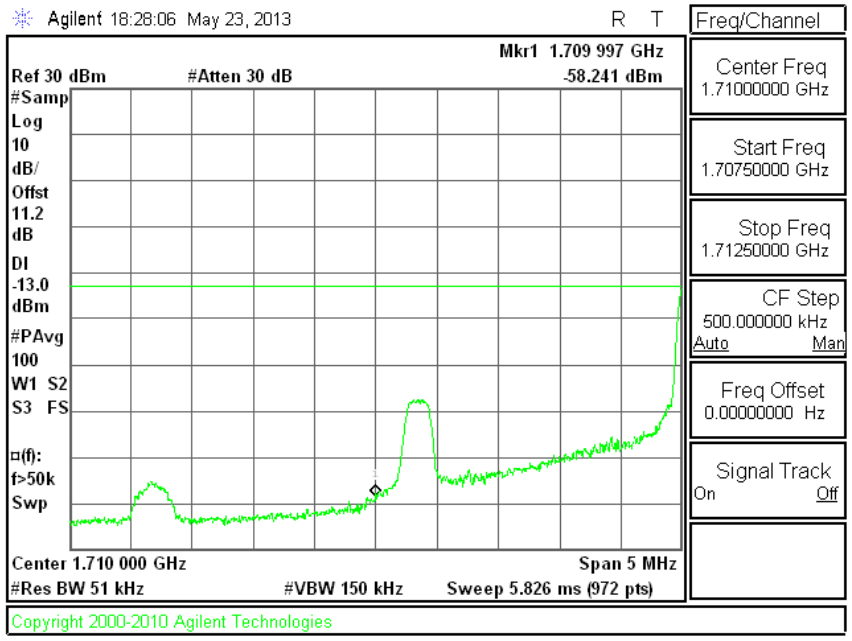


9.2.3. LTE BAND 4-5MHZ BANDWIDTH

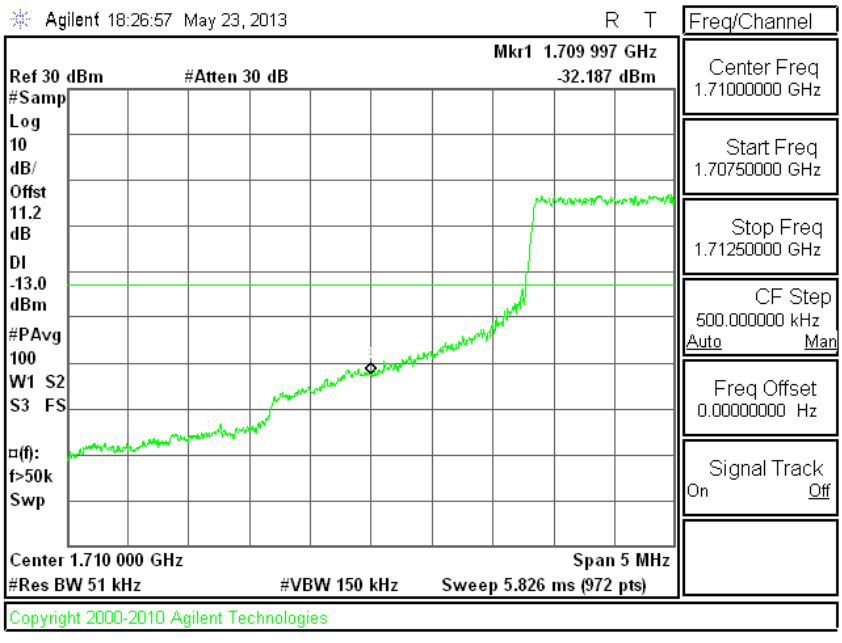
LOW-QPSK



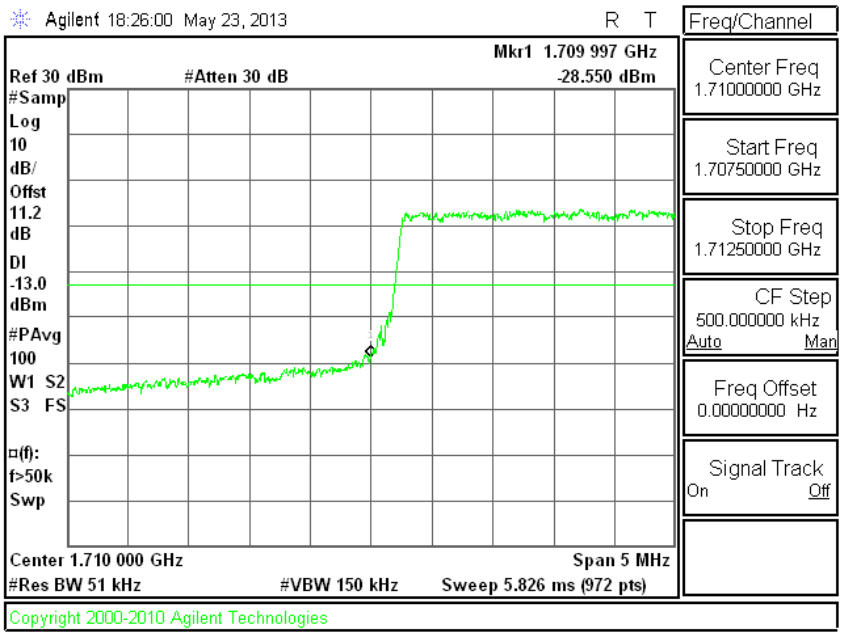
LOW CH, RB1_24



LOW CH, RB12_6

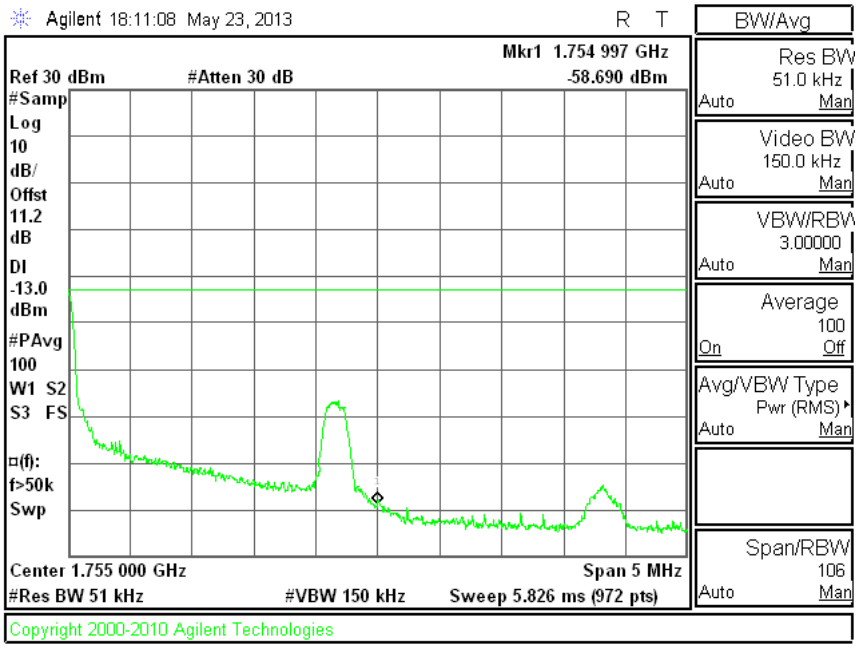


LOW CH, RB25_0

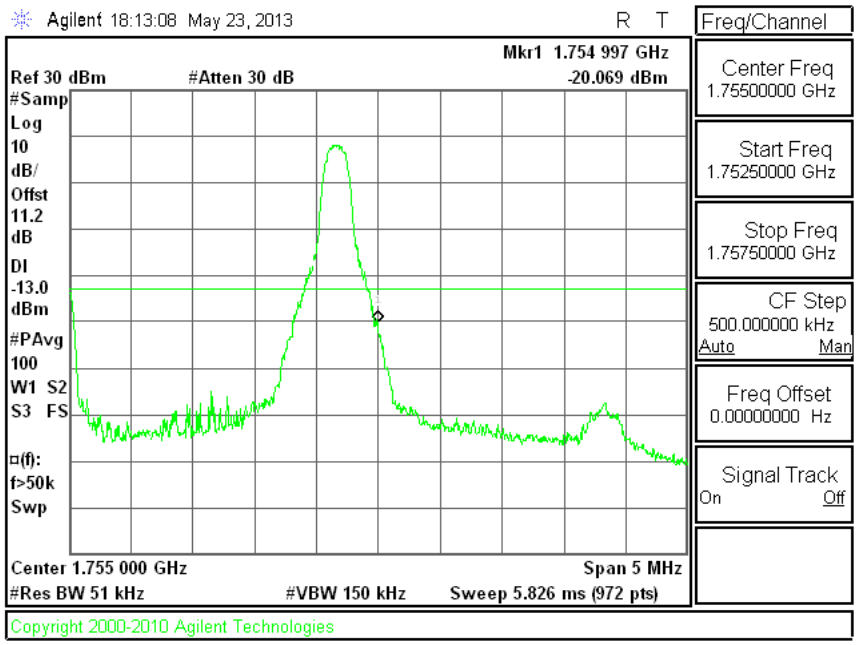


HIGH-QPSK

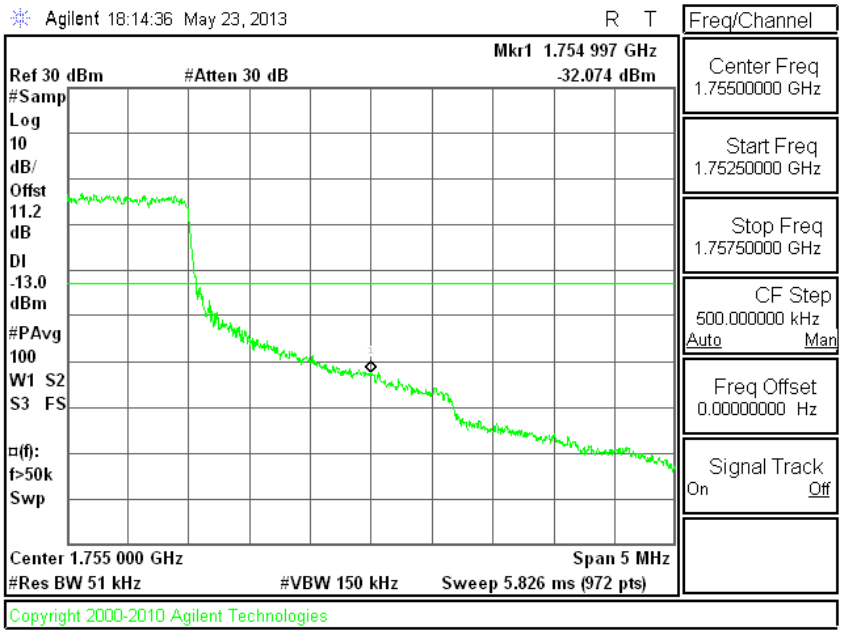
HIGH CH, RB1_0



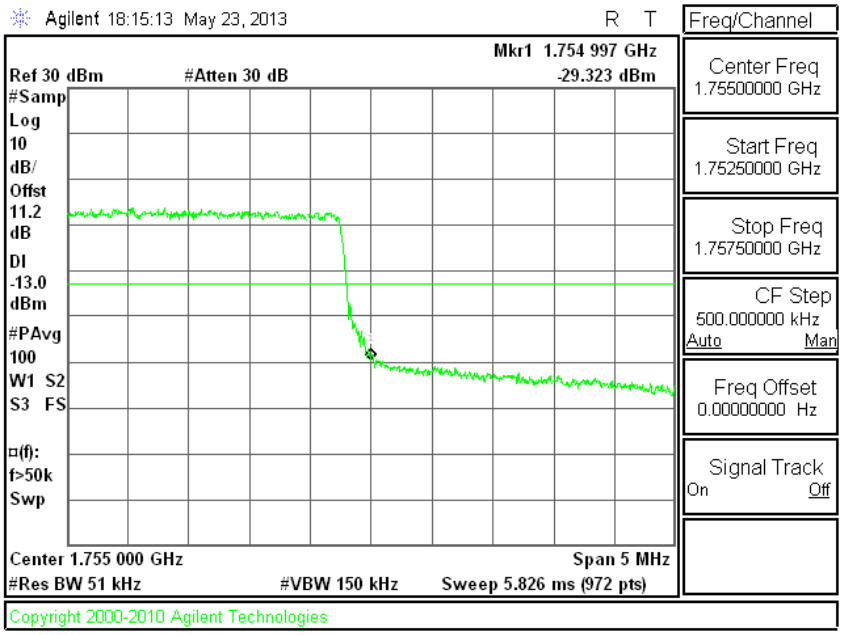
HIGH CH, RB1_24



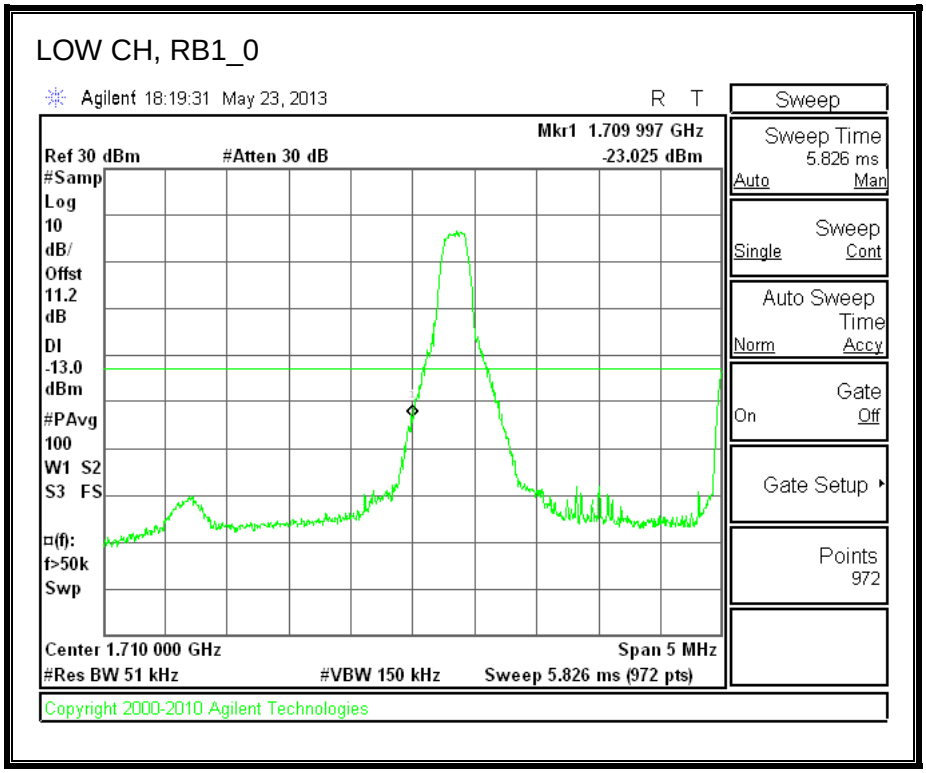
HIGH CH, RB12_6



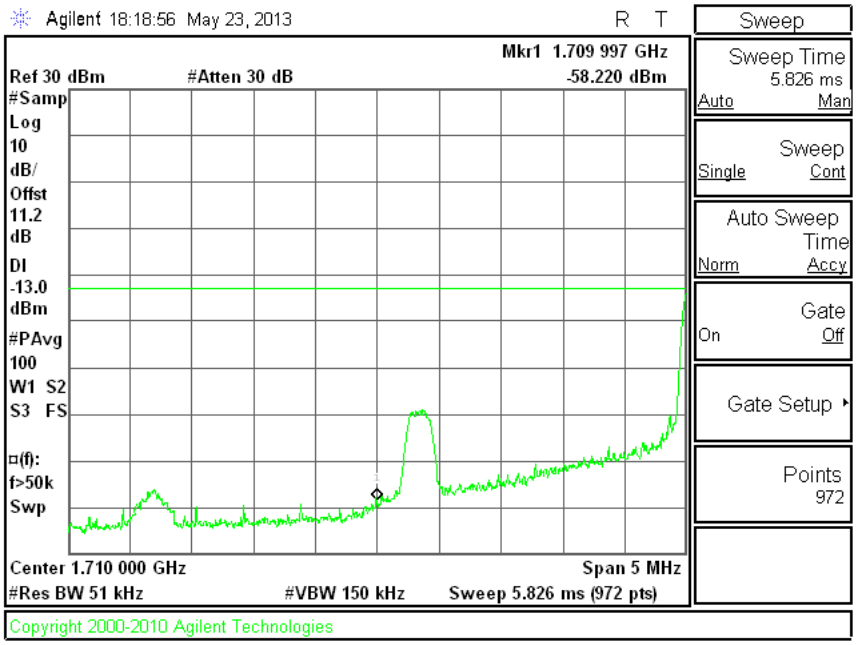
HIGH CH, RB25_0



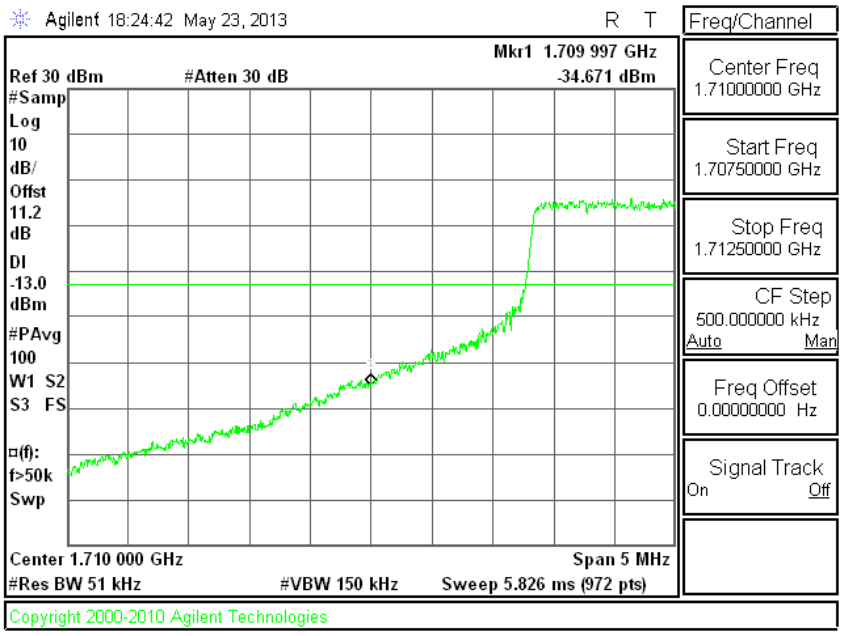
LOW-16QAM



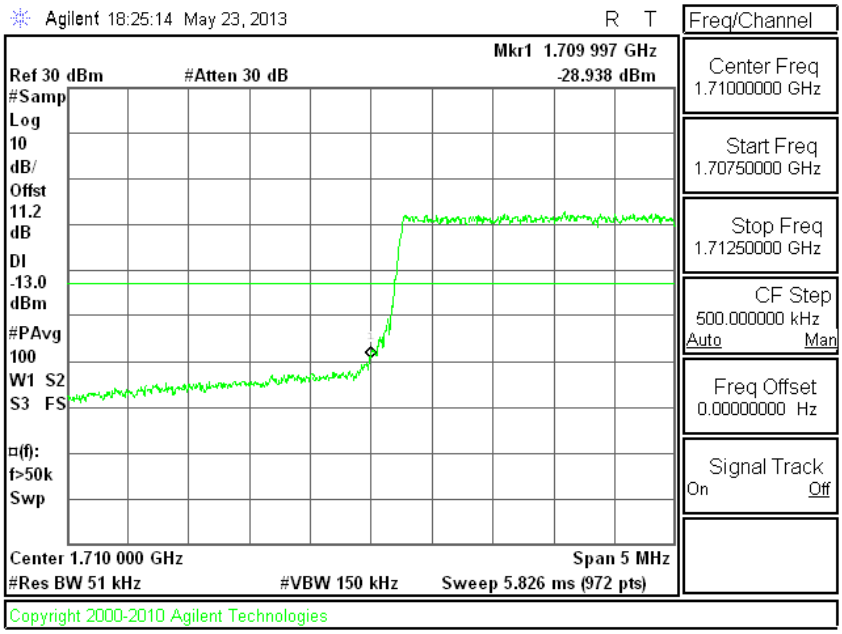
LOW CH, RB1_24



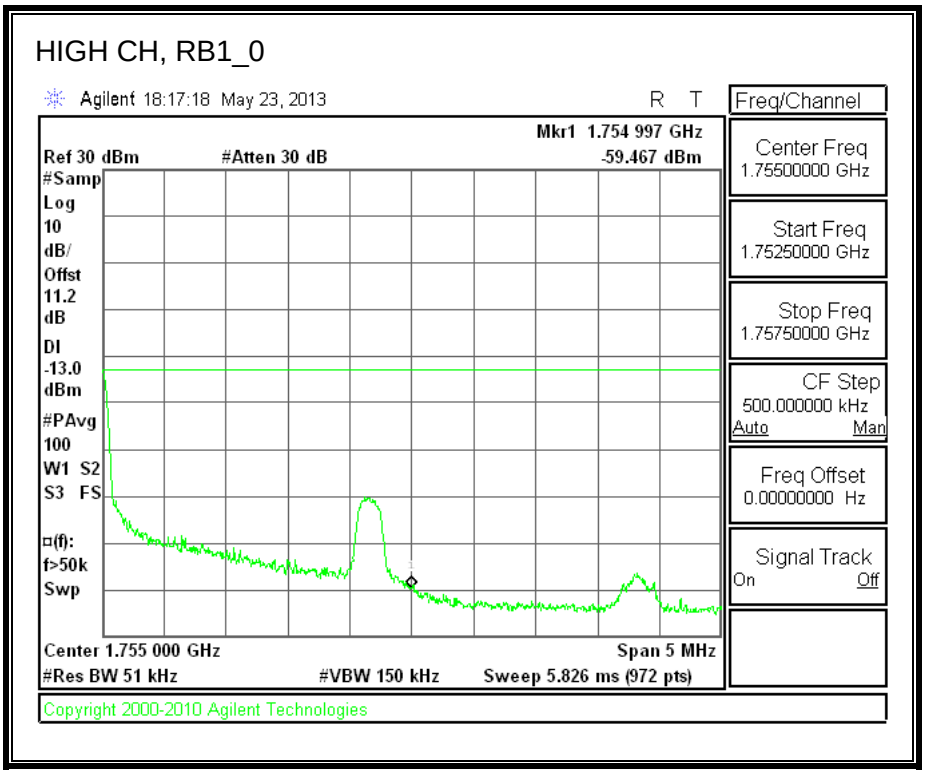
LOW CH, RB12_6



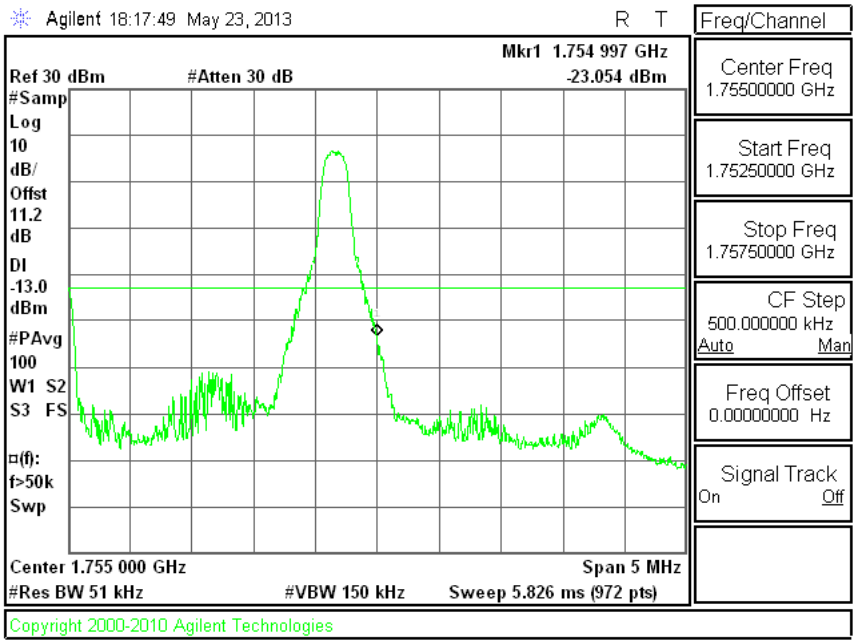
LOW CH, RB25_0



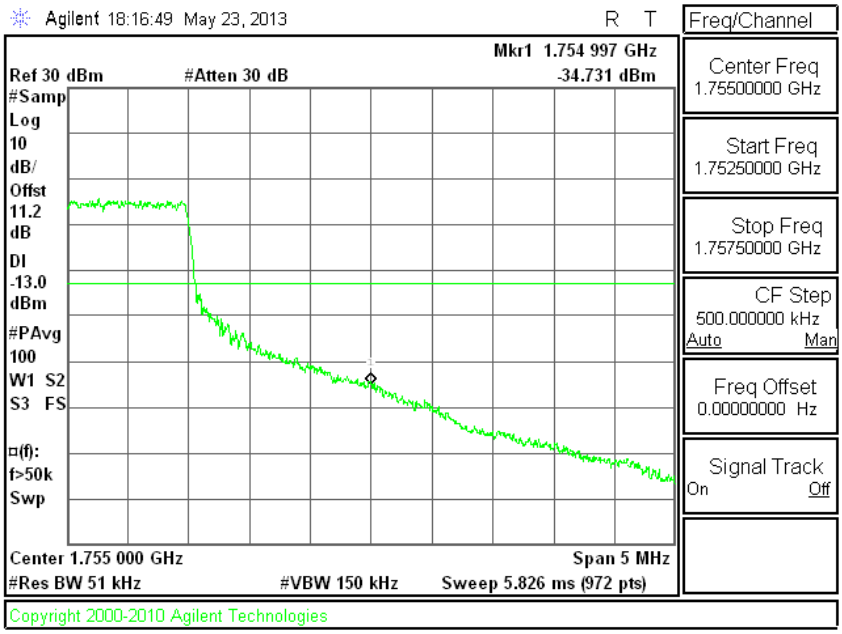
HIGH-16QAM



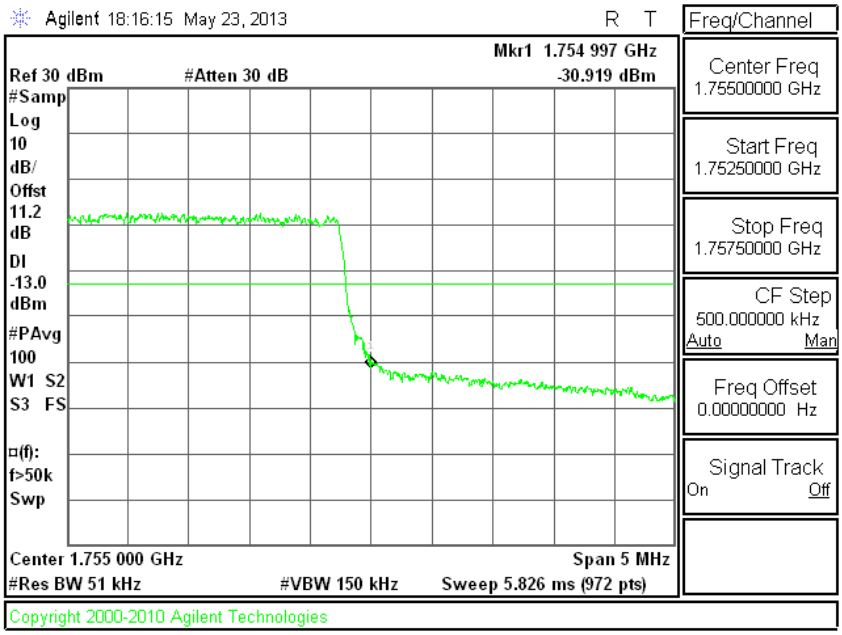
HIGH CH, RB1_24



HIGH CH, RB12_6

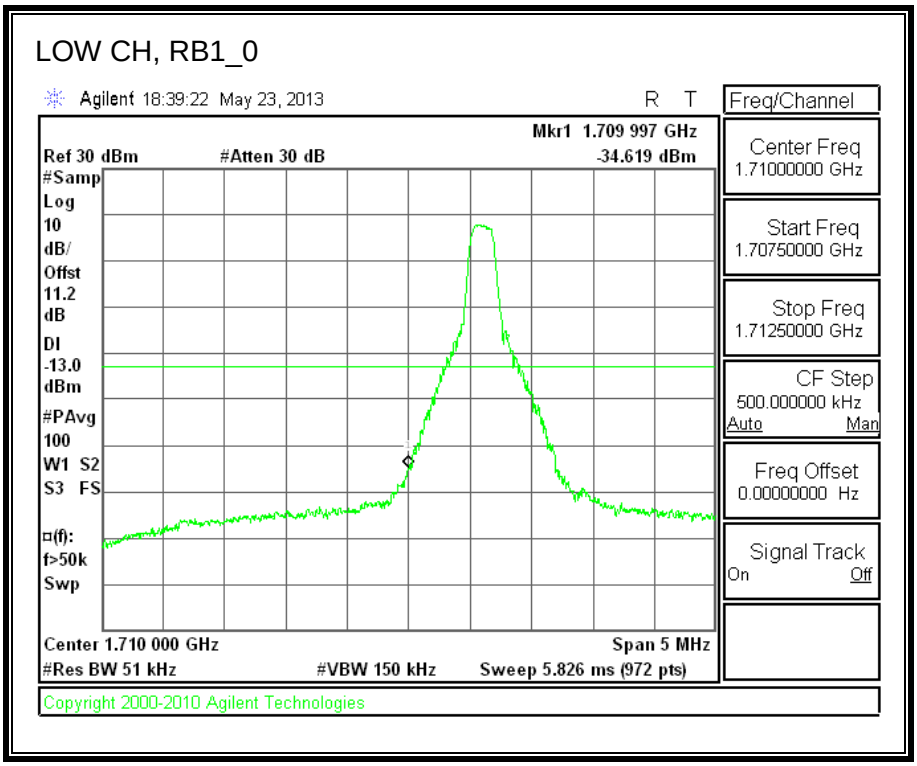


HIGH CH, RB25_0

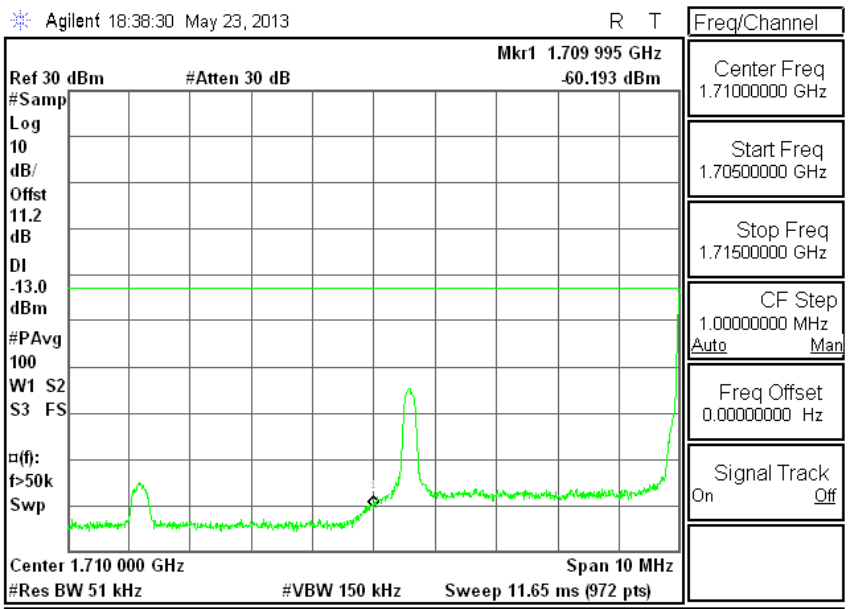


9.2.4. LTE BAND 4-10MHZ BANDWIDTH

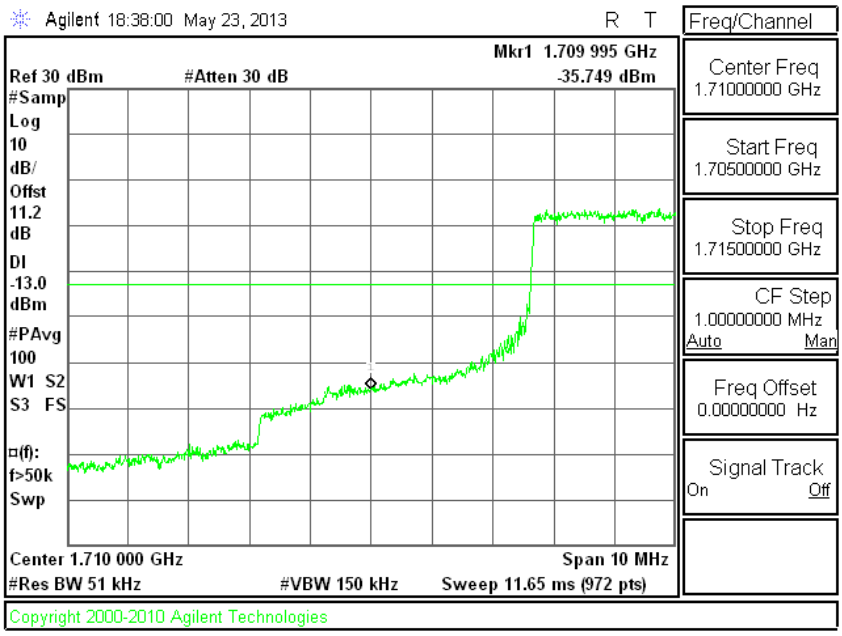
LOW-QPSK



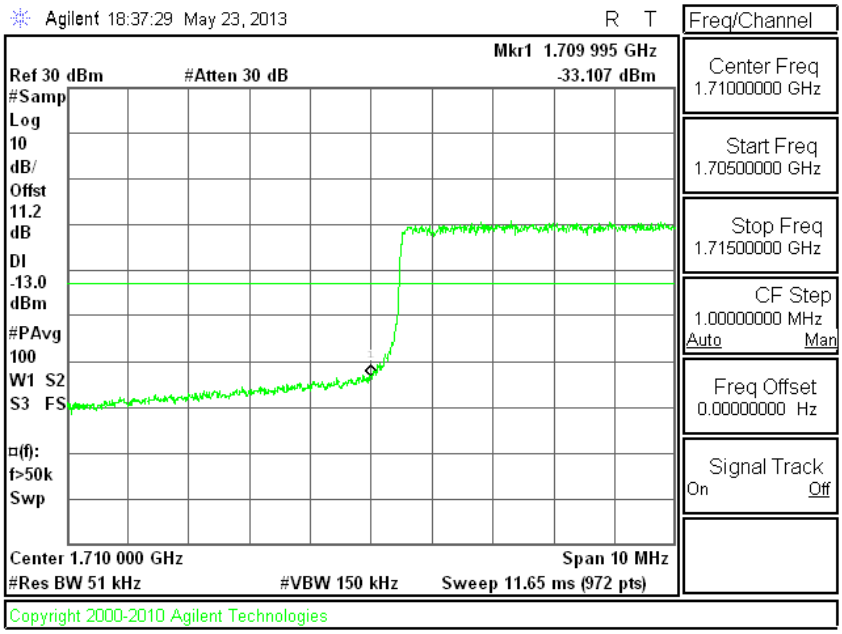
LOW CH, RB1_49



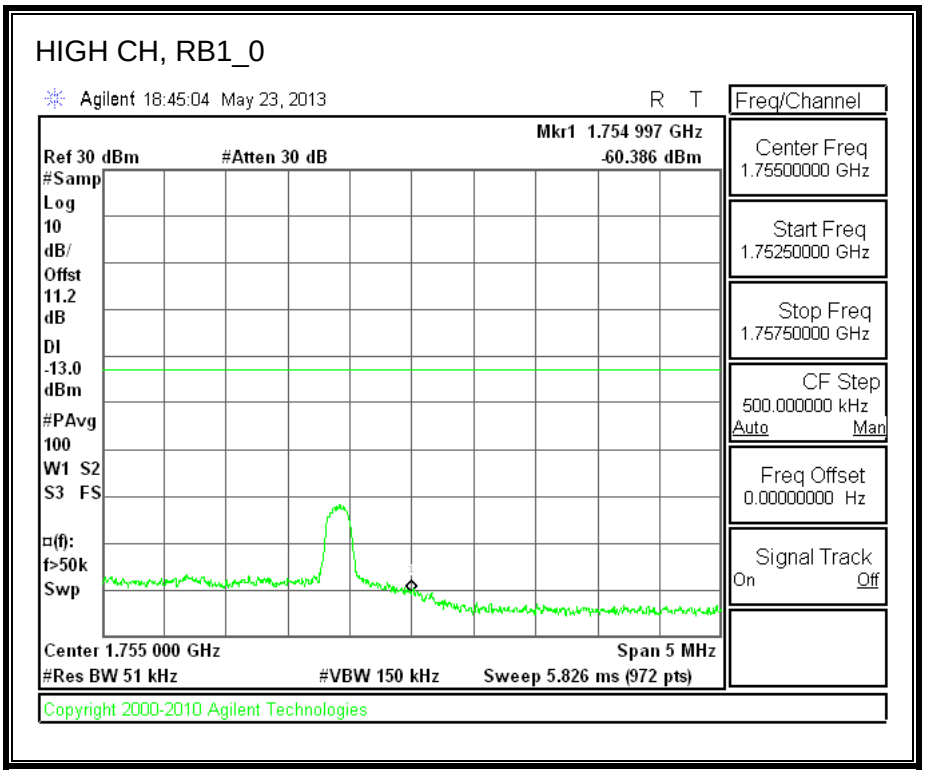
LOW CH, RB25_12



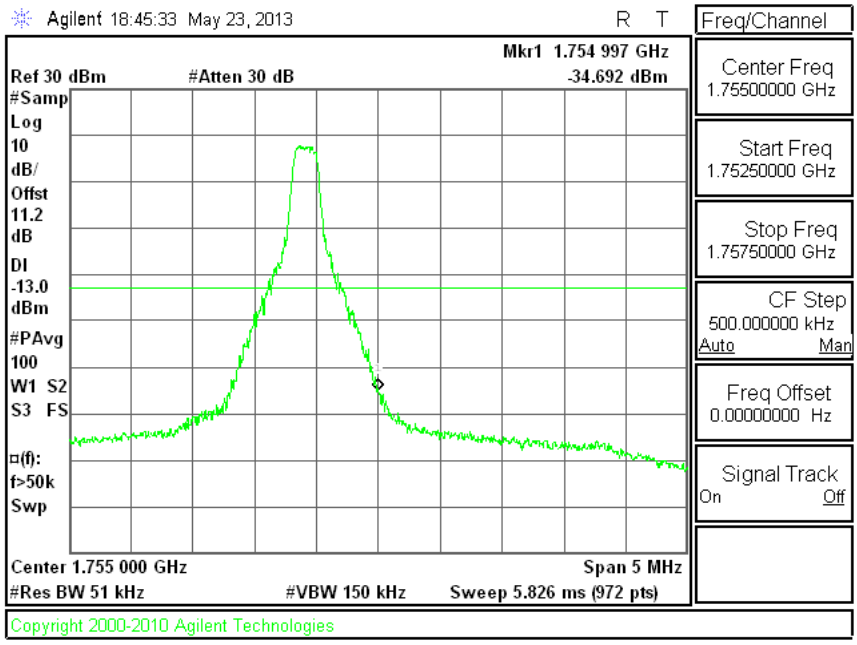
LOW CH, RB50_0



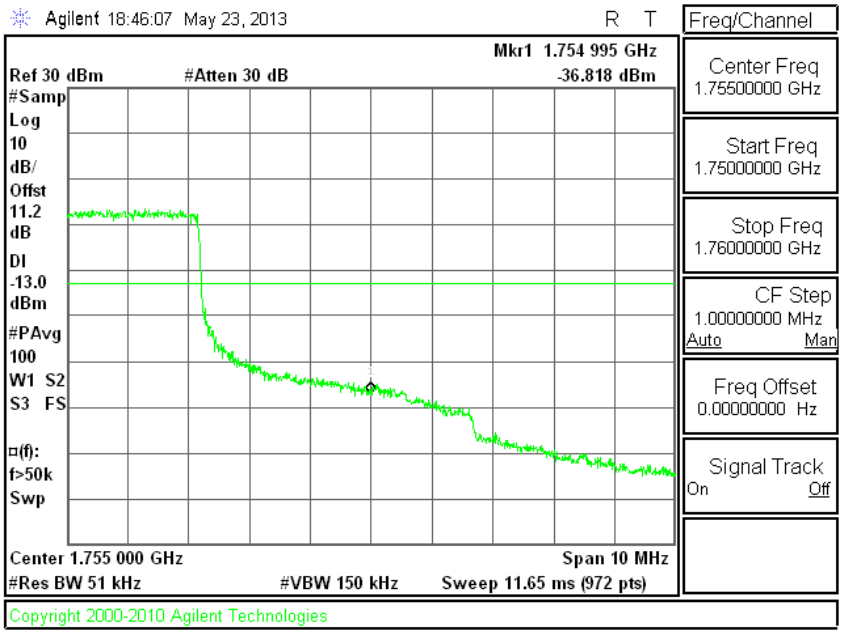
HIGH-QPSK



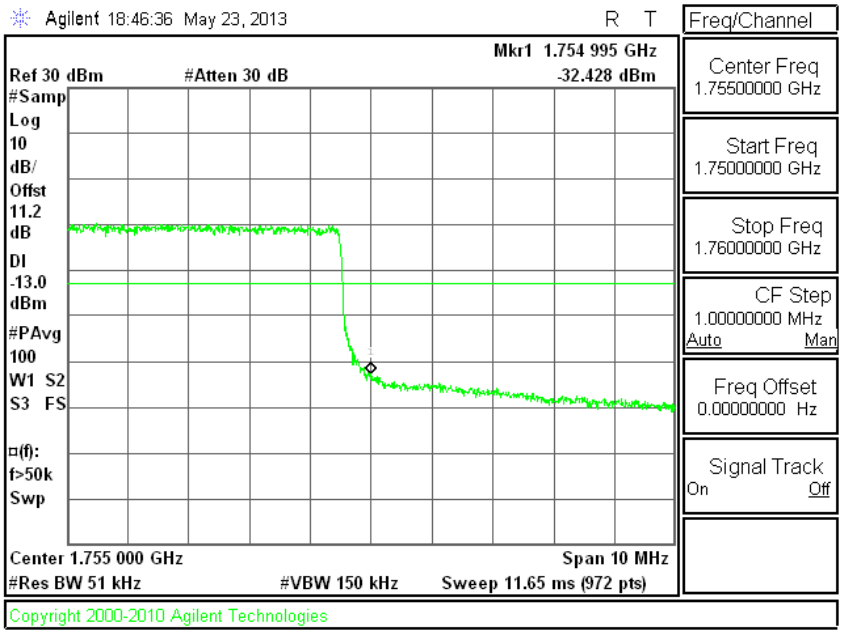
HIGH CH, RB1_49



HIGH CH, RB25_12

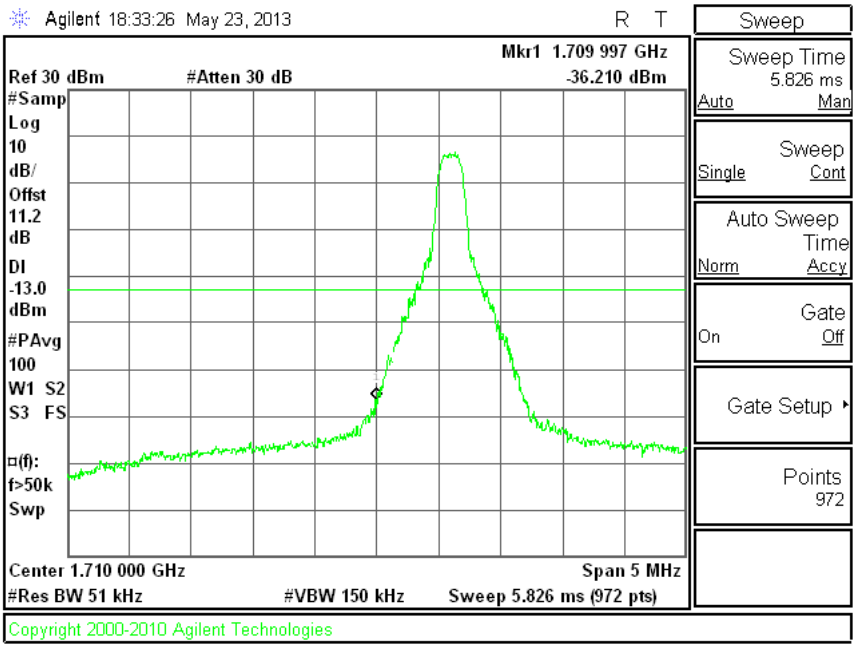


HIGH CH, RB50_0

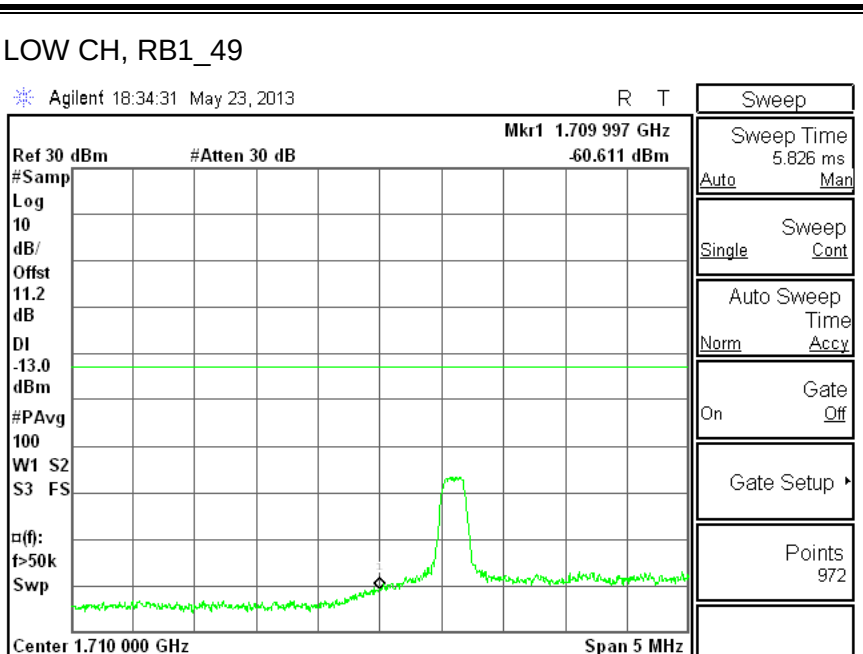


LOW-16QAM

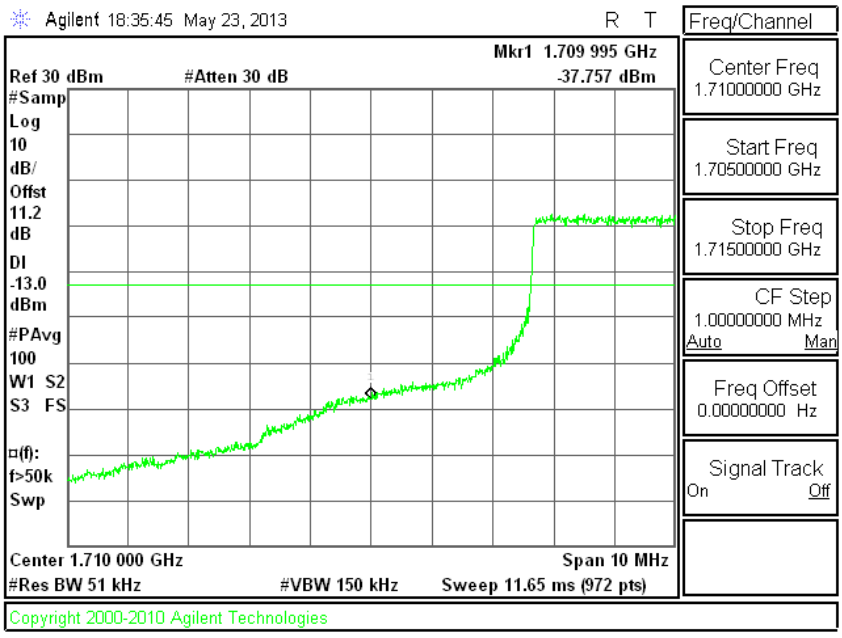
LOW CH, RB1_0



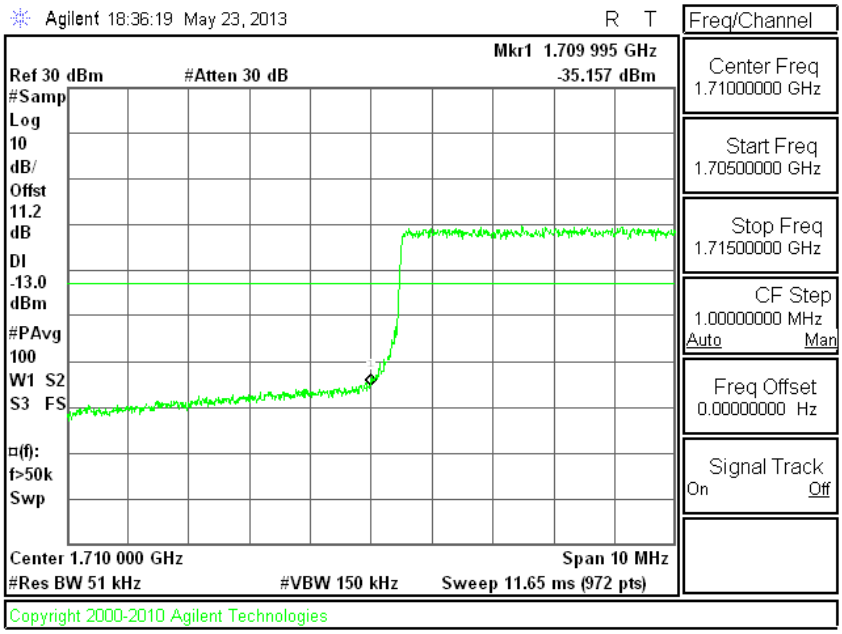
LOW CH, RB1_49



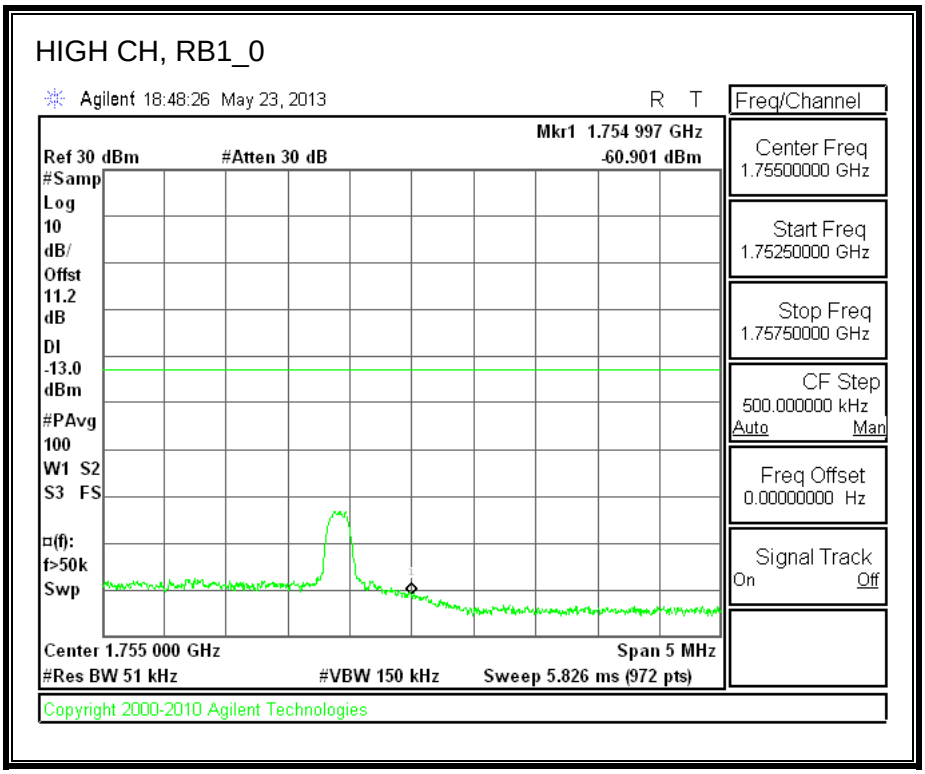
LOW CH, RB25_12



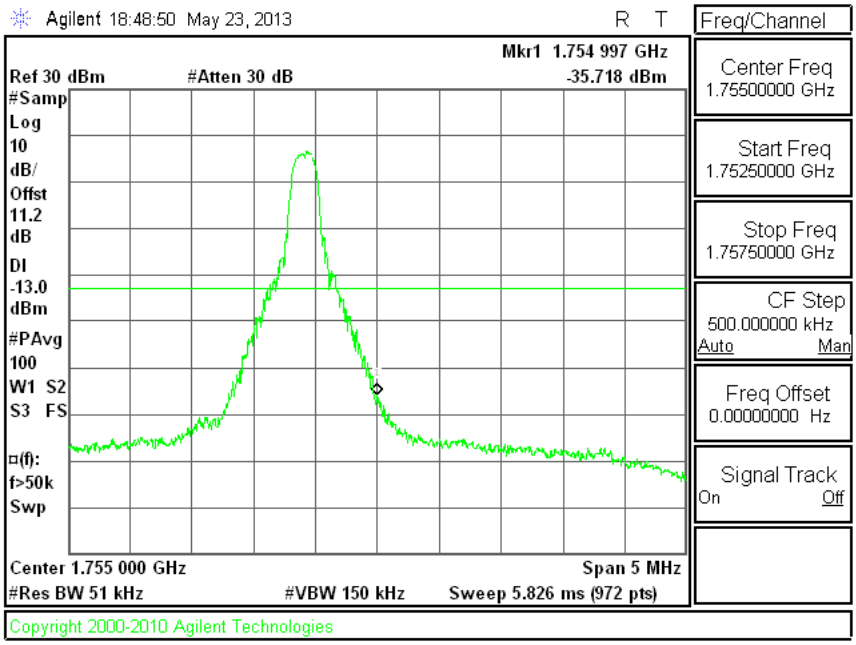
LOW CH, RB50_0



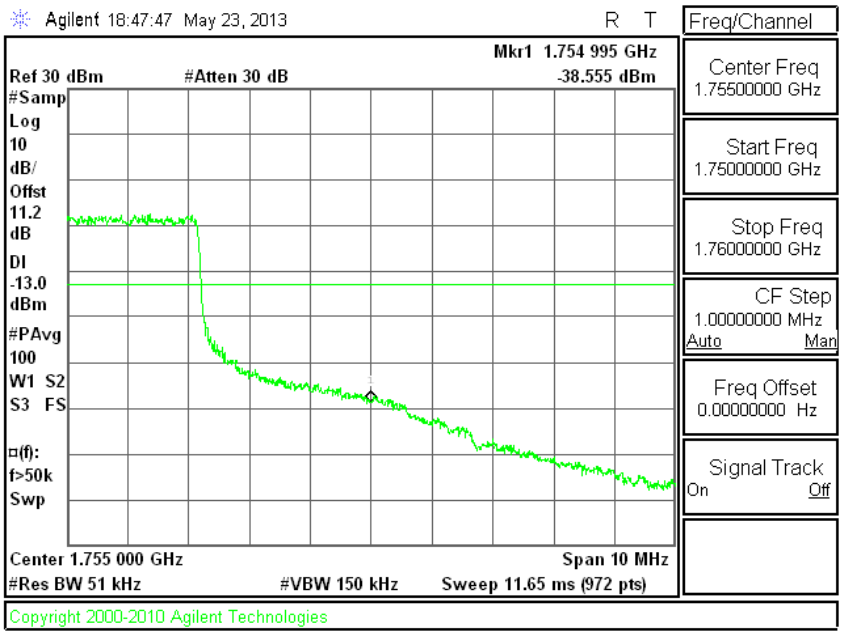
HIGH-16QAM



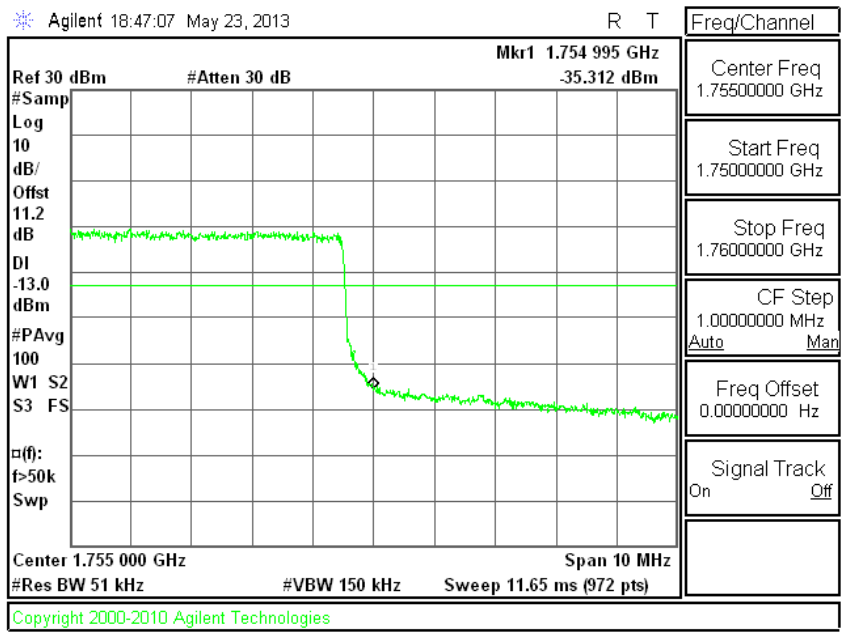
HIGH CH, RB1_49



HIGH CH, RB25_12

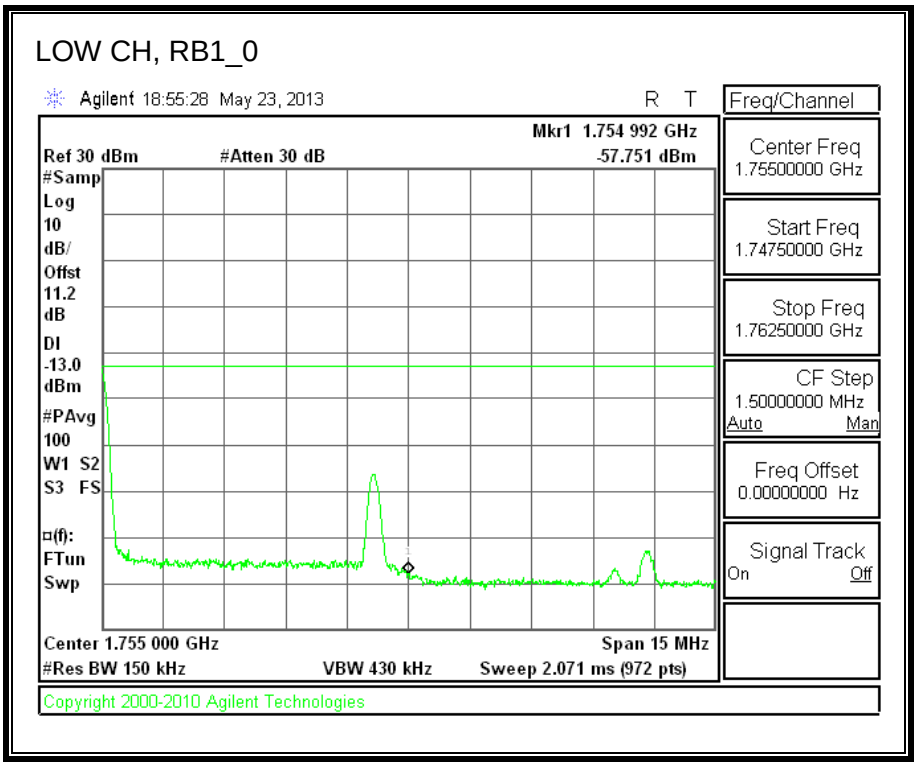


HIGH CH, RB50_0

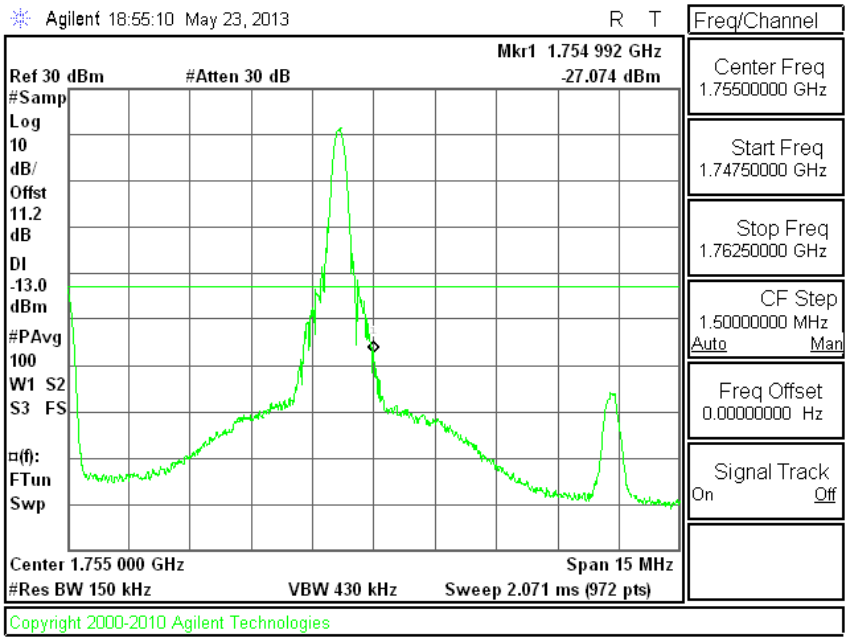


9.2.5. LTE BAND 4-15MHZ BANDWIDTH

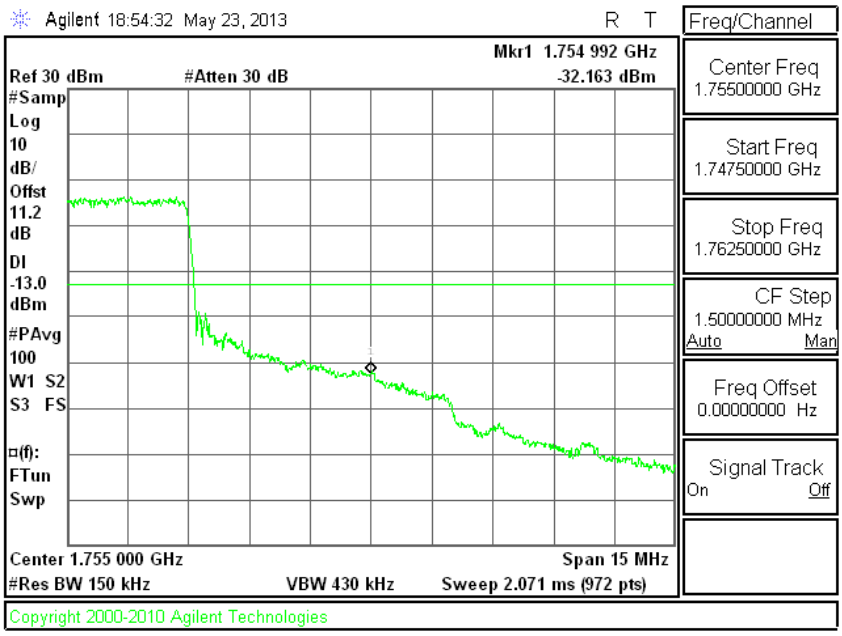
LOW-QPSK



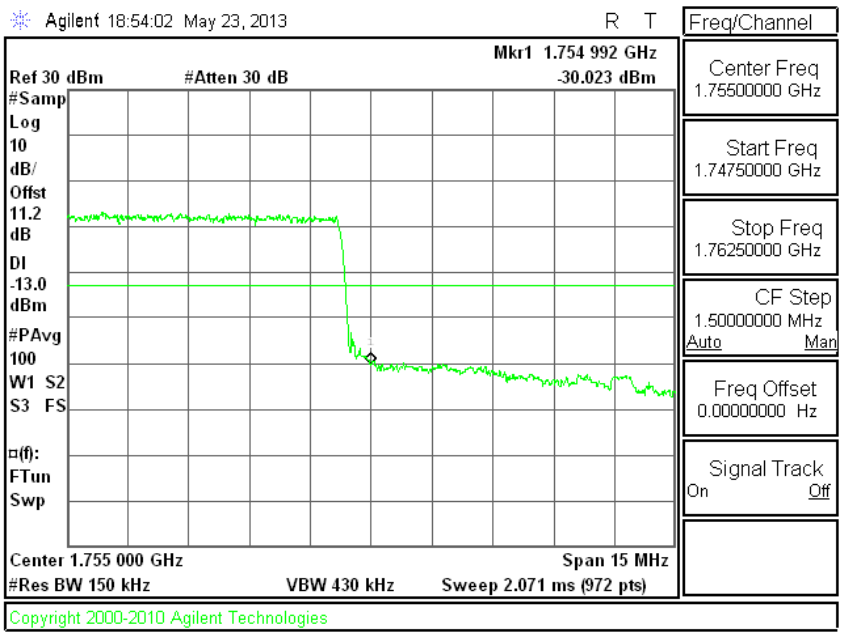
LOW CH, RB1_74



LOW CH, RB36_18

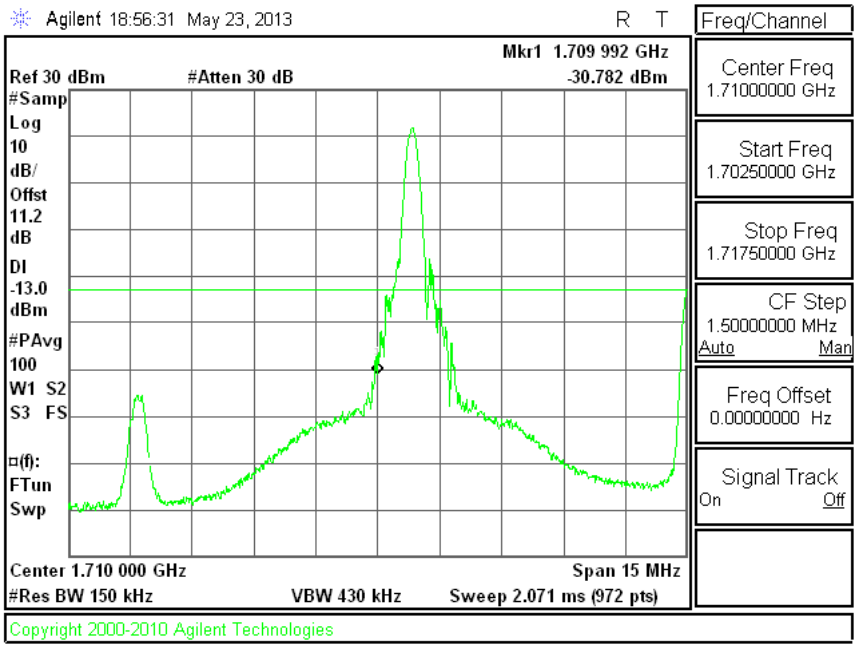


LOW CH, RB75_0

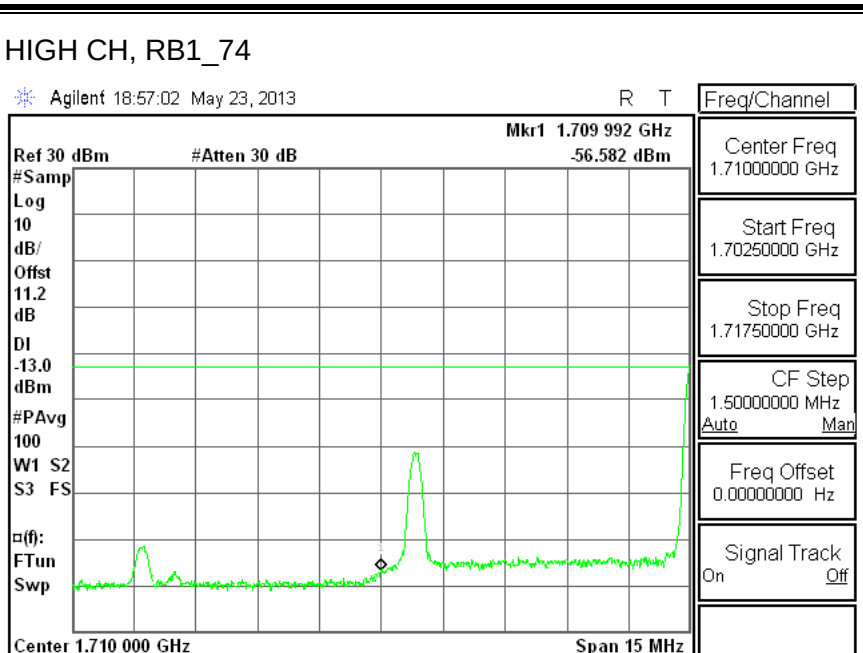


HIGH-QPSK

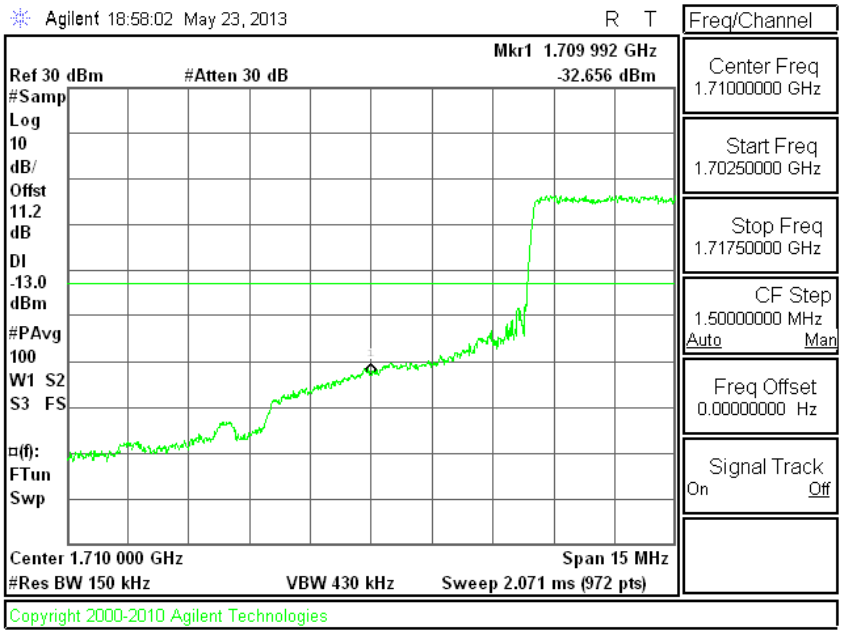
HIGH CH, RB1_0



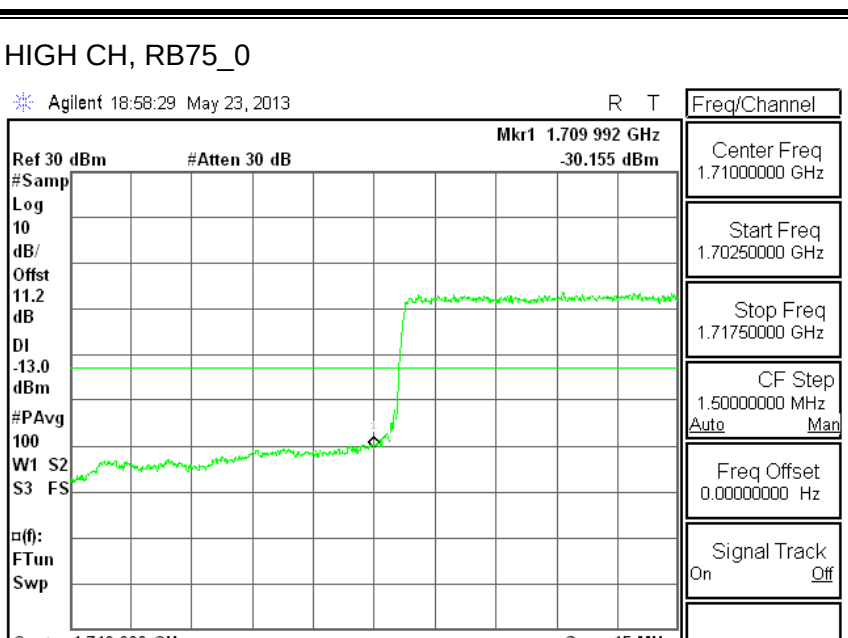
HIGH CH, RB1_74



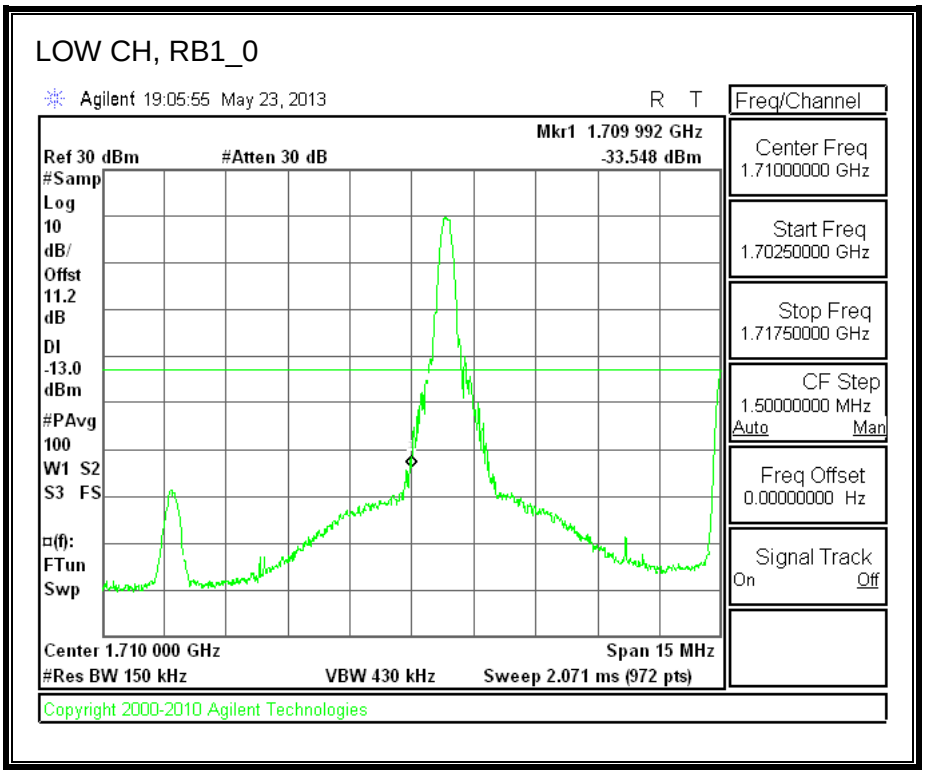
HIGH CH, RB36_18



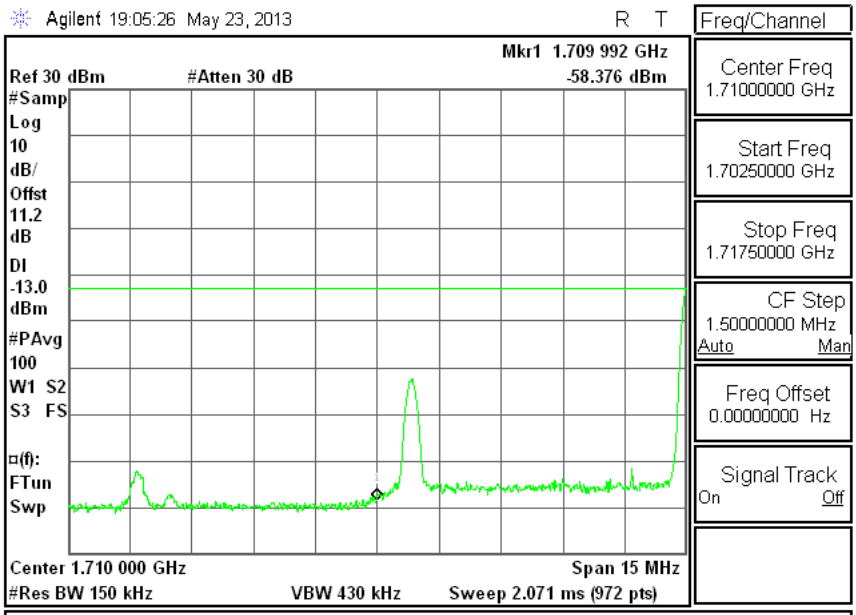
HIGH CH, RB75_0



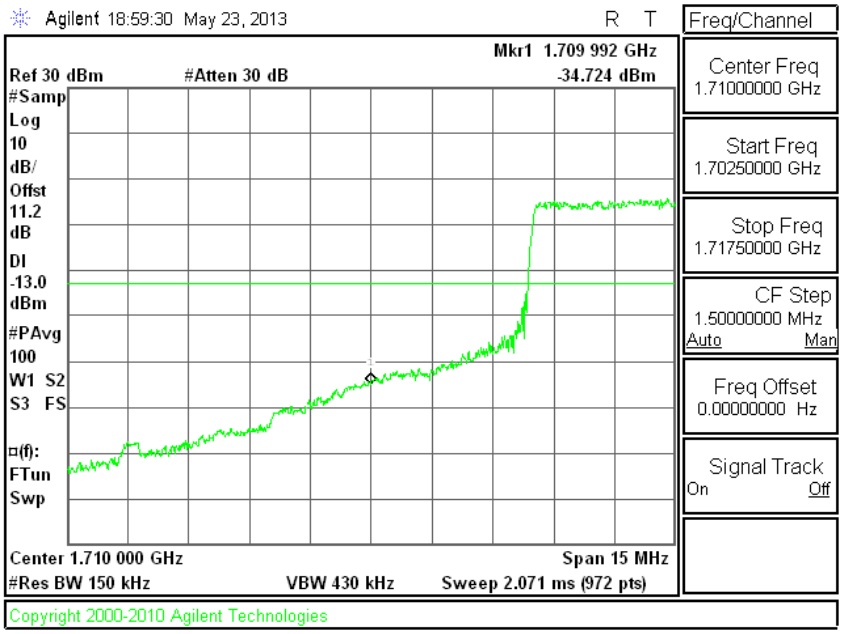
LOW-16QAM



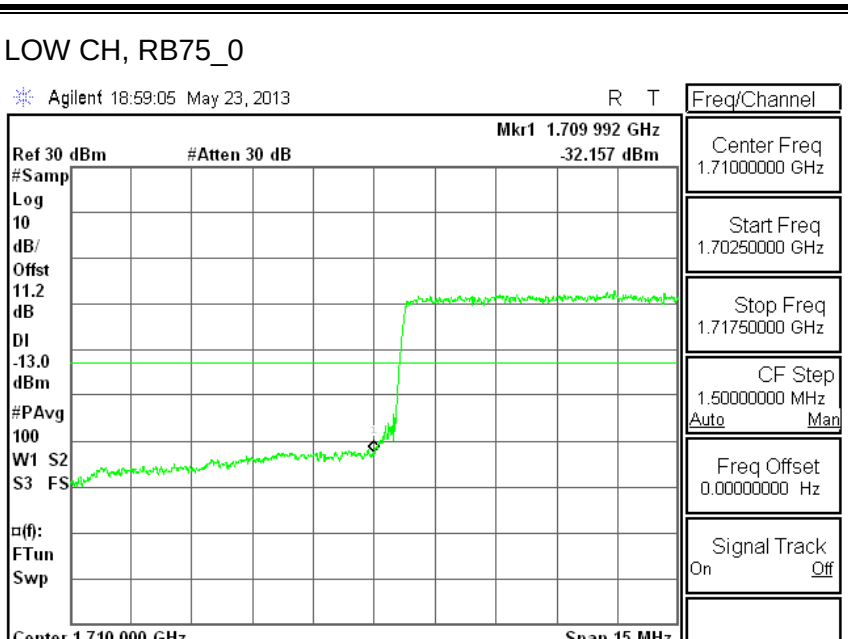
LOW CH, RB1_74



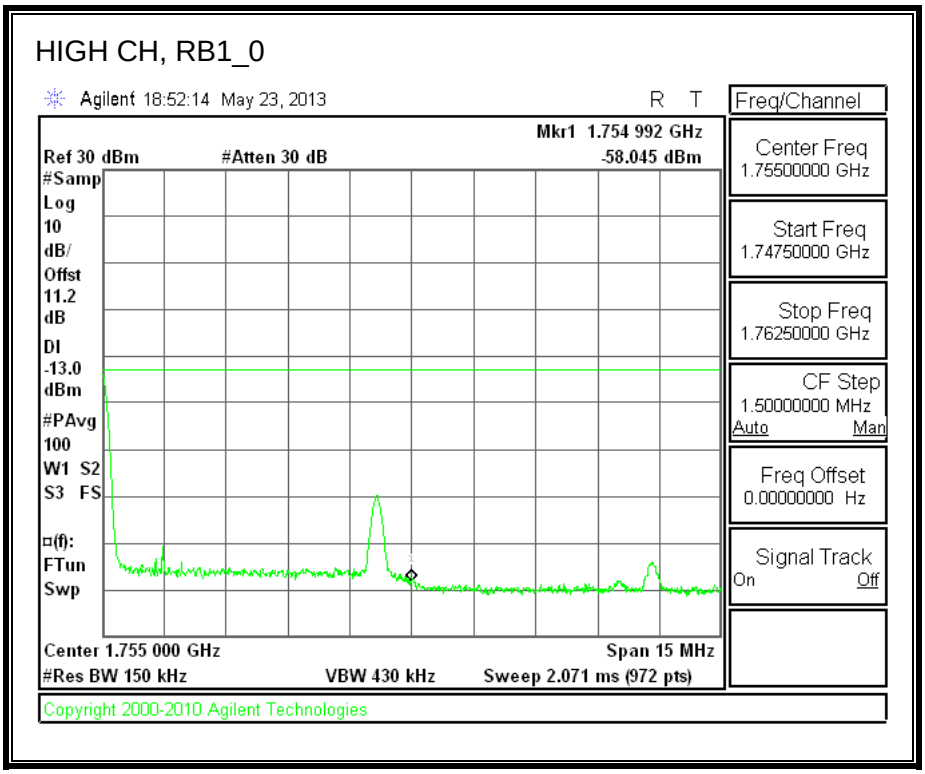
LOW CH, RB36_18



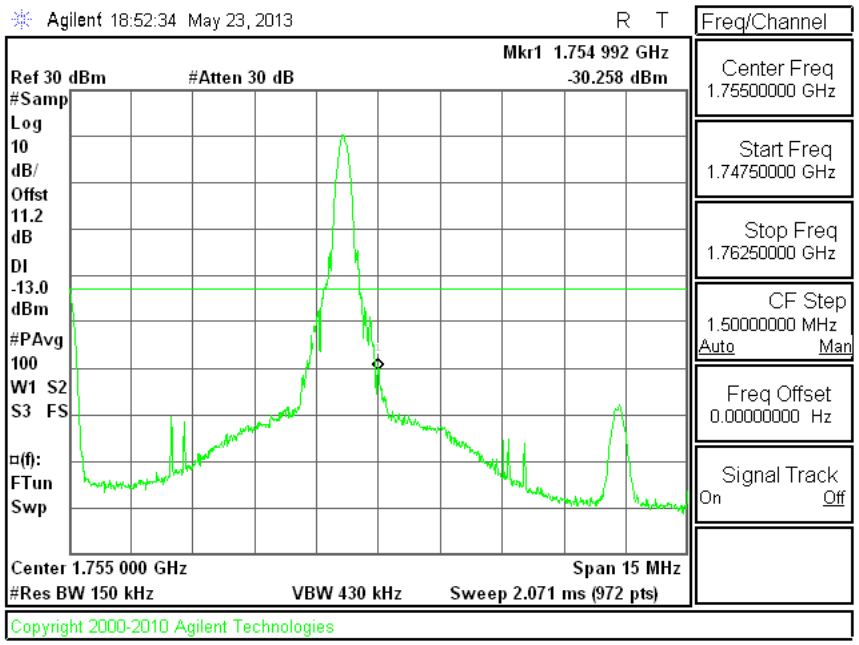
LOW CH, RB75_0



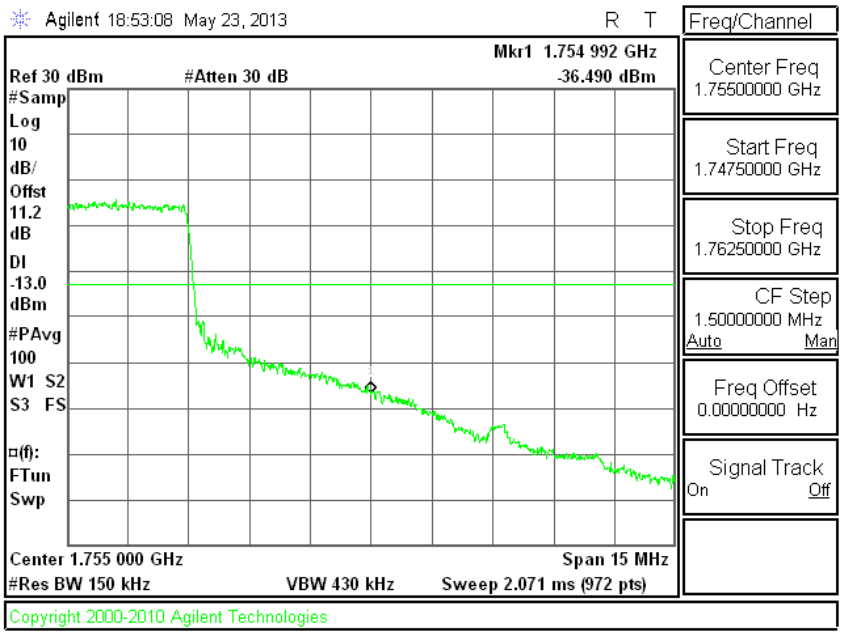
HIGH-QPSK



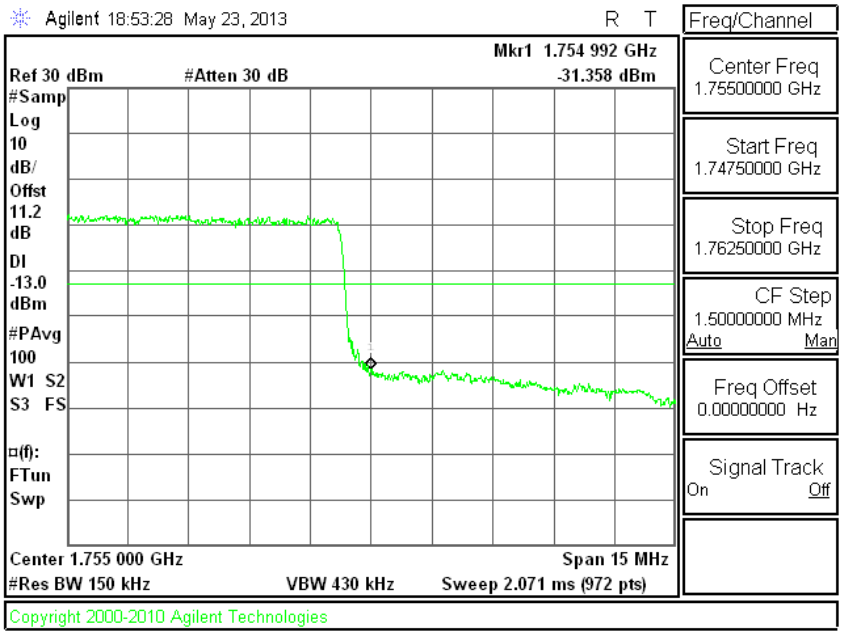
HIGH CH, RB1_74



HIGH CH, RB36_18

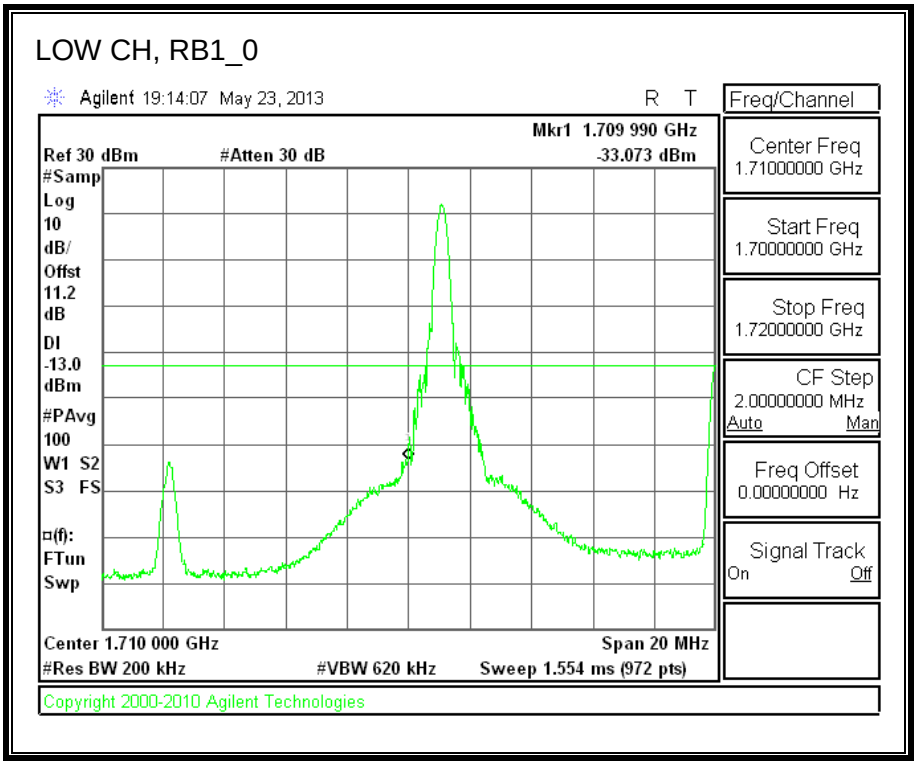


HIGH CH, RB75_0

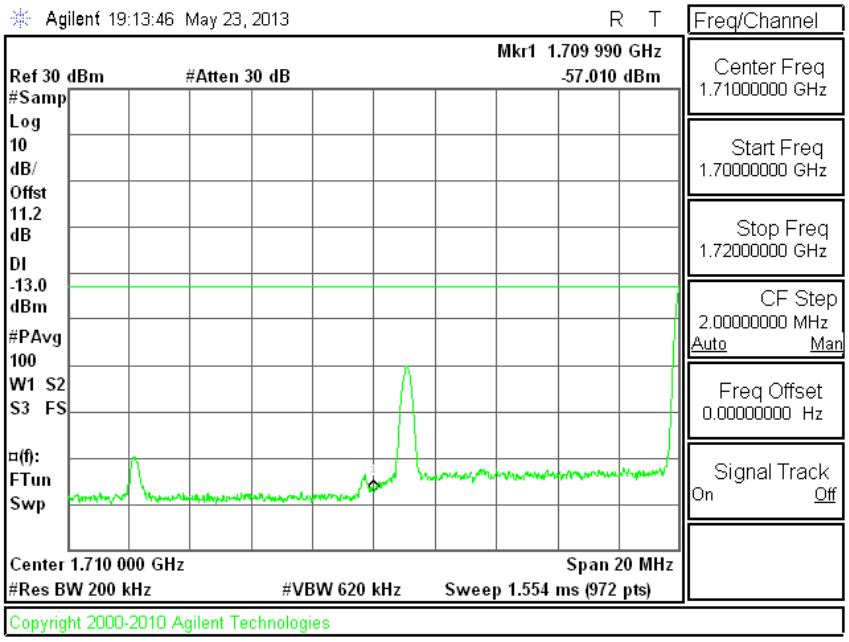


9.2.6. LTE BAND 4-20MHZ BANDWIDTH

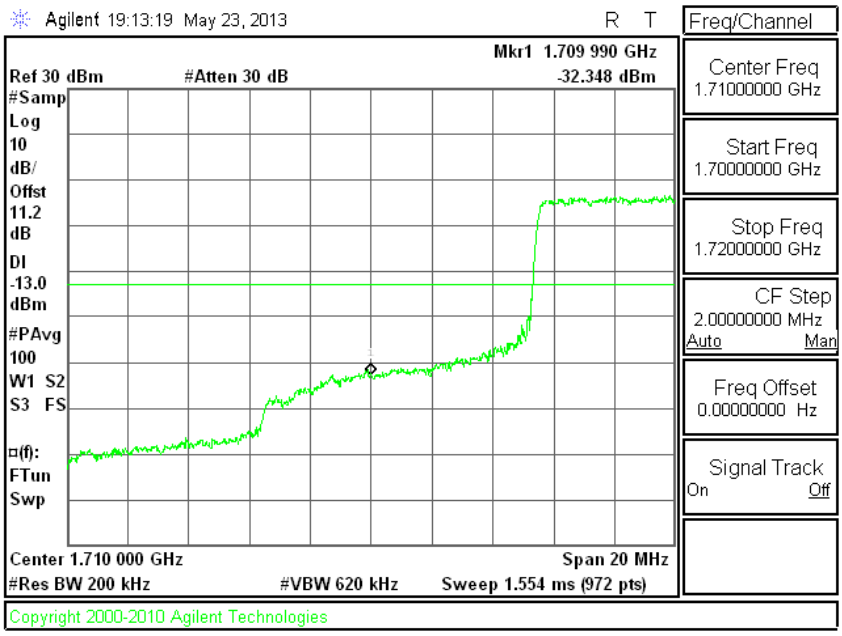
LOW-QPSK



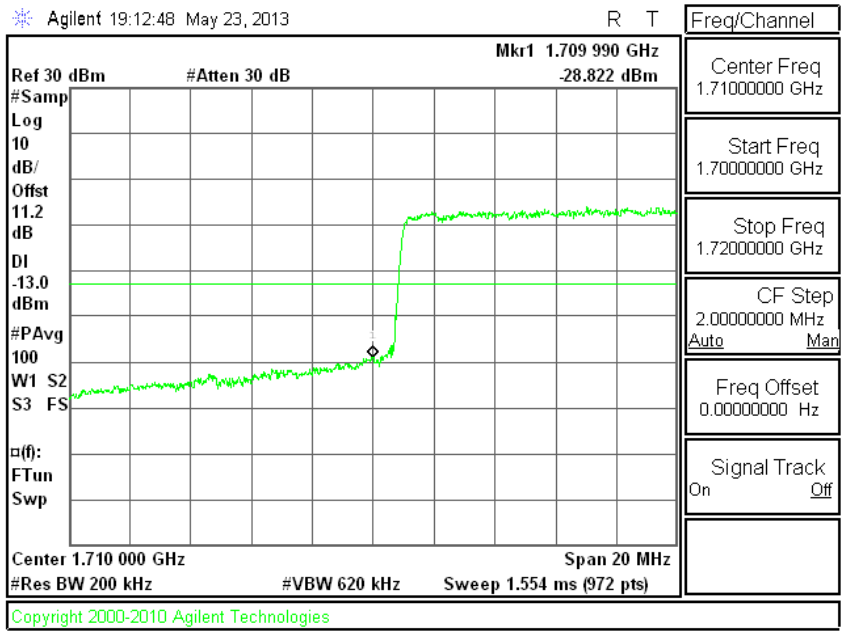
LOW CH, RB1_99



LOW CH, RB50_25

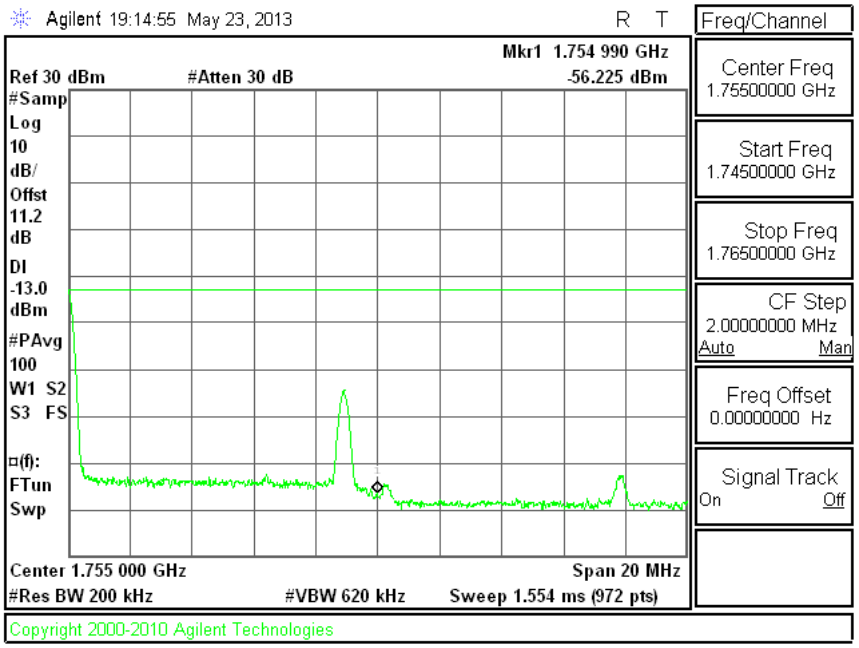


LOW CH, RB100_0

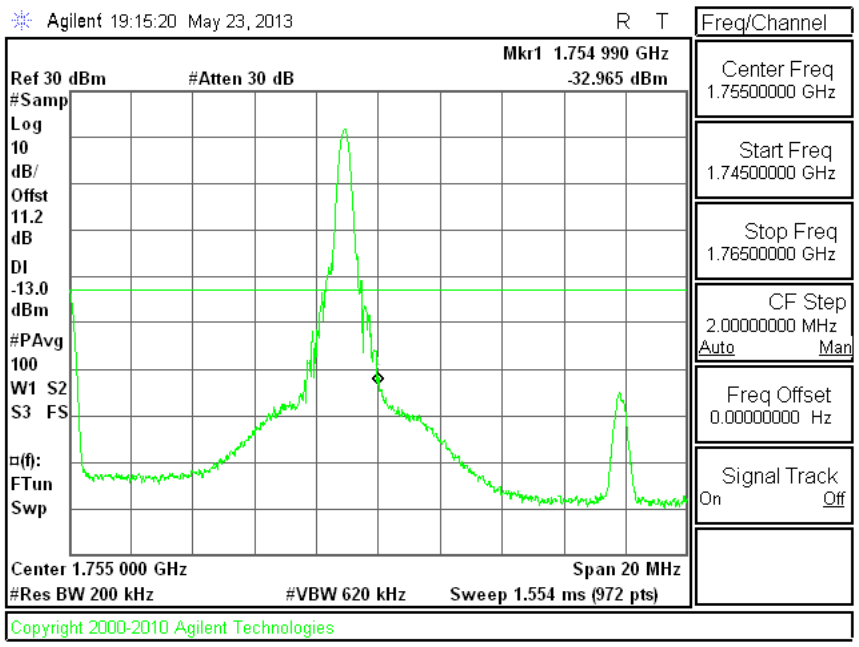


HIGH-QPSK

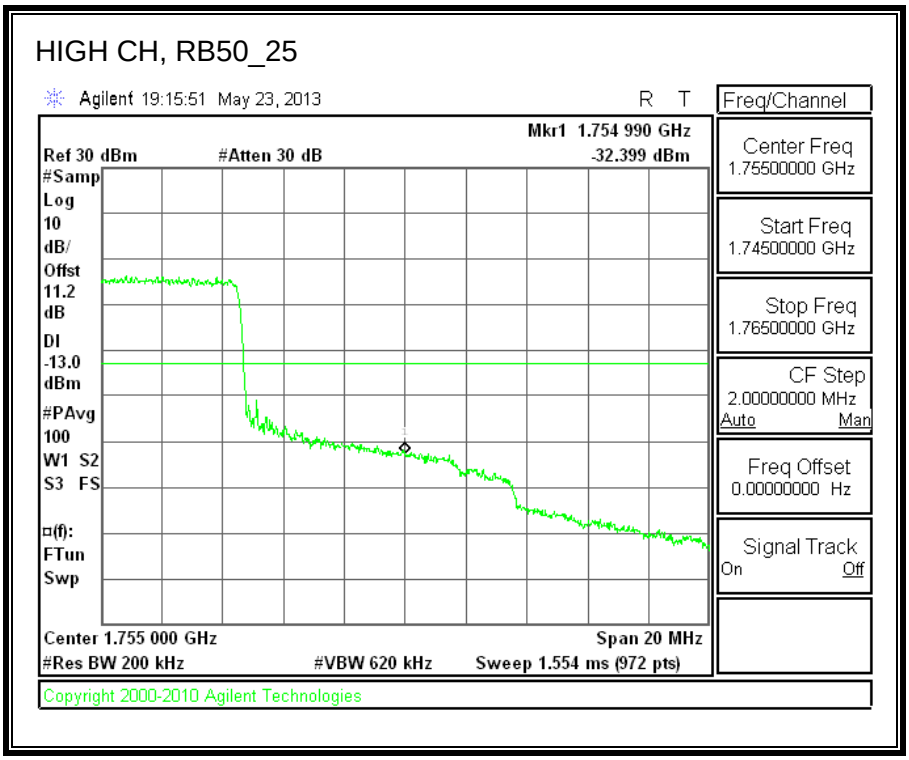
HIGH CH, RB1_0



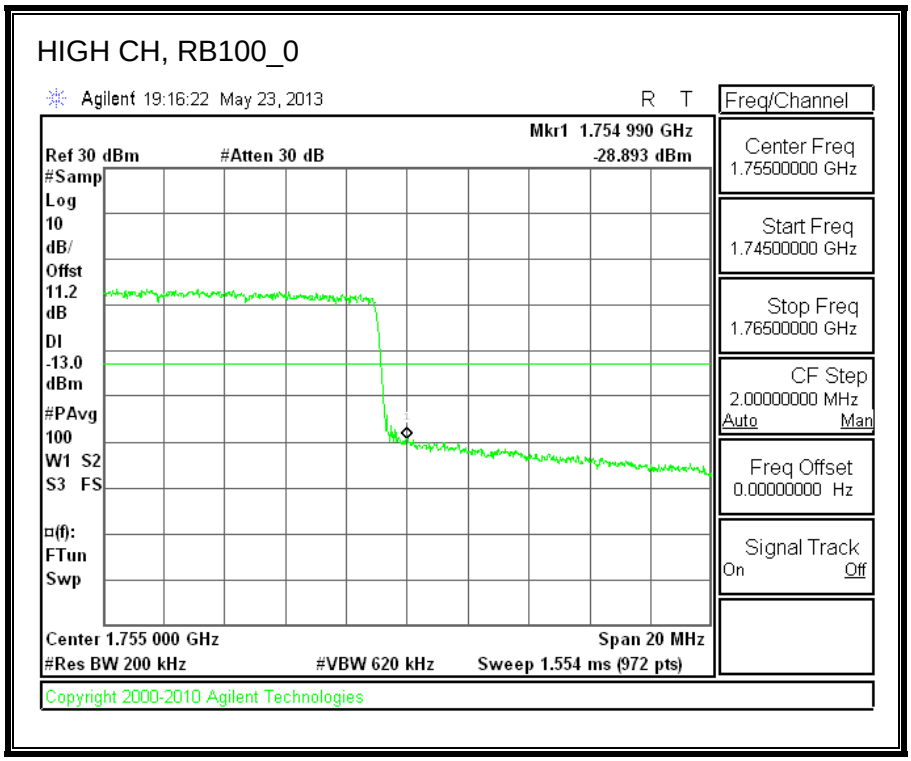
HIGH CH, RB1_99



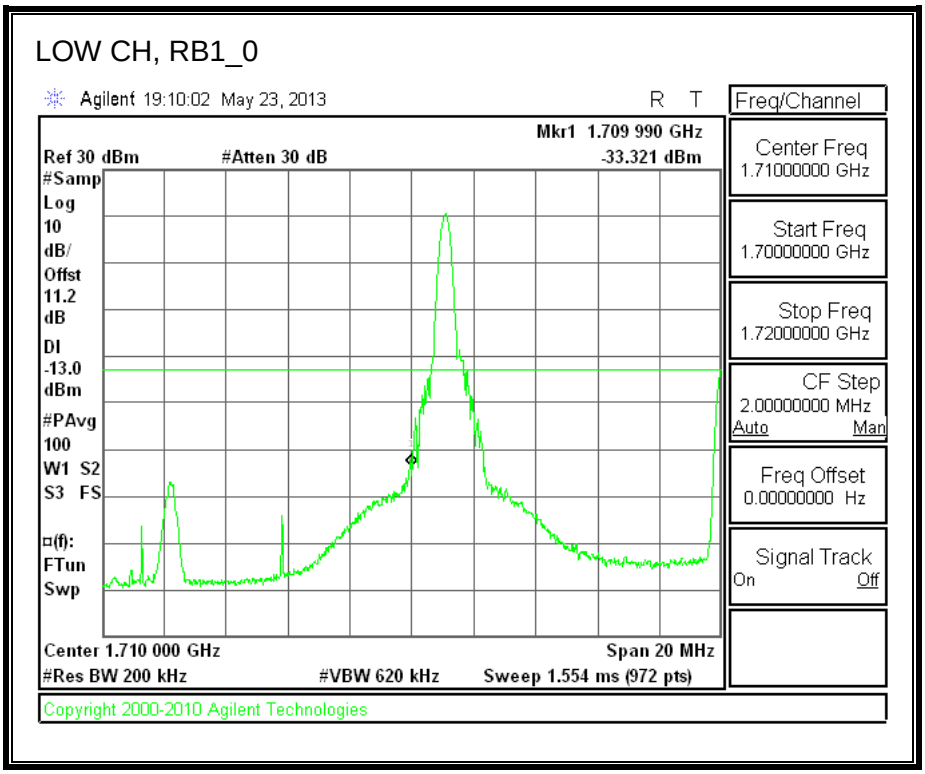
HIGH CH, RB50_25



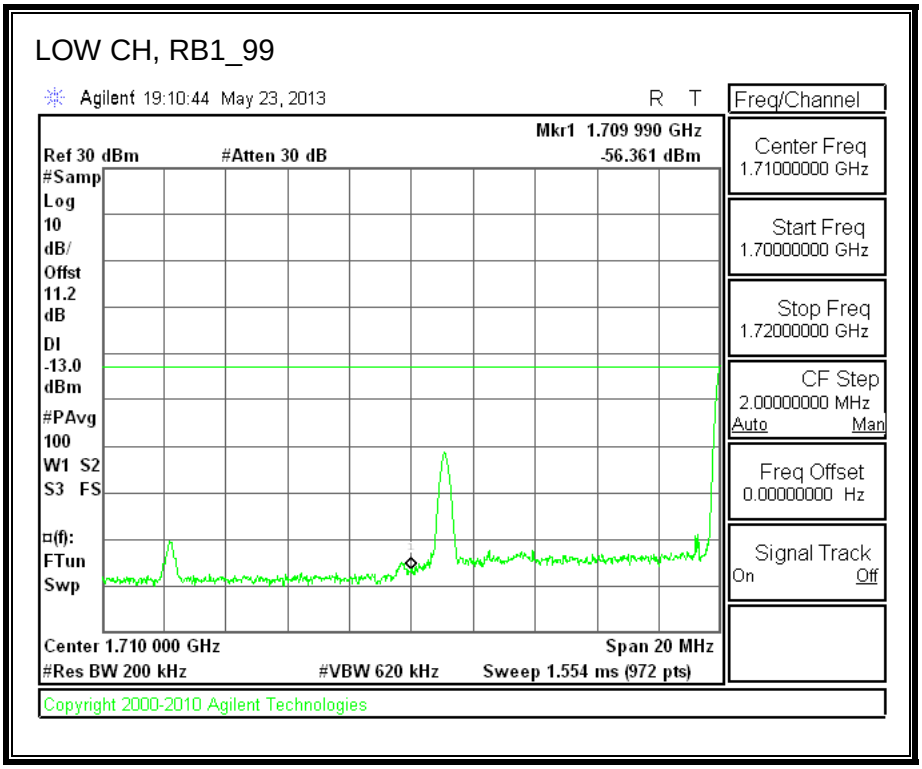
HIGH CH, RB100_0



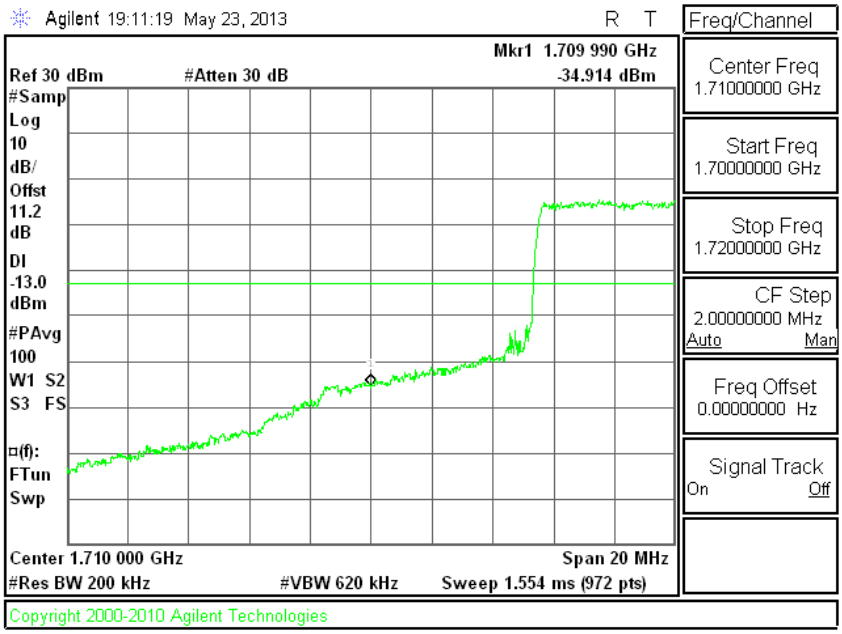
LOW-16QAM



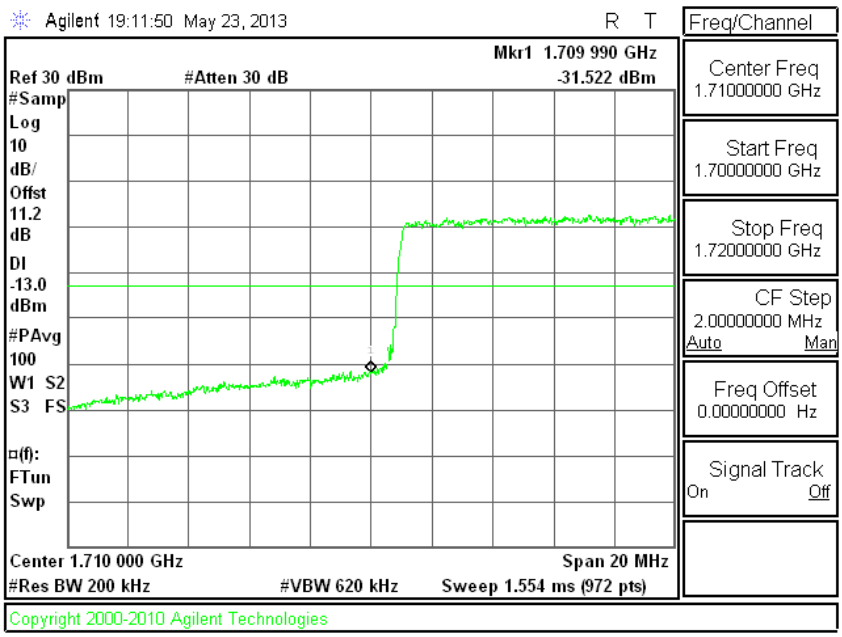
LOW CH, RB1_99



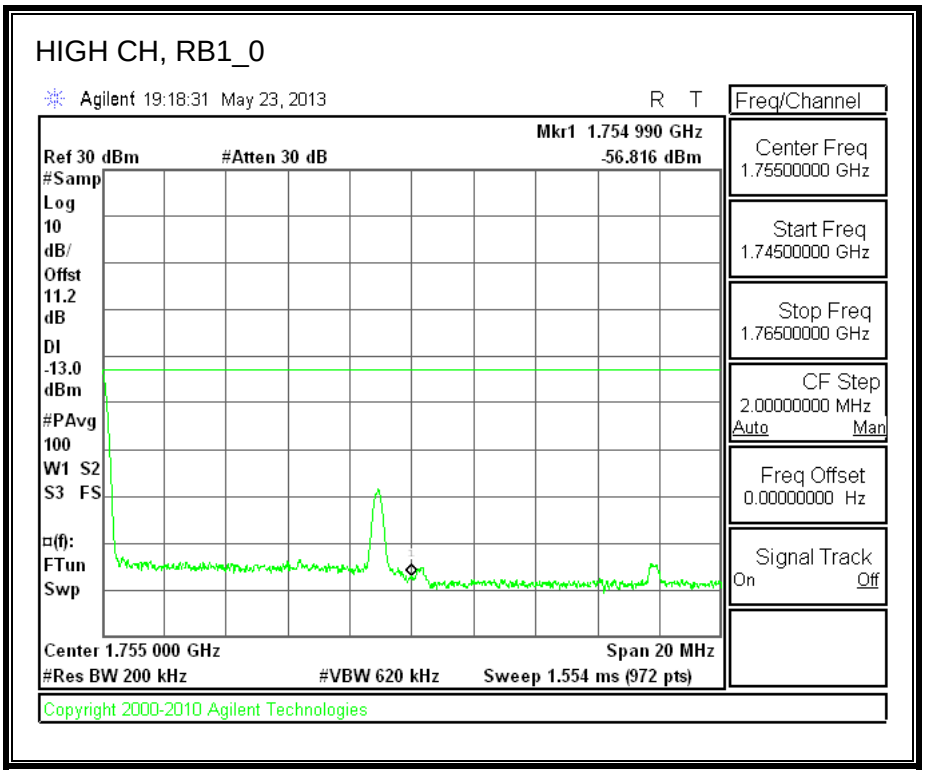
LOW CH, RB50_19



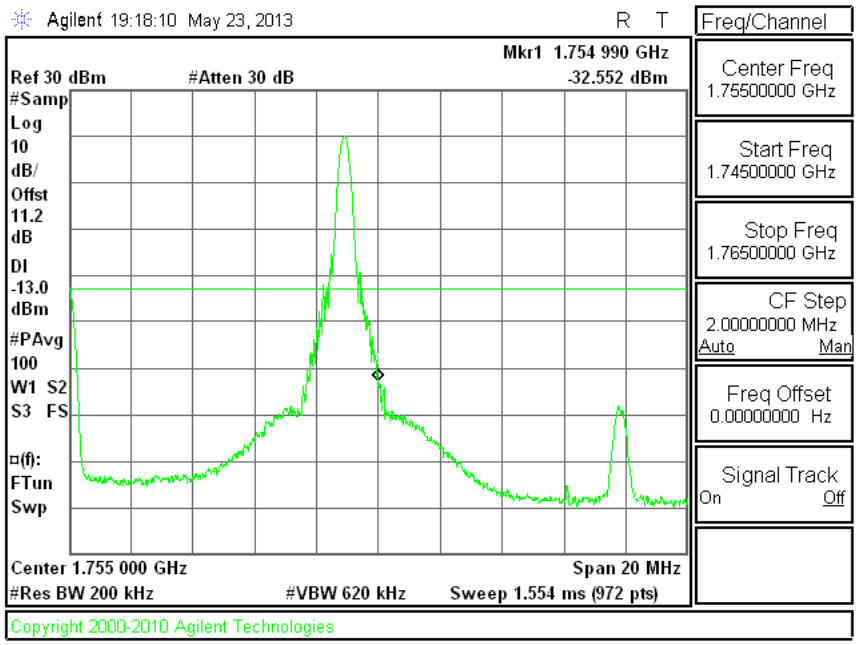
LOW CH, RB100_0



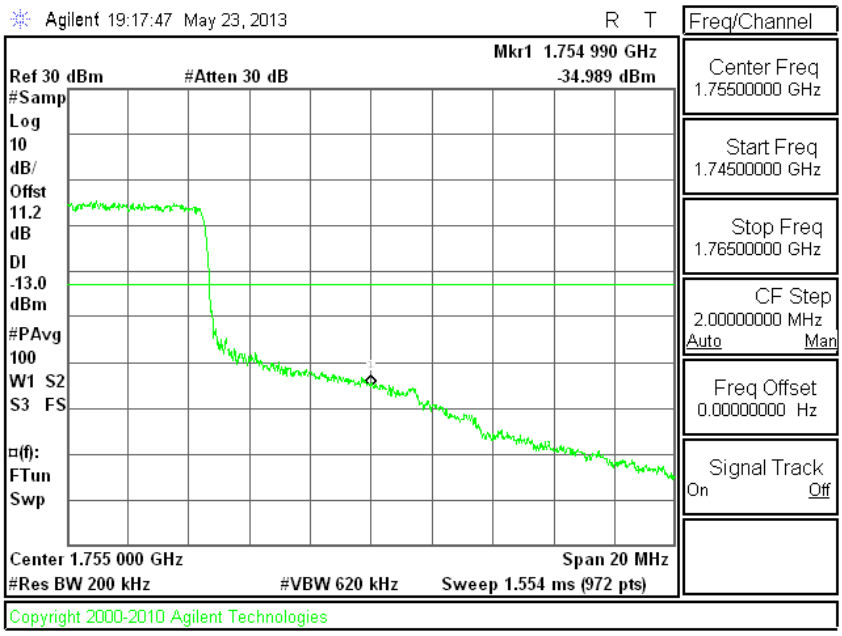
HIGH-16QAM



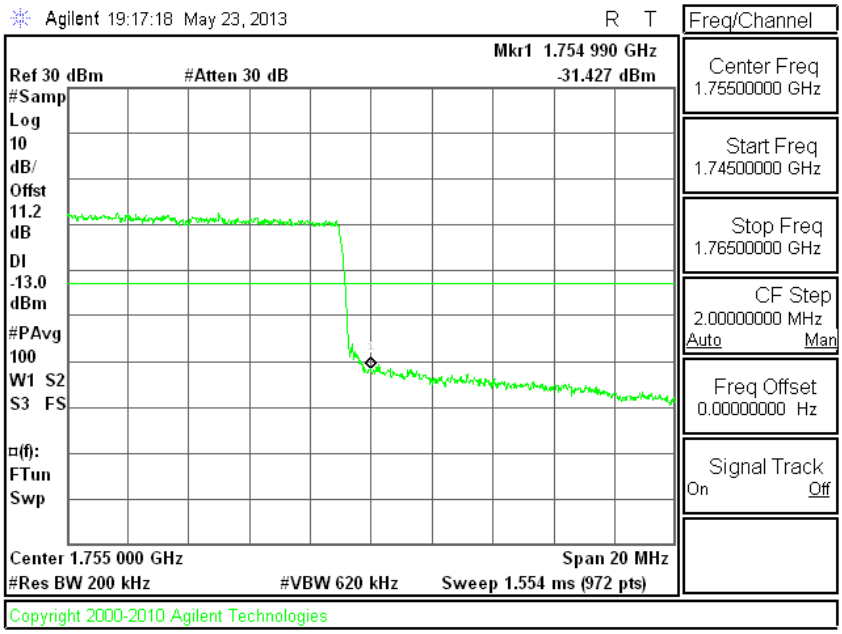
HIGH CH, RB1_99



HIGH CH, RB50_25

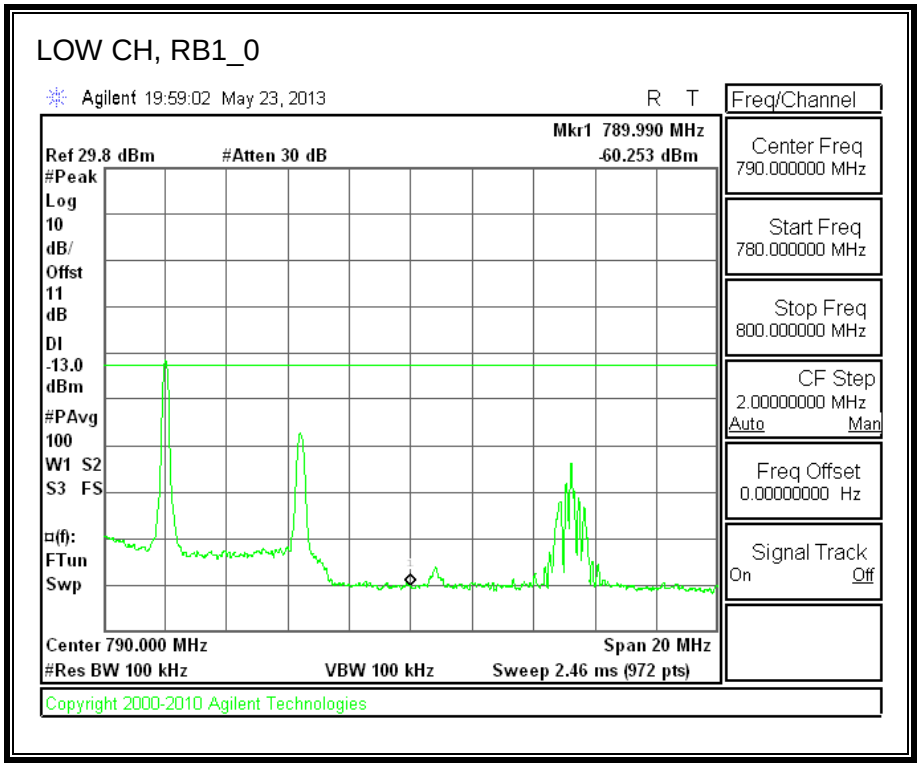


HIGH CH, RB100_0

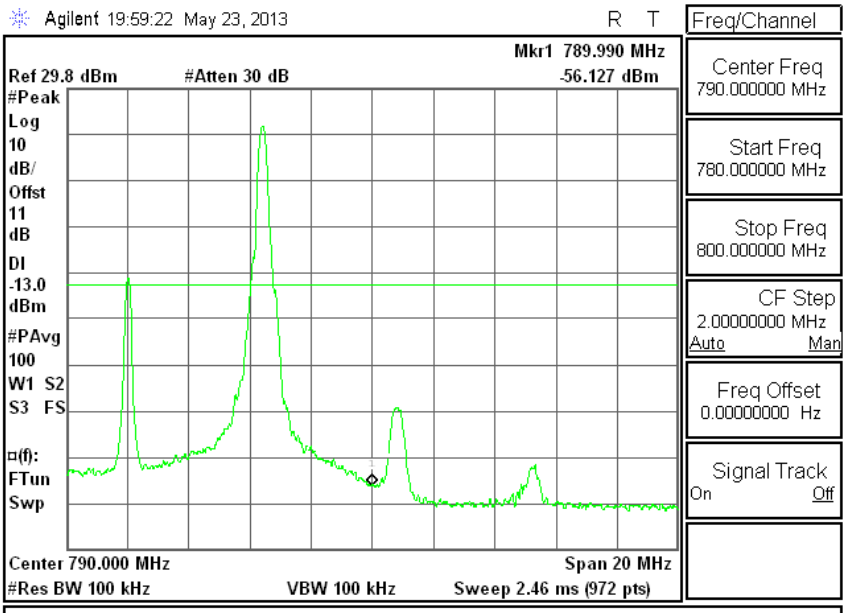


9.2.7. LTE BAND 13-10MHz BANDWIDTH

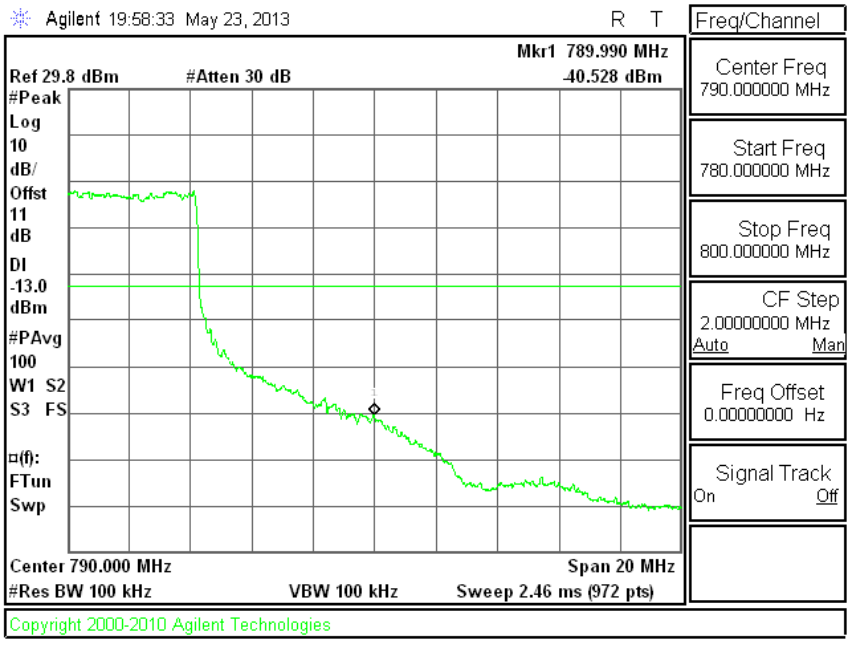
LOW-QPSK



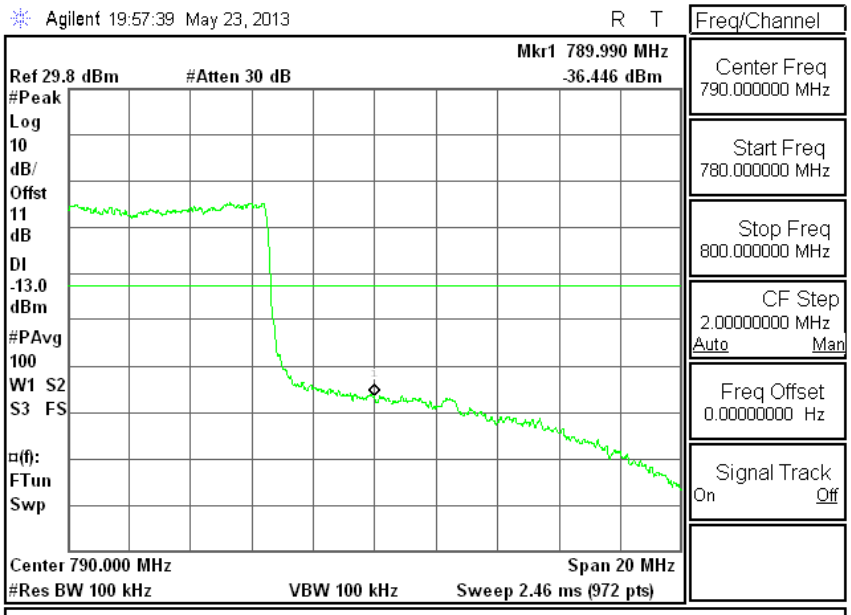
LOW CH, RB1_49



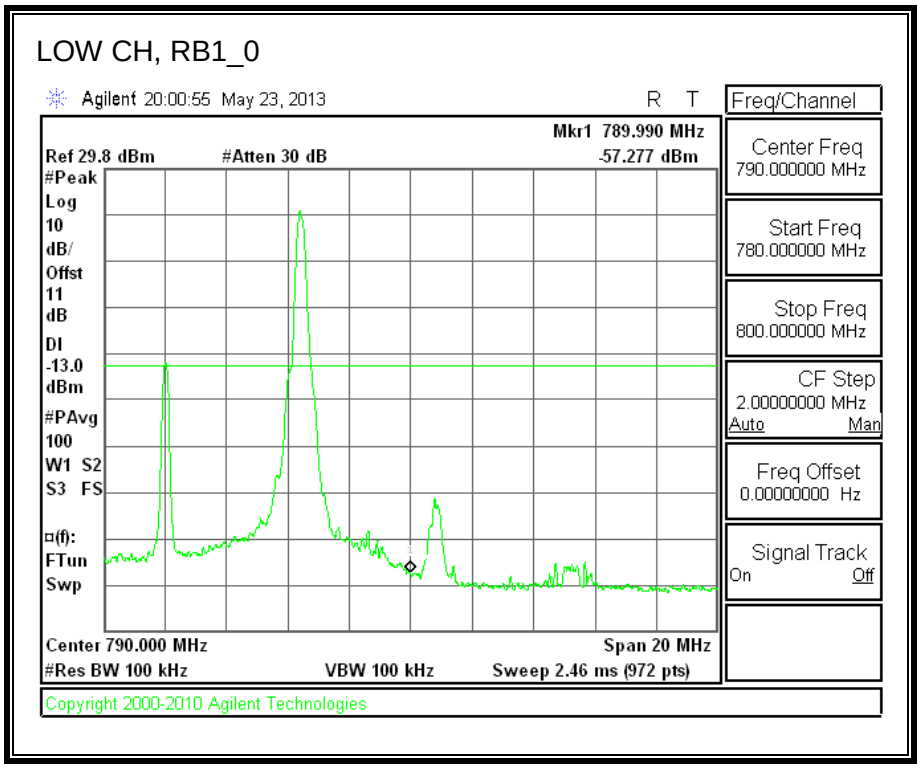
LOW CH, RB25_12



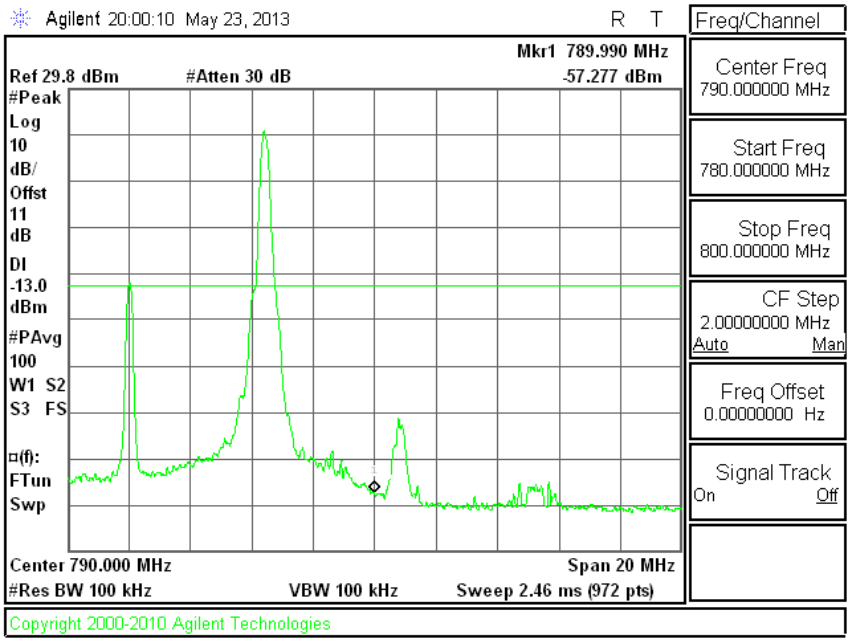
LOW CH, RB50_0



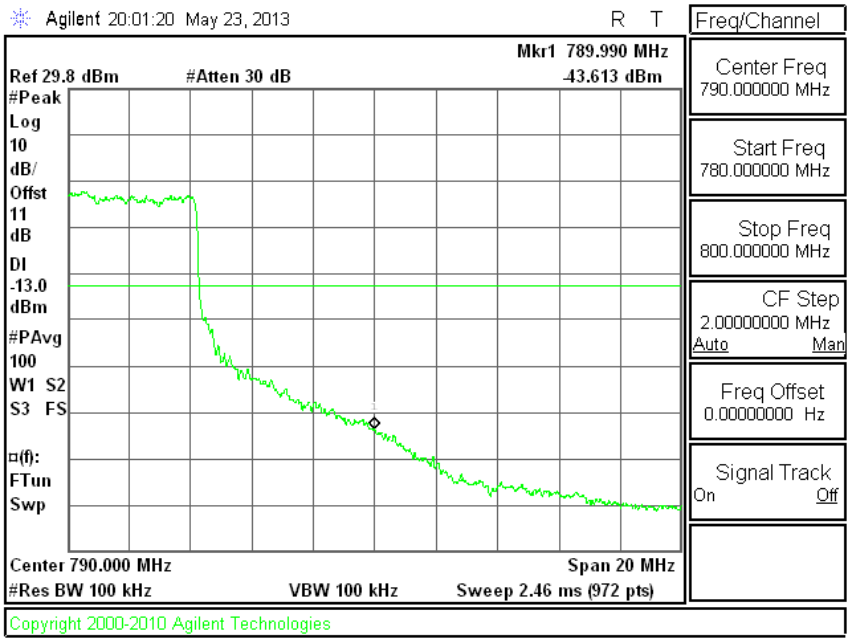
LOW-16QAM



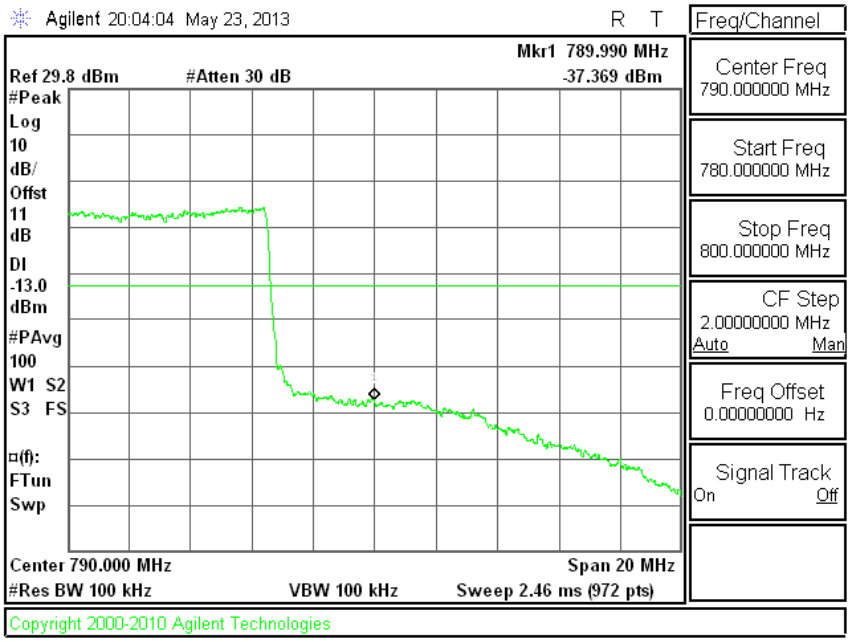
LOW CH, RB1_49



LOW CH, RB25_0



LOW CH, RB50_0



OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238

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.

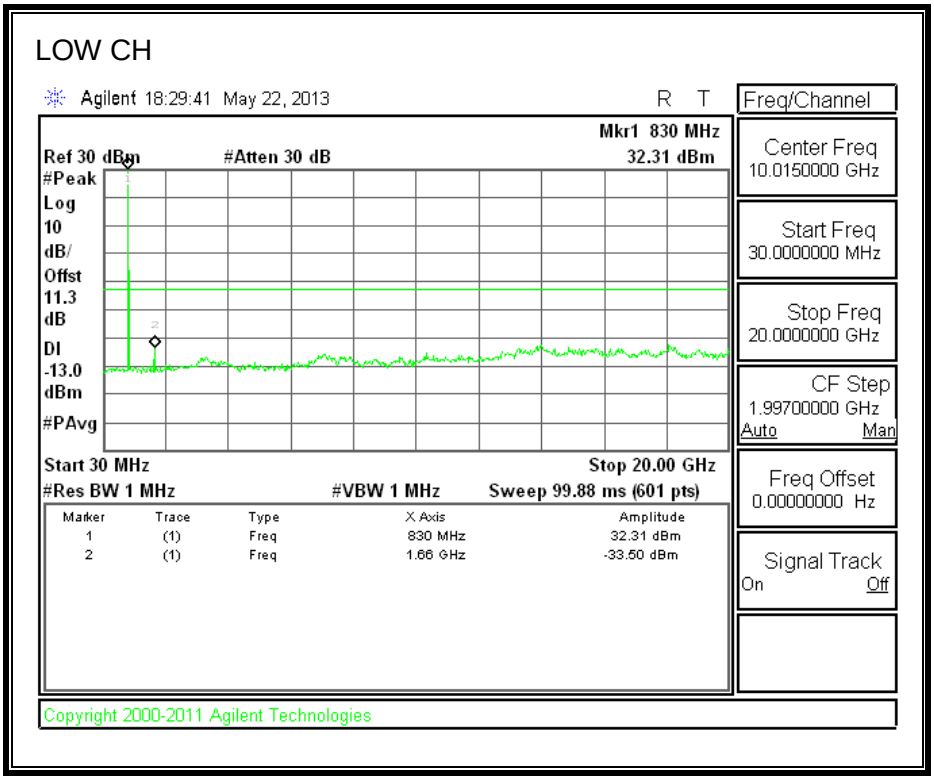
MODES TESTED

- GPRS, EGPRS
- CDMA 1xRtt, CDMA EV-DO
- UMTS REL 99, and HSUPA
- LTE Band 4, Band 13

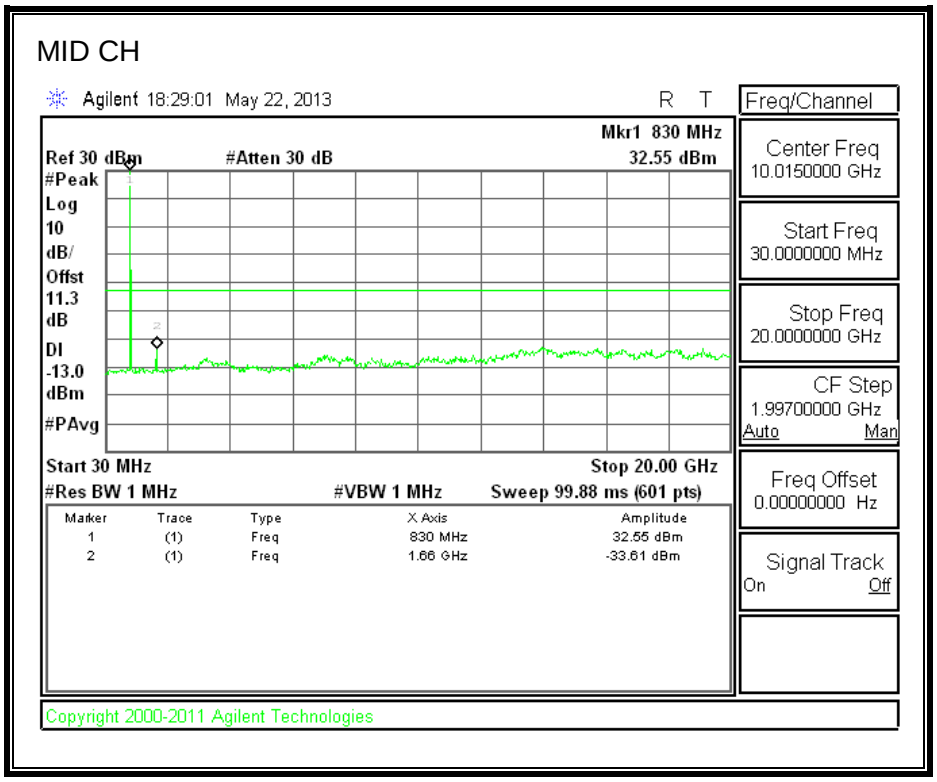
RESULTS

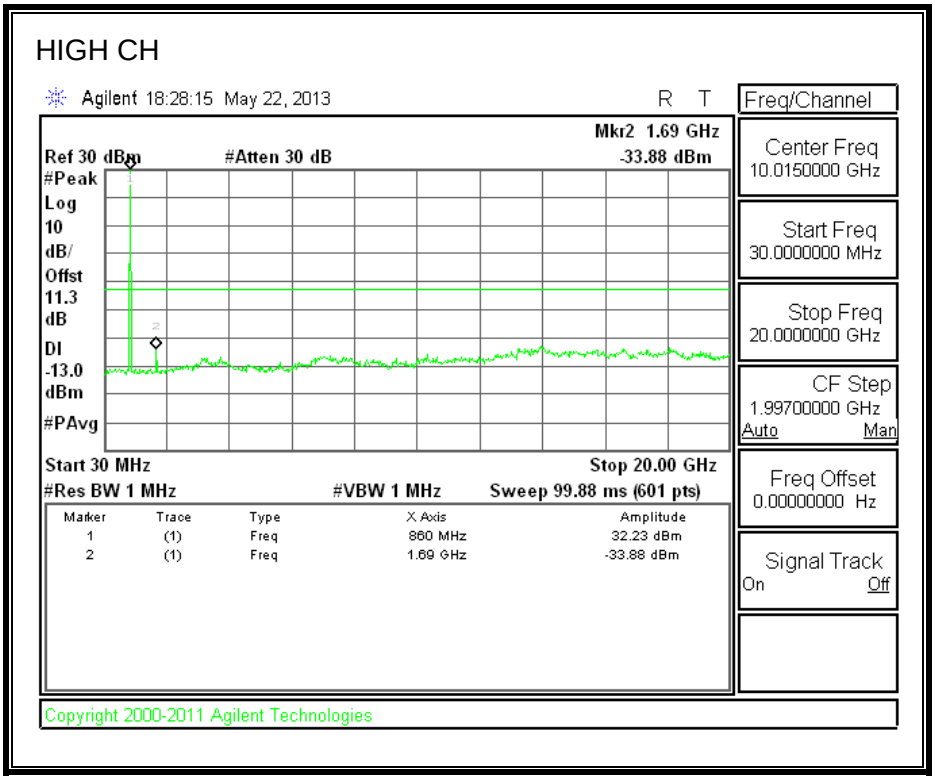
9.2.8. GPRS MODE

CELL BAND



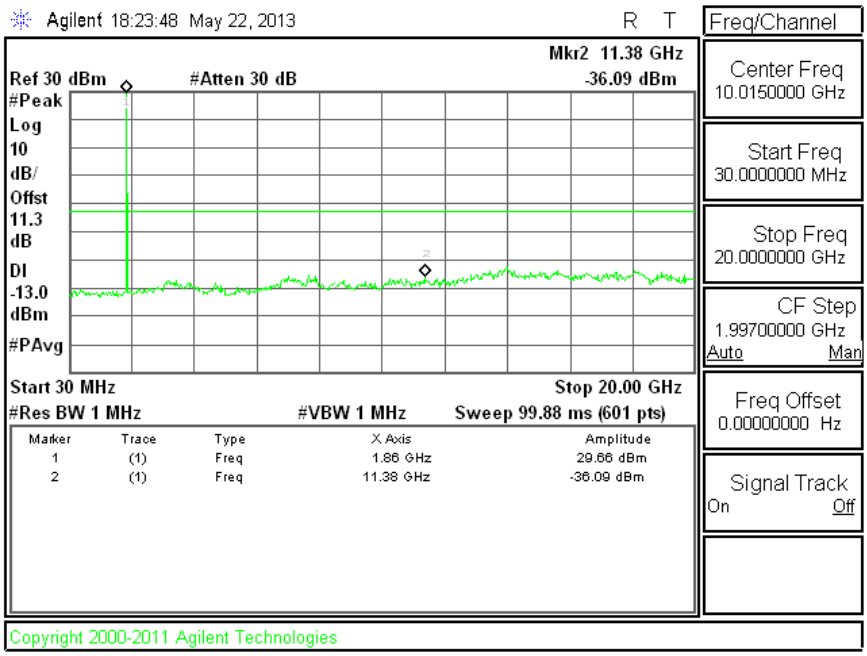
MID CH



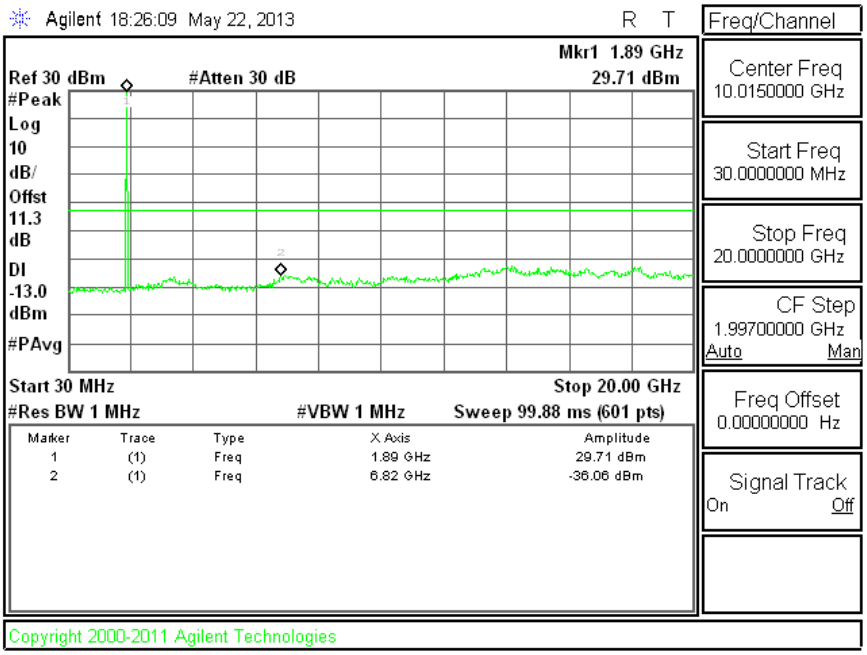


PCS BAND

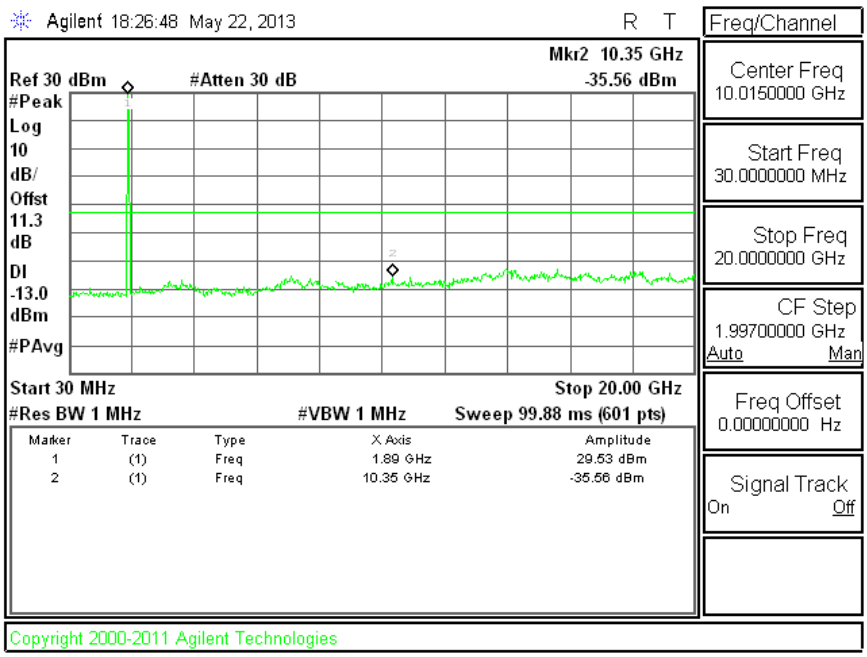
LOW CH



MID CH

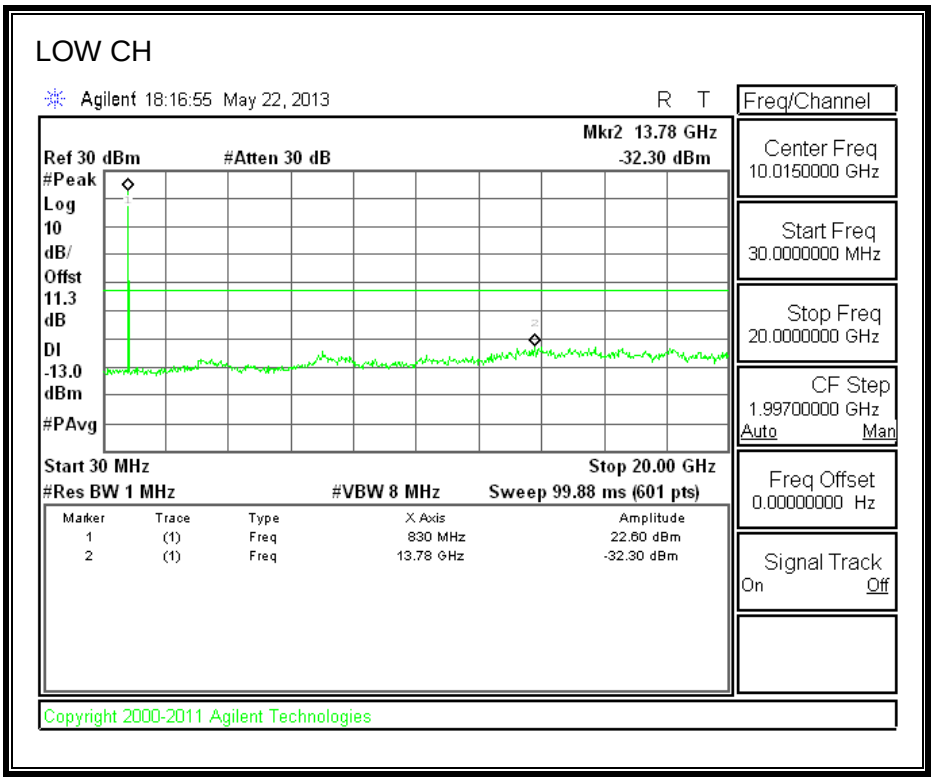


HIGH CH

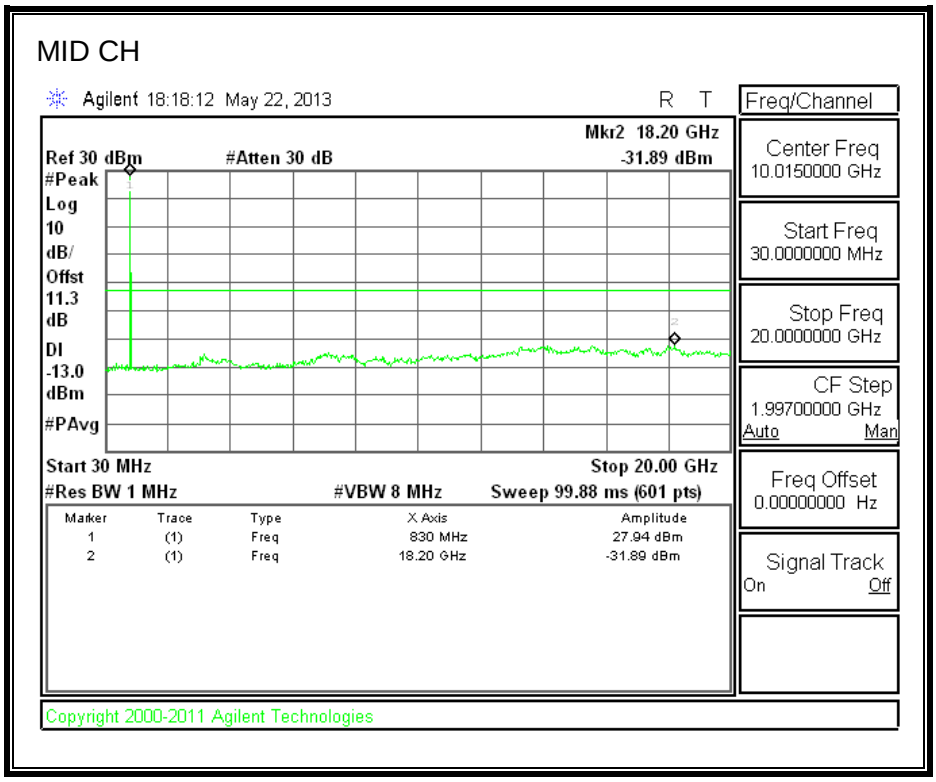


9.2.1. EGPRS MODE

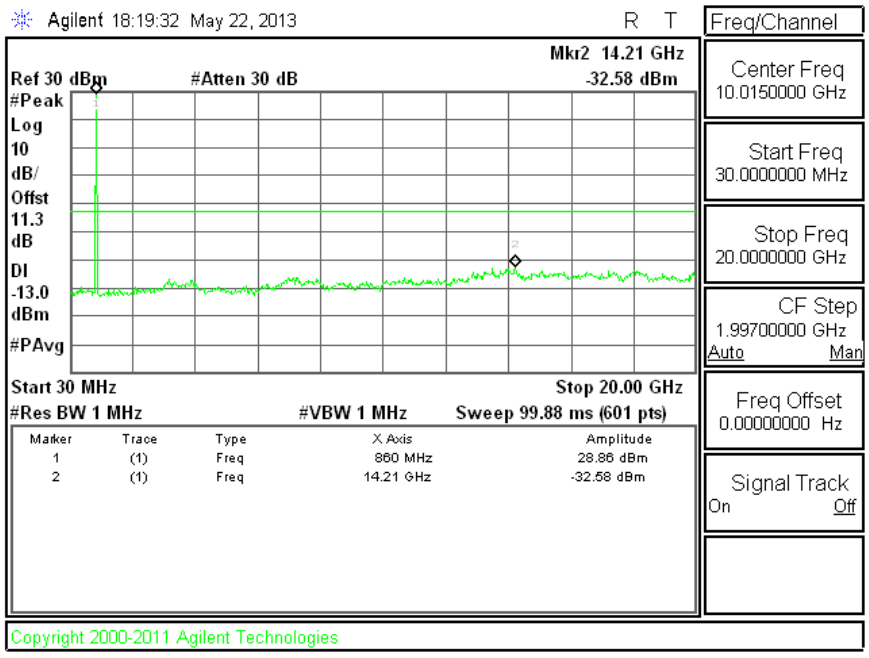
CELL BAND



MID CH

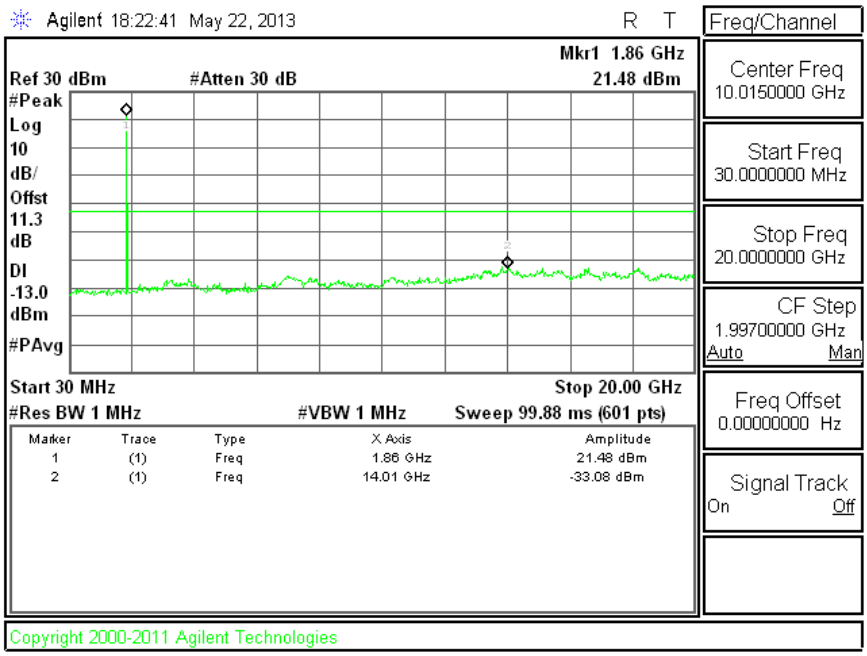


HIGH CH

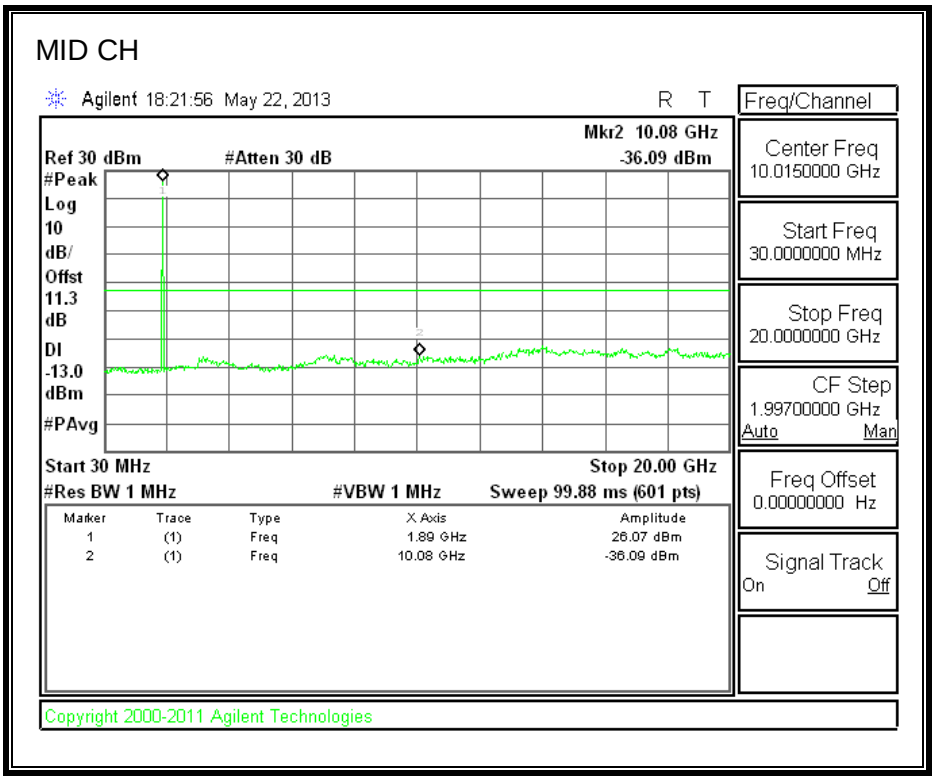


PCS BAND

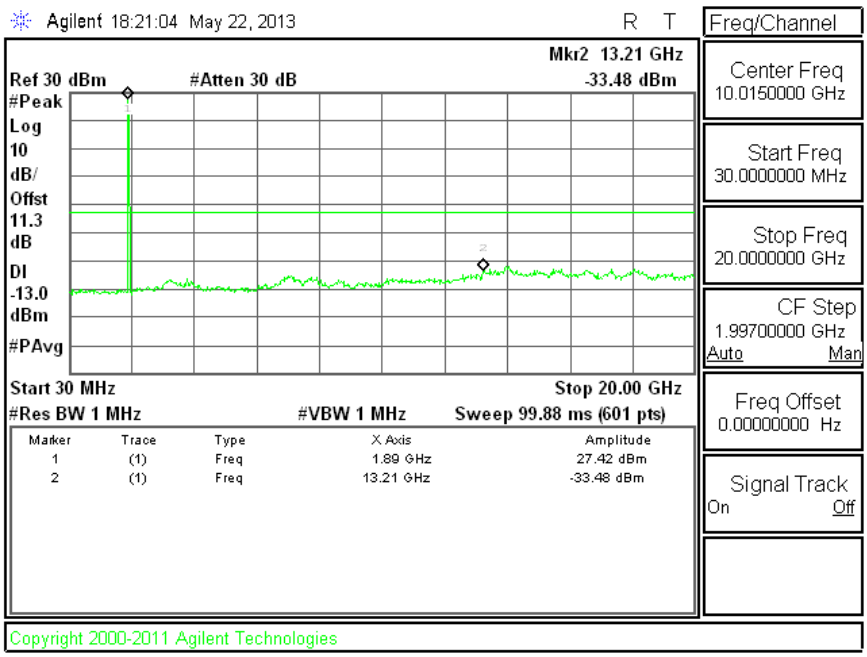
LOW CH



MID CH

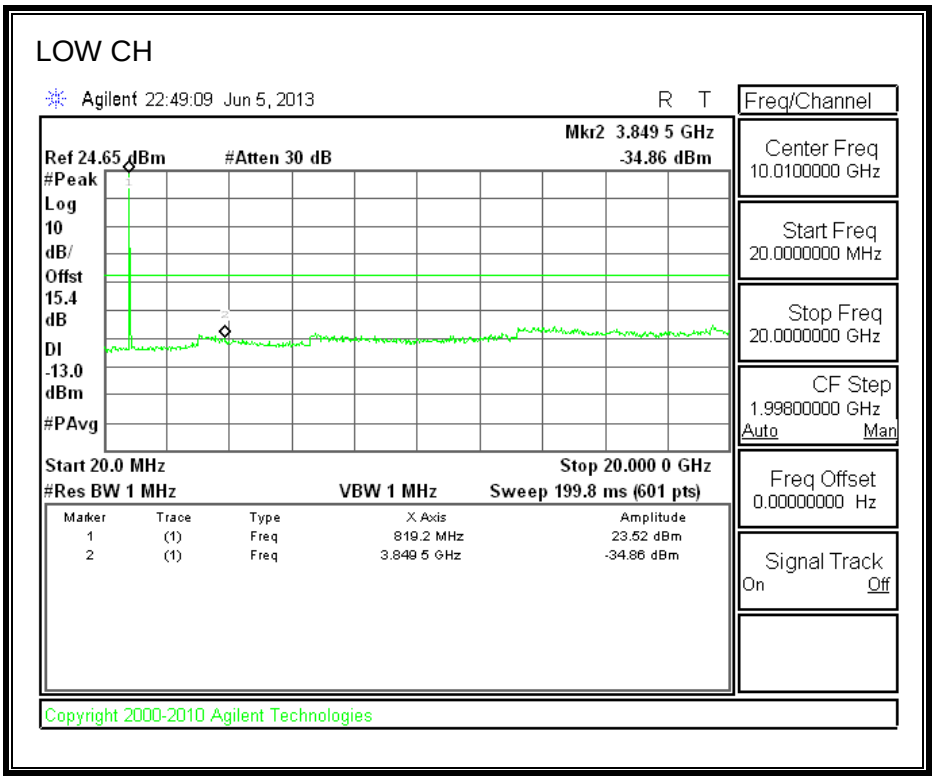


HIGH CH

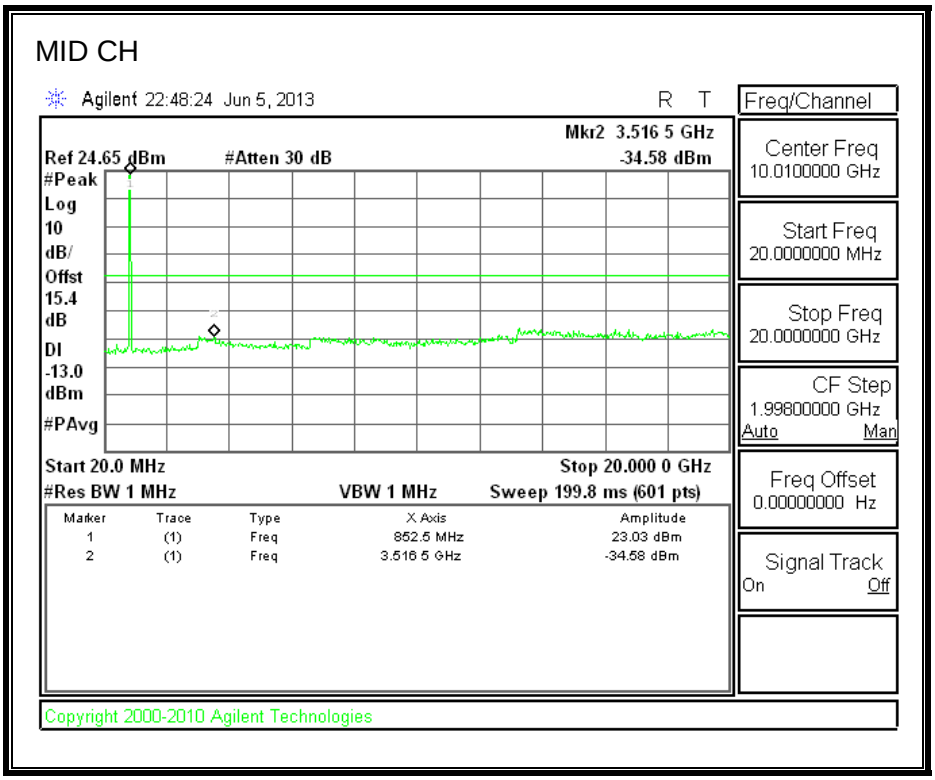


9.2.2. UMTS REL 99 MODE

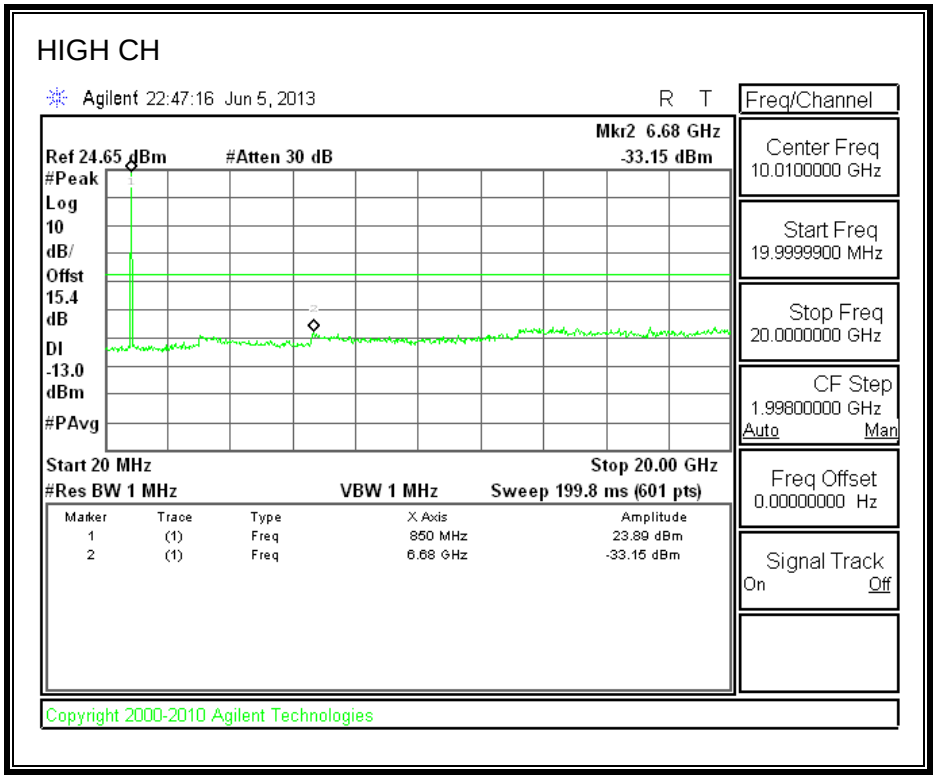
CELL BAND



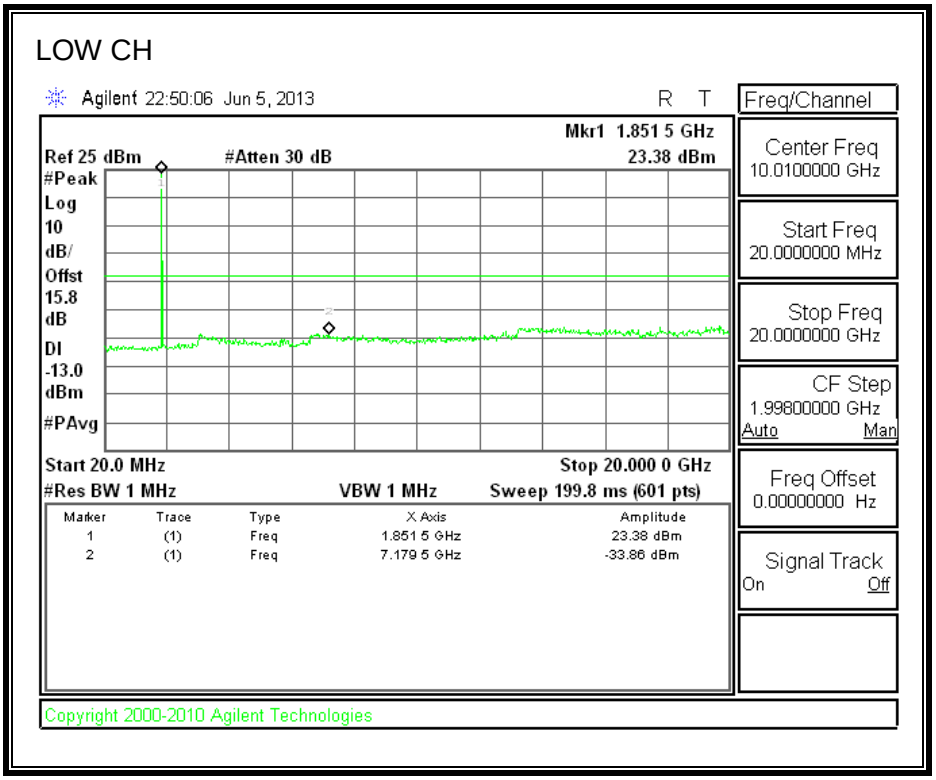
MID CH



HIGH CH



PCS BAND



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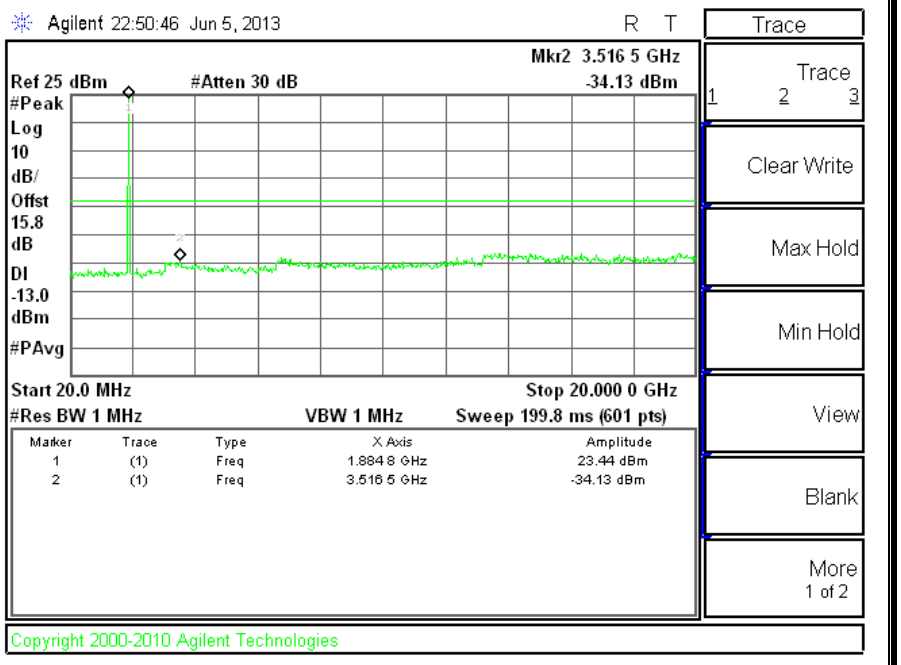
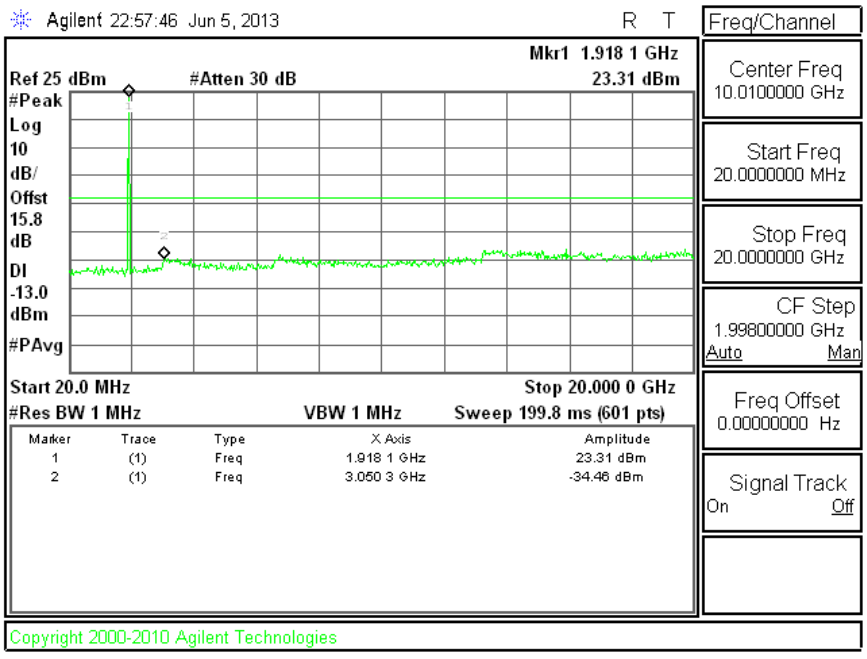
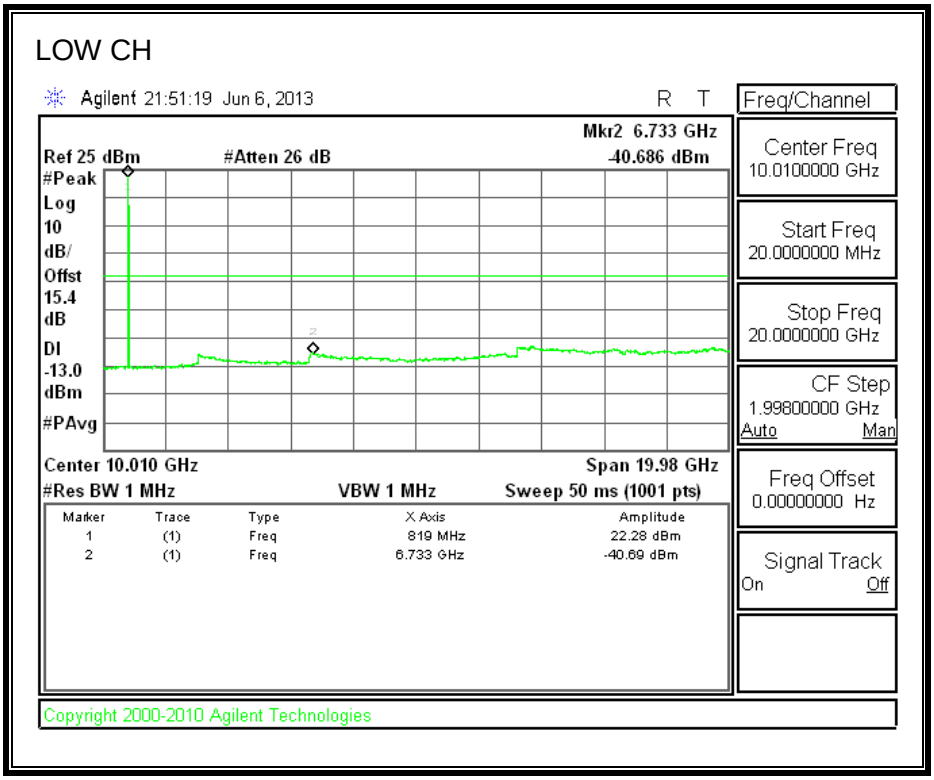


HIGH CH

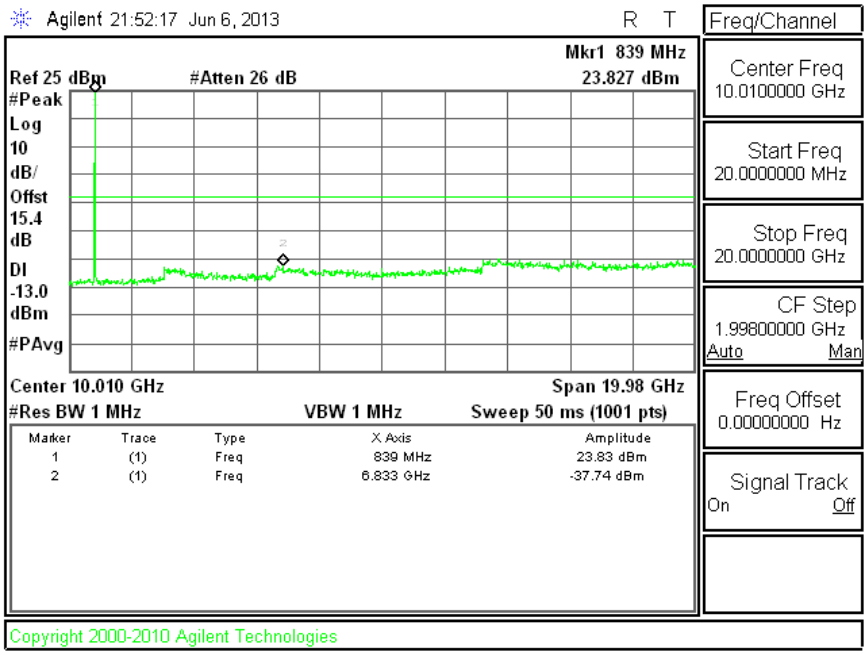


9.2.3. UMTS HSUPA MODE

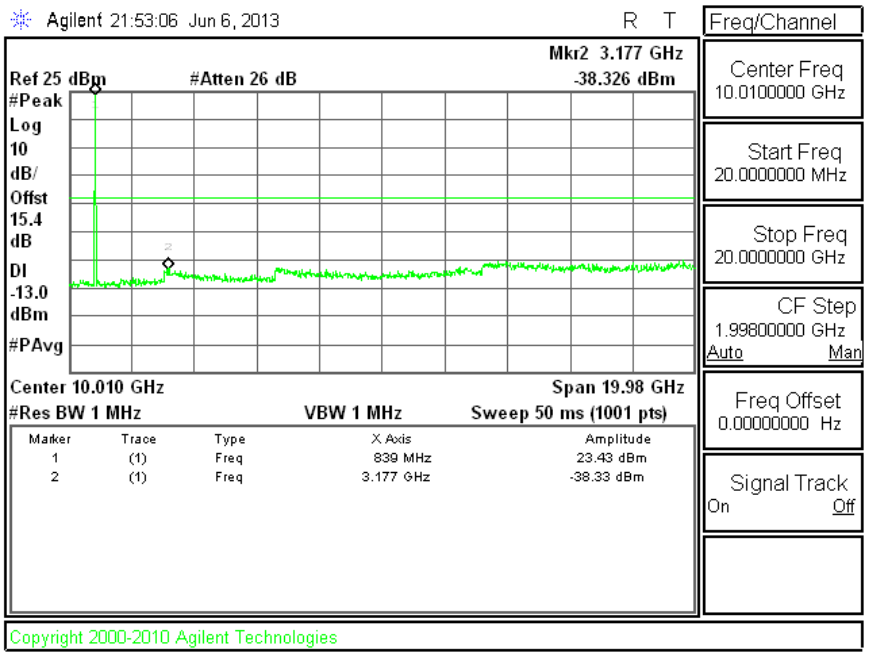
CELL BAND



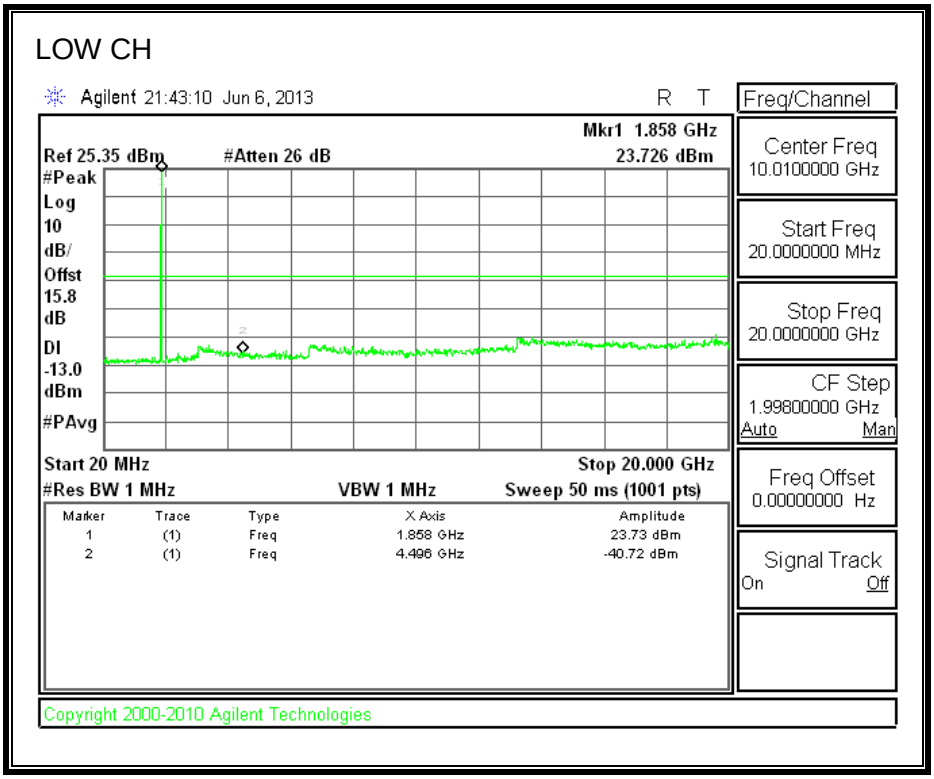
MID CH



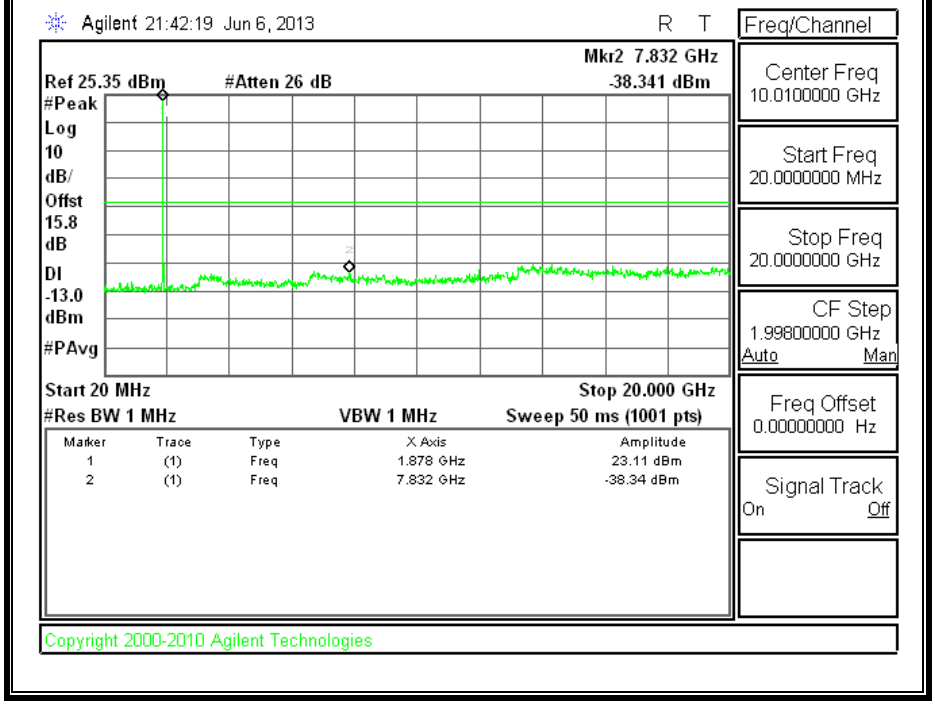
HIGH CH



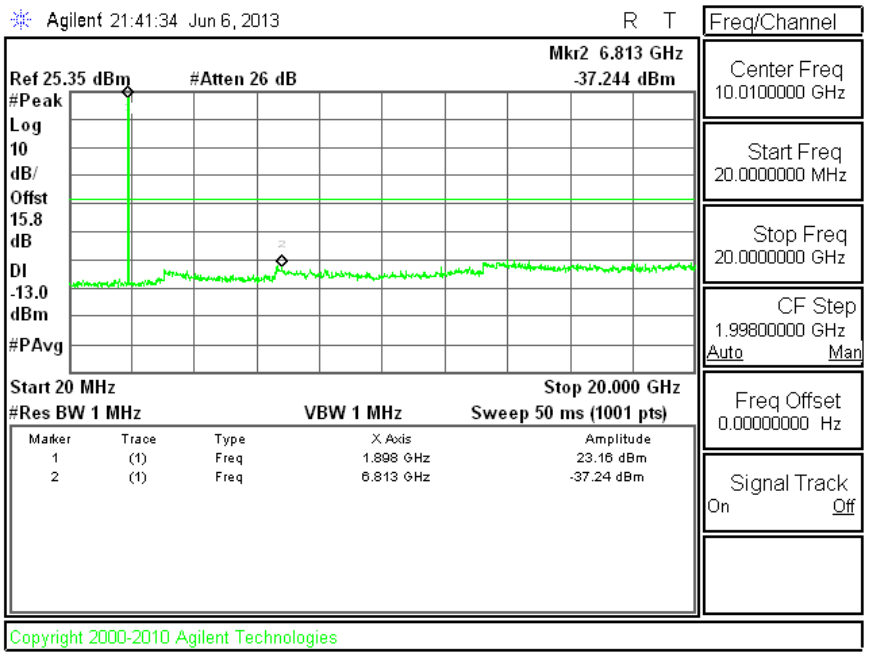
PCS BAND



MID CH

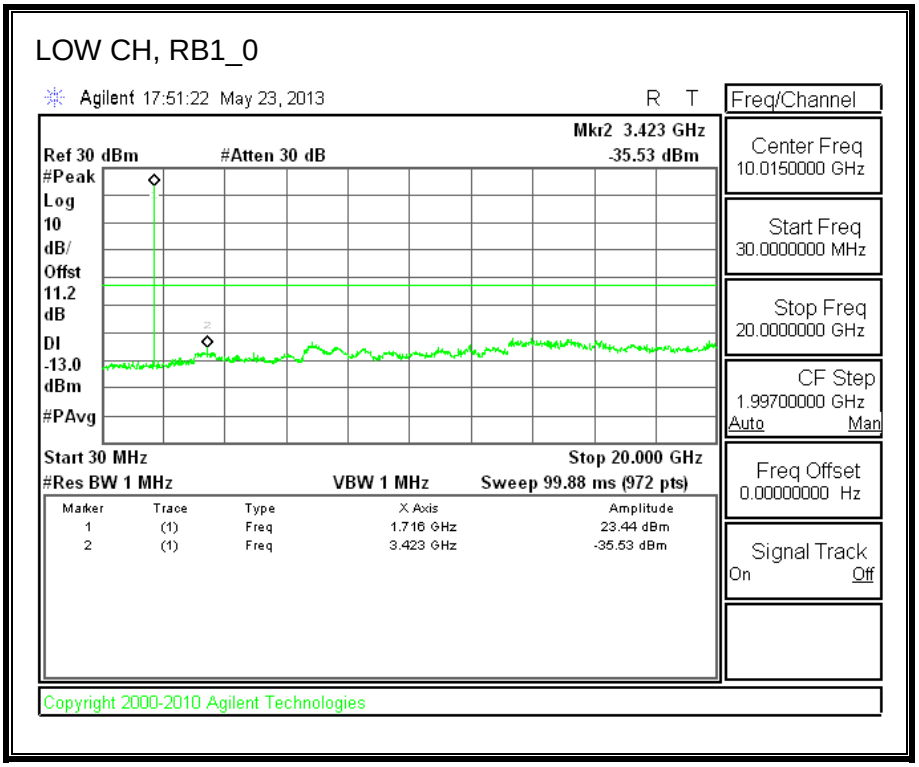


HIGH CH

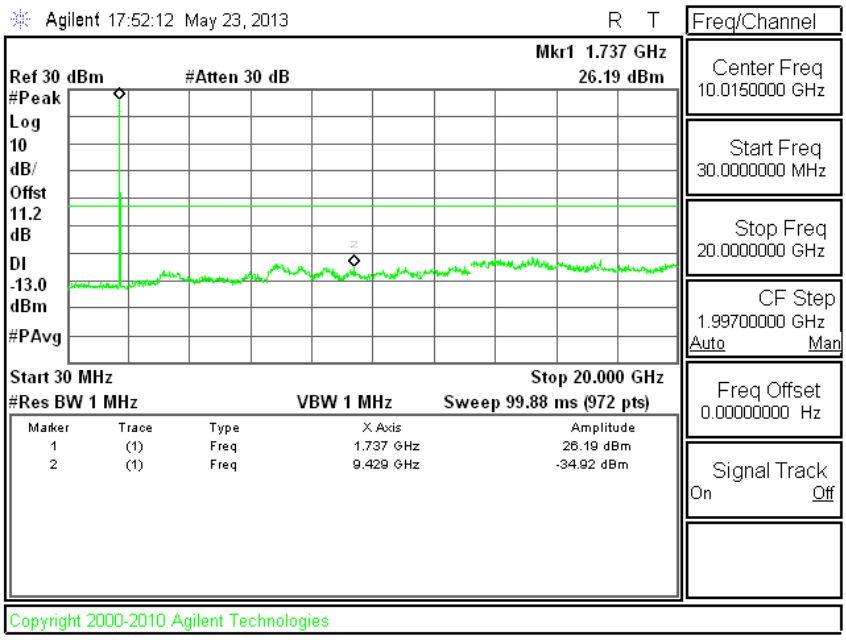


9.2.4. LTE BAND 4-5MHz BANDWIDTH

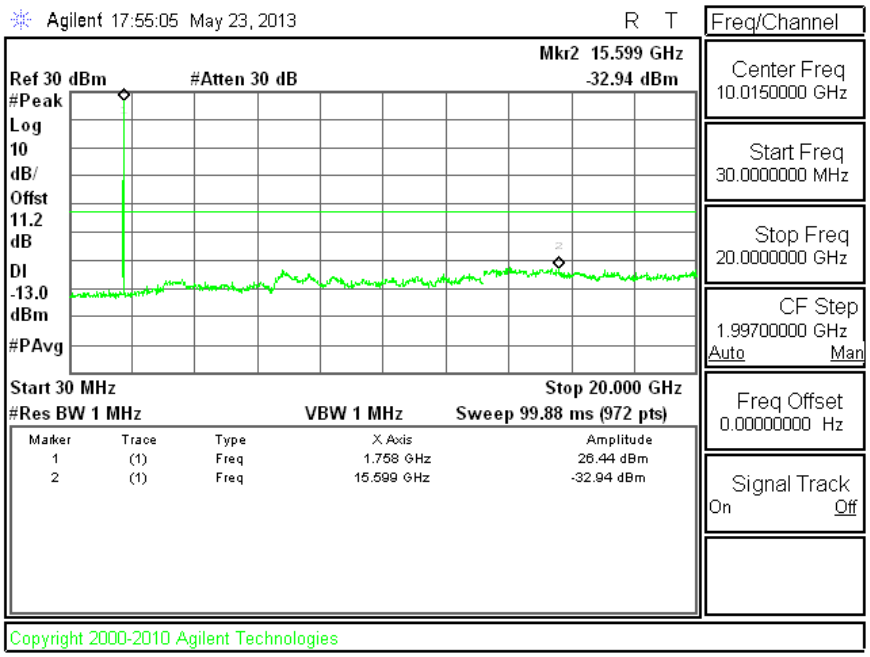
QPSK



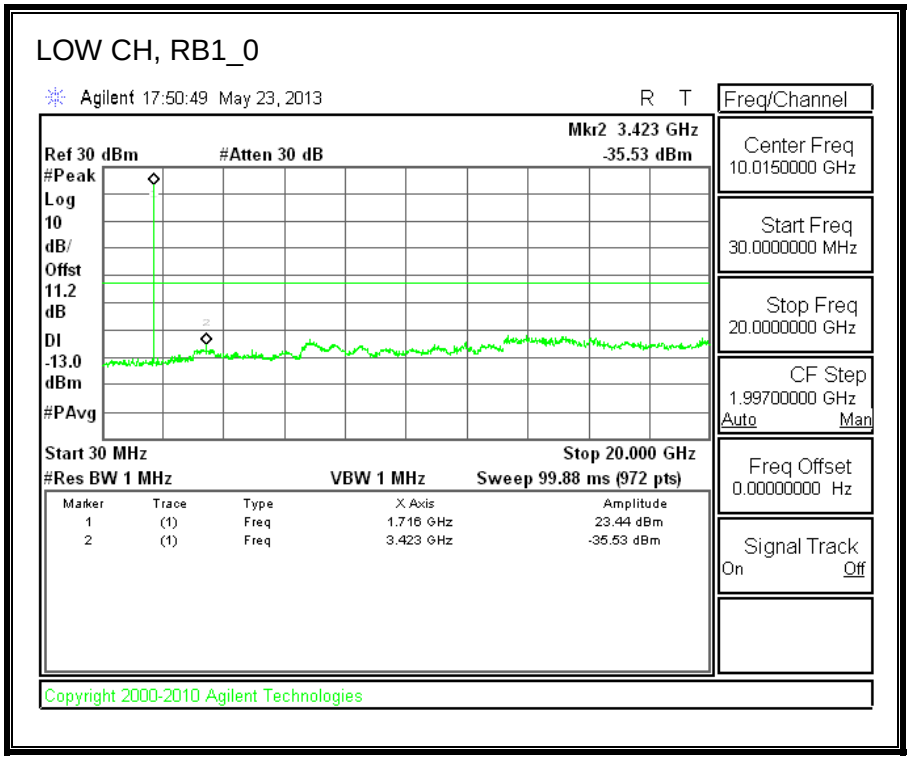
MID CH, RB1_0



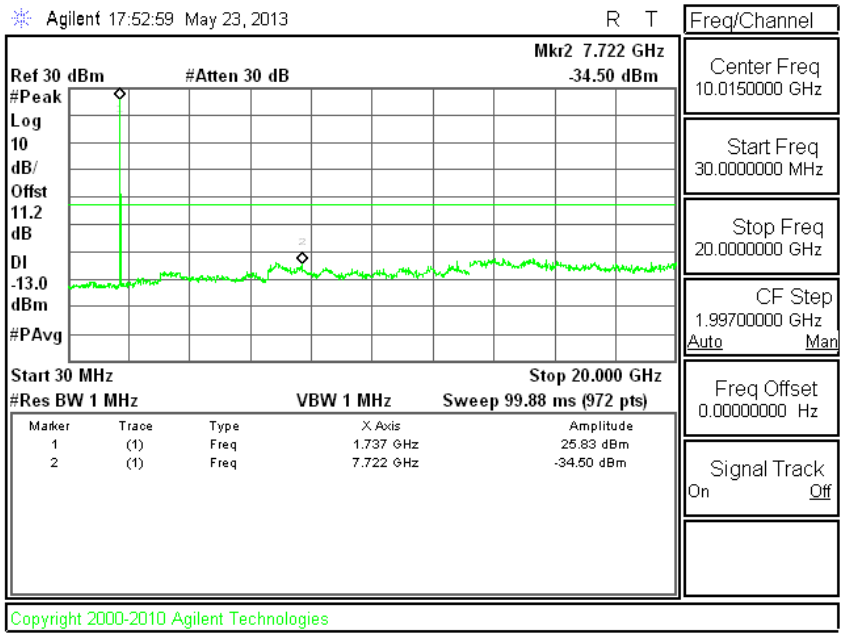
HIGH CH, RB1_0



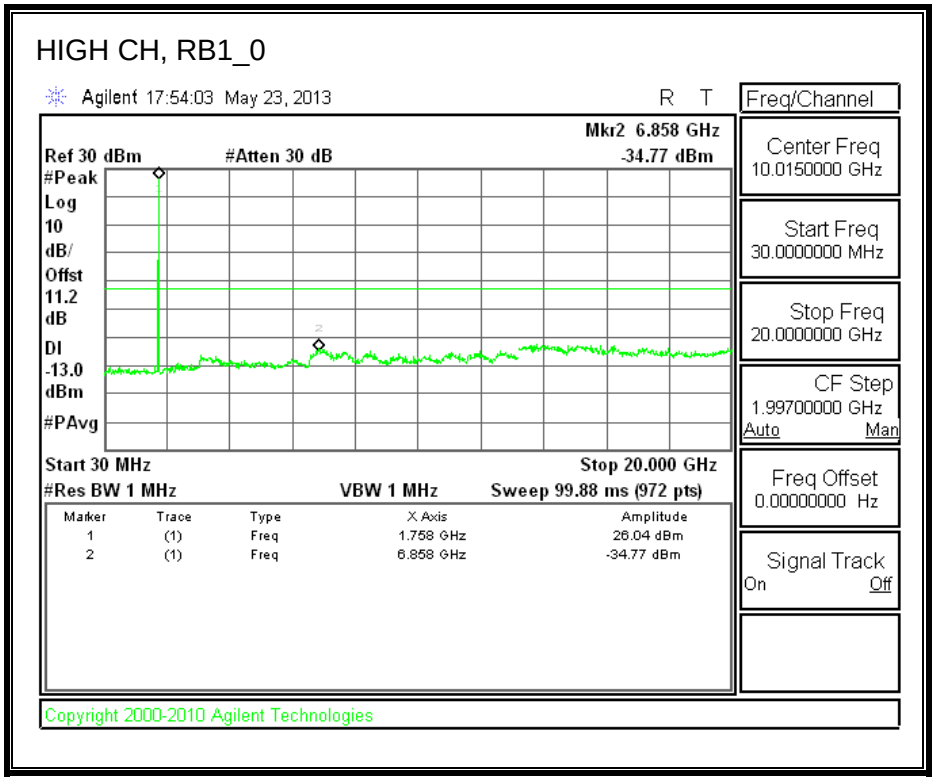
16QAM



MID CH, RB1_0

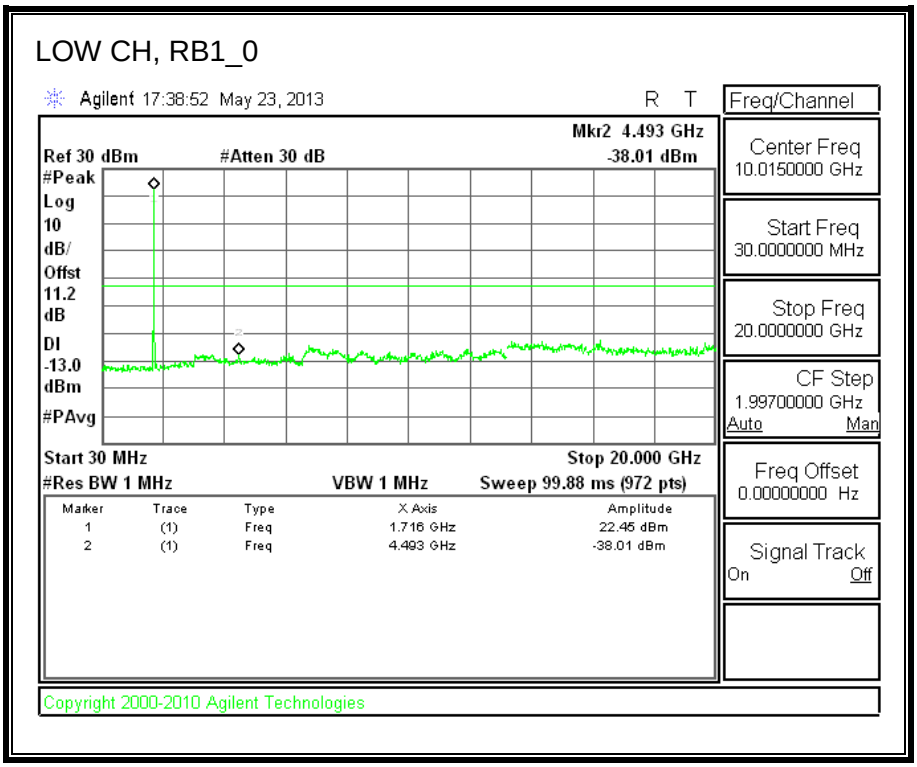


HIGH CH, RB1_0

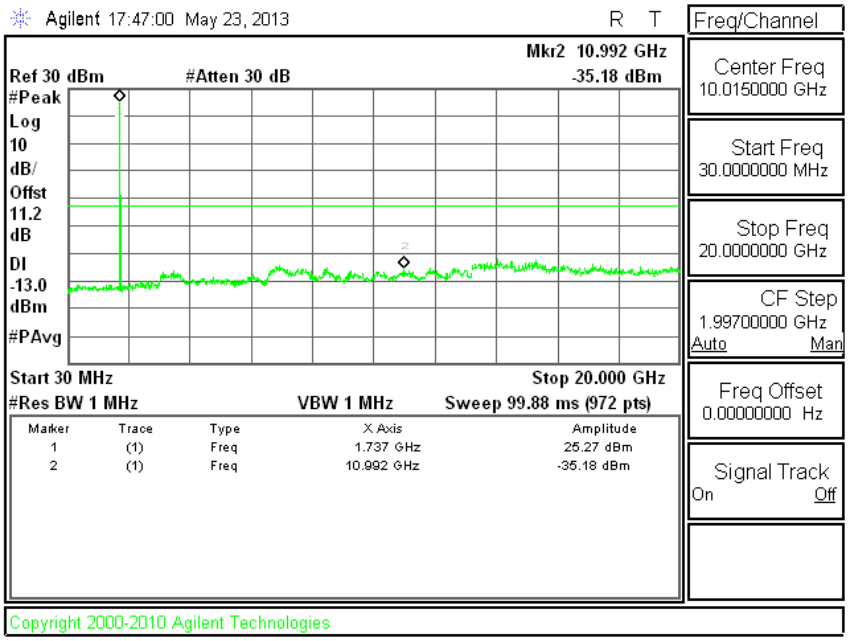


9.2.5. LTE BAND 4-10MHz BANDWIDTH

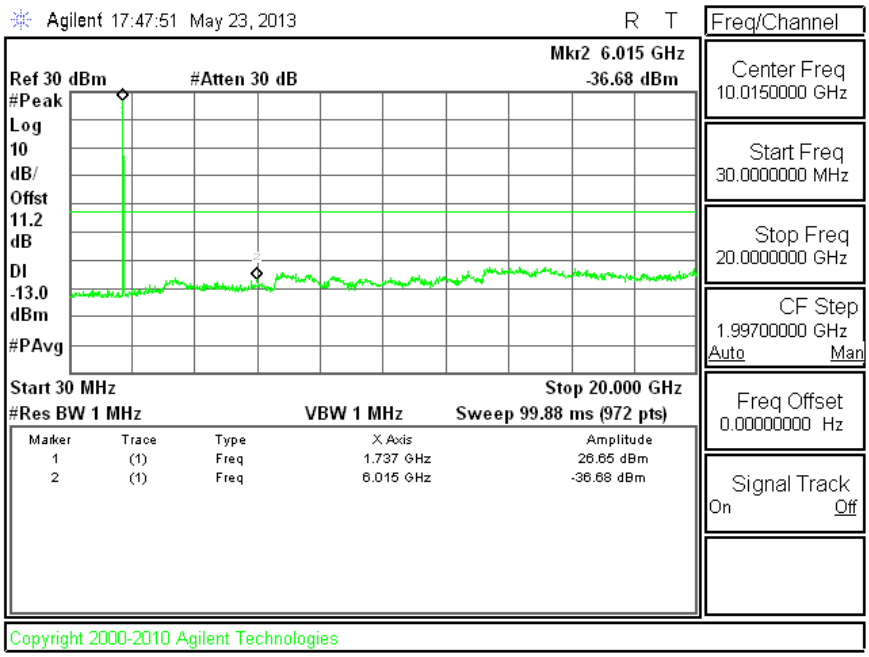
QPSK



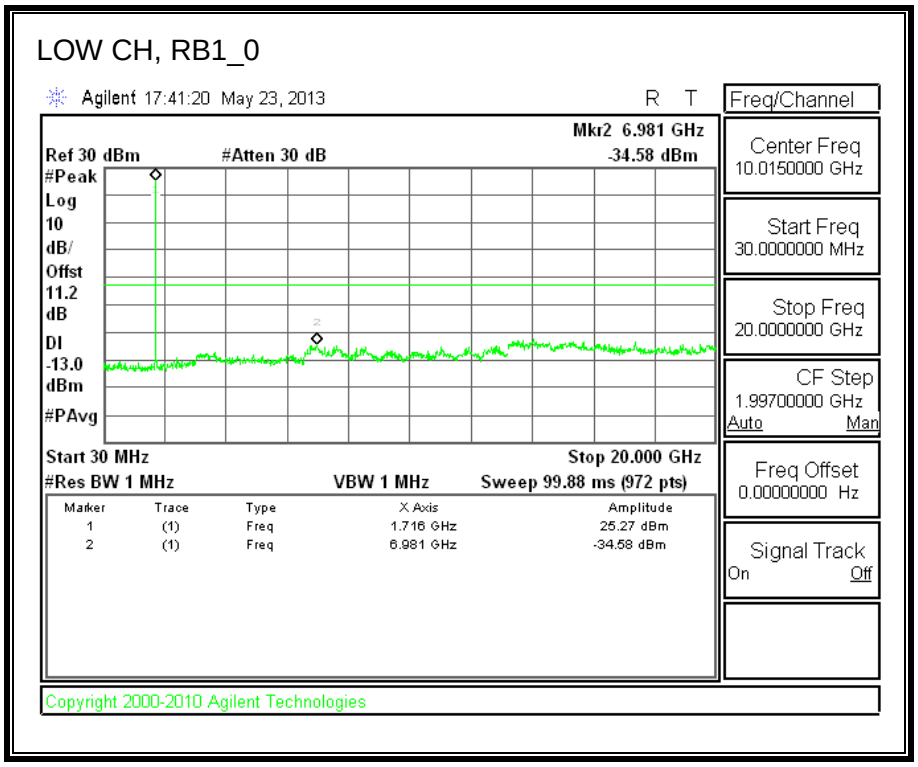
MID CH, RB1_0



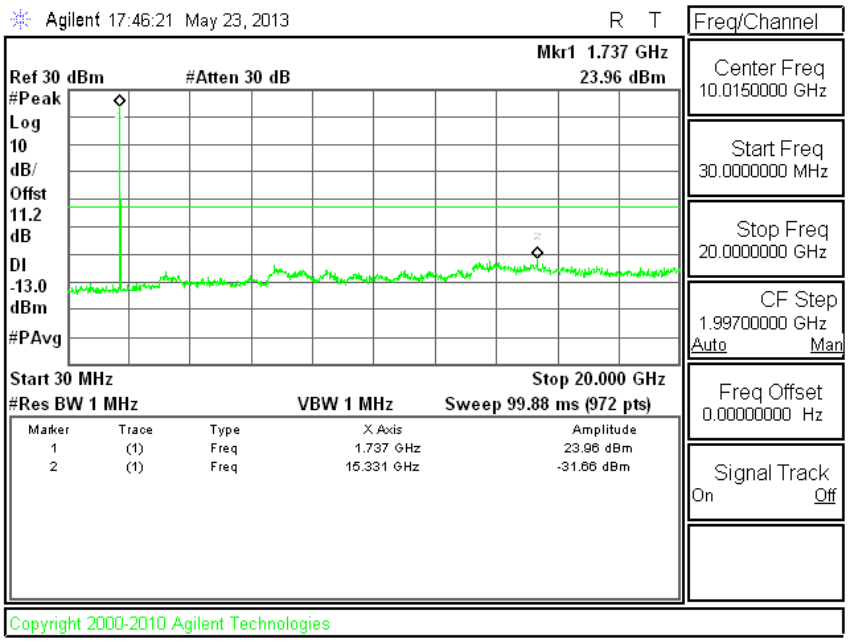
HIGH CH, RB1_0



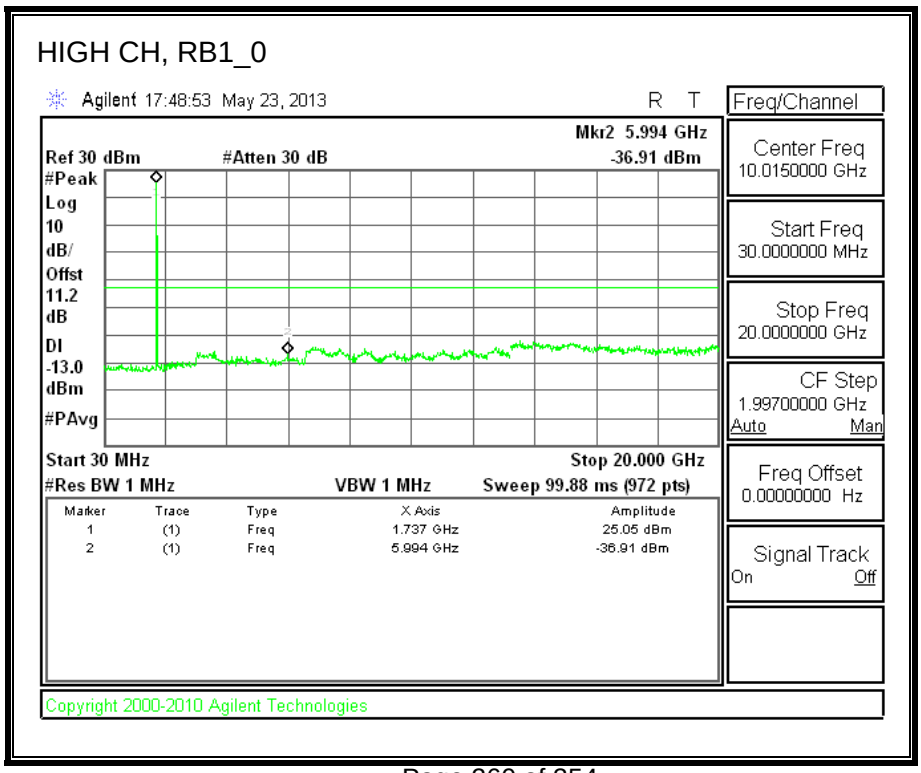
16QAM



MID CH, RB1_0

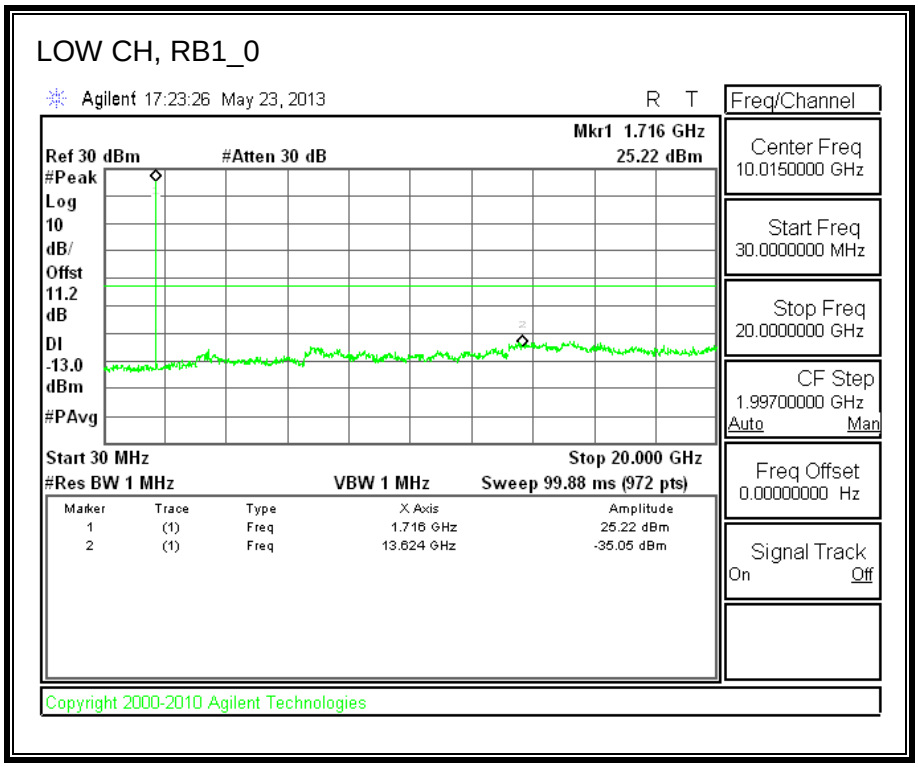


HIGH CH, RB1_0

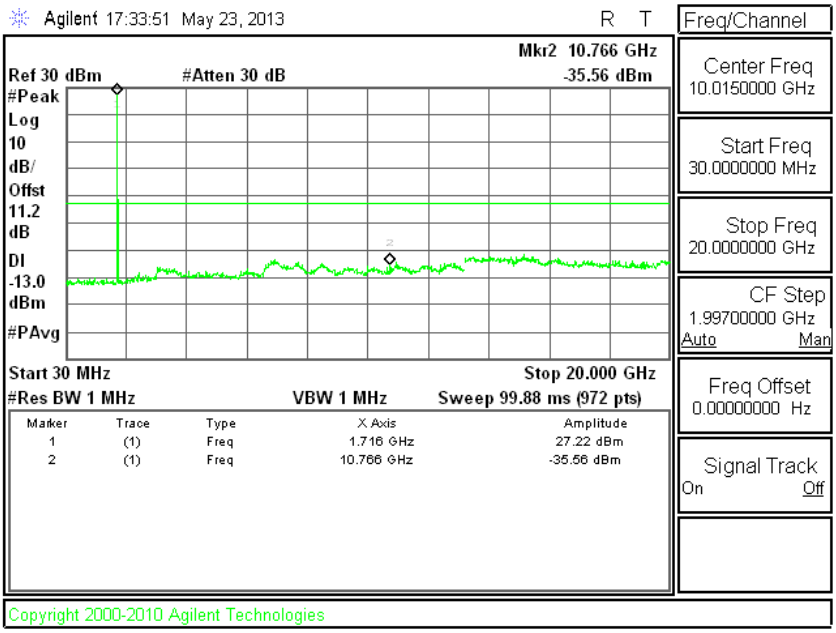


9.2.6. LTE BAND 4-15MHz BANDWIDTH

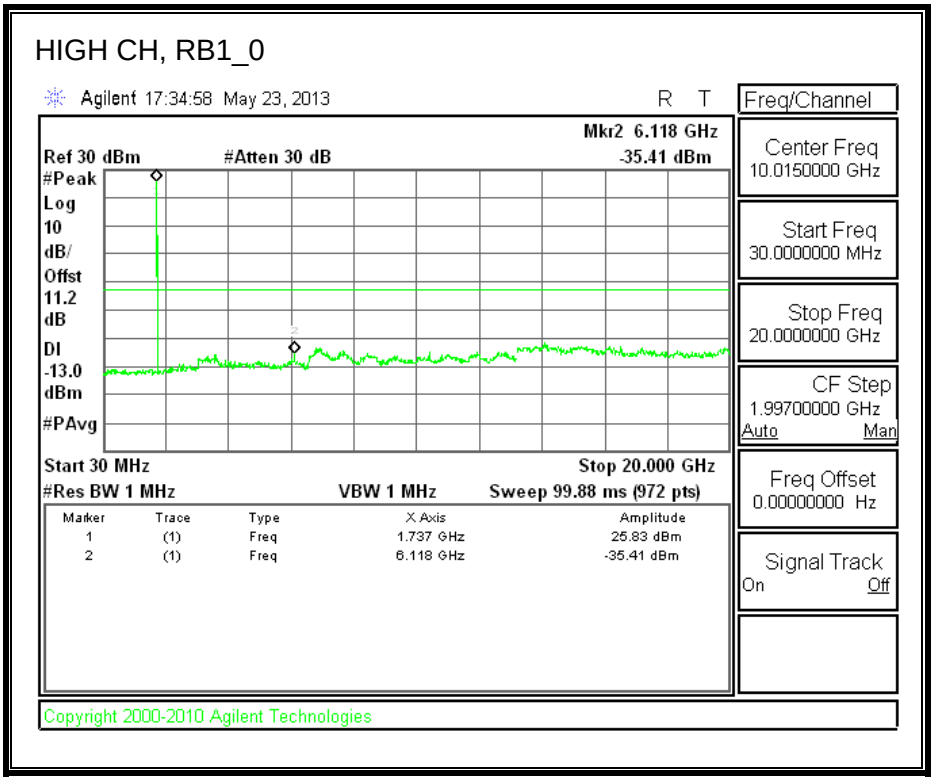
QPSK



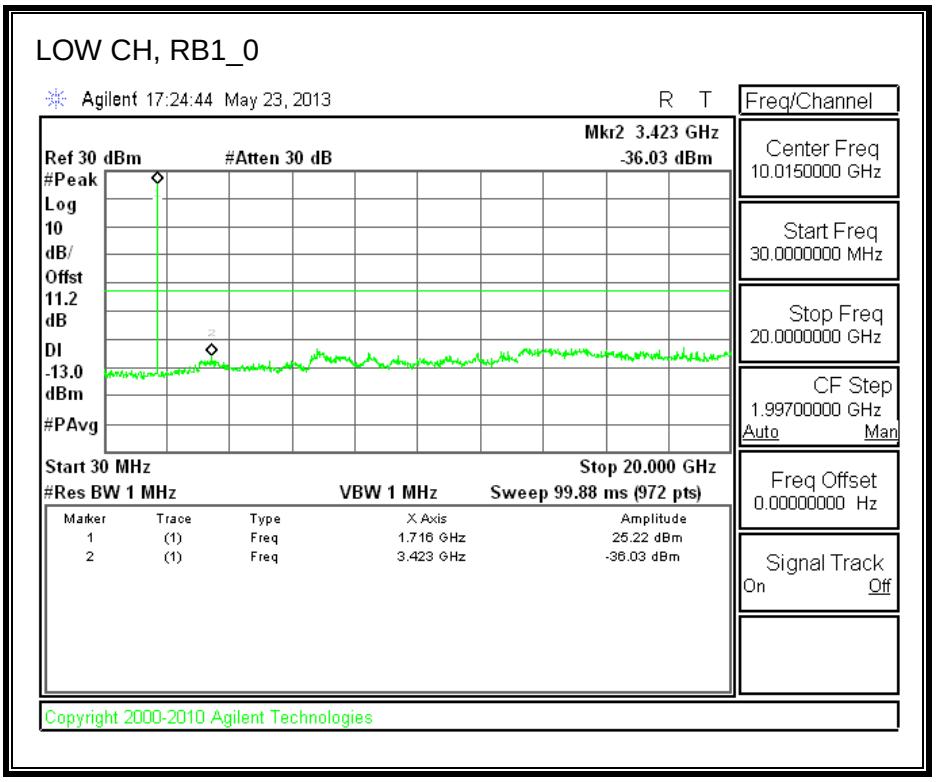
MID CH, RB1_0



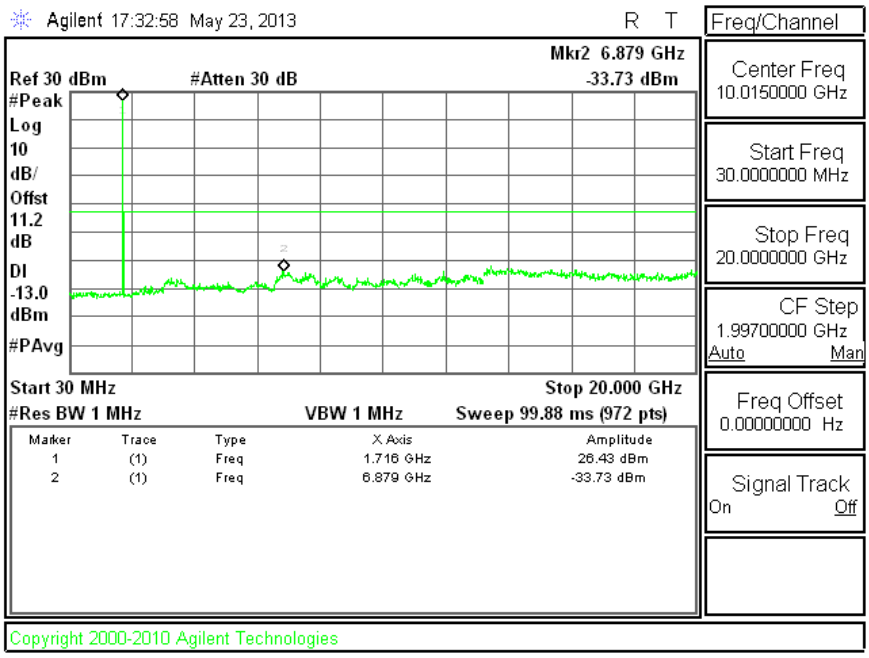
HIGH CH, RB1_0



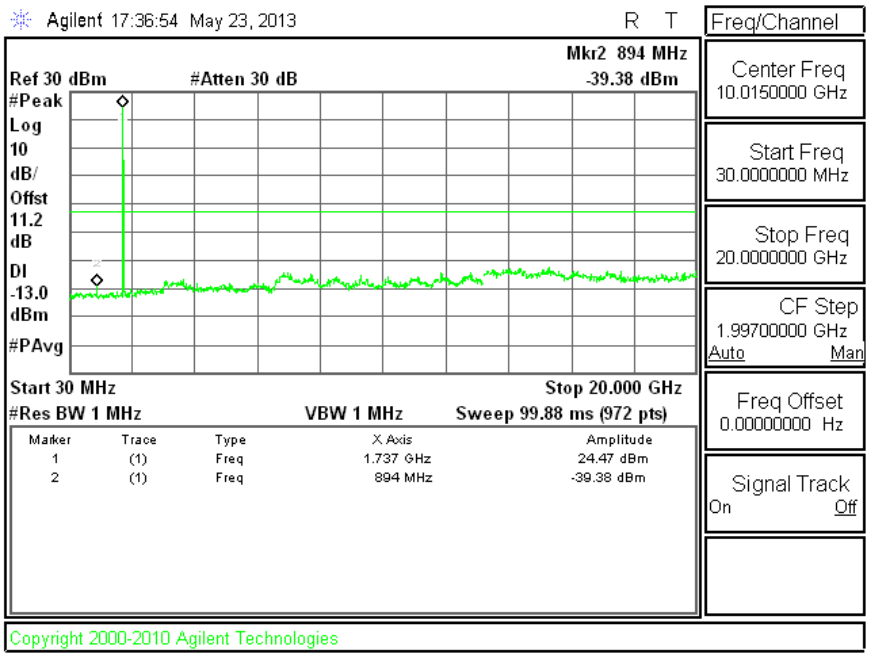
16QAM



MID CH, RB1_0

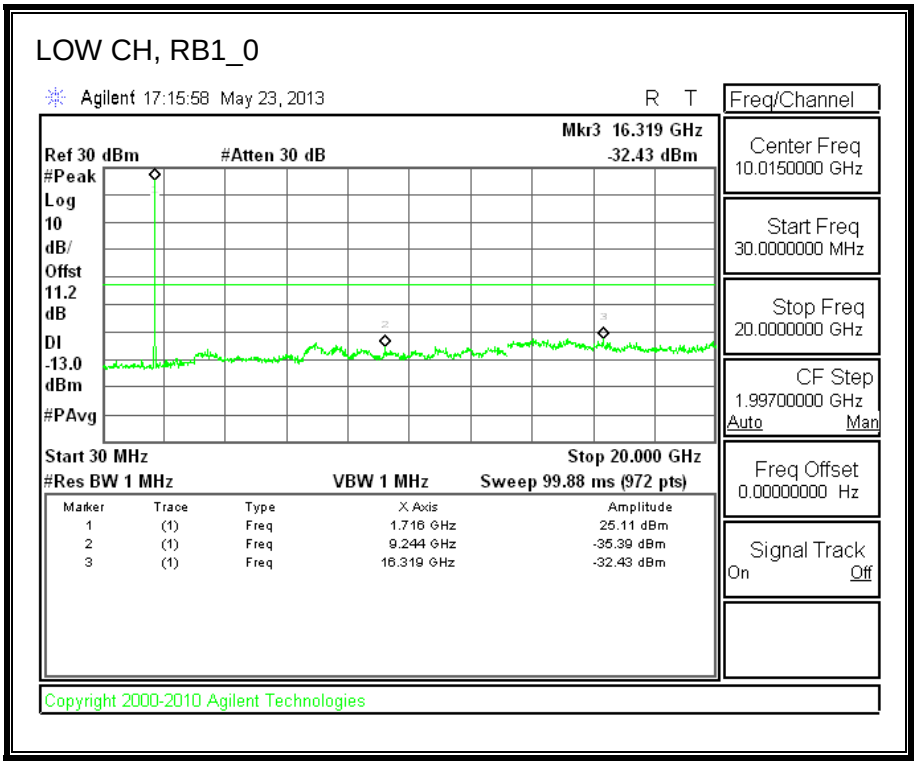


HIGH CH, RB1_0

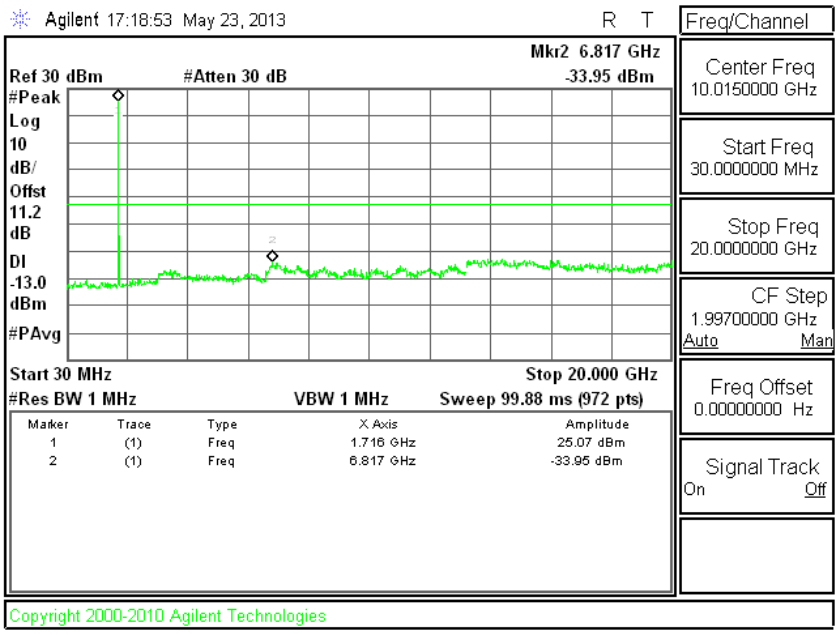


9.2.7. LTE BAND 4-20MHz BANDWIDTH

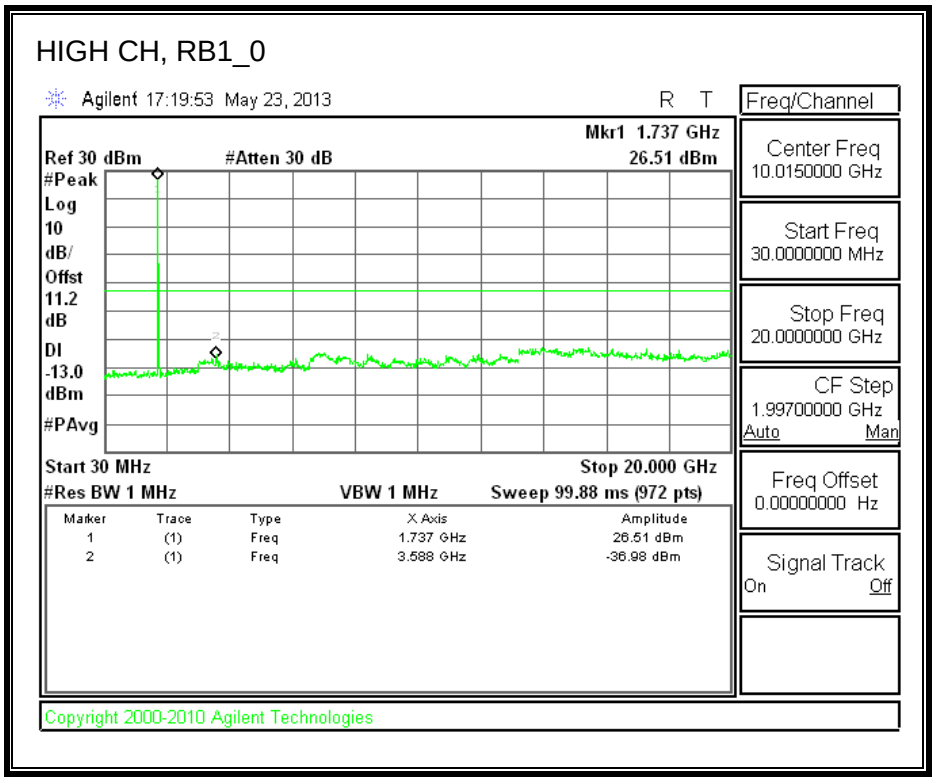
QPSK



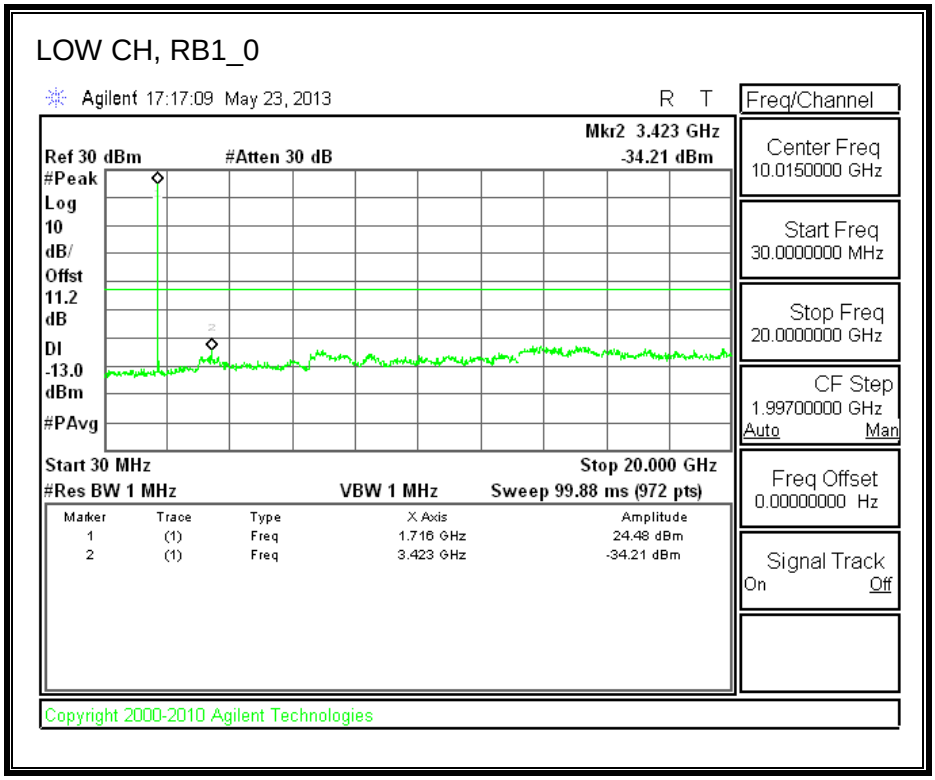
MID CH, RB1_0



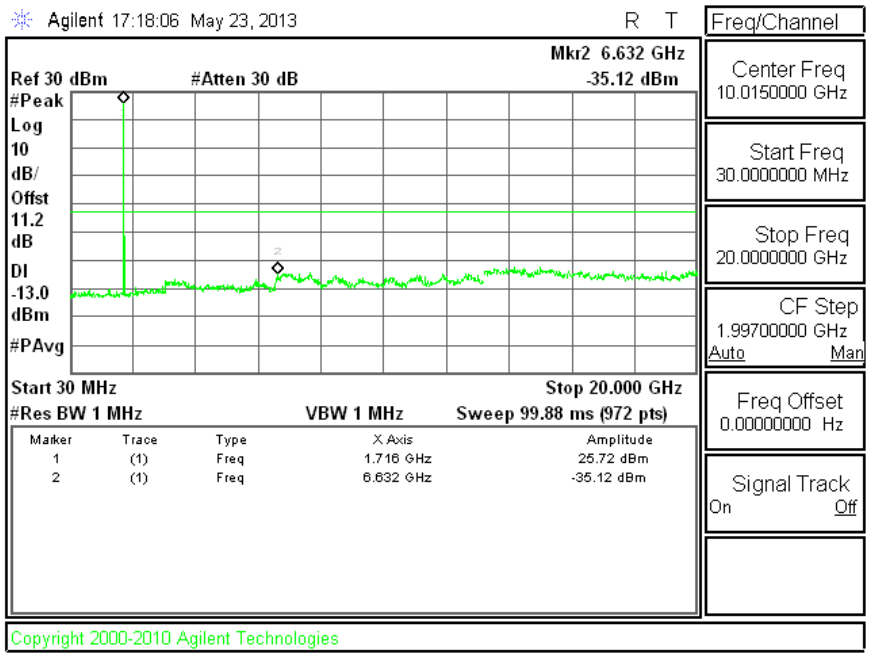
HIGH CH, RB1_0



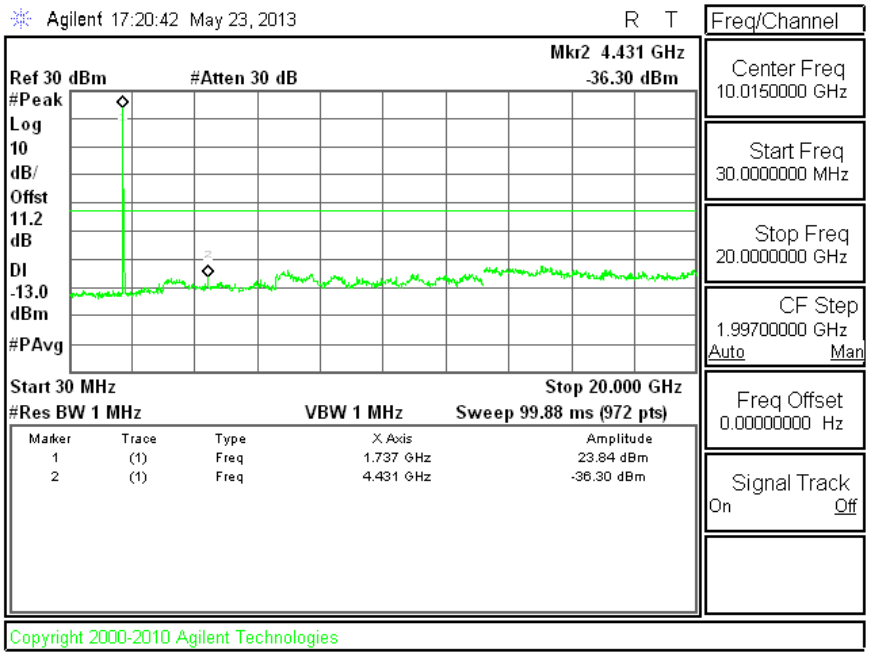
16QAM



MID CH, RB1_0

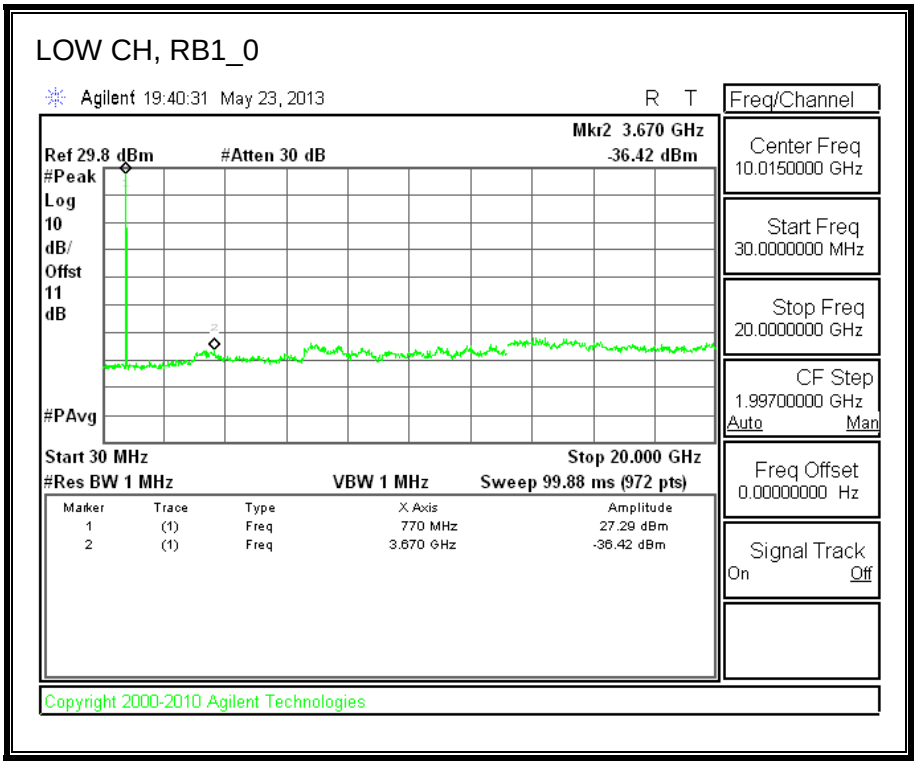


HIGH CH, RB1_0

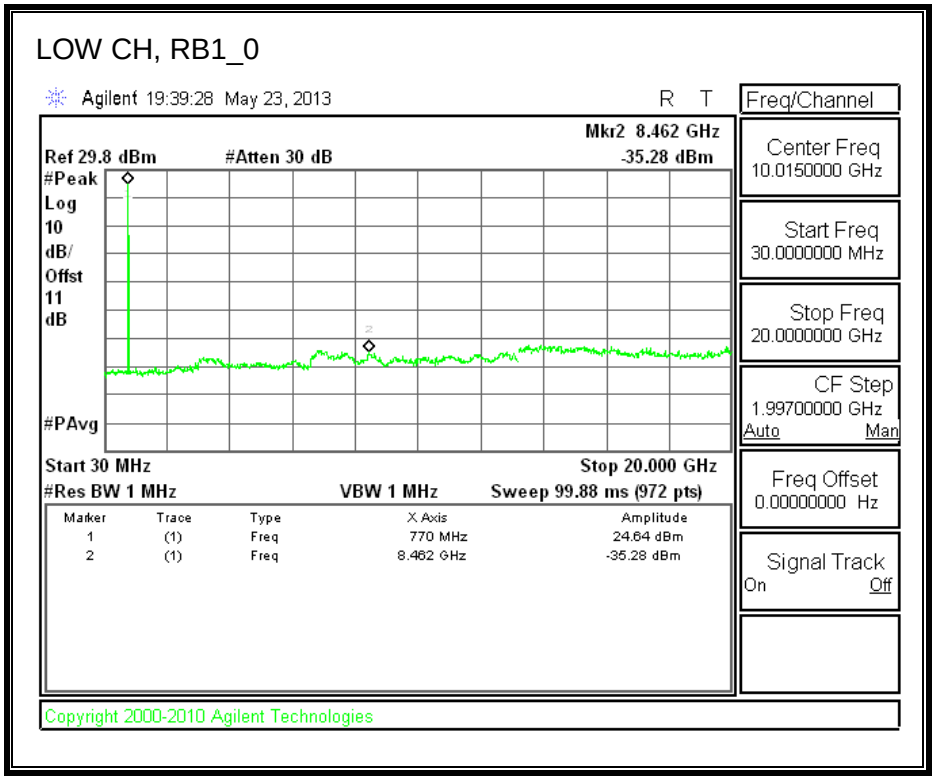


9.2.8. LTE BAND 13-10MHz BANDWIDTH

QPSK



16QAM



10. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235

LIMITS

- §22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

- §24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use Agilent 8960 with Frequency Error measurement capability.

- Temp. = −30° to +50°C
- Voltage =85% - 115%

Frequency Stability vs Temperature:

The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

- GPRS
- UMTS
- LTE

RESULTS

See the following pages

10.1.1. CELL, GPRS MODULATION – MID CHANNEL

Reference Frequency: Cellular Mid Channel 836.600027MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	836.600000	-0.006	2.5
3.70	40	836.600000	-0.006	2.5
3.70	30	836.599992	0.004	2.5
3.70	***20***	***836.599995***	***0***	***2.5***
3.70	10	836.599996	-0.001	2.5
3.70	0	836.600001	-0.007	2.5
3.70	-10	836.599997	-0.002	2.5
3.70	-20	836.599991	0.005	2.5
3.70	-30	836.599994	0.001	2.5

Reference Frequency: Cellular Mid Channel 836.600027MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	***20***	***836.599995***	***0***	***2.5***
4.20	20	836.599998	*-0.004*	2.5
3.30	20	836.599997	*-0.002*	2.5

10.1.2. PCS, GPRS MODULATION – MID CHANNEL

Reference Frequency: PCS Mid Channel 1880.000036MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (*C)**	**(MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.70	50	1880.000017	-0.016	2.5
3.70	40	1880.000001	-0.008	2.5
3.70	30	1880.000007	-0.011	2.5
3.70	***20***	***1879.999986***	***0***	***2.5***
3.70	10	1879.999990	-0.002	2.5
3.70	0	1879.999987	-0.001	2.5
3.70	-10	1879.999988	-0.001	2.5
3.70	-20	1879.999986	0.000	2.5
3.70	-30	1879.999988	-0.001	2.5

Reference Frequency: PCS Mid Channel 1880.000036MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4700.000 Hz				
Power Supply	**Environment**	**Frequency Deviation Measureed with Time Elapse**		
(Vdc)	**Temperature (*C)**	**(MHz)**	**Delta (ppm)**	**Limit (ppm)**
3.70	***20***	***1879.999986***	***0.00000***	***2.5***
4.20	20	1879.999997	*-0.00585*	2.5
3.30	20	1880.000001	*-0.00798*	2.5

10.1.3. CELL WCDMA – MID CHANNEL

Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.70	50	836.600000	0.000	2.5
3.70	40	836.600000	0.000	2.5
3.70	30	836.600000	0.000	2.5
3.70	***20***	***836.600000***	***0***	***2.5***
3.70	10	836.600000	0.000	2.5
3.70	0	836.600000	0.000	2.5
3.70	-10	836.600000	0.000	2.5
3.70	-20	836.600000	0.000	2.5
3.70	-30	836.600000	0.000	2.5

Reference Frequency: Cellular Mid Channel 836.60000MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.70	***20***	***836.600000***	***0***	***2.5***
4.20	20	836.600000	*0.000*	2.5
3.30	20	836.600000	*0.000*	2.5

10.1.4. PCS WCDMA – MID CHANNEL

Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1879.999995	-0.001	2.5
3.70	40	1879.999995	-0.001	2.5
3.70	30	1879.999994	0.000	2.5
3.70	***20***	***1879.999994***	***0***	***2.5***
3.70	10	1879.999994	0.000	2.5
3.70	0	1879.999994	0.000	2.5
3.70	-10	1879.999994	0.000	2.5
3.70	-20	1879.999993	0.001	2.5
3.70	-30	1879.999994	0.000	2.5

Reference Frequency: PCS Mid Channel 1880.000036MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measureed with Time Elapse		
			Delta (ppm)	Limit (ppm)
3.70	***20***	***1879.999994***	***0.00000***	***2.5***
4.20	20	1879.999993	*0.00053*	2.5
3.30	20	1879.999994	*0.00000*	2.5

10.1.5. LTE BAND 4 – MID CHANNEL (1732.5 MHz)

Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1732.500012	0.000	2.5
3.70	40	1732.500011	0.000	2.5
3.70	30	1732.500010	0.001	2.5
3.70	***20***	***1732.500012***	***0***	2.5
3.70	10	1732.500012	0.000	2.5
3.70	0	1732.500011	0.001	2.5
3.70	-10	1732.500012	0.000	2.5
3.70	-20	1732.500013	-0.001	2.5
3.70	-30	1732.500013	-0.001	2.5

Reference Frequency: Cellular Mid Channel 1732.500012MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.70	***20***	***1732.500012***	***0***	***2.5***
3.30	20	1732.500013	*-0.001*	2.5
4.26	20	1732.500012	*0.000*	2.5

10.1.6. LTE BAND 13 – MID CHANNEL (782.0 MHz)

Reference Frequency: Cellular Mid Channel 1782.0000MHZ Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.70	50	781.999998	0.001	2.5
3.70	40	781.999999	0.000	2.5
3.70	30	781.999998	0.001	2.5
3.70	***20***	***781.999999***	***0***	2.5
3.70	10	781.999999	0.000	2.5
3.70	0	781.999998	0.001	2.5
3.70	-10	781.999998	0.001	2.5
3.70	-20	781.999998	0.001	2.5
3.70	-30	781.999999	0.000	2.5

Reference Frequency: Cellular Mid Channel 1782.00000MHz Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	**Environment Temperature (°C)**	**Frequency Deviation Measureed with Time Elapse**		
		(MHz)	**Delta (ppm)**	**Limit (ppm)**
3.70	***20***	***781.999999***	***0***	***2.5***
3.30	20	781.999999	*0.000*	2.5
4.26	20	781.999998	*0.001*	2.5

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

The ERP/EIRP power was measured with the spectrum analyzer which attached with receiver antenna via calibrated cable. The measurements have been taken at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with VBW ≥ RBW.≥ 26dB BW, typically 3MHz.for GSM and 5MHz for WCDMA modes respectively.
- Set a marker to point the corresponding peak value.
- Channel integration power method should be applied if emission BW is greater than 5MHz.

MODES TESTED

- GSM, and GPRS
- UMTS, REL 99, and HSUPA
- LTE 4, LTE 13

RESULTS

GPRS

Mode	Channel	f (MHz)	ERP	
			dBm	mW
GPRS	128	824.20	29.27	845.28
	190	836.60	28.40	691.83
	251	848.80	29.16	824.14

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
GPRS	512	1850.20	29.01	796.16
	661	1880.00	28.56	717.79
	810	1909.80	27.80	602.56

EGPRS

Mode	Channel	f (MHz)	ERP	
			dBm	mW
EGPRS	128	824.20	26.89	488.65
	190	836.60	25.73	374.11
	251	848.80	26.30	426.58

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
EGPRS	512	1850.20	25.24	334.20
	661	1880.00	25.97	395.37
	810	1909.80	22.19	165.58

REL 99

Mode	Channel	f (MHz)	ERP	
			dBm	mW
REL 99	4357	826.40	20.05	101.16
	4408	836.60	20.73	118.30
	4458	846.60	19.86	96.83

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
REL 99	9662	1852.40	24.66	292.42
	9800	1880.00	24.24	265.46
	9938	1907.60	20.21	104.95

HSUPA

Mode	Channel	f (MHz)	ERP	
			dBm	mW
HSUPA	4357	826.40	20.51	112.46
	4405	836.00	20.77	119.40
	4455	846.00	22.00	158.49

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
HSUPA	9662	1852.40	22.58	181.13
	9800	1880.00	22.29	169.43
	9938	1907.60	19.48	88.72

CDMA 1xRtt

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA 1xRtt	1013	824.70	23.46	221.82
	384	836.52	23.29	213.30
	777	848.31	23.19	208.45

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA 1xRtt	25	1851.25	23.90	245.47
	600	1880.00	22.50	177.83
	1175	1908.75	22.59	181.55

CDMA EV-DO

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA EV-DO	1013	824.70	25.62	364.75
	384	836.52	25.41	347.54
	777	848.31	25.29	338.06

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA EV-DO	25	1851.25	23.99	250.61
	600	1880.00	23.53	225.42
	1175	1908.75	23.27	212.32

LTE BAND 4

Mode	RB/RB Offset	f (MHz)	EIRP	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	1712.50	20.63	115.61
		1732.50	19.19	82.99
		1752.50	20.41	109.90
5.0 MHZ BAND 16QAM		1712.50	19.63	91.83
		1732.50	18.29	67.45
		1752.50	19.41	87.30
10.0 MHZ BAND QPSK	1/0	1715.00	19.53	89.74
		1732.50	18.69	73.96
		1750.00	21.61	144.88
10.0 MHZ BAND 16QAM		1715.00	18.43	69.66
		1732.50	17.69	58.75
		1750.00	20.61	115.08
15.0 MHZ BAND QPSK	1/0	1717.50	20.33	107.89
		1732.50	18.69	73.96
		1747.50	20.61	115.08
15.0 MHZ BAND 16QAM		1717.50	19.33	85.70
		1732.50	17.69	58.75
		1747.50	19.61	91.41
20.0 MHZ BAND QPSK	1/0	1720.00	20.33	107.89
		1732.50	18.69	73.96
		1745.00	20.11	102.57
20.0 MHZ BAND 16QAM		1720.00	19.43	87.70
		1732.50	17.69	58.75
		1745.00	19.11	81.47

LTE BAND 13

Mode	RB/RB Offset	f (MHz)	ERP	
			dBm	mW
10 MHz QPSK	1/0	782.00	21.20	131.83
10MHz 16QAM		782.00	20.10	102.33

11.1.1. GPRS 850 (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/27/13
Test Engineer: Steven Tran
Configuration: X position, EUT only
Mode: TX, GPRS850, Average

Test Equipment:
Receiving: Sunol T243 and Chamber B 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
Low Ch								
824.20	20.69	V	0.5	0.0	20.19	38.5	-18.3	
824.20	29.77	H	0.5	0.0	29.27	38.5	-9.2	
Mid Ch								
836.60	20.02	V	0.5	0.0	19.52	38.5	-18.9	
836.60	28.90	H	0.5	0.0	28.40	38.5	-10.0	
High Ch								
848.80	20.98	V	0.5	0.0	20.48	38.5	-18.0	
848.80	29.66	H	0.5	0.0	29.16	38.5	-9.3	

Rev. 3.17.11

11.1.2. GPRS 1900 (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/27/13
Test Engineer: Steven Tran
Configuration: EUT W/ HEADSET+CHARGER, Z POSITION
Mode: Tx, GPRS Mode PCS Band, Avg

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	21.2	V	0.85	8.62	29.01	33.0	-4.0	
1.850	16.0	H	0.85	8.47	23.62	33.0	-9.4	
Mid Ch								
1.880	21.0	V	0.85	8.46	28.56	33.0	-4.4	
1.880	15.4	H	0.85	8.36	22.93	33.0	-10.1	
High Ch								
1.910	20.4	V	0.85	8.30	27.80	33.0	-5.2	
1.910	14.8	H	0.85	8.25	22.23	33.0	-10.8	

Rev. 3.17.11

11.1.3. EGPRS 850 (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/27/13
Test Engineer: Steven Tran
Configuration: EUT only, x position, Avg Detector
Mode: Tx, EGPRS Mode Cell Band

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft 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
Low ch								
824.20	18.34	V	0.6	0.0	17.74	38.5	-20.7	
824.20	27.49	H	0.6	0.0	26.89	38.5	-11.6	
Mid ch								
836.60	17.07	V	0.6	0.0	16.47	38.5	-22.0	
836.60	26.33	H	0.6	0.0	25.73	38.5	-12.7	
High ch								
848.80	18.29	V	0.6	0.0	17.69	38.5	-20.8	
848.80	26.90	H	0.6	0.0	26.30	38.5	-12.1	

Rev. 3.17.11

11.1.4. EGPRS 1900 (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/27/13
Test Engineer: Steven Tran
Configuration: EUT+Headset+Charger, Z position, Avg Detector
Mode: Tx, EGPRS Mode PCS Band

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.850	17.5	V	0.85	8.62	25.24	33.0	-7.8	
1.850	12.5	H	0.85	8.47	20.13	33.0	-12.9	
Mid Ch								
1.880	18.4	V	0.85	8.46	25.97	33.0	-7.0	
1.880	13.0	H	0.85	8.36	20.55	33.0	-12.5	
High Ch								
1.910	14.7	V	0.85	8.30	22.19	33.0	-10.8	
1.910	8.1	H	0.85	8.25	15.54	33.0	-17.5	

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11.1.5. UMTS 850 REL 99 (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: Z position, EUT only, Avg Detector
Mode: WCDMA, Rel 99 850

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft 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
Low Ch								
826.40	13.23	V	0.6	0.0	12.63	38.5	-25.8	
826.40	20.65	H	0.6	0.0	20.05	38.5	-18.4	
Mid ch								
836.60	13.96	V	0.6	0.0	13.36	38.5	-25.1	
836.60	21.33	H	0.6	0.0	20.73	38.5	-17.7	
High Ch								
846.60	13.68	V	0.6	0.0	13.08	38.5	-25.4	
846.60	20.46	H	0.6	0.0	19.86	38.5	-18.6	

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11.1.6. UMTS 850 REL 99 (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/28/13
Test Engineer: Steven Tran
Configuration: EUT, x position w/ headset and charger, Avg detector
Mode: TX, UMTS REL 99 1900

Test Equipment:
Receiving: Horn T73, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.400	10.7	V	0.85	8.38	18.27	33.0	-14.7	
1852.400	16.9	H	0.85	8.59	24.66	33.0	-8.3	
Mid Ch								
1.880	10.4	V	0.85	8.26	17.77	33.0	-15.2	
1.880	16.5	H	0.85	8.55	24.24	33.0	-8.8	
High Ch								
1907.600	6.3	V	0.85	8.21	13.68	33.0	-19.3	
1907.600	12.5	H	0.85	8.54	20.21	33.0	-12.8	

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11.1.7. UMTS 850 HSUPA (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: Z Configuration, EUT w/ headset and charger, Avg detector
Mode: WCDMA, Rel 99 850

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft 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
Low Ch								
826.40	12.33	V	0.6	0.0	11.73	38.5	-26.7	
826.40	21.11	H	0.6	0.0	20.51	38.5	-17.9	
Mid ch								
836.60	12.73	V	0.6	0.0	12.13	38.5	-26.3	
836.60	21.37	H	0.6	0.0	20.77	38.5	-17.7	
High Ch								
846.60	12.68	V	0.6	0.0	12.08	38.5	-26.4	
846.60	22.60	H	0.6	0.0	22.00	38.5	-16.4	

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11.1.8. UMTS 850 HSUPA (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: EUT, x position w/ headset and charger, Avg detector
Mode: TX, UMTS HSUPA Subset 5 1900

Test Equipment:
Receiving: Horn T73, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1852.400	8.0	V	0.85	8.38	15.56	33.0	-17.4	
1852.400	14.8	H	0.85	8.59	22.58	33.0	-10.4	
Mid Ch								
1.880	8.3	V	0.85	8.26	15.71	33.0	-17.3	
1.880	14.6	H	0.85	8.55	22.29	33.0	-10.7	
High Ch								
1907.600	7.1	V	0.85	8.21	14.50	33.0	-18.5	
1907.600	11.8	H	0.85	8.54	19.48	33.0	-13.5	

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11.1.9. CDMA 1xRtt (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: Z position, EUT only, Avg Detector
Mode: WCDMA, Rel 99 850

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft 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
Low Ch								
824.70	16.32	V	0.6	0.0	15.72	38.5	-22.7	
824.70	24.06	H	0.6	0.0	23.46	38.5	-15.0	
Mid ch								
836.52	16.46	V	0.6	0.0	15.86	38.5	-22.6	
836.52	23.89	H	0.6	0.0	23.29	38.5	-15.2	
High Ch								
848.31	16.86	V	0.6	0.0	16.26	38.5	-22.2	
848.31	23.79	H	0.6	0.0	23.19	38.5	-15.3	

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11.1.10. CDMA 1xRtt (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: EUT, x position w/ headset and charger, Avg detector
Mode: TX, UMTS REL 99 1900

Test Equipment:
Receiving: Horn T73, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.250	9.0	V	0.85	8.38	16.48	33.0	-16.5	
1851.250	16.2	H	0.85	8.59	23.90	33.0	-9.1	
Mid Ch								
1.880	6.4	V	0.85	8.26	13.83	33.0	-19.2	
1.880	14.8	H	0.85	8.55	22.50	33.0	-10.5	
High Ch								
1908.750	5.4	V	0.85	8.21	12.77	33.0	-20.2	
1908.750	14.9	H	0.85	8.54	22.59	33.0	-10.4	

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11.1.11. CDMA EV-DO (Cellular Band)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: Z position, EUT only, Avg Detector
Mode: CDMA 850 EV-DO

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft 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
Low Ch								
824.70	19.55	V	0.6	0.0	18.95	38.5	-19.5	
824.70	26.22	H	0.6	0.0	25.62	38.5	-12.8	
Mid ch								
836.52	18.50	V	0.6	0.0	17.90	38.5	-20.5	
836.52	26.01	H	0.6	0.0	25.41	38.5	-13.0	
High Ch								
848.31	16.86	V	0.6	0.0	16.26	38.5	-22.2	
848.31	25.89	H	0.6	0.0	25.29	38.5	-13.2	

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11.1.12. CDMA EV-DO (PCS Band)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: LG
Project #: 13U15118
Date: 05/30/13
Test Engineer: Steven Tran
Configuration: EUT, x position w/charger, Avg detector
Mode: TX, CMDA EV-DO 1900, AVG detector

Test Equipment:
Receiving: Horn T73, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1851.250	10.8	V	0.85	8.38	18.33	33.0	-14.7	
1851.250	16.3	H	0.85	8.59	23.99	33.0	-9.0	
Mid Ch								
1.880	8.8	V	0.85	8.26	16.25	33.0	-16.8	
1.880	15.8	H	0.85	8.55	23.53	33.0	-9.5	
High Ch								
1908.750	7.7	V	0.85	8.21	15.06	33.0	-17.9	
1908.750	15.6	H	0.85	8.54	23.27	33.0	-9.7	

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11.1.13. LTE BAND 4-5MHz BANDWIDTH

QPSK (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 5MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	13.3	V	0.85	8.16	20.63	30.0	-9.4	
1.713	10.8	H	0.85	8.59	18.54	30.0	-11.5	
Mid Ch								
1.733	11.9	V	0.85	8.11	19.19	30.0	-10.8	
1.733	10.3	H	0.85	8.69	18.16	30.0	-11.8	
High Ch								
1.753	13.2	V	0.85	8.07	20.41	30.0	-9.6	
1.753	11.5	H	0.85	8.79	19.41	30.0	-10.6	

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16QAM (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	12.3	V	0.85	8.16	19.63	30.0	-10.4	
1.713	9.5	H	0.85	8.59	17.24	30.0	-12.8	
Mid Ch								
1.733	11.0	V	0.85	8.11	18.29	30.0	-11.7	
1.733	9.4	H	0.85	8.69	17.26	30.0	-12.7	
High Ch								
1.753	12.2	V	0.85	8.07	19.41	30.0	-10.6	
1.753	10.6	H	0.85	8.79	18.51	30.0	-11.5	

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11.1.14. LTE BAND 4-10MHz BANDWIDTH

QPSK (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 10MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	12.2	V	0.85	8.16	19.53	30.0	-10.5	
1.715	10.2	H	0.85	8.59	17.94	30.0	-12.1	
Mid Ch								
1.733	11.4	V	0.85	8.11	18.69	30.0	-11.3	
1.733	9.8	H	0.85	8.69	17.66	30.0	-12.3	
High Ch								
1.750	14.4	V	0.85	8.07	21.61	30.0	-8.4	
1.750	12.1	H	0.85	8.79	20.01	30.0	-10.0	

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16QAM (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 10MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	11.1	V	0.85	8.16	18.43	30.0	-11.6	
1.715	9.1	H	0.85	8.59	16.84	30.0	-13.2	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	8.8	H	0.85	8.69	16.66	30.0	-13.3	
High Ch								
1.750	13.4	V	0.85	8.07	20.61	30.0	-9.4	
1.750	11.0	H	0.85	8.79	18.91	30.0	-11.1	

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11.1.15. LTE BAND 4-15MHz BANDWIDTH

QPSK (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 15MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	13.0	V	0.85	8.16	20.33	30.0	-9.7	
1.718	10.8	H	0.85	8.59	18.54	30.0	-11.5	
Mid Ch								
1.733	11.4	V	0.85	8.11	18.69	30.0	-11.3	
1.733	9.4	H	0.85	8.69	17.26	30.0	-12.7	
High Ch								
1.748	13.4	V	0.85	8.07	20.61	30.0	-9.4	
1.748	12.0	H	0.85	8.79	19.91	30.0	-10.1	

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16QAM (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 15MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	12.0	V	0.85	8.16	19.33	30.0	-10.7	
1.718	9.8	H	0.85	8.59	17.54	30.0	-12.5	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	8.4	H	0.85	8.69	16.26	30.0	-13.7	
High Ch								
1.748	12.4	V	0.85	8.07	19.61	30.0	-10.4	
1.748	10.9	H	0.85	8.79	18.81	30.0	-11.2	

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11.1.16. LTE BAND 4-20MHz BANDWIDTH

QPSK (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 20MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	13.0	V	0.85	8.16	20.33	30.0	-9.7	
1.720	12.4	H	0.85	8.59	20.14	30.0	-9.9	
Mid Ch								
1.733	11.4	V	0.85	8.11	18.69	30.0	-11.3	
1.733	10.6	H	0.85	8.69	18.46	30.0	-11.5	
High Ch								
1.745	12.9	V	0.85	8.07	20.11	30.0	-9.9	
1.745	11.7	H	0.85	8.79	19.61	30.0	-10.4	

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16QAM (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin Pang
Configuration: EUT Only
Mode: LTE band 4, 20MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Horn T344, and Chamber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	12.1	V	0.85	8.16	19.43	30.0	-10.6	
1.720	11.3	H	0.85	8.59	19.04	30.0	-11.0	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	9.7	H	0.85	8.69	17.56	30.0	-12.4	
High Ch								
1.745	11.9	V	0.85	8.07	19.11	30.0	-10.9	
1.745	10.8	H	0.85	8.79	18.71	30.0	-11.3	

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11.1.17. LTE BAND 13-10MHz BANDWIDTH

QPSK and 16QAM (ERP)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: LG
Project #: VS980
Date: 05/25/13
Test Engineer: Chin PANG
Configuration: EUT Only
Mode: TX, LTE BAND 13
QPSK and 16QAM, 10MHz, Average

Test Equipment:
Receiving: Sunol T402, and Chamber D 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=1-0, QPSK								
782.00	12.00	V	0.5	0.0	11.50	38.5	-26.9	
782.00	21.70	H	0.5	0.0	21.20	38.5	-17.2	
RB=1-0, 16QAM								
782.00	11.00	V	0.5	0.0	10.50	38.5	-27.9	
782.00	20.60	H	0.5	0.0	20.10	38.5	-18.3	

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11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

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

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

- GPRS, EGPRS
- UMTS REL 99, and HSUPA
- LTE Band 4 and Band 13

RESULTS

11.2.1. GPRS (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 05/23/13
Test Engineer: Steven Tran
Configuration: X position, EUT w/ charger
Mode: Tx, 850MHz GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	-19.7	V	3.0	37.4	1.0	-56.0	-13.0	-43.0	
2.473	-15.1	V	3.0	36.4	1.0	-50.5	-13.0	-37.5	
1.648	-17.1	H	3.0	37.4	1.0	-53.5	-13.0	-40.5	
2.473	-14.7	H	3.0	36.4	1.0	-50.1	-13.0	-37.1	
Mid Ch, (836.6MHz)									
1.673	-22.4	V	3.0	37.3	1.0	-58.7	-13.0	-45.7	
2.510	-18.1	V	3.0	36.4	1.0	-53.5	-13.0	-40.5	
1.673	-20.7	H	3.0	37.3	1.0	-57.0	-13.0	-44.0	
2.510	-15.1	H	3.0	36.4	1.0	-50.5	-13.0	-37.5	
High Ch, (848.8MHz)									
1.698	-21.5	V	3.0	37.3	1.0	-57.8	-13.0	-44.8	
2.546	-20.3	V	3.0	36.3	1.0	-55.6	-13.0	-42.6	
1.698	-23.5	H	3.0	37.3	1.0	-59.8	-13.0	-46.8	
2.546	-16.1	H	3.0	36.3	1.0	-51.4	-13.0	-38.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.2. GPRS (Cellular Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, EUT w/wireless ac
Mode: Tx, 850MHz GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	-25.7	V	3.0	37.4	1.0	-62.1	-13.0	-49.1	
2.473	-24.0	V	3.0	36.4	1.0	-59.4	-13.0	-46.4	
1.648	-19.5	H	3.0	37.4	1.0	-55.9	-13.0	-42.9	
2.473	-20.8	H	3.0	36.4	1.0	-56.2	-13.0	-43.2	
Mid Ch, (836.6MHz)									
1.673	-27.1	V	3.0	37.3	1.0	-63.4	-13.0	-50.4	
2.510	-19.0	V	3.0	36.4	1.0	-54.4	-13.0	-41.4	
1.673	-26.2	H	3.0	37.3	1.0	-62.5	-13.0	-49.5	
2.510	-13.8	H	3.0	36.4	1.0	-49.2	-13.0	-36.2	
High Ch, (848.8MHz)									
1.698	-25.4	V	3.0	37.3	1.0	-61.7	-13.0	-48.7	
2.546	-22.3	V	3.0	36.3	1.0	-57.6	-13.0	-44.6	
1.698	-19.6	H	3.0	37.3	1.0	-55.9	-13.0	-42.9	
2.546	-17.8	H	3.0	36.3	1.0	-53.1	-13.0	-40.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.3. GPRS (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 05/23/13
Test Engineer: Steven Tran
Configuration: X position, EUT with charger
Mode: Tx, 1900MHz GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
5.551	-11.5	V	3.0	34.7	1.0	-45.3	-13.0	-32.3	
3.700	-13.6	H	3.0	35.4	1.0	-48.0	-13.0	-35.0	
5.551	-7.3	H	3.0	34.7	1.0	-41.1	-13.0	-28.1	
Mid Ch, 1880MHz									
3.760	-11.2	V	3.0	35.3	1.0	-45.6	-13.0	-32.6	
5.640	-12.6	V	3.0	34.7	1.0	-46.3	-13.0	-33.3	
3.760	-11.1	H	3.0	35.3	1.0	-45.5	-13.0	-32.5	
5.640	-10.1	H	3.0	34.7	1.0	-43.8	-13.0	-30.8	
High Ch, 1909.8MHz									
3.820	-11.8	V	3.0	35.3	1.0	-46.1	-13.0	-33.1	
5.729	-14.4	V	3.0	34.7	1.0	-48.1	-13.0	-35.1	
3.820	-11.0	H	3.0	35.3	1.0	-45.3	-13.0	-32.3	
5.729	-10.9	H	3.0	34.7	1.0	-44.6	-13.0	-31.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.4. GPRS (PCS) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, EUT with wireless ac
Mode: Tx, 1900MHz GPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-13.4	V	3.0	35.4	1.0	-47.8	-13.0	-34.8	
5.551	-16.3	V	3.0	34.7	1.0	-50.0	-13.0	-37.0	
3.700	-12.9	H	3.0	35.4	1.0	-47.3	-13.0	-34.3	
5.551	-14.5	H	3.0	34.7	1.0	-48.3	-13.0	-35.3	
Mid Ch, 1880MHz									
3.760	-11.8	V	3.0	35.3	1.0	-46.1	-13.0	-33.1	
5.640	-16.6	V	3.0	34.7	1.0	-50.3	-13.0	-37.3	
3.760	-11.8	H	3.0	35.3	1.0	-46.2	-13.0	-33.2	
5.640	-15.6	H	3.0	34.7	1.0	-49.3	-13.0	-36.3	
High Ch, 1909.8MHz									
3.820	-15.1	V	3.0	35.3	1.0	-49.4	-13.0	-36.4	
5.729	-17.2	V	3.0	34.7	1.0	-50.9	-13.0	-37.9	
3.820	-13.5	H	3.0	35.3	1.0	-47.8	-13.0	-34.8	
5.729	-15.1	H	3.0	34.7	1.0	-48.8	-13.0	-35.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.5. EGPRS (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 05/23/13
Test Engineer: Steven Tran
Configuration: X position, EUT w/ charger
Mode: Tx, 850MHz EGPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	-22.4	V	3.0	37.4	1.0	-58.8	-13.0	-45.8	
1.648	-16.1	H	3.0	37.4	1.0	-52.5	-13.0	-39.5	
Mid Ch, (836.6MHz)									
1.673	-24.4	V	3.0	37.3	1.0	-60.7	-13.0	-47.7	
1.673	-22.6	H	3.0	37.3	1.0	-58.9	-13.0	-45.9	
High Ch, (848.8MHz)									
1.698	-24.0	V	3.0	37.3	1.0	-60.3	-13.0	-47.3	
1.698	-21.6	H	3.0	37.3	1.0	-57.9	-13.0	-44.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.6. EGPRS (Cellular Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, EUT w/ wireless ac
Mode: Tx, 850MHz EGPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.2MHz)									
1.648	-27.7	V	3.0	37.4	1.0	-64.0	-13.0	-51.0	
1.648	-26.3	H	3.0	37.4	1.0	-62.6	-13.0	-49.6	
Mid Ch, (836.6MHz)									
1.673	-27.4	V	3.0	37.3	1.0	-63.8	-13.0	-50.8	
1.673	-25.8	H	3.0	37.3	1.0	-62.2	-13.0	-49.2	
High Ch, (848.8MHz)									
1.698	-24.1	V	3.0	37.3	1.0	-60.4	-13.0	-47.4	
1.698	-19.4	H	3.0	37.3	1.0	-55.7	-13.0	-42.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.7. EGPRS (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, EUT with charger
Mode: Tx, 1900MHz EGPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-16.6	V	3.0	35.4	1.0	-51.0	-13.0	-38.0	
5.551	-15.0	V	3.0	34.7	1.0	-48.8	-13.0	-35.8	
3.700	-14.6	H	3.0	35.4	1.0	-49.0	-13.0	-36.0	
5.551	-10.7	H	3.0	34.7	1.0	-44.4	-13.0	-31.4	
Mid Ch, 1880MHz									
3.760	-12.5	V	3.0	35.3	1.0	-46.8	-13.0	-33.8	
5.640	-16.3	V	3.0	34.7	1.0	-50.0	-13.0	-37.0	
3.760	-13.3	H	3.0	35.3	1.0	-47.7	-13.0	-34.7	
5.640	-13.1	H	3.0	34.7	1.0	-46.9	-13.0	-33.9	
High Ch, 1909.8MHz									
3.820	-14.2	V	3.0	35.3	1.0	-48.5	-13.0	-35.5	
5.729	-18.1	V	3.0	34.7	1.0	-51.9	-13.0	-38.9	
3.820	-13.4	H	3.0	35.3	1.0	-47.7	-13.0	-34.7	
5.729	-15.5	H	3.0	34.7	1.0	-49.3	-13.0	-36.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.8. EGPRS (PCS Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, EUT with wireless ac
Mode: Tx, 1900MHz EGPRS MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T34 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1850.2MHz									
3.700	-15.1	V	3.0	35.4	1.0	-49.5	-13.0	-36.5	
5.551	-19.3	V	3.0	34.7	1.0	-53.0	-13.0	-40.0	
3.700	-14.0	H	3.0	35.4	1.0	-48.4	-13.0	-35.4	
5.551	-18.3	H	3.0	34.7	1.0	-52.0	-13.0	-39.0	
Mid Ch, 1880MHz									
3.760	-15.7	V	3.0	35.3	1.0	-50.0	-13.0	-37.0	
5.640	-20.3	V	3.0	34.7	1.0	-54.1	-13.0	-41.1	
3.760	-14.7	H	3.0	35.3	1.0	-49.1	-13.0	-36.1	
5.640	-19.8	H	3.0	34.7	1.0	-53.5	-13.0	-40.5	
High Ch, 1909.8MHz									
3.820	-17.1	V	3.0	35.3	1.0	-51.4	-13.0	-38.4	
5.729	-18.3	V	3.0	34.7	1.0	-52.0	-13.0	-39.0	
3.820	-14.6	H	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.729	-17.6	H	3.0	34.7	1.0	-51.3	-13.0	-38.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.9. WCDMA REL 99 (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: Z Configuration, All Peripheals Attached
Mode: TX, UMTS 850MHz, Rel 99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	FCC Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.4MHz)									
1.653	-14.5	V	3.0	35.5	1.0	-49.0	-13.0	-36.0	
1.653	-15.5	H	3.0	35.5	1.0	-50.0	-13.0	-37.0	
Mid Channel (836.6MHz)									
1.673	-13.1	V	3.0	35.5	1.0	-47.6	-13.0	-34.6	
1.673	-14.8	H	3.0	35.5	1.0	-49.3	-13.0	-36.3	
High Channel (846.8MHz)									
1.694	-9.7	V	3.0	35.5	1.0	-44.3	-13.0	-31.3	
1.694	-6.7	H	3.0	35.5	1.0	-41.2	-13.0	-28.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.10. WCDMA (Cellular Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X Configuration, w/ wireless AC
Mode: TX, UMTS 850MHz, Rel 99

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	FCC Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.4MHz)									
1.653	-25.7	V	3.0	35.5	1.0	-60.3	-13.0	-47.3	
1.653	-20.8	H	3.0	35.5	1.0	-55.4	-13.0	-42.4	
Mid Channel (836.6MHz)									
1.673	-25.1	V	3.0	35.5	1.0	-59.6	-13.0	-46.6	
1.673	-23.2	H	3.0	35.5	1.0	-57.7	-13.0	-44.7	
High Channel (846.8MHz)									
1.694	-16.4	V	3.0	35.5	1.0	-50.9	-13.0	-37.9	
1.694	-9.8	H	3.0	35.5	1.0	-44.3	-13.0	-31.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.11. WCDMA REL 99 (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, AC Adapter Plugged
Mode: Tx, 1900MHz WCDMA Rel 99 MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.705	-21.5	V	3.0	35.4	1.0	-55.9	-13.0	-42.9	
3.705	-21.3	H	3.0	35.4	1.0	-55.7	-13.0	-42.7	
Mid Ch, 1880.0MHz									
3.760	-21.4	V	3.0	35.3	1.0	-55.8	-13.0	-42.8	
3.760	-18.4	H	3.0	35.3	1.0	-52.7	-13.0	-39.7	
High Ch, 1907.6MHz									
3.815	-23.2	V	3.0	35.3	1.0	-57.5	-13.0	-44.5	
3.815	-21.0	H	3.0	35.3	1.0	-55.3	-13.0	-42.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.12. WCDMA (PCS Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/04/13
Test Engineer: Steven Tran
Configuration: X position, Headset and Wireless Adapter
Mode: Tx, 1900MHz WCDMA Rel 99 MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.705	-24.1	V	3.0	35.4	1.0	-58.5	-13.0	-45.5	
3.705	-21.0	H	3.0	35.4	1.0	-55.4	-13.0	-42.4	
Mid Ch, 1880.0MHz									
3.760	-24.0	V	3.0	35.3	1.0	-58.3	-13.0	-45.3	
3.760	-22.0	H	3.0	35.3	1.0	-56.3	-13.0	-43.3	
High Ch, 1907.6MHz									
3.815	-23.3	V	3.0	35.3	1.0	-57.6	-13.0	-44.6	
3.815	-21.8	H	3.0	35.3	1.0	-56.1	-13.0	-43.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.13. WCDMA HSUPA (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/06/13
Test Engineer: Steven Tran
Configuration: Z position, all peripheals
Mode: Tx, 850MHz WCDMA HSUPA MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	FCC Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.4MHz)									
1.653	-21.9	V	3.0	35.5	1.0	-56.4	-13.0	-43.4	
1.653	-21.9	H	3.0	35.5	1.0	-56.4	-13.0	-43.4	
Mid Channel (836.6MHz)									
1.673	-22.3	V	3.0	35.5	1.0	-56.8	-13.0	-43.8	
1.673	-23.7	H	3.0	35.5	1.0	-58.2	-13.0	-45.2	
High Channel (846.8MHz)									
1.694	-21.3	V	3.0	35.5	1.0	-55.8	-13.0	-42.8	
1.694	-23.0	H	3.0	35.5	1.0	-57.6	-13.0	-44.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.14. WCDMA HSUPA (Cell Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/06/13
Test Engineer: Steven Tran
Configuration: X position with wireless ac
Mode: Tx, 850MHz WCDMA HSUPA MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	FCC Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (826.4MHz)									
1.653	-23.5	V	3.0	35.5	1.0	-58.1	-13.0	-45.1	
1.653	-22.7	H	3.0	35.5	1.0	-57.2	-13.0	-44.2	
Mid Channel (836.6MHz)									
1.673	-23.8	V	3.0	35.5	1.0	-58.4	-13.0	-45.4	
1.673	-23.2	H	3.0	35.5	1.0	-57.7	-13.0	-44.7	
High Channel (846.8MHz)									
1.694	-18.7	V	3.0	35.5	1.0	-53.2	-13.0	-40.2	
1.694	-14.9	H	3.0	35.5	1.0	-49.4	-13.0	-36.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.15. WCDMA HSUPA (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/06/13
Test Engineer: Steven Tran
Configuration: EUT, x position, all peripheals attached
Mode: Tx, 1900MHz WCDMA HSDPA MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.705	-23.1	V	3.0	35.4	1.0	-57.5	-13.0	-44.5	
3.705	-21.4	H	3.0	35.4	1.0	-55.8	-13.0	-42.8	
Mid Ch, 1880.0MHz									
3.760	-23.4	V	3.0	35.3	1.0	-57.7	-13.0	-44.7	
3.760	-22.9	H	3.0	35.3	1.0	-57.2	-13.0	-44.2	
High Ch, 1907.6MHz									
3.815	-23.0	V	3.0	35.3	1.0	-57.3	-13.0	-44.3	
3.815	-22.4	H	3.0	35.3	1.0	-56.7	-13.0	-43.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.16. WCDMA HSUPA (PCS Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/06/13
Test Engineer: Steven Tran
Configuration: X position with wireless ac
Mode: Tx, 1900MHz WCDMA HSDPA MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, 1852.4MHz									
3.705	-22.2	V	3.0	35.4	1.0	-56.5	-13.0	-43.5	
3.705	-20.7	H	3.0	35.4	1.0	-55.0	-13.0	-42.0	
Mid Ch, 1880.0MHz									
3.760	-22.9	V	3.0	35.3	1.0	-57.2	-13.0	-44.2	
3.760	-22.5	H	3.0	35.3	1.0	-56.8	-13.0	-43.8	
High Ch, 1907.6MHz									
3.815	-22.9	V	3.0	35.3	1.0	-57.3	-13.0	-44.3	
3.815	-21.8	H	3.0	35.3	1.0	-56.1	-13.0	-43.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.17. CDMA 1xRTT (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CDMA2000, BC0, 1xRTT

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7 MHz)									
1.649	-22.5	V	3.0	32.7	1.0	-54.1	-13.0	-41.1	
2.474	-22.3	V	3.0	31.4	1.0	-52.7	-13.0	-39.7	
1.649	-23.7	H	3.0	32.7	1.0	-55.3	-13.0	-42.3	
2.474	-23.1	H	3.0	31.4	1.0	-53.5	-13.0	-40.5	
Mid Ch, (836.52MHz)									
1.673	-24.4	V	3.0	32.6	1.0	-56.0	-13.0	-43.0	
2.509	-23.1	V	3.0	31.5	1.0	-53.6	-13.0	-40.6	
1.673	-24.6	H	3.0	32.6	1.0	-56.2	-13.0	-43.2	
2.509	-23.0	H	3.0	31.5	1.0	-53.5	-13.0	-40.5	
High Ch, (848.31MHz)									
1.697	-24.4	V	3.0	32.6	1.0	-56.0	-13.0	-43.0	
2.545	-23.1	V	3.0	31.4	1.0	-53.6	-13.0	-40.6	
1.697	-25.5	H	3.0	32.6	1.0	-57.1	-13.0	-44.1	
2.545	-24.2	H	3.0	31.4	1.0	-54.6	-13.0	-41.6	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.18. CDMA 2000 (Cell Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: EUT with all peripheals (wireless ac)
Mode: TX, CDMA2000, BC0, 1xRTT

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7 MHz)									
1.649	-24.4	V	3.0	32.7	1.0	-56.0	-13.0	-43.0	
1.649	-25.4	H	3.0	32.7	1.0	-57.1	-13.0	-44.1	
Mid Ch, (836.52MHz)									
1.673	-25.0	V	3.0	32.6	1.0	-56.6	-13.0	-43.6	
1.673	-26.6	H	3.0	32.6	1.0	-58.2	-13.0	-45.2	
High Ch, (848.31MHz)									
1.697	-24.1	V	3.0	32.6	1.0	-55.7	-13.0	-42.7	
1.697	-25.5	H	3.0	32.6	1.0	-57.0	-13.0	-44.0	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.19. CDMA 2000 (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, CDMA2000, BC1, 1xRTT

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.25 MHz)									
3.703	-24.9	V	3.0	30.2	1.0	-54.1	-13.0	-41.1	
5.554	-25.0	V	3.0	28.4	1.0	-52.4	-13.0	-39.4	
11.108	-19.7	V	3.0	22.8	1.0	-41.5	-13.0	-28.5	
3.703	-24.3	H	3.0	30.2	1.0	-53.5	-13.0	-40.5	
5.554	-25.5	H	3.0	28.4	1.0	-52.9	-13.0	-39.9	
5.554	-25.5	H	3.0	28.4	1.0	-52.9	-13.0	-39.9	
Mid Ch, (1880 MHz)									
3.760	-19.9	V	3.0	30.1	1.0	-49.1	-13.0	-36.1	
5.640	-22.8	V	3.0	28.3	1.0	-50.1	-13.0	-37.1	
11.280	-21.0	V	3.0	22.7	1.0	-42.7	-13.0	-29.7	
3.760	-23.3	H	3.0	30.1	1.0	-52.4	-13.0	-39.4	
5.640	-23.4	H	3.0	28.3	1.0	-50.7	-13.0	-37.7	
11.280	-24.3	H	3.0	22.7	1.0	-46.0	-13.0	-33.0	
High Ch, (1908.75MHz)									
3.818	-23.9	V	3.0	30.1	1.0	-53.0	-13.0	-40.0	
5.726	-27.7	V	3.0	28.2	1.0	-54.9	-13.0	-41.9	
11.452	-19.3	V	3.0	22.7	1.0	-41.0	-13.0	-28.0	
3.818	-24.3	H	3.0	30.1	1.0	-53.4	-13.0	-40.4	
5.726	-26.3	H	3.0	28.2	1.0	-53.5	-13.0	-40.5	
11.452	-20.6	H	3.0	22.7	1.0	-42.3	-13.0	-29.3	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.20. CDMA 2000 (PCS Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: EUT w/ wireless ac
Mode: TX, CDMA2000, BC1, 1xRTT

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.25 MHz)									
3.703	-28.3	V	3.0	30.2	1.0	-57.5	-13.0	-44.5	
3.703	-28.8	H	3.0	30.2	1.0	-58.0	-13.0	-45.0	
Mid Ch, (1880 MHz)									
3.760	-26.6	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
3.760	-27.4	H	3.0	30.1	1.0	-56.5	-13.0	-43.5	
High Ch, (1908.75MHz)									
3.818	-29.4	V	3.0	30.1	1.0	-58.5	-13.0	-45.5	
3.818	-29.0	H	3.0	30.1	1.0	-58.1	-13.0	-45.1	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.21. CDMA EV-DO (Cellular Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: Z position, EUT with ac adapter
Mode: TX, CDMA, BC0, EVDO

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7 MHz)									
1.649	-24.3	V	3.0	32.7	1.0	-56.0	-13.0	-43.0	
1.649	-25.2	H	3.0	32.7	1.0	-56.9	-13.0	-43.9	
Mid Ch, (836.52MHz)									
1.673	-24.5	V	3.0	32.6	1.0	-56.1	-13.0	-43.1	
1.673	-26.8	H	3.0	32.6	1.0	-58.4	-13.0	-45.4	
High Ch, (848.31MHz)									
1.697	-25.5	V	3.0	32.6	1.0	-57.1	-13.0	-44.1	
1.697	-25.8	H	3.0	32.6	1.0	-57.3	-13.0	-44.3	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.22. CDMA EV-DO (Cell Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: EUT with all peripheals (wireless ac)
Mode: TX, CDMA, BC0, EVDO

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7 MHz)									
1.649	-24.4	V	3.0	32.7	1.0	-56.0	-13.0	-43.0	
1.649	-25.4	H	3.0	32.7	1.0	-57.1	-13.0	-44.1	
Mid Ch, (836.52MHz)									
1.673	-25.0	V	3.0	32.6	1.0	-56.6	-13.0	-43.6	
1.673	-26.6	H	3.0	32.6	1.0	-58.2	-13.0	-45.2	
High Ch, (848.31MHz)									
1.697	-24.1	V	3.0	32.6	1.0	-55.7	-13.0	-42.7	
1.697	-25.5	H	3.0	32.6	1.0	-57.0	-13.0	-44.0	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.23. CDMA EV-DO (PCS Band)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: EUT, x position, ac adapter
Mode: TX, CDMA, BC1, EVDO

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.25 MHz)									
3.703	-27.7	V	3.0	30.2	1.0	-56.9	-13.0	-43.9	
3.703	-27.4	H	3.0	30.2	1.0	-56.6	-13.0	-43.6	
Mid Ch, (1880 MHz)									
3.760	-27.7	V	3.0	30.1	1.0	-56.9	-13.0	-43.9	
3.760	-27.1	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
High Ch, (1908.75MHz)									
3.818	-29.8	V	3.0	30.1	1.0	-58.9	-13.0	-45.9	
3.818	-29.2	H	3.0	30.1	1.0	-58.3	-13.0	-45.3	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.24. CDMA EV-DO (PCS Band) with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/07/13
Test Engineer: Steven Tran
Configuration: EUT w/ wireless ac
Mode: TX, CDMA, BC1, EVDO

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.25 MHz)									
3.703	-27.9	V	3.0	30.2	1.0	-57.1	-13.0	-44.1	
3.703	-28.2	H	3.0	30.2	1.0	-57.4	-13.0	-44.4	
Mid Ch, (1880 MHz)									
3.760	-26.0	V	3.0	30.1	1.0	-55.1	-13.0	-42.1	
3.760	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
High Ch, (1908.75MHz)									
3.818	-28.5	V	3.0	30.1	1.0	-57.6	-13.0	-44.6	
3.818	-26.8	H	3.0	30.1	1.0	-55.9	-13.0	-42.9	

Rev. 05.31.13
Note: No other emissions were detected above the system noise floor.

11.2.25. LTE BAND 4-5MHz BANDWIDTH

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	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
Low Ch, (1712.5 MHz)									
3.420	-26.0	V	3.0	26.5	1.0	-51.5	-13.0	-38.5	
5.138	-30.4	V	3.0	24.4	1.0	-53.8	-13.0	-40.8	
3.420	-25.3	H	3.0	26.5	1.0	-50.7	-13.0	-37.7	
5.138	-29.0	H	3.0	24.4	1.0	-52.3	-13.0	-39.3	
Mid Ch, (1732.5 MHz)									
3.465	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.198	-27.6	V	3.0	24.3	1.0	-50.9	-13.0	-37.9	
3.465	-26.3	H	3.0	26.4	1.0	-51.7	-13.0	-38.7	
5.198	-29.0	H	3.0	24.3	1.0	-52.3	-13.0	-39.3	
High Ch, (1752.5 MHz)									
3.505	-26.0	V	3.0	26.4	1.0	-51.4	-13.0	-38.4	
5.258	-30.5	V	3.0	24.3	1.0	-53.7	-13.0	-40.7	
3.505	-26.3	H	3.0	26.4	1.0	-51.6	-13.0	-38.6	
5.258	-27.9	H	3.0	24.3	1.0	-51.2	-13.0	-38.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/11/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	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
Low Ch, (1712.5 MHz)									
3.420	-23.2	V	3.0	26.5	1.0	-48.6	-13.0	-35.6	
5.138	-28.5	V	3.0	24.4	1.0	-51.8	-13.0	-38.8	
3.420	-24.6	H	3.0	26.5	1.0	-50.0	-13.0	-37.0	
5.138	-28.4	H	3.0	24.4	1.0	-51.7	-13.0	-38.7	
Mid Ch, (1732.5 MHz)									
3.465	-24.3	V	3.0	26.4	1.0	-49.7	-13.0	-36.7	
5.198	-28.2	V	3.0	24.3	1.0	-51.5	-13.0	-38.5	
3.465	-24.1	H	3.0	26.4	1.0	-49.5	-13.0	-36.5	
5.198	-23.1	H	3.0	24.3	1.0	-46.4	-13.0	-33.4	
High Ch, (1752.5 MHz)									
3.505	-24.4	V	3.0	26.4	1.0	-49.7	-13.0	-36.7	
5.258	-29.7	V	3.0	24.3	1.0	-52.9	-13.0	-39.9	
3.505	-24.7	H	3.0	26.4	1.0	-50.1	-13.0	-37.1	
5.258	-29.4	H	3.0	24.3	1.0	-52.6	-13.0	-39.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 5MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	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
Low Ch, (1712.5 MHz)									
3.420	-26.8	V	3.0	26.5	1.0	-52.3	-13.0	-39.3	
5.138	-31.4	V	3.0	24.4	1.0	-54.8	-13.0	-41.8	
3.420	-26.0	H	3.0	26.5	1.0	-51.4	-13.0	-38.4	
5.138	-29.8	H	3.0	24.4	1.0	-53.1	-13.0	-40.1	
Mid Ch, (1732.5 MHz)									
3.465	-27.7	V	3.0	26.4	1.0	-53.1	-13.0	-40.1	
5.198	-28.1	V	3.0	24.3	1.0	-51.4	-13.0	-38.4	
3.465	-27.3	H	3.0	26.4	1.0	-52.7	-13.0	-39.7	
5.198	-29.6	H	3.0	24.3	1.0	-52.9	-13.0	-39.9	
High Ch, (1752.5 MHz)									
3.505	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.258	-31.2	V	3.0	24.3	1.0	-54.4	-13.0	-41.4	
3.505	-27.8	H	3.0	26.4	1.0	-53.1	-13.0	-40.1	
5.258	-28.0	H	3.0	24.3	1.0	-51.3	-13.0	-38.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:
Project #: 13U15118
Date: 06/10/13
Test Engineer: Steven Tran
Configuration: EUT with wireless AC
Mode: TX, LTE band 4, 5MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	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
Low Ch, (1712.5 MHz)									
3.420	-27.1	V	3.0	26.5	1.0	-52.6	-13.0	-39.6	
5.138	-31.9	V	3.0	24.4	1.0	-55.2	-13.0	-42.2	
3.420	-27.6	H	3.0	26.5	1.0	-53.1	-13.0	-40.1	
5.138	-31.4	H	3.0	24.4	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1732.5 MHz)									
3.465	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.198	-29.4	V	3.0	24.3	1.0	-52.7	-13.0	-39.7	
3.465	-26.8	H	3.0	26.4	1.0	-52.2	-13.0	-39.2	
5.198	-27.1	H	3.0	24.3	1.0	-50.4	-13.0	-37.4	
High Ch, (1752.5 MHz)									
3.505	-27.8	V	3.0	26.4	1.0	-53.2	-13.0	-40.2	
5.258	-31.5	V	3.0	24.3	1.0	-54.8	-13.0	-41.8	
3.505	-27.9	H	3.0	26.4	1.0	-53.3	-13.0	-40.3	
5.258	-26.9	H	3.0	24.3	1.0	-50.2	-13.0	-37.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.26. LTE BAND 4-10MHz BANDWIDTH

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1715 MHz)									
3.430	-25.0	V	3.0	26.5	1.0	-50.5	-13.0	-37.5	
5.145	-25.5	V	3.0	24.4	1.0	-48.8	-13.0	-35.8	
3.430	-23.3	H	3.0	26.5	1.0	-48.7	-13.0	-35.7	
5.145	-26.0	H	3.0	24.4	1.0	-49.3	-13.0	-36.3	
Mid Ch, (1732.5 MHz)									
3.456	-26.0	V	3.0	26.4	1.0	-51.4	-13.0	-38.4	
5.184	-25.5	V	3.0	24.3	1.0	-48.9	-13.0	-35.9	
3.456	-24.3	H	3.0	26.4	1.0	-49.7	-13.0	-36.7	
5.184	-27.0	H	3.0	24.3	1.0	-50.3	-13.0	-37.3	
High Ch, (1750 MHz)									
3.491	-26.0	V	3.0	26.4	1.0	-51.4	-13.0	-38.4	
5.237	-28.5	V	3.0	24.3	1.0	-51.8	-13.0	-38.8	
3.491	-25.3	H	3.0	26.4	1.0	-50.7	-13.0	-37.7	
5.237	-27.0	H	3.0	24.3	1.0	-50.2	-13.0	-37.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/11/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1715 MHz)									
3.430	-23.4	V	3.0	26.5	1.0	-48.9	-13.0	-35.9	
5.145	-29.2	V	3.0	24.4	1.0	-52.5	-13.0	-39.5	
3.430	-20.4	H	3.0	26.5	1.0	-45.8	-13.0	-32.8	
5.145	-20.9	H	3.0	24.4	1.0	-44.2	-13.0	-31.2	
Mid Ch, (1732.5 MHz)									
3.456	-21.6	V	3.0	26.4	1.0	-47.0	-13.0	-34.0	
5.184	-25.6	V	3.0	24.3	1.0	-48.9	-13.0	-35.9	
3.456	-22.5	H	3.0	26.4	1.0	-47.9	-13.0	-34.9	
5.184	-22.5	H	3.0	24.3	1.0	-45.8	-13.0	-32.8	
High Ch, (1750 MHz)									
3.491	-21.8	V	3.0	26.4	1.0	-47.2	-13.0	-34.2	
5.237	-26.8	V	3.0	24.3	1.0	-50.1	-13.0	-37.1	
3.491	-23.8	H	3.0	26.4	1.0	-49.2	-13.0	-36.2	
5.237	-23.9	H	3.0	24.3	1.0	-47.2	-13.0	-34.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 10MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1715 MHz)									
3.430	-26.0	V	3.0	26.5	1.0	-51.5	-13.0	-38.5	
5.145	-26.5	V	3.0	24.4	1.0	-49.8	-13.0	-36.8	
3.430	-24.3	H	3.0	26.5	1.0	-49.7	-13.0	-36.7	
5.145	-27.2	H	3.0	24.4	1.0	-50.5	-13.0	-37.5	
Mid Ch, (1732.5 MHz)									
3.456	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.184	-26.7	V	3.0	24.3	1.0	-50.1	-13.0	-37.1	
3.456	-25.3	H	3.0	26.4	1.0	-50.7	-13.0	-37.7	
5.184	-27.8	H	3.0	24.3	1.0	-51.1	-13.0	-38.1	
High Ch, (1750 MHz)									
3.491	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.237	-30.5	V	3.0	24.3	1.0	-53.8	-13.0	-40.8	
3.491	-26.3	H	3.0	26.4	1.0	-51.7	-13.0	-38.7	
5.237	-27.8	H	3.0	24.3	1.0	-51.0	-13.0	-38.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/10/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 10MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1715 MHz)									
3.430	-24.8	V	3.0	26.5	1.0	-50.3	-13.0	-37.3	
5.145	-25.1	V	3.0	24.4	1.0	-48.5	-13.0	-35.5	
3.430	-27.5	H	3.0	26.5	1.0	-53.0	-13.0	-40.0	
5.145	-23.2	H	3.0	24.4	1.0	-46.5	-13.0	-33.5	
Mid Ch, (1732.5 MHz)									
3.456	-27.0	V	3.0	26.4	1.0	-52.4	-13.0	-39.4	
5.184	97.4	V	3.0	24.3	1.0	74.1	-13.0	87.1	
3.456	-27.2	H	3.0	26.4	1.0	-52.6	-13.0	-39.6	
5.184	-19.5	H	3.0	24.3	1.0	-42.8	-13.0	-29.8	
High Ch, (1750 MHz)									
3.491	-27.4	V	3.0	26.4	1.0	-52.8	-13.0	-39.8	
5.237	-32.4	V	3.0	24.3	1.0	-55.7	-13.0	-42.7	
3.491	-26.2	H	3.0	26.4	1.0	-51.6	-13.0	-38.6	
5.237	-31.1	H	3.0	24.3	1.0	-54.3	-13.0	-41.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.27. LTE BAND 4-15MHz BANDWIDTH

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 15MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1717.5 MHz)									
3.435	-25.5	V	3.0	30.4	1.0	-54.9	-13.0	-41.9	
5.153	-28.6	V	3.0	28.7	1.0	-56.3	-13.0	-43.3	
3.435	-24.3	H	3.0	30.4	1.0	-53.7	-13.0	-40.7	
5.153	-26.0	H	3.0	28.7	1.0	-53.7	-13.0	-40.7	
Mid Ch, (1732.5 MHz)									
3.452	-25.0	V	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.178	-29.5	V	3.0	28.7	1.0	-57.3	-13.0	-44.3	
3.452	-24.3	H	3.0	30.4	1.0	-53.7	-13.0	-40.7	
5.178	-28.0	H	3.0	28.7	1.0	-55.7	-13.0	-42.7	
High Ch, (1747.5 MHz)									
3.495	-24.5	V	3.0	30.4	1.0	-53.9	-13.0	-40.9	
5.243	-27.5	V	3.0	28.7	1.0	-55.2	-13.0	-42.2	
3.495	-23.3	H	3.0	30.4	1.0	-52.6	-13.0	-39.6	
5.243	-26.9	H	3.0	28.7	1.0	-54.6	-13.0	-41.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/11/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 15MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1717.5 MHz)									
3.435	-22.8	V	3.0	30.4	1.0	-52.2	-13.0	-39.2	
5.153	-27.9	V	3.0	28.7	1.0	-55.6	-13.0	-42.6	
3.435	-23.2	H	3.0	30.4	1.0	-52.6	-13.0	-39.6	
5.153	-25.5	H	3.0	28.7	1.0	-53.2	-13.0	-40.2	
Mid Ch, (1732.5 MHz)									
3.452	-20.2	V	3.0	30.4	1.0	-49.7	-13.0	-36.7	
5.178	-24.5	V	3.0	28.7	1.0	-52.2	-13.0	-39.2	
3.452	-20.9	H	3.0	30.4	1.0	-50.3	-13.0	-37.3	
5.178	-25.6	H	3.0	28.7	1.0	-53.3	-13.0	-40.3	
High Ch, (1747.5 MHz)									
3.495	-22.3	V	3.0	30.4	1.0	-51.6	-13.0	-38.6	
5.243	-30.1	V	3.0	28.7	1.0	-57.7	-13.0	-44.7	
3.495	-24.9	H	3.0	30.4	1.0	-54.2	-13.0	-41.2	
5.243	-22.7	H	3.0	28.7	1.0	-50.3	-13.0	-37.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 15MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1717.5 MHz)									
3.435	-26.0	V	3.0	30.4	1.0	-55.4	-13.0	-42.4	
5.153	-29.1	V	3.0	28.7	1.0	-56.8	-13.0	-43.8	
3.435	-24.9	H	3.0	30.4	1.0	-54.3	-13.0	-41.3	
5.153	-27.0	H	3.0	28.7	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1732.5 MHz)									
3.452	-25.6	V	3.0	30.4	1.0	-55.0	-13.0	-42.0	
5.178	-29.3	V	3.0	28.7	1.0	-57.1	-13.0	-44.1	
3.452	-24.8	H	3.0	30.4	1.0	-54.2	-13.0	-41.2	
5.178	-28.0	H	3.0	28.7	1.0	-55.7	-13.0	-42.7	
High Ch, (1747.5 MHz)									
3.495	-25.0	V	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.243	-28.2	V	3.0	28.7	1.0	-55.9	-13.0	-42.9	
3.495	-24.3	H	3.0	30.4	1.0	-53.6	-13.0	-40.6	
5.243	-27.3	H	3.0	28.7	1.0	-55.0	-13.0	-42.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/10/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 15MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1717.5 MHz)									
3.435	-25.2	V	3.0	30.4	1.0	-54.6	-13.0	-41.6	
5.153	-29.5	V	3.0	28.7	1.0	-57.3	-13.0	-44.3	
3.435	-25.8	H	3.0	30.4	1.0	-55.2	-13.0	-42.2	
5.153	-28.4	H	3.0	28.7	1.0	-56.2	-13.0	-43.2	
Mid Ch, (1732.5 MHz)									
3.452	-24.6	V	3.0	30.4	1.0	-54.0	-13.0	-41.0	
5.178	-25.9	V	3.0	28.7	1.0	-53.7	-13.0	-40.7	
3.452	-23.5	H	3.0	30.4	1.0	-52.9	-13.0	-39.9	
5.178	-18.0	H	3.0	28.7	1.0	-45.8	-13.0	-32.8	
High Ch, (1747.5 MHz)									
3.495	-25.2	V	3.0	30.4	1.0	-54.6	-13.0	-41.6	
5.243	-29.8	V	3.0	28.7	1.0	-57.4	-13.0	-44.4	
3.495	-25.0	H	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.243	-28.5	H	3.0	28.7	1.0	-56.2	-13.0	-43.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.28. LTE BAND 4-20MHz BANDWIDTH

QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1720 MHz)									
3.423	-24.0	V	3.0	30.4	1.0	-53.5	-13.0	-40.5	
5.133	-28.4	V	3.0	28.8	1.0	-56.2	-13.0	-43.2	
3.423	-24.8	H	3.0	30.4	1.0	-54.2	-13.0	-41.2	
5.133	-27.0	H	3.0	28.8	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1732.5 MHz)									
3.447	-23.0	V	3.0	30.4	1.0	-52.4	-13.0	-39.4	
5.198	-26.6	V	3.0	28.7	1.0	-54.3	-13.0	-41.3	
3.447	-23.3	H	3.0	30.4	1.0	-52.7	-13.0	-39.7	
5.198	-23.0	H	3.0	28.7	1.0	-50.7	-13.0	-37.7	
High Ch, (1745 MHz)									
3.470	-25.0	V	3.0	30.4	1.0	-54.4	-13.0	-41.4	
5.206	-28.6	V	3.0	28.7	1.0	-56.3	-13.0	-43.3	
3.470	-25.3	H	3.0	30.4	1.0	-54.7	-13.0	-41.7	
5.206	-28.0	H	3.0	28.7	1.0	-55.7	-13.0	-42.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/11/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1720 MHz)									
3.423	-16.6	V	3.0	30.4	1.0	-46.1	-13.0	-33.1	
5.133	-20.6	V	3.0	28.8	1.0	-48.4	-13.0	-35.4	
3.423	-18.1	H	3.0	30.4	1.0	-47.5	-13.0	-34.5	
5.133	-22.3	H	3.0	28.8	1.0	-50.1	-13.0	-37.1	
Mid Ch, (1732.5 MHz)									
3.447	-22.5	V	3.0	30.4	1.0	-51.9	-13.0	-38.9	
5.198	-24.9	V	3.0	28.7	1.0	-52.6	-13.0	-39.6	
3.447	-20.5	H	3.0	30.4	1.0	-50.0	-13.0	-37.0	
5.198	-22.0	H	3.0	28.7	1.0	-49.7	-13.0	-36.7	
High Ch, (1745 MHz)									
3.470	-22.8	V	3.0	30.4	1.0	-52.2	-13.0	-39.2	
5.206	-24.1	V	3.0	28.7	1.0	-51.8	-13.0	-38.8	
3.470	101.1	H	3.0	30.4	1.0	71.7	-13.0	84.7	
5.206	-21.6	H	3.0	28.7	1.0	-49.3	-13.0	-36.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 4, 20MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1720 MHz)									
3.423	-25.0	V	3.0	30.4	1.0	-54.5	-13.0	-41.5	
5.133	-28.8	V	3.0	28.8	1.0	-56.6	-13.0	-43.6	
3.423	-25.3	H	3.0	30.4	1.0	-54.7	-13.0	-41.7	
5.133	-27.4	H	3.0	28.8	1.0	-55.1	-13.0	-42.1	
Mid Ch, (1732.5 MHz)									
3.447	-23.7	V	3.0	30.4	1.0	-53.1	-13.0	-40.1	
5.198	-27.1	V	3.0	28.7	1.0	-54.8	-13.0	-41.8	
3.447	-24.3	H	3.0	30.4	1.0	-53.7	-13.0	-40.7	
5.198	-23.6	H	3.0	28.7	1.0	-51.3	-13.0	-38.3	
High Ch, (1745 MHz)									
3.470	-25.3	V	3.0	30.4	1.0	-54.7	-13.0	-41.7	
5.206	-29.0	V	3.0	28.7	1.0	-56.7	-13.0	-43.7	
3.470	-26.0	H	3.0	30.4	1.0	-55.4	-13.0	-42.4	
5.206	-28.5	H	3.0	28.7	1.0	-56.2	-13.0	-43.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/10/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 4, 20MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
Low Ch, (1720 MHz)									
3.423	-28.4	V	3.0	30.4	1.0	-57.9	-13.0	-44.9	
5.133	-35.1	V	3.0	28.8	1.0	-62.9	-13.0	-49.9	
3.423	-28.8	H	3.0	30.4	1.0	-58.2	-13.0	-45.2	
5.133	-30.8	H	3.0	28.8	1.0	-58.6	-13.0	-45.6	
Mid Ch, (1732.5 MHz)									
3.447	-26.2	V	3.0	30.4	1.0	-55.6	-13.0	-42.6	
5.198	99.7	V	3.0	28.7	1.0	72.0	-13.0	85.0	
3.447	-22.2	H	3.0	30.4	1.0	-51.6	-13.0	-38.6	
5.198	-24.4	H	3.0	28.7	1.0	-52.1	-13.0	-39.1	
High Ch, (1745 MHz)									
3.470	-30.1	V	3.0	30.4	1.0	-59.5	-13.0	-46.5	
5.206	-35.5	V	3.0	28.7	1.0	-63.2	-13.0	-50.2	
3.470	-30.6	H	3.0	30.4	1.0	-60.0	-13.0	-47.0	
5.206	-31.9	H	3.0	28.7	1.0	-59.6	-13.0	-46.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

11.2.29. LTE BAND 13-10MHz BANDWIDTH

QPSK and 16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/01/13
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE band 13, 10MHz, QPSK/16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
QPSK									
Mid Ch, (782 MHz)									
1.564	-16.6	V	3.0	30.7	1.0	-46.3	-13.0	-33.3	
2.346	-13.2	V	3.0	28.9	1.0	-41.1	-13.0	-28.1	
1.564	-19.9	H	3.0	30.7	1.0	-49.6	-13.0	-36.6	
2.346	-18.8	H	3.0	28.9	1.0	-46.6	-13.0	-33.6	
16QAM									
Mid Ch, (782 MHz)									
1.564	-17.7	V	3.0	30.7	1.0	-47.4	-13.0	-34.4	
2.346	-16.8	V	3.0	28.9	1.0	-44.7	-13.0	-31.7	
1.564	-21.9	H	3.0	30.7	1.0	-51.6	-13.0	-38.6	
2.346	-19.8	H	3.0	28.9	1.0	-47.6	-13.0	-34.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK and 16QAM with Wireless Adapter

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: LG
Project #: 13U15118
Date: 06/11/13
Test Engineer: Steven Tran
Configuration: EUT with wireless ac
Mode: TX, LTE band 13, 10MHz, QPSK/16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	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
QPSK									
Mid Ch, (782 MHz)									
1.564	-23.7	V	3.0	30.7	1.0	-53.4	-13.0	-40.4	
2.346	-19.6	V	3.0	28.9	1.0	-47.4	-13.0	-34.4	
1.564	-20.7	H	3.0	30.7	1.0	-50.4	-13.0	-37.4	
2.346	-22.5	H	3.0	28.9	1.0	-50.4	-13.0	-37.4	
16QAM									
Mid Ch, (782 MHz)									
1.564	-24.7	V	3.0	30.7	1.0	-54.4	-13.0	-41.4	
2.346	-21.1	V	3.0	28.9	1.0	-49.0	-13.0	-36.0	
1.564	-21.1	H	3.0	30.7	1.0	-50.8	-13.0	-37.8	
2.346	-22.8	H	3.0	28.9	1.0	-50.7	-13.0	-37.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.