FCC CFR47 PART 24
CERTIFICATION TEST REPORT

FOR

CDMA, LTE, WIMAX, AND WIFI MOBILE HOT SPOT
MODEL NUMBER: BUZZARD

FCC ID: N7NAC803S

REPORT NUMBER: 11U14068-4, Revision A

ISSUE DATE: MARCH 05, 2012

Prepared for
SIERRA WIRELESS INC.
2200 FARADAY AVE. SUITE 150
CARLSBAD, CA 92008, U.S.A.

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	03/05/12	Initial Issue	T. Chan
A	03/19/12	Correction made on power conversion from dBm to mW calculations. Removed unnecessary data from maximum output power table	M. Mekuria

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SIERRA WIRELESS INC.
2200 FARADAY AVE. SUITE 150
CARLSBAD, CA 92008, U.S.A.

EUT DESCRIPTION: CDMA, LTE, WIMAX, AND WIFI MOBILE HOT SPOT

MODEL: AC803S

SERIAL NUMBER: 111097

DATE TESTED: FEBRUARY 21 and MARCH 1-2, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 24E	Pass

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

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

Approved & Released For UL CCS By:

THU CHAN
ENGINEERING MANAGER
UL CCS

Tested By:

CHIN PANG
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47, 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 CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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 Mobile hotspot that features CDMA, LTE, WIMAX, and WIFI transceiver that is manufactured by Sierra Wireless Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted and EIRP output powers as follows:

EUT STANDALONE

Part 24 LTE Band 25 MODE (5.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1852.50 - 1912.50	QPSK	1/0	28.80	758.6		
		1/24	28.84	765.6		
		12/6	28.41	693.4		
		25/0	29.00	794.3	31.70	1479.1
	16QAM	1/0	28.88	772.7		
		1/24	29.11	814.7		
		12/6	29.39	869.0		
		25/0	29.95	988.6	32.63	1832.3

Part 24 LTE Band 25 MODE (10.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW		mW
1855 - 1910	QPSK	1/0	27.50	562.3		
		1/49	27.77	598.4		
		25/12	28.50	707.9		
		50/0	28.90	776.2	31.36	1367.7
	16QAM	1/0	28.70	741.3		
		1/49	29.10	812.8		
		25/12	29.60	912.0		
		50/0	29.72	937.6	32.19	1655.8

EUT WITH CRADLE

Part 24 LTE Band 25 MODE (5.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1852.50 - 1912.50	QPSK	1/0	28.80	758.6		
		1/24	28.84	765.6		
		12/6	28.41	693.4		
		25/0	29.00	794.3	24.56	285.8
	16QAM	1/0	28.88	772.7		
		1/24	29.11	814.7		
		12/6	29.39	869.0		
		25/0	29.95	988.6	25.66	368.1

Part 24 LTE Band 25 MODE (10.0 MHz BANDWIDTH)						
Frequency range (MHz)	Modulation	Start RB and RB offset	Conducted		EIRP	
			dBm	mW	dBm	mW
1855 - 1910	QPSK	1/0	27.50	562.3		
		1/49	27.77	598.4		
		25/12	28.50	707.9		
		50/0	28.90	776.2	27.91	618.0
	16QAM	1/0	28.70	741.3		
		1/49	29.10	812.8		
		25/12	29.60	912.0		
		50/0	29.72	937.6	28.90	776.2

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a permanently integral antenna, with a maximum gain of 1.5dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT is linked with CMW500 during test.

5.5. WORST-CASE CONFIGURATION AND MODE

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

Worst-case modes:

- LTE Band 25: EUT Standalone and EUT with Cradle

Since the EUT is a portable device, for the fundamental tests the three orientations have been investigated on X, Y and Z orientations, and the worst case was found to be at X-position.

5.6. DESCRIPTION OF TEST SETUP

RADIATED TESTS SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	HP	Compaq 6515b	CNU82518TY	DoC
AC Adapter	HP	FA-1900-OBH2	7407896501	DoC
DC Battery	Sierra Wireless	W4	1202395	NA
Cradle	Sierra Wireless	NA	1145-0003	NA

I/O CABLES (RF Conducted Test)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identic Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	USB	1	MINI USB	UN-SHELDED	1.0m	N/A
2	RF In/Out	1	Directional Coupler	SHELDED	0.1m	N/A
3	SMA	1	Spectrum Analyzer	SHELDED	None	N/A
4	RF In/Out	1	CMW500	UN-SHELDED	2m	N/A

CONFIGURATION 1: EUT STAND ALONE (RF Radiated Test)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identica Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US115VAC	Un-Shielded	2m	Ferrite core at one end (Cradle Unit)
2	DC	1	DC	Un-Shielded	1.0m	N/A
3	USB	1	Mini USB	Un-Shielded	1m	NA
4	RF In/Out	1	CMW500	Shielded	2.0m	NA

CONFIGURATION 2: EUT WITH CRADLE

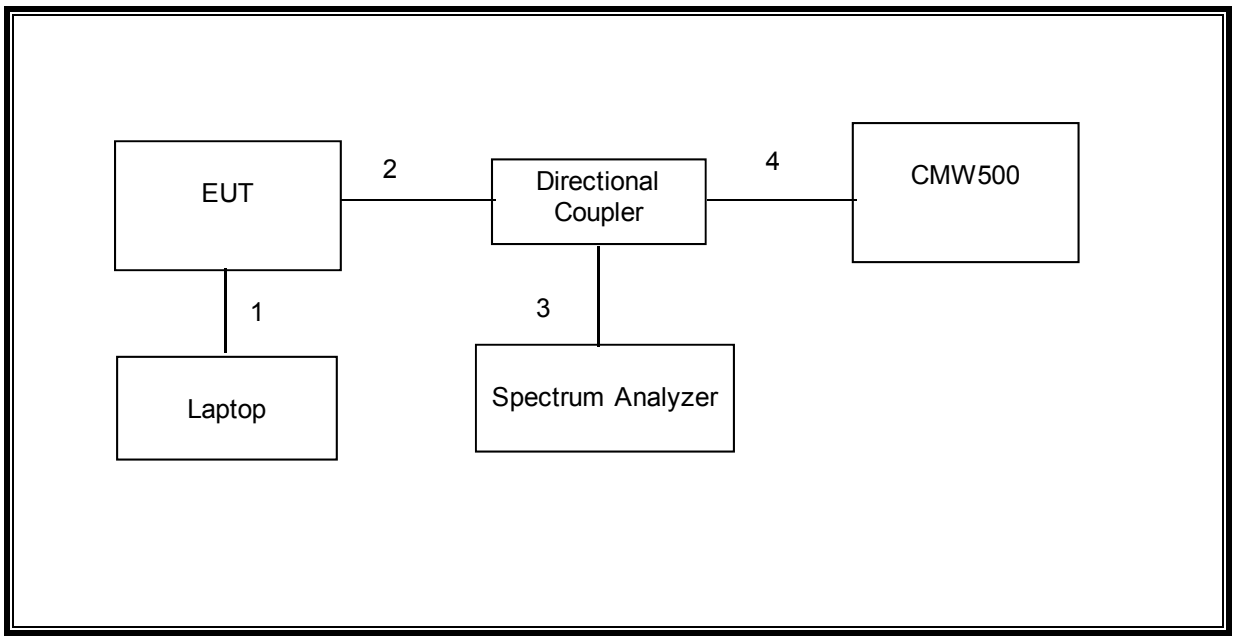
I/O CABLE LIST						
Cable No.	**Port**	**# of Identica Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	1	US115VAC	Un-Shielded	1.0m	Ferrite core at one end (Cradle Unit)
2	DC	1	DC	Un-Shielded	2.0m	NA
3	USB	1	Cradle	Un-Shielded	2.0m	NA
4	RF In/Out	1	CMW500	Shielded	2.0m	NA

TEST SETUP

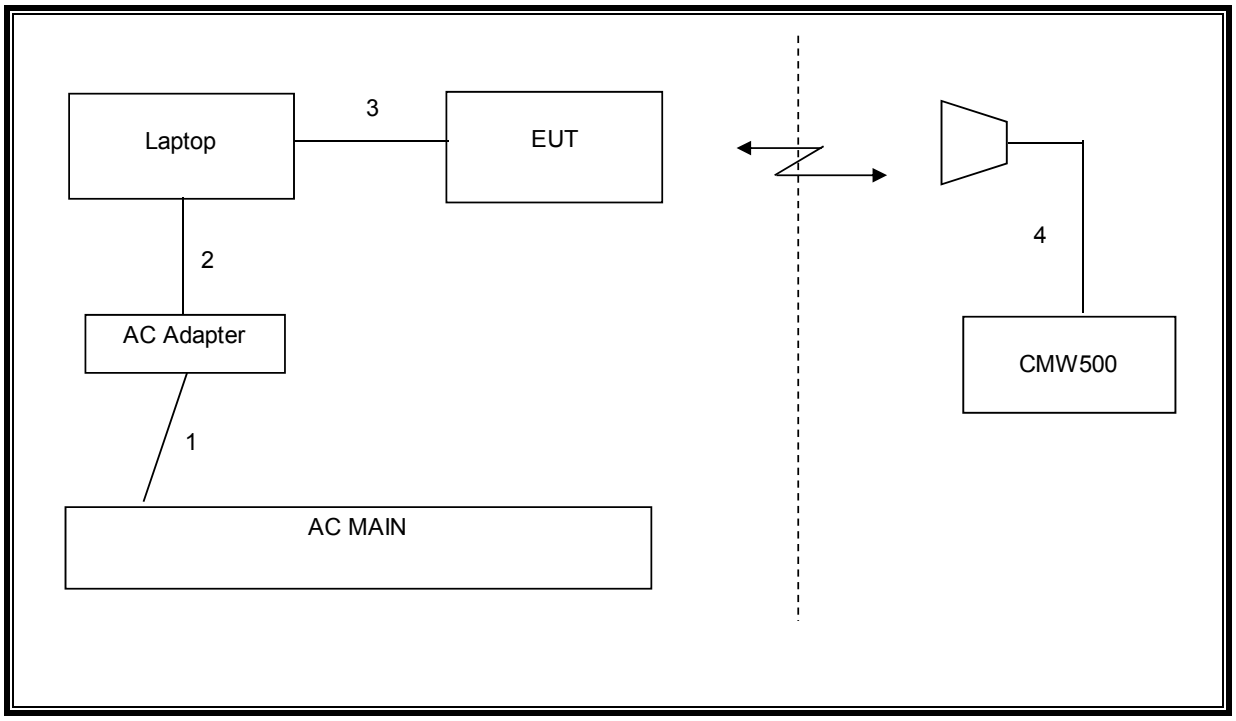
Configuration 1: The EUT is a stand-alone device.

Configuration 2: The EUT sat on the cradle

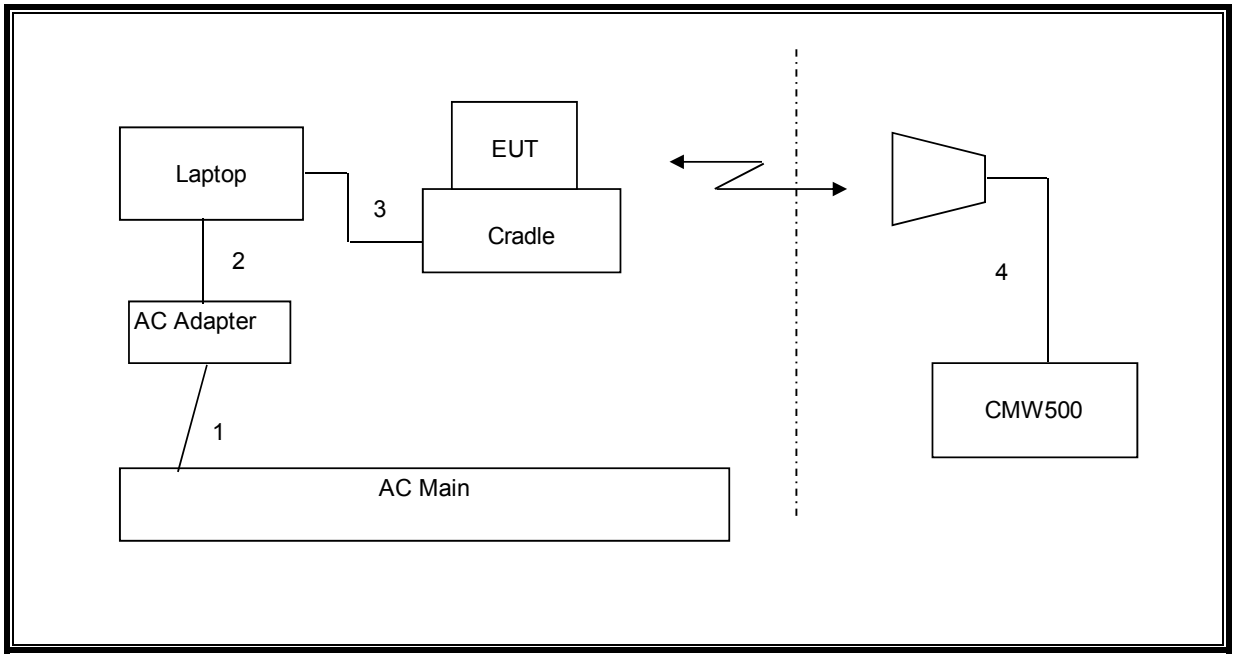
CONDUCTED SETUP DIAGRAM FOR TESTS



EUT STAND ALONE RADIATED SETUP DIAGRAM



CONFIGURATION 2: RADIATED SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	05/11/12
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/15/12
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12
Communication Test Set	R & S	CMW500	N/A	12/16/12
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	04/20/12
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Directional Coupler	RF-Lambda	RFDC5M06G15	None	CNR
Signal Generator, 20 GHz	Agilent / HP	83732B	C00774	07/14/12

7. RF POWER OUTPUT VERIFICATION

7.1. LTE Band 25

Output power for LTE Band 25 (5 MHz)

Band	BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	Peak	
						dBm	mW
25	5	26065	1852.5	QPSK	RB 1-0	27.98	628.1
					RB 1-24	28.12	648.6
					RB 12-6	27.40	549.5
					RB 25-0	28.19	659.2
				16QAM	RB 1-0	28.45	699.8
					RB 1-24	28.03	635.3
					RB 12-6	29.00	794.3
					RB 25-0	29.90	977.2
25	5	26365	1882.5	QPSK	RB 1-0	**28.80**	758.6
					RB 1-24	**28.84**	765.6
					RB 12-6	**28.41**	693.4
					RB 25-0	**29.00**	794.3
				16QAM	RB 1-0	**28.88**	772.7
					RB 1-24	**29.11**	814.7
					RB 12-6	**29.39**	869.0
					RB 25-0	**29.95**	988.6
25	5	26665	1912.5	QPSK	RB 1-0	27.55	568.9
					RB 1-24	27.23	528.4
					RB 12-6	27.05	507.0
					RB 25-0	27.57	571.5
				16QAM	RB 1-0	28.45	699.8
					RB 1-24	27.61	576.8
					RB 12-6	28.90	776.2
					RB 25-0	28.94	783.4

Output power for LTE Band 25 (10MHz)

Band	BW	UL CH #	Freq. (MHz)	Mode	UL RB Allocation	Peak	
						dBm	mW
25	10	26090.0	1855.0	QPSK	RB 1-0	27.69	587.5
					RB 1-49	27.70	588.8
					RB 25-12	28.42	695.0
					RB 50-0	28.73	746.4
				16QAM	RB 1-0	28.71	743.0
					RB 1-49	29.00	794.3
					RB 25-12	29.21	833.7
					RB 50-0	29.70	933.3
25	10	26365.0	1882.5	QPSK	RB 1-0	**27.50**	562.3
					RB 1-49	**27.77**	598.4
					RB 25-12	**28.50**	707.9
					RB 50-0	**28.90**	776.2
				16QAM	RB 1-0	**28.70**	741.3
					RB 1-49	**29.10**	812.8
					RB 25-12	**29.60**	912.0
					RB 50-0	**29.72**	937.6
25	10	26640.0	1910.0	QPSK	RB 1-0	27.60	575.4
					RB 1-49	26.58	455.0
					RB 25-12	28.15	653.1
					RB 50-0	28.96	787.0
				16QAM	RB 1-0	28.85	767.4
					RB 1-49	27.72	591.6
					RB 25-12	29.48	887.2
					RB 50-0	29.50	891.3

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- LTE Band 25

RESULTS

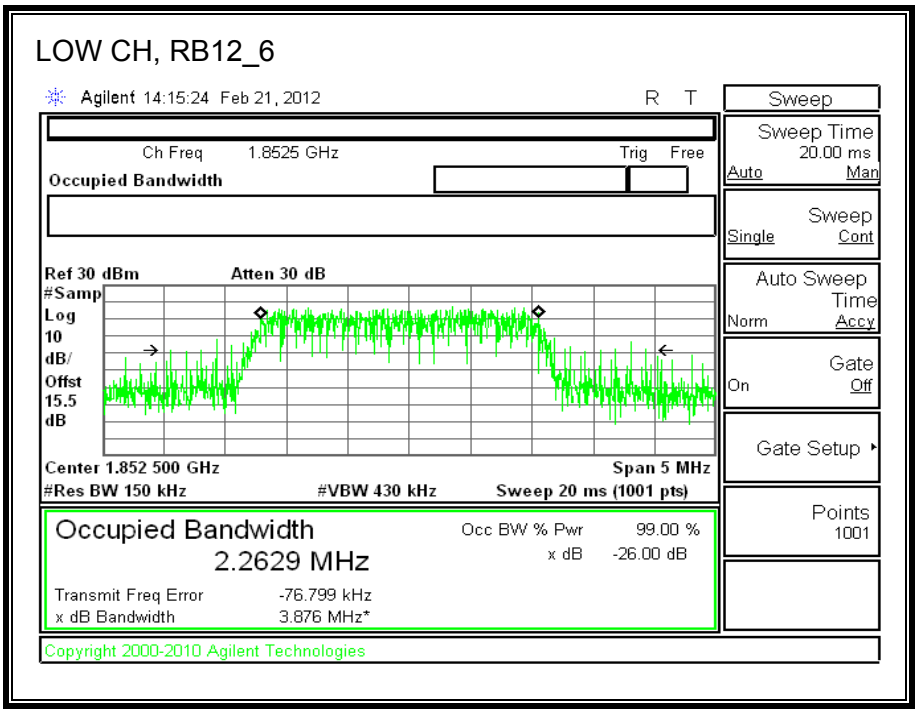
Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE BAND 25	5.0 MHz BAND QPSK	12/6	1852.5	2.2629	3.876
		25/0		4.5253	4.784
	5.0 MHz BAND 16QAM	12/6		2.2450	3.504
		25/0		4.5167	4.769
	5.0 MHz BAND QPSK	12/6	1882.5	2.2097	3.379
		25/0		4.4767	4.786
	5.0 MHz BAND 16QAM	12/6		2.1852	3.377
		25/0		4.4935	4.832
	5.0 MHz BAND QPSK	12/6	1912.5	2.2381	3.592
		25/0		4.4824	4.777
	5.0 MHz BAND 16QAM	12/6		2.1849	3.130
		25/0		4.5187	4.803

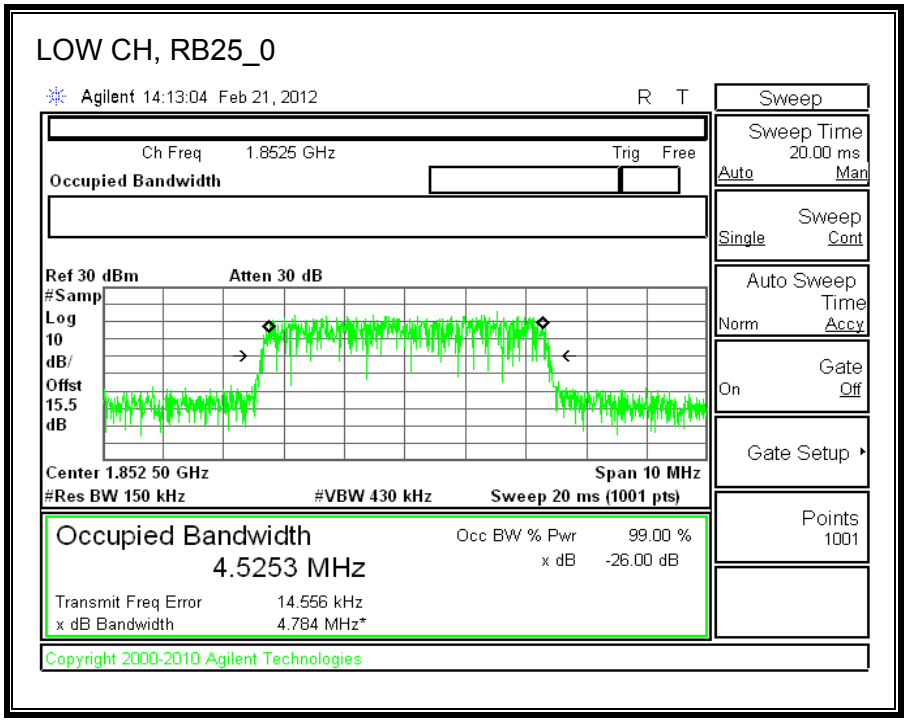
Band	Mode	RB/RB SIZE	f (MHz)	99% BW (kHz)	-26dB BW (kHz)
LTE BAND 25	10 MHz BAND QPSK	25/12	1855	4.4998	5.757
		50/0		8.9008	9.433
	10 MHz BAND 16QAM	25/12		4.5679	5.506
		50/0		9.0007	9.405
	10 MHz BAND QPSK	25/12	1882.5	4.5681	5.689
		50/0		8.9781	9.410
	10 MHz BAND 16QAM	25/12		4.5767	6.254
		50/0		8.9581	9.352
	10 MHz BAND QPSK	25/12	1910	4.5083	5.512
		50/0		8.9284	9.424
	10 MHz BAND 16QAM	25/12		4.4763	5.761
		50/0		8.9202	9.295

99% BANDWIDTH AND 26dB

LTE, Band 25 (5.0MHz BAND WIDTH)

QPSK





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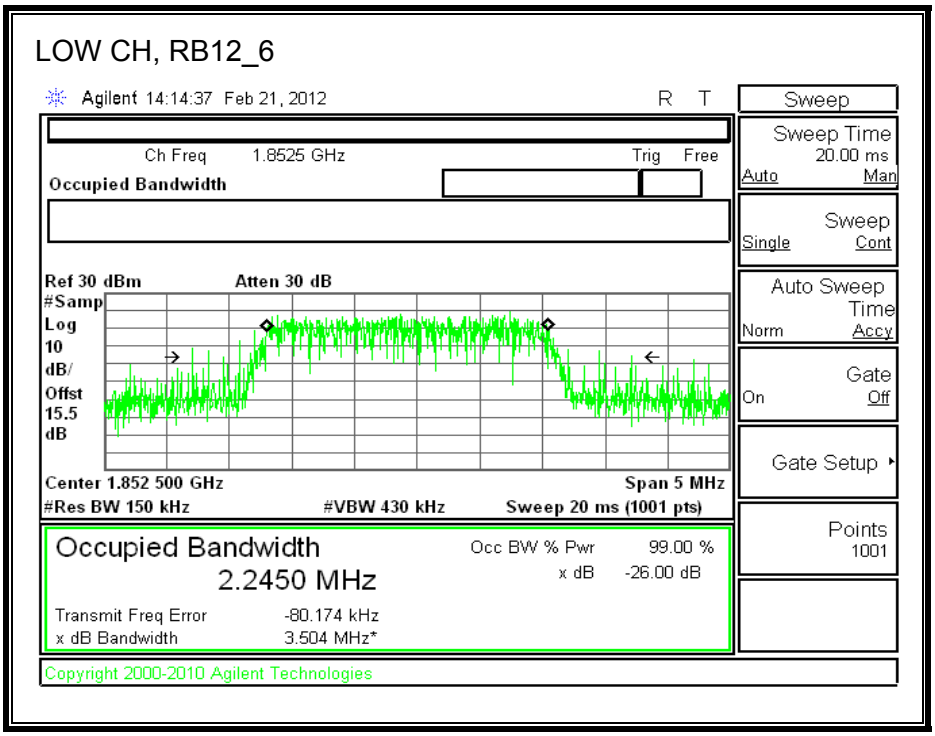

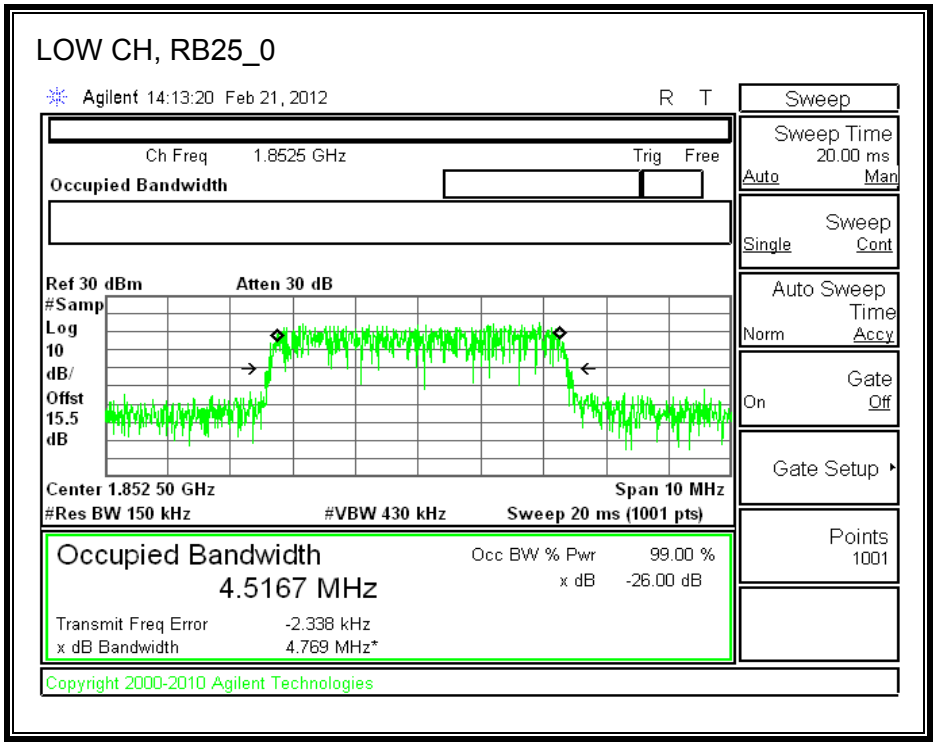

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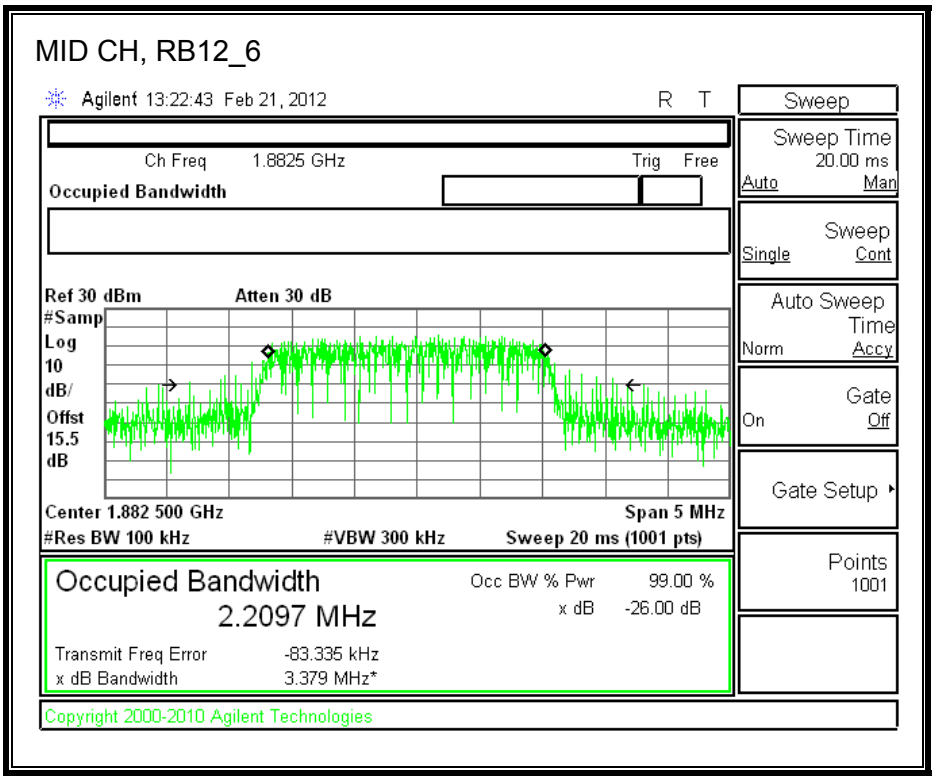

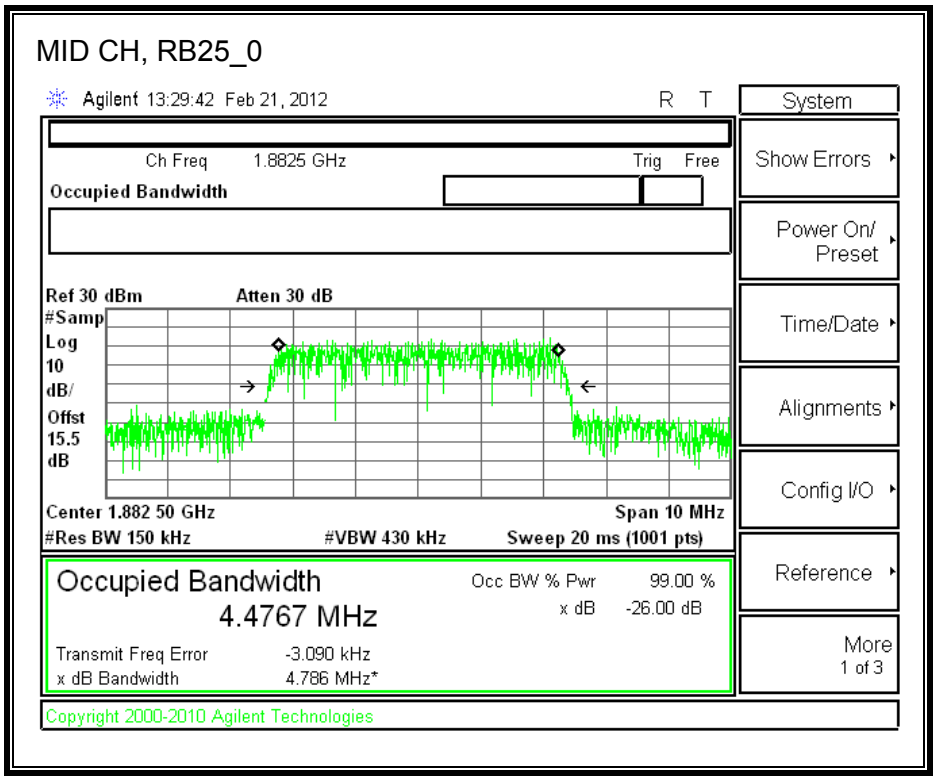

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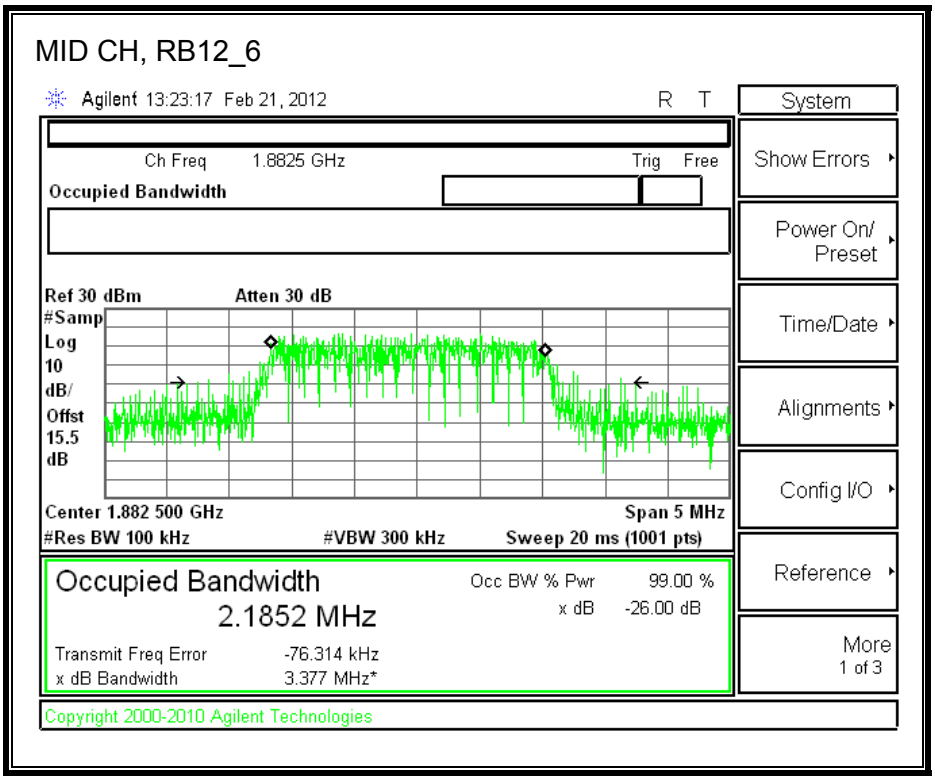

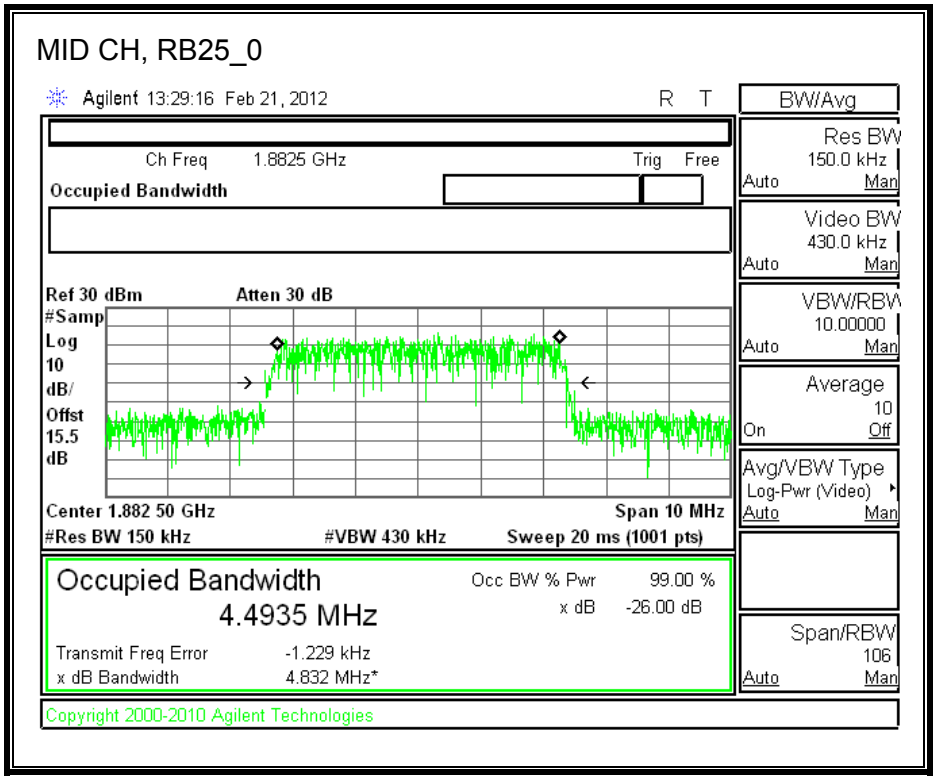

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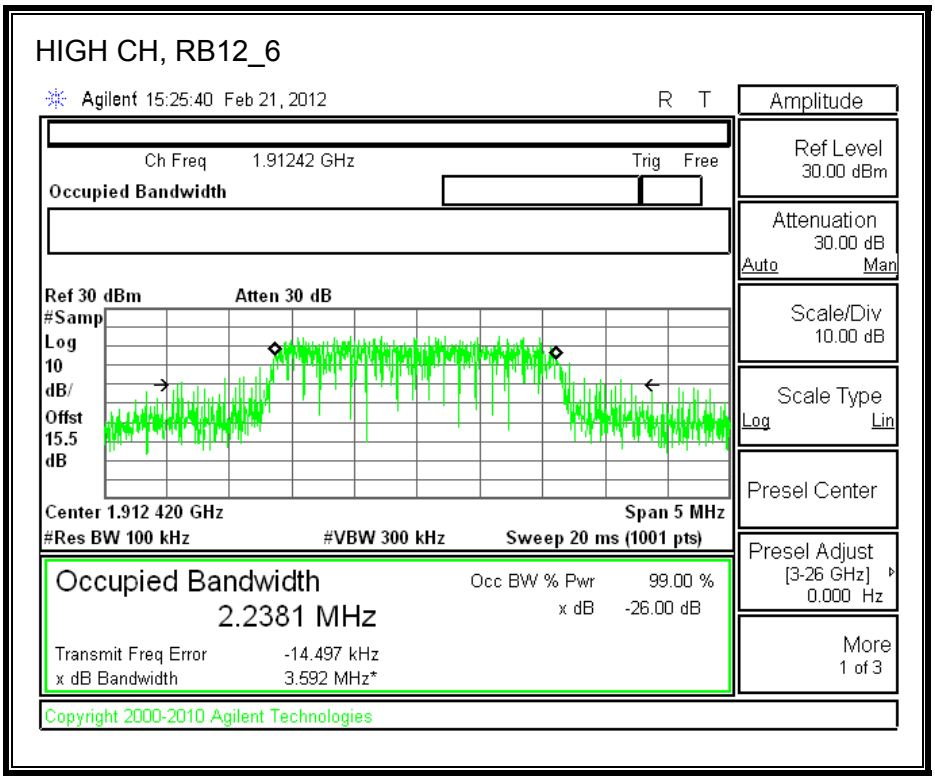

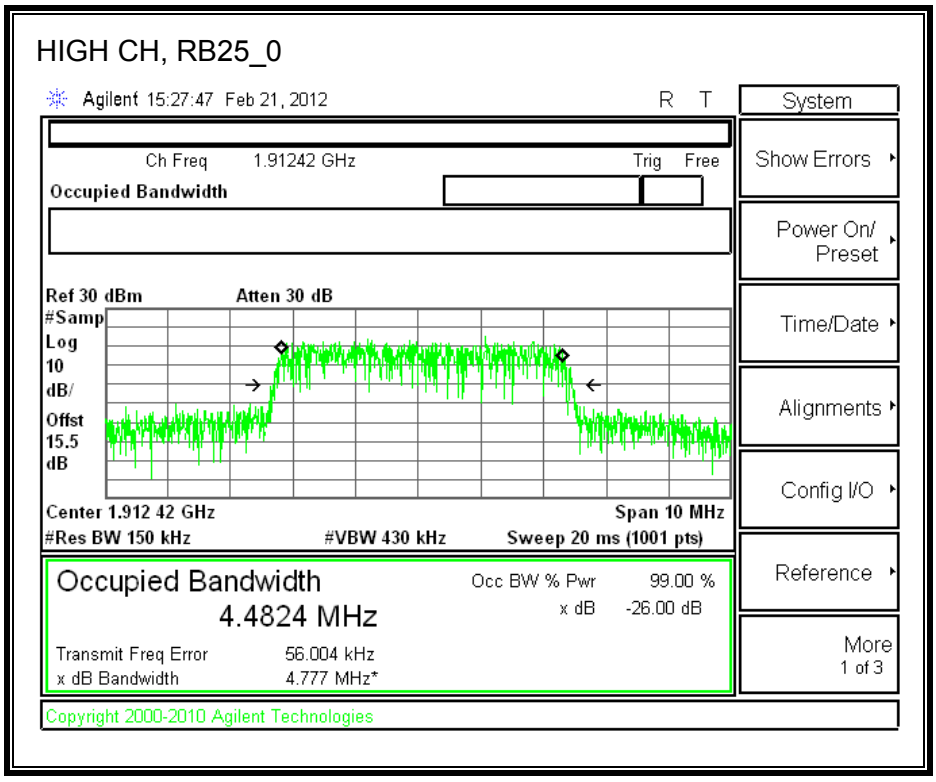

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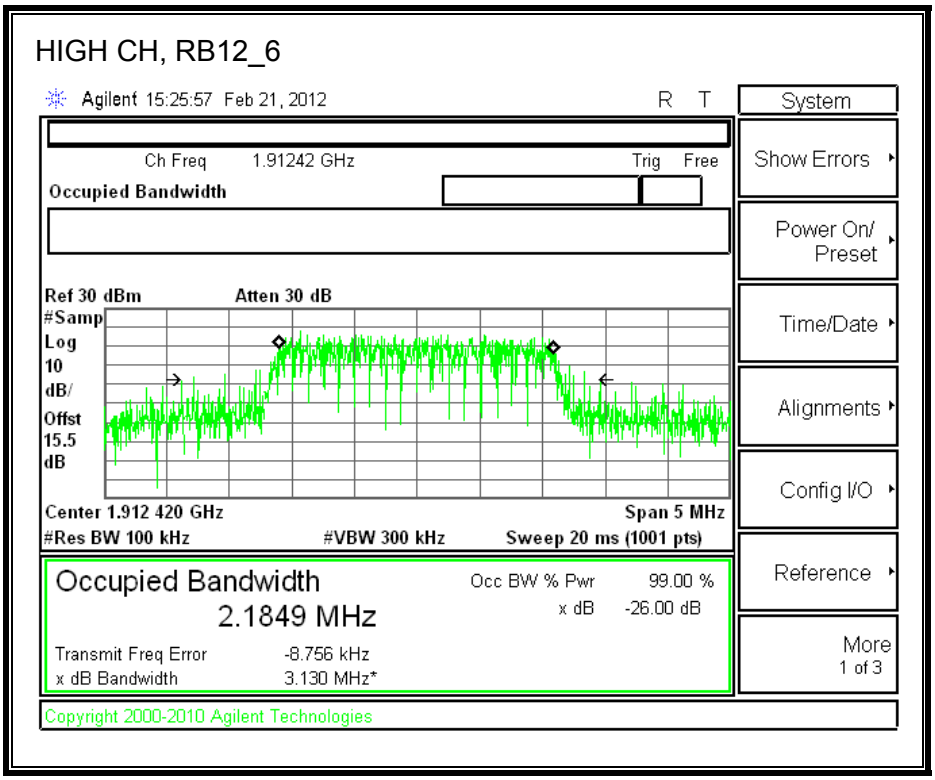
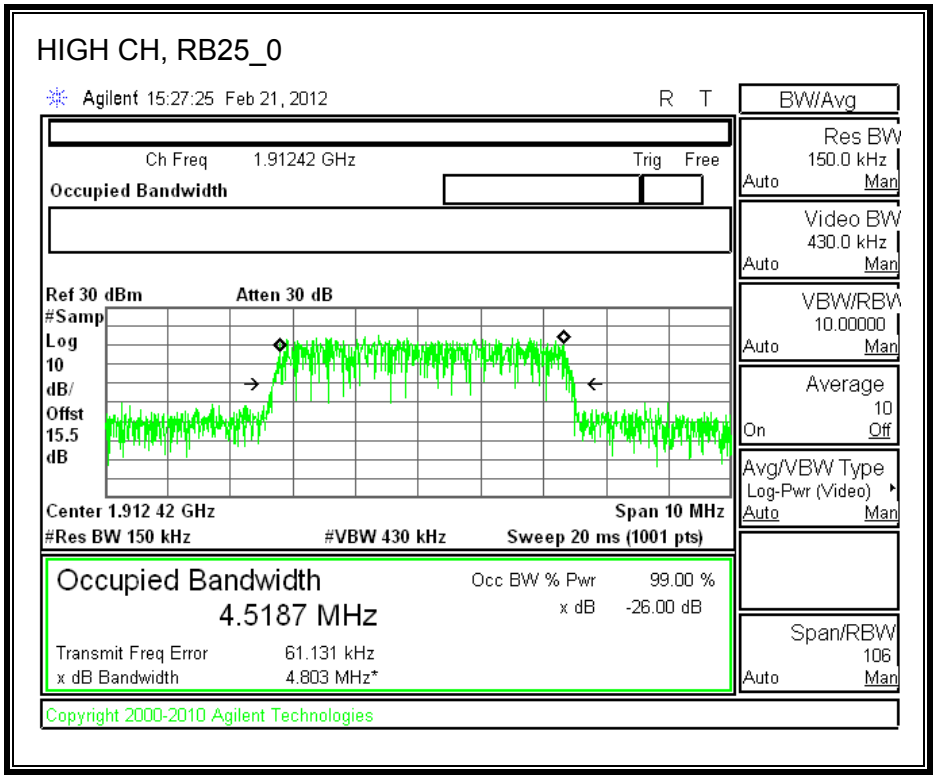
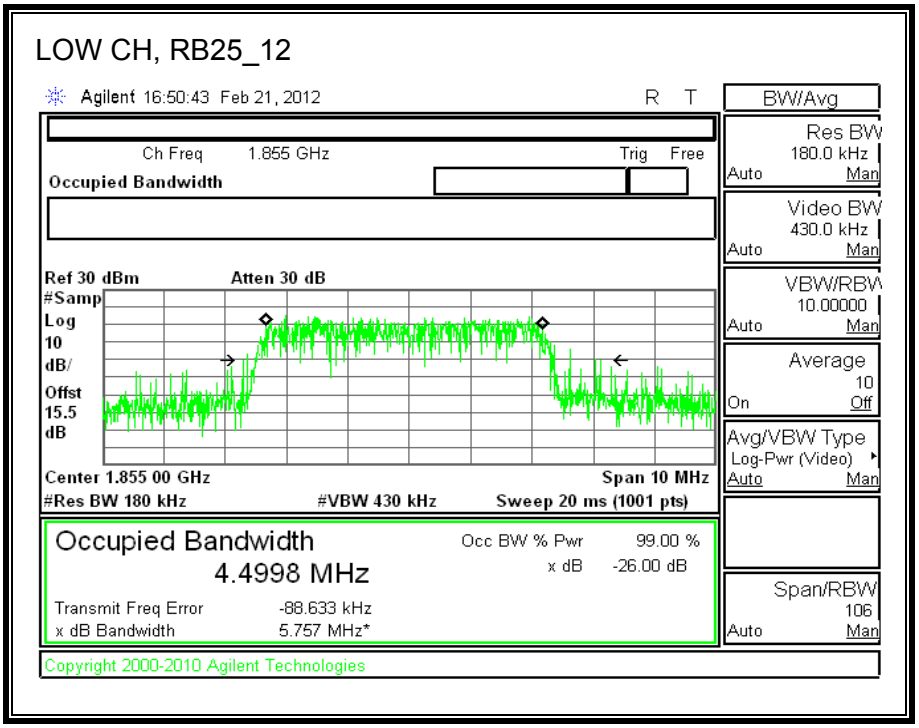
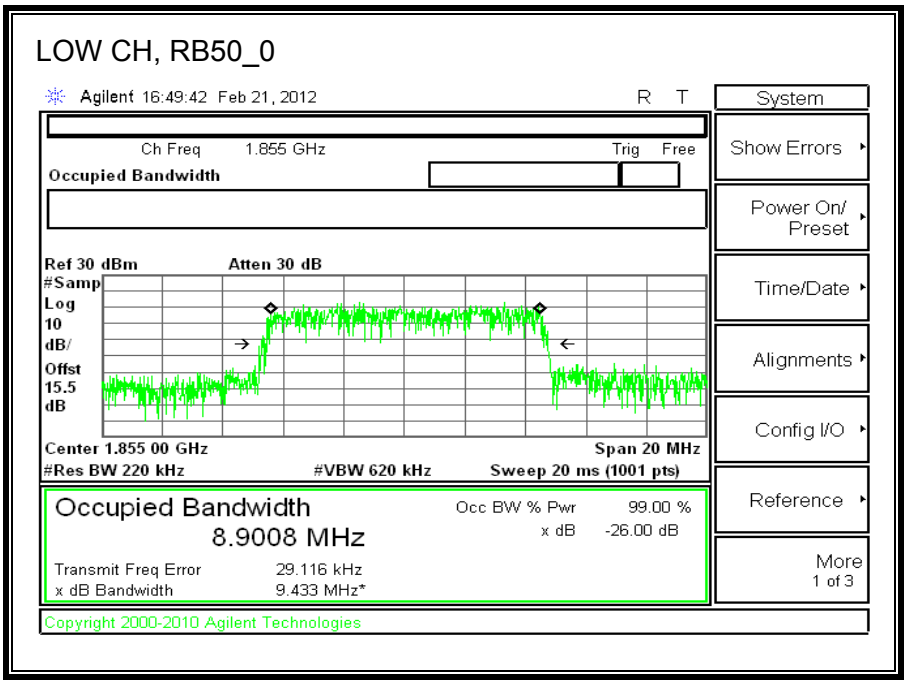




LTE, Band 25 (10.0MHz BAND WIDTH)

QPSK





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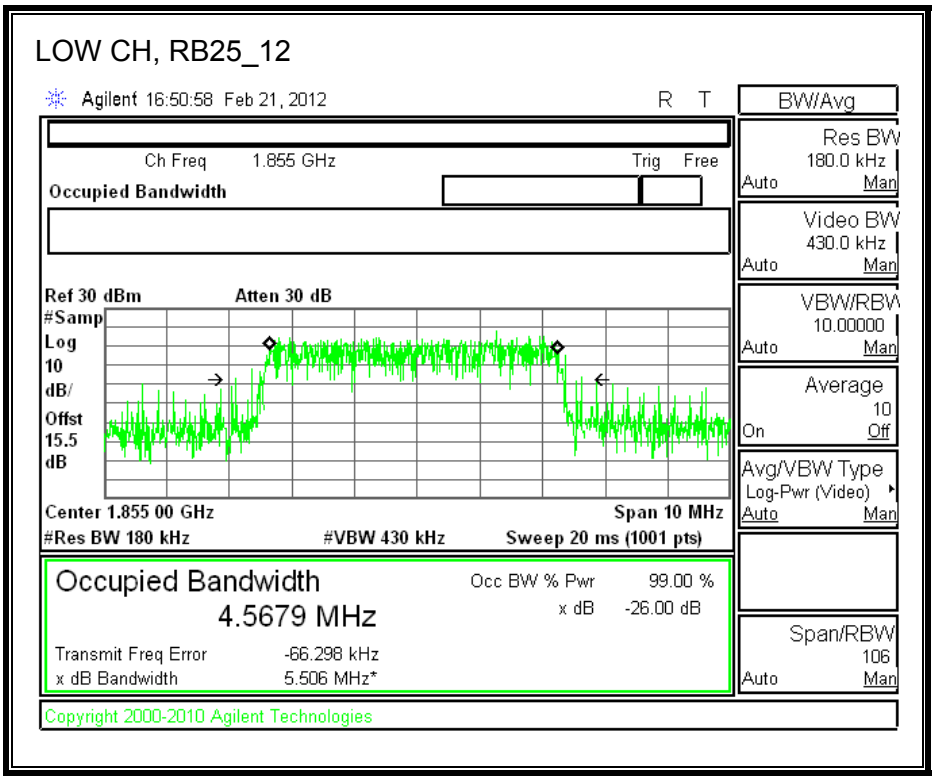

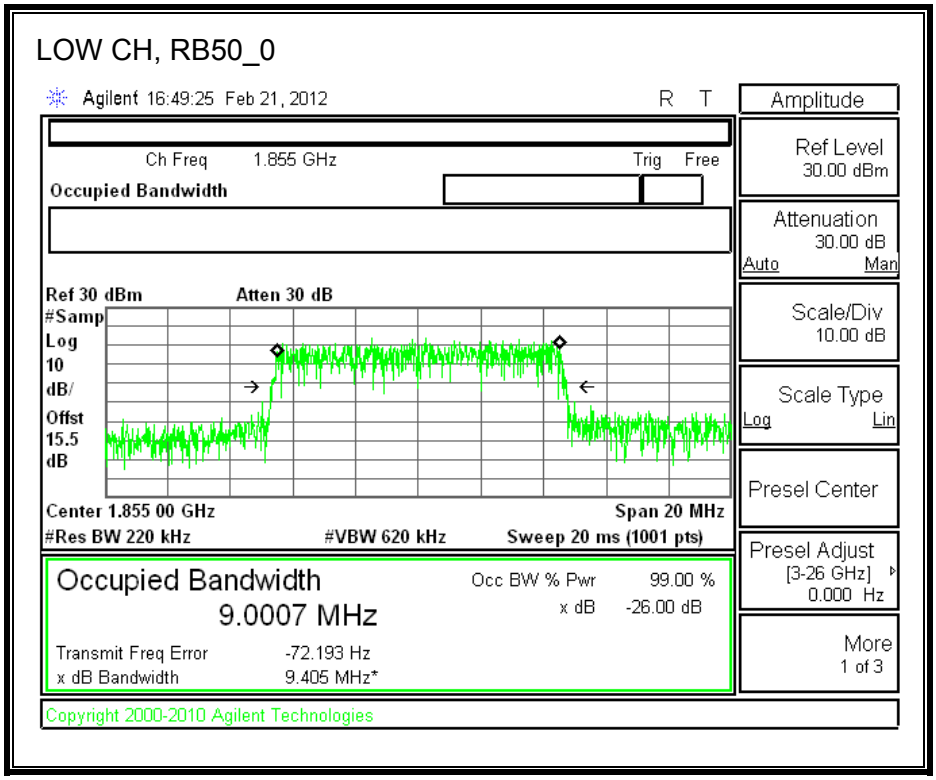

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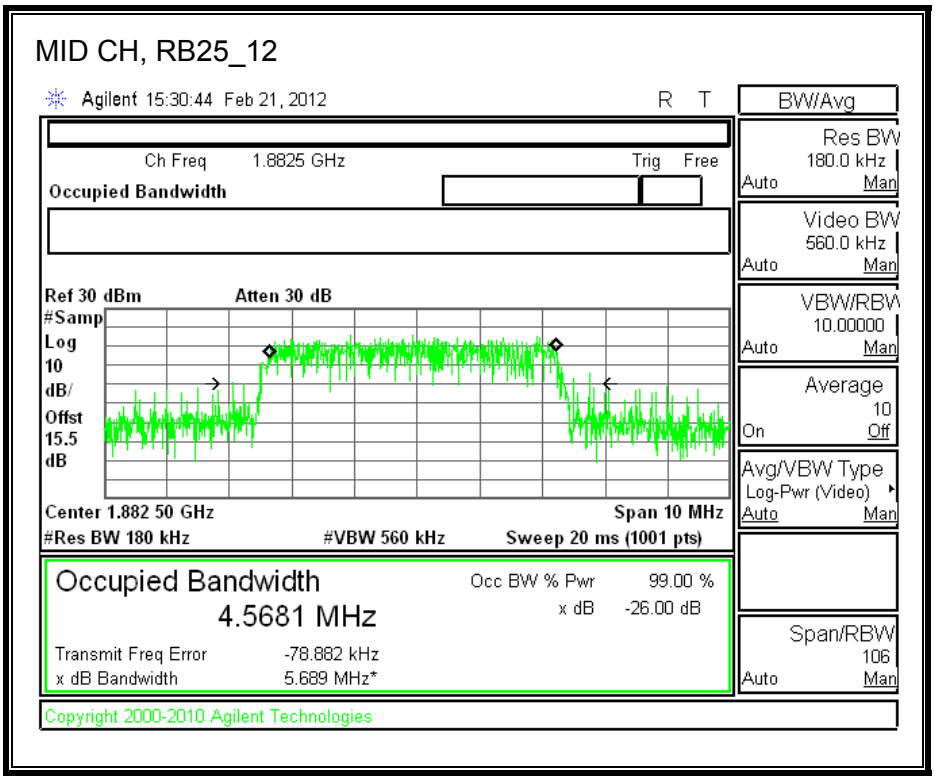
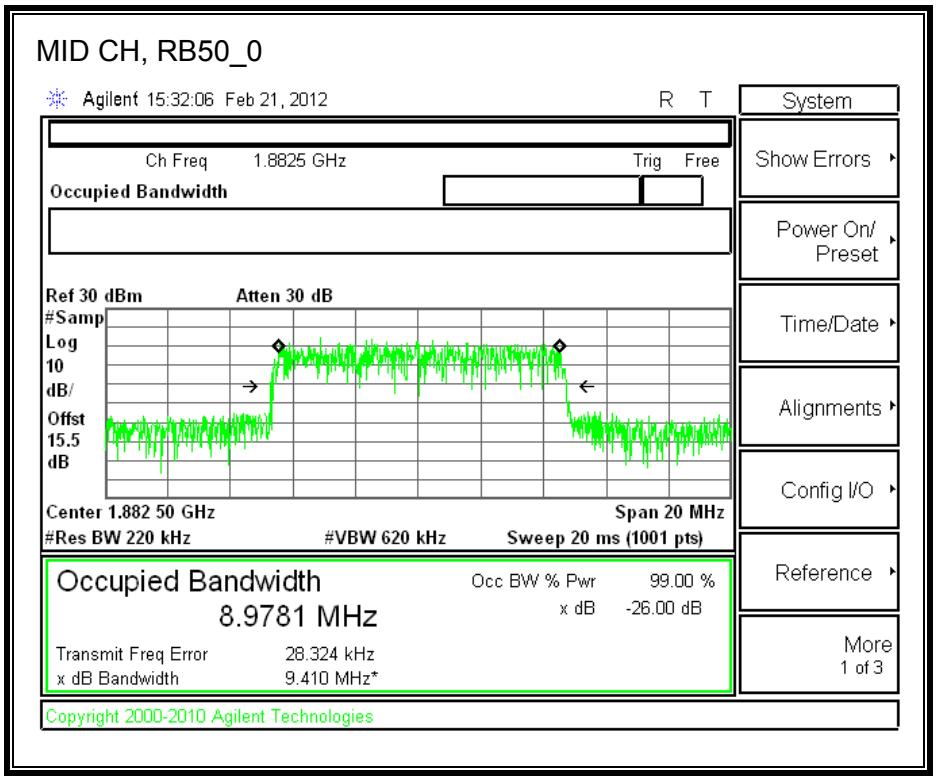
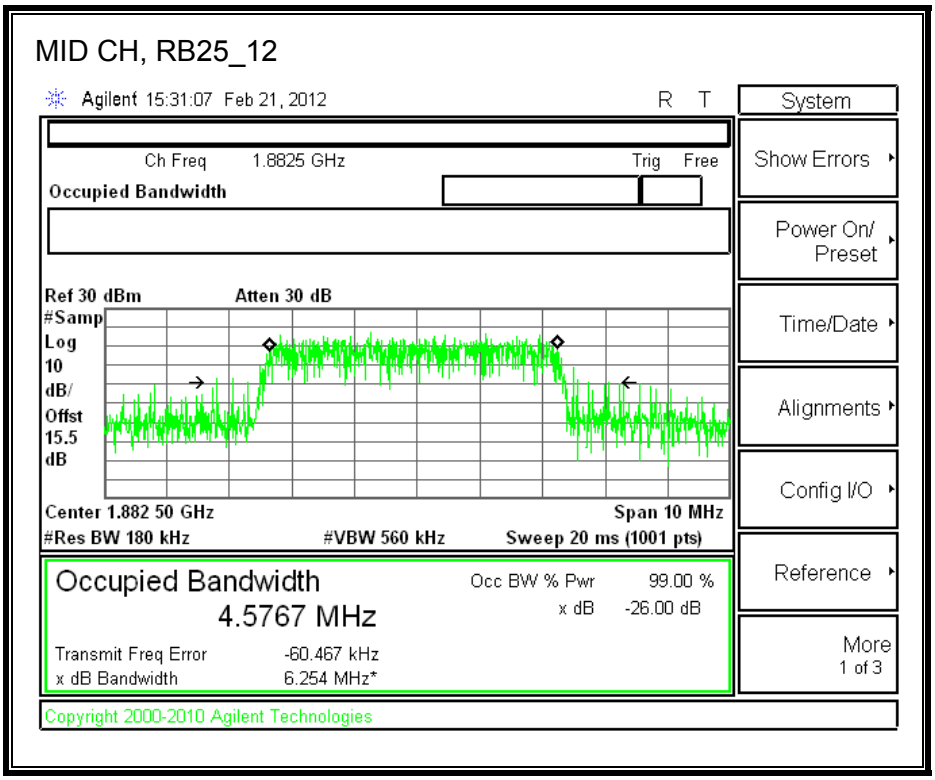
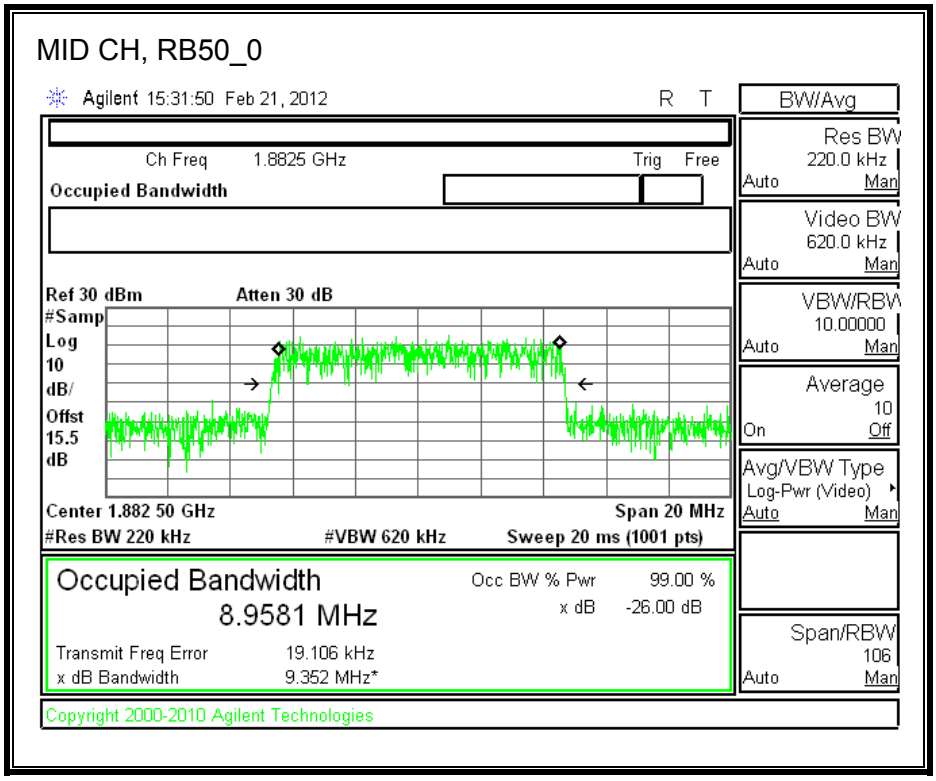


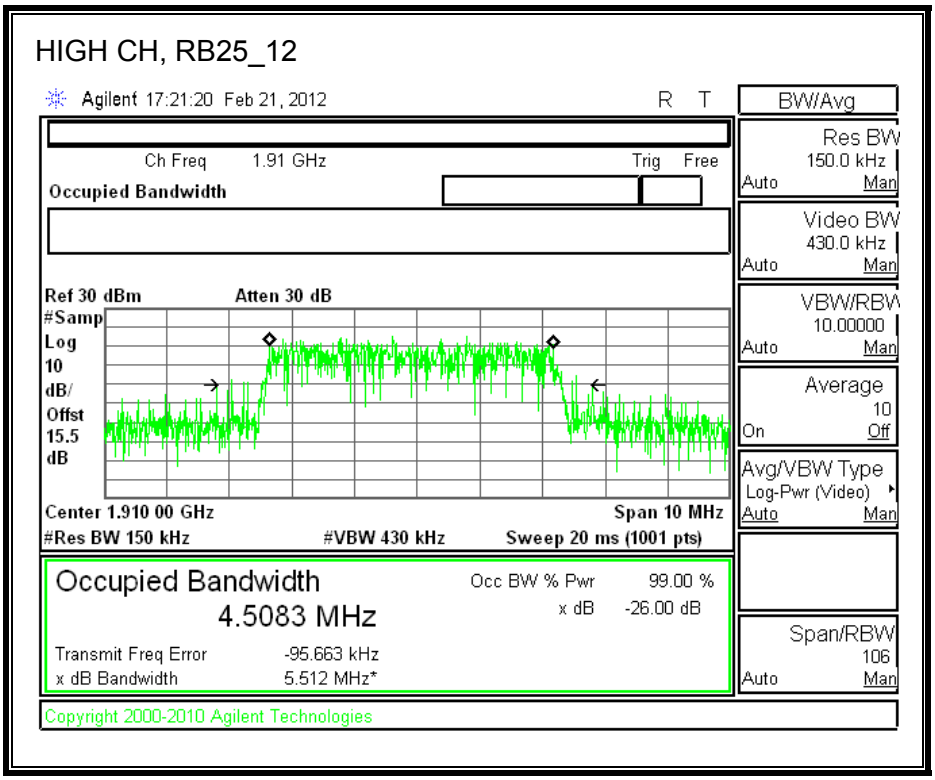


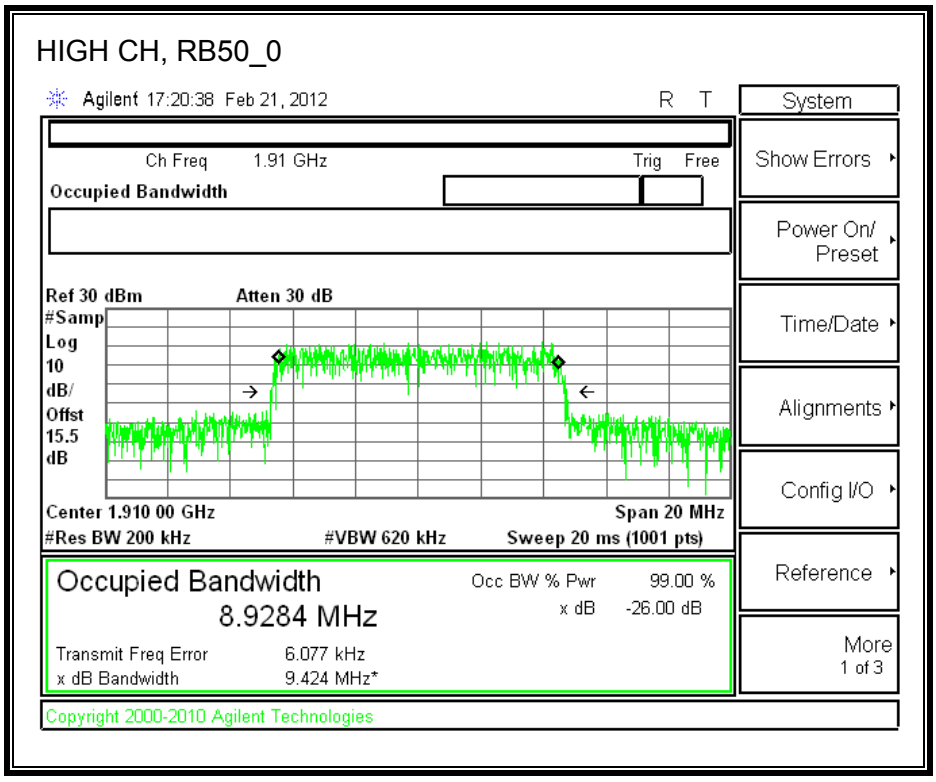
16QAM



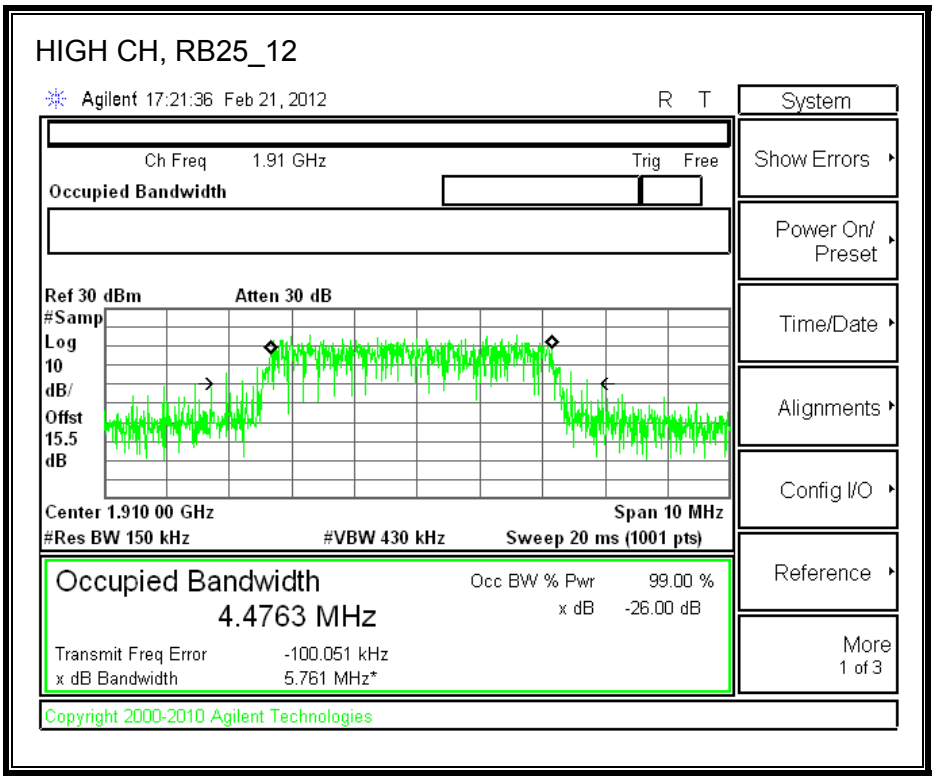


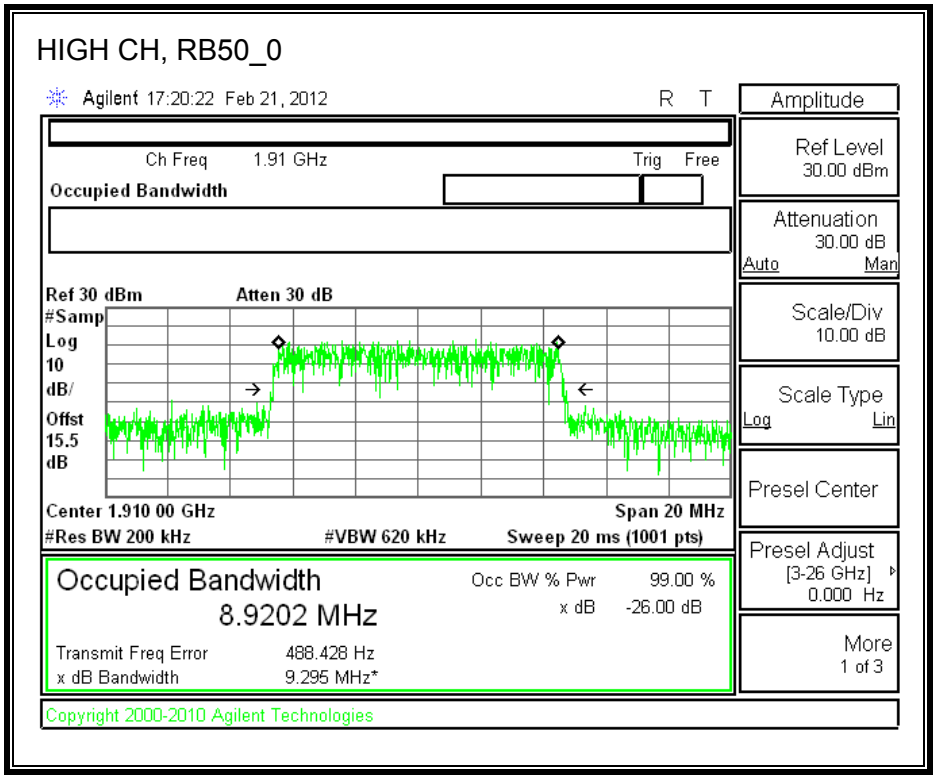
QPSK





16QAM





8.2. BAND EDGE

RULE PART(S)

FCC: §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 CMW500 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 (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

- LTE Band 25

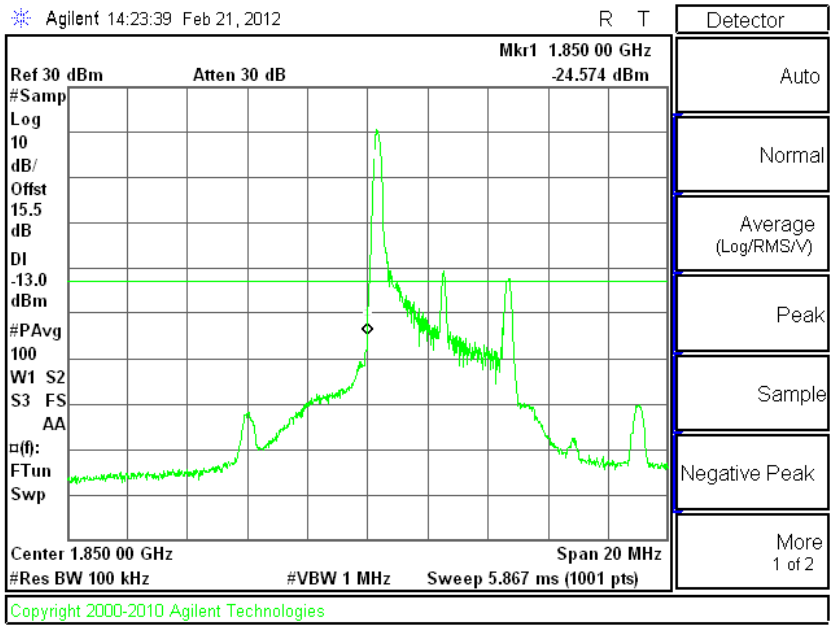
RESULTS

BANDEDGE

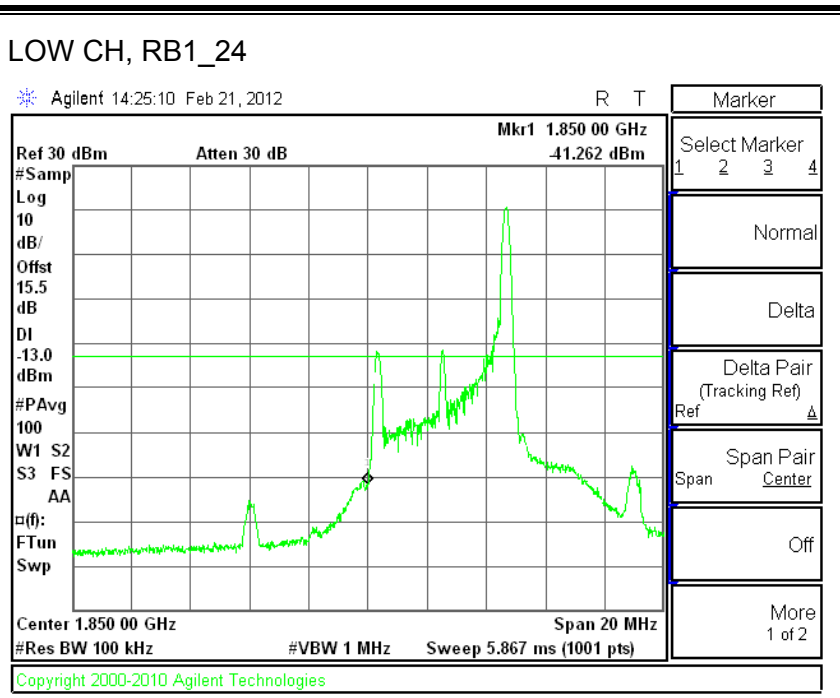
LTE, Band 25 (5.0MHz BAND WIDTH)

QPSK

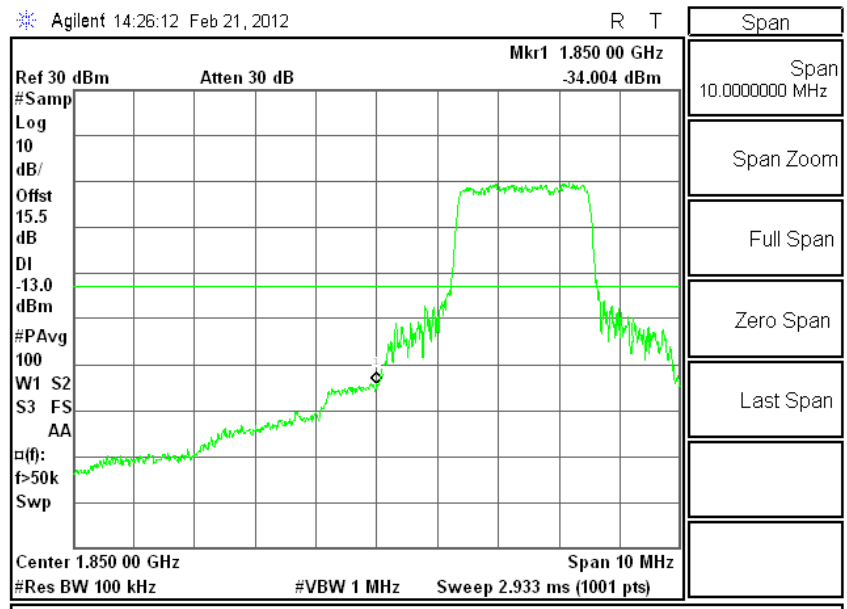
LOW CH, RB1_0



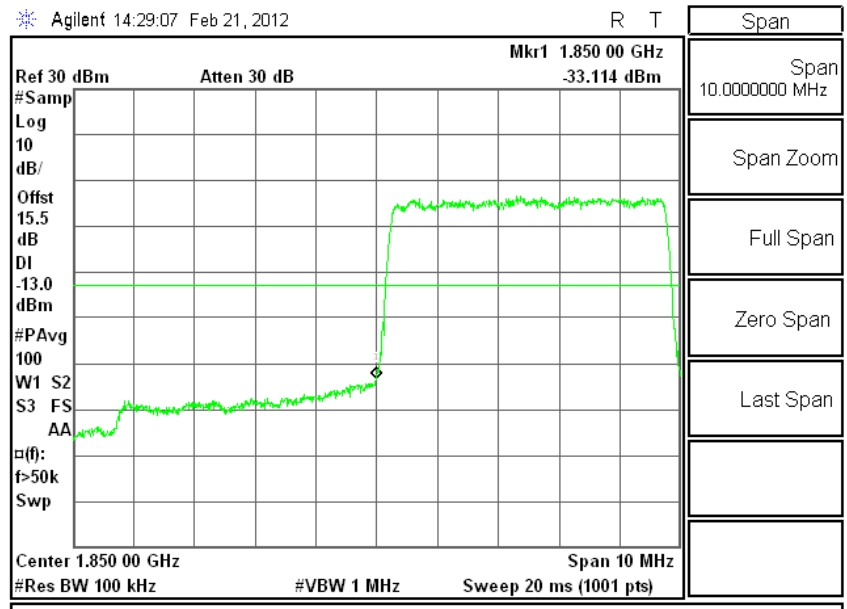
LOW CH, RB1_24



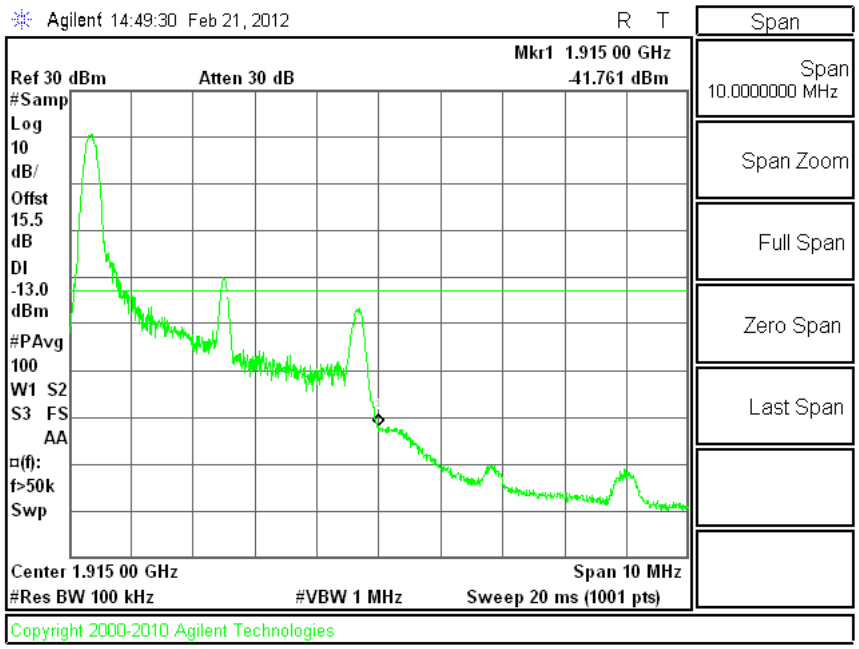
LOW CH, RB12_6



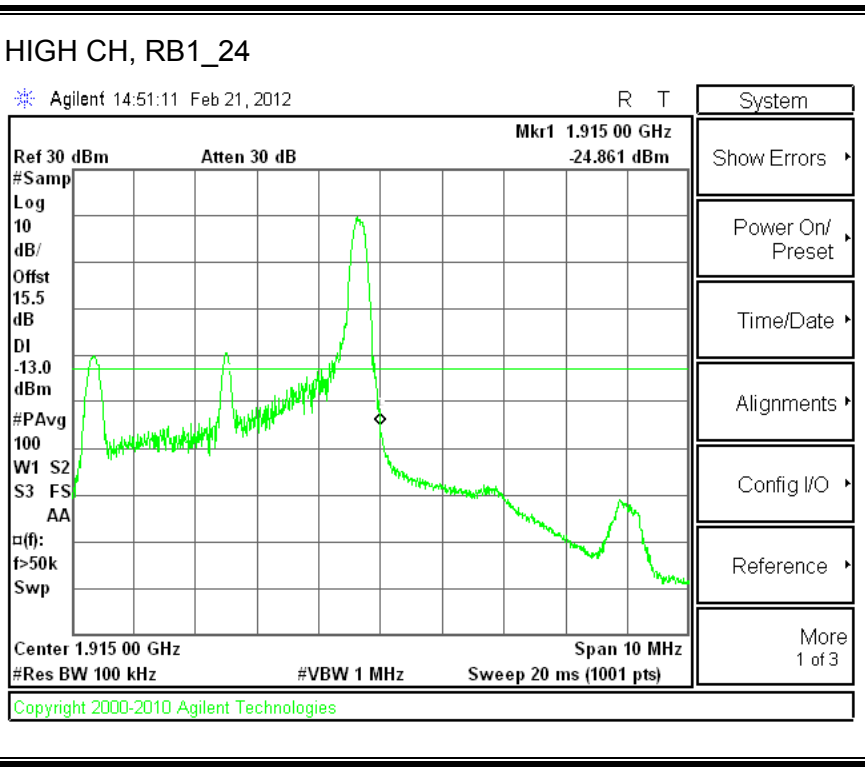
LOW CH, RB25_0



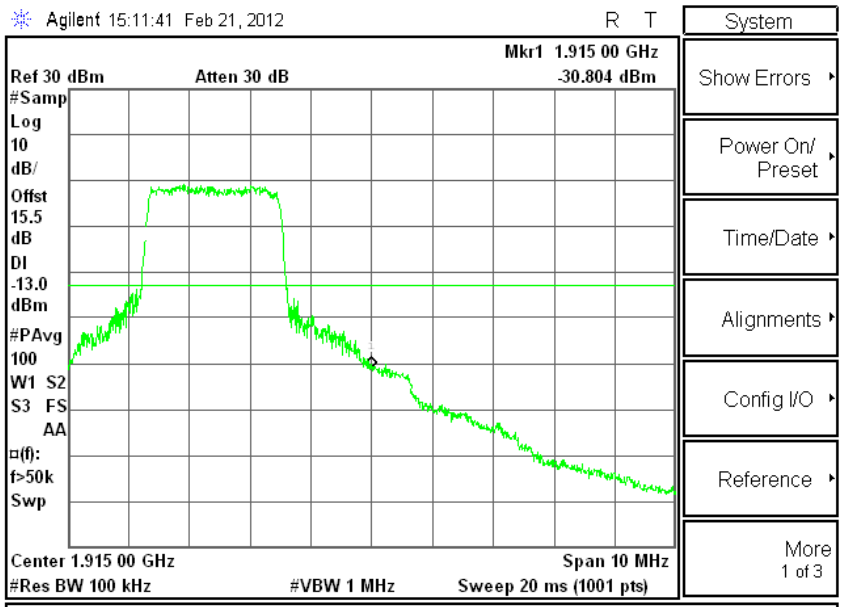
HIGH CH, RB1_0



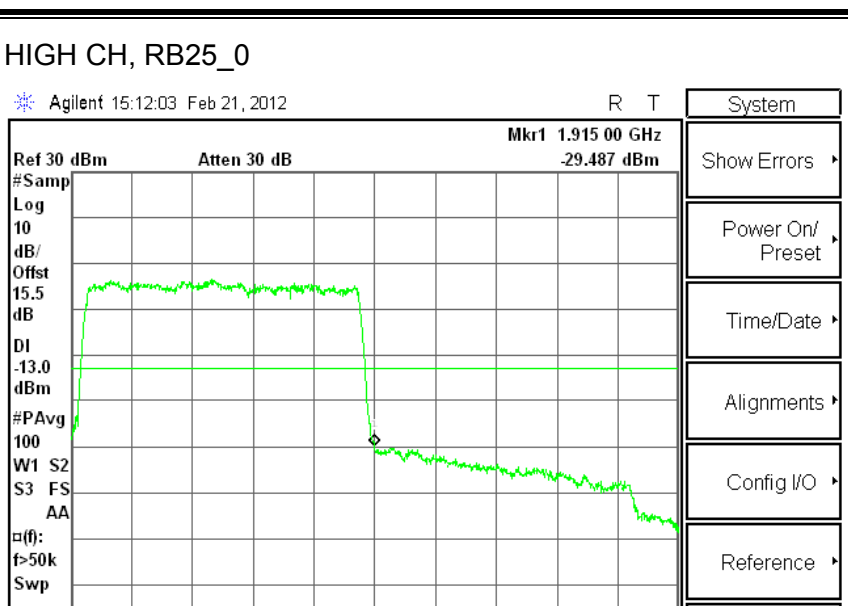
HIGH CH, RB1_24



HIGH CH, RB12_6



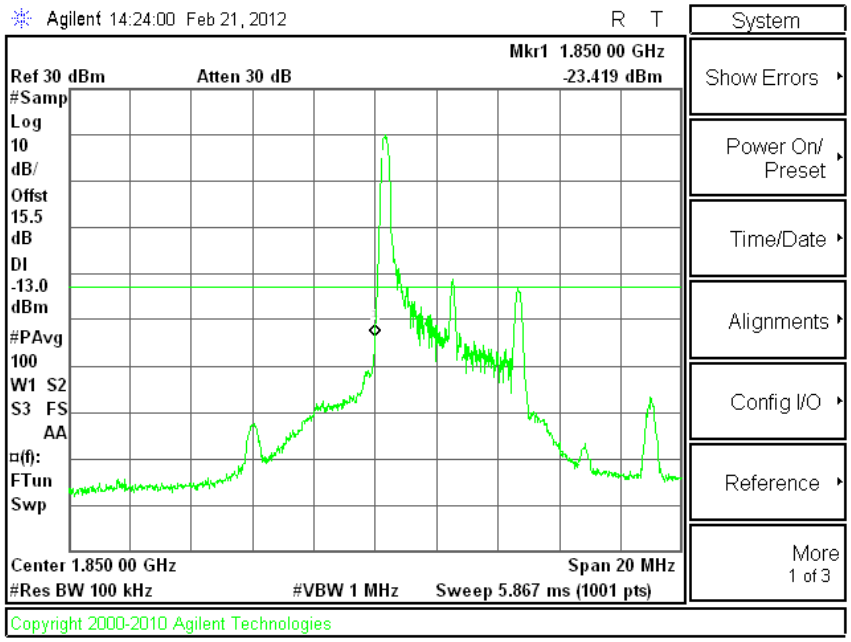
HIGH CH, RB25_0



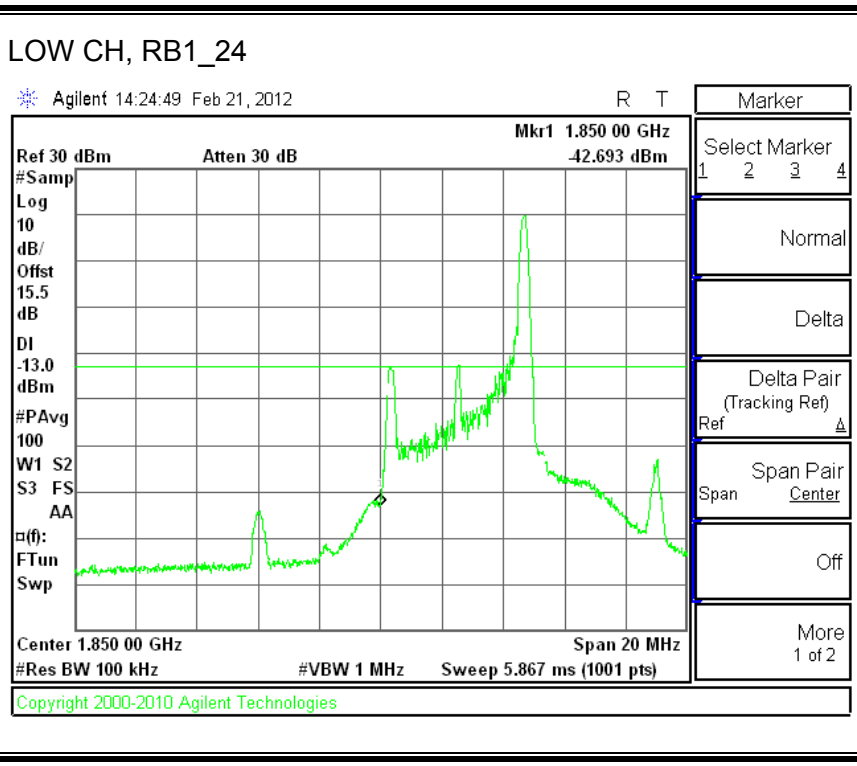
LTE, Band 25 (5.0MHz BAND WIDTH)

16QAM

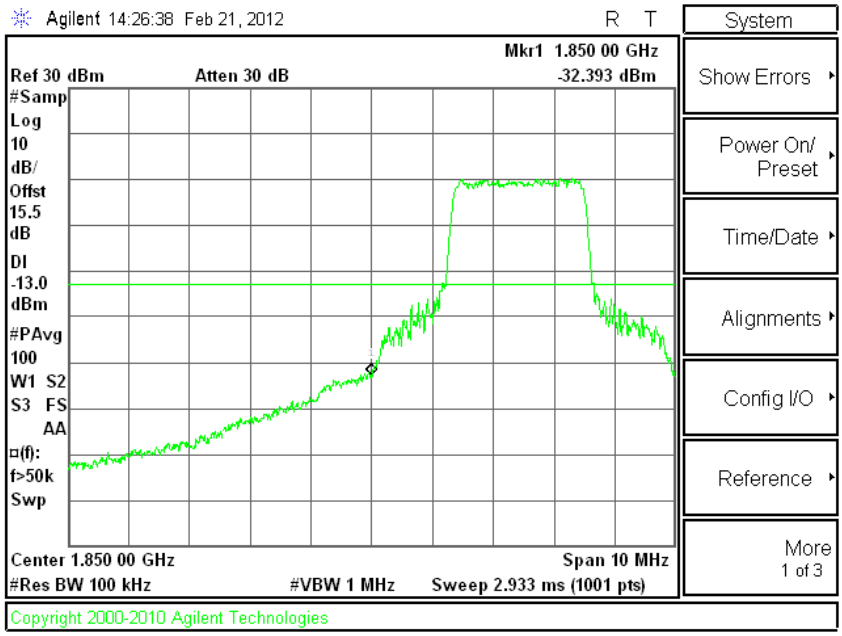
LOW CH, RB1_0



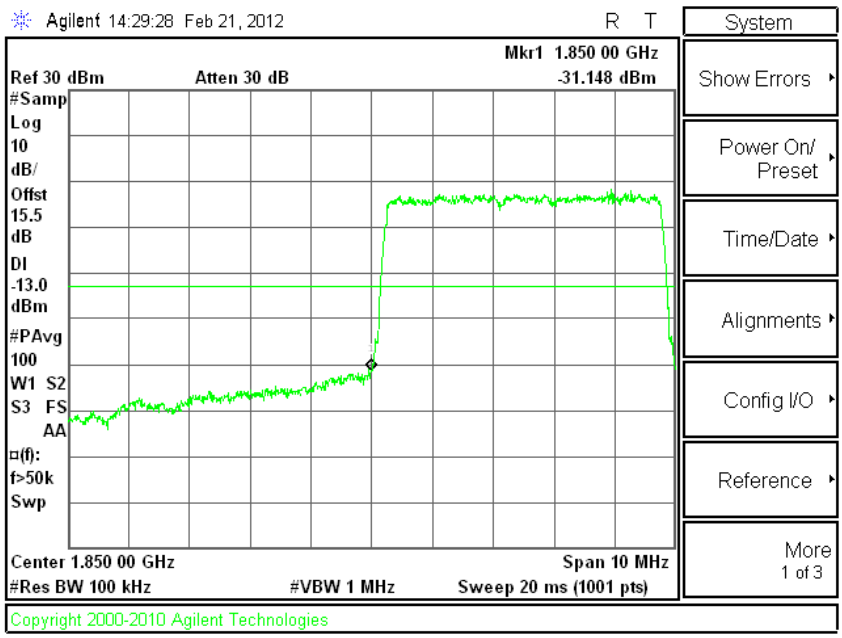
LOW CH, RB1_24



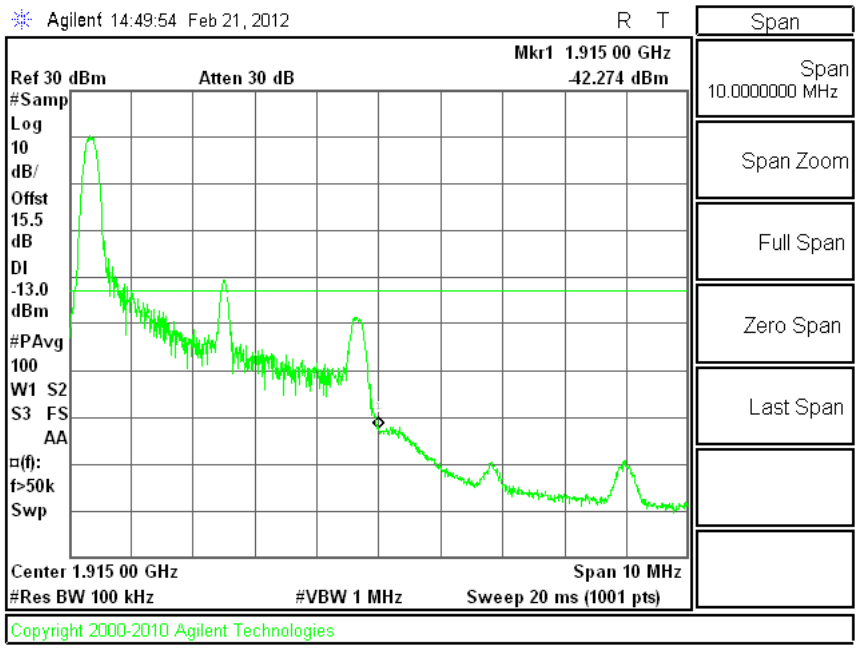
LOW CH, RB12_6



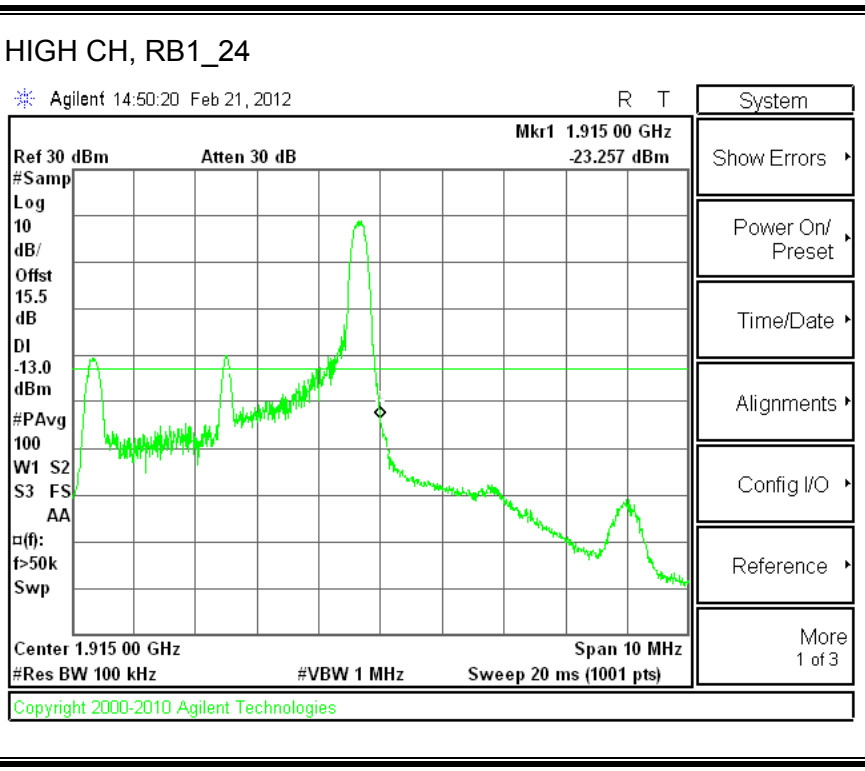
LOW CH, RB25_0



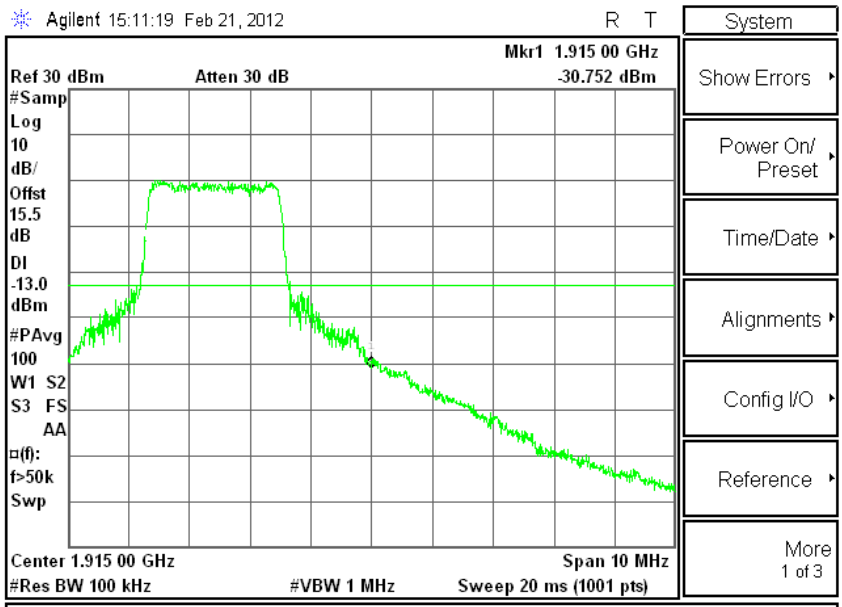
HIGH CH, RB1_0



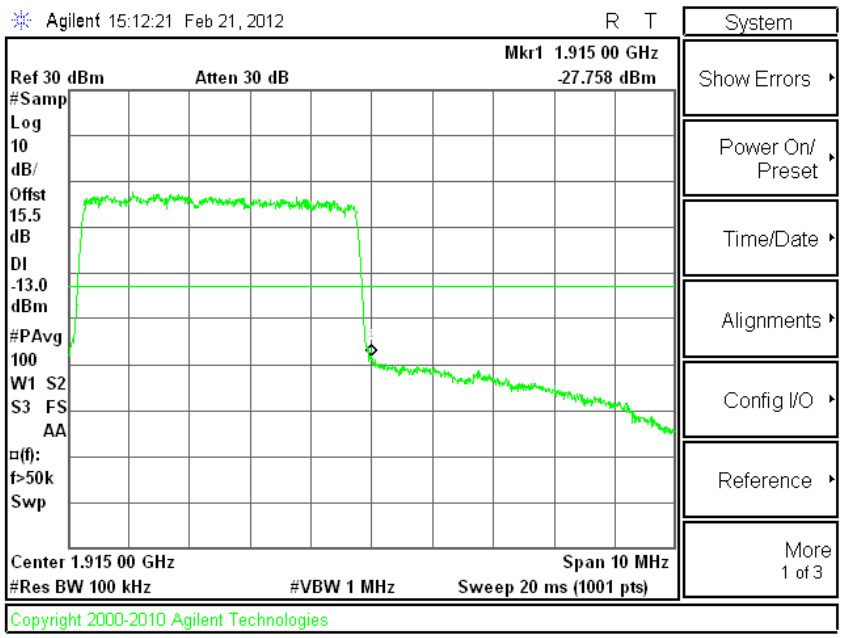
HIGH CH, RB1_24



HIGH CH, RB12_6



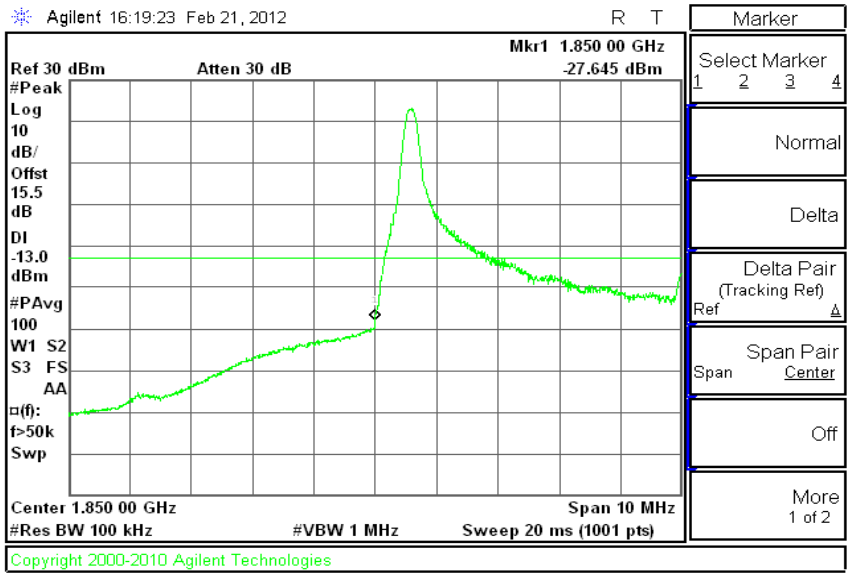
HIGH CH, RB25_0



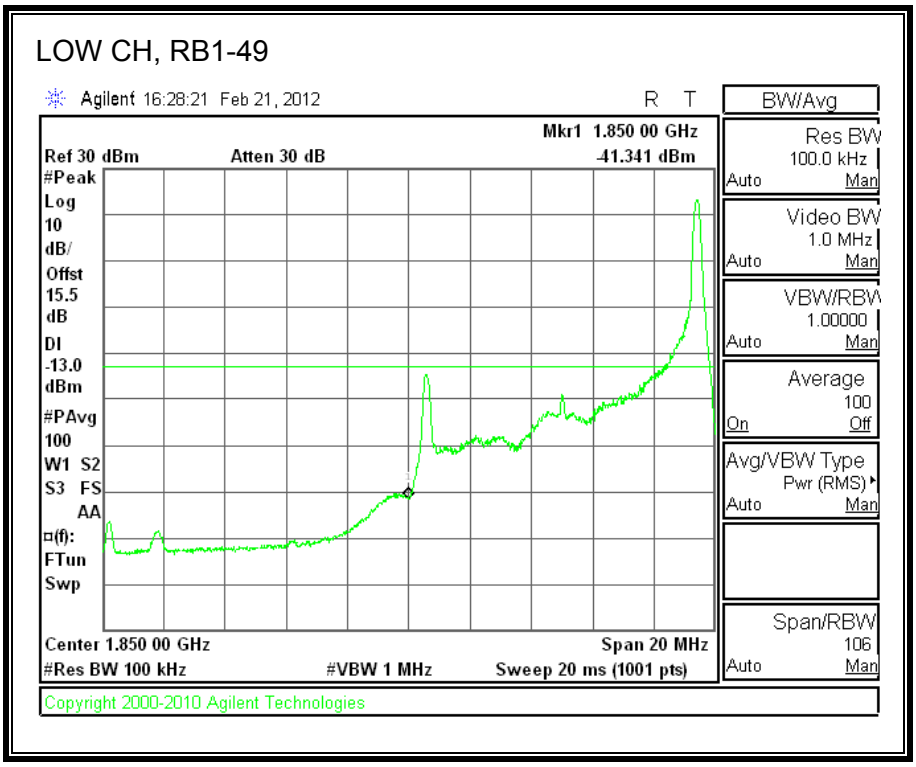
LTE, Band 25 (10.0MHz BAND WIDTH)

QPSK

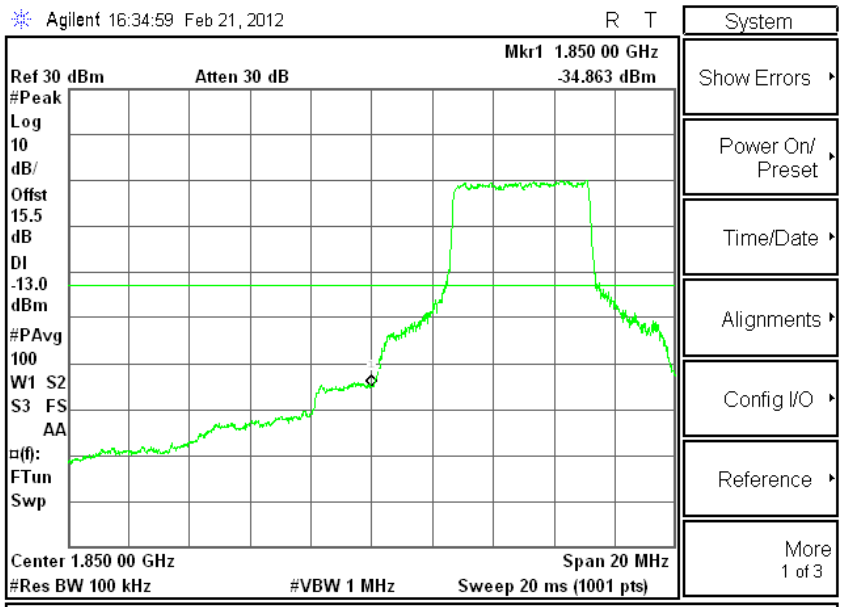
LOW CH, RB1_0



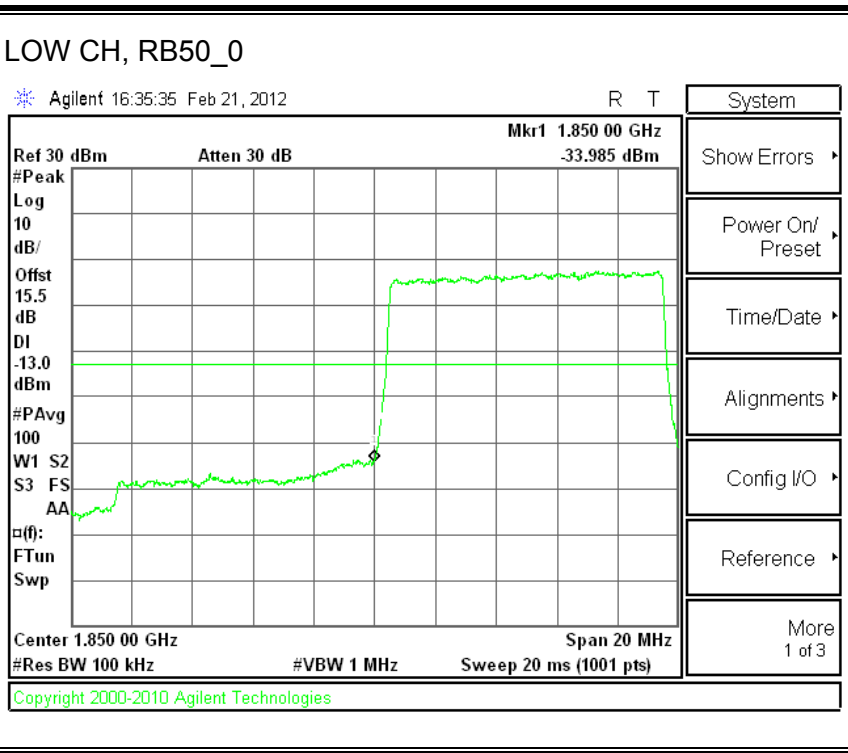
LOW CH, RB1-49



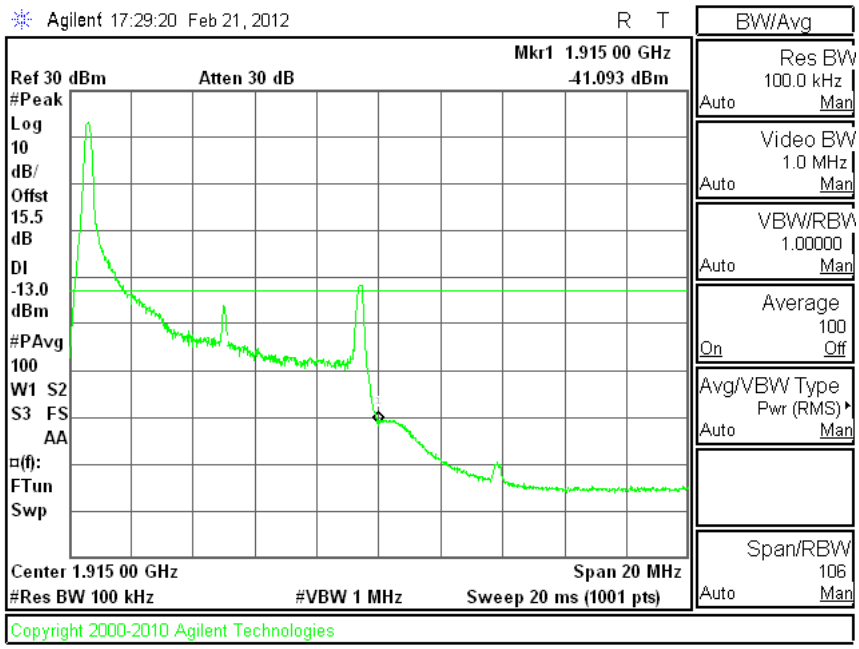
LOW CH, RB25_12



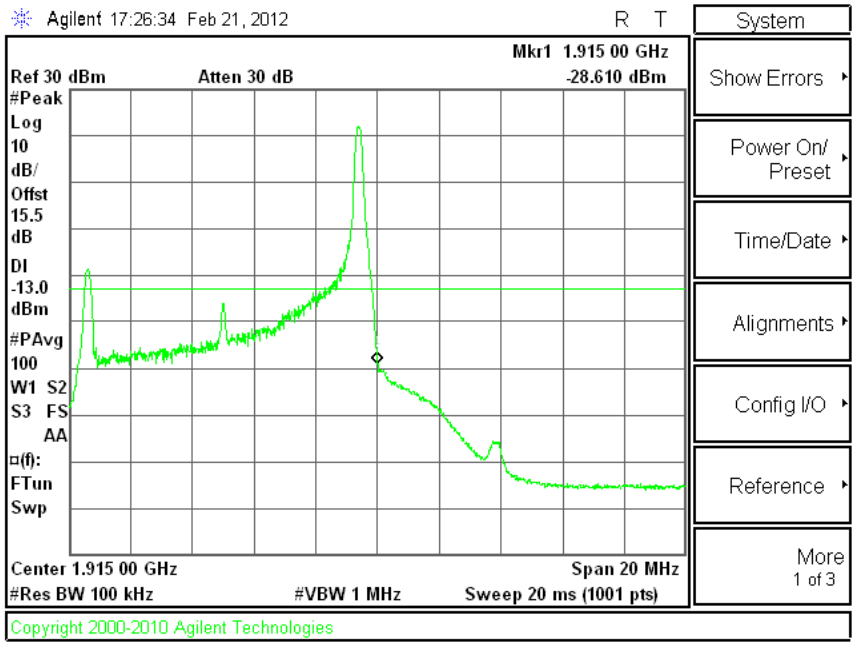
LOW CH, RB50_0



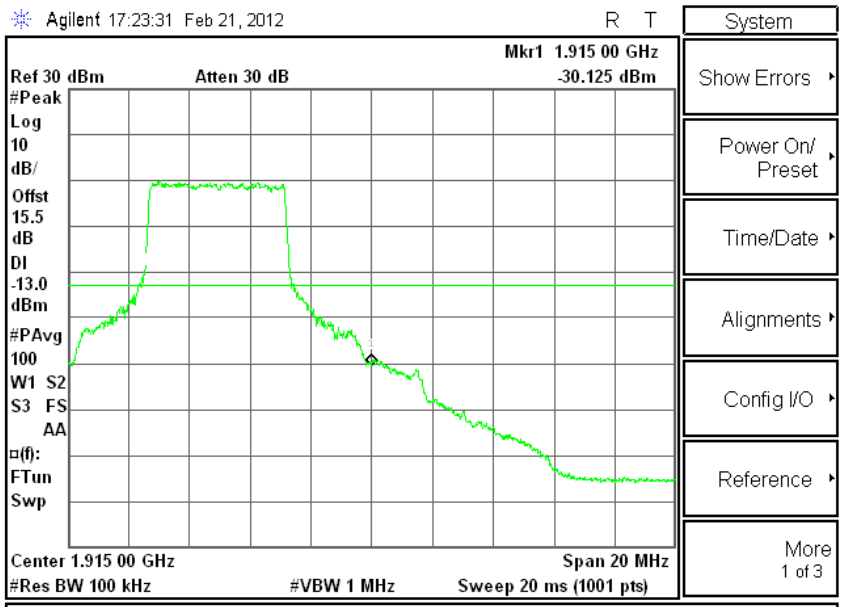
HIGH CH, RB1_0



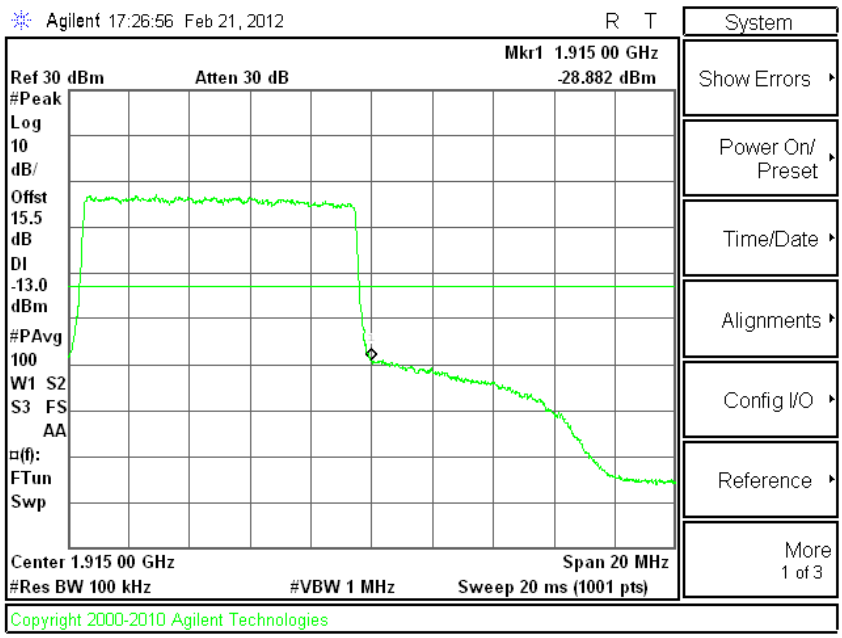
HIGH CH, RB1_49



HIGH CH, RB25_12



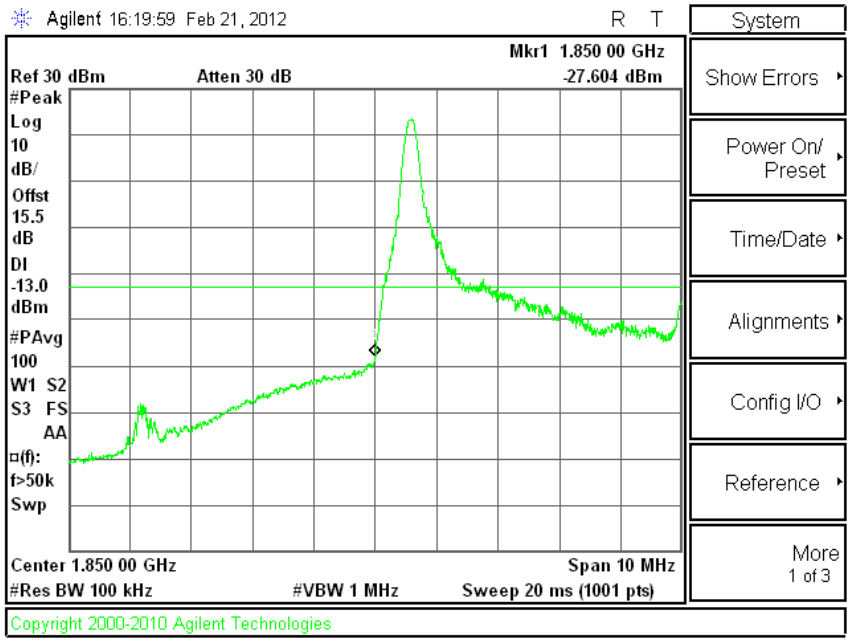
HIGH CH, RB50_0



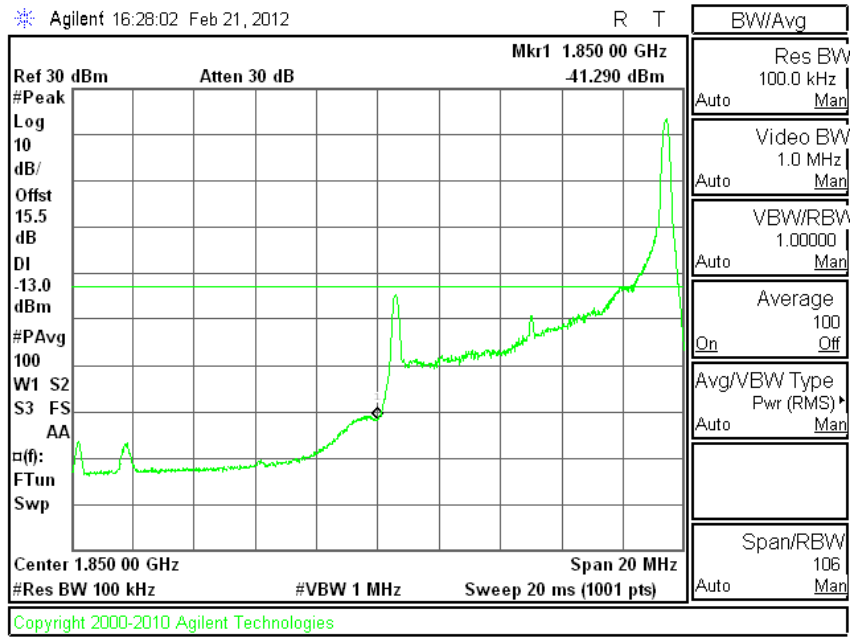
LTE, Band 25 (10.0MHz BAND WIDTH)

16QAM

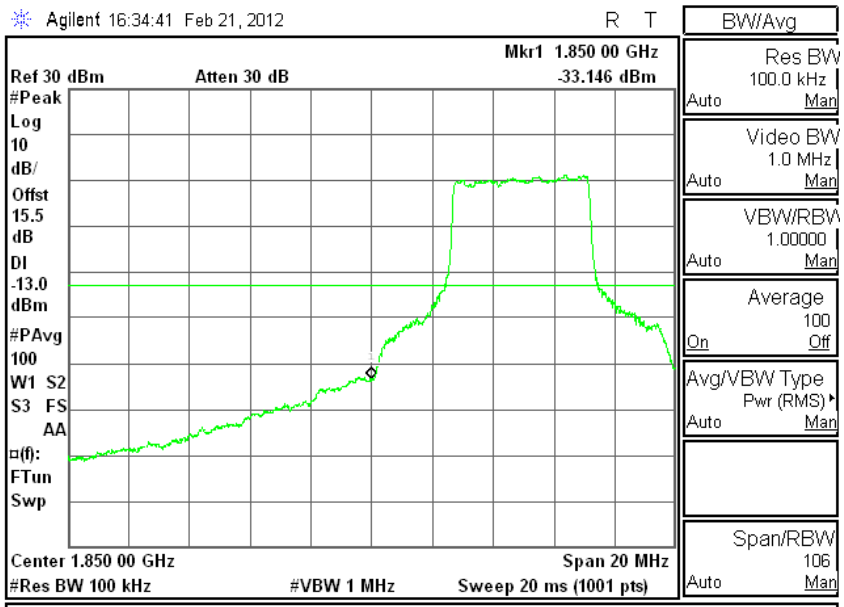
LOW CH, RB1_0



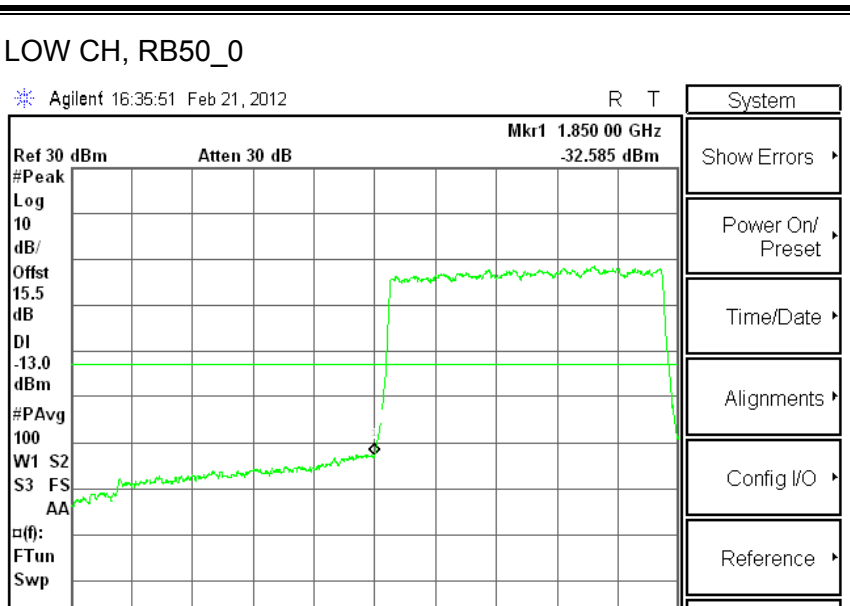
LOW CH, RB1_49



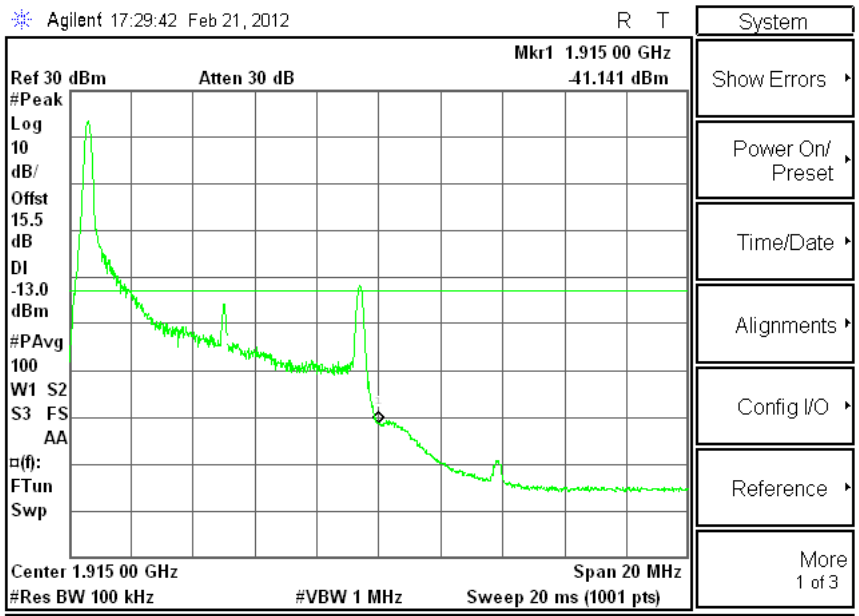
LOW CH, RB25_12



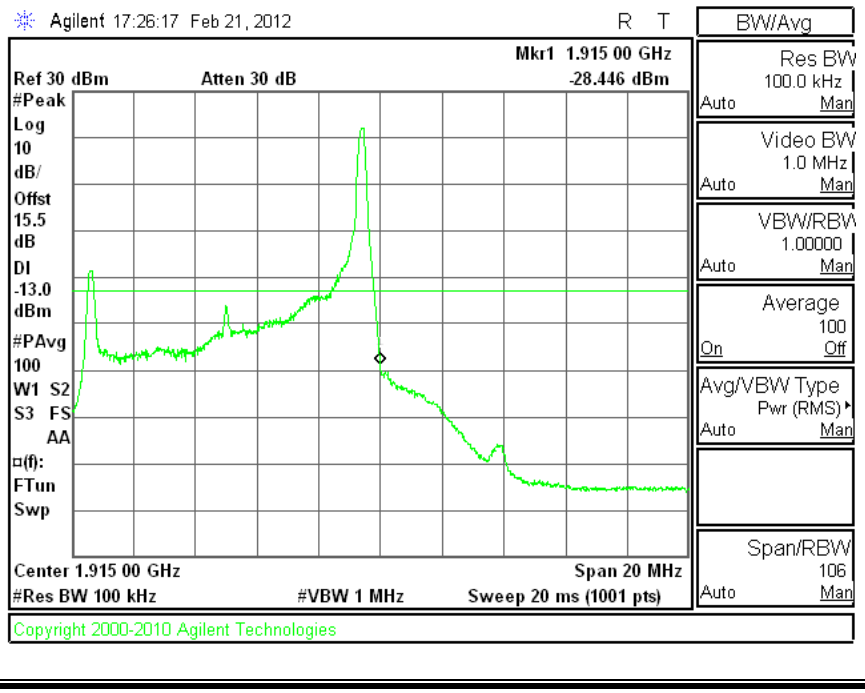
LOW CH, RB50_0



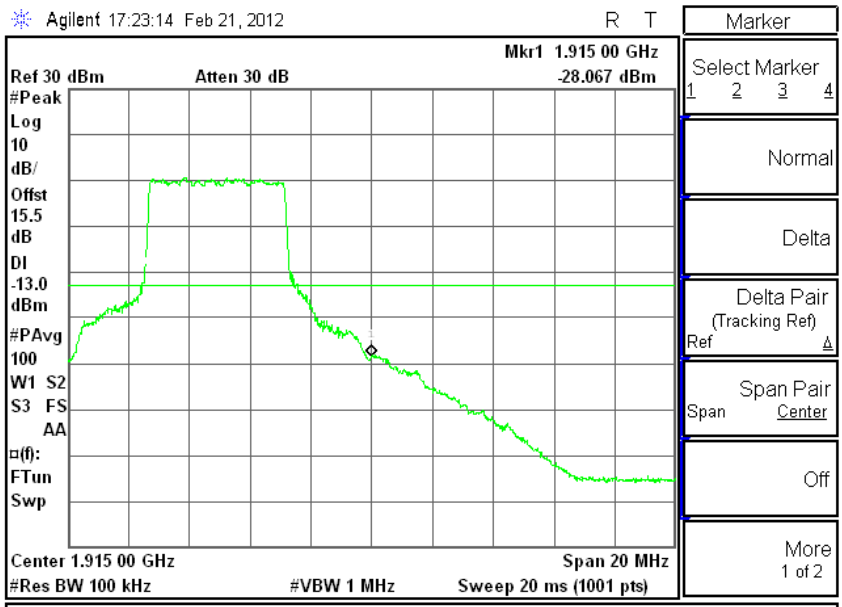
HIGH CH, RB1_0



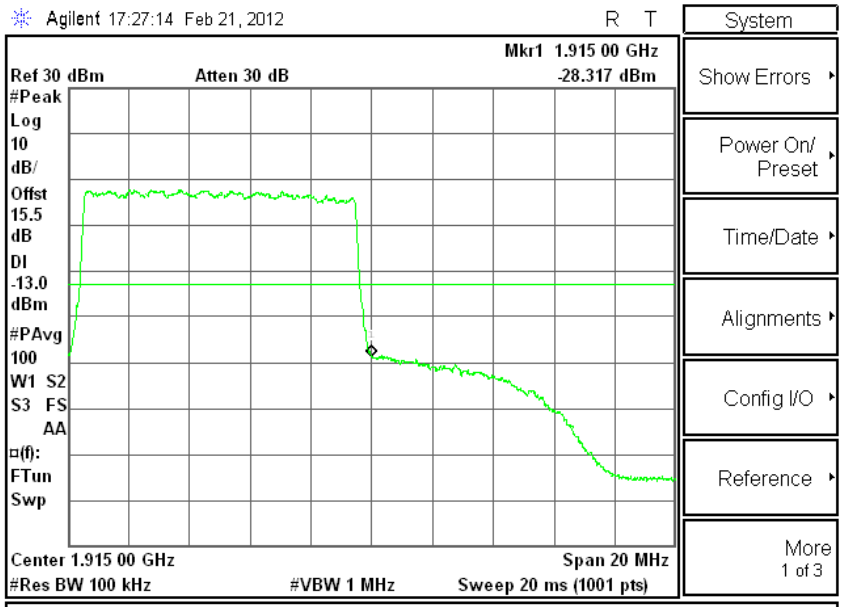
HIGH CH, RB1_49



HIGH CH, RB25_12



HIGH CH, RB50_0



8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §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.

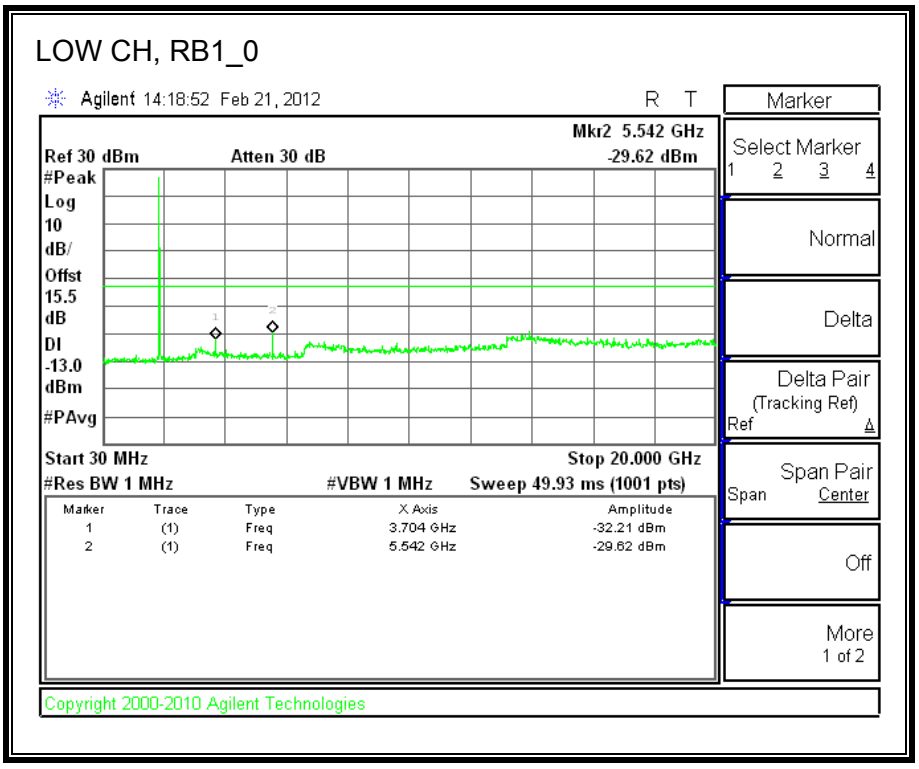
MODES TESTED

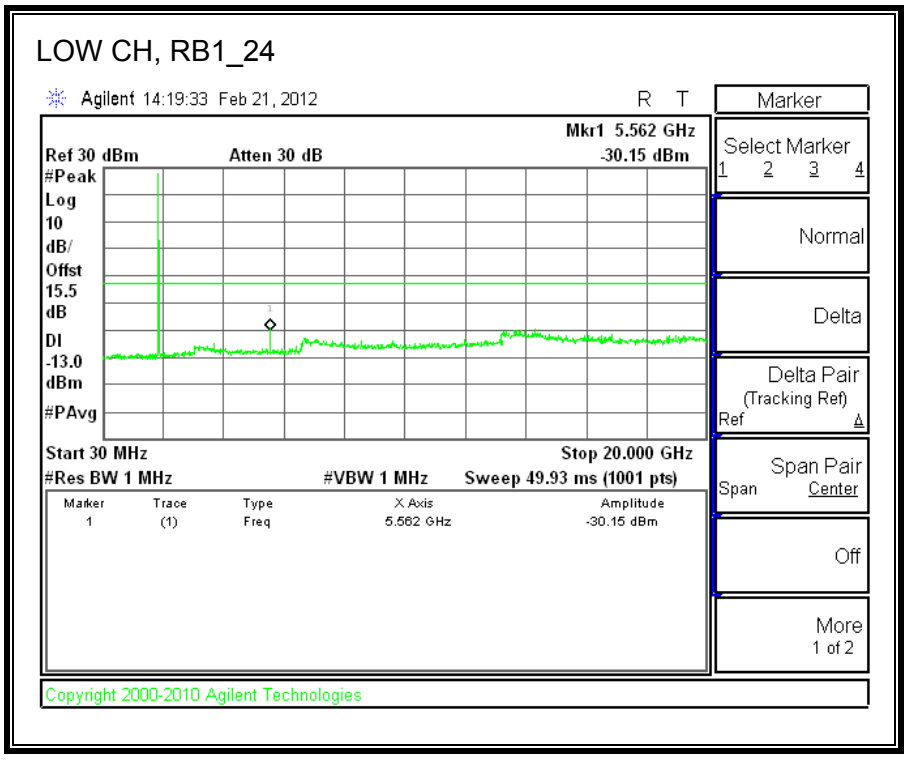
- LTE Band 25

RESULTS

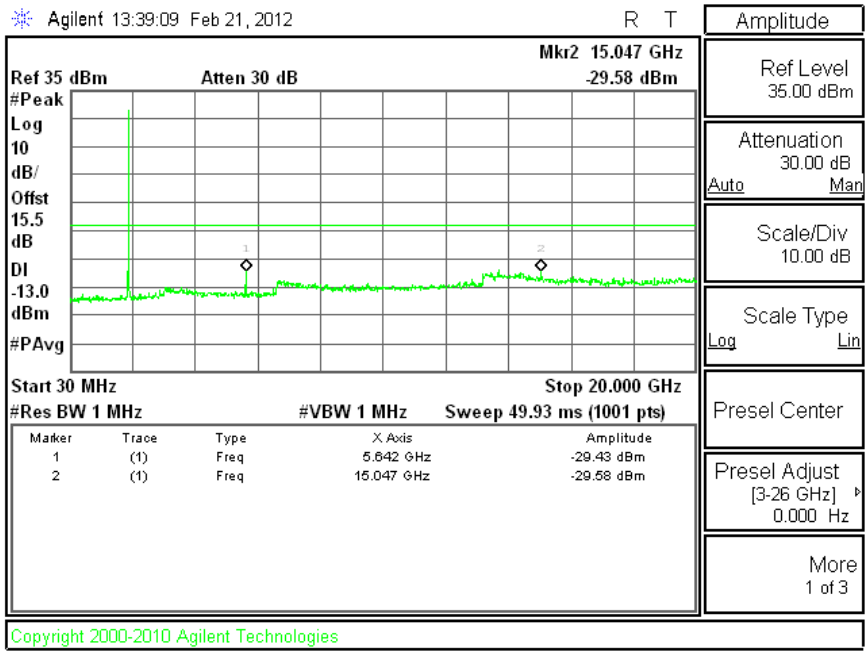
LTE, Band 25 (5.0MHz BAND WIDTH)

QPSK

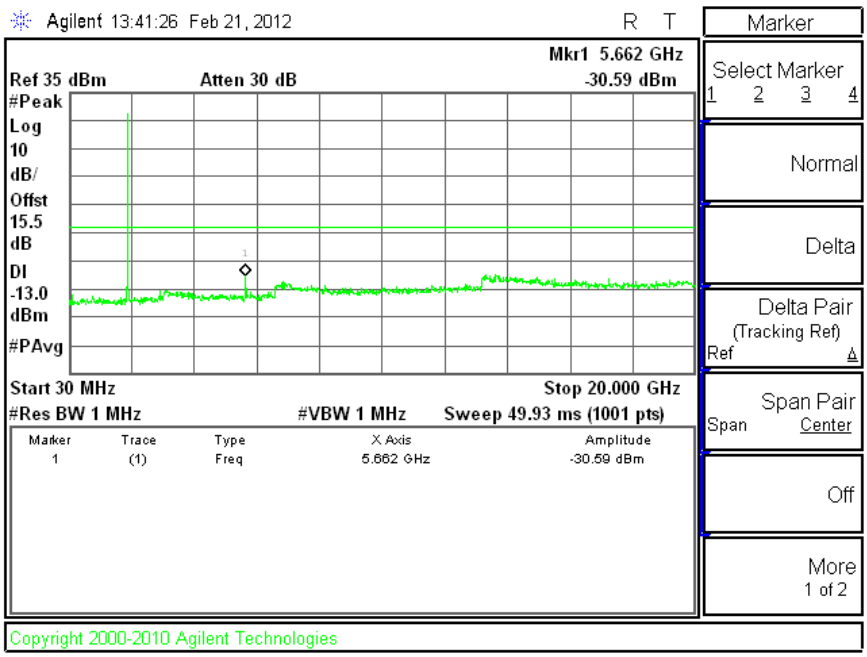




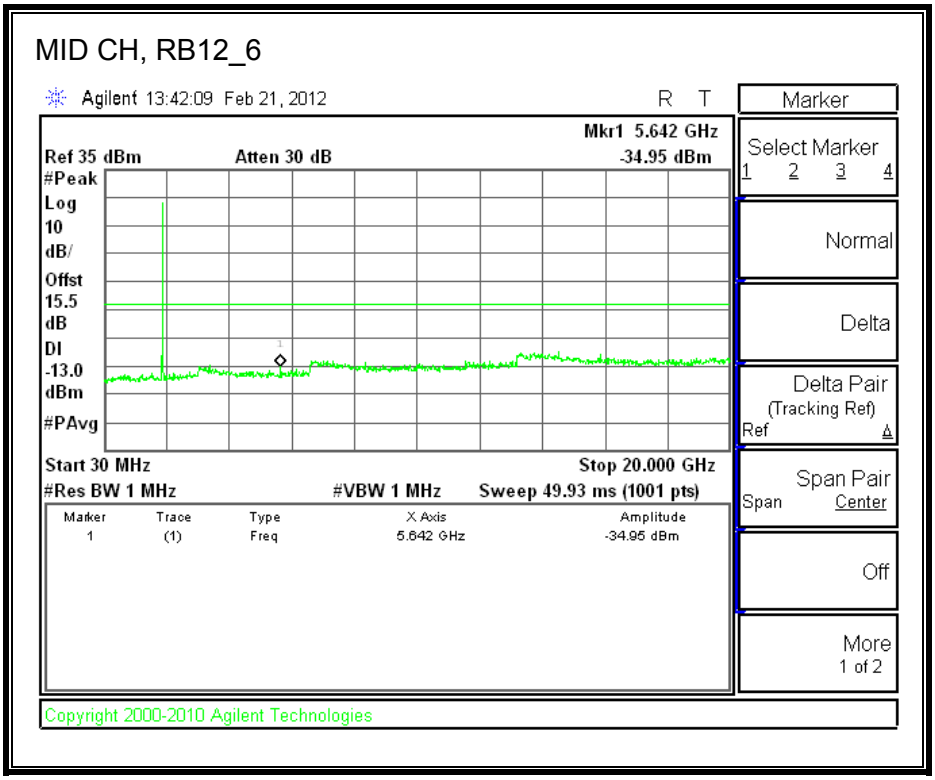
MID CH, RB1_0



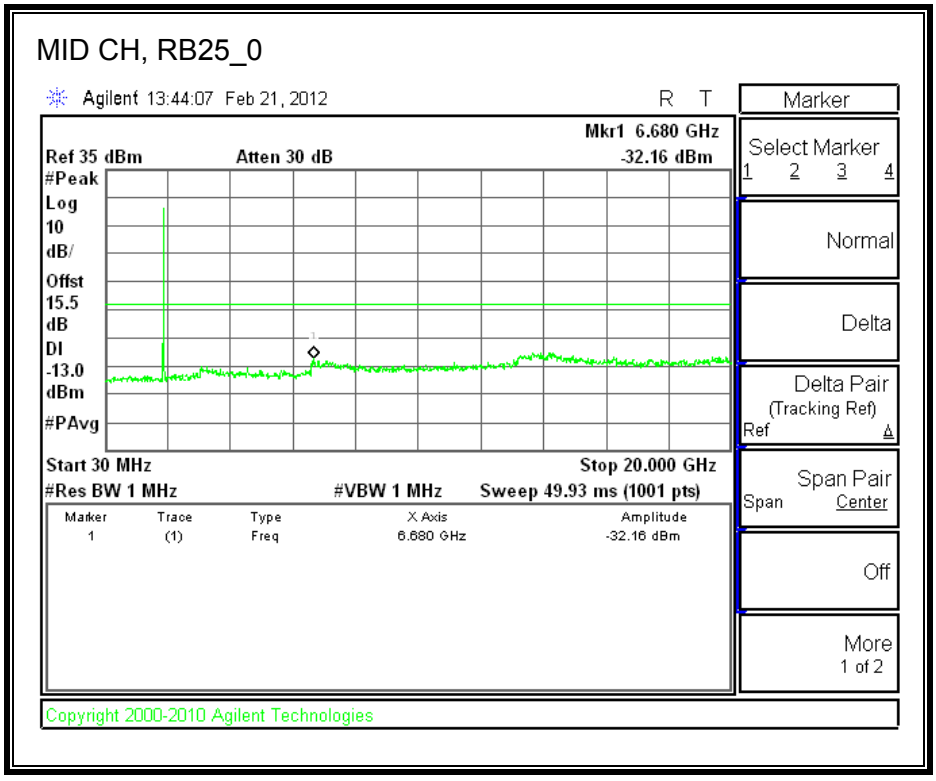
MID CH, RB1_24



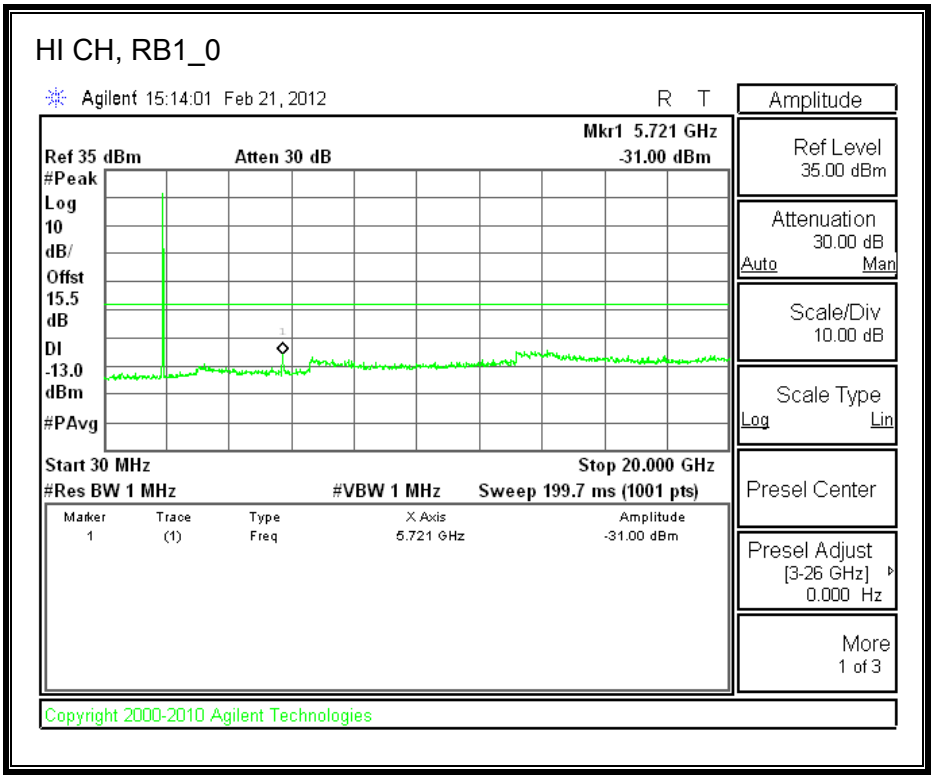
MID CH, RB12_6



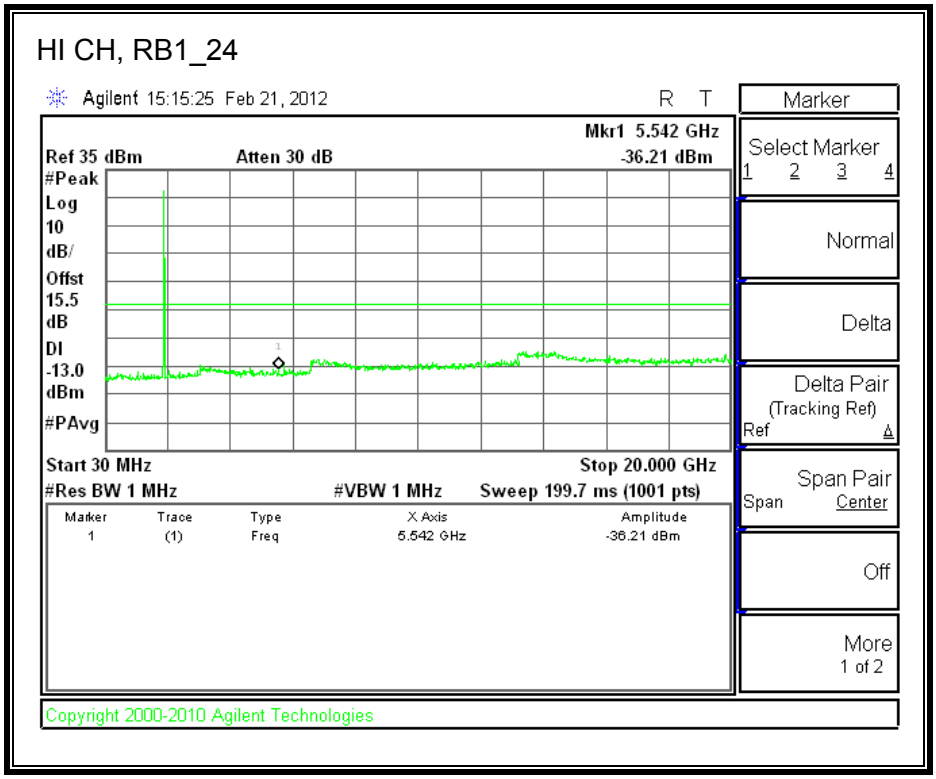
MID CH, RB25_0



HI CH, RB1_0

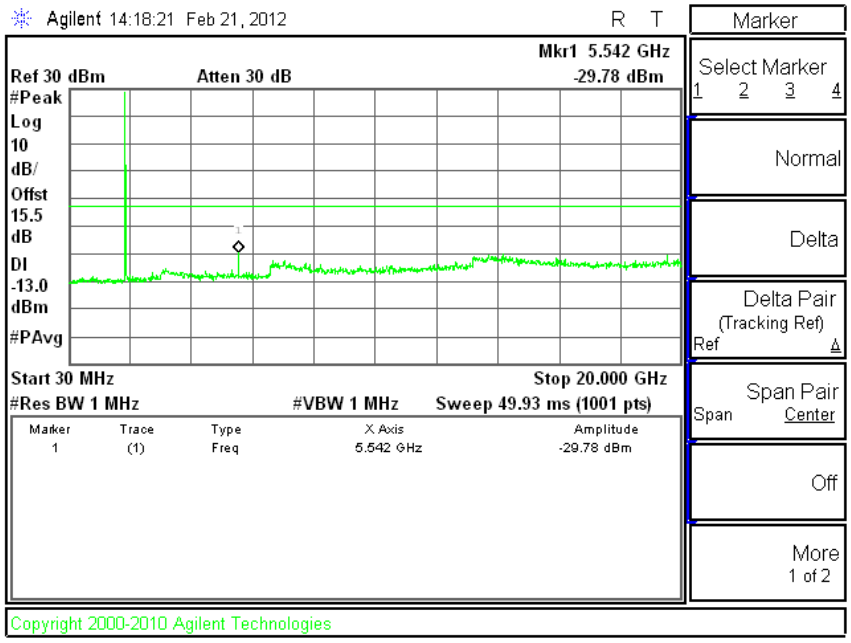


HI CH, RB1_24

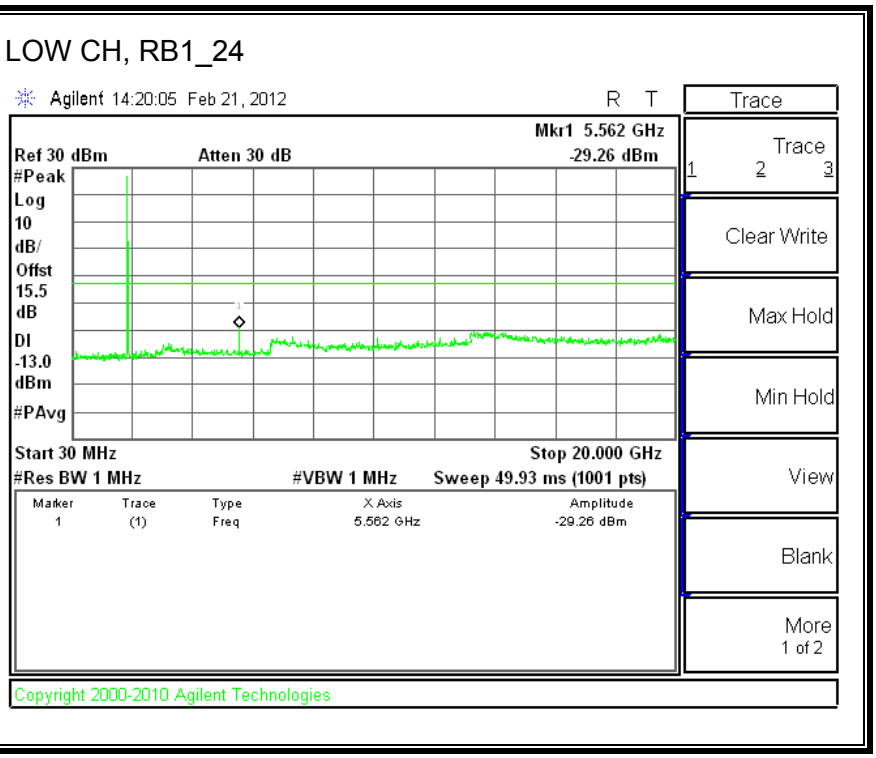


16QAM

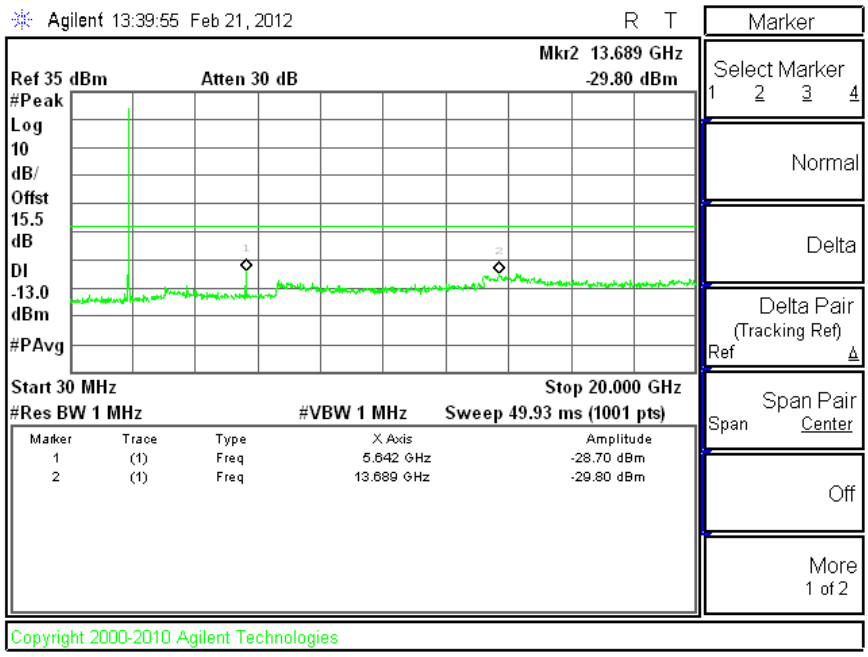
LOW CH, RB1_0



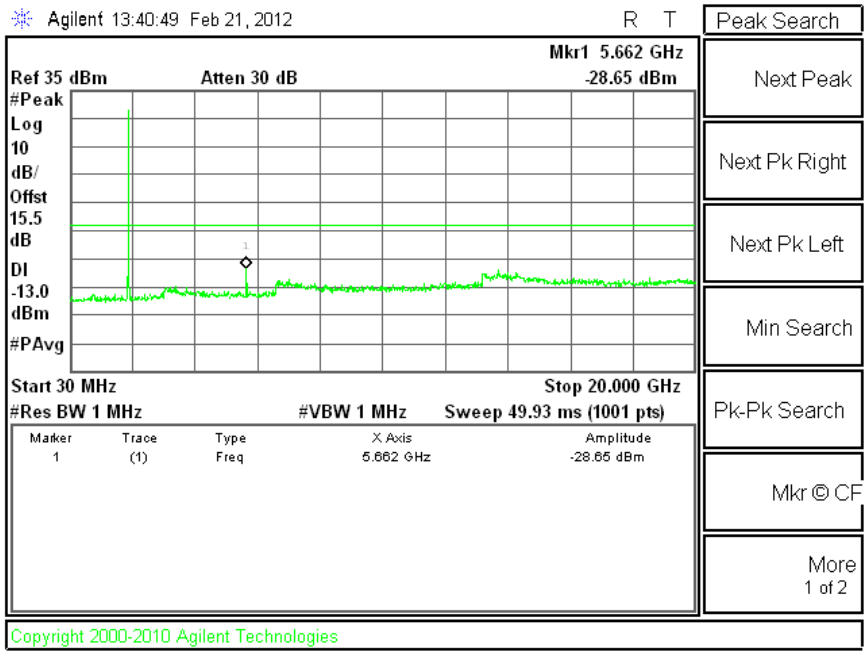
LOW CH, RB1_24



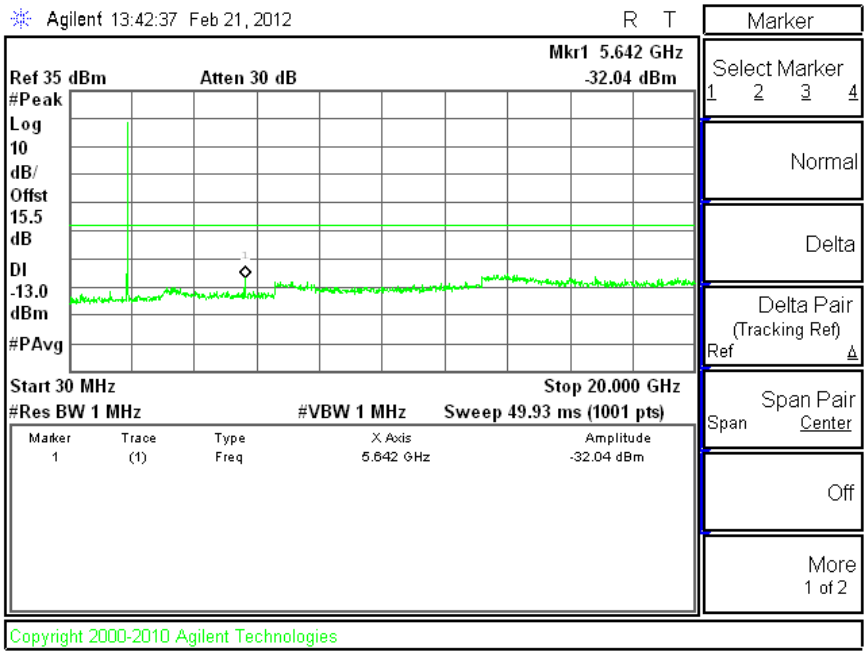
MID CH, RB1_0



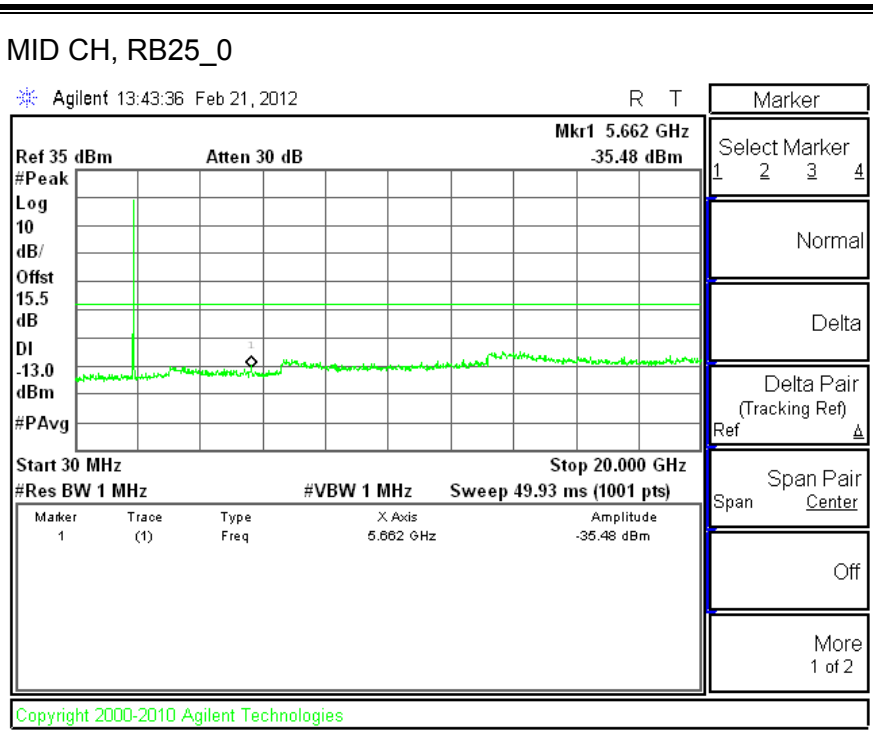
MID CH, RB1_24



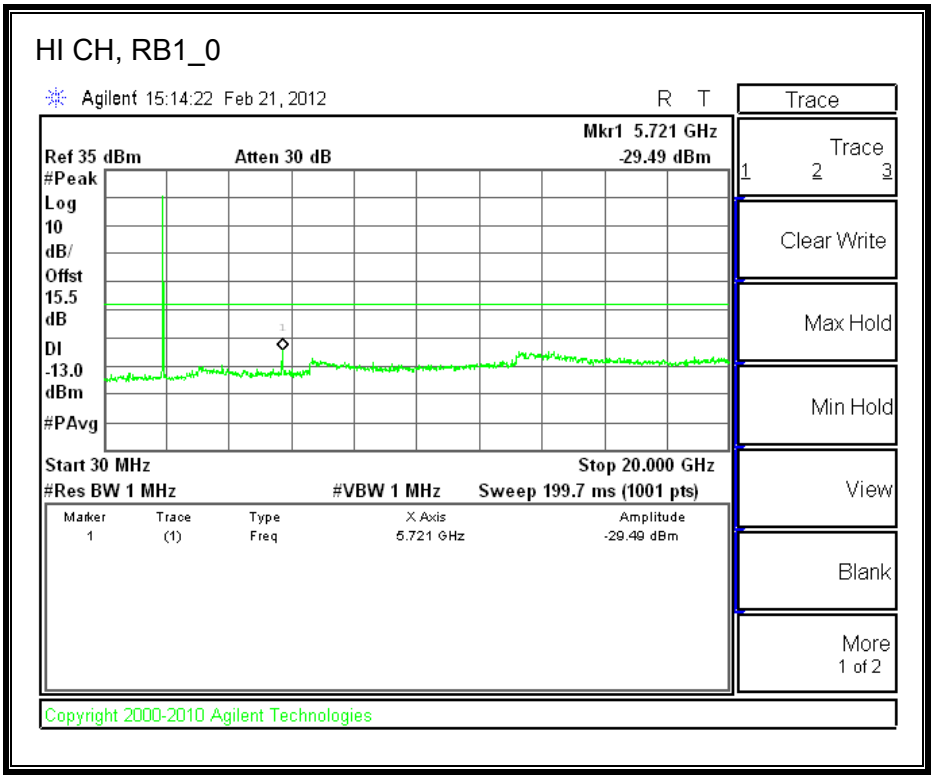
MID CH, RB12_6



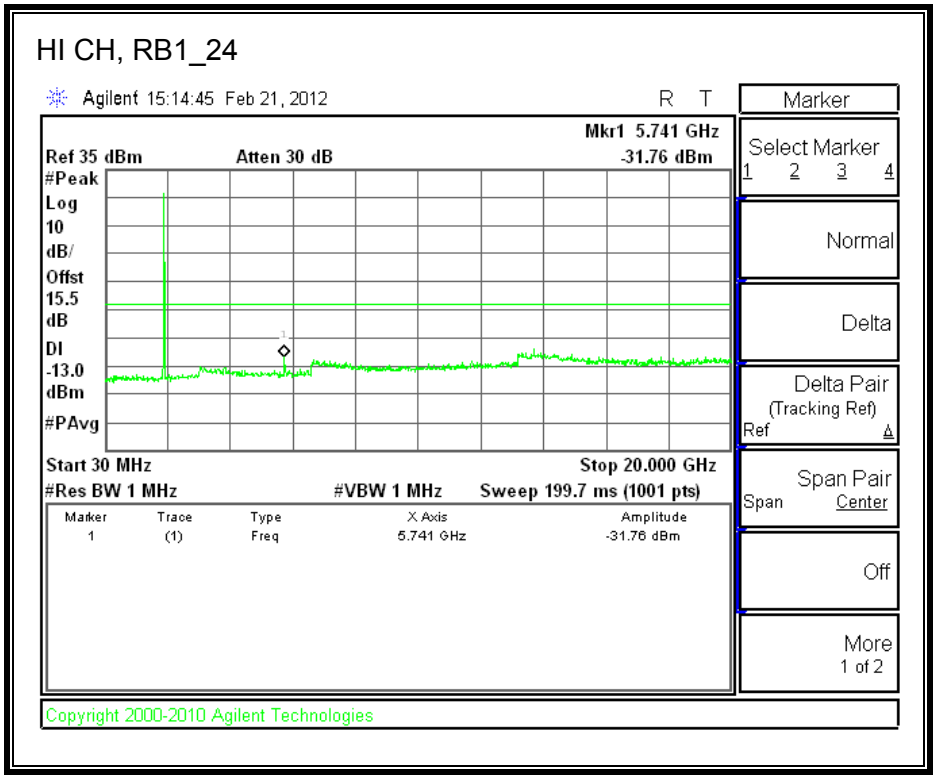
MID CH, RB25_0



HI CH, RB1_0

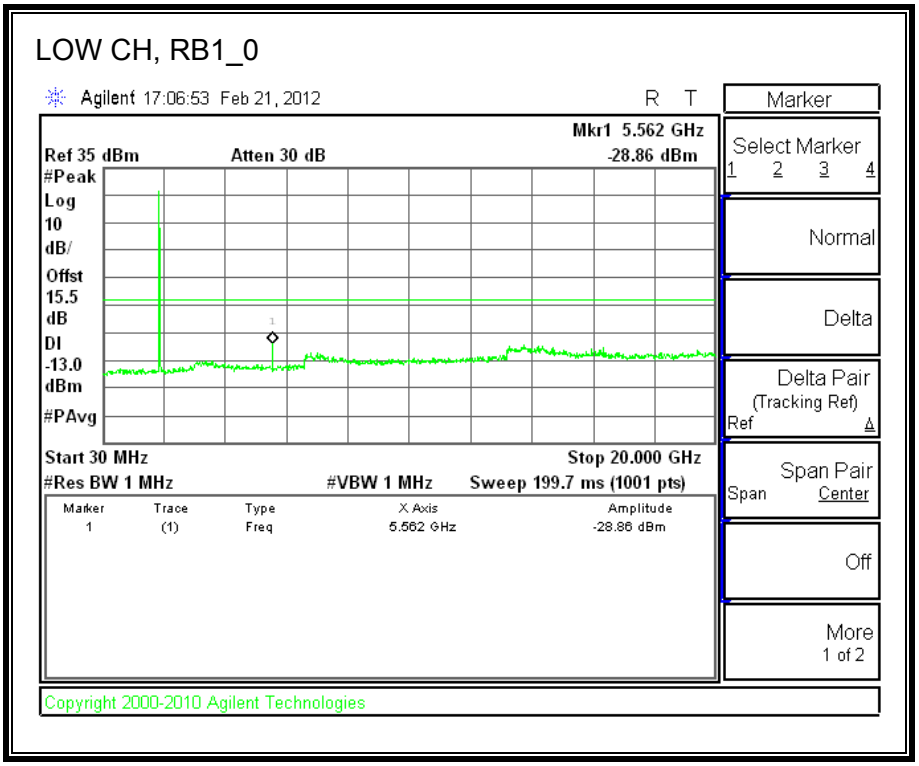


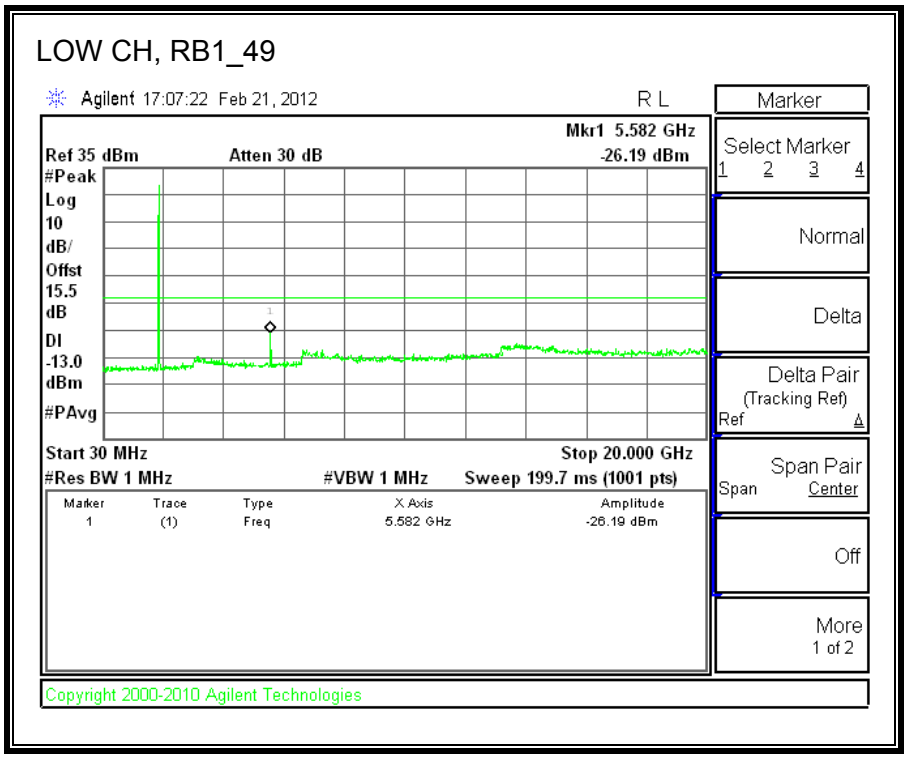
HI CH, RB1_24



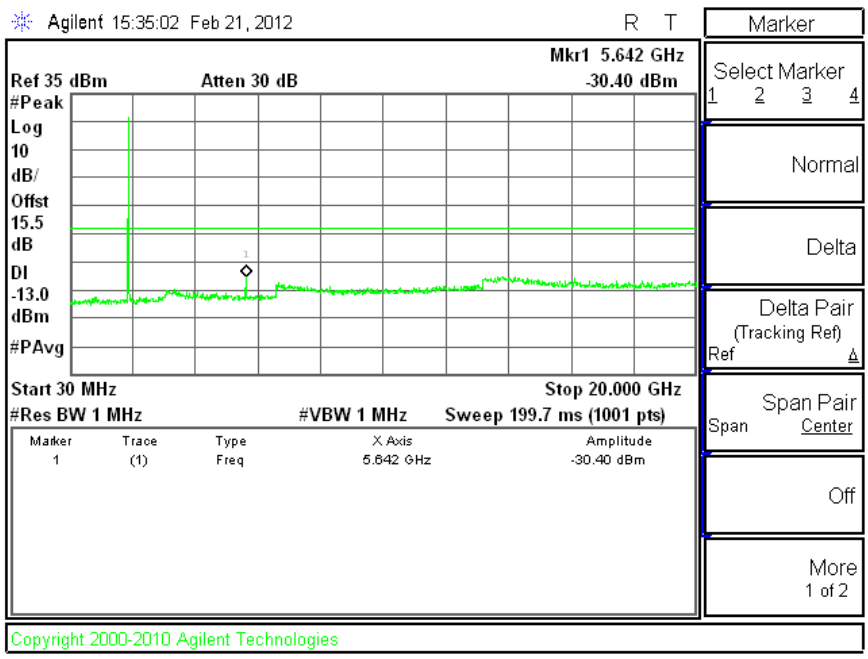
LTE, Band 25 (10.0MHz BAND WIDTH)

QPSK

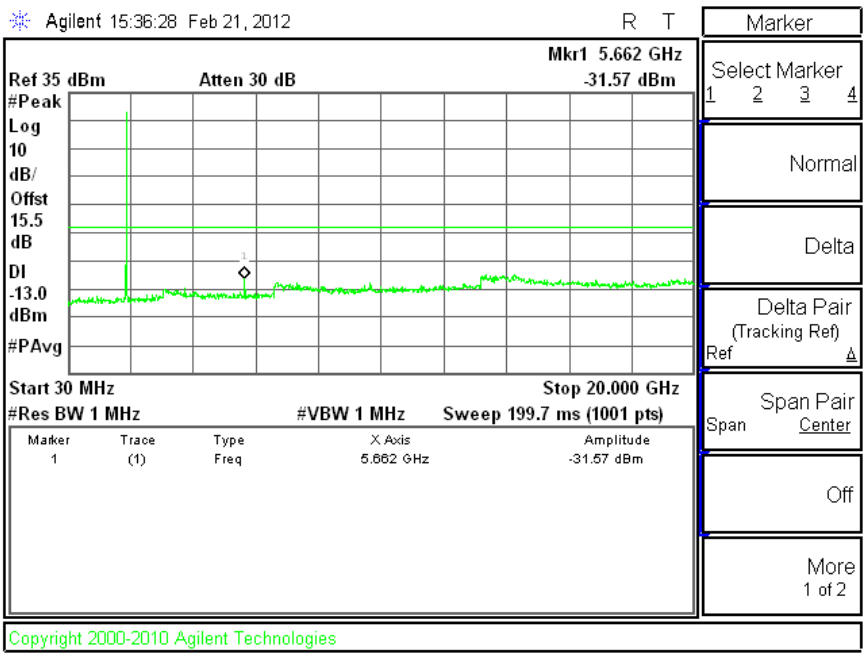




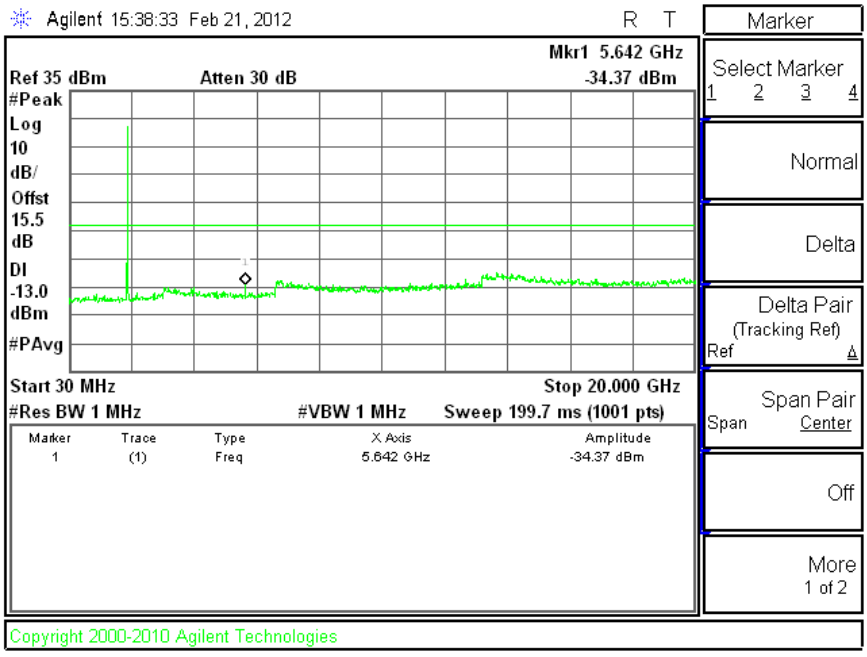
MID CH, RB1_0



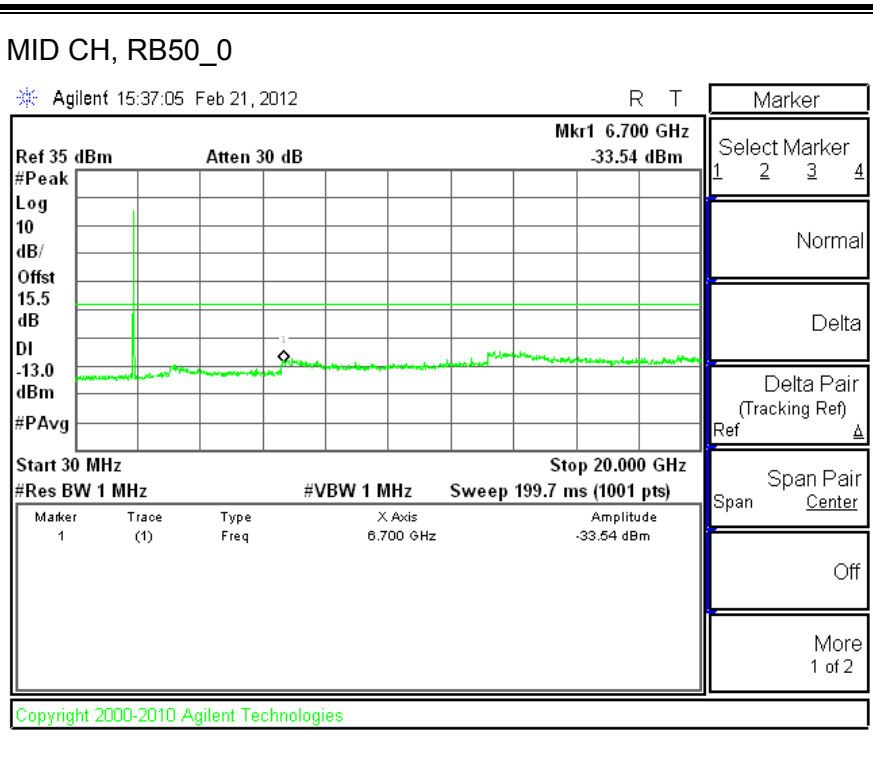
MID CH, RB1_49



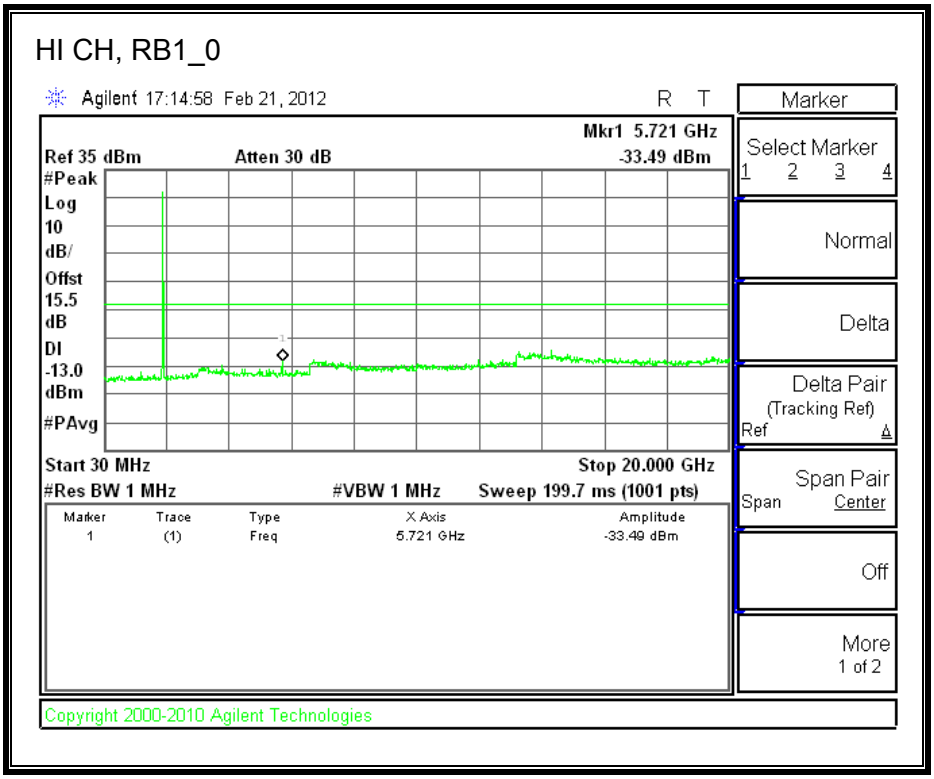
MID CH, RB25_12



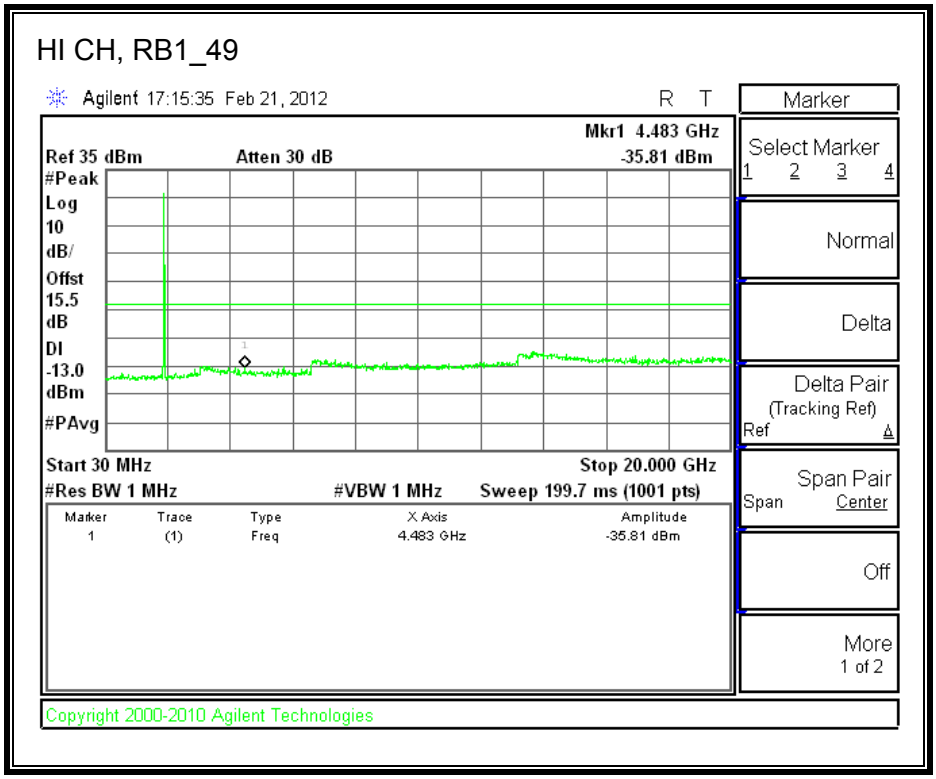
MID CH, RB50_0



HI CH, RB1_0

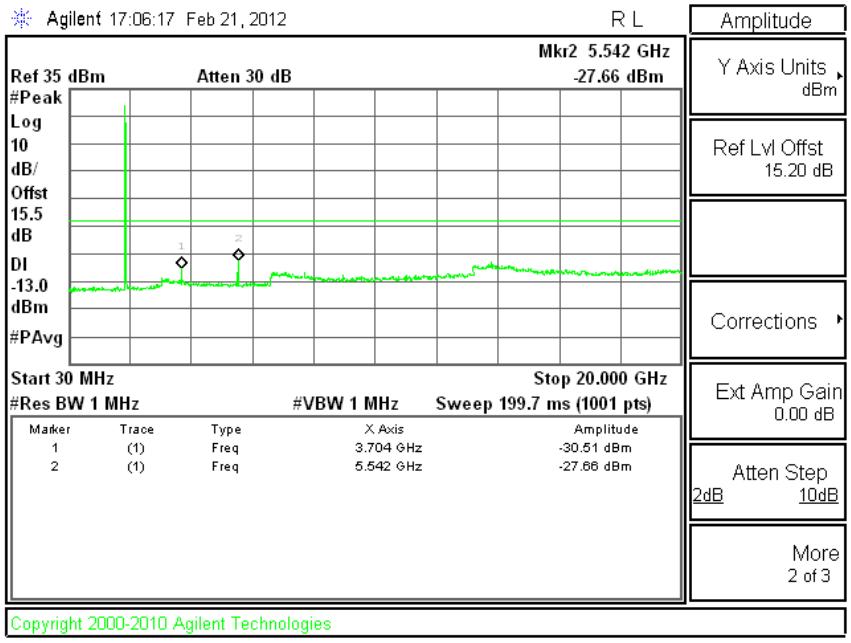


HI CH, RB1_49

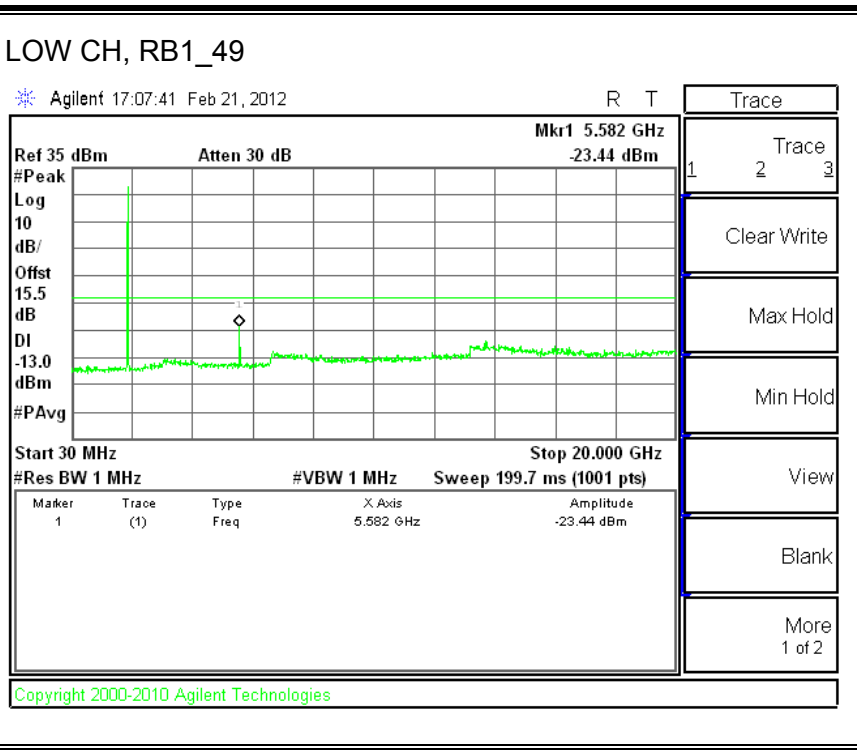


16QAM

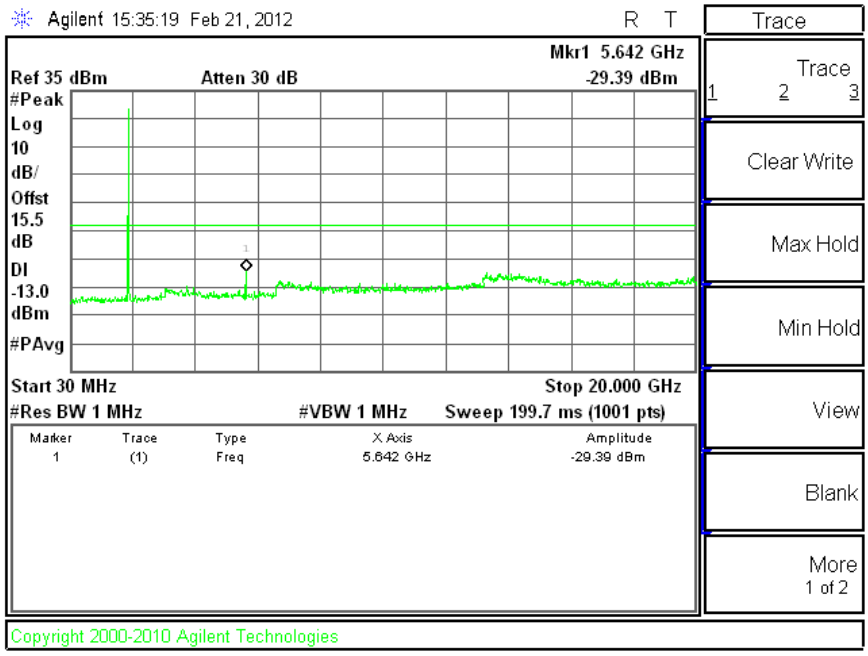
LOW CH, RB1_0



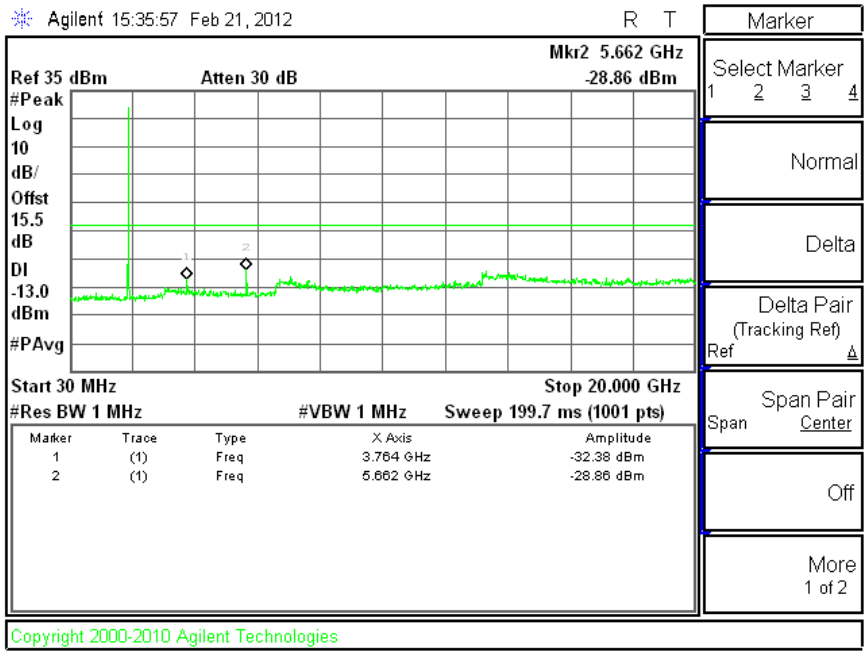
LOW CH, RB1_49



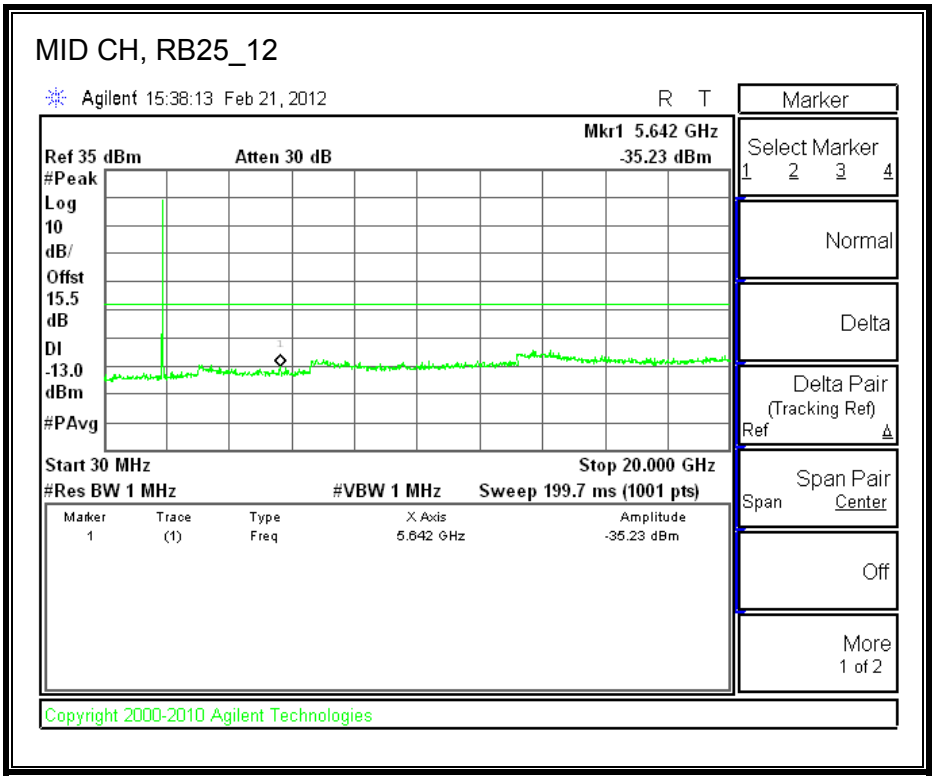
MID CH, RB1_0



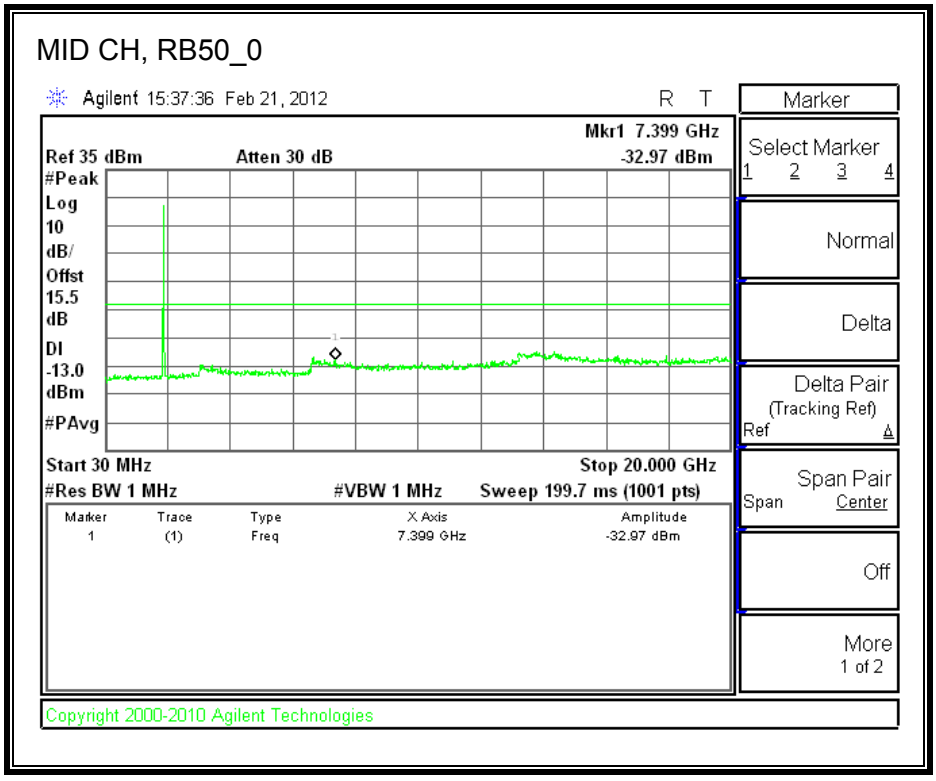
MID CH, RB1_49



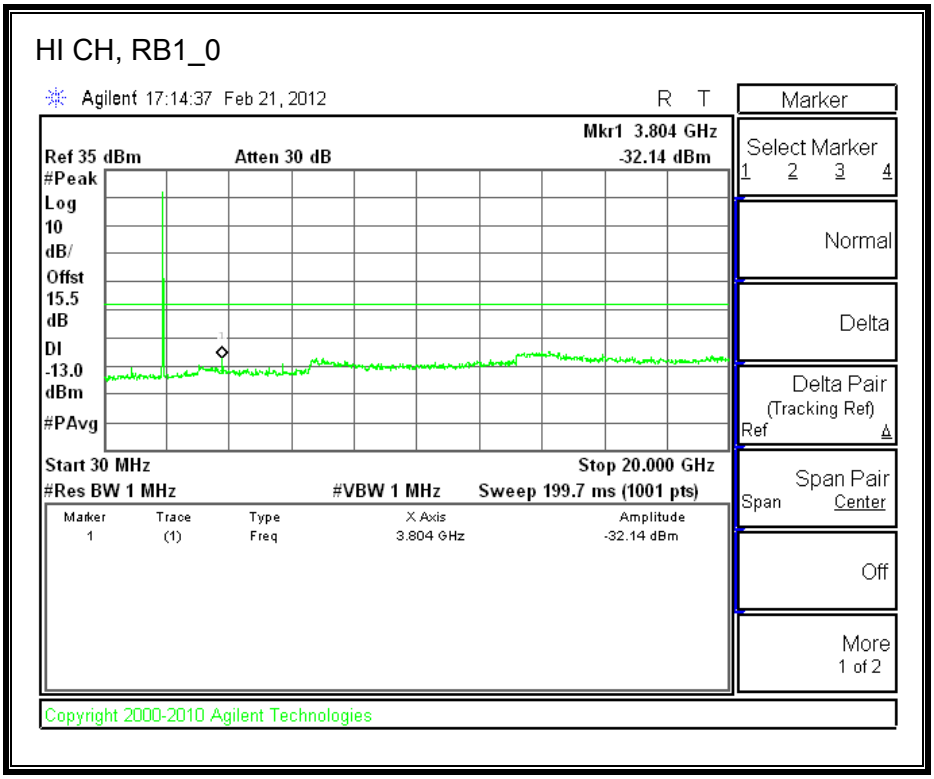
MID CH, RB25_12



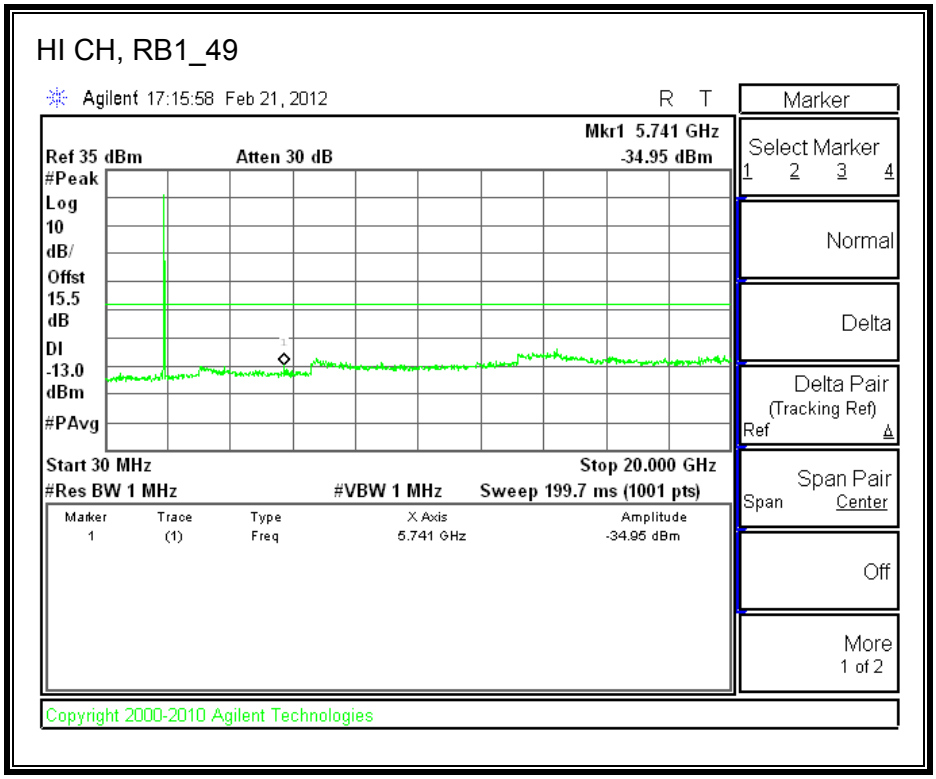
MID CH, RB50_0



HI CH, RB1_0



HI CH, RB1_49



8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §24.235.

LIMITS

shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

RSS-133 6.3 - 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 CMW 500 with Frequency Error measurement capability.

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

- LTE Band 25

RESULTS

See the following pages.

QPSK-LTE BAND 25 (5MHz Bandwidth) – MID CHANNEL

Reference Frequency: LTE Mid Channel 1882.499927MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1882.499936	-0.005	2.5
3.70	40	1882.499917	0.005	2.5
3.70	30	1882.499944	-0.009	2.5
3.70	***20***	***1882.499927***	***0***	***2.5***
3.70	10	1882.499944	-0.009	2.5
3.70	0	1882.499978	-0.027	2.5
3.70	-10	1882.499950	-0.012	2.5
3.70	-20	1882.499964	-0.020	2.5
3.70	-30	1882.499966	-0.021	2.5

Reference Frequency: LTE Mid Channel 1882.499927MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	20	1882.499927	***0***	***2.5***
3.50	20	1882.499993	-0.035	2.5
4.26	20	1882.499995	-0.036	2.5
3V (End Voltage)	20	1882.500092	-0.088	2.5

16QAM-LTE BAND 25 (5MHz Bandwidth) – MID CHANNEL

Reference Frequency: LTE Mid Channel 1882.499965MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1882.499958	0.004	2.5
3.70	40	1882.499662	0.161	2.5
3.70	30	1882.499952	0.007	2.5
3.70	***20***	***1882.499965***	***0***	***2.5***
3.70	10	1882.499646	0.169	2.5
3.70	0	1882.499967	-0.001	2.5
3.70	-10	1882.499966	-0.001	2.5
3.70	-20	1882.499973	-0.004	2.5
3.70	-30	1882.499977	-0.006	2.5

Reference Frequency: LTE Mid Channel 1882.499965MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	***20***	***1882.499965***	***0***	***2.5***
3.50	20	1882.500044	-0.042	2.5
4.26	20	1882.499989	-0.013	2.5
3 (End Voltage)	20	1882.500090	-0.066	2.5

QPSK-LTE BAND 25 (10MHz Bnadwidth) – MID CHANNEL

Reference Frequency: LTE Mid Channel 1882.499956MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1882.499972	-0.008	2.5
3.70	40	1882.499970	-0.007	2.5
3.70	30	1882.499965	-0.005	2.5
3.70	***20***	***1882.499956***	***0***	***2.5***
3.70	10	1882.499962	-0.003	2.5
3.70	0	1882.499967	-0.006	2.5
3.70	-10	1882.499964	-0.004	2.5
3.70	-20	1882.499971	-0.008	2.5
3.70	-30	1882.499977	-0.011	2.5

Reference Frequency: LTE Mid Channel 1882.499956MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	***20***	***1882.499956***	***0***	***2.5***
3.50	20	1882.499965	-0.005	2.5
4.26	20	1882.499959	-0.002	2.5
3.0V(End Voltage)	20	1882.500098	-0.075	2.5

16QAM-LTE BAND 25 (10MHzBandwidth) – MID CHANNEL

Reference Frequency: LTE Mid Channel 1882.499936MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	50	1882.499946	-0.005	2.5
3.70	40	1882.499945	-0.005	2.5
3.70	30	1882.499950	-0.007	2.5
3.70	***20***	***1882.499936***	***0***	***2.5***
3.70	10	1882.499953	-0.009	2.5
3.70	0	1882.499968	-0.017	2.5
3.70	-10	1882.499970	-0.018	2.5
3.70	-20	1882.499972	-0.019	2.5
3.70	-30	1882.499977	-0.022	2.5

Reference Frequency: LTE Mid Channel 1882.499936MHz @ 20ºC Limit: within the authorized block or +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (ºC)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.70	***20***	***1882.499936***	***0***	***2.5***
3.50	20	1882.499993	-0.030	2.5
4.26	20	1882.499958	-0.012	2.5
3.0V (End Voltage)	20	1882.500079	-0.076	2.5

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §24.232

LIMITS

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 603C Clause 2.2.17

MODES TESTED

- LTE Band 25

RESULTS

EUT STAND ALONE

EIRP LTE Band 25 (5MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1852.50	30.56	1137.63
		1882.50	**31.70**	1479.11
		1912.50	31.50	1412.54

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
5.0 MHZ BAND 16QAM	25/0	1852.50	31.56	1432.19
		1882.50	32.40	1737.80
		1912.50	**32.63**	1832.31

EIRP LTE Band 25 (10MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1855.00	**31.36**	1367.73
		1882.50	30.97	1250.26
		1910.00	30.92	1235.95

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
10.0 MHZ BAND 16QAM	50/0	1855.00	**32.19**	1655.77
		1882.50	31.79	1510.08
		1910.00	31.96	1570.36

EUT WITH CRADLE

EIRP LTE Band 25 (5MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1852.50	**24.56**	285.76
		1882.50	24.00	251.19
		1912.50	22.80	190.55

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
5.0 MHZ BAND 16QAM	25/0	1852.50	**25.66**	368.13
		1882.50	25.00	316.23
		1912.50	23.60	229.09

EIRP LTE Band 25 (10MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1855.00	**27.91**	618.02
		1882.50	27.20	524.81
		1910.00	26.70	467.74

Mode	RB/RB SIZE	f (MHz)	EIRP	
			dBm	mW
10.0 MHZ BAND 16QAM	50/0	1855.00	**28.90**	776.25
		1882.50	28.30	676.08
		1910.00	27.60	575.44

EIRP LTE QPSK Band 25 (5.0MHz BAND WIDTH)

RB25-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Apple
Project #: 11U13938
Date: 02/20/12
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, Band 25, 5MHz

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB25-0, QPSK								
1.853	7.6	V	0.85	8.01	14.76	33.0	-18.2	
1.853	23.4	H	0.85	8.01	30.56	33.0	-2.4	
RB25-0 QPSK								
1.883	15.6	V	0.85	8.35	23.10	33.0	-9.9	
1.883	24.2	H	0.85	8.35	31.70	33.0	-1.3	
RB25-0, QPSK								
1.913	15.6	V	0.85	8.35	23.10	33.0	-9.9	
1.913	24.0	H	0.85	8.35	31.50	33.0	-1.5	

Rev. 3.17.11

RB25-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Apple
Project #: 11U13938
Date: 02/20/12
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, Band 25, 5MHz

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB25-0, 16QAM								
1.853	18.4	V	0.85	8.01	25.56	33.0	-7.4	
1.853	24.4	H	0.85	8.01	31.56	33.0	-1.4	
RB50-0 16QAM								
1.883	16.2	V	0.85	8.35	23.70	33.0	-9.3	
1.883	24.9	H	0.85	8.35	32.40	33.0	-0.6	
RB25-0, 16QAM								
1.913	15.8	V	0.85	8.35	23.30	33.0	-9.7	
1.913	25.1	H	0.85	8.35	32.63	33.0	-0.4	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (10.0MHz BAND WIDTH)

RB50-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Apple
Project #: 11U13938
Date: 08/01/11
Test Engineer: Chin Pang
Configuration: EUT with AC Adapter
Mode: TX, Band 25, 10MHz

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB50-0, QPSK								
1.855	15.4	V	0.85	8.01	22.56	33.0	-10.4	
1.855	24.2	H	0.85	8.01	31.36	33.0	-1.6	
RB50-0 QPSK								
1.883	17.1	V	0.85	8.35	24.60	33.0	-8.4	
1.883	23.5	H	0.85	8.35	30.97	33.0	-2.0	
RB50-0, QPSK								
1.910	16.9	V	0.85	8.35	24.40	33.0	-8.6	
1.910	23.4	H	0.85	8.35	30.92	33.0	-2.1	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (10.0MHz BAND WIDTH)

RB50-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Apple
Project #: 11U13938
Date: 08/01/11
Test Engineer: Chin Pang
Configuration: EUT with AC Adapter
Mode: TX, Band 25, 10MHz

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB50-0, 16QAM								
1.855	15.8	V	0.85	8.01	22.96	33.0	-10.0	
1.855	25.0	H	0.85	8.01	32.19	33.0	-0.8	
RB50-0 16QAM								
1.883	18.8	V	0.85	8.35	26.30	33.0	-6.7	
1.883	24.3	H	0.85	8.35	31.79	33.0	-1.2	
RB50-0, 16QAM								
1.910	18.6	V	0.85	8.35	26.10	33.0	-6.9	
1.910	24.5	H	0.85	8.35	31.96	33.0	-1.0	

Rev. 3.17.11

EUT WITH CRADLE

EIRP LTE QPSK Band 25 (5.0MHz BAND WIDTH)

RB25-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT with Cradle
Mode: TX, Band 25, 5MHz
QPSK

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB25-0, QPSK								
1.853	15.1	V	0.85	8.01	22.26	33.0	-10.7	
1.853	17.4	H	0.85	8.01	24.56	33.0	-8.4	
RB25-0 QPSK								
1.883	14.3	V	0.85	8.35	21.80	33.0	-11.2	
1.883	16.5	H	0.85	8.35	24.00	33.0	-9.0	
RB25-0, QPSK								
1.913	14.1	V	0.85	8.35	21.60	33.0	-11.4	
1.913	15.3	H	0.85	8.35	22.80	33.0	-10.2	

Rev. 3.17.11

RB25-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT with Cradle
Mode: TX, Band 25, 5MHz
16QAM

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB25-0, 16QAM								
1.853	16.3	V	0.85	8.01	23.46	33.0	-9.5	
1.853	18.5	H	0.85	8.01	25.66	33.0	-7.3	
RB25-0 16QAM								
1.883	15.4	V	0.85	8.35	22.90	33.0	-10.1	
1.883	17.5	H	0.85	8.35	25.00	33.0	-8.0	
RB25-0, 16QAM								
1.913	15.1	V	0.85	8.35	22.60	33.0	-10.4	
1.913	16.1	H	0.85	8.35	23.60	33.0	-9.4	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (10.0MHz BAND WIDTH)

RB50-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT with Cradle
Mode: TX, Band 25, 10MHz
QPSK

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB50-0, QPSK								
1.855	20.8	V	0.85	8.01	27.91	33.0	-5.1	
1.855	16.2	H	0.85	8.01	23.36	33.0	-9.6	
RB50-0 QPSK								
1.883	19.7	V	0.85	8.35	27.20	33.0	-5.8	
1.883	16.1	H	0.85	8.35	23.60	33.0	-9.4	
RB50-0, QPSK								
1.910	19.2	V	0.85	8.35	26.70	33.0	-6.3	
1.910	15.3	H	0.85	8.35	22.80	33.0	-10.2	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (10.0MHz BAND WIDTH)

RB50-0

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT with Cradle
Mode: TX, Band 25, 10MHz
16QAM

Test Equipment:
Receiving: Horn T59, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 6ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
RB50-0, 16QAM								
1.855	21.7	V	0.85	8.01	28.90	33.0	-4.1	
1.855	17.4	H	0.85	8.01	24.56	33.0	-8.4	
RB50-0 16QAM								
1.883	20.8	V	0.85	8.35	28.30	33.0	-4.7	
1.883	17.1	H	0.85	8.35	24.60	33.0	-8.4	
RB50-0, 16QAM								
1.910	20.1	V	0.85	8.35	27.60	33.0	-5.4	
1.910	16.0	H	0.85	8.35	23.50	33.0	-9.5	

Rev. 3.17.11

9.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §24.238.

LIMIT

§24.238 (a): Out of band emissions. 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

- LTE Band 25

RESULTS

ERIP LTE QPSK Band 25 (5.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Sierra Wireless
Project #:	11U14068
Date:	03/01/12
Test Engineer:	Chin Pang
Configuration:	EUT ALONE
Mode:	TX, Band 25, 5MHz QPSK

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, (1852.5MHz)									
3.705	-16.9	V	3.0	35.4	1.0	-51.2	-13.0	-38.2	
5.558	-5.8	V	3.0	35.4	1.0	-40.2	-13.0	-27.2	
3.705	-14.5	H	3.0	35.4	1.0	-48.8	-13.0	-35.8	
5.558	-2.6	H	3.0	35.4	1.0	-37.0	-13.0	-24.0	
Mid Ch, (1882.5MHz)									
3.765	-18.2	V	3.0	35.3	1.0	-52.5	-13.0	-39.5	
5.648	-6.7	V	3.0	35.4	1.0	-41.1	-13.0	-28.1	
3.765	-16.5	H	3.0	35.3	1.0	-50.8	-13.0	-37.8	
5.648	-2.8	H	3.0	35.4	1.0	-37.3	-13.0	-24.3	
High Ch, (1912.5MHz)									
3.825	-14.6	V	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.737	-3.7	V	3.0	35.5	1.0	-38.2	-13.0	-25.2	
3.825	-14.3	H	3.0	35.3	1.0	-48.6	-13.0	-35.6	
5.737	-1.3	H	3.0	35.5	1.0	-35.7	-13.0	-22.7	

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

ERIP LTE 16QAM Band 25 (5.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Sierra Wireless
Project #:	11U14068
Date:	03/01/12
Test Engineer:	Chin Pang
Configuration:	EUT ALONE
Mode:	TX, Band 25, 5MHz 16QAM

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, (1852.5MHz)									
3.705	-13.8	V	3.0	35.4	1.0	-48.1	-13.0	-35.1	
5.558	-0.8	V	3.0	35.4	1.0	-35.2	-13.0	-22.2	
3.705	-12.0	H	3.0	35.4	1.0	-46.3	-13.0	-33.3	
5.558	4.0	H	3.0	35.4	1.0	-30.4	-13.0	-17.4	
Mid Ch, (1882.5MHz)									
3.765	-15.9	V	3.0	35.3	1.0	-50.2	-13.0	-37.2	
5.648	-2.7	V	3.0	35.4	1.0	-37.1	-13.0	-24.1	
3.765	-14.5	H	3.0	35.3	1.0	-48.8	-13.0	-35.8	
5.648	2.7	H	3.0	35.4	1.0	-31.8	-13.0	-18.8	
High Ch, (1912.5MHz)									
3.835	-13.1	V	3.0	35.3	1.0	-47.4	-13.0	-34.4	
5.737	-3.6	V	3.0	35.5	1.0	-38.1	-13.0	-25.1	
3.835	-14.2	H	3.0	35.3	1.0	-48.5	-13.0	-35.5	
5.737	0.3	H	3.0	35.5	1.0	-34.1	-13.0	-21.1	

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

ERIP LTE QPSK Band 25 (10.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT ALONE
Mode: TX, Band 25, 10MHz QPSK

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, (1855MHz)									
3.710	-15.4	V	3.0	35.4	1.0	-49.7	-13.0	-36.7	
5.565	-7.8	V	3.0	35.4	1.0	-42.2	-13.0	-29.2	
3.710	-14.6	H	3.0	35.4	1.0	-49.0	-13.0	-36.0	
5.565	-3.0	H	3.0	35.4	1.0	-37.4	-13.0	-24.4	
Mid Ch, (1882.5MHz)									
3.765	-14.7	V	3.0	35.3	1.0	-49.0	-13.0	-36.0	
5.648	-7.7	V	3.0	35.4	1.0	-42.1	-13.0	-29.1	
3.765	-15.0	H	3.0	35.3	1.0	-49.3	-13.0	-36.3	
5.648	-3.8	H	3.0	35.4	1.0	-38.3	-13.0	-25.3	
High Ch, (1910MHz)									
3.820	-15.6	V	3.0	35.3	1.0	-49.9	-13.0	-36.9	
5.730	-7.6	V	3.0	35.4	1.0	-42.1	-13.0	-29.1	
3.820	-14.3	H	3.0	35.3	1.0	-48.6	-13.0	-35.6	
5.730	-3.7	H	3.0	35.4	1.0	-38.1	-13.0	-25.1	

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

ERIP LTE 16QAM Band 25 (10.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT ALONE
Mode: TX, Band 25, 10MHz 16QAM

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, (1855MHz)									
3.710	-14.9	V	3.0	35.4	1.0	-49.2	-13.0	-36.2	
5.565	-6.8	V	3.0	35.4	1.0	-41.2	-13.0	-28.2	
3.710	-14.6	H	3.0	35.4	1.0	-49.0	-13.0	-36.0	
5.565	-0.5	H	3.0	35.4	1.0	-34.9	-13.0	-21.9	
Mid Ch, (1882.5MHz)									
3.765	-16.7	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
5.648	-5.7	V	3.0	35.4	1.0	-40.1	-13.0	-27.1	
3.765	-15.7	H	3.0	35.3	1.0	-50.0	-13.0	-37.0	
5.648	-0.8	H	3.0	35.4	1.0	-35.3	-13.0	-22.3	
High Ch, (1910MHz)									
3.820	-13.7	V	3.0	35.3	1.0	-48.0	-13.0	-35.0	
5.730	-6.6	V	3.0	35.4	1.0	-41.1	-13.0	-28.1	
3.820	-13.6	H	3.0	35.3	1.0	-47.9	-13.0	-34.9	
5.730	-1.7	H	3.0	35.4	1.0	-36.1	-13.0	-23.1	

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

EUT WITH CRADLE

ERIP LTE QPSK Band 25 (5.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Sierra Wireless
Project #:	11U14068
Date:	03/01/12
Test Engineer:	Chin Pang
Configuration:	EUT with Cradle
Mode:	TX, Band 25, 5MHz QPSK

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, (1852.5MHz)									
3.705	-14.9	V	3.0	35.4	1.0	-49.2	-13.0	-36.2	
5.558	-6.8	V	3.0	35.4	1.0	-41.2	-13.0	-28.2	
3.705	-13.3	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
5.558	-2.0	H	3.0	35.4	1.0	-36.4	-13.0	-23.4	
Mid Ch, (1882.5MHz)									
3.765	-14.7	V	3.0	35.3	1.0	-49.0	-13.0	-36.0	
5.648	-7.7	V	3.0	35.4	1.0	-42.1	-13.0	-29.1	
3.765	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
5.648	-2.8	H	3.0	35.4	1.0	-37.3	-13.0	-24.3	
High Ch, (1912.5MHz)									
3.825	-14.9	V	3.0	35.3	1.0	-49.2	-13.0	-36.2	
5.737	-7.4	V	3.0	35.5	1.0	-41.9	-13.0	-28.9	
3.825	-12.9	H	3.0	35.3	1.0	-47.2	-13.0	-34.2	
5.737	-3.2	H	3.0	35.5	1.0	-37.6	-13.0	-24.6	

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

ERIP LTE 16QAM Band 25 (5.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Sierra Wireless
Project #:	11U14068
Date:	03/01/12
Test Engineer:	Chin Pang
Configuration:	EUT with Cradle
Mode:	TX, Band 25, 5MHz 16QAM

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, (1852.5MHz)									
3.705	-15.7	V	3.0	35.4	1.0	-50.0	-13.0	-37.0	
5.558	-4.1	V	3.0	35.4	1.0	-38.5	-13.0	-25.5	
3.705	-12.7	H	3.0	35.4	1.0	-47.0	-13.0	-34.0	
5.558	2.0	H	3.0	35.4	1.0	-32.4	-13.0	-19.4	
Mid Ch, (1882.5MHz)									
3.765	-16.3	V	3.0	35.3	1.0	-50.6	-13.0	-37.6	
5.648	-4.7	V	3.0	35.4	1.0	-39.1	-13.0	-26.1	
3.765	-16.0	H	3.0	35.3	1.0	-50.3	-13.0	-37.3	
5.648	2.2	H	3.0	35.4	1.0	-32.3	-13.0	-19.3	
High Ch, (1912.5MHz)									
3.825	-13.8	V	3.0	35.3	1.0	-48.1	-13.0	-35.1	
5.737	-6.6	V	3.0	35.5	1.0	-41.1	-13.0	-28.1	
3.825	-13.3	H	3.0	35.3	1.0	-47.6	-13.0	-34.6	
5.737	1.3	H	3.0	35.5	1.0	-33.1	-13.0	-20.1	

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

ERIP LTE QPSK Band 25 (10.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Sierra Wireless
Project #:	11U14068
Date:	03/01/12
Test Engineer:	Chin Pang
Configuration:	EUT with Cradle
Mode:	TX, Band 25, 10MHz QPSK

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, (1855MHz)									
3.710	-14.5	V	3.0	35.4	1.0	-48.8	-13.0	-35.8	
5.565	-7.8	V	3.0	35.4	1.0	-42.2	-13.0	-29.2	
3.710	-13.2	H	3.0	35.4	1.0	-47.6	-13.0	-34.6	
5.565	-3.0	H	3.0	35.4	1.0	-37.4	-13.0	-24.4	
Mid Ch, (1882.5MHz)									
3.765	-15.2	V	3.0	35.3	1.0	-49.5	-13.0	-36.5	
5.648	-9.5	V	3.0	35.4	1.0	-43.9	-13.0	-30.9	
3.765	-14.7	H	3.0	35.3	1.0	-49.0	-13.0	-36.0	
5.648	-3.6	H	3.0	35.4	1.0	-38.1	-13.0	-25.1	
High Ch, (1910MHz)									
3.820	-14.1	V	3.0	35.3	1.0	-48.4	-13.0	-35.4	
5.730	-8.1	V	3.0	35.4	1.0	-42.6	-13.0	-29.6	
3.820	-13.3	H	3.0	35.3	1.0	-47.6	-13.0	-34.6	
5.730	-3.7	H	3.0	35.4	1.0	-38.1	-13.0	-25.1	

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

ERIP LTE 16QAM Band 25 (10.0 MHz BAND WIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Sierra Wireless
Project #: 11U14068
Date: 03/01/12
Test Engineer: Chin Pang
Configuration: EUT with Cradle
Mode: TX, Band 25, 10MHz 16QAM

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, (1855MHz)									
3.710	-13.9	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
5.565	-5.8	V	3.0	35.4	1.0	-40.2	-13.0	-27.2	
3.710	-12.6	H	3.0	35.4	1.0	-47.0	-13.0	-34.0	
5.565	1.0	H	3.0	35.4	1.0	-33.4	-13.0	-20.4	
Mid Ch, (1882.5MHz)									
3.765	-16.2	V	3.0	35.3	1.0	-50.5	-13.0	-37.5	
5.648	-8.7	V	3.0	35.4	1.0	-43.1	-13.0	-30.1	
3.765	-14.5	H	3.0	35.3	1.0	-48.8	-13.0	-35.8	
5.648	-0.8	H	3.0	35.4	1.0	-35.3	-13.0	-22.3	
High Ch, (1910MHz)									
3.825	-14.6	V	3.0	35.3	1.0	-48.9	-13.0	-35.9	
5.737	-8.6	V	3.0	35.5	1.0	-43.1	-13.0	-30.1	
3.825	-13.1	H	3.0	35.3	1.0	-47.4	-13.0	-34.4	
5.737	-0.7	H	3.0	35.5	1.0	-35.1	-13.0	-22.1	

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