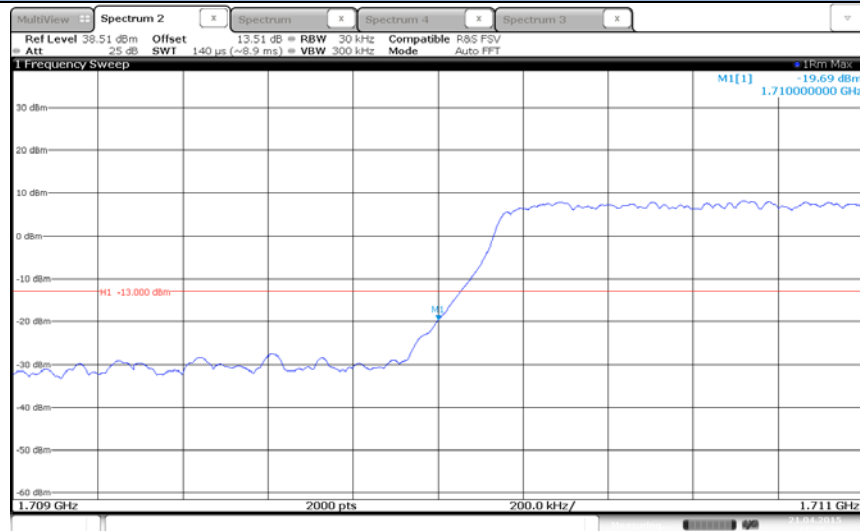
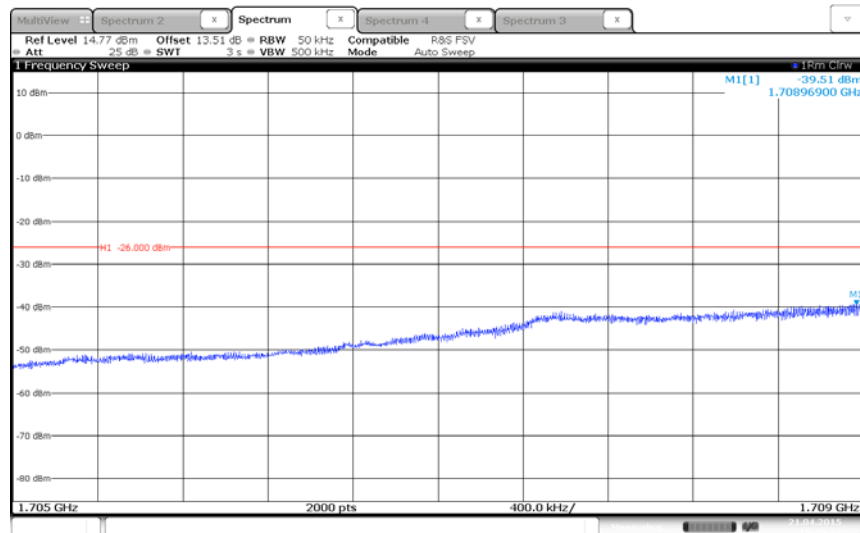


LTE Band 4 (3 MHz BW)/Low Channel (19965) Band Edge @ 1710 MHz

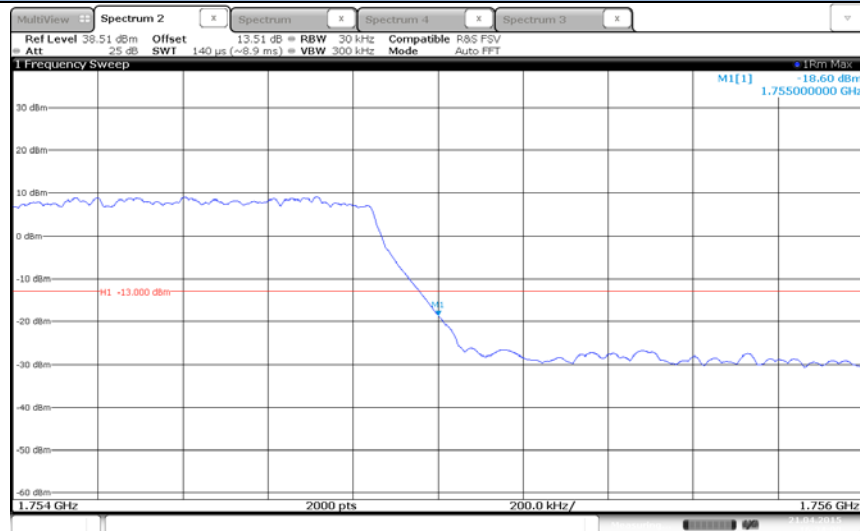


Date: 21 APR 2015 16:25:33

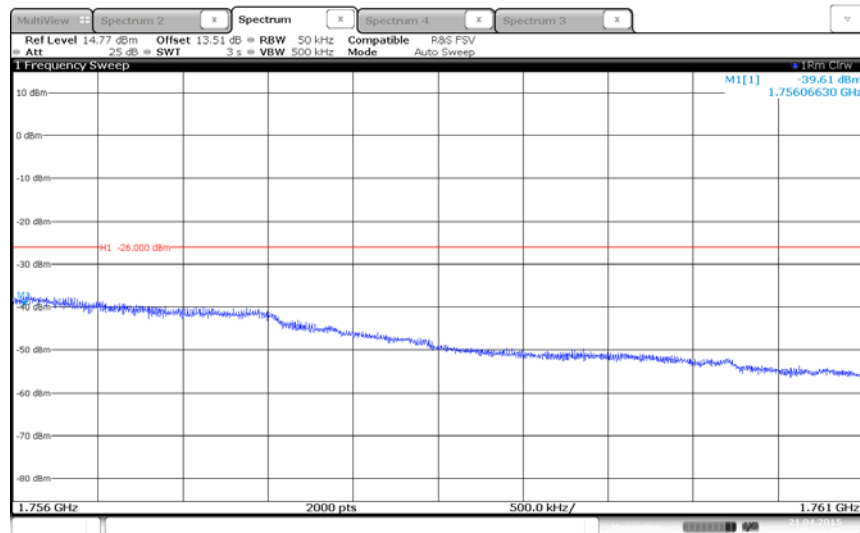


Date: 21 APR 2015 16:25:57

LTE Band 4 (3 MHz BW)/High Channel (20385) Band Edge @ 1755 MHz

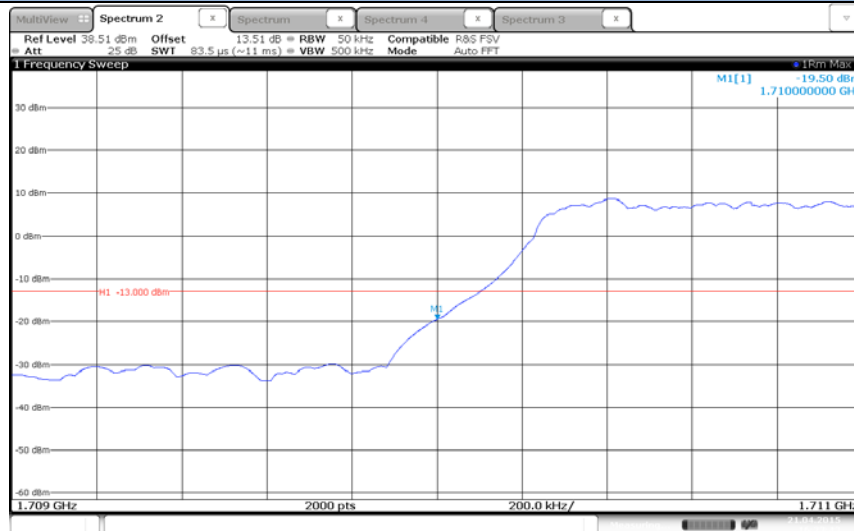


Date: 21 APR 2015 16:34:01

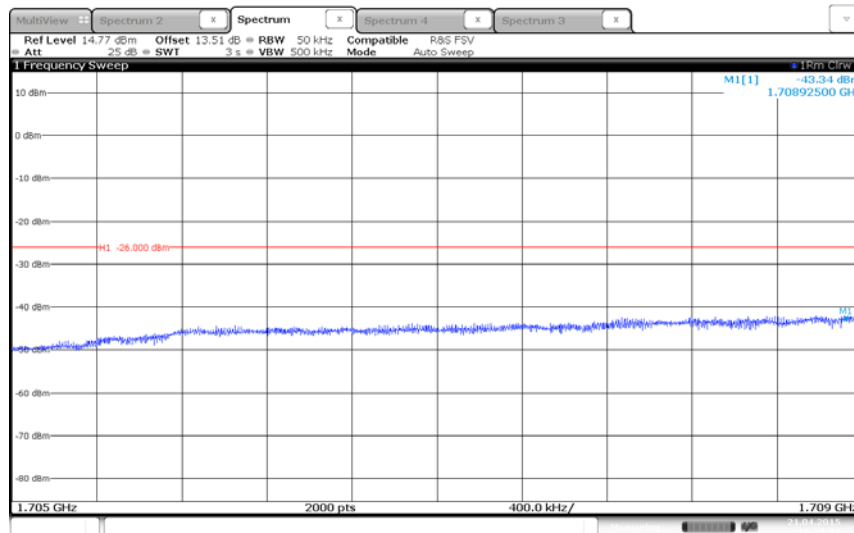


Date: 21 APR 2015 16:35:46

LTE Band 4 (5 MHz BW)/Low Channel (19975) Band Edge @ 1710 MHz

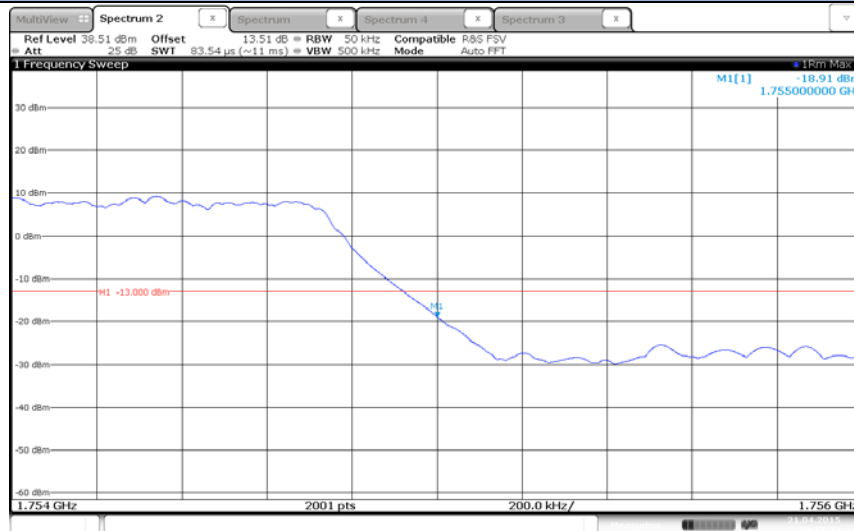


Date: 21 APR 2015 16:23:43

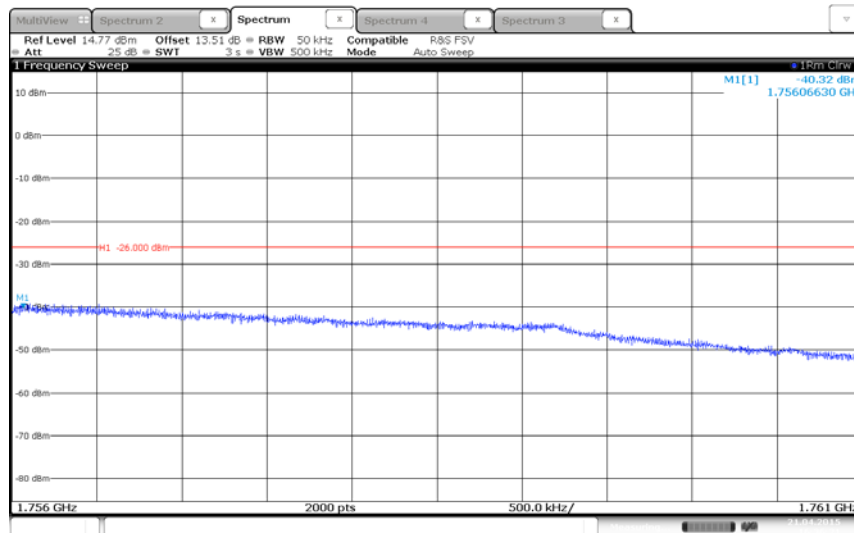


Date: 21 APR 2015 16:24:13

LTE Band 4 (5 MHz BW)/High Channel (20375) Band Edge @ 1755 MHz

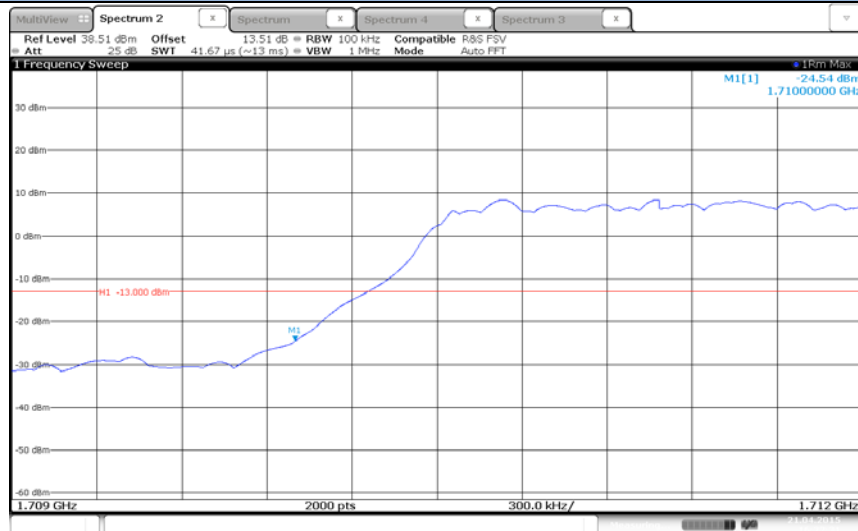


Date: 21 APR 2015 16:37:83

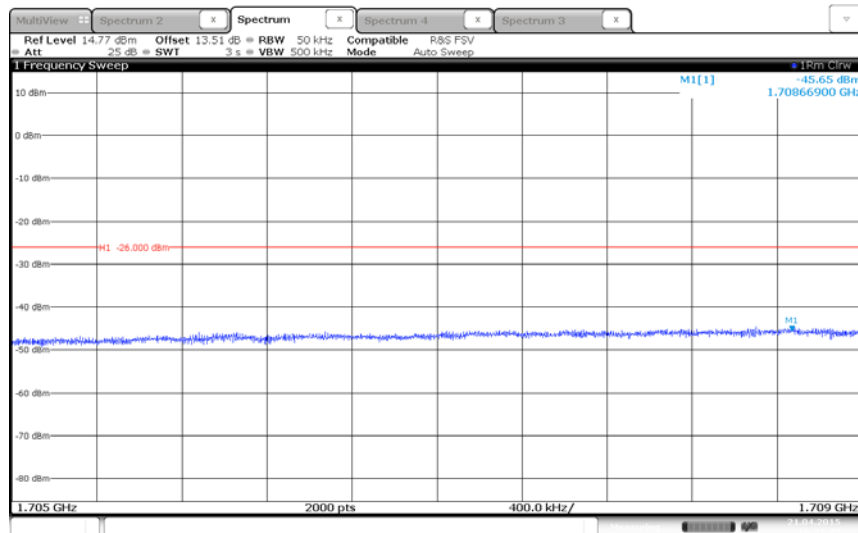


Date: 21 APR 2015 16:36:21

LTE Band 4 (10 MHz BW)/Low Channel (20000) Band Edge @ 1710 MHz

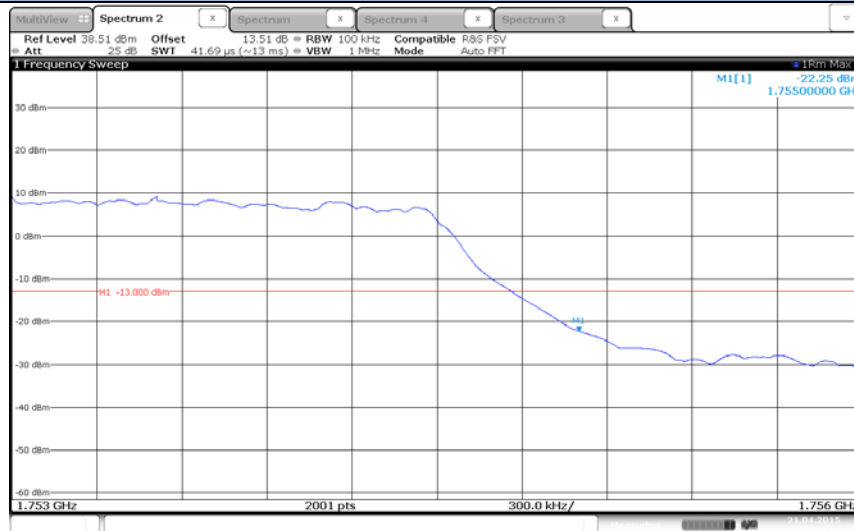


Date: 21 APR 2015 16:22:31

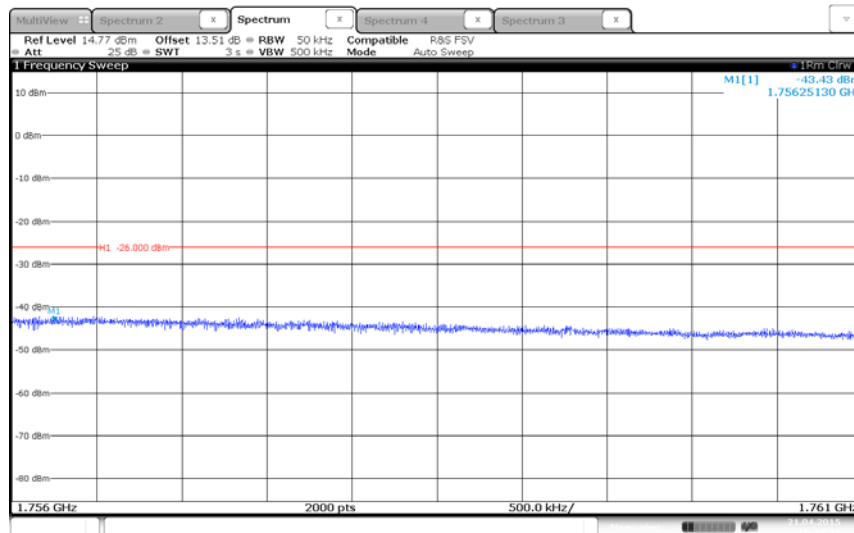


Date: 21 APR 2015 16:21:33

LTE Band 4 (10 MHz BW)/High Channel (20350) Band Edge @ 1755 MHz

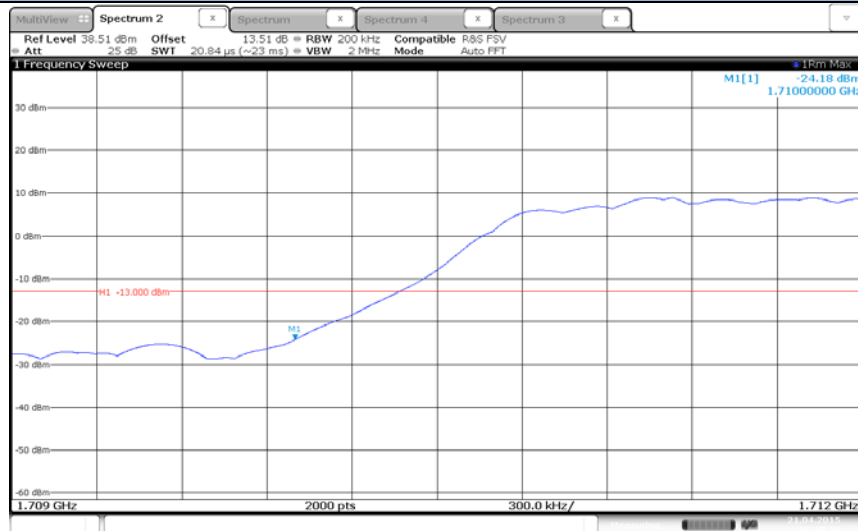


Date: 21 APR 2015 16:38:19

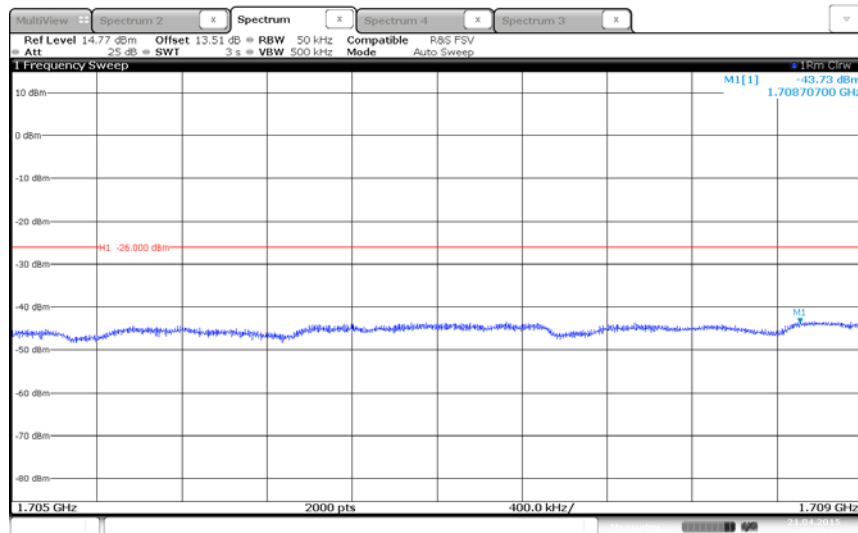


Date: 21 APR 2015 16:38:45

LTE Band 4 (15 MHz BW)/Low Channel (20025) Band Edge @ 1710 MHz

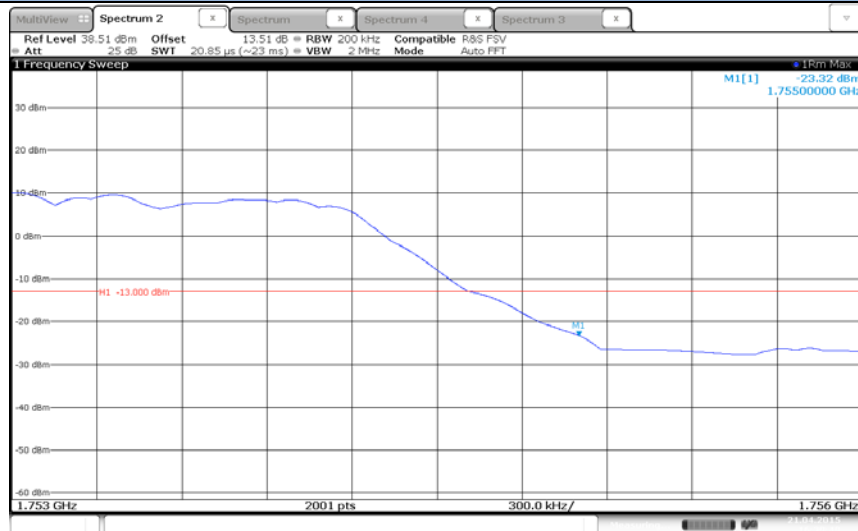


Date: 21 APR 2015 16:18:59

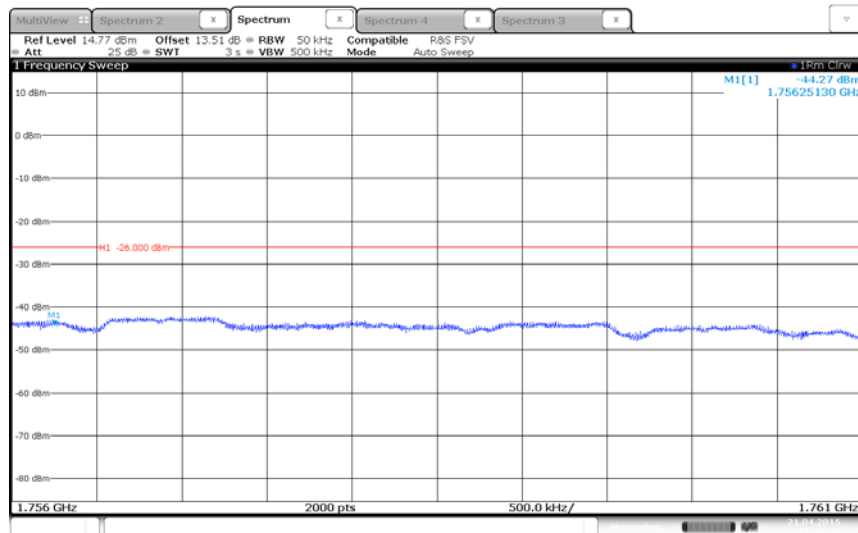


Date: 21 APR 2015 16:19:19

LTE Band 4 (15 MHz BW)/High Channel (20325) Band Edge @ 1755 MHz

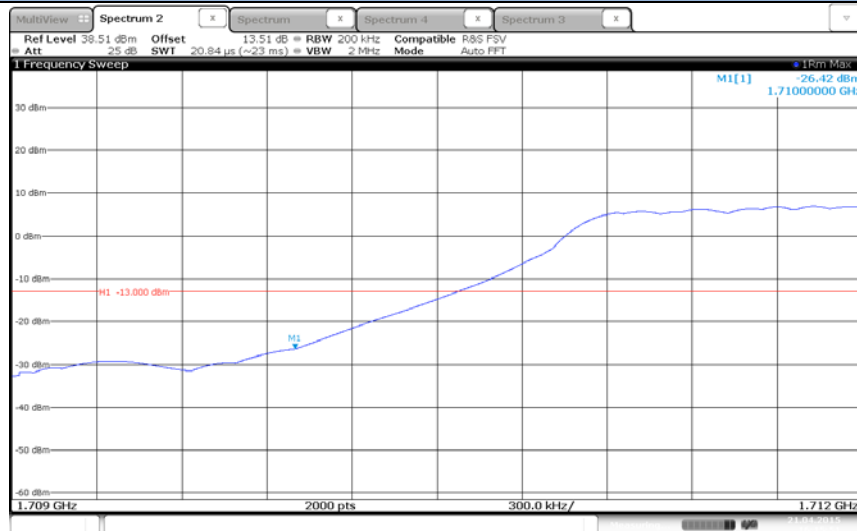


Date: 21 APR 2015 16:39:59

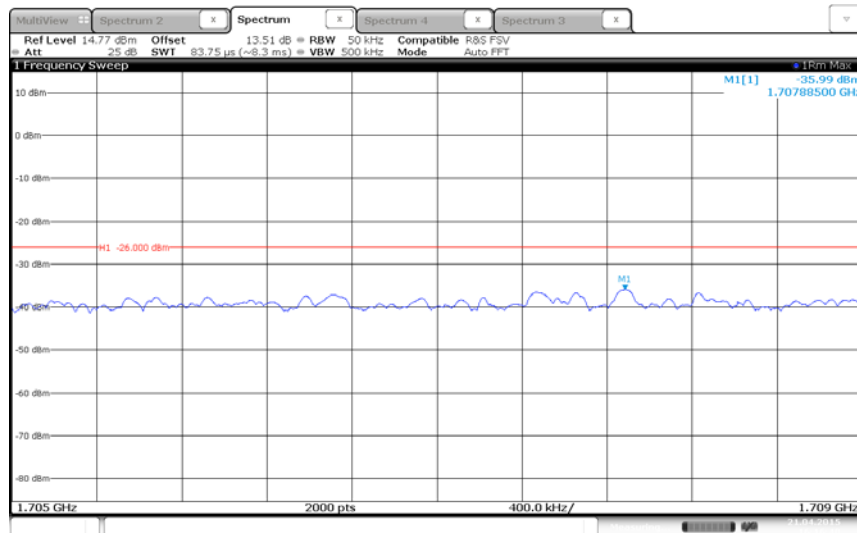


Date: 21 APR 2015 16:39:21

LTE Band 4 (20 MHz BW)/Low Channel (20050) Band Edge @ 1710 MHz

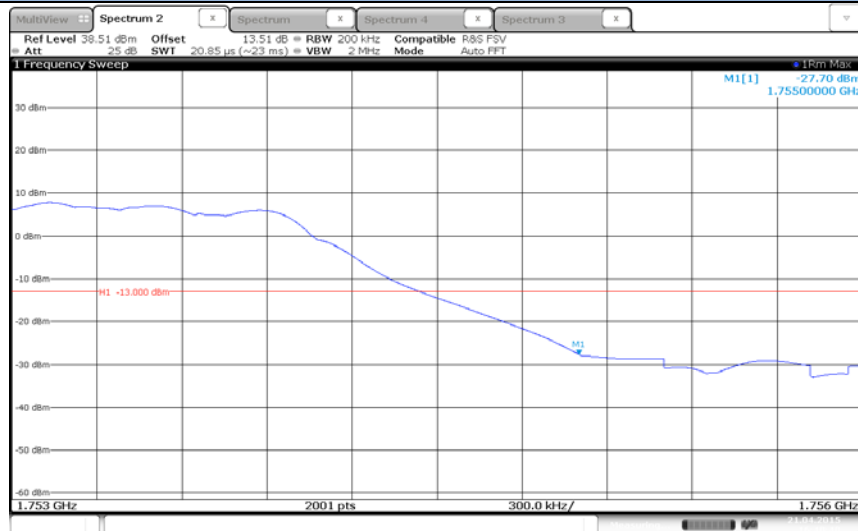


Date: 21 APR 2015 16:15:51

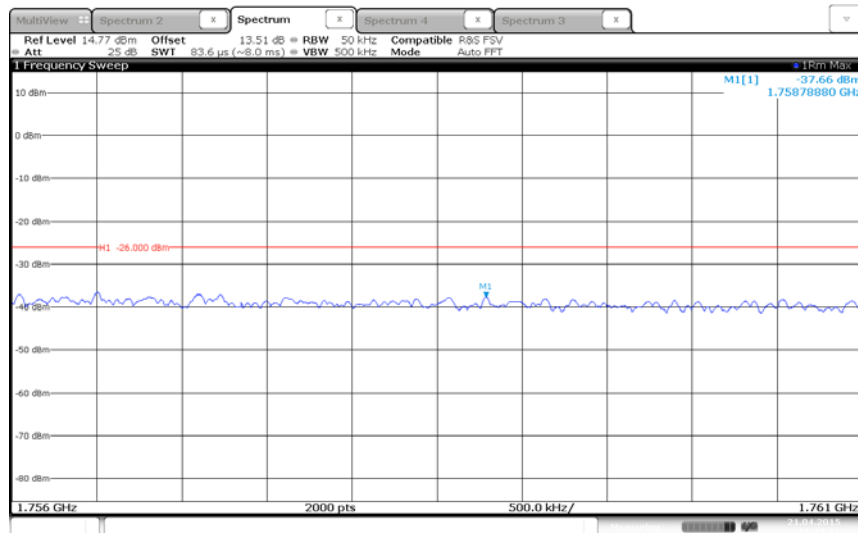


Date: 21 APR 2015 16:16:41

LTE Band 4 (20 MHz BW)/High Channel (20300) Band Edge @ 1755 MHz

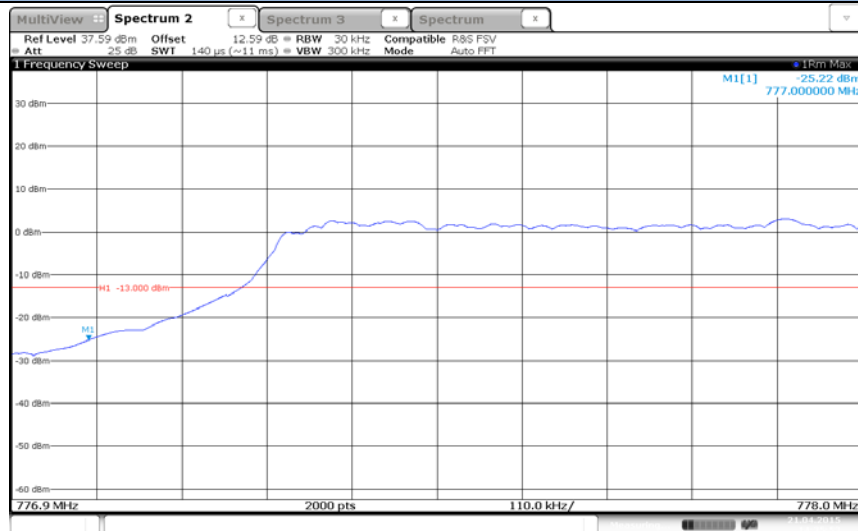


Date: 21 APR 2015 16:40:40

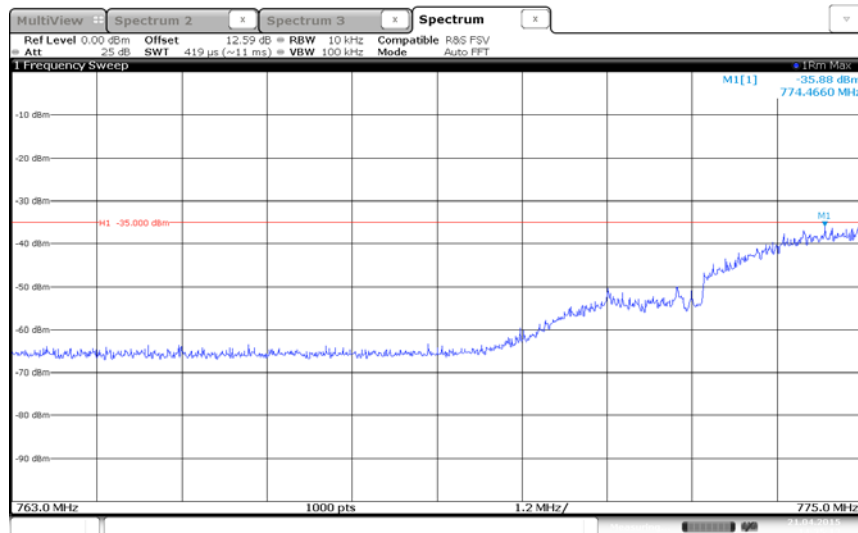


Date: 21 APR 2015 16:41:11

LTE Band 13 (5 MHz BW)/Low Channel (23205) Band Edge @ 777 MHz

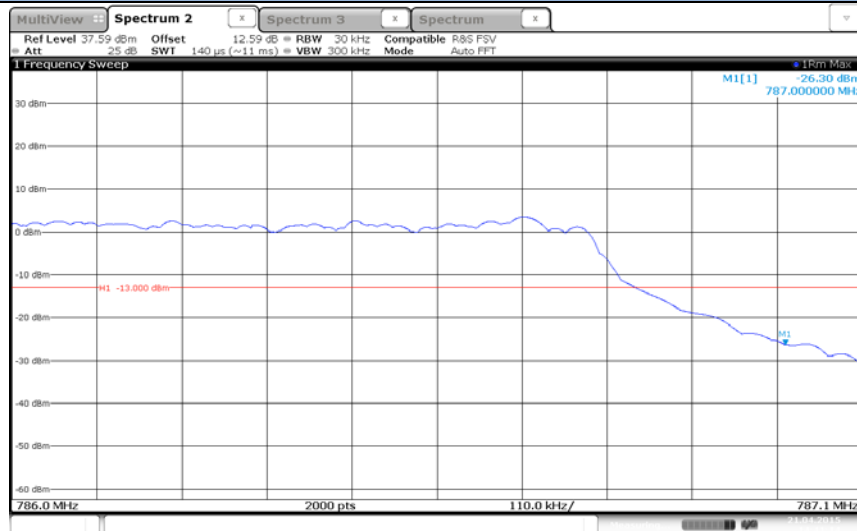


Date: 21 APR 2015 14:35:52

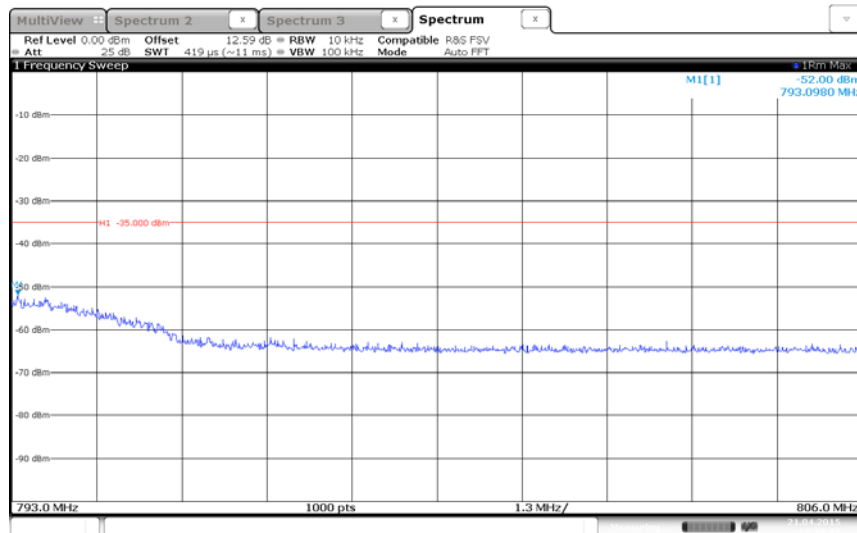


Date: 21 APR 2015 14:35:13

LTE Band 13 (5 MHz BW)/High Channel (23255) Band Edge @ 787 MHz

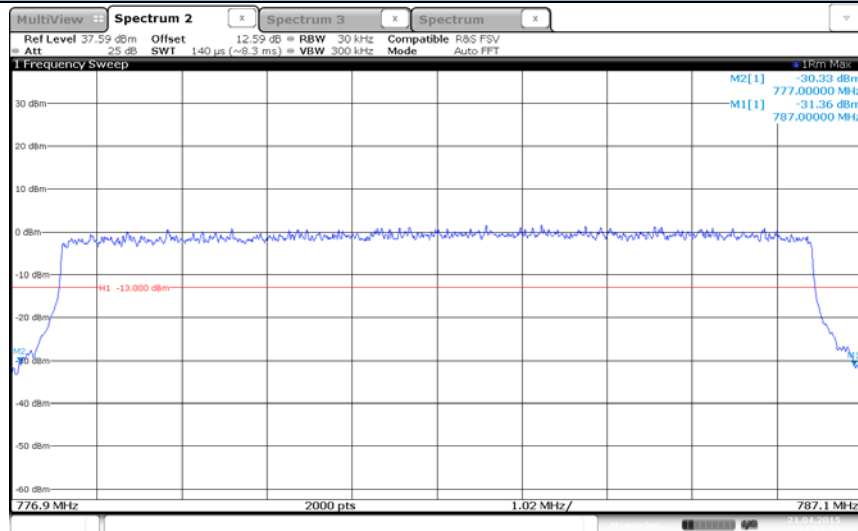


Date: 21 APR 2015 14:11:14

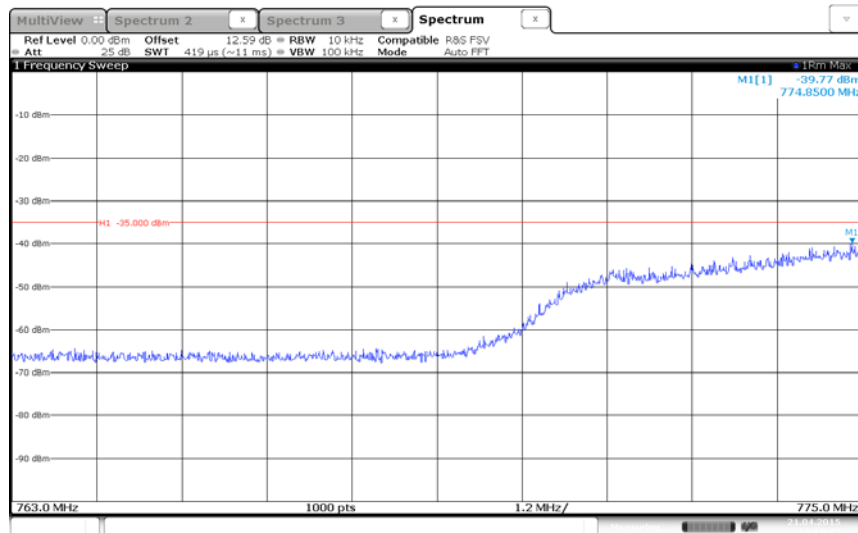


Date: 21 APR 2015 14:39:17

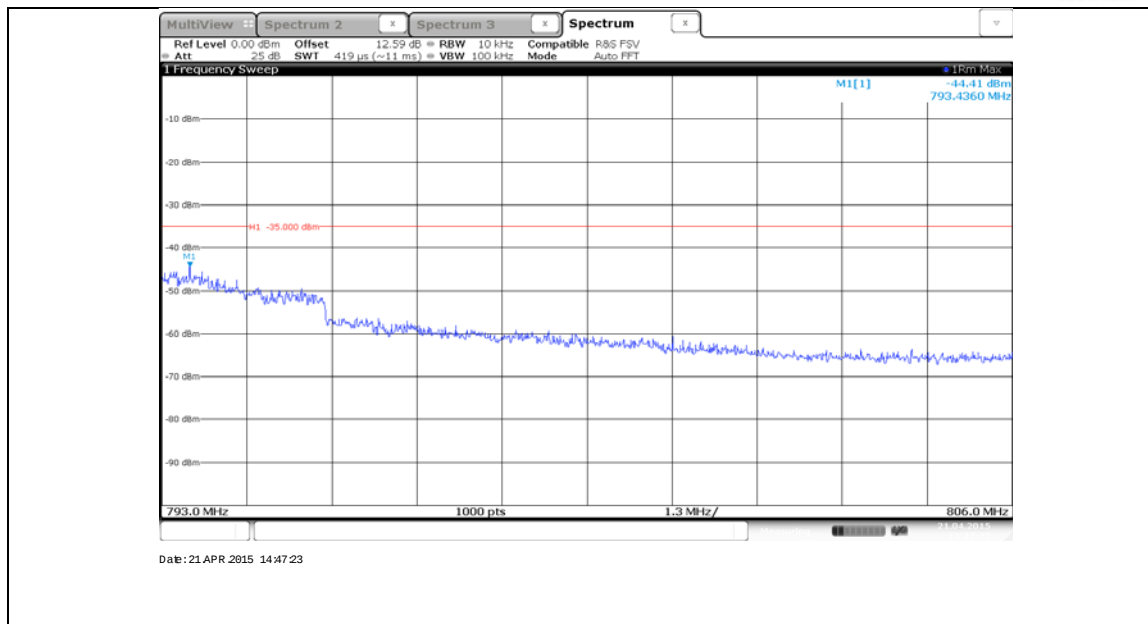
LTE Band 13 (10 MHz BW)/Channel (23230) Band Edge @ 777 MHz and 787 MHz



Date: 21 APR 2015 14:47:57



Date: 21 APR 2015 14:46:46





2.6 CONDUCTED SPURIOUS EMISSIONS

2.6.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 27, Clause 27.53 (h)(1)
FCC 47 CFR Part 27, Clause 27.53(c)(2)
RSS-139, Clause 6.5
RSS-130, Clause 4.6

2.6.2 Standard Applicable

FCC Part 27:

Clause 27.53 (c)(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Clause 27.53 (h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1710-1755 MHz, 2110-2155 MHz, 2000-2020 MHz, 2180-2200 MHz, 1915-1920 MHz, and 1995-2000 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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.

RSS-139:

In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least $43 + 10 \log_{10}(P)$, dB.

RSS-130:

The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

2.6.3 Equipment Under Test and Modification State

Serial No: SP070315900027 / Test Configuration A

2.6.4 Date of Test/Initial of test personnel who performed the test

April 22, 2015 / ZXY

2.6.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.6 Environmental Conditions/ Test Location

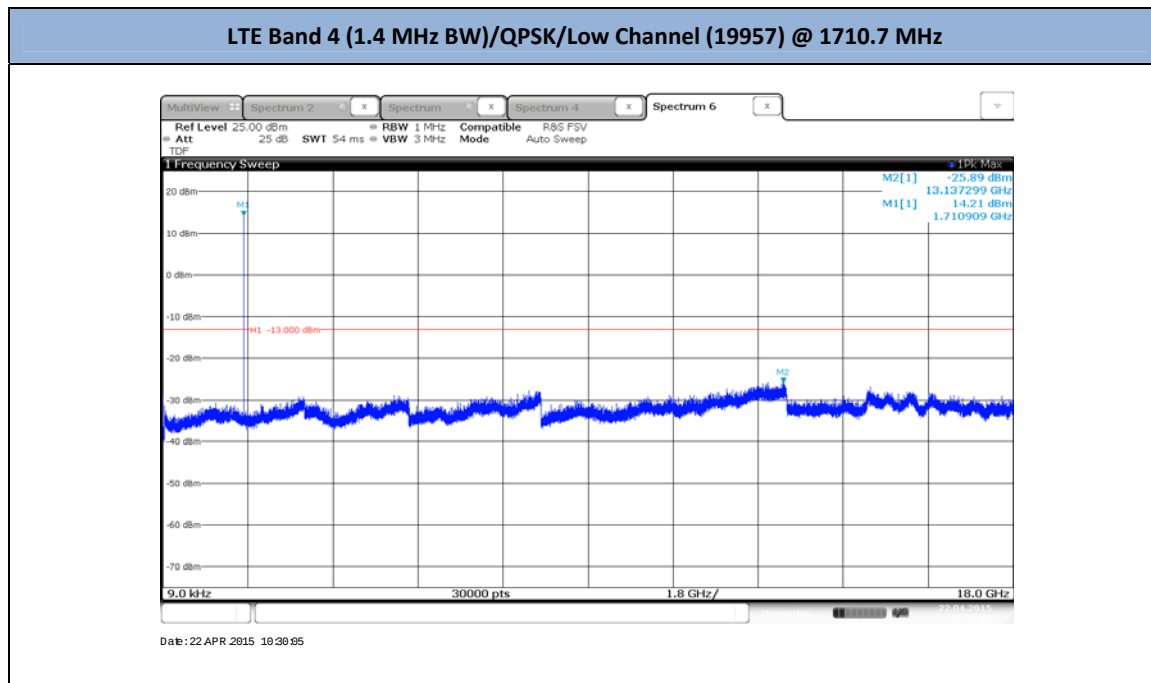
Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature 25.2°C
 Relative Humidity 38.3%
 ATM Pressure 99.7 kPa

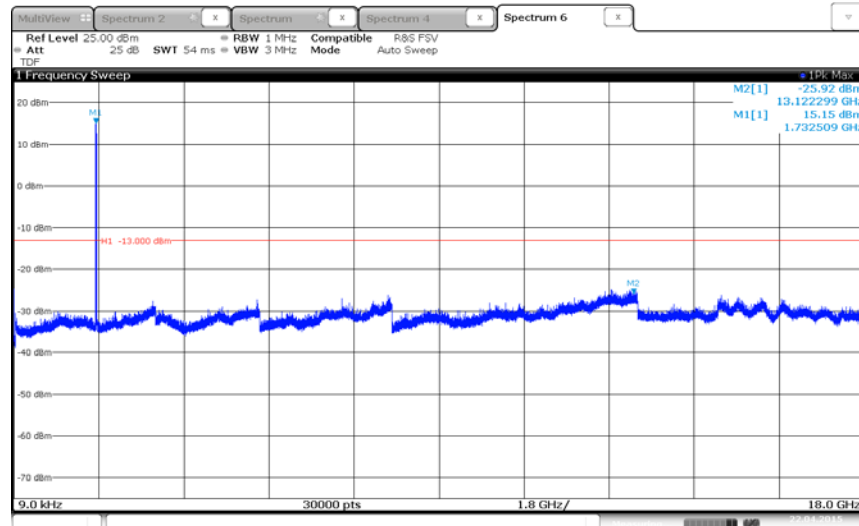
2.6.7 Additional Observations

- This is a conducted test.
- The spectrum was searched from 9kHz to the 10th harmonic.
- The path was measured and entered as a level offset.
- Only worst case configuration for all technologies presented in this test report.

2.6.8 Test Results

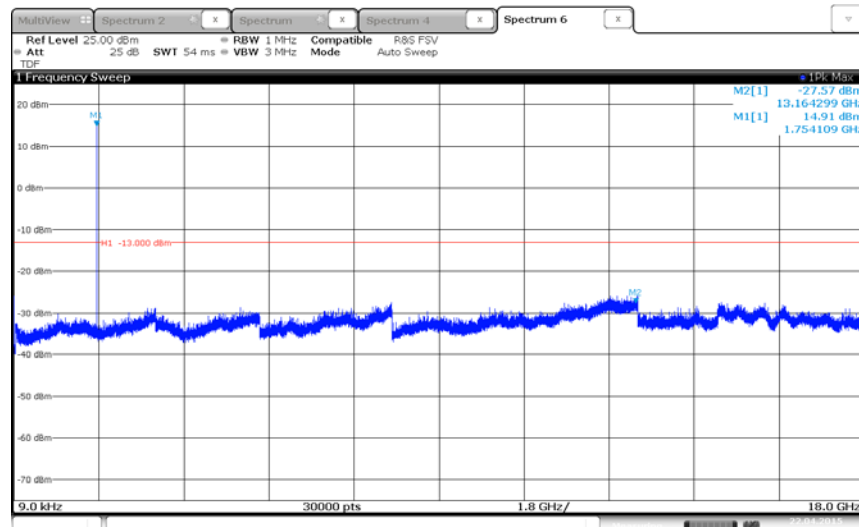


LTE Band 4 (1.4 MHz BW)/QPSK/Mid Channel (20175) @ 1732.5 MHz



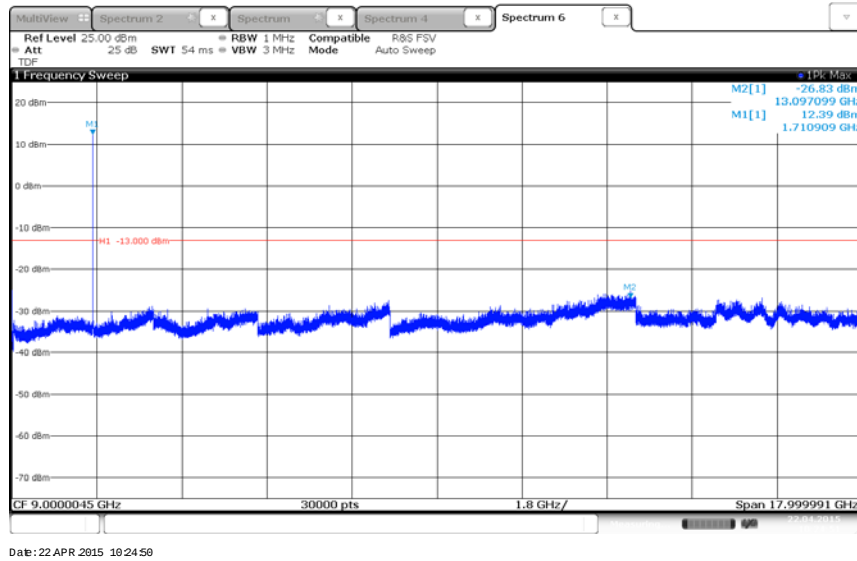
Date: 22 APR 2015 10:28:19

LTE Band 4 (1.4 MHz BW)/QPSK/High Channel (20393) @ 1754.3 MHz

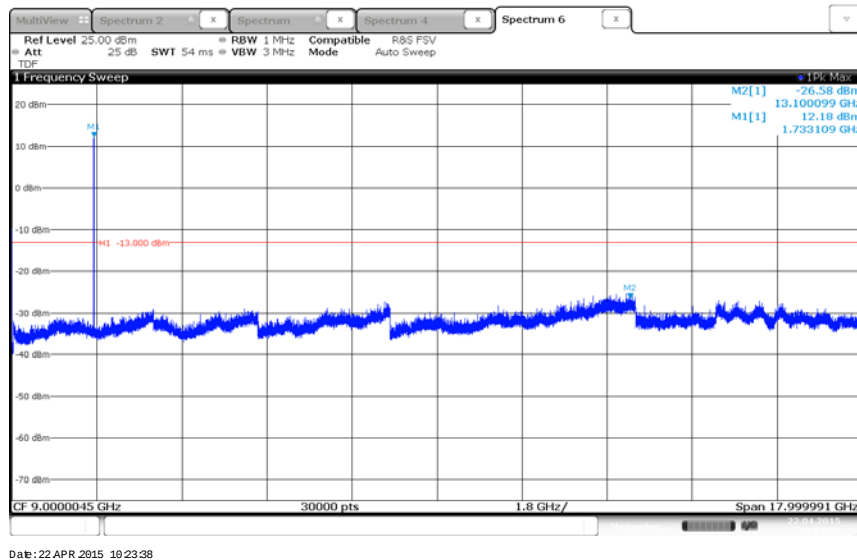


Date: 22 APR 2015 10:31:29

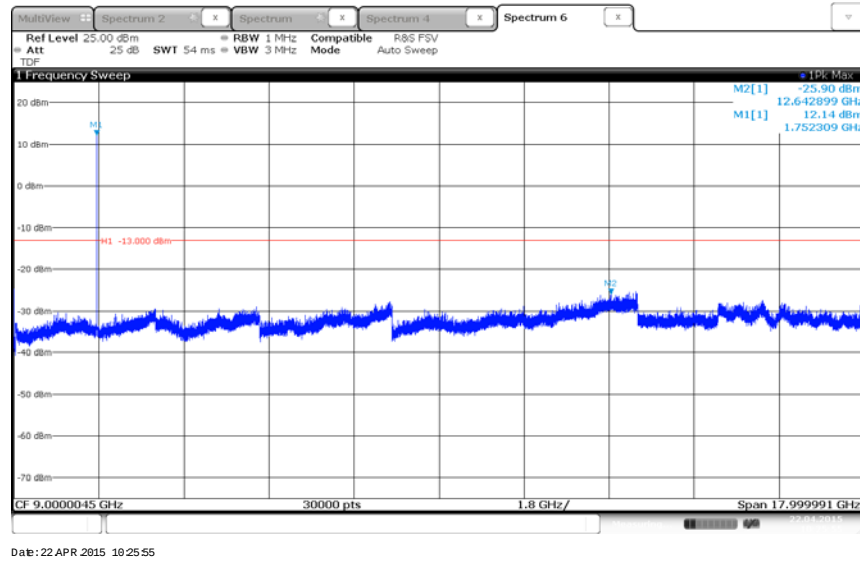
LTE Band 4 (3 MHz BW)/QPSK/Low Channel (19965) @ 1711.5 MHz



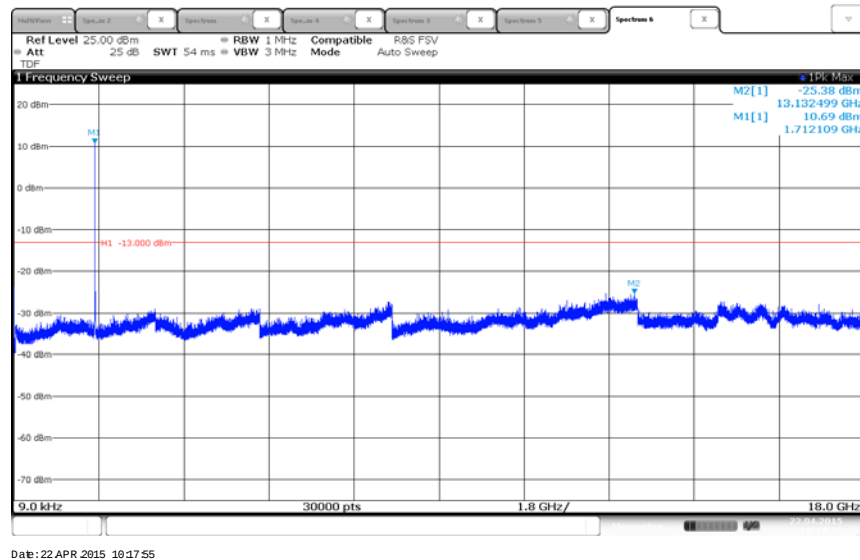
LTE Band 4 (3 MHz BW)/QPSK/Mid Channel (20175) @ 1732.5 MHz



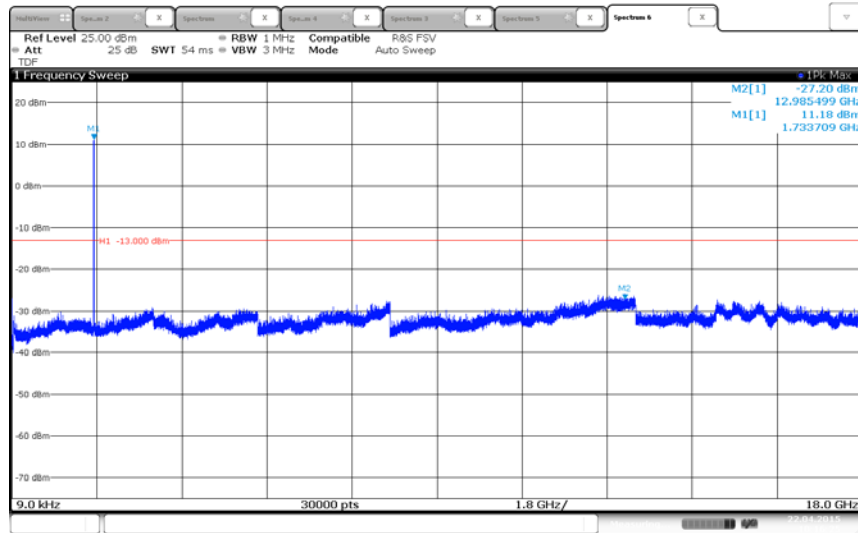
LTE Band 4 (3 MHz BW)/QPSK/High Channel (20385) @ 1753.5 MHz



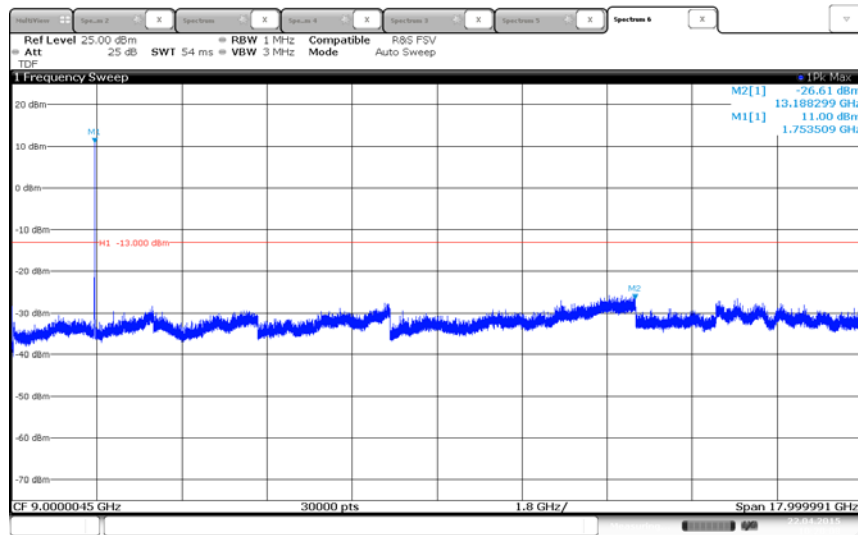
LTE Band 4 (5 MHz BW)/QPSK/Low Channel (19975) @ 1712.5 MHz



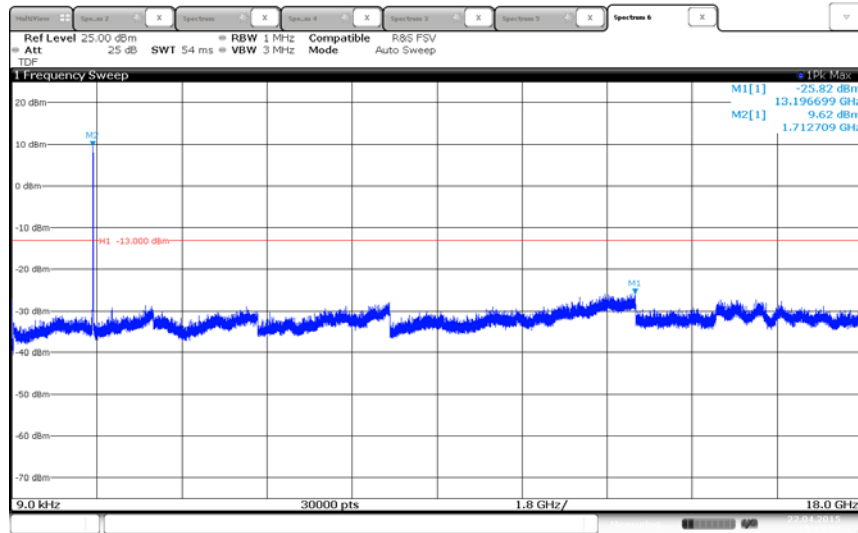
LTE Band 4 (5 MHz BW)/QPSK/Mid Channel (20175) @ 1732.5 MHz



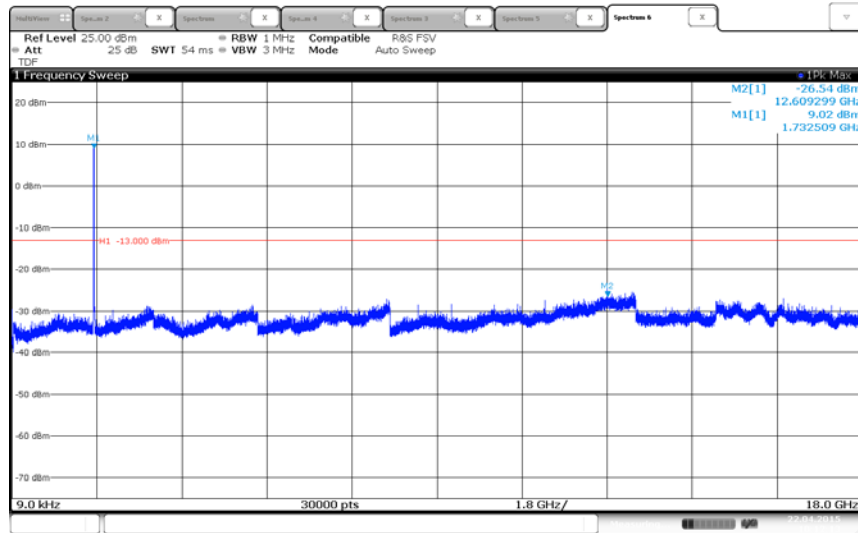
LTE Band 4 (5 MHz BW)/QPSK/High Channel (20375) @ 1752.5 MHz



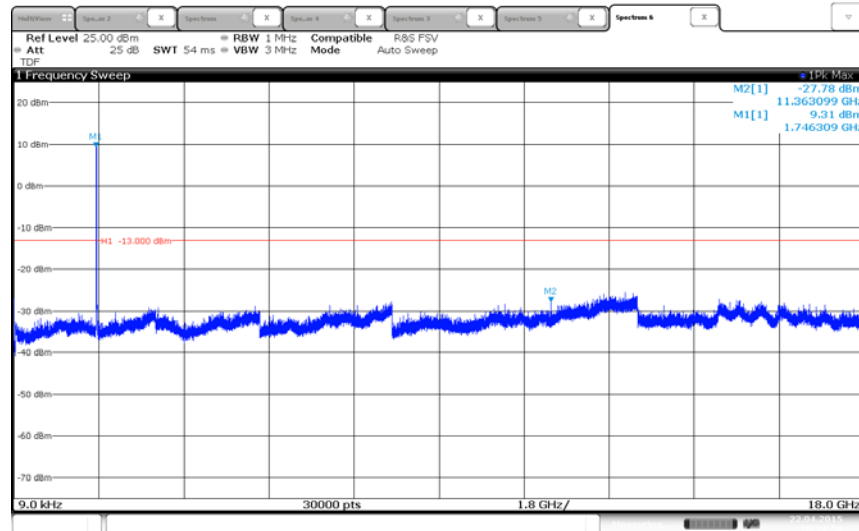
LTE Band 4 (10 MHz BW)/QPSK/Low Channel (20000) @ 1715.0 MHz



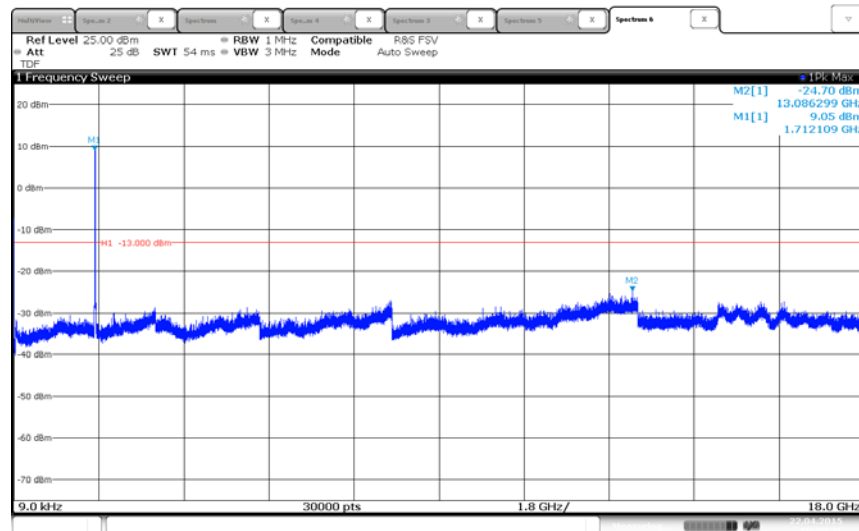
LTE Band 4 (10 MHz BW)/QPSK/Mid Channel (20175) @ 1732.5 MHz



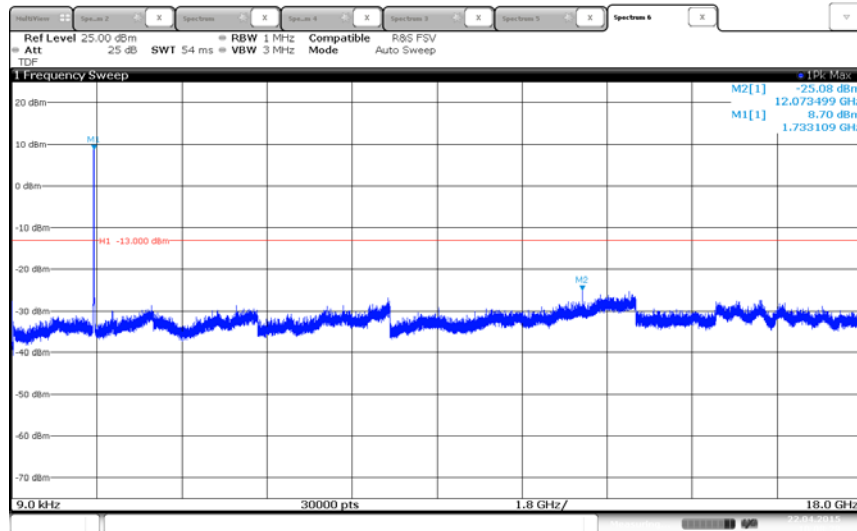
LTE Band 4 (10 MHz BW)/QPSK/High Channel (20350) @ 1750.0 MHz



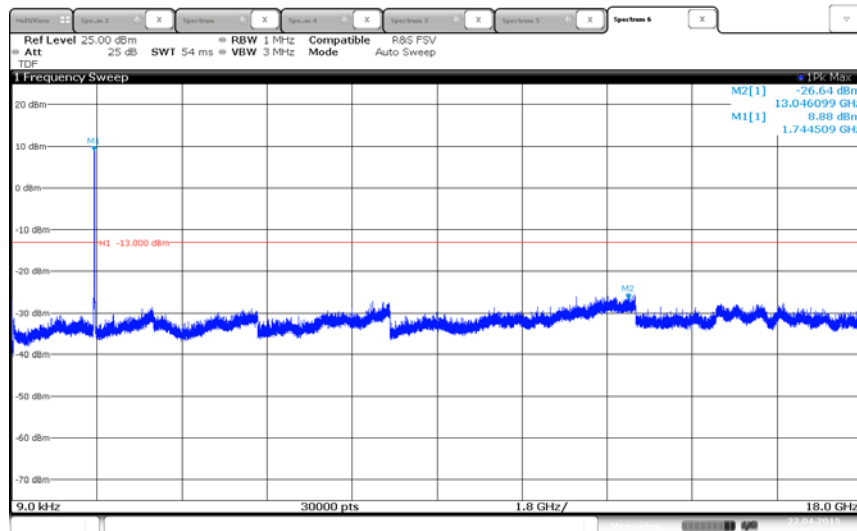
LTE Band 4 (15 MHz BW)/QPSK/Low Channel (20025) @ 1717.5 MHz



LTE Band 4 (15 MHz BW)/QPSK/Mid Channel (20175) @ 1732.5 MHz



LTE Band 4 (15 MHz BW)/QPSK/High Channel (20325) @ 1747.5 MHz



1 Frequency Sweep

20 dBm

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

9.0 kHz

30000 pts

1.8 GHz/

18.0 GHz

Ref Level 25.00 dBm

Att 25 dB

RBW 1 MHz

VBW 3 MHz

R/S FSV Auto Sweep

Compatible Mode

SWT 54 ms

1PF Max

M2[1] -24.70 dBm

13.086299 GHz

M1[1] 9.05 dBm

1.712109 GHz

M1 -13.000 dBm

M2

Ref Level 25.00 dBm
 Att 25 dB
 RBW 1 MHz
 Compatible Mode
 R&S FSV
 Auto Sweep
 SWT 54 ms
 VBW 3 MHz

1 Frequency Sweep

20 dBm
 10 dBm
 0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm
 -60 dBm
 -70 dBm

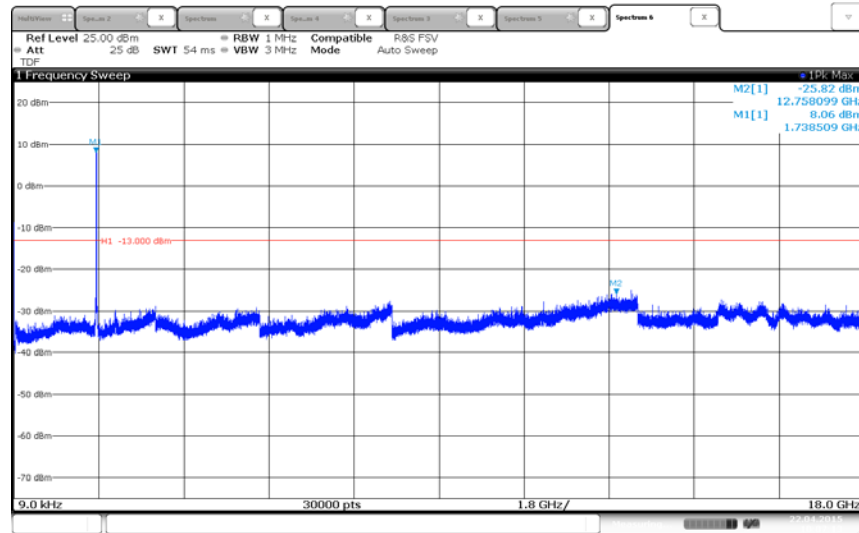
9.0 GHz 30000 pts 1.8 GHz/ 18.0 GHz

M2[1] -25.62 dBm
 13.178699 GHz
 M1[1] 7.90 dBm
 1.733109 GHz

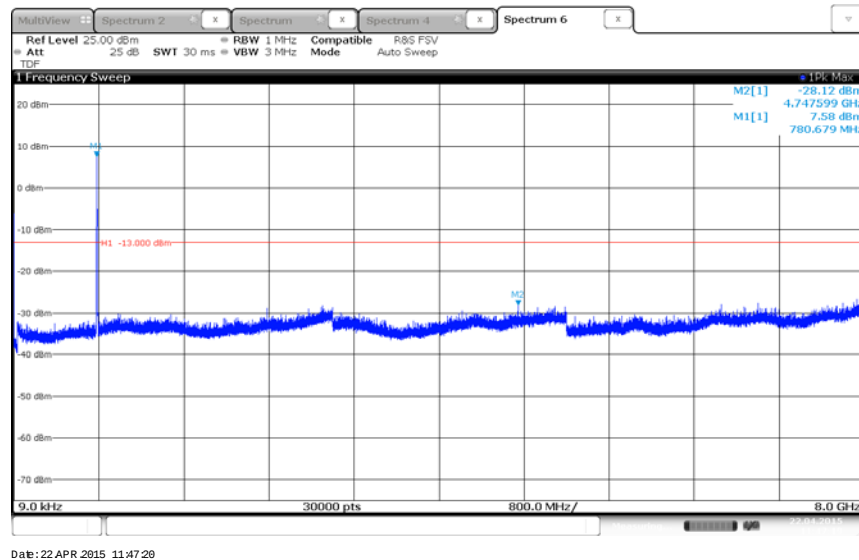
M1 -13.000 dBm

TÜV SÜD AMERICA INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 678 1400 FAX: 858 546 0364

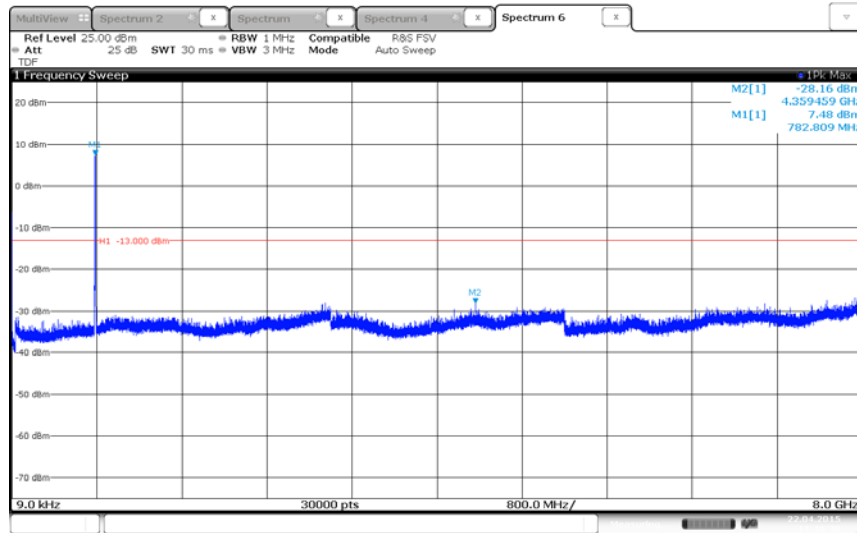
LTE Band 4 (15 MHz BW)/QPSK/High Channel (20300) @ 1745.0 MHz



LTE Band 13 (5 MHz BW)/QPSK/ Low Channel (23205)@ 779.5 MHz

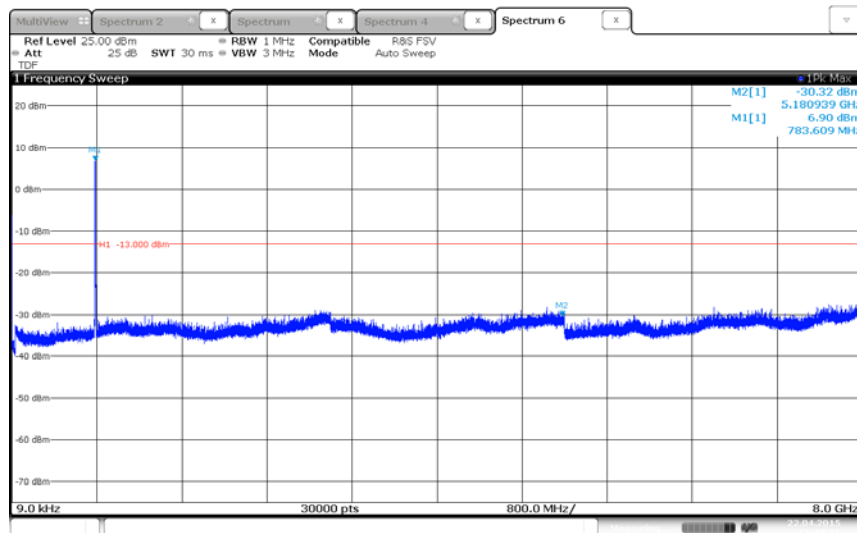


LTE Band 13 (5 MHz BW)/QPSK/ Mid Channel (23230)@ 782.0 MHz



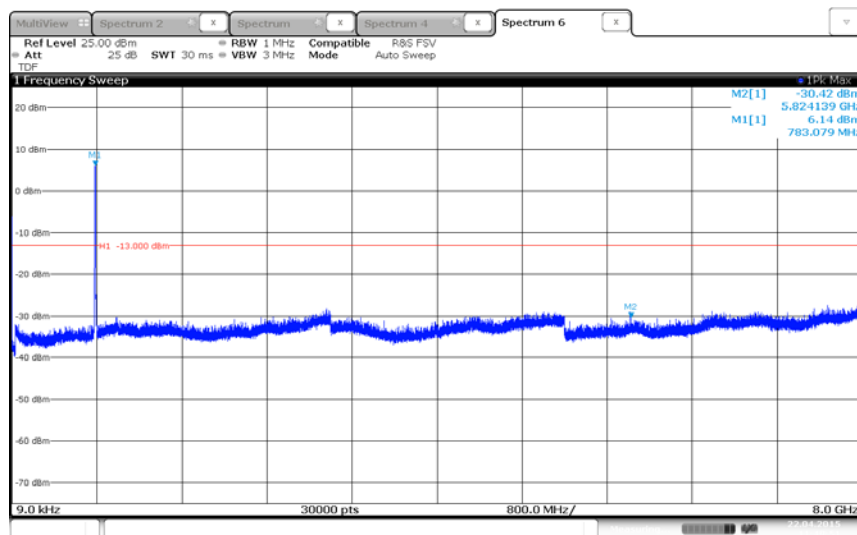
Date: 22 APR 2015 11:46:29

LTE Band 13 (5 MHz BW)/QPSK/ High Channel (23255)@ 784.5 MHz



Date: 22 APR 2015 11:48:11

LTE Band 13 (10 MHz BW)/QPSK/ Mid Channel (23230)@ 782.0 MHz



Date: 22 APR 2015 11:49:51



2.7 FIELD STRENGTH OF SPURIOUS RADIATION

2.7.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1053
FCC 47 CFR Part 27, Clause 27.53(h)(1)
FCC 47 CFR Part 27, Clause 27.53(c)(2)
RSS-139, Clause 6.3
RSS-130, Clause 4.3

2.7.2 Standard Applicable

FCC Part 27:

Clause 27.53 (c)(2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Clause 27.53 (h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1710-1755 MHz, 2110-2155 MHz, 2000-2020 MHz, 2180-2200 MHz, 1915-1920 MHz, and 1995-2000 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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.

RSS-139:

In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least $43 + 10 \log_{10}(P)$, dB.

RSS-130:

The power of any unwanted emissions in any 100 kHz bandwidth on any frequency outside the frequency range(s) within which the equipment is designed to operate shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency range, a resolution bandwidth of 30 kHz may be employed.

2.7.3 Equipment Under Test and Modification State

Serial No: SP070315900027 / Test Configuration B



2.7.4 Date of Test/Initial of test personnel who performed the test

April 15 to 23, 2015 / XYZ

2.7.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.6 Environmental Conditions / Test Location

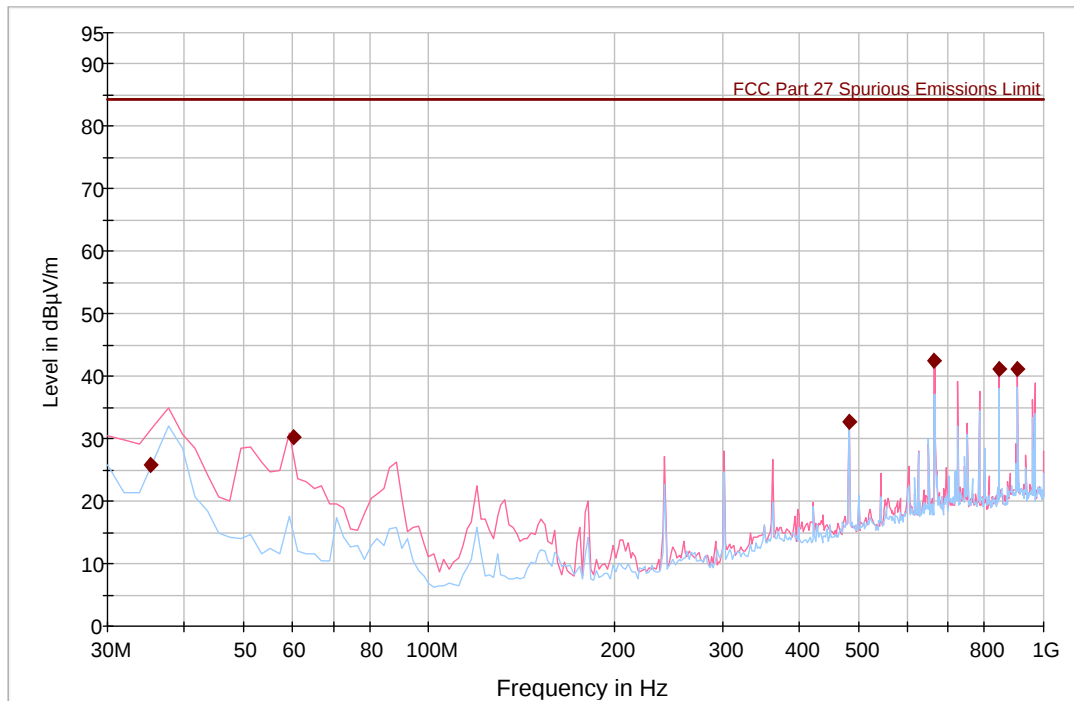
Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.8 - 24.6°C
Relative Humidity	45.2 - 47.0%
ATM Pressure	99.5 - 99.9 kPa

2.7.7 Additional Observations

- This is a radiated test using substitution method as per Unwanted Emissions: Radiated Spurious method of measurement of ANSI/TIA/EIA-603-C 2004, August 17, 2004.
- Only the worst case configuration presented in this test report.
- Only noise floor measurements observed above 18GHz.
- Measurement was done using EMC32 V8.53 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.

2.7.8 Test Results Below 1GHz – Band 4_20 MHz_Mid Ch_QPSK_1732.5 MHz



— FCC Part 27 Spurious Emissions Limit [..EMI radiated] — Preview Result 1V-PK+ [Preview Result 1V.Re:
 — Preview Result 1H-PK+ [Preview Result 1H.Result:2] ◆ Final Result 1-QPK [Final Result 1.Result:1]

Quasi Peak Data

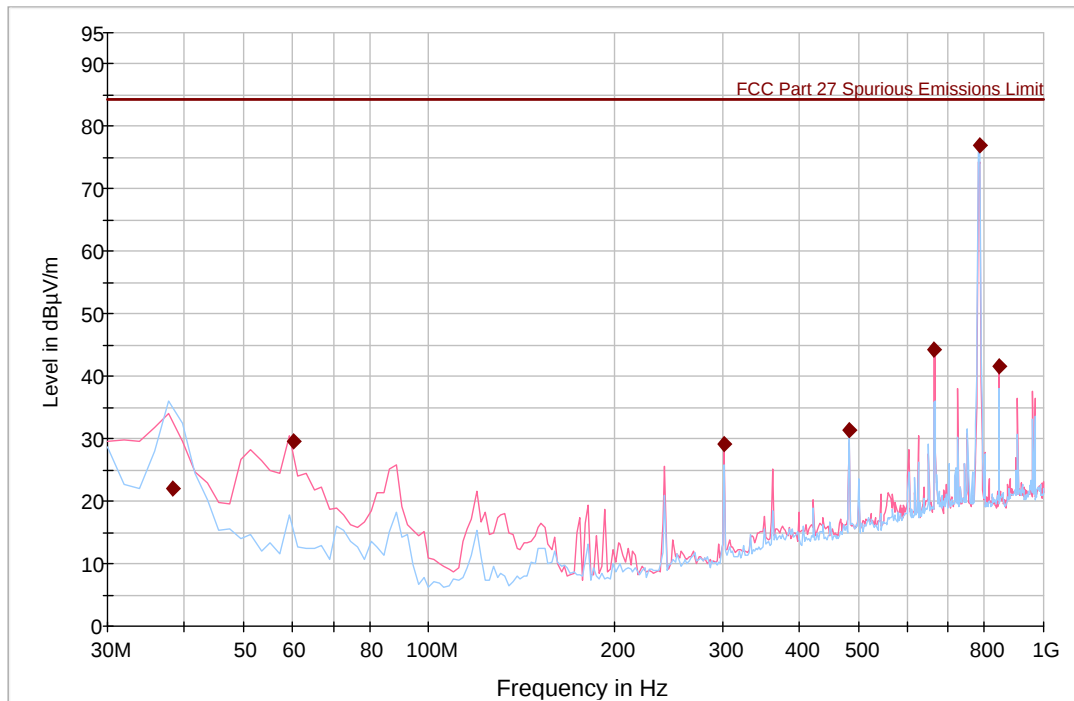
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
35.295551	25.9	1000.0	120.000	105.0	V	-5.0	-15.6	58.5	84.4
60.358317	30.3	1000.0	120.000	100.0	V	144.0	-22.9	54.1	84.4
482.925852	32.6	1000.0	120.000	100.0	V	267.0	-8.2	51.8	84.4
664.011303	42.6	1000.0	120.000	100.0	V	176.0	-5.3	41.8	84.4
845.112866	41.2	1000.0	120.000	100.0	V	99.0	-2.5	43.2	84.4
905.453387	41.3	1000.0	120.000	100.0	V	122.0	-0.8	43.1	84.4

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Limit (dBm)	Compliance

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions below 1GHz. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.9 Test Results Below 1GHz – Band 13_5 MHz_Top Ch_QPSK_784.5 MHz



— FCC Part 27 Spurious Emissions Limit [..EMI radiated] — Preview Result 1V-PK+ [Preview Result 1V.Re:
 — Preview Result 1H-PK+ [Preview Result 1H.Result:2] ◆ Final Result 1-QPK [Final Result 1.Result:1]

Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
38.295551	21.9	1000.0	120.000	385.0	H	18.0	-17.1	62.5	84.4
60.358317	29.6	1000.0	120.000	100.0	V	165.0	-22.9	54.8	84.4
301.824289	29.2	1000.0	120.000	127.0	V	168.0	-14.6	55.2	84.4
482.925852	31.3	1000.0	120.000	120.0	H	108.0	-8.2	53.1	84.4
664.011303	44.2	1000.0	120.000	100.0	V	160.0	-5.3	40.2	84.4
785.292345	77.0	1000.0	120.000	105.0	H	172.0	Fundamental		
845.112866	41.6	1000.0	120.000	100.0	V	102.0	-2.5	42.8	84.4

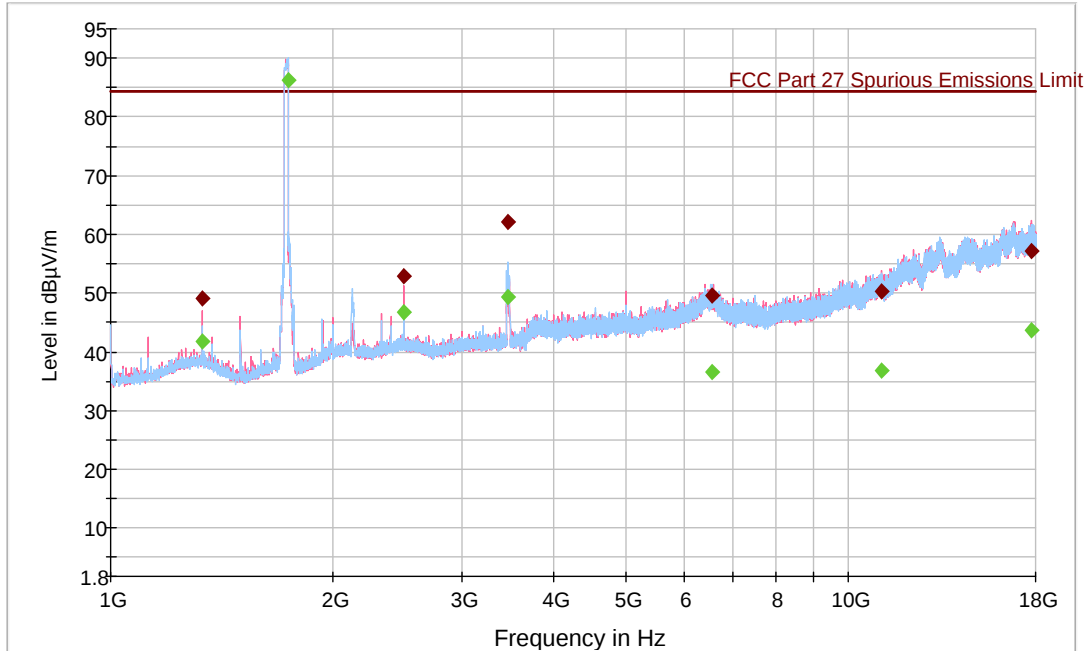
Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Limit (dBm)	Compliance

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions below 1GHz. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.10 Test Results Above 1GHz – Band 4_20 MHz_Mid Ch_QPSK_1732.5 MHz

Continuous Rotation TUV 3m Radiated 1000 to 18000MHz



— FCC Part 27 Spurious Emissions Limit [..EMI radiated]
 — Preview Result 1H-PK+ [Preview Result 1H.Result:2]
 — Preview Result 1V-PK+ [Preview Result 1V.Result:1]
 ◆ Final Result 2-AVG [Final Result 2.Result:1]

Peak and Average Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1332.100000	49.1	1000.0	1000.000	99.7	V	168.0	-5.5	35.3	84.4
1741.033333	97.3	1000.0	1000.000	148.7	H	132.0		Fundamental	
2500.166667	52.9	1000.0	1000.000	116.7	V	6.0	-0.1	31.5	84.4
3456.133333	62.0	1000.0	1000.000	156.6	H	132.0	1.6	22.4	84.4
6558.666667	49.6	1000.0	1000.000	356.1	H	145.0	11.3	34.8	84.4
11103.30000	50.4	1000.0	1000.000	103.7	H	202.0	14.5	34.0	84.4
17746.50000	57.2	1000.0	1000.000	267.3	V	303.0	23.2	27.2	84.4

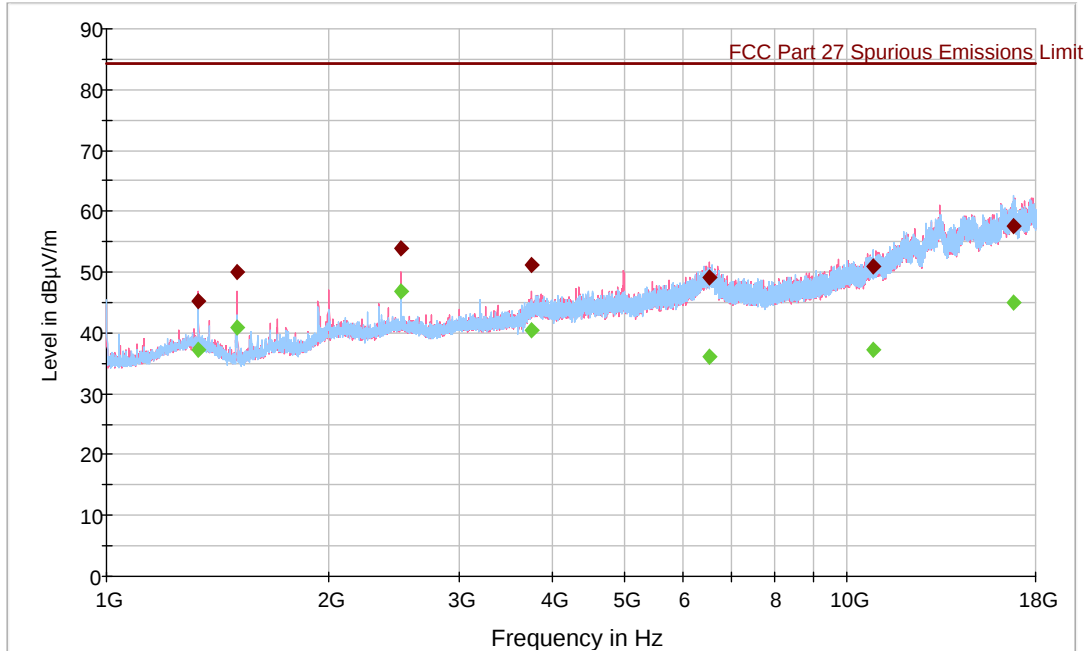
Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Limit (dBm)	Compliance

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.11 Test Results Above 1GHz – Band 13_5 MHz_Top Ch_QPSK_784.5 MHz

Continuous Rotation TUV 3m Radiated 1000 to 18000MHz



— FCC Part 27 Spurious Emissions Limit [..EMI radiated]
 — Preview Result 1H-PK+ [Preview Result 1H.Result:2]
 ◆ Final Result 2-AVG [Final Result 2.Result:1]
 ◆ Preview Result 1V-PK+ [Preview Result 1V.Result:1]
 ◆ Final Result 1-PK+ [Final Result 1.Result:1]

Peak and Average Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1331.900000	45.3	1000.0	1000.000	174.6	V	139.0	-5.5	39.1	84.4
1500.000000	50.0	1000.0	1000.000	255.3	V	36.0	-5.7	34.4	84.4
2500.200000	53.9	1000.0	1000.000	140.7	V	345.0	-0.1	30.5	84.4
3750.233333	51.1	1000.0	1000.000	102.7	V	20.0	4.5	33.3	84.4
6519.700000	49.1	1000.0	1000.000	182.6	V	280.0	11.2	35.3	84.4
10835.60000	51.0	1000.0	1000.000	117.7	H	213.0	14.3	33.4	84.4
16789.23333	57.6	1000.0	1000.000	102.7	H	112.0	23.6	26.9	84.4

Substitution Data

Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Limit (dBm)	Compliance

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 2GHz high pass filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).



2.8 FREQUENCY STABILITY

2.8.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1055
FCC 47 CFR Part 27, Clause 27.54
RSS-139, Clause 6.3
RSS-130, Clause 4.3

2.8.2 Standard Applicable

FCC Part 27:

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

RSS-139:

Clause 6.3: The frequency stability shall be sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-130:

Clause 4.3: The transmitter frequency stability limit shall be determined as follows:

(a) The frequency offset shall be measured according to the procedure described in RSS-Gen and recorded;

(b) Using a resolution bandwidth of 1% of the occupied bandwidth, a reference point at the unwanted emission level which complies with the attenuation of $43 + 10 \log_{10} p$ (watts) on the emission mask of the lowest and highest channel shall be selected, and the frequency at these points shall be recorded as fL and fH respectively.

2.8.3 Equipment Under Test and Modification State

Serial No: SP070315900027 / Test Configuration A

2.8.4 Date of Test/Initial of test personnel who performed the test

April 27 and 28, 2015 / XYZ

2.8.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.6 Environmental Conditions / Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.1 - 25.4°C
Relative Humidity	23.0 - 24.5%
ATM Pressure	98.7 kPa

2.8.7 Additional Observations

- This is a conducted test. The EUT was operated at 5 VDC nominal voltage and was placed in the temperature chamber for this evaluation. The EUT was controlled by a CMW500 and the maximum frequency error was monitored through the Wideband Radio Communication Tester Frequency Error measurement function under LTE Tx Measurement.
- The EUT was tested over the temperature -30°C to +50°C in 10°C steps and allowed to sit for 1 hour to allow the equipment and chamber temperature to stabilize. The measurements were then performed.
- Voltage variation was also performed at 85% and 115% of the nominal voltage at 20°C.
- The maximum frequency deviation was verified against the frequency band edges using the EBW data.

2.8.8 Test Results Summary

LTE Band 4–QPSK – 5MHz BW-Mid Channel 20175 @1732.5 MHz		
<i>Voltage (VDC)</i>	<i>Temperature (°C)</i>	<i>Frequency Deviation (Hz)</i>
5.0	-30	-7.47
	-20	-6.09
	-10	-5.78
	0	-5.77
	+10	-6.32
	+20	-5.62
	+30	-10.21
	+40	-9.06
	+50	-8.74

LTE Band 4–QPSK – 5MHz BW-Mid Channel 20175 @1732.5 MHz		
<i>Temperature (°C)</i>	<i>Voltage (VDC)</i>	<i>Frequency Deviation (Hz)</i>
20	4.25	-6.43
	5.75	-5.67

LTE Band 13-QPSK – 5MHz BW-Mid Channel 23230 @782.0 MHz		
Voltage (VDC)	Temperature (°C)	Frequency Deviation (Hz)
5.0	-30	3.85
	-20	3.82
	-10	3.79
	0	3.60
	+10	3.15
	+20	3.57
	+30	-5.79
	+40	-5.81
	+50	5.09

LTE Band 13-QPSK – 5MHz BW-Mid Channel 23230 @782.0 MHz		
Temperature (°C)	Voltage (VDC)	Frequency Deviation (Hz)
20	4.25	5.89
	5.75	3.18

LTE Band 13 worst case frequency error: 5.89 Hz
 Worst case 99% OBW of LTE Band 4 5.0MHz BW: 4.49 MHz

Low Channel Sample Calculation:

Edge of fundamental emission $(779.5 - (4.49/2))$: 777.255 MHz
 Max. fundamental frequency error $(777.255 - 0.00000589)$: 777.25499411 MHz
 EUT complies. 777.25499411 MHz > 777 MHz (edge of authorized band)

High Channel Sample Calculation:

Edge of fundamental emission $(784.5 + (4.49/2))$: 786.745 MHz
 Max. fundamental frequency error $(786.745 - 0.00000589)$: 786.74500589 MHz
 EUT complies. 786.74500589 MHz < 787 MHz (edge of authorized band)



SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

ID Number (SDGE/SDR B)	Test Equipment	Type	Serial Number	Manufacturer	Cal Date	Cal Due Date
Conducted Port Setup						
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	12/22/14	12/22/15
7569	Series Power Meter	N1911A P-	MY45100625	Agilent	05/22/14	05/22/15
7570	50MHz-18GHz Wideband Power Sensor	N1921A	MY45240588	Agilent	05/09/14	05/09/15
7562	Wideband Radio Communication Tester	CMW 500	1201.0002k50 /103829	Rhode & Schwarz	10/09/14	10/09/15
-	Power Divider/Splitter	1506A	RR003	Weinschel	Verified by 7608 and 7569	
-	6dB Attenuator	606-06-1F4/DR	-	MECA	Verified by 7608 and 7569	
Radiated Test Setup						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/30/14	01/30/16
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	08/29/14	08/29/15
1016	Pre-amplifier	PAM-0202	187	PAM	12/10/14	12/10/15
1051	Double-ridged waveguide horn antenna	3115	00155511	EMCO	02/28/14	02/28/16
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/11/14	03/11/16
8628	Pre-amplifier	QLJ 01182835- JO	8986002	QuinStar Technologies Inc.	05/03/14	05/03/15
1150	Horn antenna	RA42-K-F-4B-C	012054-004	CMT	04/26/13	04/26/2015
1151	Pre-amplifier	TS-PR26	100026	Rhode & Schwarz	05/02/13	05/02/2015
7562	Wideband Radio Communication Tester	CMW 500	1201.0002k50 /103829	Rhode & Schwarz	10/09/13	10/09/15
Miscellaneous						
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	
1072	DC Power Supply	E3610A	KR51311519	Hewlett Packard	Verified by 6452	
6452	Multimeter	3478A	2911A52177	Hewlett Packard	08/12/14	08/12/15
7579	Temperature Chamber	115	151617	TestQuity	07/21/14	07/21/15
7560	Barometer/Temper ature/Humidity Transmitter	iBTHX-W	1240476	Omega	01/30/15	01/30/16

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

3.2.1 Radiated Emission Measurements (Below 1GHz)

Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.45	0.26	0.07
2	Cables	Rectangular	0.50	0.29	0.08
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					2.41
Coverage Factor (k):					2
Expanded Uncertainty:					4.82

3.2.2 Radiated Emission Measurements (Above 1GHz)

Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.70	0.40	0.16
3	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.37	0.21	0.05
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					2.40
Coverage Factor (k):					2
Expanded Uncertainty:					4.81

3.2.3 Conducted Antenna Port Measurement

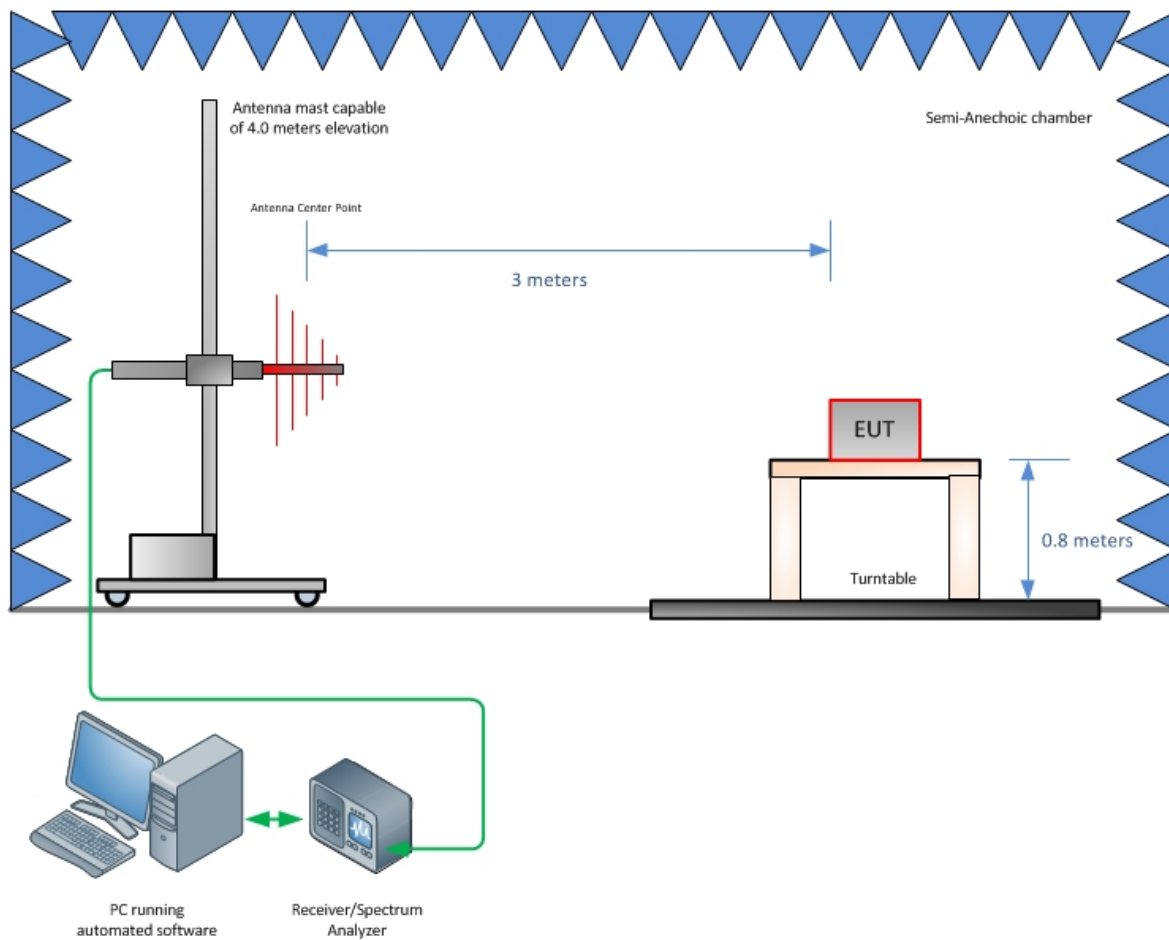
Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.57	0.33	0.11
2	Cables	Rectangular	0.50	0.29	0.08
3	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					0.72
Coverage Factor (k):					2
Expanded Uncertainty:					1.45



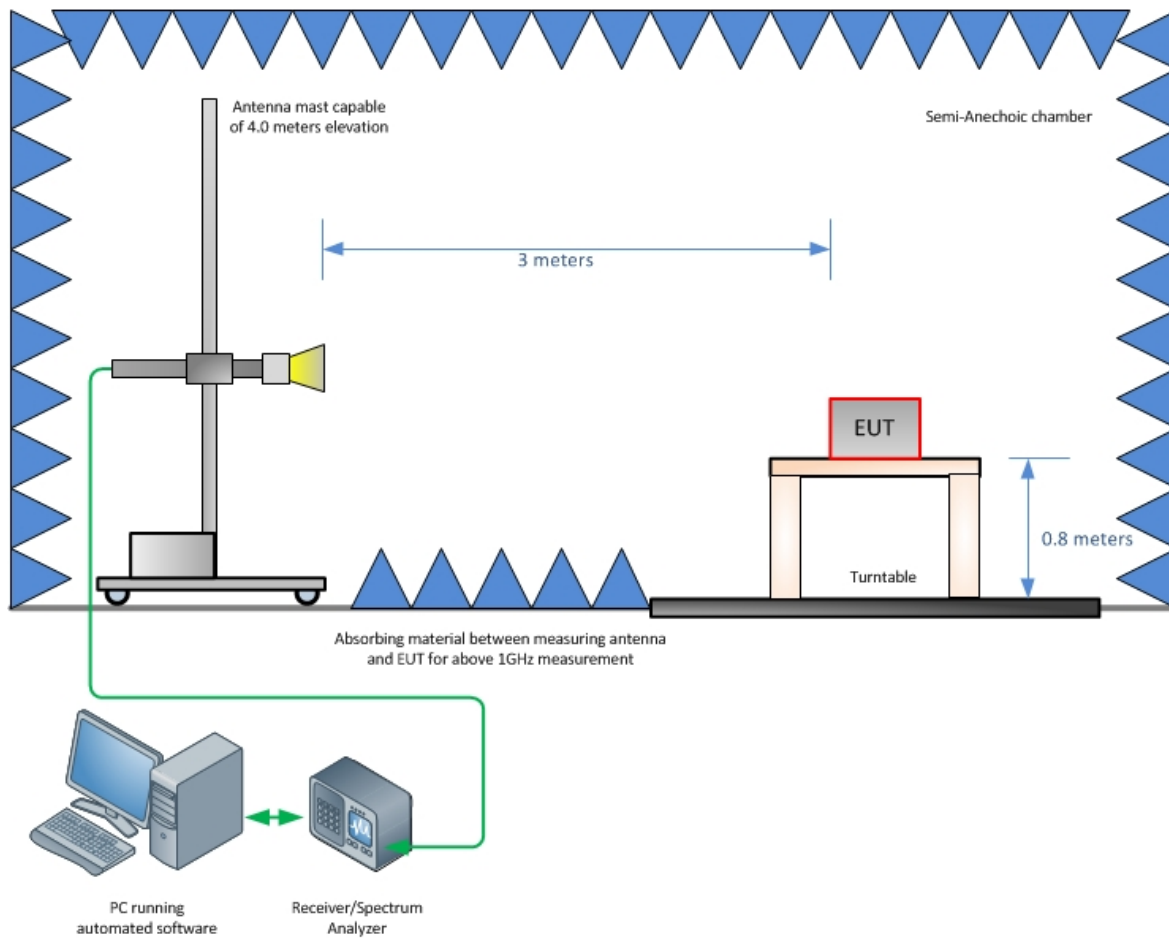
SECTION 4

DIAGRAM OF TEST SETUP

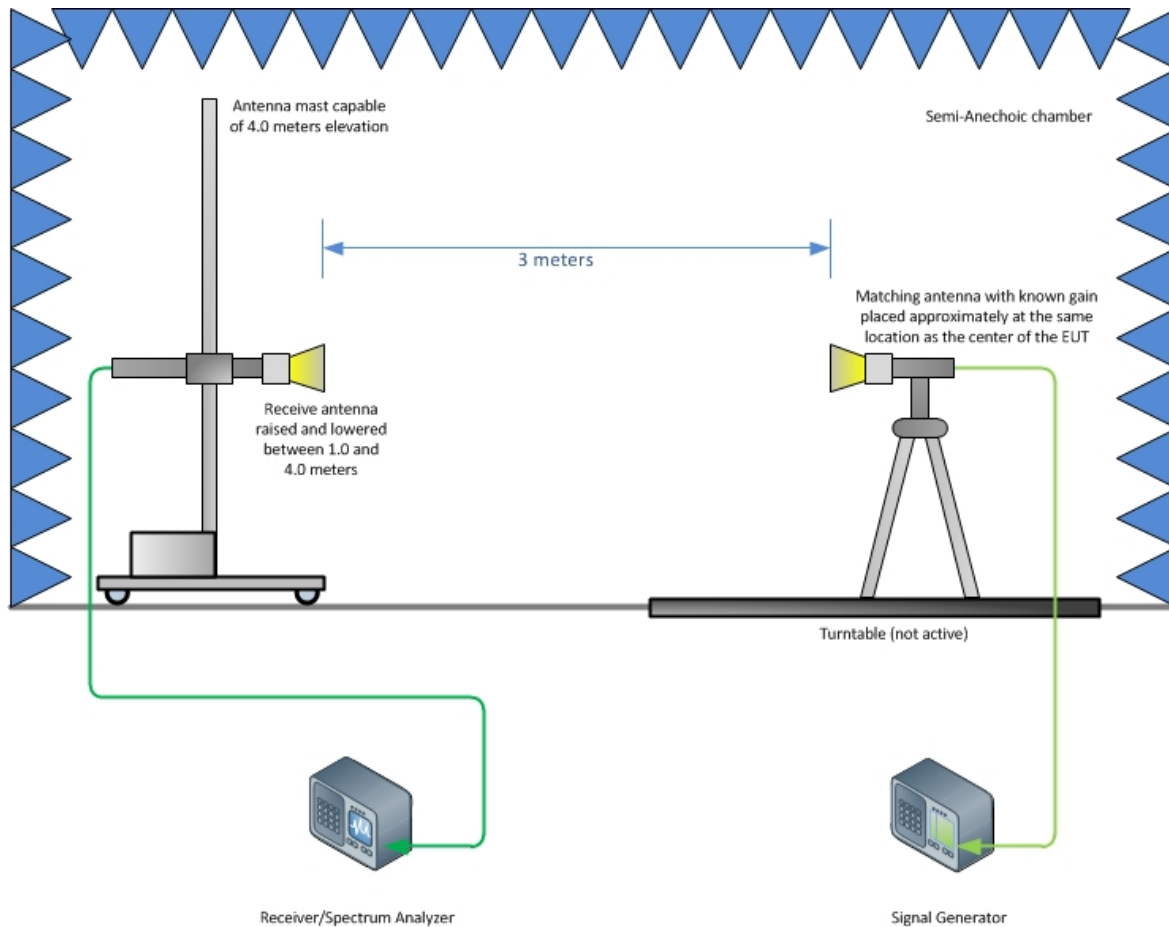
4.1 TEST SETUP DIAGRAM



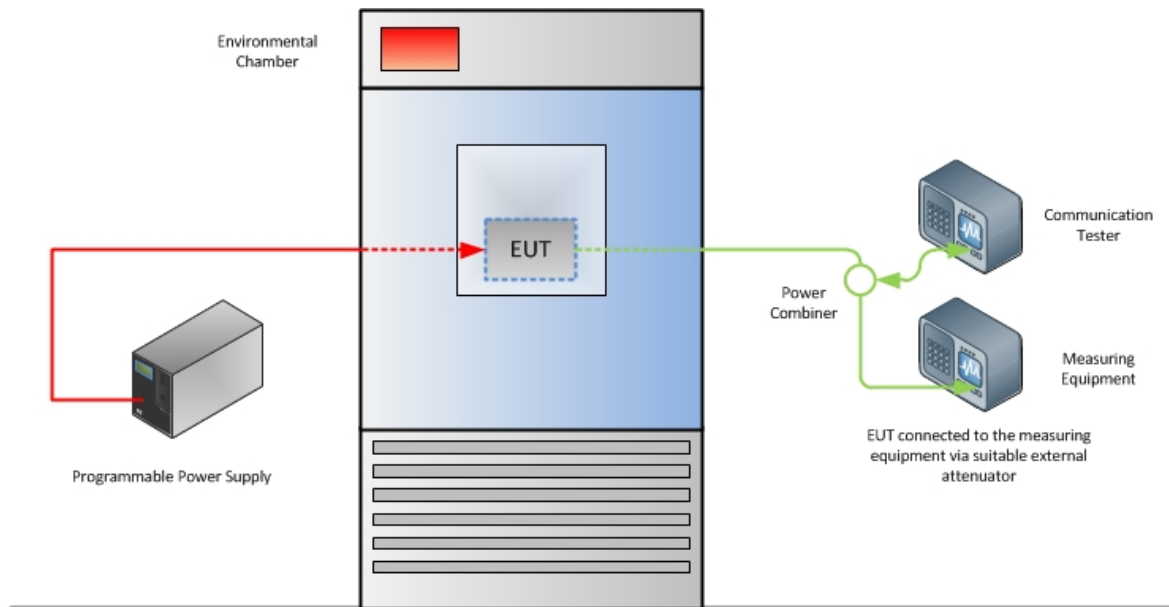
Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)



Substitution Test Method (Above 1GHz)



Frequency Stability Test Configuration



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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