

LTE Band 66 (3 MHz BW)/QPSK/Low Channel 1711.5 MHz/1 RB 0 offset Band Edge @1710 MHz



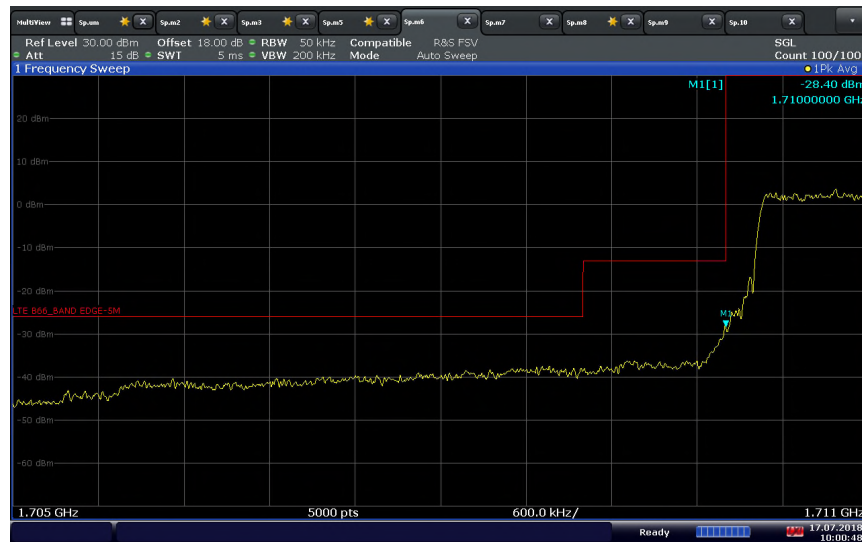
10:12:36 17.07.2018

LTE Band 66 (3 MHz BW)/QPSK/High Channel 1778.5 MHz/1 RB 14 offset Band Edge @1780 MHz

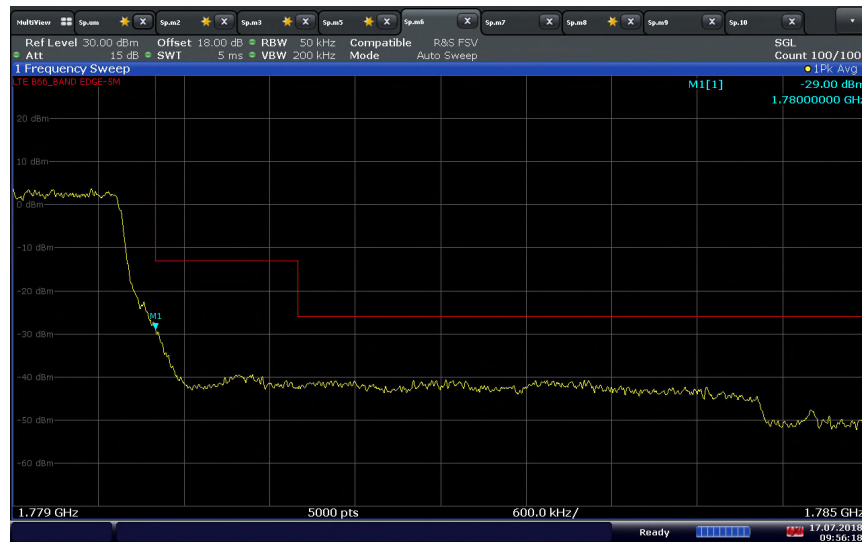


10:08:24 17.07.2018

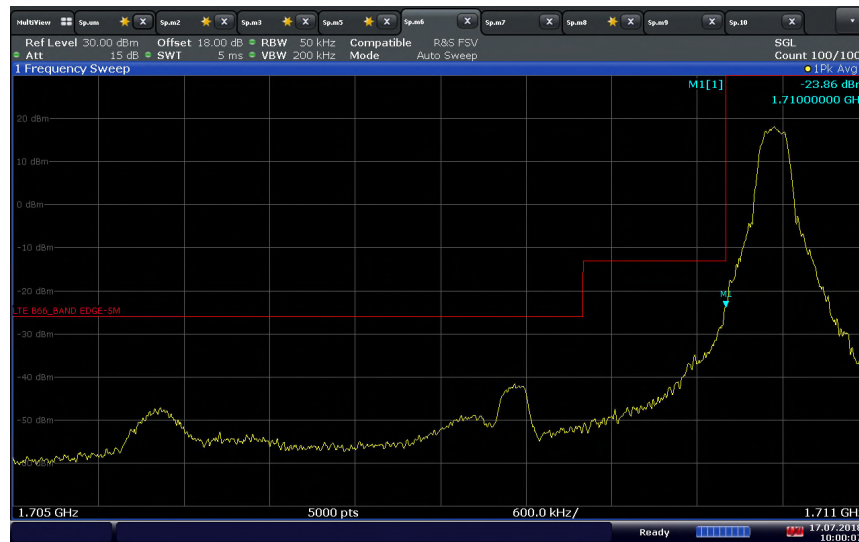
LTE Band 66 (5 MHz BW)/QPSK/Low Channel 1712.5 MHz/Full RB Band Edge @1710 MHz



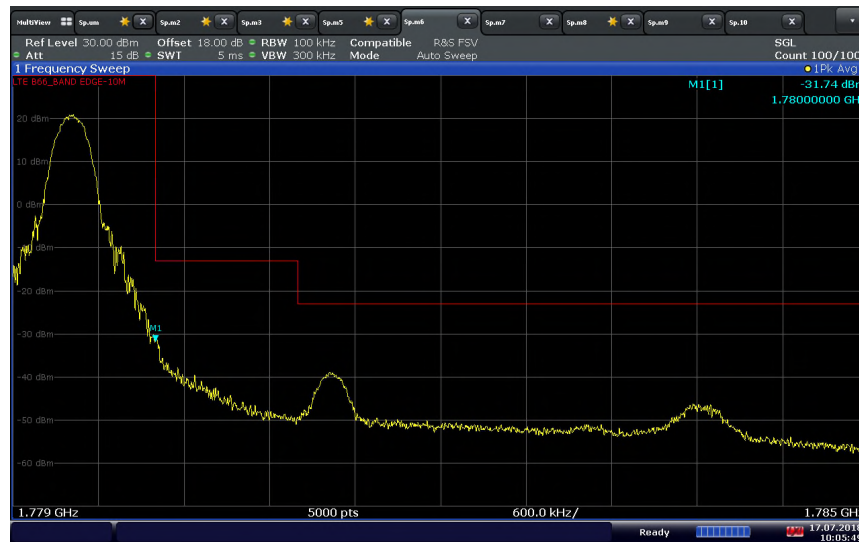
LTE Band 66 (5 MHz BW)/QPSK/High Channel 1777.5 MHz/Full RB Band Edge @1780 MHz



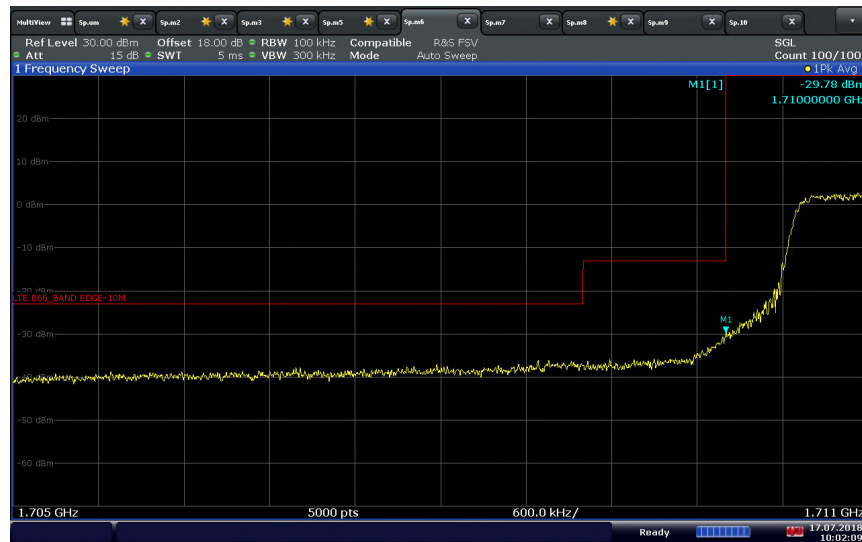
LTE Band 66 (5 MHz BW)/QPSK/Low Channel 1712.5 MHz/1 RB 0 offset Band Edge @1710 MHz



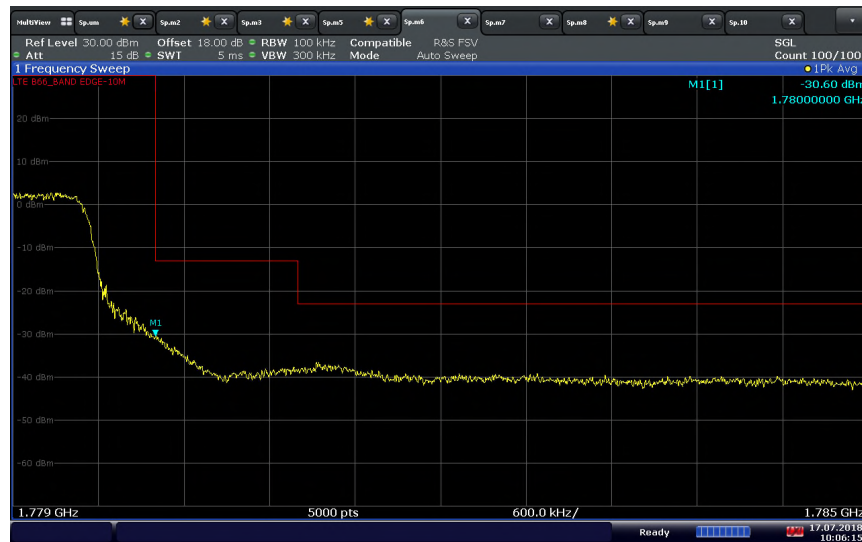
LTE Band 66 (5 MHz BW)/QPSK/High Channel 1777.5 MHz/1 RB 24 offset Band Edge @1780 MHz



LTE Band 66 (10 MHz BW)/QPSK/Low Channel 1715 MHz/Full RB Band Edge @1710 MHz



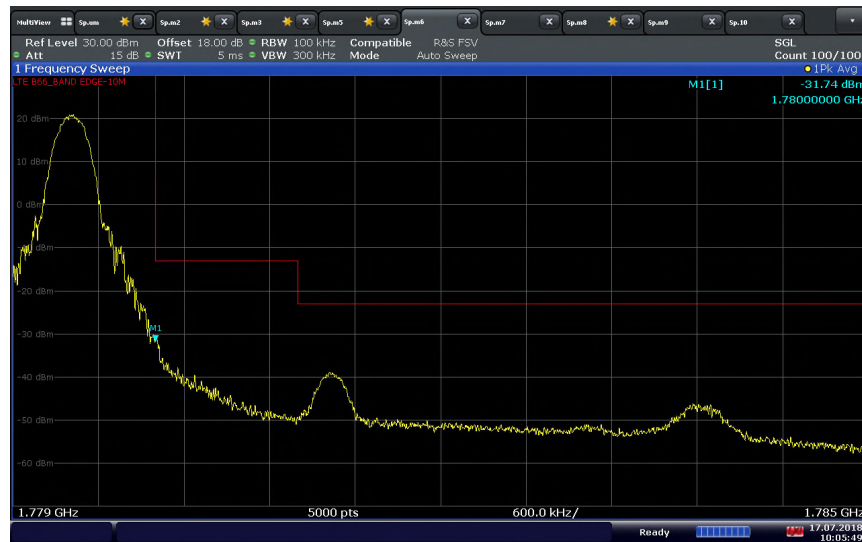
LTE Band 66 (10 MHz BW)/QPSK/High Channel 1775 MHz/Full RB Band Edge @1780 MHz



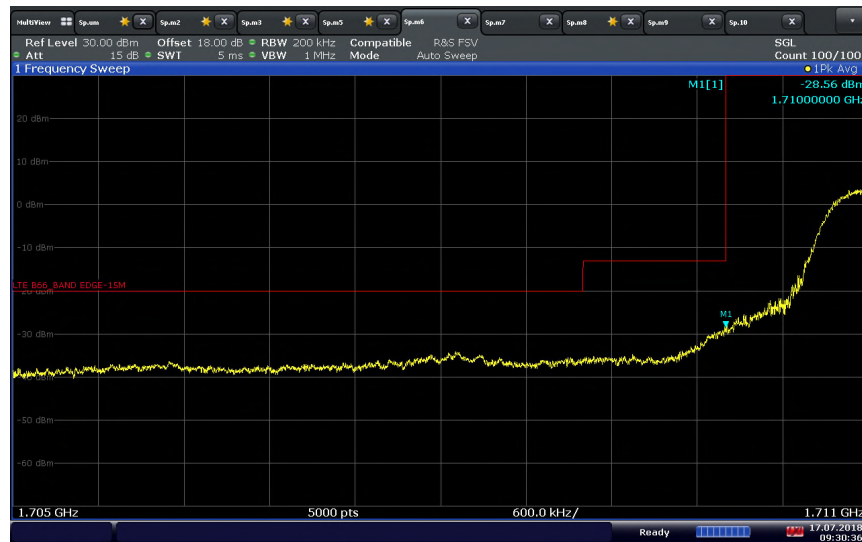
LTE Band 66 (10 MHz BW)/QPSK/Low Channel 1715 MHz/1 RB 0 offset Band Edge @1710 MHz



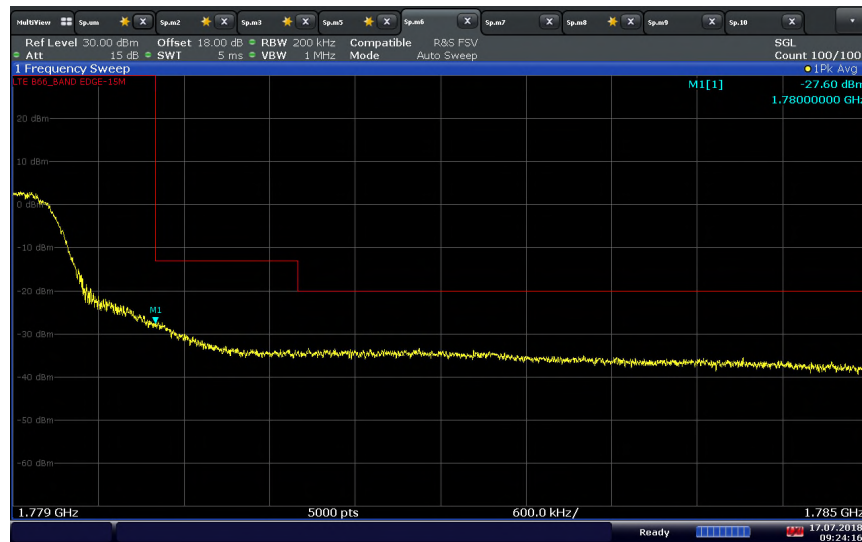
LTE Band 66 (10 MHz BW)/QPSK/High Channel 1775 MHz/1 RB 49 offset Band Edge @1780 MHz



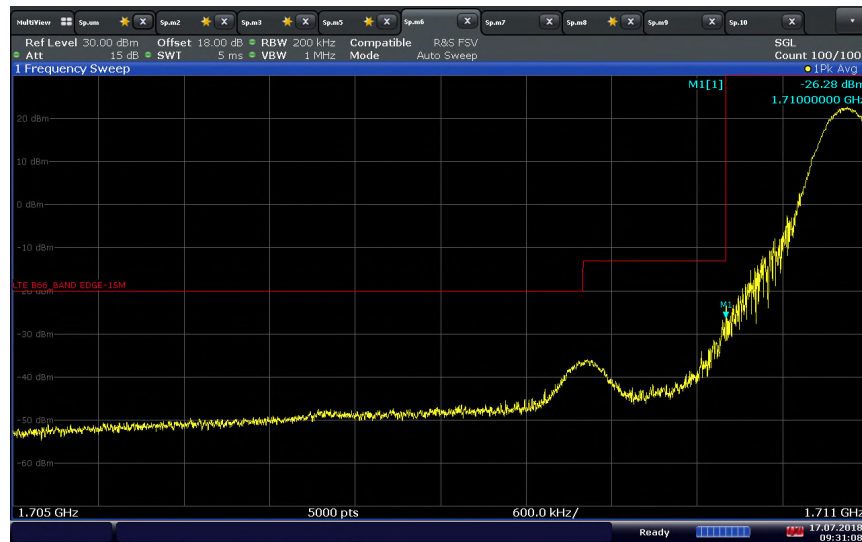
LTE Band 66 (15 MHz BW)/QPSK/Low Channel 1717.5 MHz/Full RB Band Edge @1710 MHz



LTE Band 66 (15 MHz BW)/QPSK/High Channel 1772.5 MHz/Full RB Band Edge @1780 MHz

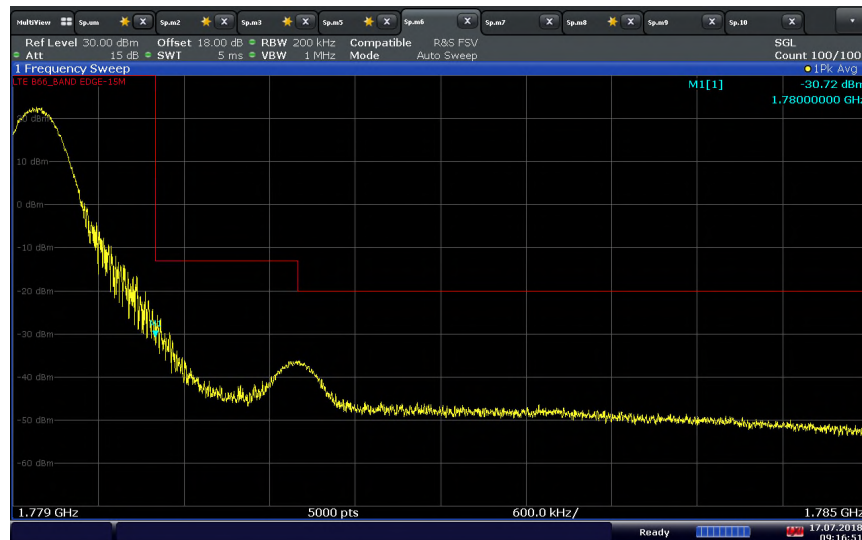


LTE Band 66 (15 MHz BW)/QPSK/Low Channel 1717.5 MHz/1 RB 0 offset Band Edge @1710 MHz



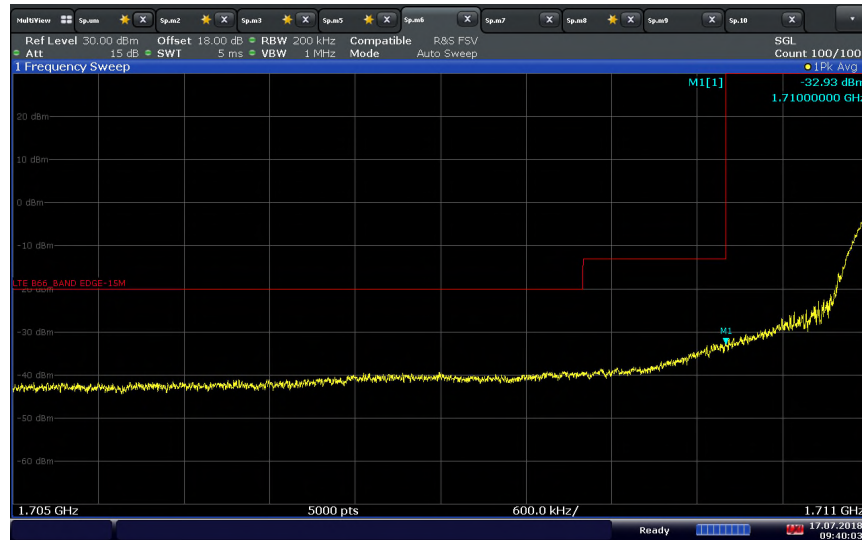
09:31:08 17.07.2018

LTE Band 66 (15 MHz BW)/QPSK/High Channel 1772.5 MHz/1 RB 74 offset Band Edge @1780 MHz



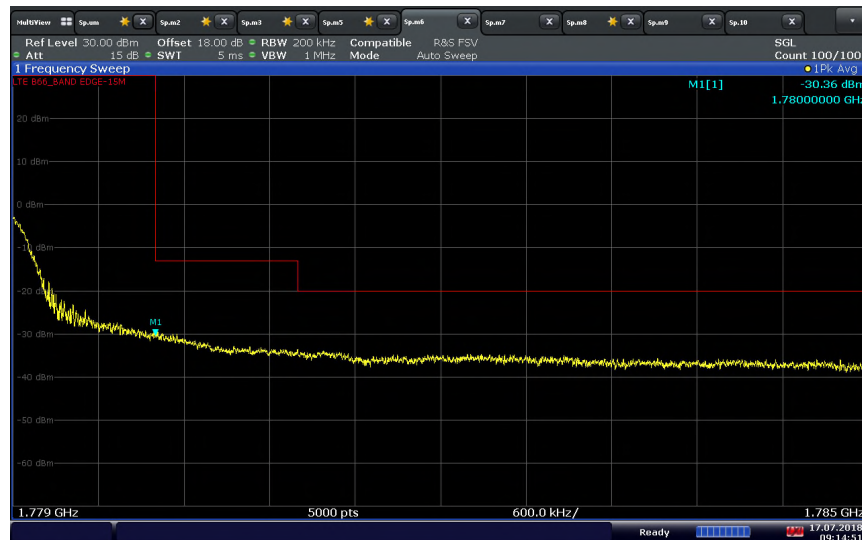
09:16:52 17.07.2018

LTE Band 66 (20 MHz BW)/QPSK/Low Channel 1720 MHz/Full RB Band Edge @1710 MHz



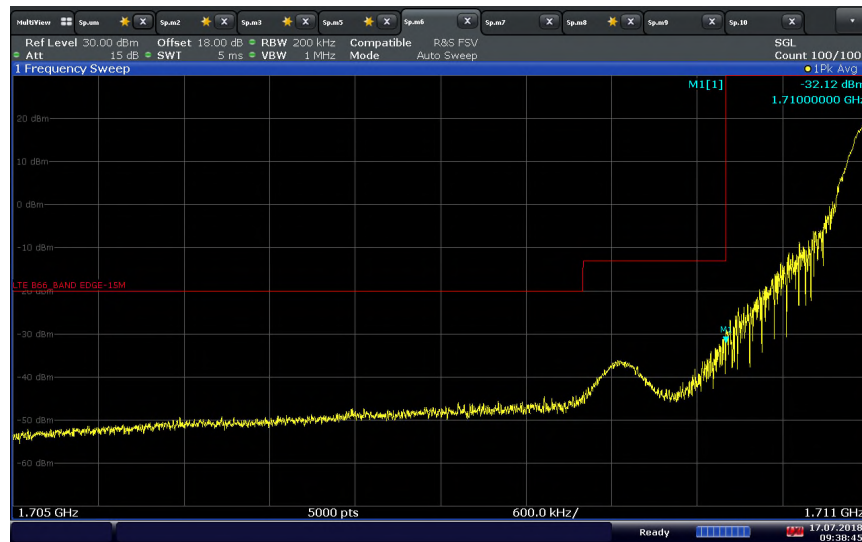
09:40:03 17.07.2018

LTE Band 66 (20 MHz BW)/QPSK/High Channel 1770 MHz/Full RB Band Edge @1780 MHz

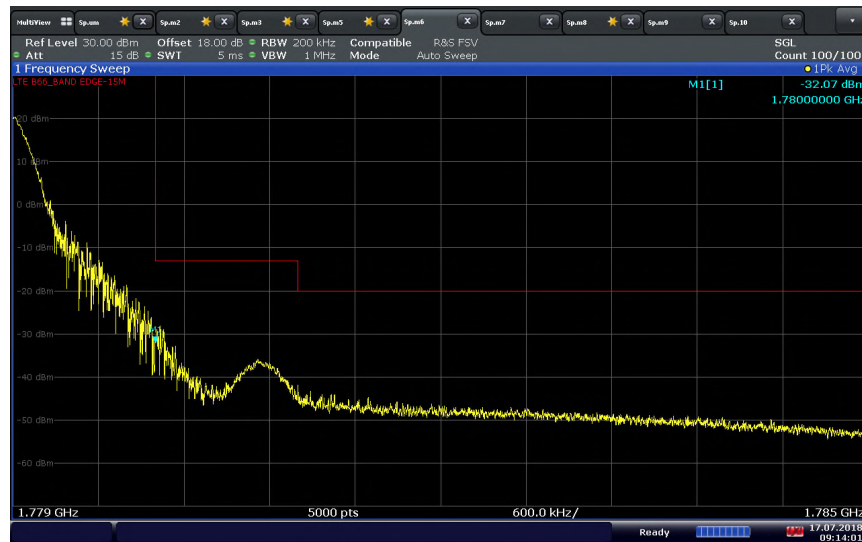


09:14:51 17.07.2018

LTE Band 66 (20 MHz BW)/QPSK/Low Channel 1720 MHz/1 RB 0 offset Band Edge @1710 MHz



LTE Band 66 (20 MHz BW)/QPSK/High Channel 1770 MHz/1 RB 99 offset Band Edge @1780 MHz





2.7 CONDUCTED SPURIOUS EMISSIONS

2.7.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 27, Clause 27.53(h)(1)(3)
FCC 47 CFR Part 27, Clause 27.53(c)(2)(4)(5)&(f)
FCC 47 CFR Part 27, Clause 27.53(m)(4)(6)
RSS-139, Clause 6.6
RSS-130, Clause 4.6
RSS-199, Clause 4.5

2.7.2 Standard Applicable

FCC 47 CFR Part 27.53

(h)(1) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(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 $43 + 10 \log_{10}(P)$ dB.

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

(f) For operations in the 746-758 MHz and 775-788 MHz and 805-806 MHz bands, emissions in the band 1559-1610 MHz be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

RSS-139, Clause 6.6:

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

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (dBW), by at least $43 + 10 \log_{10} p$ (watts) dB.



RSS-199, Clause 4.5:

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

(i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away.

(ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and

(iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

Note: X is 6 MHz or the equipment occupied bandwidth, whichever is greater

RSS-130:

4.6.1 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.

4.6.2 In addition to the limit outlined in Section 4.6.1 (RSS-139 Issue 3: 2015), equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

(a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:

(i) $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment, and

(ii) $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment.

(b) The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

2.7.3 Equipment Under Test and Modification State

Serial No: AZ280418A00044 / Test Configuration A

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

June 21,23 and July 20, 2018 / 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

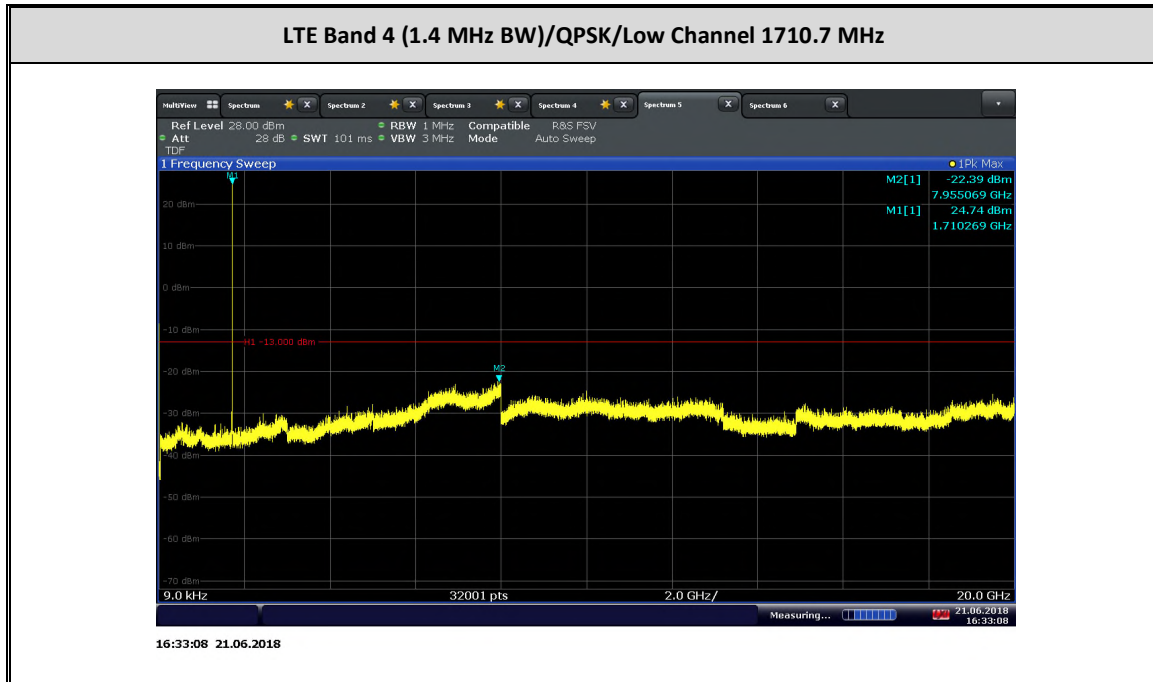
Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	24.3 - 25.6 °C
Relative Humidity	51.6 – 56.4 %
ATM Pressure	98.6 - 99.0 kPa

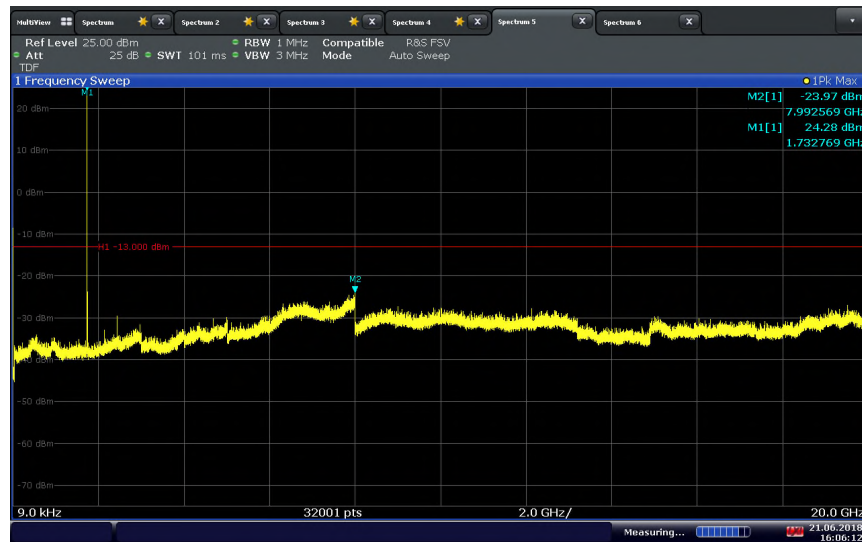
2.7.7 Additional Observations

- This is a conducted test.
- The spectrum was searched from 9 kHz to the 10th harmonic.
- The path loss was measured and entered as a transducer factor (TDF).
- Low, Middle and High channels on all channel bandwidth and modulation are verified. Only the worst case channel of each band presented.

2.7.8 Test Results

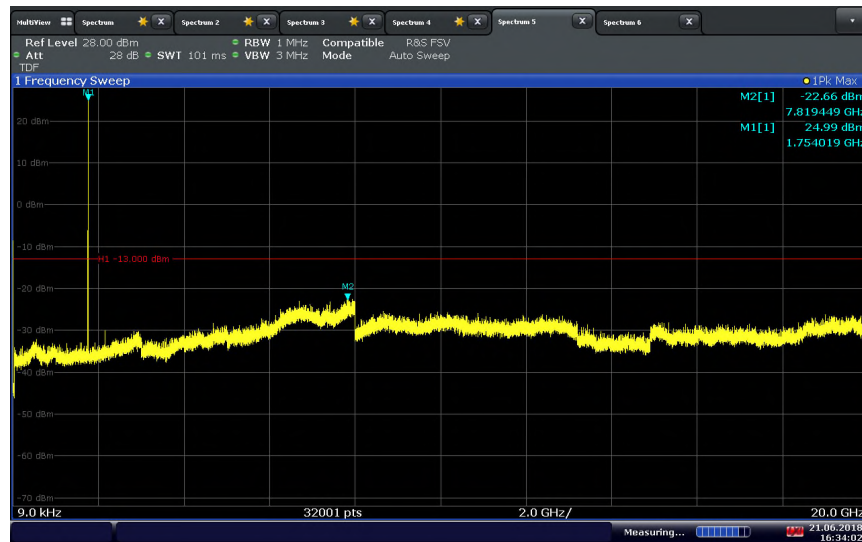


LTE Band 4 (1.4 MHz BW)/QPSK/Middle Channel 1732.5 MHz



16:06:13 21.06.2018

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

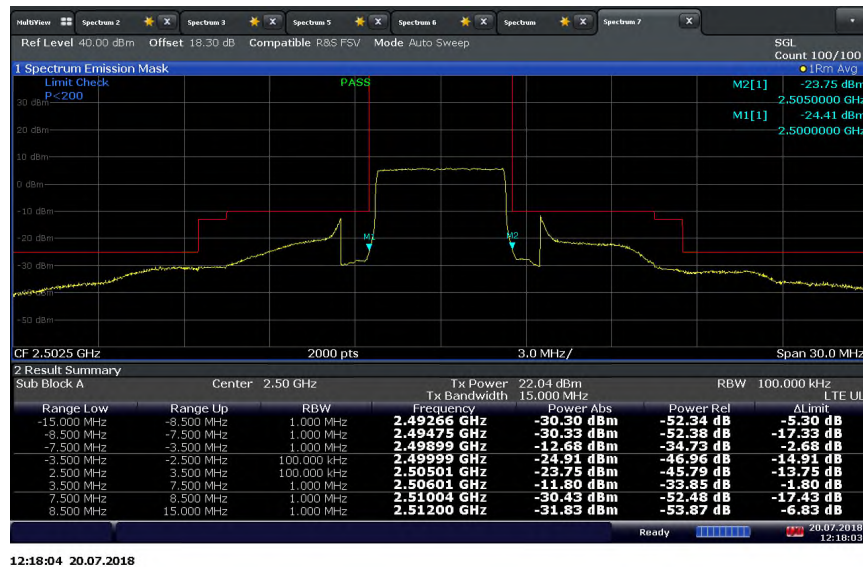


16:34:03 21.06.2018

LTE Band 7 (5 MHz BW)/QPSK/Low Channel 2502.5 MHz



LTE Band 7 (5 MHz BW)/QPSK/Low Channel 2502.5 MHz Mask

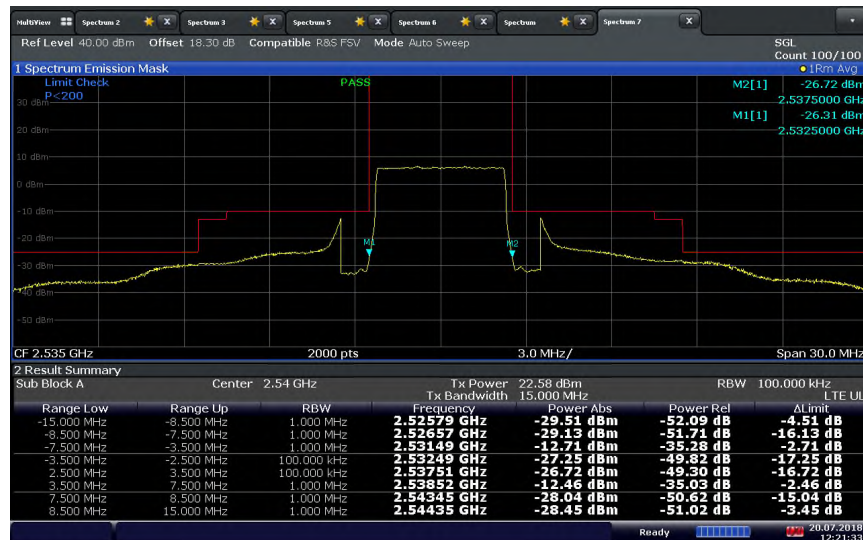


LTE Band 7 (5 MHz BW)/QPSK/Middle Channel 2535 MHz



10:04:08 20.07.2018

LTE Band 7 (5 MHz BW)/QPSK/Middle Channel 2535 MHz Mask



12:21:34 20.07.2018

LTE Band 7 (5 MHz BW)/QPSK/High Channel 2567.5 MHz



10:02:10 20.07.2018

LTE Band 7 (5 MHz BW)/QPSK/High Channel 2567.5 MHz Mask



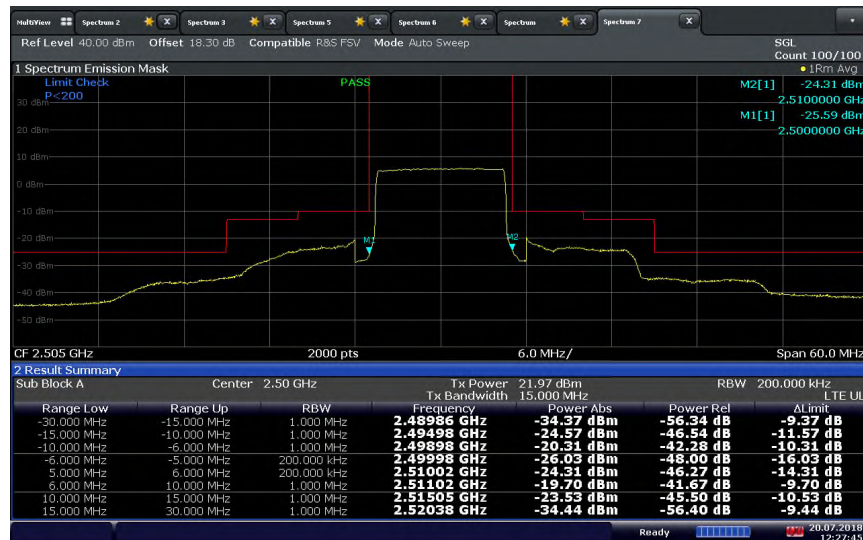
12:20:46 20.07.2018

LTE Band 7 (10 MHz BW)/QPSK/Low Channel 2505 MHz



10:07:24 20.07.2018

LTE Band 7 (10 MHz BW)/QPSK/Low Channel 2505 MHz Mask

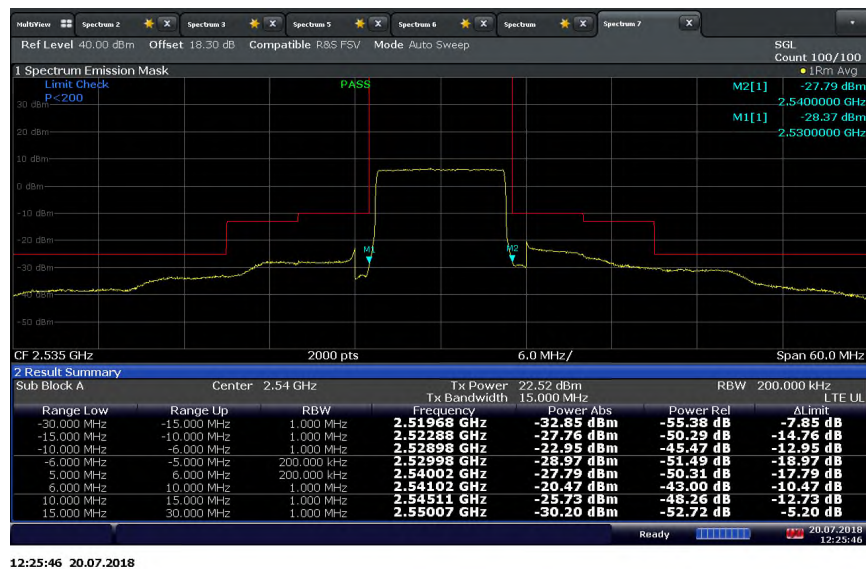


12:27:46 20.07.2018

LTE Band 7 (10 MHz BW)/QPSK/Middle Channel 2535 MHz



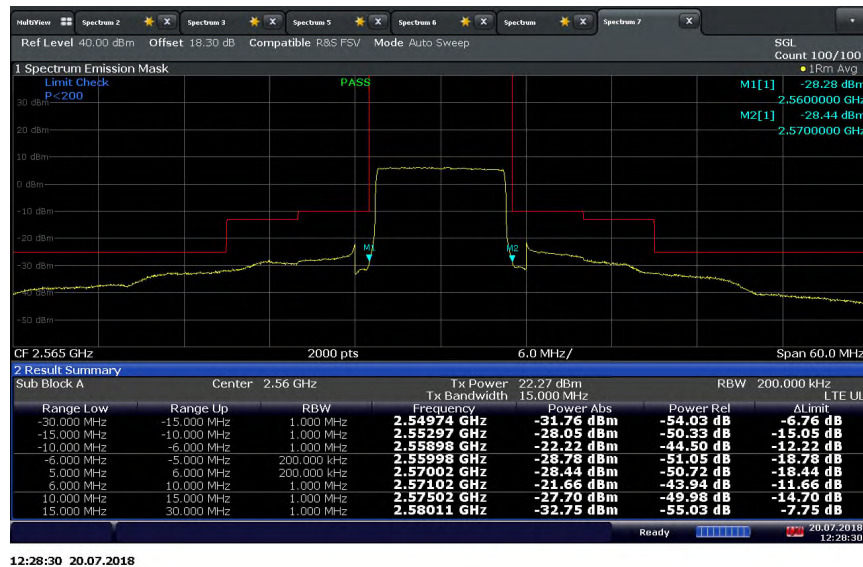
LTE Band 7 (10 MHz BW)/QPSK/Middle Channel 2535 MHz



LTE Band 7 (10 MHz BW)/QPSK/High Channel 2565 MHz



LTE Band 7 (10 MHz BW)/QPSK/High Channel 2565 MHz

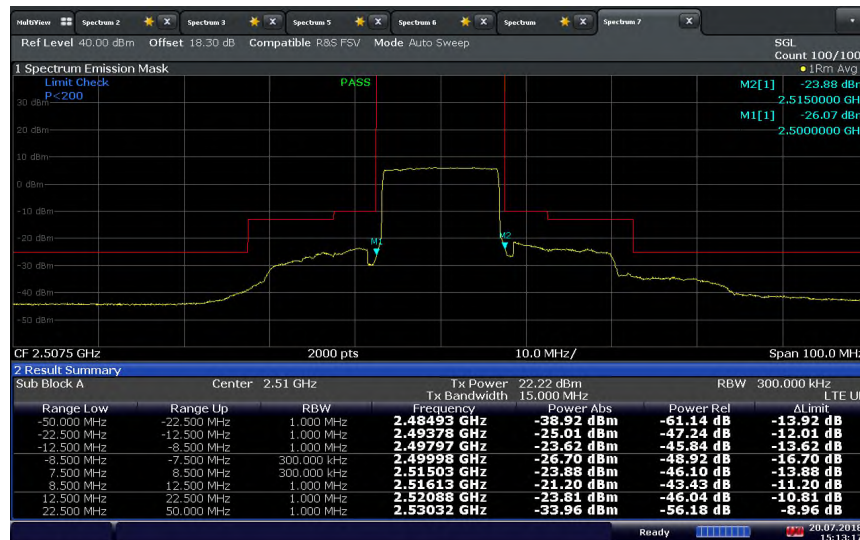


LTE Band 7 (15 MHz BW)/QPSK/Low Channel 2507.5 MHz



10:18:24 20.07.2018

LTE Band 7 (15 MHz BW)/QPSK/Low Channel 2507.5 MHz Mask



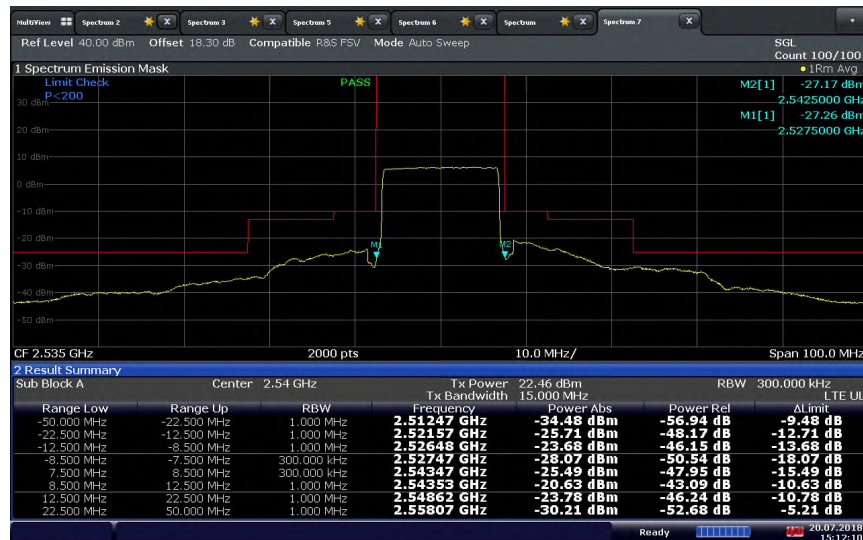
15:13:17 20.07.2018

LTE Band 7 (15 MHz BW)/QPSK/Middle Channel 2535 MHz



10:15:14 20.07.2018

LTE Band 7 (15 MHz BW)/QPSK/Middle Channel 2535 MHz Mask



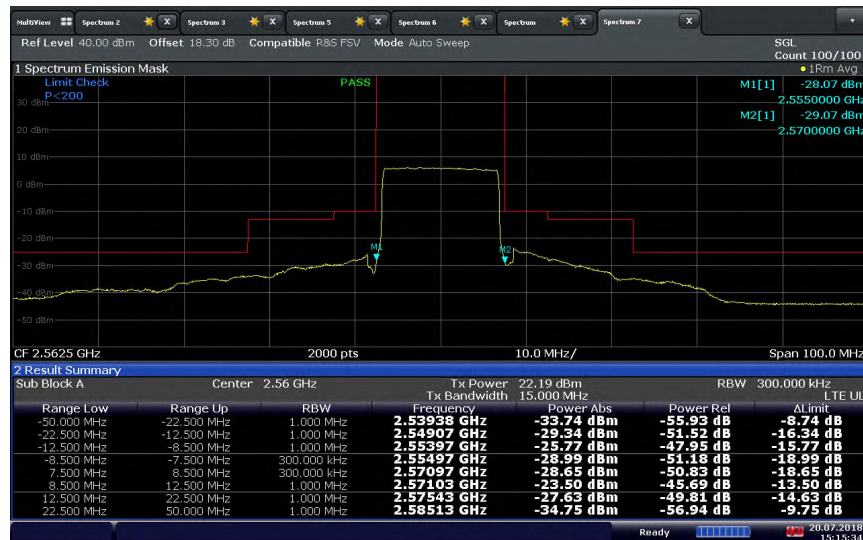
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LTE Band 7 (15 MHz BW)/QPSK/High Channel 2562.5 MHz



10:30:27 20.07.2018

LTE Band 7 (15 MHz BW)/QPSK/High Channel 2562.5 MHz Mask



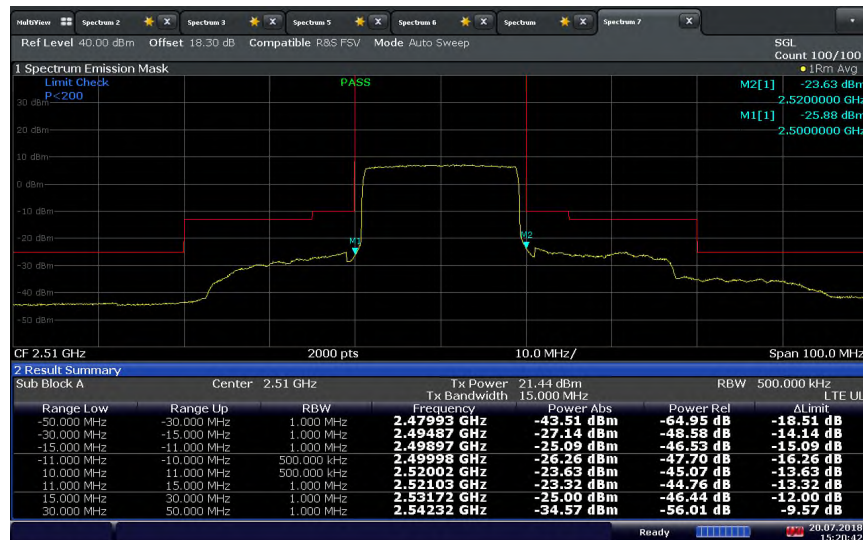
15:15:35 20.07.2018

LTE Band 7 (20 MHz BW)/QPSK/Low Channel 2510 MHz



10:36:08 20.07.2018

LTE Band 7 (20 MHz BW)/QPSK/Low Channel 2510 MHz Mask



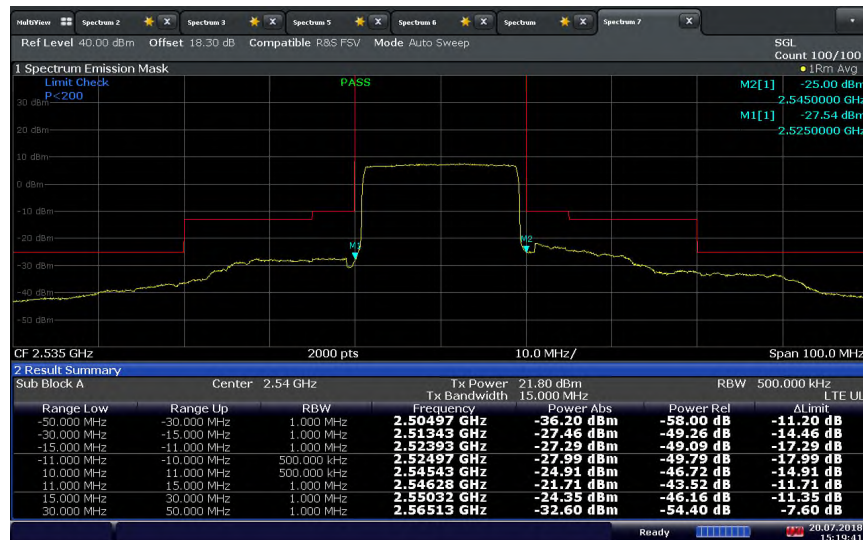
15:20:43 20.07.2018

LTE Band 7 (20 MHz BW)/QPSK/Middle Channel 2535 MHz Mask



10:32:53 20.07.2018

LTE Band 7 (20 MHz BW)/QPSK/Middle Channel 2535 MHz Mask



15:19:42 20.07.2018

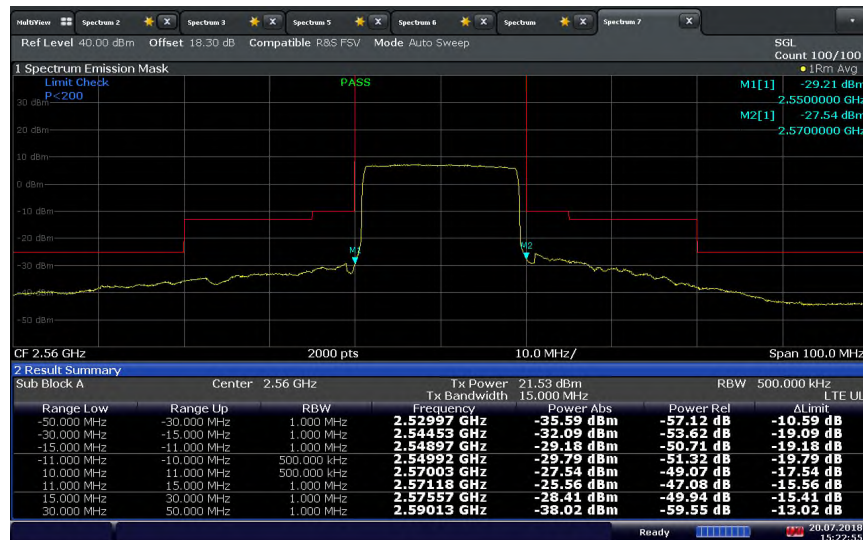


LTE Band 7 (20 MHz BW)/QPSK/High Channel 2560 MHz



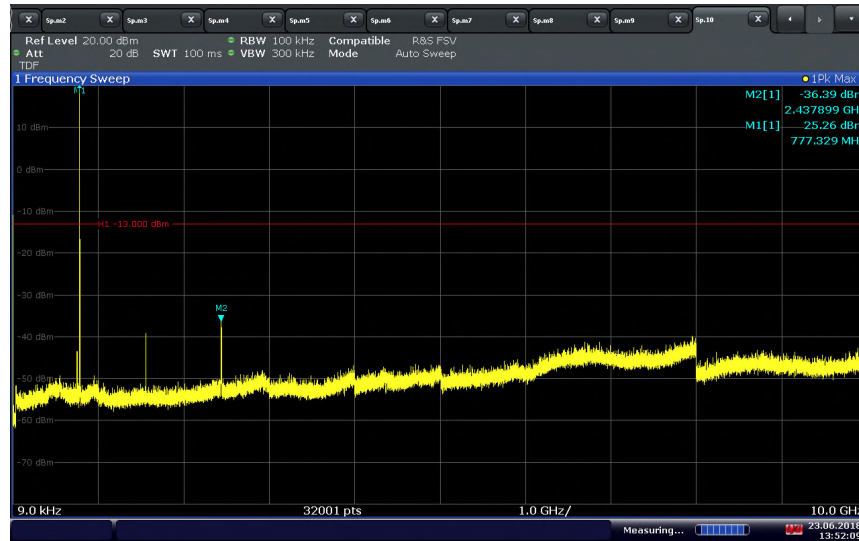
10:37:27 20.07.2018

LTE Band 7 (20 MHz BW)/QPSK/High Channel 2560 MHz Mask



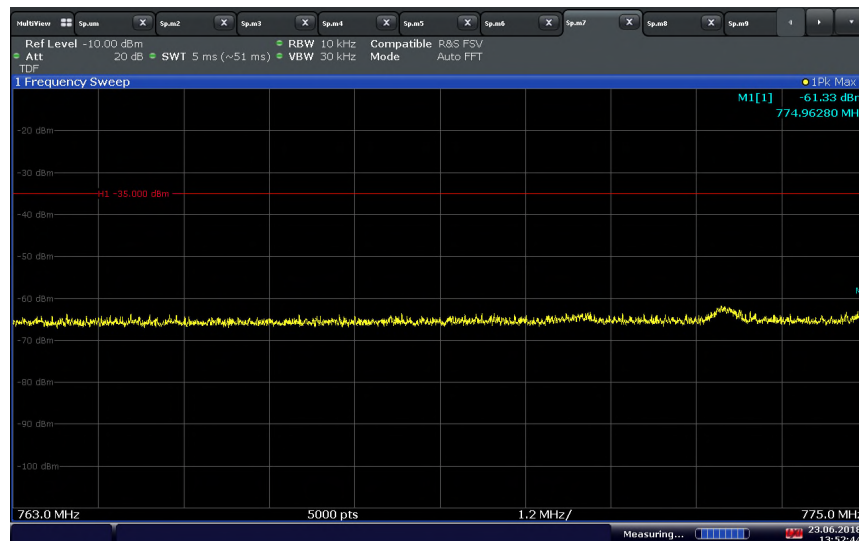
15:22:55 20.07.2018

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



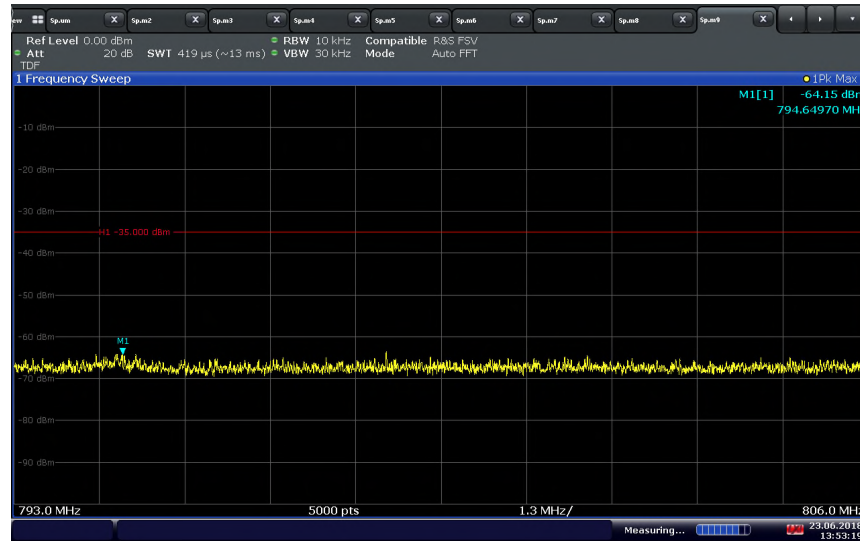
13:52:10 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/Low Channel 779.5 MHz Conducted Spurious Emissions (763-775 MHz)



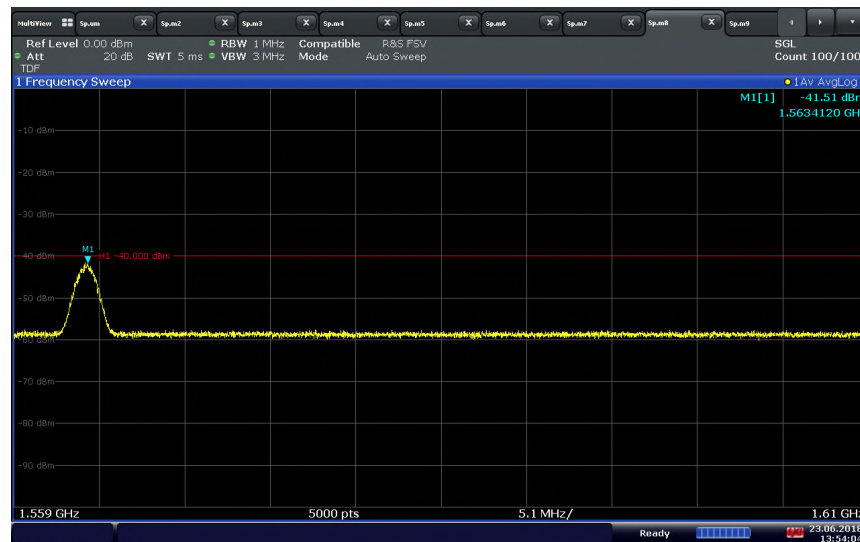
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LTE Band 13 (5 MHz BW)/QPSK/Low Channel 779.5 MHz Conducted Spurious Emissions (793-806 MHz)



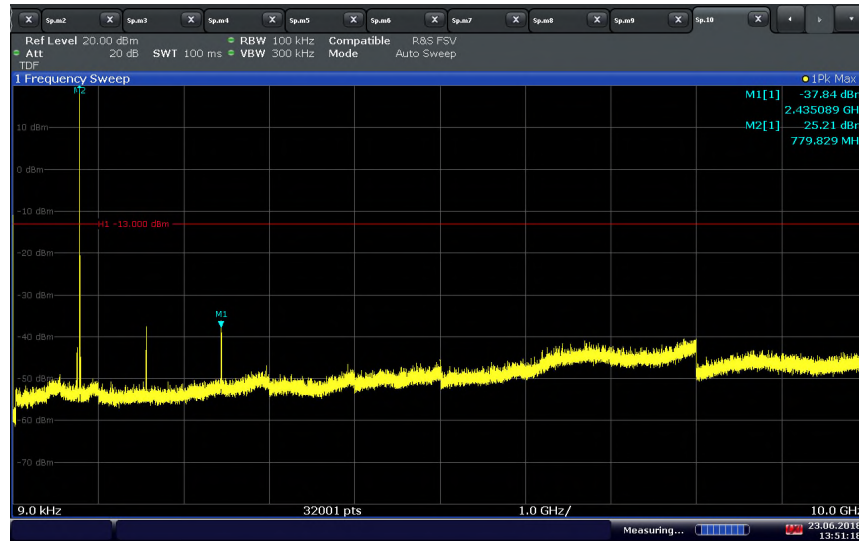
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LTE Band 13 (5 MHz BW)/QPSK/Low Channel 779.5 MHz Conducted Spurious Emissions (1559-1610 MHz)



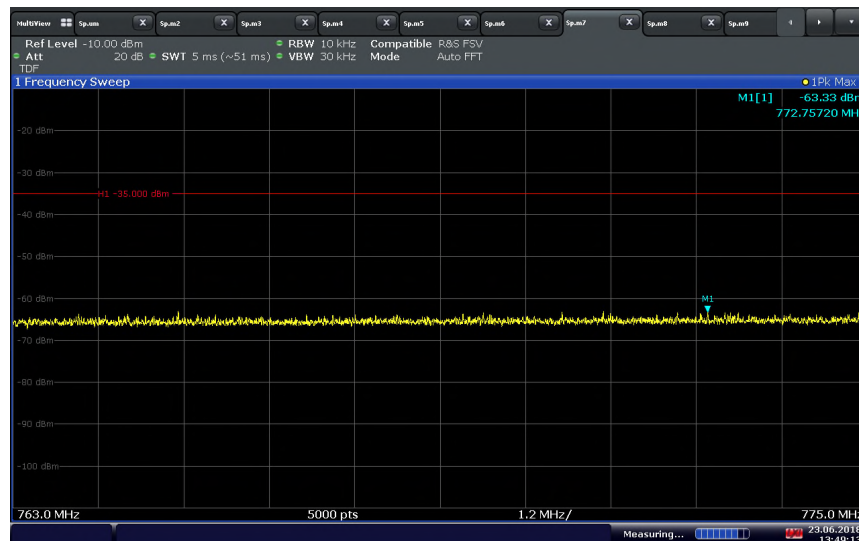
13:54:05 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/Middle Channel 782 MHz



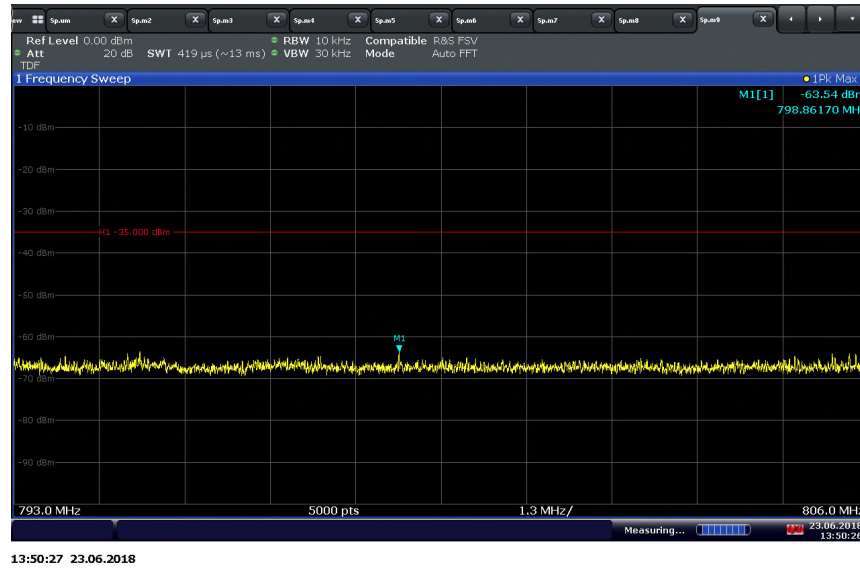
13:51:18 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (763-775 MHz)

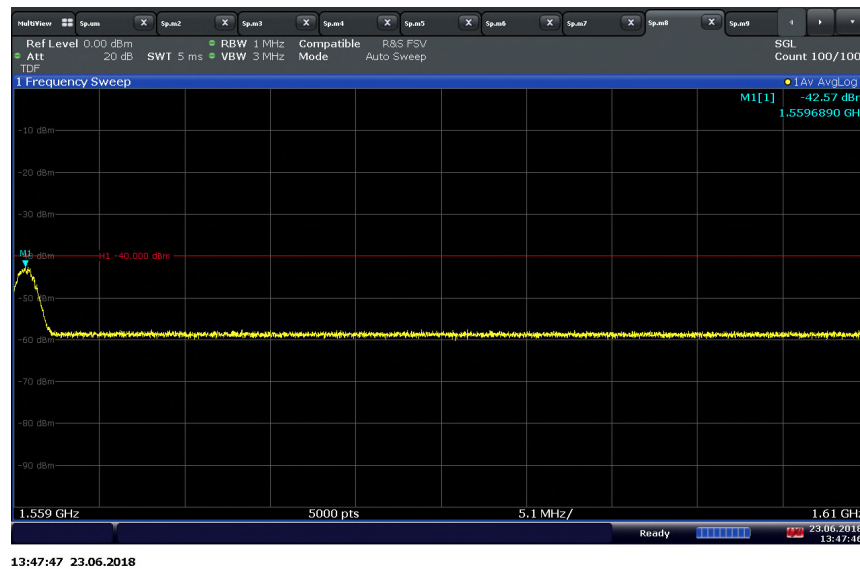


13:49:13 23.06.2018

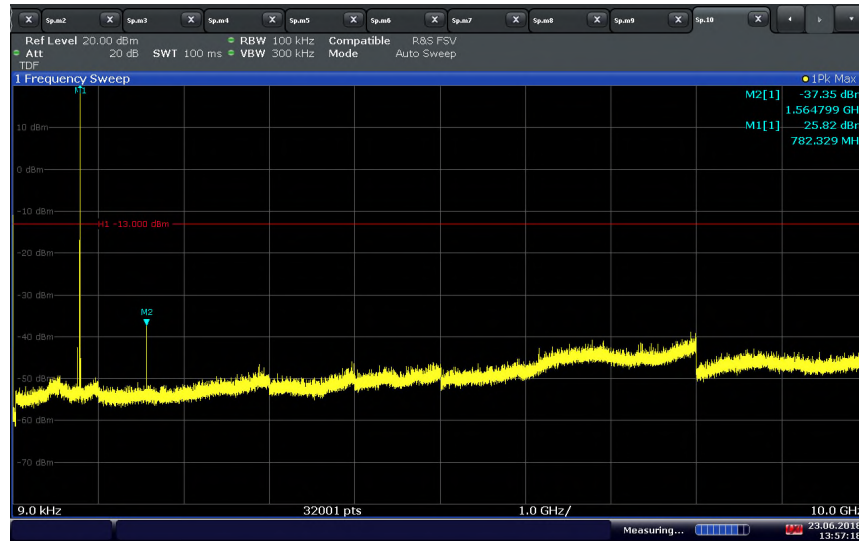
LTE Band 13 (5 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (793-806 MHz)



LTE Band 13 (5 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (1559-1610 MHz)

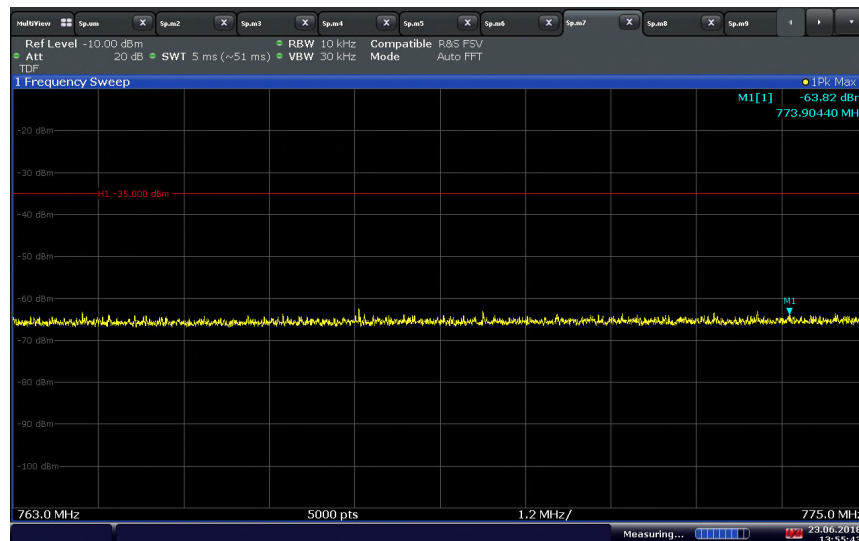


LTE Band 13 (5 MHz BW)/QPSK/High Channel 784.5 MHz



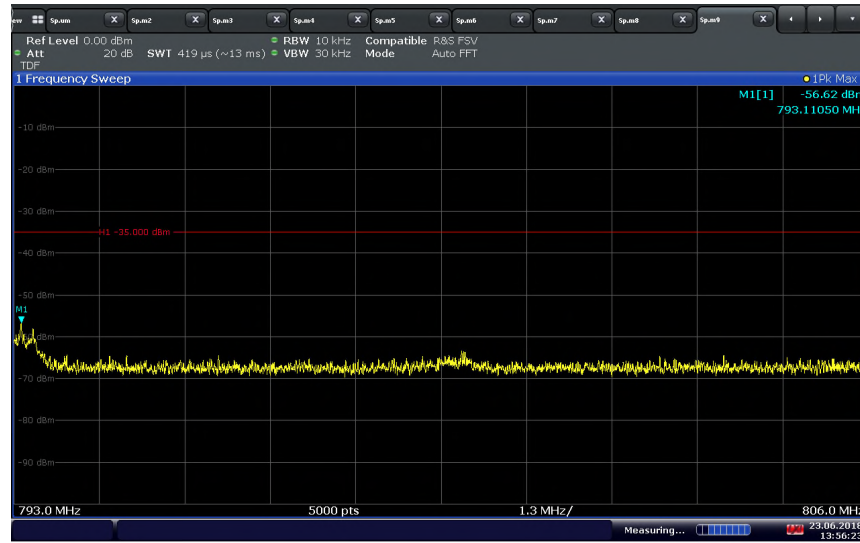
13:57:19 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/High Channel 784.5 MHz Conducted Spurious Emissions (763-775 MHz)



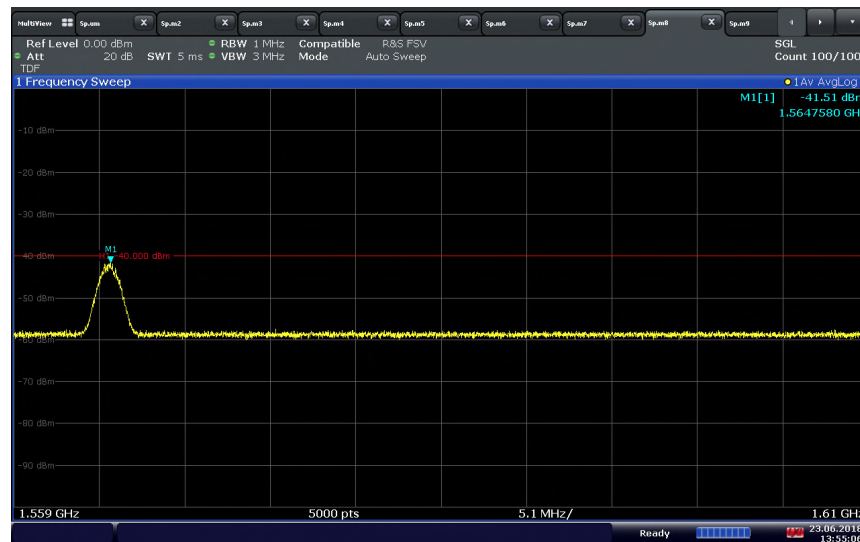
13:55:44 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/High Channel 784.5 MHz Conducted Spurious Emissions (793-806 MHz)



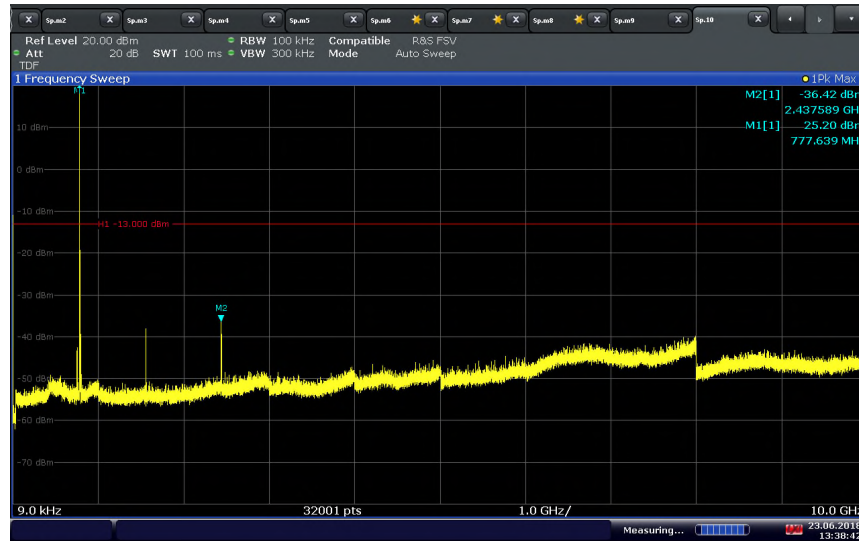
13:56:23 23.06.2018

LTE Band 13 (5 MHz BW)/QPSK/High Channel 784.5 MHz Conducted Spurious Emissions (1559-1610 MHz)



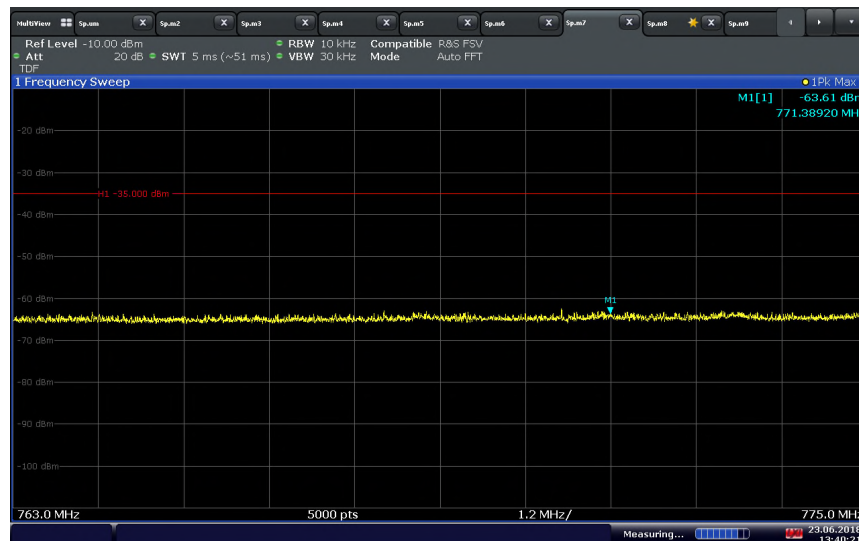
13:55:06 23.06.2018

LTE Band 13 (10 MHz BW)/QPSK/Middle Channel 782 MHz



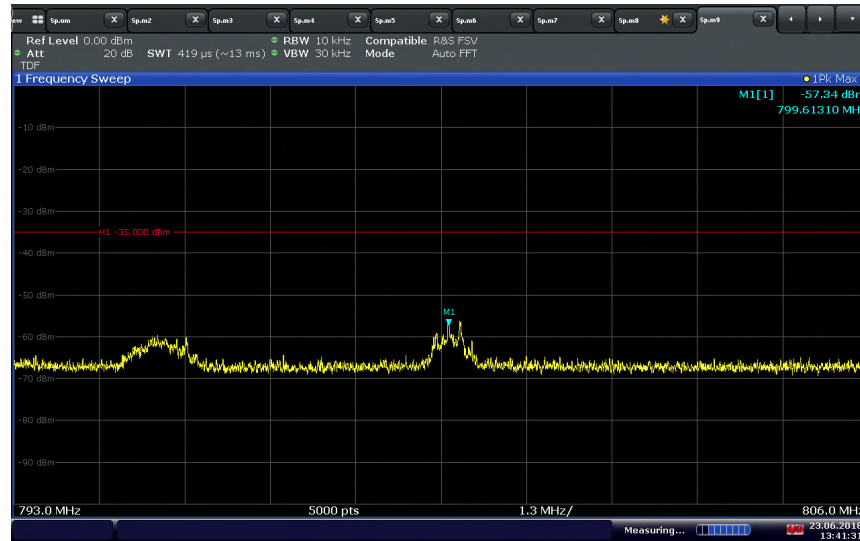
13:38:42 23.06.2018

LTE Band 13 (10 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (763-775 MHz)



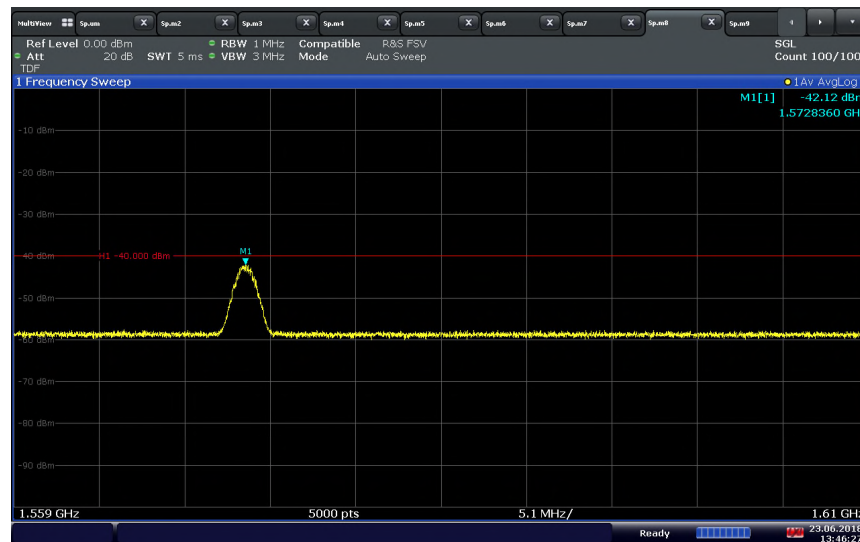
13:40:22 23.06.2018

LTE Band 13 (10 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (793-806 MHz)



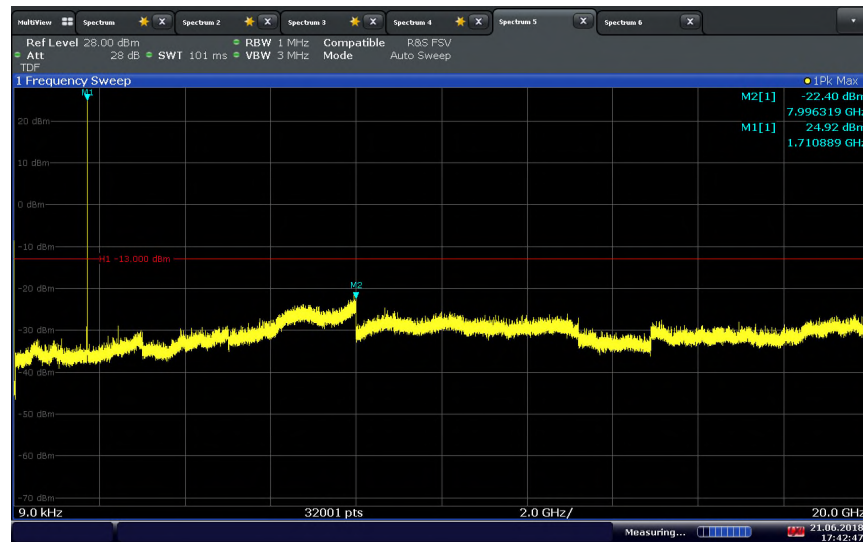
13:41:32 23.06.2018

LTE Band 13 (10 MHz BW)/QPSK/Middle Channel 782 MHz Conducted Spurious Emissions (1559-1610 MHz)



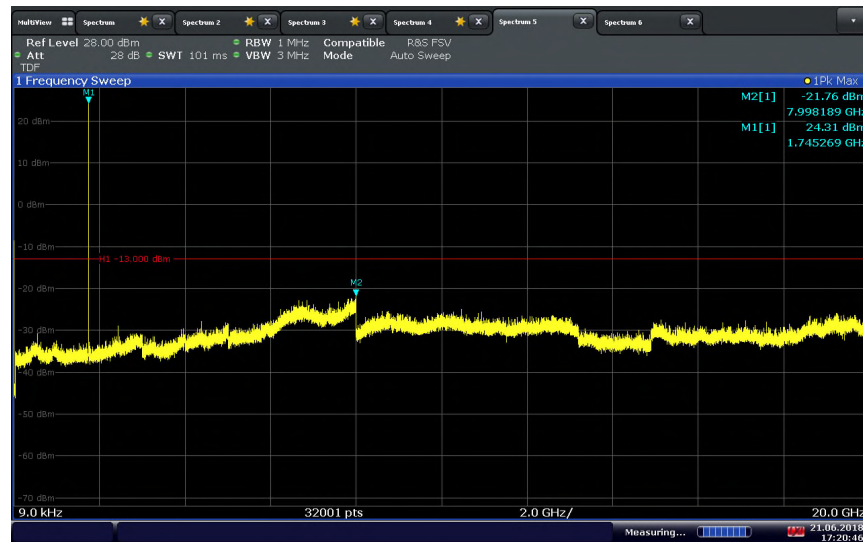
13:46:28 23.06.2018

LTE Band 66 (1.4 MHz BW)/QPSK/Low Channel 1710.7 MHz



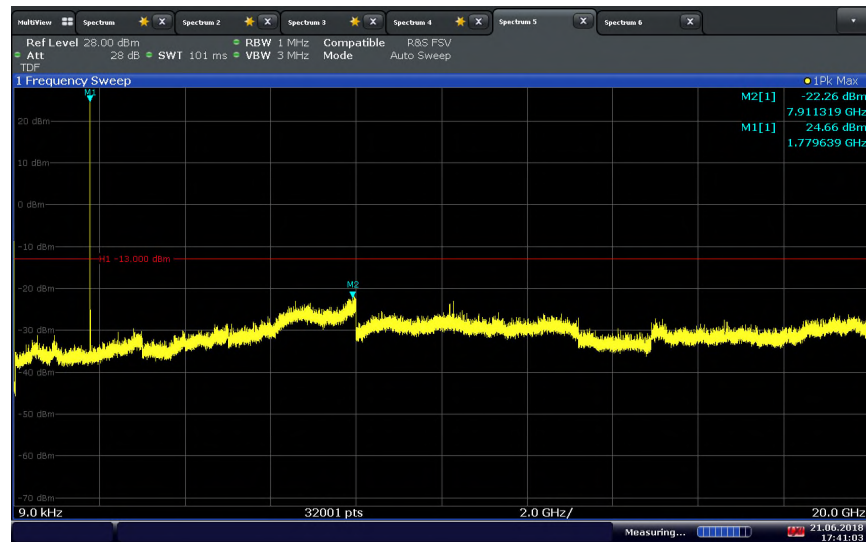
17:42:48 21.06.2018

LTE Band 66 (1.4 MHz BW)/QPSK/Middle Channel 1745 MHz



17:20:46 21.06.2018

LTE Band 66 (1.4 MHz BW)/QPSK/High Channel 1779.3 MHz



2.8 FIELD STRENGTH OF SPURIOUS RADIATION

2.8.1 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(m)(4)
FCC 47 CFR Part 27, Clause 27.53(c)(2)
RSS-139, Clause 6.6
RSS-199, Clause 4.5
RSS-130, Clause 4.6

2.8.2 Standard Applicable

FCC 47 CFR Part 27.53

(h)(1) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(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 $43 + 10 \log_{10}(P)$ dB.

RSS-139, Clause 6.6:

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

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (dBW), by at least $43 + 10 \log_{10} p$ (watts) dB.



RSS-199, Clause 4.5:

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

(i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away.

(ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and

(iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

RSS-130:

4.6.1 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.

2.8.3 Equipment Under Test and Modification State

Serial No: AS190818B00021 / Test Configuration B

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

October 19, 22 and 24, 2018 / 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	23.5 - 24.3 °C
Relative Humidity	28.3 - 59.0 %
ATM Pressure	98.8 - 99.1 kPa

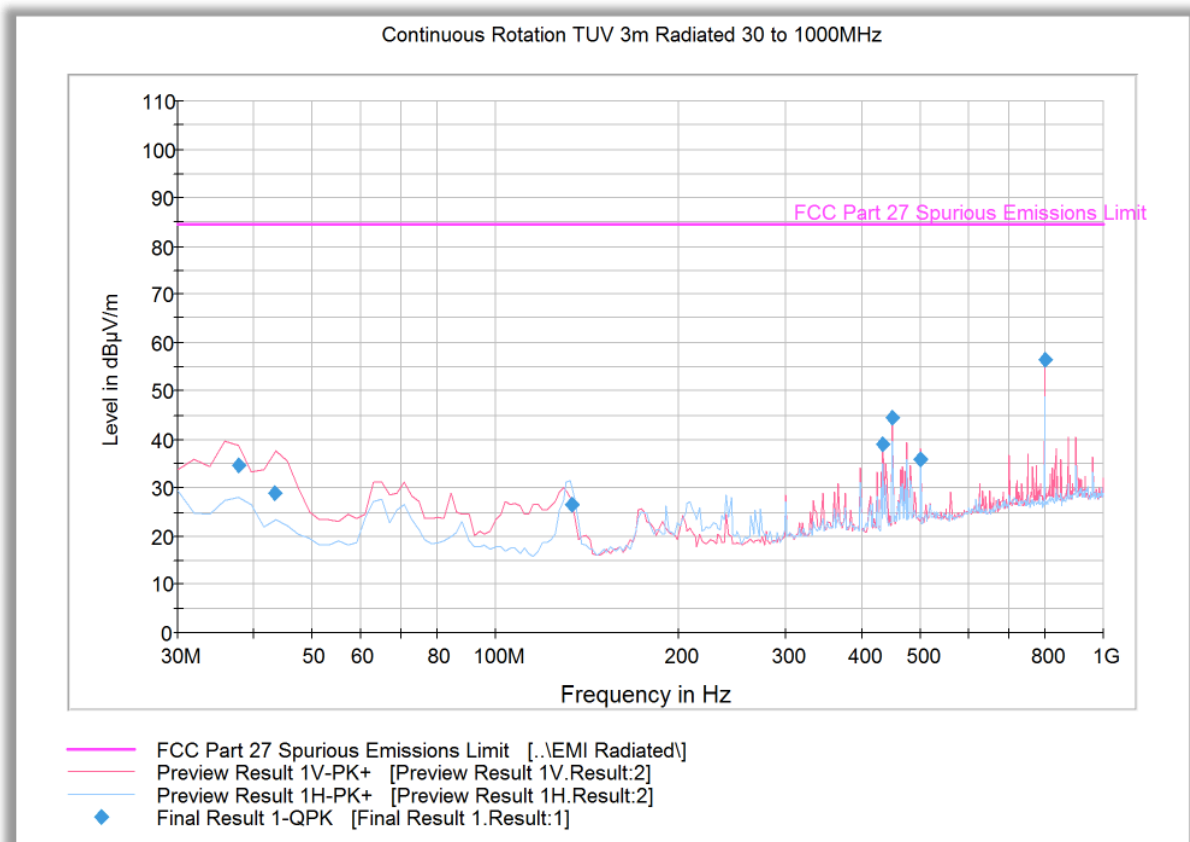
2.8.7 Additional Observations

- 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.
- This is cabinet spurious emissions testing. Main antenna port was terminated during the test. Fundamental frequency measurement will be ignored for this test.
- Emissions within 6dB of the limit will be proven by substitution method.
- Only the worst case configuration presented in this test report.
- Only noise floor measurements observed above 18GHz.
- Measurement was done using EMC32 V8.52 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.

2.8.8 Test Results

Compliant. See attached plots.

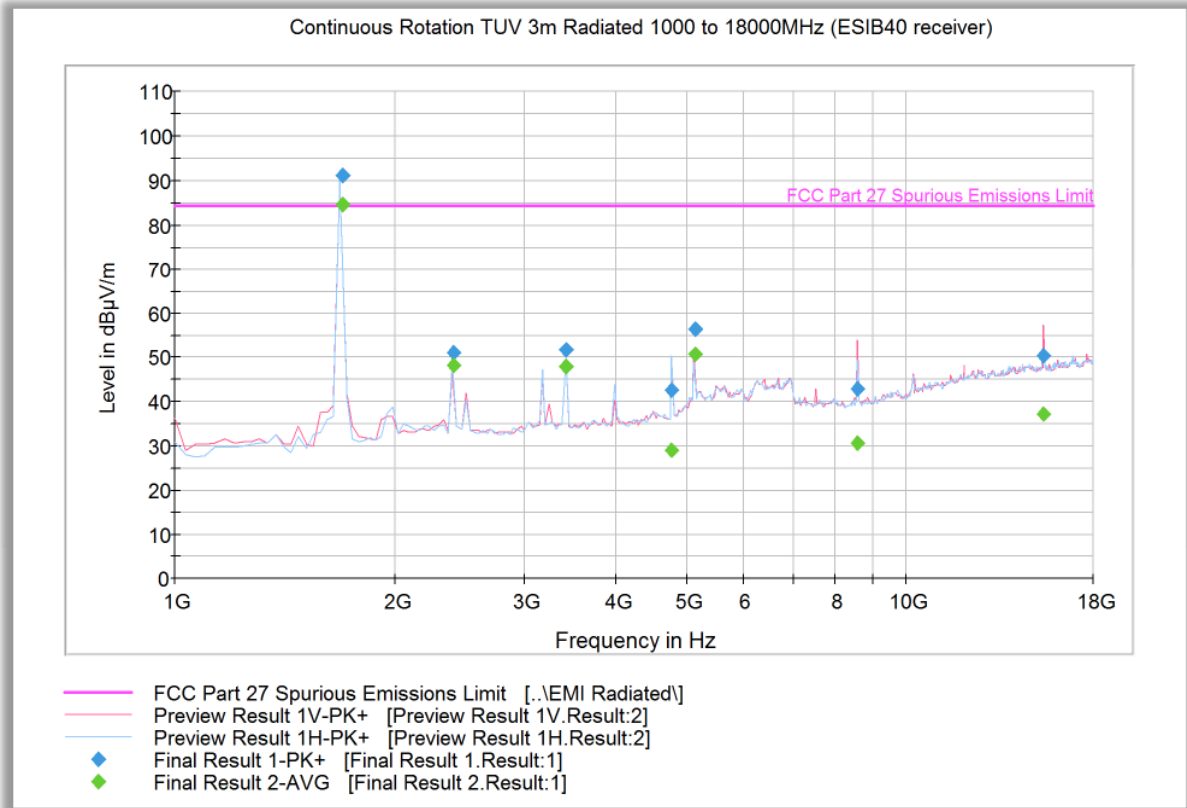
2.8.9 Radiated Emission Test Results Below 1GHz – Worst Case LTE Band 4_20MHz Bandwidth_Low Channel_1 RB 0 offset_QPSK



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)
37.711663	34.7	1000.0	120.000	100.0	V	153.0	-11.0	49.8	84.4
43.447214	28.9	1000.0	120.000	100.0	V	198.0	-12.9	55.5	84.4
133.386052	26.6	1000.0	120.000	215.0	H	133.0	-14.2	57.8	84.4
433.328657	39.1	1000.0	120.000	202.0	V	110.0	-3.9	45.3	84.4
449.999760	44.4	1000.0	120.000	182.0	V	158.0	-3.1	40.0	84.4
500.020842	36.0	1000.0	120.000	207.0	V	117.0	-2.0	48.4	84.4
800.003447	56.4	1000.0	120.000	100.0	V	178.0	3.6	28.0	84.4

2.8.10 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 4_20MHz Bandwidth_Low Channel_1 RB 0 offset_QPSK



Peak Data

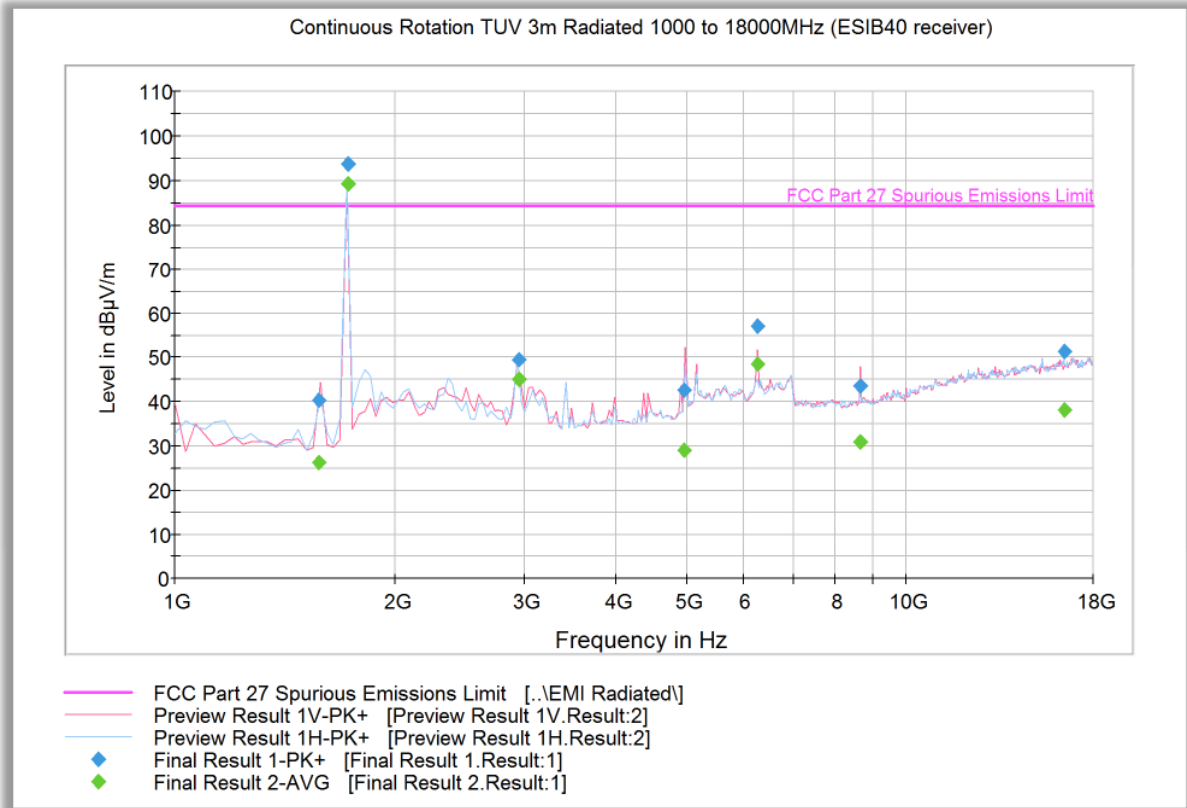
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1693.962725	91.2	1000.0	1000.000	304.2	H	4.0	-5.1	Fundamental Carrier*	
2400.193587	51.2	1000.0	1000.000	103.7	H	197.0	-1.2	33.2	84.4
3422.237675	51.6	1000.0	1000.000	202.4	V	20.0	0.8	32.8	84.4
4778.563126	42.5	1000.0	1000.000	106.7	V	70.0	3.5	41.9	84.4
5133.244489	56.5	1000.0	1000.000	175.6	V	-3.0	4.0	27.9	84.4
8555.326253	43.0	1000.0	1000.000	200.5	V	-3.0	7.1	41.4	84.4
15403.821643	50.4	1000.0	1000.000	212.4	V	-3.0	15.7	34.0	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1693.962725	84.5	1000.0	1000.000	304.2	H	4.0	-5.1	Fundamental Carrier*	
2400.193587	48.2	1000.0	1000.000	103.7	H	197.0	-1.2	36.2	84.4
3422.237675	47.8	1000.0	1000.000	202.4	V	20.0	0.8	36.6	84.4
4778.563126	29.3	1000.0	1000.000	106.7	V	70.0	3.5	55.1	84.4
5133.244489	50.7	1000.0	1000.000	175.6	V	-3.0	4.0	33.7	84.4
8555.326253	30.6	1000.0	1000.000	200.5	V	-3.0	7.1	53.8	84.4
15403.821643	37.3	1000.0	1000.000	212.4	V	-3.0	15.7	47.1	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.11 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 4_20MHz Bandwidth _Middle Channel_1 RB 0 offset_QPSK



Peak Data

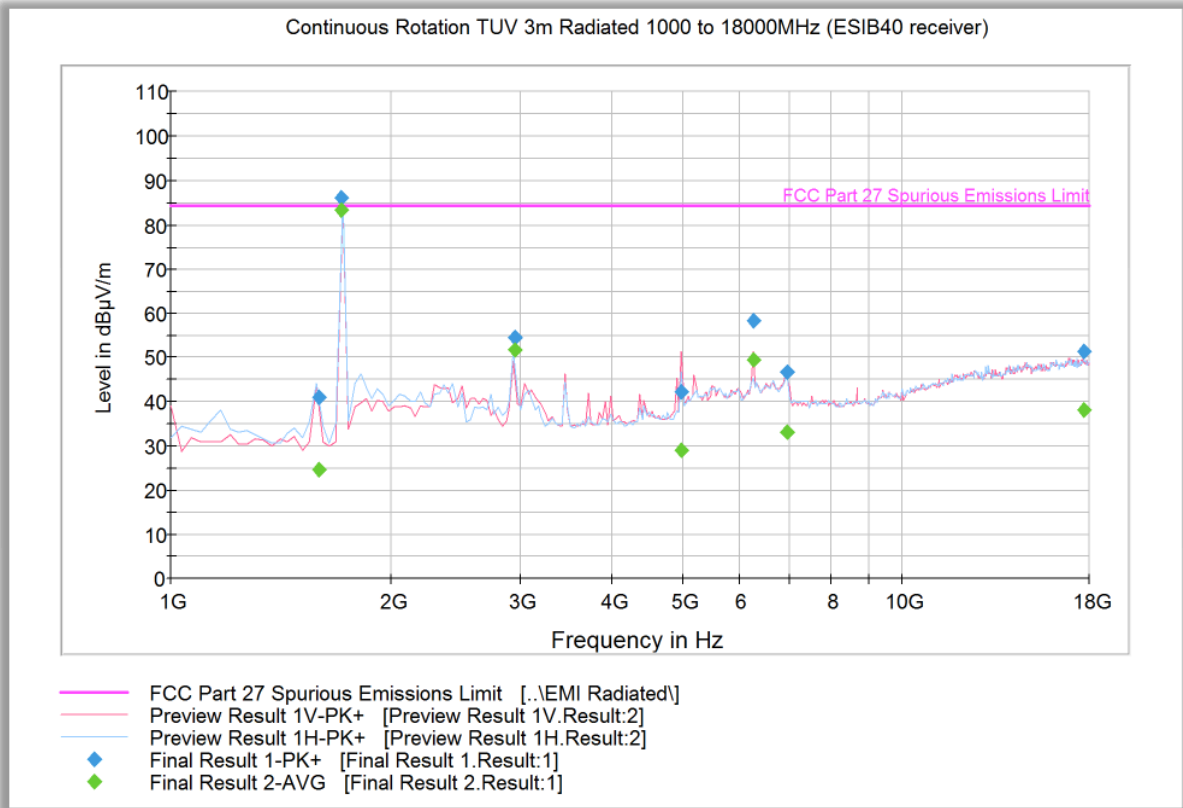
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1577.358317	40.4	1000.0	1000.000	271.3	V	89.0	-5.8	44.0	84.4
1723.630862	93.6	1000.0	1000.000	153.7	H	196.0	-4.7	Fundamental Carrier*	
2949.283768	49.4	1000.0	1000.000	116.7	H	226.0	0.3	35.0	84.4
4975.371944	42.7	1000.0	1000.000	152.6	V	243.0	3.6	41.7	84.4
6249.892986	56.9	1000.0	1000.000	211.4	V	243.0	5.8	27.5	84.4
8633.462525	43.6	1000.0	1000.000	232.4	V	135.0	7.3	40.8	84.4
16393.397595	51.3	1000.0	1000.000	325.2	H	201.0	17.1	33.1	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1577.358317	26.4	1000.0	1000.000	271.3	V	89.0	-5.8	58.0	84.4
1723.630862	89.4	1000.0	1000.000	153.7	H	196.0	-4.7	Fundamental Carrier*	
2949.283768	45.1	1000.0	1000.000	116.7	H	226.0	0.3	39.3	84.4
4975.371944	29.1	1000.0	1000.000	152.6	V	243.0	3.6	55.3	84.4
6249.892986	48.6	1000.0	1000.000	211.4	V	243.0	5.8	35.8	84.4
8633.462525	31.1	1000.0	1000.000	232.4	V	135.0	7.3	53.3	84.4
16393.397595	38.1	1000.0	1000.000	325.2	H	201.0	17.1	46.3	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.12 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 4_20MHz Bandwidth_High Channel_1 RB 0 offset_QPSK



Peak Data

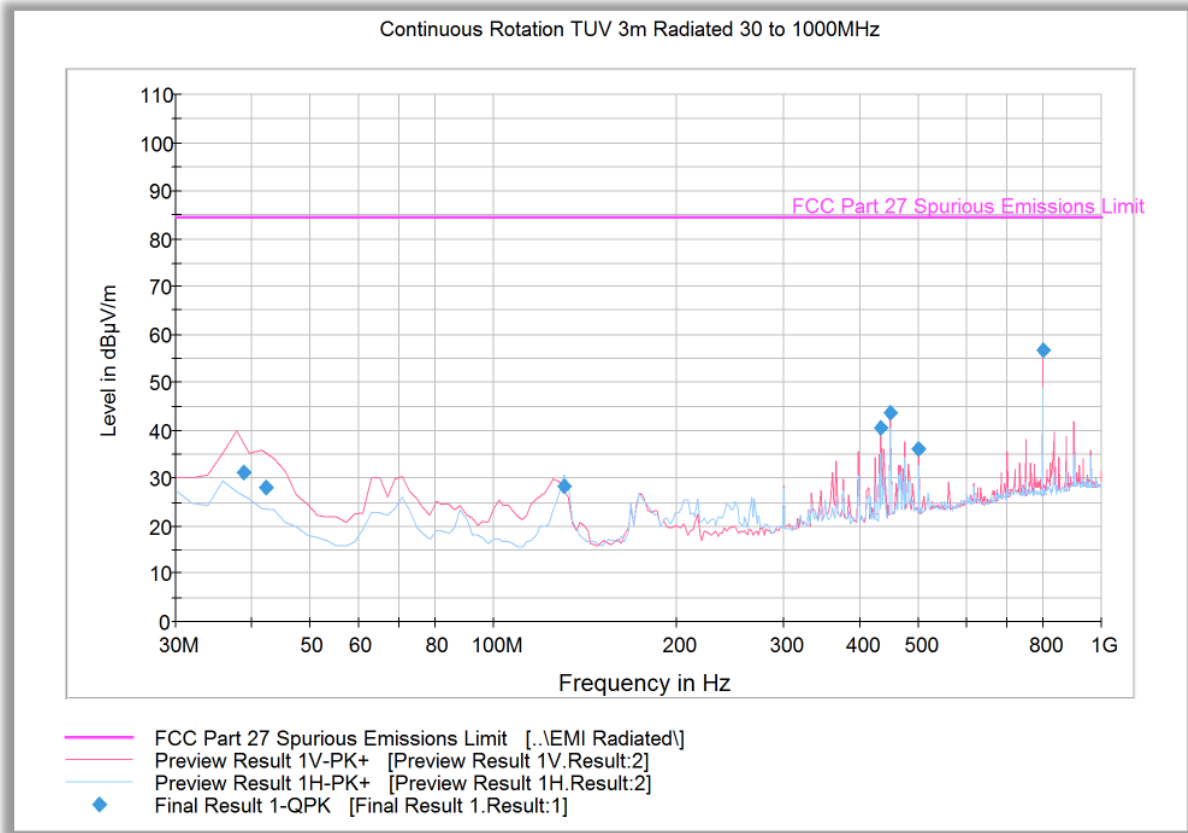
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1592.558317	41.1	1000.0	1000.000	212.4	H	170.0	-5.8	43.3	84.4
1714.430862	86.1	1000.0	1000.000	152.2	H	182.0	-4.8	Fundamental Carrier*	
2949.283768	54.7	1000.0	1000.000	117.7	H	242.0	0.3	29.7	84.4
4978.571944	42.4	1000.0	1000.000	250.5	V	242.0	3.6	42.0	84.4
6249.892986	58.2	1000.0	1000.000	303.2	V	287.0	5.8	26.2	84.4
6937.255711	46.8	1000.0	1000.000	152.2	V	237.0	6.3	37.6	84.4
17661.118637	51.5	1000.0	1000.000	142.7	V	316.0	17.7	32.9	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1592.558317	24.8	1000.0	1000.000	212.4	H	170.0	-5.8	59.6	84.4
1714.430862	83.2	1000.0	1000.000	152.2	H	182.0	-4.8	Fundamental Carrier*	
2949.283768	51.7	1000.0	1000.000	117.7	H	242.0	0.3	32.7	84.4
4978.571944	29.2	1000.0	1000.000	250.5	V	242.0	3.6	55.2	84.4
6249.892986	49.5	1000.0	1000.000	303.2	V	287.0	5.8	34.9	84.4
6937.255711	33.2	1000.0	1000.000	152.2	V	237.0	6.3	51.2	84.4
17661.118637	38.3	1000.0	1000.000	142.7	V	316.0	17.7	46.1	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

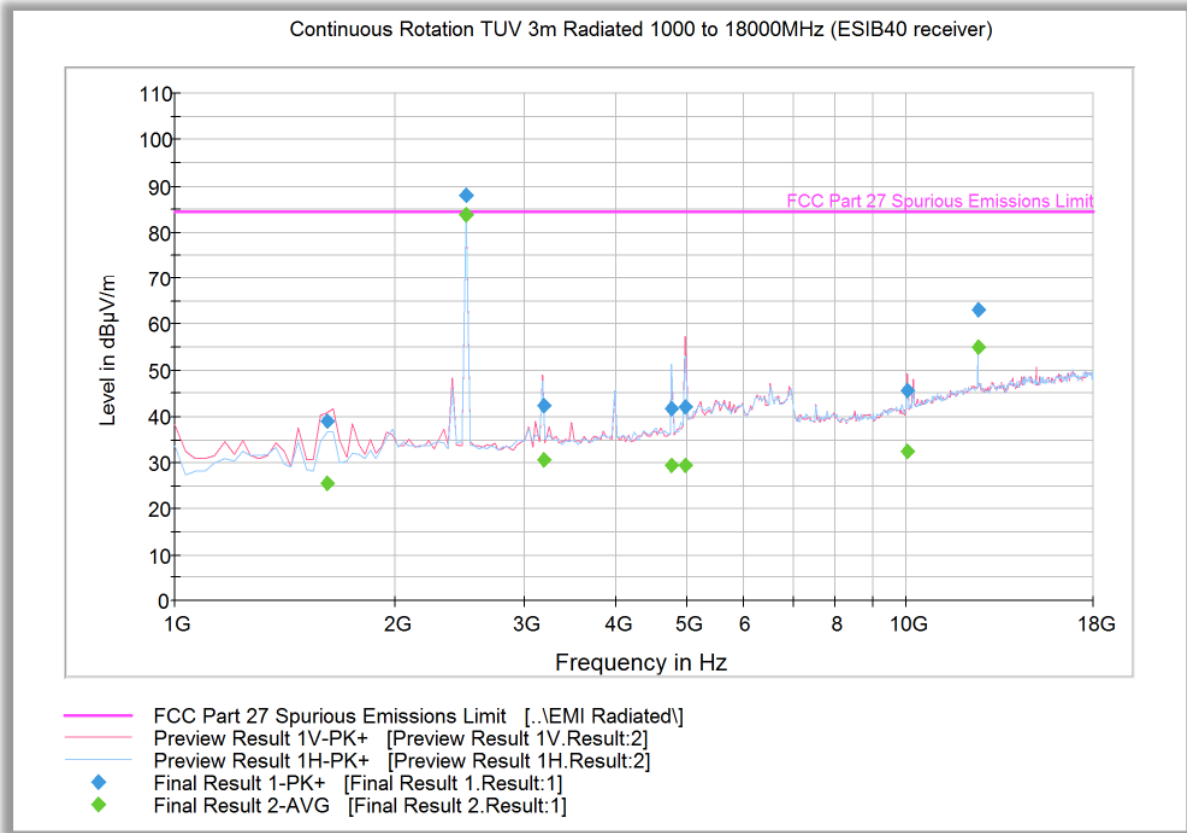
2.8.13 Radiated Emission Test Results Below 1GHz – Worst Case LTE Band 7_5MHz Bandwidth_Middle Channel_1 RB 13 offset_QPSK



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)
38.735551	31.3	1000.0	120.000	100.0	V	98.0	-11.5	53.1	84.4
42.287214	28.0	1000.0	120.000	138.0	V	192.0	-12.6	56.4	84.4
130.602164	28.3	1000.0	120.000	150.0	H	273.0	-14.3	56.1	84.4
433.328657	40.4	1000.0	120.000	195.0	V	105.0	-3.9	44.0	84.4
449.999760	43.8	1000.0	120.000	202.0	V	91.0	-3.1	40.6	84.4
499.980842	36.1	1000.0	120.000	183.0	V	109.0	-2.0	48.3	84.4
800.003447	56.7	1000.0	120.000	100.0	V	168.0	3.6	27.7	84.4

2.8.14 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 7_5MHz Bandwidth_Low Channel_1 RB 13 offset_QPSK



Peak Data

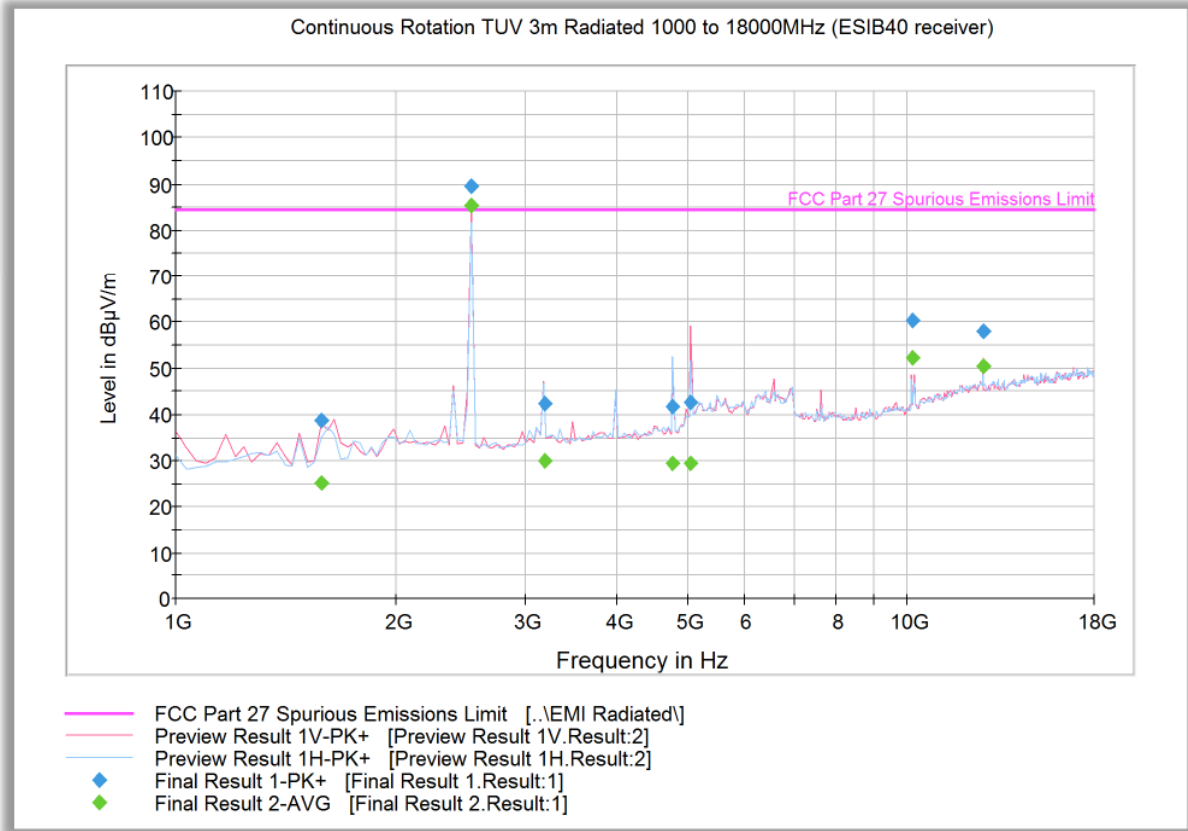
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1617.426453	39.1	1000.0	1000.000	152.2	V	336.0	-5.6	45.3	84.4
2502.797996	88.0	1000.0	1000.000	293.2	V	17.0	-0.4	Fundamental Carrier*	
3187.760721	42.3	1000.0	1000.000	193.5	V	221.0	0.9	42.1	84.4
4774.963126	41.8	1000.0	1000.000	192.5	H	56.0	3.5	42.6	84.4
4987.371944	42.2	1000.0	1000.000	250.5	V	53.0	3.6	42.2	84.4
10037.056112	45.5	1000.0	1000.000	200.5	V	67.0	9.6	38.9	84.4
12513.230060	63.2	1000.0	1000.000	166.6	H	4.0	13.2	21.2	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1617.426453	25.6	1000.0	1000.000	152.2	V	336.0	-5.6	58.8	84.4
2502.797996	83.7	1000.0	1000.000	293.2	V	17.0	-0.4	Fundamental Carrier*	
3187.760721	30.7	1000.0	1000.000	193.5	V	221.0	0.9	53.7	84.4
4774.963126	29.4	1000.0	1000.000	192.5	H	56.0	3.5	55.0	84.4
4987.371944	29.4	1000.0	1000.000	250.5	V	53.0	3.6	55.0	84.4
10037.056112	32.4	1000.0	1000.000	200.5	V	67.0	9.6	52.0	84.4
12513.230060	54.9	1000.0	1000.000	166.6	H	4.0	13.2	29.5	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.15 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 7_5MHz Bandwidth_Middle Channel_1 RB 13 offset_QPSK



Peak Data

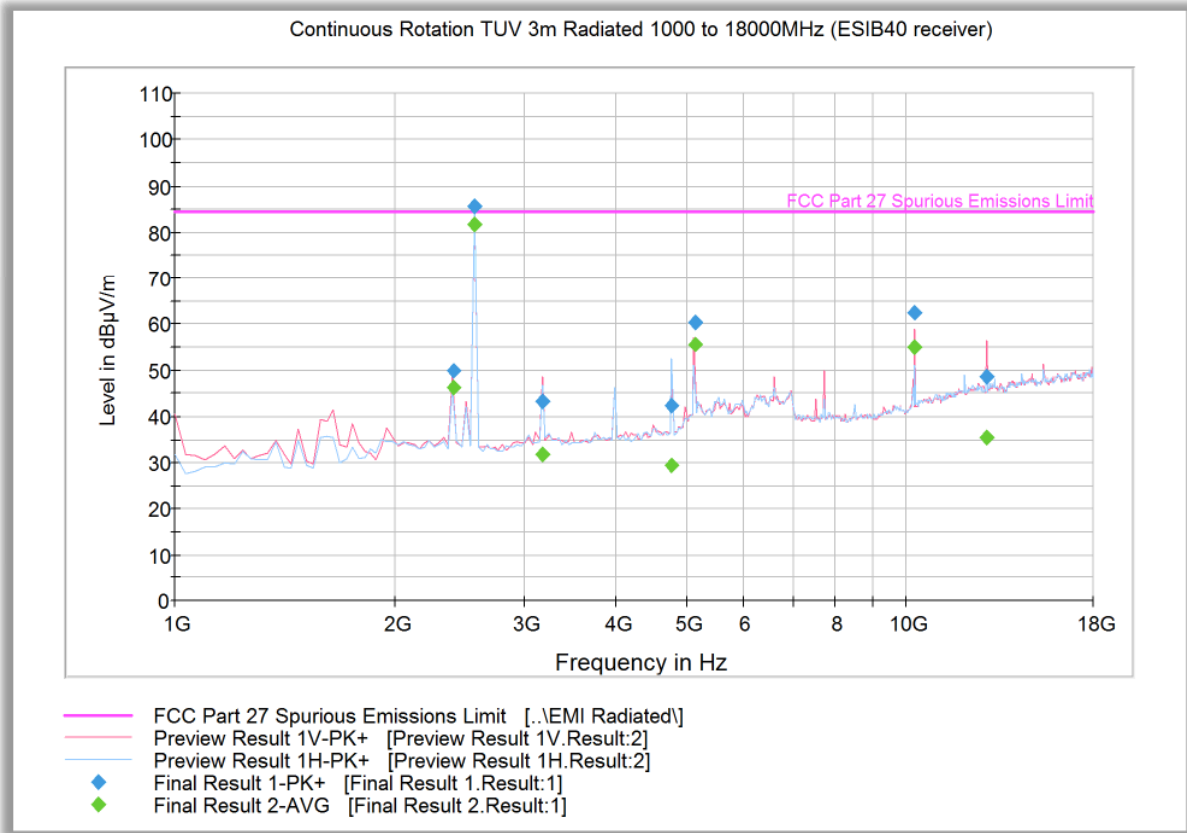
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1583.758317	38.7	1000.0	1000.000	183.5	V	193.0	-5.8	45.7	84.4
2535.266132	89.6	1000.0	1000.000	211.4	V	320.0	-0.5	Fundamental Carrier*	84.4
3187.760721	42.5	1000.0	1000.000	151.7	V	205.0	0.9	41.9	84.4
4773.363126	41.9	1000.0	1000.000	200.5	H	79.0	3.5	42.5	84.4
5057.108216	42.5	1000.0	1000.000	220.4	V	-20.0	3.7	41.9	84.4
10140.860521	60.5	1000.0	1000.000	183.6	V	62.0	9.8	23.9	84.4
12675.970741	58.1	1000.0	1000.000	239.4	V	62.0	13.2	26.3	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1583.758317	25.3	1000.0	1000.000	183.5	V	193.0	-5.8	59.1	84.4
2535.266132	85.4	1000.0	1000.000	211.4	V	320.0	-0.5	Fundamental Carrier*	84.4
3187.760721	30.1	1000.0	1000.000	151.7	V	205.0	0.9	54.3	84.4
4773.363126	29.4	1000.0	1000.000	200.5	H	79.0	3.5	55.0	84.4
5057.108216	29.5	1000.0	1000.000	220.4	V	-20.0	3.7	54.9	84.4
10140.860521	52.3	1000.0	1000.000	183.6	V	62.0	9.8	32.1	84.4
12675.970741	50.4	1000.0	1000.000	239.4	V	62.0	13.2	34.0	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.16 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 7_5MHz Bandwidth_High Channel_1 RB 13 offset_QPSK



Peak Data

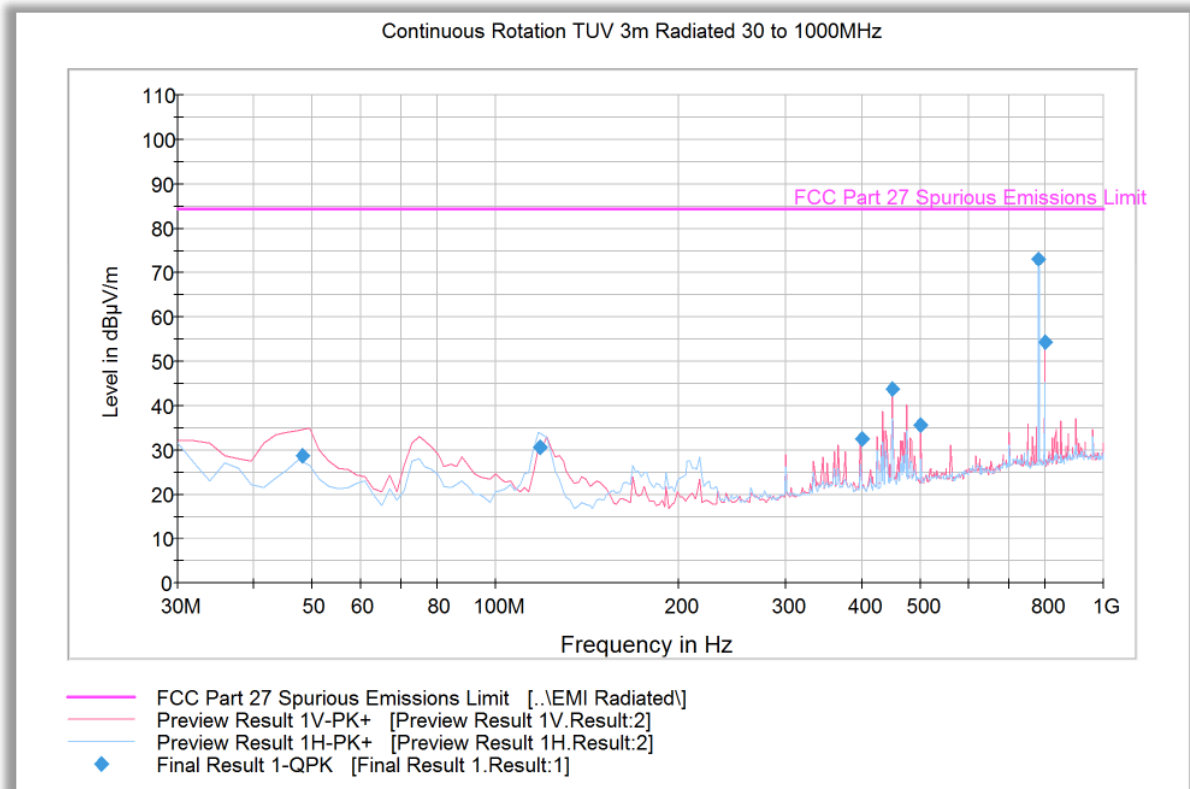
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.193587	49.8	1000.0	1000.000	103.7	V	242.0	-1.2	34.6	84.4
2567.734269	85.8	1000.0	1000.000	202.5	H	83.0	-0.5	Fundamental Carrier*	
3187.360721	43.3	1000.0	1000.000	202.5	V	193.0	0.9	41.1	84.4
4780.563126	42.5	1000.0	1000.000	192.5	H	50.0	3.5	41.9	84.4
5135.244489	60.4	1000.0	1000.000	202.5	V	4.0	4.0	24.0	84.4
10270.733066	62.5	1000.0	1000.000	193.5	V	82.0	10.0	21.9	84.4
12845.911423	48.5	1000.0	1000.000	174.6	V	53.0	13.2	35.9	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2400.193587	46.2	1000.0	1000.000	103.7	V	242.0	-1.2	38.2	84.4
2567.734269	81.7	1000.0	1000.000	202.5	H	83.0	-0.5	Fundamental Carrier*	
3187.360721	31.8	1000.0	1000.000	202.5	V	193.0	0.9	52.6	84.4
4780.563126	29.3	1000.0	1000.000	192.5	H	50.0	3.5	55.1	84.4
5135.244489	55.5	1000.0	1000.000	202.5	V	4.0	4.0	28.9	84.4
10270.733066	54.9	1000.0	1000.000	193.5	V	82.0	10.0	29.5	84.4
12845.911423	35.6	1000.0	1000.000	174.6	V	53.0	13.2	48.8	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.17 Radiated Emission Test Results Below 1GHz – Worst Case LTE Band 13_5MHz Bandwidth_High Channel_1 RB 0 offset_QPSK

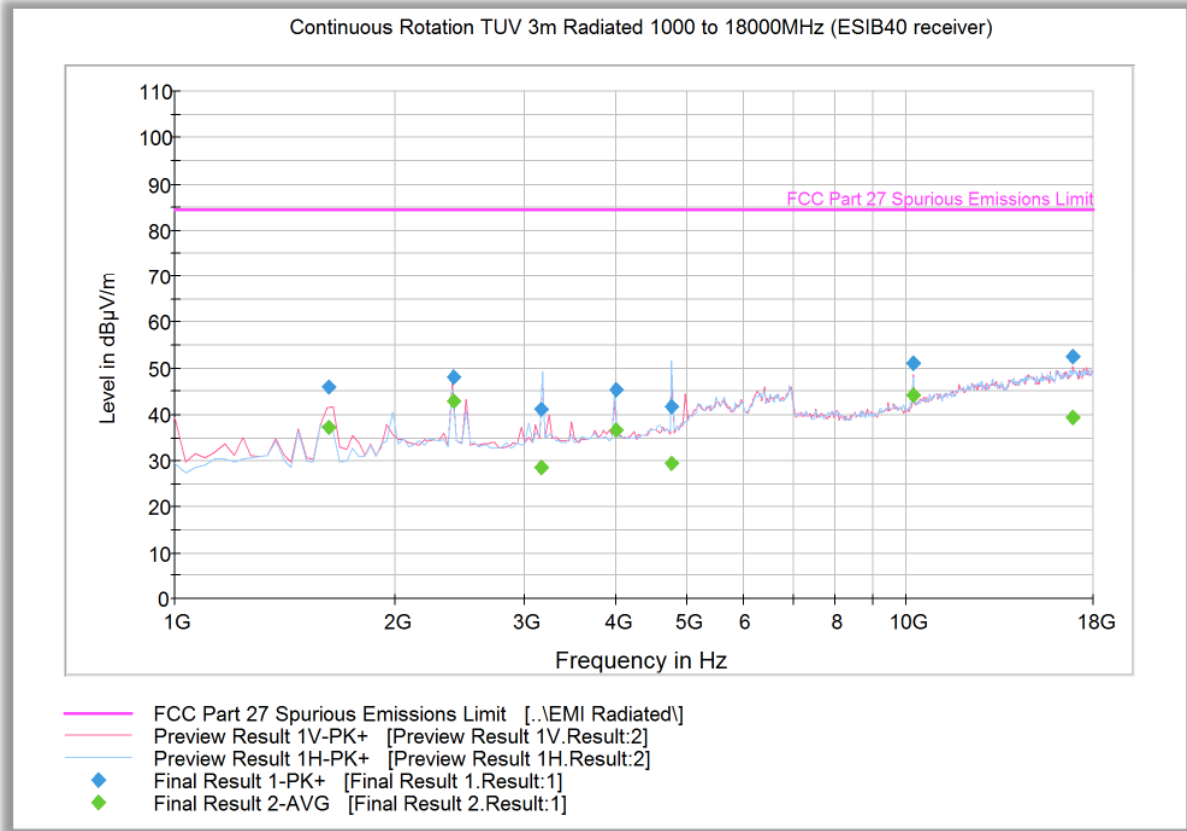


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
48.198878	28.8	1000.0	120.000	100.0	V	218.0	-14.5	55.6	84.4
118.594950	30.8	1000.0	120.000	250.0	H	0.0	-14.7	53.6	84.4
399.978677	32.4	1000.0	120.000	250.0	V	196.0	-4.4	52.0	84.4
449.999760	43.7	1000.0	120.000	172.0	V	122.0	-3.1	40.7	84.4
499.980842	35.7	1000.0	120.000	159.0	V	139.0	-2.0	48.7	84.4
782.404569	73.0	1000.0	120.000	100.0	H	200.0	3.4	Fundamental Carrier*	
800.003447	54.3	1000.0	120.000	100.0	V	177.0	3.6	30.1	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.18 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 13_5MHz Bandwidth_Low Channel_1 RB 0 offset_QPSK



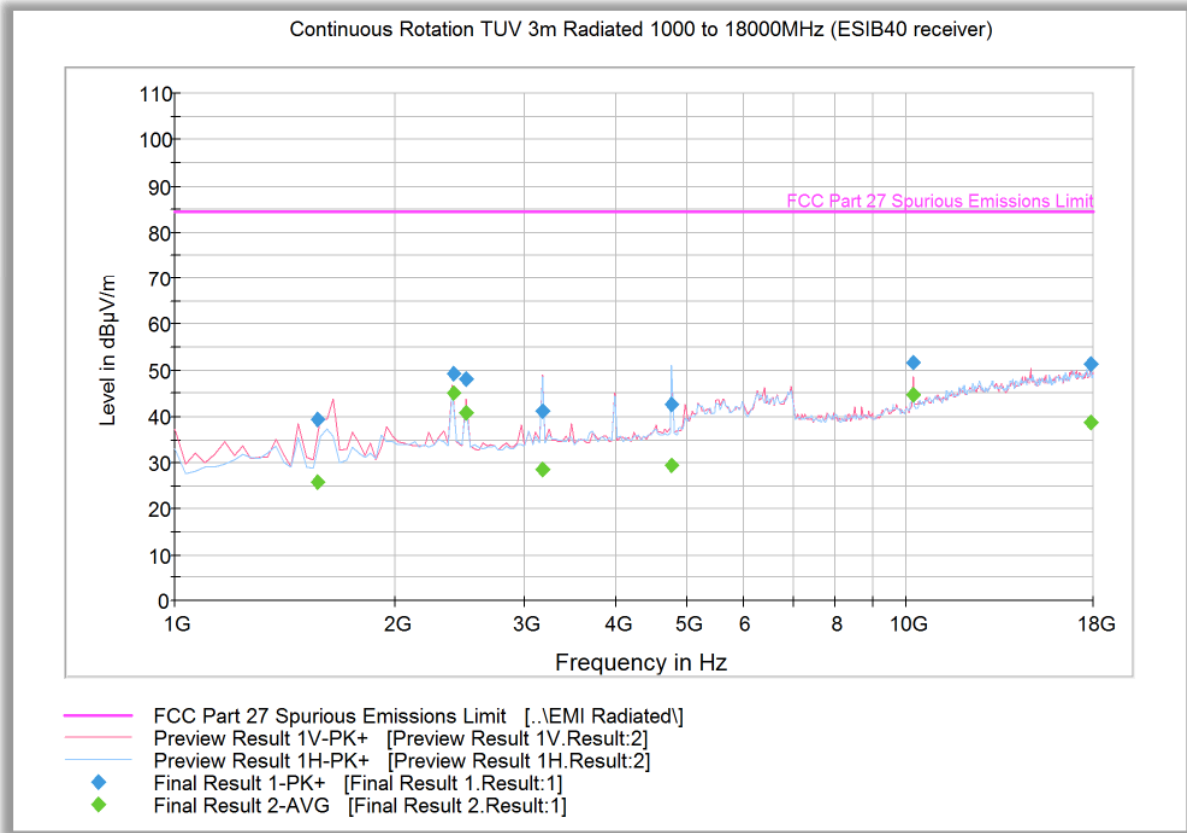
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1625.026453	46.1	1000.0	1000.000	99.7	V	308.0	-5.6	38.3	84.4
2400.193587	48.1	1000.0	1000.000	151.6	V	4.0	-1.2	36.3	84.4
3171.360721	41.1	1000.0	1000.000	338.1	H	23.0	0.9	43.3	84.4
3999.795992	45.4	1000.0	1000.000	202.5	H	69.0	2.4	39.0	84.4
4777.363126	41.9	1000.0	1000.000	250.5	H	59.0	3.5	42.5	84.4
10200.196794	51.2	1000.0	1000.000	202.5	V	253.0	9.9	33.2	84.4
16883.551503	52.6	1000.0	1000.000	314.2	V	168.0	17.9	31.8	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1625.026453	37.1	1000.0	1000.000	99.7	V	308.0	-5.6	47.3	84.4
2400.193587	43.1	1000.0	1000.000	151.6	V	4.0	-1.2	41.3	84.4
3171.360721	28.5	1000.0	1000.000	338.1	H	23.0	0.9	55.9	84.4
3999.795992	36.6	1000.0	1000.000	202.5	H	69.0	2.4	47.8	84.4
4777.363126	29.4	1000.0	1000.000	250.5	H	59.0	3.5	55.0	84.4
10200.196794	44.1	1000.0	1000.000	202.5	V	253.0	9.9	40.3	84.4
16883.551503	39.3	1000.0	1000.000	314.2	V	168.0	17.9	45.1	84.4

2.8.19 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 13_5MHz Bandwidth_Middle Channel_1 RB 0 offset_QPSK



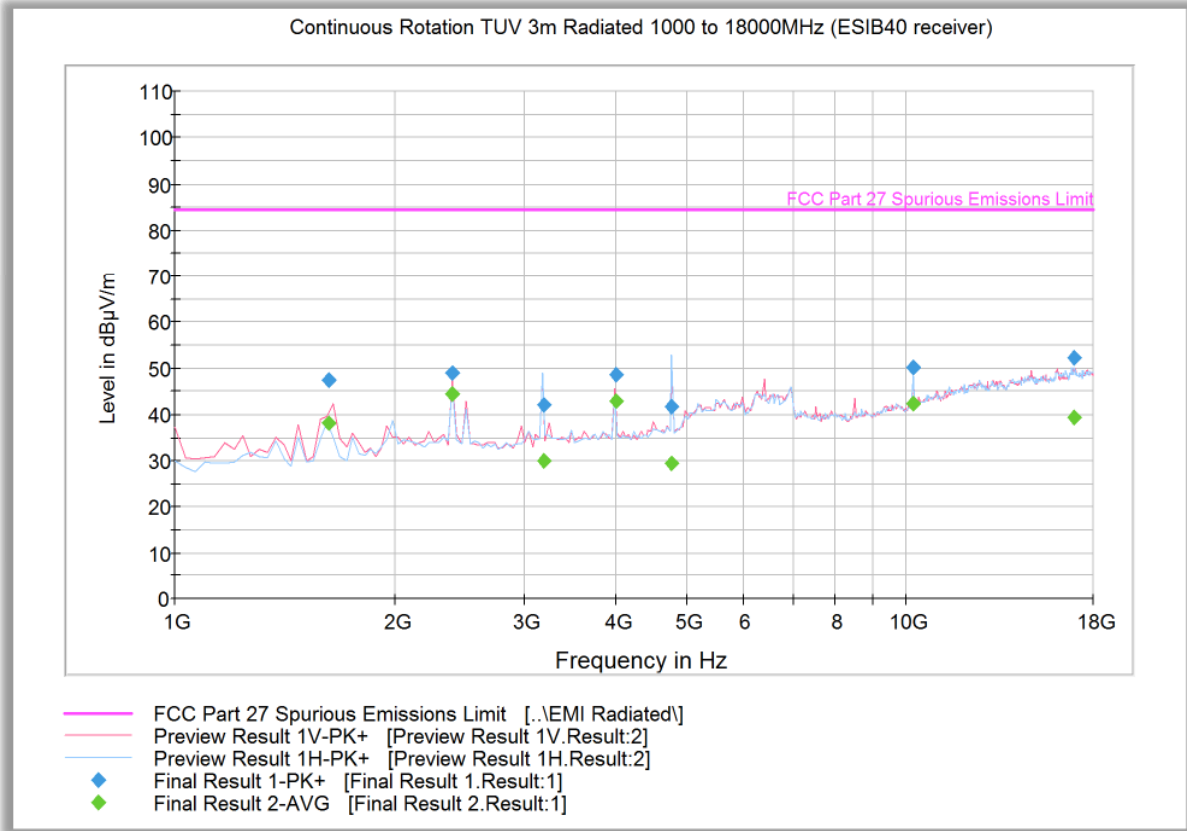
Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1567.358317	39.3	1000.0	1000.000	151.2	V	209.0	-5.9	45.1	84.4
2400.193587	49.3	1000.0	1000.000	102.7	V	242.0	-1.2	35.1	84.4
2499.997996	48.1	1000.0	1000.000	315.2	H	20.0	-0.4	36.3	84.4
3185.360721	41.1	1000.0	1000.000	175.6	V	194.0	0.9	43.3	84.4
4772.163126	42.7	1000.0	1000.000	221.4	H	75.0	3.5	41.7	84.4
10200.196794	51.6	1000.0	1000.000	231.4	V	193.0	9.9	32.8	84.4
17833.859319	51.3	1000.0	1000.000	304.2	V	320.0	17.7	33.1	84.4

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1567.358317	25.8	1000.0	1000.000	151.2	V	209.0	-5.9	58.6	84.4
2400.193587	45.2	1000.0	1000.000	102.7	V	242.0	-1.2	39.2	84.4
2499.997996	40.8	1000.0	1000.000	315.2	H	20.0	-0.4	43.6	84.4
3185.360721	28.5	1000.0	1000.000	175.6	V	194.0	0.9	55.9	84.4
4772.163126	29.4	1000.0	1000.000	221.4	H	75.0	3.5	55.0	84.4
10200.196794	44.8	1000.0	1000.000	231.4	V	193.0	9.9	39.6	84.4
17833.859319	38.8	1000.0	1000.000	304.2	V	320.0	17.7	45.6	84.4

2.8.20 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 13_5MHz Bandwidth_High Channel_1 RB 0 offset_QPSK



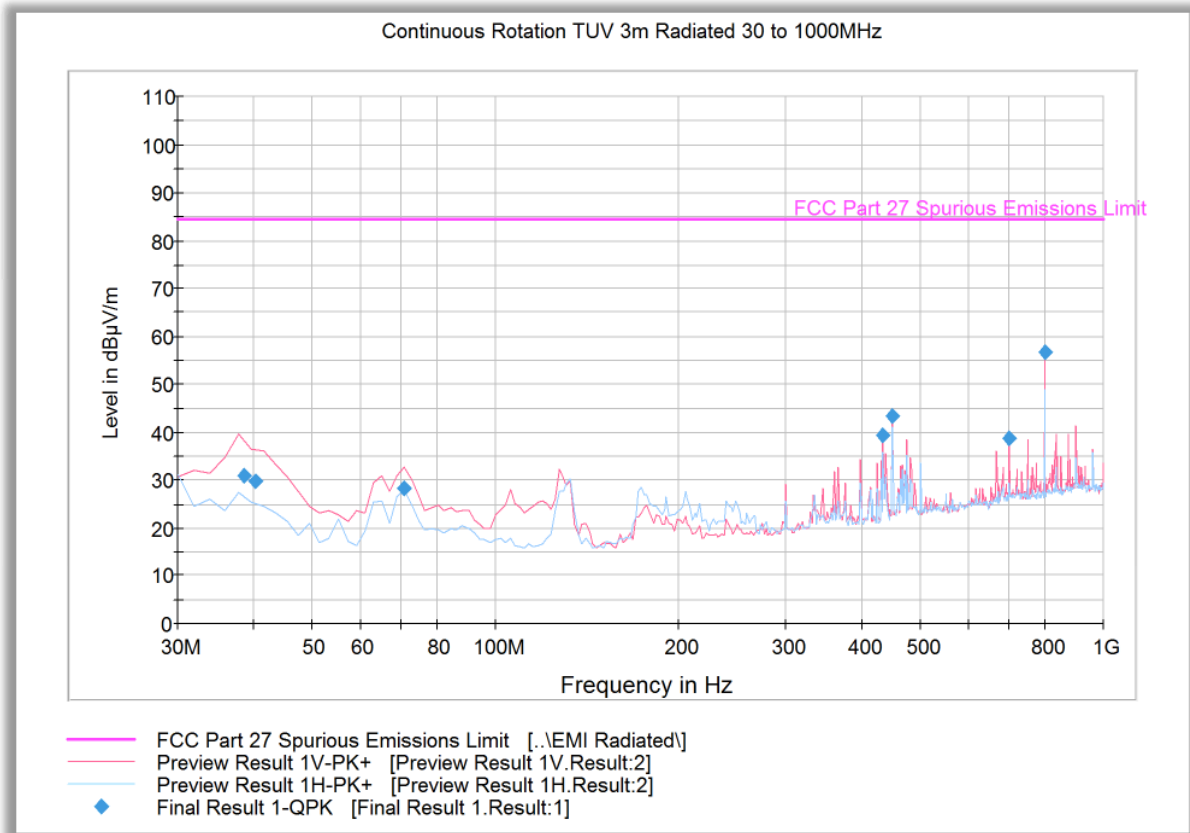
Peak Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1625.026453	47.4	1000.0	1000.000	151.6	V	182.0	-5.6	37.0	84.4
2399.793587	48.9	1000.0	1000.000	103.7	V	242.0	-1.2	35.5	84.4
3187.760721	42.0	1000.0	1000.000	316.2	H	33.0	0.9	42.4	84.4
4000.195992	48.7	1000.0	1000.000	103.7	V	123.0	2.4	35.7	84.4
4773.763126	41.9	1000.0	1000.000	200.5	H	43.0	3.5	42.5	84.4
10200.196794	50.2	1000.0	1000.000	151.6	V	233.0	9.9	34.2	84.4
16935.687776	52.3	1000.0	1000.000	293.2	H	182.0	17.9	32.1	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1625.026453	38.2	1000.0	1000.000	151.6	V	182.0	-5.6	46.2	84.4
2399.793587	44.6	1000.0	1000.000	103.7	V	242.0	-1.2	39.8	84.4
3187.760721	30.0	1000.0	1000.000	316.2	H	33.0	0.9	54.4	84.4
4000.195992	42.9	1000.0	1000.000	103.7	V	123.0	2.4	41.5	84.4
4773.763126	29.3	1000.0	1000.000	200.5	H	43.0	3.5	55.1	84.4
10200.196794	42.5	1000.0	1000.000	151.6	V	233.0	9.9	41.9	84.4
16935.687776	39.5	1000.0	1000.000	293.2	H	182.0	17.9	44.9	84.4

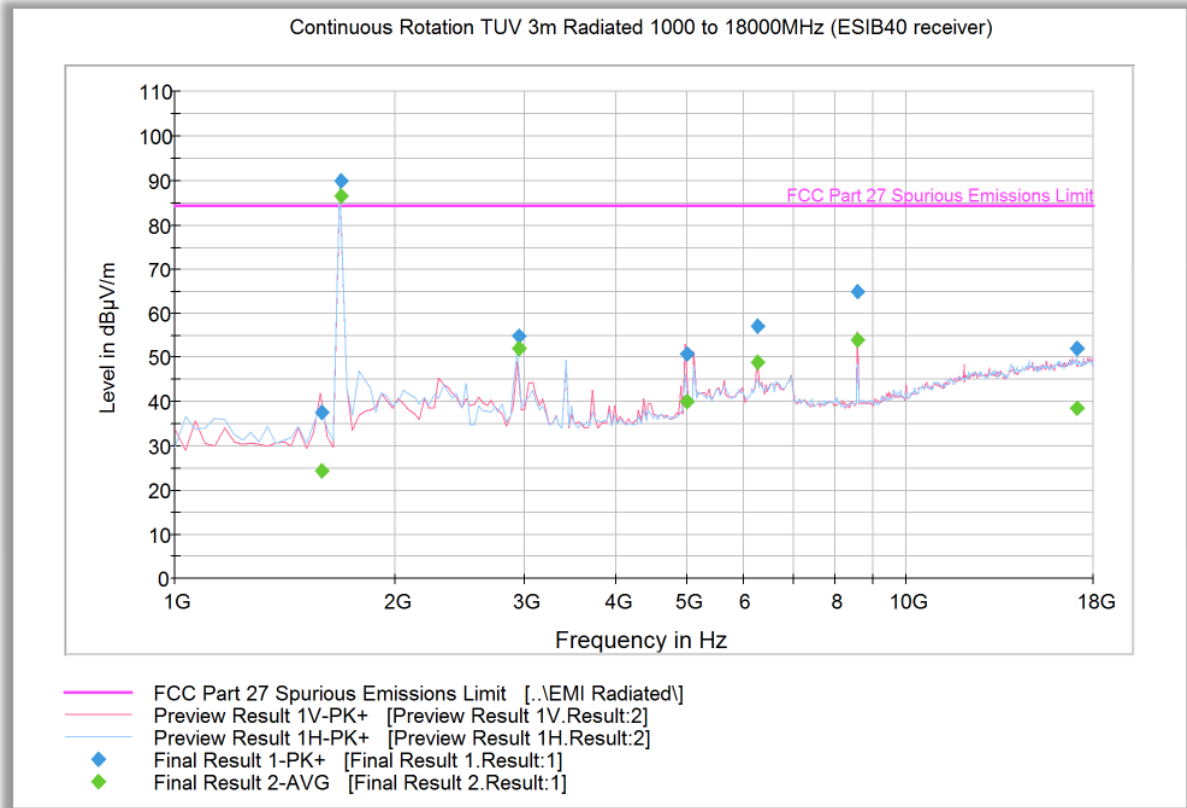
2.8.21 Radiated Emission Test Results Below 1GHz – Worst Case LTE Band 66_10MHz Bandwidth_Low Channel_1 RB 0 offset_QPSK



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)
38.655551	31.0	1000.0	120.000	100.0	V	124.0	-11.4	53.4	84.4
40.167214	29.7	1000.0	120.000	100.0	V	224.0	-12.1	54.7	84.4
70.701643	28.3	1000.0	120.000	160.0	V	81.0	-16.9	56.1	84.4
433.328657	39.2	1000.0	120.000	213.0	V	113.0	-3.9	45.2	84.4
449.999760	43.4	1000.0	120.000	206.0	V	91.0	-3.1	41.0	84.4
700.001283	38.9	1000.0	120.000	100.0	V	96.0	2.6	45.5	84.4
800.003447	56.7	1000.0	120.000	100.0	V	172.0	3.6	27.7	84.4

2.8.22 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 66_10MHz Bandwidth_Low Channel_1 RB 0 offset_QPSK



Peak Data

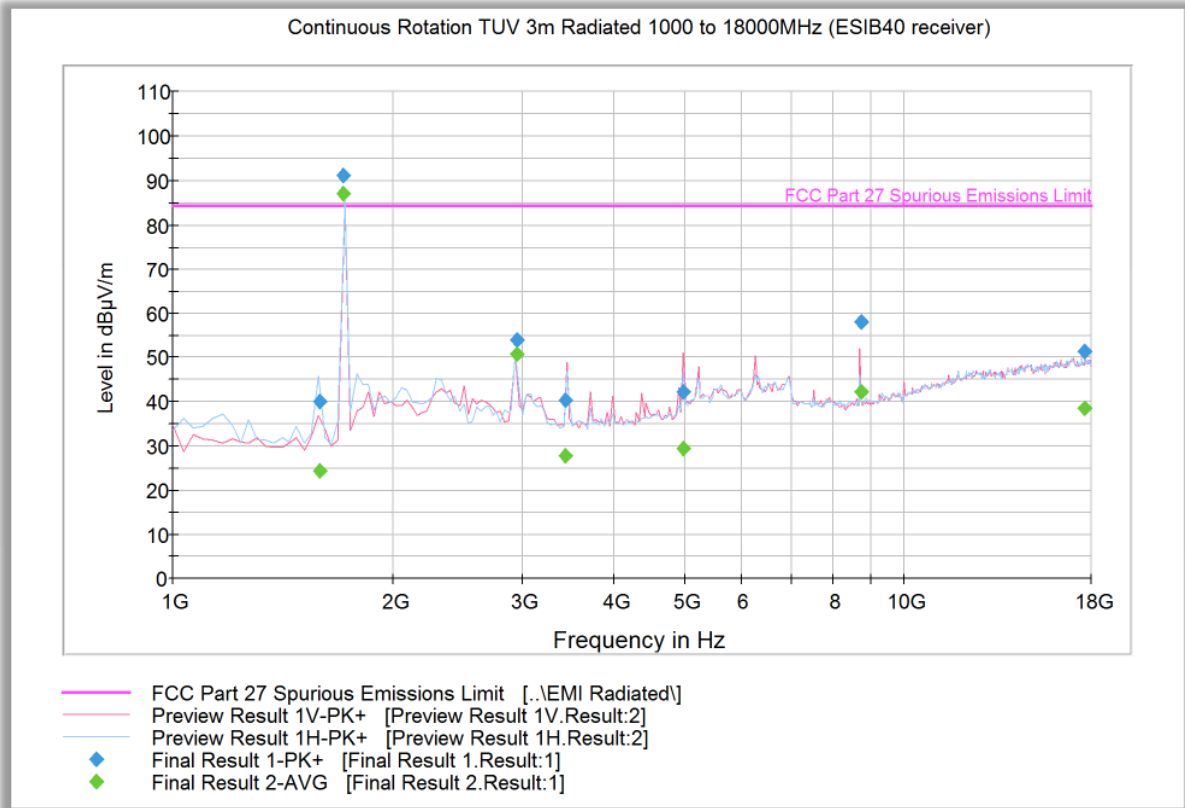
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1586.558317	37.7	1000.0	1000.000	303.2	V	138.0	-5.8	46.7	84.4
1687.562725	90.1	1000.0	1000.000	166.6	H	214.0	-5.1	Fundamental Carrier*	
2949.283768	54.8	1000.0	1000.000	117.7	H	242.0	0.3	29.6	84.4
4999.371944	50.7	1000.0	1000.000	241.3	V	241.0	3.7	33.7	84.4
6249.892986	56.9	1000.0	1000.000	203.5	V	241.0	5.8	27.5	84.4
8552.926253	64.8	1000.0	1000.000	212.4	V	0.0	7.1	19.6	84.4
17046.692184	51.9	1000.0	1000.000	252.3	H	341.0	17.6	32.5	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1586.558317	24.5	1000.0	1000.000	303.2	V	138.0	-5.8	59.9	84.4
1687.562725	86.4	1000.0	1000.000	166.6	H	214.0	-5.1	Fundamental Carrier*	
2949.283768	52.0	1000.0	1000.000	117.7	H	242.0	0.3	32.4	84.4
4999.371944	40.2	1000.0	1000.000	241.3	V	241.0	3.7	44.2	84.4
6249.892986	48.9	1000.0	1000.000	203.5	V	241.0	5.8	35.5	84.4
8552.926253	53.9	1000.0	1000.000	212.4	V	0.0	7.1	30.5	84.4
17046.692184	38.6	1000.0	1000.000	252.3	H	341.0	17.6	45.8	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.23 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 66_10MHz Bandwidth_Middle Channel_1 RB 0 offset_QPSK



Peak Data

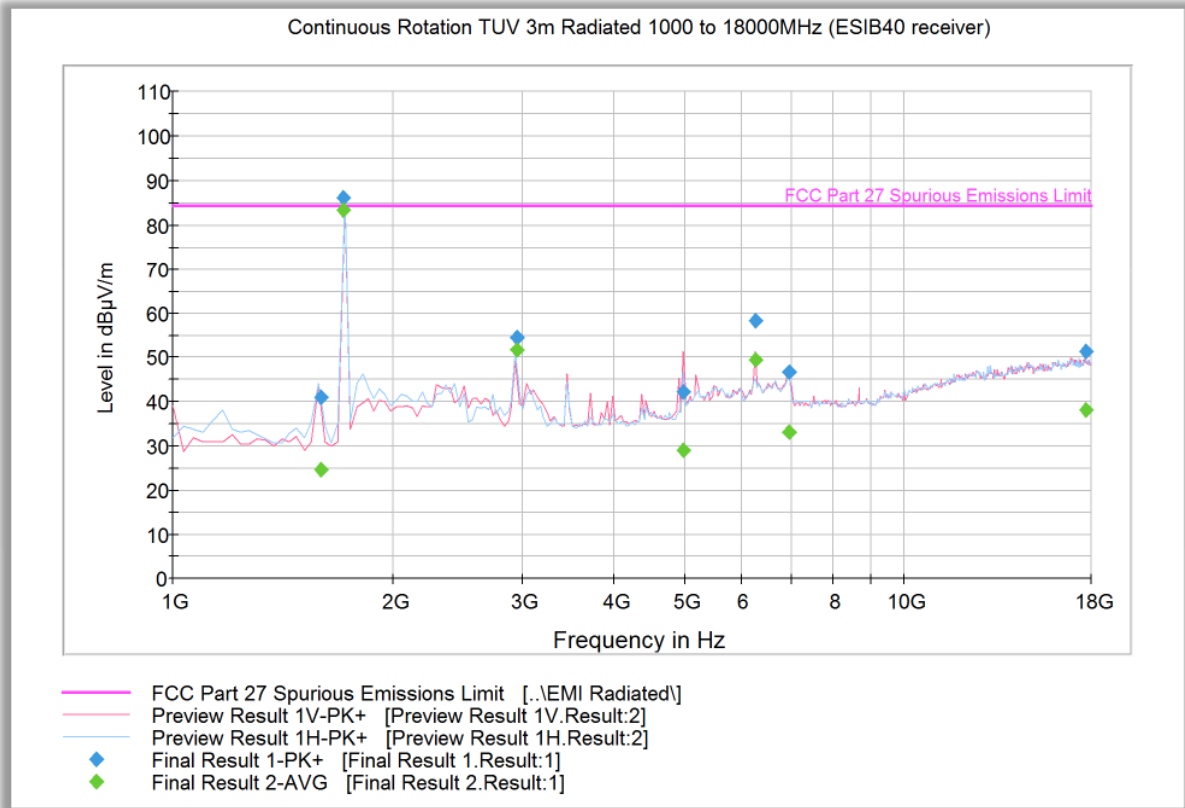
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1586.558317	40.1	1000.0	1000.000	193.5	H	170.0	-5.8	44.3	84.4
1707.630862	91.2	1000.0	1000.000	193.5	H	317.0	-4.9	Fundamental Carrier*	
2949.283768	54.0	1000.0	1000.000	133.7	H	241.0	0.3	30.4	84.4
3445.505812	40.4	1000.0	1000.000	252.3	V	31.0	0.8	44.0	84.4
4986.571944	42.4	1000.0	1000.000	201.5	V	241.0	3.6	42.0	84.4
8702.798798	57.9	1000.0	1000.000	151.6	V	20.0	7.4	26.6	84.4
17625.050501	51.3	1000.0	1000.000	102.7	H	68.0	17.6	33.1	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1586.558317	24.4	1000.0	1000.000	193.5	H	170.0	-5.8	60.0	84.4
1707.630862	87.1	1000.0	1000.000	193.5	H	317.0	-4.9	Fundamental Carrier*	
2949.283768	50.9	1000.0	1000.000	133.7	H	241.0	0.3	33.5	84.4
3445.505812	27.8	1000.0	1000.000	252.3	V	31.0	0.8	56.6	84.4
4986.571944	29.5	1000.0	1000.000	201.5	V	241.0	3.6	54.9	84.4
8702.798798	42.2	1000.0	1000.000	151.6	V	20.0	7.4	42.2	84.4
17625.050501	38.6	1000.0	1000.000	102.7	H	68.0	17.6	45.8	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.

2.8.24 Radiated Emission Test Results Above 1GHz – Worst Case LTE Band 66_10MHz Bandwidth_High Channel_1 RB 0 offset_QPSK



Peak Data

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1592.558317	41.1	1000.0	1000.000	212.4	H	170.0	-5.8	43.3	84.4
1714.430862	86.1	1000.0	1000.000	152.2	H	182.0	-4.8	Fundamental Carrier*	
2949.283768	54.7	1000.0	1000.000	117.7	H	242.0	0.3	29.7	84.4
4978.571944	42.4	1000.0	1000.000	250.5	V	242.0	3.6	42.0	84.4
6249.892986	58.2	1000.0	1000.000	303.2	V	287.0	5.8	26.2	84.4
6937.255711	46.8	1000.0	1000.000	152.2	V	237.0	6.3	37.6	84.4
17661.118637	51.5	1000.0	1000.000	142.7	V	316.0	17.7	32.9	84.4

Average Data

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1592.558317	24.8	1000.0	1000.000	212.4	H	170.0	-5.8	59.6	84.4
1714.430862	83.2	1000.0	1000.000	152.2	H	182.0	-4.8	55.2	84.4
2949.283768	51.7	1000.0	1000.000	117.7	H	242.0	0.3	32.7	84.4
4978.571944	29.2	1000.0	1000.000	250.5	V	242.0	3.6	55.2	84.4
6249.892986	49.5	1000.0	1000.000	303.2	V	287.0	5.8	34.9	84.4
6937.255711	33.2	1000.0	1000.000	152.2	V	237.0	6.3	51.2	84.4
17661.118637	38.3	1000.0	1000.000	142.7	V	316.0	17.7	46.1	84.4

* This is the fundamental frequency not part of spurious emission evaluation. Data provided for information purpose only.



2.9 FREQUENCY STABILITY

2.9.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1055
FCC 47 CFR Part 27, Clause 27.54
RSS-139, Clause 6.4
RSS-199, Clause 4.3
RSS-130, Clause 4.3

2.9.2 Standard Applicable

FCC Part 27, Clause 27.54:

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

RSS-139, Clause 6.4:

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS-199, 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 equal to that permitted within the 1 MHz band immediately outside the channel edge, as found in section 4.5, reference points will be selected at the unwanted emission limits, which comply with the attenuation specified in section 4.5 for the type of device under test, on the emission mask of the lowerest and highest channels. The frequency points shall be recorded as f_L and f_H respectively. The applicant shall ensure compliance with frequency stability requirements by showing that f_L minus the frequency offset and f_H plus the frequency offset is within the frequency range in which the equipment is designed to operate.

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 f_L and f_H respectively.

The applicant shall ensure frequency stability by showing that f_L minus the frequency offset and f_H plus the frequency offset shall be within the frequency range in which the equipment is designed to operate.

2.9.3 Equipment Under Test and Modification State

Serial No: AZ280418A00044 / Test Configuration A

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

July 3, 10 and 11, 2018 / XYZ



2.9.5 Test Equipment Used

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

2.9.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	25.7 - 26.8°C
Relative Humidity	44.4 - 54.1%
ATM Pressure	98.7 - 99.0 kPa

2.9.7 Additional Observations

- This is a conducted test. The EUT was operated at 3.7VDC nominal voltage and was placed in the temperature chamber for this evaluation. The EUT was controlled by a CMW500 and utilizing a spectrum analyzer for measurement.
- Test performed in 5 MHz Bandwidth Middle channel as the representative configuration.
- Measurement was done using the CMW 500 measurement function.
- 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 voltage 3.3VDC and higher 4.3VDC of the nominal voltage at 20°C.

2.9.8 Test Results

LTE Band 4 – QPSK 5 MHz BW-Middle Channel 1732.5 MHz				
Voltage (VDC)	Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)*
3.7	-30	-14.05	-0.0081	± 0.1
	-20	-15.68	-0.0091	± 0.1
	-10	-12.76	-0.0074	± 0.1
	0	-11.34	-0.0066	± 0.1
	+10	-12.8	-0.0074	± 0.1
	+20	15.15	0.0087	± 0.1
	+30	-12.06	-0.0070	± 0.1
	+40	-15.15	-0.0087	± 0.1
	+50	-14.9	-0.0086	± 0.1
3.3	20	15.55	0.0090	± 0.1
4.3		14.33	0.0083	± 0.1

*Limit according to 3GPP TS 36 010 V14.4.0

The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

LTE Band 7 – QPSK 5 MHz BW-Middle Channel 2535 MHz				
Voltage (VDC)	Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)*
3.7	-30	-15.48	-0.0061	± 0.1
	-20	15.05	0.0059	± 0.1
	-10	15.29	0.0060	± 0.1
	0	16.11	0.0064	± 0.1
	+10	15.65	0.0062	± 0.1
	+20	16.52	0.0065	± 0.1
	+30	15.05	0.0059	± 0.1
	+40	15.01	0.0059	± 0.1
	+50	15.56	0.0061	± 0.1
3.3	20	17.28	0.0068	± 0.1
4.3		15.65	0.0062	± 0.1

LTE Band 7 – QPSK 5 MHz BW						
Voltage (VDC)	Temperature (°C)	F _L (MHz)	F _L – Freq Error (MHz)	F _H (MHz)	F _L + Freq Error (MHz)	Compliance
3.7	-30	2500.0928	2500.0928	2569.9203	2569.9203	Yes
	+20	2500.0699	2500.0699	2569.9138	2569.9138	Yes
	+50	2500.0970	2500.0970	2569.9306	2569.9306	Yes
3.3	20	2500.0919	2500.0919	2569.9182	2569.9182	Yes
4.3		2500.0713	2500.0713	2569.9299	2569.9299	Yes

*Limit according to 3GPP TS 36 010 V14.4.0

The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

LTE Band 13 – QPSK 5 MHz BW-Middle Channel 782 MHz				
Voltage (VDC)	Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)*
3.7	-30	10.44	0.013	± 0.1
	-20	15.46	0.020	± 0.1
	-10	14.19	0.018	± 0.1
	0	14.05	0.018	± 0.1
	+10	-13.33	-0.017	± 0.1
	+20	-7.82	-0.010	± 0.1
	+30	13.86	0.018	± 0.1
	+40	13.8	0.018	± 0.1
	+50	14.75	0.019	± 0.1
3.3	20	-12.14	-0.016	± 0.1
4.3		-10.71	-0.014	± 0.1

LTE Band 13 – QPSK 5 MHz BW						
Voltage (VDC)	Temperature (°C)	F _L (MHz)	F _L – Freq Error (MHz)	F _H (MHz)	F _L + Freq Error (MHz)	Compliance
3.7	-30	777.0719	777.0719	786.9318	786.9318	Yes
	+20	777.0968	777.0968	786.9337	786.9337	Yes
	+50	777.0823	777.0823	786.8882	786.8882	Yes
3.3	20	777.0959	777.0959	786.9168	786.9168	Yes
4.3		777.0912	777.0912	786.9496	786.9496	Yes

*Limit according to 3GPP TS 36 010 V14.4.0

The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

LTE Band 66 – QPSK 5 MHz BW-Middle Channel 1745 MHz				
Voltage (VDC)	Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)*
3.7	-30	13.66	0.0078	± 0.1
	-20	15.01	0.0086	± 0.1
	-10	13.92	0.0080	± 0.1
	0	15.66	0.0090	± 0.1
	+10	12.47	0.0071	± 0.1
	+20	10.59	0.0061	± 0.1
	+30	15.86	0.0091	± 0.1
	+40	13.12	0.0075	± 0.1
	+50	12.86	0.0074	± 0.1
3.3	20	10.63	0.0061	± 0.1
4.3		10.84	0.0062	± 0.1

*Limit according to 3GPP TS 36 010 V14.4.0

The frequency stability of the EUT is sufficient to keep it within the authorised frequency ranges at any temperature interval and voltage variations across the measured range.

2.9.9 Sample Test plot

CMW 500 V 3.7.22 - LTE Measurement - V3.7.30 - TX Measurement

Multi Evaluation

PRACH

SRS

FDD Freq: 1732.5 MHz Ref. Level: 40.20 dBm BW: 5.0 MHz CP: Normal Meas Subfr./Slot: 0 / All

TX Measurement

Detected Allocation

NoRB:25OffsetRB:0

	Current	Average	Extreme	StdDev	
EVM RMS [%] I/h	3.88 4.01 3.71 3.86	3.93	4.08	0.17 0.16	
EVM Peak [%] I/h	23.56 28.37 23.14 28.22	24.26	30.64	0.44 0.75	
EVM DMRS [%] I/h	2.35 2.68 2.37 2.58	2.52	2.83	0.05 0.14	
MErr RMS [%] I/h	3.44 3.58 3.29 3.44	3.47	3.63	0.16 0.15	
MErr Peak [%] I/h	-23.51 -28.31 23.08 28.16	-24.26	-30.59	0.45 0.74	
MErr DMRS [%] I/h	1.96 2.16 1.94 2.07	2.10	2.30	0.09 0.17	
PhErr RMS [°] I/h	1.04 1.04 1.00 1.01	1.08	1.08	0.04 0.04	
PhErr Peak [°] I/h	-5.23 5.77 5.26 5.82	6.35	7.23	0.32 0.43	
PhErr DMRS [°] I/h	0.74 0.91 0.78 0.88	0.93	1.00	0.05 0.02	
IQ Offset [dBc]	-56.80	-54.39	-50.27	3.37	
IQ Gain Imbalance [dB]	-0.07	-0.09	-0.11	0.02	
IQ Quadrature Error [°]	0.25	0.11	0.28	0.14	
Freq Error [Hz]	10.36	8.07	15.15	2.95	
Timing Error [Ts]	1.81	2.35	7.32	0.71	
OBW [MHz]	4.43	4.43	4.43	0.00	
	Current	Average	Min	Max	StdDev
TX Power [dBm]	21.43	21.46	21.35	21.54	0.03
Peak Power [dBm]	26.14	25.89	25.69	26.70	0.19

Statistic Count

Out of Tolerance

Detected Modulation

Detected Channel Type

View Filter Throughput

20 / 20

0.00 %

QPSK

PUSCH

100.0 %

PS: Connection Established RRC State: Connected

RF Settings

Trigger

Display

Signaling Parameter

LTE Signaling

Run

Run

Repetition ...

Stop Condition ...

Statistic Count ...

Channel Bandwidth ...

Measurement Subframes ...

Assign Views

Config ...

LTE Band 4_5 MHz Bandwidth_Middle Channel @20°C

CMW 500 V 3.7.22 - LTE Measurement - V3.7.30 - TX Measurement

Multi Evaluation

PRACH

SRS

FDD Freq: 2535.0 MHz Ref. Level: 39.80 dBm BW: 5.0 MHz CP: Normal Meas Subfr./Slot: 0 / All

TX Measurement

Detected Allocation

NoRB:

25

OffsetRB:

0

<

LTE Band 7_5 MHz Bandwidth_Middle Channel @20°C

CMW 500 V 3.7.22 - LTE Measurement - V3.7.30 - TX Measurement										LTE
Multi Evaluation PRACH SRS										Multi Evaluation RUN
FDD Freq: 782.0 MHz Ref. Level: 41.00 dBm BW: 5.0 MHz CP: Normal Meas Subfr/Slot: 0 / All										
TX Measurement										
Detected Allocation NoRB: 25 OffsetRB: 0										
										RF Settings
EVM RMS [%] I/h 3.16 3.36 3.34 3.51 3.55 3.70 0.18 0.16										
EVM Peak [%] I/h 22.12 26.81 21.98 28.00 22.77 31.16 0.29 1.35										
EVM DMRS [%] I/h 2.09 2.31 2.18 2.41 2.30 2.62 0.04 0.12										
MErr RMS [%] I/h 2.81 3.01 2.97 3.15 3.15 3.33 0.16 0.14										Trigger
MErr Peak [%] I/h -22.11 -26.75 21.94 27.96 -22.77 -31.15 0.31 1.36										
MErr DMRS [%] I/h 1.70 1.81 1.81 1.95 1.97 2.14 0.09 0.14										
PhErr RMS [°] I/h 0.84 0.87 0.89 0.90 0.95 0.96 0.05 0.04										
PhErr Peak [°] I/h 5.15 6.07 4.94 5.69 5.92 7.56 0.28 0.62										
PhErr DMRS [°] I/h 0.69 0.82 0.68 0.81 0.79 0.88 0.05 0.02										
IQ Offset [dBc] -51.76 -52.89 -49.96 1.51										Display
IQ Gain Imbalance [dB] -0.10 -0.08 -0.10 0.02										
IQ Quadrature Error [°] -0.14 -0.02 -0.19 0.13										
Freq Error [Hz] 2.17 0.96 -7.82 2.53										
Timing Error [Ts] 7.06 7.13 8.32 0.16										
OBW [MHz] 4.41 4.41 4.41 0.00										
Current Average Min Max StdDev										
TX Power [dBm] 22.59 22.57 22.47 22.65 0.02										Signaling Parameter
Peak Power [dBm] 26.92 26.96 26.80 27.76 0.09										
Statistic Count Out of Tolerance Detected Modulation Detected Channel Type View Filter Throughput										
20 / 20 0.00 % QPSK PUSCH 100.0 %										
PS: Connection Established RRC State Connected										LTE Signaling Run
Repetition ...	Stop Condition ...	Statistic Count ...	Channel Bandwidth ...	Measurement Subframes ...	Assign Views	Config ...				

LTE Band 13_5 MHz Bandwidth_Middle Channel @20°C

CMW 500 V 3.7.22 - LTE Measurement - V3.7.30 - TX Measurement

Multi EvaluationPRACHSRS

FDD Freq: 1745.0 MHz Ref. Level: 40.50 dBm BW: 5.0 MHz CP: Normal Meas Subfr/Slot: 0 / All

TX Measurement

Detected Allocation	NoRB:	25		OffsetRB:	0				
		Current		Average		Extreme		StdDev	
EVM RMS [%] I/h		3.60	3.75	3.45	3.61	3.65	3.81	0.17	0.15
EVM Peak [%] I/h		21.83	28.53	21.72	28.07	22.99	30.37	0.63	0.62
EVM DMRS [%] I/h		2.39	2.71	2.34	2.55	2.50	2.80	0.04	0.14
MErr RMS [%] I/h		3.18	3.33	3.03	3.20	3.23	3.38	0.16	0.15
MErr Peak [%] I/h		-21.79	-28.52	21.52	28.05	-22.95	-30.30	0.64	0.62
MErr DMRS [%] I/h		2.04	2.23	1.94	2.05	2.13	2.31	0.07	0.14
PhErr RMS [°] I/h		0.98	1.00	0.95	0.97	1.02	1.03	0.03	0.03
PhErr Peak [°] I/h		5.20	5.89	5.45	6.20	7.44	7.64	0.63	0.55
PhErr DMRS [°] I/h		0.71	0.88	0.74	0.86	0.91	0.97	0.05	0.03
IQ Offset [dBc]		-53.76		-52.06		-49.27		1.44	
IQ Gain Imbalance [dB]		-0.08		-0.10		-0.13		0.02	
IQ Quadrature Error [°]		0.19		0.05		0.22		0.12	
Freq Error [Hz]		4.86		3.65		10.59		1.87	
Timing Error [Ts]		0.10		-0.01		5.11		0.17	
OBW [MHz]		4.41		4.42		4.43		0.01	
		Current		Average		Min		Max	
TX Power [dBm]		21.48		21.48		21.30		21.67	
Peak Power [dBm]		26.81		26.62		26.74		26.88	

Statistic Count

Out of Tolerance

Detected Modulation

Detected Channel Type

View Filter Throughput

20 / 20

0.00 %

QPSK

PUSCH

100.0 %

PS: Connection Established

RRC State

Connected

Repetition ...

Stop Condition ...

Statistic Count ...

Channel Bandwidth ...

Measurement Subframes ...

Assign Views

Config ...

LTE

Multi Evaluation

RUN

RF Settings

Trigger

Display

Signaling Parameter

LTE Signaling

Run

LTE Band 66_5 MHz Bandwidth_Middle Channel @20°C



SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

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

ID Number (SDGE/SDRB)	Test Equipment	Type	Serial Number	Manufacturer	Cal Date	Cal Due Date
Antenna Conducted Port Setup						
7662	P-Series Power Meter	N1911A	MY45100951	Agilent	06/15/18	06/15/19
7661	50MHz-18GHz Wideband Power Sensor	N1921A	MY45241383	Agilent	06/15/18	06/15/19
7608	Vector Signal Generator	SMBV100A	259021	Rhode & Schwarz	09/19/17	09/19/19
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	12/14/17	12/14/18
-	Wideband Radio Communication Tester	CMW 500	158164	Rhode & Schwarz	04/04/18	04/04/19
8825	20dB Attenuator	46-20-34	BK5773	Weinschel Corp.	Verified by 7608 and 7582	
-	10dB Attenuator	VAT-10W2+2W	N/A	MCL	Verified by 7608 and 7582	
Radiated Test Setup						
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	12/14/17	12/14/18
7608	Vector Signal Generator	SMBV100A	259021	Rhode & Schwarz	09/19/17	09/19/19
1002	Bilog Antenna	3142C	00058717	EMCO	11/20/17	11/20/18
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	06/16/18	06/16/20
1193	Pre-amplifier	PAM-0202	185	A.H. Systems, Inc.	04/11/18	04/11/19
8921	High-frequency cable	SucoFlex 100 SX	N/A	Suhner	Verified by 7608 and 7582	
8923	High-frequency cable	Micropore 19057793	N/A	United Microwave Products	Verified by 7608 and 7582	
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	10/15/18	10/15/19
8628	Pre-amplifier	QLI-01182835-JO	8986002	Quinstar	02/06/18	02/06/19
-	UXM Wireless Test Set	E7515A	MY56180375	Keysight	For Signalling only	
-	Wideband Radio Communication Tester	CMW 500	158164	Rhode & Schwarz	For Signalling only	
Miscellaneous						
6708	Multimeter	34401A	US36086974	Hewlett Packard	07/18/18	07/18/19
7579	Temperature Chamber	115	151617	TestQuity	08/24/18	08/24/19
11312	Mini Environmental Quality Meter	850027	CF099-56010-340	Sper Scientific	02/26/18	02/26/19
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	

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	Preamplifier	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.52	1.44	2.07
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					1.68
Coverage Factor (k):					2
Expanded Uncertainty:					3.36

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	Preamplifier	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.37	0.21	0.05
5	Site	Rectangular	3.00	1.22	1.50
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					1.49
Coverage Factor (k):					2
Expanded Uncertainty:					2.99

3.2.3 Conducted Antenna Port Measurement

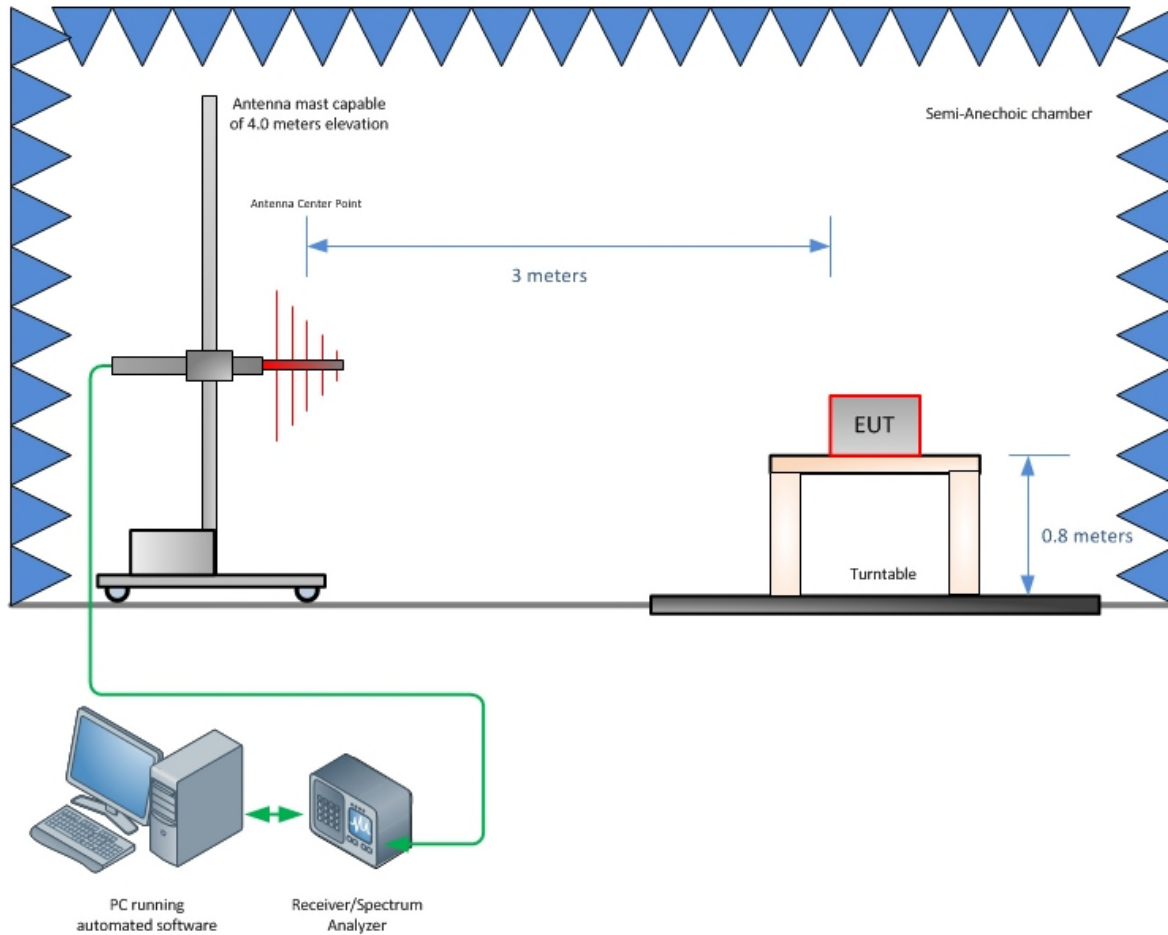
	Contribution	Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.34	0.20	0.04
2	Cables	Rectangular	0.30	0.17	0.03
3	EUT Setup	Rectangular	0.50	0.29	0.08
Combined Uncertainty (u_c):					0.39
Coverage Factor (k):					1.96
Expanded Uncertainty:					0.76



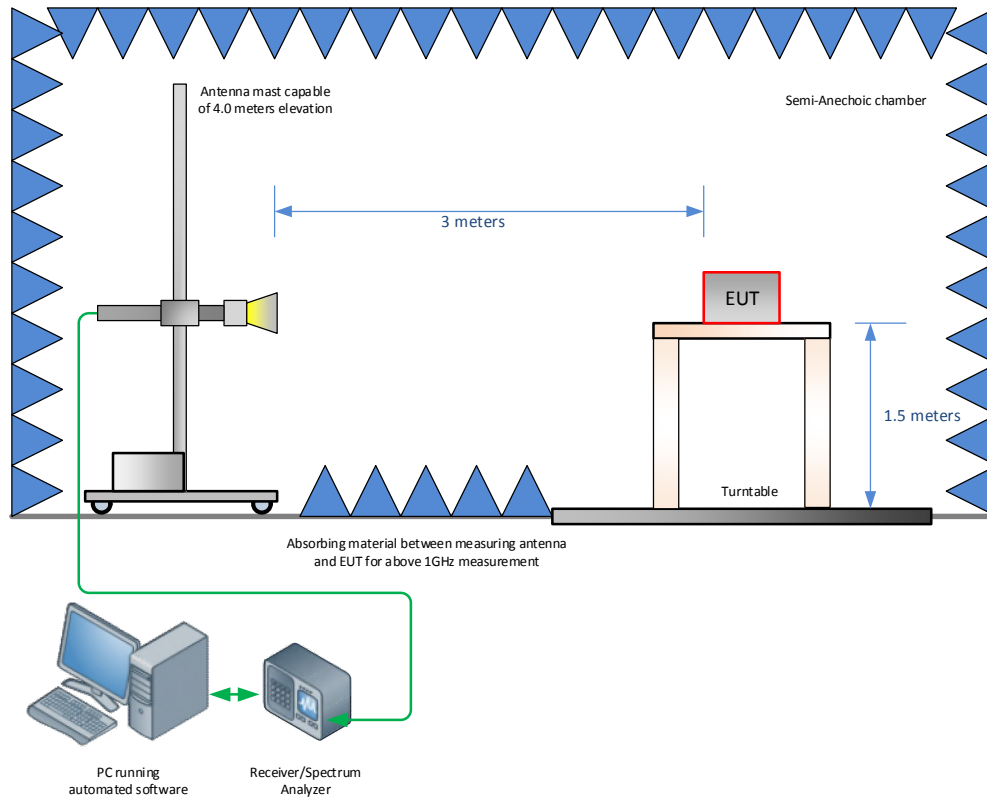
SECTION 4

DIAGRAM OF TEST SETUP

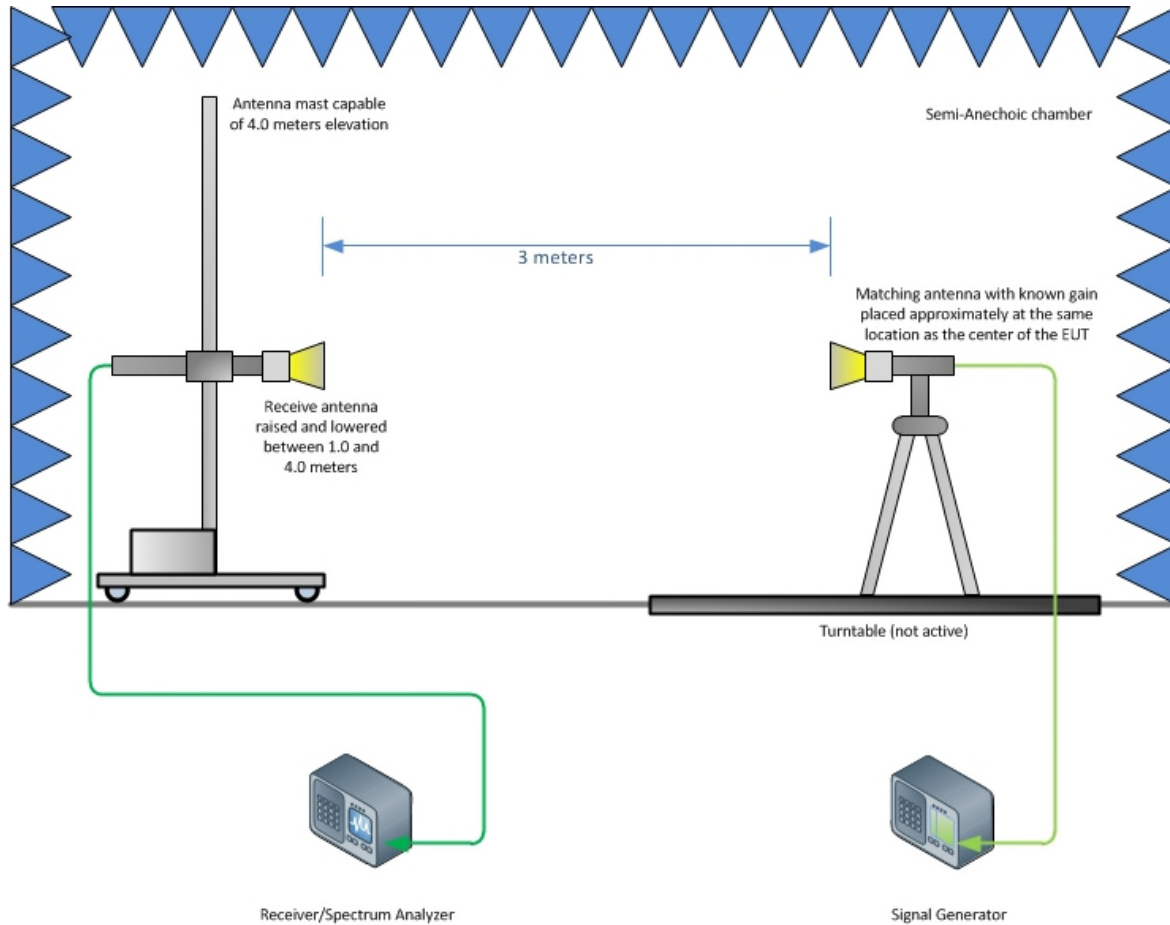
4.1 TEST SETUP DIAGRAM



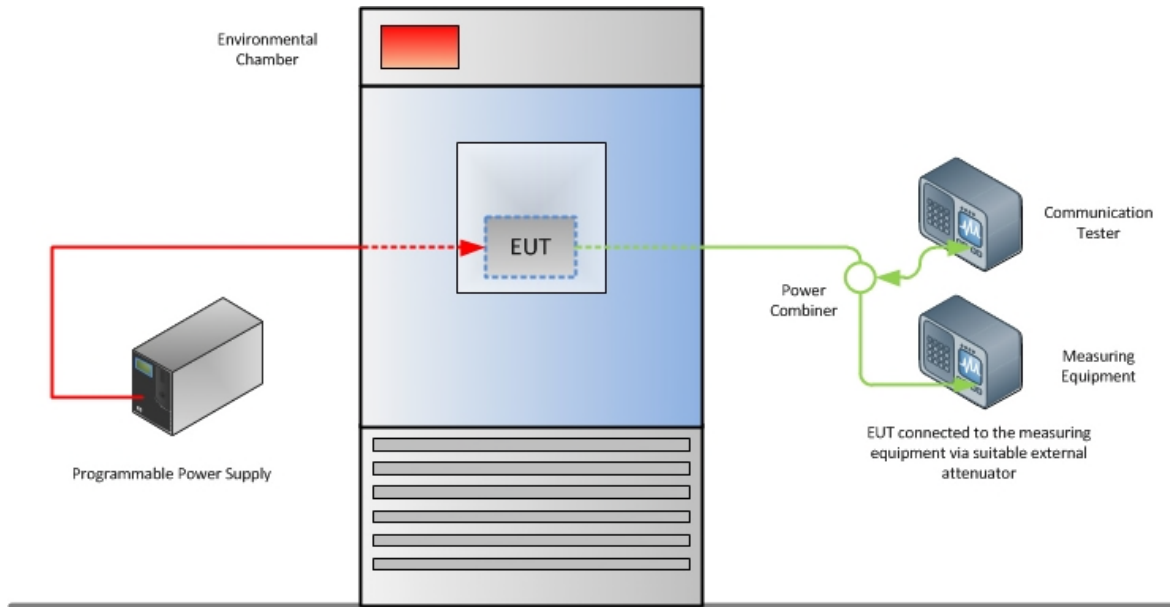
Radiated Emission Test Setup (Below 1GHz)



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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