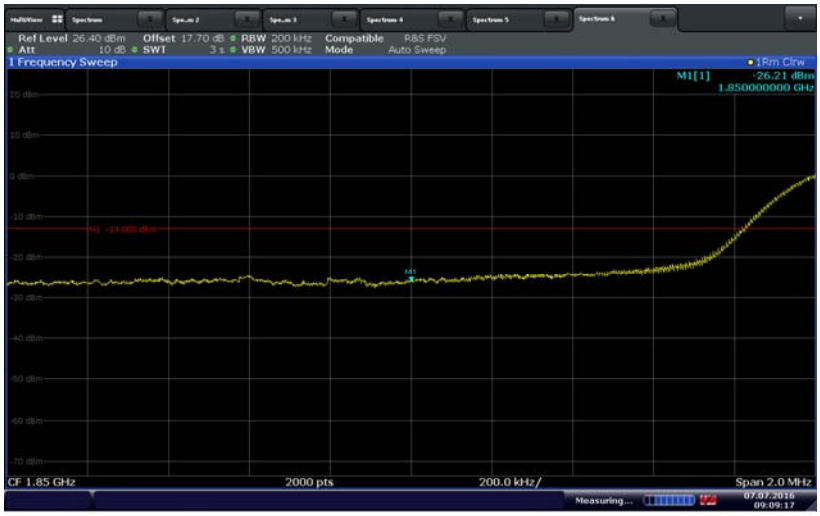
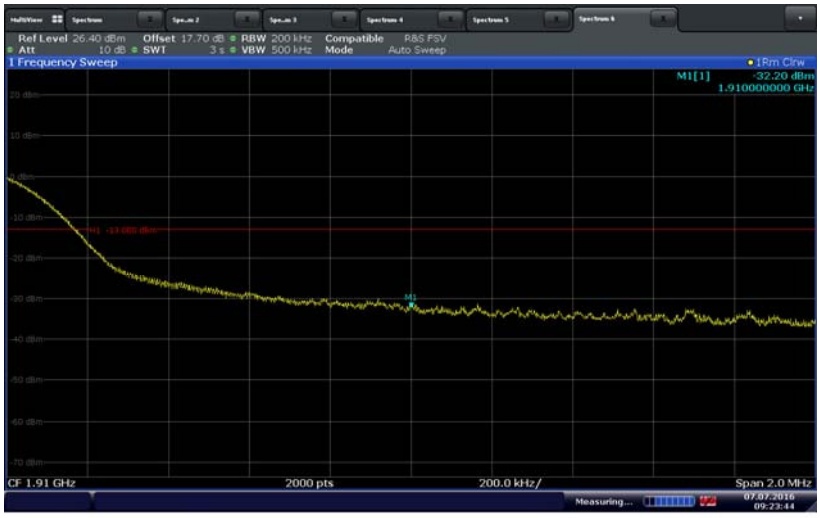
LTE Band 2 (20 MHz BW)/QPSK/Low Channel (18700) Band Edge @ 1850 MHz


LTE Band 2 (20 MHz BW)/QPSK/High Channel (19100) Band Edge @ 1910 MHz


2.7 CONDUCTED SPURIOUS EMISSIONS

2.7.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 22, Clause 22.917(a)
FCC 47 CFR Part 24, Clause 24.238(a)
RSS-132, Clause 5.5
RSS-133, Clause 6.5

2.7.2 Standard Applicable

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

2.7.3 Equipment Under Test and Modification State

Serial No: SZ17061900005 / Test Configuration A

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

July 06 to 08, 2016 / XYZ
July 11, 15 and 18, 2016 / FC and AC

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

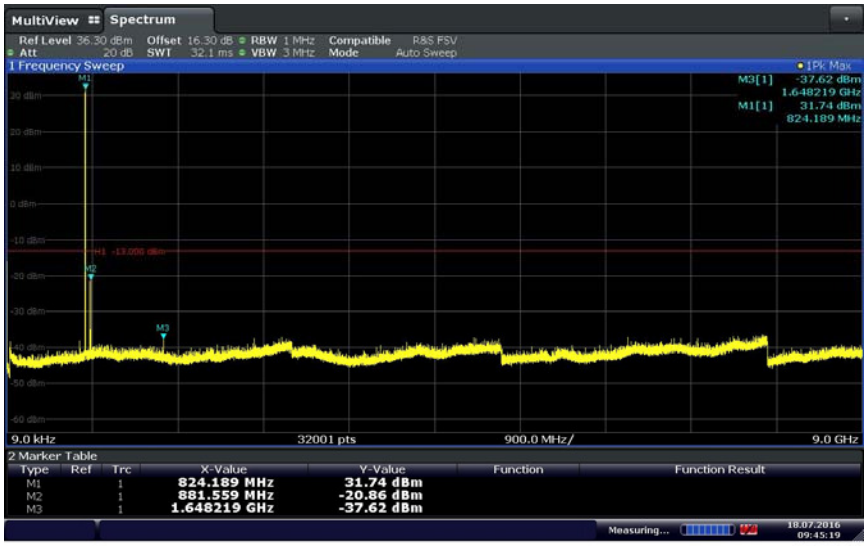
Ambient Temperature	24.3 - 25.7°C
Relative Humidity	37.8 - 41.5%
ATM Pressure	99.2 - 99.8 kPa

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 level offset.
- For RBW was set to 1 MHz.
- Only worst case configuration for all technologies presented in this test report.

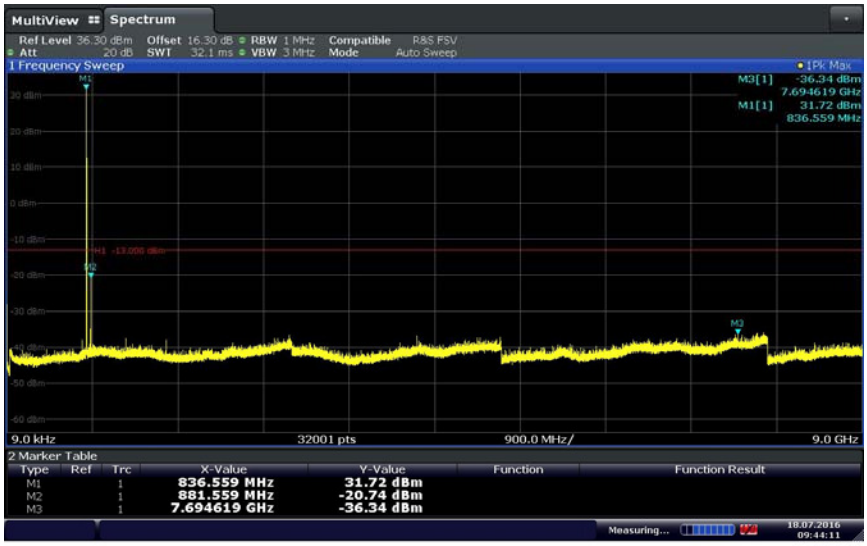
2.7.8 Test Results

GPRS850-BC0/Low Channel (128)/ @ 824.2 MHz

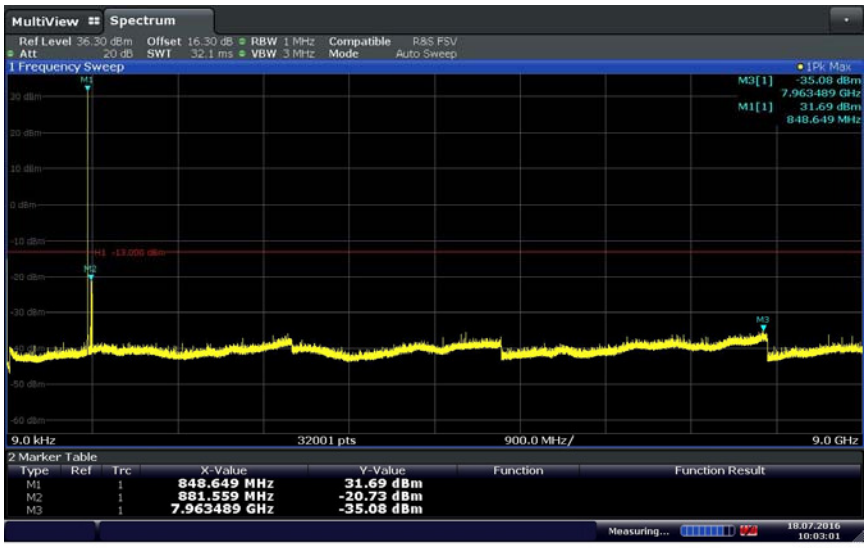


Date: 18.JUL.2016 09:45:19

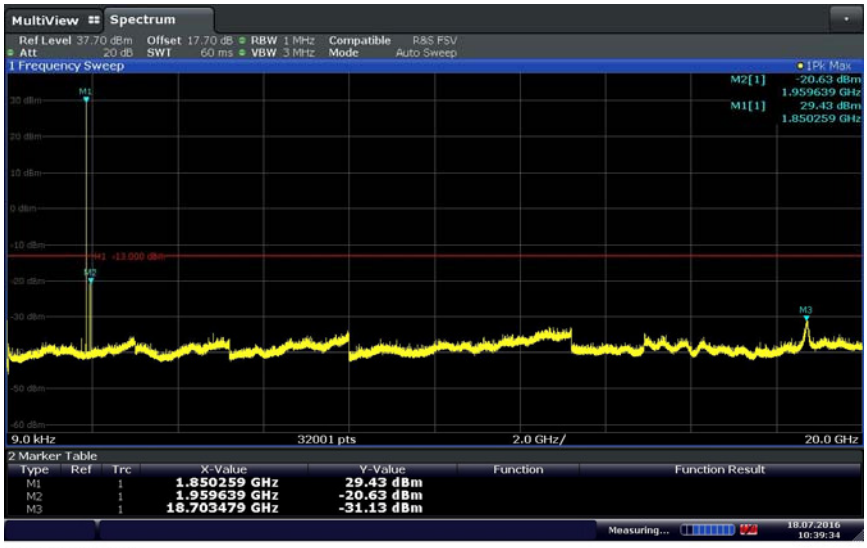
GPRS850-BC0/Mid Channel (190)/ @ 836.6 MHz



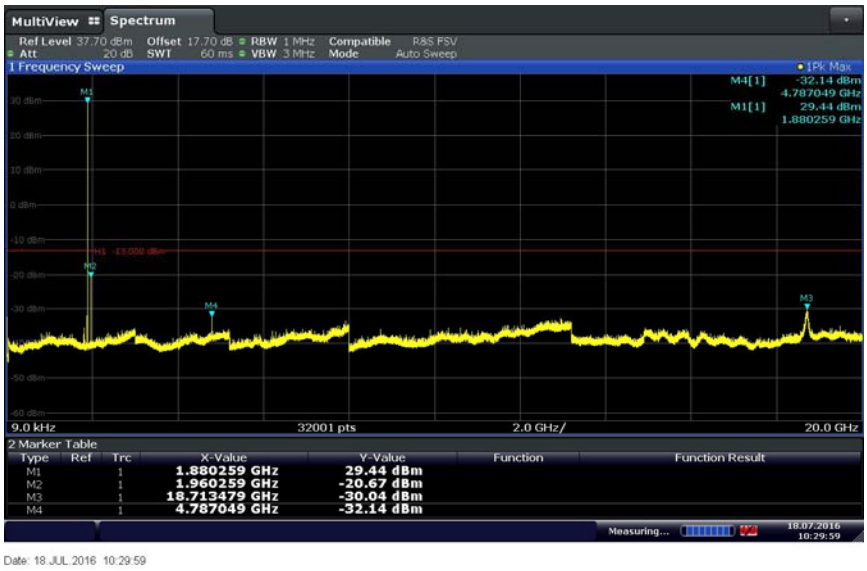
Date: 18.JUL.2016 09:44:11

GPRS850-BC0/High Channel (251)/ @ 848.8 MHz


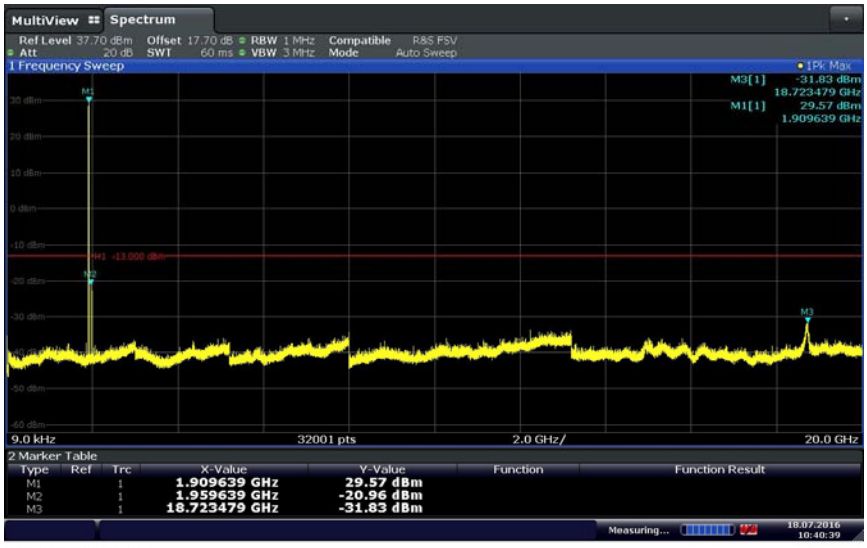
Date: 18.JUL.2016 10:03:01

GPRS1900-BC1/Low Channel (512)/ @ 1850.2 MHz


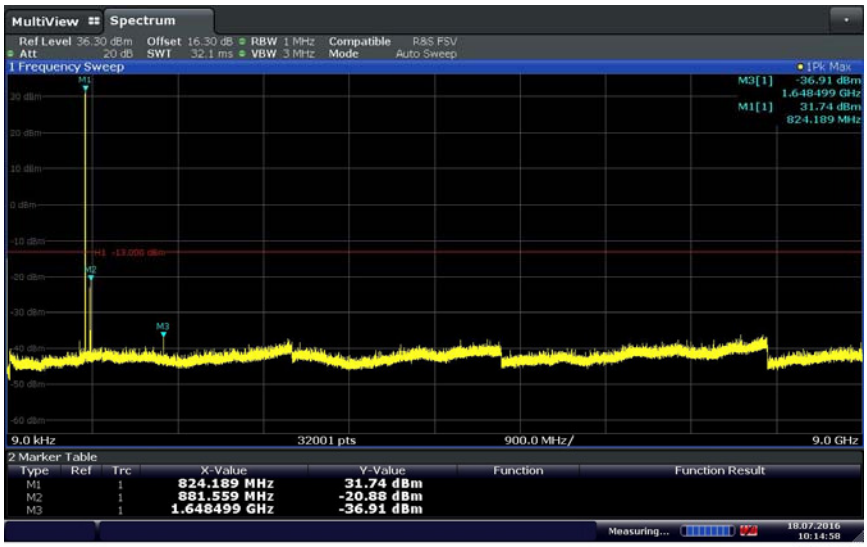
Date: 18.JUL.2016 10:39:34

GPRS1900-BC1/Mid Channel (661)/ @ 1880.0 MHz


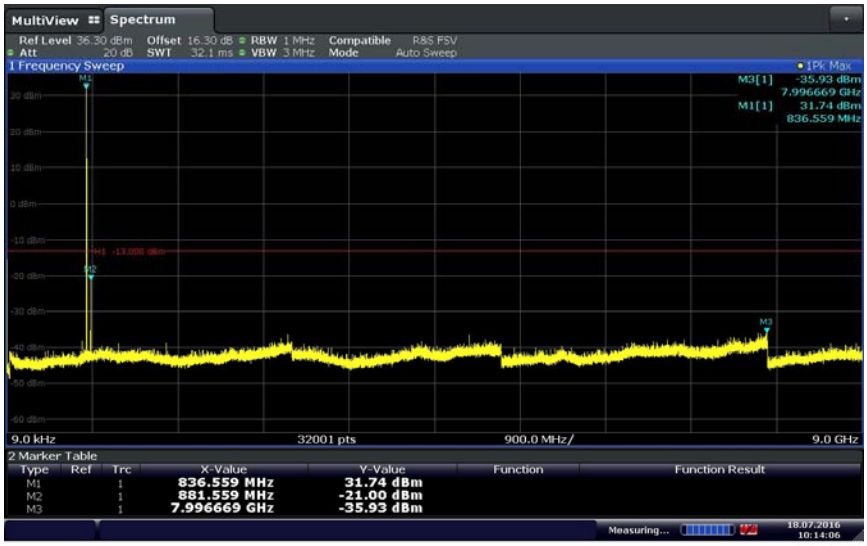
Date: 18.JUL.2016 10:29:59

GPRS1900-BC1/High Channel (810)/ @ 1909.8 MHz


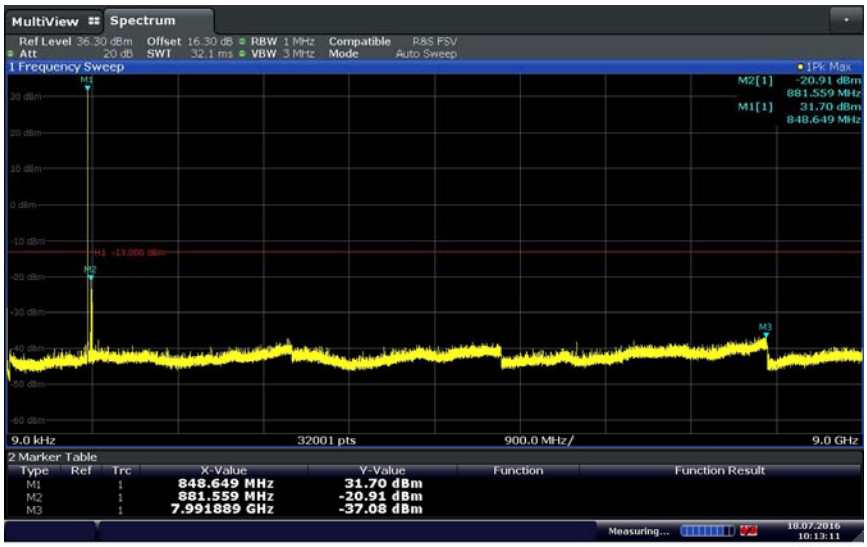
Date: 18.JUL.2016 10:40:39

EGPRS850-BC0/Low Channel (128)/ @ 824.2 MHz


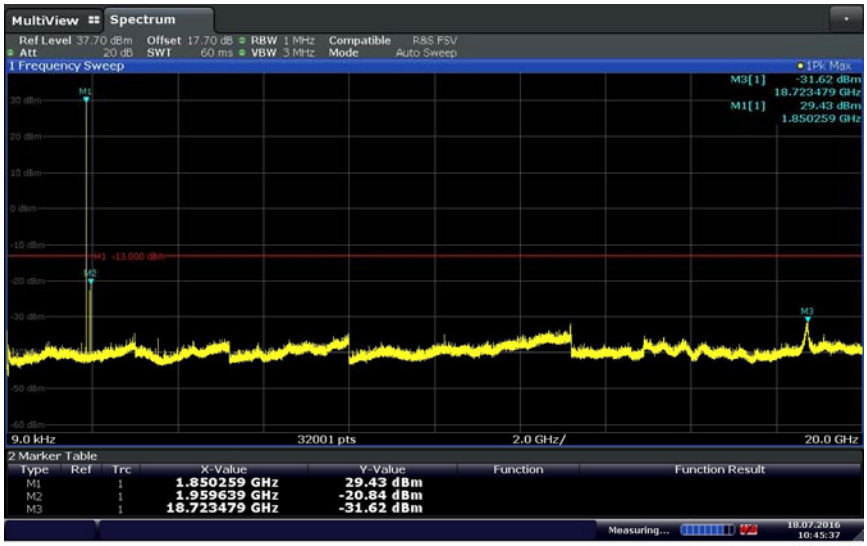
Date: 18.JUL.2016 10:14:58

EGPRS850-BC0/Mid Channel (190)/ @ 836.6 MHz


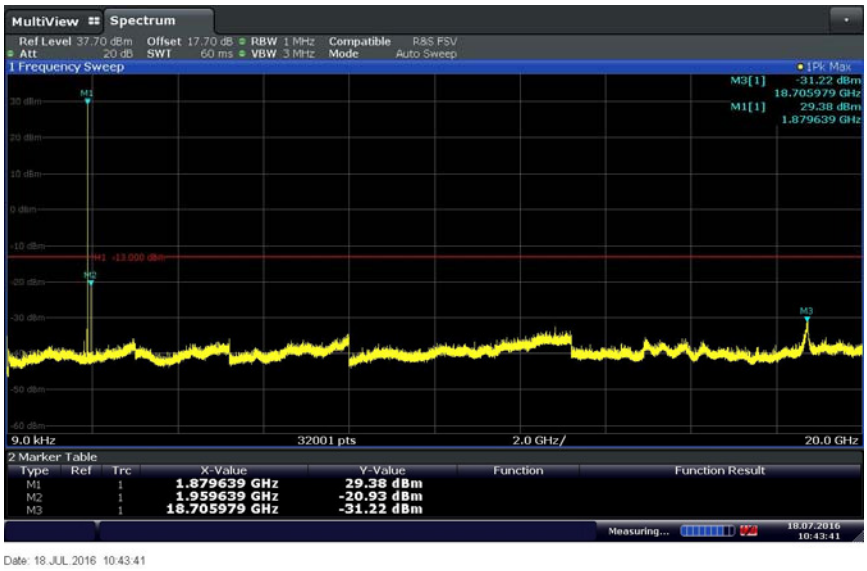
Date: 18.JUL.2016 10:14:07

EGPRS850-BC0/High Channel (251)/ @ 848.8 MHz


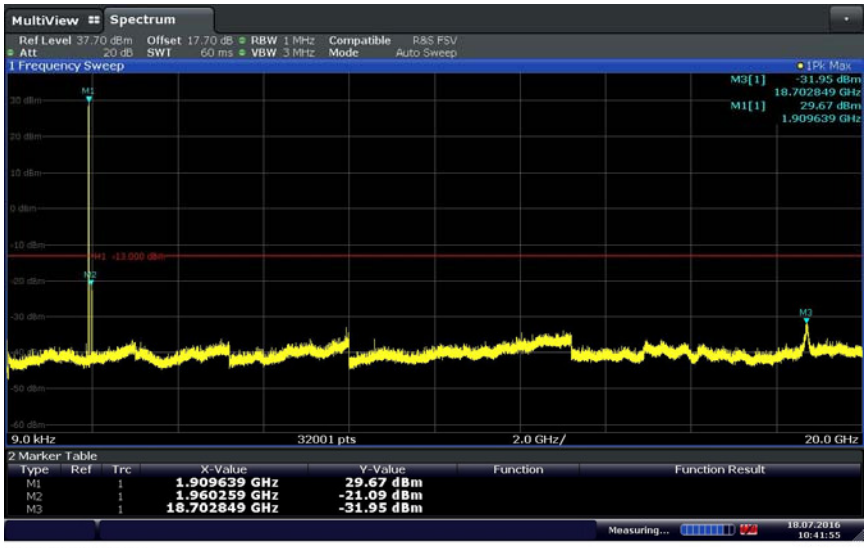
Date: 18.JUL.2016 10:13:11

EGPRS1900-BC1/Low Channel (512)/ @ 1850.2 MHz


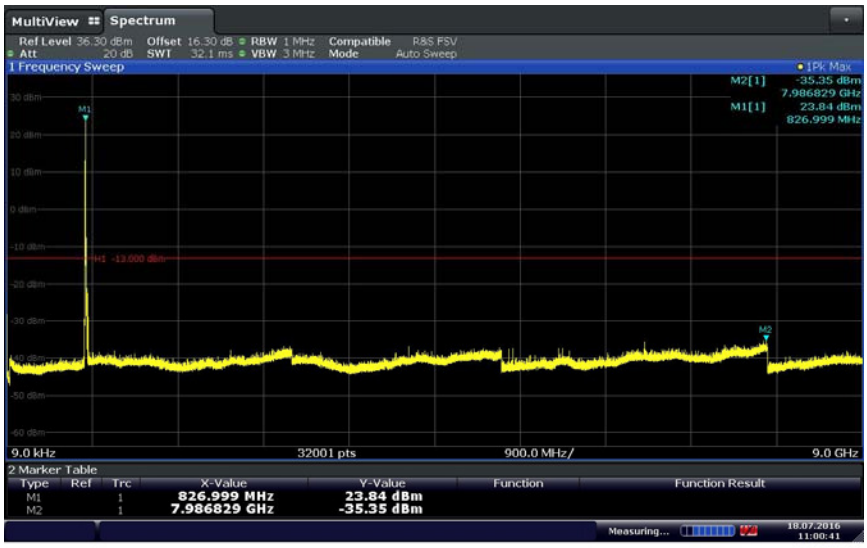
Date: 18.JUL.2016 10:45:37

EGPRS1900-BC1/Mid Channel (661)/ @ 1880.0 MHz


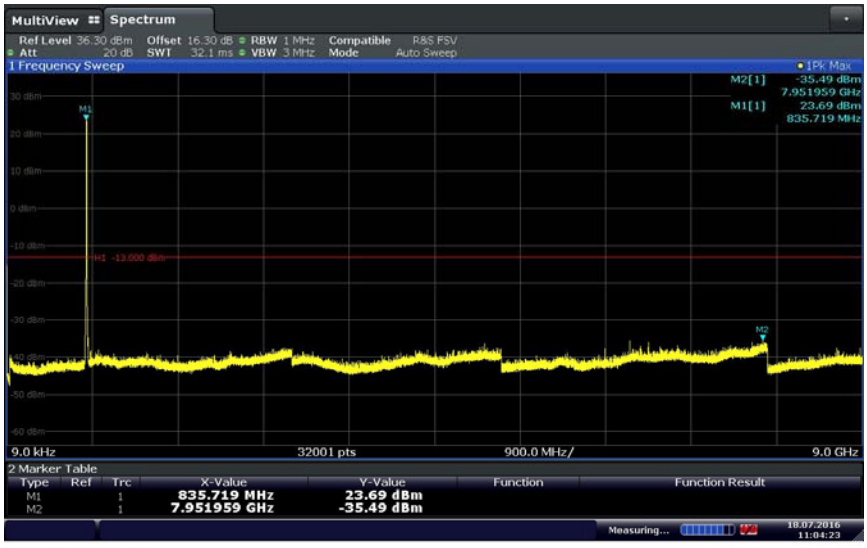
Date: 18.JUL.2016 10:43:41

EGPRS1900-BC1/High Channel (810)/ @ 1909.8 MHz


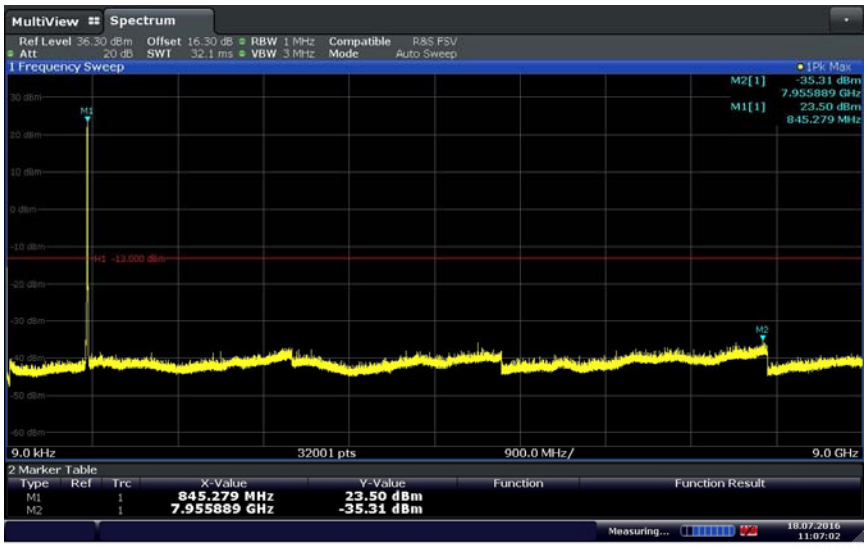
Date: 18.JUL.2016 10:41:55

WCDMA – Band 5/Low Channel (4132) @ 826.4 MHz


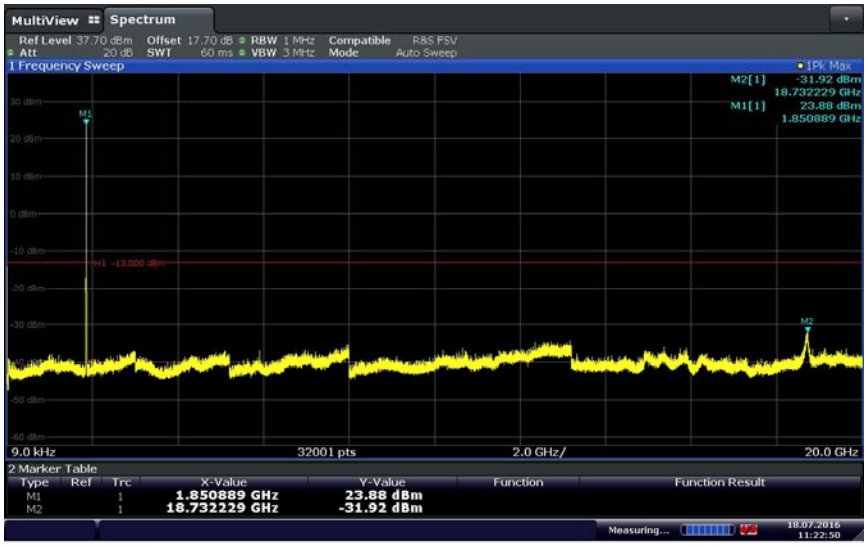
Date: 18.JUL.2016 11:00:41

WCDMA – Band 5/Mid Channel (4183) @ 836.6 MHz


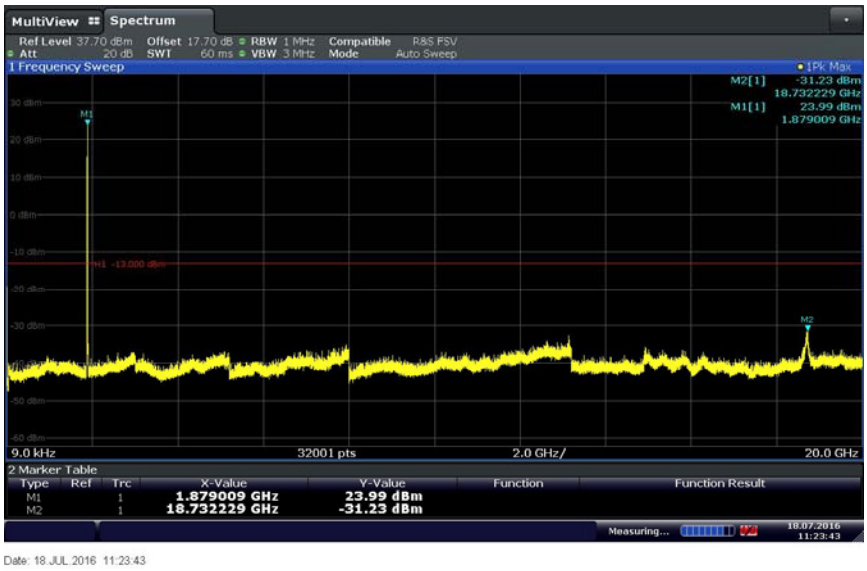
Date: 18.JUL.2016 11:04:23

WCDMA – Band 5/High Channel (4233) @ 846.6 MHz


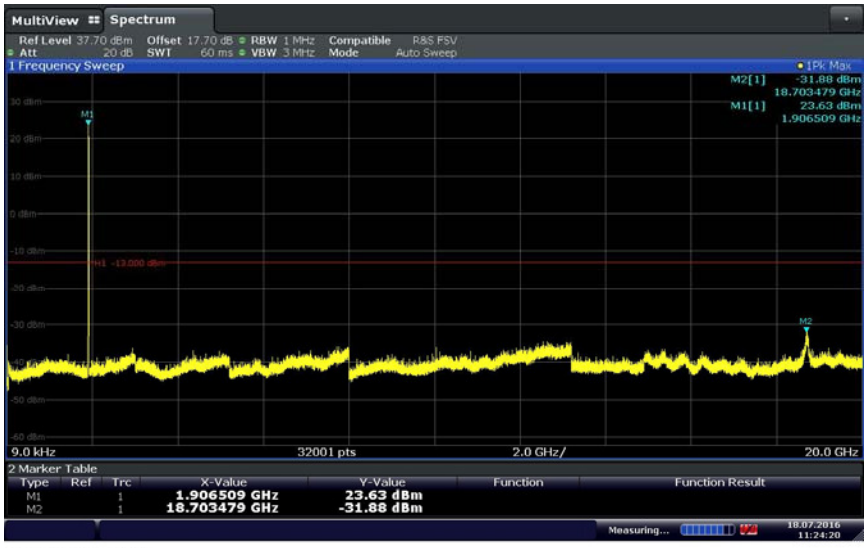
Date: 18.JUL.2016 11:07:02

WCDMA – Band 2/Low Channel (9262) @ 1852.4 MHz


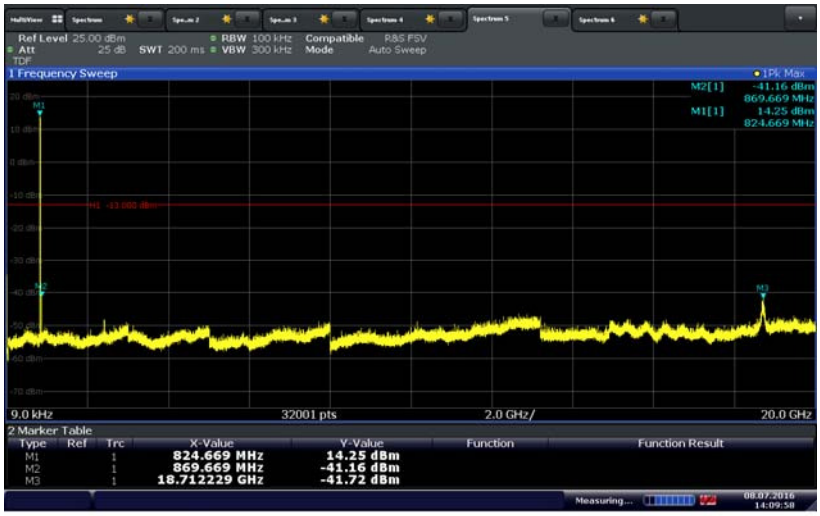
Date: 18.JUL.2016 11:22:50

WCDMA – Band 2/Mid Channel (9400) @ 1880.0 MHz


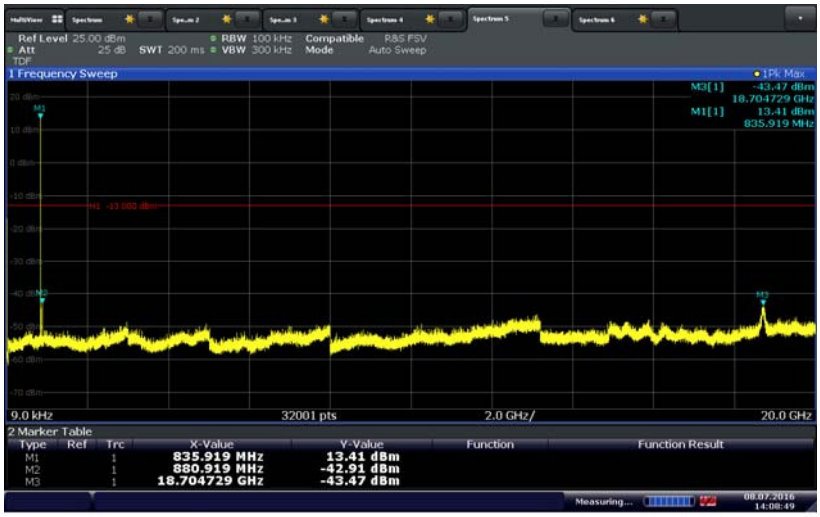
Date: 18.JUL.2016 11:23:43

WCDMA – Band 2/High Channel (9538) @ 1907.6 MHz


Date: 18.JUL.2016 11:24:20

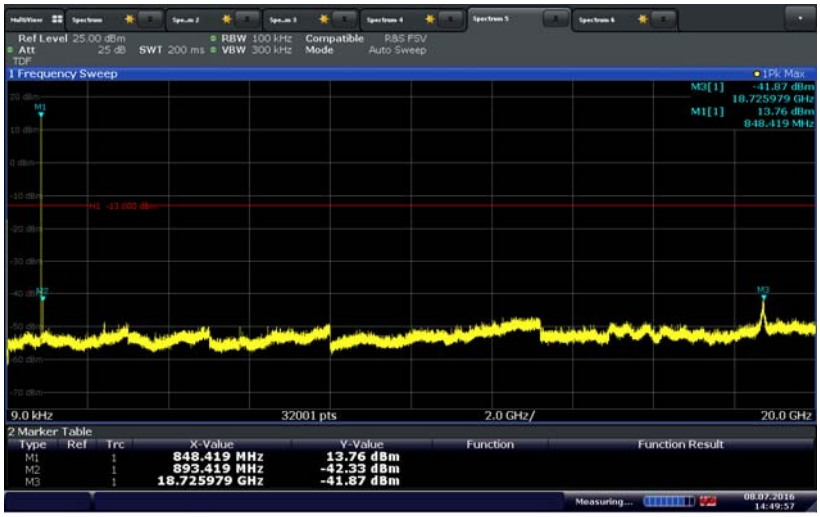
LTE Band 5 (1.4 MHz BW)/QPSK/Low Channel (20407) @ 824.7 MHz


Date: 8.JUL.2016 14:09:59

LTE Band 5 (1.4 MHz BW)/QPSK/Mid Channel (20525) @ 836.5 MHz


Date: 8.JUL.2016 14:08:49

LTE Band 5 (1.4 MHz BW)/QPSK/High Channel (20643) @ 848.3 MHz



Date: 8.JUL.2016 14:49:58

LTE Band 2 (1.4 MHz BW)/QPSK/Low Channel (18607) @ 1850.7 MHz

Date: 7.JUL.2016 11:17:37

LTE Band 2 (1.4 MHz BW)/QPSK/Mid Channel (18900) @ 1880.0 MHz


Date: 7.JUL.2016 11:07:00

LTE Band 2 (1.4 MHz BW)/QPSK/High Channel (19193) @ 1909.3 MHz


Date: 7.JUL.2016 11:19:57

2.8 FIELD STRENGTH OF SPURIOUS RADIATION

2.8.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1053
FCC 47 CFR Part 22, Clause 22.917(a)
FCC 47 CFR Part 24, Clause 24.238(a)
RSS-132, Clause 5.5
RSS-133, Clause 6.5

2.8.2 Standard Applicable

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

2.8.3 Equipment Under Test and Modification State

Serial No: SZ17061900005 / Test Configuration B

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

July 13 and 23, 2016 / IR and AC

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	23.8 - 24.6°C
Relative Humidity	45.2 - 47.0%
ATM Pressure	99.5 - 99.9 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.
- 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. See Section 2.8.8 for sample computation.

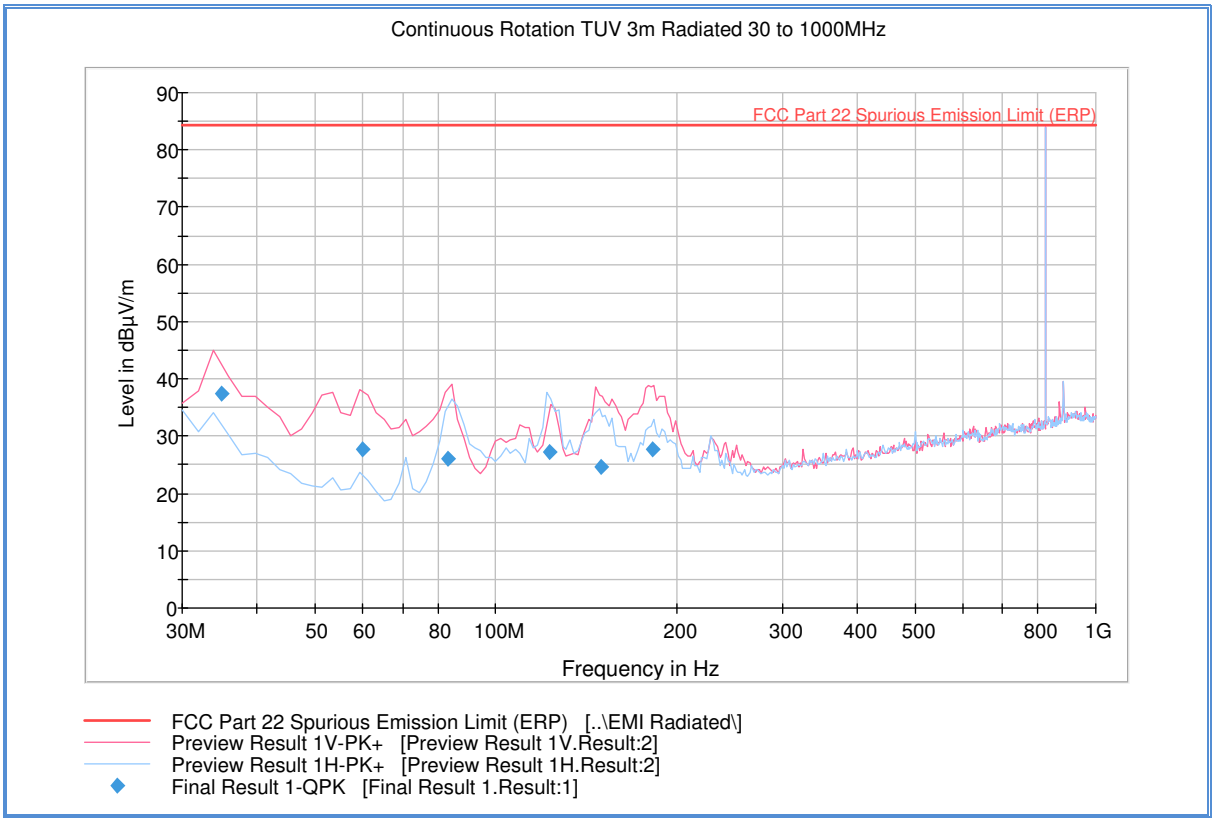
2.8.8 Sample Computation (Radiated Emission)

Measuring equipment raw measurement (dBµV) @ 2400 MHz			53.9
Correction Factor (dB)	Asset# 1153 (cable)	3.4	-0.4
	Asset# 8628(preamplifier)	-36.5	
	Asset#7575 (antenna)	32.7	
Reported Max Peak Final Measurement (dBµV/m) @ 2400 MHz			**53.5**

2.8.9 Test Results

Compliant. See attached plots.

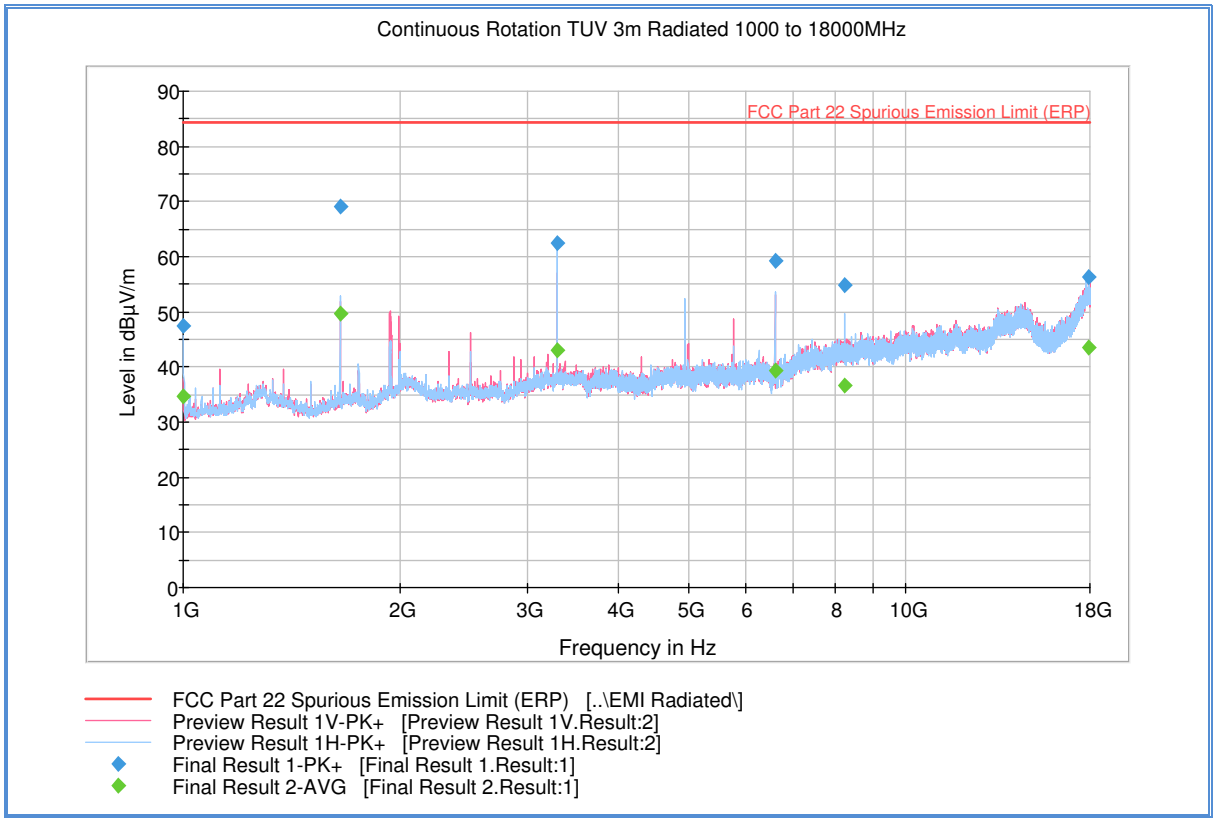
2.8.10 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_GPRS850-BC0_Low Channel 128



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)
34.967776	37.5	1000.0	120.000	109.0	V	29.0	-8.5	46.9	84.4
60.038317	27.7	1000.0	120.000	146.0	V	288.0	-16.2	56.7	84.4
83.308858	26.0	1000.0	120.000	105.0	V	307.0	-16.2	58.3	84.4
122.906613	27.1	1000.0	120.000	360.0	H	54.0	-15.4	57.2	84.4
149.833267	24.7	1000.0	120.000	100.0	V	139.0	-13.3	59.7	84.4
182.767134	27.8	1000.0	120.000	100.0	V	175.0	-12.0	56.6	84.4

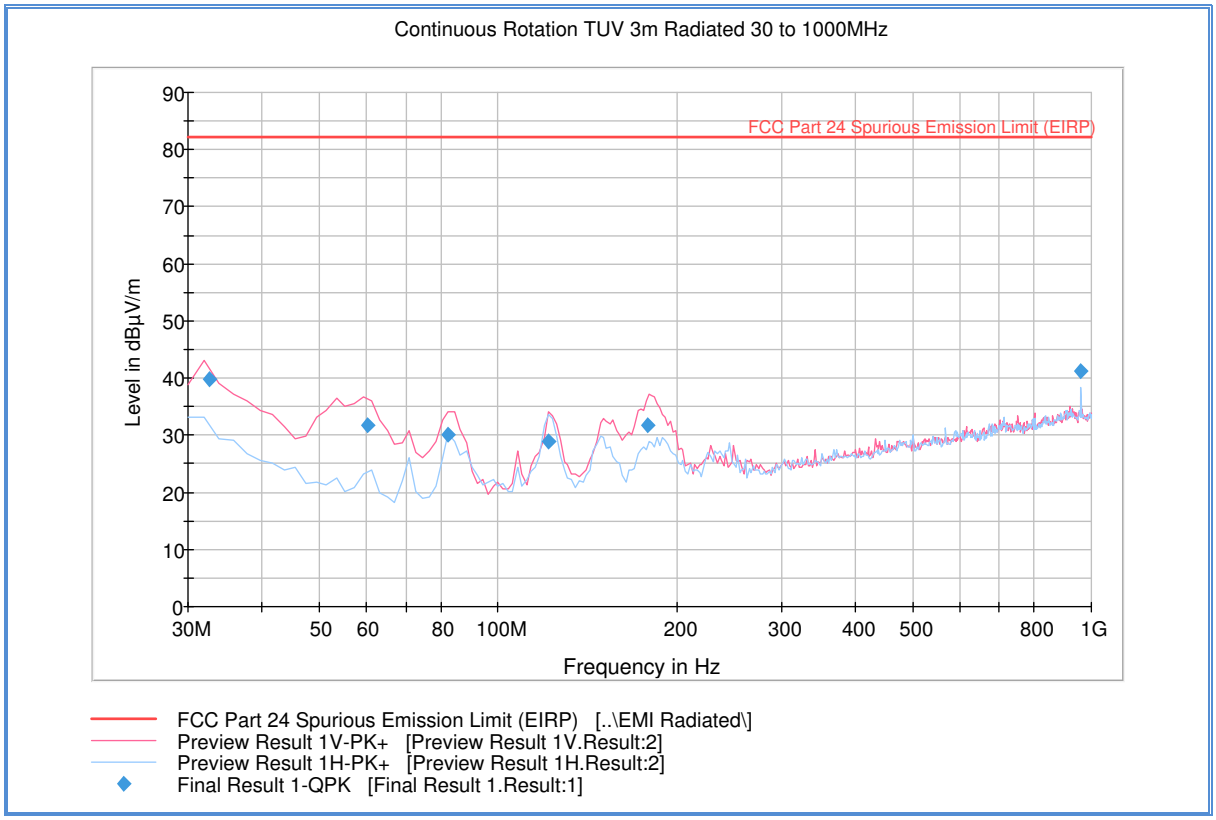
2.8.11 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_GPRS850-BC0_Low Channel 128



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	47.5	1000.0	1000.000	102.7	H	121.0	-11.2	36.9	84.4
1648.466667	69.0	1000.0	1000.000	112.7	H	181.0	-8.0	15.3	84.4
3296.900000	62.5	1000.0	1000.000	103.7	H	140.0	-1.1	21.9	84.4
6593.366667	59.3	1000.0	1000.000	141.7	H	119.0	4.5	25.1	84.4
8242.200000	54.8	1000.0	1000.000	149.6	H	124.0	8.8	29.6	84.4
17931.566667	56.2	1000.0	1000.000	394.0	V	294.0	24.1	28.1	84.4

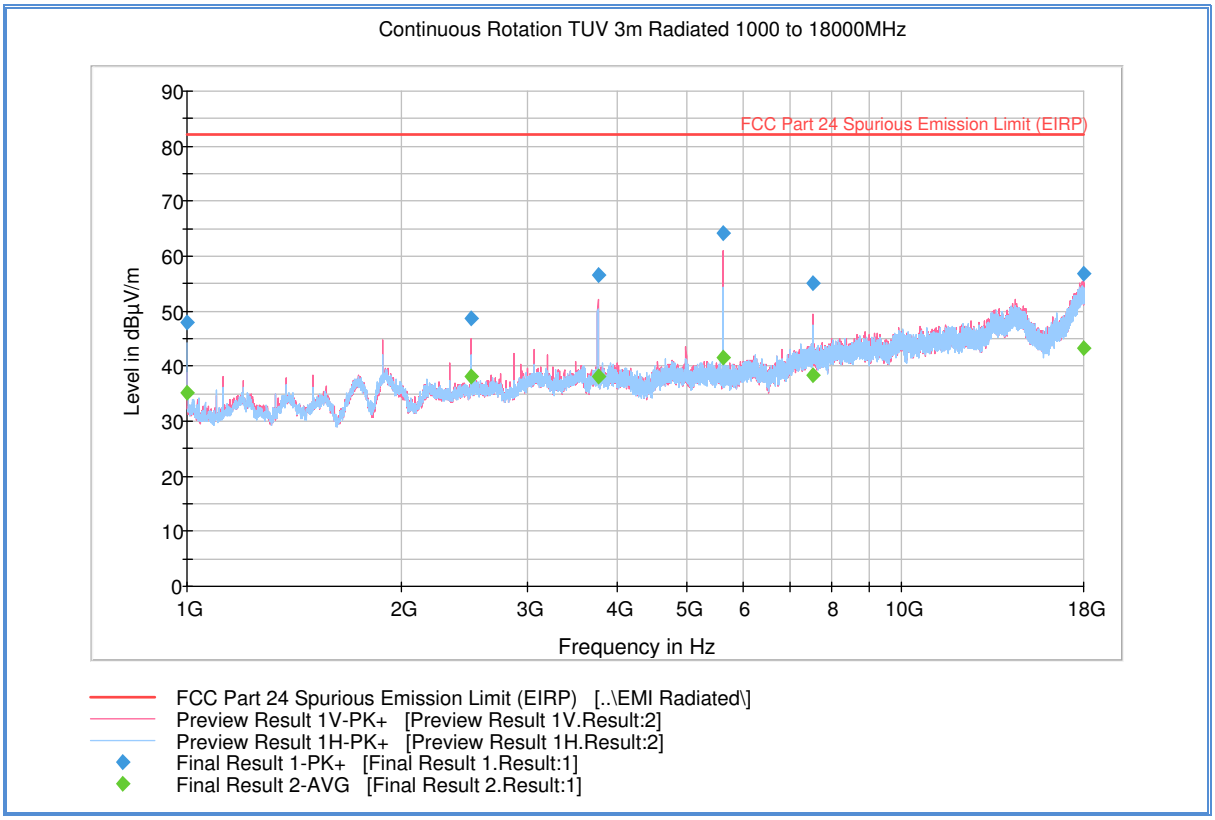
2.8.12 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_GPRS1900-BC1_Mid Channel 661



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)
32.600000	39.8	1000.0	120.000	100.0	V	2.0	-7.3	42.4	82.2
60.158317	31.7	1000.0	120.000	100.0	V	191.0	-16.2	50.5	82.2
82.428858	30.2	1000.0	120.000	100.0	V	265.0	-16.3	52.1	82.2
121.442725	28.9	1000.0	120.000	150.0	V	103.0	-15.4	53.3	82.2
178.823246	31.6	1000.0	120.000	114.0	V	198.0	-12.5	50.6	82.2
960.082244	41.2	1000.0	120.000	115.0	H	111.0	6.2	41.0	82.2

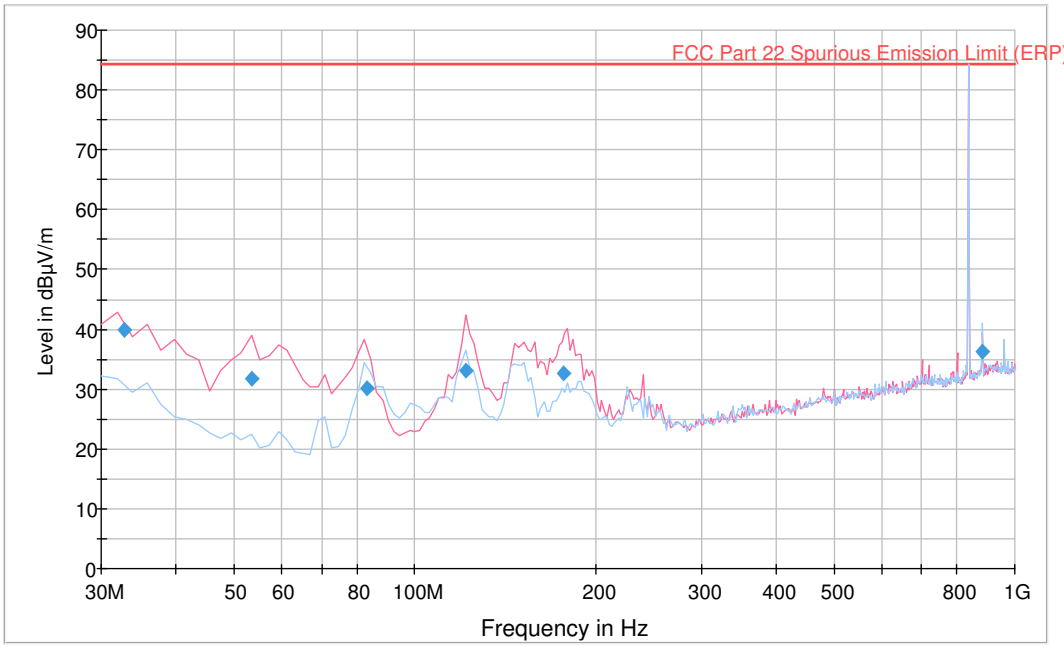
2.8.13 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_GPRS1900-BC1_Mid Channel 661



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	48.1	1000.0	1000.000	102.7	H	142.0	-11.2	34.2	82.2
2500.200000	48.6	1000.0	1000.000	103.7	V	20.0	-4.9	33.6	82.2
3760.666667	56.6	1000.0	1000.000	159.6	V	338.0	0.6	25.6	82.2
5640.666667	64.2	1000.0	1000.000	302.2	V	196.0	3.4	18.0	82.2
7519.866667	55.0	1000.0	1000.000	147.7	V	326.0	8.1	27.2	82.2
17975.433333	56.8	1000.0	1000.000	186.5	V	72.0	24.2	25.5	82.2

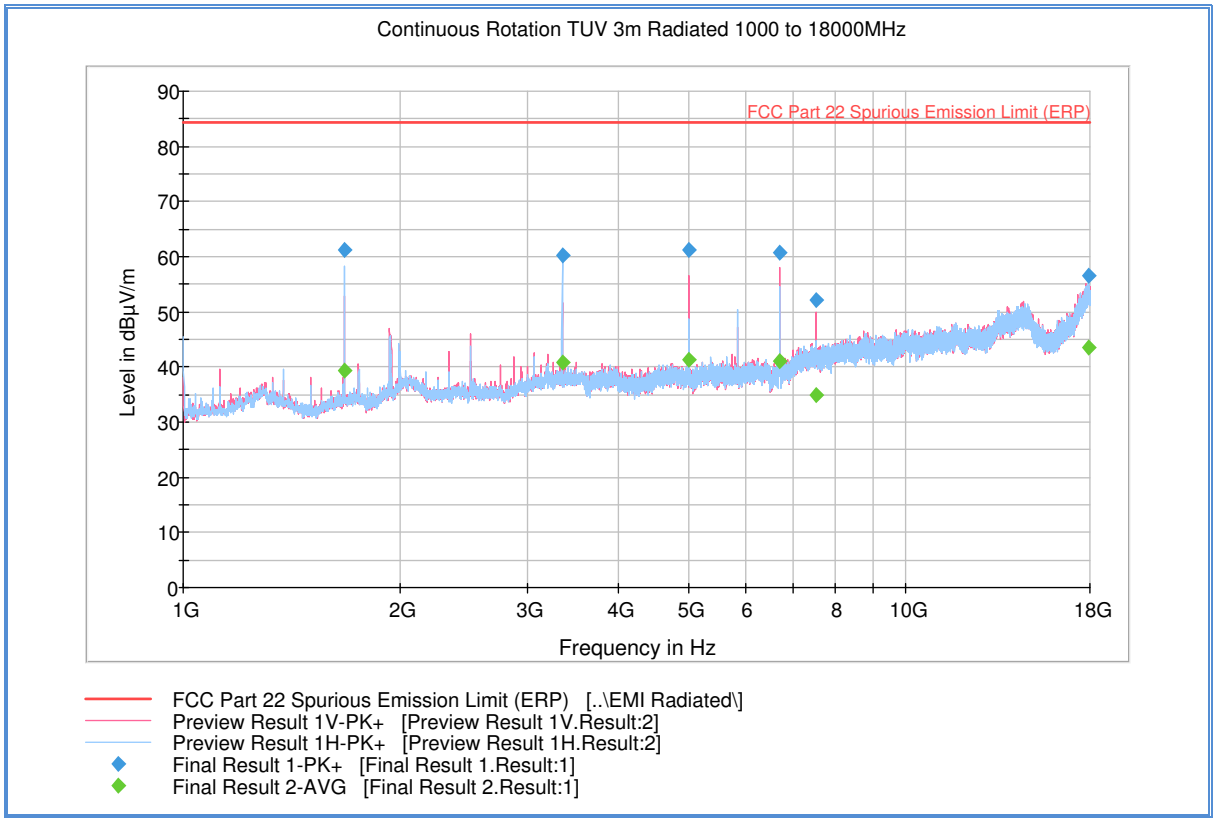
2.8.14 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_EGPRS850-BC0_Mid Channel 190



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)
32.800000	40.0	1000.0	120.000	100.0	V	198.0	-7.4	44.4	84.4
53.366653	31.6	1000.0	120.000	105.0	V	283.0	-15.1	52.7	84.4
83.004970	30.2	1000.0	120.000	109.0	V	282.0	-16.2	54.1	84.4
121.482725	33.2	1000.0	120.000	116.0	V	316.0	-15.4	51.2	84.4
177.159359	32.7	1000.0	120.000	100.0	V	223.0	-12.6	51.7	84.4
883.366783	36.3	1000.0	120.000	100.0	V	200.0	5.5	48.1	84.4

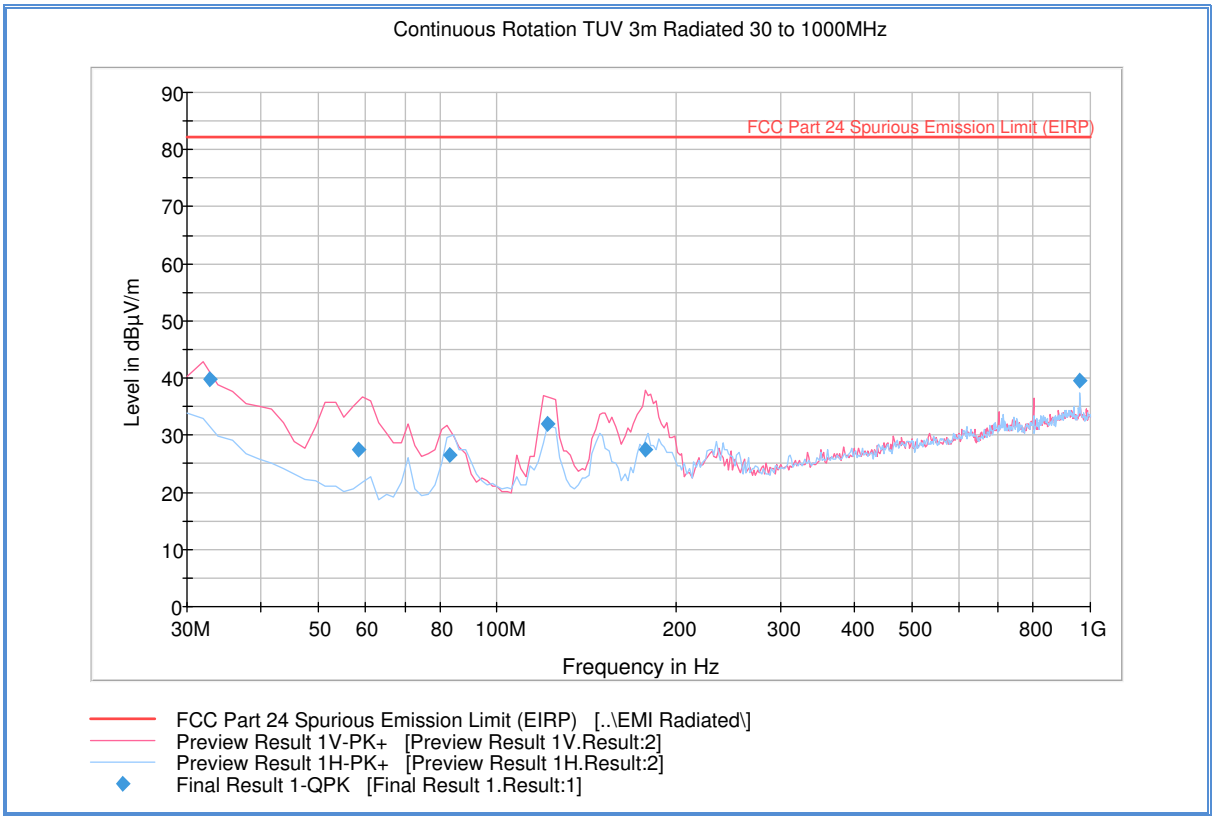
2.8.15 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_EGPRS850-BC0_Mid Channel 190



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1673.433333	61.3	1000.0	1000.000	102.7	H	4.0	-7.6	23.0	84.4
3346.200000	60.3	1000.0	1000.000	103.7	H	141.0	-0.8	24.0	84.4
5019.966667	61.2	1000.0	1000.000	145.7	V	192.0	2.2	23.2	84.4
6693.100000	60.7	1000.0	1000.000	169.6	V	189.0	5.1	23.7	84.4
7528.766667	52.2	1000.0	1000.000	257.3	V	341.0	8.1	32.1	84.4
17934.500000	56.4	1000.0	1000.000	143.7	H	334.0	24.1	27.9	84.4

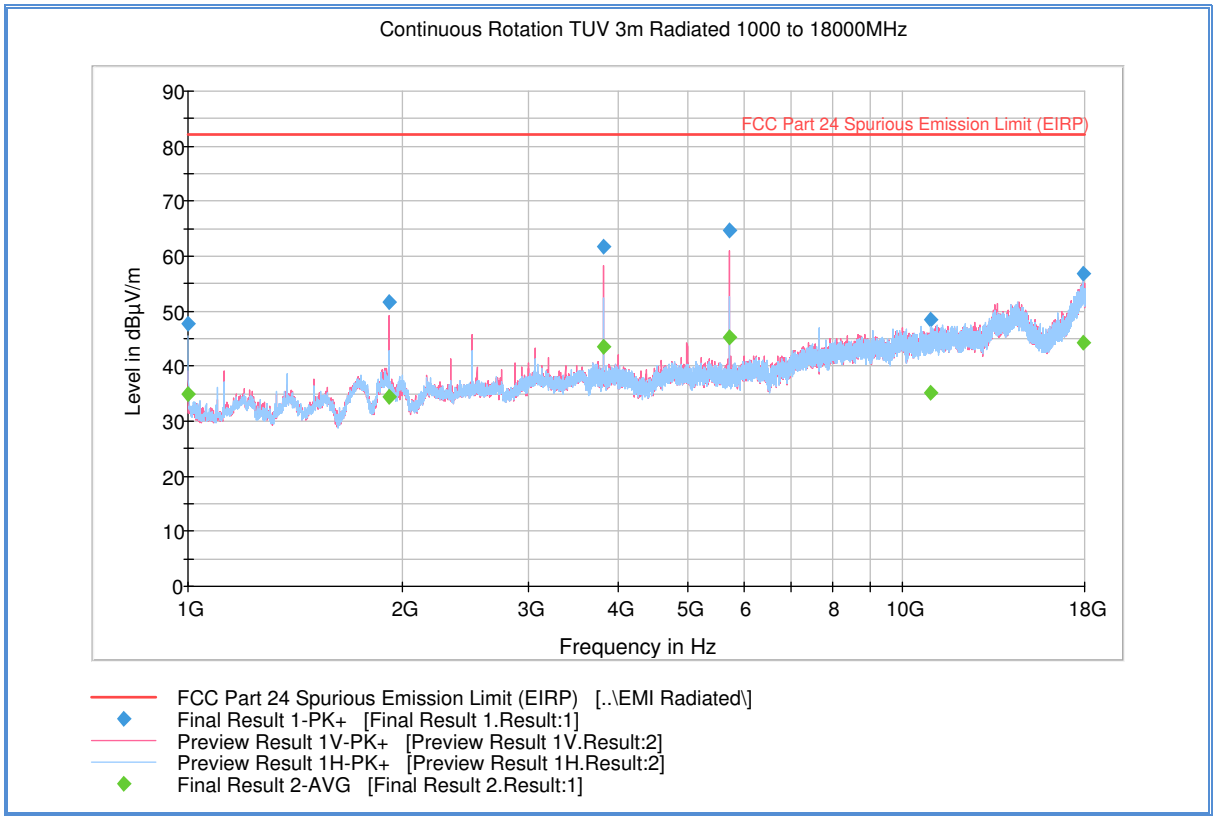
2.8.16 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_EGPRS1900-BC1_High Channel 810



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)
32.840000	39.9	1000.0	120.000	100.0	V	9.0	-7.4	42.3	82.2
58.398317	27.6	1000.0	120.000	133.0	V	114.0	-16.0	54.7	82.2
83.004970	26.4	1000.0	120.000	109.0	V	280.0	-16.2	55.8	82.2
121.298838	31.9	1000.0	120.000	109.0	V	64.0	-15.3	50.3	82.2
177.815471	27.5	1000.0	120.000	100.0	V	198.0	-12.6	54.7	82.2
960.082244	39.5	1000.0	120.000	122.0	H	103.0	6.2	42.7	82.2

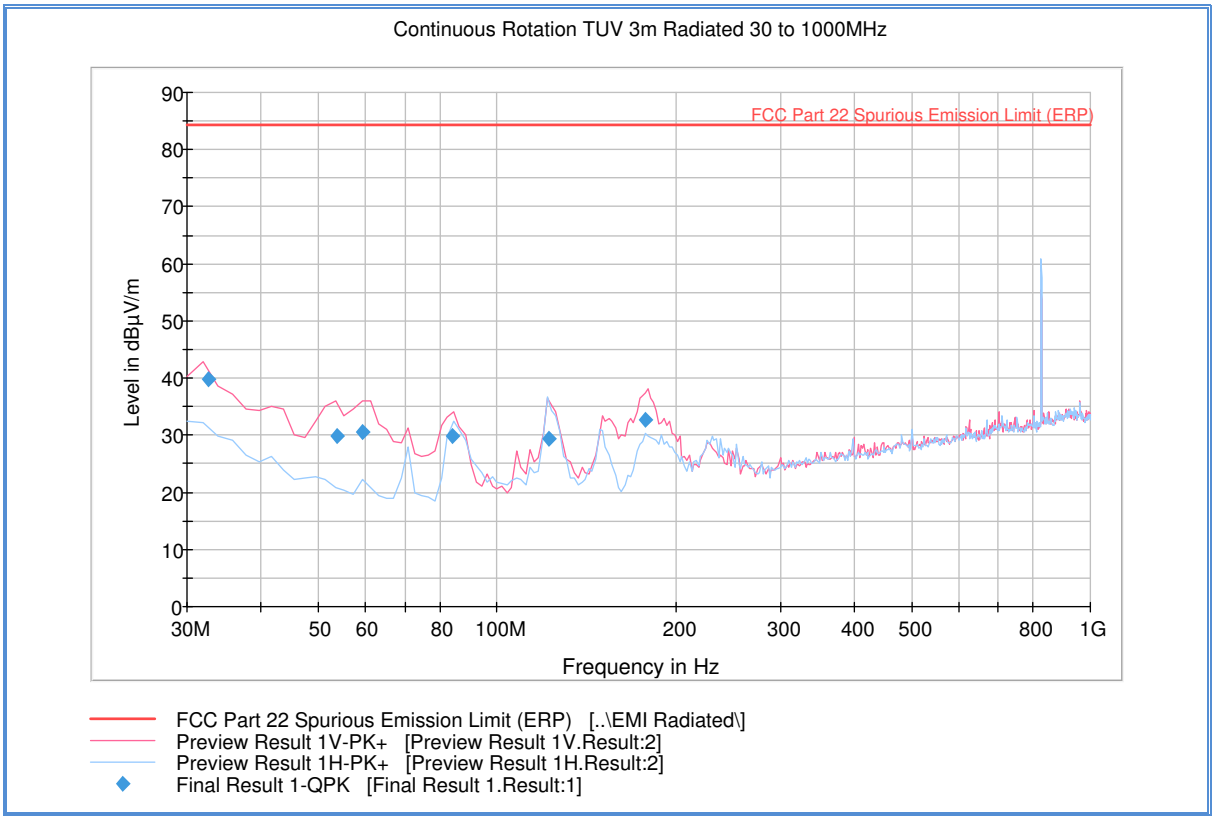
2.8.17 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_EGPRS1900-BC1_High Channel 810



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	47.7	1000.0	1000.000	102.7	H	136.0	-11.2	34.5	82.2
1909.700000	51.6	1000.0	1000.000	103.7	V	240.0	-4.6	30.7	82.2
3819.566667	61.7	1000.0	1000.000	114.7	V	357.0	0.9	20.6	82.2
5729.600000	64.6	1000.0	1000.000	177.5	V	194.0	3.6	17.6	82.2
10970.533333	48.5	1000.0	1000.000	403.0	H	168.0	13.0	33.8	82.2
17937.633333	56.9	1000.0	1000.000	403.0	V	220.0	24.2	25.3	82.2

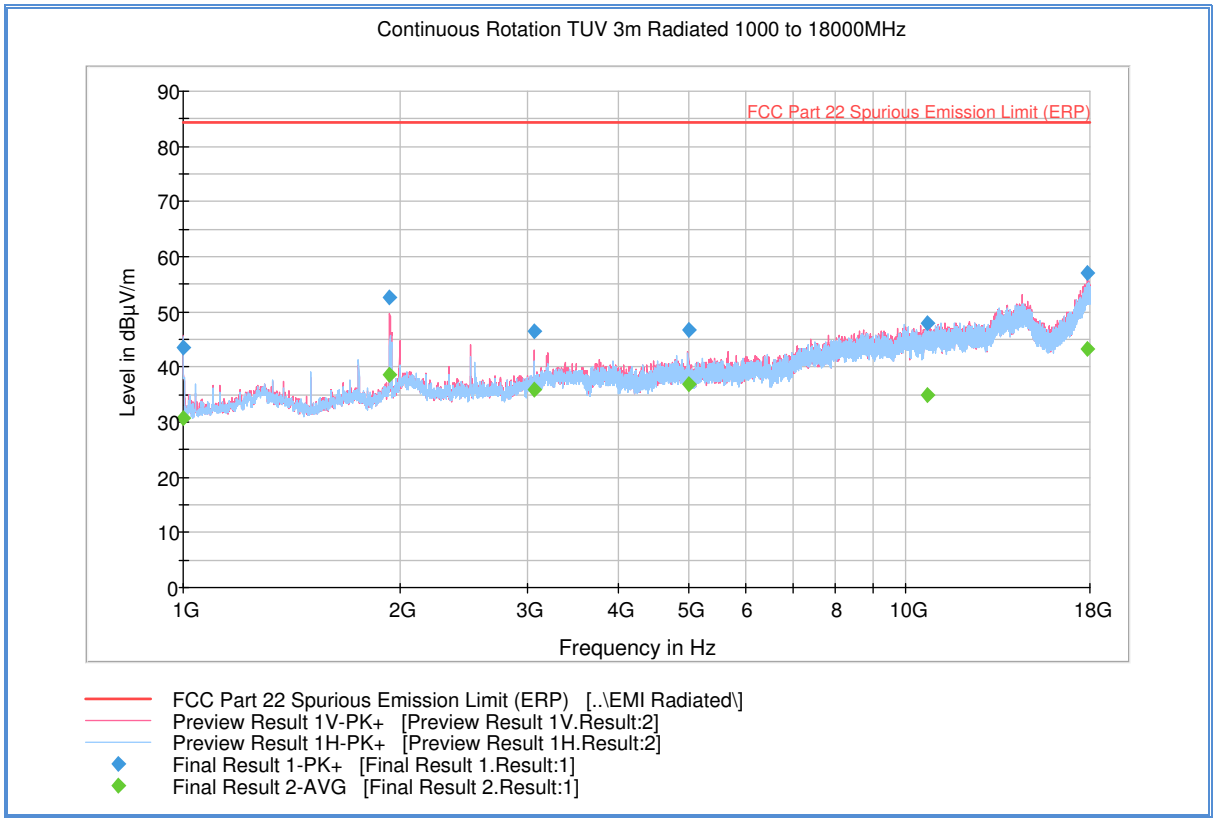
2.8.18 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_WCDMA_Band 5_Low Channel 4132



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)
32.600000	39.8	1000.0	120.000	100.0	V	292.0	-7.3	44.6	84.4
53.806653	29.9	1000.0	120.000	100.0	V	188.0	-15.2	54.5	84.4
59.382204	30.6	1000.0	120.000	100.0	V	188.0	-16.1	53.8	84.4
84.124970	29.7	1000.0	120.000	100.0	V	260.0	-16.2	54.6	84.4
122.522725	29.4	1000.0	120.000	150.0	H	228.0	-15.4	55.0	84.4
178.079359	32.6	1000.0	120.000	100.0	V	216.0	-12.5	51.8	84.4

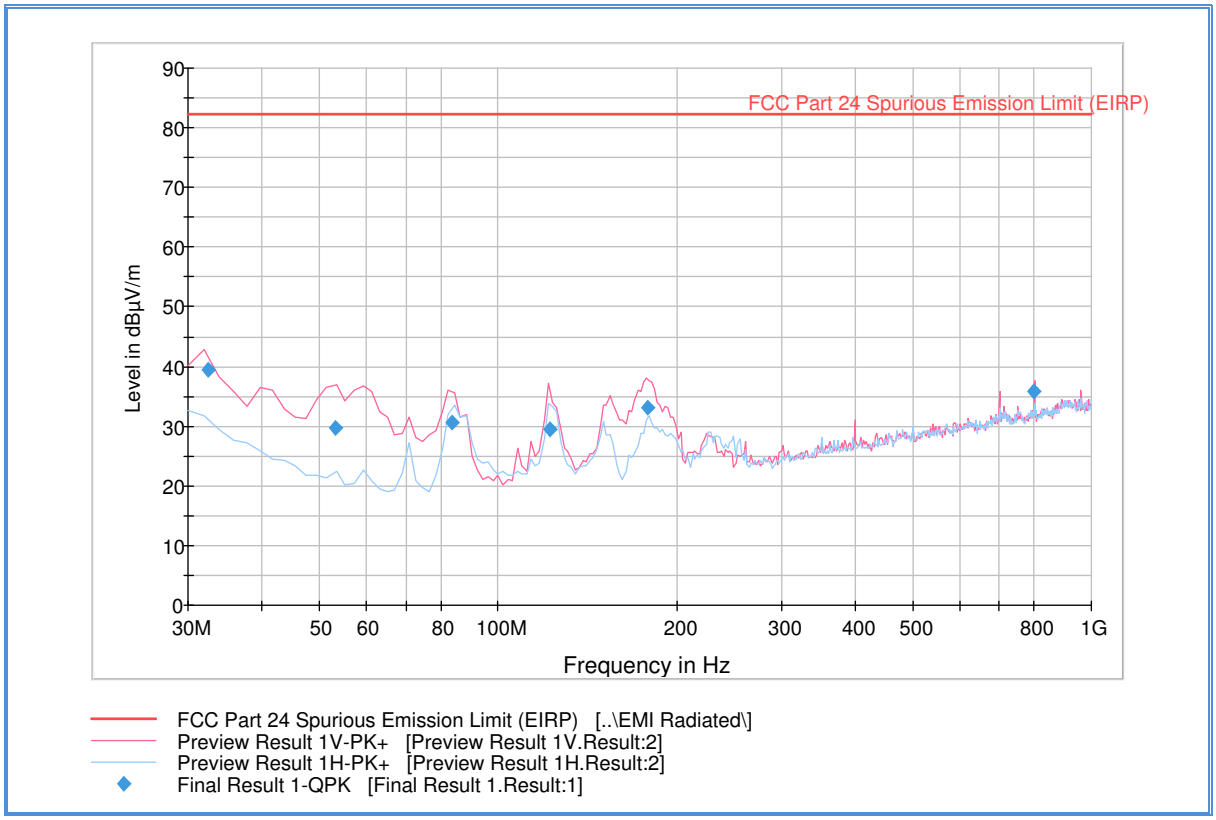
2.8.19 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_WCDMA_Band 5_Low Channel 4132



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	43.5	1000.0	1000.000	155.6	V	293.0	-11.2	40.9	84.4
1931.966667	52.6	1000.0	1000.000	192.5	V	110.0	-4.6	31.8	84.4
3062.500000	46.4	1000.0	1000.000	129.7	V	10.0	-2.3	38.0	84.4
4999.933333	46.7	1000.0	1000.000	168.6	V	157.0	2.2	37.7	84.4
10696.833333	48.0	1000.0	1000.000	174.6	V	229.0	12.5	36.4	84.4
17852.233333	57.0	1000.0	1000.000	403.0	V	220.0	23.7	27.4	84.4

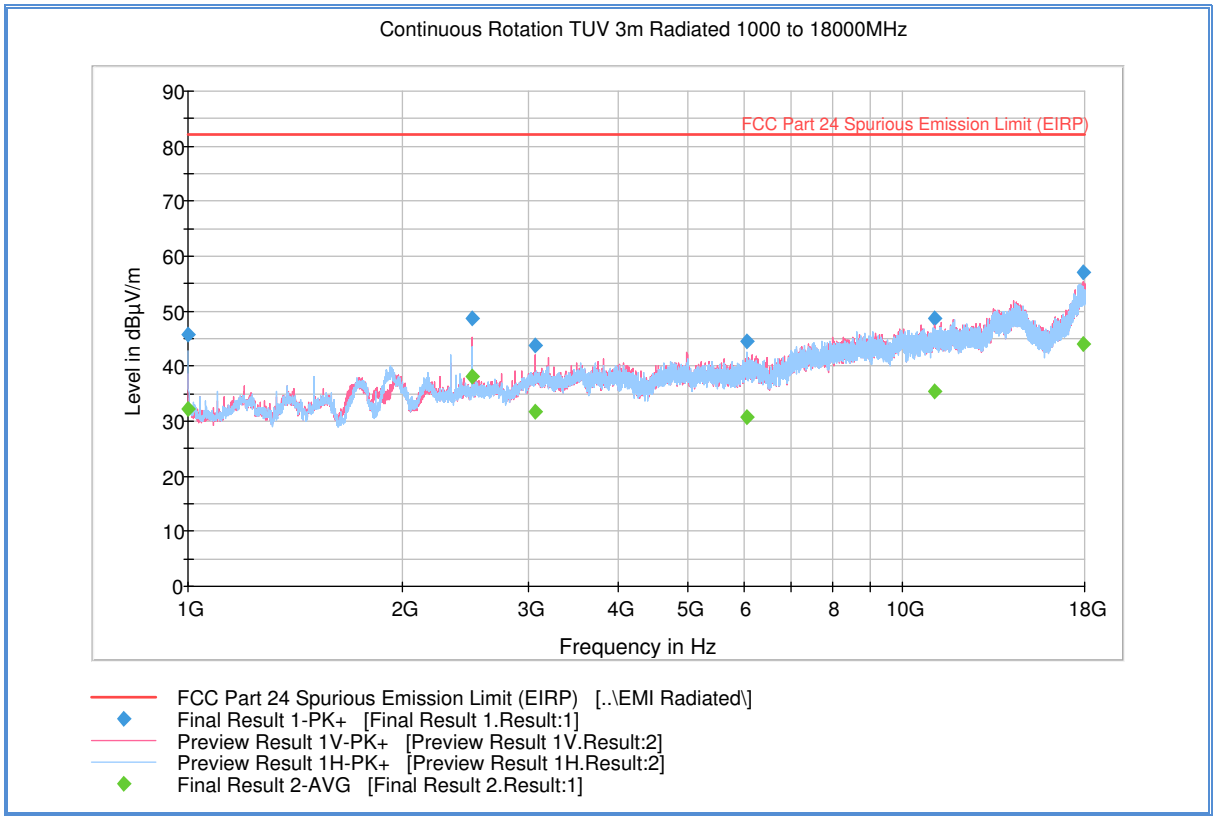
2.8.20 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_WCDMA_Band 2_Mid Channel 9400



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)
32.400000	39.6	1000.0	120.000	100.0	V	269.0	-7.2	42.7	82.2
53.086653	29.6	1000.0	120.000	100.0	V	9.0	-15.0	52.6	82.2
83.684970	30.5	1000.0	120.000	106.0	V	249.0	-16.2	51.7	82.2
122.002725	29.5	1000.0	120.000	100.0	V	284.0	-15.4	52.7	82.2
178.455471	33.1	1000.0	120.000	100.0	V	206.0	-12.5	49.1	82.2
800.003447	35.9	1000.0	120.000	100.0	V	4.0	3.8	46.4	82.2

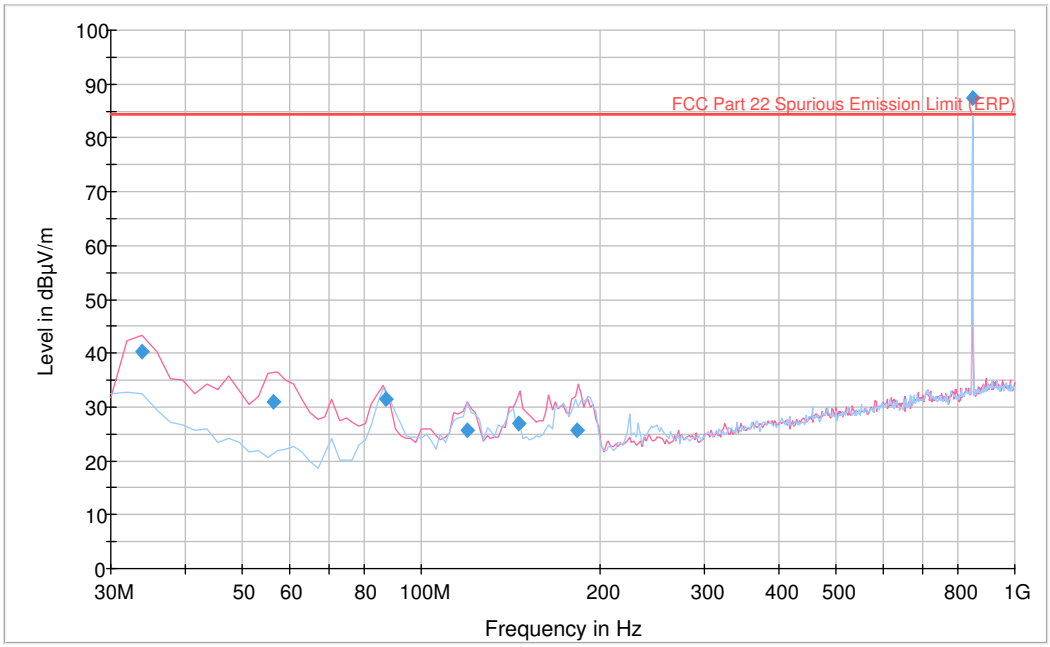
2.8.21 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_WCDMA_Band 2_Mid Channel 9400



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	45.7	1000.0	1000.000	102.7	H	10.0	-11.2	36.6	82.2
2499.800000	48.6	1000.0	1000.000	116.7	V	352.0	-5.0	33.6	82.2
3062.500000	43.8	1000.0	1000.000	116.7	V	-13.0	-2.3	38.4	82.2
6050.333333	44.4	1000.0	1000.000	328.2	H	60.0	4.3	37.8	82.2
11086.333333	48.7	1000.0	1000.000	145.7	V	154.0	13.2	33.6	82.2
17913.500000	57.0	1000.0	1000.000	403.0	V	-13.0	24.1	25.2	82.2

2.8.22 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_LTE Band 5_1.4MHz BW_High Channel 20643

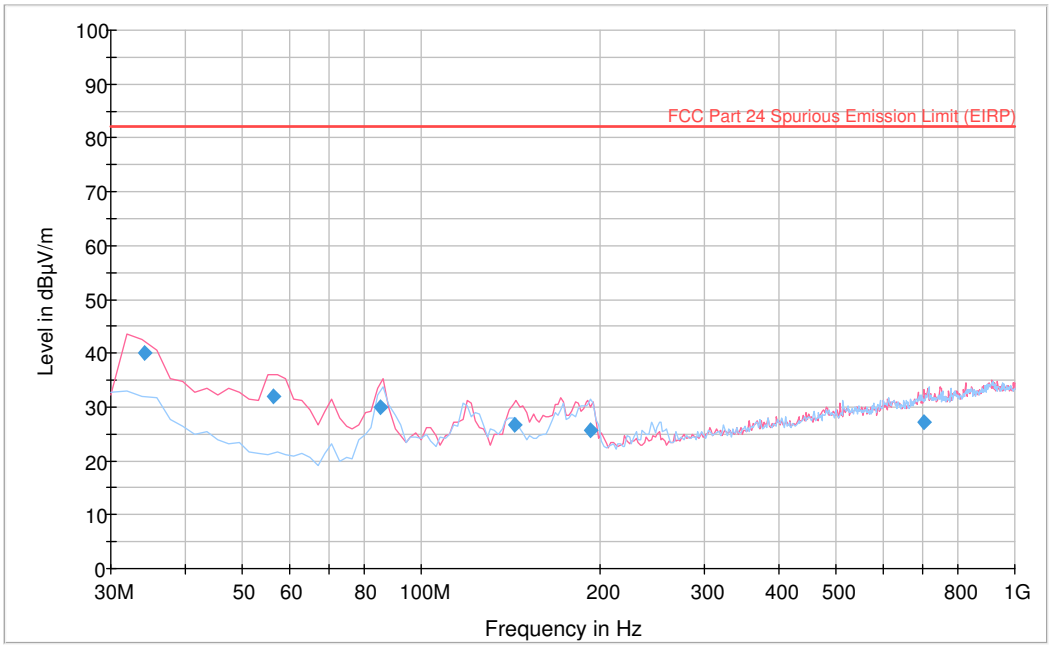


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.927776	40.3	1000.0	120.000	100.0	V	277.0	-7.9	44.1	84.4
56.430541	31.0	1000.0	120.000	100.0	V	341.0	-15.6	53.3	84.4
87.012745	31.5	1000.0	120.000	100.0	V	265.0	-15.8	52.9	84.4
119.858838	25.6	1000.0	120.000	100.0	V	95.0	-15.2	58.8	84.4
146.153267	26.9	1000.0	120.000	100.0	V	222.0	-13.7	57.5	84.4
182.887134	25.7	1000.0	120.000	150.0	V	159.0	-12.0	58.7	84.4
847.816754	87.3	1000.0	120.000	100.0	H	333.0	4.6	* Fundamental Freq.	

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

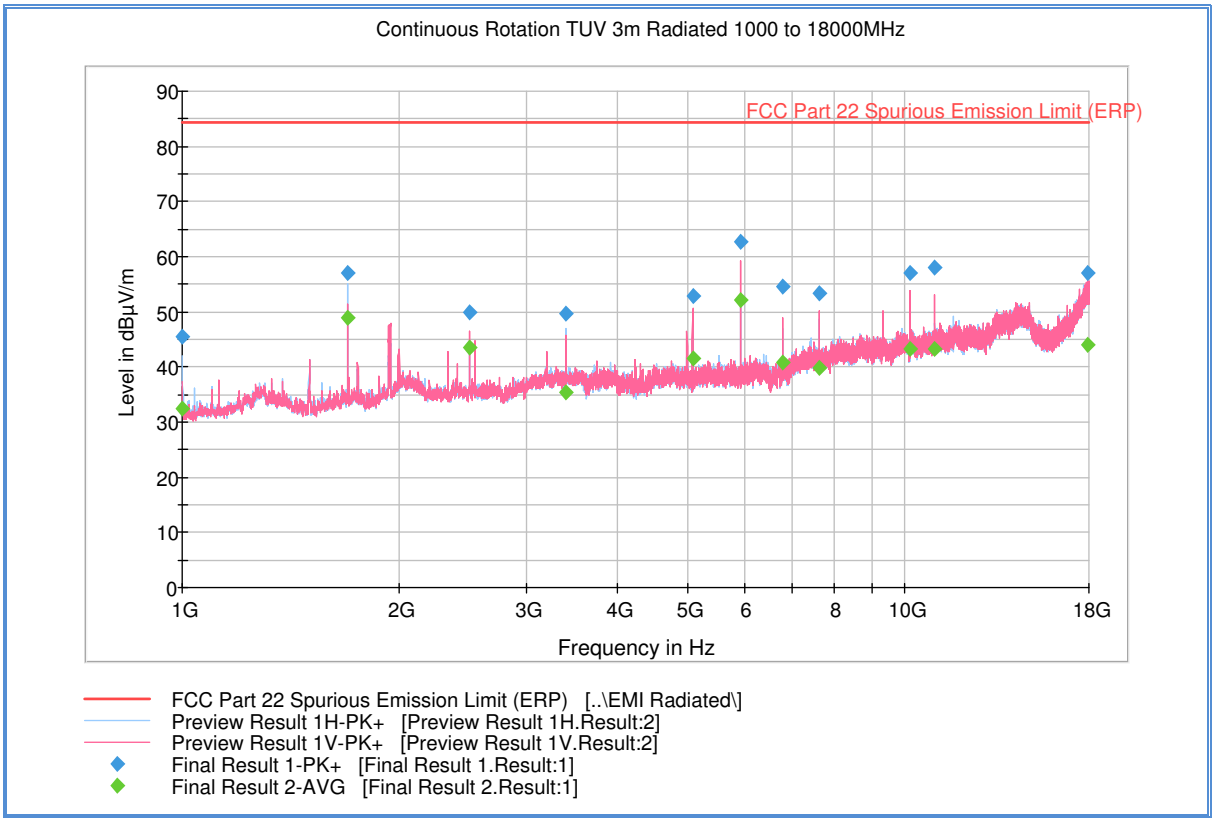
2.8.23 Radiated Emission Test Results Below 1GHz_Worst Case Configuration_LTE Band 2_20MHz BW_Mid Channel 18900



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)
34.200000	40.1	1000.0	120.000	100.0	V	279.0	-8.1	42.2	82.2
56.350541	31.9	1000.0	120.000	100.0	V	184.0	-15.6	50.3	82.2
85.612745	29.9	1000.0	120.000	114.0	V	247.0	-16.0	52.3	82.2
143.985491	26.6	1000.0	120.000	100.0	V	344.0	-14.0	55.6	82.2
193.406573	25.8	1000.0	120.000	145.0	H	83.0	-11.1	56.5	82.2
703.609058	27.3	1000.0	120.000	350.0	V	70.0	3.0	55.0	82.2

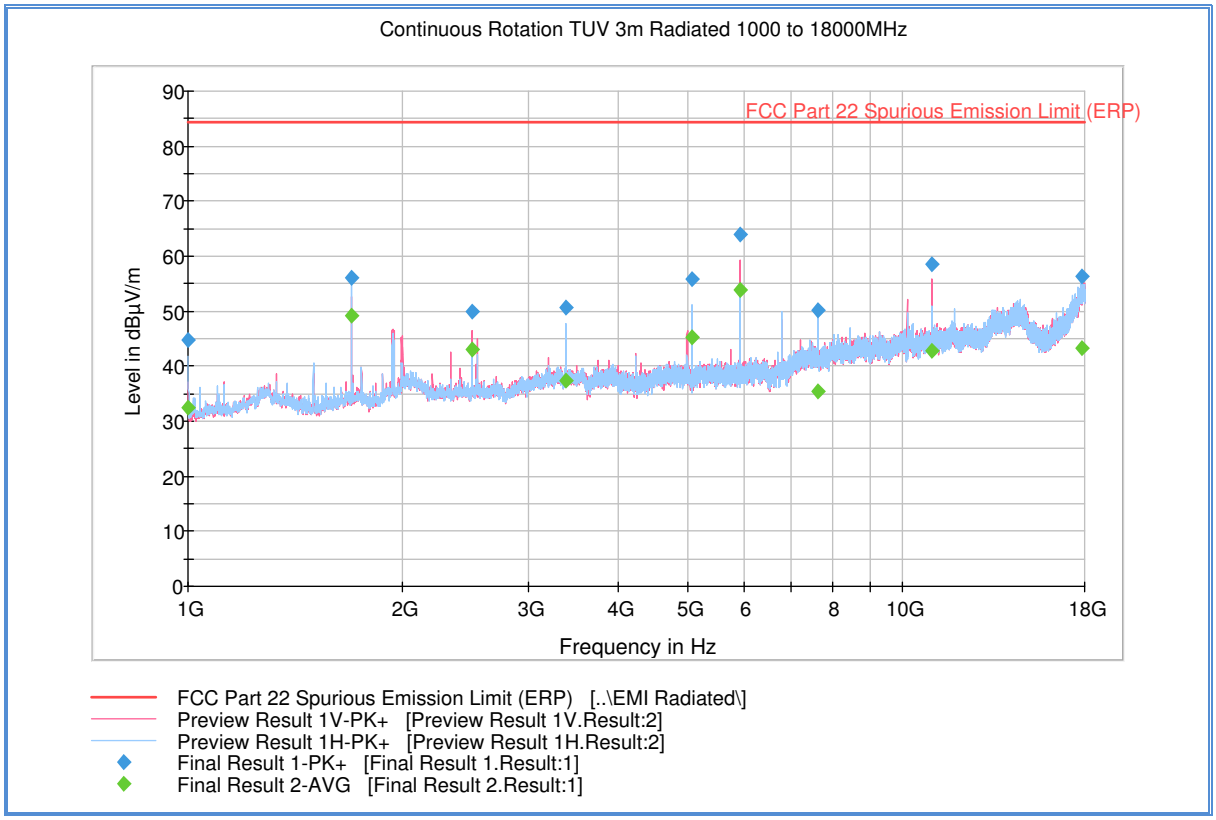
2.8.24 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 5_1.4MHz BW_High Channel 20643



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	45.6	1000.0	1000.000	120.7	H	261.0	-11.2	38.8	84.4
1695.700000	56.9	1000.0	1000.000	157.6	H	197.0	-7.3	27.4	84.4
2500.000000	49.9	1000.0	1000.000	146.7	V	350.0	-4.9	34.5	84.4
3391.533333	49.7	1000.0	1000.000	120.7	H	222.0	-1.0	34.7	84.4
5087.000000	52.9	1000.0	1000.000	303.2	V	202.0	2.3	31.5	84.4
5934.933333	62.7	1000.0	1000.000	185.5	V	195.0	4.0	21.6	84.4
6783.033333	54.7	1000.0	1000.000	193.5	V	220.0	5.5	29.7	84.4
7630.800000	53.4	1000.0	1000.000	297.2	V	150.0	8.1	30.9	84.4
10174.133333	57.2	1000.0	1000.000	103.7	V	224.0	11.8	27.2	84.4
11022.033333	57.9	1000.0	1000.000	199.5	V	207.0	13.1	26.4	84.4
17933.700000	57.0	1000.0	1000.000	143.7	V	7.0	24.1	27.4	84.4

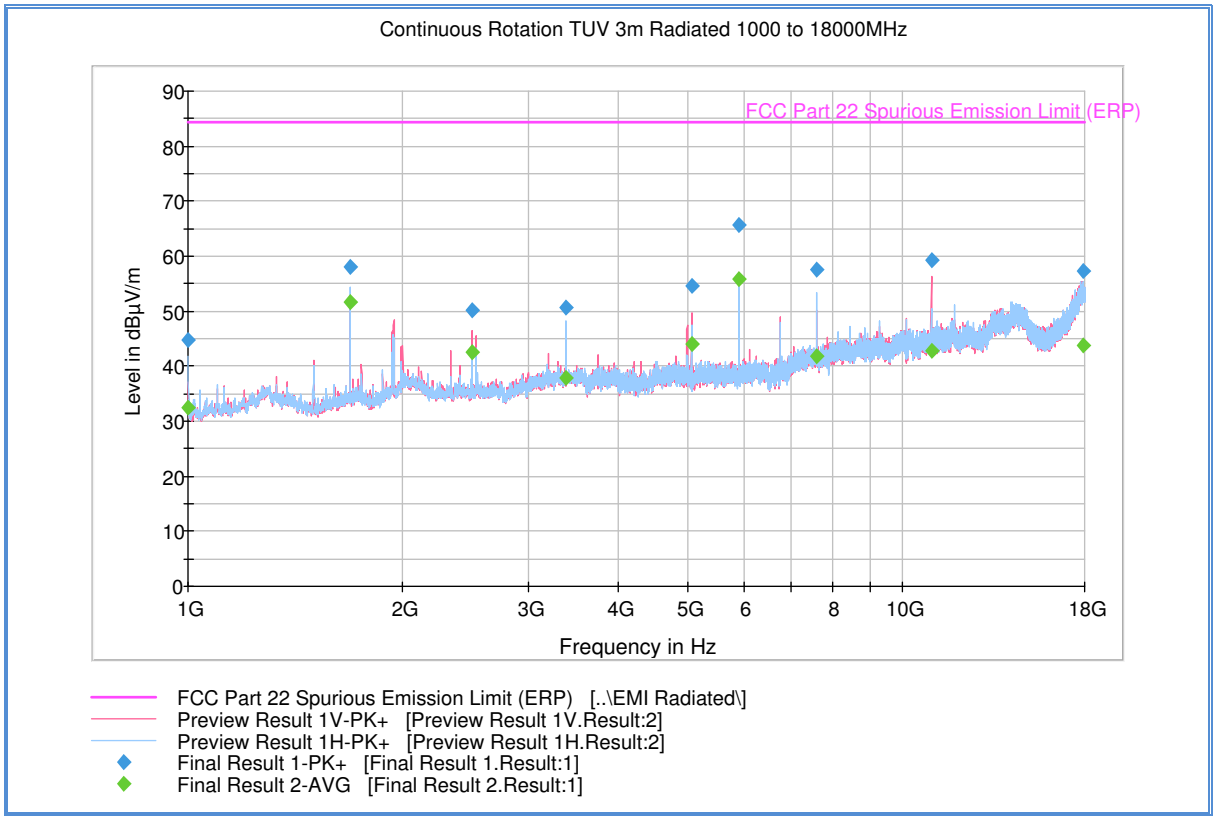
2.8.25 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 5_3MHz BW_High Channel 20635



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	44.7	1000.0	1000.000	132.7	H	210.0	-11.2	39.7	84.4
1692.266667	56.1	1000.0	1000.000	195.5	H	144.0	-7.4	28.2	84.4
2500.166667	49.8	1000.0	1000.000	147.6	V	348.0	-4.9	34.6	84.4
3384.933333	50.6	1000.0	1000.000	138.7	H	151.0	-1.0	33.8	84.4
5077.366667	55.7	1000.0	1000.000	237.3	H	234.0	2.2	28.7	84.4
5923.600000	64.0	1000.0	1000.000	187.5	V	214.0	3.9	20.4	84.4
7616.033333	50.2	1000.0	1000.000	103.7	V	44.0	8.1	34.2	84.4
11000.900000	58.5	1000.0	1000.000	190.5	V	207.0	13.0	25.9	84.4
17857.633333	56.4	1000.0	1000.000	371.0	V	75.0	23.8	28.0	84.4

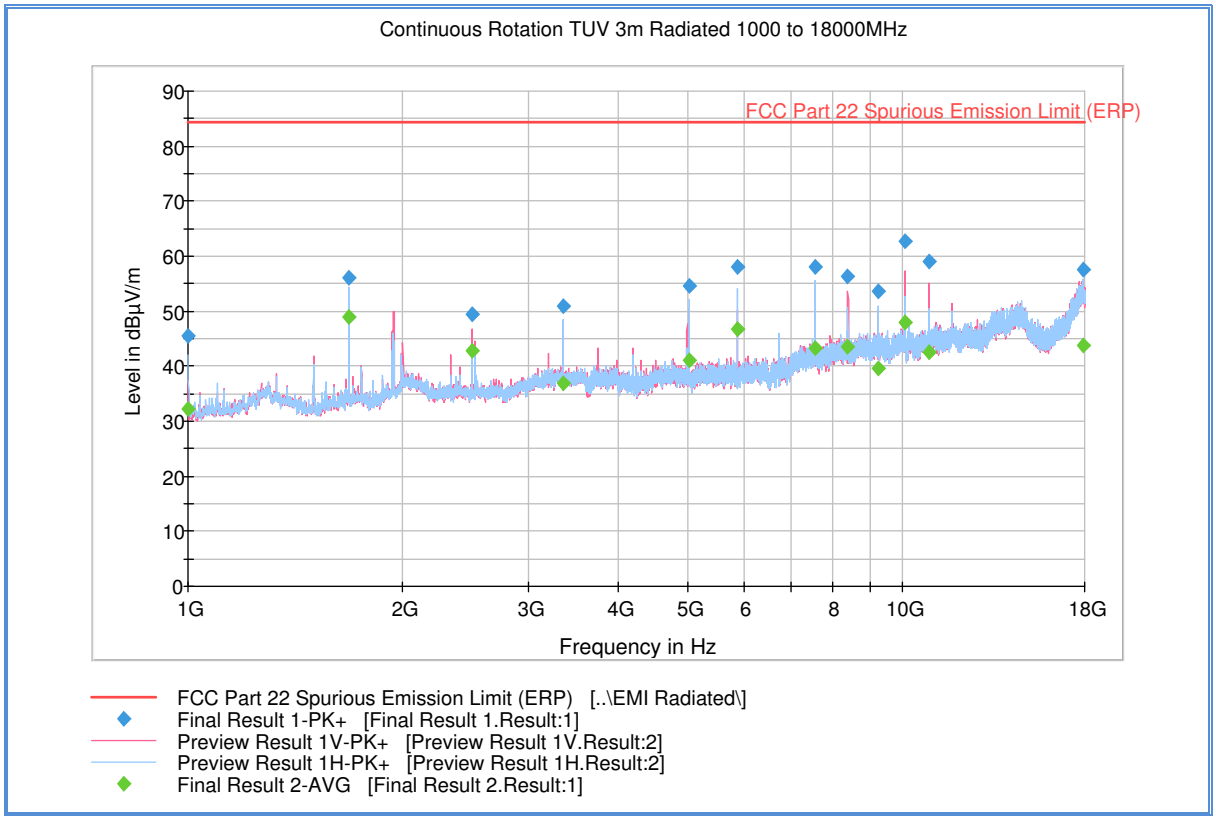
2.8.26 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 5_5MHz BW_High Channel 20625



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	44.8	1000.0	1000.000	126.7	H	47.0	-11.2	39.6	84.4
1688.700000	58.0	1000.0	1000.000	157.6	H	206.0	-7.4	26.4	84.4
2500.200000	50.2	1000.0	1000.000	135.7	V	351.0	-4.9	34.2	84.4
3377.366667	50.6	1000.0	1000.000	138.7	H	152.0	-0.9	33.7	84.4
5066.033333	54.6	1000.0	1000.000	161.6	V	192.0	2.2	29.8	84.4
5910.366667	65.7	1000.0	1000.000	186.5	V	208.0	3.9	18.7	84.4
7599.033333	57.5	1000.0	1000.000	169.6	H	352.0	8.1	26.8	84.4
10976.366667	59.3	1000.0	1000.000	141.7	V	205.0	13.0	25.1	84.4
17888.966667	57.3	1000.0	1000.000	162.6	H	71.0	24.0	27.1	84.4

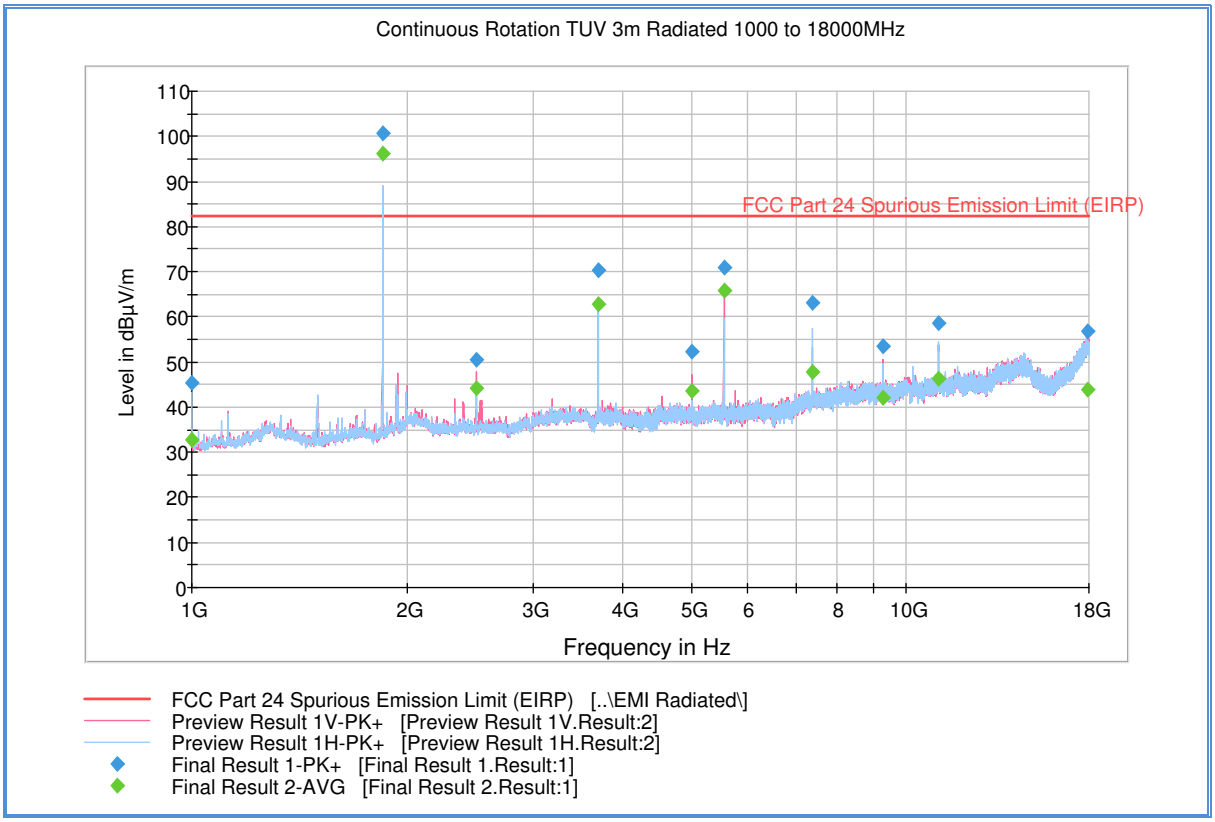
2.8.27 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 5_10MHz BW_High Channel 20600



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.400000	45.4	1000.0	1000.000	124.7	H	157.0	-11.2	39.0	84.4
1679.066667	56.0	1000.0	1000.000	204.4	H	187.0	-7.6	28.4	84.4
2499.766667	49.4	1000.0	1000.000	143.6	V	348.0	-5.0	35.0	84.4
3358.300000	50.9	1000.0	1000.000	103.7	H	150.0	-0.8	33.5	84.4
5037.300000	54.7	1000.0	1000.000	245.3	H	128.0	2.2	29.7	84.4
5877.133333	58.0	1000.0	1000.000	182.5	H	228.0	3.8	26.3	84.4
7556.133333	58.1	1000.0	1000.000	218.4	H	322.0	8.1	26.3	84.4
8395.766667	56.4	1000.0	1000.000	278.2	V	211.0	9.1	27.9	84.4
9235.566667	53.5	1000.0	1000.000	303.2	V	211.0	10.4	30.9	84.4
10075.166667	62.6	1000.0	1000.000	112.7	V	231.0	11.7	21.7	84.4
10914.766667	59.0	1000.0	1000.000	200.5	V	255.0	12.9	25.4	84.4
17905.766667	57.6	1000.0	1000.000	300.6	H	155.0	24.1	26.8	84.4

2.8.28 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_1.4MHz BW_Low Channel 18607

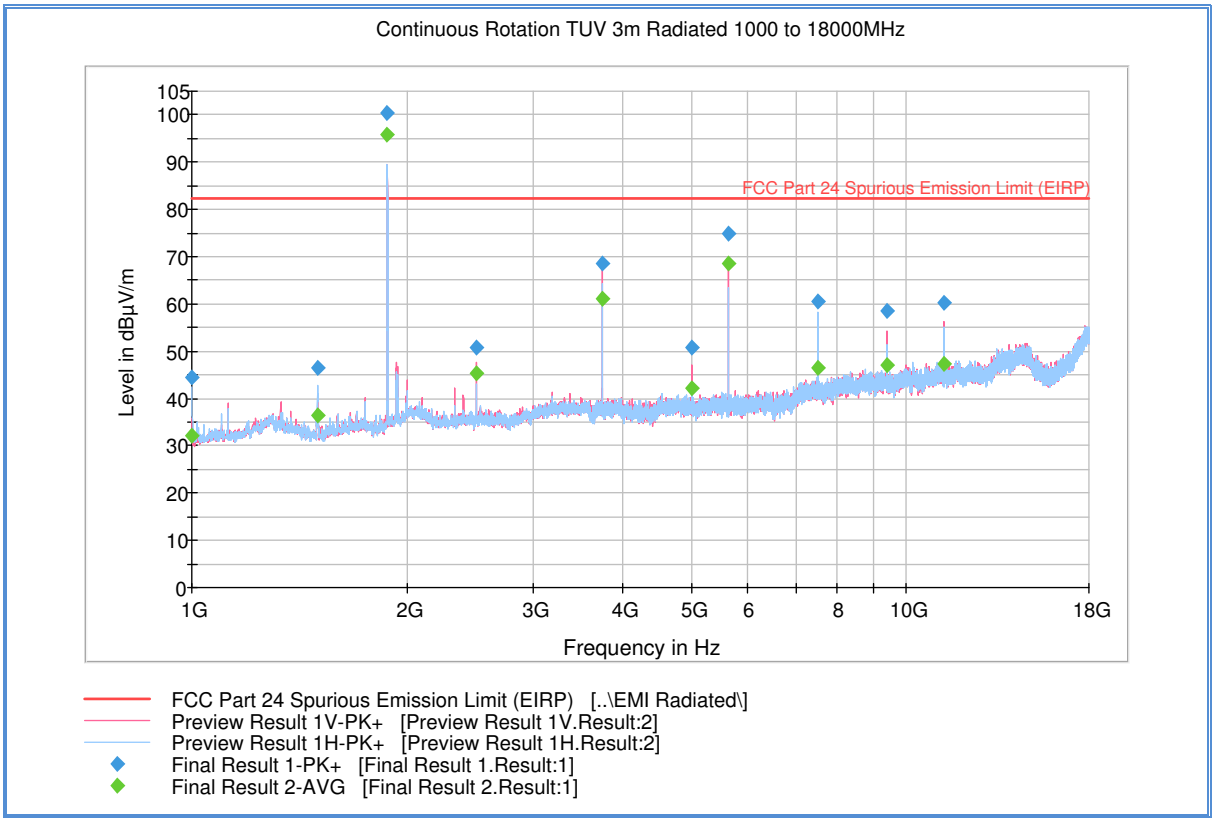


Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	45.2	1000.0	1000.000	150.7	H	58.0	-11.2	37.0	82.2
1850.200000	100.6	1000.0	1000.000	103.7	V	329.0	-6.2	* Fundamental Freq.	
2500.200000	50.4	1000.0	1000.000	116.7	V	349.0	-4.9	31.8	82.2
3700.533333	70.3	1000.0	1000.000	171.6	H	144.0	-0.2	12.0	82.2
4999.733333	52.3	1000.0	1000.000	149.6	V	-19.0	2.2	29.9	82.2
5550.533333	70.9	1000.0	1000.000	178.6	V	186.0	3.3	11.3	82.2
7400.866667	63.2	1000.0	1000.000	119.7	H	82.0	8.1	19.1	82.2
9251.433333	53.6	1000.0	1000.000	111.7	H	277.0	10.5	28.7	82.2
11101.600000	58.6	1000.0	1000.000	405.3	H	289.0	13.2	23.6	82.2
17943.300000	56.7	1000.0	1000.000	402.7	V	220.0	24.2	25.5	82.2

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

2.8.29 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_3MHz BW_Mid Channel 18900

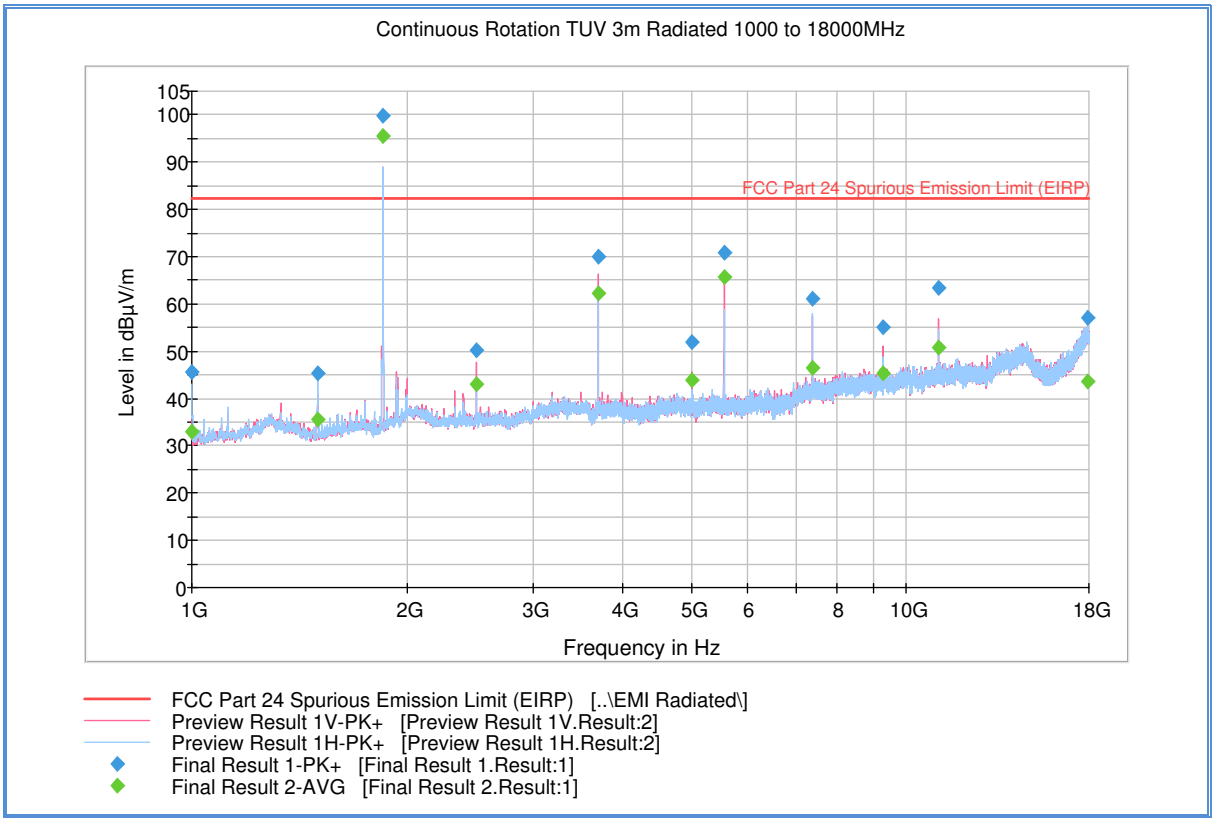


Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	44.5	1000.0	1000.000	142.7	H	55.0	-11.2	37.7	82.2
1499.800000	46.5	1000.0	1000.000	102.7	H	284.0	-9.1	35.7	82.2
1878.533333	100.4	1000.0	1000.000	306.2	H	321.0	-5.4	* Fundamental Freq.	
2500.166667	50.8	1000.0	1000.000	103.7	V	350.0	-4.9	31.4	82.2
3757.600000	68.7	1000.0	1000.000	103.7	V	295.0	0.6	13.6	82.2
5000.300000	50.8	1000.0	1000.000	131.7	V	332.0	2.2	31.4	82.2
5636.100000	74.9	1000.0	1000.000	252.3	V	199.0	3.4	7.4	82.2
7514.766667	60.5	1000.0	1000.000	150.7	H	113.0	8.1	21.8	82.2
9393.833333	58.6	1000.0	1000.000	139.7	V	216.0	11.2	23.6	82.2
11272.333333	60.2	1000.0	1000.000	161.6	V	197.0	13.4	22.0	82.2

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

2.8.30 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_5MHz BW_Low Channel 18625

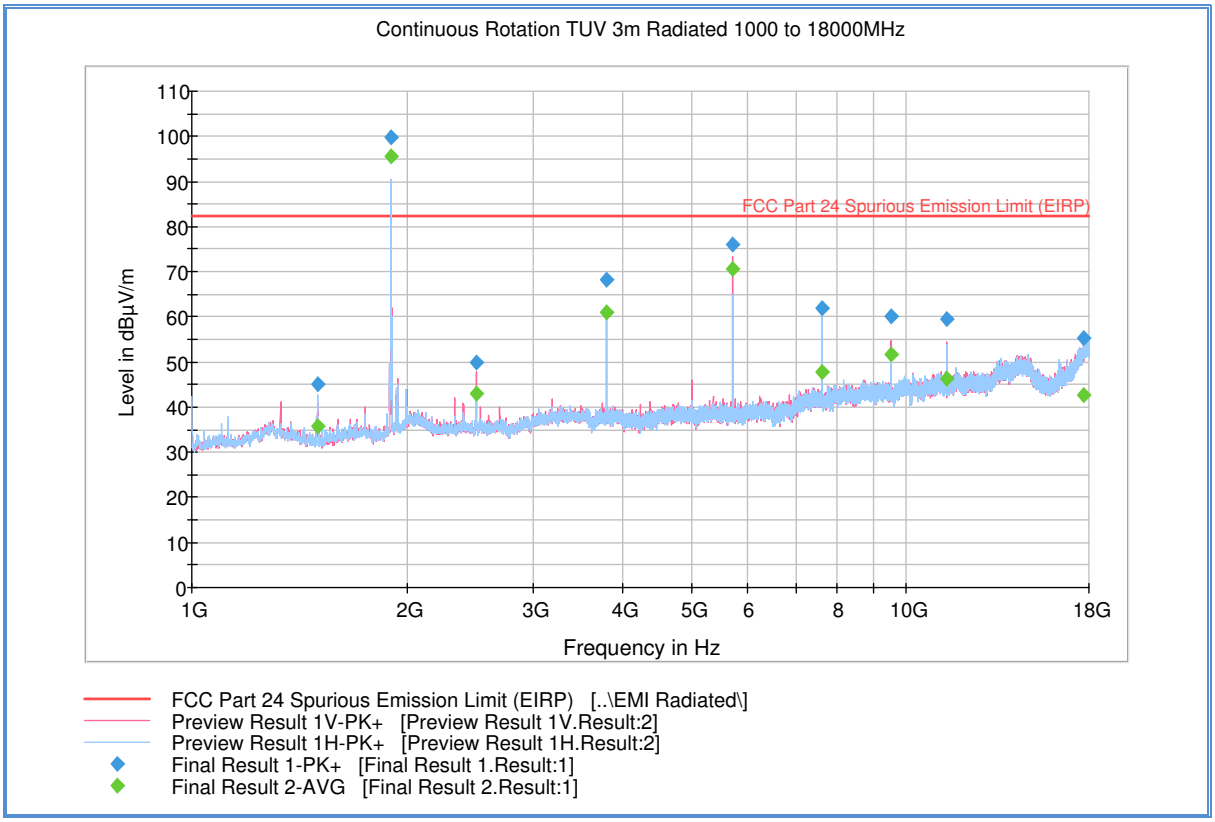


Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	45.5	1000.0	1000.000	146.7	H	124.0	-11.2	36.7	82.2
1500.000000	45.3	1000.0	1000.000	131.7	H	279.0	-9.1	36.9	82.2
1850.200000	99.8	1000.0	1000.000	99.7	V	324.0	-6.2	* Fundamental Freq.	
2500.200000	50.1	1000.0	1000.000	147.7	V	347.0	-4.9	32.1	82.2
3700.566667	69.9	1000.0	1000.000	99.7	V	298.0	-0.2	12.3	82.2
4999.900000	51.9	1000.0	1000.000	108.7	V	335.0	2.2	30.3	82.2
5551.100000	70.9	1000.0	1000.000	195.5	V	186.0	3.3	11.4	82.2
7401.433333	61.2	1000.0	1000.000	112.7	H	116.0	8.1	21.0	82.2
9251.433333	55.1	1000.0	1000.000	199.5	V	119.0	10.5	27.1	82.2
11102.166667	63.3	1000.0	1000.000	135.7	V	206.0	13.2	18.9	82.2
17925.200000	57.1	1000.0	1000.000	405.3	H	339.0	24.1	25.1	82.2

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

2.8.31 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_10MHz BW_High Channel 19150

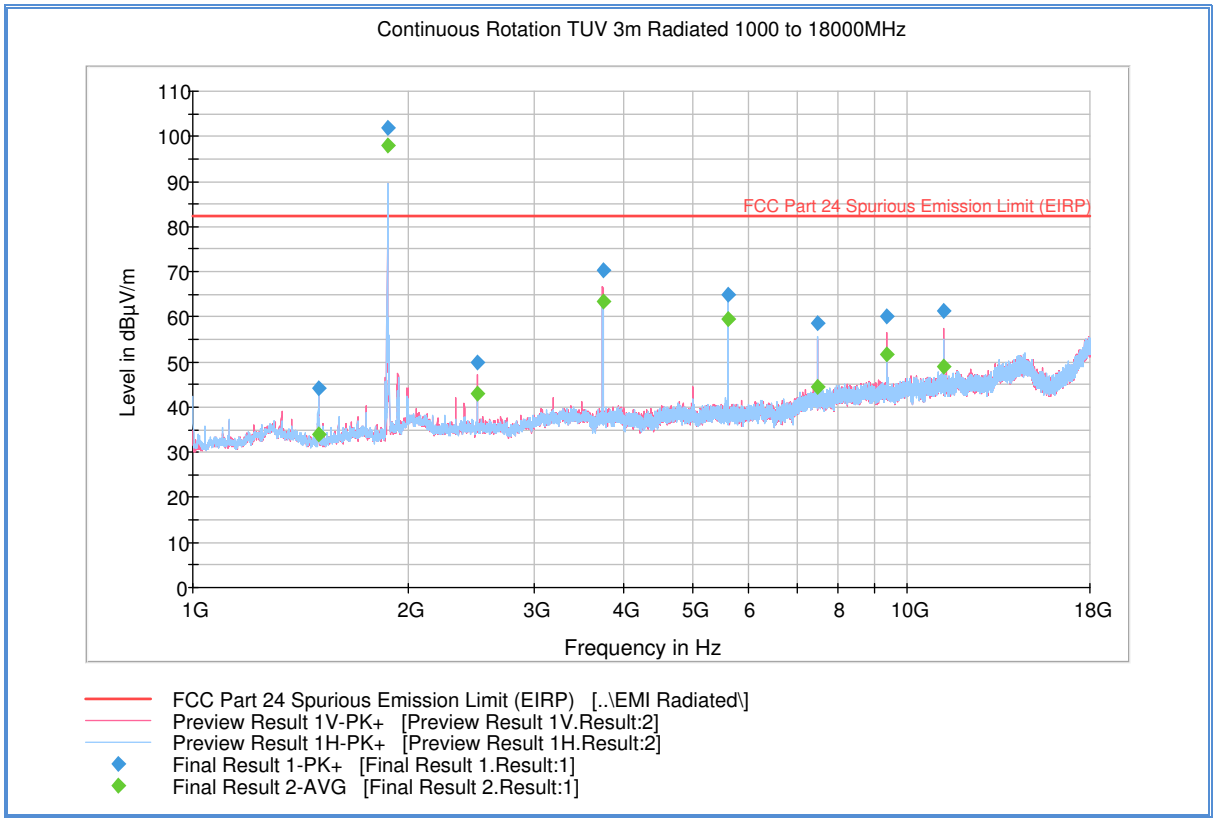


Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	45.2	1000.0	1000.000	103.7	H	281.0	-9.1	37.0	82.2
1900.633333	99.9	1000.0	1000.000	286.2	H	166.0	-4.7	* Fundamental Freq.	
2500.166667	50.0	1000.0	1000.000	151.6	V	347.0	-4.9	32.2	82.2
3801.233333	68.3	1000.0	1000.000	166.6	H	147.0	0.8	13.9	82.2
5701.833333	76.1	1000.0	1000.000	247.3	V	199.0	3.6	6.2	82.2
7602.433333	61.8	1000.0	1000.000	173.6	H	145.0	8.1	20.4	82.2
9503.033333	60.1	1000.0	1000.000	204.5	V	117.0	11.2	22.1	82.2
11403.633333	59.4	1000.0	1000.000	214.4	V	194.0	13.4	22.8	82.2
17721.000000	55.2	1000.0	1000.000	184.5	V	215.0	22.9	27.1	82.2

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

2.8.32 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_15MHz BW_Mid Channel 18900

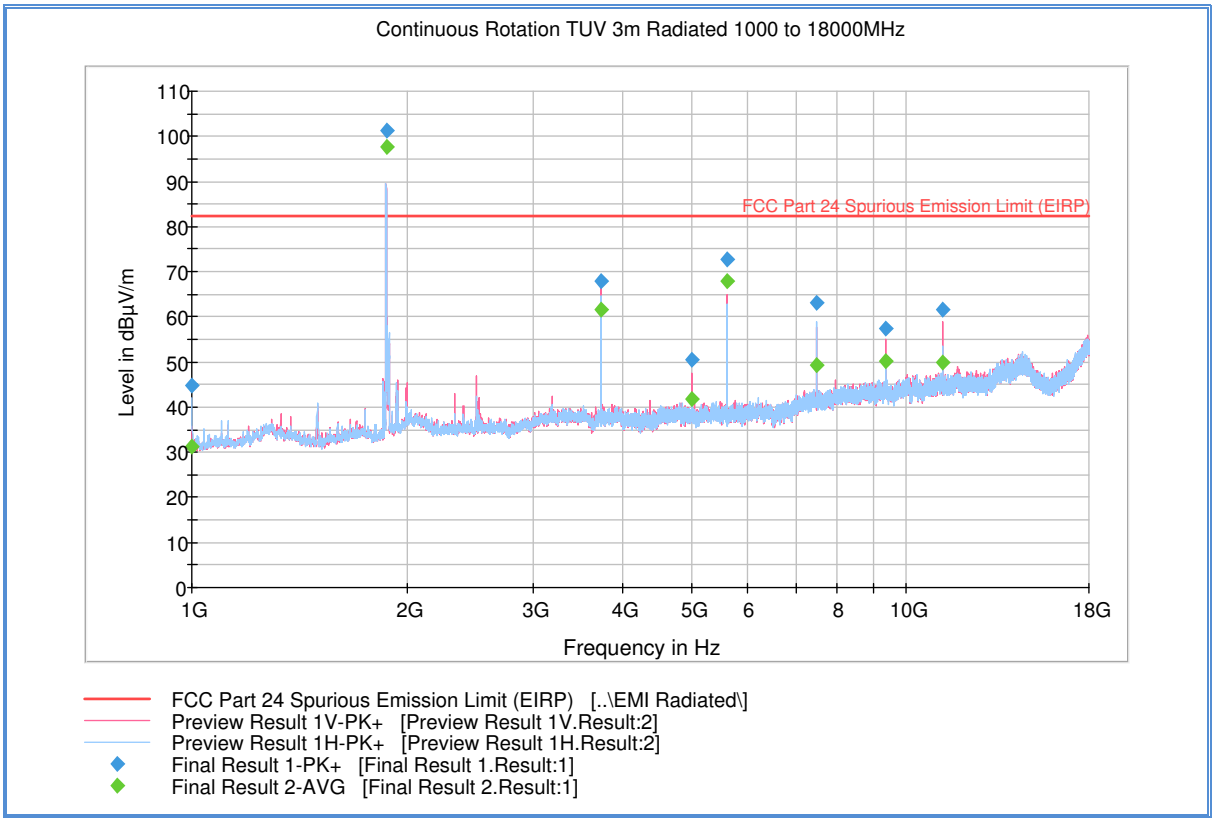


Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1500.000000	44.2	1000.0	1000.000	134.7	H	241.0	-9.1	38.1	82.2
1873.433333	101.7	1000.0	1000.000	100.7	V	293.0	-5.6	* Fundamental Freq.	
2500.166667	49.8	1000.0	1000.000	101.7	V	19.0	-4.9	32.5	82.2
3746.466667	70.4	1000.0	1000.000	99.7	V	297.0	0.5	11.8	82.2
5619.866667	65.0	1000.0	1000.000	115.7	V	64.0	3.4	17.2	82.2
7493.633333	58.7	1000.0	1000.000	134.7	V	5.0	8.1	23.5	82.2
9366.666667	60.0	1000.0	1000.000	103.7	V	226.0	11.1	22.3	82.2
11240.066667	61.4	1000.0	1000.000	400.0	V	210.0	13.4	20.9	82.2

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

2.8.33 Radiated Emission Test Results Above 1GHz_Worst Case Configuration_LTE Band 2_20MHz BW_Mid Channel 18900



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.500000	44.7	1000.0	1000.000	147.7	H	55.0	-11.2	37.5	82.2
1871.166667	101.3	1000.0	1000.000	99.7	V	330.0	-5.6	* Fundamental Freq.	
3742.300000	67.9	1000.0	1000.000	99.7	V	326.0	0.4	14.3	82.2
4999.900000	50.6	1000.0	1000.000	117.7	V	334.0	2.2	31.6	82.2
5613.433333	72.7	1000.0	1000.000	189.5	V	207.0	3.3	9.5	82.2
7484.166667	63.0	1000.0	1000.000	102.7	H	120.0	8.1	19.3	82.2
9355.333333	57.4	1000.0	1000.000	208.5	V	114.0	11.1	24.9	82.2
11226.433333	61.5	1000.0	1000.000	400.0	V	210.0	13.4	20.7	82.2

***** 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 22, Clause 22.355
FCC 47 CFR Part 24, Clause 24.235
RSS-132, Clause 5.3
RSS-133, Clause 6.3

2.9.2 Standard Applicable

FCC:
Part 22, Clause 22.355: Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C–1 of this section.

Table C–1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Mobile ≤3 watts (ppm)
821 to 896	2.5

Part 24, Clause 24.235: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

IC:
RSS-132 Clause 5.3: The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.
RSS-133 Clasue 6.3: The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations.

2.9.3 Equipment Under Test and Modification State

Serial No: SZ17061900005 / Test Configuration A

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

July 11, 18 and 19 2016 / AC

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	25.1 – 25.4°C
Relative Humidity	23.0 - 24.5%
ATM Pressure	98.7 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 worst case channel based on RF power output measurement.
- An offset were added to compensate for the external attenuator and cable used.
- f1 and f2 are lower and upper -10dBc points in relation to the peak value of the power envelope.
- 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

GPRS850-BC0 – Low Ch 128 @ 824.2 MHz						
Voltage (VDC)	***Temperature (°C)***	***f1 (MHz)***	***f2 (MHz)***	***Center Freq. (f1+f2)/2***	***Freq. Error (ppm)***	***Limit (ppm)***
3.7	-30	824.046567	824.355276	824.200922	-1.12	2.5
	-20	824.045099	824.355870	824.200485	-0.59	2.5
	-10	824.046786	824.355620	824.201203	-1.46	2.5
	0	824.045880	824.355041	824.200461	-0.56	2.5
	+10	824.043161	824.356808	824.199985	0.02	2.5
	+20	824.046036	824.354339	824.200188	-0.23	2.5
	+30	824.042942	824.354776	824.198859	1.38	2.5
	+40	824.046442	824.351683	824.199063	1.14	2.5
	+50	824.046599	824.354089	824.200344	-0.42	2.5
GPRS850-BC0 – Low Ch 128 @ 824.2 MHz						
Voltage (VDC)	***Temperature (°C)***	***f1 (MHz)***	***f2 (MHz)***	***Center Freq. (f1+f2)/2***	***Freq. Error (ppm)***	***Limit (ppm)***
3.3	20	824.046161	824.354558	824.200360	-0.44	2.5
4.3		824.045442	824.354964	824.200203	-0.25	2.5

GPRS1900-BC1 – Mid Ch 661 @ 1880 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.7	-30	1879.90666	1880.09913	1880.002895	-1.54	2.5
	-20	1879.92113	1880.07308	1879.997105	1.54	2.5
	-10	1879.90883	1880.09262	1880.000725	-0.39	2.5
	0	1879.90955	1880.09262	1880.001085	-0.58	2.5
	+10	1879.90666	1880.09986	1880.00326	-1.73	2.5
	+20	1879.913003	1880.091278	1880.002141	-1.14	2.5
	+30	1879.909409	1880.091278	1880.000344	-0.18	2.5
	+40	1879.909378	1880.088435	1879.998907	0.58	2.5
	+50	1879.846536	1880.154558	1880.000547	-0.29	2.5
GPRS1900-BC1 – Mid Ch 661 @ 1880 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.3	20	1879.90955	1880.09334	1880.001445	-0.77	2.5
4.3		1879.921002	1880.076404	1879.998703	0.69	2.5

WCDMA – Band 5 – Low Ch 4132 @ 826.4 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.7	-30	826.399966	826.399969	826.399968	0.04	2.5
	-20	826.399874	826.400107	826.399991	0.01	2.5
	-10	826.399932	826.400107	826.400020	-0.02	2.5
	0	826.399933	826.400167	826.400050	-0.06	2.5
	+10	826.400212	826.400250	826.400231	-0.28	2.5
	+20	826.399313	826.399406	826.399360	0.77	2.5
	+30	826.400415	826.400421	826.400418	-0.51	2.5
	+40	826.399415	826.399421	826.399418	0.70	2.5
	+50	826.399415	826.399420	826.399418	0.70	2.5
WCDMA – Band 5 – Low Ch 4132 @ 826.4 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.3	20	826.399313	826.399375	826.399344	0.79	2.5
4.3		826.399281	826.399375	826.399328	0.81	2.5

WCDMA – Band 2 – Mid Ch 9400 @ 1880 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.7	-30	1877.8582	1882.1418	1880.0	0.0	2.5
	-20	1877.8509	1882.1418	1879.99635	1.94	2.5
	-10	1877.8582	1882.1346	1879.9964	1.91	2.5
	0	1877.8509	1882.1418	1879.99635	1.94	2.5
	+10	1877.8654	1882.1346	1880.0	0.0	2.5
	+20	1877.8582	1882.1346	1879.9964	1.91	2.5
	+30	1877.8509	1882.1418	1879.99635	1.94	2.5
	+40	1877.8582	1882.1418	1880.0	0.0	2.5
	+50	1877.9113	1882.0813	1879.9963	1.97	2.5
WCDMA – Band 2 – Mid Ch 9400 @ 1880 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.3	20	1877.8509	1882.1418	1879.99635	1.94	2.5
4.3		1877.8582	1882.1491	1880.00365	-1.94	2.5

LTE Band 5 – QPSK 1.4MHz BW-High Channel 20643 @ 848.3 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.7	-30	847.759079	848.841421	848.300250	-0.29	2.5
	-20	847.759079	848.841421	848.300250	-0.29	2.5
	-10	847.759079	848.841421	848.300250	-0.29	2.5
	0	847.759079	848.841421	848.300250	-0.29	2.5
	+10	847.759079	848.841421	848.300250	-0.29	2.5
	+20	847.759079	848.841421	848.300250	-0.29	2.5
	+30	847.759017	848.841421	848.300219	-0.26	2.5
	+40	847.759079	848.841421	848.300250	-0.29	2.5
	+50	847.759017	848.841421	848.300219	-0.26	2.5
LTE Band 5 – QPSK 1.4MHz BW-High Channel 20643 @ 848.3 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.3	20	847.759079	848.841421	848.300250	-0.29	2.5
4.3		847.759079	848.841421	848.300250	-0.29	2.5

LTE Band 2 – QPSK 20MHz BW-Mid Channel 18900 @ 1880.0 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.7	-30	1870.9987	1889.0013	1880.0	0	2.5
	-20	1870.9987	1889.0013	1880.0	0	2.5
	-10	1870.9987	1889.0013	1880.0	0	2.5
	0	1870.9972	1889.0013	1879.99925	0.39	2.5
	+10	1870.9987	1889.0013	1880.0	0	2.5
	+20	1870.9972	1889.0013	1879.99925	0.39	2.5
	+30	1870.9972	1889.0013	1879.99925	0.39	2.5
	+40	1870.9972	1889.0013	1879.99925	0.39	2.5
	+50	1870.9972	1889.0013	1879.99925	0.39	2.5
LTE Band 2 – QPSK 20MHz BW-Mid Channel 18900 @ 1880.0 MHz						
Voltage (VDC)	*Temperature (°C)*	*f1 (MHz)*	*f2 (MHz)*	*Center Freq. (f1+f2)/2*	*Freq. Error (ppm)*	*Limit (ppm)*
3.3	20	1870.9972	1889.0013	1879.99925	0.39	2.5
4.3		1870.9972	1889.0013	1879.99925	0.39	2.5

2.9.9 Sample Calculation and plot

Variables (from test plot): M1 = (Peak value of the power envelope)
T1 = (-10 dBc point)
T2 = (+10 dBc point)

Center Frequency Formula: = (T1+T2) / 2
= 1870.9972+1889.0013) / 2
= 1879.99925 MHz

Δ (MHz): = Center Frequency – Calculated Center Frequency
= 1880 MHz – 1879.99925 MHz
= 0.00075 MHz

Ppm Calculation: = (Δ (MHz) / Center Frequency) x 1000000
= (0.00075 MHz / 1880 MHz) x 1000000
= 0.39894 ppm

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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
Conducted Port Setup						
7611	Signal/Spectrum Analyzer	FSW26	102017	Rhode & Schwarz	02/01/16	02/01/17
8825	20dB Attenuator	46-20-34	BK5773	Weinschel Corp.	Verified by 7611 and 7608	
7578	Wideband Radio Communication Tester	CMW 500	1201.0002K50 -116735-rQ	Rhode & Schwarz	Used for connectivity only, calibration not required	
7608	Vector Signal Generator	SMBV100A	259021	Rhode & Schwarz	07/29/15	07/29/16
Radiated Test Setup						
1033	Bilog Antenna	3142C	00044556	EMCO	09/25/14	09/25/16
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	09/29/15	09/29/16
1016	Pre-amplifier	PAM-0202	187	PAM	12/15/15	12/15/16
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	05/12/16	05/12/17
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/17/16	03/17/17
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	01/11/16	01/11/17
1054	Horn antenna (18-40 GHz)	3116	9407-2233	EMCO	12/22/15	12/22/17
n/a	Pre-amplifier (18-40 GHz)	SLKKa-30-6	15G27	Spacek Labs	Verified by 1003 and 7611	
7578	Wideband Radio Communication Tester	CMW 500	1201.0002K50 -116735-rQ	Rhode & Schwarz	Used for connectivity only, calibration not required	
1003	Signal Generator	SMR-40	1104.0002.40	Rhode & Schwarz	05/16/16	05/16/17
7611	Signal/Spectrum Analyzer	FSW26	102017	Rhode & Schwarz	02/01/16	02/01/17
Miscellaneous						
	Test Software	EMC32	V8.53	Rhode & Schwarz	N/A	
1123	DC Power Supply	E3631A	N/A	Hewlett Packard	Verified by 6452	
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/14/15	08/14/16
7579	Temperature Chamber	115	151617	TestQuity	08/14/15	08/14/16
7560	Barometer/Temperature/Humidity Transmitter	iBTHX-W	1240476	Omega	10/19/15	10/19/16

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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (uc):	1.78
				Coverage Factor (k):	2
				Expanded Uncertainty:	3.57

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	2.70	1.56	2.43
6	EUT Setup	Rectangular	1.00	0.58	0.33
				Combined Uncertainty (u_c):	1.78
				Coverage Factor (k):	2
				Expanded Uncertainty:	3.56

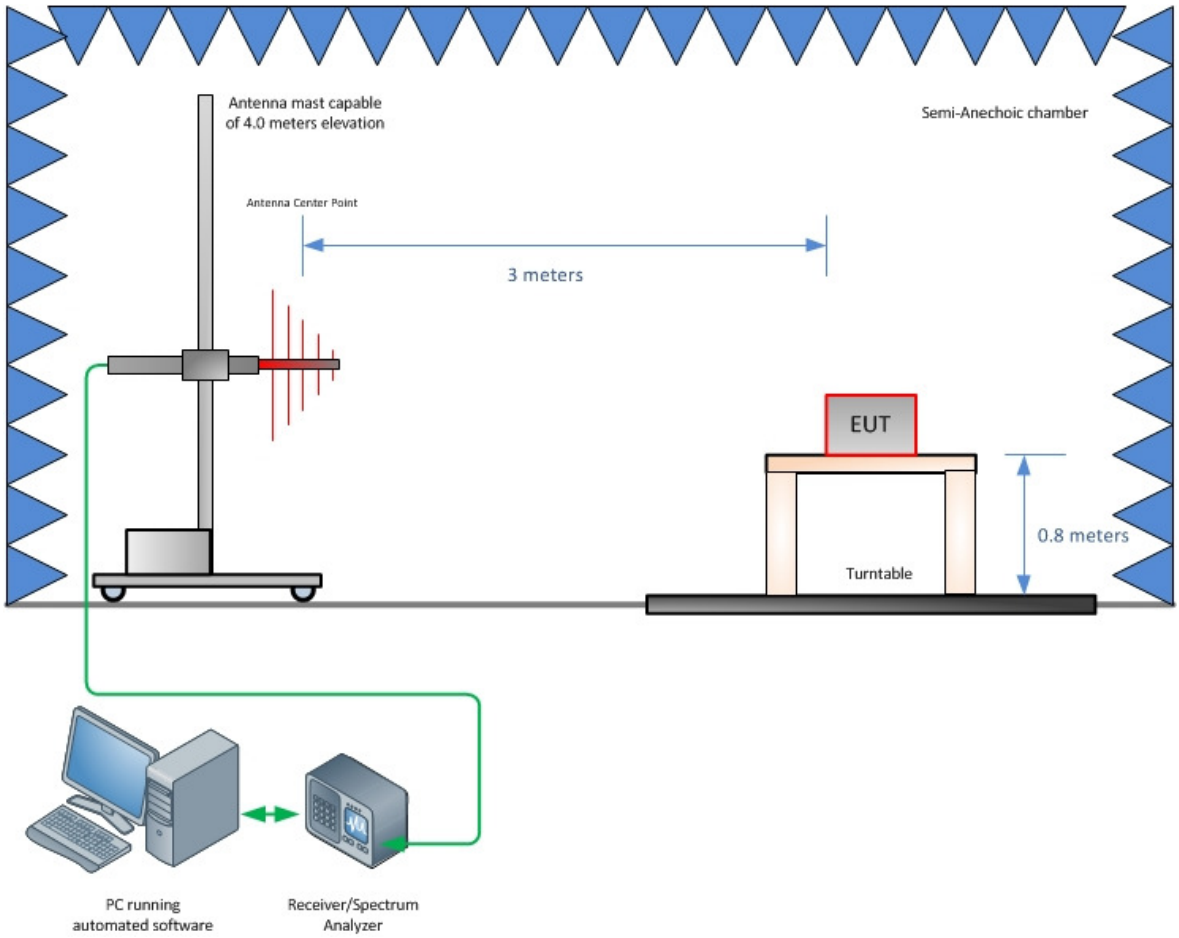
3.2.3 Conducted Antenna Port Measurement

	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

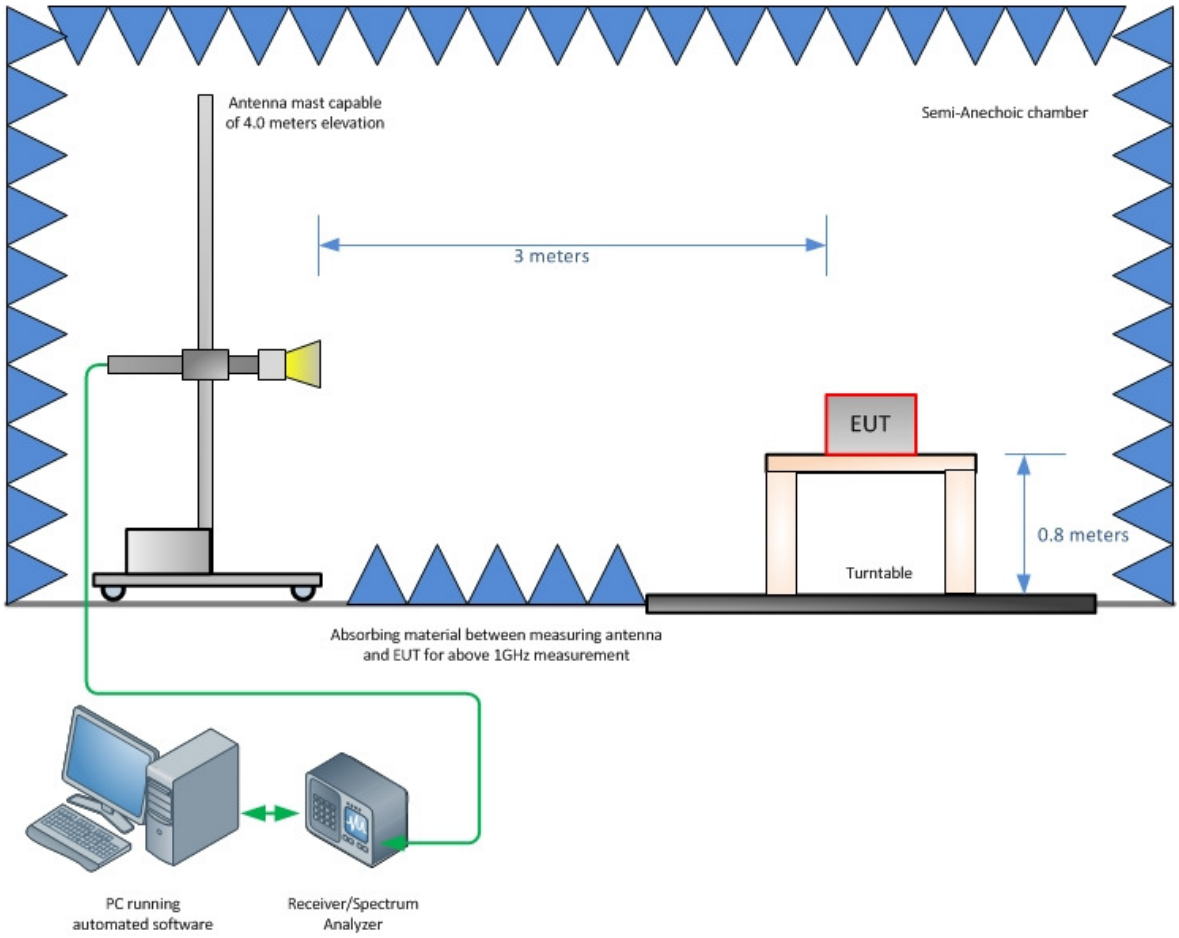
SECTION 4

DIAGRAM OF TEST SETUP

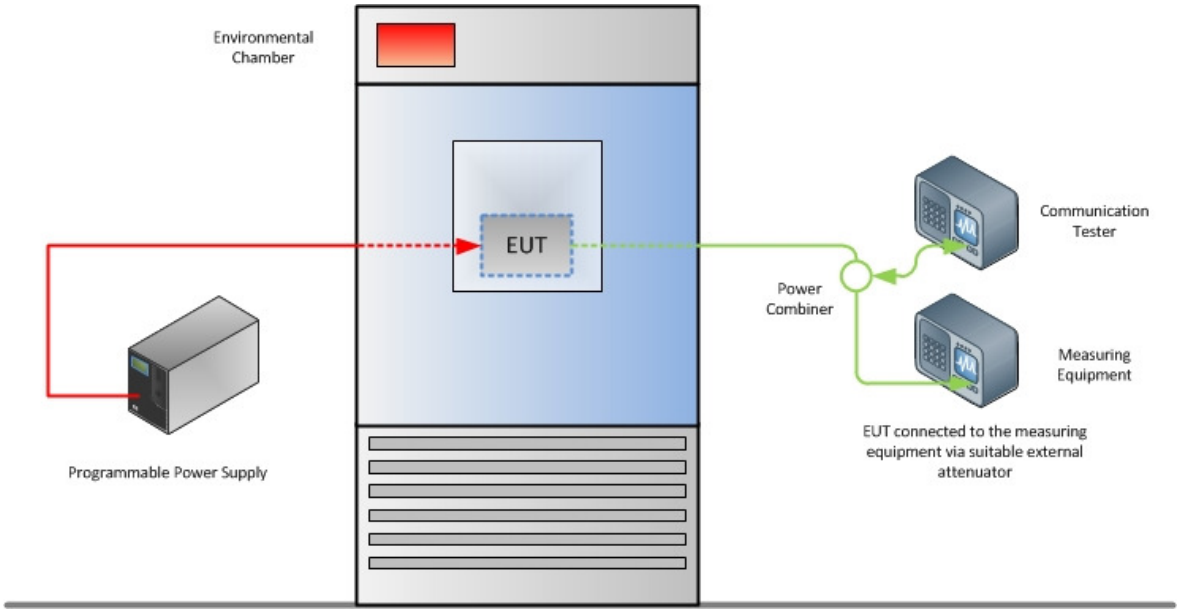
4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)



Frequency Stability Test Comfiguration

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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