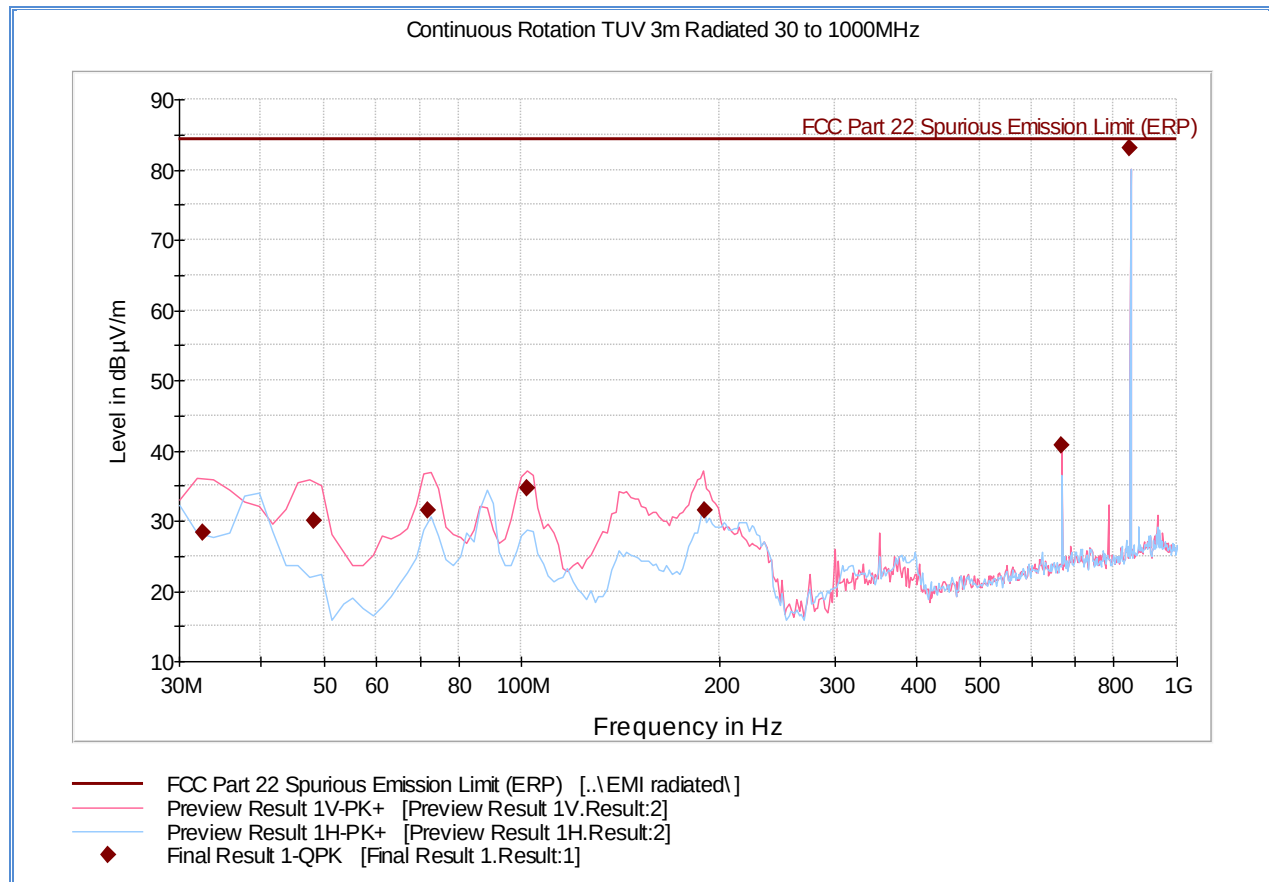


2.7.17 Test Results Below 1GHz_Worst Case Configuration GSM850 (EGPRS)_Cell_High Channel (251)

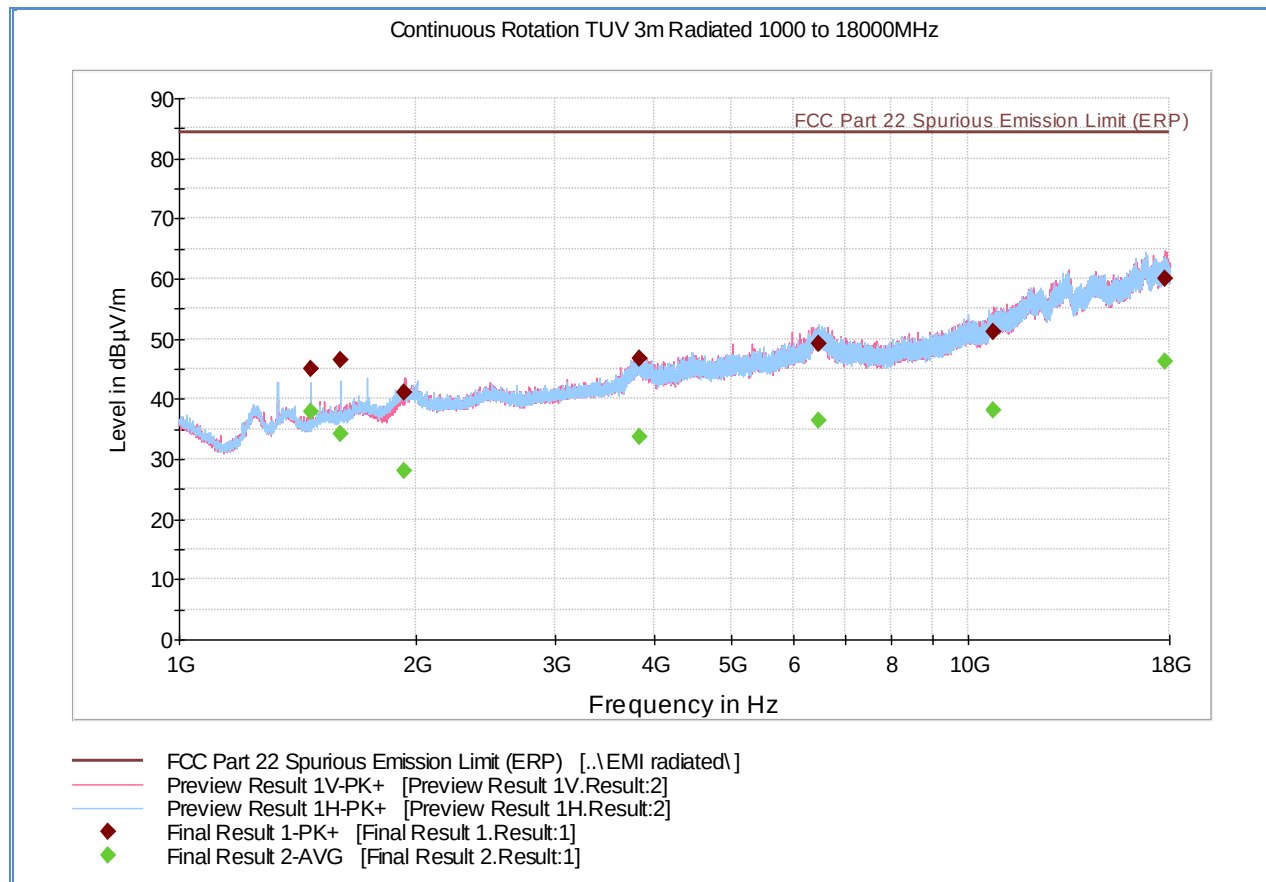


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.640000	28.4	1000.0	120.000	100.0	V	183.0	-12.0	56.0	84.4
48.078878	30.1	1000.0	120.000	100.0	V	17.0	-18.3	54.3	84.4
71.965531	31.6	1000.0	120.000	127.0	V	259.0	-21.4	52.8	84.4
101.643848	34.7	1000.0	120.000	100.0	V	286.0	-18.8	49.7	84.4
189.758798	31.5	1000.0	120.000	100.0	V	248.0	-15.3	52.9	84.4
666.675190	40.7	1000.0	120.000	100.0	V	196.0	-2.0	43.7	84.4
848.800641	83.0	1000.0	120.000	340.0	V	356.0	Fundamental		

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.7.18 Test Results Above 1GHz_GSM850 (EGPRS)_Cell_Low Channel (128)



Peak/Average Data

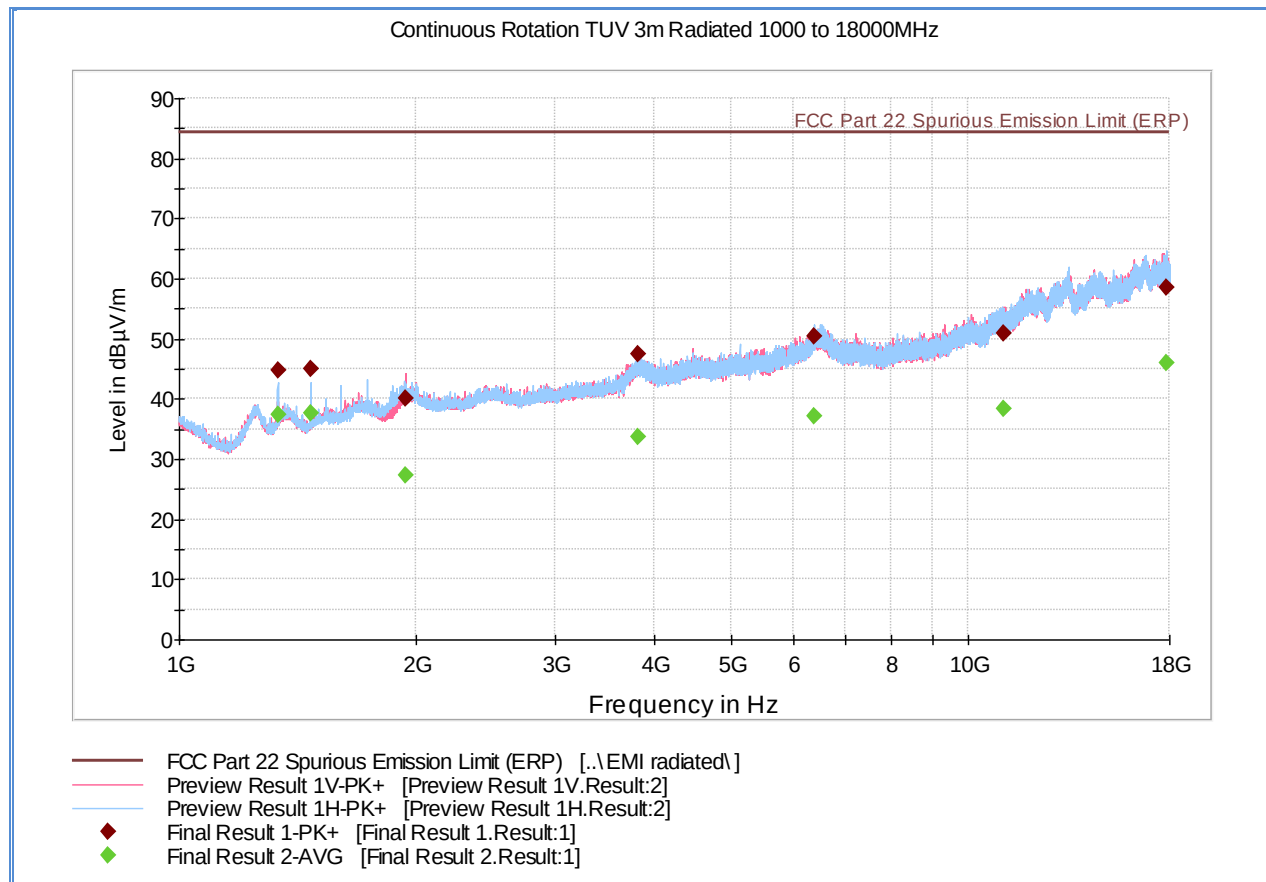
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1466.566667	45.1	37.8	1000.0	1000.000	114.7	H	329.0	-5.2	39.3	46.6	84.4
1599.733333	46.4	34.2	1000.0	1000.000	163.6	H	4.0	-4.9	38.0	50.2	84.4
1932.533333	41.2	28.1	1000.0	1000.000	229.4	V	-16.0	-1.4	43.2	56.3	84.4
3830.866667	46.7	33.8	1000.0	1000.000	345.1	V	247.0	6.1	37.7	50.6	84.4
6454.866667	49.2	36.5	1000.0	1000.000	99.7	H	151.0	12.7	35.2	47.9	84.4
10779.90000	51.2	38.1	1000.0	1000.000	169.6	V	217.0	16.3	33.2	46.3	84.4
17734.23333	60.1	46.3	1000.0	1000.000	367.1	V	233.0	25.7	24.3	38.1	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.19 Test Results Above 1GHz_GSM850 (EGPRS)_Cell_Mid Channel (190)



Peak/Average Data

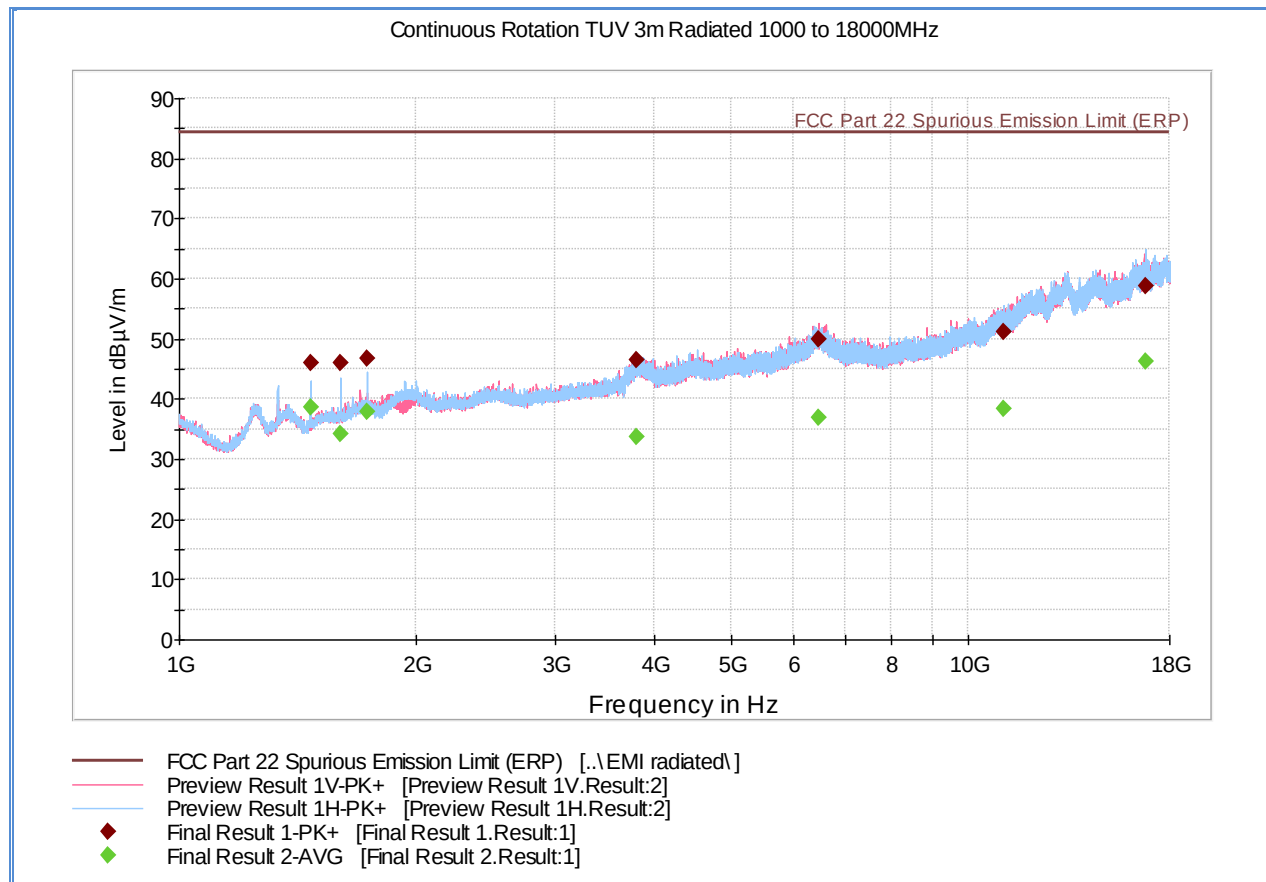
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.400000	44.8	37.4	1000.0	1000.000	136.7	H	319.0	-5.0	39.6	47.0	84.4
1466.733333	44.9	37.6	1000.0	1000.000	128.7	H	330.0	-5.2	39.5	46.8	84.4
1938.033333	40.2	27.3	1000.0	1000.000	280.2	V	-16.0	-1.4	44.2	57.0	84.4
3813.466667	47.6	33.8	1000.0	1000.000	112.7	H	122.0	6.0	36.8	50.6	84.4
6370.833333	50.3	37.0	1000.0	1000.000	300.6	H	325.0	12.6	34.1	47.4	84.4
11082.166666	50.8	38.4	1000.0	1000.000	359.1	V	292.0	16.6	33.5	46.0	84.4
17866.233333	58.4	45.9	1000.0	1000.000	403.6	H	137.0	25.5	25.9	38.5	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.20 Test Results Above 1GHz_GSM850 (EGPRS)_Cell_High Channel (251)



Peak/Average Data

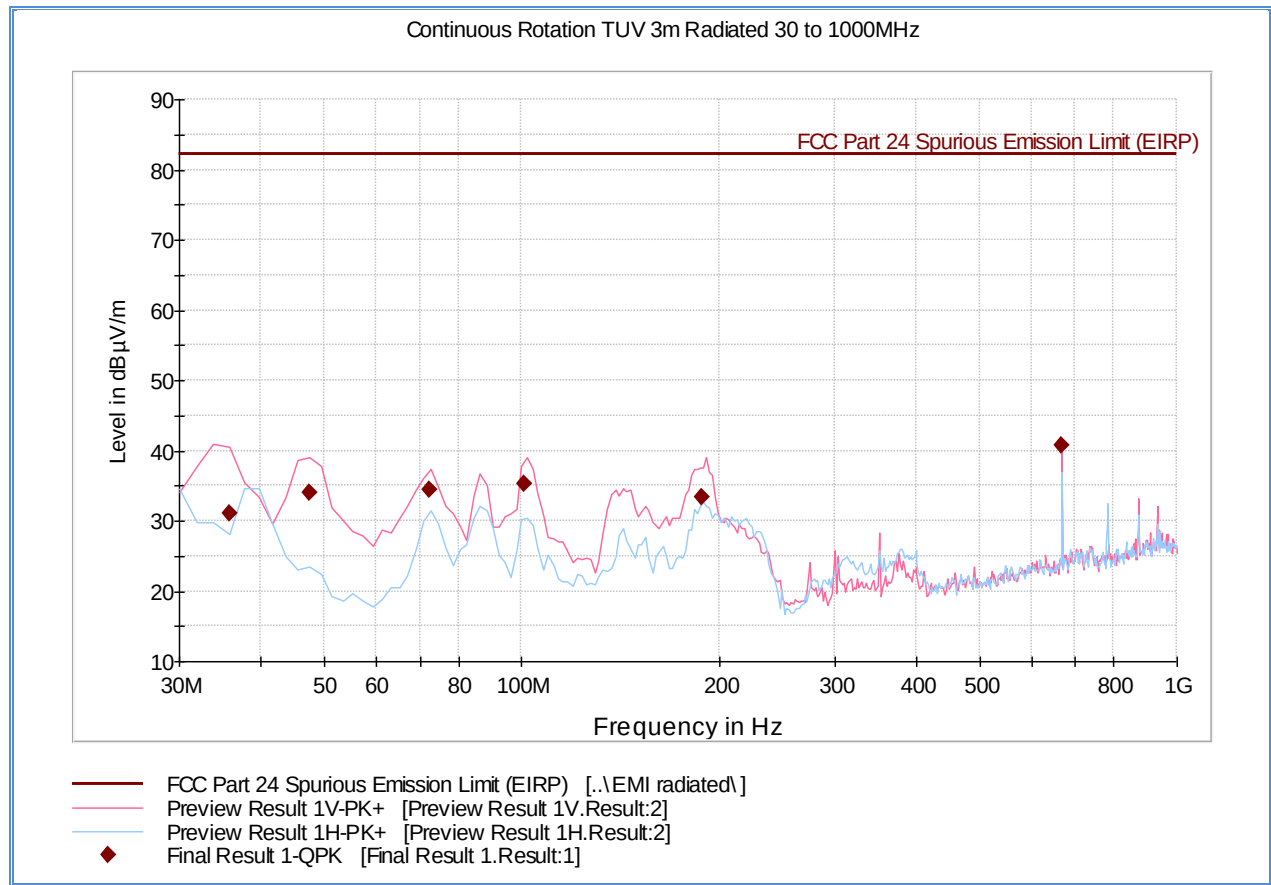
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBµV/m)
1466.566667	45.9	38.5	1000.0	1000.000	121.7	H	330.0	-5.2	38.5	45.9	84.4
1599.733333	46.1	34.2	1000.0	1000.000	112.7	H	-15.0	-4.9	38.3	50.2	84.4
1733.466667	46.6	37.8	1000.0	1000.000	120.7	H	358.0	-3.4	37.8	46.6	84.4
3803.433333	46.5	33.7	1000.0	1000.000	187.5	V	119.0	6.0	37.9	50.7	84.4
6461.366667	49.9	36.9	1000.0	1000.000	138.7	V	222.0	12.7	34.5	47.5	84.4
11083.63333	51.1	38.3	1000.0	1000.000	152.6	H	346.0	16.6	33.3	46.1	84.4
16829.10000	58.8	46.2	1000.0	1000.000	99.7	H	281.0	25.4	25.5	38.2	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.21 Test Results Below 1GHz_Worst Case Configuration GSM1900 (EGPRS)_PCS_High Channel (810)

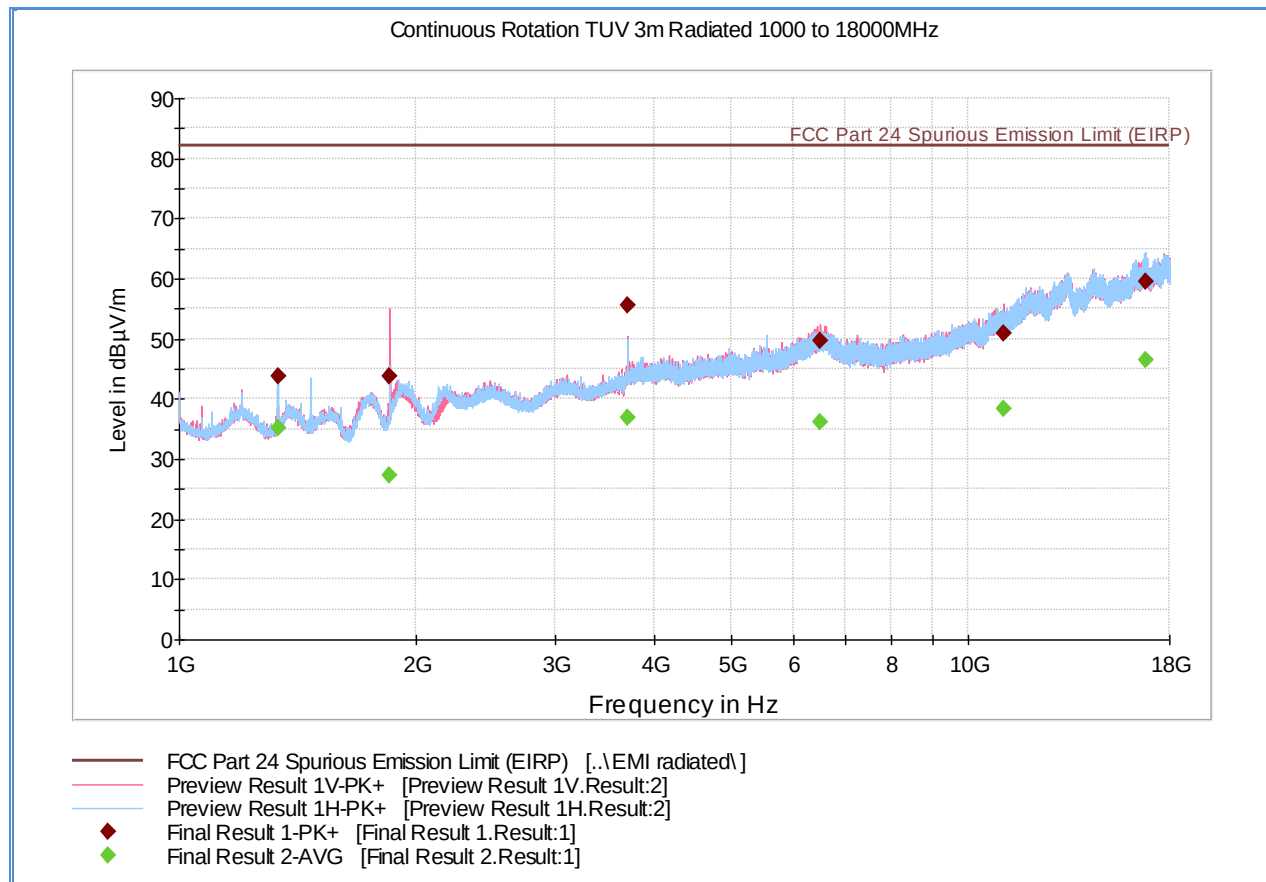


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
35.847776	31.1	1000.0	120.000	100.0	V	208.0	-13.7	51.1	82.2
47.534990	34.0	1000.0	120.000	100.0	V	230.0	-18.2	48.2	82.2
72.285531	34.4	1000.0	120.000	100.0	V	317.0	-21.4	47.8	82.2
101.043848	35.3	1000.0	120.000	100.0	V	255.0	-18.8	46.9	82.2
188.702685	33.3	1000.0	120.000	100.0	V	245.0	-15.3	48.9	82.2
666.675190	40.8	1000.0	120.000	100.0	V	324.0	-2.0	41.4	82.2

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.7.22 Test Results Above 1GHz_GSM1900 (EGPRS)_PCS_Low Channel (512)



Peak/Average Data

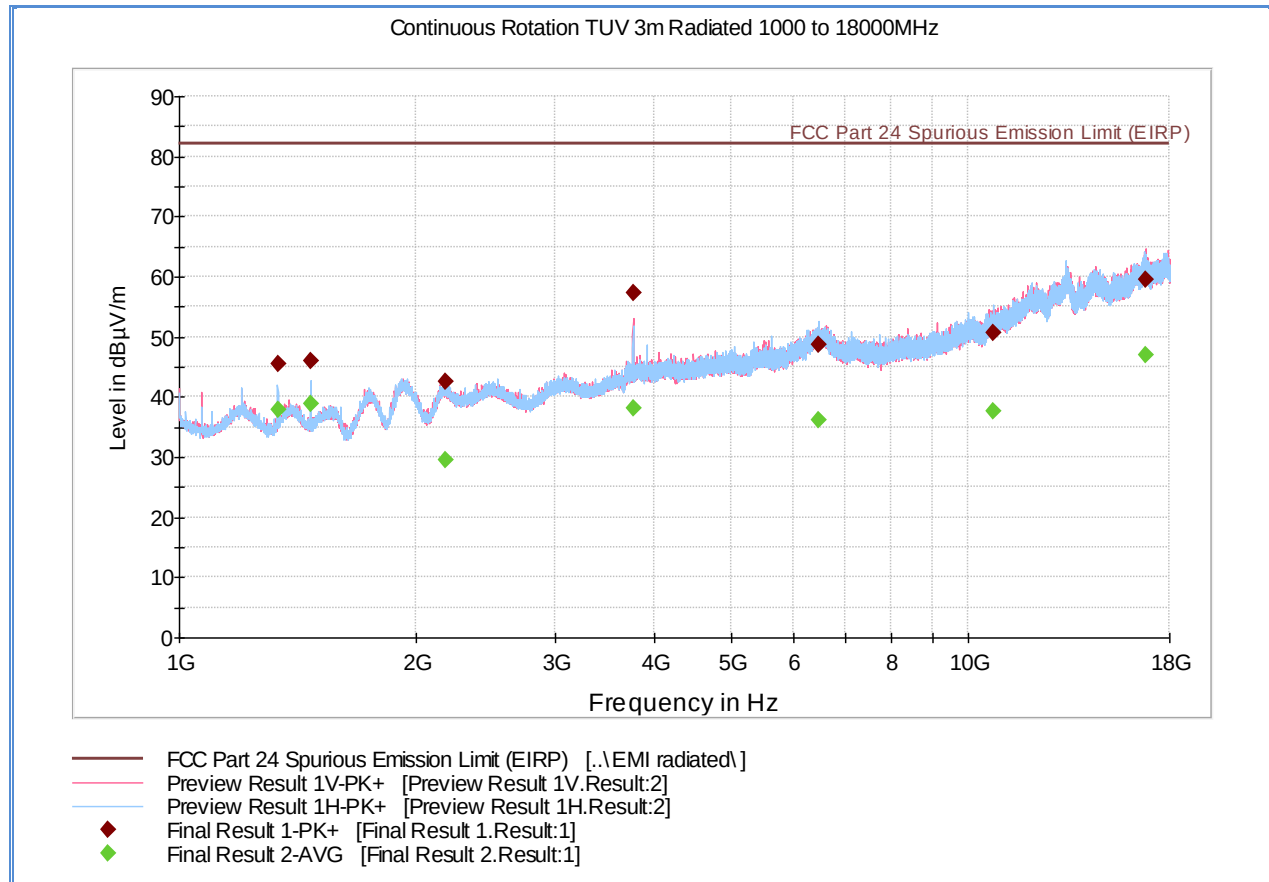
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBµV/m)
1333.000000	43.8	35.2	1000.0	1000.000	102.7	H	320.0	-5.0	38.5	47.1	82.2
1850.200000	43.9	27.2	1000.0	1000.000	219.4	V	126.0	-2.2	38.3	55.0	82.2
3700.366667	55.7	36.8	1000.0	1000.000	99.7	V	221.0	4.7	26.6	45.4	82.2
6481.166667	49.6	36.2	1000.0	1000.000	378.1	V	39.0	12.7	32.7	46.0	82.2
11079.866666	51.0	38.3	1000.0	1000.000	121.7	V	281.0	16.6	31.2	43.9	82.2
16814.366666	59.5	46.4	1000.0	1000.000	300.2	H	13.0	25.6	22.7	35.8	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.23 Test Results Above 1GHz_GSM1900 (EGPRS)_PCS_Mid Channel (661)



Peak/Average Data

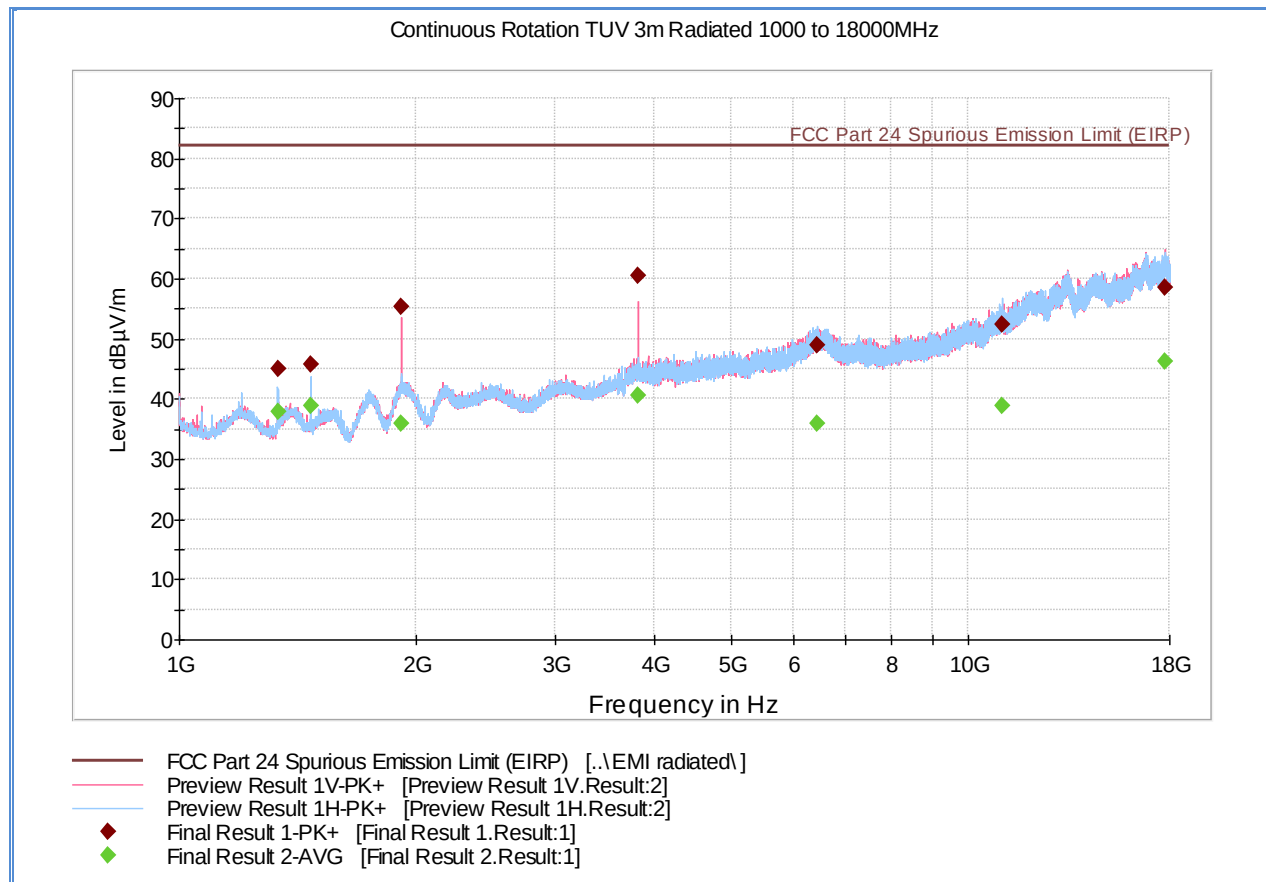
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBµV/m)
1333.400000	45.4	38.0	1000.0	1000.000	136.7	H	313.0	-5.0	36.8	44.3	82.2
1466.566667	46.0	38.9	1000.0	1000.000	120.7	H	326.0	-5.2	36.3	43.3	82.2
2172.000000	42.5	29.6	1000.0	1000.000	403.6	V	56.0	-1.0	39.8	52.6	82.2
3760.066667	57.3	38.1	1000.0	1000.000	355.1	V	-14.0	5.3	24.9	44.2	82.2
6457.533333	48.6	36.1	1000.0	1000.000	246.3	H	65.0	12.7	33.6	46.2	82.2
10757.23333	50.7	37.7	1000.0	1000.000	99.7	H	90.0	16.2	31.6	44.5	82.2
16792.80000	59.4	47.0	1000.0	1000.000	403.6	V	186.0	25.9	22.8	35.2	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.24 Test Results Above 1GHz_GSM1900 (EGPRS)_PCS_High Channel (810)



Peak/Average Data

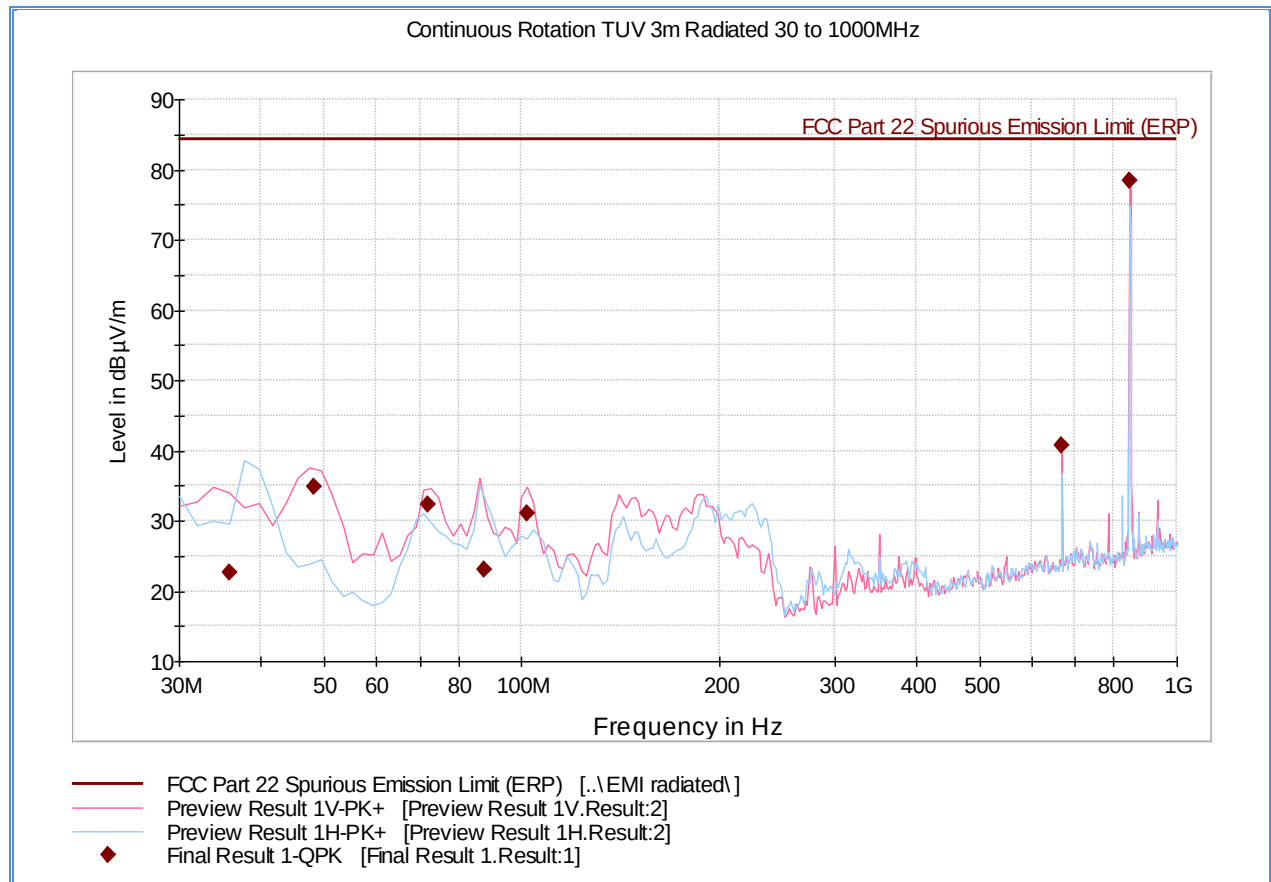
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.433333	45.1	38.0	1000.0	1000.000	121.7	H	310.0	-5.0	37.2	44.2	82.2
1466.566667	45.8	38.8	1000.0	1000.000	136.7	H	320.0	-5.2	36.5	43.4	82.2
1909.700000	55.3	35.9	1000.0	1000.000	208.5	V	214.0	-1.5	27.0	46.4	82.2
3819.566667	60.5	40.7	1000.0	1000.000	300.2	V	-9.0	6.0	21.8	41.6	82.2
6448.333333	48.9	35.9	1000.0	1000.000	265.3	H	283.0	12.7	33.3	46.4	82.2
11033.766666	52.4	38.9	1000.0	1000.000	154.6	H	158.0	16.9	29.8	43.3	82.2
17746.700000	58.5	46.1	1000.0	1000.000	370.1	V	176.0	25.8	23.7	36.1	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.25 Test Results Below 1GHz_Worst Case Configuration WCDMA_Cell Band 5_High Channel (4233)

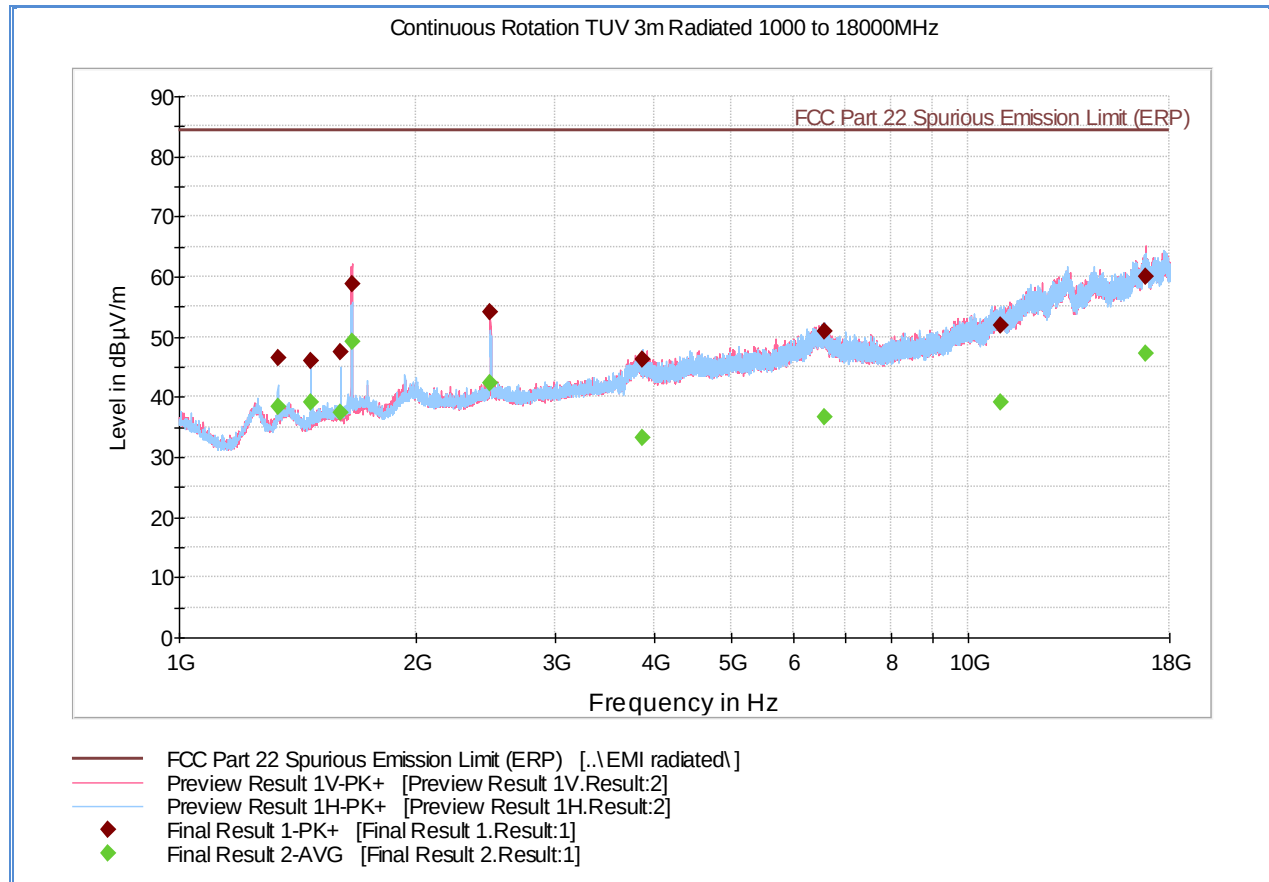


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
35.855551	22.6	1000.0	120.000	365.0	H	15.0	-13.7	61.8	84.4
48.254990	34.9	1000.0	120.000	100.0	V	22.0	-18.3	49.5	84.4
71.965531	32.4	1000.0	120.000	100.0	V	151.0	-21.4	52.0	84.4
87.812745	23.1	1000.0	120.000	200.0	V	344.0	-20.3	61.3	84.4
102.123848	31.1	1000.0	120.000	100.0	V	271.0	-18.9	53.3	84.4
666.675190	40.7	1000.0	120.000	100.0	V	323.0	-2.0	43.7	84.4
847.896754	78.3	1000.0	120.000	110.0	V	173.0	Fundamental		

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.7.26 Test Results Above 1GHz_WCDMA_Cell Band 5_Low Channel (4132)



Peak/Average Data

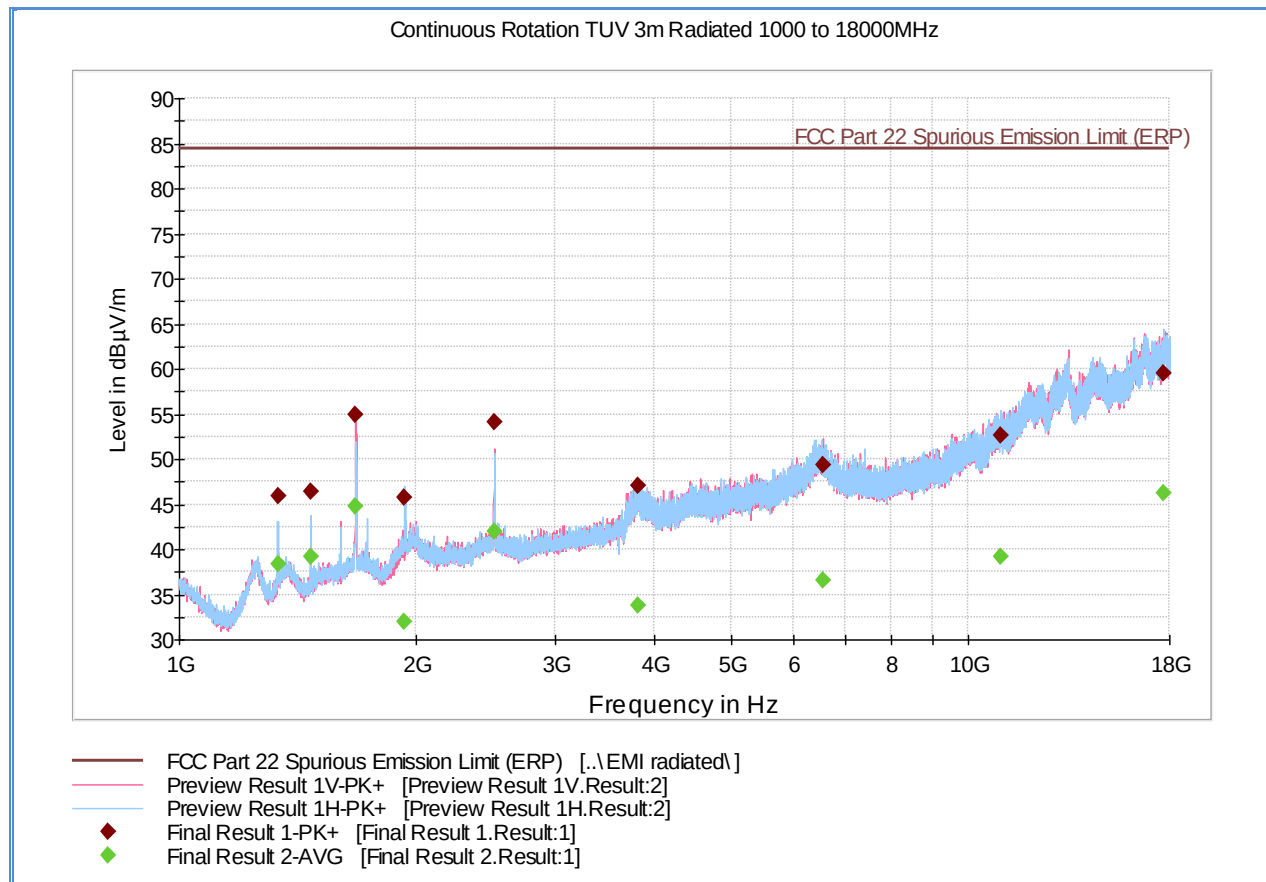
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.400000	46.5	38.4	1000.0	1000.000	143.7	H	316.0	-5.0	37.9	46.0	84.4
1466.566667	46.1	39.0	1000.0	1000.000	120.7	H	319.0	-5.2	38.3	45.4	84.4
1599.933333	47.5	37.3	1000.0	1000.000	120.7	H	358.0	-4.9	36.8	47.1	84.4
1654.700000	58.7	49.1	1000.0	1000.000	200.5	V	202.0	-4.3	25.7	35.2	84.4
2476.366667	54.1	42.4	1000.0	1000.000	103.7	V	284.0	0.1	30.3	42.0	84.4
3867.133333	46.2	33.3	1000.0	1000.000	344.1	H	278.0	6.0	38.1	51.1	84.4
6578.133333	50.9	36.7	1000.0	1000.000	227.4	H	23.0	12.8	33.5	47.6	84.4
11023.000000	51.8	39.2	1000.0	1000.000	321.1	H	310.0	16.9	32.6	45.2	84.4
16778.866666	60.1	47.1	1000.0	1000.000	403.6	V	-3.0	25.9	24.3	37.2	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.27 Test Results Above 1GHz_WCDMA_Cell Band 5_Mid Channel (4183)



Peak/Average Data

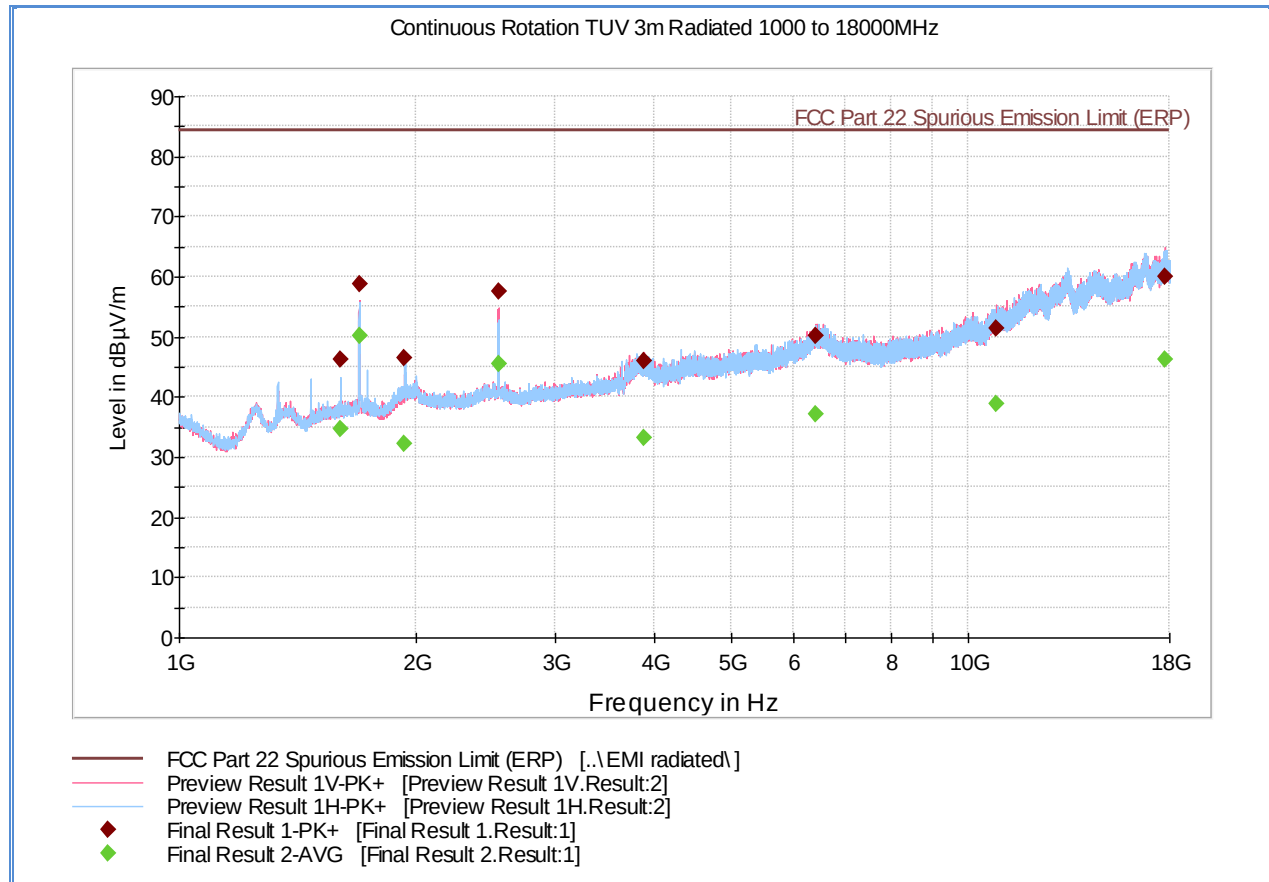
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.433333	45.9	38.3	1000.0	1000.000	128.7	H	319.0	-5.0	38.4	46.1	84.4
1466.766667	46.4	39.2	1000.0	1000.000	128.7	H	328.0	-5.2	38.0	45.2	84.4
1671.133333	54.9	44.8	1000.0	1000.000	103.7	V	163.0	-4.1	29.5	39.6	84.4
1932.133333	45.8	31.9	1000.0	1000.000	103.7	H	280.0	-1.4	38.6	52.5	84.4
2506.966667	54.2	41.9	1000.0	1000.000	120.7	V	145.0	0.2	30.2	42.5	84.4
3810.666667	47.0	33.8	1000.0	1000.000	136.7	H	39.0	6.0	37.4	50.6	84.4
6538.833333	49.3	36.5	1000.0	1000.000	146.7	V	90.0	12.8	35.1	47.9	84.4
10978.866666	52.6	39.3	1000.0	1000.000	403.6	H	215.0	17.0	31.8	45.1	84.4
17718.800000	59.5	46.2	1000.0	1000.000	367.1	H	116.0	25.6	24.9	38.2	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.28 Test Results Above 1GHz_WCDMA_Cell Band 5_High Channel (4233)



Peak/Average Data

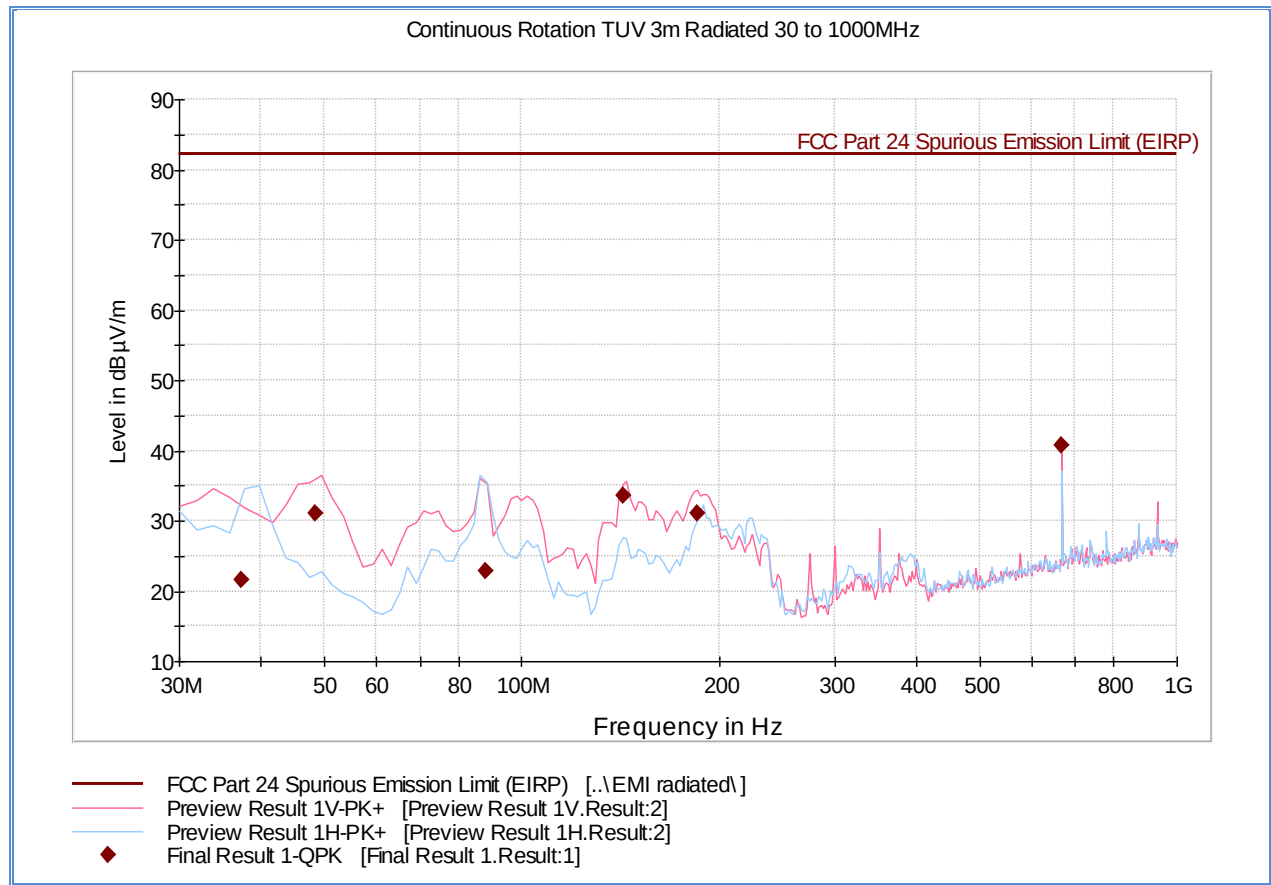
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBµV/m)
1600.133333	46.3	34.8	1000.0	1000.000	128.7	H	0.0	-4.9	38.1	49.6	84.4
1694.933333	58.8	50.2	1000.0	1000.000	189.5	V	212.0	-3.7	25.5	34.2	84.4
1932.366667	46.4	32.2	1000.0	1000.000	102.7	H	221.0	-1.4	38.0	52.2	84.4
2542.666667	57.5	45.6	1000.0	1000.000	115.7	V	133.0	0.1	26.9	38.8	84.4
3875.866667	46.1	33.3	1000.0	1000.000	259.3	V	19.0	6.0	38.3	51.1	84.4
6401.133333	50.2	37.2	1000.0	1000.000	180.6	V	299.0	12.7	34.2	47.2	84.4
10864.93333	51.5	38.9	1000.0	1000.000	138.7	V	209.0	16.6	32.9	45.5	84.4
17776.00000	60.1	46.3	1000.0	1000.000	258.3	V	238.0	25.8	24.3	38.1	84.4

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 800MHz to 1GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.29 Test Results Below 1GHz_Worst Case Configuration
WCDMA_PCS Band 2_High Channel (9538)

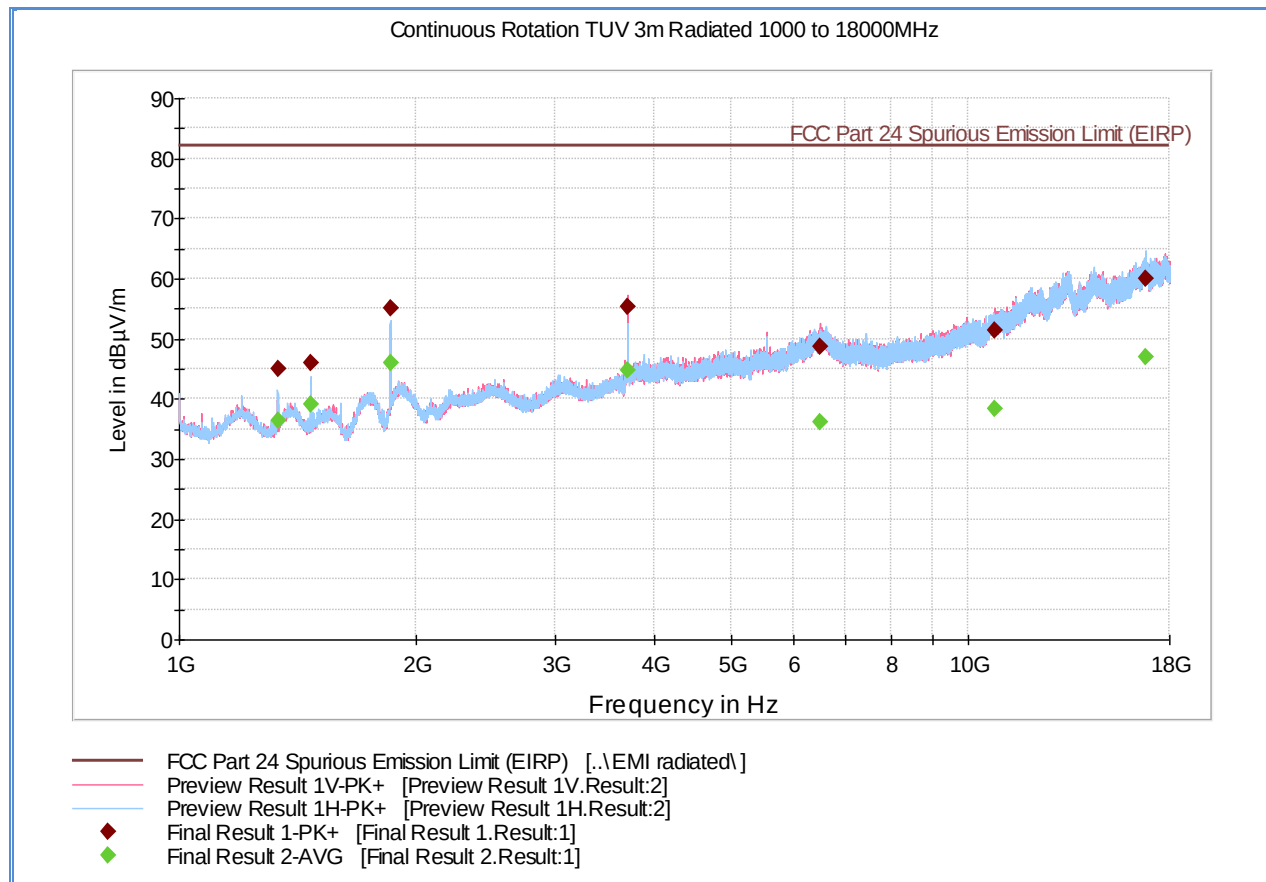


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
37.319439	21.5	1000.0	120.000	350.0	H	-15.0	-14.4	60.7	82.2
48.318878	31.1	1000.0	120.000	100.0	V	172.0	-18.4	51.1	82.2
87.972745	22.9	1000.0	120.000	200.0	H	-12.0	-20.3	59.4	82.2
142.889379	33.6	1000.0	120.000	100.0	V	133.0	-18.7	48.7	82.2
185.031022	31.1	1000.0	120.000	100.0	V	218.0	-15.9	51.1	82.2
666.675190	40.8	1000.0	120.000	100.0	V	197.0	-2.0	41.5	82.2

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.7.30 Test Results Above 1GHz_WCDMA_PCS Band 2_Low Channel (9262)



Peak/Average Data

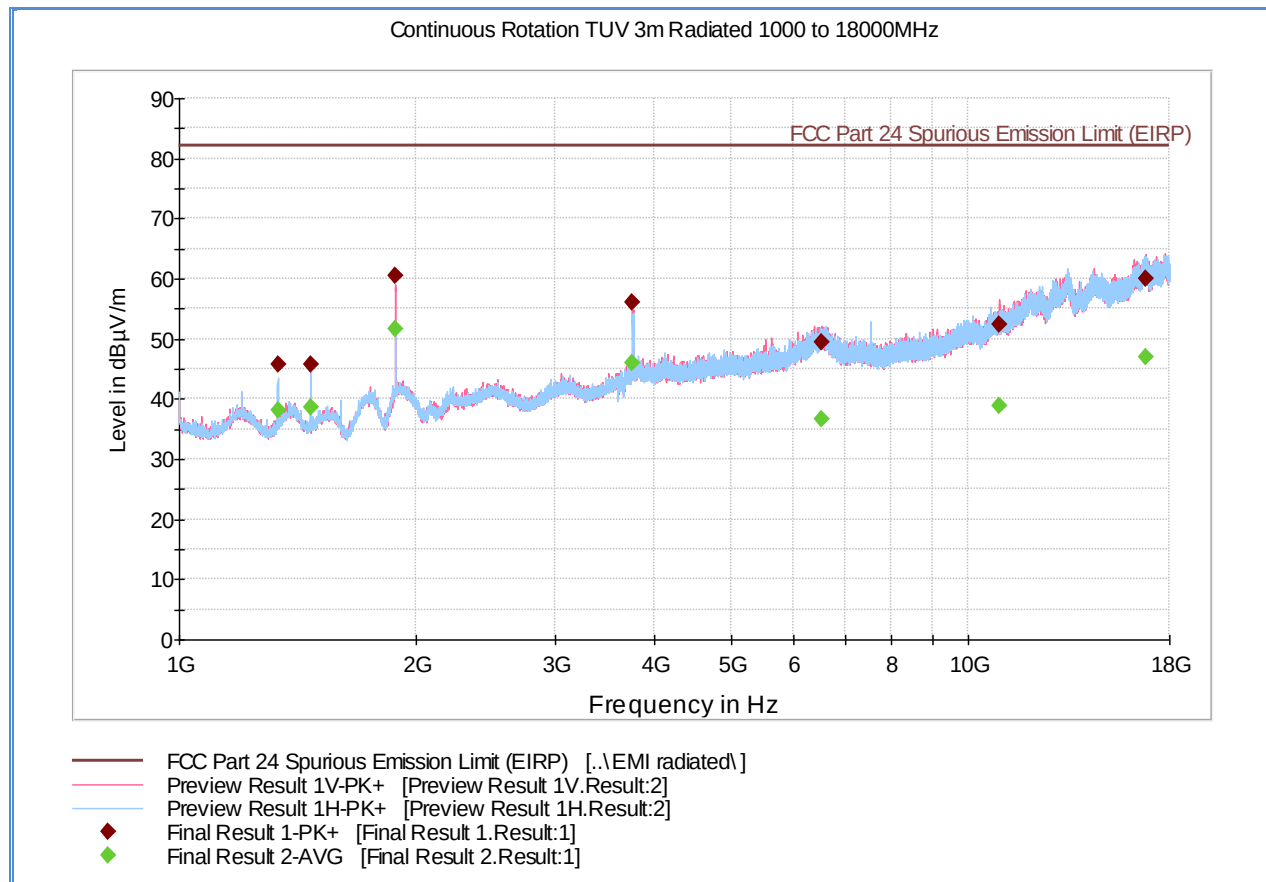
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.033333	45.0	36.4	1000.0	1000.000	136.7	H	319.0	-5.0	37.2	45.8	82.2
1466.566667	46.1	39.2	1000.0	1000.000	128.7	H	329.0	-5.2	36.1	43.0	82.2
1851.333333	55.0	45.9	1000.0	1000.000	256.3	H	221.0	-2.2	27.2	36.3	82.2
3702.833333	55.2	44.6	1000.0	1000.000	161.6	V	206.0	4.7	27.0	37.6	82.2
6486.833333	48.8	36.1	1000.0	1000.000	103.7	V	-2.0	12.7	33.5	46.1	82.2
10817.30000	51.3	38.4	1000.0	1000.000	99.7	V	79.0	16.5	30.9	43.9	82.2
16799.36666	60.0	47.0	1000.0	1000.000	403.6	H	158.0	25.9	22.2	35.2	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.31 Test Results Above 1GHz_WCDMA_PCS Band 2_Mid Channel (9400)



Peak/Average Data

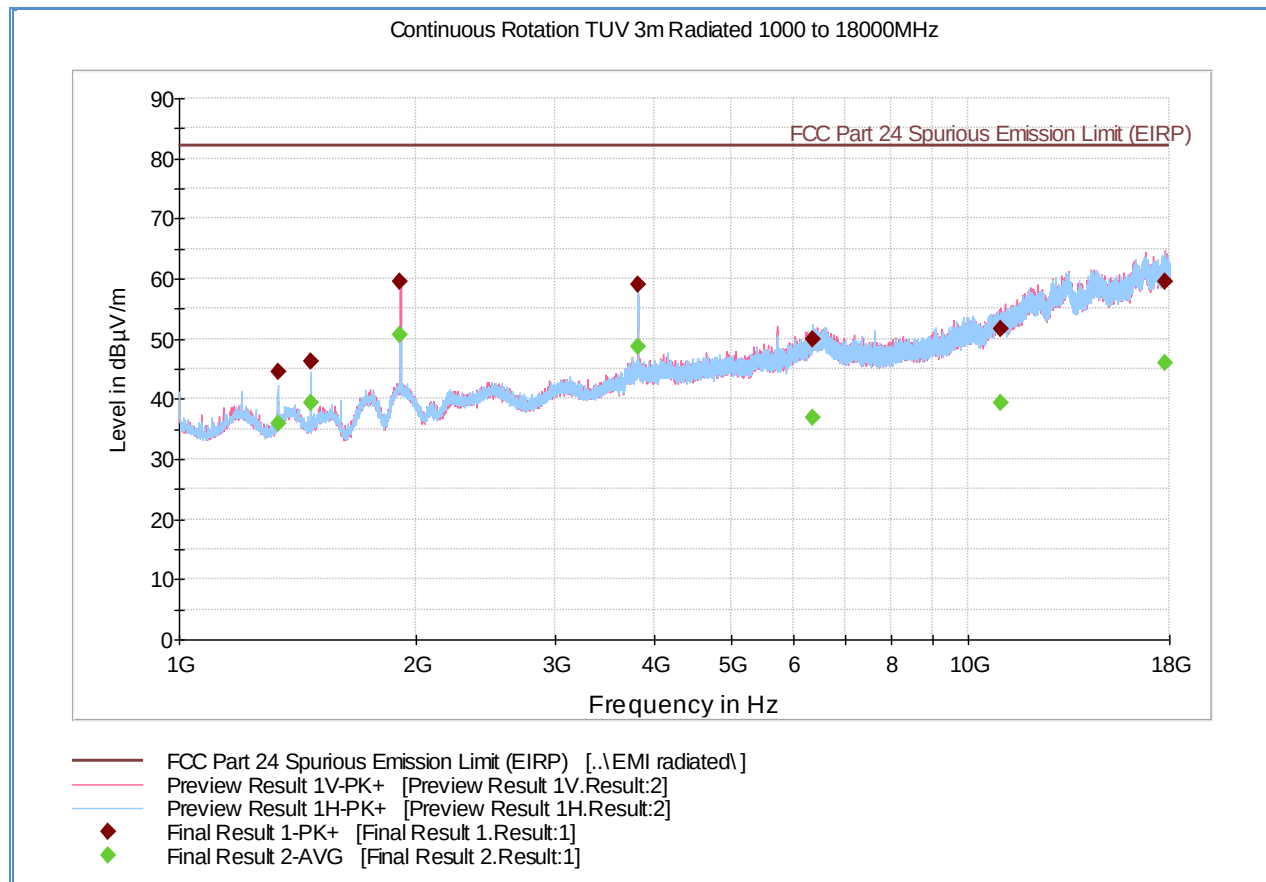
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.433333	45.8	38.1	1000.0	1000.000	128.7	H	316.0	-5.0	36.5	44.2	82.2
1466.566667	45.7	38.5	1000.0	1000.000	144.7	H	319.0	-5.2	36.5	43.7	82.2
1879.100000	60.4	51.7	1000.0	1000.000	99.7	V	209.0	-1.8	21.8	30.5	82.2
3758.166667	56.0	45.9	1000.0	1000.000	120.7	V	163.0	5.3	26.2	36.3	82.2
6532.333333	49.5	36.7	1000.0	1000.000	202.3	V	323.0	12.8	32.7	45.6	82.2
10973.73333	52.4	38.8	1000.0	1000.000	154.6	V	136.0	17.0	29.8	43.4	82.2
16787.53333	60.1	47.0	1000.0	1000.000	202.3	V	225.0	25.9	22.1	35.2	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.32 Test Results Above 1GHz_WCDMA_PCS Band 2_High Channel (9538)



Peak/Average Data

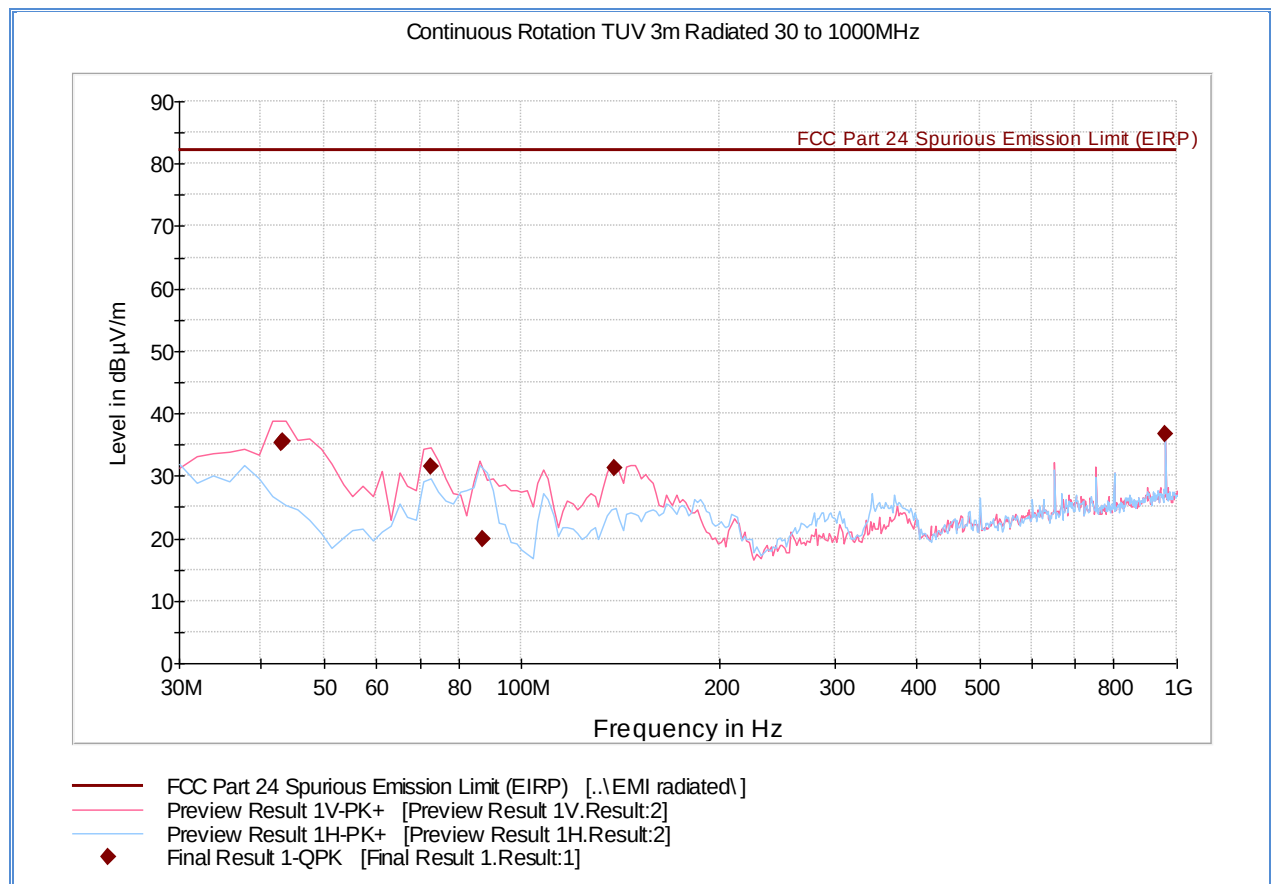
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1333.000000	44.5	35.9	1000.0	1000.000	136.7	H	319.0	-5.0	37.7	46.3	82.2
1466.566667	46.2	39.4	1000.0	1000.000	128.7	H	329.0	-5.2	36.1	42.9	82.2
1906.500000	59.4	50.6	1000.0	1000.000	113.7	V	246.0	-1.5	22.8	31.6	82.2
3817.100000	59.1	48.8	1000.0	1000.000	228.4	H	143.0	6.0	23.1	33.5	82.2
6365.000000	49.9	36.8	1000.0	1000.000	403.6	H	323.0	12.6	32.3	45.4	82.2
11000.500000	51.7	39.2	1000.0	1000.000	146.7	V	213.0	17.1	30.5	43.0	82.2
17751.800000	59.4	46.1	1000.0	1000.000	103.7	V	2.0	25.8	22.8	36.1	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.33 Test Results Below 1GHz_Worst Case Configuration LTE Band 2_QPSK_1.4MHz BW_Mid Channel (18900)

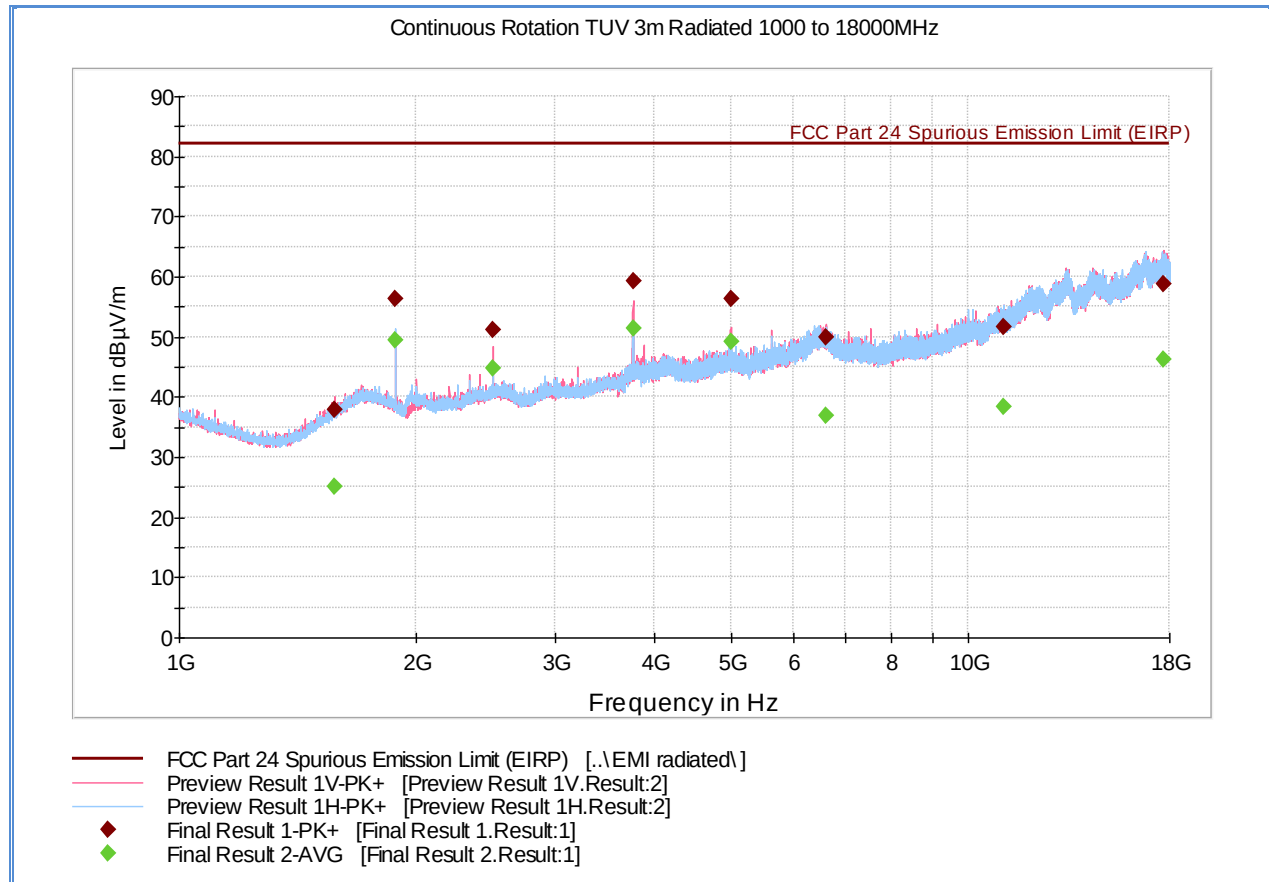


Quasi Peak Data

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
43.063327	35.2	1000.0	120.000	100.0	V	141.0	-16.9	49.2	84.4
43.087214	35.5	1000.0	120.000	100.0	V	190.0	-16.9	49.0	84.4
72.645531	31.4	1000.0	120.000	100.0	V	102.0	-21.4	53.0	84.4
87.092745	19.8	1000.0	120.000	200.0	V	355.0	-20.4	64.6	84.4
138.473828	31.3	1000.0	120.000	109.0	V	151.0	-19.2	53.1	84.4
960.082244	36.8	1000.0	120.000	100.0	V	98.0	2.4	47.6	84.4

Test Notes: Only worst case channel presented for spurious emissions below 1GHz.

2.7.34 Test Results Above 1GHz_LTE Band 2_QPSK_1.4MHz BW_Low Channel (18607)



Peak/Average Data

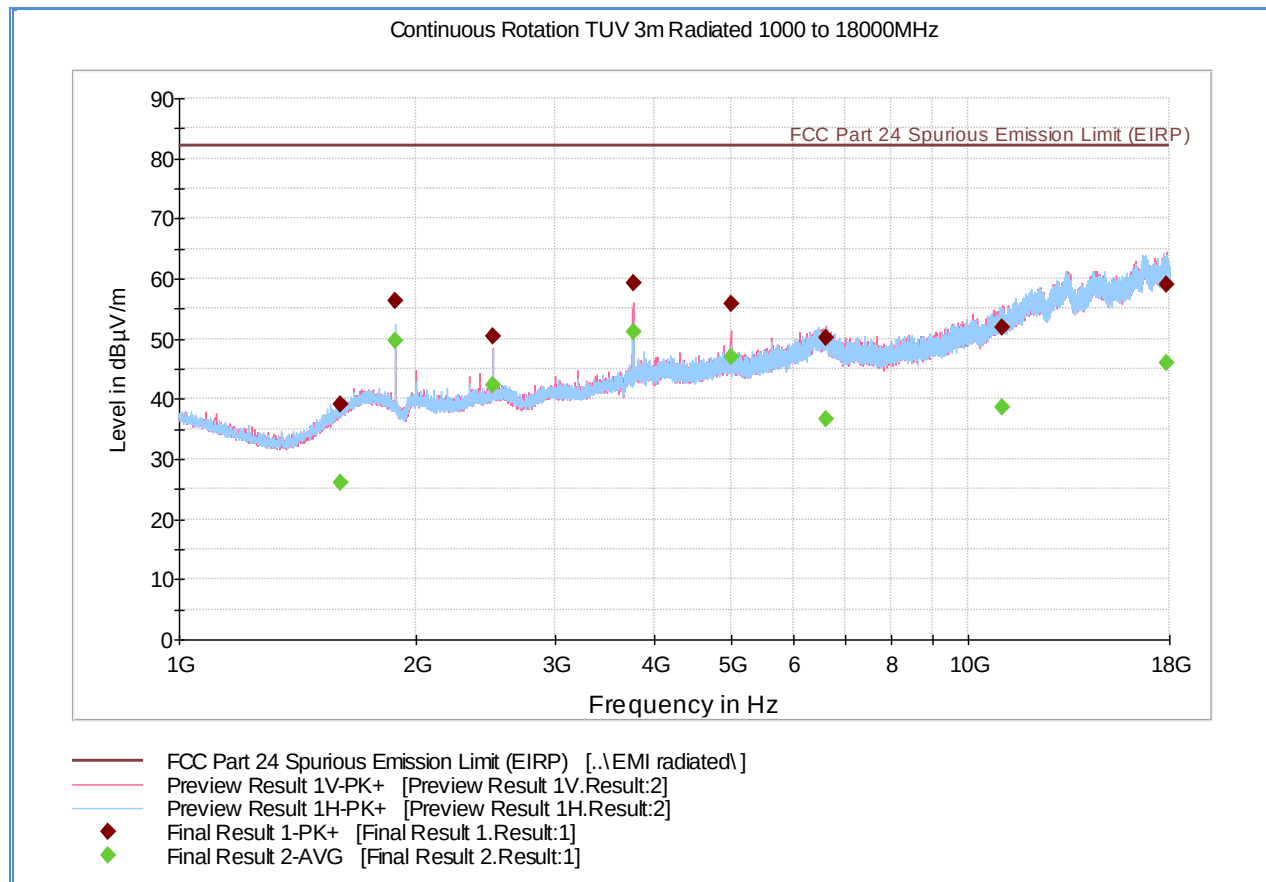
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1573.700000	37.8	25.2	1000.0	1000.000	200.5	V	232.0	-5.0	44.4	57.0	82.2
1879.833333	56.2	49.5	1000.0	1000.000	115.7	H	164.0	-1.8	26.0	32.7	82.2
2500.166667	51.2	44.8	1000.0	1000.000	113.7	V	346.0	0.2	31.1	37.4	82.2
3759.866667	59.4	51.4	1000.0	1000.000	102.7	V	88.0	5.3	22.9	30.9	82.2
4999.900000	56.3	49.3	1000.0	1000.000	136.7	V	338.0	7.6	26.0	32.9	82.2
6596.033333	49.8	36.8	1000.0	1000.000	249.3	V	351.0	12.8	32.4	45.4	82.2
11097.10000	51.6	38.3	1000.0	1000.000	404.4	V	177.0	16.5	30.6	43.9	82.2
17705.86666	58.8	46.2	1000.0	1000.000	323.2	V	338.0	25.6	23.4	36.1	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.35 Test Results Above 1GHz_LTE Band 2_QPSK_1.4MHz BW_Mid Channel (18900)



Peak/Average Data

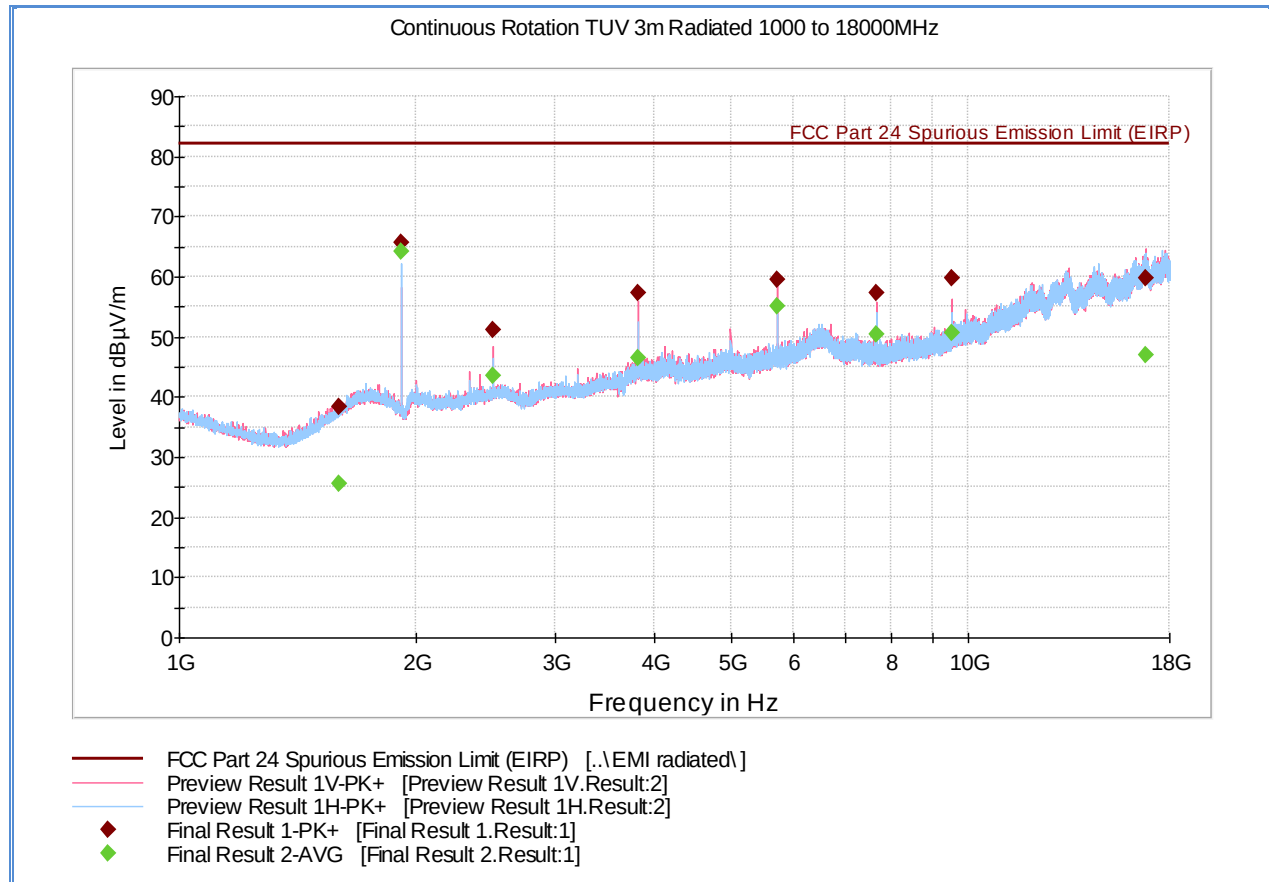
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1602.800000	39.0	26.1	1000.0	1000.000	404.4	H	276.0	-4.9	43.2	56.2	82.2
1879.866667	56.3	49.6	1000.0	1000.000	114.7	H	163.0	-1.8	25.9	32.6	82.2
2499.766667	50.4	42.4	1000.0	1000.000	99.7	V	349.0	0.2	31.9	39.8	82.2
3759.866667	59.1	51.0	1000.0	1000.000	103.7	V	87.0	5.3	23.1	31.2	82.2
4999.900000	55.7	47.1	1000.0	1000.000	161.6	V	337.0	7.6	26.5	35.1	82.2
6616.066667	50.1	36.6	1000.0	1000.000	153.7	V	18.0	12.7	32.1	45.6	82.2
11066.066666	52.0	38.6	1000.0	1000.000	187.5	V	294.0	16.7	30.2	43.7	82.2
17809.233333	58.9	46.1	1000.0	1000.000	120.7	V	54.0	25.8	23.3	36.2	82.2

Substitution Data

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

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data not required since margin is >20dB compared to the -13dBm limit (converted to field strength @ 3 meters).

2.7.36 Test Results Above 1GHz_LTE Band 2_QPSK_1.4MHz BW_High Channel (19193)



Peak/Average Data

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Peak Margin (dB)	Average Margin (dB)	Limit (dBμV/m)
1592.733333	38.3	25.7	1000.0	1000.000	144.7	V	202.0	-4.9	43.9	56.5	82.2
1909.700000	65.6	64.1	1000.0	1000.000	114.7	H	162.0	-1.5	16.6	18.1	82.2
2500.166667	51.1	43.6	1000.0	1000.000	112.7	V	350.0	0.2	31.2	38.6	82.2
3818.966667	57.2	46.4	1000.0	1000.000	99.7	V	269.0	6.0	25.0	35.8	82.2
5729.200000	59.5	55.0	1000.0	1000.000	145.7	V	282.0	9.6	22.8	27.2	82.2
7638.866667	57.3	50.4	1000.0	1000.000	199.5	V	292.0	10.6	25.0	31.9	82.2
9548.933333	59.8	50.8	1000.0	1000.000	162.6	V	197.0	13.5	22.4	31.5	82.2
16798.233333	59.8	47.0	1000.0	1000.000	219.4	V	183.0	25.9	22.5	35.2	82.2

Substitution Data

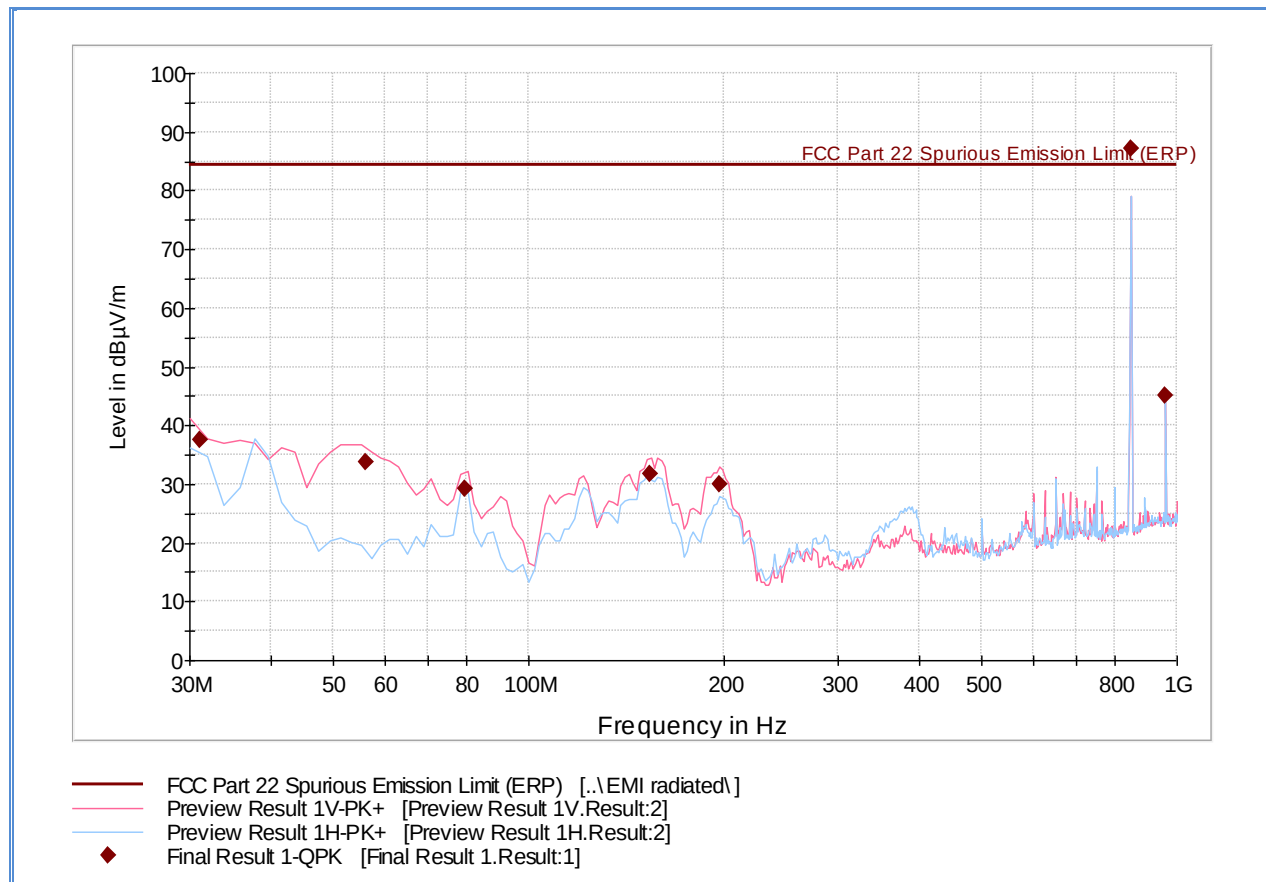
Frequency (MHz)	Field Strength @ 3 meters (dBμV/m)	Cable Loss (dB)	Substitution Antenna Gain (dBi)	Signal Generator Level (dBm)	Substitution Data SGL+AG-CL (dBm)	Limit (dBm)	Compliance
1909.700000	65.6	-3.3	8.2	-34.61	-29.62	-13	Complies

Test Notes: Only worst case modulation/bandwidth presented for spurious emissions above 1GHz. Measurement was performed with a 1800MHz to 2GHz notch filter. Substitution data required when margin is <20dB compared to the -13dBm limit (converted to field strength @ 3 meters).



America

2.7.37 Test Results Below 1GHz (LTE Band5_ 5M BW_QPSK_Channel 20625 @ Frequency 846.5MHz)



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)
31.160000	37.6	1000.0	120.000	100.0	V	212.0	-11.7	46.8	84.4
56.150541	33.6	1000.0	120.000	100.0	V	275.0	-20.9	50.8	84.4
79.861082	29.3	1000.0	120.000	115.0	V	236.0	-21.7	55.1	84.4
153.648818	31.8	1000.0	120.000	100.0	V	193.0	-18.3	52.6	84.4
196.838236	29.9	1000.0	120.000	100.0	V	134.0	-16.4	54.5	84.4
848.600641	87.3	1000.0	120.000	100.0	V	310.0	-0.5	Fundamental *)	
960.082244	45.0	1000.0	120.000	100.0	V	163.0	1.4	39.4	84.4

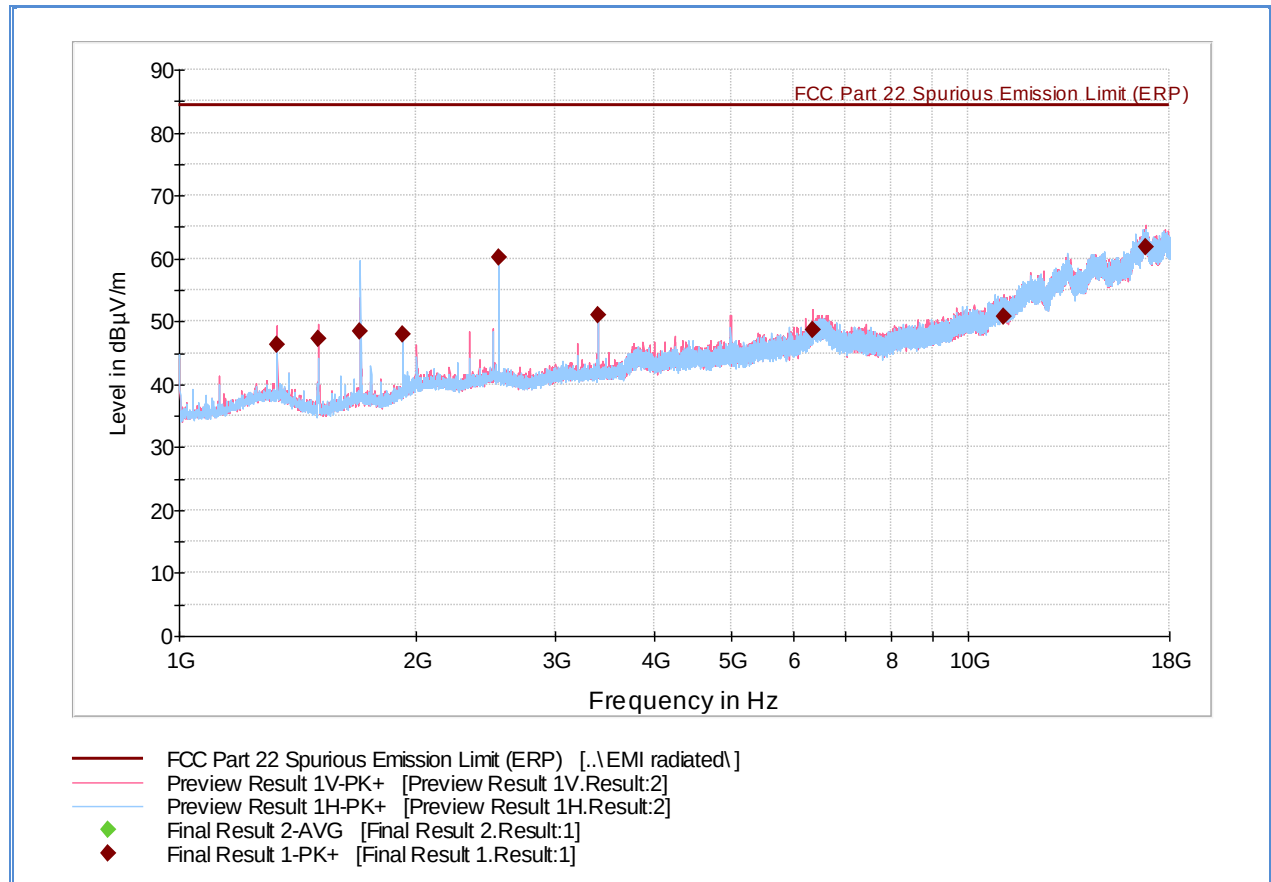
*) this is the fundamental frequency is not part of spurious emission evaluation. Data show for information purpose only.

Substitution Data

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

Test Notes: Only worst case configuration presented for spurious emissions below 1GHz. Substitution data not needed since Peak data > 20dB in all peaks.

2.7.38 Test Results Above 1GHz (LTE Band5_ 5M BW_QPSK_Channel 20625 @ Frequency 846.5MHz)



Peak Data

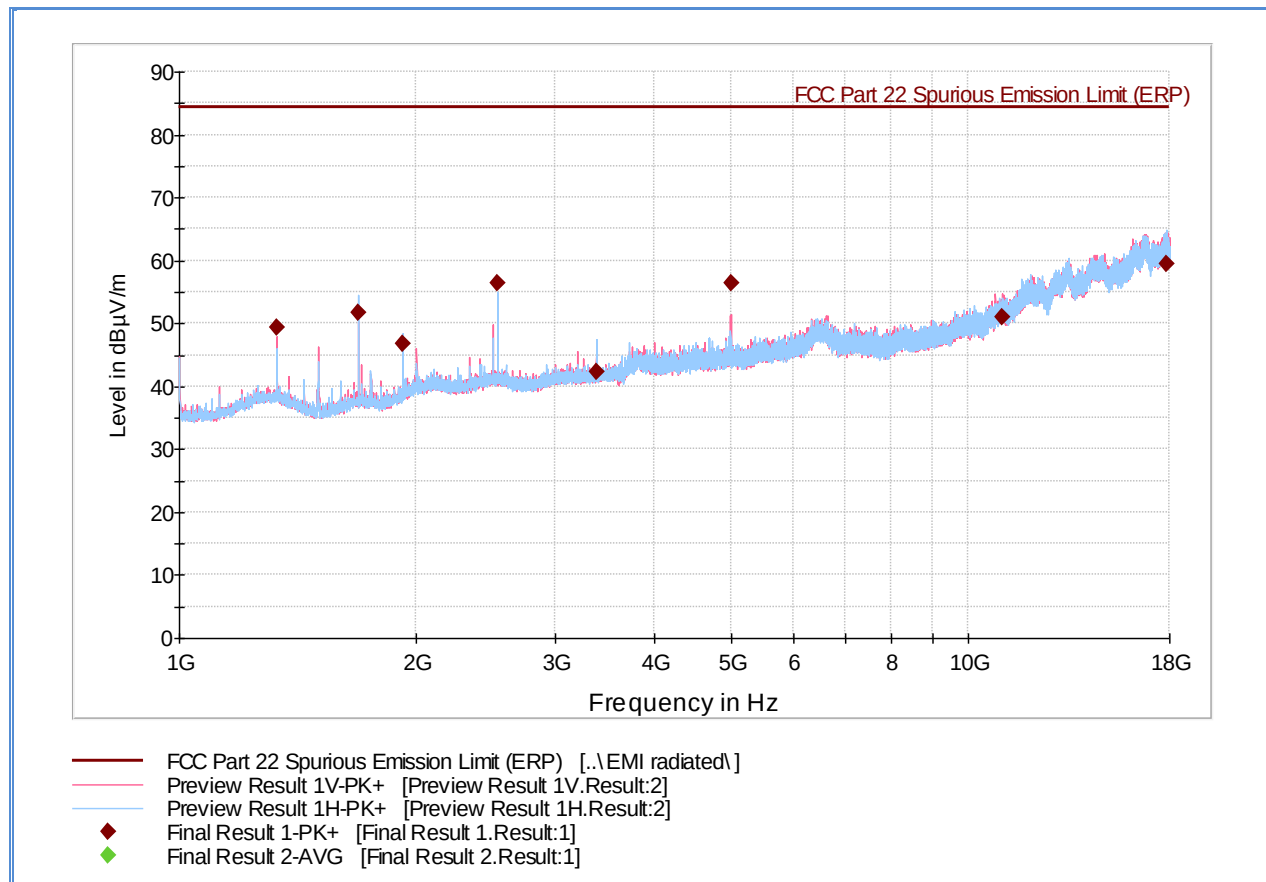
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1331.900000	46.3	1000.0	1000.000	172.6	V	156.0	-5.4	38.0	84.4
1500.000000	47.1	1000.0	1000.000	159.6	V	147.0	-5.6	37.2	84.4
1697.200000	48.3	1000.0	1000.000	201.3	H	137.0	-4.2	36.1	84.4
1919.900000	48.0	1000.0	1000.000	201.3	H	103.0	-1.9	36.4	84.4
2546.066667	60.2	1000.0	1000.000	123.7	H	345.0	0.2	24.2	84.4
3394.533333	51.0	1000.0	1000.000	123.7	H	141.0	1.7	33.4	84.4
6346.733333	48.7	1000.0	1000.000	103.7	V	95.0	11.0	35.7	84.4
11103.633333	50.7	1000.0	1000.000	389.1	V	10.0	15.1	33.7	84.4
16778.633333	61.7	1000.0	1000.000	344.1	V	280.0	26.4	22.7	84.4

Substitution Data

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

Test Notes: Only worst case configuration in modulation, bandwidth and RB size presented for spurious emissions above 1GHz. Substitution data not needed since Peak data > 20dB in all peaks.

2.7.39 Test Results Above 1GHz (LTE Band5_ 10M BW_QPSK_Channel 20600 @ Frequency 844.0MHz)



Peak Data

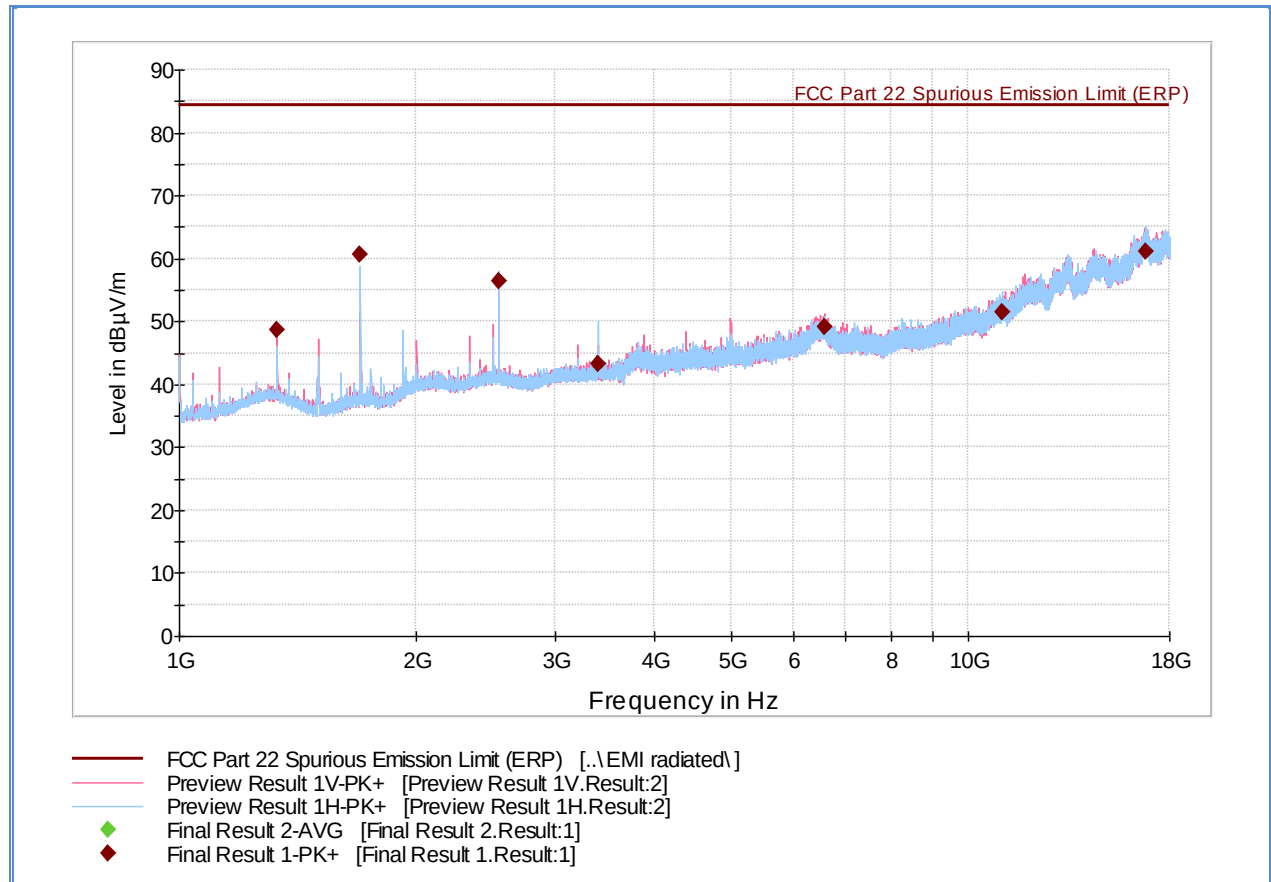
Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1331.900000	49.3	1000.0	1000.000	116.7	V	173.0	-5.4	35.0	84.4
1688.133333	51.7	1000.0	1000.000	201.3	H	128.0	-4.3	32.7	84.4
1919.900000	46.9	1000.0	1000.000	201.3	H	97.0	-1.9	37.5	84.4
2532.100000	56.4	1000.0	1000.000	123.7	H	60.0	0.2	28.0	84.4
3376.433333	42.4	1000.0	1000.000	388.0	H	142.0	1.7	42.0	84.4
4999.900000	56.4	1000.0	1000.000	164.6	V	336.0	6.5	28.0	84.4
11060.633333	51.0	1000.0	1000.000	406.7	V	20.0	15.3	33.4	84.4
17836.200000	59.5	1000.0	1000.000	191.5	H	341.0	26.0	24.9	84.4

Substitution Data

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

Test Notes: Only worst case configuration in modulation, bandwidth and RB size presented for spurious emissions above 1GHz. Substitution data not needed since Peak data > 20dB in all peaks.

2.7.40 Test Results Above 1GHz (LTE Band5_ 5M BW_16QAM_Channel 20625 @ Frequency 846.5MHz)



Peak Data

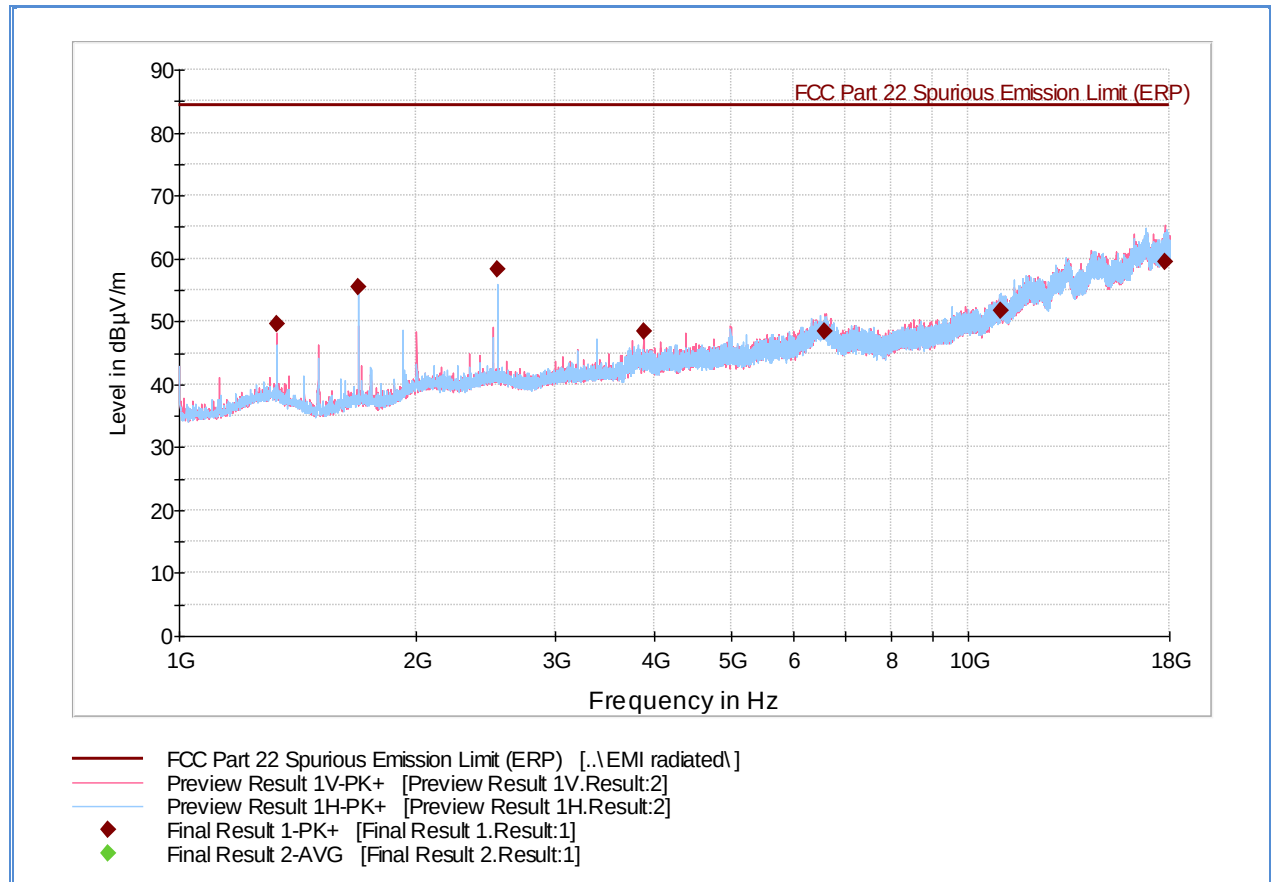
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1332.300000	48.7	1000.0	1000.000	128.7	V	160.0	-5.4	35.7	84.4
1697.200000	60.7	1000.0	1000.000	103.7	H	132.0	-4.2	23.7	84.4
2546.066667	56.4	1000.0	1000.000	99.7	H	10.0	0.2	28.0	84.4
3394.766667	43.2	1000.0	1000.000	186.5	H	147.0	1.7	41.2	84.4
6582.800000	49.2	1000.0	1000.000	300.2	V	325.0	11.5	35.2	84.4
11027.700000	51.4	1000.0	1000.000	356.1	H	50.0	15.5	33.0	84.4
16815.500000	61.0	1000.0	1000.000	103.7	H	281.0	26.3	23.3	84.4

Substitution Data

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

Test Notes: Only worst case configuration in modulation, bandwidth and RB size presented for spurious emissions above 1GHz. Substitution data not needed since Peak data > 20dB in all peaks.

2.7.41 Test Results Above 1GHz (LTE Band5_ 10M BW_16QAM_Channel 20600 @ Frequency 844.0MHz)



Peak Data

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1332.300000	49.5	1000.0	1000.000	116.7	V	106.0	-5.4	34.8	84.4
1688.133333	55.4	1000.0	1000.000	191.5	H	216.0	-4.3	29.0	84.4
2532.100000	58.3	1000.0	1000.000	124.7	H	56.0	0.2	26.0	84.4
3875.100000	48.5	1000.0	1000.000	202.3	V	4.0	5.2	35.9	84.4
6584.533333	48.5	1000.0	1000.000	300.6	V	255.0	11.5	35.9	84.4
11012.833333	51.7	1000.0	1000.000	407.8	H	3.0	15.6	32.6	84.4
17784.466667	59.4	1000.0	1000.000	402.7	V	243.0	26.0	24.9	84.4

Substitution Data

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

Test Notes: Only worst case configuration in modulation, bandwidth and RB size presented for spurious emissions above 1GHz. Substitution data not needed since Peak data > 20dB in all peaks.



2.8 FREQUENCY STABILITY

2.8.1 Specification Reference

Part 22 Subpart H §22.355 and RSS-132 (5.3)

2.8.2 Standard Applicable

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

2.8.3 Equipment Under Test and Modification State

Serial No: FID: SH181114900011 / Test Configuration A

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

January 09, 2015 / AC and IR

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	24.7°C
Relative Humidity	34.4%
ATM Pressure	99.2 kPa

2.8.7 Additional Observations

- This is a conducted test. The EUT was operated at 3.8VDC nominal voltage and was placed in the temperature chamber for this evaluation. The EUT was controlled by a CMW500 and the maximum frequency error was monitored through the CMW500 Frequency Error measurement function under LTE Tx Measurement. These results are then verified against Transmit Frequency Error function of the Spectrum Analyzer used.
- The temperature was reduce to -30°C and to sit for 1 hour to allow the equipment and chamber temperature to stabilize. The temperature was set increased by 10°C steps and allowed to settle before taking the next set of measurements.
- Voltage variation was also performed at 85% and 115% of the nominal voltage.



- Only worst case configuration presented. See Section 1.4.4 of this test report for details.

- The limit 2.5ppm is converted in Hz using the formula below:

$$\Delta f = (f \times \text{ppm}) / 10^6$$

Example: $\Delta f = (846500000 \times 2.5) / 1000000$
 $= 2116250000 / 1000000$
 $= 2116.25 \text{ Hz}$

2.8.8 Test Results

See attached plots.



GSM850 / GSM1900 (GPRS) Cell Band Low Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Deviation Limit (Hz)
100	3.8	-30	824.2	29.40	2120.775
100		-20		26.24	2120.775
100		-10		25.70	2120.775
100		0		26.41	2120.775
100		+10		26.89	2120.775
100		+20		22.47	2120.775
100		+30		22.35	2120.775
100		+40		18.85	2120.775
100		+50		27.80	2120.775
115	4.37	+20		20.31	2120.775
85	3.23	+20		19.65	2120.775

GSM850 / GSM1900 (GPRS) PCS Band High Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Operating within the 1850-1910 Band <1.25MHZ
100	3.8	-30	1909.8	68.41	Complies
100		-20		66.95	Complies
100		-10		65.68	Complies
100		0		65.89	Complies
100		+10		62.80	Complies
100		+20		94.94	Complies
100		+30		118.67	Complies
100		+40		56.38	Complies
100		+50		59.13	Complies
115	4.37	+20		102.95	Complies
85	3.23	+20		101.39	Complies



GSM850 / GSM1900 (EGPRS) Cell Band High Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Deviation Limit (Hz)
100	3.8	-30	848.8	49.31	2120.775
100		-20		46.39	2120.775
100		-10		50.30	2120.775
100		0		50.81	2120.775
100		+10		52.45	2120.775
100		+20		48.34	2120.775
100		+30		48.09	2120.775
100		+40		48.04	2120.775
100		+50		50.97	2120.775
115	4.37	+20		41.21	2120.775
85	3.23	+20		46.86	2120.775

GSM850 / GSM1900 (EGPRS) PCS Band High Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Operating within the 1850-1910 Band <1.25MHZ
100	3.8	-30	1909.8	90.21	Complies
100		-20		89.09	Complies
100		-10		90.65	Complies
100		0		96.28	Complies
100		+10		93.64	Complies
100		+20		92.41	Complies
100		+30		88.29	Complies
100		+40		84.89	Complies
100		+50		103.14	Complies
115	4.37	+20		87.84	Complies
85	3.23	+20		85.01	Complies



WCDMA (3GPP Release Version 99) Cell Band 5 High Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Deviation Limit (Hz)
100	3.8	-30	846.6	5.00	2120.775
100		-20		5.03	2120.775
100		-10		4.46	2120.775
100		0		3.65	2120.775
100		+10		-4.93	2120.775
100		+20		-5.22	2120.775
100		+30		-6.71	2120.775
100		+40		-6.13	2120.775
100		+50		-6.92	2120.775
115	4.37	+20		-4.68	2120.775
85	3.23	+20		-4.95	2120.775

WCDMA (3GPP Release Version 99) PCS Band 2 High Channel					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Operating within the 1850-1910 Band <1.25MHz
100	3.8	-30	1907.6	10.81	Complies
100		-20		12.16	Complies
100		-10		10.59	Complies
100		0		9.42	Complies
100		+10		-8.58	Complies
100		+20		-8.15	Complies
100		+30		-13.59	Complies
100		+40		-11.37	Complies
100		+50		-12.48	Complies
115	4.37	+20		-9.14	Complies
85	3.23	+20		-7.68	Complies



LTE Band 2 – QPSK 1.4MHz – Low Channel 18607 – RB 3/1					
<i>Voltage (%)</i>	<i>Power (VDC)</i>	<i>Temp (°C)</i>	<i>Frequency (MHz)</i>	<i>Frequency Deviation (Hz)</i>	<i>Operating within the 1850-1910 Band <1.25MHz</i>
100	3.8	-30	1850.7	18.81	Complies
100		-20		16.28	Complies
100		-10		13.20	Complies
100		0		16.81	Complies
100		+10		15.03	Complies
100		+20		16.77	Complies
100		+30		15.99	Complies
100		+40		19.05	Complies
100		+50		16.04	Complies
115	4.37	+20		13.48	Complies
85	3.23	+20		12.50	Complies

LTE Band 2 – 16QAM 1.4MHz – High Channel 19193 – RB 1/5					
<i>Voltage (%)</i>	<i>Power (VDC)</i>	<i>Temp (°C)</i>	<i>Frequency (MHz)</i>	<i>Frequency Deviation (Hz)</i>	<i>Operating within the 1850-1910 Band <1.25MHz</i>
100	3.8	-30	1909.3	12.77	Complies
100		-20		-10.67	Complies
100		-10		13.43	Complies
100		0		13.82	Complies
100		+10		-13.42	Complies
100		+20		12.69	Complies
100		+30		-18.74	Complies
100		+40		13.46	Complies
100		+50		12.98	Complies
115	4.37	+20		13.63	Complies
85	3.23	+20		14.43	Complies



LTE Band 5 Mid Channel 20625 Worst Configuration					
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (MHz)	Frequency Deviation (Hz)	Deviation Limit (Hz)
100	3.8	-30	846.5	-6.42	2116.25
100		-20		-6.47	2116.25
100		-10		-5.62	2116.25
100		0		-7.01	2116.25
100		+10		-5.85	2116.25
100		+20		-8.47	2116.25
100		+30		-7.60	2116.25
100		+40		-7.05	2116.25
100		+50		-6.85	2116.25
115	4.37	+20		-8.11	2116.25
85	3.23	+20		-7.34	2116.25

2.9 RECEIVER SPURIOUS EMISSIONS

2.9.1 Specification Reference

RSS-132(4.6) and RSS-Gen (7.1.2)

2.9.2 Standard Applicable

Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

Table 2 – Receiver Radiated Limits

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 meters)
30-88	100
88-216	150
216-960	200
Above 930	500

2.9.3 Equipment Under Test and Modification State

Serial No: FID: SH181114900011 / Test Configuration B

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

January 06, 2015 / 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 23.6°C
Relative Humidity 23.0%
ATM Pressure 99.7 kPa

2.9.7 Additional Observations

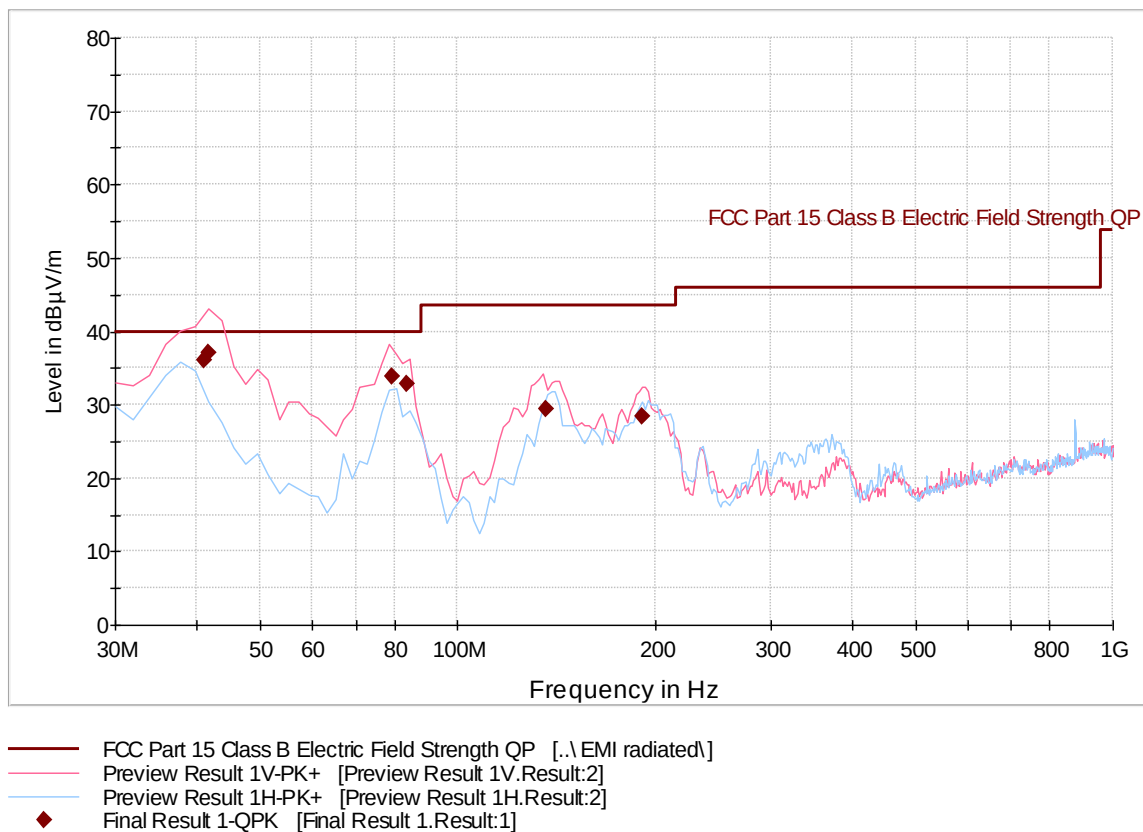
- This is a radiated test. The spectrum was searched from 30MHz to the 18GHz performed (4.5GHz as required which 5 times of highest frequency used or generated from EUT).
- Limit used is from FCC §15.209 which is identical to RSS-Gen limits.
- Only worst case configuration presented; which is the EUT in idle and battery charging mode.
- All emissions observed above 1GHz are noise floor measurements.
- Measurement was done using EMC32 automated software. Reported level is the actual level with all the correction factors factored in. Correction Factor column is for informational purposes only.



2.9.8 Test Results

See attached plots.

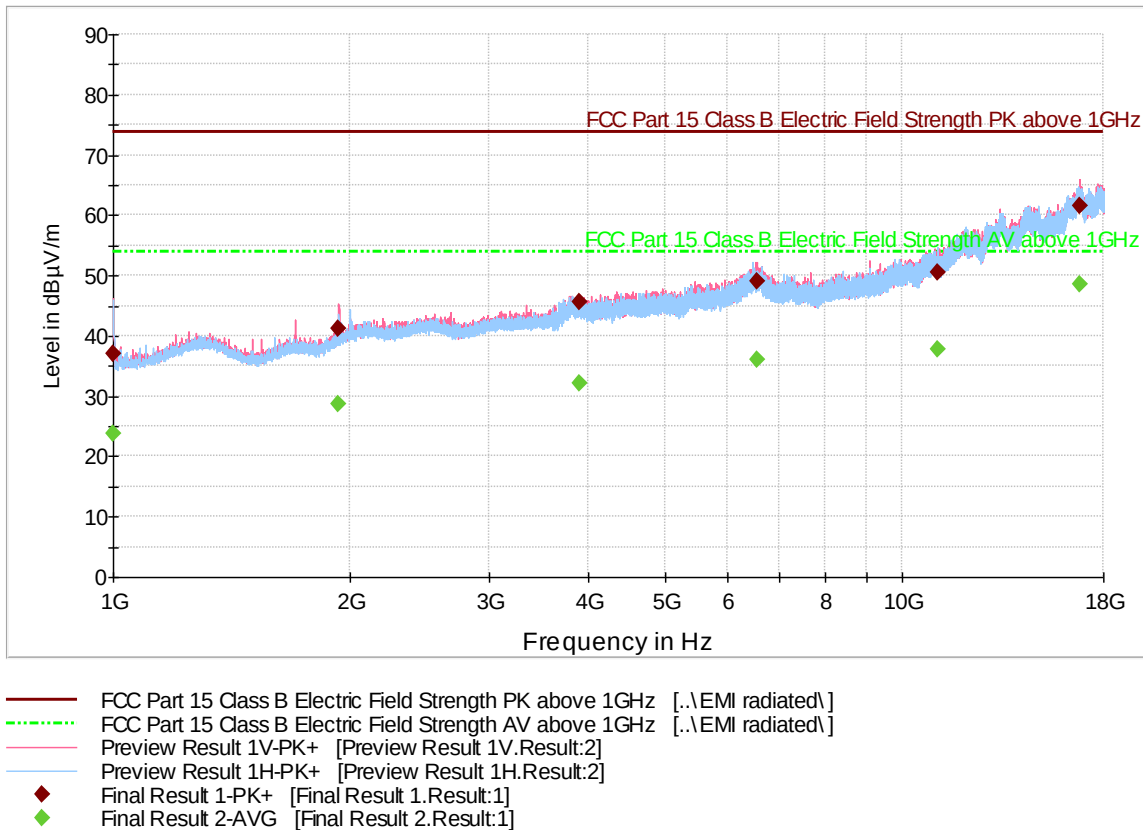
2.9.9 Test Results Below 1GHz (EUT in idle and battery charging mode)



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)
41.095551	36.0	1000.0	120.000	100.0	V	4.0	-16.8	4.0	40.0
41.623327	37.0	1000.0	120.000	100.0	V	19.0	-17.0	3.0	40.0
79.197194	33.8	1000.0	120.000	100.0	V	116.0	-21.8	6.2	40.0
83.748858	32.8	1000.0	120.000	100.0	V	125.0	-21.5	7.2	40.0
136.209940	29.4	1000.0	120.000	100.0	V	211.0	-20.1	14.1	43.5
190.862685	28.4	1000.0	120.000	100.0	V	8.0	-16.1	15.1	43.5

2.9.10 Test Results Above 1GHz (EUT in idle and battery charging mode)



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	37.1	1000.0	1000.000	114.7	V	0.0	-7.3	36.8	73.9
1931.166667	41.2	1000.0	1000.000	189.5	V	144.0	-1.9	32.7	73.9
3896.600000	45.5	1000.0	1000.000	269.3	V	-16.0	5.2	28.4	73.9
6535.766667	49.0	1000.0	1000.000	103.7	V	192.0	11.5	24.9	73.9
11107.466667	50.4	1000.0	1000.000	201.3	H	42.0	15.1	23.5	73.9
16812.233333	61.5	1000.0	1000.000	196.5	V	98.0	26.4	12.4	73.9

Average Data

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1000.000000	23.8	1000.0	1000.000	114.7	V	0.0	-7.3	30.1	53.9
1931.166667	28.7	1000.0	1000.000	189.5	V	144.0	-1.9	25.2	53.9
3896.600000	32.1	1000.0	1000.000	269.3	V	-16.0	5.2	21.8	53.9
6535.766667	36.1	1000.0	1000.000	103.7	V	192.0	11.5	17.8	53.9
11107.466667	37.7	1000.0	1000.000	201.3	H	42.0	15.1	16.2	53.9
16812.233333	48.5	1000.0	1000.000	196.5	V	98.0	26.4	5.4	53.9



2.10 POWER LINE CONDUCTED EMISSIONS

2.10.1 Specification Reference

RSS-Gen 8.8

2.10.2 Standard Applicable

A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz-30 MHz, shall not exceed the limits in Table 3.

Unless the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 3 below. The more stringent limit applies at the frequency range boundaries.

Table 3 – AC Power Line Conducted Emission Limits

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average**
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

* The Level decreases linearly with the logarithm of the frequency.

** A linear average detector is required.

2.10.3 Equipment Under Test and Modification State

Serial No: FID: SH181114900011 / Test Configuration C

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

January 06, 2015 / AC

2.10.5 Test Equipment Used

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

2.10.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	23.8°C
Relative Humidity	22.0%
ATM Pressure	99.4 kPa



2.10.7 Additional Observations

- The EUT was verified using worst case configuration (worst case channel/mode). The EUT was set to transmit max. power while plugged into the AC adapter.
- EUT verified using input voltage of 120VAC 60Hz.
- Limit used is from FCC §15.207 which is identical to RSS-Gen limits.
- Measurement was done using EMC32 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.

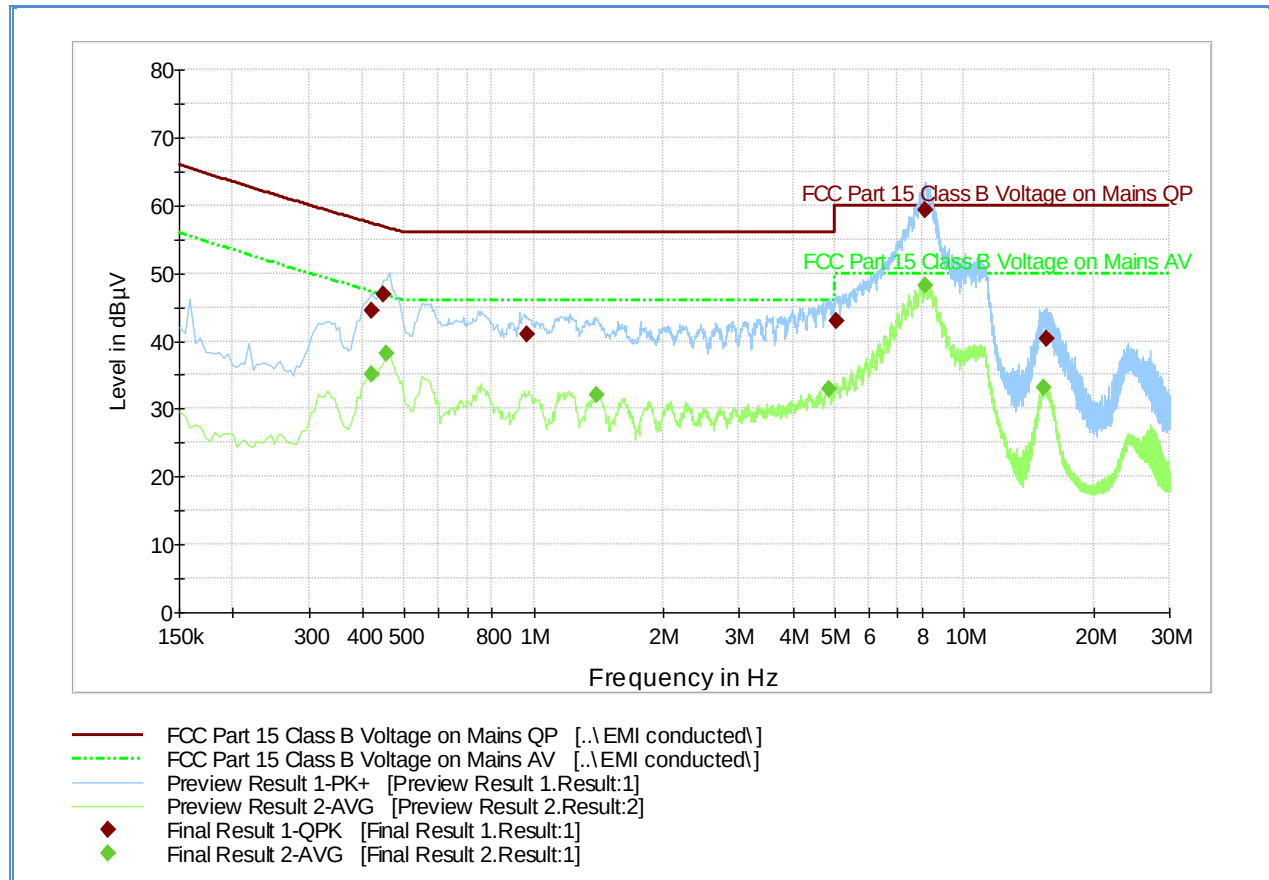
2.10.8 Sample Computation (Conducted Emission – Quasi Peak)

Measuring equipment raw measurement (dbμV) @ 150kHz			5.5
Correction Factor (dB)	Asset# 8607 (20 dB attenuator)	19.9	20.7
	Asset# 1177 (cable)	0.15	
	Asset# 1176 (cable)	0.35	
	Asset# 7567 (LISN)	0.30	
Reported QuasiPeak Final Measurement (dbμV) @ 150kHz			26.2

2.10.9 Test Results

Compliant. See attached plots and tables.

2.10.10 Line 1 (LTE Band5_5M BW_QPSK_Channel 20625 @ Frequency 846.5MHz)



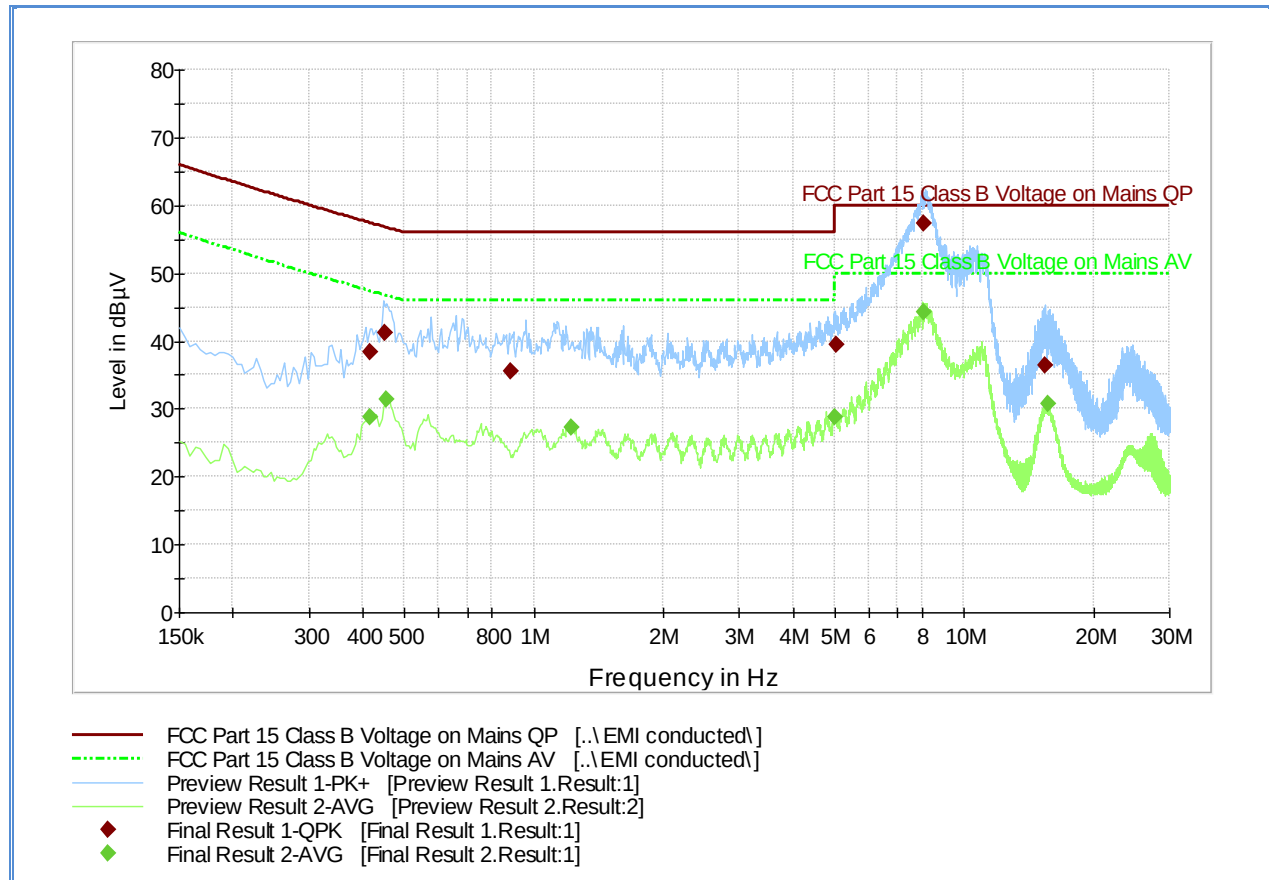
Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV)
0.420000	44.5	1000.0	9.000	Off	L1	20.0	12.9	57.3
0.447000	46.9	1000.0	9.000	Off	L1	20.0	9.9	56.9
0.964500	40.9	1000.0	9.000	Off	L1	20.1	15.1	56.0
5.037000	43.0	1000.0	9.000	Off	L1	20.5	17.0	60.0
8.106000	59.3	1000.0	9.000	Off	L1	20.6	0.7	60.0
15.526500	40.4	1000.0	9.000	Off	L1	20.9	19.6	60.0

Average

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBμV)
0.420000	35.1	1000.0	9.000	Off	L1	20.0	12.2	47.3
0.456000	38.1	1000.0	9.000	Off	L1	20.0	8.6	46.7
1.401000	32.1	1000.0	9.000	Off	L1	20.1	13.9	46.0
4.839000	32.8	1000.0	9.000	Off	L1	20.5	13.2	46.0
8.115000	48.2	1000.0	9.000	Off	L1	20.6	1.8	50.0
15.333000	33.2	1000.0	9.000	Off	L1	20.9	16.8	50.0

2.10.11 Line 2 (LTE Band5_5M BW_QPSK_Channel 20625 @ Frequency 846.5MHz)



Quasi Peak

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV)
0.415500	38.3	1000.0	9.000	Off	N	20.1	19.2	57.4
0.451500	41.2	1000.0	9.000	Off	N	20.0	15.5	56.8
0.883500	35.5	1000.0	9.000	Off	N	20.0	20.5	56.0
5.032500	39.4	1000.0	9.000	Off	N	20.4	20.6	60.0
8.047500	57.3	1000.0	9.000	Off	N	20.5	2.7	60.0
15.396000	36.4	1000.0	9.000	Off	N	20.7	23.6	60.0

Average

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin - Ave (dB)	Limit - Ave (dBμV)
0.415500	28.9	1000.0	9.000	Off	N	20.1	18.5	47.4
0.456000	31.3	1000.0	9.000	Off	N	20.0	15.4	46.7
1.225500	27.4	1000.0	9.000	Off	N	20.1	18.6	46.0
5.014500	28.8	1000.0	9.000	Off	N	20.4	21.2	50.0
8.052000	44.4	1000.0	9.000	Off	N	20.5	5.6	50.0
15.625500	30.7	1000.0	9.000	Off	N	20.7	19.3	50.0



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						
7582	Signal/Spectrum Analyzer	FSW26	101614	Rhode & Schwarz	12/22/14	12/22/15
7570	50MHz-18GHz Wideband Power Sensor	N1921A	MY45240588	Agilent	04/09/14	04/09/15
7569	Series Power Meter	N1911A P-	MY45100625	Agilent	04/22/14	04/22/15
7579	Temperature Chamber	115	151617	TestQuity	07/21/14	07/21/15
7562	Wideband Radio Communication Tester	CMW 500	1201.0002k5 0/103829	Rhode & Schwarz	10/09/13	10/09/15
Conducted Test Setup						
1024	EMI Test Receiver	ESCS 30	847793/001	Rhode & Schwarz	04/05/14	04/05/15
7562	Wideband Radio Communication Tester	CMW 500	1201.0002k5 0/103829	Rhode & Schwarz	10/09/13	10/09/15
7567	LISN	FCC-LISN-50-25-2-10	120304	Fischer Custom Comm.	07/01/14	07/01/15
8822	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	01/30/14	01/30/15
8824	20dB Attenuator	34-20-34	N/A	MCE / Weinschel	01/30/14	01/30/15
Radiated Test Setup						
1002	Bilog Antenna	3142C	00058717	ETS-Lindgren	01/30/14	01/30/16
1040	EMI Test Receiver	ESIB40	100292	Rhode & Schwarz	08/29/14	08/29/15
1016	Pre-amplifier	PAM-0202	187	PAM	12/10/14	12/10/15
7575	Double-ridged waveguide horn antenna	3117	00155511	EMCO	04/08/14	04/08/15
1049	EMI Test Receiver	ESU	100133	Rhode & Schwarz	03/17/14	03/17/15
8628	Pre-amplifier	QLJ 01182835-JO	8986002	QuinStar Technologies Inc.	04/03/14	04/03/15
7562	Wideband Radio Communication Tester	CMW 500	1201.0002k5 0/103829	Rhode & Schwarz	10/09/13	10/09/15
Miscellaneous						
7560	Barometer/Temperature /Humidity Transmitter	iBTHX-W	1240476	Omega	01/30/14	01/30/15
6792	Multimeter	3478A	2911A70964	Hewlett Packard	08/12/14	08/12/15
1072	DC Power Supply	E3610A	KR51311519	Hewlett Packard	Verified by 6792	
	Test Software	EMC32	V8.52	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	Preamp	Rectangular	0.50	0.29	0.08
4	Antenna	Rectangular	0.75	0.43	0.19
5	Site	Rectangular	3.89	2.25	5.04
6	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					2.41
Coverage Factor (k):					2
Expanded Uncertainty:					4.82

3.2.2 Radiated Emission Measurements (Above 1GHz)

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

3.2.3 Conducted Antenna Port Measurement

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

3.2.4 Conducted Measurements

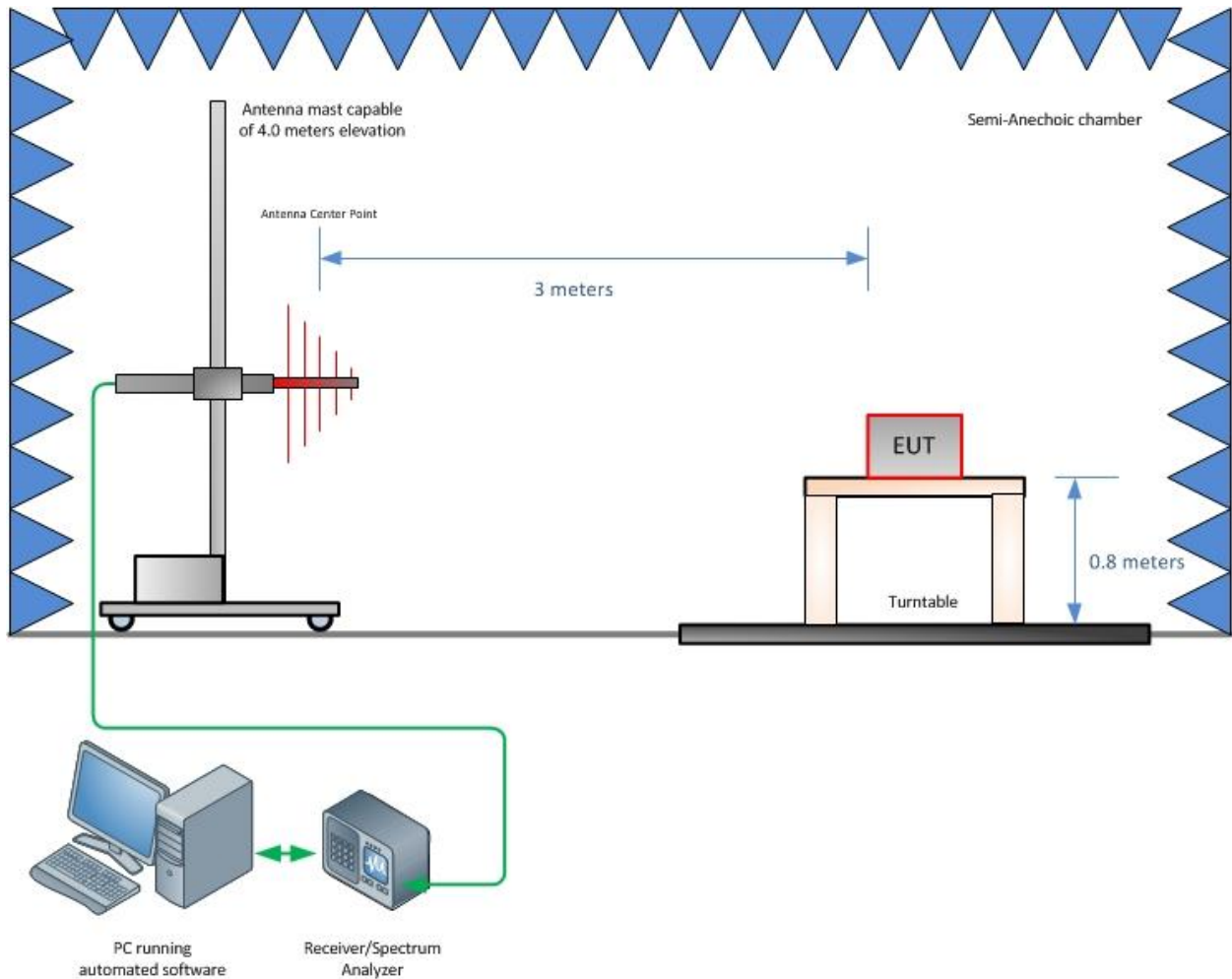
Contribution		Probability Distribution Type	Probability Distribution x_i	Standard Uncertainty $u(x_i)$	$[u(x_i)]^2$
1	Receiver/Spectrum Analyzer	Rectangular	0.36	0.21	0.04
2	Cables	Rectangular	0.50	0.29	0.08
3	LISN	Rectangular	0.66	0.38	0.15
4	Attenuator	Rectangular	0.30	0.17	0.03
5	EUT Setup	Rectangular	1.00	0.58	0.33
Combined Uncertainty (u_c):					0.80
Coverage Factor (k):					2
Expanded Uncertainty:					1.59



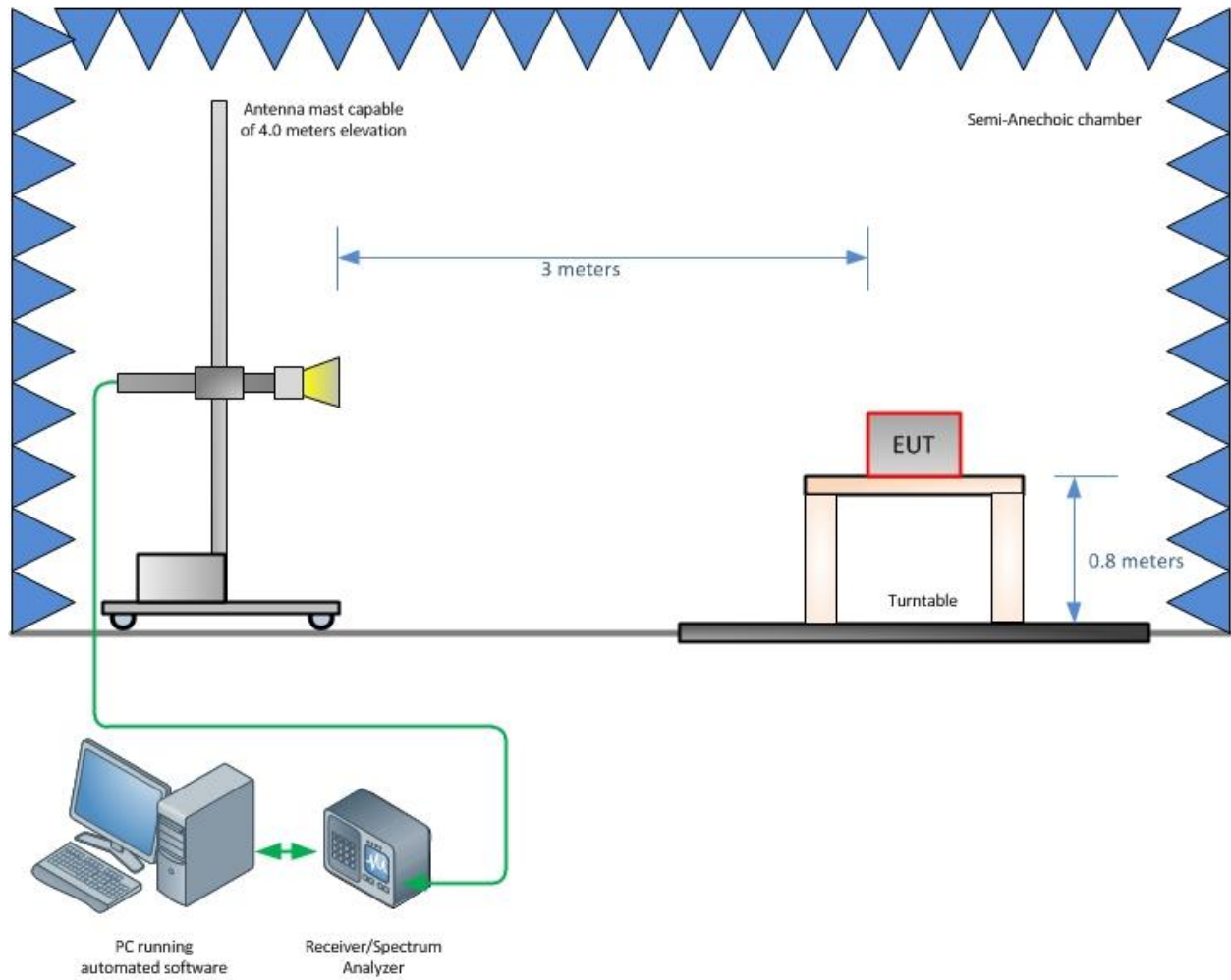
SECTION 4

DIAGRAM OF TEST SETUP

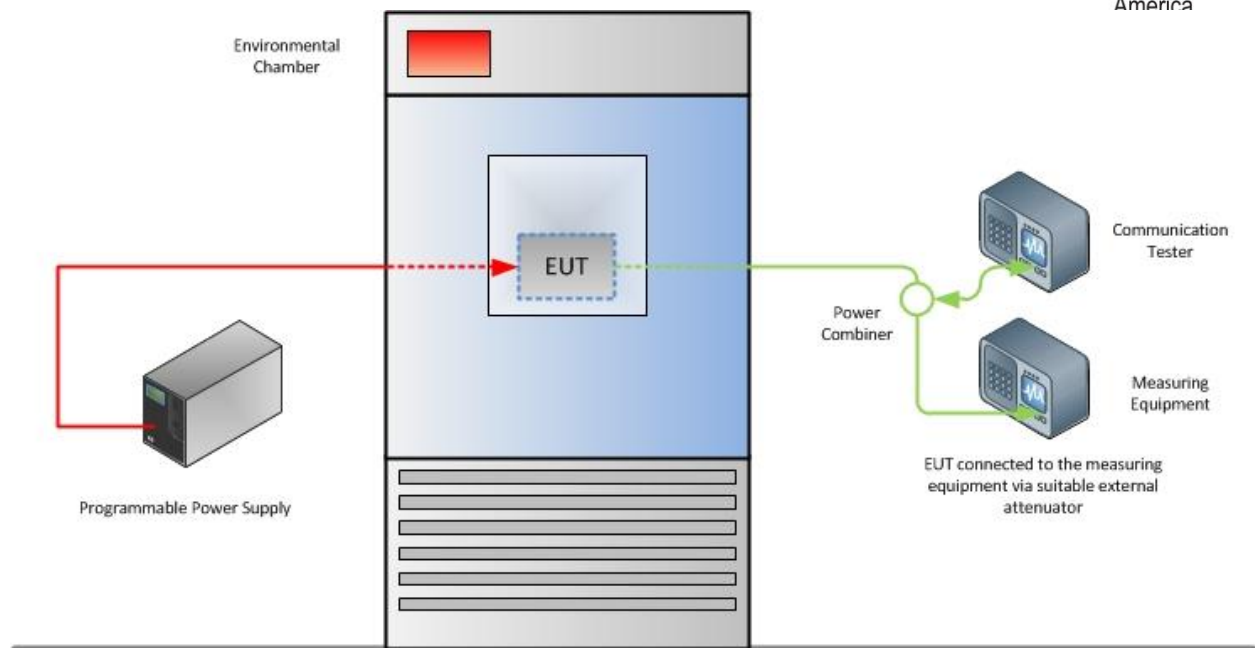
4.1 TEST SETUP DIAGRAM



Radiated Emission Test Setup (Below 1GHz)



Radiated Emission Test Setup (Above 1GHz)



Frequency Stability Test Configuration



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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