2.4 Frequency Stability

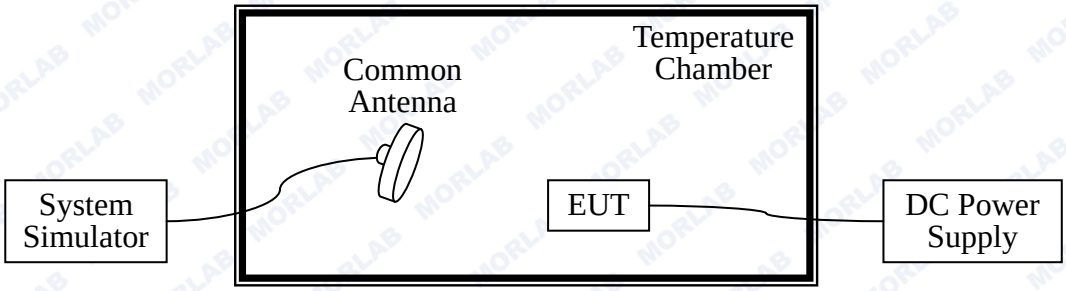
2.4.1 Requirement

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from -30°C to +50°C at intervals of not more than 10°C.
(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

2.4.2 Test Description

1. Test Setup:



The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS via a Common Antenna.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2014.02.26	2015.02.25
DC Power Supply	Good Will	GPS-3030DD	EF920938	2014.02.26	2015.02.25
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2014.02.26	2015.02.25

2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.2VDC and 3.45VDC, which are specified by the applicant; the normal temperature here used is 25°C. The frequency deviation limit of

850MHz band is ±2.5ppm, and 1900MHz is ±1ppm.

1. GSM 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-24.45	±2060.5	22.12	±2091.5	18.17	±2122	PASS
	-20	27.11		12.43		-15.02		
	-10	-2.25		-17.46		15.11		
	0	30.26		31.14		5.05		
	+10	21.79		-24.93		3.02		
	+20	-19.56		-17.19		10.76		
	+30	34.36		19.36		-16.53		
	+40	41.63		19.64		-2.13		
	+55	36.28		23.27		-12.89		
4.2	+25	-15.73		29.05		-7.55		
3.45	+25	-17.65		37.13		7.78		

2. GSM 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	16.11	±1850.2	24.18	±1880.0	33.15	±1909.8	PASS
	-20	37.18		-21.48		-18.88		
	-10	-2.05		-13.76		-16.88		
	0	40.06		-18.38		19.32		
	+10	1.98		-21.61		25.31		
	+20	-19.76		15.52		30.26		
	+30	39.76		-0.78		-29.21		
	+40	46.56		35.37		19.33		
	+55	39.88		24.02		-19.37		
4.2	+25	37.88		23.72		27.09		
3.45	+25	-5.69		15.22		19.89		

3. EDGE 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-31.12	±2060.5	26.19	±2091.5	6.22	±2122	PASS
	-20	36.98		13.73		-13.80		
	-10	-3.25		-18.35		11.16		
	0	43.06		38.10		5.05		
	+10	1.99		-22.06		3.02		
	+20	-19.86		-16.11		10.76		
	+30	39.56		17.76		-16.51		
	+40	47.62		15.54		-2.11		
	+55	39.98		3.57		-12.89		
4.2	+25	-15.71		14.05		-7.83		
3.45	+25	-15.01		7.93		6.88		

4. EDGE 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-11.87	±1850.2	25.12	±1880.0	1.57	±1909.8	PASS
	-20	2.72		7.63		-13.76		
	-10	1.25		-25.78		-13.21		
	0	2.57		-1.36		13.23		
	+10	-10.78		-17.98		5.23		
	+20	-2.11		-21.61		37.16		
	+30	14.03		14.58		-26.88		
	+40	5.43		-0.78		19.34		
	+55	-2.46		39.07		-16.77		
4.2	+25	19.02		4.08		26.59		
3.45	+25	-7.19		14.13		19.03		

5. WCDMA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	18.11	±2066	14.21	±2087.5	-1.10	±2116.5	PASS
	-20	-7.51		-0.62		-18.48		
	-10	-3.43		22.45		7.67		
	0	16.47		13.25		4.32		
	+10	30.18		1.31		-17.33		
	+20	32.07		-12.22		11.90		
	+30	-7.98		30.62		6.63		
	+40	26.31		13.45		28.93		
	+55	12.10		-12.42		19.76		
4.2	+25	-6.17		32.12		23.89		
3.45	+25	18.56		-17.80		-18.12		

6. WCDMA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	-4.12	±1852.4	-11.67	±1880.0	-1.29	±1907.6	PASS
	-20	19.15		12.28		25.60		
	-10	5.35		-14.36		15.11		
	0	18.92		18.59		-3.17		
	+10	32.40		21.39		18.12		
	+20	13.55		38.27		-10.39		
	+30	2.31		2.37		17.47		
	+40	-12.52		-13.47		28.84		
	+55	-13.65		-5.81		-2.53		
4.2	+25	24.23		14.68		21.05		
3.45	+25	23.12		25.37		-25.11		

7. HSDPA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	28.46	±2066	-24.87	±2087.5	17.11	±2116.5	PASS
	-20	-8.66		-14.06		14.41		
	-10	20.85		37.23		21.57		
	0	12.78		-8.41		-24.37		
	+10	-14.75		-13.95		-13.96		
	+20	8.78		-24.37		35.11		
	+30	-1.49		12.88		-8.31		
	+40	17.14		-14.75		-13.95		
	+55	-23.61		23.37		25.37		
4.2	+25	33.03		7.93		7.98		
3.45	+25	17.14		-31.21		1.98		

8. HSDPA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	11.57	±1852.4	-3.54	±1880	2.50	±1907.6	PASS
	-20	-16.05		22.71		-8.48		
	-10	20.42		15.37		-14.02		
	0	-3.11		-12.21		-9.01		
	+10	21.71		10.60		5.64		
	+20	20.12		-4.81		-3.85		
	+30	-15.01		35.11		9.57		
	+40	23.71		8.46		28.32		
	+55	16.42		-24.88		-12.42		
4.2	+25	-11.25		29.53		-2.83		
3.45	+25	11.53		-2.17		14.32		

9. HSUPA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	27.12	±2066	14.51	±2087.5	15.05	±2116.5	PASS
	-20	-15.40		-19.43		27.52		
	-10	-12.71		-12.79		38.71		
	0	-14.09		-0.44		-7.32		
	+10	-0.37		0.01		-4.91		
	+20	-11.85		-6.64		21.35		
	+30	28.57		24.25		-5.94		
	+40	-11.89		9.73		13.78		
	+55	-0.45		25.76		28.55		
4.2	+25	2.78		-4.67		29.31		
3.45	+25	3.65		5.65		-6.60		

10. HSUPA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	35.54	±1852.4	-11.69	±1880	7.17	±1907.6	PASS
	-20	28.13		-0.74		2.12		
	-10	7.82		0.11		-4.85		
	0	2.41		14.82		17.08		
	+10	-4.73		-15.25		-1.86		
	+20	16.22		-11.79		23.52		
	+30	-1.55		-0.44		-0.48		
	+40	24.16		1.25		-12.05		
	+55	14.79		-7.84		-5.81		
4.2	+25	-8.08		6.72		26.38		
3.45	+25	22.78		-1.72		-15.45		

11. HSPA+ 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.8	-30	27.55	±2066	13.31	±2087.5	13.45	±2116.5	PASS
	-20	-14.40		-19.33		27.52		
	-10	-12.71		-12.79		37.71		
	0	-14.09		-0.44		-7.32		
	+10	-0.37		0.01		-4.91		
	+20	-11.85		-6.64		21.35		
	+30	28.57		24.25		-5.94		
	+40	-11.89		9.73		13.78		
	+55	-0.45		25.76		28.55		
4.2	+25	1.78		-4.67		29.98		
3.45	+25	1.35		6.35		-7.93		

12. HSPA+ 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.8	-30	32.67	±1852.4	-12.19	±1880	7.29	±1907.6	PASS
	-20	28.23		-0.82		2.12		
	-10	7.82		0.21		-4.85		
	0	2.41		15.82		17.08		
	+10	-4.73		-15.25		-1.86		
	+20	16.22		-11.79		23.52		
	+30	-1.55		-0.44		-0.48		
	+40	24.16		1.25		-12.05		
	+55	14.79		-7.84		-5.81		
4.2	+25	-8.08		6.71		26.38		
3.45	+25	22.38		-1.22		-16.38		

2.5 Conducted Out of Band Emissions

2.5.1 Requirement

According to FCC section 22.917(a) and FCC section 24.238(a) 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. This calculated to be -13dBm.

2.5.2 Test Description

See section 2.1.2 of this report.

2.5.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

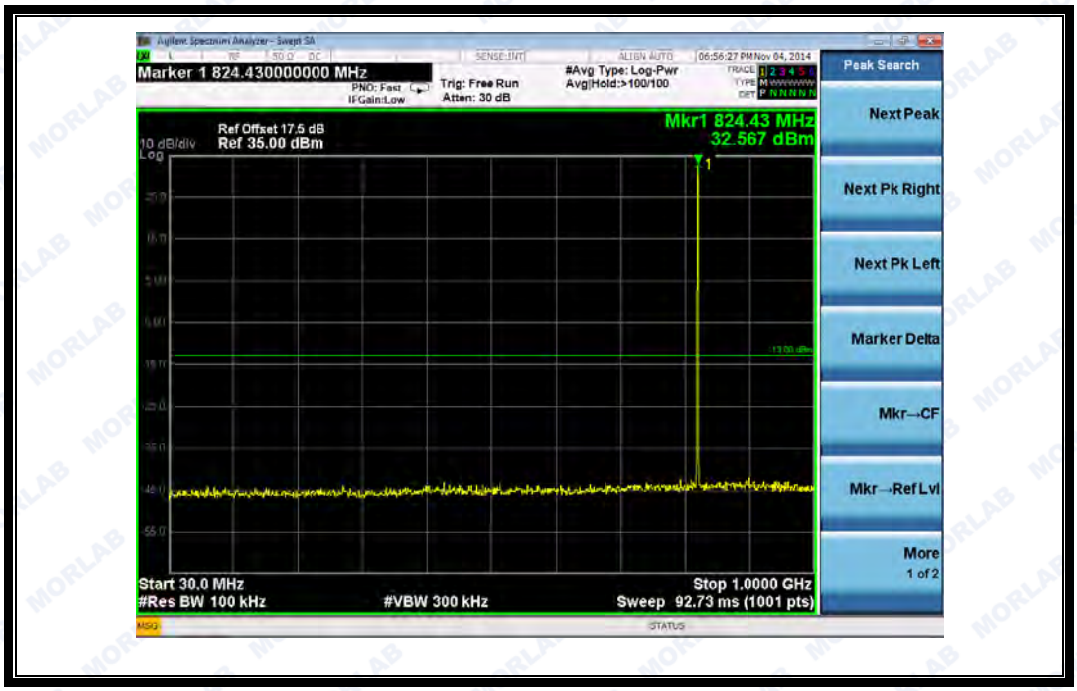
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	<-25	Plot A1toA1.1	-13	PASS
	190	836.6	<-25	Plot A2toA2.1		PASS
	251	848.8	<-25	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	<-25	Plot B1toB1.1	-13	PASS
	661	1880.0	<-25	Plot B2toB2.1		PASS
	810	1909.8	<-25	Plot B3toB3.1		PASS
EDGE 850MHz	128	824.2	<-25	Plot C1toC1.1	-13	PASS
	190	836.6	<-25	Plot C2toC2.1		PASS
	251	848.8	<-25	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	<-25	Plot D1toD1.1	-13	PASS
	661	1880.0	<-25	Plot D2toD2.1		PASS
	810	1909.8	<-25	Plot D3toD3.1		PASS
WCDMA 850MHz	4132	826.4	<-25	Plot E1toE1.1	-13	PASS
	4175	835	<-25	Plot E2toE2.1		PASS
	4233	846.6	<-25	Plot E3toE3.1		PASS
WCDMA 1900MHz	9262	1852.4	<-25	Plot F1toF1.1	-13	PASS
	9400	1880	<-25	Plot F2toF2.1		PASS
	9538	1907.6	<-25	Plot F3toF3.1		PASS

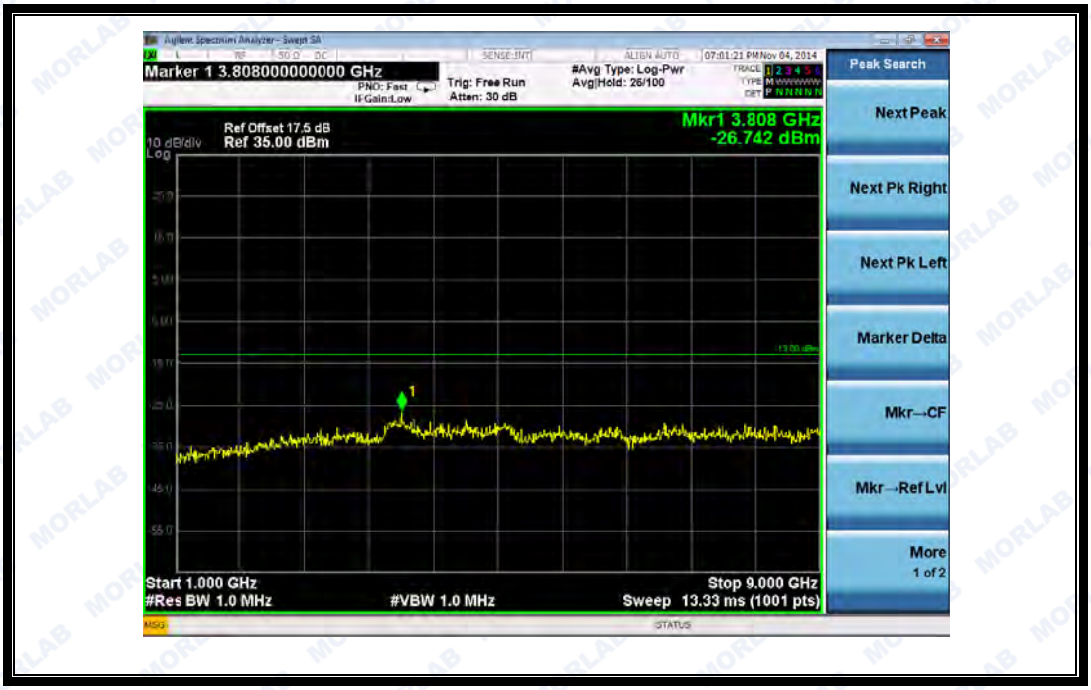
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
HSDPA 850MHz	4132	826.4	<-25	Plot G1toG1.1	-13	PASS
	4175	835	<-25	Plot G2toG2.1		PASS
	4233	846.6	<-25	Plot G3toG3.1		PASS
HSDPA 1900MHz	9262	1852.4	<-25	Plot H1toH1.1	-13	PASS
	9400	1880	<-25	Plot H2toH2.1		PASS
	9538	1907.6	<-25	Plot H3toH3.1		PASS
HSUPA 850MHz	4132	826.4	<-25	Plot I1toI1.1	-13	PASS
	4175	835	<-25	Plot I2toI2.1		PASS
	4233	846.6	<-25	Plot I3toI3.1		PASS
HSUPA 1900MHz	9262	1852.4	<-25	Plot J1toJ1.1	-13	PASS
	9400	1880	<-25	Plot J2toJ2.1		PASS
	9538	1907.6	<-25	Plot J3toJ3.1		PASS
HSPA+ 850MHz	4132	826.4	<-25	Plot K1toK1.1	-13	PASS
	4175	835	<-25	Plot K2toK2.1		PASS
	4233	846.6	<-25	Plot K3toK3.1		PASS
HSPA+ 1900MHz	9262	1852.4	<-25	Plot L1toL1.1	-13	PASS
	9400	1880	<-25	Plot L2toL2.1		PASS
	9538	1907.6	<-25	Plot L3toL3.1		PASS

2. Test Plots for the Whole Measurement Frequency Range:

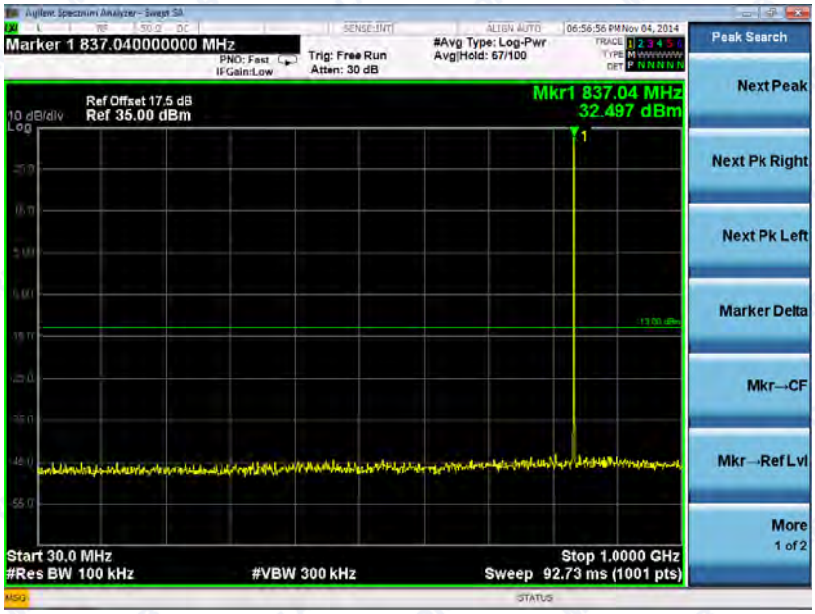
Note: the power of the EUT transmitting frequency should be ignored.



(Plot A1:GSM 850MHz Channel = 128, 30MHz to 1GHz)



(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)

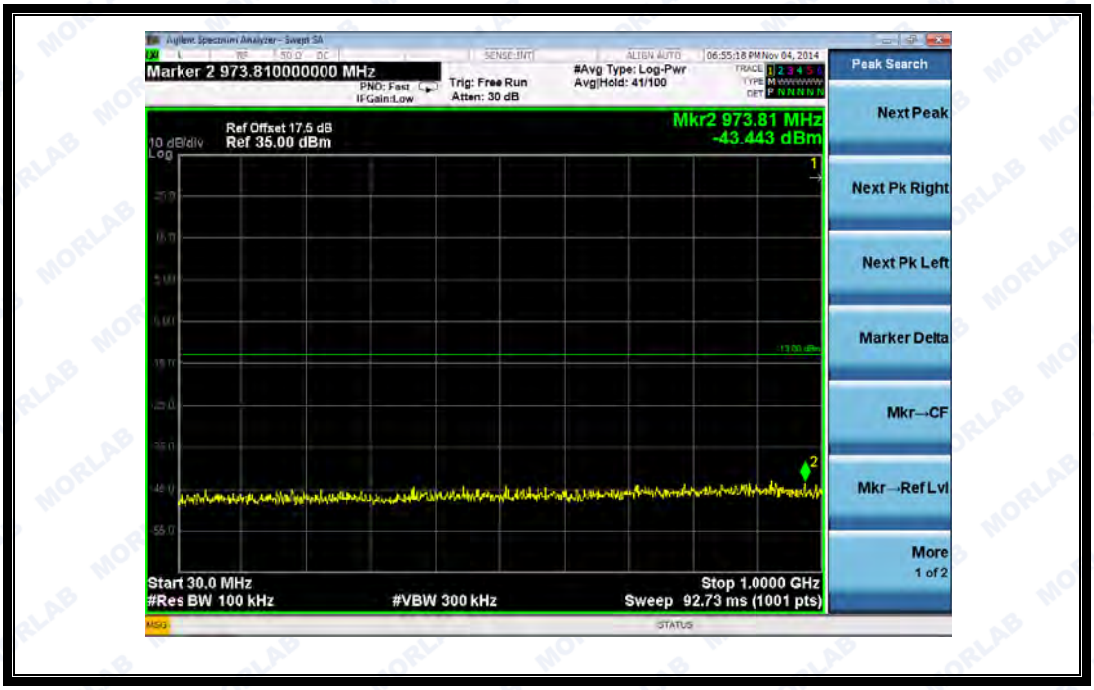


(Plot A2:GSM 850MHz Channel = 190, 30MHz to 1GHz)

(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)

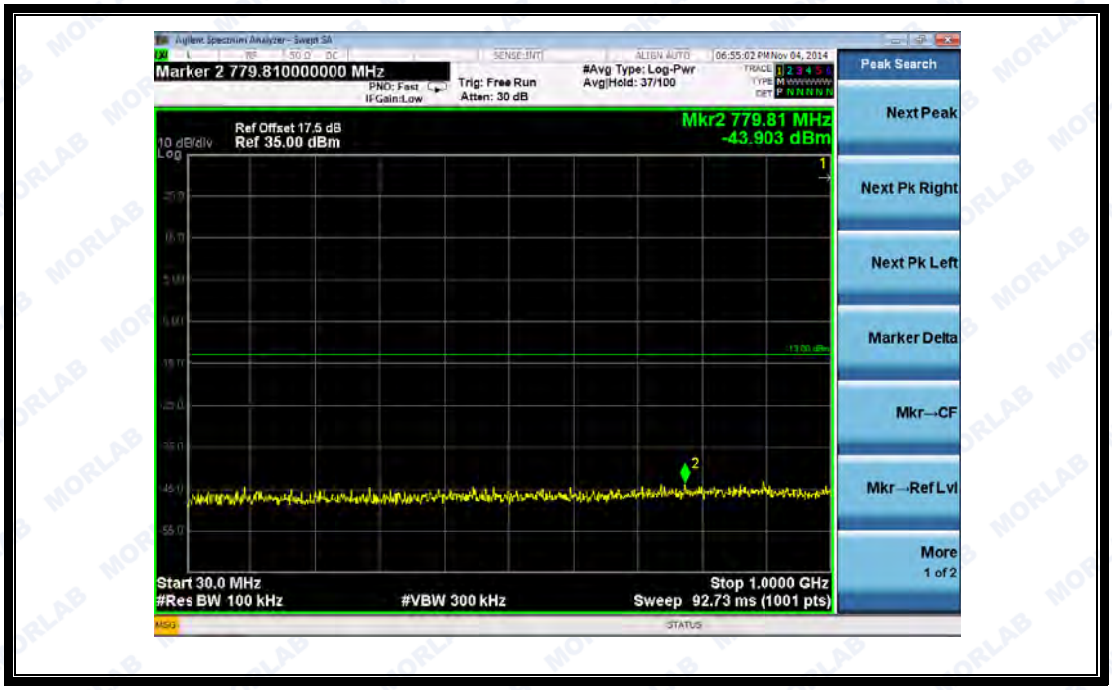
(Plot A3:GSM 850MHz Channel = 251, 30MHz to 1GHz)

(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



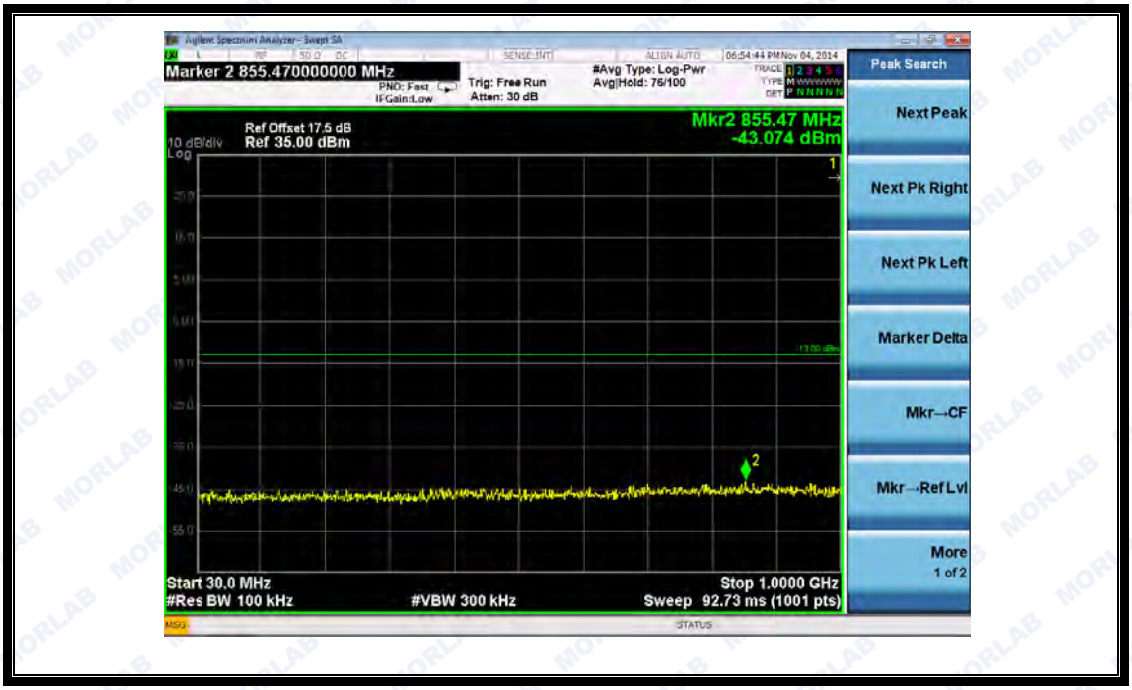
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)

(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



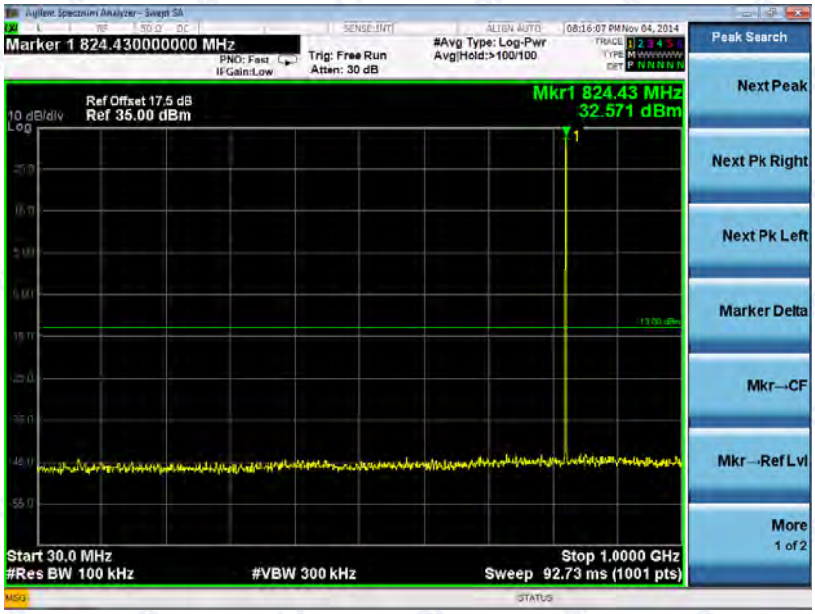
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)

(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



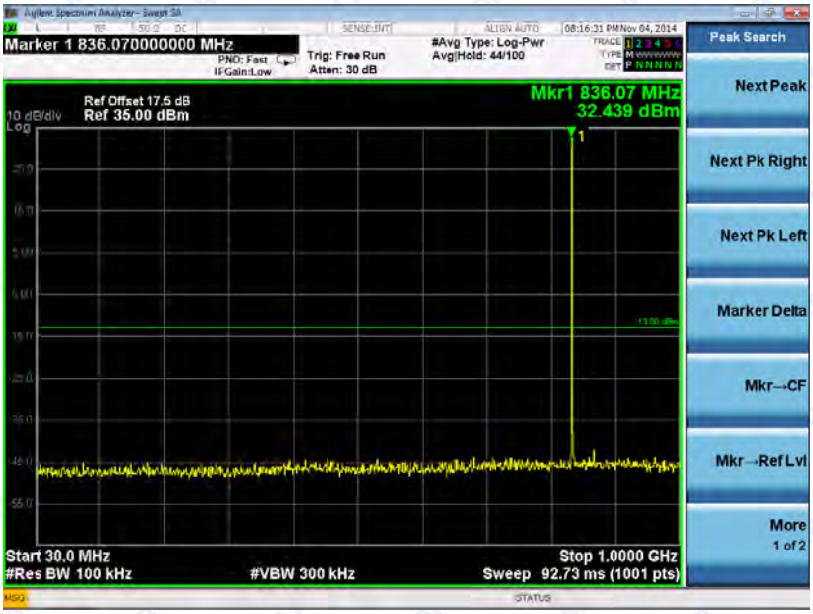
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)

(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



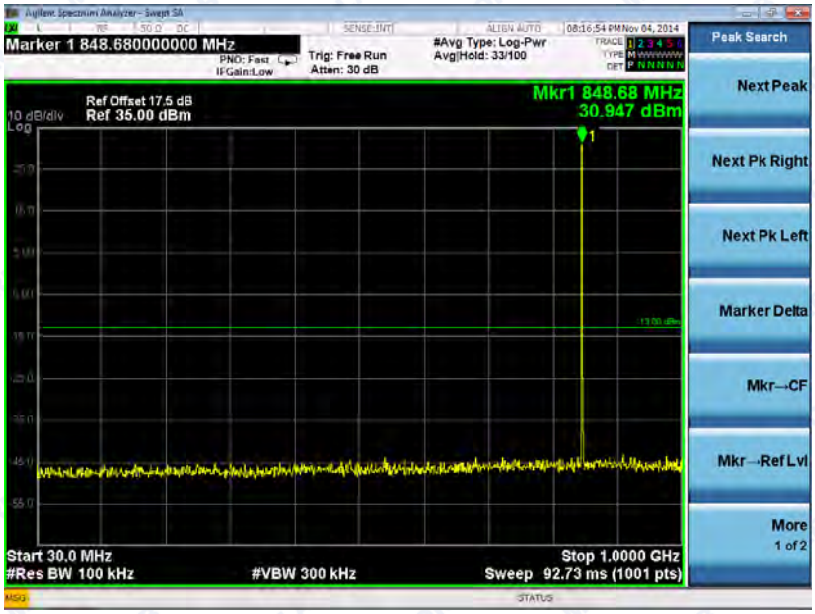
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)

(Plot C1.1: EDGE 850MHz Channel = 128, 1GHz to 9GHz)



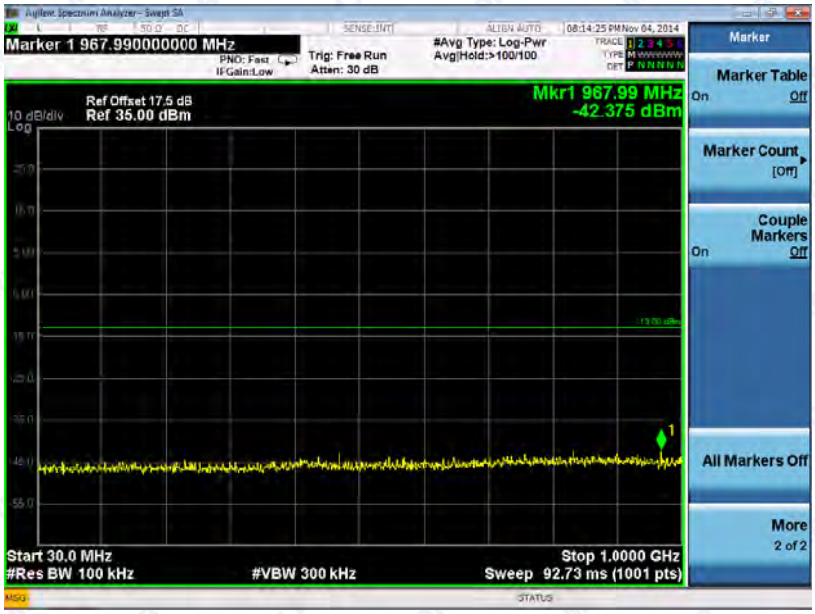
(Plot C2: EDGE 850MHz Channel = 190, 30MHz to 1GHz)

(Plot C2.1: EDGE 850MHz Channel = 190, 1GHz to 9GHz)

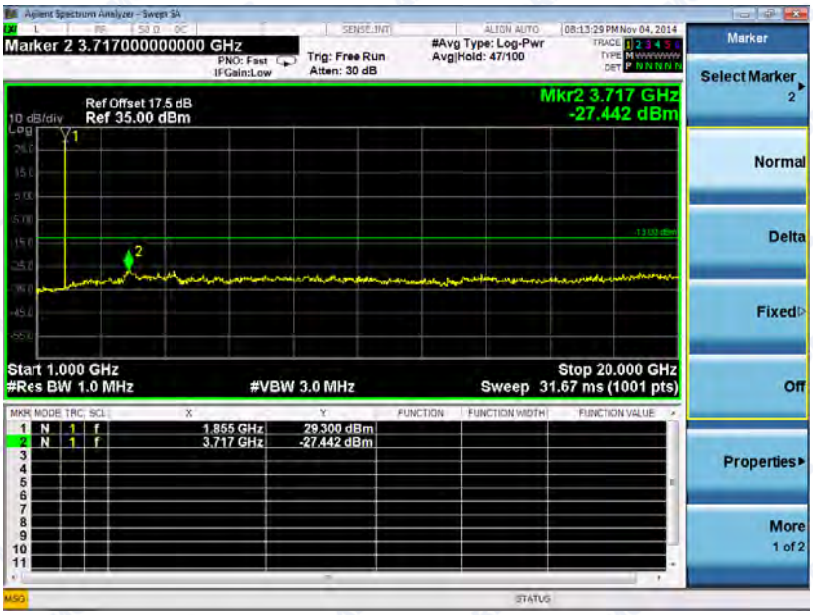


(Plot C3: EDGE 850MHz Channel = 251, 30MHz to 1GHz)

(Plot C3.1: EDGE 850MHz Channel = 251, 1GHz to 9GHz)

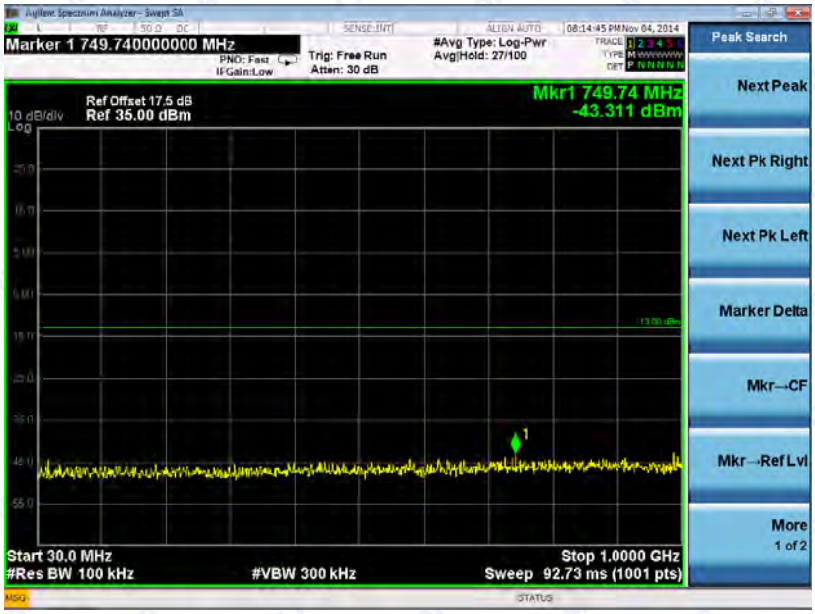


(Plot D1: EDGE 1900MHz Channel = 512, 30MHz to 1GHz)

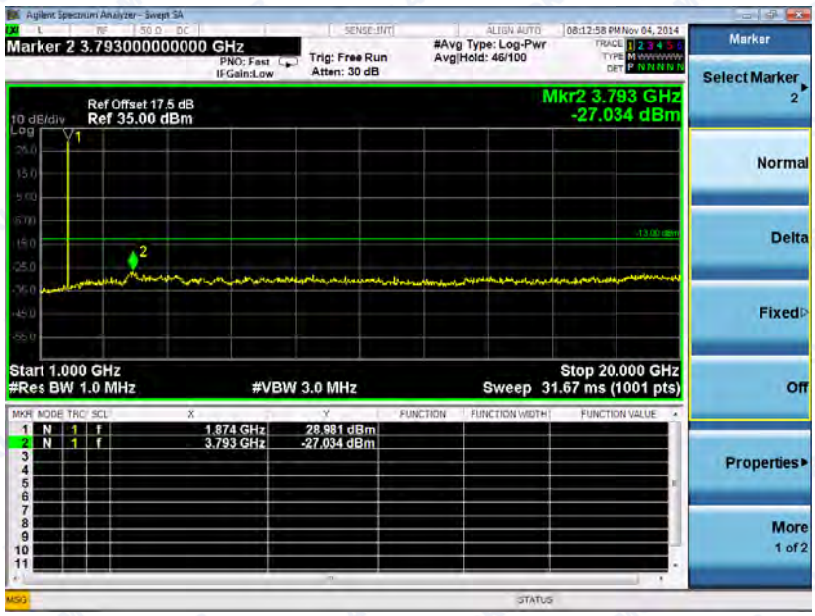


8

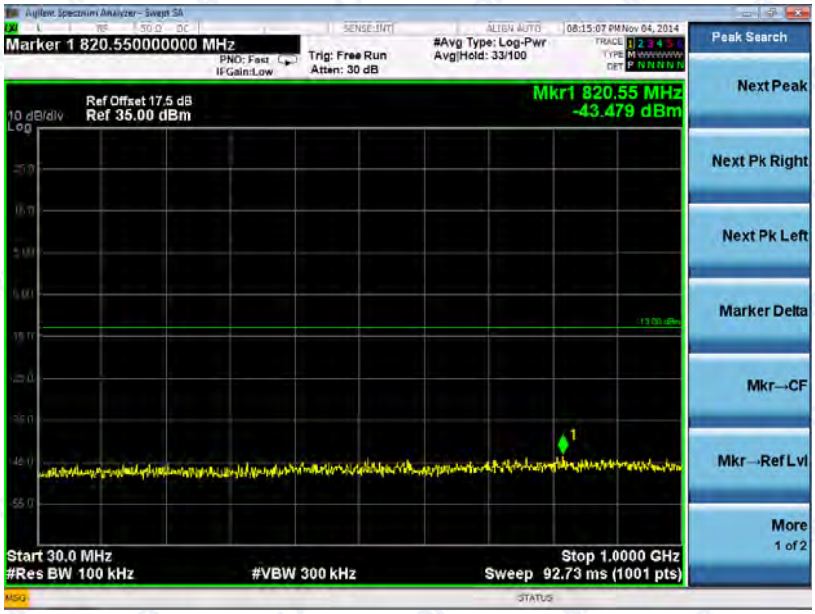
(Plot D1.1: EDGE 1900MHz Channel = 512, 1GHz to 20GHz)



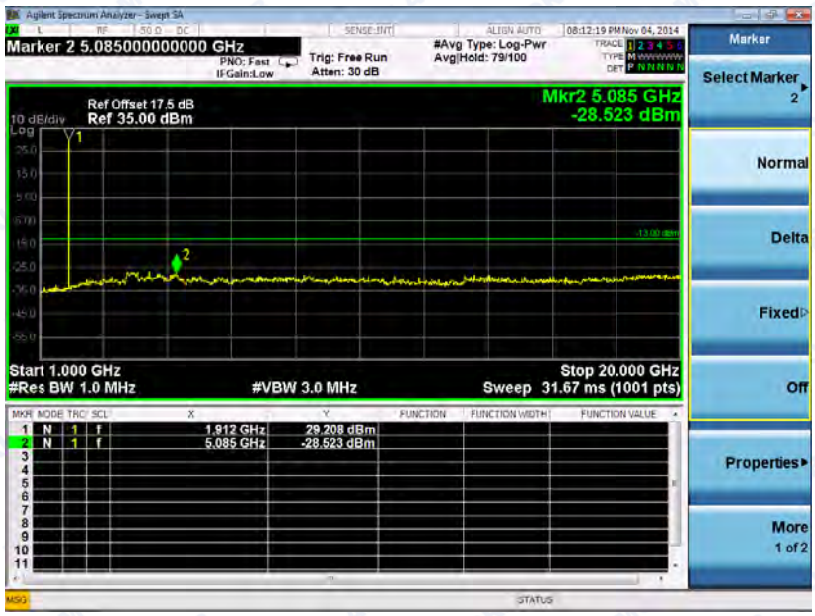
(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



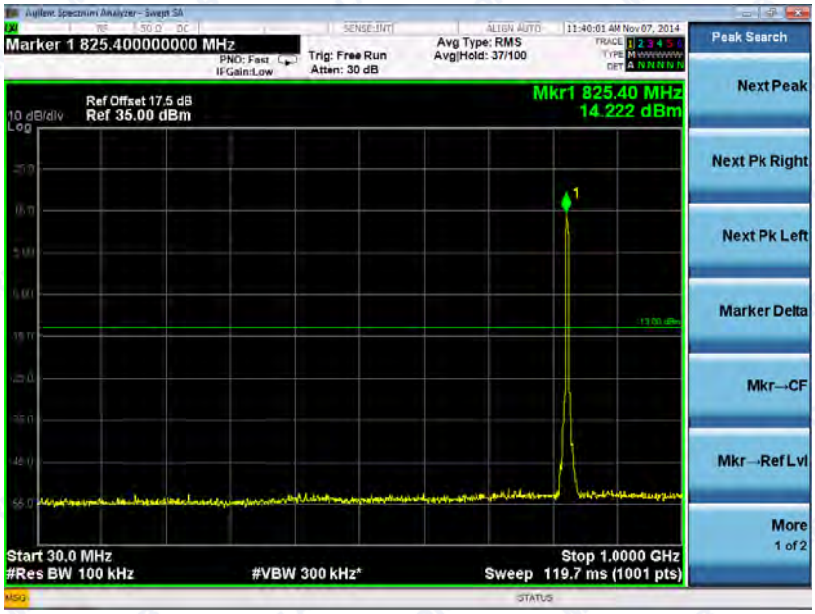
(Plot D2.1: EDGE 1900MHz Channel = 661,1GHz to 20GHz)



(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)

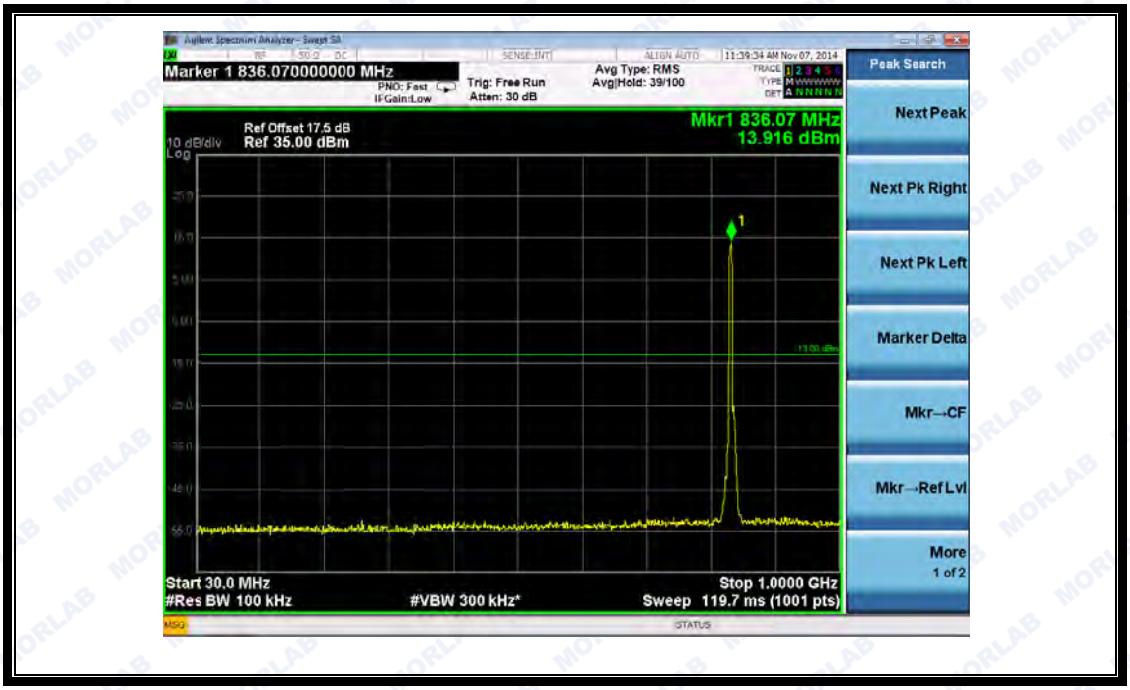


(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



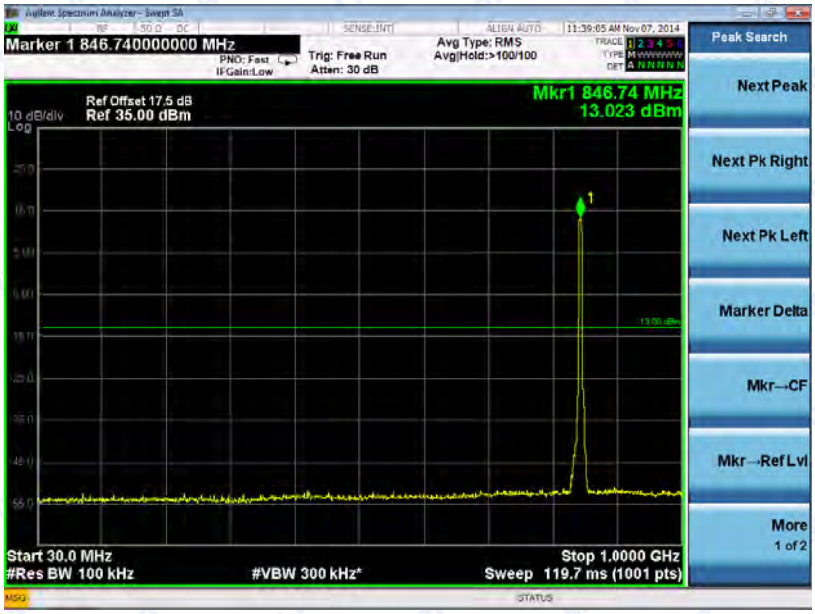
(Plot E1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)

(Plot E1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)



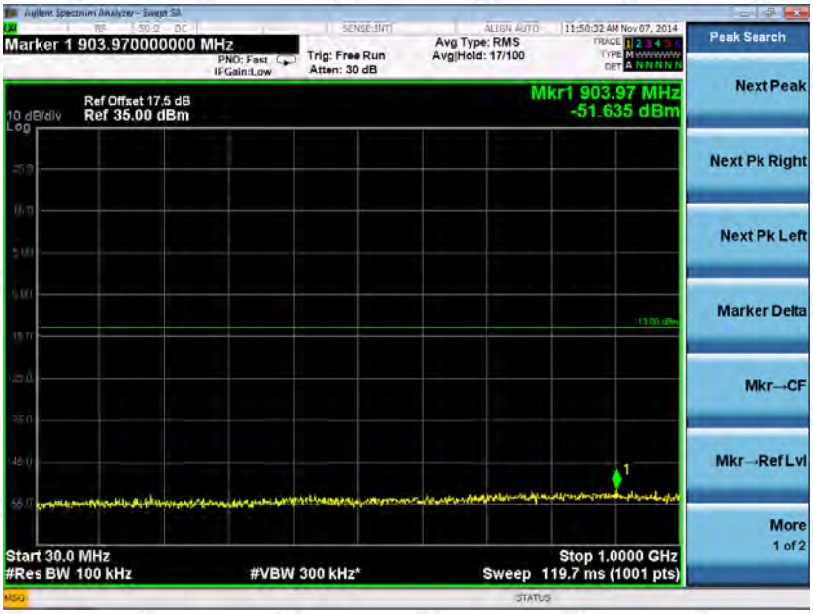
(Plot E2: WCDMA850MHz Channel = 4175, 30MHz to 1GHz)

(Plot E2.1: WCDMA850MHz Channel = 4175, 1GHz to 9GHz)

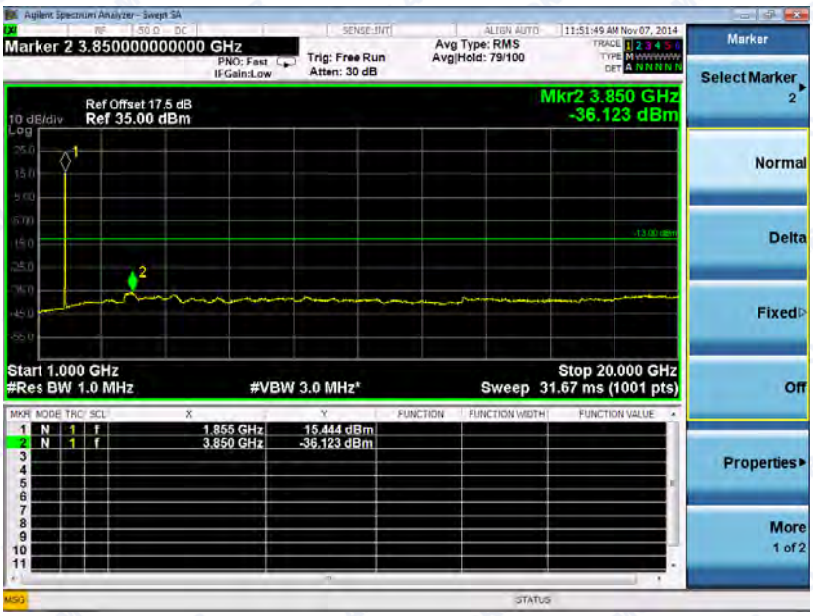


(Plot E3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)

(Plot E3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)

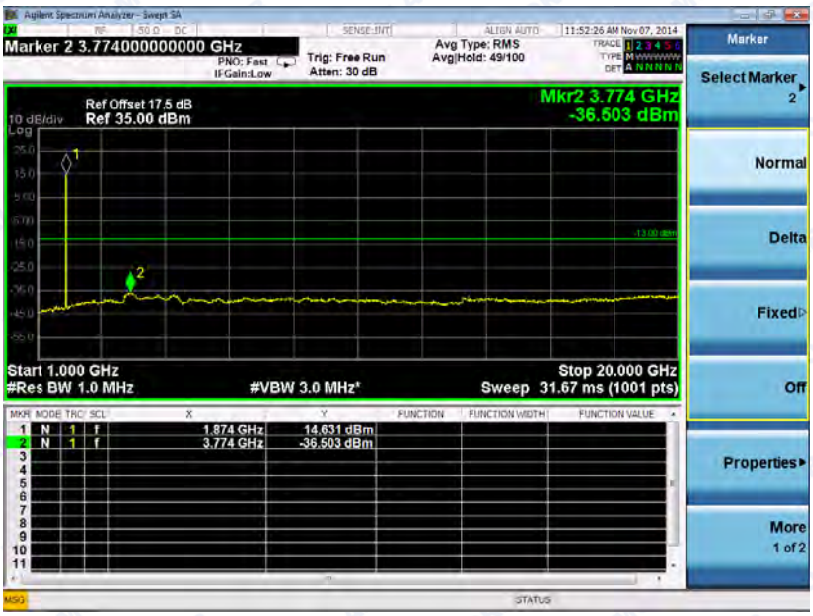


(Plot F1:WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)

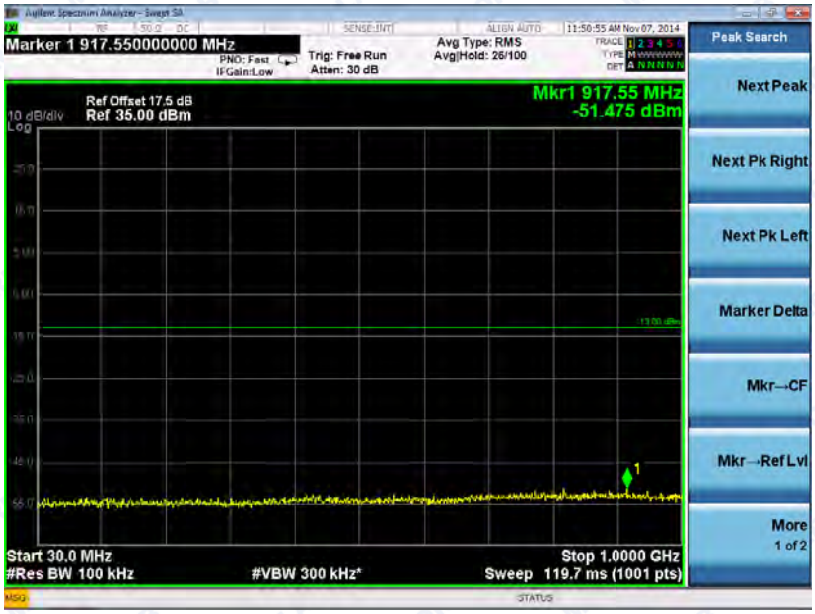


(Plot F1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)

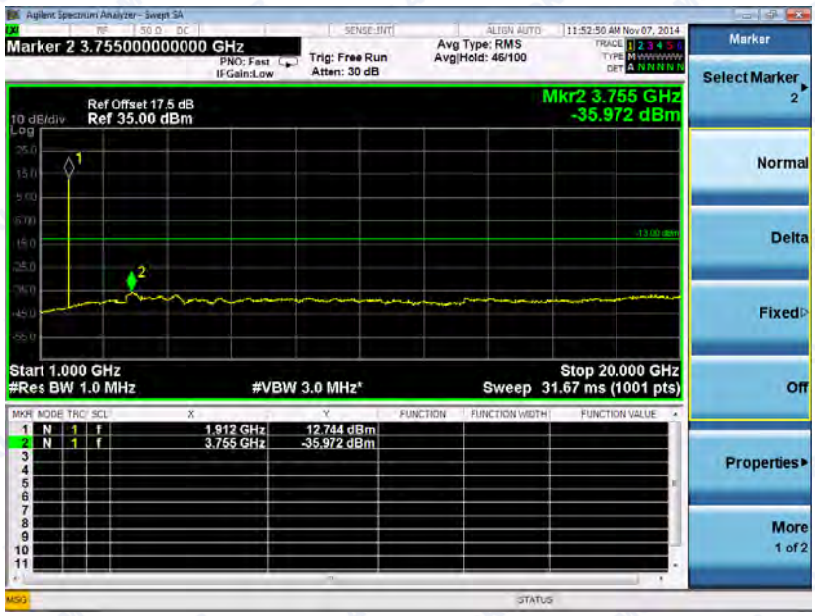
(Plot F2:WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)



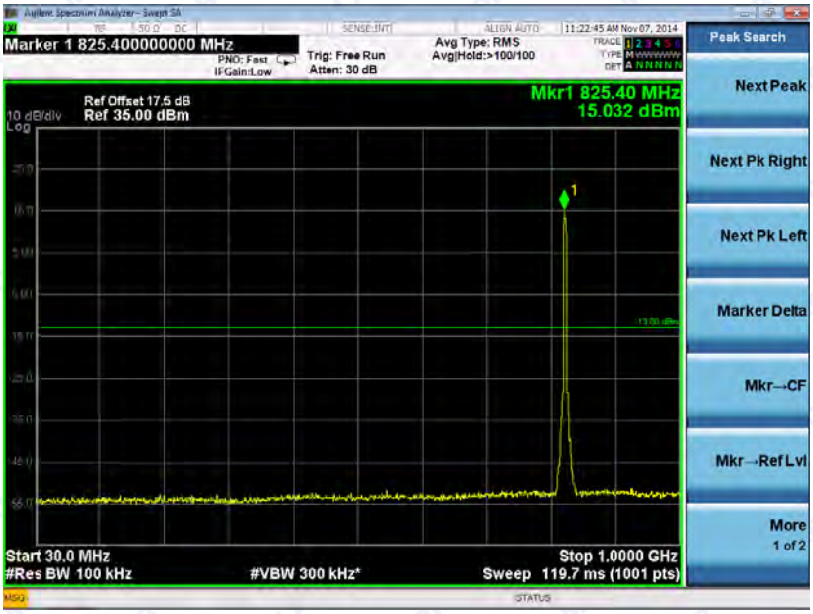
(Plot F2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)



(Plot F3:WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)

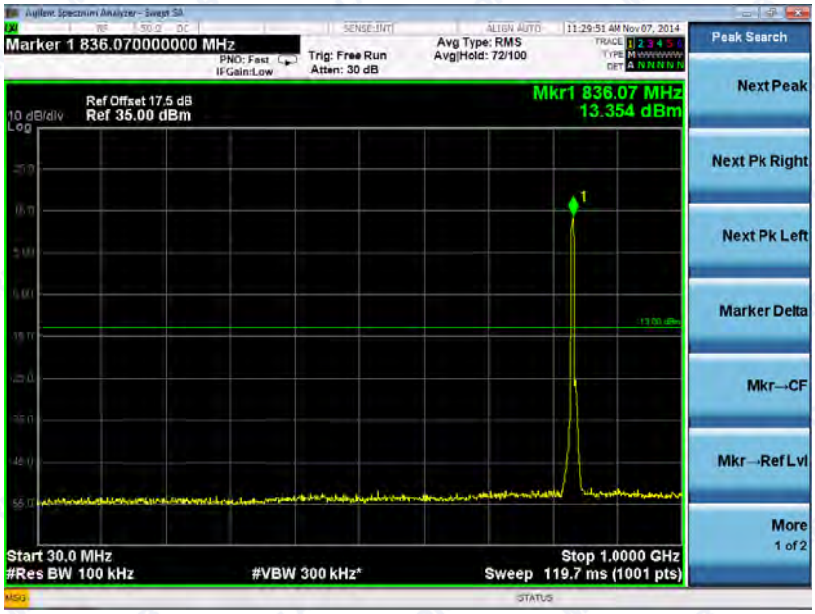


(Plot F3.1: WCDMA1900MHz Channel = 9538 1GHz to 20GHz)



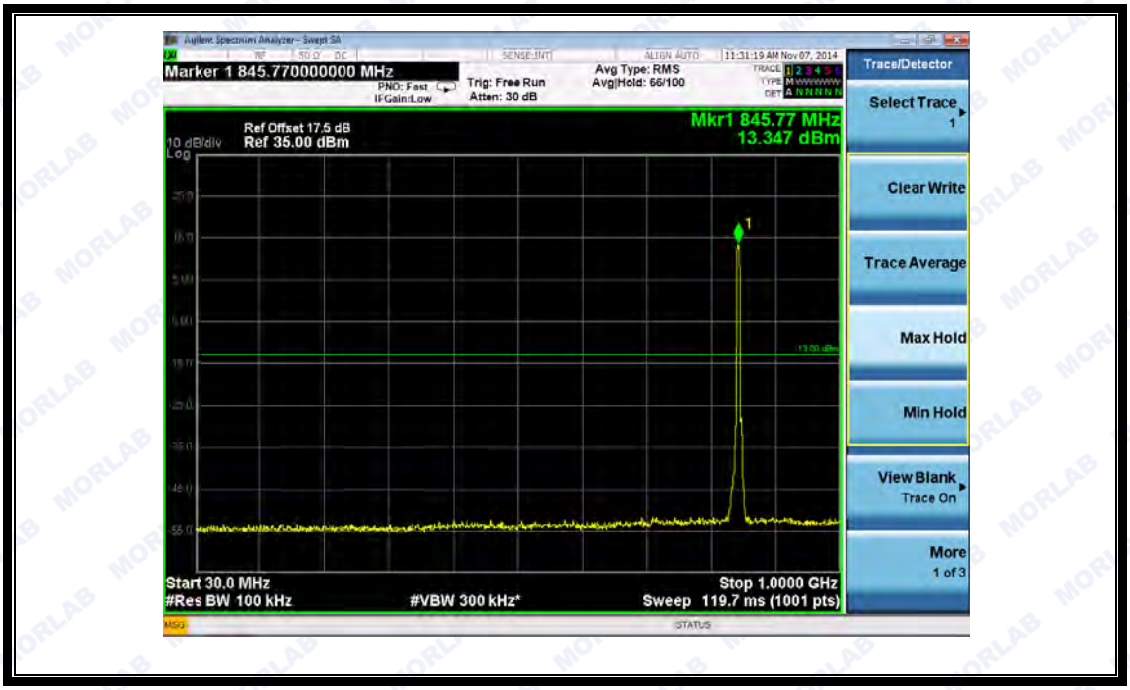
(Plot G1: HSDPA 850MHz Channel = 4132, 30MHz to 1GHz)

(Plot G1.1: HSDPA 850MHz Channel = 4132, 1GHz to 9GHz)



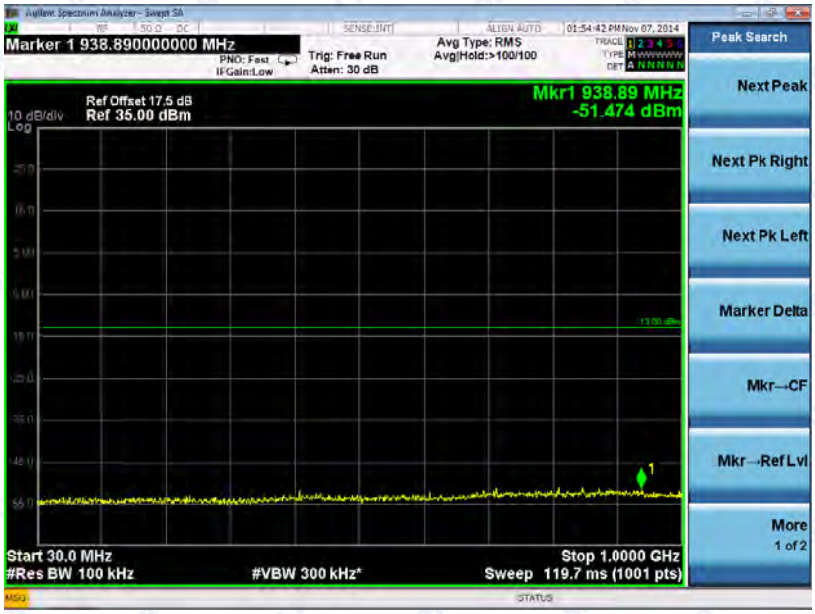
(Plot G2: HSDPA 850MHz Channel = 4175, 30MHz to 1GHz)

(Plot G2.1: HSDPA 850MHz Channel = 4175, 1GHz to 9GHz)

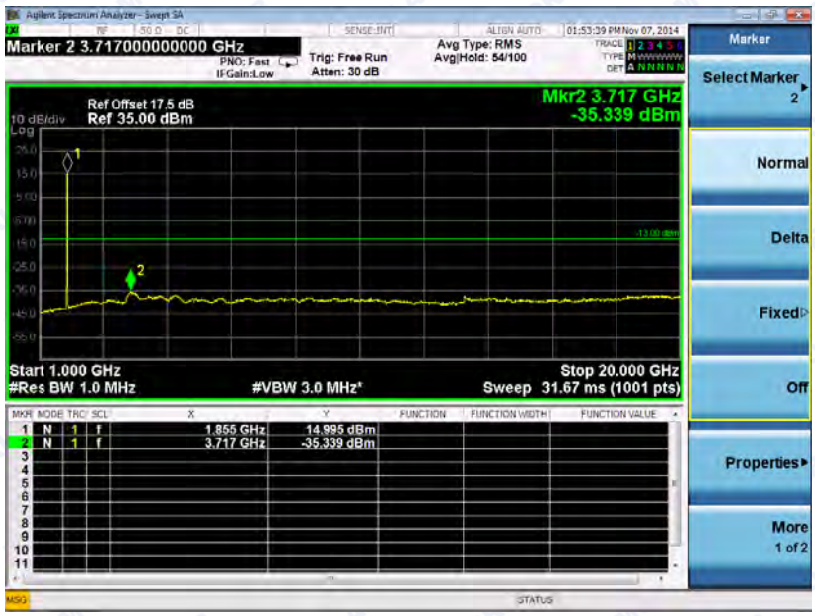


(Plot G3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)

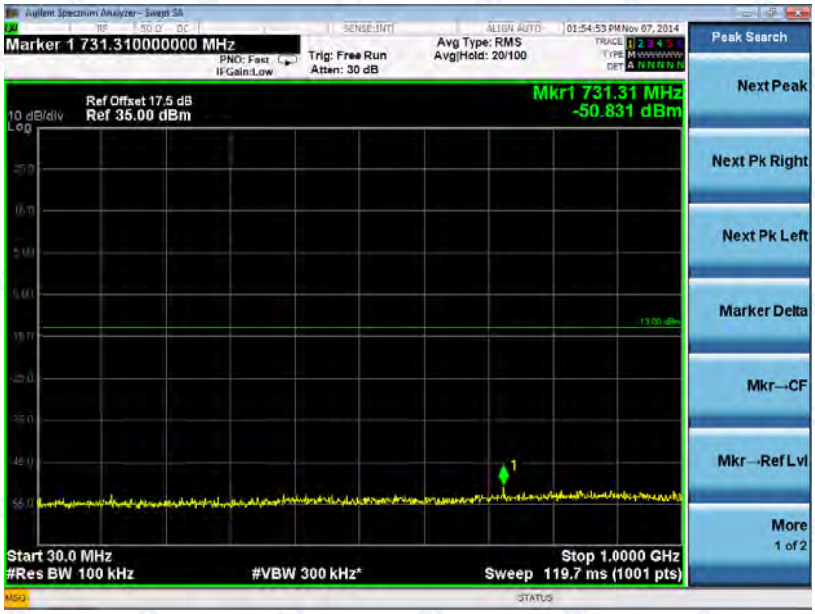
(Plot G3.1: HSDPA850MHz Channel = 4233, 1GHz to 9GHz)



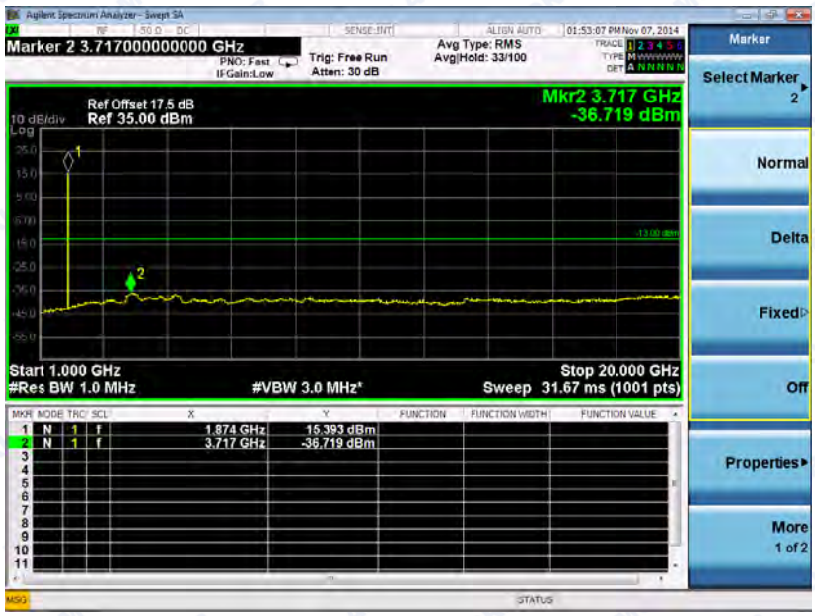
(Plot H1: HSDPA1900MHz Channel = 9262, 30MHz to 1GHz)



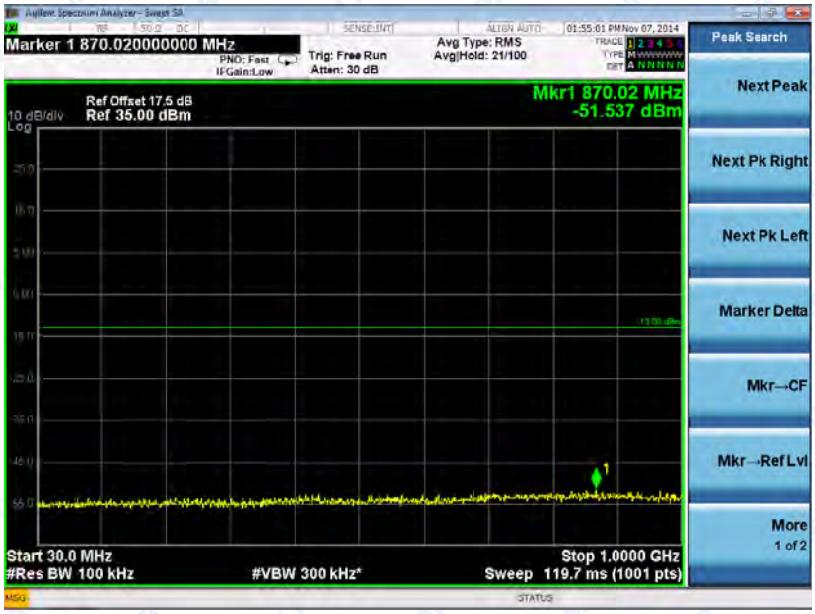
(Plot H1.1: HSDPA1900MHz Channel = 9262, 1GHz to 20GHz)



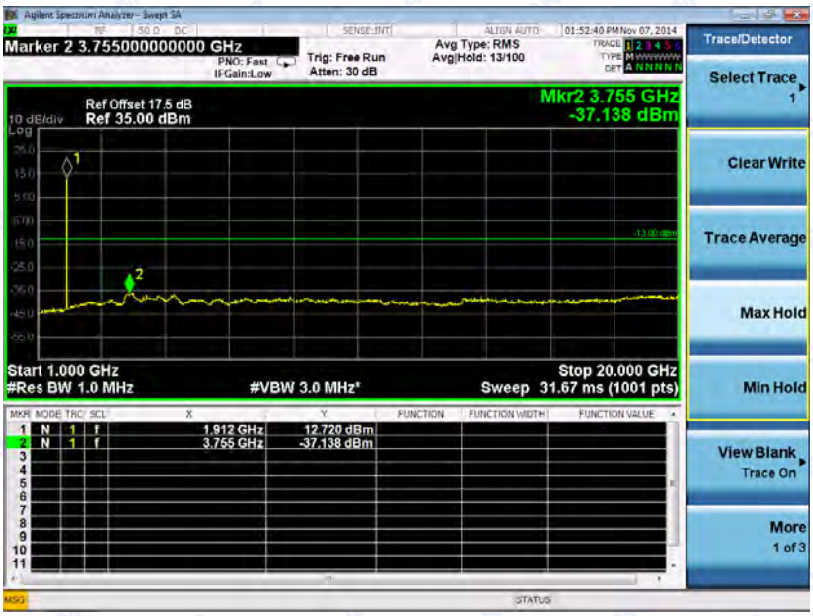
(Plot H2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)



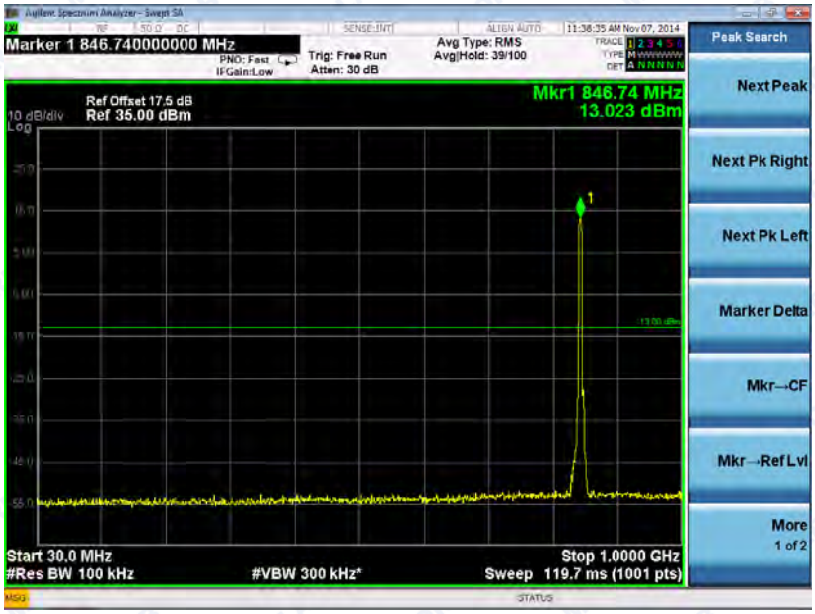
(Plot H2.1: HSDPA1900MHz Channel = 9400, 1GHz to 20GHz)



(Plot H3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)

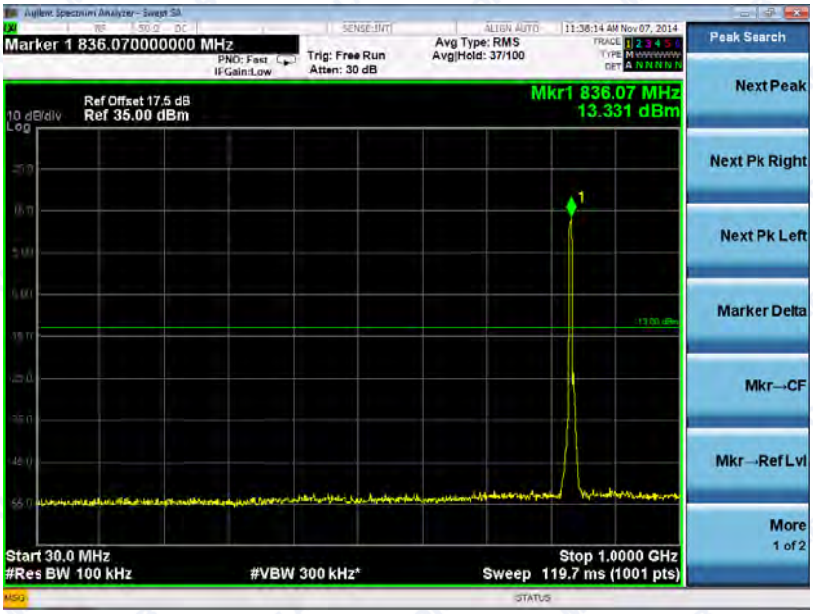


(Plot H3.1: HSDPA1900MHz Channel = 9538 1GHz to 20GHz)



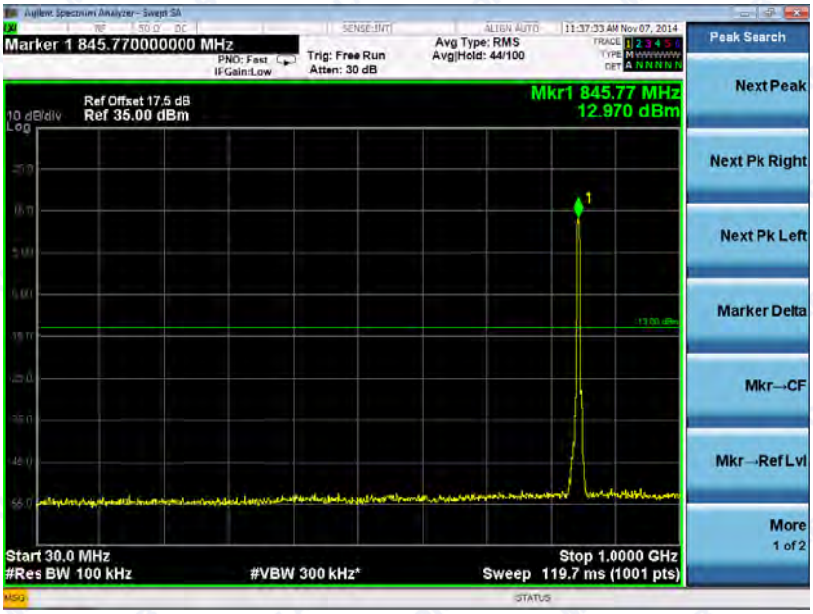
(Plot I 1:HSUPA 850MHz Channel = 4132, 30MHz to 1GHz)

(Plot I1.1: HSUPA 850MHz Channel = 4132, 1GHz to 9GHz)



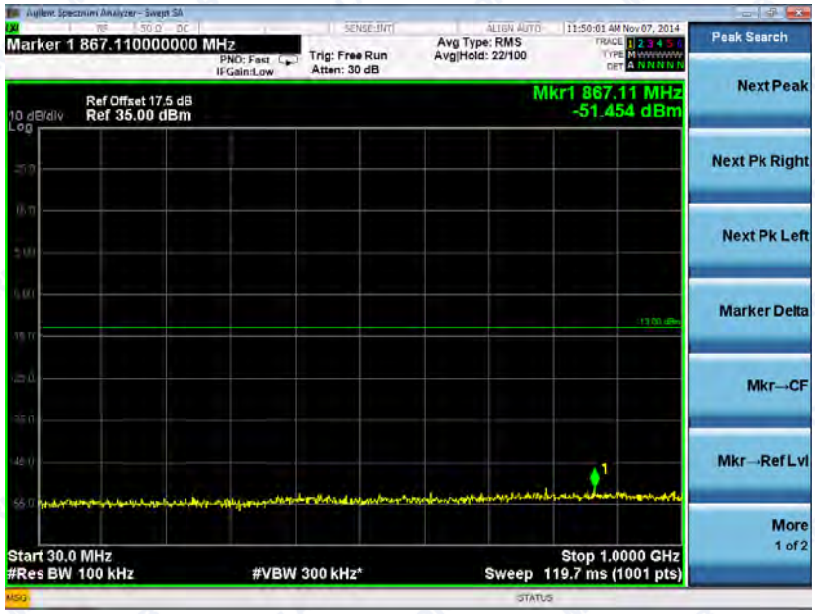
(Plot I 2:HSUPA 850MHz Channel = 4175, 30MHz to 1GHz)

(Plot I2.1: HSUPA 850MHz Channel = 4175, 1GHz to 9GHz)

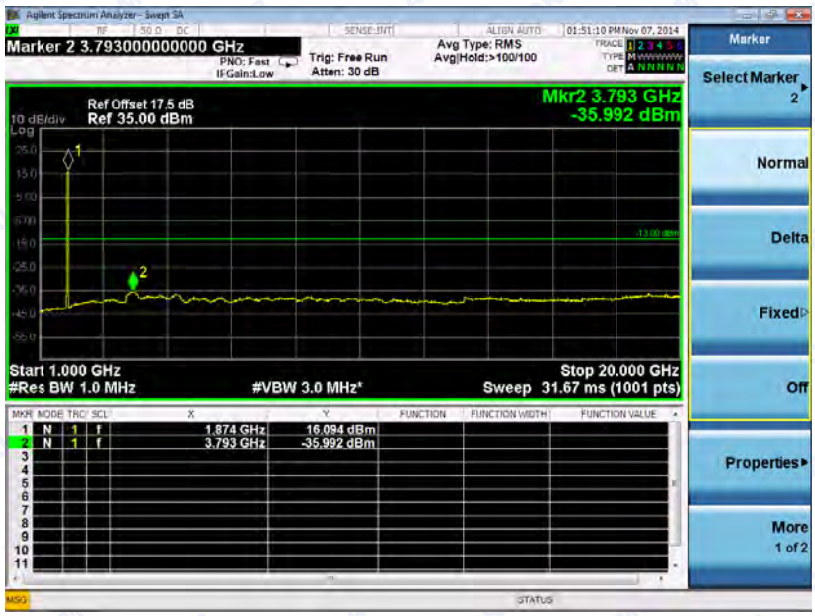


(Plot I 3: HSUPA850MHz Channel = 4233, 30MHz to 1GHz)

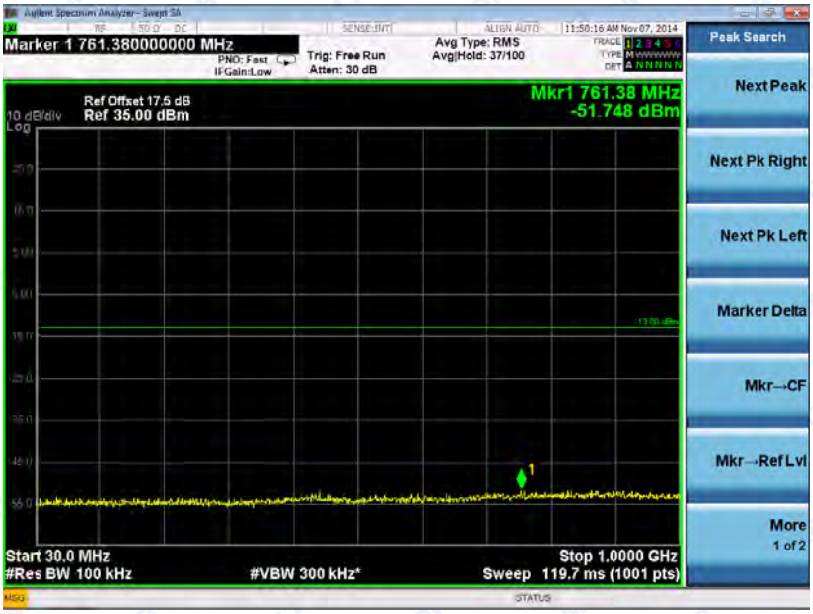
(Plot I3.1: HSUPA850MHz Channel = 4233, 1GHz to 9GHz)



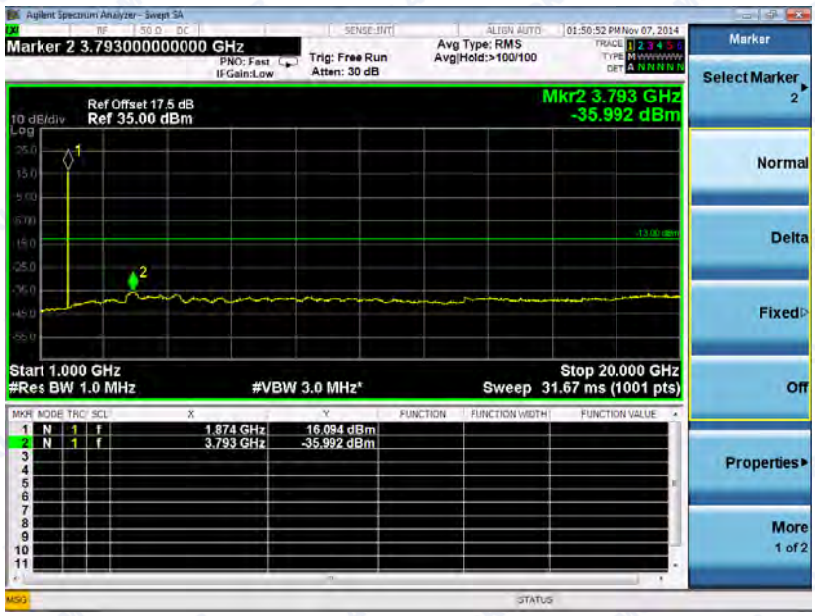
(Plot J 1: HSUPA1900MHz Channel = 9262, 30MHz to 1GHz)



(Plot J1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)

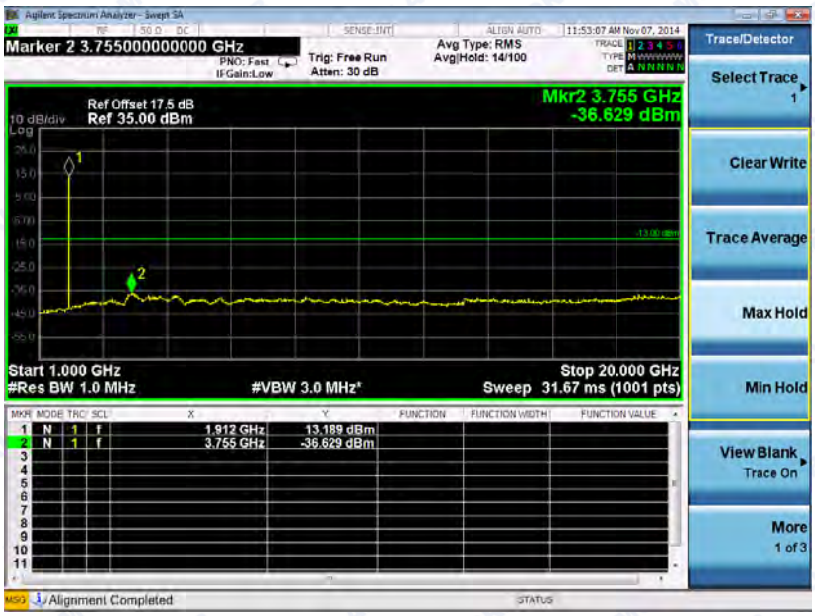


(Plot J 2: HSUPA1900MHz Channel = 9400, 30MHz to 1GHz)

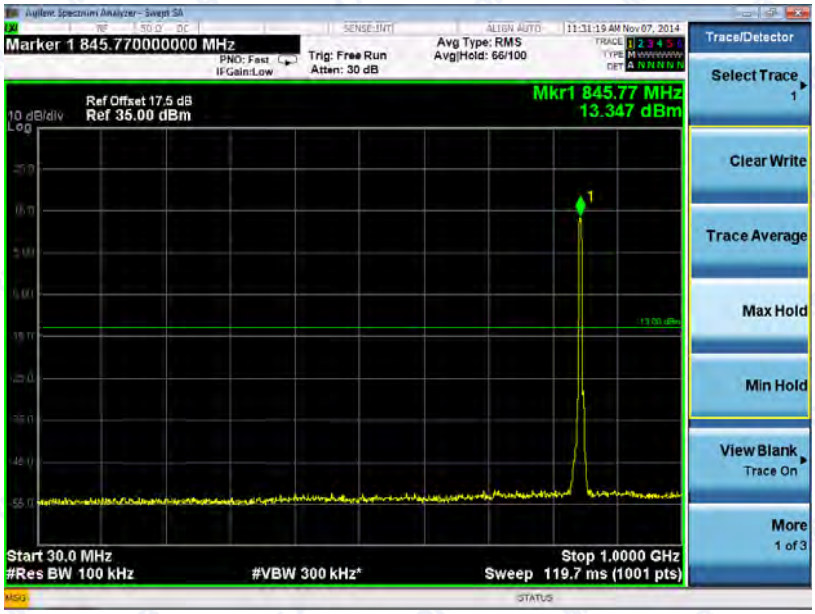


(Plot J2.1: HSUPA1900MHz Channel = 9400, 1GHz to 20GHz)

(Plot J 3: HSUPA1900MHz Channel = 9538, 30MHz to 1GHz)

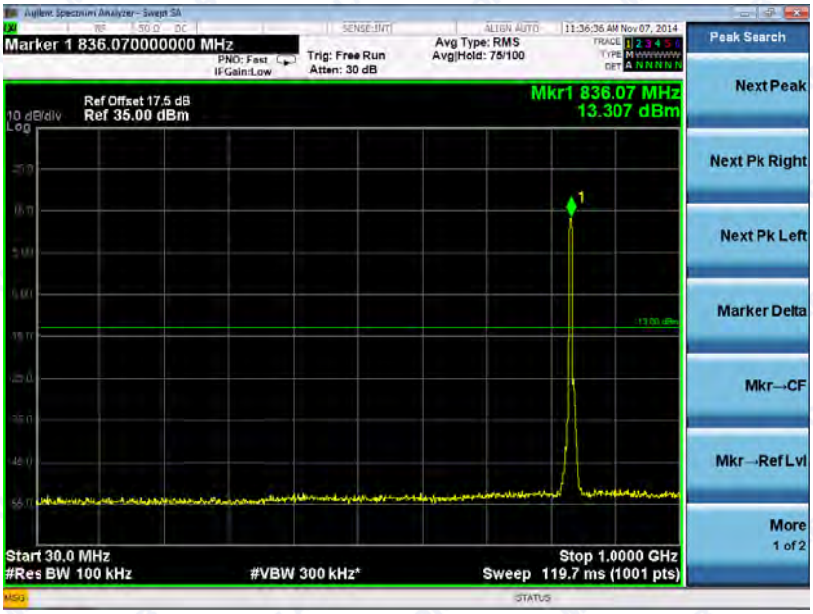


(Plot J3.1: HSUPA1900MHz Channel = 9538 1GHz to 20GHz)



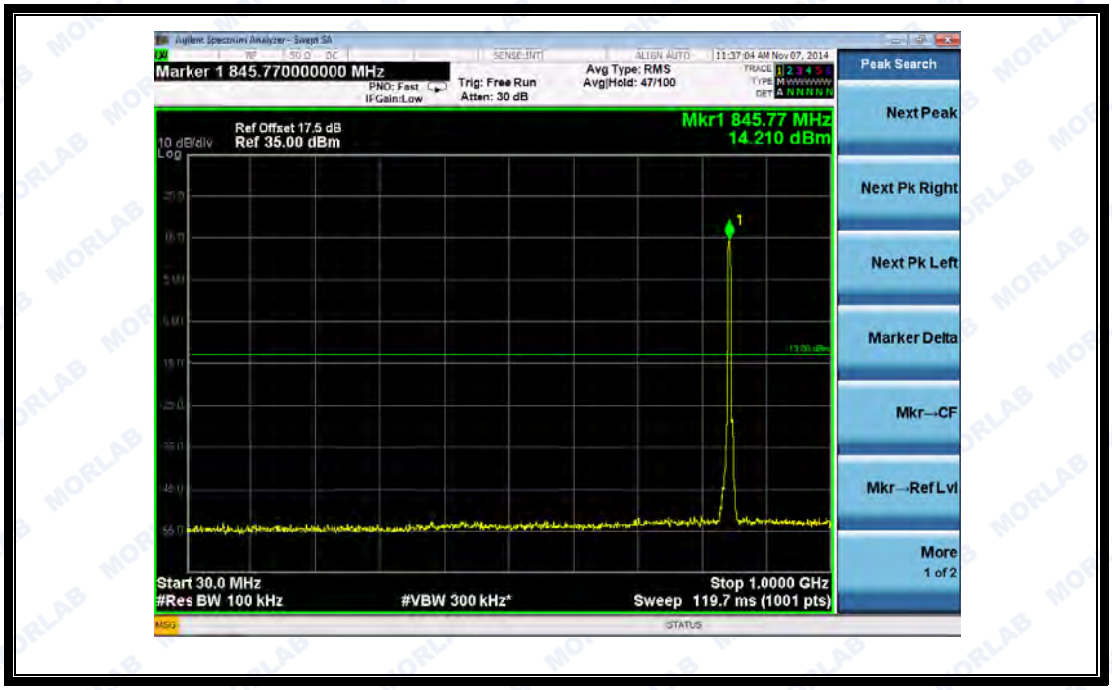
(Plot K 1: HSPA+ 850MHz Channel = 4132, 30MHz to 1GHz)

(Plot K1.1: HSPA+ 850MHz Channel = 4132, 1GHz to 9GHz)



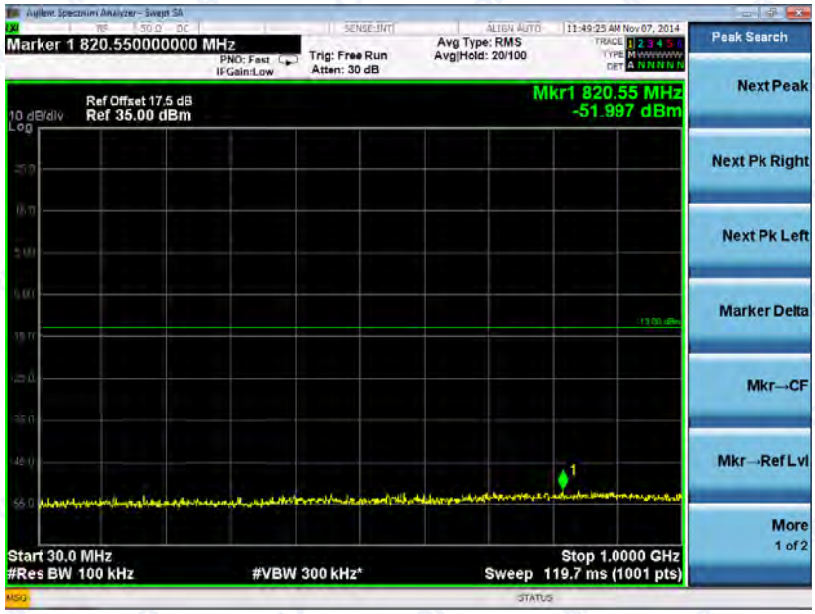
(Plot K 2: HSPA+ 850MHz Channel = 4175, 30MHz to 1GHz)

(Plot K2.1: HSPA+ 850MHz Channel = 4175, 1GHz to 9GHz)

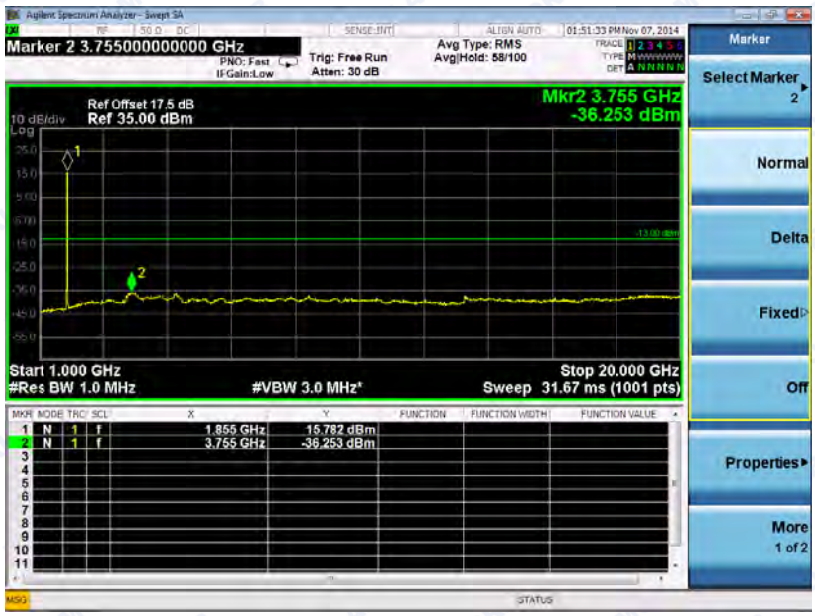


(Plot K 3: HSPA+ 850MHz Channel = 4233, 30MHz to 1GHz)

(Plot K3.1: HSPA+ 850MHz Channel = 4233, 1GHz to 9GHz)

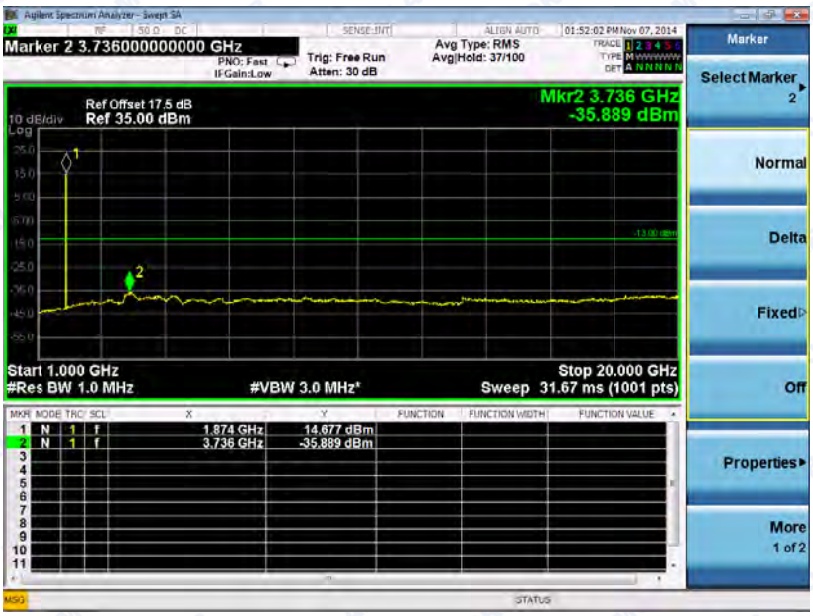


(Plot K 1: HSPA+ 1900MHz Channel = 9262, 30MHz to 1GHz)

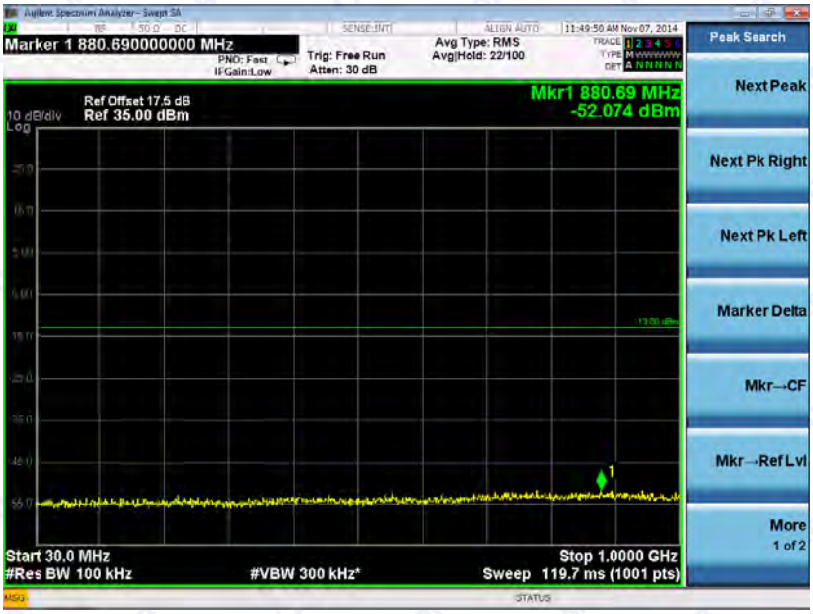


(Plot K1.1: HSPA+ 1900MHz Channel = 9262, 1GHz to 20GHz)

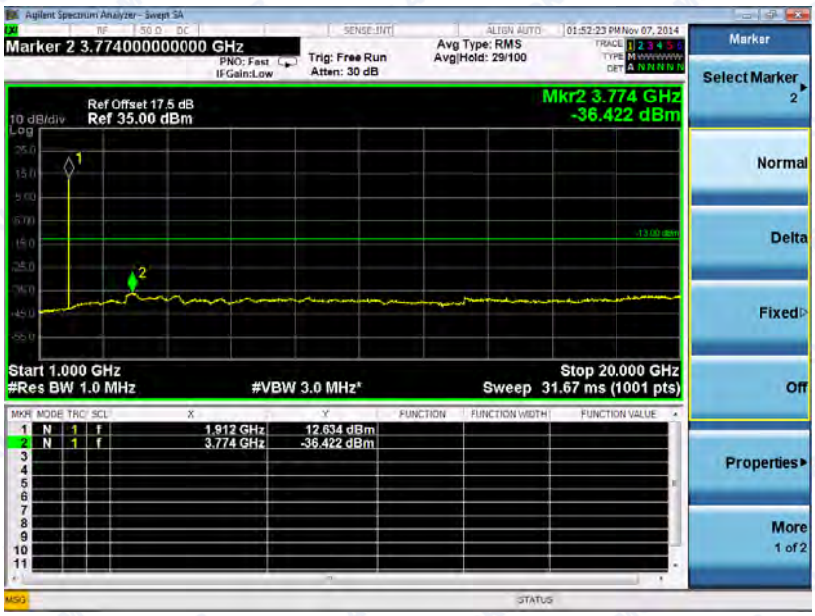
(Plot K 2: HSPA+ 1900MHz Channel = 9400, 30MHz to 1GHz)



(Plot K2.1: HSPA+ 1900MHz Channel = 9400, 1GHz to 20GHz)



(Plot K 3: HSPA+ 1900MHz Channel = 9538, 30MHz to 1GHz)



(Plot K3.1: HSPA+ 1900MHz Channel = 9538 1GHz to 20GHz)

2.6 Band Edge

2.6.1 Requirement

According to FCC section 22.917(b) and FCC section 24.238(b) in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

2.6.2 Test Description

See section 2.1.2 of this report.

2.6.3 Test Result

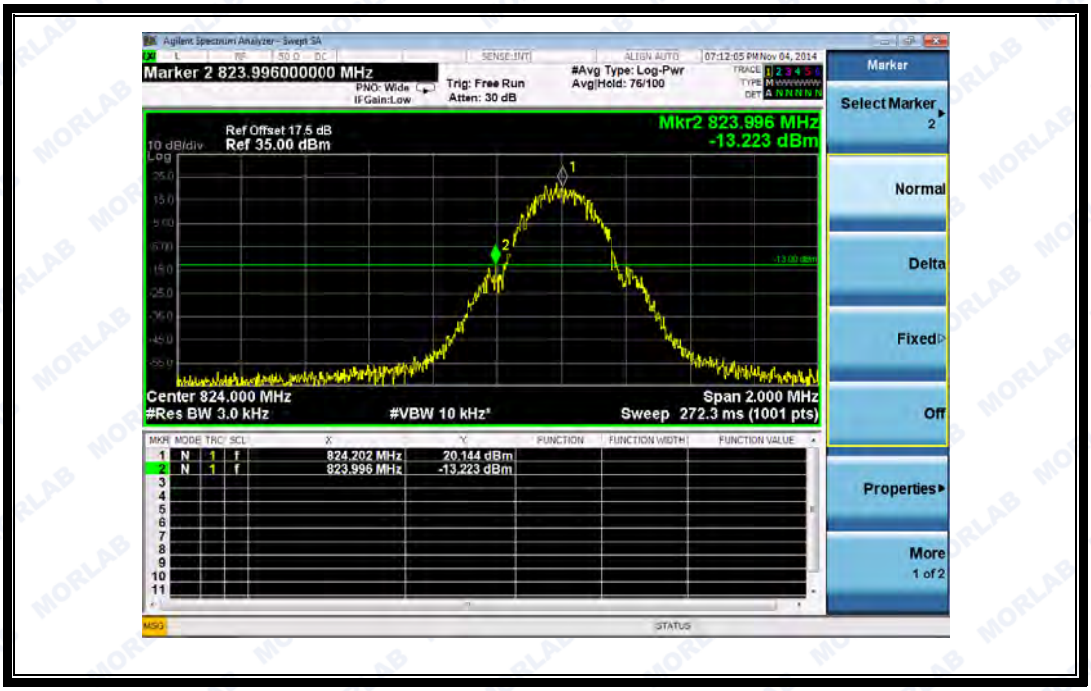
The lowest and highest channels are tested to verify the band edge emissions.

1. Test Verdict:

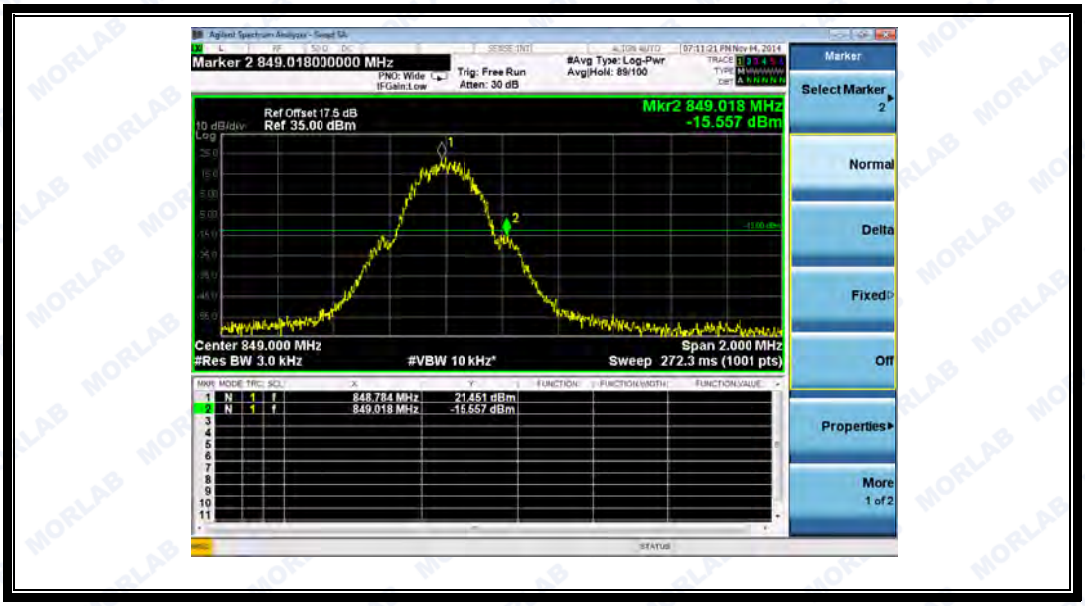
Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-14.865	Plat A	-13	PASS
	251	848.8	-13.228	Plot B		PASS
GSM 1900MHz	512	1850.2	-16.095	Plat C	-13	PASS
	810	1909.8	-18.074	Plot D		PASS
EDGE 850MHz	128	824.2	-17.163	Plat E	-13	PASS
	251	848.8	-14.343	Plot F		PASS
EDGE 1900MHz	512	1850.2	-18.347	Plat G	-13	PASS
	810	1909.8	-17.950	Plot H		PASS
WCDMA 850MHz	4132	826.4	-14.867	Plat I	-13	PASS
	4233	846.6	-15.620	Plot J		PASS
WCDMA 1900MHz	9262	1852.4	-23.529	Plat K	-13	PASS
	9538	1907.6	-22.806	Plot L		PASS
HSDPA 850MHz	4132	826.4	-22.399	Plat M	-13	PASS
	4233	846.6	-21.546	Plot N		PASS
HSDPA 1900MHz	9262	1852.4	-23.548	Plat O	-13	PASS
	9538	1907.6	-23.187	Plot P		PASS
HSUPA 850MHz	4132	826.4	-43.694	Plat Q	-13	PASS
	4233	846.6	-33.980	Plot R		PASS

HSUPA 1900MHz	9262	1852.4	-29.429	Plat S	-13	PASS
	9538	1907.6	-26.801	Plot T		PASS
HSPA+ 850MHz	4132	826.4	-23.275	Plat U	-13	PASS
	4233	846.6	-23.041	Plot V		PASS
HSPA+ 1900MHz	9262	1852.4	-23.515	Plat W	-13	PASS
	9538	1907.6	-21.022	Plot X		PASS

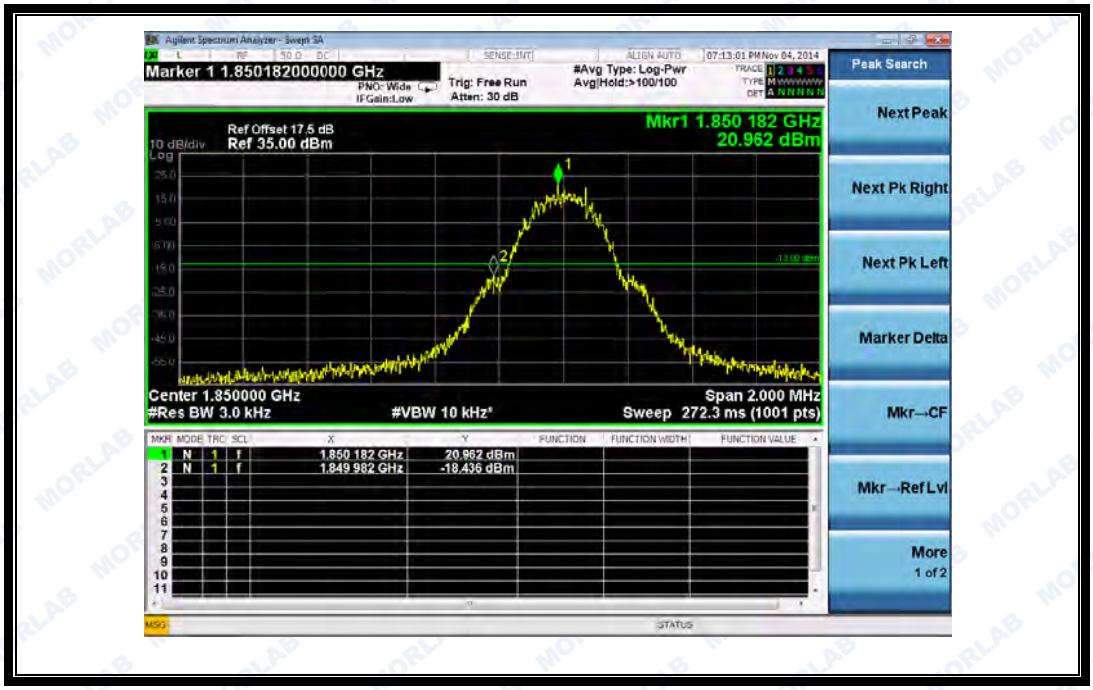
2. Test Plots:



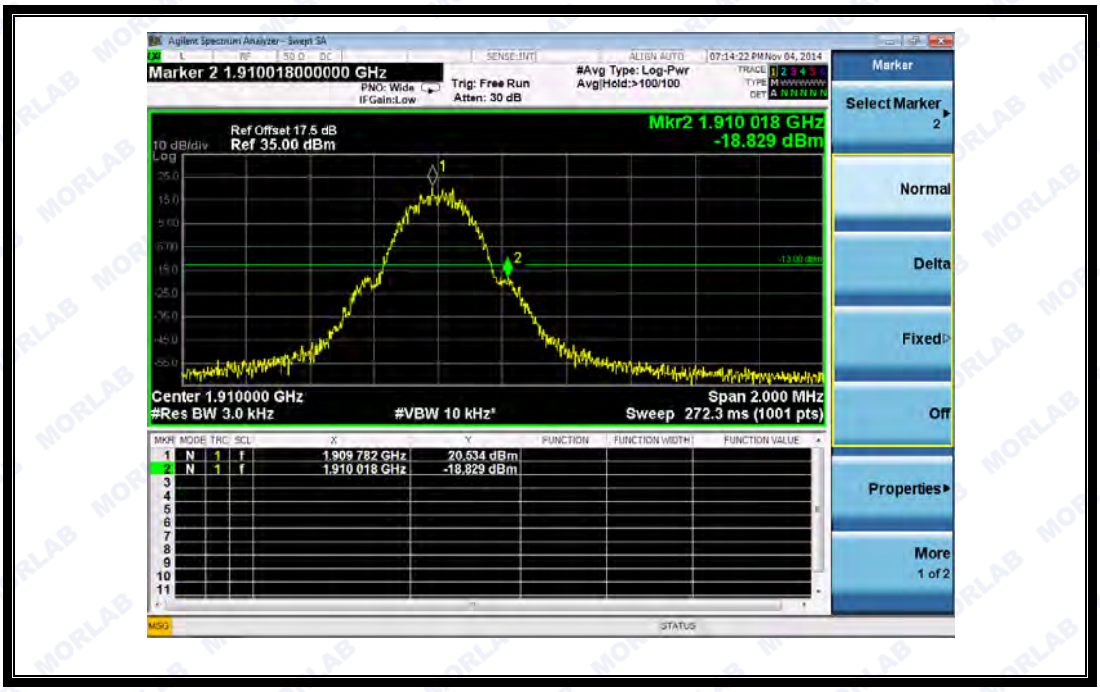
(Plot A: GSM 850 Channel = 128)



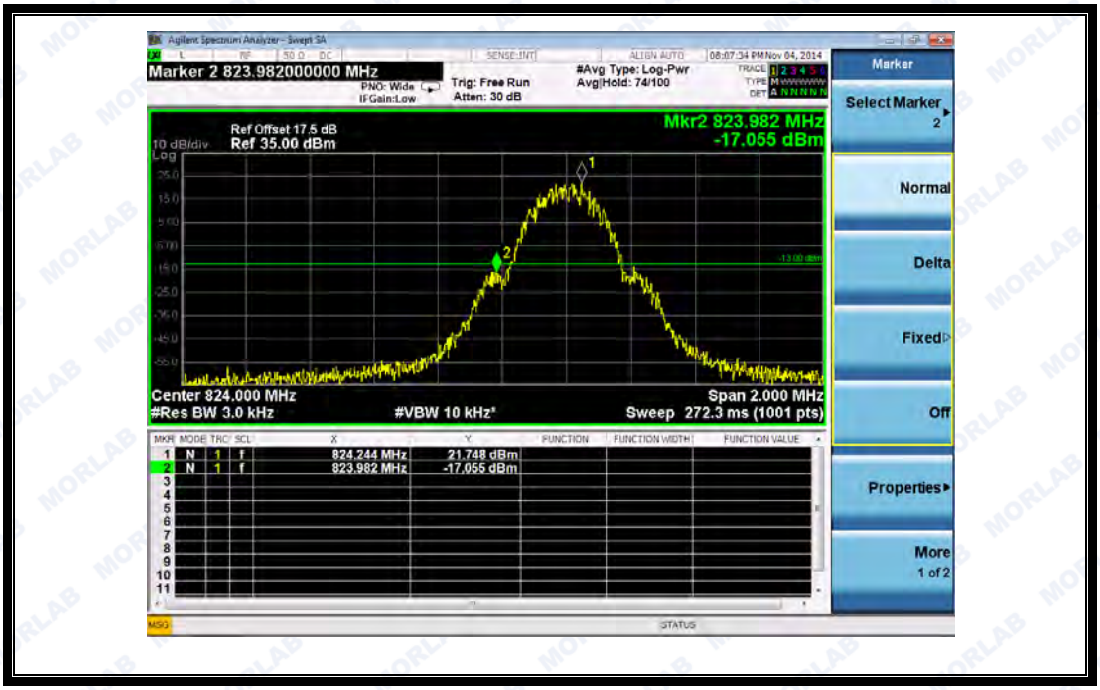
(Plot B: GSM 850 Channel = 251)



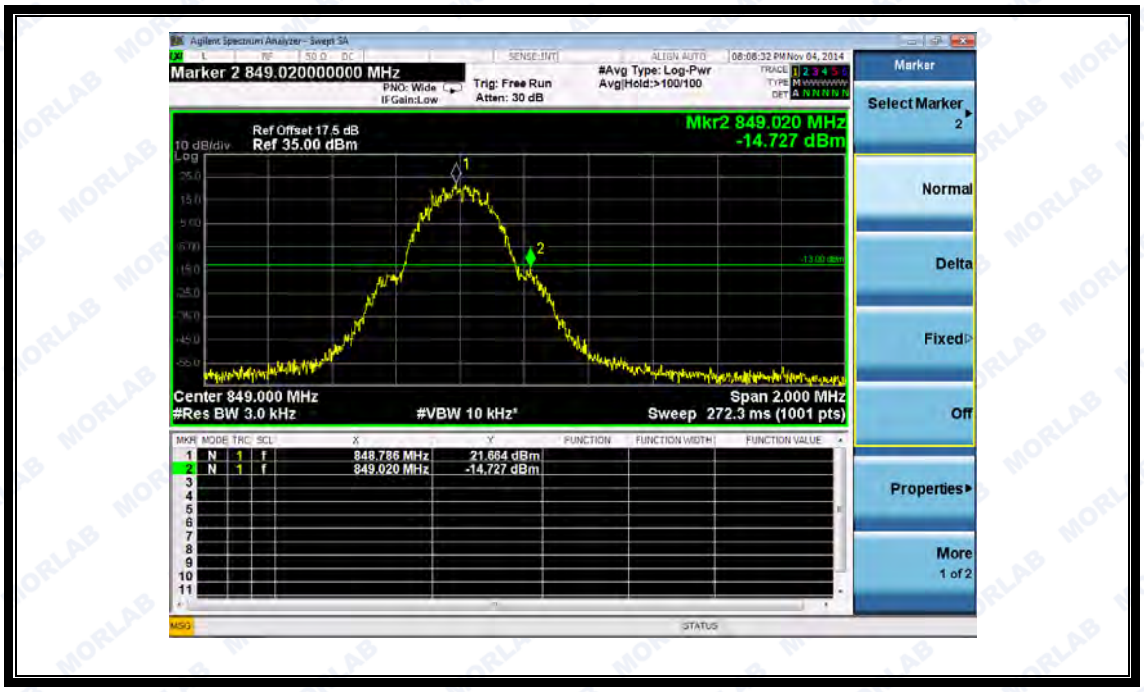
(Plot C: GSM 1900 Channel = 512)



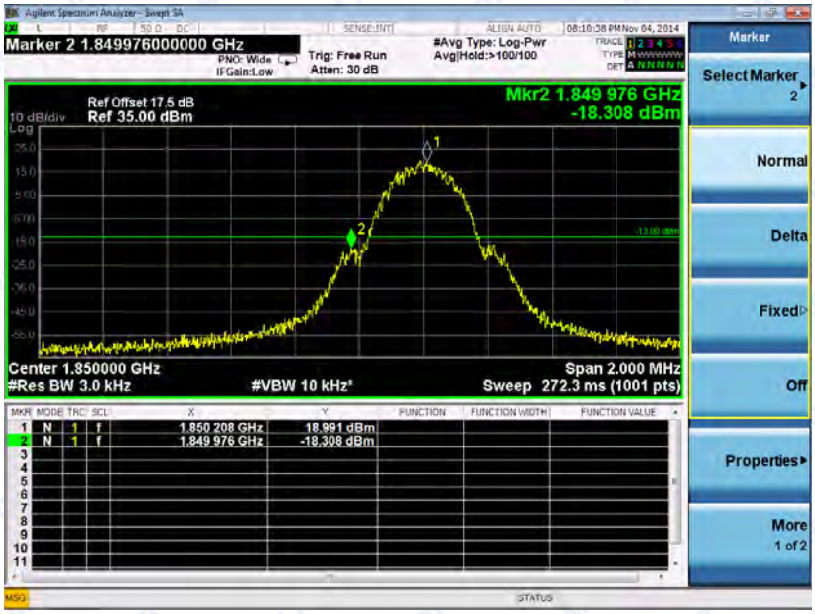
(Plot D: GSM 1900 Channel = 810)



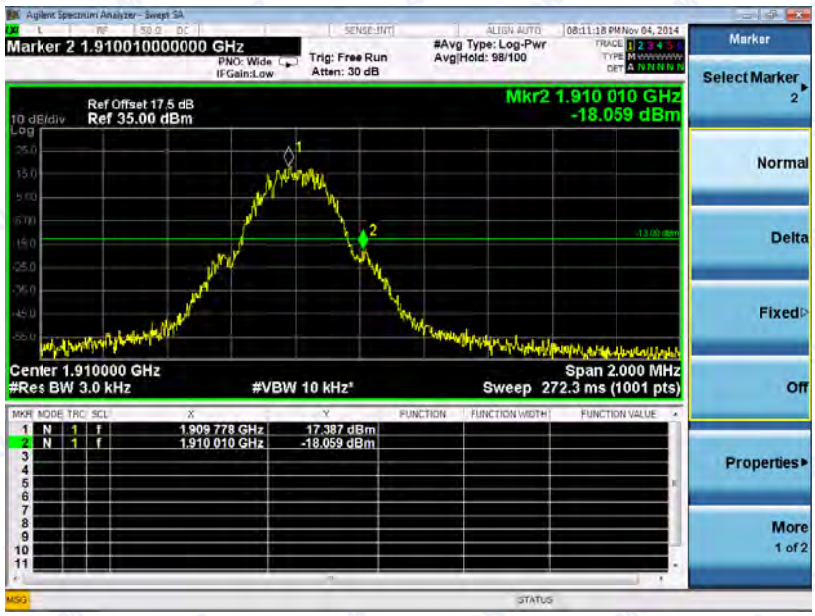
(Plot E: EGPRS 850 Channel = 128)



(Plot F: EGPRS 850 Channel = 251)



(Plot G: EGPRS 1900 Channel = 512)



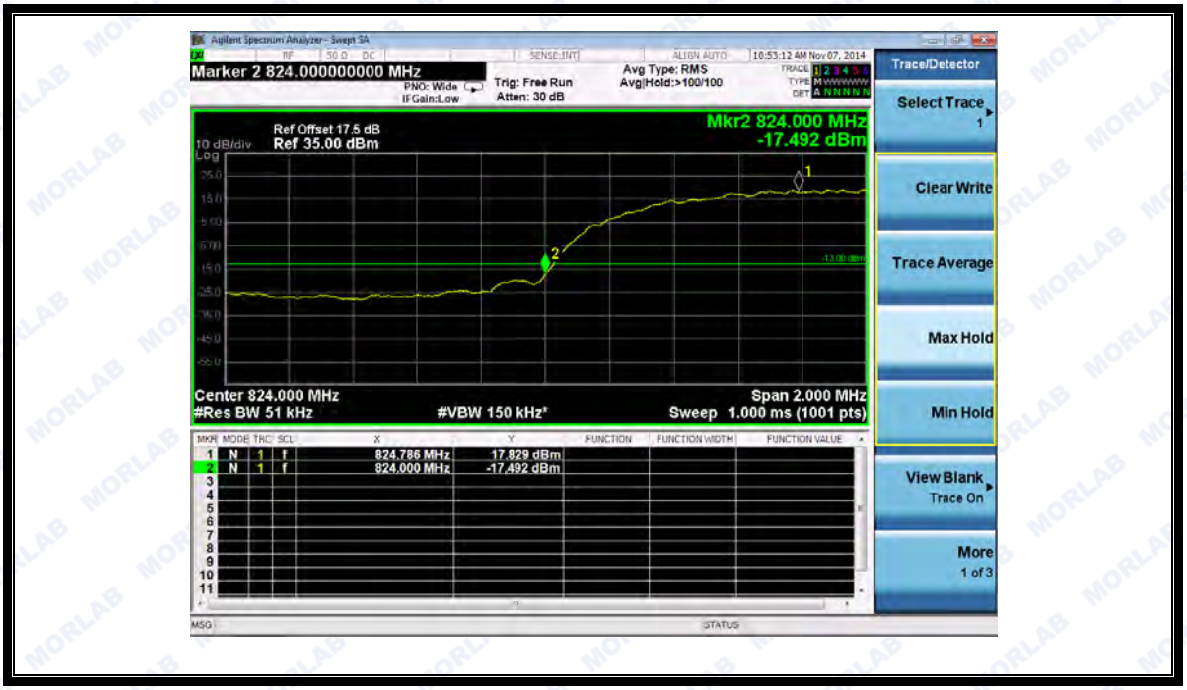
(Plot H: EGPRS 1900 Channel = 810)

(Plot I: WCDMA 850 Channel = 4132)

(Plot J: WCDMA 850 Channel = 4233)

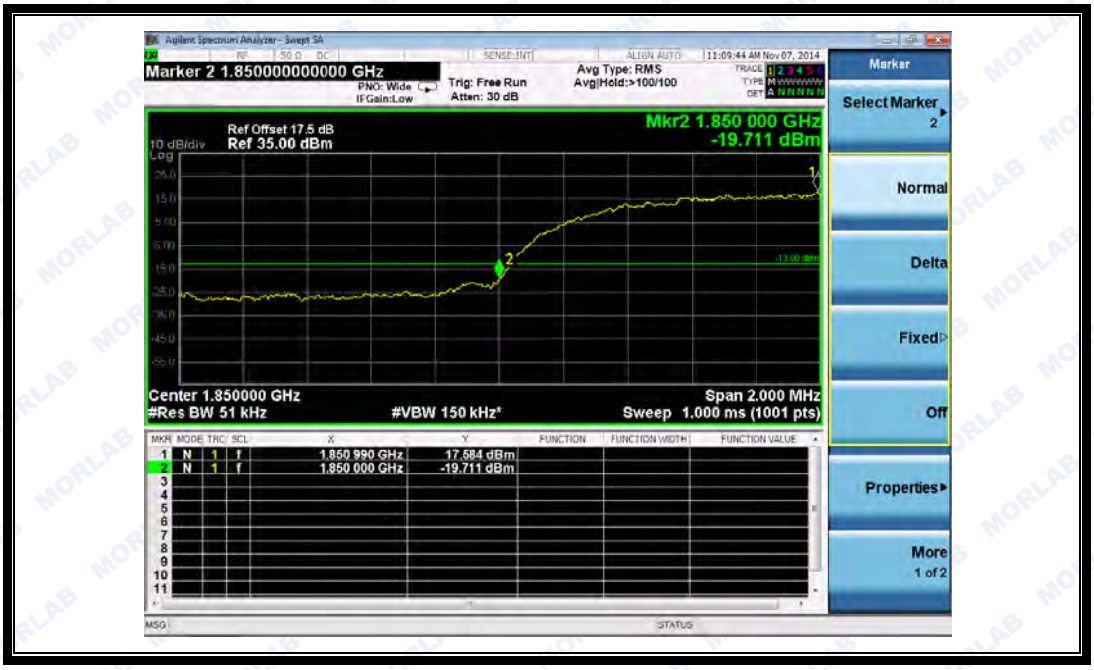
(Plot K: WCDMA 1900 Channel = 9262)

(Plot L: WCDMA 1900 Channel = 9538)



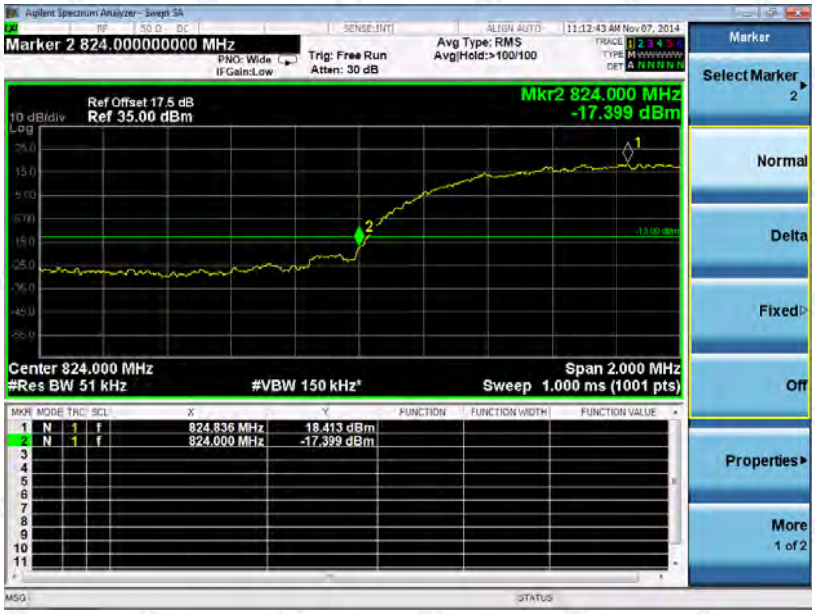
(Plot M: HSDPA 850 Channel = 4132)

(Plot N: HSDPA850 Channel = 4233)



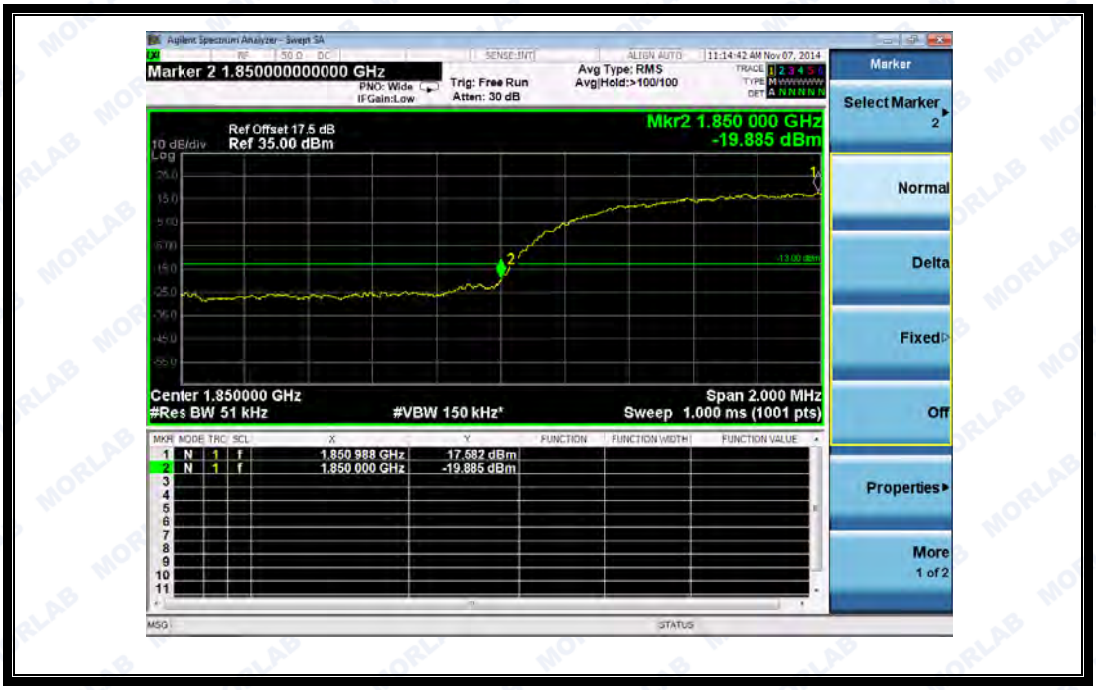
(Plot O: HSDPA 1900 Channel = 9262)

(Plot P: HSDPA 1900 Channel = 9538)



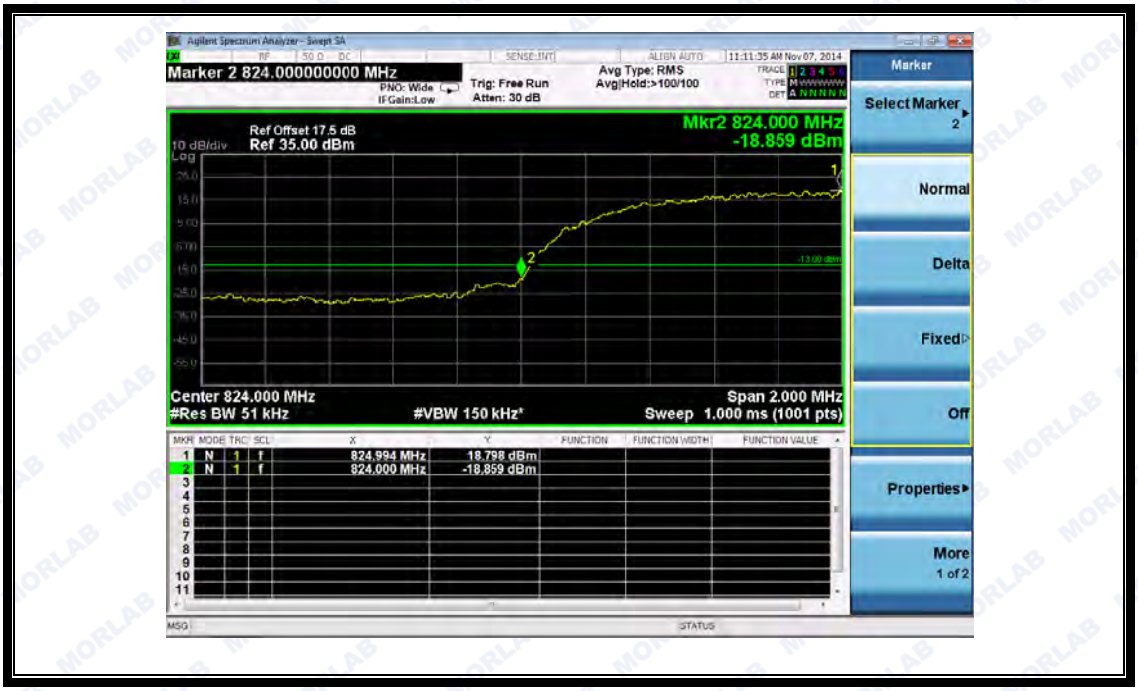
(Plot Q: HSUPA 850 Channel = 4132)

(Plot R: HSUPA850 Channel = 4233)



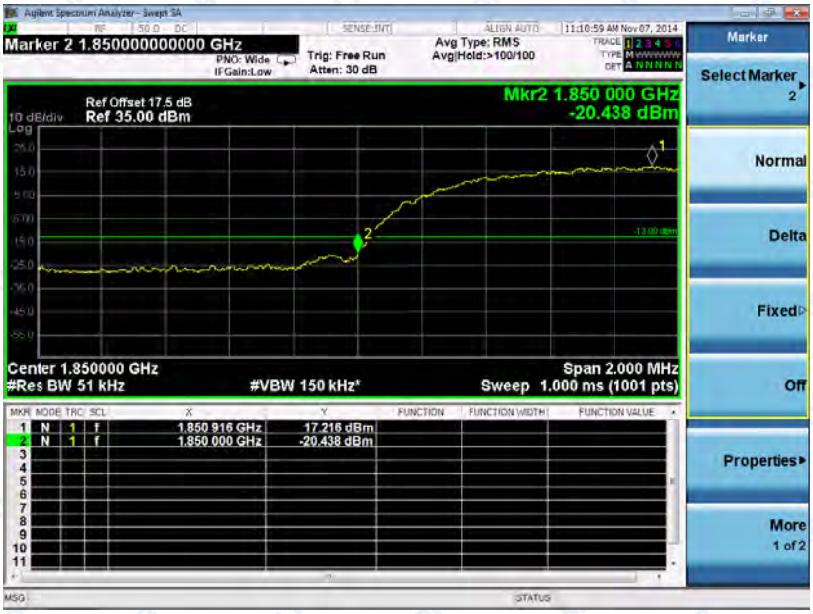
(Plot S: HSUPA 1900 Channel = 9262)

(Plot T: HSUPA 1900 Channel = 9538)



(Plot U: HSPA+ 850 Channel = 4132)

(Plot V: HSPA+ 850 Channel = 4233)



(Plot W: HSPA+ 1900 Channel = 9262)

(Plot X: HSPA+ 1900 Channel = 9538)

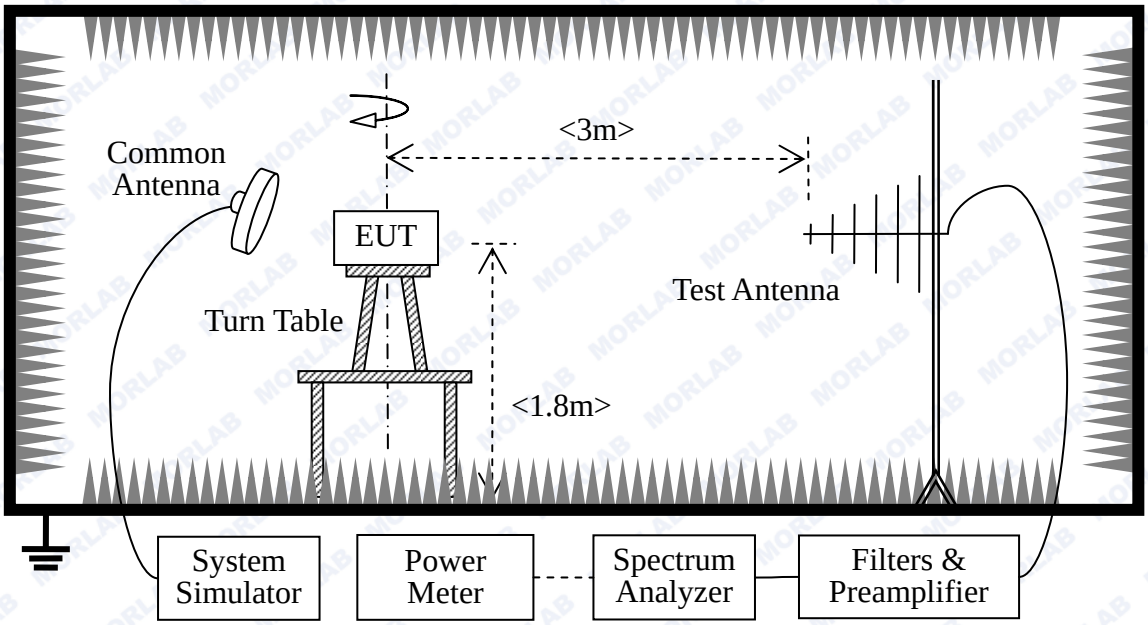
2.7 Transmitter Radiated Power (EIRP/ERP)

2.7.1 Requirement

According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power

2.7.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power (i.e. GSM850MHz band Power Control Level (PCL) = 5/19 and Power Class = 4, GSM1900MHz band Power Control Level (PCL) = 0/15 and Power Class = 1), and only the test result of the maximum output power was recorded.

- GSM Maximum RF output power: GSM 850 32.48dBm, GSM 1900 29.45dBm, EGPRS 850 31.77dBm，EGPRS 1900 28.39dBm,WCDMA 850 24.40dBm, WCDMA 1900 23.80dBm, Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB

- Minimum RF power: GSM 850 3.1dBm, GSM 1900 0.3dBm，EGPRS 850 3.1dBm, EGPRS 1900 0.21dBm ,WCDMA 850 0.39dBm ,WCDMA 1900 0.5dBm.

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2014.02.26	2015.02.25
Spectrum Analyzer	Agilent	E7405A	US44210471	2014.02.26	2015.02.25
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2014.02.26	2015.02.25
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2014.02.26	2015.02.25
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2014.02.26	2015.02.25
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2014.02.26	2015.02.25
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2014.02.26	2015.02.25

2.7.3 Test Result

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of A_{TOT}.

1. GSM Model Test Verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.20	5	32.2	1.660	Plot A	38.5	7	PASS
	190	836.60	5	32.15	1.641				PASS
	251	848.80	5	32.24	1.675				PASS
GPRS 850MHz	128	824.20	5	30.62	1.153	Plot B Note 1	38.5	7	PASS
	190	836.60	5	30.72	1.180				PASS
	251	848.80	5	30.31	1.074				PASS
EGPRS 850MHz	128	824.20	5	31.92	1.556	Plot C Note 1	38.5	7	PASS
	190	836.60	5	31.79	1.510				PASS
	251	848.80	5	31.75	1.496				PASS

Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	30.05	1.012	Plot D	33	2	PASS
	661	1880.0	0	30.44	1.107				PASS
	810	1909.8	0	30.26	1.062				PASS
GPRS 1900MHz	512	1850.2	0	28.71	0.743	Plot E Note 1	33	2	PASS
	661	1880.0	0	28.48	0.705				PASS
	810	1909.8	0	28.45	0.700				PASS
EGPRS 1900MHz	512	1850.2	0	29.8	0.955	Plot F Note 1	33	2	PASS
	661	1880.0	0	29.87	0.971				PASS
	810	1909.8	0	29.75	0.944				PASS

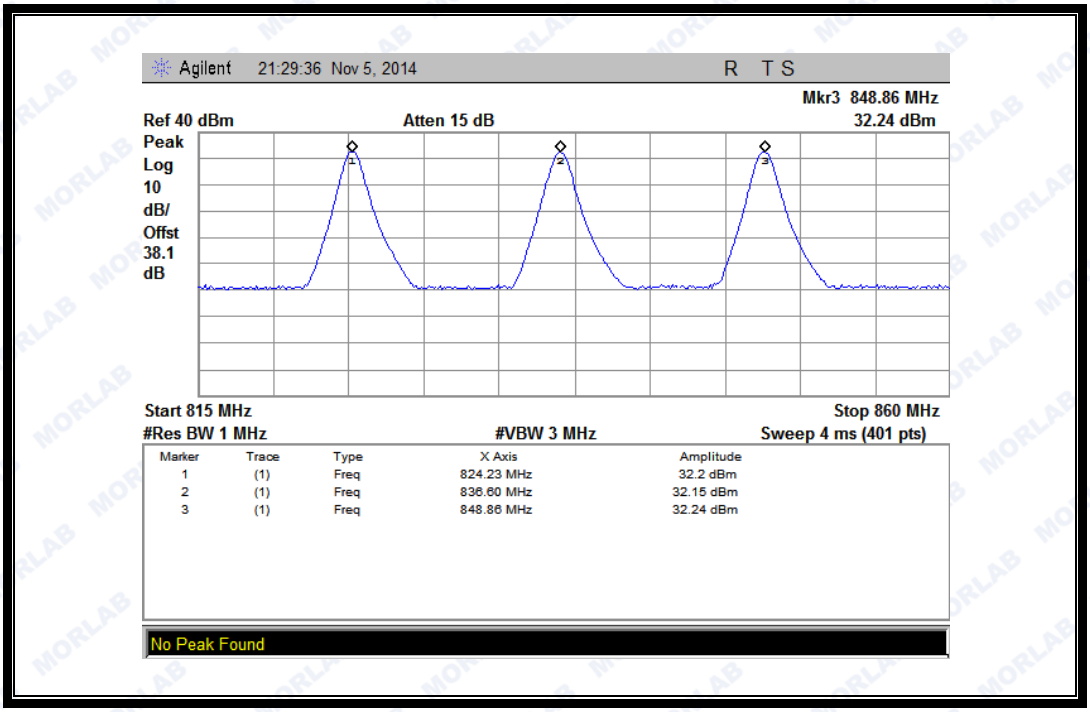
Note 1:	For the GPRS and EGPRS model, all the slots were tested and just the worst data was record in this report.

2. WCDMA Model Test Verdict:

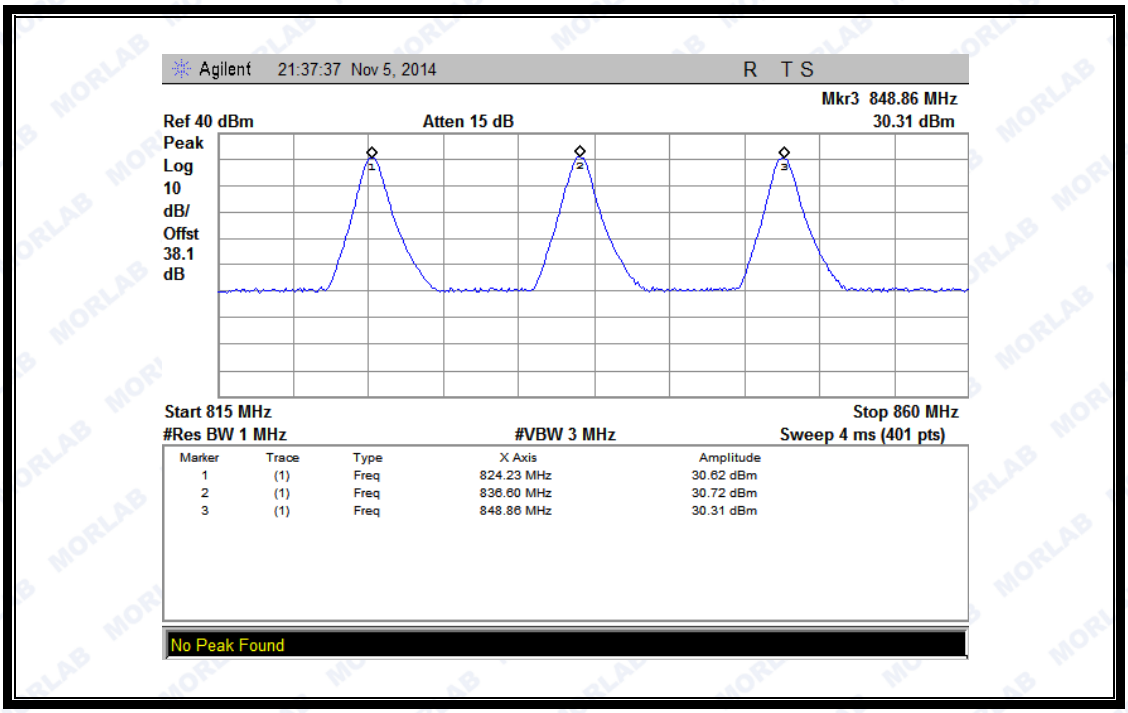
Band	Channel	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
WCDMA 850MHz	4132	826.4	26.26	0.423	Plot G	38.5	7	PASS
	4175	835	27.11	0.514				PASS
	4233	846.6	27.15	0.519				PASS
HSDPA 850MHz	4132	826.4	26.4	0.437	Plot H	38.5	7	PASS
	4175	835	27.39	0.548				PASS
	4233	846.6	27.12	0.515				PASS
HSUPA 850MHz	4132	826.4	26.38	0.435	Plot I	38.5	7	PASS
	4175	835	27.21	0.526				PASS
	4233	846.6	27.04	0.506				PASS
HSPA+ 850MHz	4132	826.4	26	0.398	Plot J	38.5	7	PASS
	4175	835	27.24	0.530				PASS
	4233	846.6	27.33	0.541				PASS

Band	Channel	Frequency (MHz)	Measured EIRP			Limit		Verdict
			dBm	W		dBm	W	
WCDMA 1900MHz	9262	1852.4	24.98	0.315	Plot K	33	2	PASS
	9400	1880	24.8	0.302				PASS
	9538	1907.6	24.02	0.252				PASS
HSDPA 1900MHz	9262	1852.4	24.46	0.279	Plot L	33	2	PASS
	9400	1880	24.47	0.280				PASS
	9538	1907.6	24.1	0.257				PASS
HSUPA 1900MHz	9262	1852.4	24.6	0.288	Plot M	33	2	PASS
	9400	1880	24.79	0.301				PASS
	9538	1907.6	24.36	0.273				PASS
HSPA+ 1900MHz	9262	1852.4	24.23	0.265	Plot N	33	2	PASS
	9400	1880	24.73	0.297				PASS
	9538	1907.6	24.21	0.264				PASS

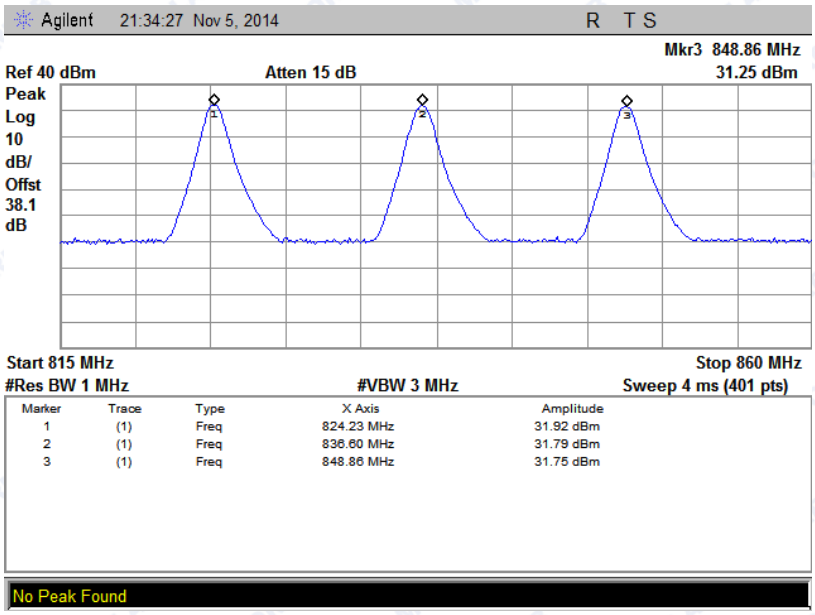
3. Test Plots:



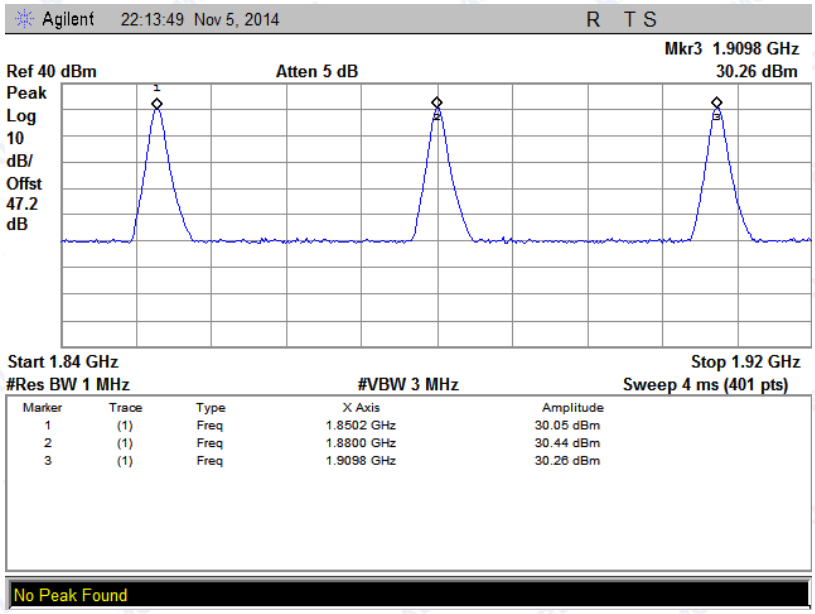
(Plot A: GSM 850MHz Channel = 128, 190, 251)



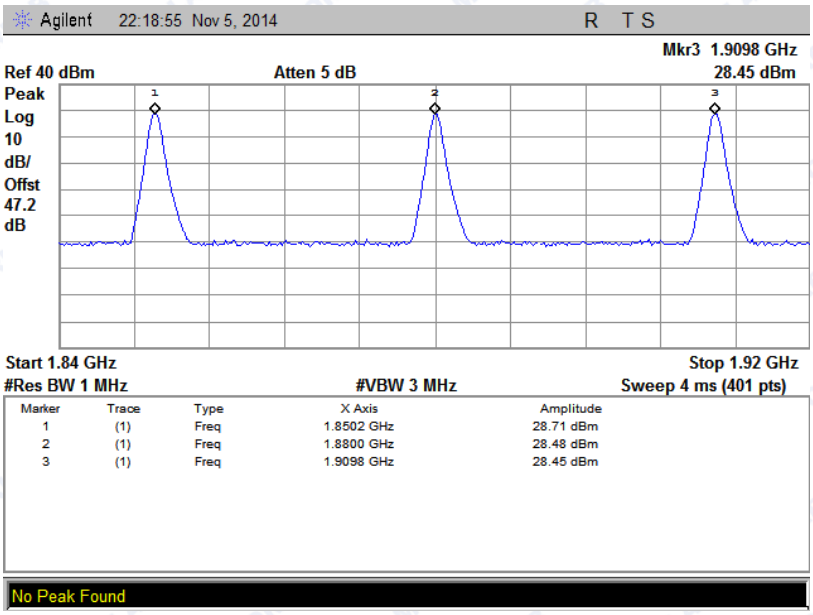
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



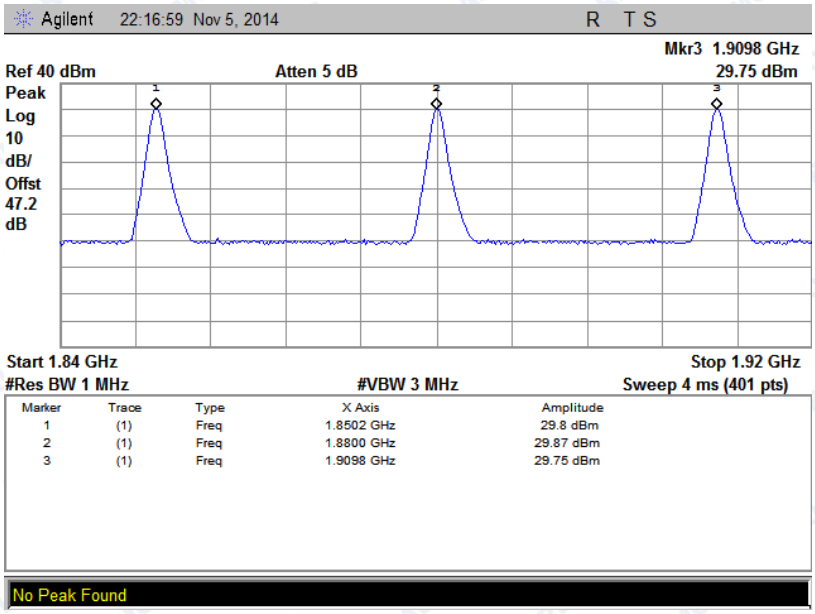
(Plot C: EGPRS 850MHz Channel = 128, 190, 251)



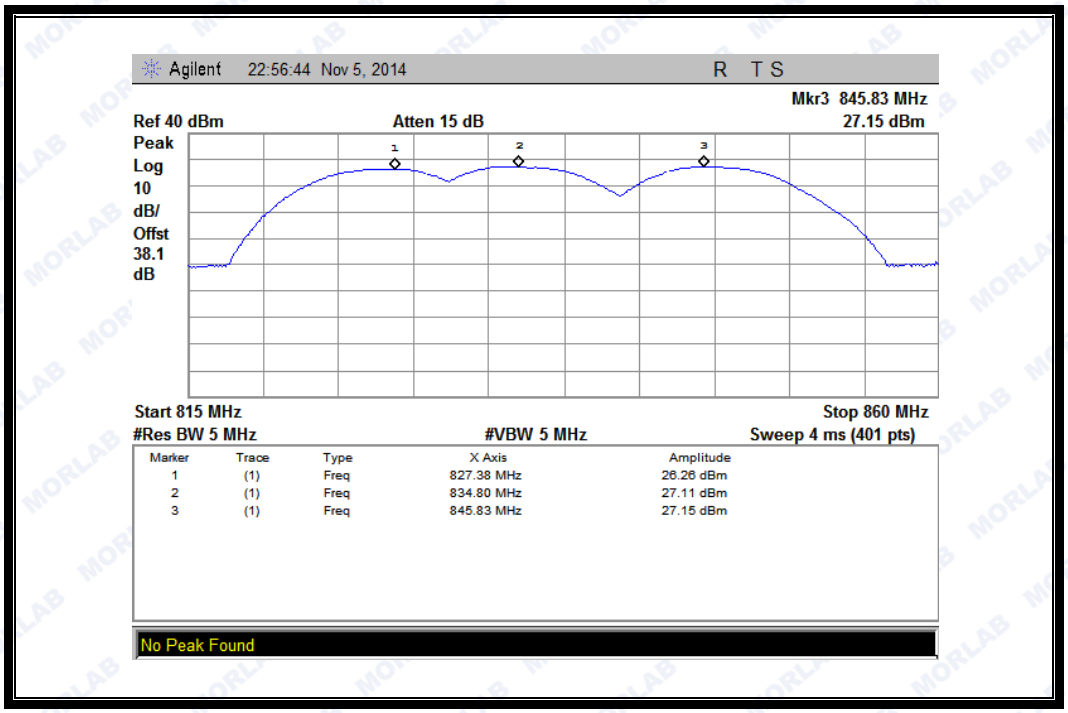
(Plot D: GSM 1900MHz Channel = 512, 661, 810)



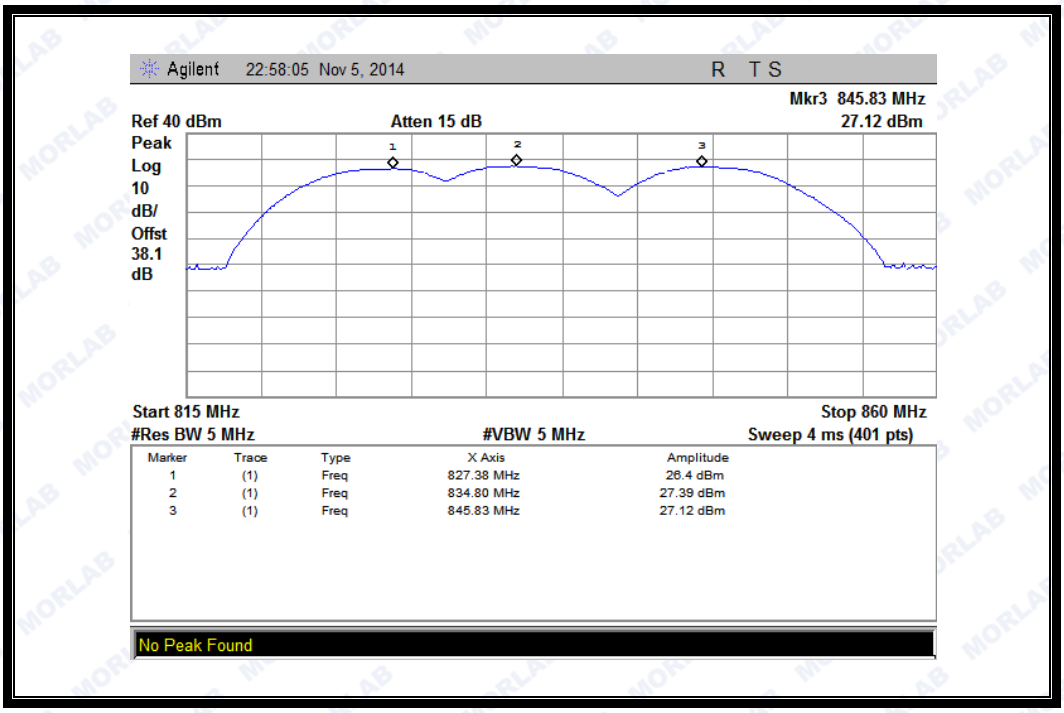
(Plot E: GPRS 1900MHz Channel = 512, 661, 810)



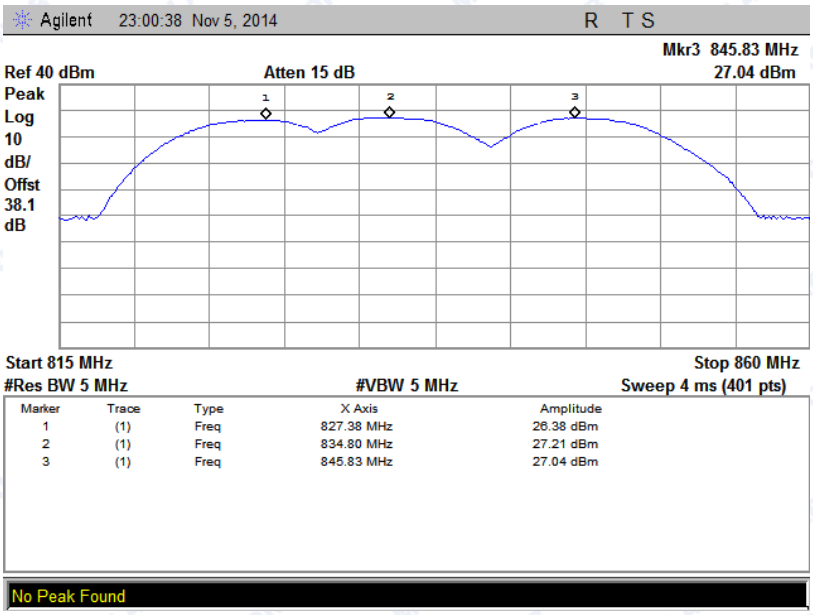
(Plot F: EGPRS 1900MHz Channel = 512, 661, 810)



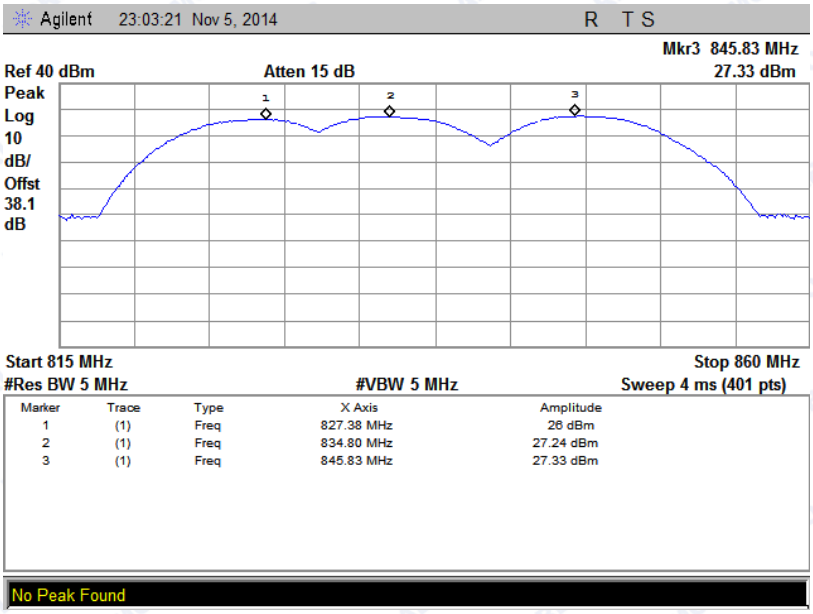
(Plot G: WCDMA 850 MHz Channel = 4132, 4175, 4233)



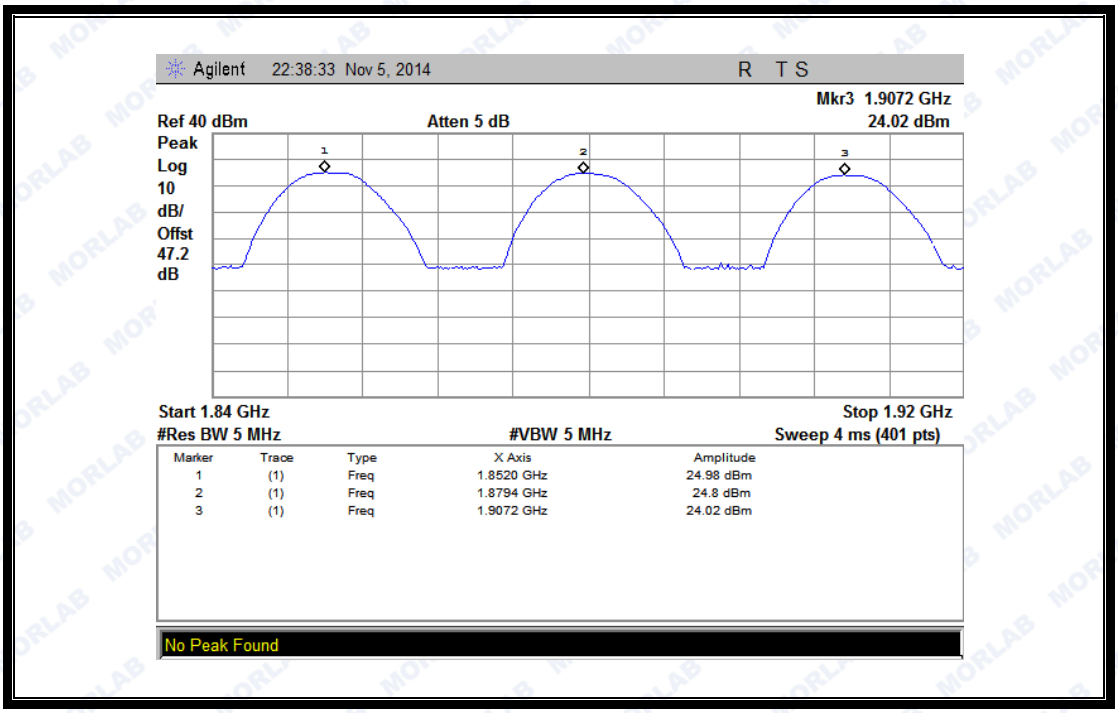
(Plot H: HSDPA 850 MHz Channel = 4132, 4175, 4233)



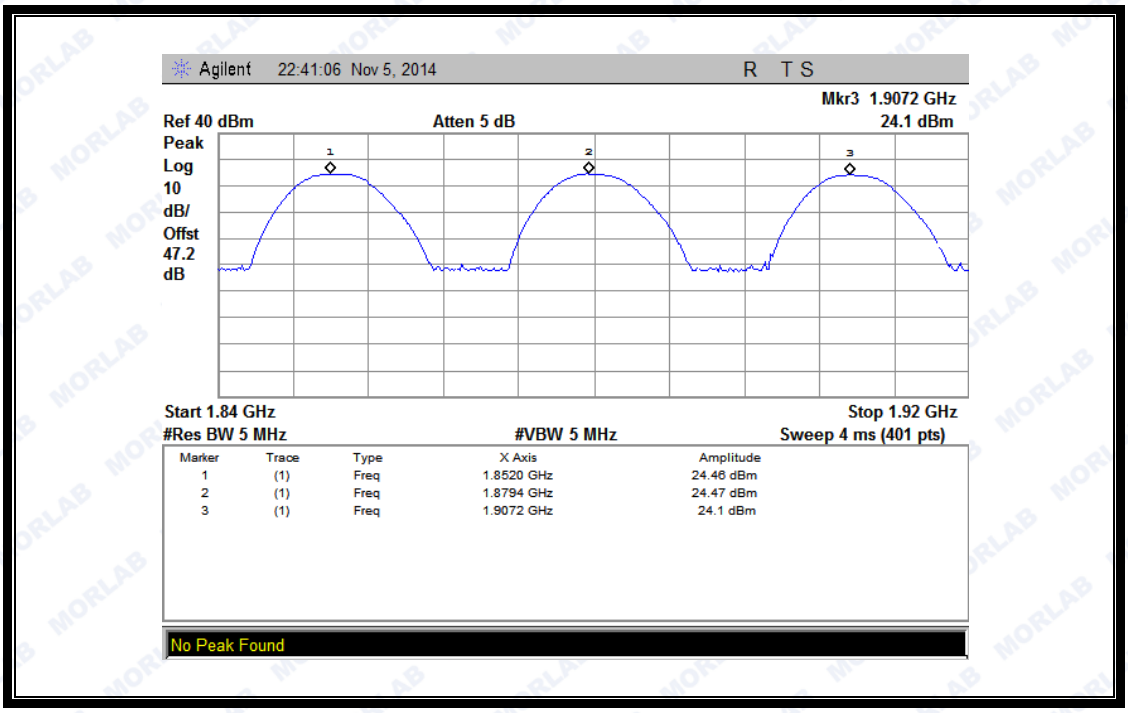
(Plot I: HSUPA 850 MHz Channel = 4132, 4175, 4233)



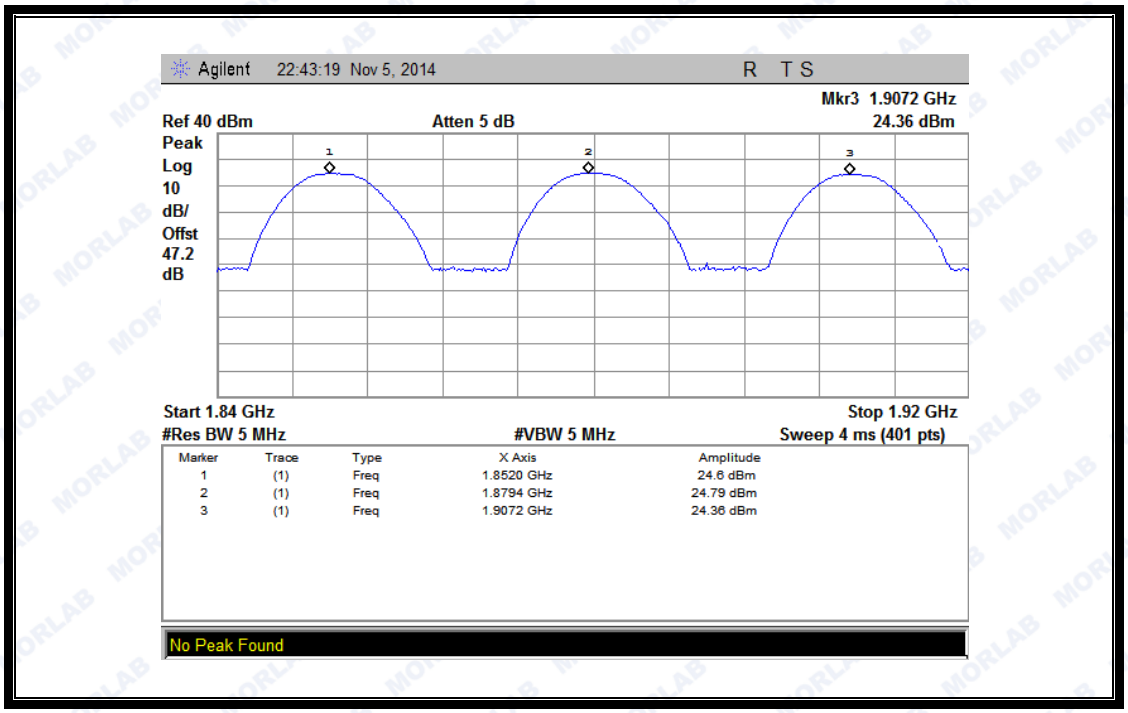
(Plot J: HSPA+ 850 MHz Channel = 4132, 4175, 4233)



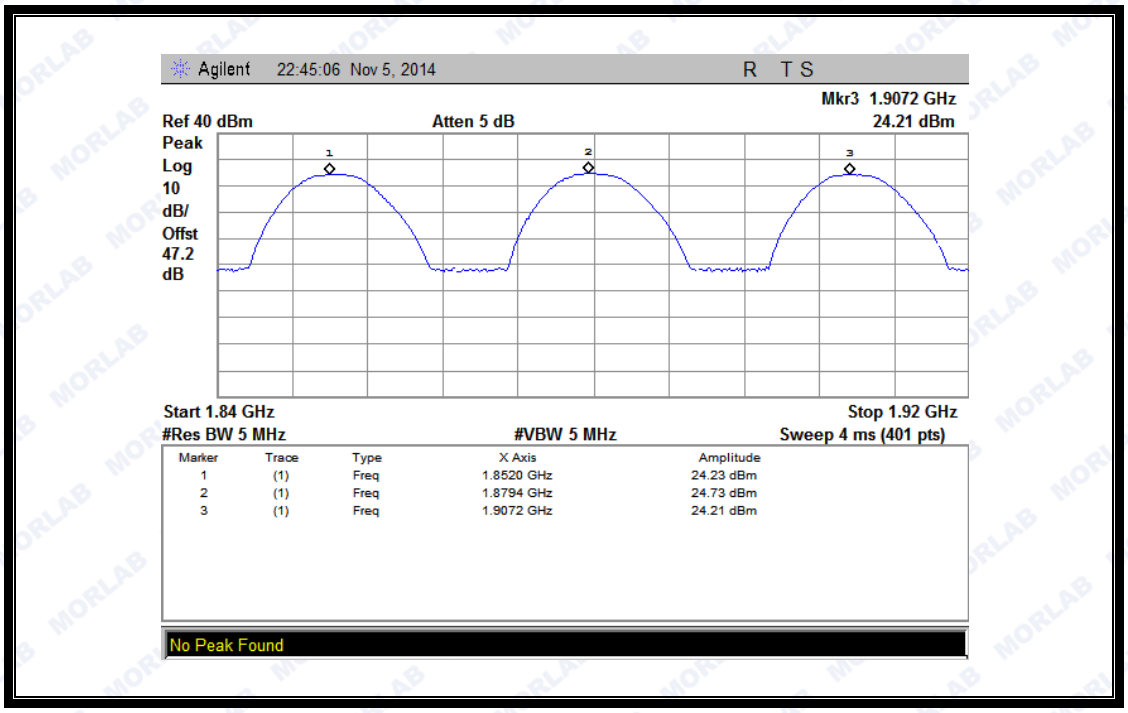
(Plot K: WCDMA 1900 MHz Channel = 9262, 9400, 9538)



(Plot L: HSDPA1900 MHz Channel = 9262, 9400, 9538)



(Plot M: HSUPA1900 MHz Channel = 9262, 9400, 9538)



(Plot N: HSPA+ 1900 MHz Channel = 9262, 9400, 9538)

2.8 Radiated Out of Band Emissions

2.8.1 Requirement

According to FCC section 22.917(a) and section 24.238(a) 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. This calculated to be -13dBm.

The spurious emission with frequency band 1900 according to FCC section 2.1057.

2.8.2 Test Description

See section 2.7.2 of this report.

Equipment List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2014.02.26	2015.02.25
Spectrum Analyzer	Agilent	E7405A	US44210471	2014.02.26	2015.02.25
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2014.02.26	2015.02.25
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2014.02.26	2015.02.25
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2014.02.26	2015.02.25
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2014.02.26	2015.02.25
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2014.02.26	2015.02.25
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2014.02.26	2015.02.25

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.8.3 Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

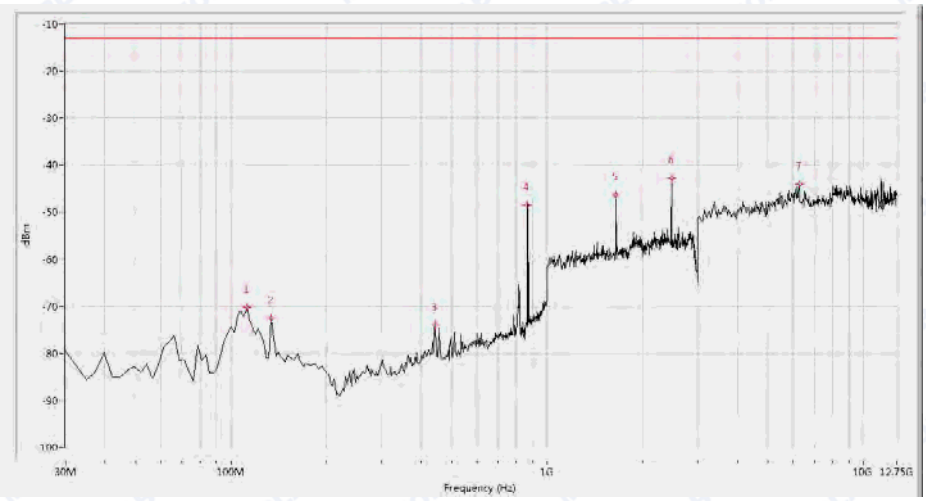
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GSM 850MHz	128	824.2	< -25	< -25	Plot A.1/A.2	-13	PASS
	190	836.6	< -25	< -25	Plot A.3/A.4		PASS
	251	848.8	< -25	< -25	Plot A.5/A.6		PASS
GSM 1900MHz	512	1850.2	< -25	< -25	Plot B.1/B.2	-13	PASS
	661	1880.0	< -25	< -25	Plot B.3/B.4		PASS
	810	1909.8	< -25	< -25	Plot B.5/B.6		PASS
EDGE 850MHz	128	824.2	< -25	< -25	Plot C.1/C.2	-13	PASS
	190	836.6	< -25	< -25	Plot C.3/C.4		PASS
	251	848.8	< -25	< -25	Plot C.5/C.6		PASS
EDGE 1900MHz	512	1850.2	< -25	< -25	Plot D.1/D.2	-13	PASS
	661	1880.0	< -25	< -25	Plot D.3/D.4		PASS
	810	1909.8	< -25	< -25	Plot D.5/D.6		PASS
WCDMA 850MHz	4132	826.4	< -25	< -25	Plot E.1/E.2	-13	PASS
	4175	835	< -25	< -25	Plot E.3/E.4		PASS
	4233	846.6	< -25	< -25	Plot E.5/E.6		PASS
WCDMA 1900MHz	9262	1852.4	< -25	< -25	Plot F.1/F.2	-13	PASS
	9400	1880	< -25	< -25	Plot F.3/F.4		PASS
	9538	1907.6	< -25	< -25	Plot F.5/F.6		PASS
HSDPA 850MHz	4132	826.4	< -25	< -25	Plot G.1/G.2	-13	PASS
	4175	835	< -25	< -25	Plot G.3/G.4		PASS
	4233	846.6	< -25	< -25	Plot G.5/G.6		PASS
HSDPA 1900MHz	9262	1852.4	< -25	< -25	Plot H.1/H.2	-13	PASS
	9400	1880	< -25	< -25	Plot H.3/H.4		PASS
	9538	1907.6	< -25	< -25	Plot H.5/H.6		PASS
HSUPA 850MHz	4132	826.4	< -25	< -25	Plot I.1/I.2	-13	PASS
	4175	835	< -25	< -25	Plot I.3/I.4		PASS
	4233	846.6	< -25	< -25	Plot I.5/I.6		PASS
HSUPA 1900MHz	9262	1852.4	< -25	< -25	Plot J.1/J.2	-13	PASS
	9400	1880	< -25	< -25	Plot J.3/J.4		PASS
	9538	1907.6	< -25	< -25	Plot J.5/J.6		PASS
HSPA+ 850MHz	4132	826.4	< -25	< -25	Plot K.1/K.2	-13	PASS
	4175	835	< -25	< -25	Plot K.3/K.4		PASS
	4233	846.6	< -25	< -25	Plot K.5/K.6		PASS
HSPA+	9262	1852.4	< -25	< -25	Plot L.1/L.2	-13	PASS

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
1900MHz	9400	1880	< -25	< -25	Plot L.3/L.4		PASS
	9538	1907.6	< -25	< -25	Plot L.5/L.6		PASS

2. Test Plots for the Whole Measurement Frequency Range:

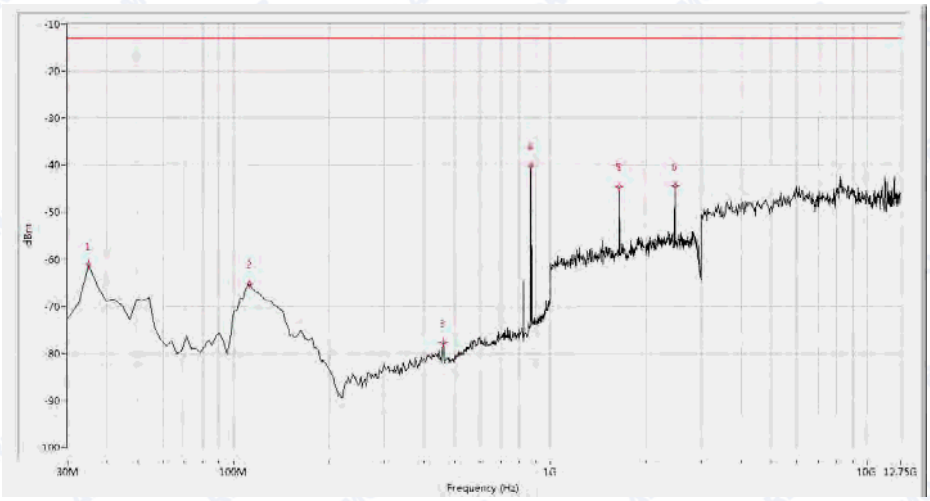
Note1: the power of the EUT transmitting frequency should be ignored.

Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



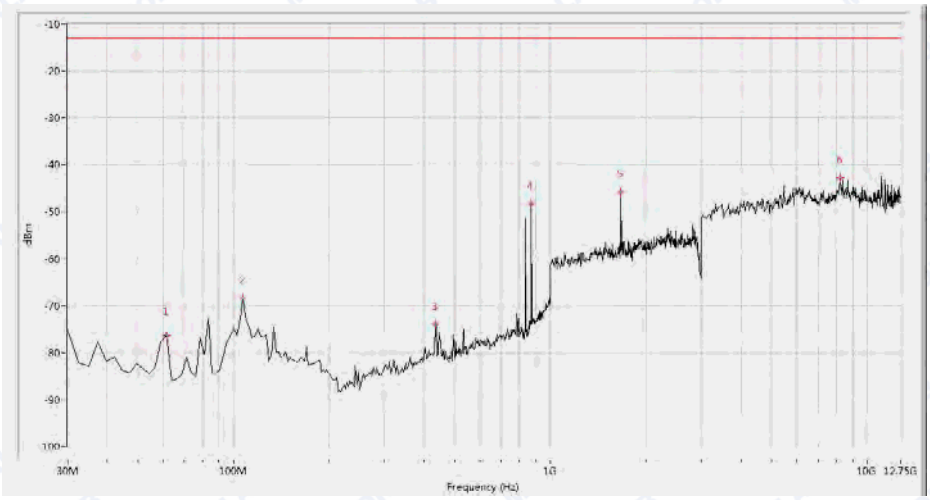
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-70.23	-13.0	57.2	348.7	Horizontal	PASS
134.015	-72.50	-13.0	59.5	124.0	Horizontal	PASS
441.222	-73.94	-13.0	60.9	150.0	Horizontal	PASS
866.958	-48.53	-13.0	35.5	360.0	Horizontal	PASS
1648.379	-46.41	-13.0	33.4	343.5	Horizontal	PASS
2471.322	-42.86	-13.0	29.9	360.0	Horizontal	PASS
6282.419	-44.11	-13.0	31.1	348.7	Horizontal	PASS

(Plot A.1: GSM 850MHz Channel = 128, Test Antenna Horizontal)



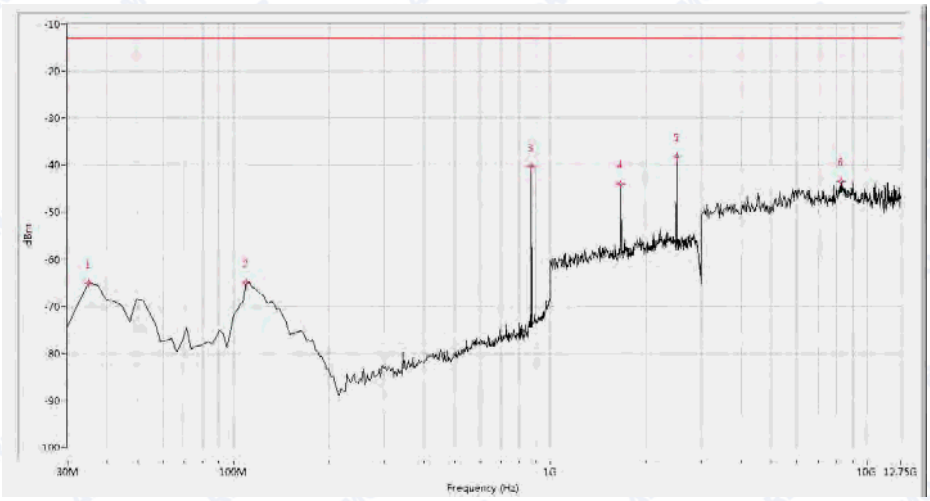
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-61.20	-13.0	48.2	16.8	Vertical	PASS
112.244	-65.28	-13.0	52.3	101.3	Vertical	PASS
458.155	-77.72	-13.0	64.7	54.0	Vertical	PASS
871.796	-40.21	-13.0	27.2	279.9	Vertical	PASS
1648.379	-44.66	-13.0	31.7	162.6	Vertical	PASS
2471.322	-44.38	-13.0	31.4	46.6	Vertical	PASS

(Plot A.2: GSM 850MHz Channel = 128, Test Antenna Vertical)



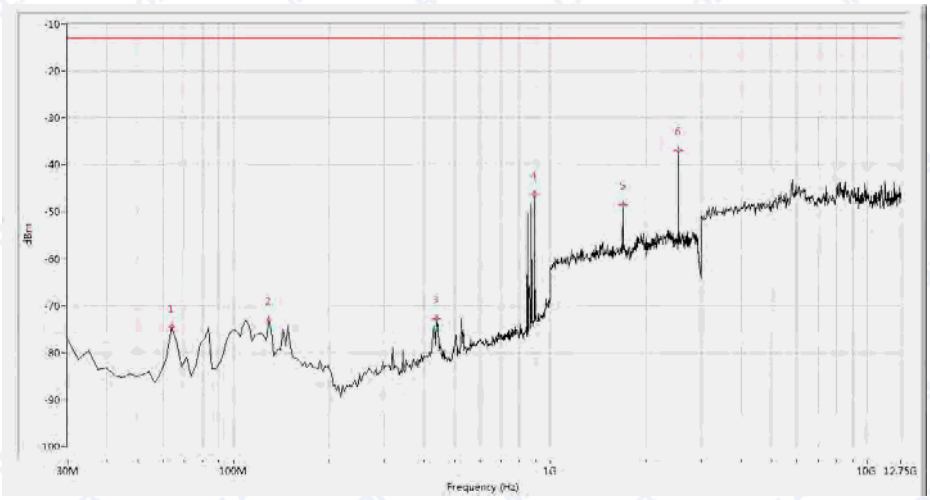
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
61.446	-76.32	-13.0	63.3	119.5	Horizontal	PASS
107.406	-68.51	-13.0	55.5	305.5	Horizontal	PASS
433.965	-73.93	-13.0	60.9	211.4	Horizontal	PASS
871.796	-48.27	-13.0	35.3	0.1	Horizontal	PASS
1673.317	-45.80	-13.0	32.8	160.1	Horizontal	PASS
8203.242	-42.86	-13.0	29.9	100.6	Horizontal	PASS

(Plot A.3: GSM 850MHz Channel = 190, Test Antenna Horizontal)



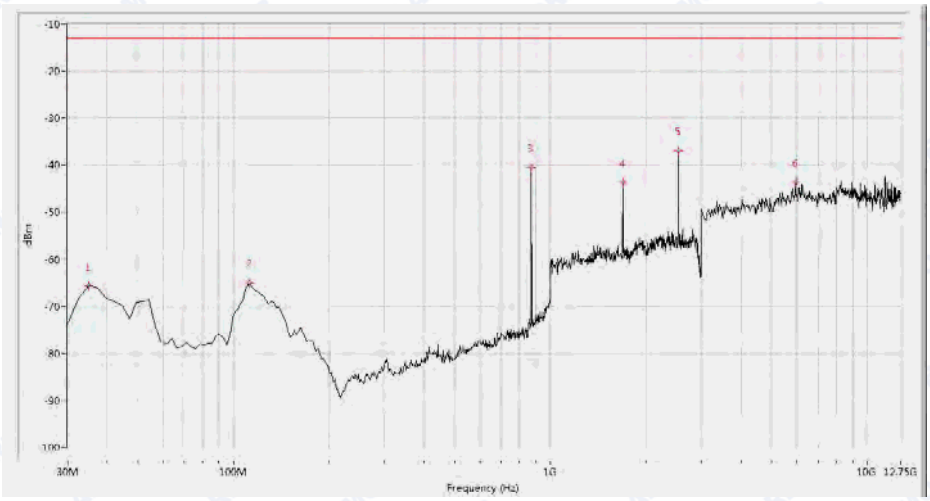
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-65.12	-13.0	52.1	22.7	Vertical	PASS
109.825	-65.09	-13.0	52.1	53.9	Vertical	PASS
871.796	-40.33	-13.0	27.3	54.0	Vertical	PASS
1673.317	-44.09	-13.0	31.1	-0.0	Vertical	PASS
2506.234	-38.24	-13.0	25.2	26.5	Vertical	PASS
8276.185	-43.59	-13.0	30.6	141.8	Vertical	PASS

(Plot A.4: GSM 850MHz Channel = 190, Test Antenna Vertical)



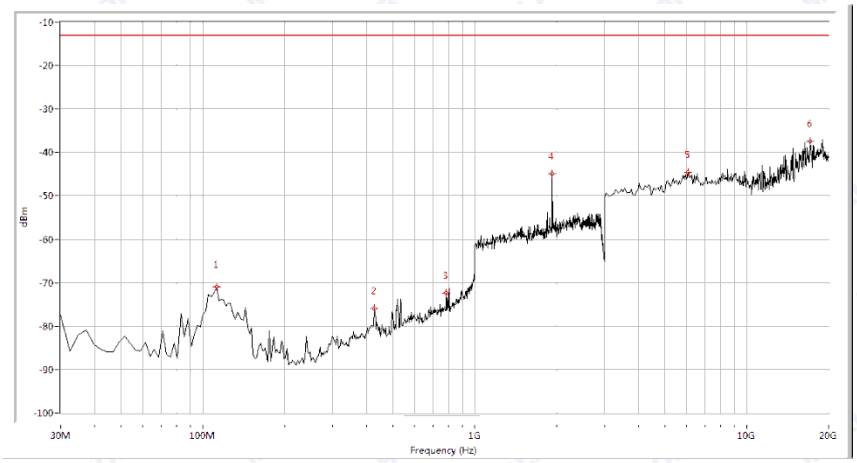
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-74.46	-13.0	61.5	192.0	Horizontal	PASS
129.177	-73.15	-13.0	60.2	339.4	Horizontal	PASS
436.384	-72.79	-13.0	59.8	308.2	Horizontal	PASS
891.147	-46.41	-13.0	33.4	237.4	Horizontal	PASS
1698.254	-48.49	-13.0	35.5	355.8	Horizontal	PASS
2541.147	-36.93	-13.0	23.9	175.3	Horizontal	PASS

(Plot A.5: GSM 850MHz Channel = 251, Test Antenna Horizontal)



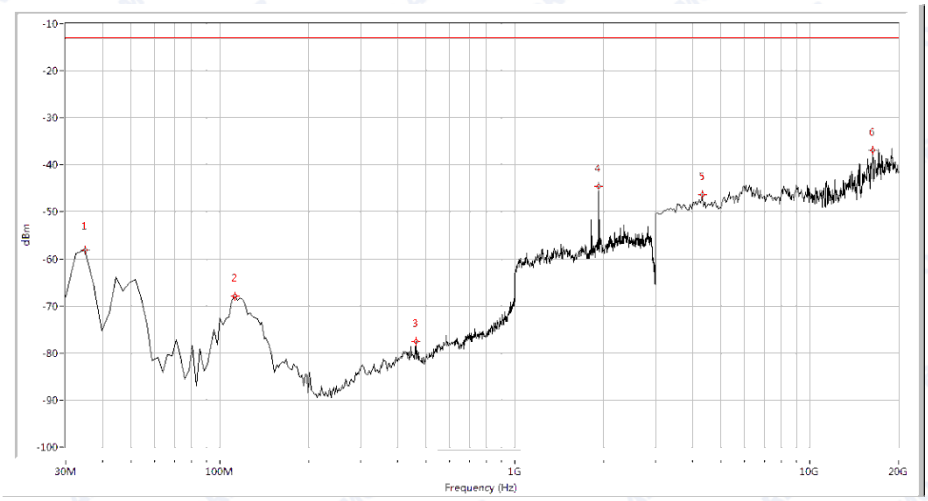
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-65.57	-13.0	52.6	215.5	Vertical	PASS
112.244	-65.06	-13.0	52.1	52.5	Vertical	PASS
871.796	-40.39	-13.0	27.4	360.0	Vertical	PASS
1698.254	-43.72	-13.0	30.7	271.8	Vertical	PASS
2541.147	-36.83	-13.0	23.8	222.2	Vertical	PASS
5942.020	-43.63	-13.0	30.6	359.4	Vertical	PASS

(Plot A.6: GSM 850MHz Channel = 251, Test Antenna Vertical)



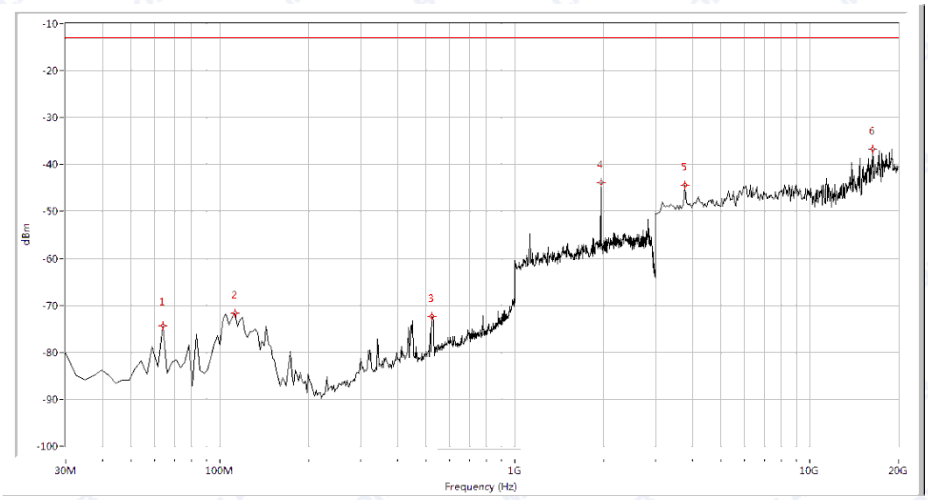
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-71.02	-13.0	58.0	0.7	Horizontal	PASS
426.708	-75.87	-13.0	62.9	211.7	Horizontal	PASS
787.132	-72.33	-13.0	59.3	7.7	Horizontal	PASS
1927.681	-44.95	-13.0	31.9	303.2	Horizontal	PASS
6094.763	-44.53	-13.0	31.5	-0.0	Horizontal	PASS
17074.813	-37.47	-13.0	24.5	150.4	Horizontal	PASS

(Plot B.1: GSM 1900MHz Channel = 512, Test Antenna Horizontal)



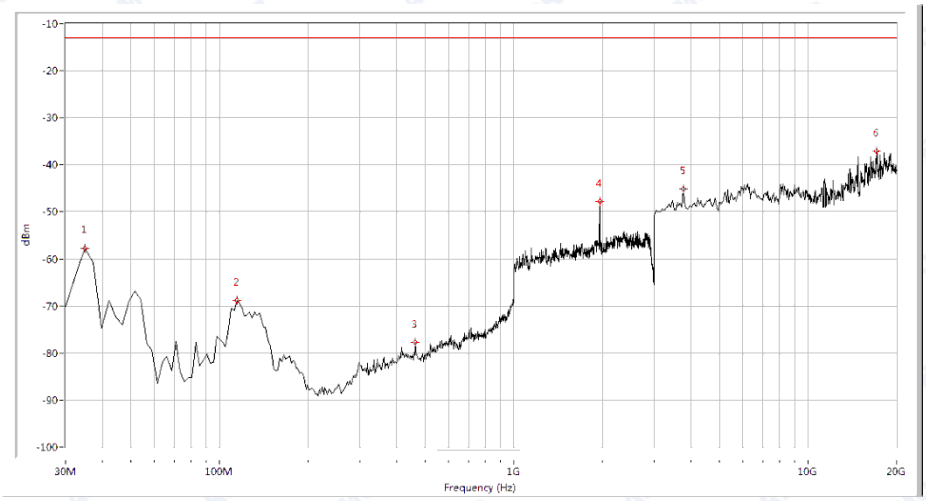
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-58.07	-13.0	45.1	216.3	Vertical	PASS
112.244	-67.88	-13.0	54.9	309.3	Vertical	PASS
460.574	-77.53	-13.0	64.5	359.1	Vertical	PASS
1927.681	-44.49	-13.0	31.5	360.0	Vertical	PASS
4314.214	-46.30	-13.0	33.3	0.4	Vertical	PASS
16354.115	-36.86	-13.0	23.9	100.9	Vertical	PASS

(Plot B.2: GSM 1900MHz Channel = 512, Test Antenna Vertical)



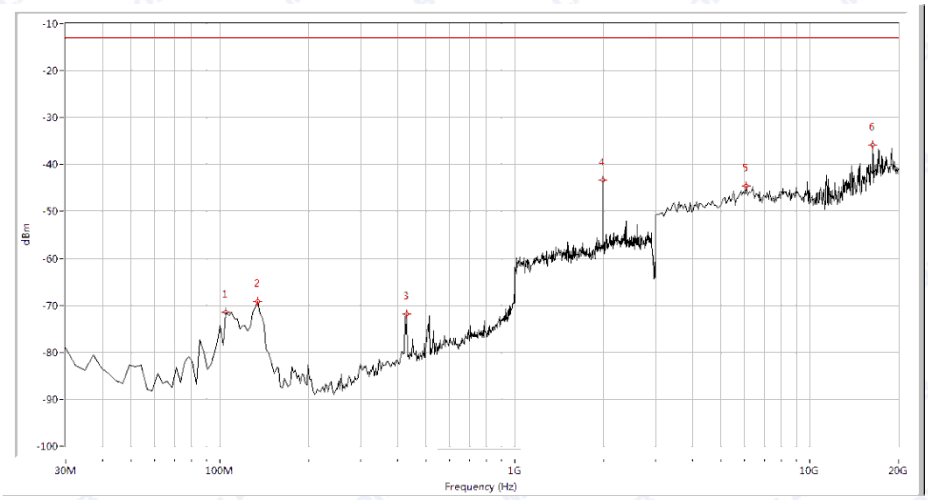
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-74.32	-13.0	61.3	87.8	Horizontal	PASS
112.244	-71.69	-13.0	58.7	169.0	Horizontal	PASS
523.466	-72.43	-13.0	59.4	21.7	Horizontal	PASS
1957.606	-43.88	-13.0	30.9	42.9	Horizontal	PASS
3763.092	-44.48	-13.0	31.5	291.0	Horizontal	PASS
16354.115	-36.82	-13.0	23.8	147.4	Horizontal	PASS

(Plot B.3: GSM 1900MHz Channel = 661, Test Antenna Horizontal)



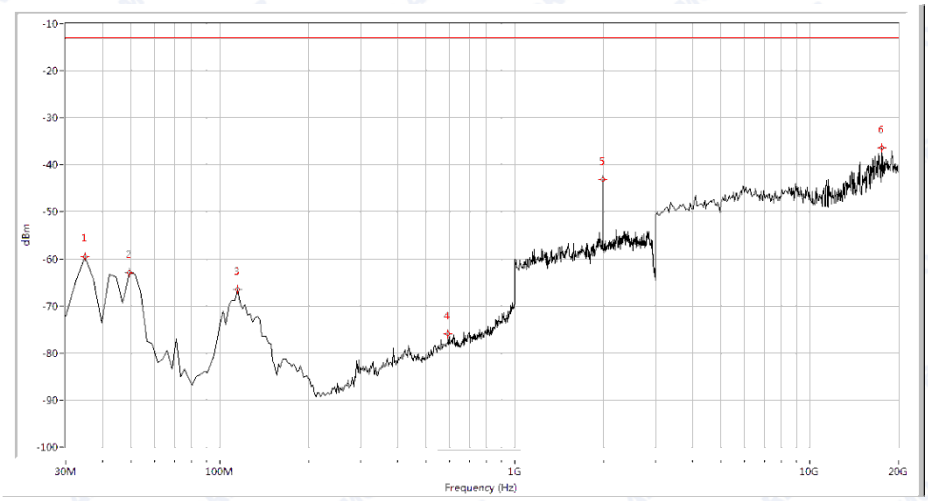
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-57.70	-13.0	44.7	-0.0	Vertical	PASS
114.663	-68.78	-13.0	55.8	357.1	Vertical	PASS
462.993	-77.73	-13.0	64.7	-0.0	Vertical	PASS
1957.606	-47.84	-13.0	34.8	45.4	Vertical	PASS
3763.092	-45.15	-13.0	32.1	87.1	Vertical	PASS
17117.207	-37.02	-13.0	24.0	275.4	Vertical	PASS

(Plot B.4: GSM 1900MHz Channel = 661, Test Antenna Vertical)



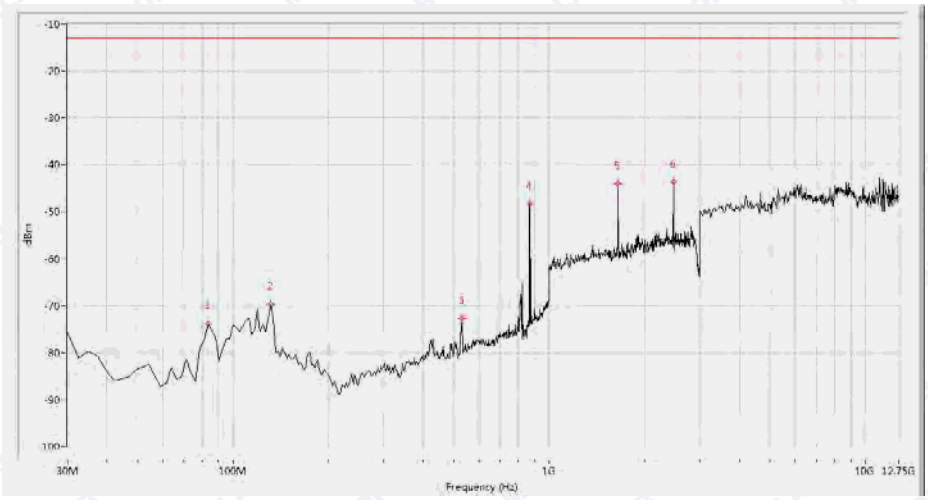
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
104.988	-71.48	-13.0	58.5	355.3	Horizontal	PASS
134.015	-69.22	-13.0	56.2	357.4	Horizontal	PASS
429.127	-71.78	-13.0	58.8	221.1	Horizontal	PASS
1987.531	-43.33	-13.0	30.3	192.8	Horizontal	PASS
6094.763	-44.64	-13.0	31.6	240.0	Horizontal	PASS
16354.115	-35.91	-13.0	22.9	138.1	Horizontal	PASS

(Plot B.5: GSM 1900MHz Channel = 810, Test Antenna Horizontal)



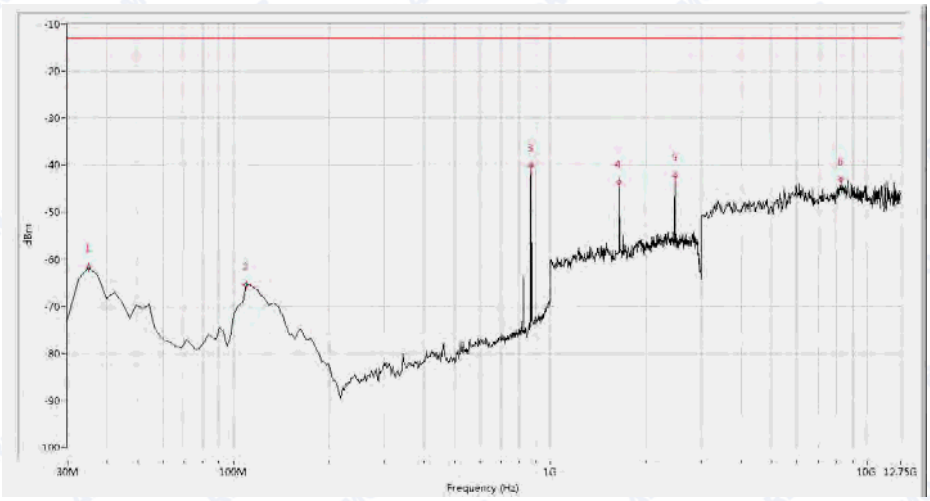
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.56	-13.0	46.6	88.6	Vertical	PASS
49.352	-62.93	-13.0	49.9	360.0	Vertical	PASS
114.663	-66.58	-13.0	53.6	355.5	Vertical	PASS
593.616	-76.00	-13.0	63.0	154.1	Vertical	PASS
1987.531	-43.13	-13.0	30.1	92.4	Vertical	PASS
17583.541	-36.32	-13.0	23.3	203.2	Vertical	PASS

(PlotB.6: GSM 1900MHz Channel = 810, Test Antenna Vertical)



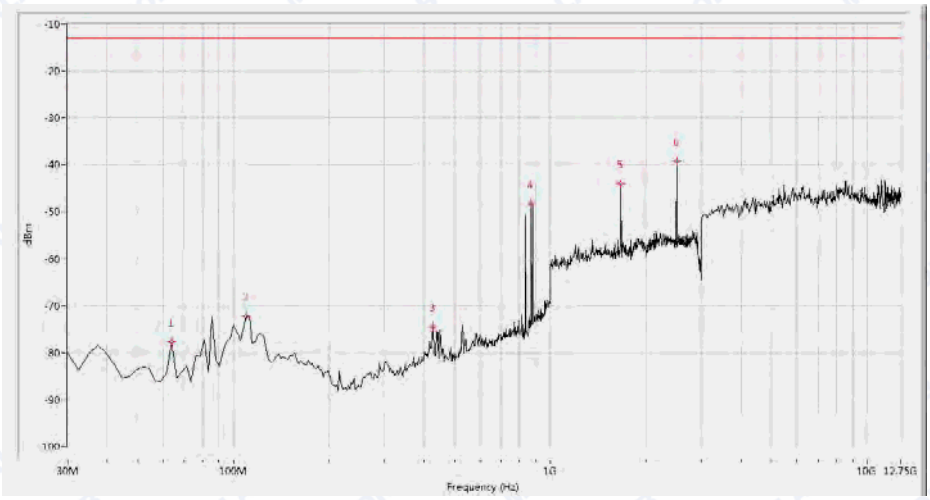
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-73.91	-13.0	60.9	42.4	Horizontal	PASS
131.596	-69.65	-13.0	56.7	118.3	Horizontal	PASS
530.723	-72.77	-13.0	59.8	85.9	Horizontal	PASS
871.796	-48.25	-13.0	35.3	357.4	Horizontal	PASS
1648.379	-44.04	-13.0	31.0	190.2	Horizontal	PASS
2471.322	-43.60	-13.0	30.6	-0.0	Horizontal	PASS

(Plot C.1: EGPRS 850MHz Channel = 128, Test Antenna Horizontal)



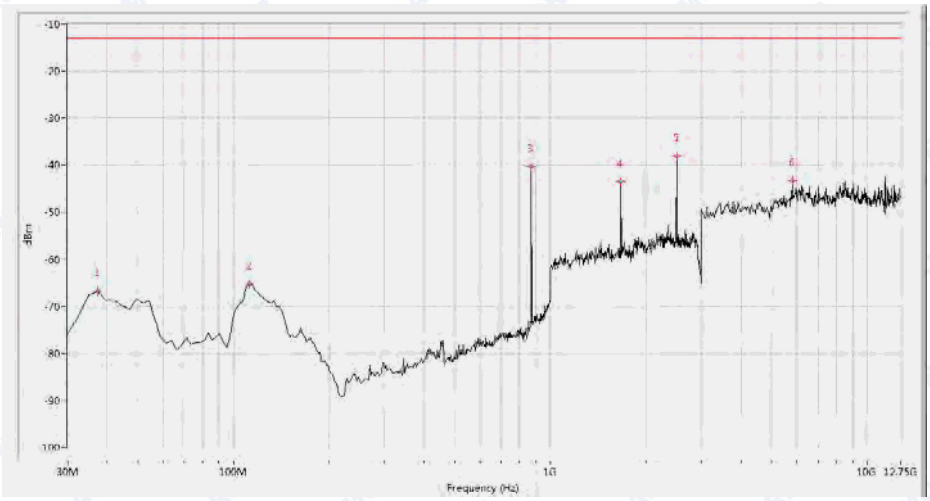
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-61.74	-13.0	48.7	166.0	Vertical	PASS
109.825	-65.37	-13.0	52.4	95.7	Vertical	PASS
871.796	-40.06	-13.0	27.1	128.1	Vertical	PASS
1648.379	-43.68	-13.0	30.7	295.5	Vertical	PASS
2471.322	-42.21	-13.0	29.2	360.0	Vertical	PASS
8276.185	-43.16	-13.0	30.2	38.0	Vertical	PASS

(Plot C.2: EGPRS 850MHz Channel = 128, Test Antenna Vertical)



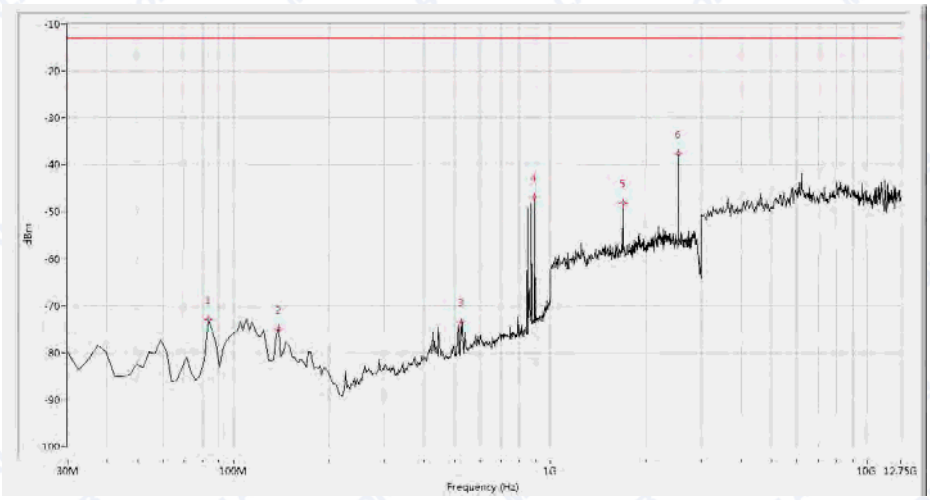
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-77.69	-13.0	64.7	345.4	Horizontal	PASS
109.825	-72.19	-13.0	59.2	48.0	Horizontal	PASS
426.708	-74.59	-13.0	61.6	152.6	Horizontal	PASS
871.796	-48.33	-13.0	35.3	303.3	Horizontal	PASS
1673.317	-44.05	-13.0	31.0	8.8	Horizontal	PASS
2506.234	-39.14	-13.0	26.1	346.1	Horizontal	PASS

(Plot C.3: EGPRS 850MHz Channel = 190, Test Antenna Horizontal)



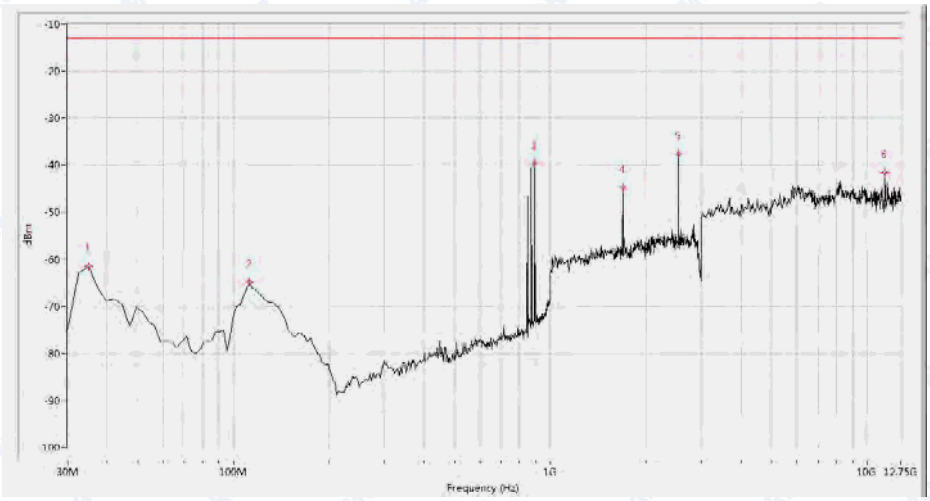
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
37.257	-66.88	-13.0	53.9	6.6	Vertical	PASS
112.244	-65.30	-13.0	52.3	58.5	Vertical	PASS
871.796	-40.36	-13.0	27.4	345.0	Vertical	PASS
1673.317	-43.52	-13.0	30.5	270.6	Vertical	PASS
2506.234	-37.92	-13.0	24.9	4.6	Vertical	PASS
5796.135	-43.28	-13.0	30.3	323.7	Vertical	PASS

(Plot C.4: EGPRS 850MHz Channel = 190, Test Antenna Vertical)



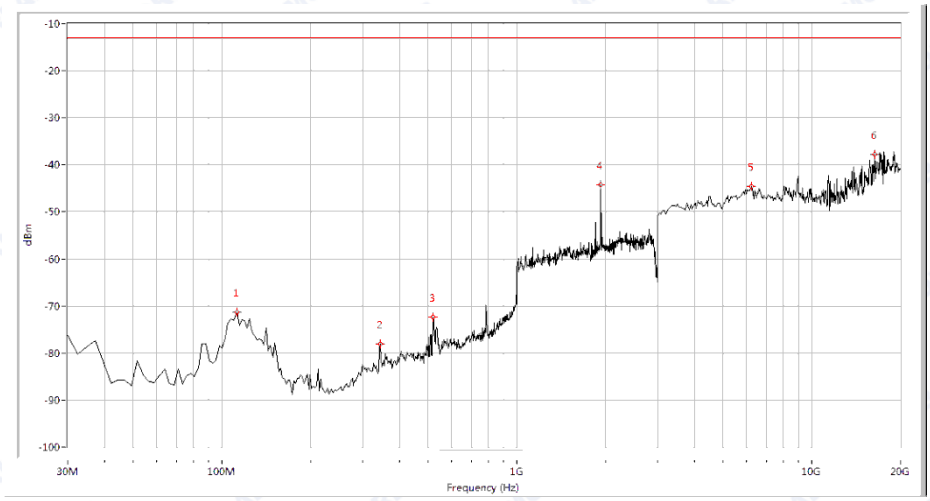
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-72.87	-13.0	59.9	111.7	Horizontal	PASS
138.853	-75.13	-13.0	62.1	132.9	Horizontal	PASS
525.885	-73.47	-13.0	60.5	127.3	Horizontal	PASS
891.147	-46.85	-13.0	33.9	358.1	Horizontal	PASS
1698.254	-48.20	-13.0	35.2	354.1	Horizontal	PASS
2541.147	-37.70	-13.0	24.7	174.1	Horizontal	PASS

(Plot C.5: EGPRS 850MHz Channel = 251, Test Antenna Horizontal)



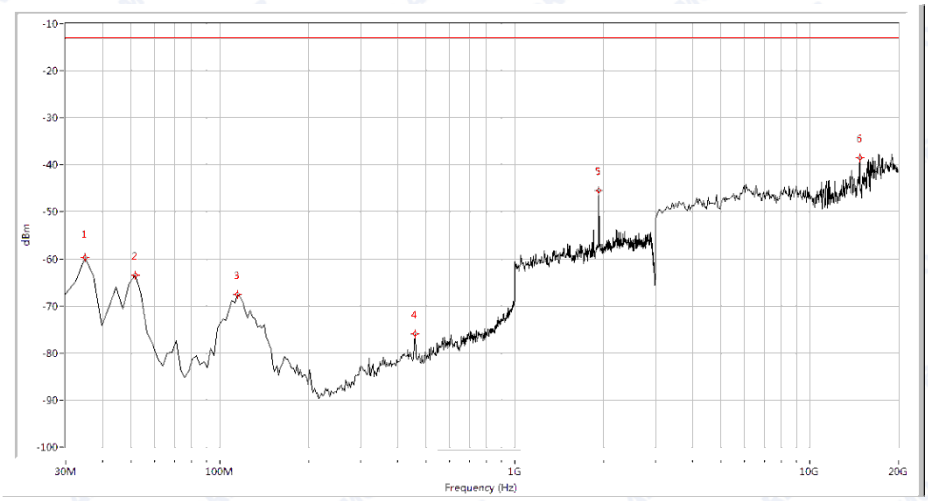
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-61.46	-13.0	48.5	203.9	Vertical	PASS
112.244	-64.88	-13.0	51.9	255.7	Vertical	PASS
891.147	-39.61	-13.0	26.6	180.2	Vertical	PASS
1698.254	-44.77	-13.0	31.8	194.0	Vertical	PASS
2541.147	-37.59	-13.0	24.6	283.3	Vertical	PASS
11364.090	-41.57	-13.0	28.6	-0.0	Vertical	PASS

(Plot C.6: EGPRS 850MHz Channel = 251, Test Antenna Vertical)



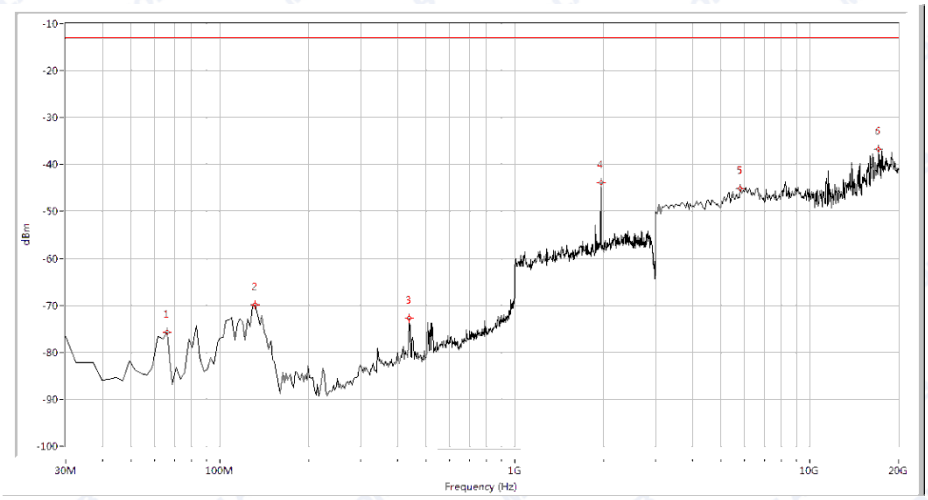
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-71.23	-13.0	58.2	360.0	Horizontal	PASS
344.464	-78.12	-13.0	65.1	290.3	Horizontal	PASS
518.628	-72.42	-13.0	59.4	170.5	Horizontal	PASS
1927.681	-44.15	-13.0	31.1	332.4	Horizontal	PASS
6221.945	-44.54	-13.0	31.5	247.8	Horizontal	PASS
16354.115	-37.84	-13.0	24.8	264.2	Horizontal	PASS

(Plot D.1: EGPRS 1900MHz Channel = 512, Test Antenna Horizontal)



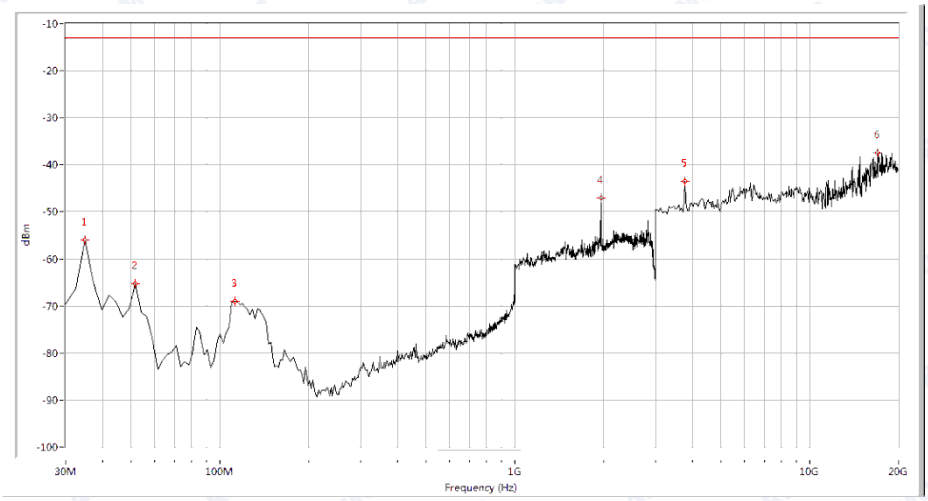
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.67	-13.0	46.7	107.1	Vertical	PASS
51.771	-63.55	-13.0	50.5	358.7	Vertical	PASS
114.663	-67.53	-13.0	54.5	3.2	Vertical	PASS
458.155	-76.02	-13.0	63.0	336.0	Vertical	PASS
1927.681	-45.42	-13.0	32.4	92.6	Vertical	PASS
14785.536	-38.43	-13.0	25.4	350.9	Vertical	PASS

(Plot D.2: EGPRS 1900MHz Channel = 512, Test Antenna Vertical)



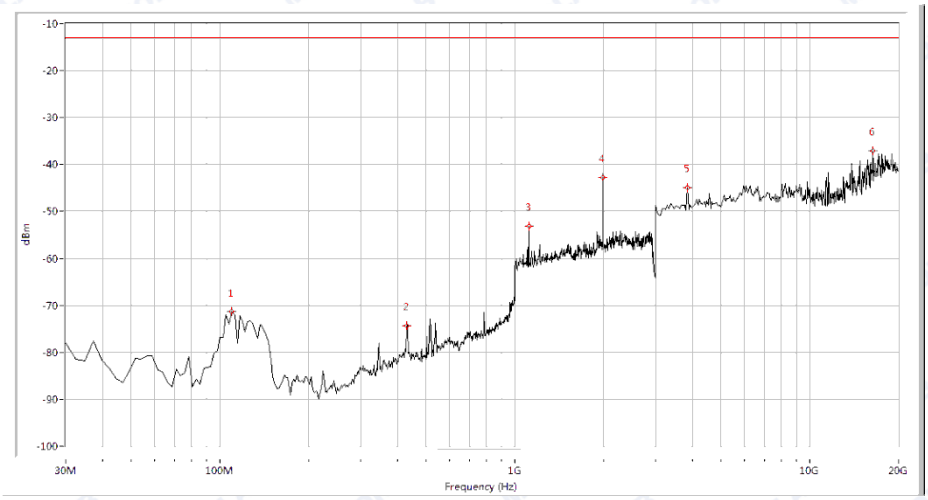
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
66.284	-75.81	-13.0	62.8	0.7	Horizontal	PASS
131.596	-69.93	-13.0	56.9	349.1	Horizontal	PASS
438.803	-72.65	-13.0	59.7	207.3	Horizontal	PASS
1957.606	-43.80	-13.0	30.8	46.9	Horizontal	PASS
5798.005	-45.19	-13.0	32.2	161.9	Horizontal	PASS
17117.207	-36.76	-13.0	23.8	321.6	Horizontal	PASS

(Plot D.3: EGPRS 1900MHz Channel = 661, Test Antenna Horizontal)



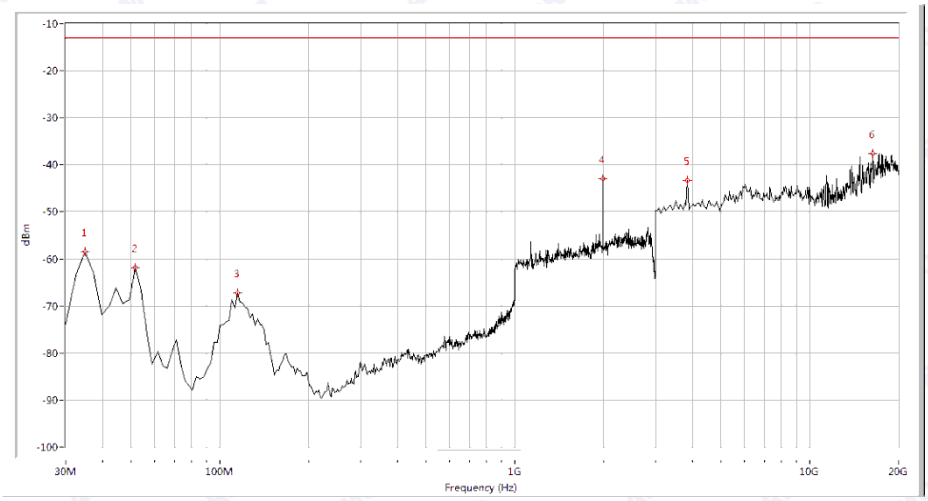
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-56.01	-13.0	43.0	359.1	Vertical	PASS
51.771	-65.28	-13.0	52.3	360.0	Vertical	PASS
112.244	-69.04	-13.0	56.0	194.3	Vertical	PASS
1957.606	-47.06	-13.0	34.1	156.4	Vertical	PASS
3763.092	-43.48	-13.0	30.5	346.5	Vertical	PASS
16990.025	-37.50	-13.0	24.5	160.0	Vertical	PASS

(Plot D.4: EGPRS 1900MHz Channel = 661, Test Antenna Vertical)



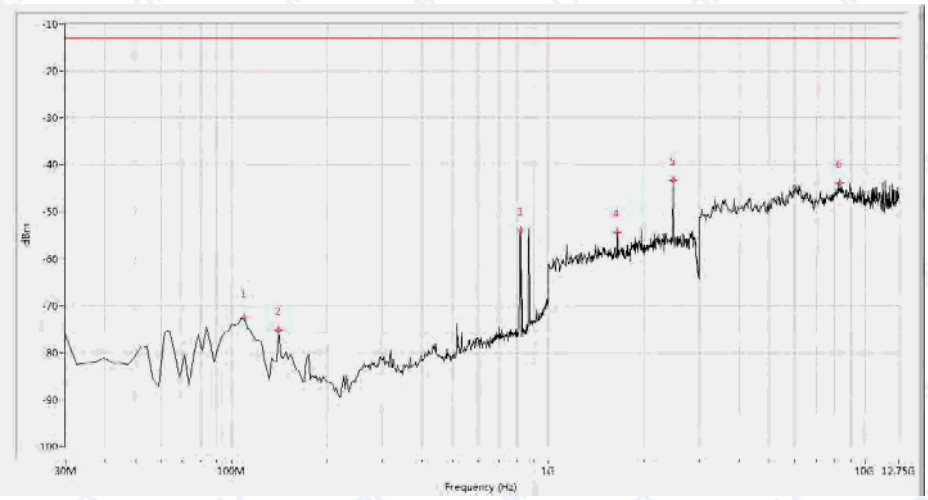
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-71.34	-13.0	58.3	138.8	Horizontal	PASS
429.127	-74.25	-13.0	61.3	344.3	Horizontal	PASS
1114.713	-53.09	-13.0	40.1	189.1	Horizontal	PASS
1987.531	-42.86	-13.0	29.9	135.1	Horizontal	PASS
3847.880	-44.89	-13.0	31.9	232.6	Horizontal	PASS
16354.115	-37.14	-13.0	24.1	135.1	Horizontal	PASS

(Plot D.5: EGPRS 1900MHz Channel = 810, Test Antenna Horizontal)



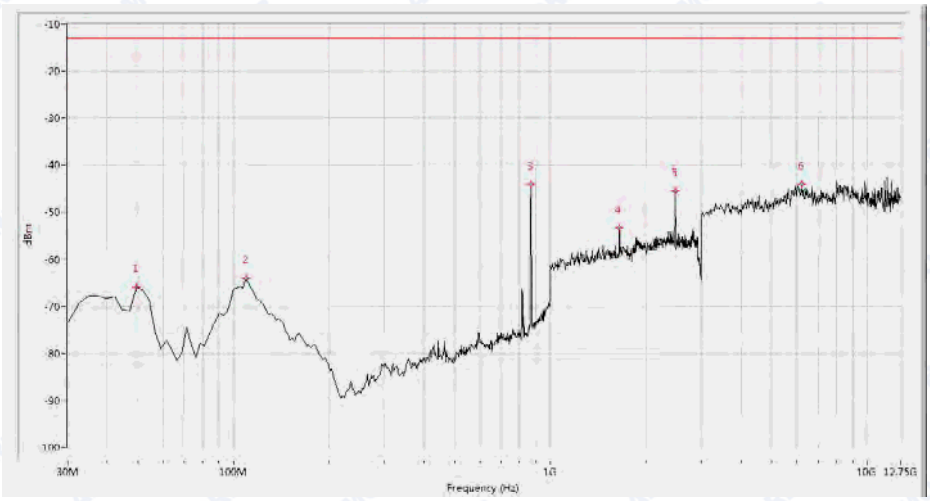
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-58.43	-13.0	45.4	-0.0	Vertical	PASS
51.771	-61.84	-13.0	48.8	348.0	Vertical	PASS
114.663	-67.26	-13.0	54.3	213.6	Vertical	PASS
1987.531	-42.89	-13.0	29.9	318.2	Vertical	PASS
3847.880	-43.37	-13.0	30.4	204.0	Vertical	PASS
16354.115	-37.56	-13.0	24.6	78.2	Vertical	PASS

(Plot D.6: EGPRS 1900MHz Channel = 810, Test Antenna Vertical)



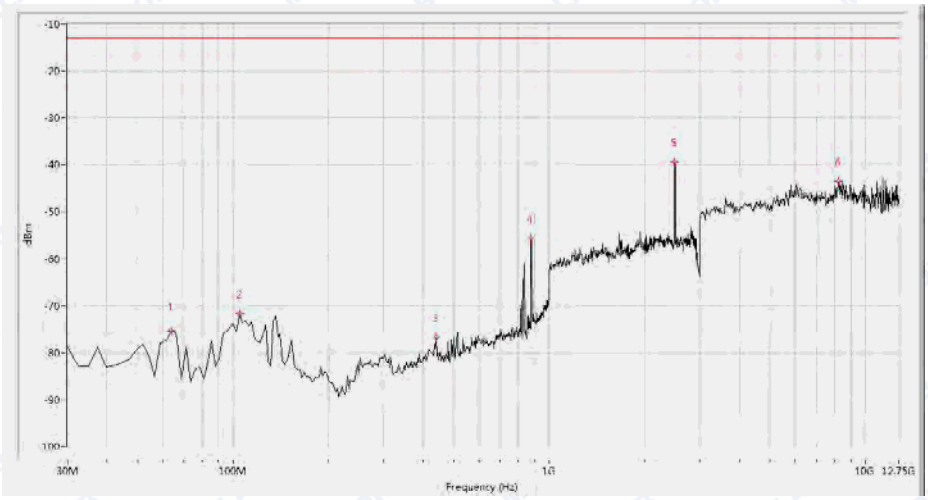
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-72.64	-13.0	59.6	118.7	Horizontal	PASS
141.272	-75.25	-13.0	62.2	32.7	Horizontal	PASS
816.160	-54.01	-13.0	41.0	295.5	Horizontal	PASS
1648.379	-54.43	-13.0	41.4	6.9	Horizontal	PASS
2476.309	-43.29	-13.0	30.3	60.3	Horizontal	PASS
8349.127	-43.93	-13.0	30.9	291.8	Horizontal	PASS

(Plot E.1: WCDMA 850MHz Channel = 4132, Test Antenna Horizontal)



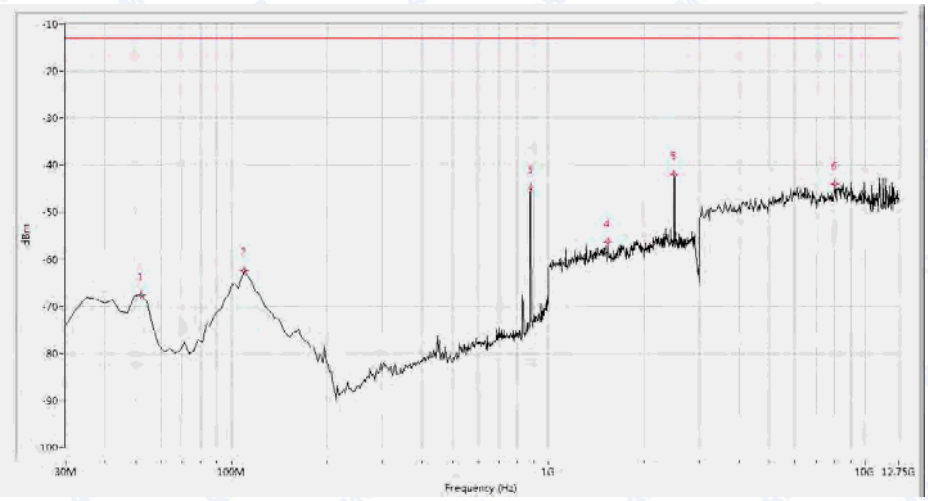
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-65.93	-13.0	52.9	59.6	Vertical	PASS
109.825	-63.98	-13.0	51.0	360.0	Vertical	PASS
871.796	-44.04	-13.0	31.0	241.1	Vertical	PASS
1648.379	-53.27	-13.0	40.3	187.2	Vertical	PASS
2481.297	-45.52	-13.0	32.5	181.6	Vertical	PASS
6233.791	-44.01	-13.0	31.0	293.7	Vertical	PASS

(Plot E.2: WCDMA 850MHz Channel = 4132, Test Antenna Vertical)



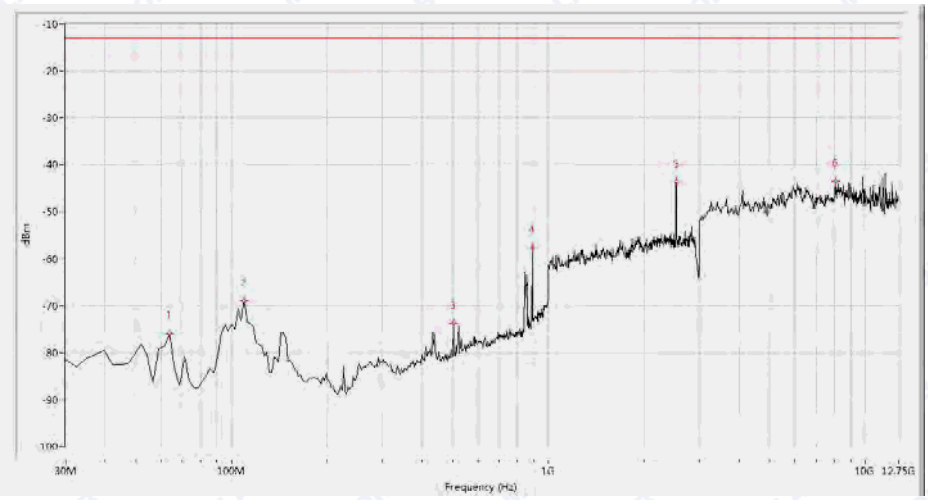
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-75.42	-13.0	62.4	-0.0	Horizontal	PASS
104.988	-71.71	-13.0	58.7	33.1	Horizontal	PASS
438.803	-76.71	-13.0	63.7	81.5	Horizontal	PASS
876.633	-55.61	-13.0	42.6	66.3	Horizontal	PASS
2501.247	-39.35	-13.0	26.3	70.3	Horizontal	PASS
8227.556	-43.43	-13.0	30.4	126.2	Horizontal	PASS

(Plot E.3: WCDMA 850MHz Channel = 4175, Test Antenna Horizontal)



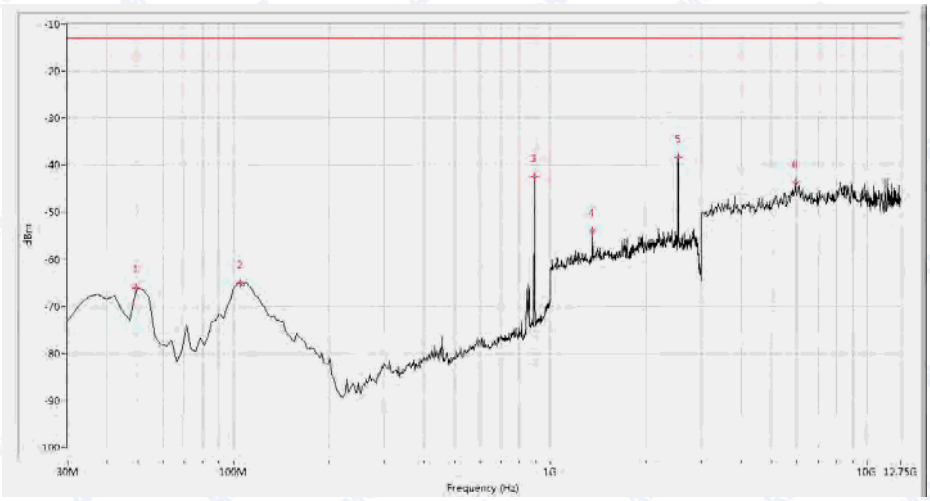
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
51.771	-67.56	-13.0	54.6	210.3	Vertical	PASS
109.825	-62.37	-13.0	49.4	232.6	Vertical	PASS
879.052	-44.70	-13.0	31.7	18.9	Vertical	PASS
1538.653	-56.27	-13.0	43.3	90.5	Vertical	PASS
2501.247	-41.94	-13.0	28.9	360.0	Vertical	PASS
8008.728	-44.12	-13.0	31.1	267.6	Vertical	PASS

(Plot E.4: WCDMA 850MHz Channel = 4175, Test Antenna Vertical)



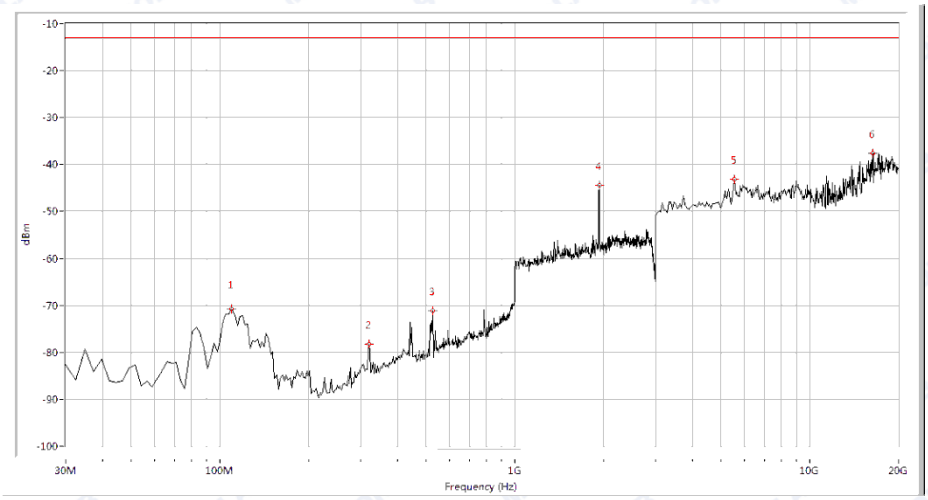
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-75.90	-13.0	62.9	360.0	Horizontal	PASS
109.825	-68.93	-13.0	55.9	176.0	Horizontal	PASS
501.696	-73.85	-13.0	60.9	122.8	Horizontal	PASS
891.147	-57.54	-13.0	44.5	231.5	Horizontal	PASS
2536.160	-43.70	-13.0	30.7	75.2	Horizontal	PASS
8081.671	-43.56	-13.0	30.6	336.1	Horizontal	PASS

(Plot E.5: WCDMA 850MHz Channel = 4233, Test Antenna Horizontal)



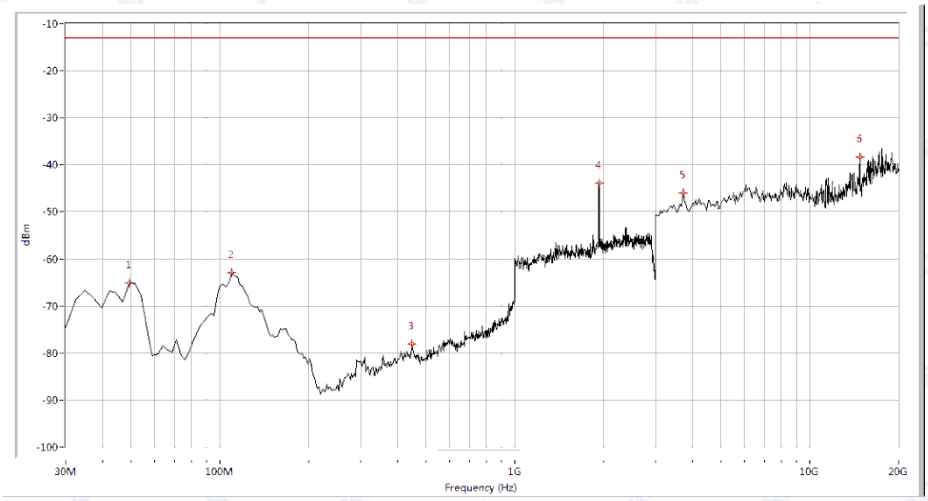
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-66.19	-13.0	53.2	157.8	Vertical	PASS
104.988	-65.10	-13.0	52.1	263.5	Vertical	PASS
891.147	-42.43	-13.0	29.4	45.0	Vertical	PASS
1359.102	-54.01	-13.0	41.0	200.6	Vertical	PASS
2536.160	-38.41	-13.0	25.4	-0.0	Vertical	PASS
5942.020	-43.71	-13.0	30.7	276.1	Vertical	PASS

(Plot E.6: WCDMA 850MHz Channel = 4233, Test Antenna Vertical)



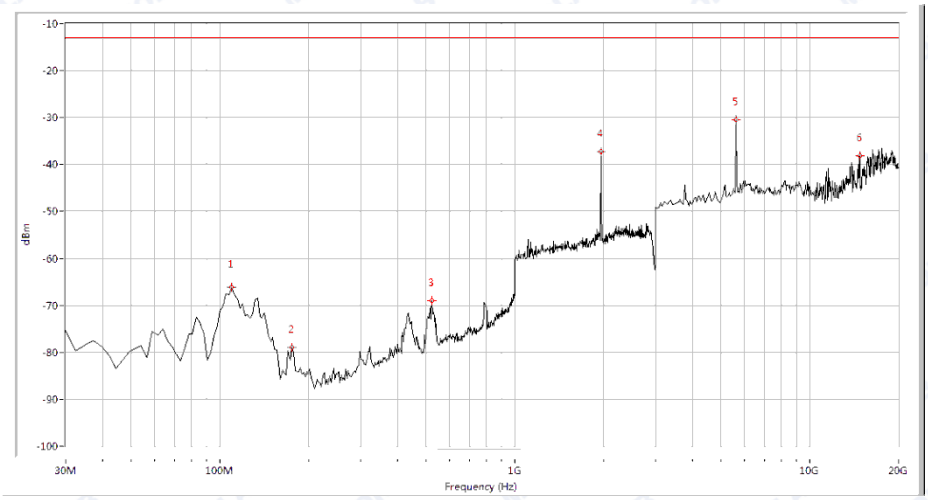
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-70.77	-13.0	57.8	352.3	Horizontal	PASS
320.274	-78.20	-13.0	65.2	58.8	Horizontal	PASS
525.885	-71.10	-13.0	58.1	104.6	Horizontal	PASS
1932.668	-44.43	-13.0	31.4	308.9	Horizontal	PASS
5543.641	-43.22	-13.0	30.2	237.1	Horizontal	PASS
16354.115	-37.62	-13.0	24.6	91.2	Horizontal	PASS

(Plot F.1: WCDMA 1900MHz Channel = 9262, Test Antenna Horizontal)



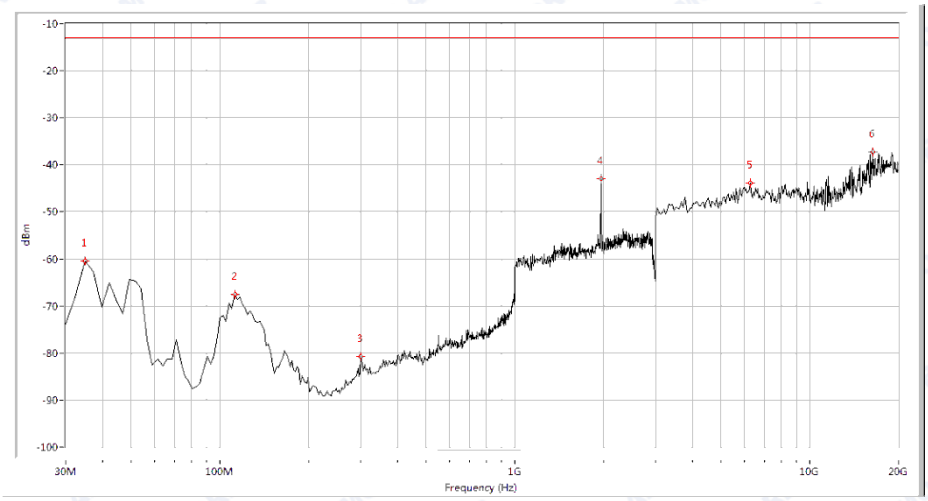
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-65.13	-13.0	52.1	190.9	Vertical	PASS
109.825	-62.95	-13.0	50.0	327.9	Vertical	PASS
448.479	-78.10	-13.0	65.1	29.8	Vertical	PASS
1932.668	-43.90	-13.0	30.9	332.0	Vertical	PASS
3720.698	-46.01	-13.0	33.0	176.4	Vertical	PASS
14785.536	-38.35	-13.0	25.4	-0.0	Vertical	PASS

(Plot F.2: WCDMA 1900MHz Channel = 9262, Test Antenna Vertical)



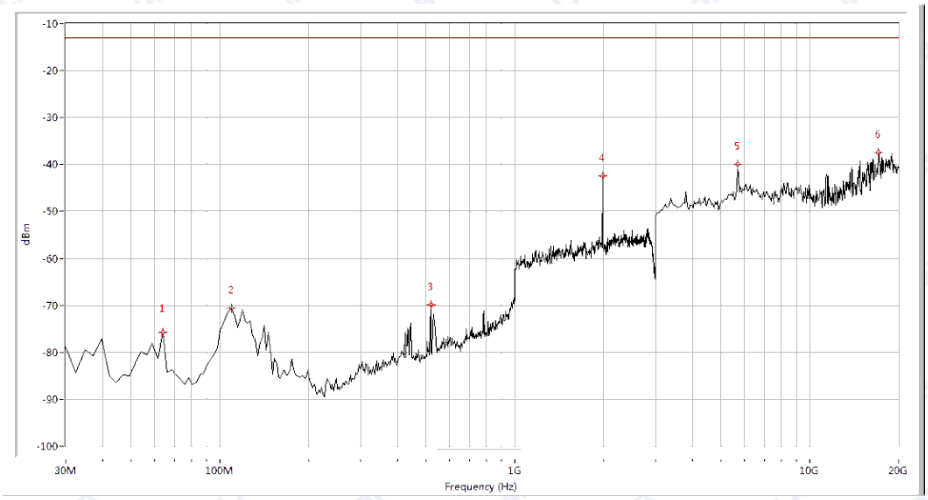
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-66.06	-13.0	53.1	73.7	Horizontal	PASS
175.137	-78.89	-13.0	65.9	148.1	Horizontal	PASS
523.466	-68.94	-13.0	55.9	24.2	Horizontal	PASS
1957.606	-37.35	-13.0	24.4	230.0	Horizontal	PASS
5628.429	-30.57	-13.0	17.6	140.7	Horizontal	PASS
14785.536	-38.15	-13.0	25.1	7.9	Horizontal	PASS

(Plot F.3: WCDMA 1900MHz Channel = 9400, Test Antenna Horizontal)



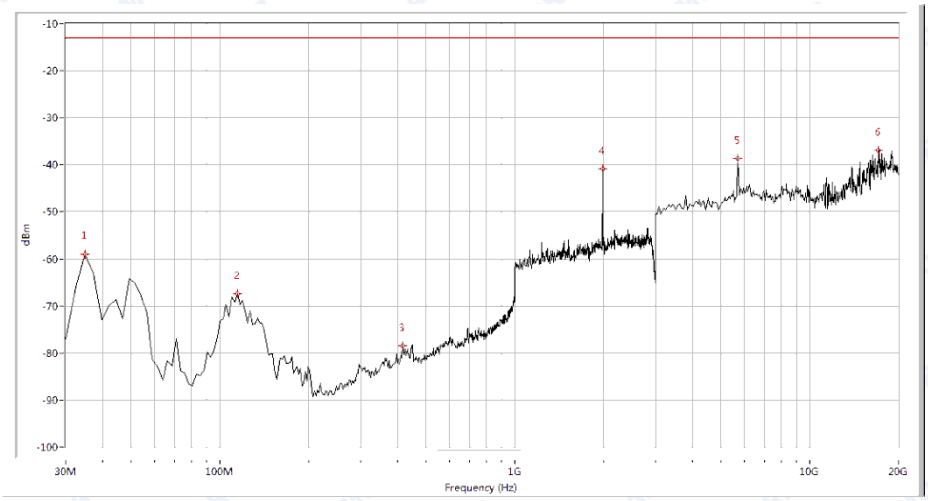
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-60.49	-13.0	47.5	319.5	Vertical	PASS
112.244	-67.58	-13.0	54.6	285.3	Vertical	PASS
300.923	-80.77	-13.0	67.8	110.6	Vertical	PASS
1957.606	-42.91	-13.0	29.9	333.9	Vertical	PASS
6264.339	-43.90	-13.0	30.9	160.7	Vertical	PASS
16354.115	-37.32	-13.0	24.3	45.3	Vertical	PASS

(Plot F.4: WCDMA 1900MHz Channel = 9400, Test Antenna Vertical)



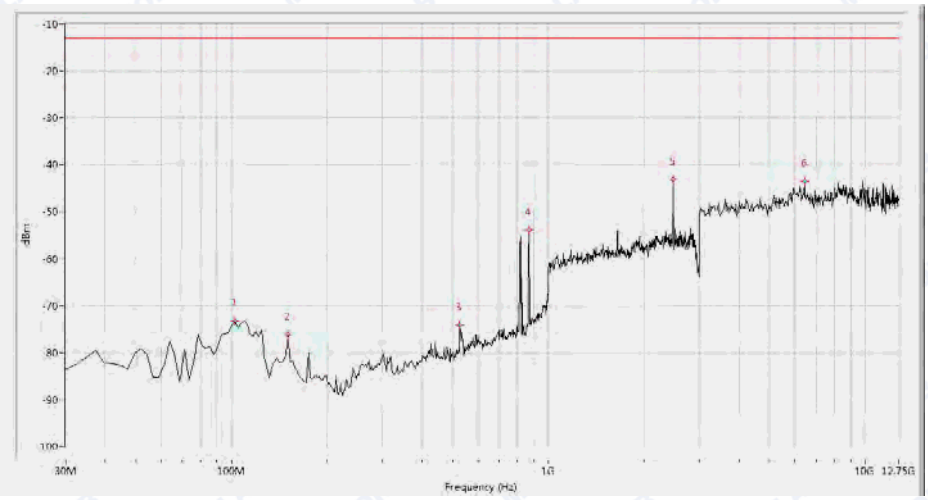
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-75.81	-13.0	62.8	360.0	Horizontal	PASS
109.825	-70.57	-13.0	57.6	107.6	Horizontal	PASS
518.628	-69.96	-13.0	57.0	233.1	Horizontal	PASS
1987.531	-42.50	-13.0	29.5	161.6	Horizontal	PASS
5713.217	-39.85	-13.0	26.9	188.0	Horizontal	PASS
17074.813	-37.41	-13.0	24.4	298.9	Horizontal	PASS

(Plot F.5: WCDMA 1900MHz Channel = 9538, Test Antenna Horizontal)



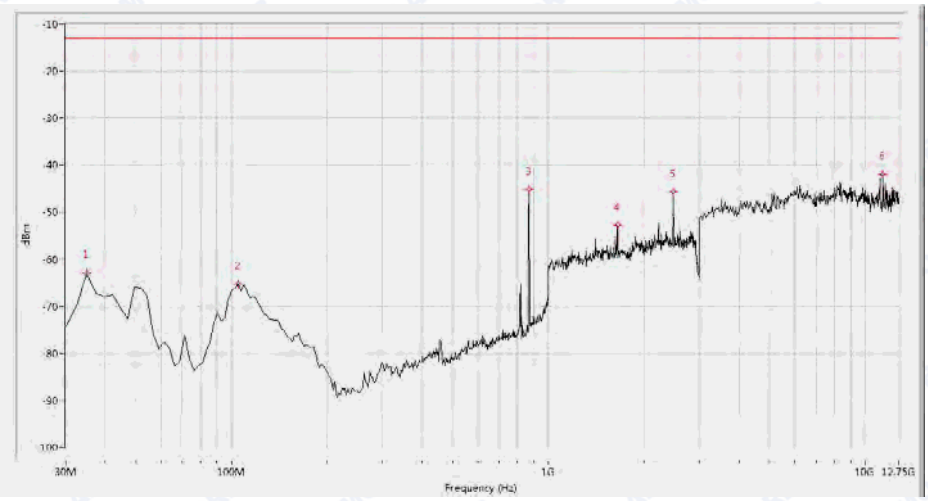
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.01	-13.0	46.0	3.4	Vertical	PASS
114.663	-67.38	-13.0	54.4	359.0	Vertical	PASS
417.032	-78.48	-13.0	65.5	242.7	Vertical	PASS
1987.531	-40.75	-13.0	27.7	51.4	Vertical	PASS
5713.217	-38.74	-13.0	25.7	281.4	Vertical	PASS
17074.813	-36.85	-13.0	23.9	103.1	Vertical	PASS

(Plot F.6: WCDMA 1900MHz Channel = 9538, Test Antenna Vertical)



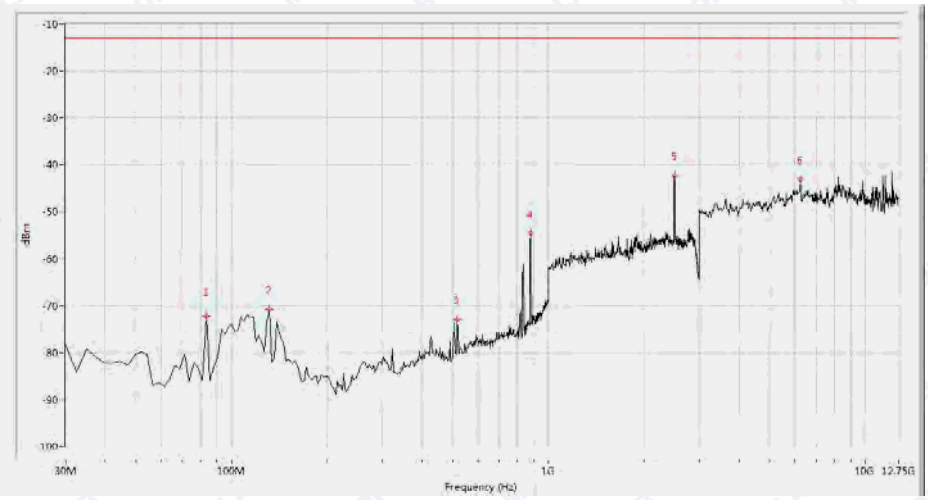
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
102.569	-73.29	-13.0	60.3	307.0	Horizontal	PASS
150.948	-76.16	-13.0	63.2	170.5	Horizontal	PASS
525.885	-74.09	-13.0	61.1	72.7	Horizontal	PASS
871.796	-53.76	-13.0	40.8	299.3	Horizontal	PASS
2476.309	-43.07	-13.0	30.1	63.6	Horizontal	PASS
6428.304	-43.47	-13.0	30.5	250.1	Horizontal	PASS

(Plot G.1: HSDPA 850MHz Channel = 4132, Test Antenna Horizontal)



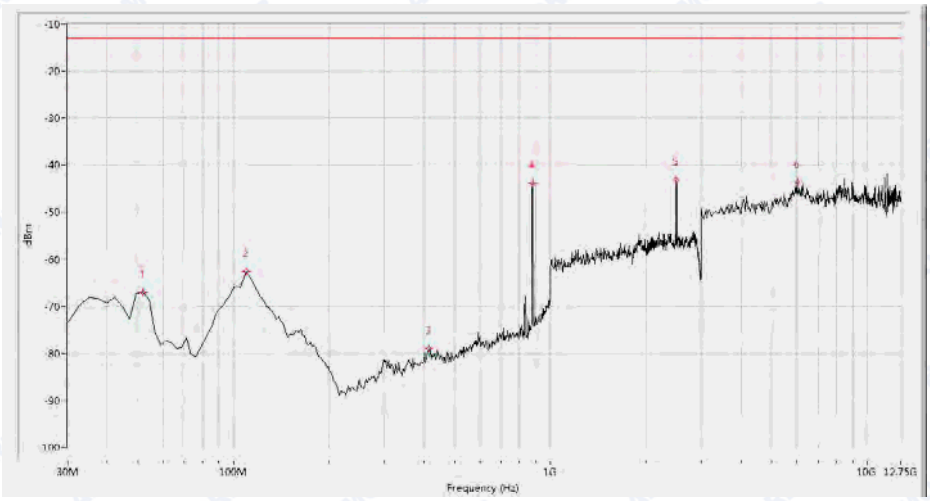
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-62.89	-13.0	49.9	320.1	Vertical	PASS
104.988	-65.33	-13.0	52.3	67.7	Vertical	PASS
869.377	-45.08	-13.0	32.1	193.9	Vertical	PASS
1653.367	-52.86	-13.0	39.9	283.2	Vertical	PASS
2481.297	-45.64	-13.0	32.6	92.3	Vertical	PASS
11364.090	-41.93	-13.0	28.9	360.0	Vertical	PASS

(Plot G.2: HSDPA 850MHz Channel = 4132, Test Antenna Vertical)



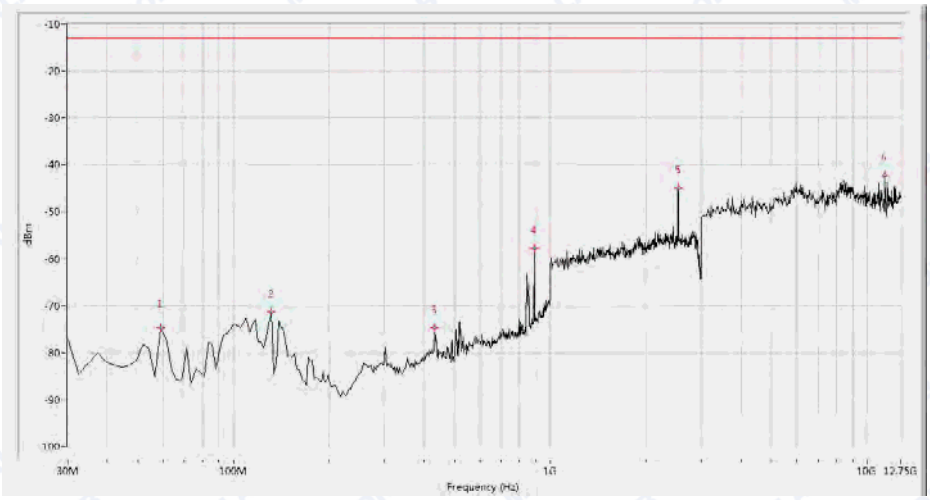
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-72.25	-13.0	59.3	349.4	Horizontal	PASS
131.596	-70.80	-13.0	57.8	105.7	Horizontal	PASS
516.209	-72.88	-13.0	59.9	180.1	Horizontal	PASS
879.052	-54.47	-13.0	41.5	142.9	Horizontal	PASS
2506.234	-42.25	-13.0	29.3	360.0	Horizontal	PASS
6258.105	-43.13	-13.0	30.1	63.3	Horizontal	PASS

(Plot G.3: HSDPA 850MHz Channel = 4175, Test Antenna Horizontal)



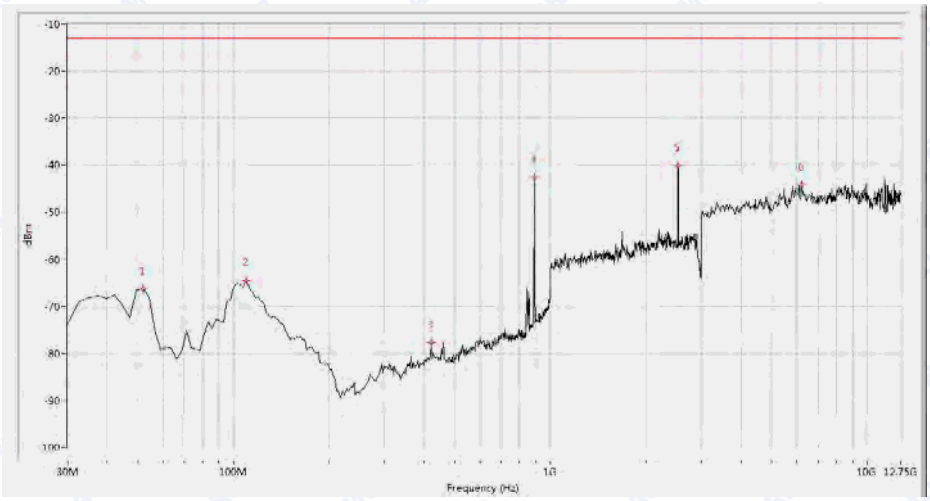
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
51.771	-66.94	-13.0	53.9	15.3	Vertical	PASS
109.825	-62.62	-13.0	49.6	236.7	Vertical	PASS
414.613	-79.00	-13.0	66.0	231.8	Vertical	PASS
879.052	-43.89	-13.0	30.9	231.5	Vertical	PASS
2496.259	-43.06	-13.0	30.1	291.0	Vertical	PASS
6014.963	-43.75	-13.0	30.8	23.9	Vertical	PASS

(Plot G.4: HSDPA 850MHz Channel = 4175, Test Antenna Vertical)



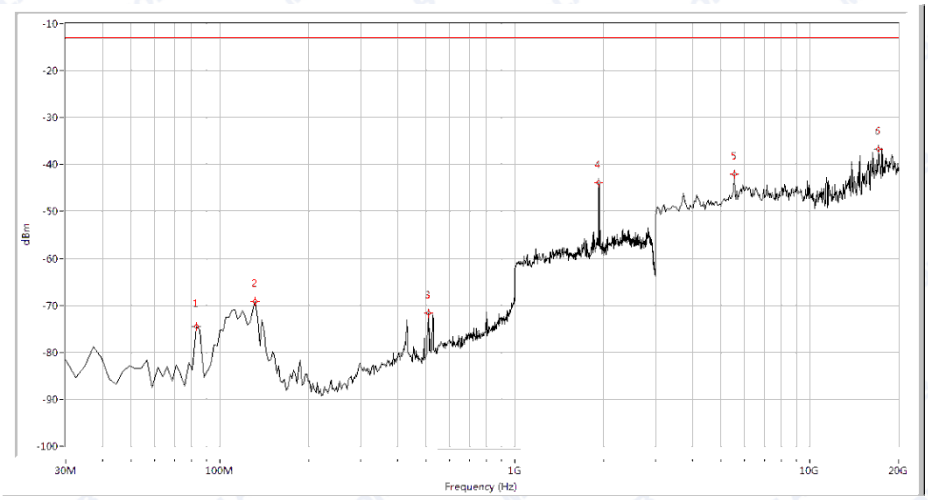
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
59.027	-74.62	-13.0	61.6	13.4	Horizontal	PASS
131.596	-71.37	-13.0	58.4	245.7	Horizontal	PASS
431.546	-74.72	-13.0	61.7	56.9	Horizontal	PASS
888.728	-57.78	-13.0	44.8	163.5	Horizontal	PASS
2536.160	-44.98	-13.0	32.0	6.0	Horizontal	PASS
11364.090	-42.18	-13.0	29.2	312.8	Horizontal	PASS

(Plot G.5: HSDPA 850MHz Channel = 4233, Test Antenna Horizontal)



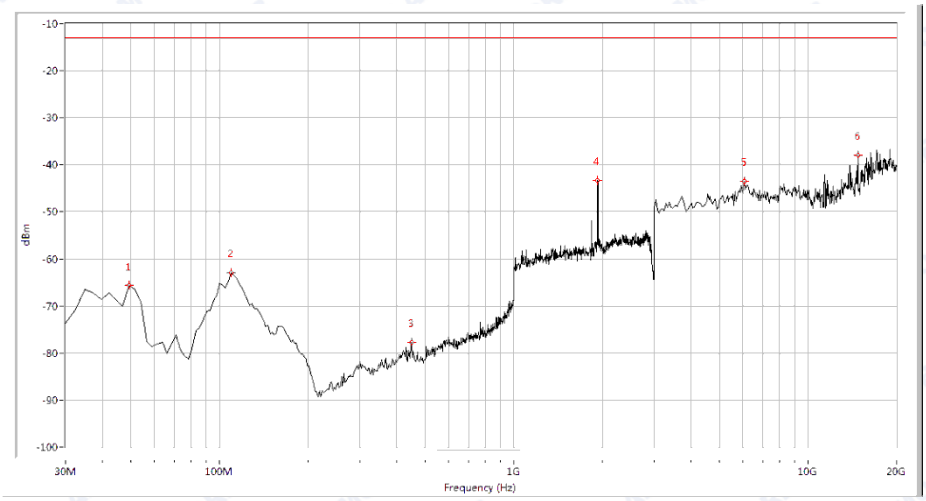
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
51.771	-66.24	-13.0	53.2	340.2	Vertical	PASS
109.825	-64.54	-13.0	51.5	359.7	Vertical	PASS
421.870	-77.74	-13.0	64.7	199.1	Vertical	PASS
888.728	-42.70	-13.0	29.7	125.9	Vertical	PASS
2531.172	-40.12	-13.0	27.1	-0.0	Vertical	PASS
6209.476	-44.15	-13.0	31.2	-0.0	Vertical	PASS

(Plot G.6: HSDPA 850MHz Channel = 4233, Test Antenna Vertical)



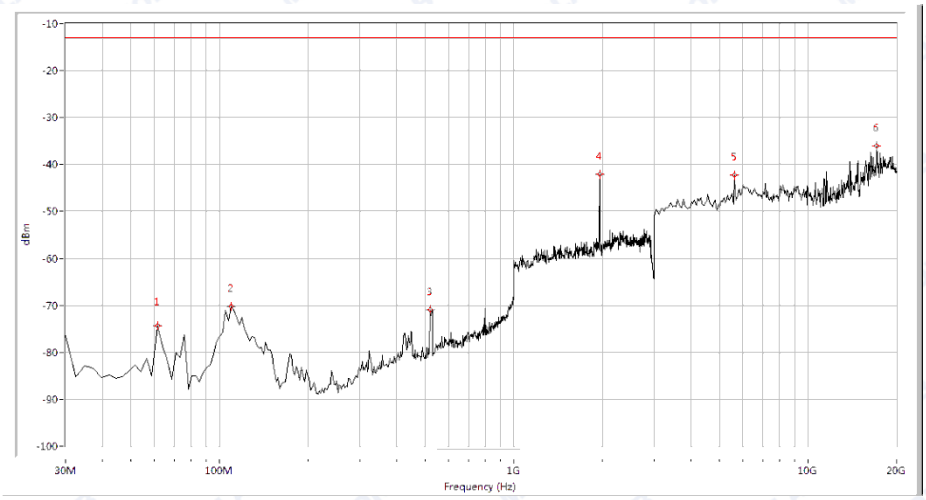
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-74.51	-13.0	61.5	339.1	Horizontal	PASS
131.596	-69.18	-13.0	56.2	96.8	Horizontal	PASS
508.953	-71.71	-13.0	58.7	199.5	Horizontal	PASS
1927.681	-43.93	-13.0	30.9	91.6	Horizontal	PASS
5543.641	-42.12	-13.0	29.1	232.2	Horizontal	PASS
17117.207	-36.73	-13.0	23.7	343.5	Horizontal	PASS

(Plot H.1: HSDPA 1900 MHz Channel = 9262, Test Antenna Horizontal)



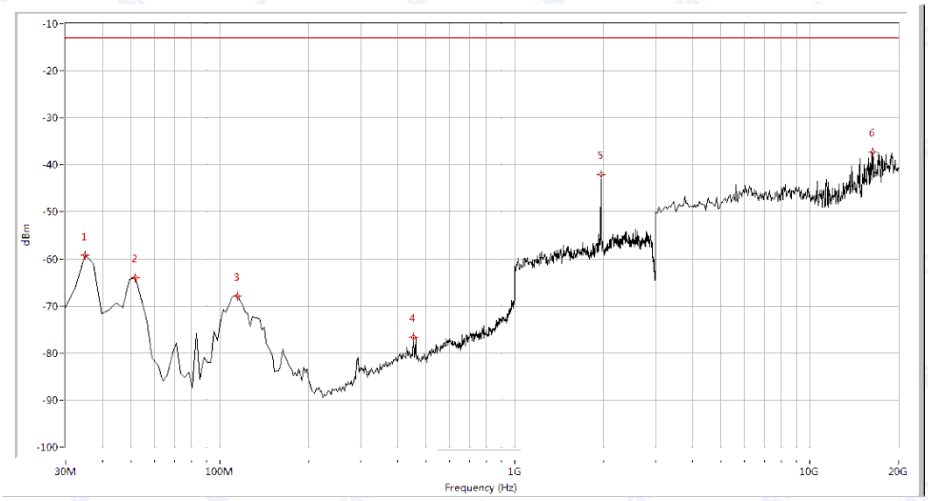
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-65.64	-13.0	52.6	250.5	Vertical	PASS
109.825	-62.94	-13.0	49.9	313.4	Vertical	PASS
450.898	-77.77	-13.0	64.8	37.5	Vertical	PASS
1927.681	-43.41	-13.0	30.4	202.8	Vertical	PASS
6094.763	-43.51	-13.0	30.5	77.8	Vertical	PASS
14785.536	-38.01	-13.0	25.0	42.5	Vertical	PASS

(Plot H.2: HSDPA 1900 MHz Channel = 9262, Test Antenna Vertical)



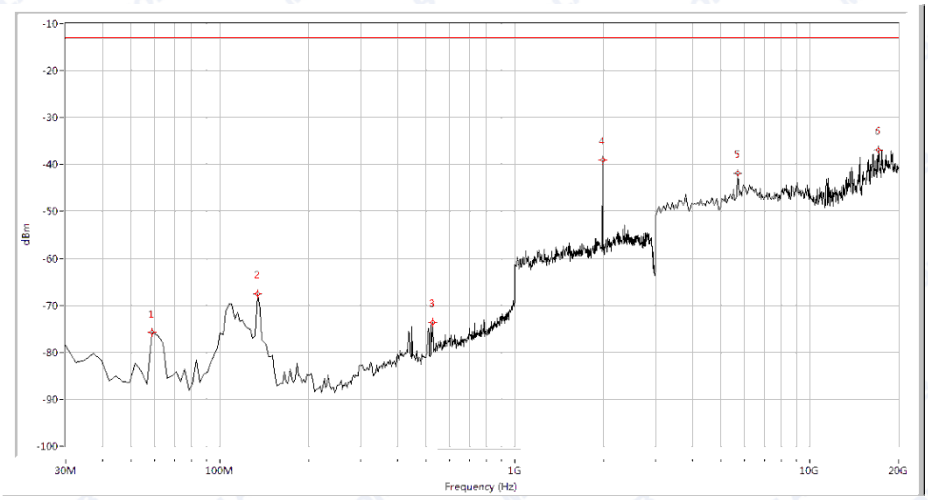
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
61.446	-74.36	-13.0	61.4	280.0	Horizontal	PASS
109.825	-70.20	-13.0	57.2	8.8	Horizontal	PASS
518.628	-71.01	-13.0	58.0	4.2	Horizontal	PASS
1957.606	-42.07	-13.0	29.1	203.3	Horizontal	PASS
5628.429	-42.33	-13.0	29.3	211.4	Horizontal	PASS
17117.207	-36.10	-13.0	23.1	143.6	Horizontal	PASS

(PlotH.3:HSDPA 1900 MHz Channel = 9400, Test Antenna Horizontal)



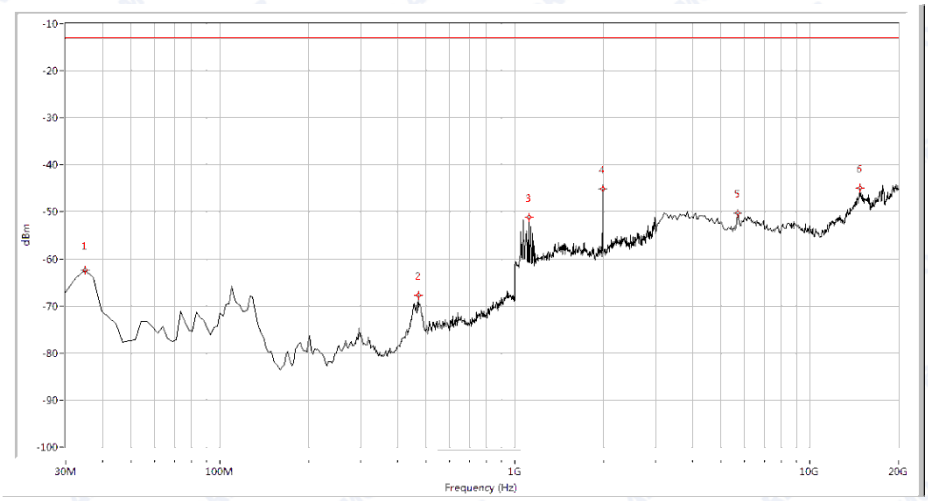
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.17	-13.0	46.2	179.4	Vertical	PASS
51.771	-64.05	-13.0	51.1	219.3	Vertical	PASS
114.663	-68.00	-13.0	55.0	47.1	Vertical	PASS
453.317	-76.57	-13.0	63.6	336.5	Vertical	PASS
1957.606	-42.01	-13.0	29.0	176.3	Vertical	PASS
16354.115	-37.26	-13.0	24.3	50.3	Vertical	PASS

(Plot H.4: HSDPA 1900 MHz Channel = 9400, Test Antenna Vertical)



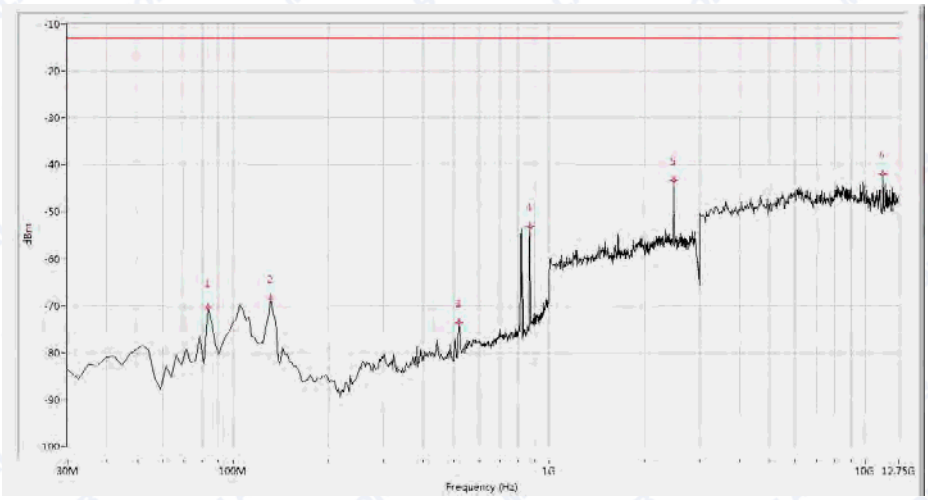
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
59.027	-75.83	-13.0	62.8	286.6	Horizontal	PASS
134.015	-67.61	-13.0	54.6	304.8	Horizontal	PASS
525.885	-73.70	-13.0	60.7	355.4	Horizontal	PASS
1982.544	-38.99	-13.0	26.0	239.3	Horizontal	PASS
5713.217	-41.93	-13.0	28.9	308.6	Horizontal	PASS
17117.207	-36.84	-13.0	23.8	333.9	Horizontal	PASS

(Plot H.5: HSDPA 1900 MHz Channel = 9538, Test Antenna Horizontal)



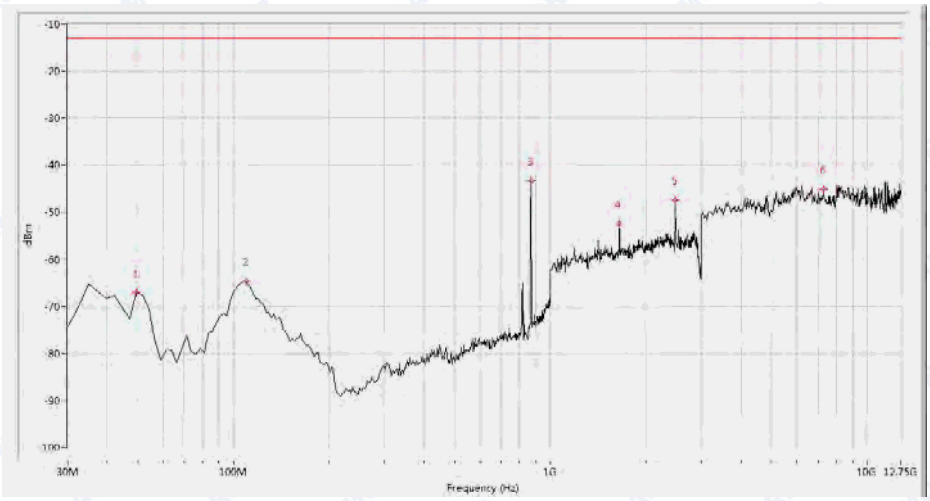
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-62.37	-13.0	49.4	18.6	Vertical	PASS
470.249	-67.79	-13.0	54.8	166.8	Vertical	PASS
1114.713	-51.12	-13.0	38.1	1.3	Vertical	PASS
1987.531	-45.10	-13.0	32.1	83.4	Vertical	PASS
5713.217	-50.35	-13.0	37.3	97.9	Vertical	PASS
14827.930	-44.93	-13.0	31.9	56.2	Vertical	PASS

(Plot H.6: HSDPA 1900 MHz Channel = 9538, Test Antenna Vertical)



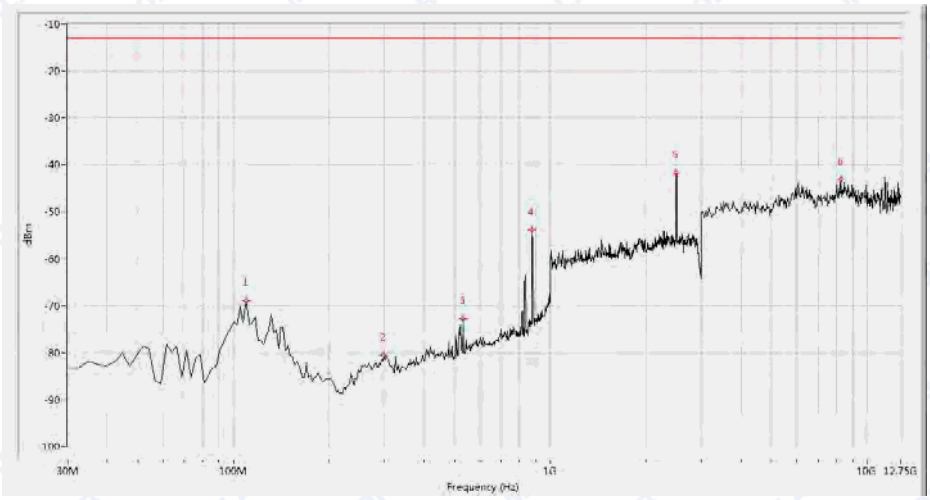
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-70.37	-13.0	57.4	71.2	Horizontal	PASS
131.596	-68.37	-13.0	55.4	168.2	Horizontal	PASS
518.628	-73.59	-13.0	60.6	76.7	Horizontal	PASS
869.377	-53.07	-13.0	40.1	266.1	Horizontal	PASS
2481.297	-43.30	-13.0	30.3	68.5	Horizontal	PASS
11364.090	-41.96	-13.0	29.0	335.2	Horizontal	PASS

(Plot I.1: HSUPA 850MHz Channel = 4132, Test Antenna Horizontal)



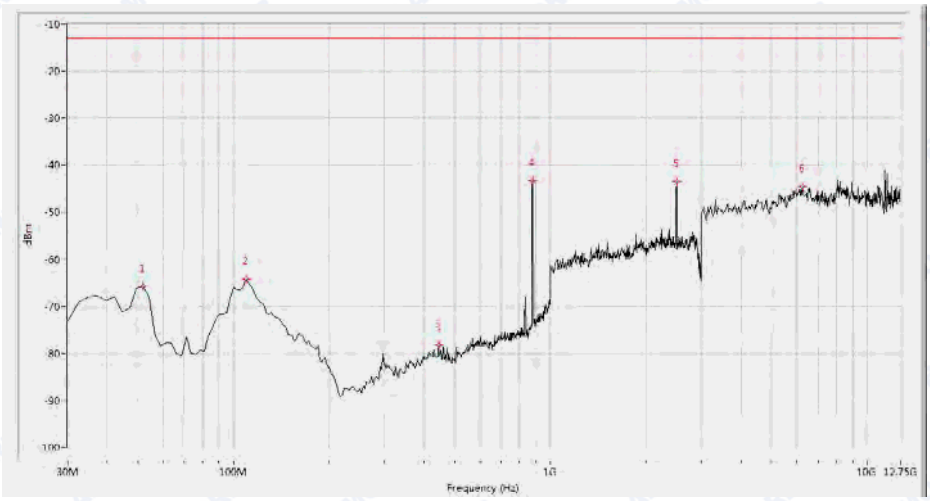
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-66.99	-13.0	54.0	281.0	Vertical	PASS
109.825	-64.66	-13.0	51.7	-0.0	Vertical	PASS
869.377	-43.25	-13.0	30.3	9.6	Vertical	PASS
1648.379	-52.41	-13.0	39.4	191.7	Vertical	PASS
2481.297	-47.41	-13.0	34.4	161.1	Vertical	PASS
7279.302	-45.19	-13.0	32.2	289.5	Vertical	PASS

(Plot I.2: HSUPA 850 MHz Channel = 4132, Test Antenna Vertical)



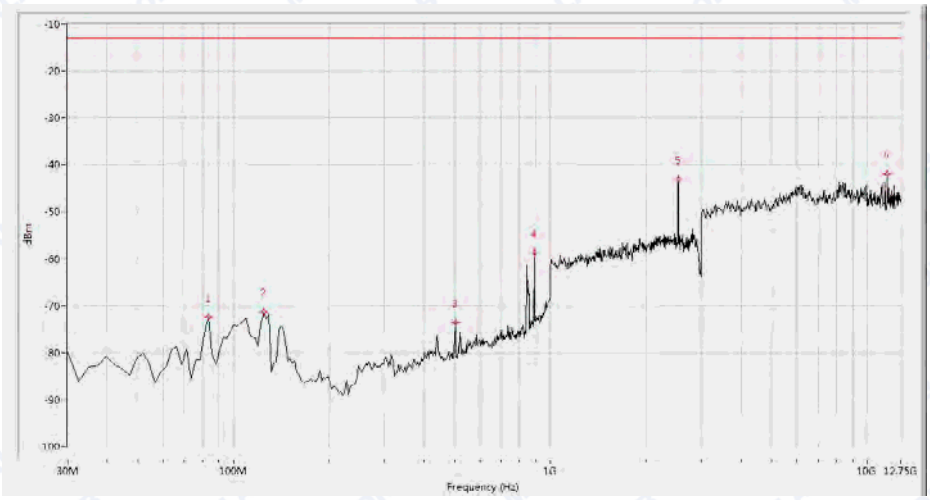
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-69.03	-13.0	56.0	248.7	Horizontal	PASS
298.504	-80.64	-13.0	67.6	333.0	Horizontal	PASS
530.723	-72.69	-13.0	59.7	228.1	Horizontal	PASS
876.633	-53.89	-13.0	40.9	63.8	Horizontal	PASS
2496.259	-41.66	-13.0	28.7	45.9	Horizontal	PASS
8251.870	-43.21	-13.0	30.2	149.9	Horizontal	PASS

(Plot I.3: HSUPA 850MHz Channel = 4175, Test Antenna Horizontal)



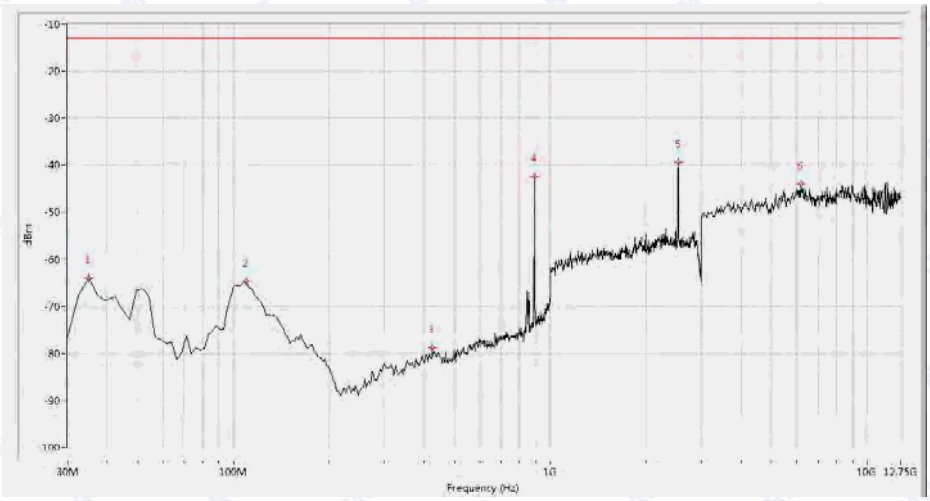
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
51.771	-65.79	-13.0	52.8	156.8	Vertical	PASS
109.825	-64.26	-13.0	51.3	360.0	Vertical	PASS
446.060	-78.33	-13.0	65.3	125.9	Vertical	PASS
879.052	-43.31	-13.0	30.3	312.6	Vertical	PASS
2506.234	-43.47	-13.0	30.5	39.1	Vertical	PASS
6258.105	-44.65	-13.0	31.7	157.1	Vertical	PASS

(Plot I.4: HSUPA 850MHz Channel = 4175, Test Antenna Vertical)



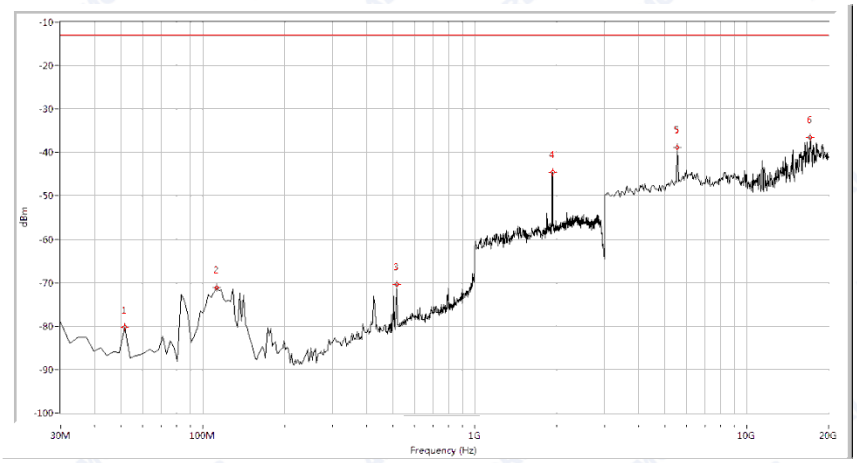
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-72.39	-13.0	59.4	358.1	Horizontal	PASS
124.339	-71.38	-13.0	58.4	179.0	Horizontal	PASS
501.696	-73.55	-13.0	60.5	343.0	Horizontal	PASS
888.728	-58.66	-13.0	45.7	73.4	Horizontal	PASS
2536.160	-43.20	-13.0	30.2	68.5	Horizontal	PASS
11558.603	-41.89	-13.0	28.9	96.8	Horizontal	PASS

(Plot I.5: HSUPA 850MHz Channel = 4233, Test Antenna Horizontal)



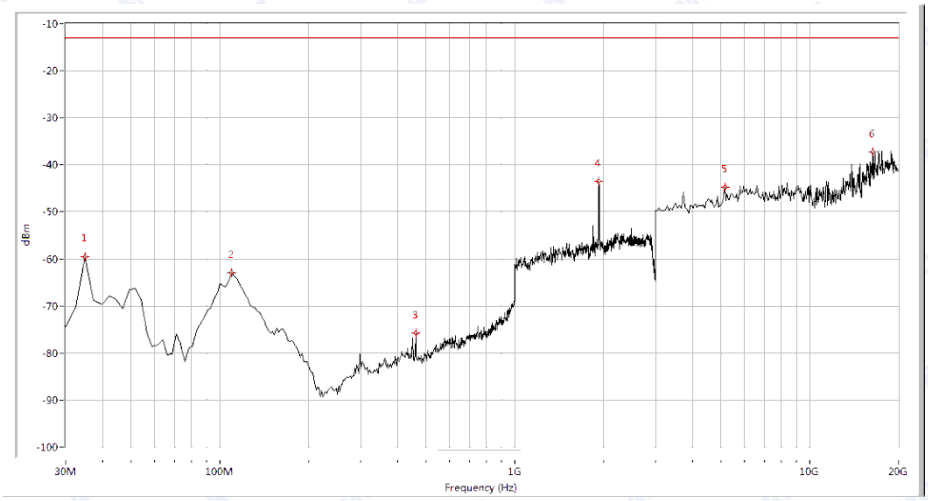
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-63.92	-13.0	50.9	124.6	Vertical	PASS
109.825	-64.74	-13.0	51.7	211.0	Vertical	PASS
424.289	-78.87	-13.0	65.9	205.8	Vertical	PASS
891.147	-42.49	-13.0	29.5	125.9	Vertical	PASS
2541.147	-39.49	-13.0	26.5	360.0	Vertical	PASS
6160.848	-43.98	-13.0	31.0	329.0	Vertical	PASS

(Plot I.6: HSUPA 850MHz Channel = 4233, Test Antenna Vertical)



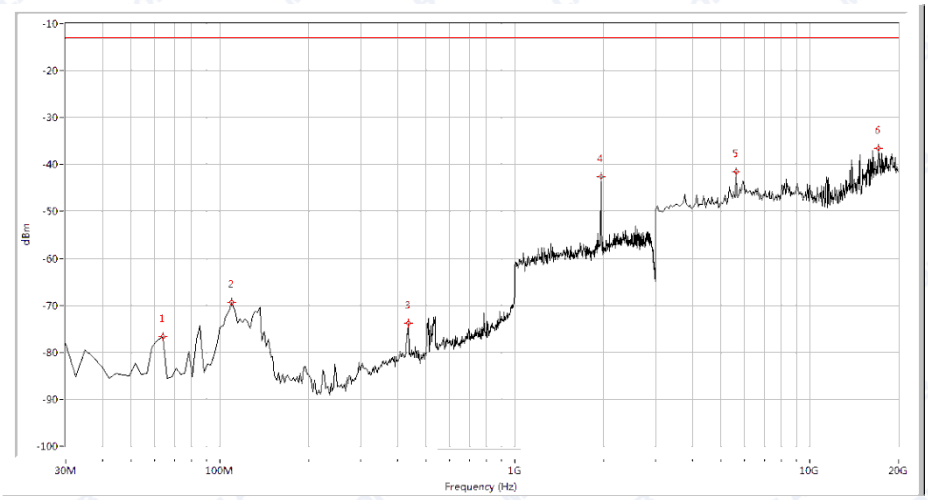
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
51.771	-80.17	-13.0	67.2	301.9	Horizontal	PASS
112.244	-71.09	-13.0	58.1	98.3	Horizontal	PASS
516.209	-70.41	-13.0	57.4	12.7	Horizontal	PASS
1932.668	-44.65	-13.0	31.7	106.9	Horizontal	PASS
5543.641	-38.94	-13.0	25.9	238.2	Horizontal	PASS
17074.813	-36.64	-13.0	23.6	298.1	Horizontal	PASS

(Plot J.1: HSUPA 1900 MHz Channel = 9262, Test Antenna Horizontal)



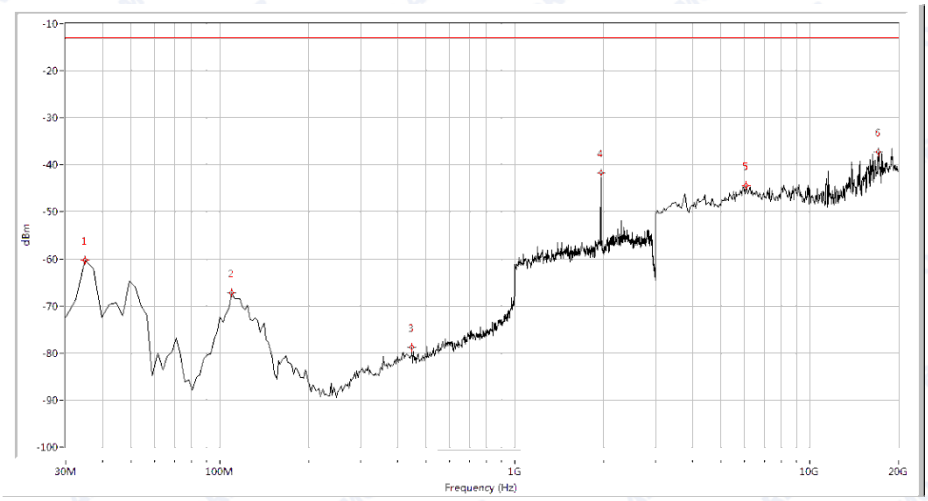
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.62	-13.0	46.6	360.0	Vertical	PASS
109.825	-62.88	-13.0	49.9	244.5	Vertical	PASS
460.574	-75.70	-13.0	62.7	30.8	Vertical	PASS
1927.681	-43.42	-13.0	30.4	33.4	Vertical	PASS
5162.095	-44.69	-13.0	31.7	99.4	Vertical	PASS
16354.115	-37.20	-13.0	24.2	315.6	Vertical	PASS

(Plot J.2: HSUPA 1900 MHz Channel = 9262, Test Antenna Vertical)



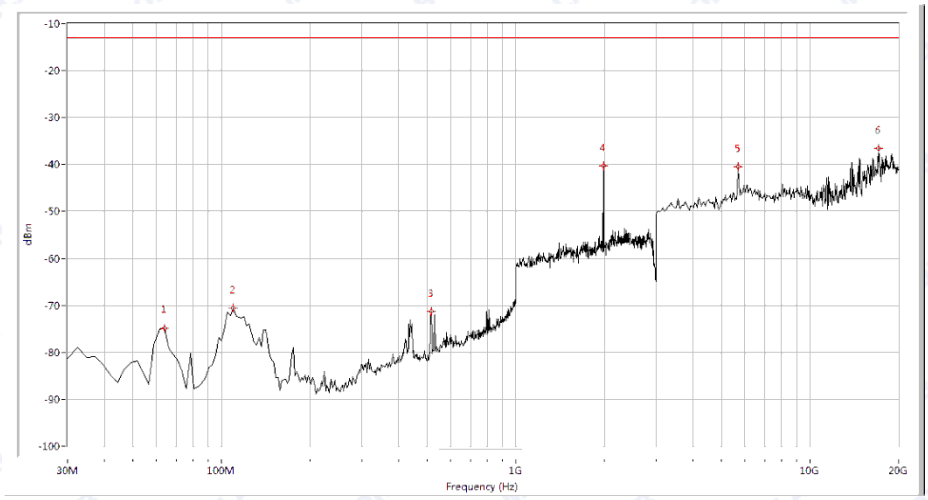
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-76.65	-13.0	63.7	280.7	Horizontal	PASS
109.825	-69.43	-13.0	56.4	68.9	Horizontal	PASS
436.384	-73.87	-13.0	60.9	196.9	Horizontal	PASS
1957.606	-42.56	-13.0	29.6	127.0	Horizontal	PASS
5628.429	-41.55	-13.0	28.6	155.3	Horizontal	PASS
17117.207	-36.49	-13.0	23.5	210.7	Horizontal	PASS

(Plot J.3: HSUPA 1900 MHz Channel = 9400, Test Antenna Horizontal)



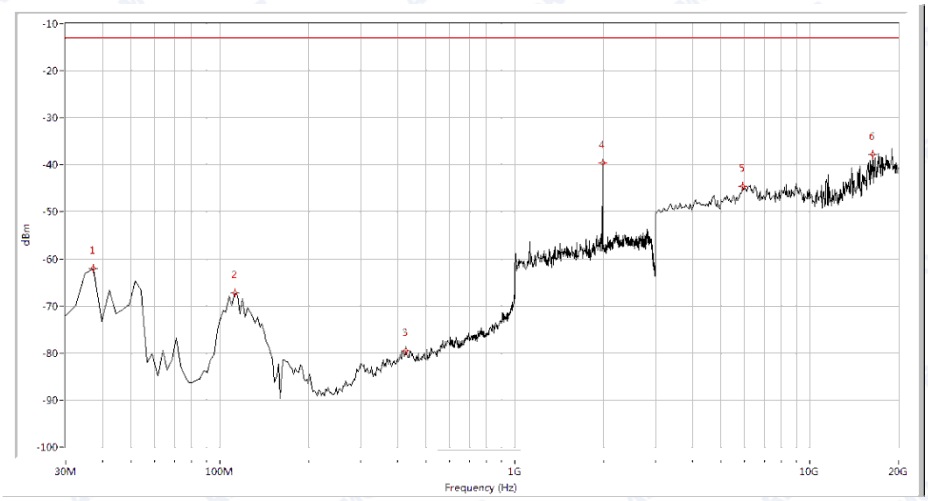
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-60.29	-13.0	47.3	150.5	Vertical	PASS
109.825	-67.23	-13.0	54.2	25.8	Vertical	PASS
448.479	-78.76	-13.0	65.8	102.2	Vertical	PASS
1957.606	-41.66	-13.0	28.7	80.8	Vertical	PASS
6094.763	-44.32	-13.0	31.3	151.5	Vertical	PASS
17117.207	-37.21	-13.0	24.2	299.4	Vertical	PASS

(Plot J.4: HSUPA 1900 MHz Channel = 9400, Test Antenna Vertical)



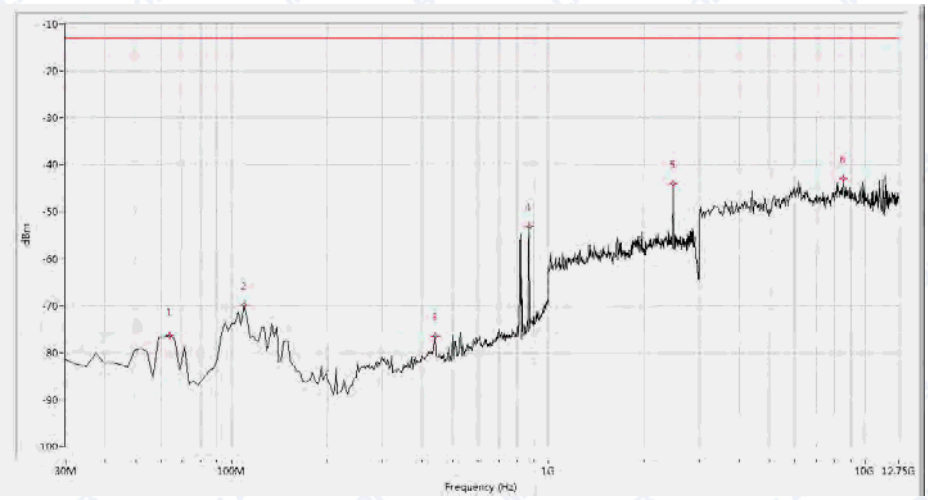
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-74.80	-13.0	61.8	-0.0	Horizontal	PASS
109.825	-70.68	-13.0	57.7	49.9	Horizontal	PASS
516.209	-71.30	-13.0	58.3	7.1	Horizontal	PASS
1987.531	-40.32	-13.0	27.3	341.9	Horizontal	PASS
5713.217	-40.42	-13.0	27.4	358.7	Horizontal	PASS
17117.207	-36.63	-13.0	23.6	186.1	Horizontal	PASS

(Plot J.5: HSUPA 1900 MHz Channel = 9538, Test Antenna Horizontal)



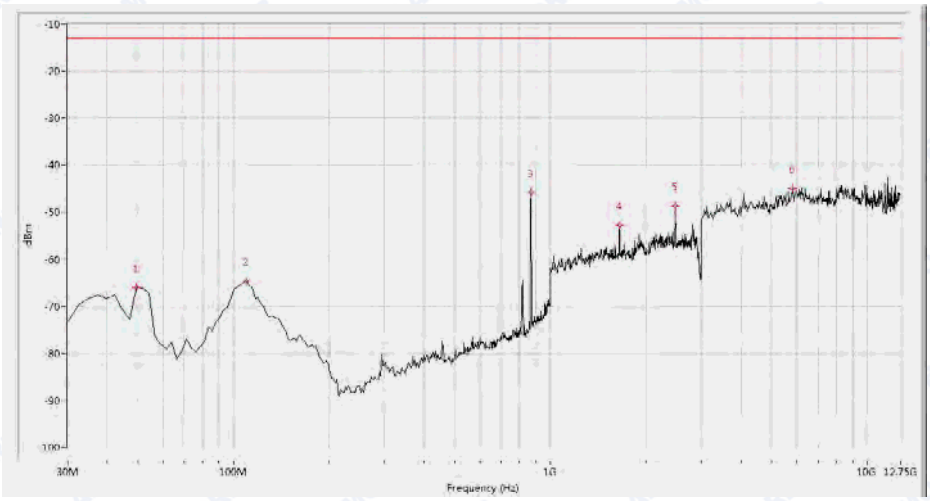
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
37.257	-62.10	-13.0	49.1	15.7	Vertical	PASS
112.244	-67.29	-13.0	54.3	10.1	Vertical	PASS
426.708	-79.53	-13.0	66.5	336.8	Vertical	PASS
1987.531	-39.50	-13.0	26.5	336.8	Vertical	PASS
5925.187	-44.60	-13.0	31.6	230.4	Vertical	PASS
16354.115	-37.79	-13.0	24.8	238.5	Vertical	PASS

(Plot J.6: HSUPA 1900 MHz Channel = 9538, Test Antenna Vertical)



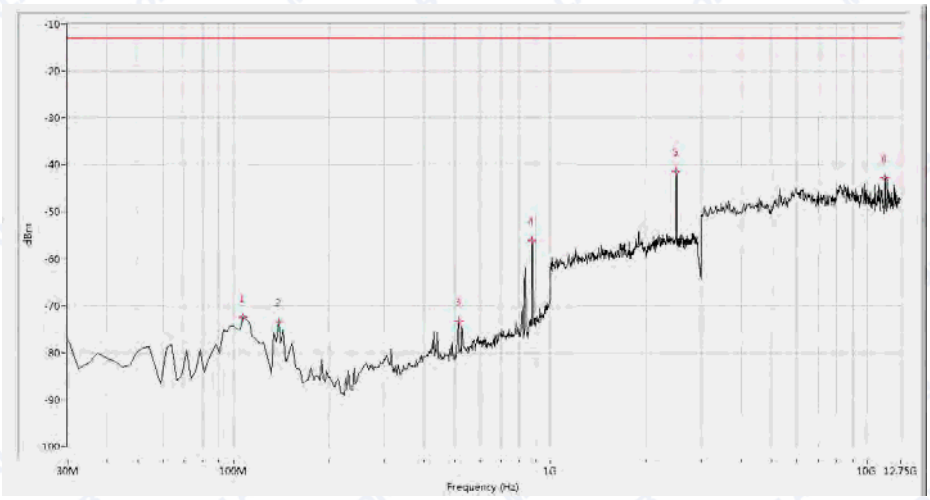
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-76.34	-13.0	63.3	356.2	Horizontal	PASS
109.825	-69.96	-13.0	57.0	37.2	Horizontal	PASS
438.803	-76.47	-13.0	63.5	292.6	Horizontal	PASS
869.377	-53.21	-13.0	40.2	93.1	Horizontal	PASS
2471.322	-43.98	-13.0	31.0	11.9	Horizontal	PASS
8543.641	-42.89	-13.0	29.9	346.5	Horizontal	PASS

(Plot K.1: HSPA+ 850MHz Channel = 4132, Test Antenna Horizontal)



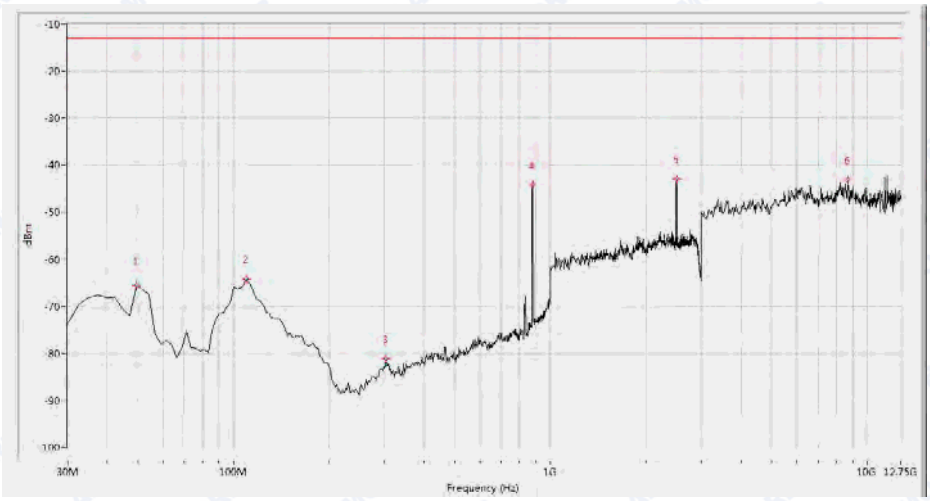
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-65.97	-13.0	53.0	9.5	Vertical	PASS
109.825	-64.71	-13.0	51.7	35.5	Vertical	PASS
869.377	-45.75	-13.0	32.8	24.7	Vertical	PASS
1653.367	-52.73	-13.0	39.7	244.2	Vertical	PASS
2481.297	-48.63	-13.0	35.6	312.3	Vertical	PASS
5820.449	-44.94	-13.0	31.9	167.6	Vertical	PASS

(Plot K.2: HSPA+ 850 MHz Channel = 4132, Test Antenna Vertical)



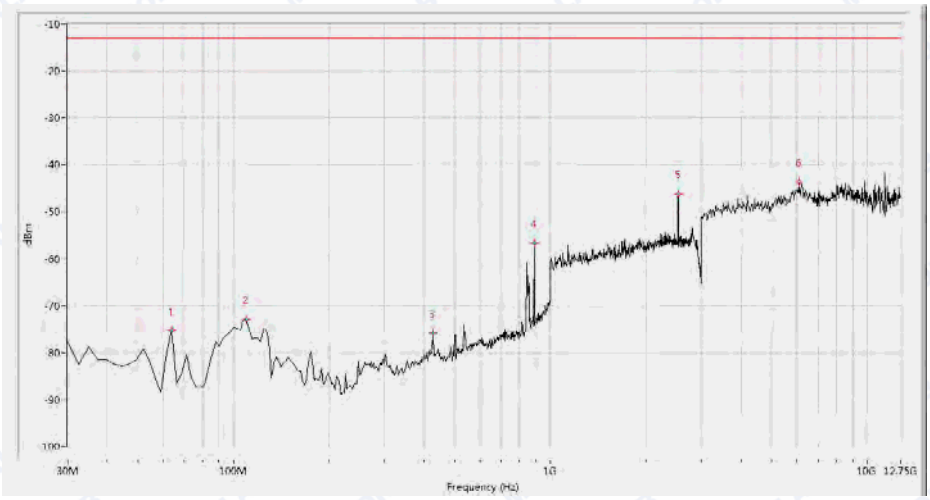
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
107.406	-72.45	-13.0	59.4	201.6	Horizontal	PASS
138.853	-73.44	-13.0	60.4	-0.0	Horizontal	PASS
513.791	-73.22	-13.0	60.2	185.6	Horizontal	PASS
876.633	-56.08	-13.0	43.1	141.1	Horizontal	PASS
2501.247	-41.42	-13.0	28.4	45.9	Horizontal	PASS
11364.090	-42.75	-13.0	29.8	0.1	Horizontal	PASS

(Plot K.3: HSPA+ 850MHz Channel = 4175, Test Antenna Horizontal)



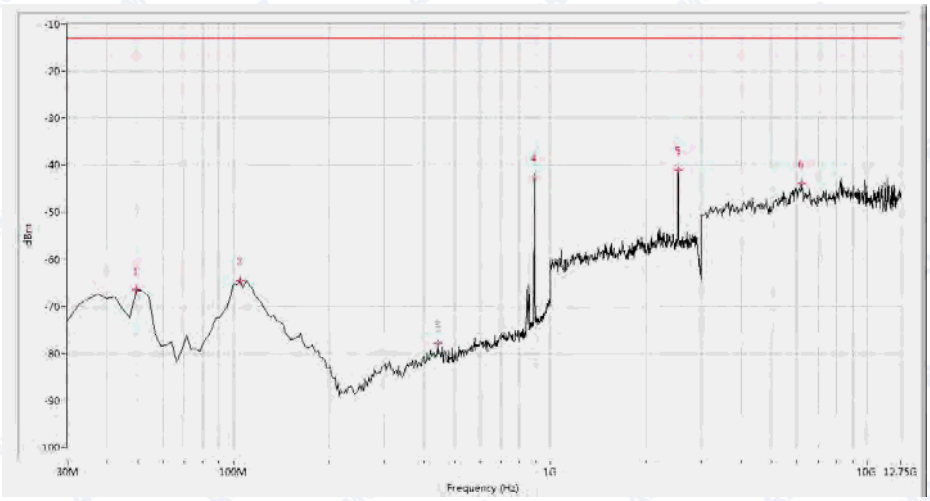
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-65.69	-13.0	52.7	188.7	Vertical	PASS
109.825	-64.23	-13.0	51.2	214.7	Vertical	PASS
303.342	-81.02	-13.0	68.0	109.8	Vertical	PASS
879.052	-44.18	-13.0	31.2	-0.0	Vertical	PASS
2506.234	-43.03	-13.0	30.0	286.6	Vertical	PASS
8713.840	-43.15	-13.0	30.1	0.6	Vertical	PASS

(Plot K.4: HSPA+ 850MHz Channel = 4175, Test Antenna Vertical)



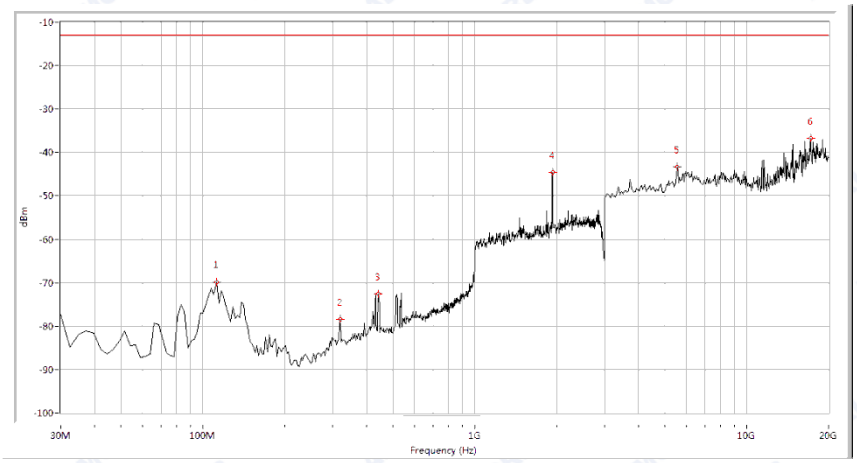
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-75.30	-13.0	62.3	139.1	Horizontal	PASS
109.825	-72.90	-13.0	59.9	191.2	Horizontal	PASS
426.708	-75.84	-13.0	62.8	118.3	Horizontal	PASS
888.728	-56.78	-13.0	43.8	67.4	Horizontal	PASS
2536.160	-46.20	-13.0	33.2	20.1	Horizontal	PASS
6087.905	-43.75	-13.0	30.8	239.7	Horizontal	PASS

(Plot K.5: HSPA+ 850MHz Channel = 4233, Test Antenna Horizontal)



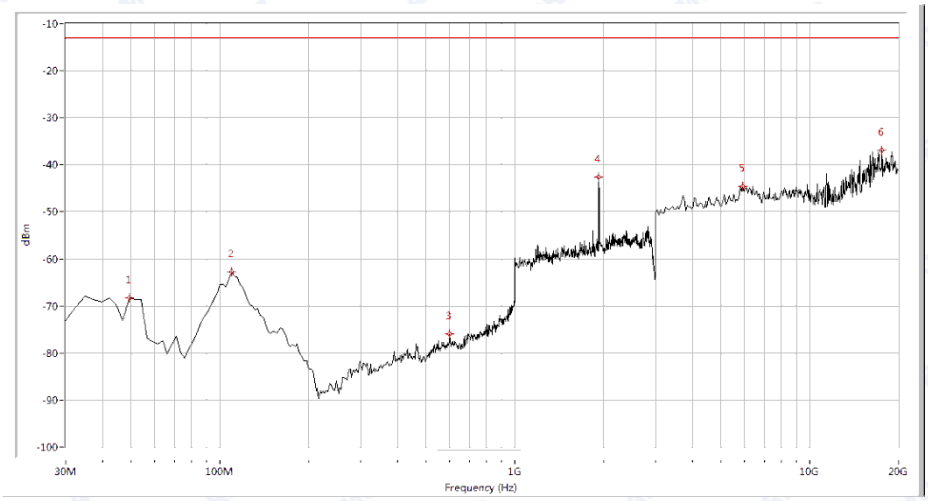
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-66.43	-13.0	53.4	48.1	Vertical	PASS
104.988	-64.49	-13.0	51.5	162.3	Vertical	PASS
441.222	-77.95	-13.0	65.0	187.9	Vertical	PASS
888.728	-42.63	-13.0	29.6	-0.0	Vertical	PASS
2536.160	-40.97	-13.0	28.0	1.0	Vertical	PASS
6233.791	-43.84	-13.0	30.8	242.6	Vertical	PASS

(Plot K.6: HSPA+ 850MHz Channel = 4233, Test Antenna Vertical)



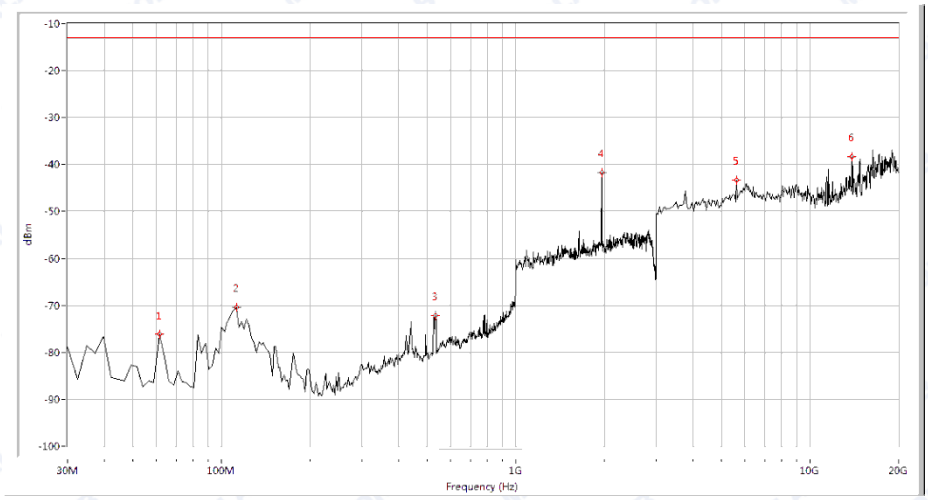
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-69.90	-13.0	56.9	281.7	Horizontal	PASS
320.274	-78.51	-13.0	65.5	305.2	Horizontal	PASS
441.222	-72.61	-13.0	59.6	83.0	Horizontal	PASS
1932.668	-44.62	-13.0	31.6	101.2	Horizontal	PASS
5543.641	-43.28	-13.0	30.3	239.0	Horizontal	PASS
17159.601	-36.77	-13.0	23.8	240.5	Horizontal	PASS

(Plot L.1: HSPA+ 1900 MHz Channel = 9262, Test Antenna Horizontal)



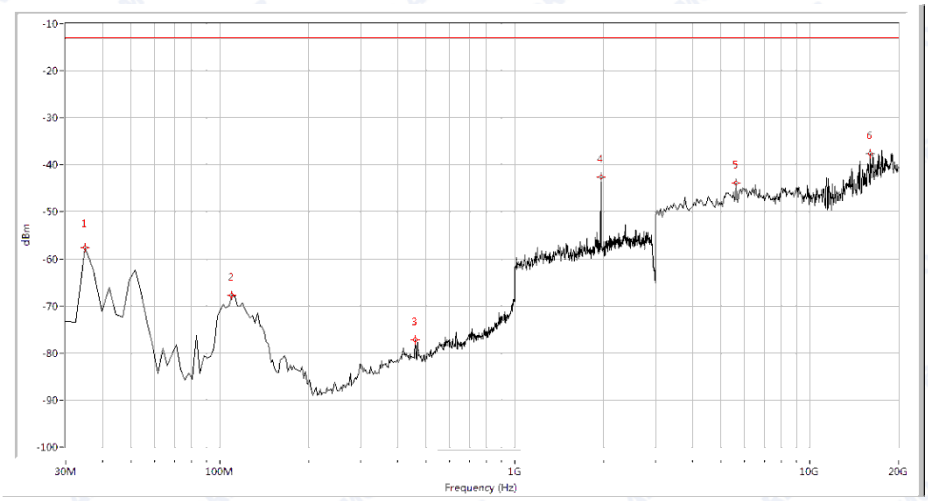
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
49.352	-68.34	-13.0	55.3	73.0	Vertical	PASS
109.825	-62.72	-13.0	49.7	341.6	Vertical	PASS
600.873	-75.86	-13.0	62.9	31.7	Vertical	PASS
1927.681	-42.54	-13.0	29.5	243.0	Vertical	PASS
5925.187	-44.62	-13.0	31.6	324.2	Vertical	PASS
17583.541	-36.99	-13.0	24.0	41.6	Vertical	PASS

(Plot L.2: HSPA+ 1900 MHz Channel = 9262, Test Antenna Vertical)



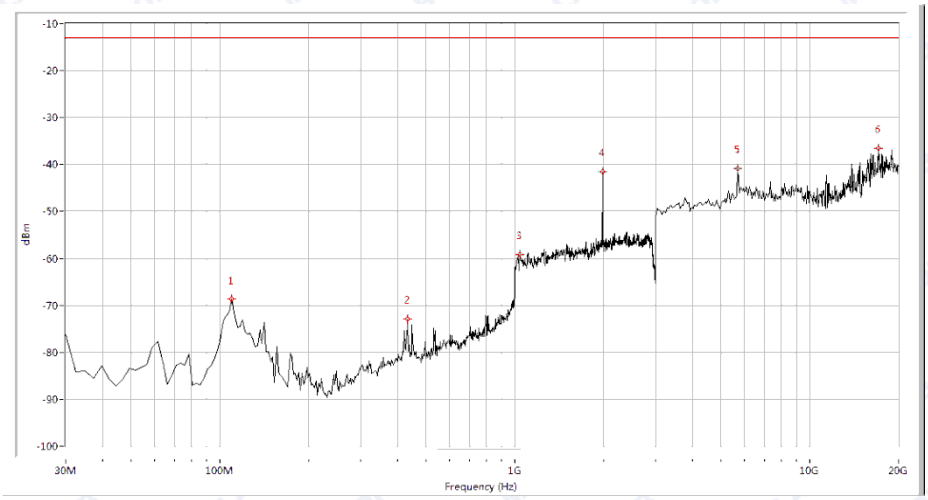
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
61.446	-76.04	-13.0	63.0	340.8	Horizontal	PASS
112.244	-70.35	-13.0	57.3	23.8	Horizontal	PASS
533.142	-72.21	-13.0	59.2	249.8	Horizontal	PASS
1957.606	-41.65	-13.0	28.7	158.2	Horizontal	PASS
5628.429	-43.32	-13.0	30.3	289.1	Horizontal	PASS
13895.262	-38.38	-13.0	25.4	317.1	Horizontal	PASS

(Plot L.3: HSPA+ 1900 MHz Channel = 9400, Test Antenna Horizontal)



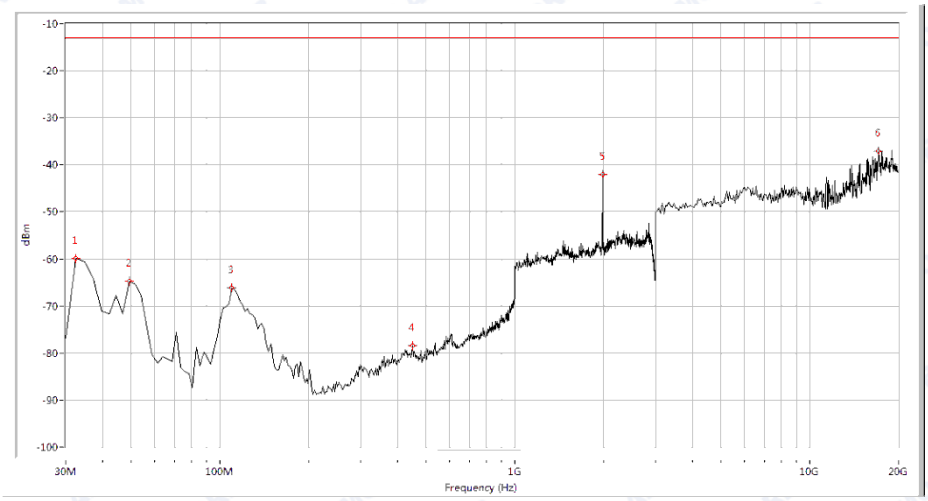
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-57.54	-13.0	44.5	24.2	Vertical	PASS
109.825	-67.82	-13.0	54.8	352.9	Vertical	PASS
458.155	-77.26	-13.0	64.3	20.9	Vertical	PASS
1957.606	-42.68	-13.0	29.7	128.8	Vertical	PASS
5628.429	-43.81	-13.0	30.8	291.0	Vertical	PASS
16057.357	-37.65	-13.0	24.6	360.0	Vertical	PASS

(Plot L.4: HSPA+ 1900 MHz Channel = 9400, Test Antenna Vertical)



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.69	-13.0	55.7	72.6	Horizontal	PASS
433.965	-72.85	-13.0	59.9	19.3	Horizontal	PASS
1039.900	-59.14	-13.0	46.1	358.3	Horizontal	PASS
1987.531	-41.56	-13.0	28.6	-0.0	Horizontal	PASS
5713.217	-40.82	-13.0	27.8	201.0	Horizontal	PASS
17074.813	-36.53	-13.0	23.5	360.0	Horizontal	PASS

(Plot L.5: HSPA+ 1900 MHz Channel = 9538, Test Antenna Horizontal)



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
32.419	-59.86	-13.0	46.9	24.2	Vertical	PASS
49.352	-64.77	-13.0	51.8	317.3	Vertical	PASS
109.825	-66.21	-13.0	53.2	53.6	Vertical	PASS
450.898	-78.45	-13.0	65.4	247.9	Vertical	PASS
1987.531	-42.02	-13.0	29.0	265.7	Vertical	PASS
17117.207	-37.05	-13.0	24.0	35.7	Vertical	PASS

(Plot L.6: HSPA+ 1900 MHz Channel = 9538, Test Antenna Vertical)

** END OF REPORT **