REPORT No.: SZ14120182W01

FCC TEST REPORT

APPLICANT	:	Hisense International Co.,Ltd
PRODUCT NAME	:	WCDMA Handset
MODEL NAME	:	HS-U688
TRADE NAME	:	Hisense
BRAND NAME	:	Hisense
FCC ID	:	2ADOBU688
STANDARD(S)	:	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
ISSUE DATE	:	2015-01-26

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	Jan 26, 2015	First edition

Test Report Declaration

Applicant	Hisense International Co.,Ltd
Applicant Address	Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
Manufacturer	Hisense Communications Co.,Ltd
Manufacturer Address	218,Qianwangang Road,Qingdao Economic&Technological Development Zone,Qingdao
Product Name	WCDMA Handset
Model Name	HS-U688
Brand Name	Hisense
HW Version	V2.00
SW Version	W1001.4.01.03.US00
Test Standards	47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
Test Date	2015-01-08 to 2015-01-23
Test Result	PASS

Tested by : Liu Zhisen

Liu Zhisen

Reviewed by : Huang Pulong

Huang Pulong

Approved by : Zeng Dexin

Zeng Dexin

1. GENERAL INFORMATION

1.1 EUT Description

Frequency Range ..... :	GSM 850MHz: Tx: 824.20 - 848.80MHz (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA 850MHz Tx: 826.4 - 846.6MHz (at intervals of 200kHz); Rx: 871.4 - 891.6MHz (at intervals of 200kHz) WCDMA 1900MHz Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz); Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
Modulation Type..... :	GSM,GPRS Mode with GMSK Modulation EDGE Mode with 8PSK Modulation WCDMA Mode with QPSK Modulation HSDPA Mode with QPSK Modulation HSUPA Mode with QPSK Modulation HSPA+ Mode with QPSK Modulation
Multislot Class..... :	GPRS: Multislot Class 33,EGPRS: Multislot Class 33
Antenna Type..... :	PIFA Antenna
Emission Designators ..... :	GSM 850:248KGXW,GSM 1900:248KGXW EGPRS850:249KG7W, EGPRS1900:247KG7W, WCDMA 850:4M17F9W ,WCDMA1900:4M19F9W

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2*(n-128), 128<=n<=251; the lowest, middle, highest channel numbers (ARFCHs) used and tested in this report are separately 128 (824.2MHz), 190 (836.6MHz) and 251 (848.8MHz).

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula F(n)=1850.2+0.2*(n-512), 512<=n<=810; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The transmitter (Tx) frequency arrangement of the WCDMA 850MHz band used by the EUT can be represented with the formula F(n)=826.4+0.2*(n-4132), 4132<=n<=4233; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 4132 (826.4MHz), 4175(835MHz) and 4233 (846.6MHz).

Note 4: The transmitter (Tx) frequency arrangement of the WCDMA 1900MHz band used by the EUT can

be represented with the formula F(n)=1852.4+0.2*(n-9262), 9262<=n<=9538; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

Note 5: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 2, Part 22 and Part 24 for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-13 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-13 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-13 Edition)	Personal Communications Services

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	2.1046	Conducted RF Output Power	PASS
2.	24.232(d)	Peak to average radio	PASS
2	2.1049,22.917 24.238	99% Occupied Bandwidth	PASS
3	2.1055,22.355 24.235	Frequency Stability	PASS
4	2.1051,2.1057 22.917,24.238,	Conducted Out of Band Emissions	PASS
5	2.1051,2.1057 22.917,24.238	Band Edge	PASS
6	22.913,24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
7	2.1053,2.1057 22.917,24.238	Radiated Out of Band Emissions	PASS

NOTE：Measurement method according to TIA/EIA 603.D-2010

1.3 Facilities and Accreditations

1.3.1 Facilities

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, No.8 LongChang Road,Block 67, BaoAn District, ShenZhen, GuangDong Province,P. R. China 518101. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 695796.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

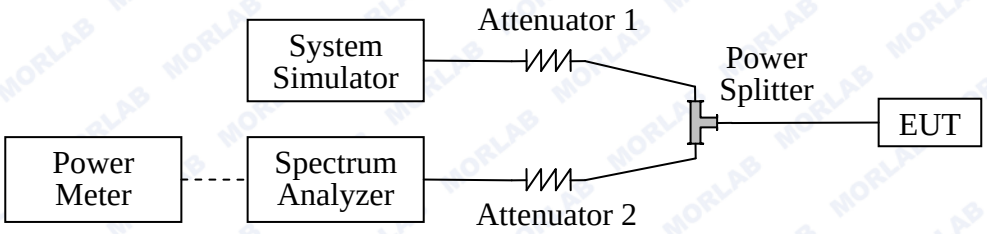
2.1 Conducted RF Output Power

2.1.1 Requirement

According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

2.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the 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.

The Power Meter was just used for the Conducted RF Output Power test of WCDMA Model.

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
Power Meter	Agilent	E4418B	GB43318055	2014.02.26	2015.02.25
Power Sensor	Agilent	8482A	MY41091706	2014.02.26	2015.02.25
Power Splitter	Weinschel	1506A	NW521	2014.02.26	2015.02.25
Attenuator 1	Resnet	20dB	(n.a.)	2014.02.26	2015.02.25
Attenuator 2	Resnet	3dB	(n.a.)	2014.02.26	2015.02.25

2.1.3 Test Results

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

1. GSM Model Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 850MHz	128	824.2	32.72	Plot A1 to A3	35	PASS
	190	836.6	32.84			PASS
	251	848.8	32.79			PASS
GSM 1900MHz	512	1850.2	29.19	Plot B1 to B3	32	PASS
	661	1880.0	29.33			PASS
	810	1909.8	29.24			PASS
GPRS 850MHz	128	824.2	20.09	Plot C1 to C3 Note 1	35	PASS
	190	836.6	20.34			PASS
	251	848.8	20.43			PASS
GPRS 1900MHz	512	1850.2	22.80	Plot D1 to D3 Note 1	32	PASS
	661	1880.0	22.80			PASS
	810	1909.8	23.01			PASS
EGPRS 850MHz	128	824.2	20.32	Plot E1 to E3 Note 1	35	PASS
	190	836.6	20.48			PASS
	251	848.8	20.55			PASS
EGPRS 1900MHz	512	1850.2	22.76	Plot F1 to F3 Note 1	32	PASS
	661	1880.0	22.95			PASS
	810	1909.8	23.11			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:

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	23.36	23.26	23.22	22.44	22.50	22.14
HSDPA	1	23.30	23.19	23.32	22.53	22.55	22.00
	2	23.28	23.18	23.30	22.51	22.54	22.01
	3	22.79	22.68	22.81	22.01	22.05	21.51
	4	22.78	22.69	22.80	22.02	22.05	21.50
HSUPA	1	23.30	23.22	23.23	22.45	22.62	22.16
	2	21.30	21.22	21.23	20.44	20.61	20.15
	3	22.31	22.20	22.22	21.45	21.62	21.15
	4	21.29	21.21	21.22	20.45	20.62	20.14
	5	23.29	23.21	23.22	22.16	22.60	22.15
HSPA+	1	23.36	23.23	23.21	22.49	22.64	22.14
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA /HSPA+ was tested by power meter.						

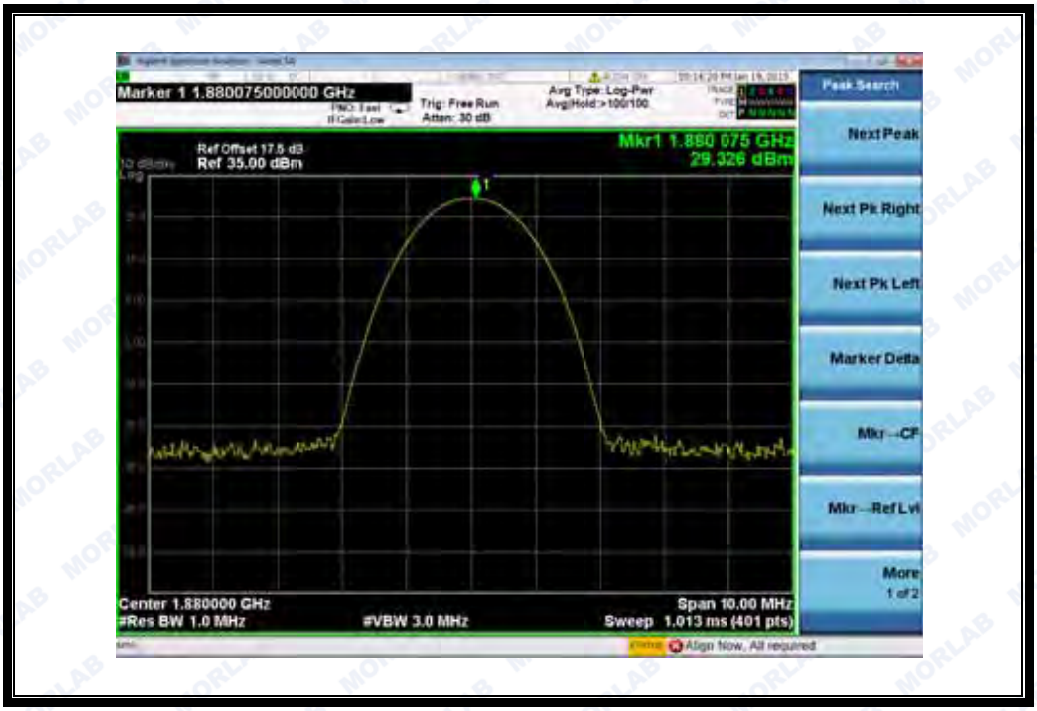
3. GSM Model Test Plots:

(Plot A1:GSM 850MHz Channel = 128)

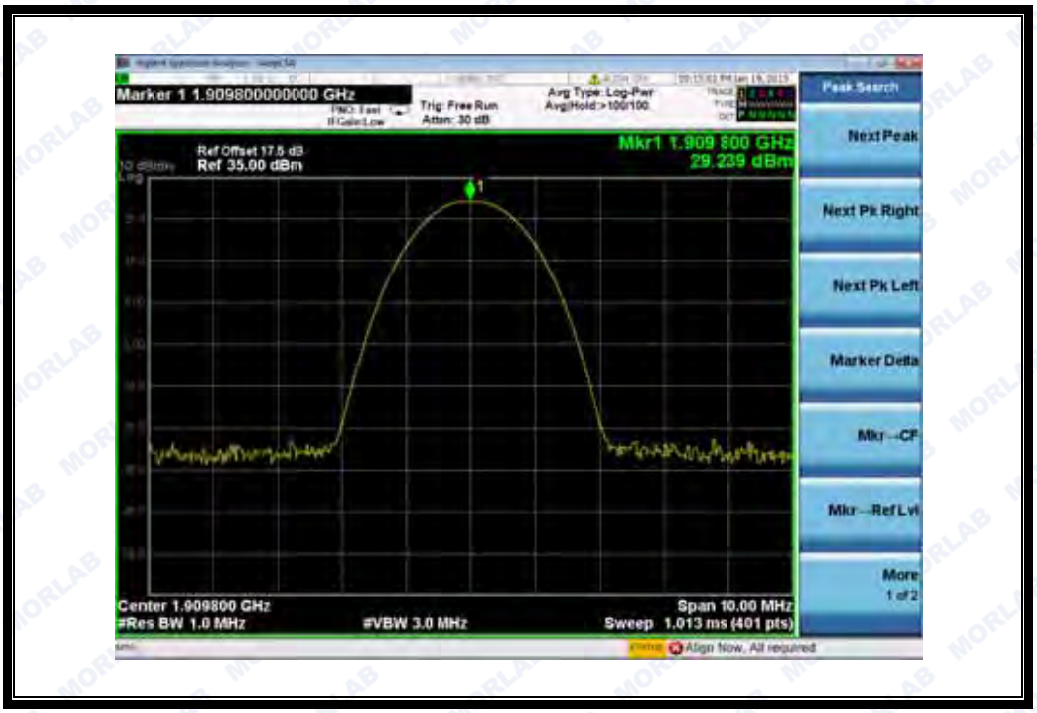
(Plot A2:GSM 850MHz Channel = 190)

(Plot A3:GSM 850MHz Channel = 251)

(Plot B1: GSM 1900MHz Channel = 512)

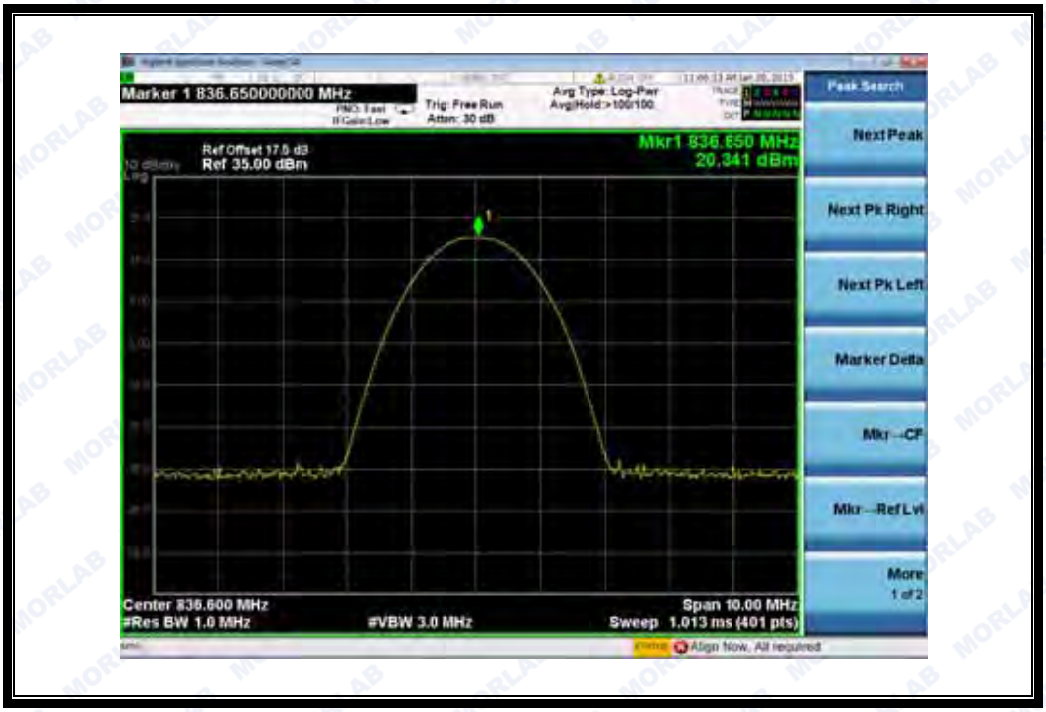


(Plot B2: GSM 1900MHz Channel = 661)

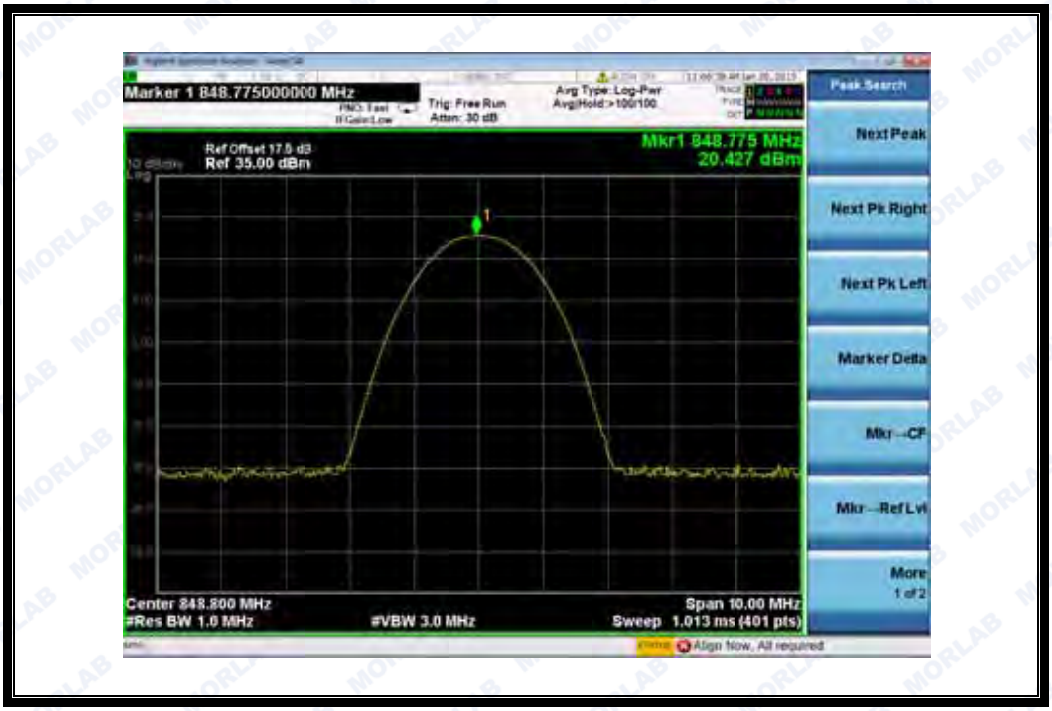


(Plot B3: GSM 1900Hz Channel = 810)

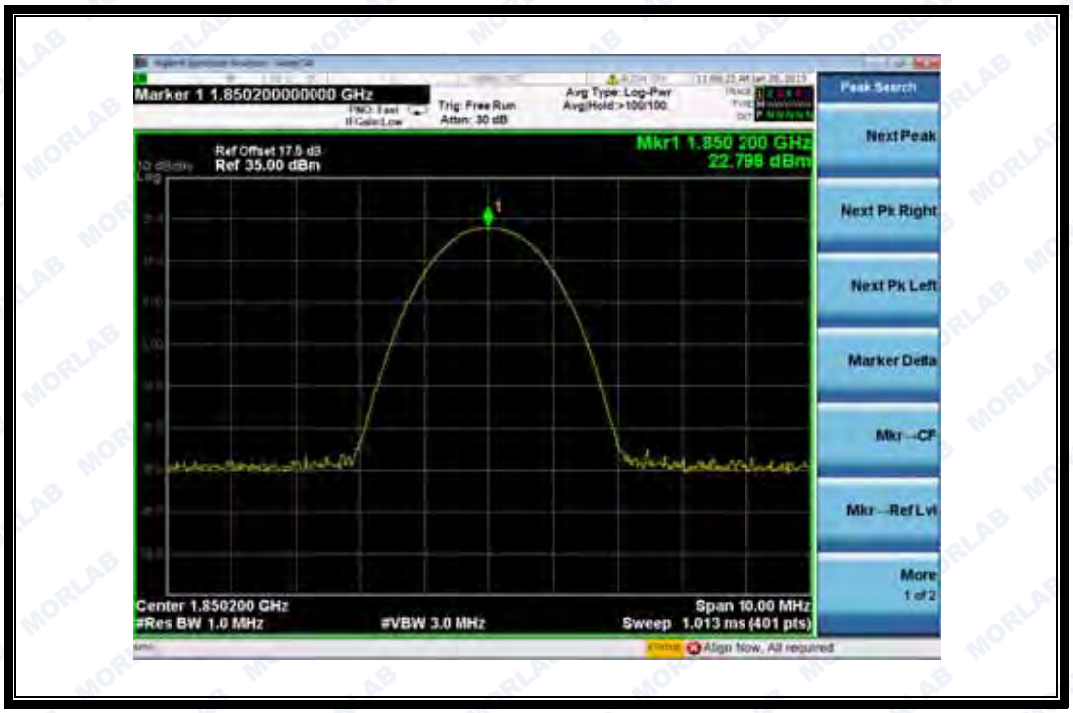
(Plot C 1: GPRS 850MHz Channel = 128)



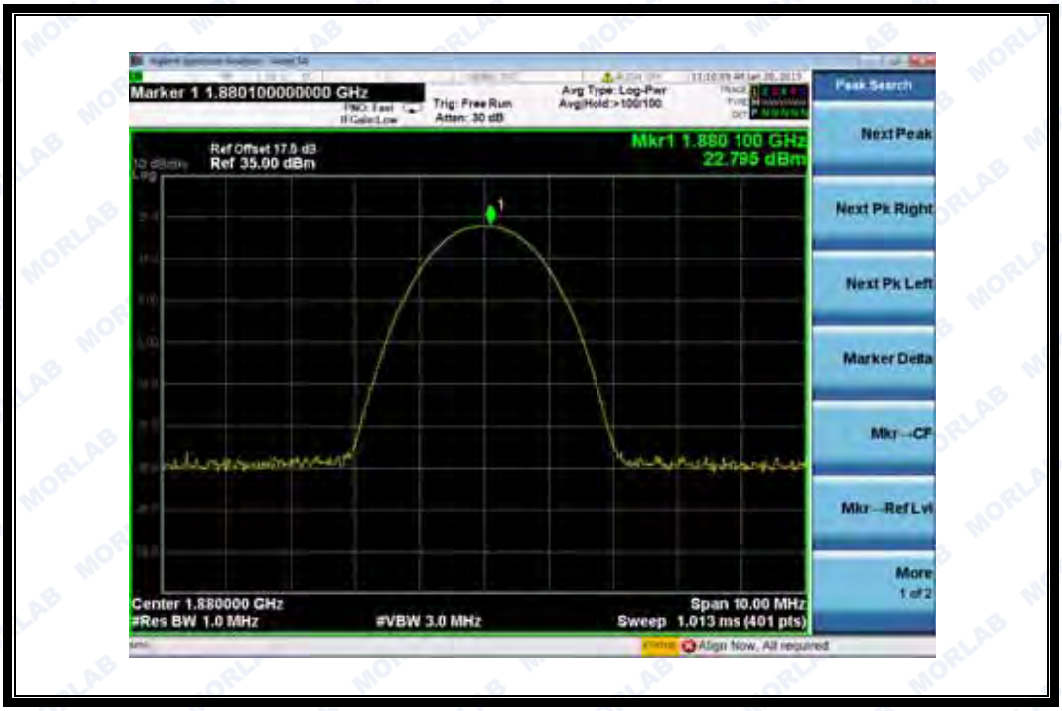
(Plot C 2: GPRS 850MHz Channel = 190)



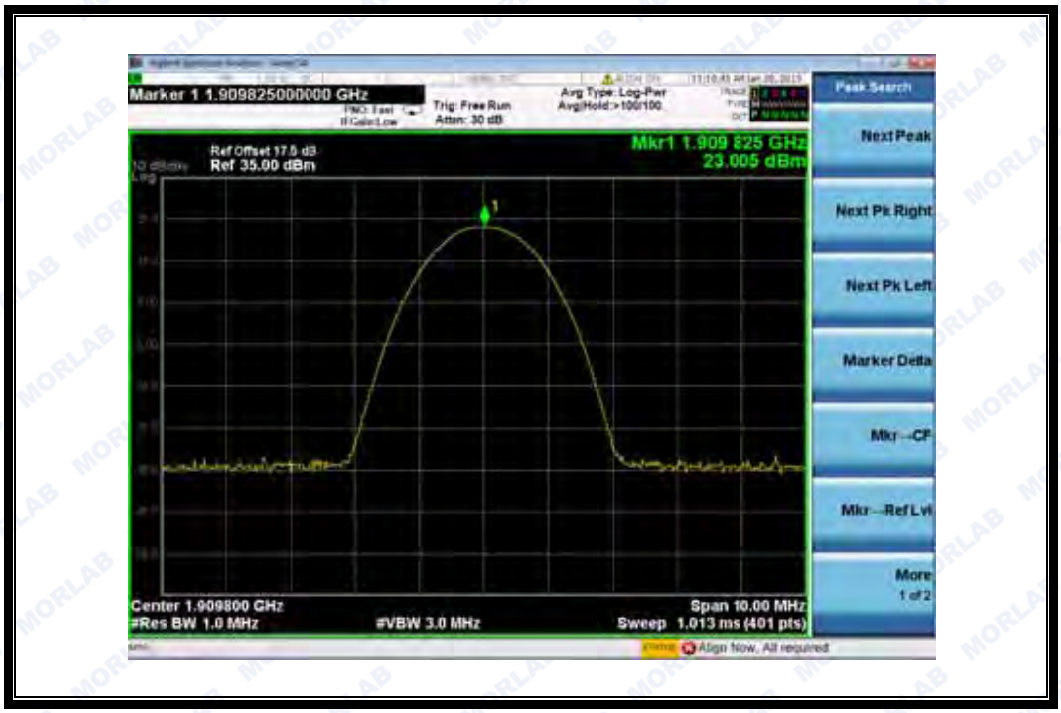
(Plot C 3: GPRS 850MHz Channel = 251)



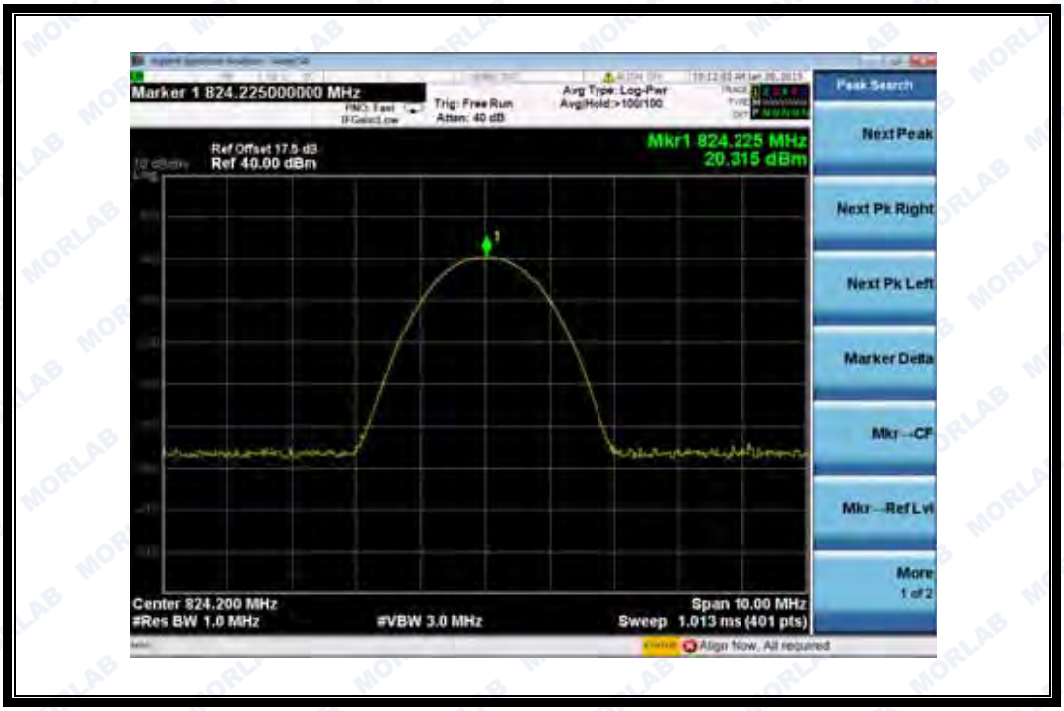
(Plot D 1: GPRS 1900MHz Channel = 512)



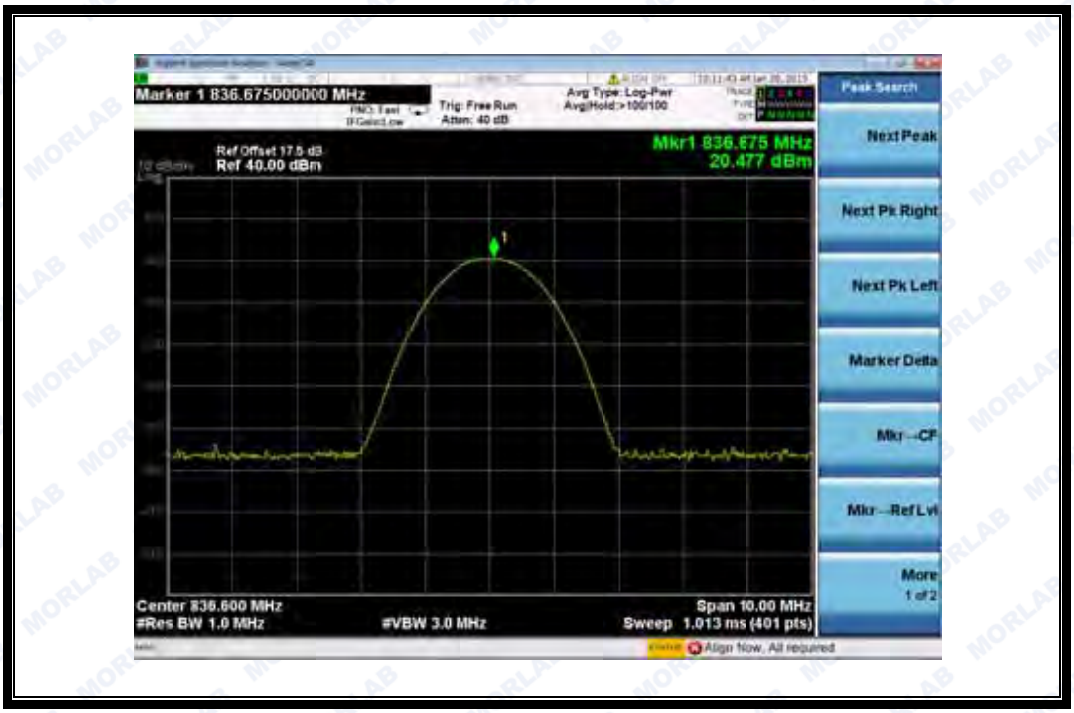
(Plot D 2: GPRS 1900MHz Channel = 661)



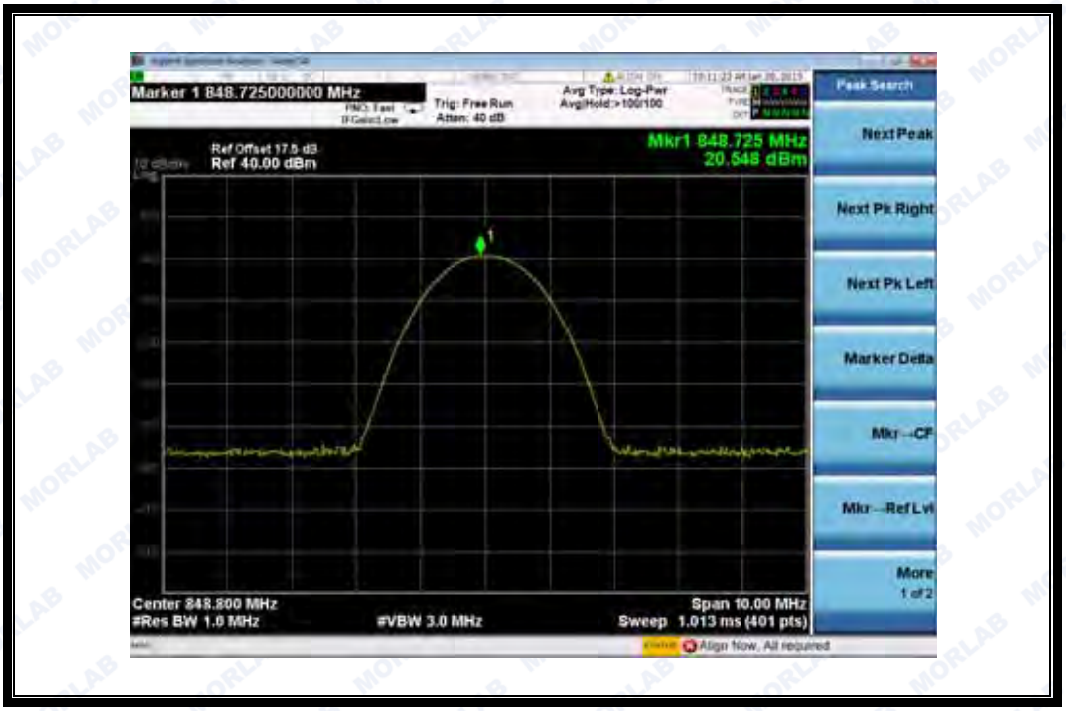
(Plot D 3: GPRS 1900MHz Channel = 810)



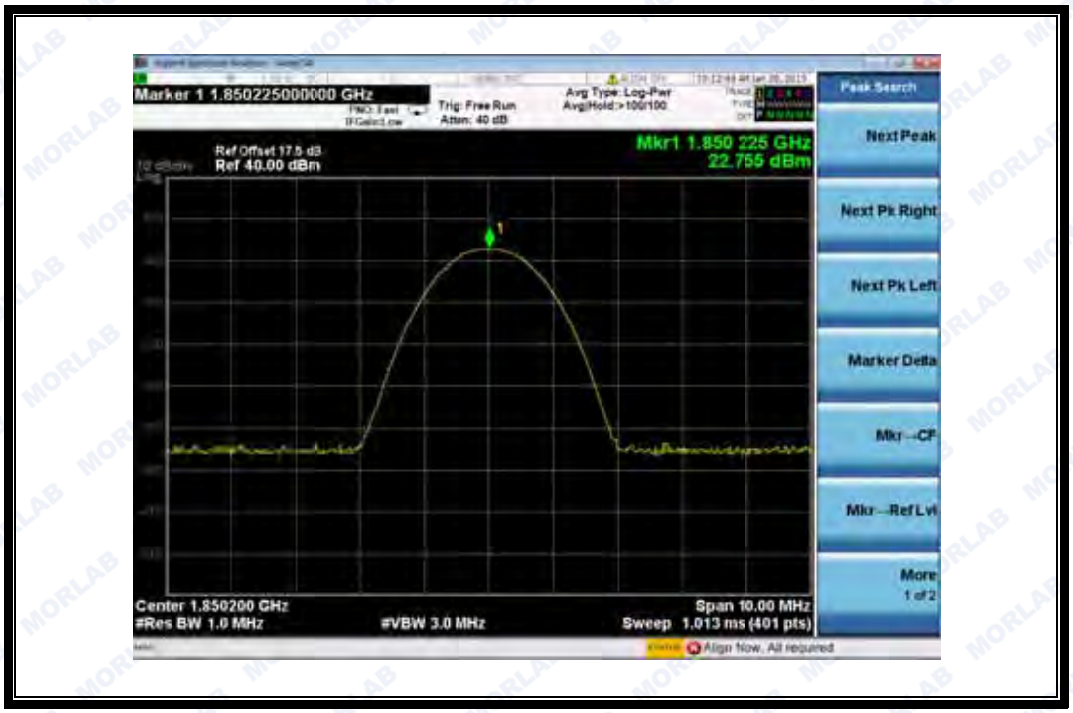
(Plot E1: EGPRS 850MHz Channel = 128)



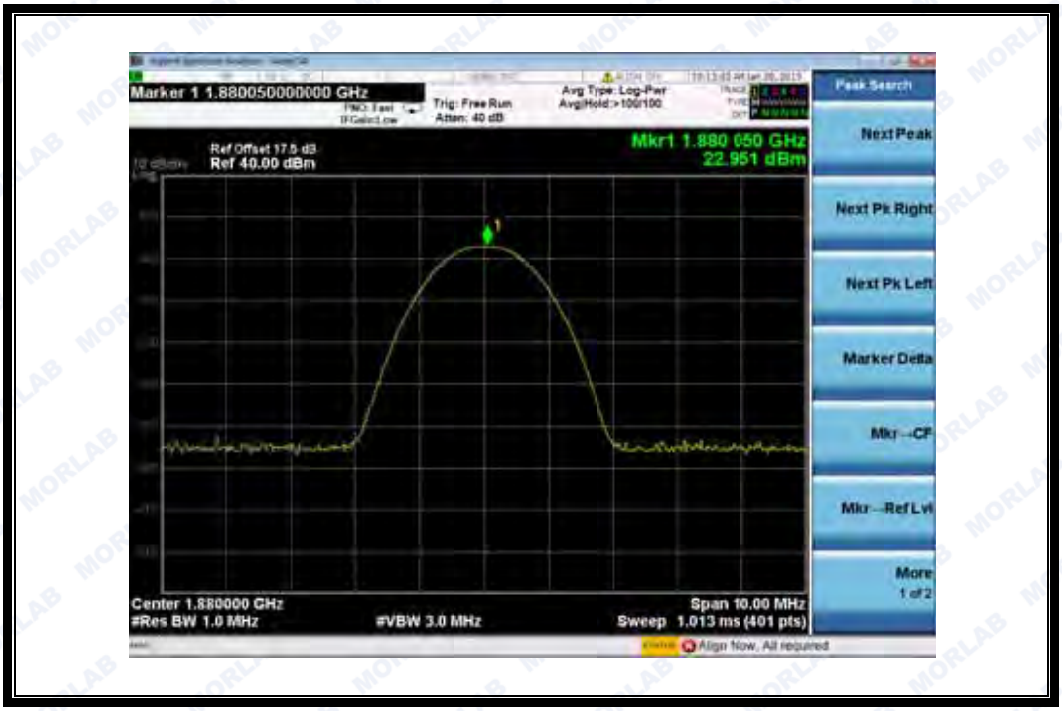
(Plot E2: EGPRS 850MHz Channel = 190)



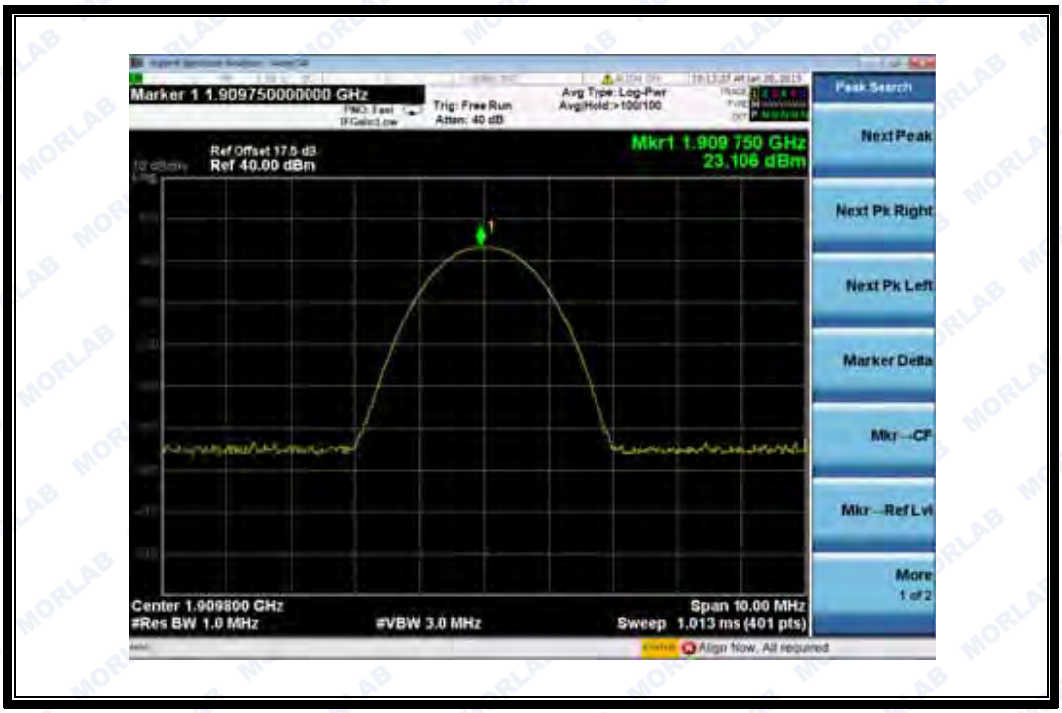
(Plot E3: EGPRS 850MHz Channel = 251)



(Plot F1:EGPRS 1900MHz Channel = 512)



(Plot F2:EGPRS 1900MHz Channel = 661)



(Plot F3:EGPRS 1900Hz Channel = 810)

2.2 Peak to Average Radio

2.2.1 Definition

According to FCC section 2.1049 and FCC 24.232(d) the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

2.2.2 Test Description

See section 2.1.2 of this report.

2.2.3 Test Verdict

Here the lowest, middle and highest channels are selected to perform testing to verify the peak-to-average ratio.

Test procedures:

A .For GSM/EGPRS operating mode:

a. Set RBW=1MHz, VBW=1MHz, peak detector in spectrum analyzer.

b. Set EUT in maximum output power, and triggered the bust signal.

c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average radio.

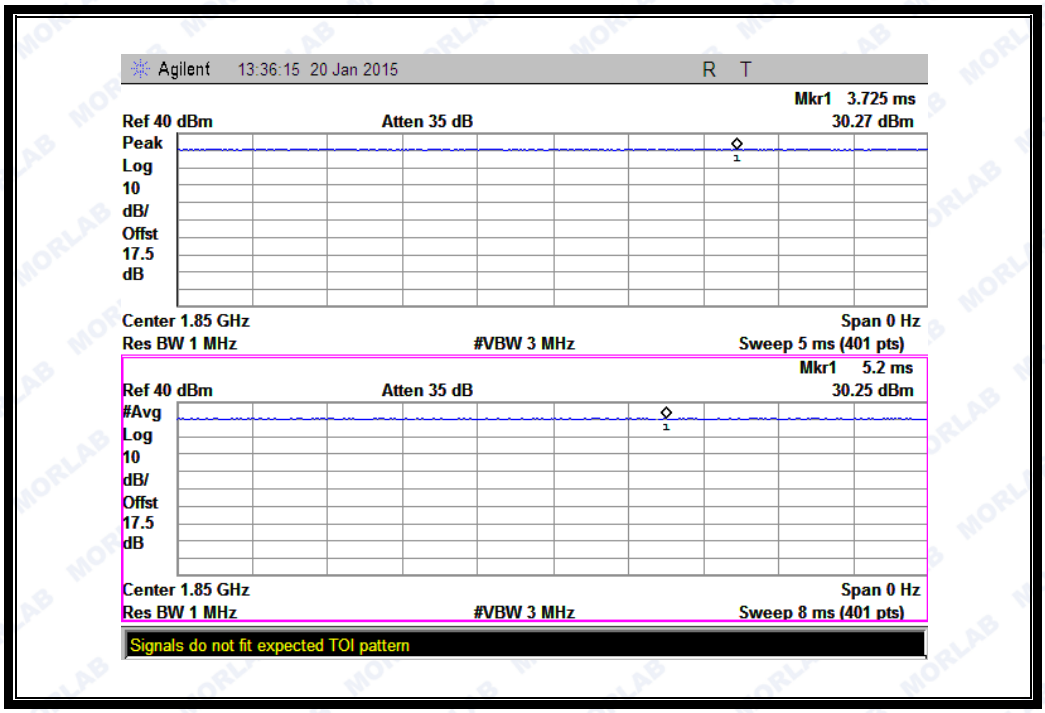
B. For UMTS operating mode:

a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.

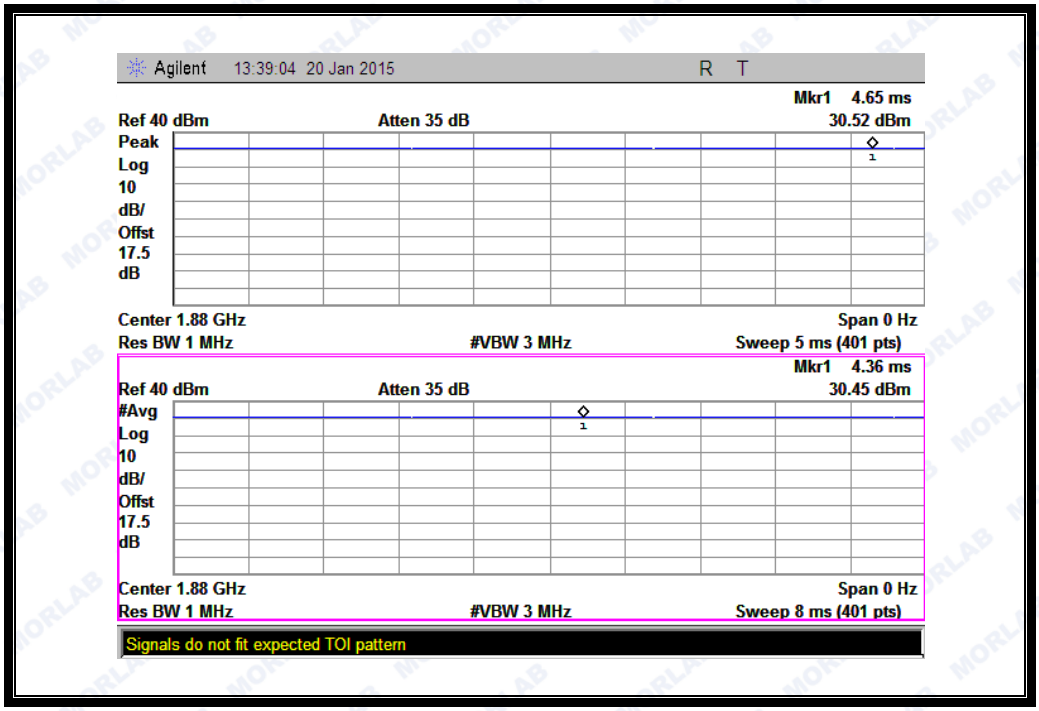
b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

1. Test Verdict:

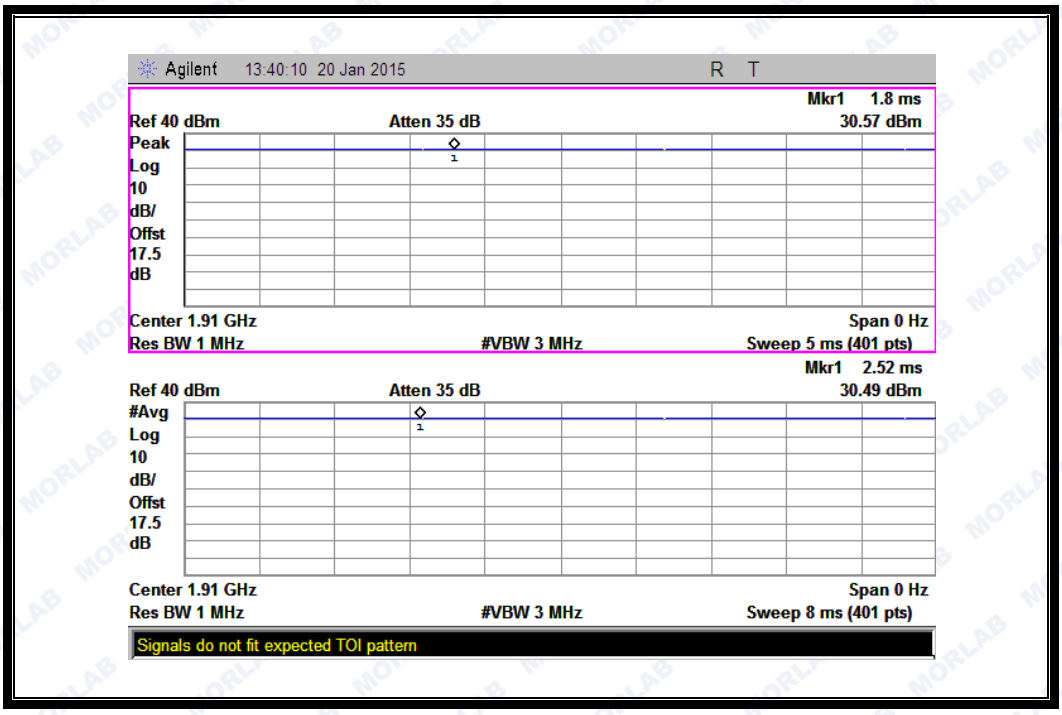
Band	Channel	Frequency (MHz)	Peak to Average radio		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 1900MHz	512	1850.2	0.02	Plot A1 to A3	13	PASS
	661	1880.0	0.07			PASS
	810	1909.8	0.08			PASS
EGPRS 1900MHz	512	1850.2	0.04	Plot B1 to B3	13	PASS
	661	1880.0	0.06			PASS
	810	1909.8	0.04			PASS
WCDMA 1900MHz	9262	1852.4	2.61	Plot C1 toC3	13	PASS
	9400	1880	2.72			PASS
	9538	1907.6	2.59			PASS



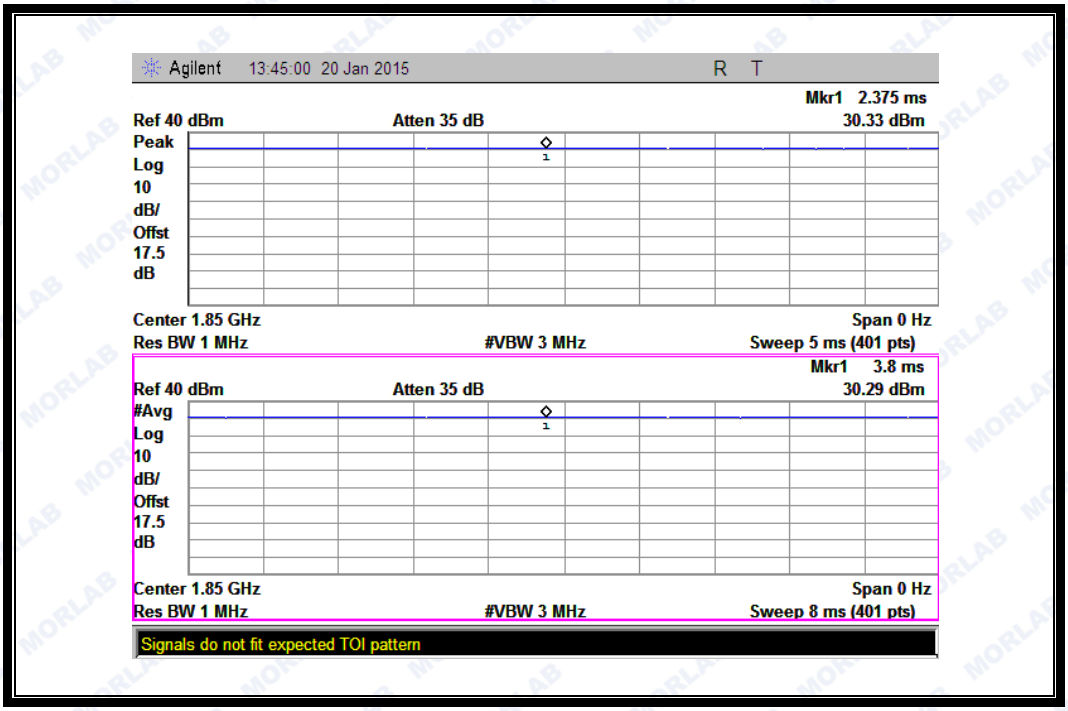
(Plot A1:GSM 1900 MHz Channel = 512)



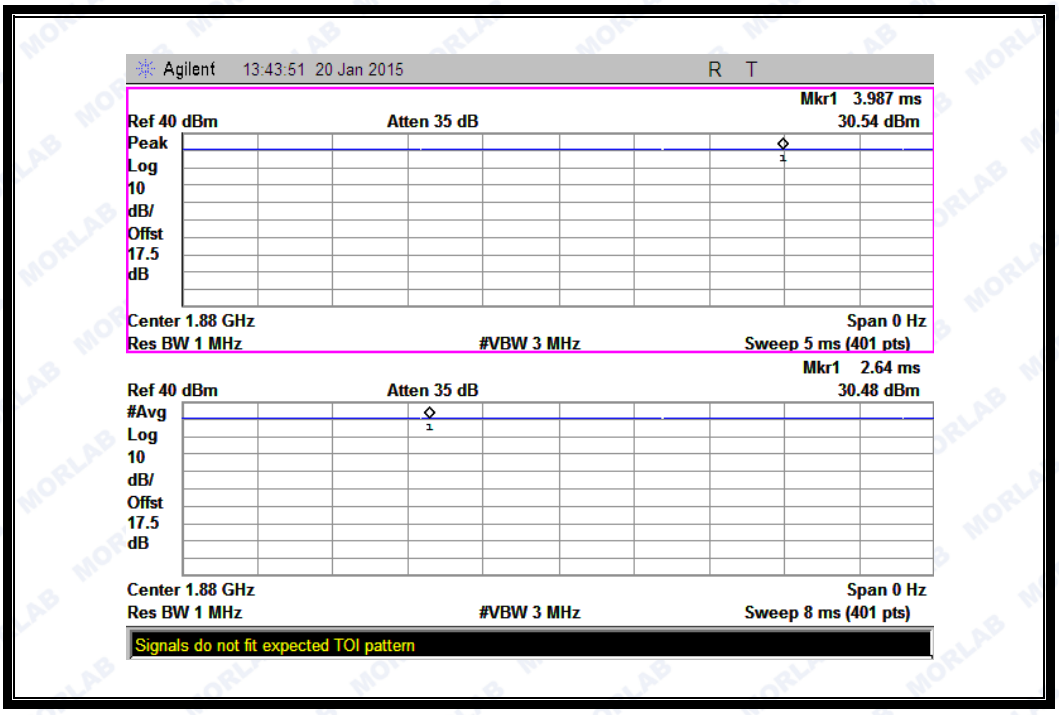
(Plot A2:GSM 1900 MHz Channel = 661)



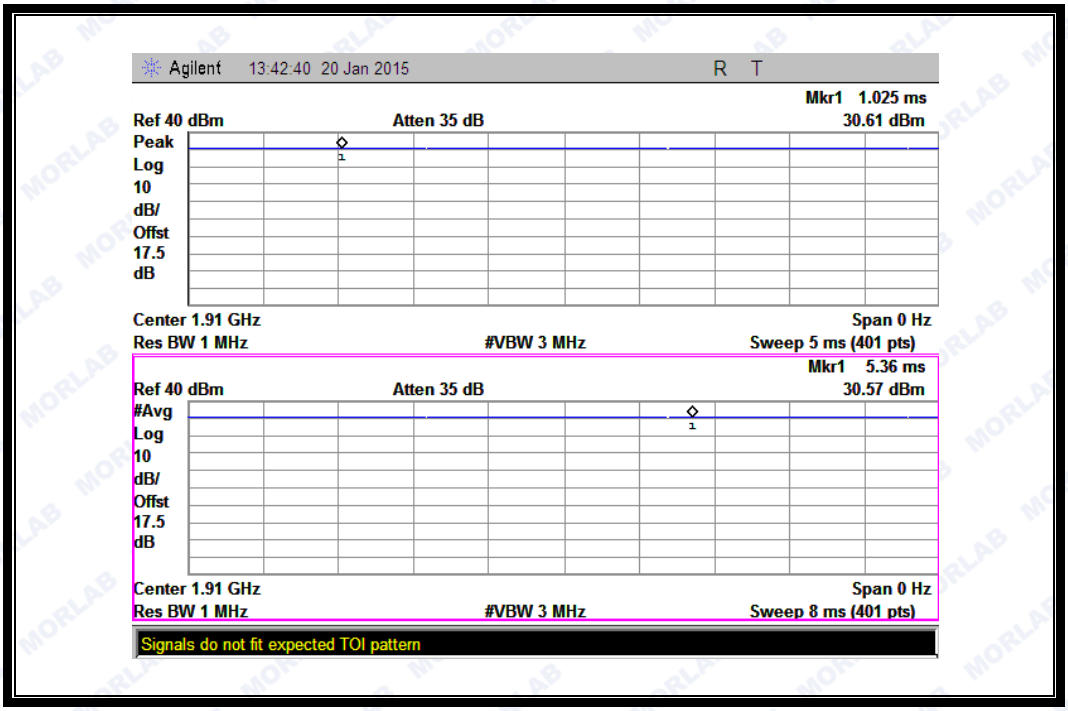
(Plot A3:GSM 1900MHz Channel = 810)



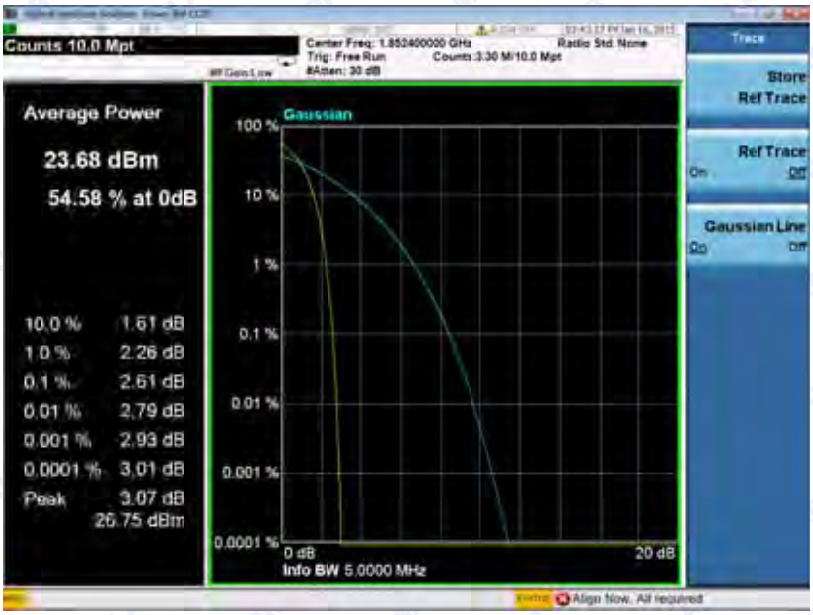
(Plot B1: EGPRS 1900MHz Channel = 512)



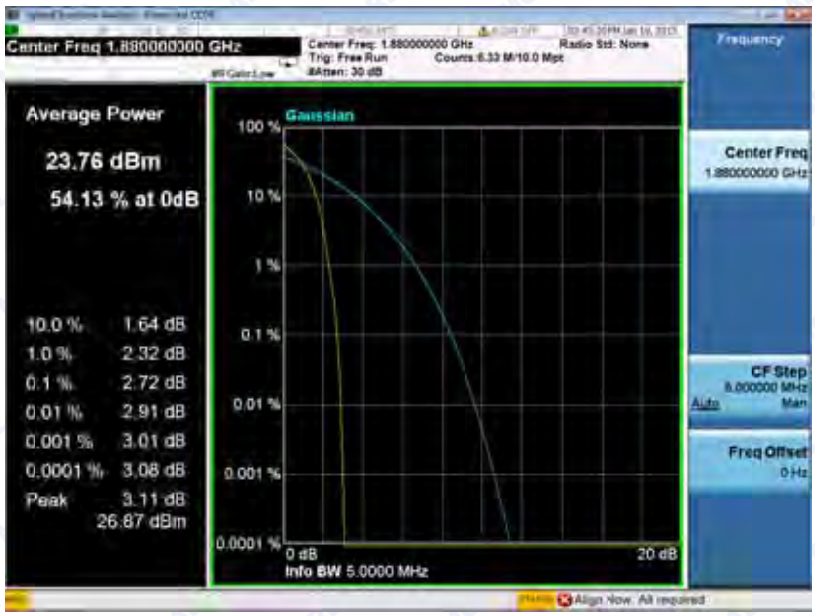
(Plot B2: EGPRS 1900MHz Channel = 661)



(Plot B3: EGPRS 1900MHz Channel = 810)

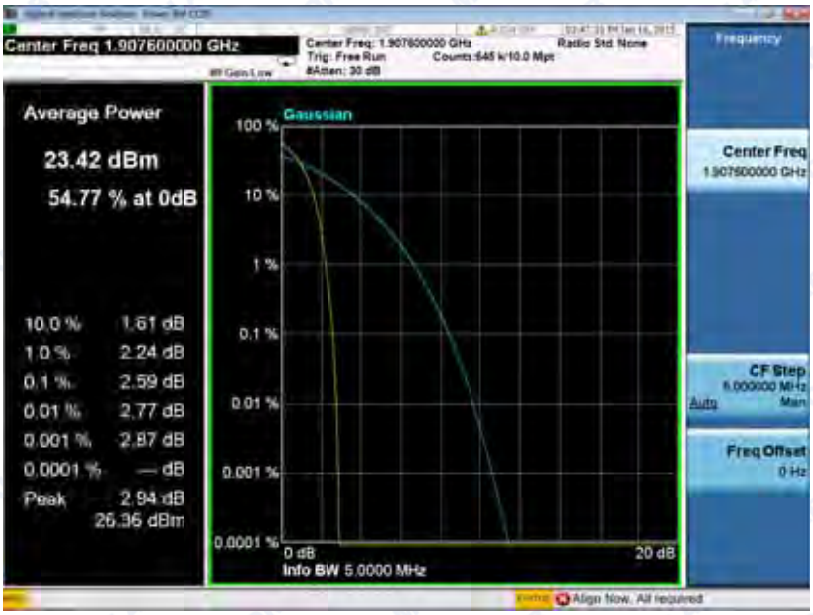


(Plot C1: WCDMA 1900MHz Channel = 9262)



8

(Plot C2: WCDMA 1900MHz Channel = 9400)



(Plot C3: WCDMA 1900MHz Channel = 9538)

2.3 99% Occupied Bandwidth

2.3.1 Definition

According to FCC section 2.1049 and FCC § 22.917 &24.238 the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,

2.3.2 Test Description

See section 2.1.2 of this report.

2.3.3 Test Verdict

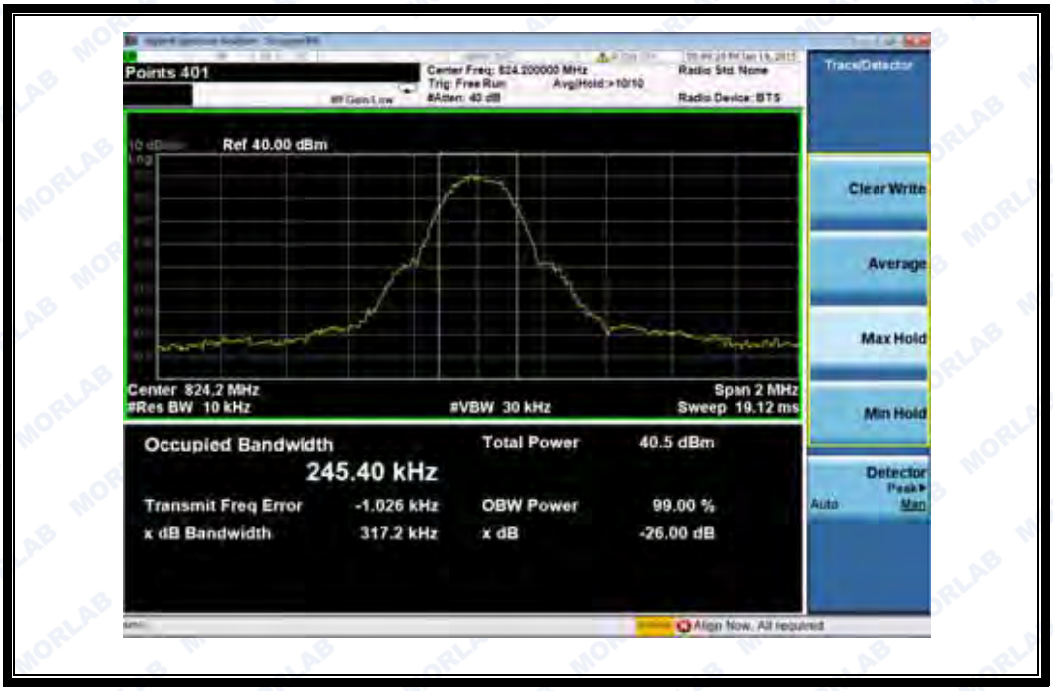
Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

2. Test Verdict:

Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
EDGE 850MHz	128	824.2	317.2 KHz	245.40 KHz	Plot A
	190	836.6	320.9 KHz	241.84 KHz	Plot B
	251	848.8	322.2 KHz	248.93 KHz	Plot C
EDGE 1900MHz	512	1850.2	320.3 KHz	245.52 KHz	Plot D
	661	1880.0	316.6 KHz	246.03 KHz	Plot E
	810	1909.8	317.6 KHz	246.76 KHz	Plot F
WCDMA 850MHz	4132	826.4	4.710 MHz	4.1645 MHz	Plot G
	4175	835	4.727 MHz	4.1717 MHz	Plot H
	4233	846.6	4.719 MHz	4.1693 MHz	Plot I
WCDMA 1900MHz	9262	1852.4	4.741 MHz	4.1697 MHz	Plot J
	9400	1880	4.736 MHz	4.1613 MHz	Plot K
	9538	1907.6	4.749 MHz	4.1799 MHz	Plot L
HSDPA 850MHz	4132	826.4	4.702 MHz	4.1647 MHz	Plot M
	4175	835	4.732 MHz	4.1676 MHz	Plot N
	4233	846.6	4.723 MHz	4.1675 MHz	Plot O
HSDPA 1900MHz	9262	1852.4	4.749 MHz	4.1770 MHz	Plot P
	9400	1880	4.727 MHz	4.1781 MHz	Plot Q
	9538	1907.6	4.744 MHz	4.1840 MHz	Plot R
HSUPA 850MHz	4132	826.4	4.702 MHz	4.1647 MHz	Plot S
	4175	835	4.732 MHz	4.1676 MHz	Plot T
	4233	846.6	4.723 MHz	4.1675 MHz	Plot U
HSUPA 1900MHz	9262	1852.4	4.749 MHz	4.1770 MHz	Plot V

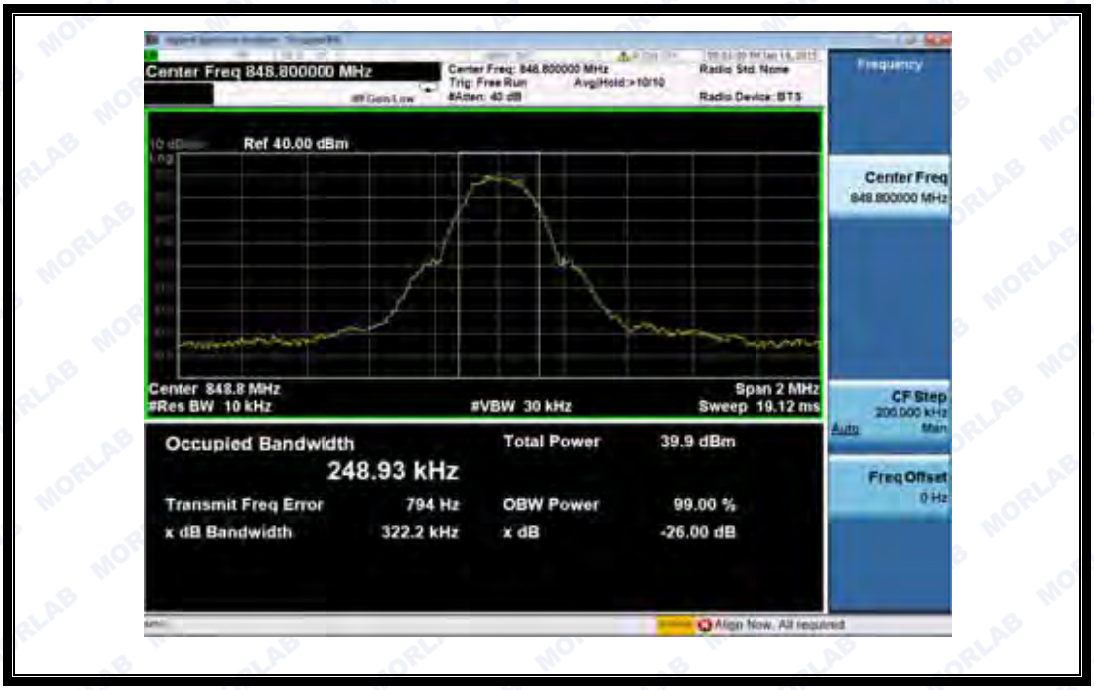
Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
	9400	1880	4.727 MHz	4.1781 MHz	Plot W
	9538	1907.6	4.744 MHz	4.1840 MHz	Plot X
HSPA+ 850MHz	4132	826.4	4.707 MHz	4.1669 MHz	Plot Y
	4175	835	4.723 MHz	4.1685 MHz	Plot Z
	4233	846.6	4.734 MHz	4.1626 MHz	Plot A1
HSPA+ 1900MHz	9262	1852.4	4.743 MHz	4.1722 MHz	Plot B1
	9400	1880	4.732 MHz	4.1771 MHz	Plot C1
	9538	1907.6	4.765 MHz	4.1859 MHz	Plot D1
GSM 850MHz	128	824.2	318.0 KHz	243.40 KHz	Plot E1
	190	836.6	317.6 KHz	244.63 KHz	Plot F1
	251	848.8	314.0 KHz	243.76 KHz	Plot G1
GSM 1900MHz	512	1850.2	312.7 KHz	244.39 KHz	Plot H1
	661	1880.0	313.8 KHz	240.24 KHz	Plot I1
	810	1909.8	319.1 KHz	243.24 KHz	Plot J2
GPRS 850MHz	128	824.2	321.6 KHz	245.38 KHz	Plot K1
	190	836.6	317.6 KHz	245.99 KHz	Plot L1
	251	848.8	315.8 KHz	247.62 KHz	Plot M1
GPRS 1900MHz	512	1850.2	325.4 KHz	247.66 KHz	Plot N1
	661	1880.0	320.7 KHz	244.12 KHz	Plot O1
	810	1909.8	318.0 KHz	242.42 KHz	Plot P1

3. Test Plots:

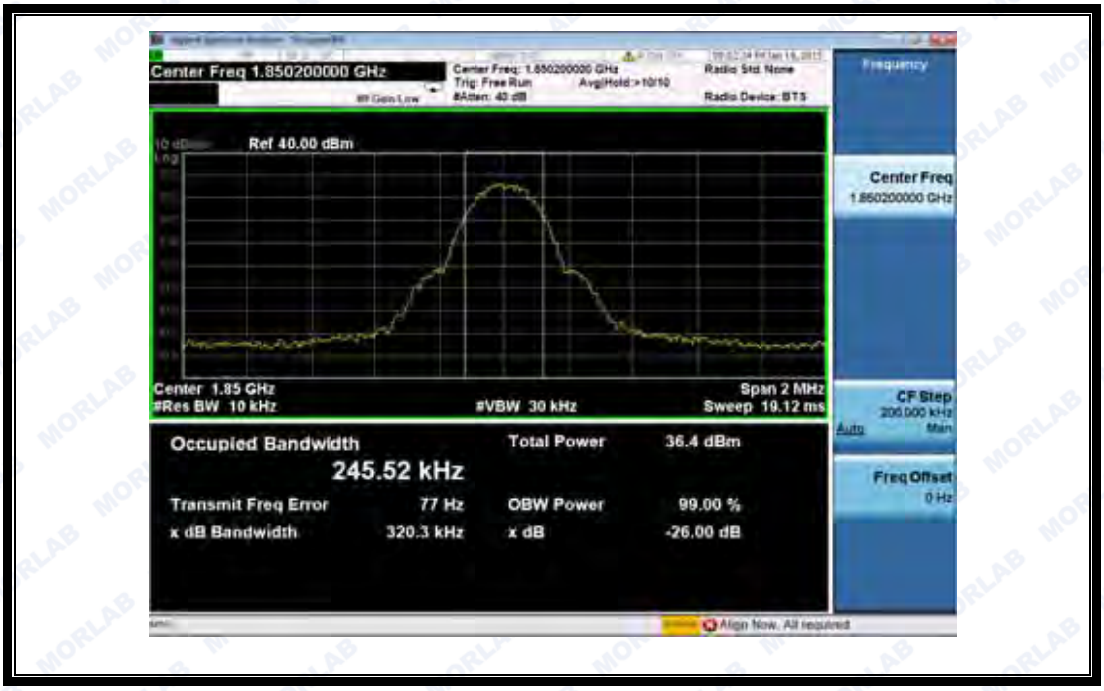


(Plot A: EGPRS 850MHz Channel = 128)

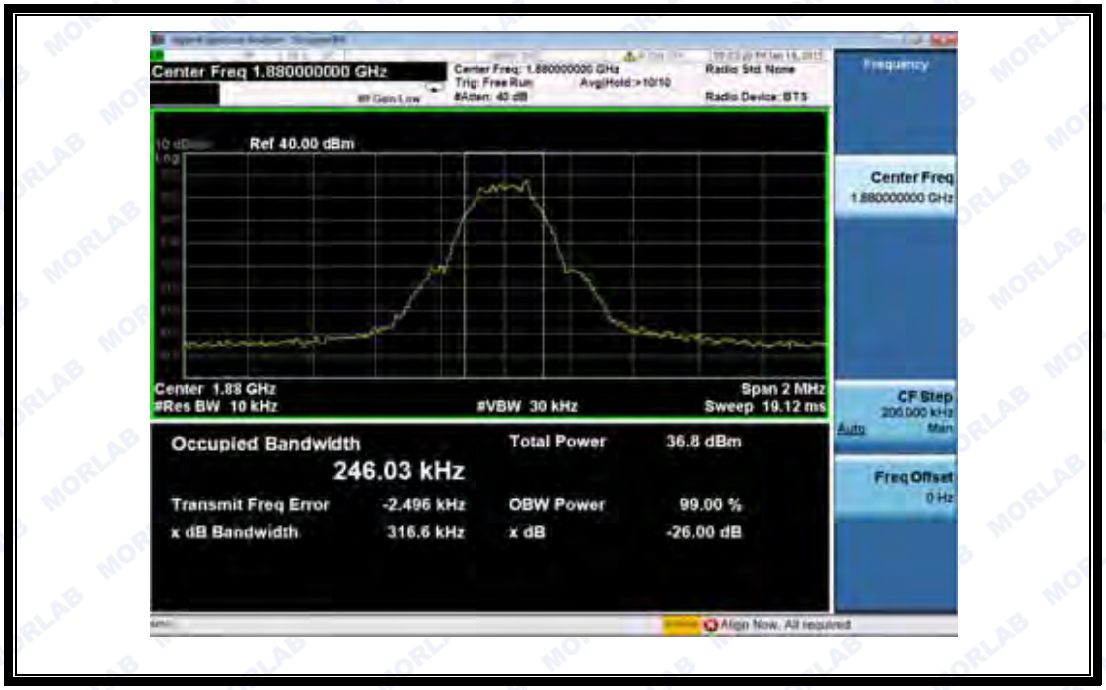
(Plot B: EGPRS 850MHz Channel = 190)



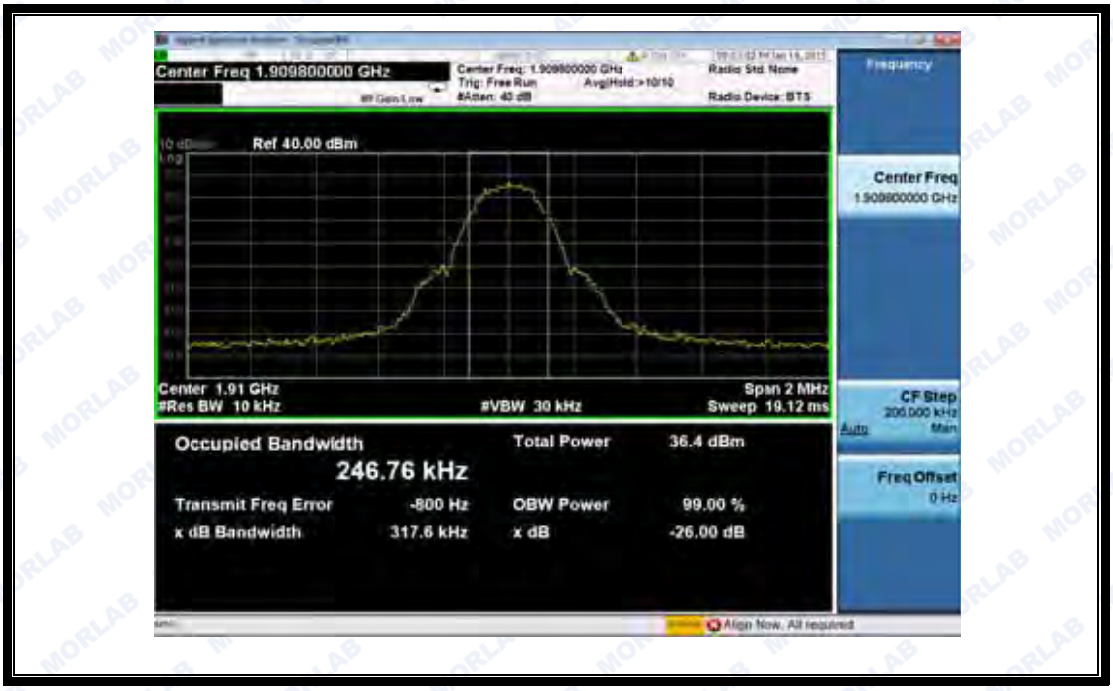
(Plot C: EGPRS 850MHz Channel = 251)



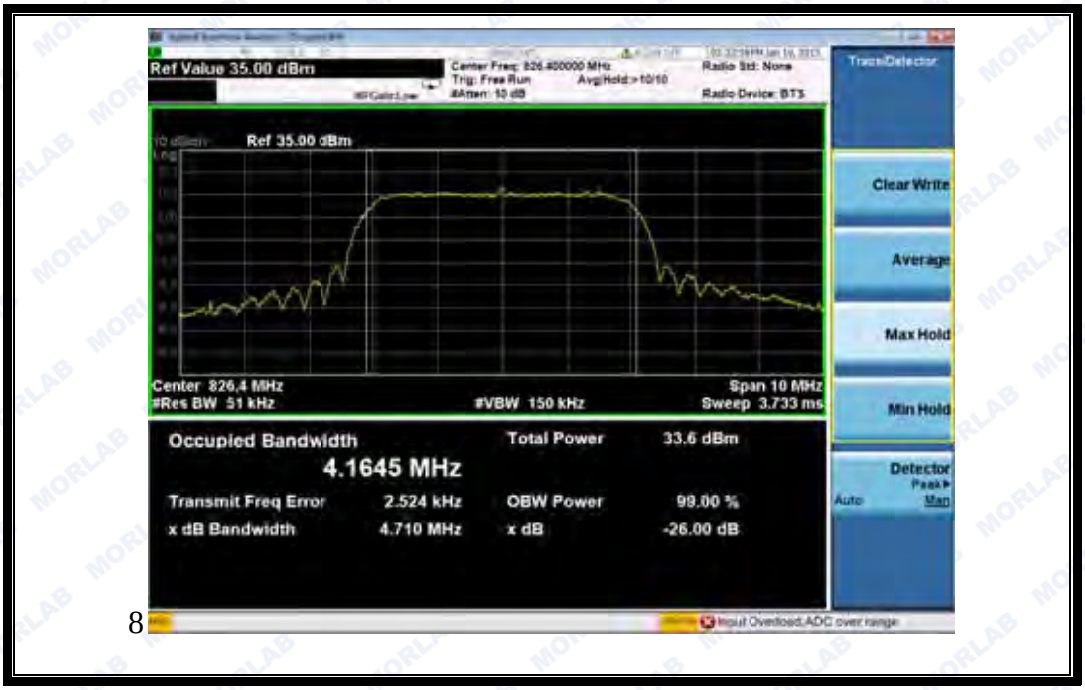
(Plot D: EGPRS1900MHz Channel = 512)



(Plot E: EGPRS1900MHz Channel = 661)

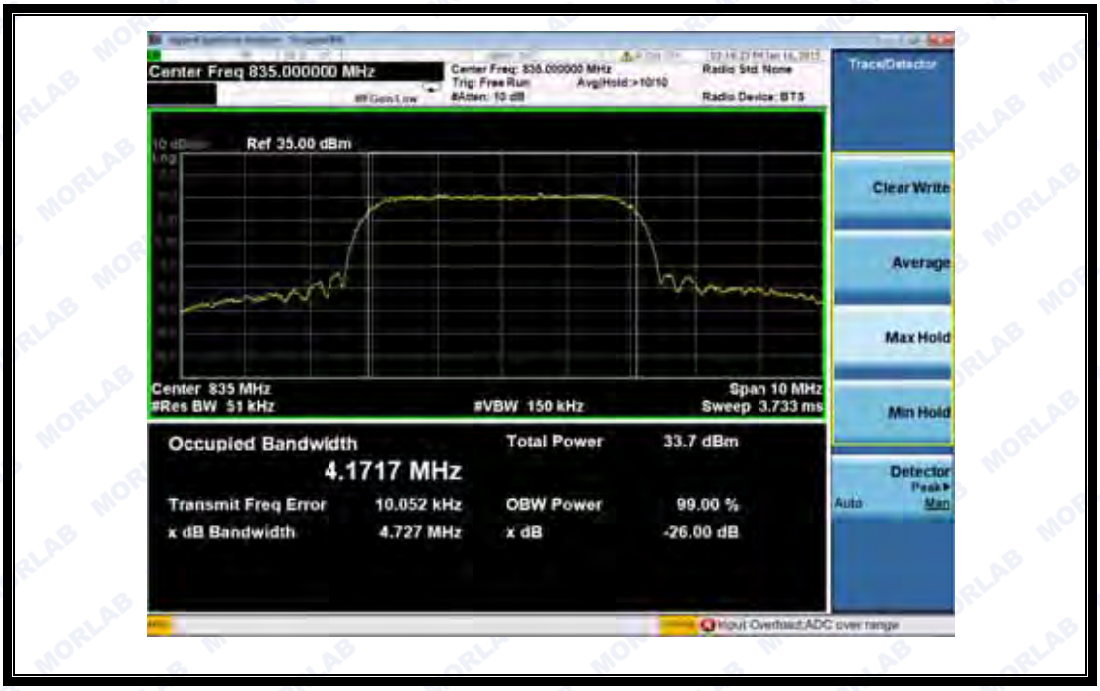


(Plot F: EGPRS 1900MHz Channel = 810)

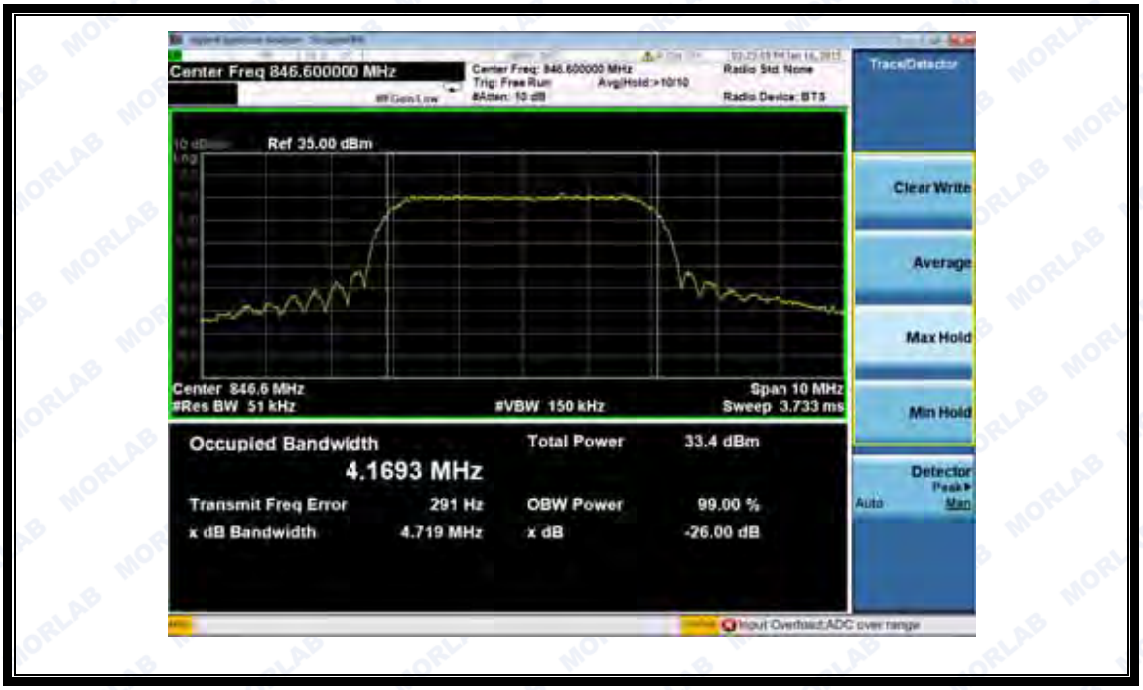


8

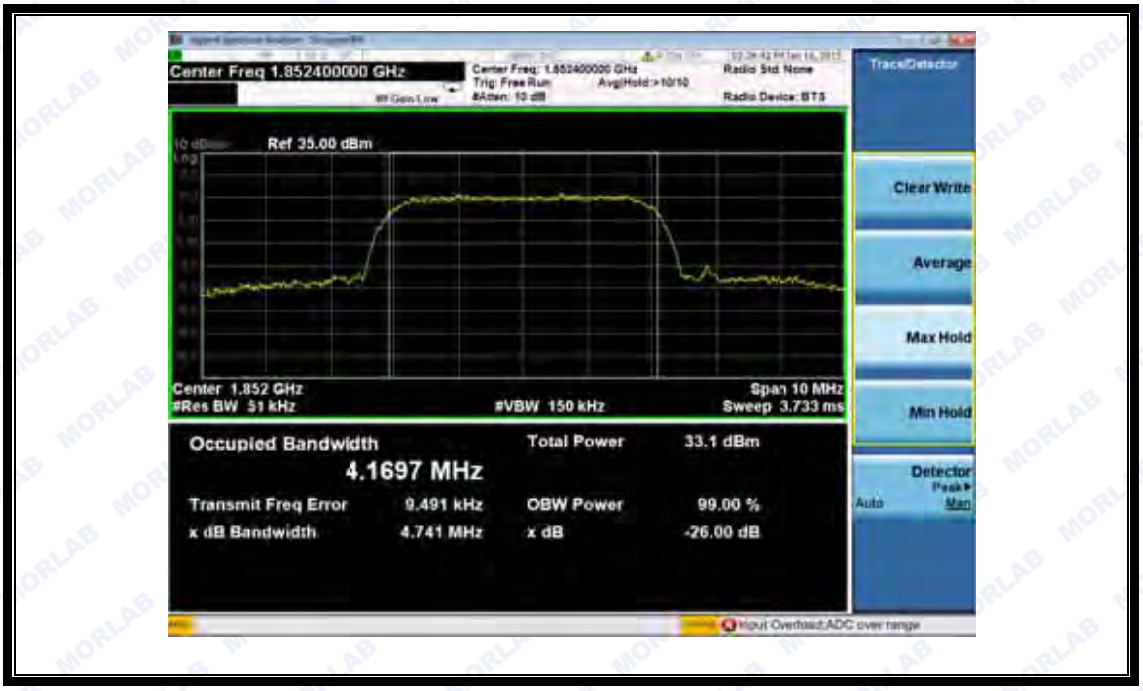
(Plot G: WCDMA 850MHz Channel = 4132)



(Plot H: WCDMA 850 MHz Channel = 4175)

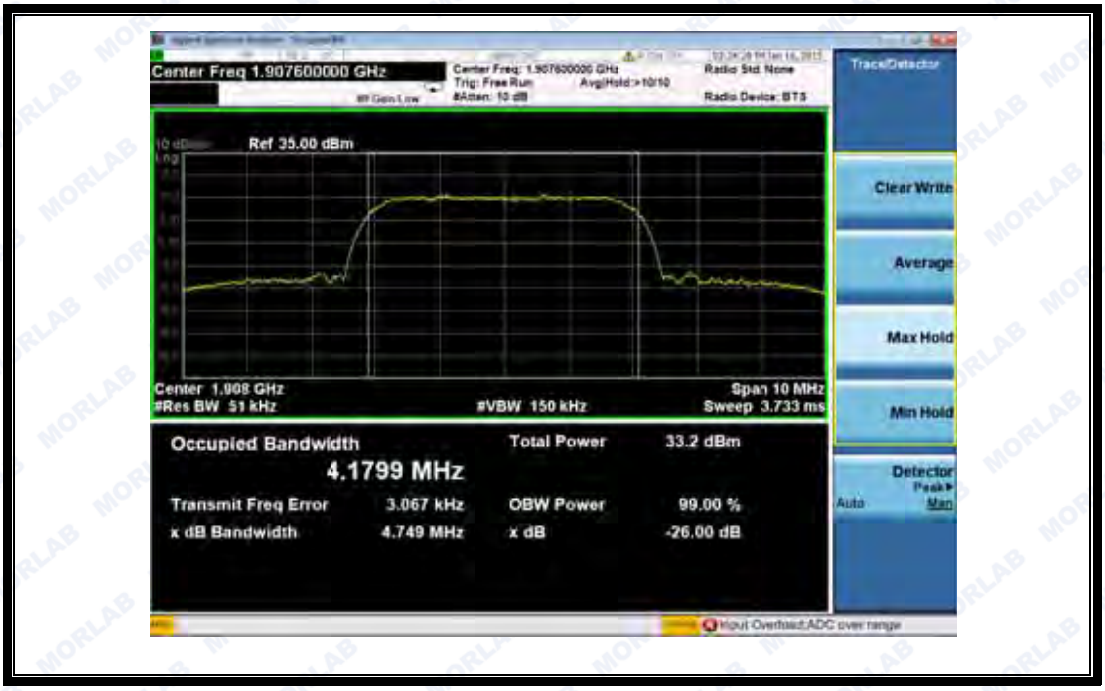


(Plot I: WCDMA 850MHz Channel = 4233)

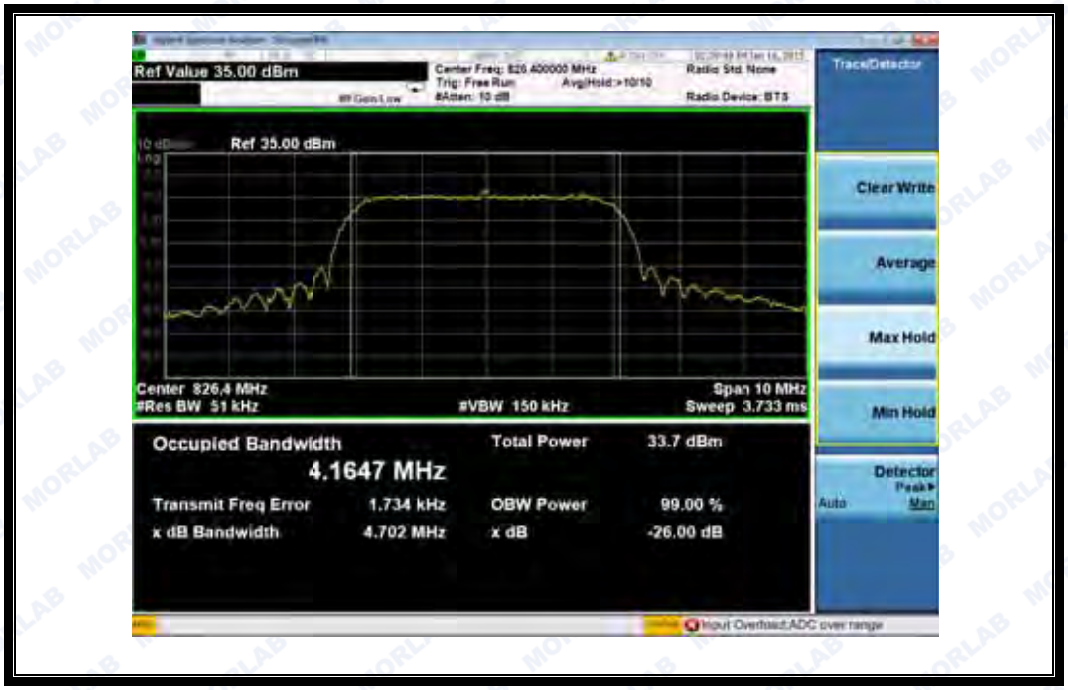


(Plot J: WCDMA 1900MHz Channel = 9262)

(Plot K: WCDMA 1900 MHz Channel = 9400)



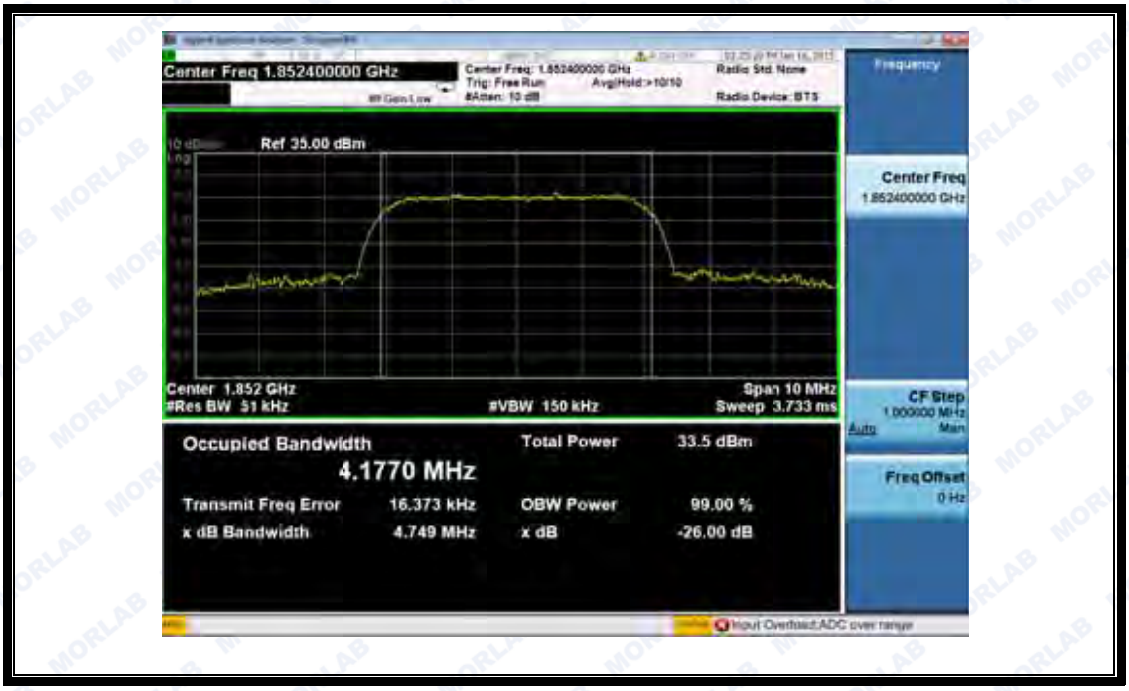
(Plot L: WCDMA1900MHz Channel = 9538)



(Plot M: HSDPA 850MHz Channel = 4132)

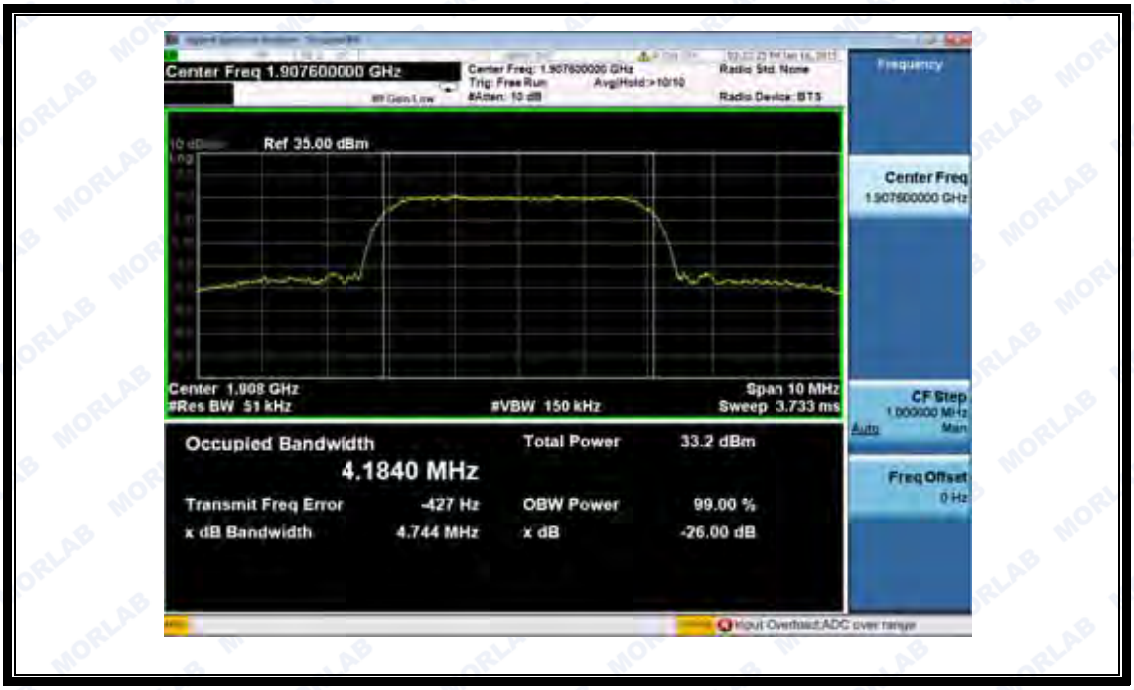
(Plot N: HSDPA850 MHz Channel = 4175)

(Plot O: HSDPA 850 MHz Channel = 4233)

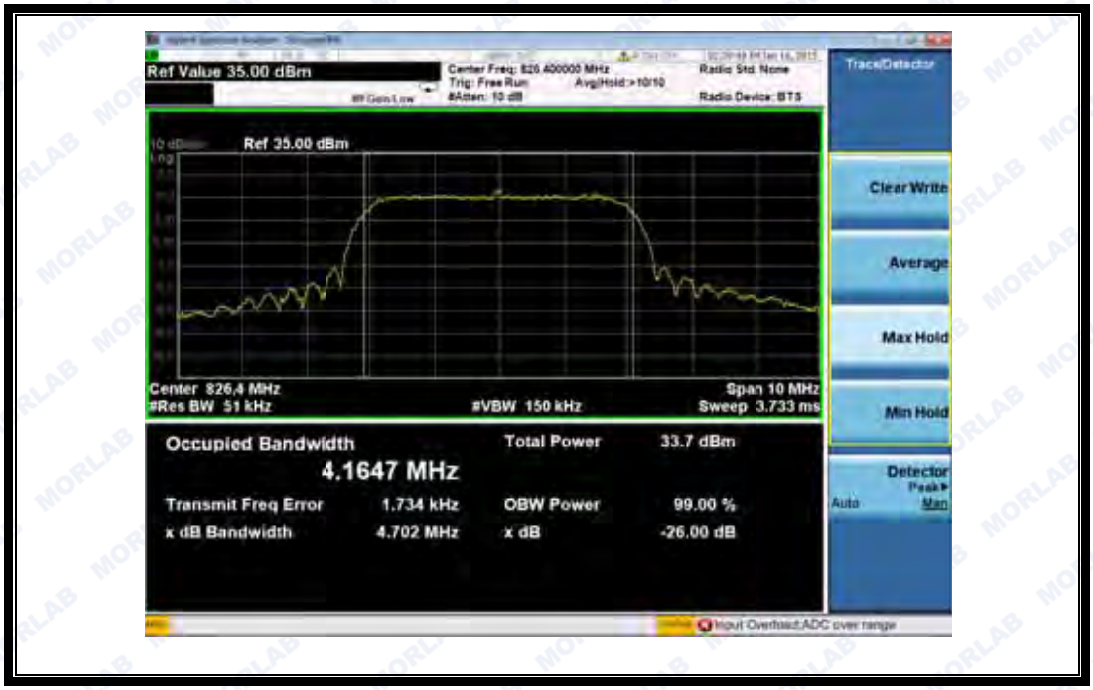


(Plot P: HSDPA1900 MHz Channel = 9262)

(Plot Q: HSDPA1900 MHz Channel = 9400)



(Plot R: HSDPA 1900 MHz Channel = 9538)

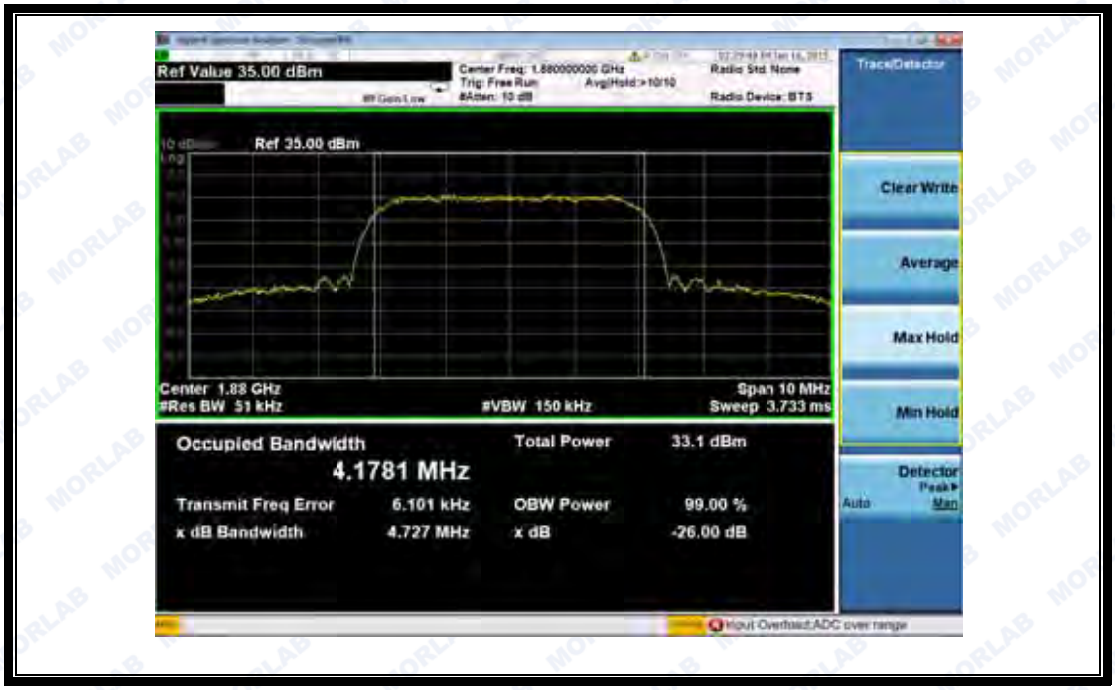


(Plot S: HSUPA850 MHz Channel = 4132)

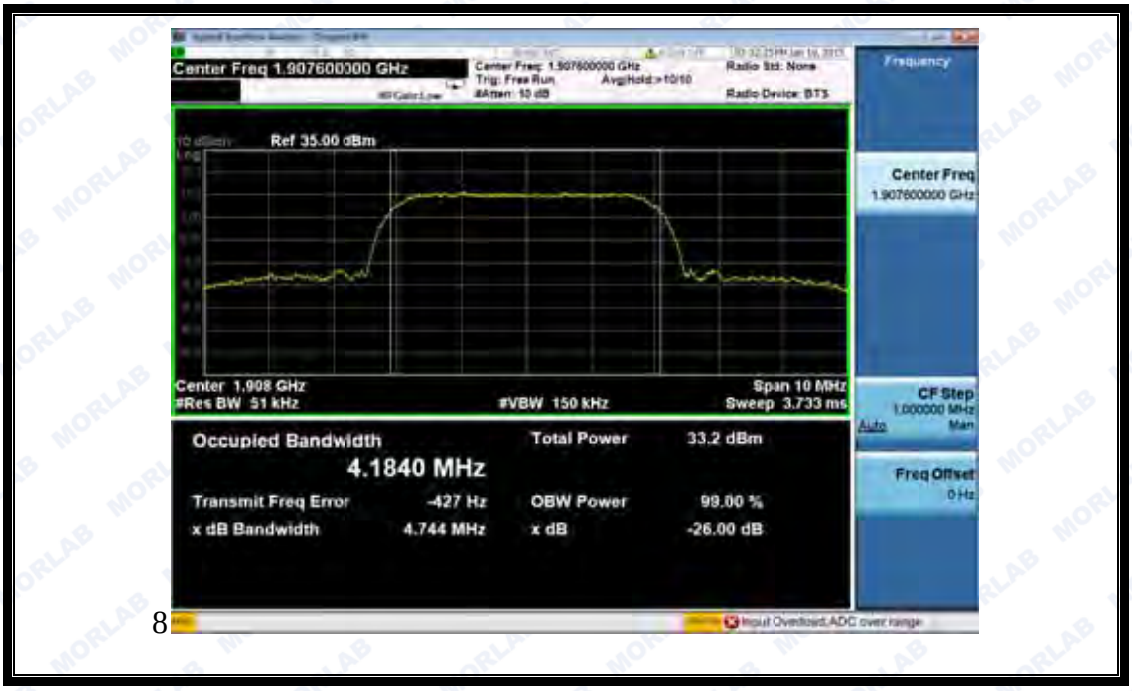
(Plot T: HSUPA850 MHz Channel = 4175)

(Plot U: HSUPA850 MHz Channel = 4233)

(Plot V: HSUPA1900 MHz Channel = 9262)

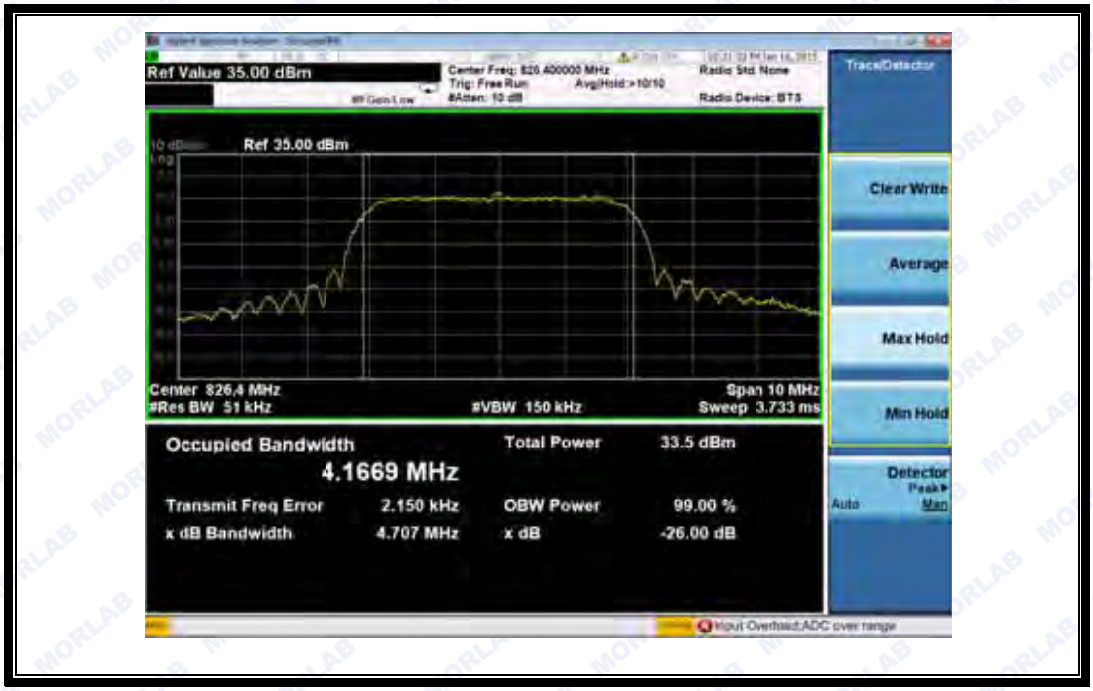


(Plot W: HSUPA1900 MHz Channel = 9400)

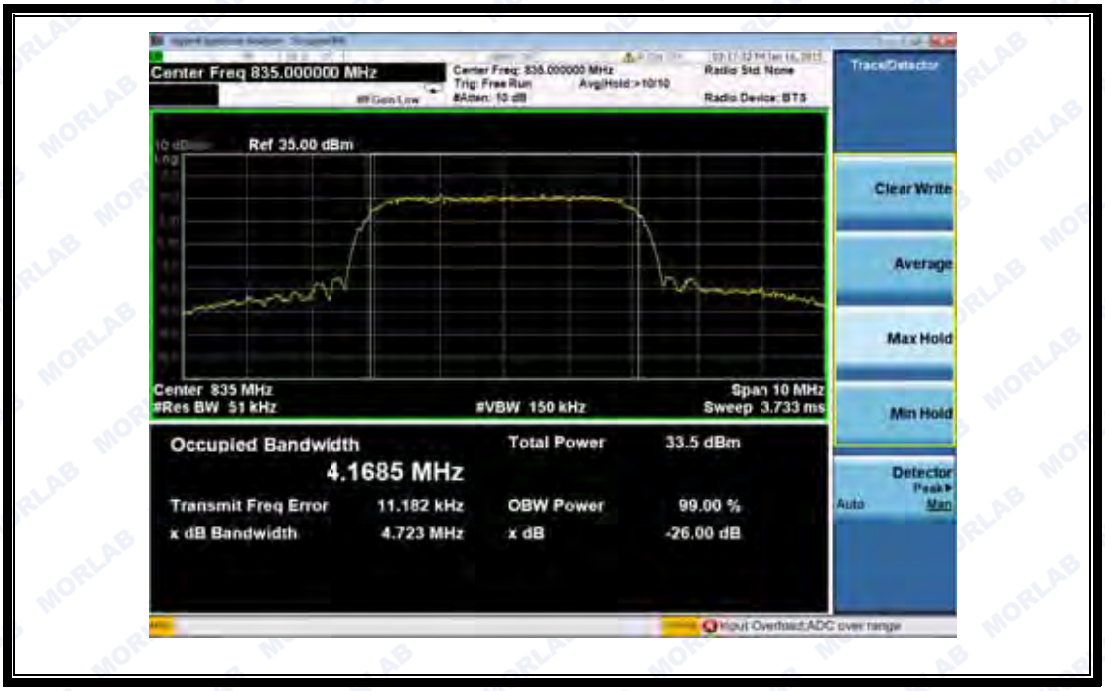


8

(Plot X: HSUPA1900 MHz Channel = 9538)



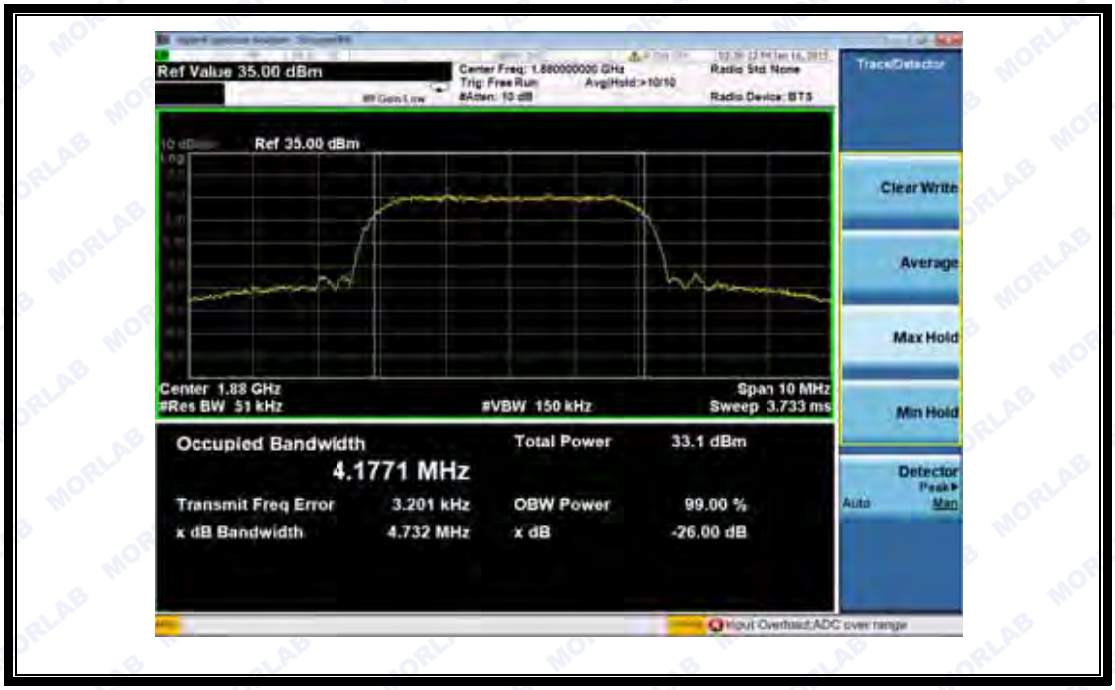
(Plot Y: HSPA+850 MHz Channel = 4132)



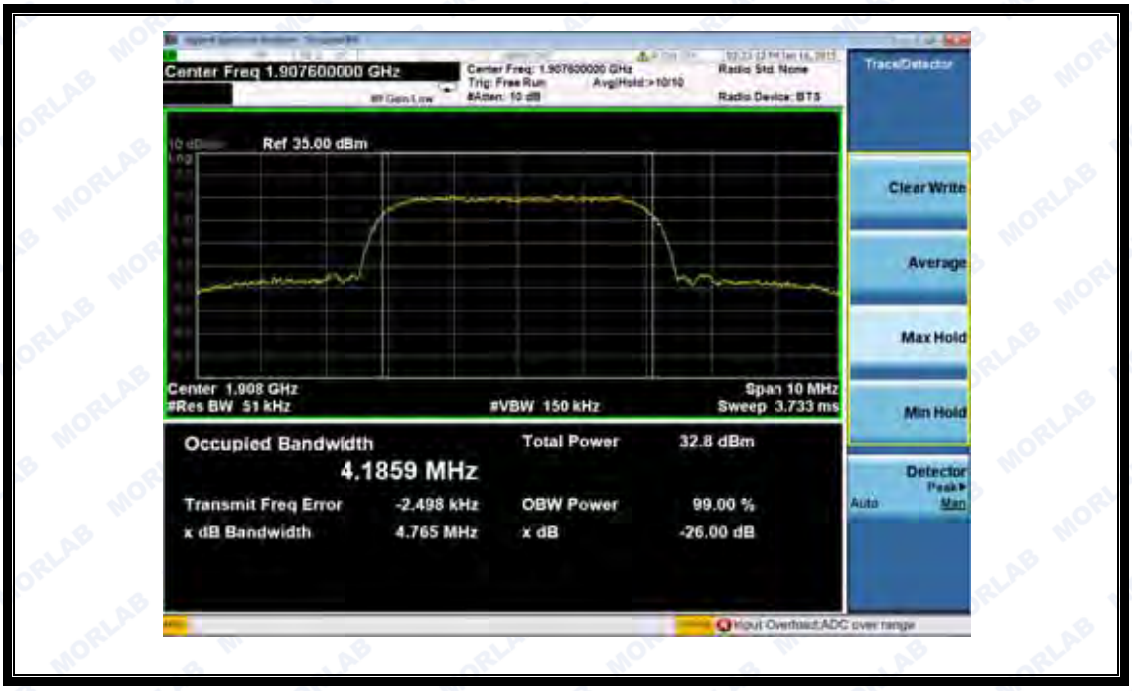
(Plot Z: HSPA+850 MHz Channel = 4175)

(Plot A1:HSPA+850 MHz Channel = 4233)

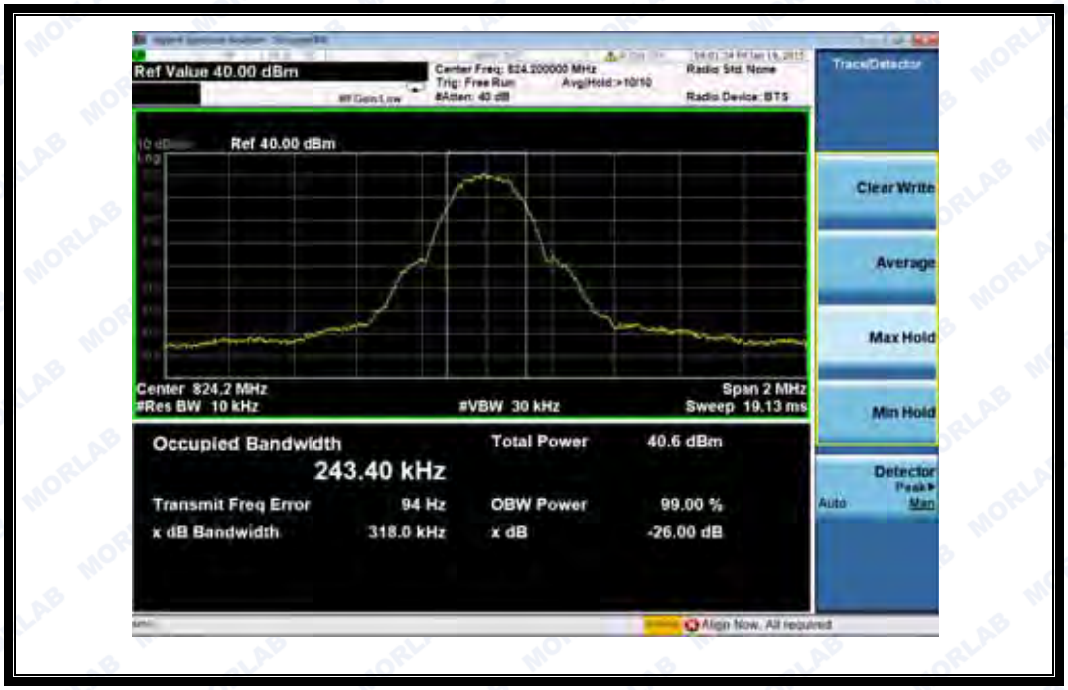
(Plot B1: HSPA+1900 MHz Channel = 9262)



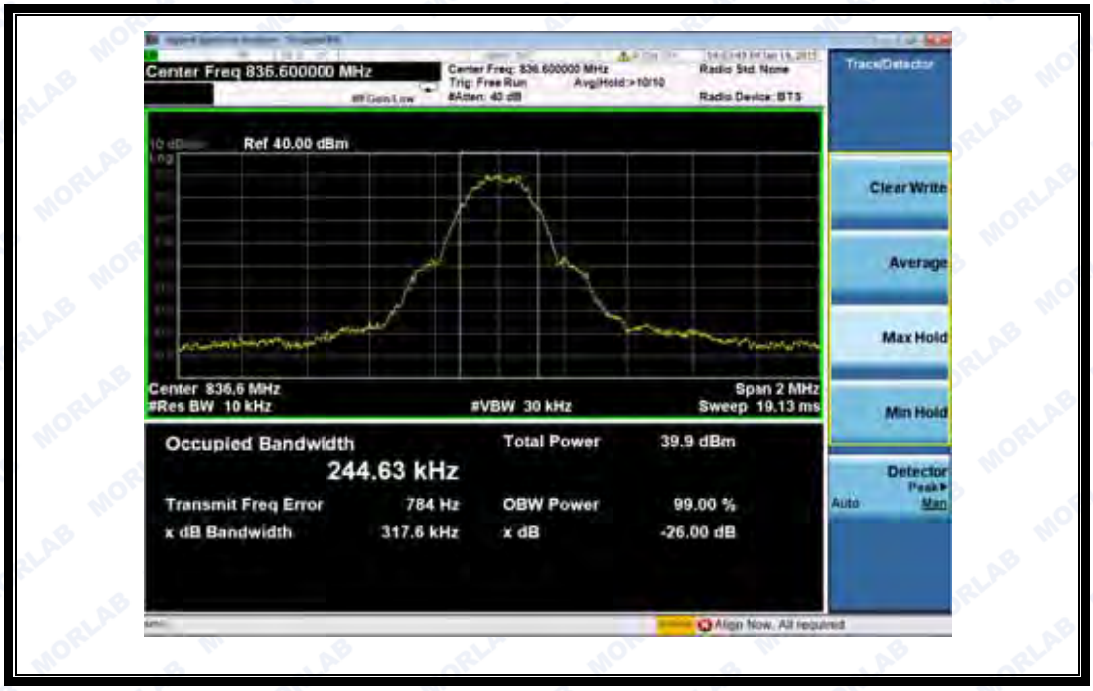
(Plot C1: HSPA+1900 MHz Channel = 9400)



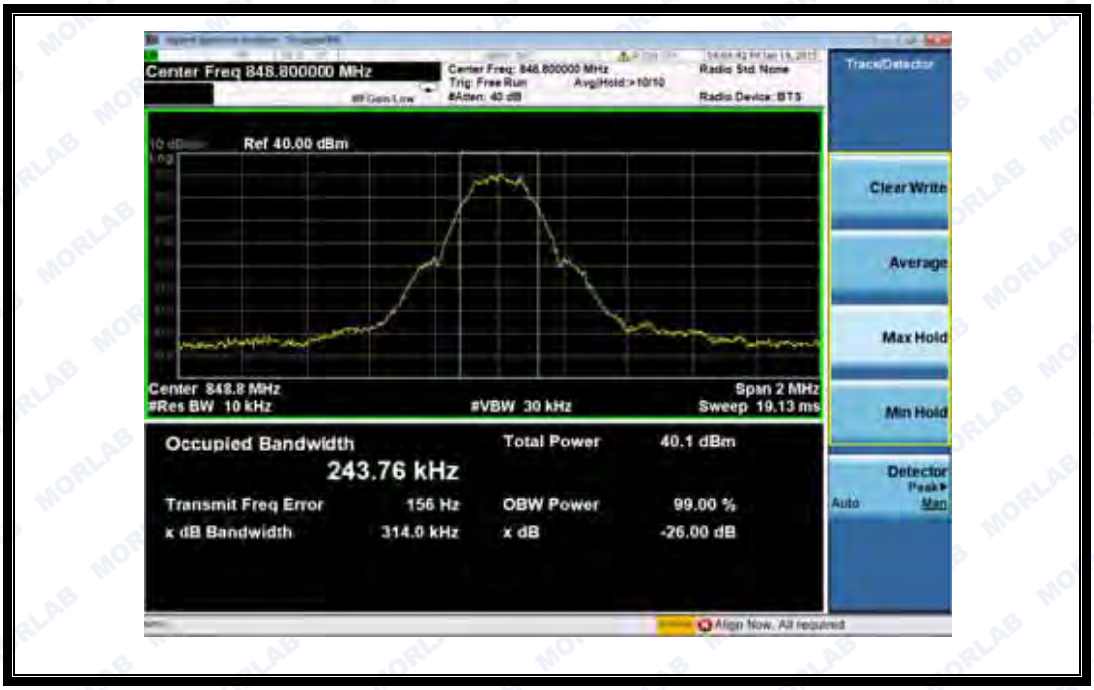
(Plot D1: HSPA+1900 MHz Channel = 9538)



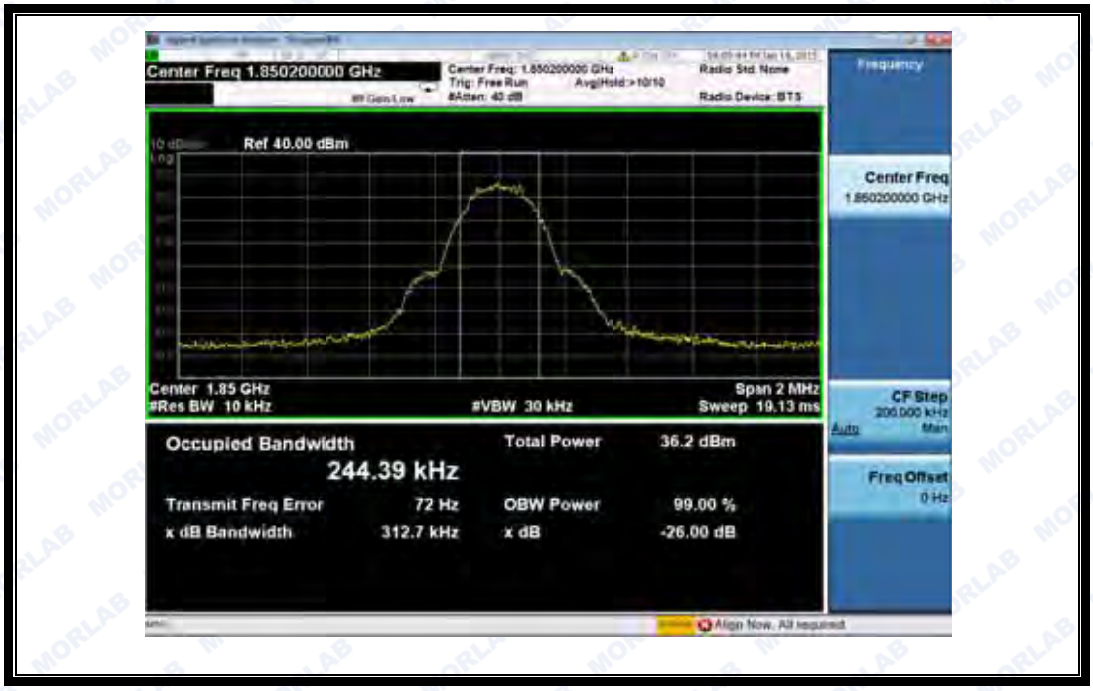
(Plot E1: GSM 850MHz Channel = 128)



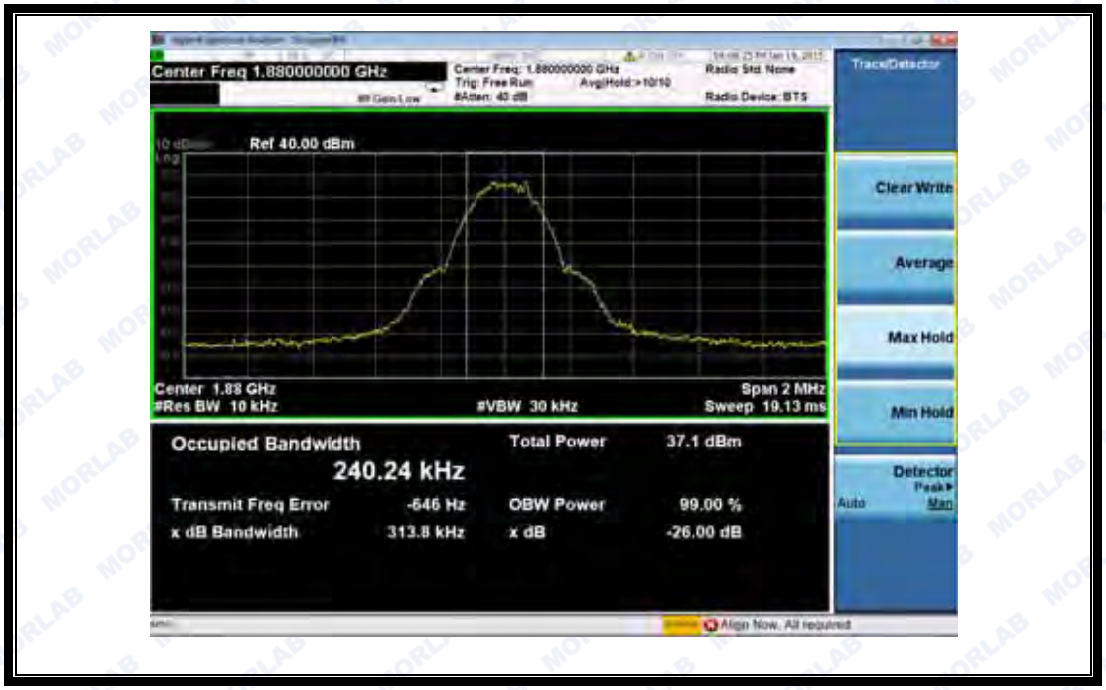
(Plot F1:GSM 850MHz Channel = 190)



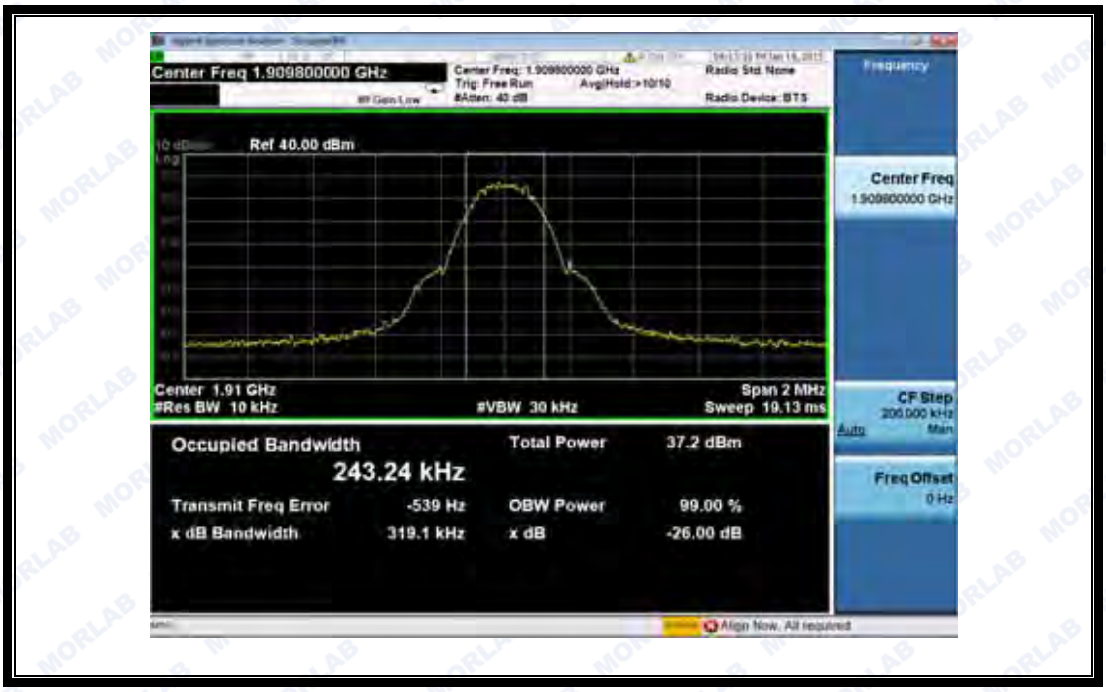
(Plot G1: GSM 850MHz Channel = 251)



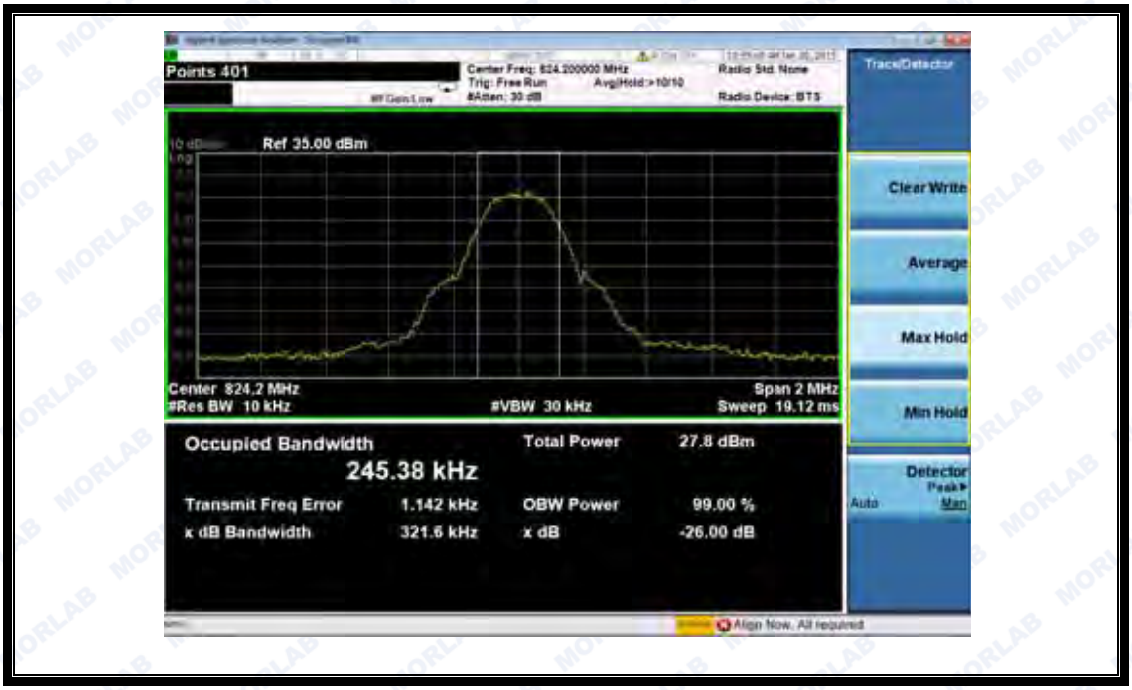
(Plot H1: GSM 1900MHz Channel = 512)



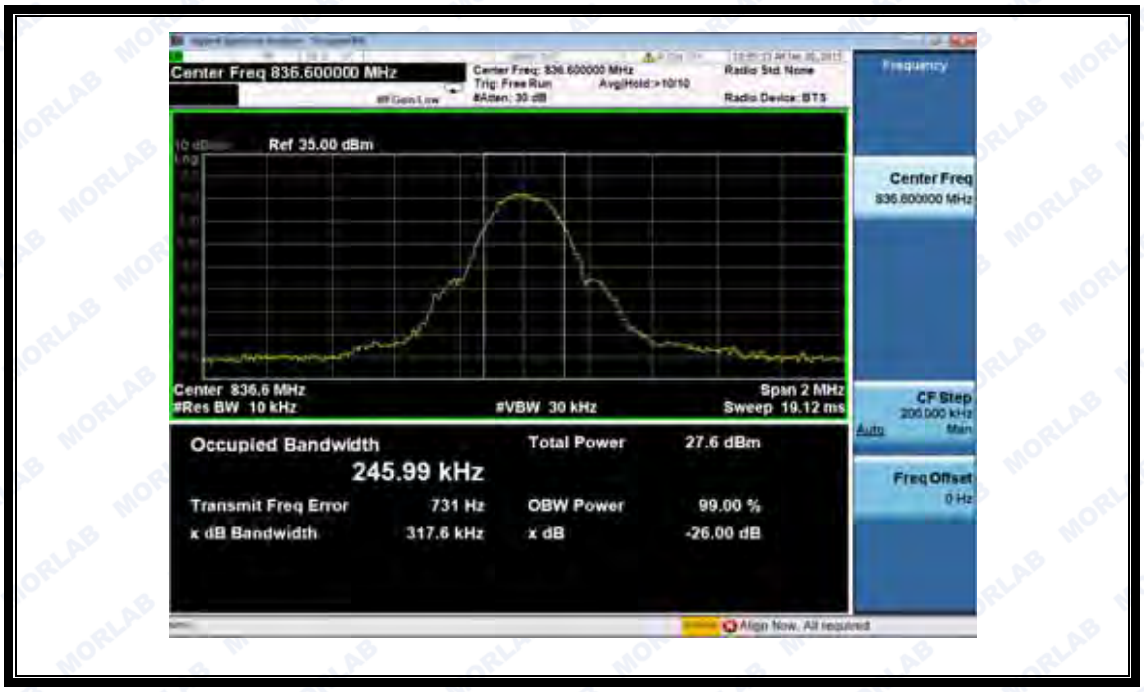
(Plot I1: GSM 1900MHz Channel = 661)



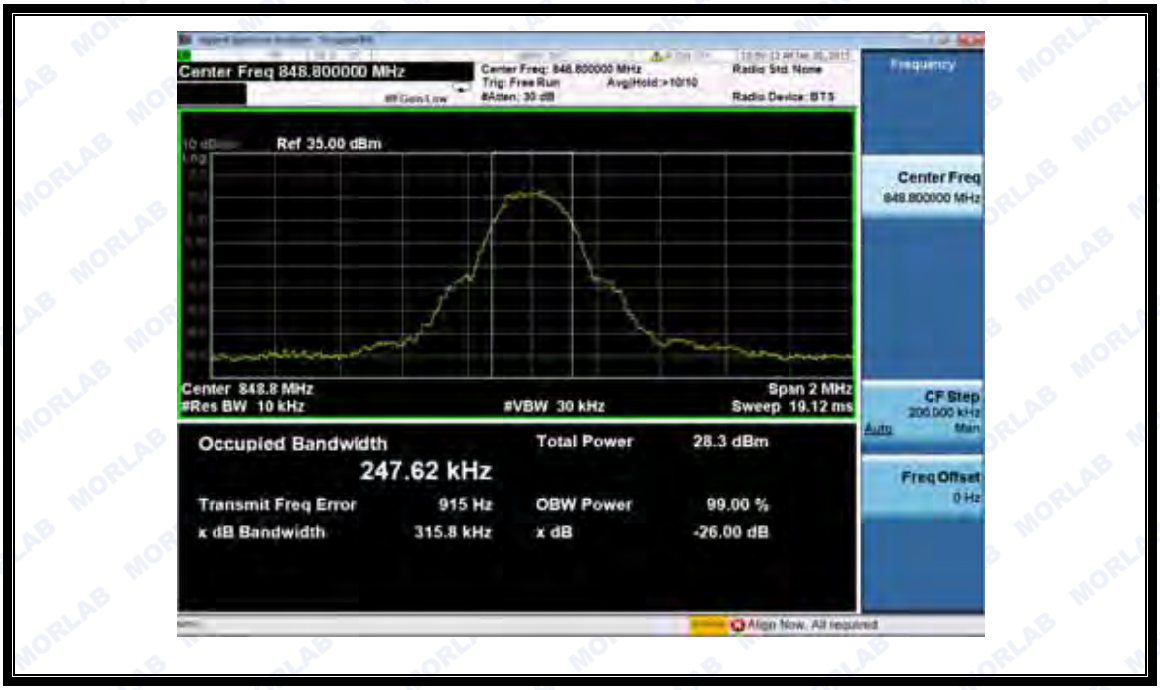
(Plot J1: GSM 1900MHz Channel = 810)



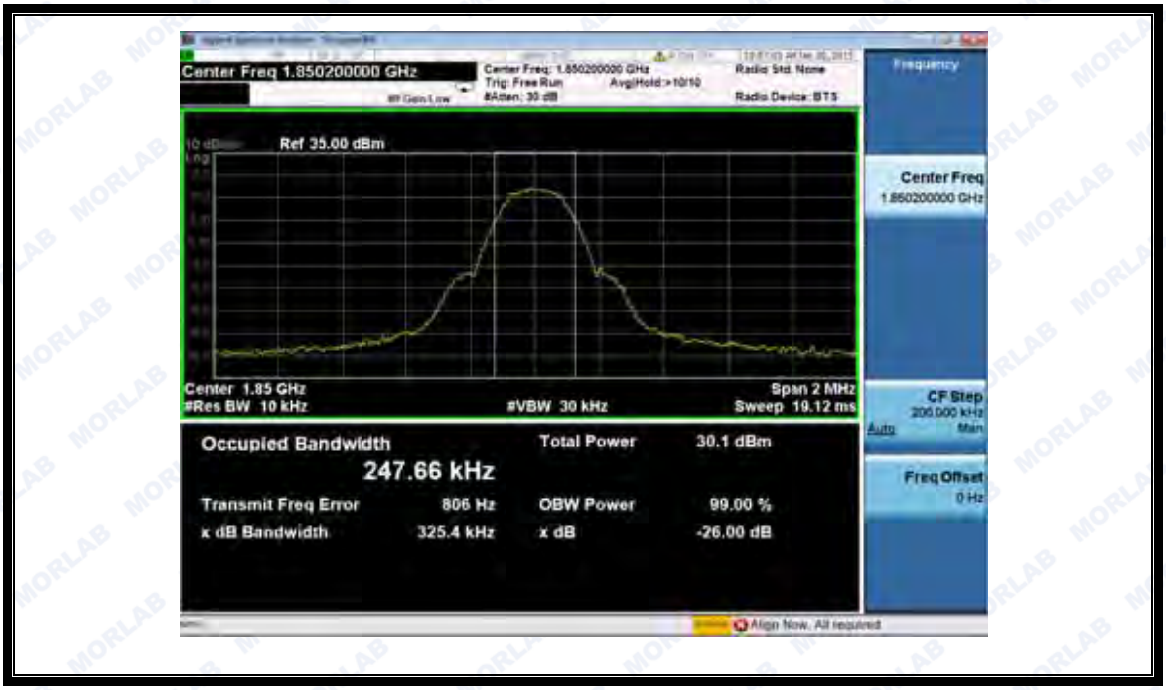
(Plot K1: GPRS 850MHz Channel = 128)



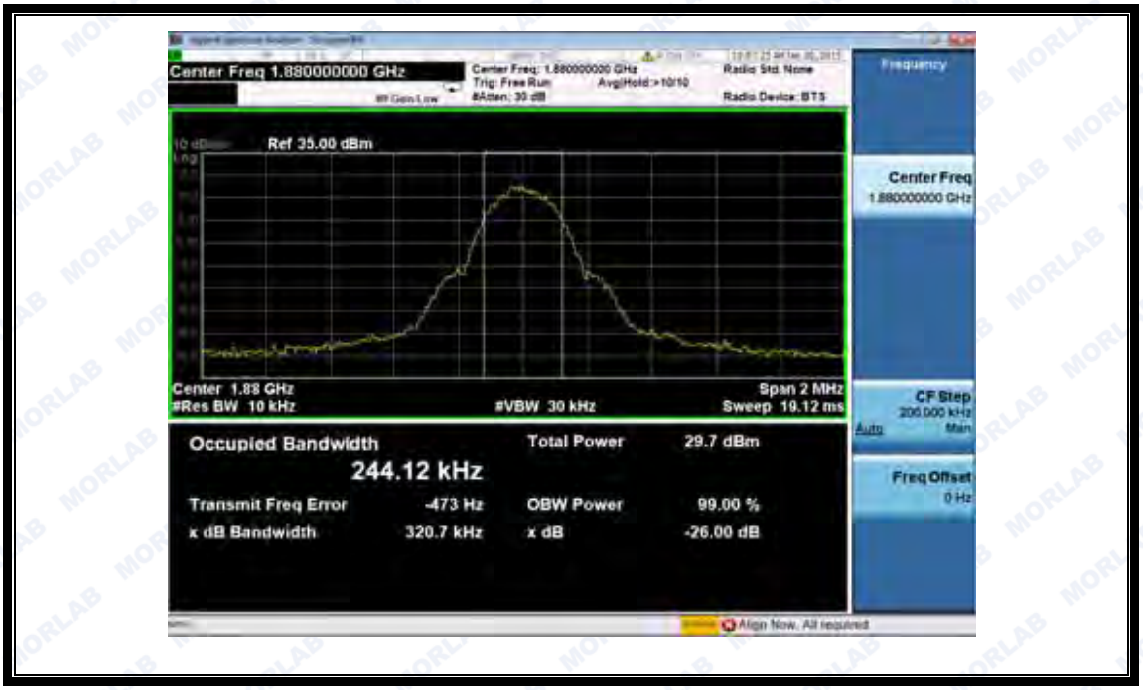
(Plot L1:GPRS 850MHz Channel = 190)



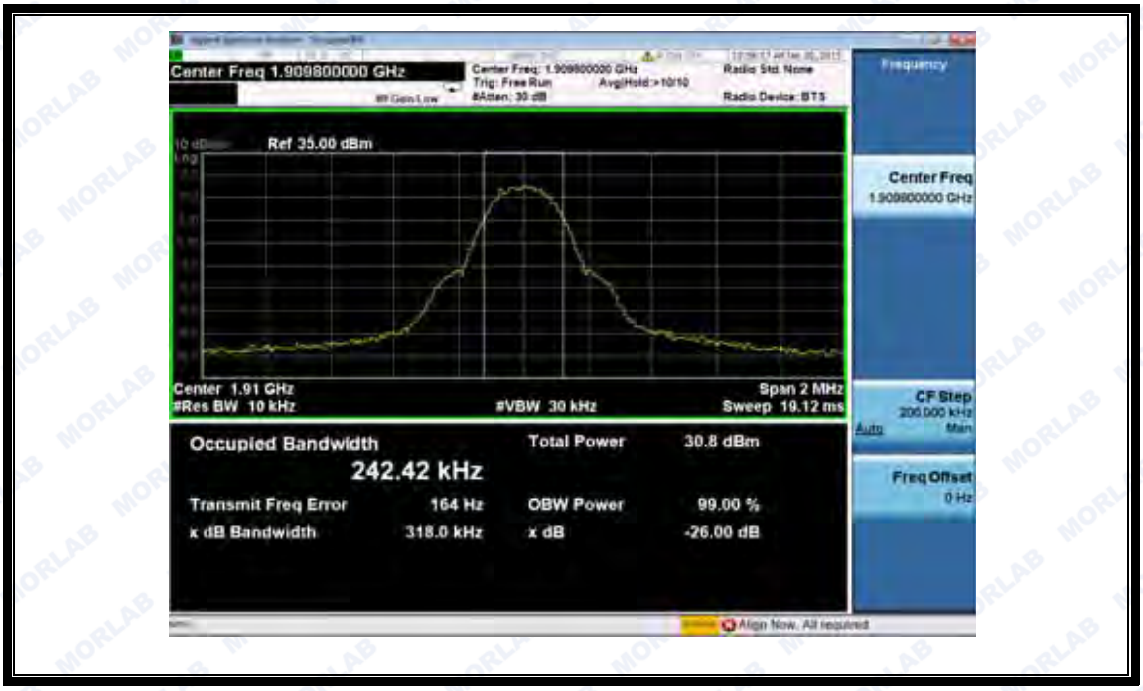
(Plot M1: GPRS850MHz Channel = 251)



(Plot N1: GPRS 1900MHz Channel = 512)



(Plot O1: GPRS 1900MHz Channel = 661)



(Plot P1: GPRS 1900MHz Channel = 810)

2.4 Frequency Stability

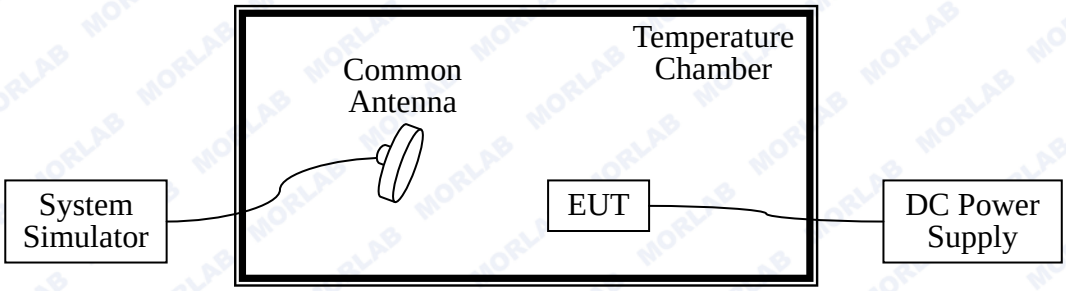
2.4.1 Requirement

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, 4.35VDC and 3.6VDC, 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	-22.45	±2060.5	21.11	±2091.5	18.17	±2122	PASS
	-20	27.11		12.23		-15.02		
	-10	-2.25		-17.46		15.11		
	0	31.26		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	42.63		19.64		-2.13		
	+55	35.28		23.27		-12.89		
4.35	+25	-15.73		28.05		-7.55		
3.6	+25	-17.65		39.13		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	19.15	±1850.2	22.18	±1880.0	33.15	±1909.8	PASS
	-20	37.78		-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		31.26		
	+30	39.76		-0.78		-29.21		
	+40	47.76		35.35		19.33		
	+55	39.88		24.02		-19.37		
4.35	+25	37.88		23.72		28.09		
3.6	+25	-4.69		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	-32.12	±2060.5	26.19	±2091.5	6.22	±2122	PASS
	-20	35.98		13.73		-13.80		
	-10	-3.25		-18.35		11.16		
	0	41.06		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	48.62		15.54		-2.11		
	+55	35.98		3.57		-12.89		
4.35	+25	-15.71		14.05		-7.83		
3.6	+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	-12.87	±1850.2	25.44	±1880.0	2.57	±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		37.89		
	+30	15.03		14.58		-26.88		
	+40	5.43		-0.78		19.34		
	+55	-2.46		39.07		-16.77		
4.35	+25	18.02		4.18		22.59		
3.6	+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	12.43	±2087.5	-1.10	±2116.5	PASS
	-20	-7.51		-0.32		-18.48		
	-10	-3.43		23.45		7.67		
	0	16.47		13.25		4.32		
	+10	30.18		1.31		-17.33		
	+20	32.17		-12.22		11.90		
	+30	-7.98		31.62		6.63		
	+40	26.31		13.45		28.93		
	+55	12.10		-12.42		19.76		
4.35	+25	-6.17		35.12		23.89		
3.6	+25	18.56		-17.80		-17.12		

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	-12.67	±1880.0	-2.29	±1907.6	PASS
	-20	17.15		12.28		22.60		
	-10	5.35		-14.36		12.11		
	0	18.92		18.59		-3.17		
	+10	34.40		21.39		18.12		
	+20	13.55		40.27		-10.39		
	+30	2.31		2.37		17.47		
	+40	-12.52		-13.47		29.84		
	+55	-13.65		-5.81		-2.53		
4.35	+25	24.23		14.68		21.05		
3.6	+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	29.46	±2066	-24.87	±2087.5	16.11	±2116.5	PASS
	-20	-8.66		-14.06		14.41		
	-10	20.85		41.23		21.57		
	0	12.78		-8.41		-24.37		
	+10	-14.75		-13.95		-14.96		
	+20	8.78		-24.37		36.11		
	+30	-1.49		12.88		-8.31		
	+40	17.14		-14.75		-13.95		
	+55	-23.61		23.37		26.37		
4.35	+25	35.03		7.93		7.98		
3.6	+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	12.57	±1852.4	-2.54	±1880	2.50	±1907.6	PASS
	-20	-16.25		22.71		-8.48		
	-10	23.42		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		37.11		9.57		
	+40	22.71		8.46		26.32		
	+55	16.42		-24.88		-12.42		
4.35	+25	-11.25		29.53		-2.83		
3.6	+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	28.12	±2066	14.51	±2087.5	16.05	±2116.5	PASS
	-20	-15.40		-19.43		27.52		
	-10	-12.71		-12.79		39.71		
	0	-14.09		-0.44		-7.32		
	+10	-0.37		0.01		-4.91		
	+20	-11.85		-6.64		21.35		
	+30	29.57		25.25		-5.94		
	+40	-11.89		9.73		13.78		
	+55	-0.45		26.76		28.55		
4.35	+25	2.78		-4.67		30.31		
3.6	+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		24.52		
	+30	-1.55		-0.44		-0.48		
	+40	24.16		1.25		-12.05		
	+55	14.79		-7.84		-5.81		
4.35	+25	-8.08		6.72		27.38		
3.6	+25	25.78		-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	28.55	±2066	14.31	±2087.5	13.45	±2116.5	PASS
	-20	-14.40		-19.33		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	29.57		25.25		-5.94		
	+40	-11.89		9.73		13.78		
	+55	-0.45		25.76		28.55		
4.35	+25	1.78		-4.67		29.98		
3.6	+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	33.67	±1852.4	-11.19	±1880	7.29	±1907.6	PASS
	-20	29.23		-0.82		2.12		
	-10	7.82		0.21		-4.85		
	0	2.41		16.82		17.08		
	+10	-4.73		-15.25		-1.86		
	+20	16.22		-11.79		24.52		
	+30	-1.55		-0.44		-0.48		
	+40	25.16		1.25		-12.05		
	+55	14.79		-7.84		-5.81		
4.35	+25	-8.08		6.71		29.38		
3.6	+25	22.08		-1.32		-17.38		

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	-17.115	Plot A1toA1.1	-13	PASS
	190	836.6	-15.572	Plot A2toA2.1		PASS
	251	848.8	-16.704	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	-16.568	Plot C1toC1.1	-13	PASS
	190	836.6	-17.429	Plot C2toC2.1		PASS
	251	848.8	-17.920	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	-18.104	Plot D1toD1.1	-13	PASS
	661	1880.0	-18.328	Plot D2toD2.1		PASS
	810	1909.8	-16.794	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
HSDPA	4132	826.4	<-25	Plot G1toG1.1	-13	PASS

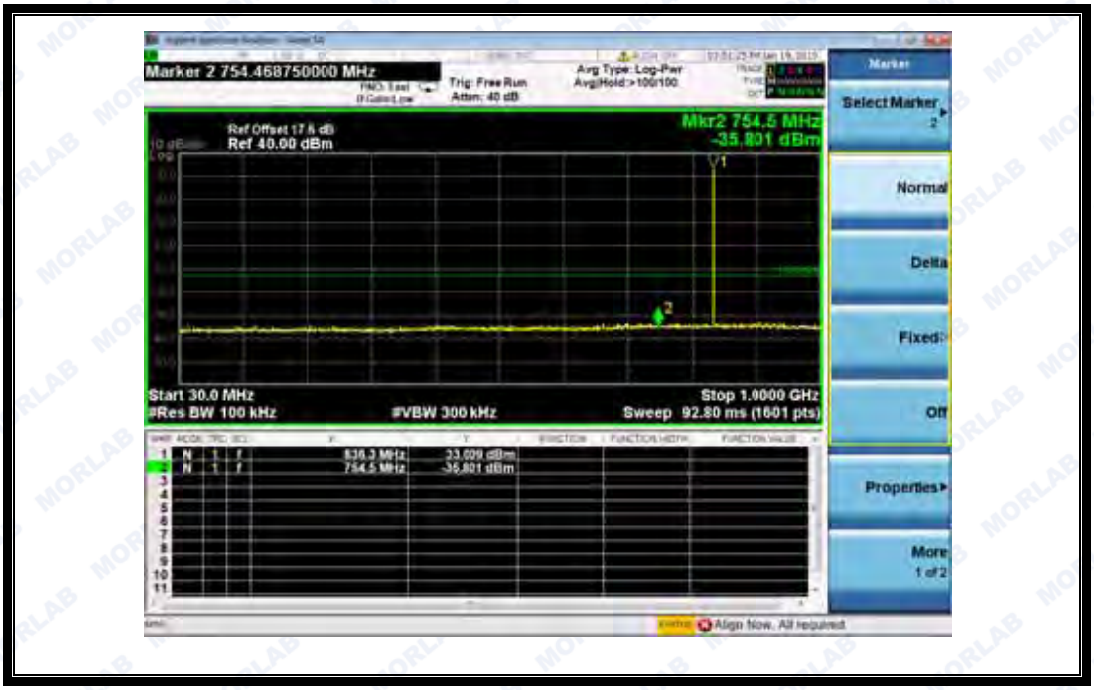
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
850MHz	4175	835	<-25	Plot G2toG2.1		PASS
	4233	846.6	<-25	Plot G3toG3.1		PASS
HSDPA 1900MHz	9262	1852.4	<-25	Plot H1toH1.1	-13	PASS
	9400	1880	<-25	Plot H2toH2.1		PASS
	9538	1907.6	<-25	Plot H3toH3.1		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.

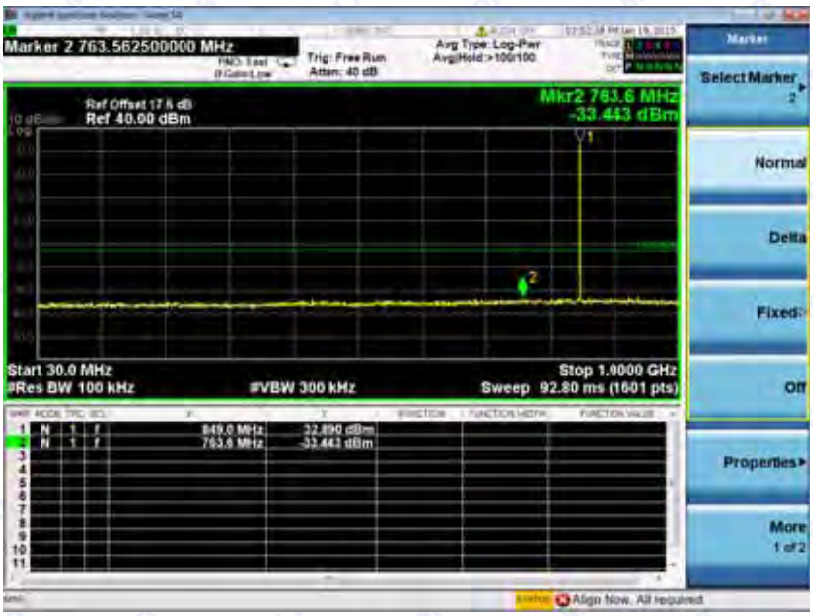
(Plot A1:GSM 850MHz Channel = 128, 30MHz to 1GHz)

(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)

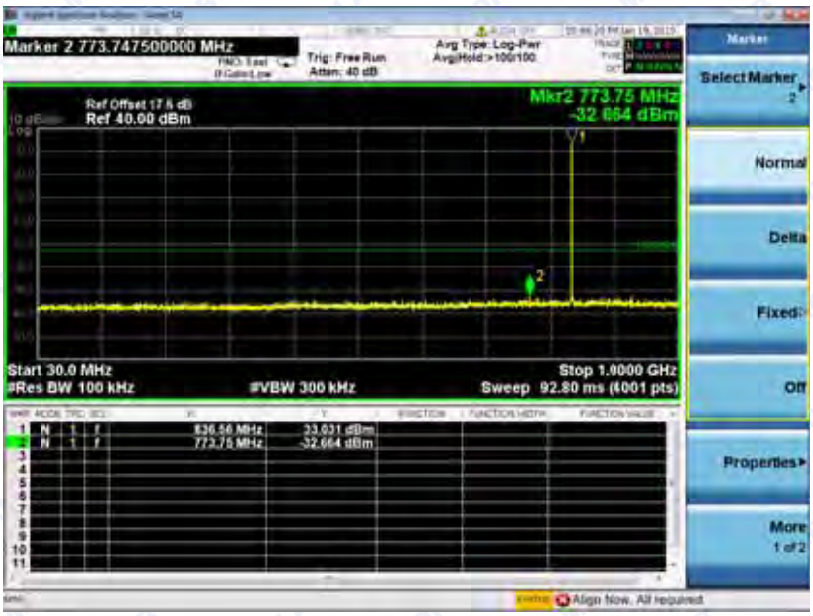
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)

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

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

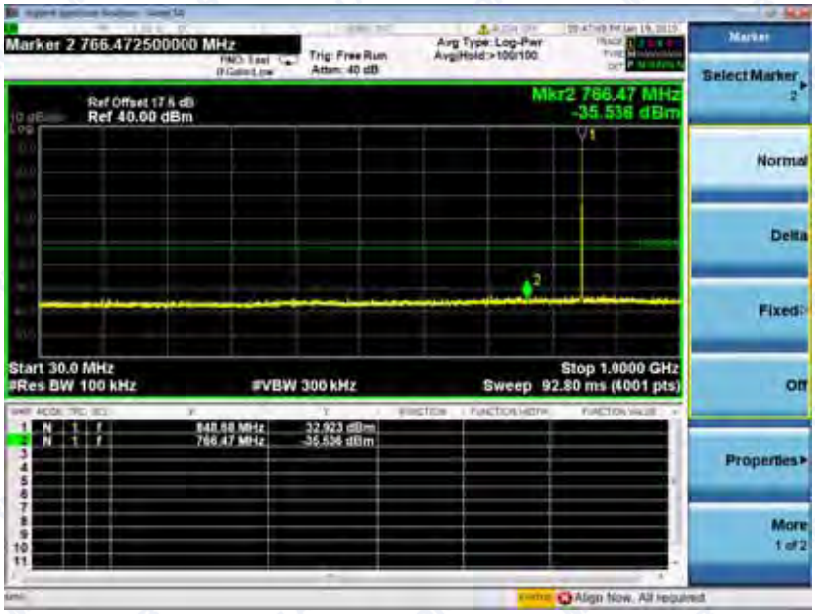
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)

(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)

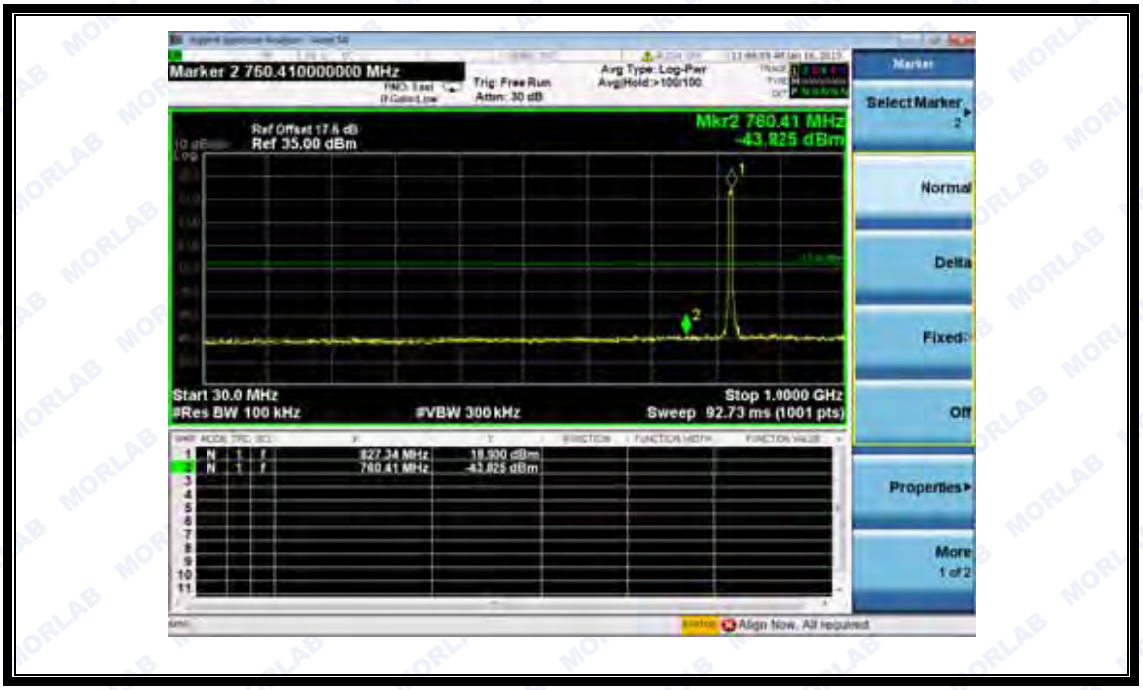
(Plot D1.1: EDGE 1900MHz Channel = 512, 1GHz to 20GHz)

(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)

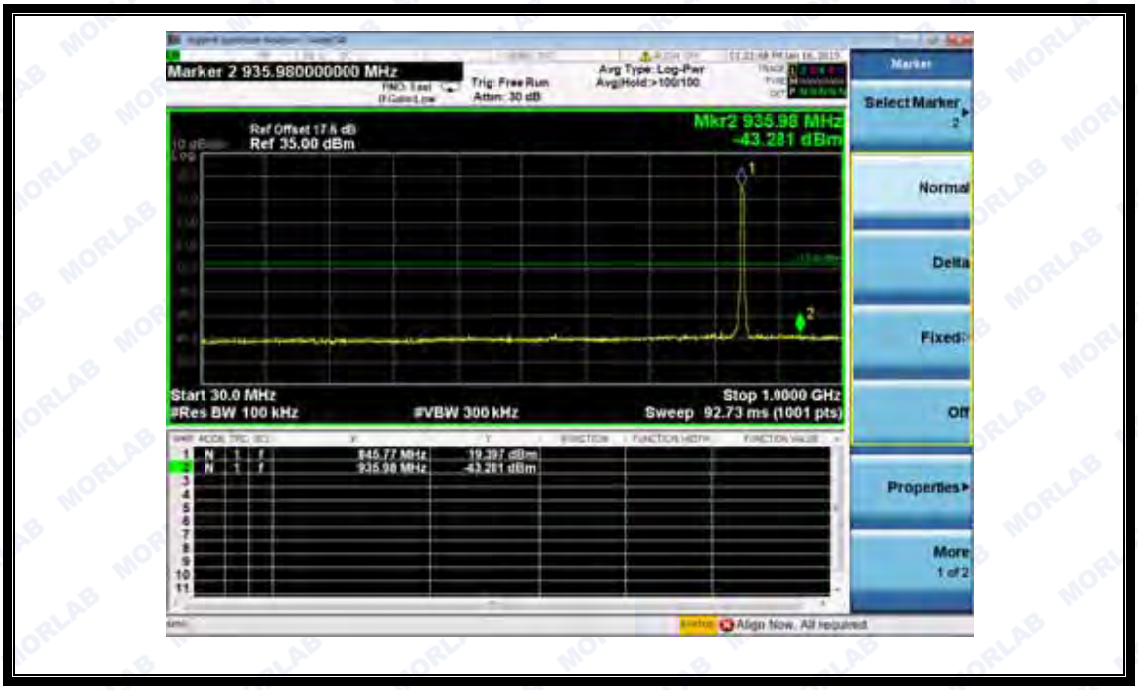


(Plot E1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)

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

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

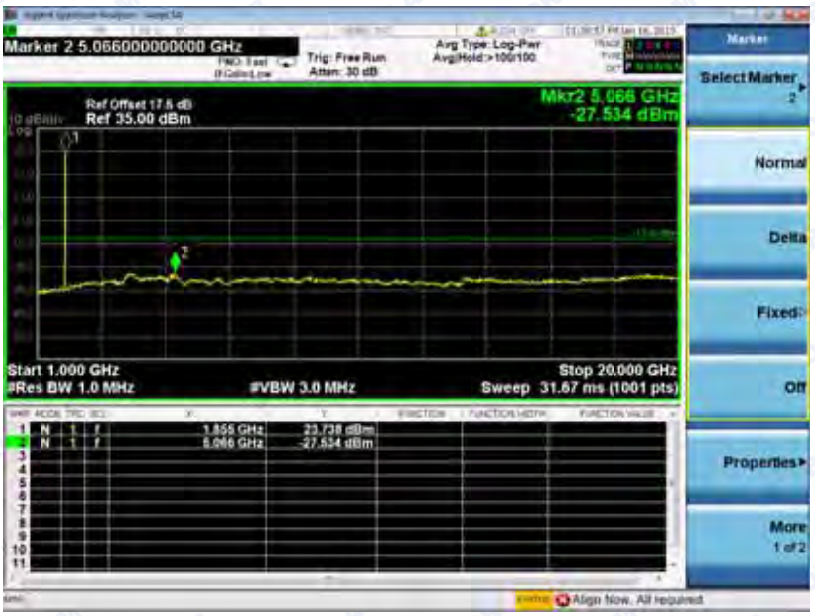
(Plot E2.1: WCDMA850MHz Channel = 4175, 1GHz to 9GHz)



(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)



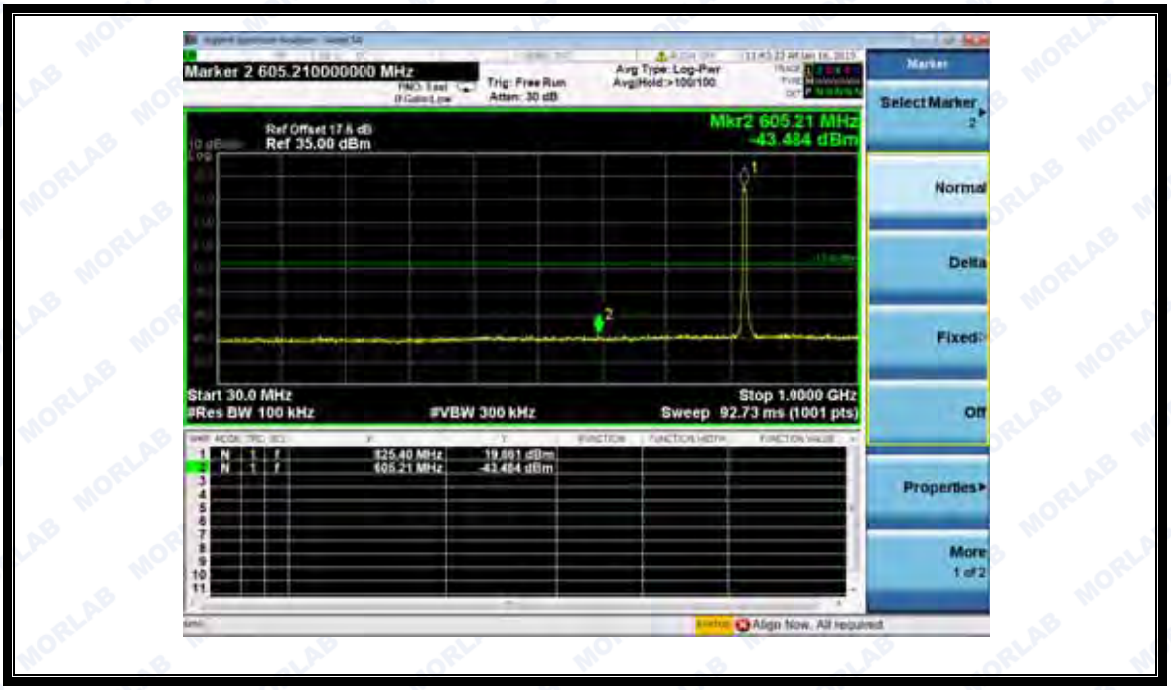
(Plot F1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)

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

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

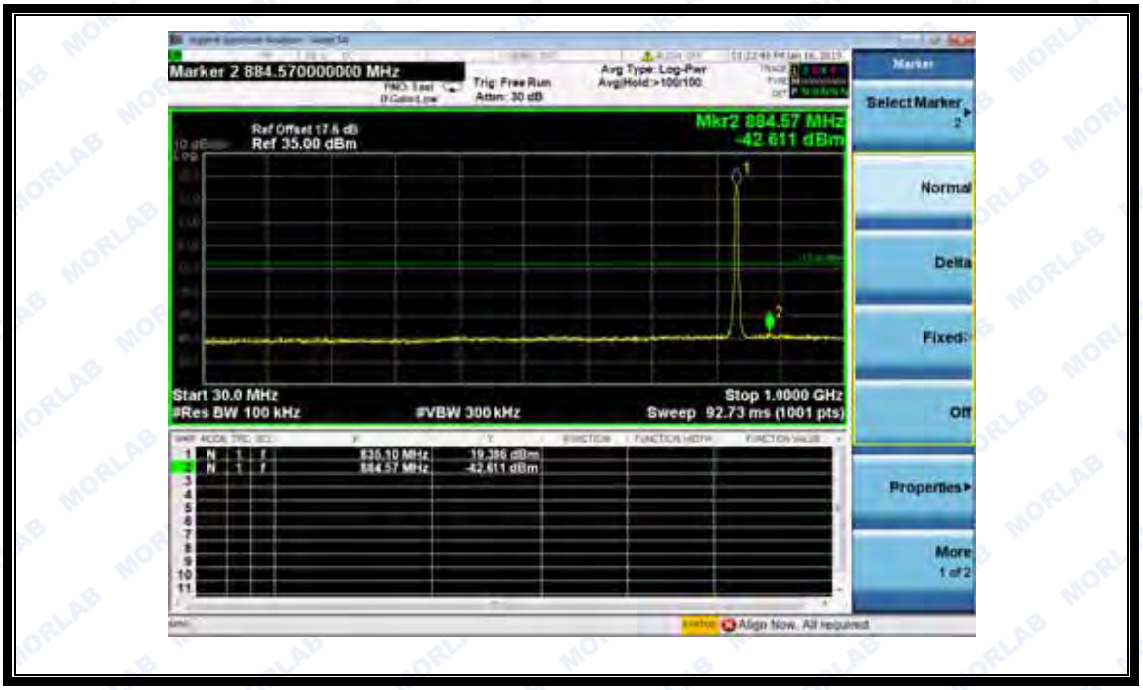
(Plot F3:WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)

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



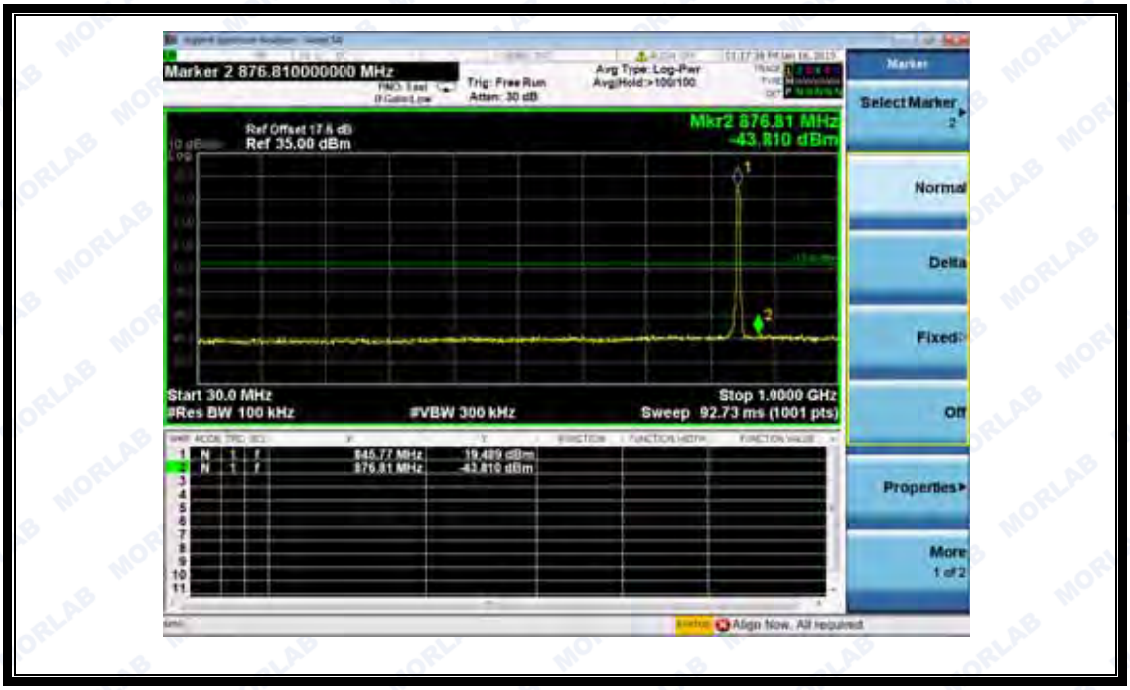
(Plot G1: HSDPA 850MHz Channel = 4132, 30MHz to 1GHz)

(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)



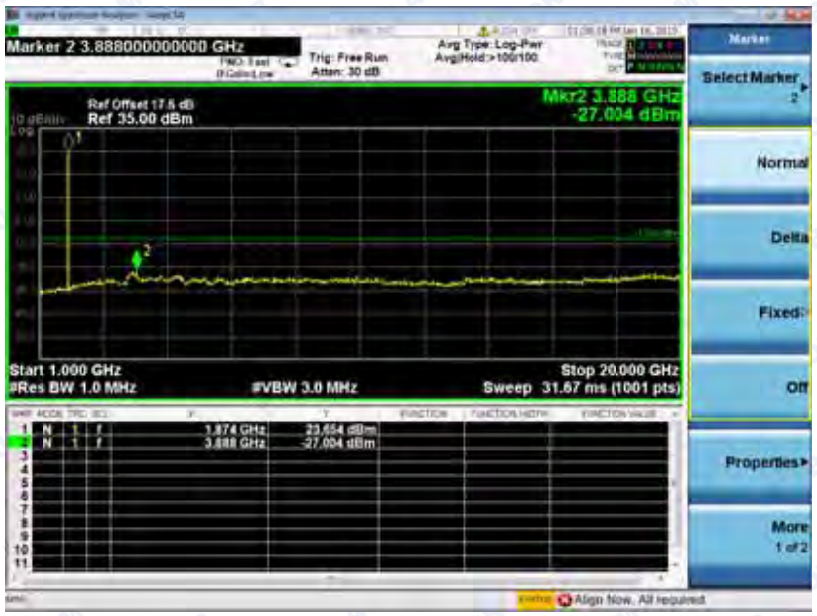
(Plot G3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)

(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)

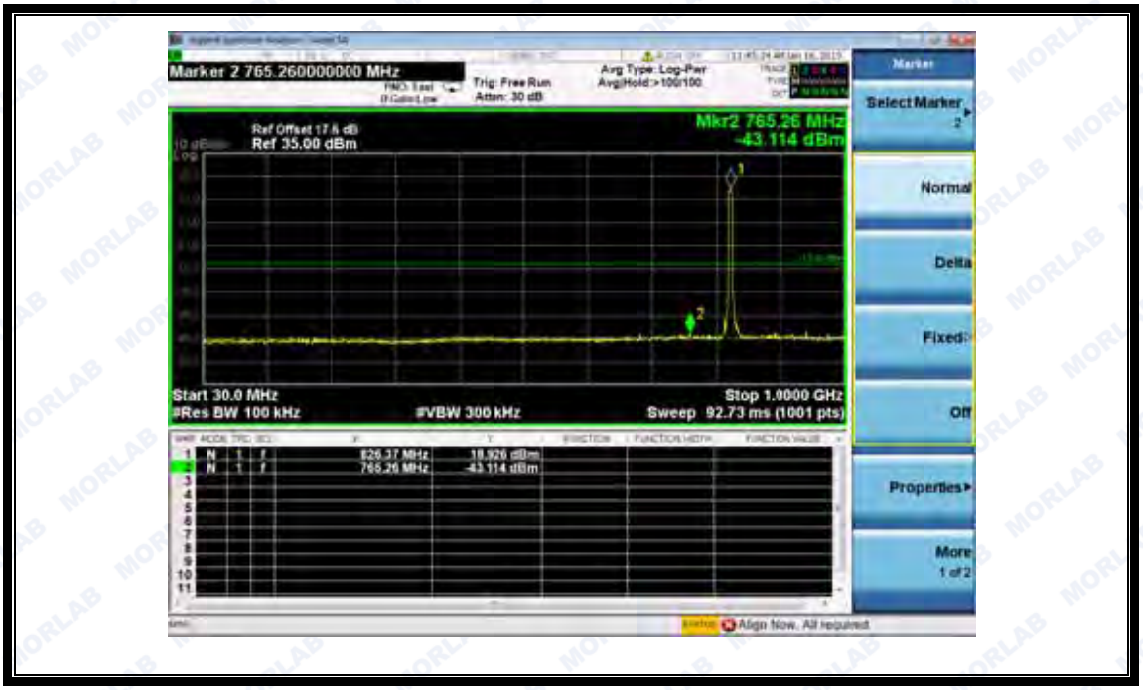
(Plot H2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)



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

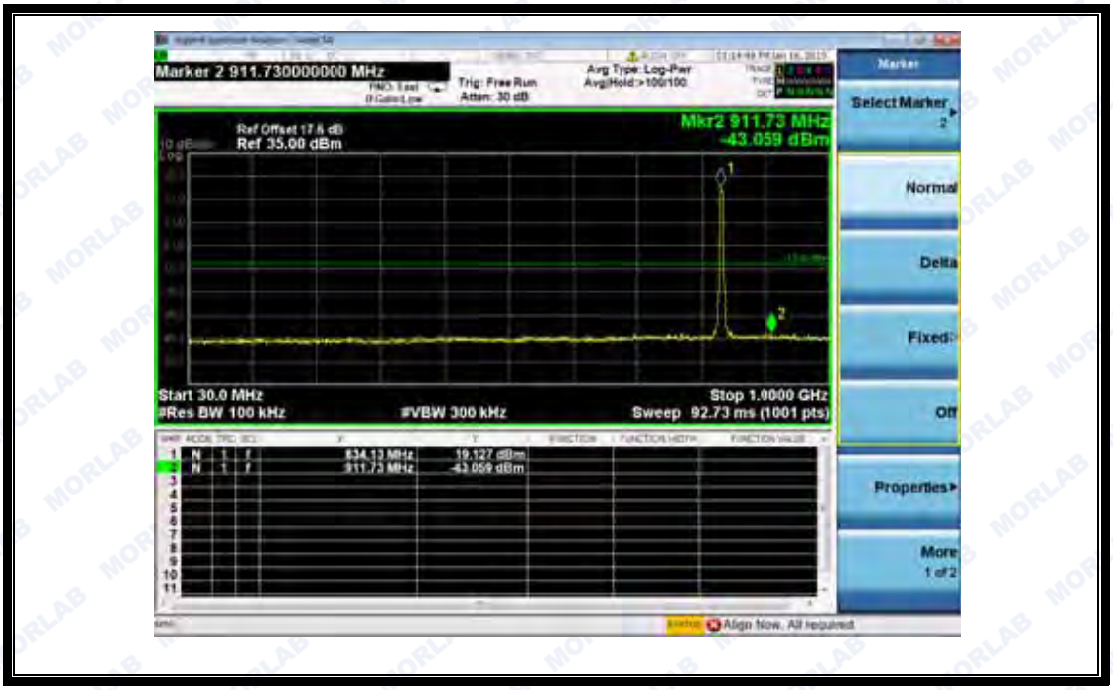
(Plot H3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)

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



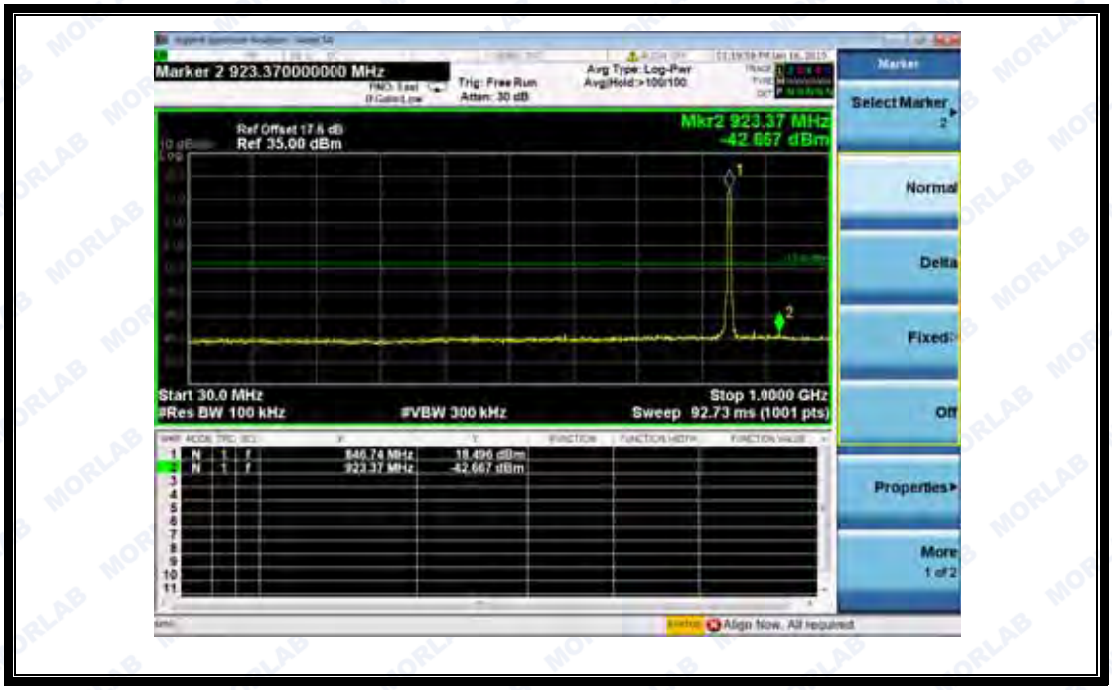
(Plot I 1:HSUPA 850MHz Channel = 4132, 30MHz to 1GHz)

(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)

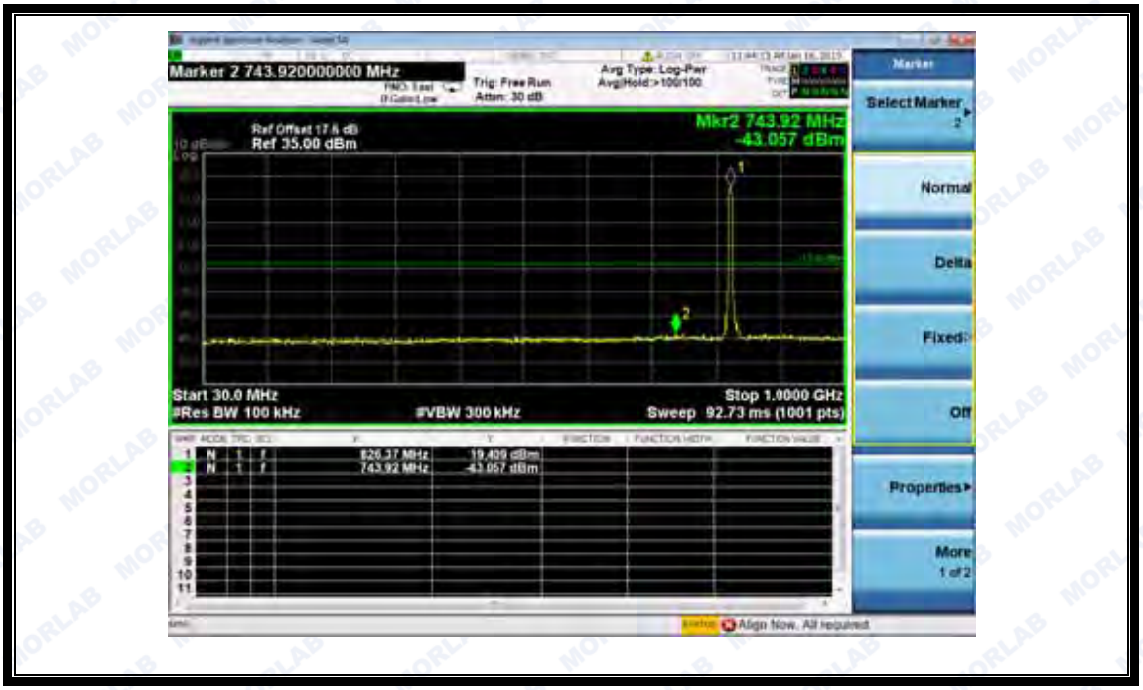
(Plot J1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)

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

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

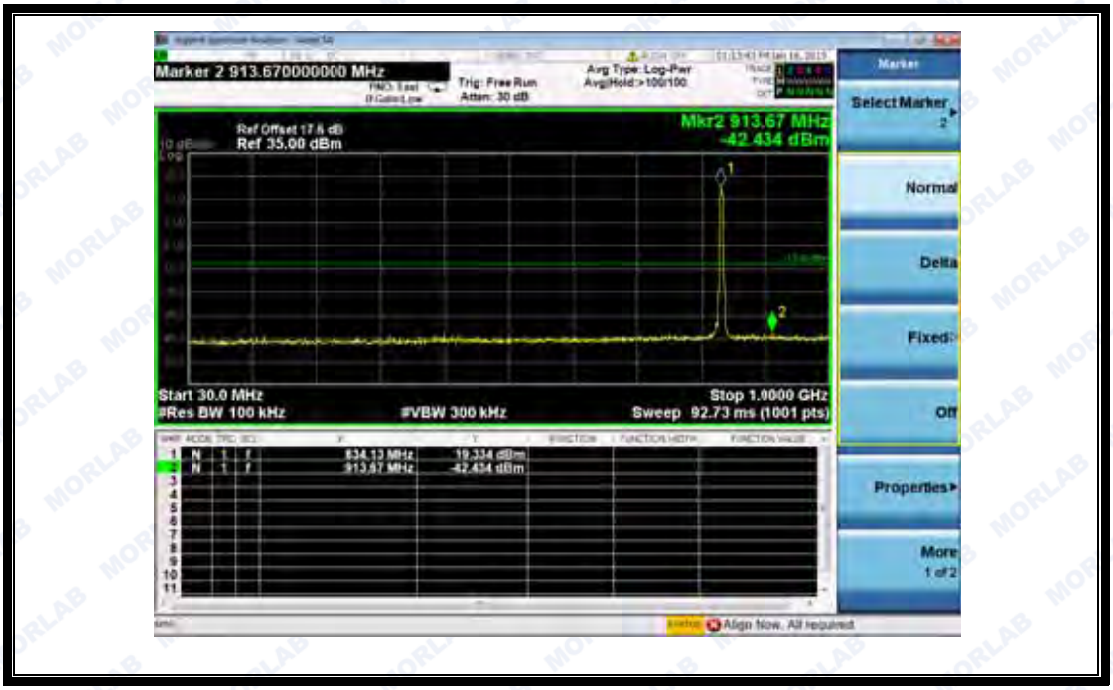
(Plot J 3: HSUPA1900MHz Channel = 9538, 30MHz to 1GHz)

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



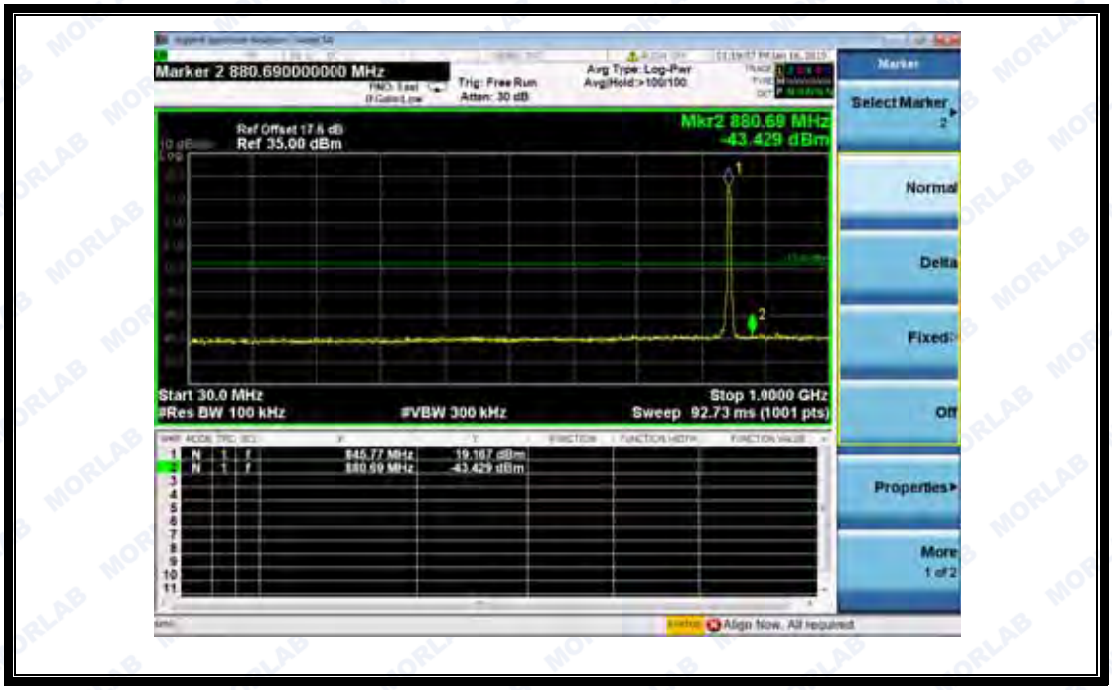
(Plot K 1: HSPA+ 850MHz Channel = 4132, 30MHz to 1GHz)

(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)



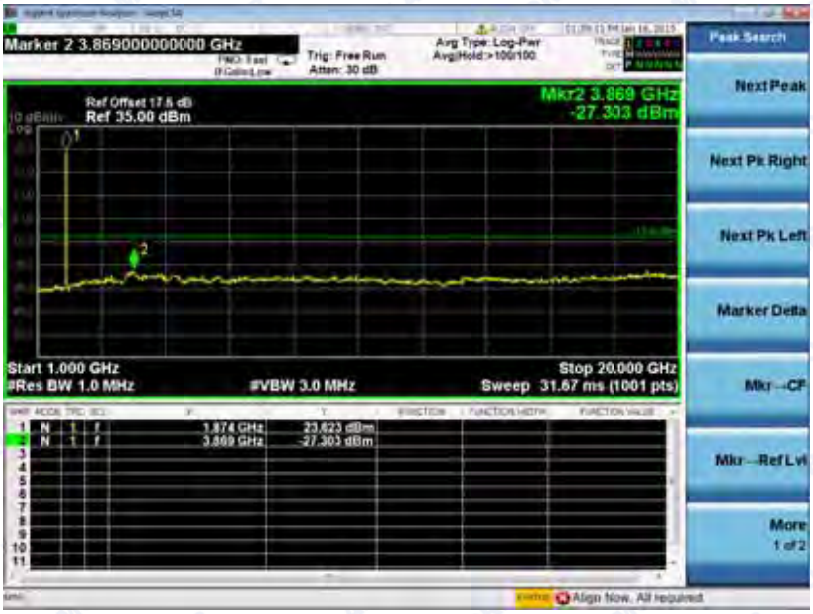
(Plot K 3: HSPA+ 850MHz Channel = 4233, 30MHz to 1GHz)

(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

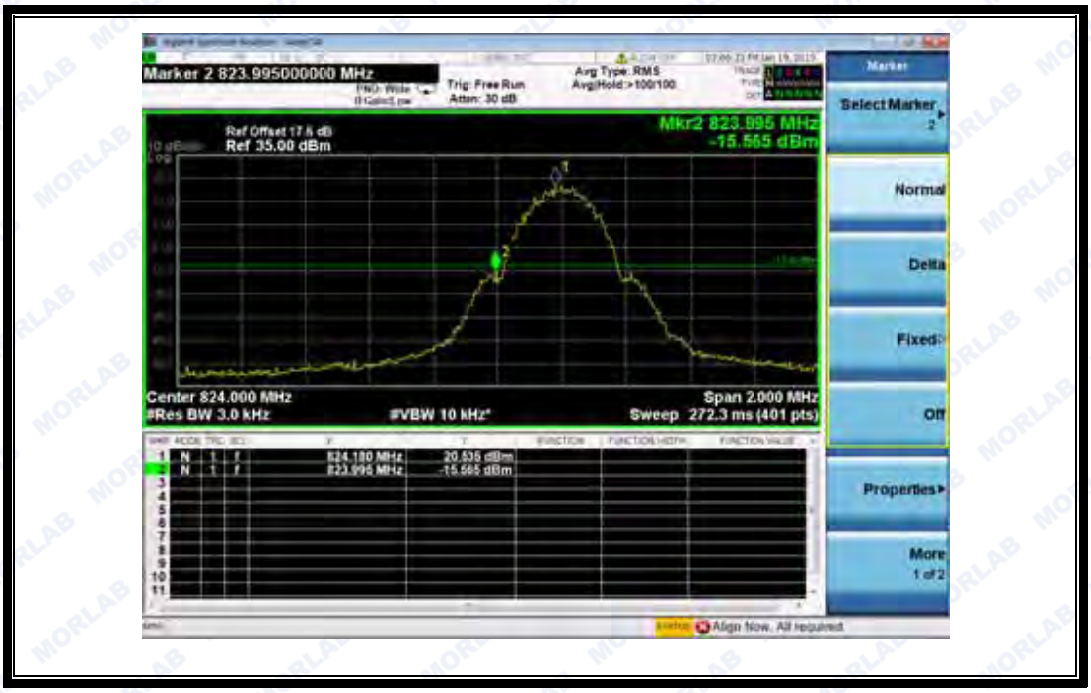
The lowest and highest channels are tested to verify the band edge emissions.

1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-15.565	Plat A	-13	PASS
	251	848.8	-16.092	Plot B		PASS
GSM 1900MHz	512	1850.2	-20.719	Plat C	-13	PASS
	810	1909.8	-18.308	Plot D		PASS
EDGE 850MHz	128	824.2	-18.134	Plat E	-13	PASS
	251	848.8	-17.040	Plot F		PASS
EDGE 1900MHz	512	1850.2	-22.141	Plat G	-13	PASS
	810	1909.8	-20.623	Plot H		PASS
WCDMA 850MHz	4132	826.4	-17.646	Plat I	-13	PASS
	4233	846.6	-17.997	Plot J		PASS
WCDMA 1900MHz	9262	1852.4	-14.301	Plat K	-13	PASS
	9538	1907.6	-14.488	Plot L		PASS
HSDPA 850MHz	4132	826.4	-15.554	Plat M	-13	PASS
	4233	846.6	-14.996	Plot N		PASS
HSDPA 1900MHz	9262	1852.4	-14.093	Plat O	-13	PASS
	9538	1907.6	-16.010	Plot P		PASS
HSUPA 850MHz	4132	826.4	-13.947	Plat Q	-13	PASS
	4233	846.6	-15.065	Plot R		PASS
HSUPA	9262	1852.4	-13.086	Plat S	-13	PASS

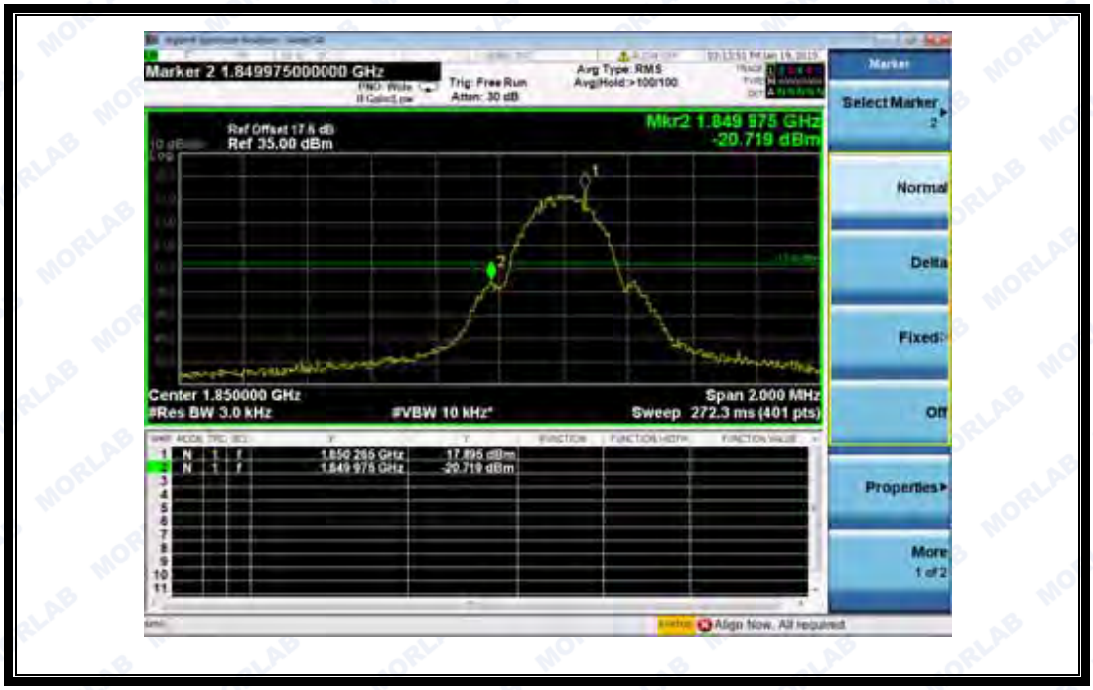
1900MHz	9538	1907.6	-14.190	Plot T		PASS
HSPA+	4132	826.4	-15.978	Plat U	-13	PASS
850MHz	4233	846.6	-15.033	Plot V		PASS
HSPA+	9262	1852.4	-13.394	Plat W	-13	PASS
1900MHz	9538	1907.6	-14.148	Plot X		PASS

2. Test Plots:

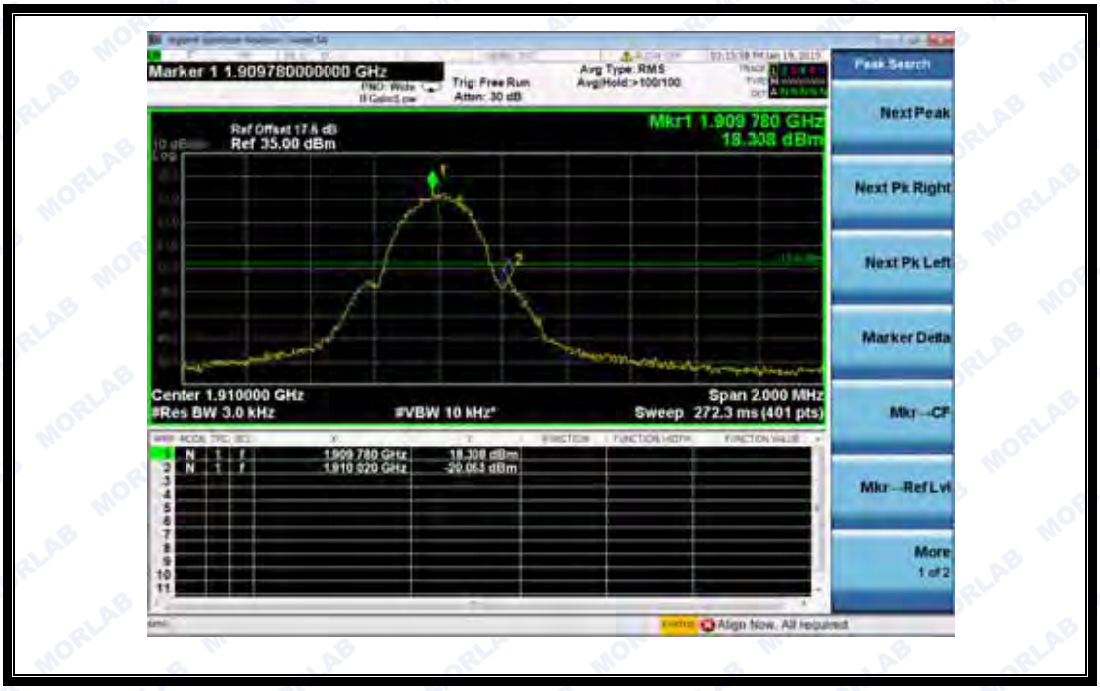


(Plot A: GSM 850 Channel = 128)

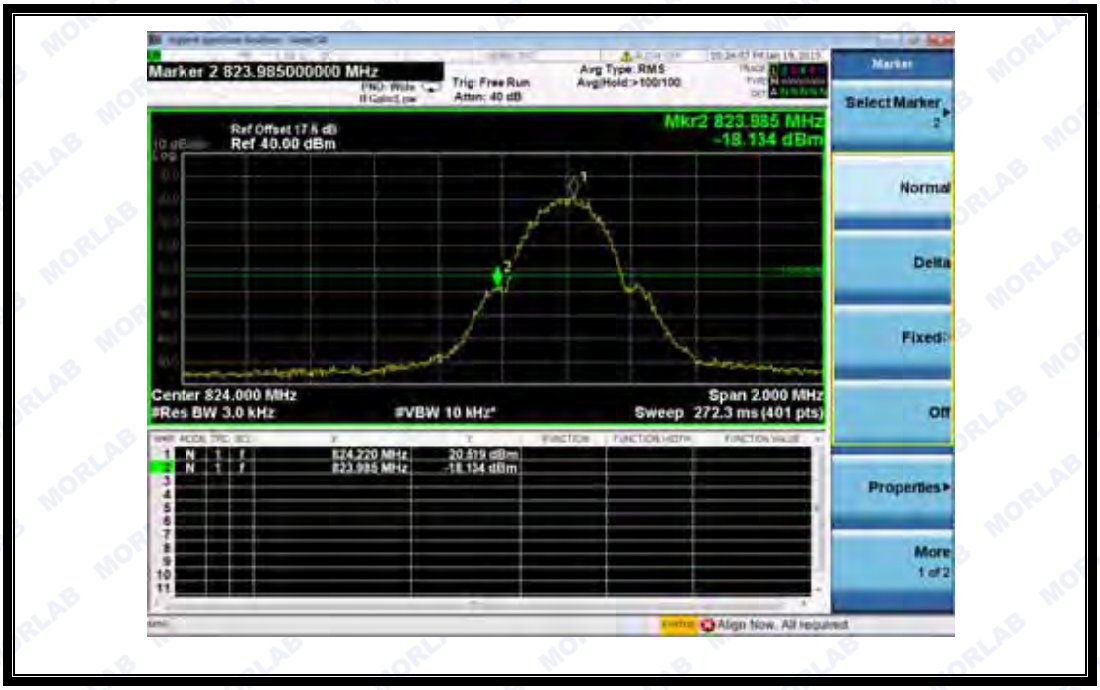
(Plot B: GSM 850 Channel = 251)



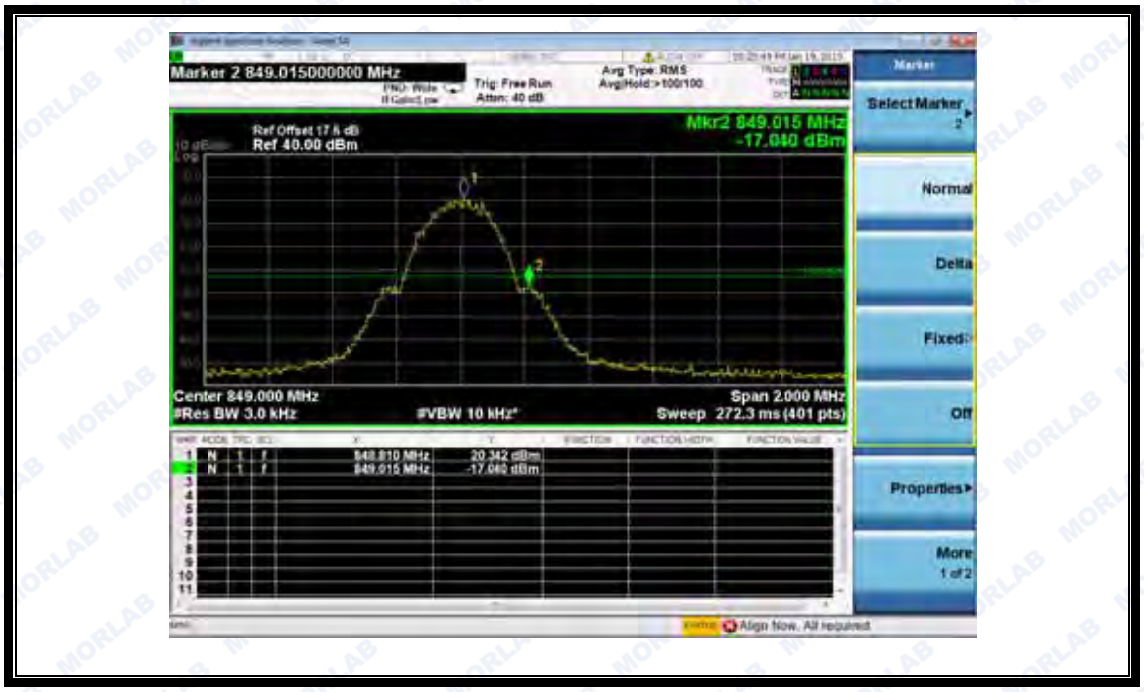
(Plot C: GSM 1900 Channel = 512)



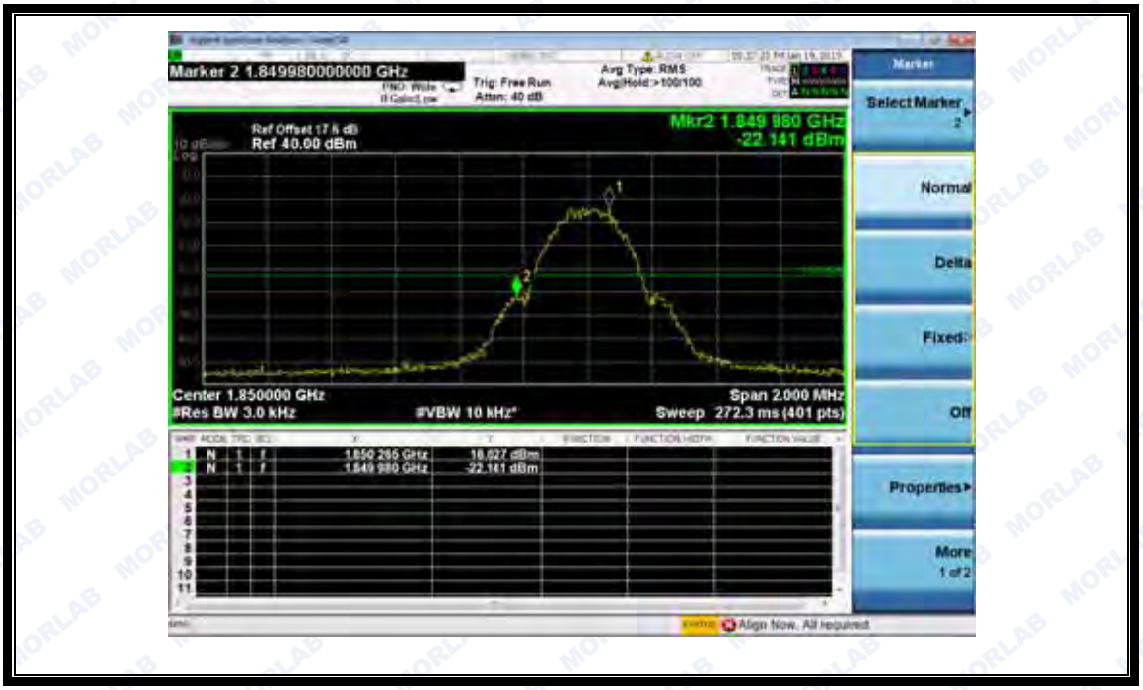
(Plot D: GSM 1900 Channel = 810)



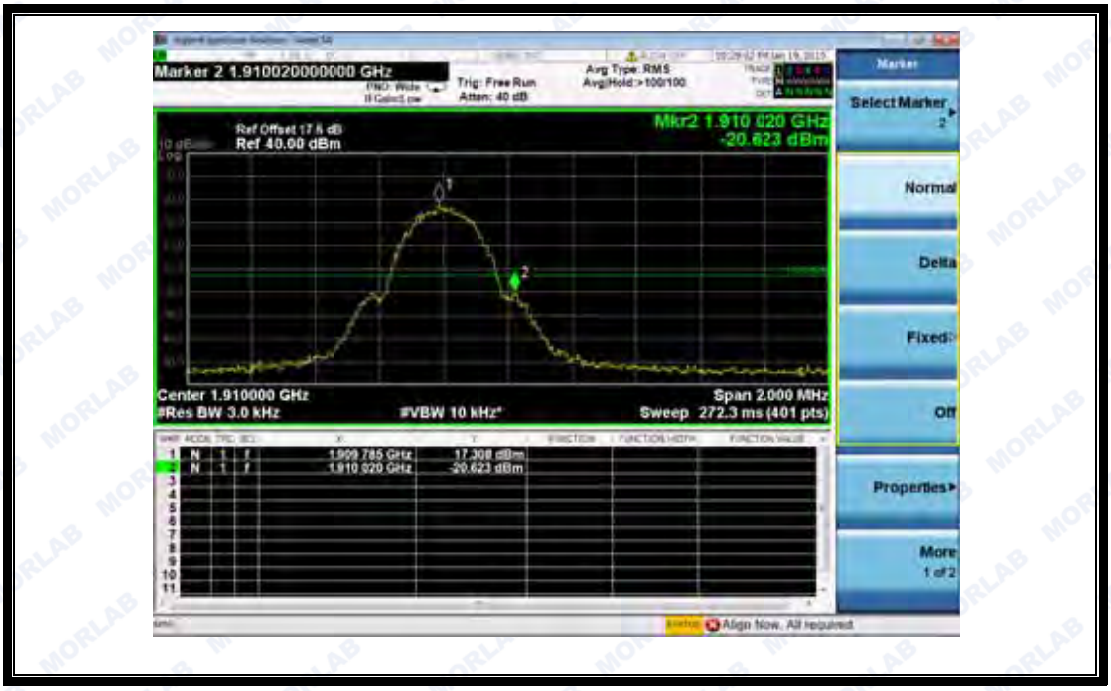
(Plot E: EGPRS 850 Channel = 128)



(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)

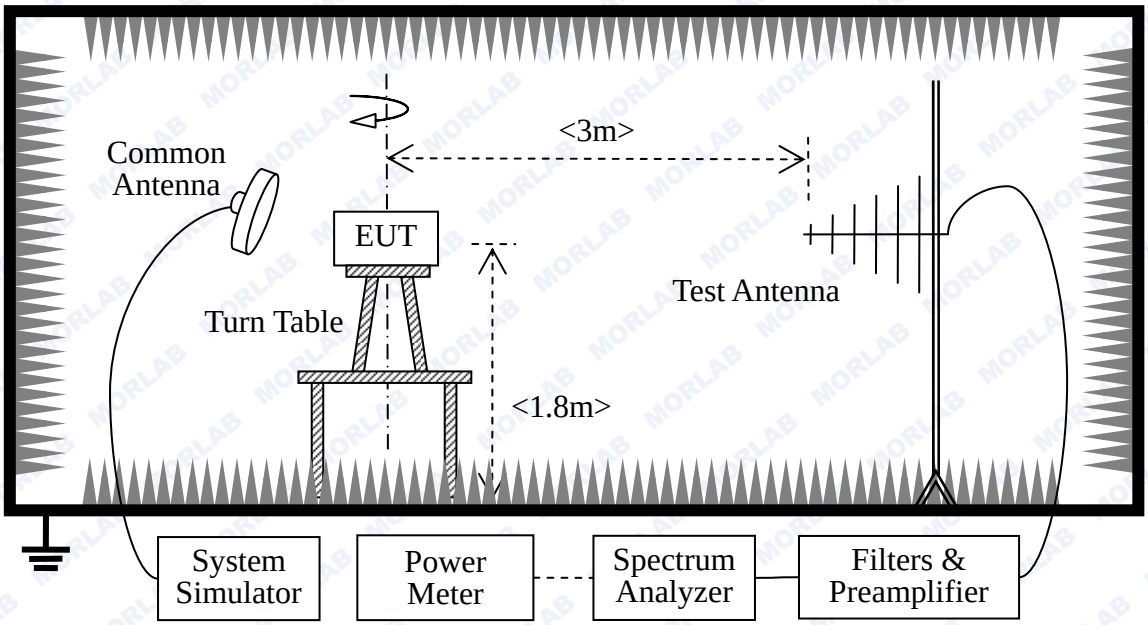
2.7 Transmitter Radiated Power (EIRP/ERP)

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 32.84dBm, GSM 1900 29.33dBm, EGPRS 850 20.55dBm, EGPRS 1900 23.11dBm,WCDMA 850 23.36dBm, WCDMA 1900 22.64dBm, 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	32.66	1.845	Plot A	38.5	7	PASS
	190	836.60	5	32.58	1.811				PASS
	251	848.80	5	32.22	1.667				PASS
GPRS 850MHz	128	824.20	5	31.14	1.300	Plot B Note 1	38.5	7	PASS
	190	836.60	5	31.49	1.409				PASS
	251	848.80	5	31.24	1.330				PASS
EGPRS 850MHz	128	824.20	5	31.73	1.489	Plot C Note 1	38.5	7	PASS
	190	836.60	5	31.92	1.556				PASS
	251	848.80	5	31.99	1.581				PASS

Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	29.09	0.811	Plot D	33	2	PASS
	661	1880.0	0	28.61	0.726				PASS
	810	1909.8	0	28.24	0.667				PASS
GPRS 1900MHz	512	1850.2	0	26.2	0.417	Plot E Note 1	33	2	PASS
	661	1880.0	0	26.67	0.465				PASS
	810	1909.8	0	26.26	0.423				PASS
EGPRS 1900MHz	512	1850.2	0	27.94	0.622	Plot F Note 1	33	2	PASS
	661	1880.0	0	27.63	0.579				PASS
	810	1909.8	0	27.52	0.565				PASS

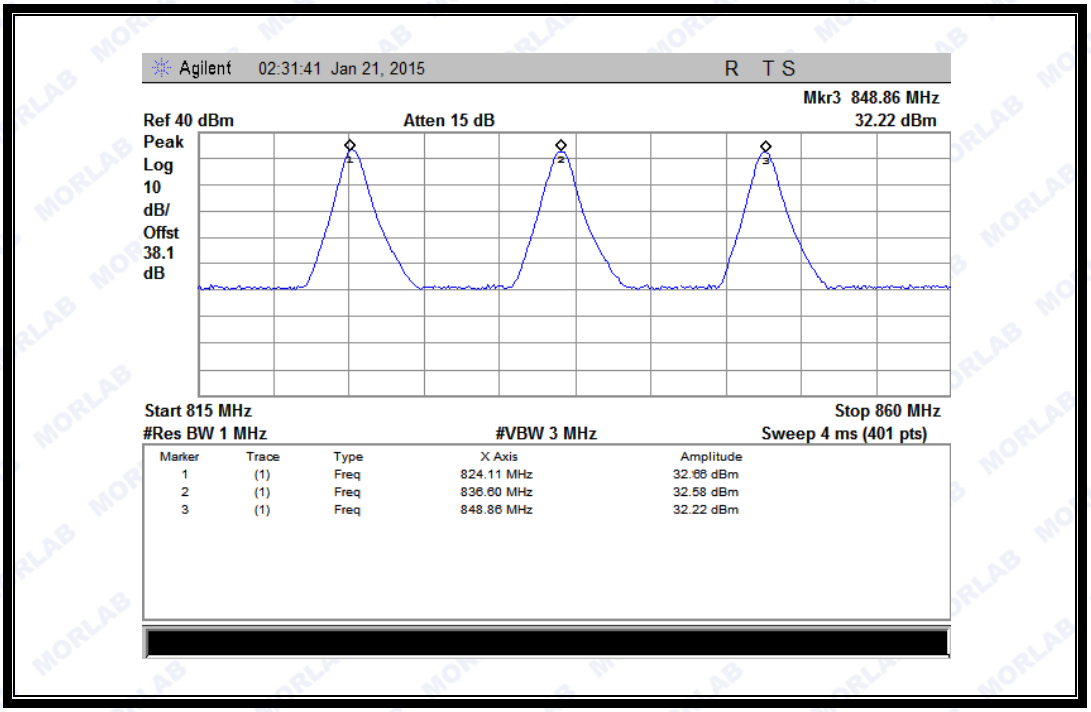
Note 1:	For the GPRS and EGPRS model, all the slots were tested and just the worst data was record in this report.

2. WCDMA Model Test Verdict:

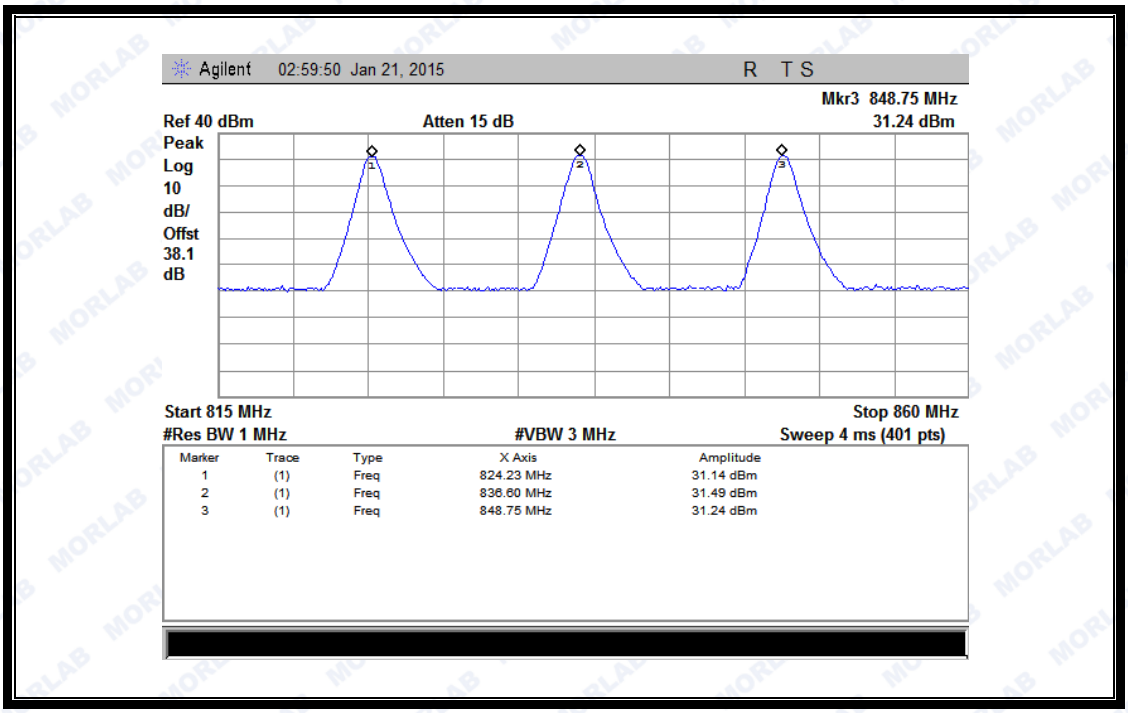
Band	Channel	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
WCDMA 850MHz	4132	826.4	27.57	0.571	Plot G	38.5	7	PASS
	4175	835	27.75	0.596				PASS
	4233	846.6	27.41	0.551				PASS
HSDPA 850MHz	4132	826.4	27.11	0.514	Plot H	38.5	7	PASS
	4175	835	27.11	0.514				PASS
	4233	846.6	27.29	0.536				PASS
HSUPA 850MHz	4132	826.4	27.07	0.509	Plot I	38.5	7	PASS
	4175	835	27.06	0.508				PASS
	4233	846.6	27.03	0.505				PASS
HSPA+ 850MHz	4132	826.4	27.11	0.514	Plot J	38.5	7	PASS
	4175	835	27.45	0.556				PASS
	4233	846.6	27.01	0.502				PASS

Band	Channel	Frequency (MHz)	Measured EIRP			Limit		Verdict
			dBm	W		dBm	W	
WCDMA 1900MHz	9262	1852.4	24.79	0.301	Plot K	33	2	PASS
	9400	1880	22.58	0.181				PASS
	9538	1907.6	24.3	0.269				PASS
HSDPA 1900MHz	9262	1852.4	24.7	0.295	Plot L	33	2	PASS
	9400	1880	22.56	0.180				PASS
	9538	1907.6	24.24	0.265				PASS
HSUPA 1900MHz	9262	1852.4	24.7	0.295	Plot M	33	2	PASS
	9400	1880	22.77	0.189				PASS
	9538	1907.6	24.26	0.267				PASS
HSPA+ 1900MHz	9262	1852.4	24.78	0.301	Plot N	33	2	PASS
	9400	1880	22.68	0.185				PASS
	9538	1907.6	24.28	0.268				PASS

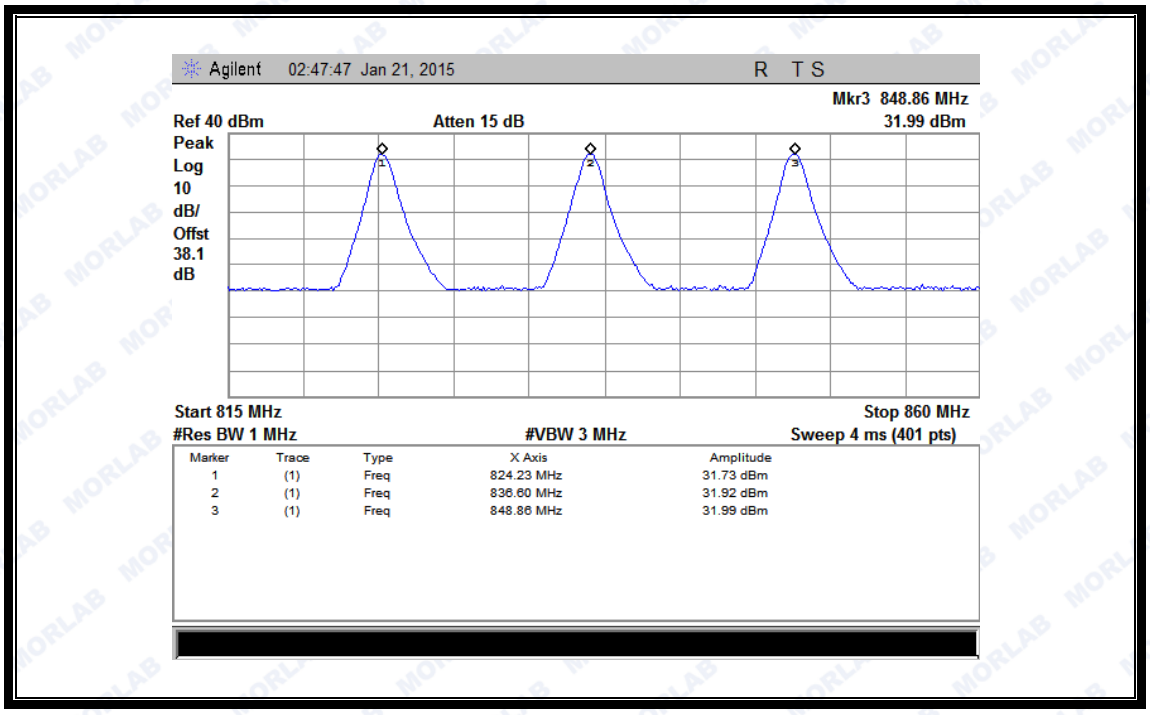
3. Test Plots:



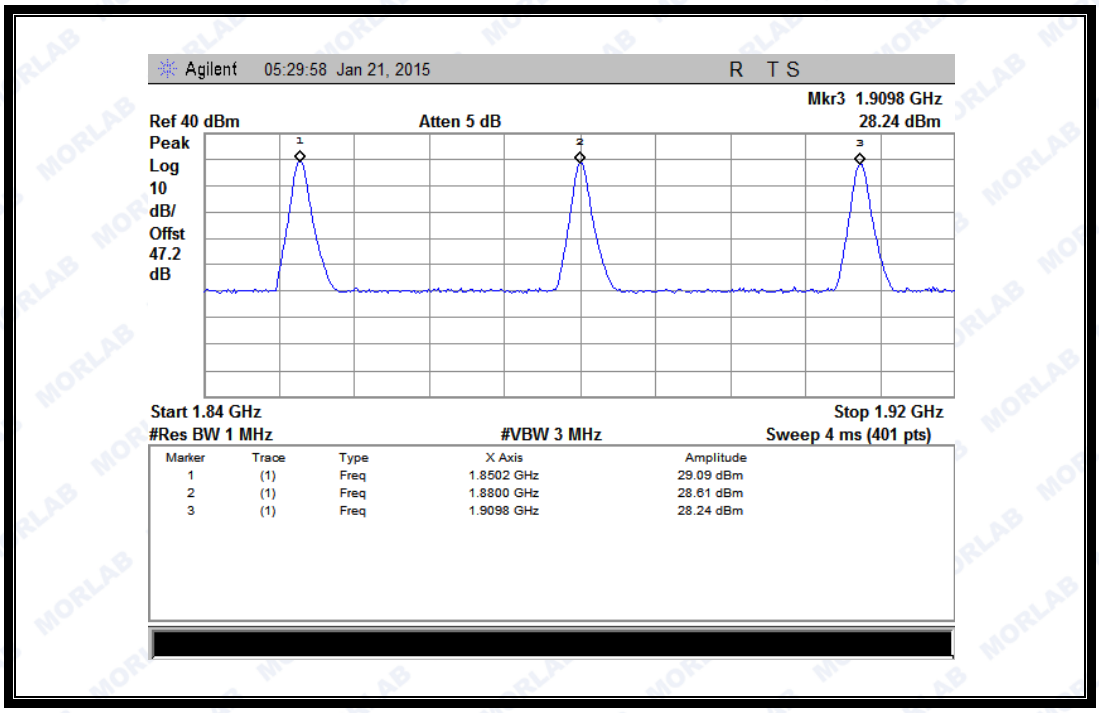
(Plot A: GSM 850MHz Channel = 128, 190, 251)



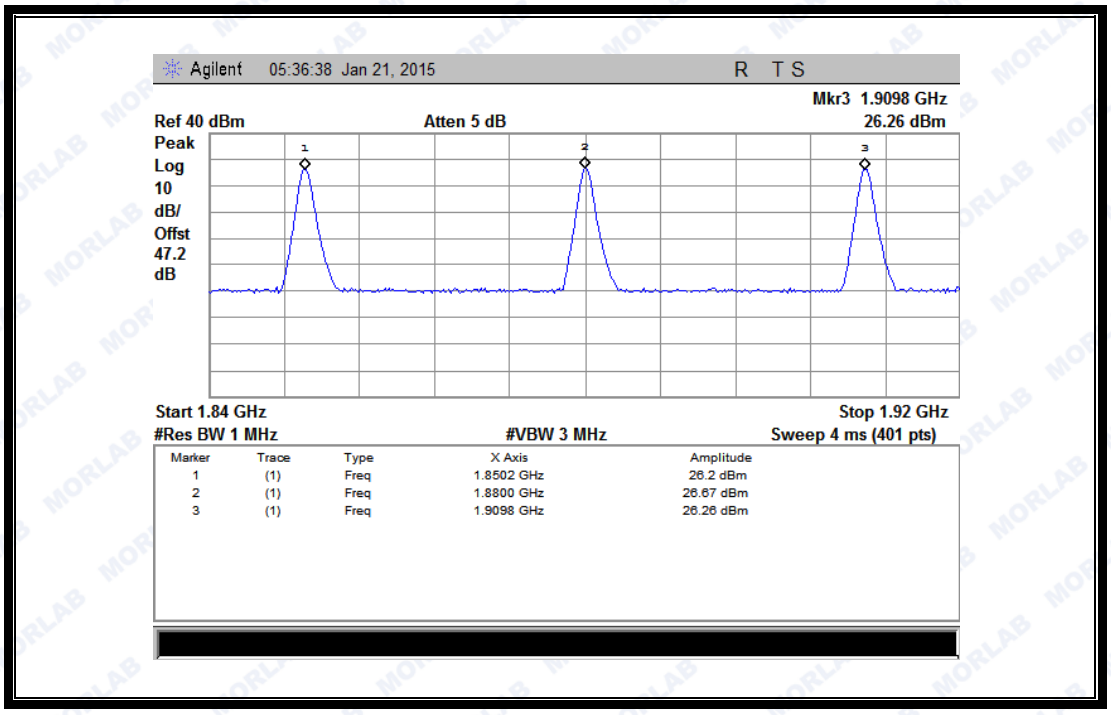
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



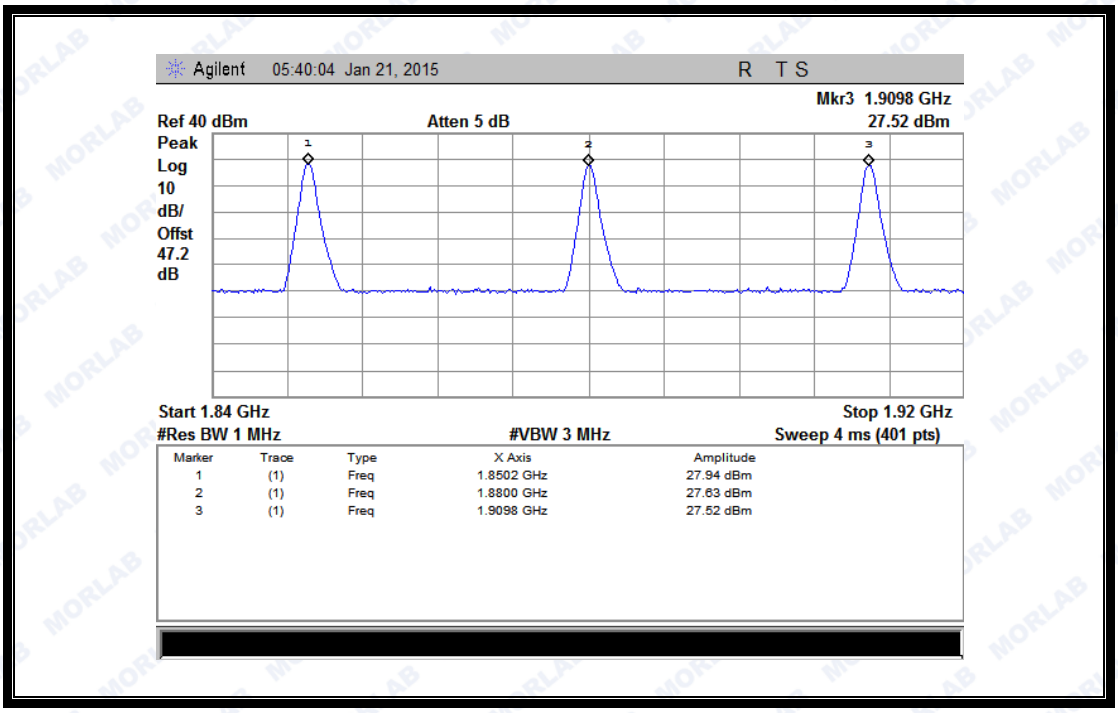
(Plot C: EGPRS 850MHz Channel = 128, 190, 251)



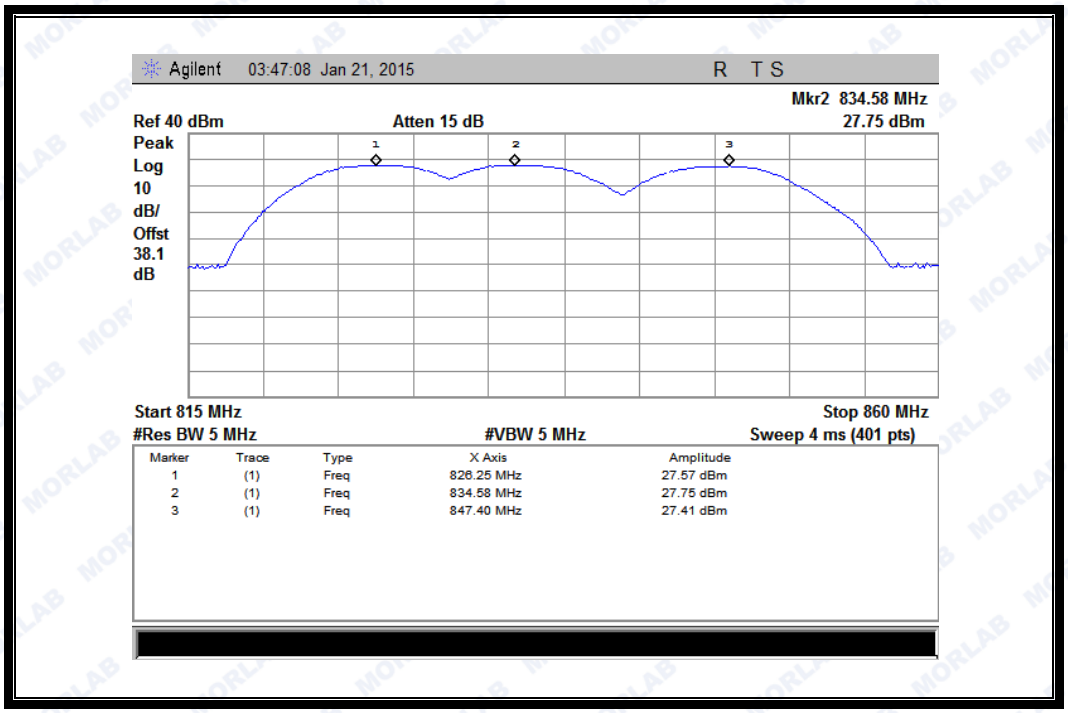
(Plot D: GSM 1900MHz Channel = 512, 661, 810)



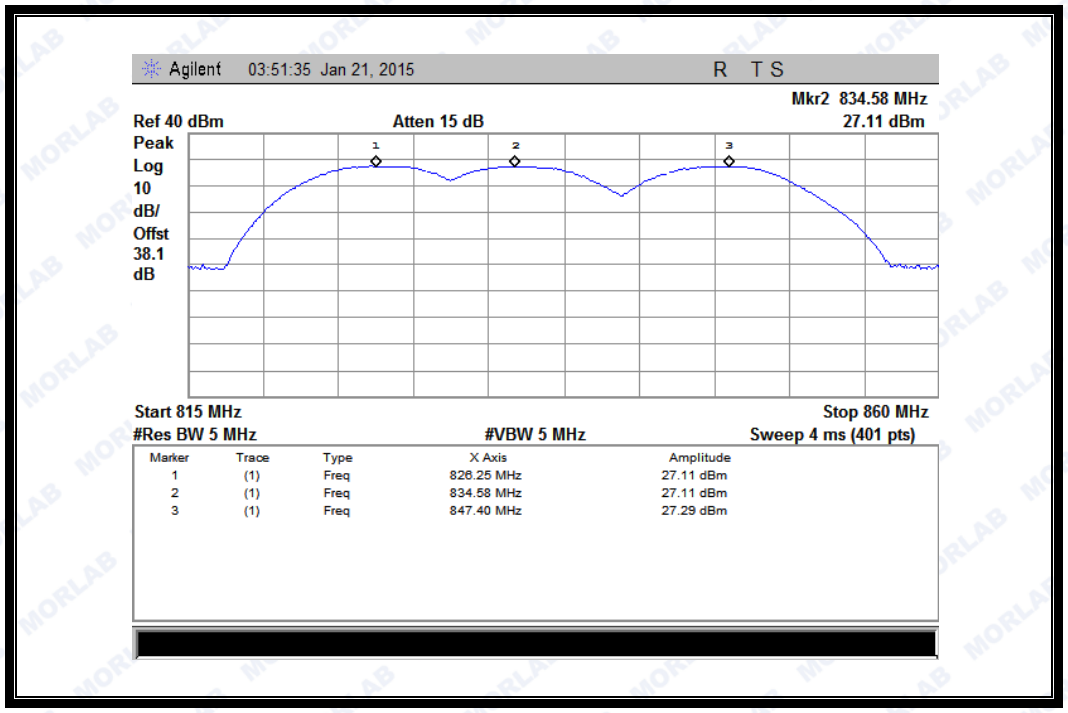
(Plot E: GPRS 1900MHz Channel = 512, 661, 810)



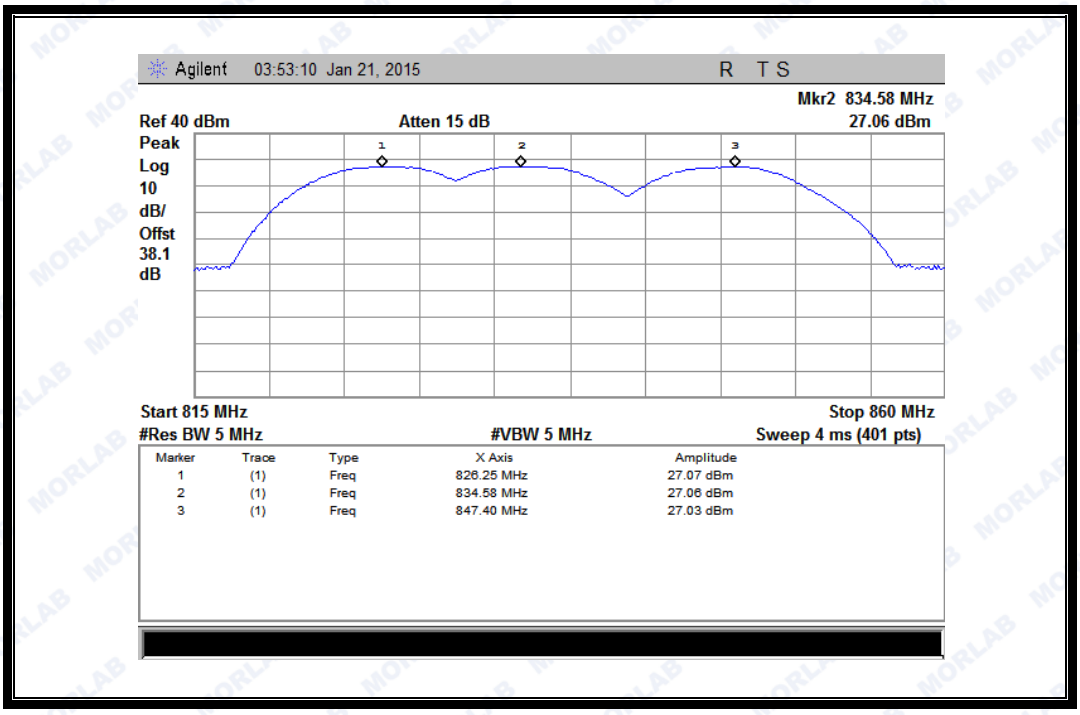
(Plot F: EGPRS 1900MHz Channel = 512, 661, 810)



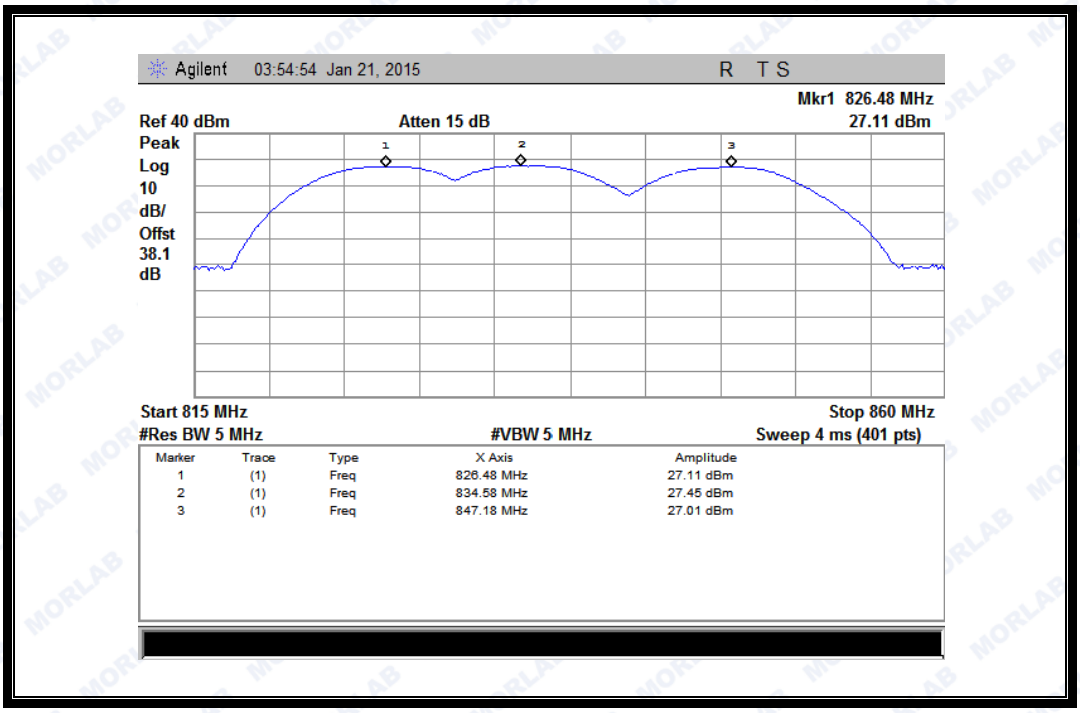
(Plot G: WCDMA 850 MHz Channel = 4132, 4175, 4233)



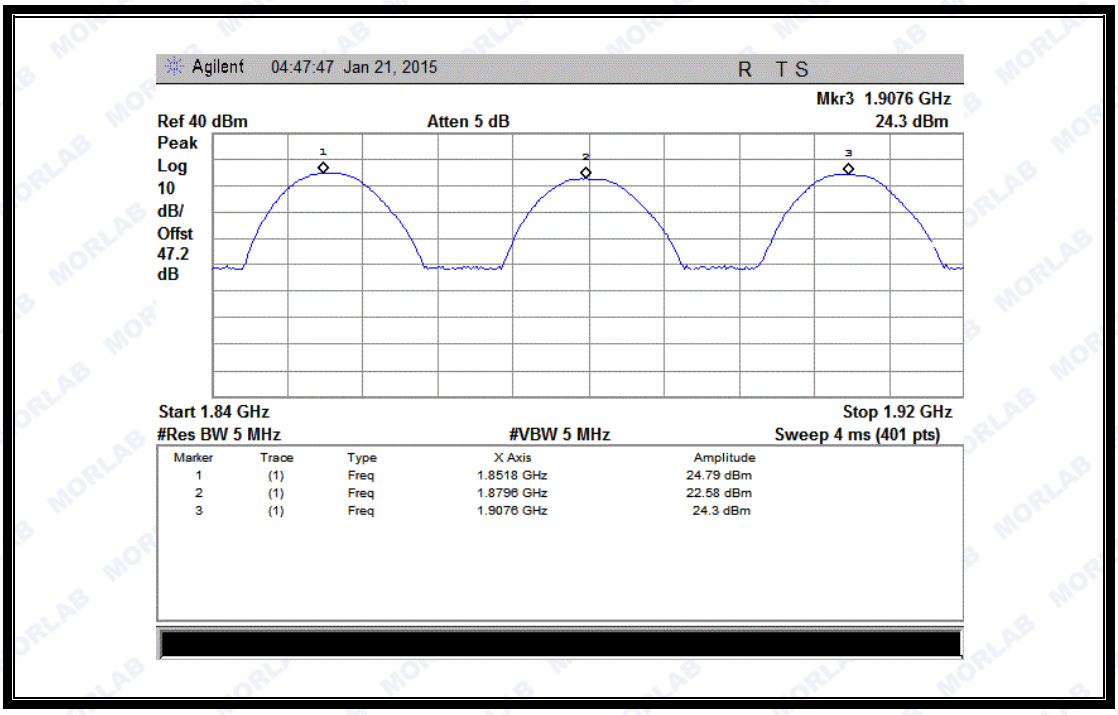
(Plot H: HSDPA 850 MHz Channel = 4132, 4175, 4233)



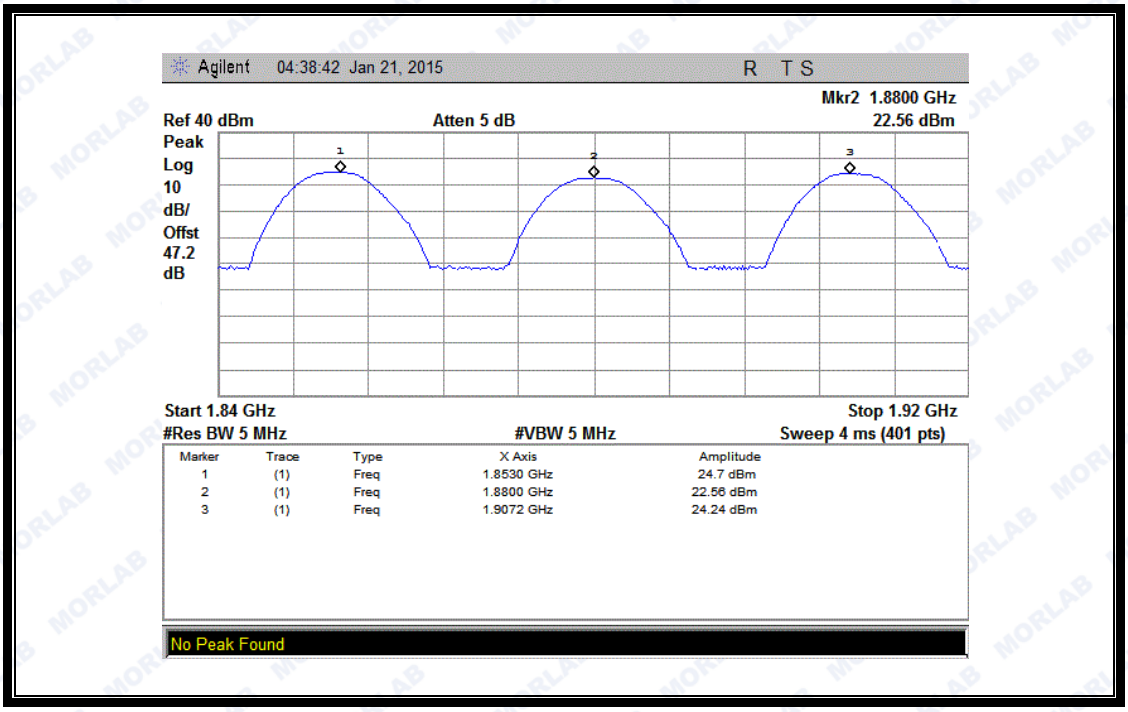
(Plot I: HSUPA 850 MHz Channel = 4132, 4175, 4233)



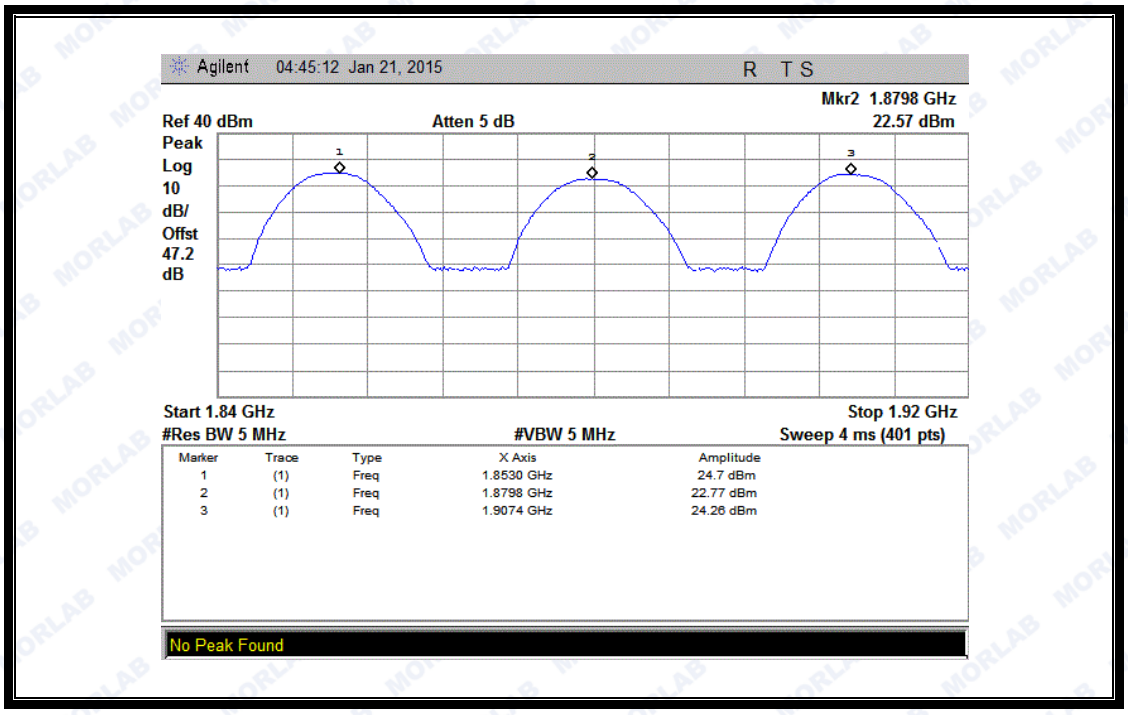
(Plot J: HSPA+ 850 MHz Channel = 4132, 4175, 4233)



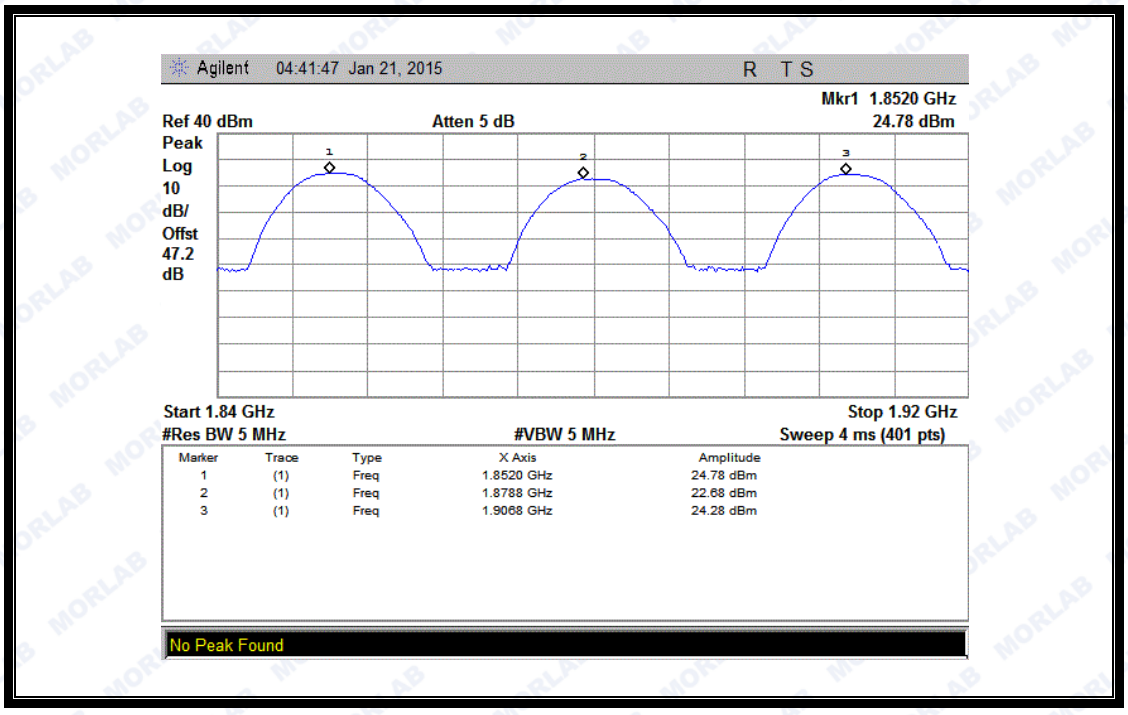
(Plot K: WCDMA 1900 MHz Channel = 9262, 9400, 9538)



(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:

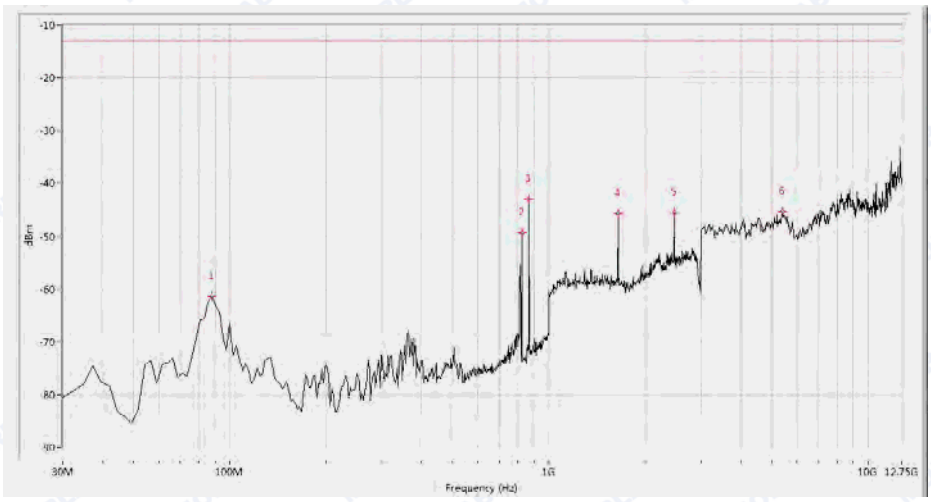
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GSM 850MHz	128	824.2	< -25	< -25	Plot A.1/A.2	-13	PASS
	190	836.6	< -25	< -25	Plot A.3/A.4		PASS
	251	848.8	< -25	< -25	Plot A.5/A.6		PASS
GSM 1900MHz	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+ 1900MHz	9262	1852.4	< -25	< -25	Plot L.1/L.2	-13	PASS
	9400	1880	< -25	< -25	Plot L.3/L.4		PASS

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

2. Test Plots for the Whole Measurement Frequency Range:

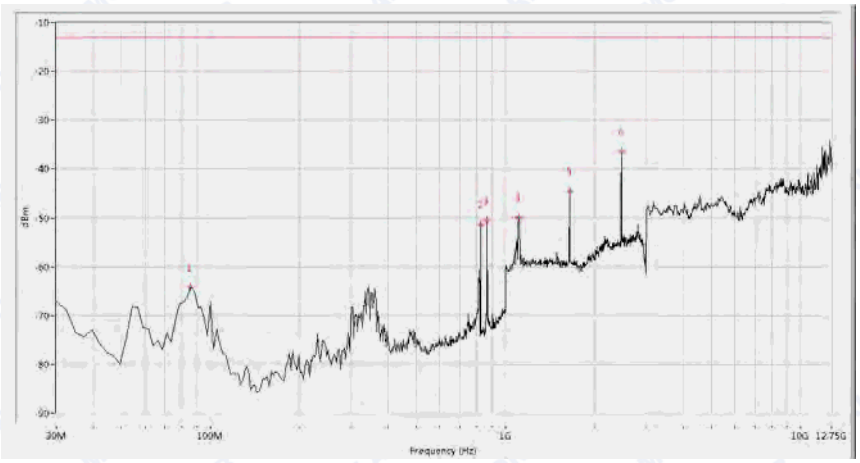
Note1: the power of the EUT transmitting frequency should be ignored.

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.



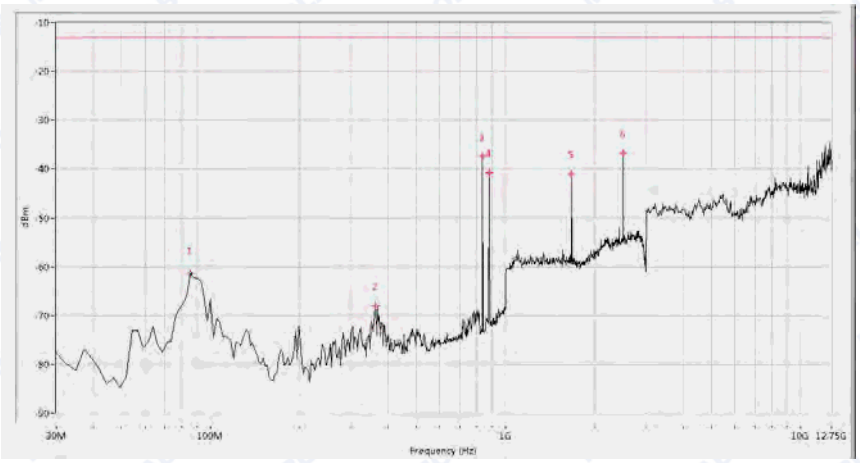
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-61.33	-13.0	48.3	246.2	Horizontal	PASS
823.416	-49.32	-13.0	36.3	183.4	Horizontal	N.A
866.958	-42.89	-13.0	29.9	129.1	Horizontal	N.A
1648.379	-45.57	-13.0	32.6	-0.0	Horizontal	PASS
2471.322	-45.52	-13.0	32.5	32.9	Horizontal	PASS
5407.107	-45.37	-13.0	32.4	58.0	Horizontal	PASS

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



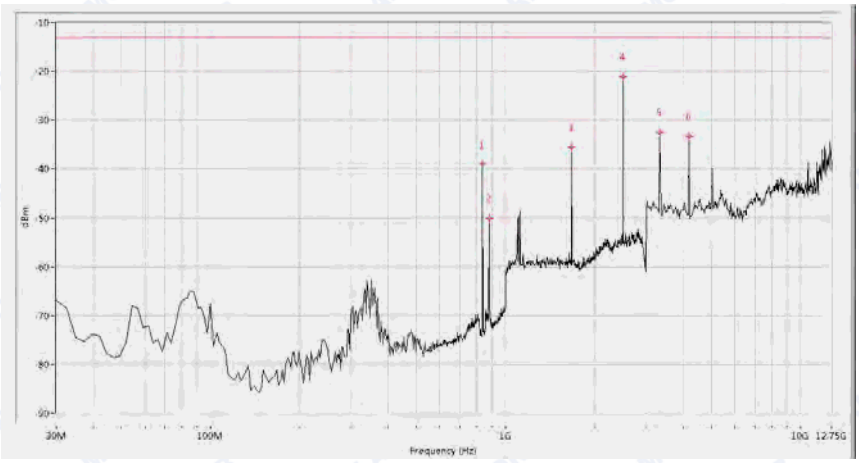
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-64.19	-13.0	51.2	72.7	Vertical	PASS
823.416	-51.40	-13.0	38.4	46.3	Vertical	N.A
866.958	-50.56	-13.0	37.6	349.1	Vertical	N.A
1109.726	-49.94	-13.0	36.9	94.1	Vertical	PASS
1648.379	-44.54	-13.0	31.5	35.4	Vertical	PASS
2471.322	-36.53	-13.0	23.5	39.1	Vertical	PASS

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



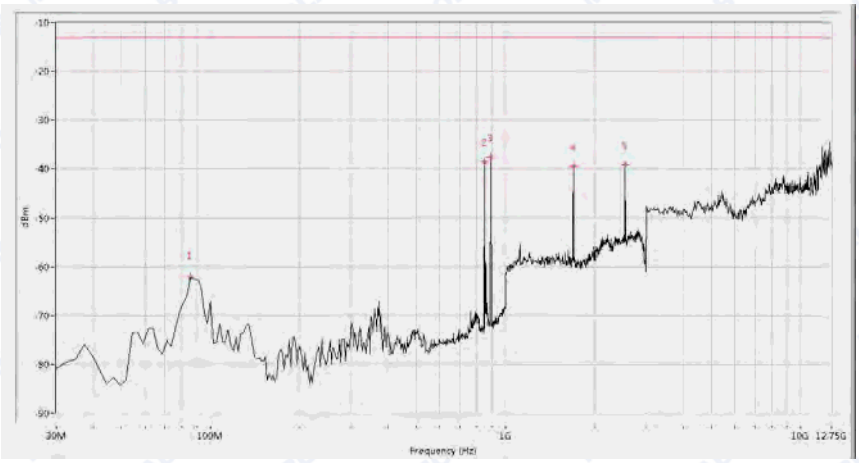
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-61.26	-13.0	48.3	243.9	Horizontal	PASS
361.397	-68.06	-13.0	55.1	84.2	Horizontal	PASS
835.511	-37.42	-13.0	24.4	217.5	Horizontal	N.A
879.052	-40.68	-13.0	27.7	173.3	Horizontal	N.A
1673.317	-41.09	-13.0	28.1	359.2	Horizontal	PASS
2506.234	-36.81	-13.0	23.8	1.0	Horizontal	PASS

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



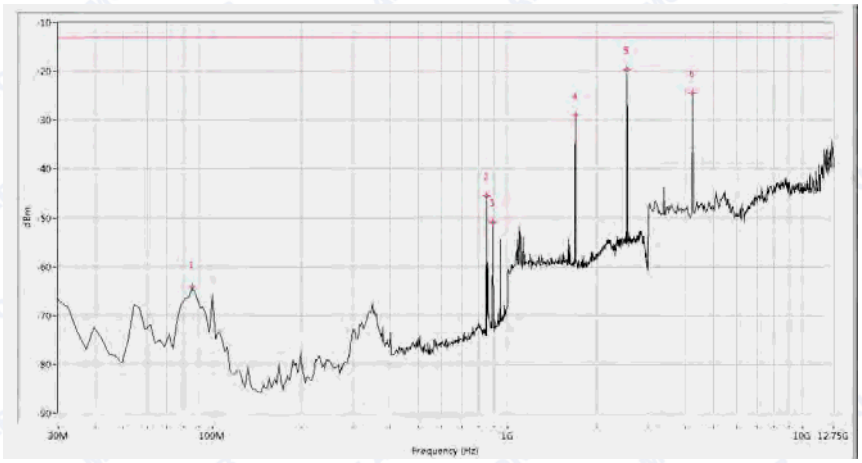
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-38.94	-13.0	25.9	360.0	Vertical	N.A
879.052	-50.07	-13.0	37.1	128.7	Vertical	N.A
1673.317	-35.45	-13.0	22.5	66.4	Vertical	PASS
2506.234	-21.15	-13.0	8.2	318.6	Vertical	PASS
3340.399	-32.50	-13.0	19.5	136.9	Vertical	PASS
4191.397	-33.32	-13.0	20.3	171.5	Vertical	PASS

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



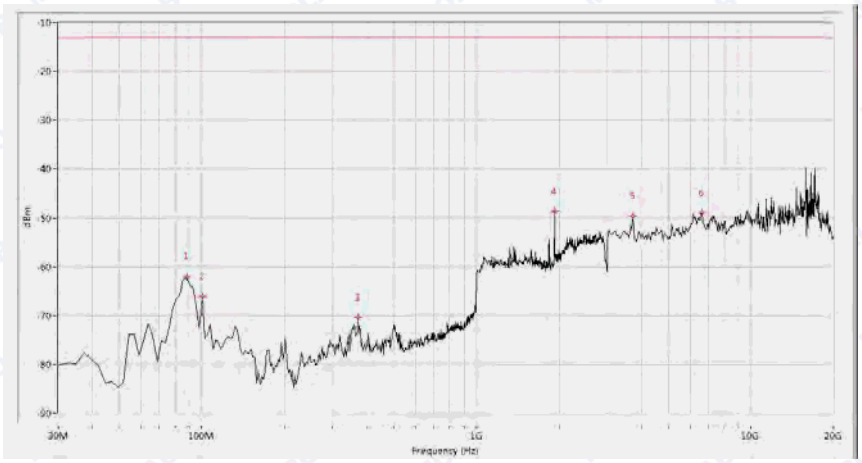
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-62.07	-13.0	49.1	89.7	Horizontal	PASS
847.606	-38.56	-13.0	25.6	168.5	Horizontal	N.A
891.147	-37.53	-13.0	24.5	274.9	Horizontal	N.A
1698.254	-39.46	-13.0	26.5	359.6	Horizontal	PASS
2541.147	-39.12	-13.0	26.1	124.0	Horizontal	PASS

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



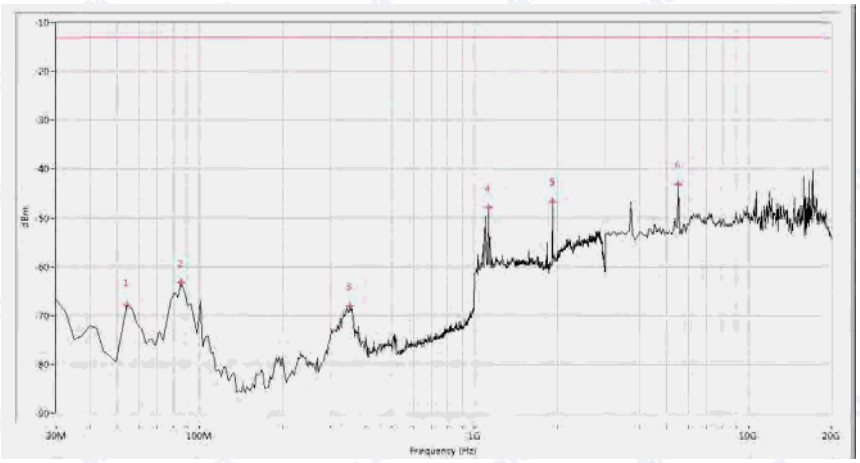
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-64.22	-13.0	51.2	-0.0	Vertical	PASS
847.606	-45.49	-13.0	32.5	26.9	Vertical	N.A
891.147	-50.88	-13.0	37.9	74.6	Vertical	N.A
1698.254	-28.96	-13.0	16.0	159.2	Vertical	PASS
2541.147	-19.64	-13.0	6.6	91.9	Vertical	PASS
4240.025	-24.36	-13.0	11.4	89.5	Vertical	PASS

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



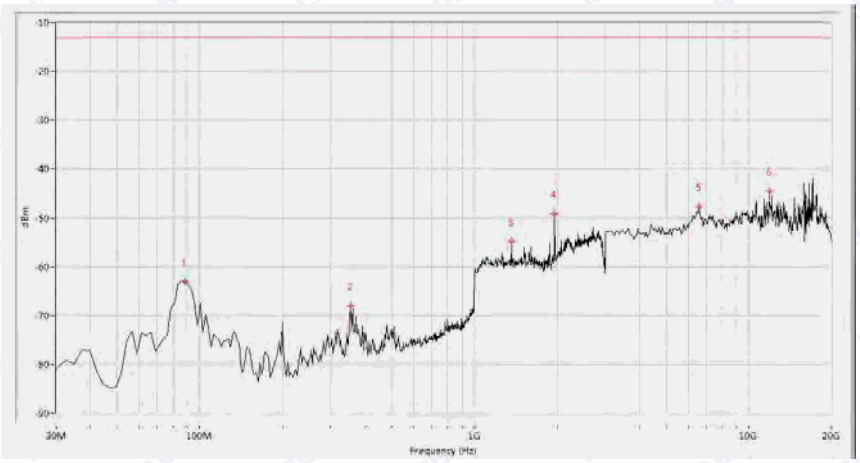
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-62.16	-13.0	49.2	77.6	Horizontal	PASS
100.150	-66.16	-13.0	53.2	217.0	Horizontal	PASS
371.072	-70.36	-13.0	57.4	92.8	Horizontal	PASS
1927.681	-48.65	-13.0	35.6	47.7	Horizontal	N.A
3720.698	-49.60	-13.0	36.6	317.5	Horizontal	PASS
6645.885	-48.93	-13.0	35.9	301.9	Horizontal	PASS

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



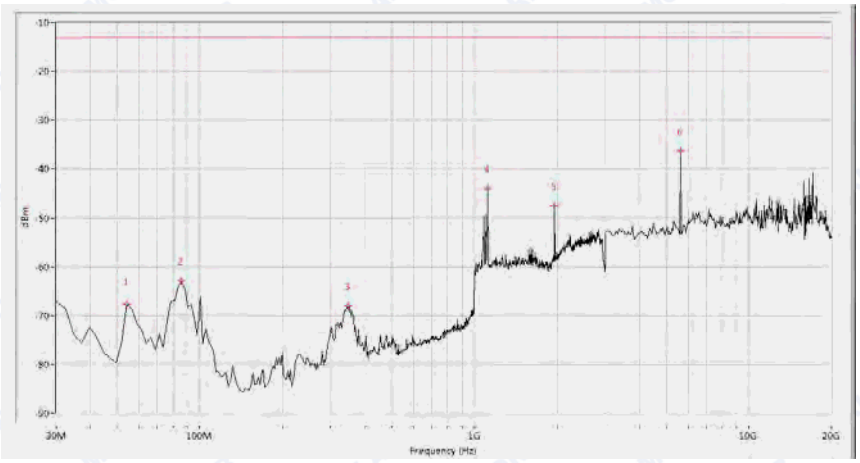
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.87	-13.0	54.9	339.1	Vertical	PASS
85.636	-63.20	-13.0	50.2	360.0	Vertical	PASS
351.721	-68.06	-13.0	55.1	161.7	Vertical	PASS
1124.688	-47.80	-13.0	34.8	360.0	Vertical	PASS
1927.681	-46.62	-13.0	33.6	44.7	Vertical	N.A
5543.641	-43.16	-13.0	30.2	37.8	Vertical	PASS

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



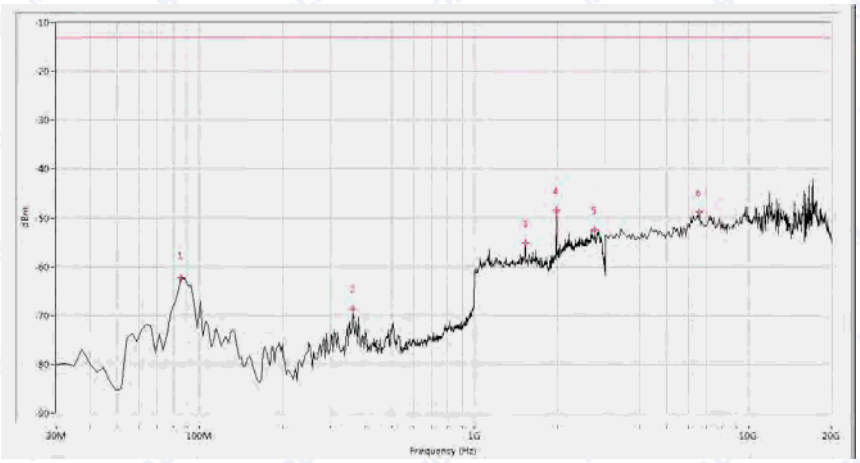
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-63.05	-13.0	50.1	269.2	Horizontal	PASS
354.140	-68.05	-13.0	55.0	125.2	Horizontal	PASS
1364.090	-54.89	-13.0	41.9	89.7	Horizontal	PASS
1957.606	-49.20	-13.0	36.2	221.8	Horizontal	N.A
6603.491	-47.74	-13.0	34.7	307.8	Horizontal	PASS
11860.349	-44.56	-13.0	31.6	284.0	Horizontal	PASS

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



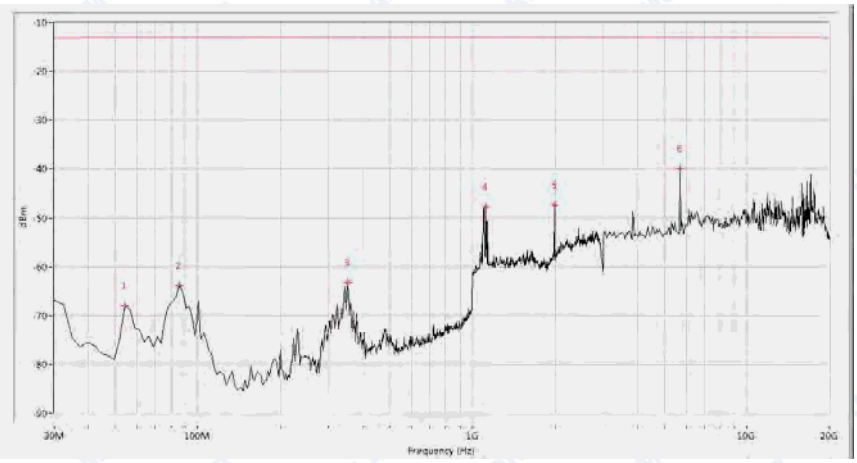
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.72	-13.0	54.7	56.7	Vertical	PASS
85.636	-62.97	-13.0	50.0	173.1	Vertical	PASS
346.883	-68.05	-13.0	55.0	153.0	Vertical	PASS
1119.701	-43.98	-13.0	31.0	360.0	Vertical	PASS
1957.606	-47.54	-13.0	34.5	305.4	Vertical	N.A
5628.429	-36.24	-13.0	23.2	356.2	Vertical	PASS

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



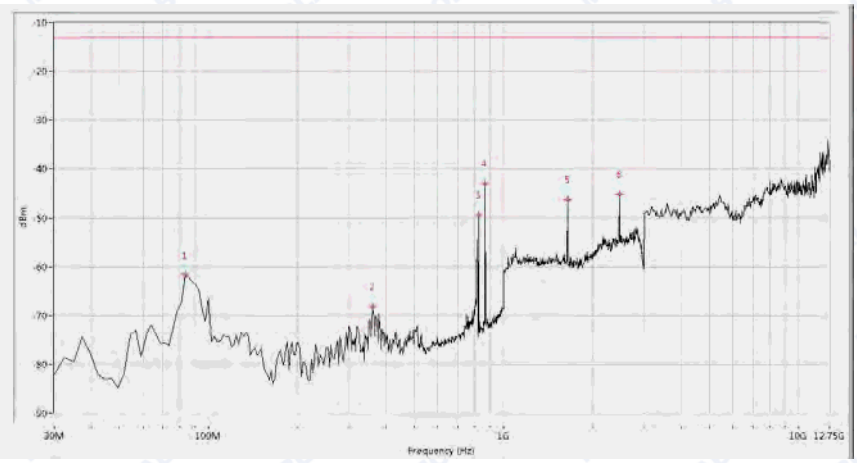
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-62.33	-13.0	49.3	47.1	Horizontal	PASS
361.397	-68.58	-13.0	55.6	99.2	Horizontal	PASS
1533.666	-55.23	-13.0	42.2	9.4	Horizontal	PASS
1987.531	-48.48	-13.0	35.5	146.6	Horizontal	N.A
2745.636	-52.42	-13.0	39.4	204.2	Horizontal	PASS
6603.491	-48.76	-13.0	35.8	162.0	Horizontal	PASS

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



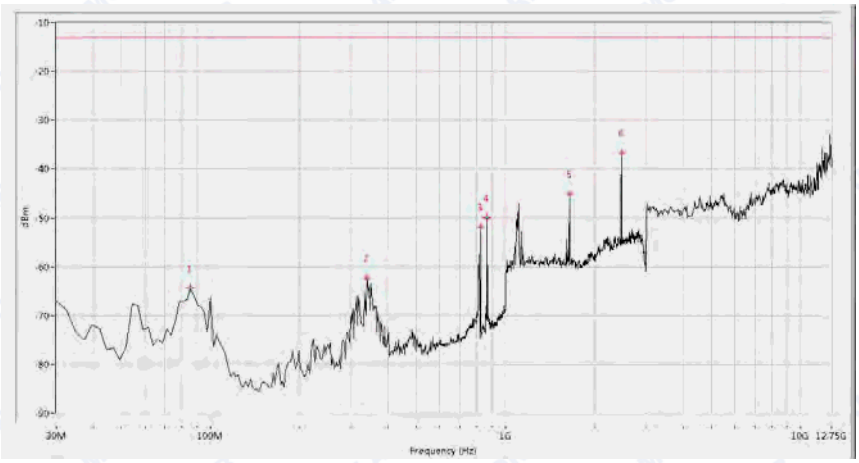
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.00	-13.0	55.0	-0.0	Vertical	PASS
85.636	-63.80	-13.0	50.8	304.5	Vertical	PASS
351.721	-63.24	-13.0	50.2	197.7	Vertical	PASS
1119.701	-47.63	-13.0	34.6	360.0	Vertical	PASS
1987.531	-47.38	-13.0	34.4	218.3	Vertical	N.A
5713.217	-39.91	-13.0	26.9	332.0	Vertical	PASS

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



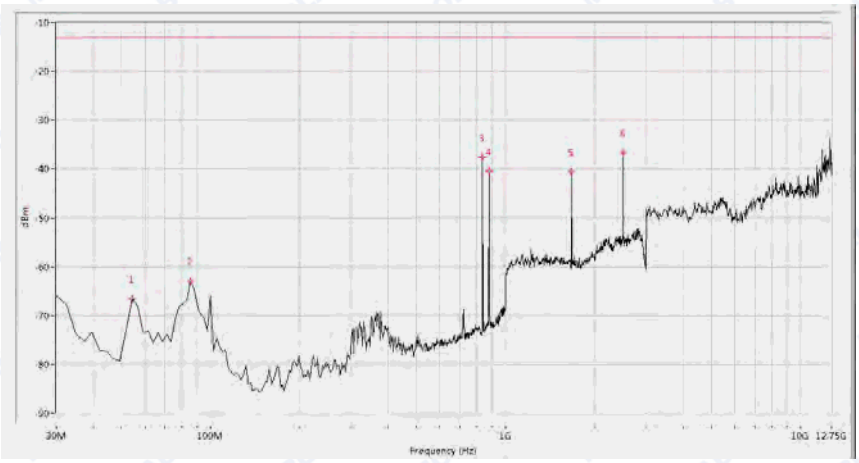
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-61.57	-13.0	48.6	246.9	Horizontal	PASS
358.978	-68.14	-13.0	55.1	112.3	Horizontal	PASS
823.416	-49.41	-13.0	36.4	195.6	Horizontal	N.A
866.958	-43.01	-13.0	30.0	112.3	Horizontal	N.A
1648.379	-46.31	-13.0	33.3	103.1	Horizontal	PASS
2471.322	-45.22	-13.0	32.2	39.1	Horizontal	PASS

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



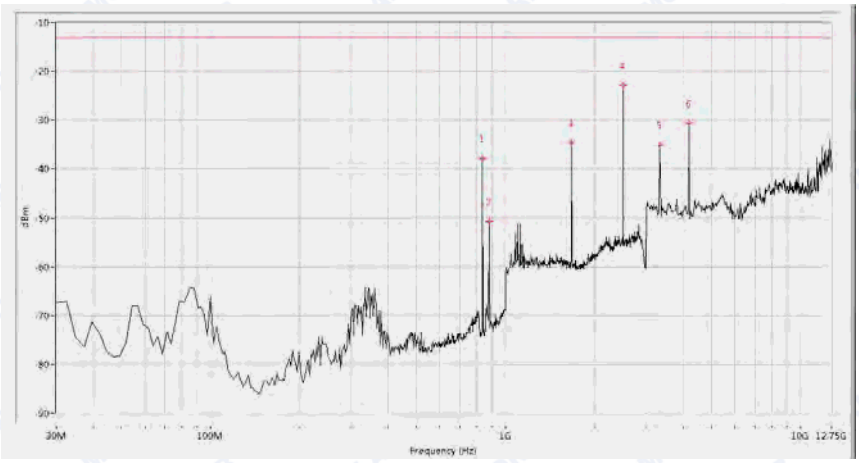
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-64.28	-13.0	51.3	307.1	Vertical	PASS
339.626	-62.30	-13.0	49.3	119.6	Vertical	PASS
823.416	-51.87	-13.0	38.9	56.7	Vertical	N.A
866.958	-49.92	-13.0	36.9	311.9	Vertical	N.A
1648.379	-45.01	-13.0	32.0	86.3	Vertical	PASS
2471.322	-36.54	-13.0	23.5	51.4	Vertical	PASS

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



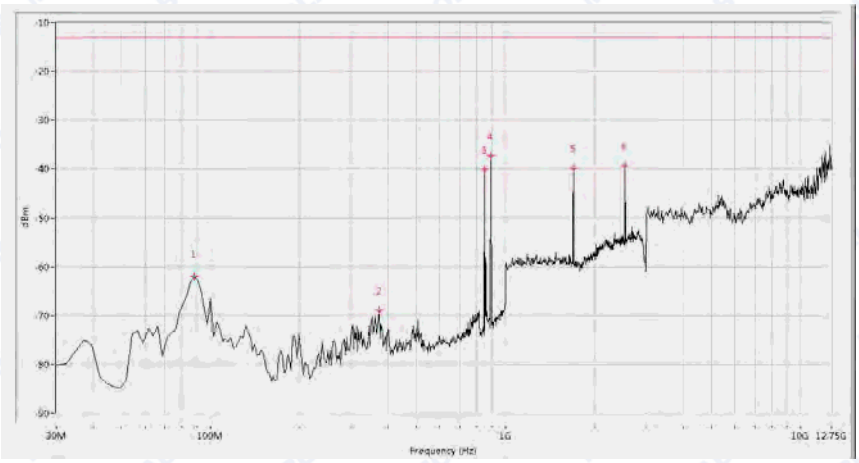
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-66.54	-13.0	53.5	137.4	Horizontal	PASS
85.636	-62.91	-13.0	49.9	127.0	Horizontal	PASS
835.511	-37.52	-13.0	24.5	152.0	Horizontal	N.A
879.052	-40.45	-13.0	27.4	337.6	Horizontal	N.A
1673.317	-40.63	-13.0	27.6	357.3	Horizontal	PASS
2506.234	-36.65	-13.0	23.7	358.3	Horizontal	PASS

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



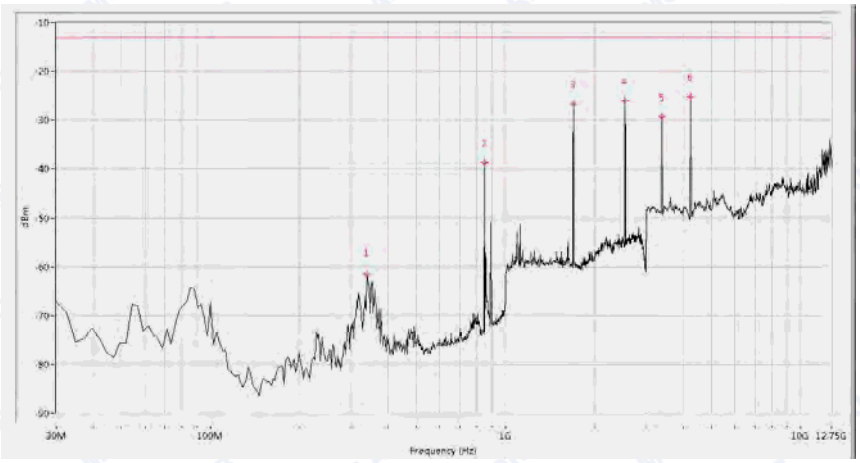
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-37.95	-13.0	25.0	43.4	Vertical	N.A
879.052	-50.74	-13.0	37.7	322.0	Vertical	N.A
1673.317	-34.52	-13.0	21.5	74.8	Vertical	PASS
2506.234	-22.78	-13.0	9.8	156.6	Vertical	PASS
3340.399	-35.02	-13.0	22.0	82.8	Vertical	PASS
4191.397	-30.64	-13.0	17.6	105.8	Vertical	PASS

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



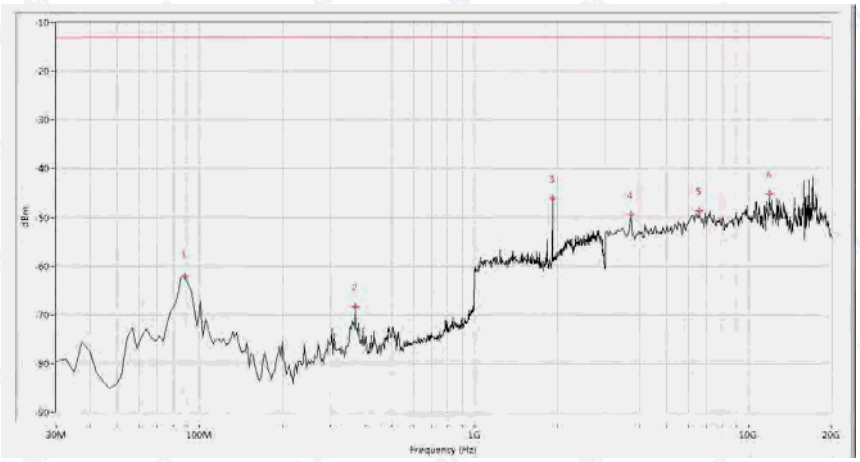
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-61.99	-13.0	49.0	54.5	Horizontal	PASS
373.491	-68.96	-13.0	56.0	112.5	Horizontal	PASS
847.606	-40.04	-13.0	27.0	175.4	Horizontal	N.A
891.147	-37.30	-13.0	24.3	4.3	Horizontal	N.A
1698.254	-39.78	-13.0	26.8	2.1	Horizontal	PASS
2541.147	-39.30	-13.0	26.3	128.4	Horizontal	PASS

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



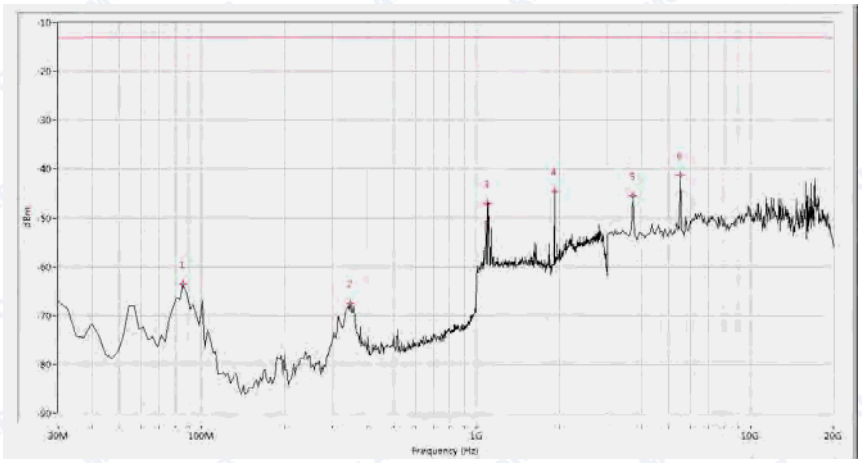
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
339.626	-61.71	-13.0	48.7	143.0	Vertical	PASS
847.606	-38.64	-13.0	25.6	359.1	Vertical	N.A
1698.254	-26.63	-13.0	13.6	230.8	Vertical	PASS
2541.147	-26.05	-13.0	13.0	96.2	Vertical	PASS
3389.027	-29.35	-13.0	16.4	101.2	Vertical	PASS
4240.025	-25.17	-13.0	12.2	64.0	Vertical	PASS

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



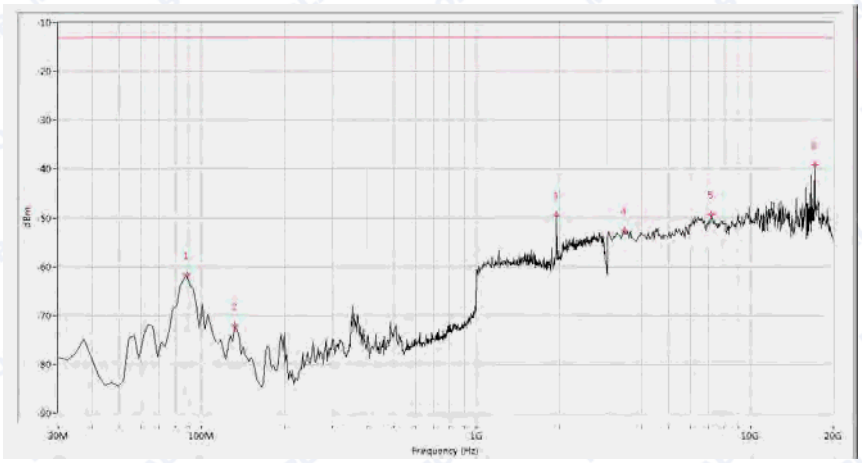
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-62.19	-13.0	49.2	245.1	Horizontal	PASS
368.653	-68.34	-13.0	55.3	68.9	Horizontal	PASS
1927.681	-46.19	-13.0	33.2	111.9	Horizontal	N.A
3720.698	-49.42	-13.0	36.4	261.5	Horizontal	PASS
6603.491	-48.58	-13.0	35.6	219.9	Horizontal	PASS
11860.349	-45.17	-13.0	32.2	320.7	Horizontal	PASS

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



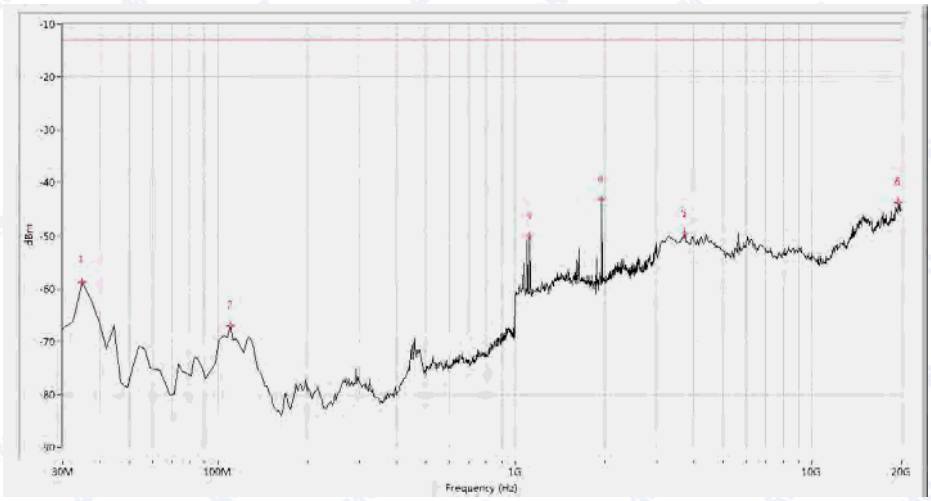
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-63.61	-13.0	50.6	356.5	Vertical	PASS
346.883	-67.54	-13.0	54.5	164.1	Vertical	PASS
1094.763	-47.09	-13.0	34.1	269.6	Vertical	PASS
1927.681	-44.51	-13.0	31.5	332.8	Vertical	N.A
3720.698	-45.47	-13.0	32.5	209.5	Vertical	PASS
5543.641	-41.21	-13.0	28.2	359.9	Vertical	PASS

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



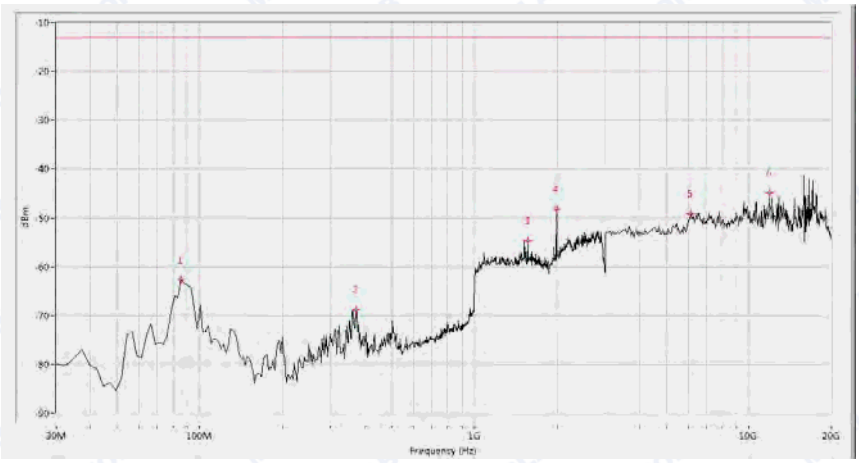
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
88.055	-61.72	-13.0	48.7	259.7	Horizontal	PASS
131.596	-72.16	-13.0	59.2	35.0	Horizontal	PASS
1957.606	-49.45	-13.0	36.5	329.0	Horizontal	N.A
3466.334	-52.65	-13.0	39.7	78.5	Horizontal	PASS
7154.613	-49.26	-13.0	36.3	61.4	Horizontal	PASS
17074.813	-39.17	-13.0	26.2	52.1	Horizontal	PASS

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



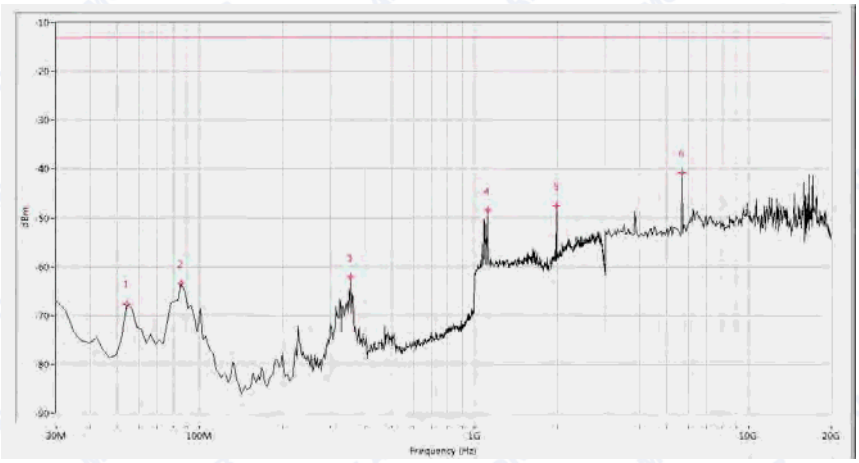
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-58.77	-13.0	45.8	359.1	Vertical	PASS
109.825	-67.08	-13.0	54.1	360.0	Vertical	PASS
1119.701	-50.01	-13.0	37.0	194.3	Vertical	PASS
1957.606	-43.12	-13.0	30.1	156.4	Vertical	PASS
3720.698	-49.67	-13.0	36.7	346.5	Vertical	PASS
19533.666	-43.80	-13.0	30.8	160.0	Vertical	PASS

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



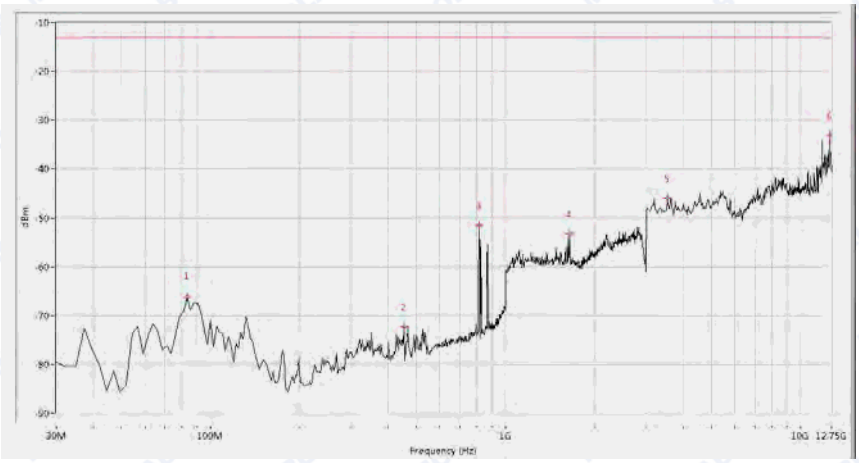
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-62.55	-13.0	49.5	239.5	Horizontal	PASS
371.072	-68.78	-13.0	55.8	81.1	Horizontal	PASS
1563.591	-54.74	-13.0	41.7	-0.0	Horizontal	PASS
1987.531	-48.21	-13.0	35.2	240.9	Horizontal	N.A
6137.157	-49.18	-13.0	36.2	217.6	Horizontal	PASS
11860.349	-44.86	-13.0	31.9	17.9	Horizontal	PASS

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



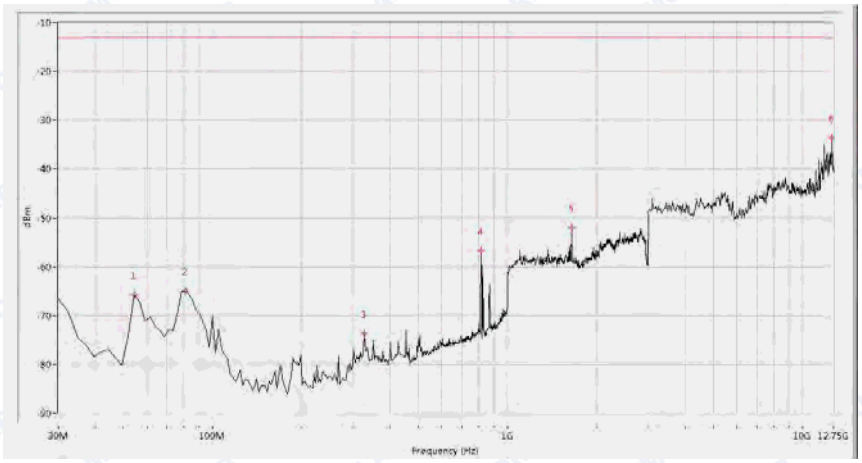
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.72	-13.0	54.7	30.9	Vertical	PASS
85.636	-63.37	-13.0	50.4	340.7	Vertical	PASS
354.140	-62.11	-13.0	49.1	167.0	Vertical	PASS
1114.713	-48.55	-13.0	35.6	115.1	Vertical	PASS
1987.531	-47.55	-13.0	34.5	66.7	Vertical	N.A
5713.217	-40.73	-13.0	27.7	295.3	Vertical	PASS

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



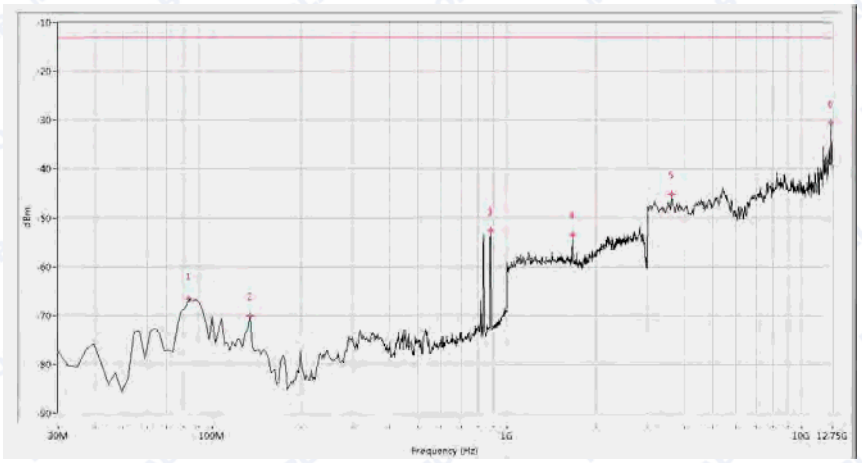
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-66.16	-13.0	53.2	291.8	Horizontal	PASS
453.317	-72.26	-13.0	59.3	165.9	Horizontal	PASS
816.160	-51.58	-13.0	38.6	92.8	Horizontal	PASS
1648.379	-53.25	-13.0	40.3	98.0	Horizontal	PASS
3534.913	-45.90	-13.0	32.9	256.9	Horizontal	PASS
12604.115	-32.96	-13.0	20.0	233.1	Horizontal	PASS

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



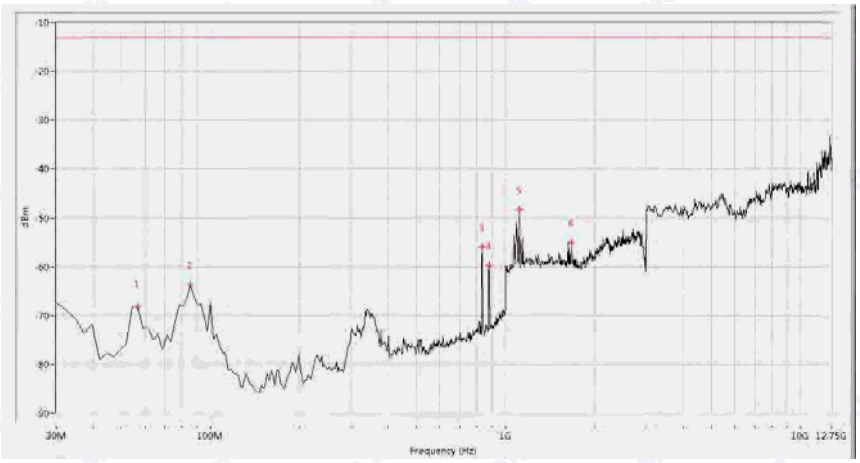
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-65.83	-13.0	52.8	234.1	Vertical	PASS
80.798	-64.95	-13.0	51.9	11.6	Vertical	PASS
327.531	-73.63	-13.0	60.6	82.0	Vertical	PASS
816.160	-56.80	-13.0	43.8	33.2	Vertical	PASS
1648.379	-52.02	-13.0	39.0	265.6	Vertical	PASS
12628.429	-33.68	-13.0	20.7	20.6	Vertical	PASS

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



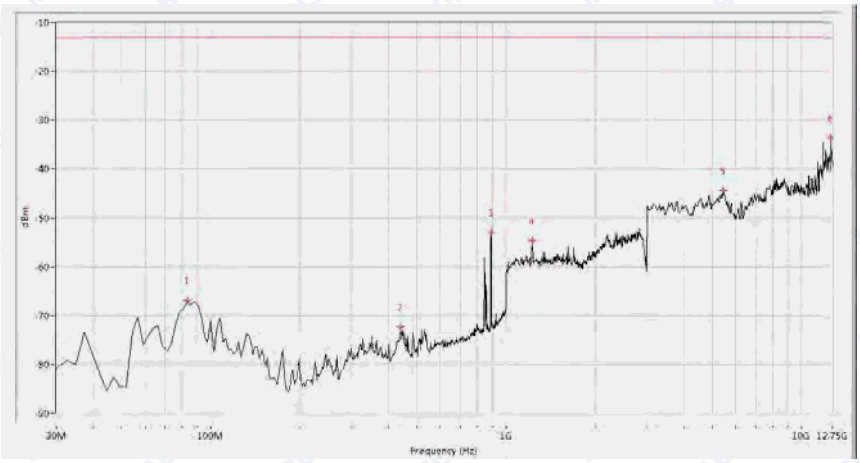
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-66.57	-13.0	53.6	158.2	Horizontal	PASS
134.015	-69.97	-13.0	57.0	295.1	Horizontal	PASS
879.052	-52.54	-13.0	39.5	106.1	Horizontal	PASS
1668.329	-53.38	-13.0	40.4	259.4	Horizontal	PASS
3632.170	-45.20	-13.0	32.2	283.9	Horizontal	PASS
12628.429	-30.63	-13.0	17.6	154.5	Horizontal	PASS

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



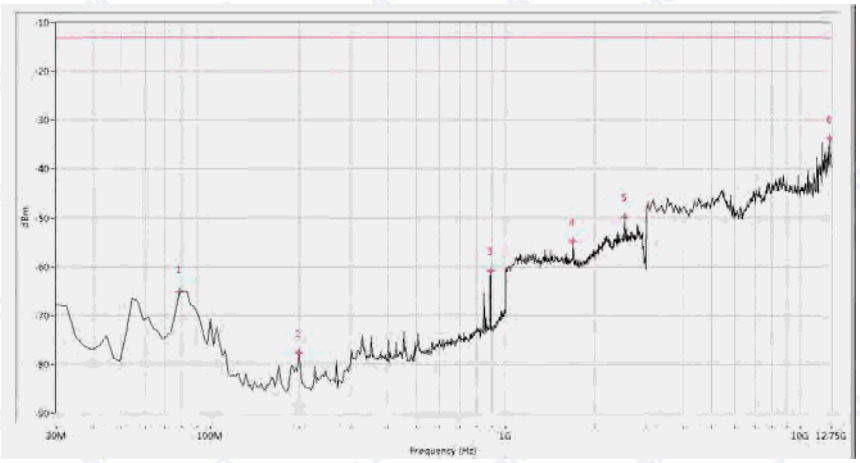
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
56.608	-68.15	-13.0	55.2	195.5	Vertical	PASS
85.636	-63.63	-13.0	50.6	142.3	Vertical	PASS
833.092	-55.89	-13.0	42.9	1.5	Vertical	N.A
879.052	-59.75	-13.0	46.8	78.7	Vertical	N.A
1114.713	-48.27	-13.0	35.3	39.5	Vertical	PASS
1668.329	-55.04	-13.0	42.0	297.2	Vertical	PASS

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



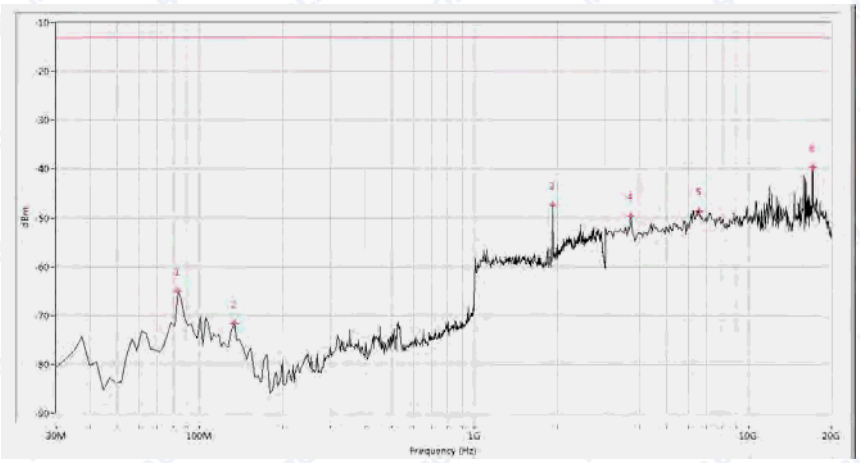
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-66.83	-13.0	53.8	89.4	Horizontal	PASS
438.803	-72.30	-13.0	59.3	102.0	Horizontal	PASS
891.147	-52.90	-13.0	39.9	61.6	Horizontal	PASS
1229.426	-54.66	-13.0	41.7	89.4	Horizontal	PASS
5431.421	-44.32	-13.0	31.3	188.2	Horizontal	PASS
12628.429	-33.56	-13.0	20.6	259.1	Horizontal	PASS

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



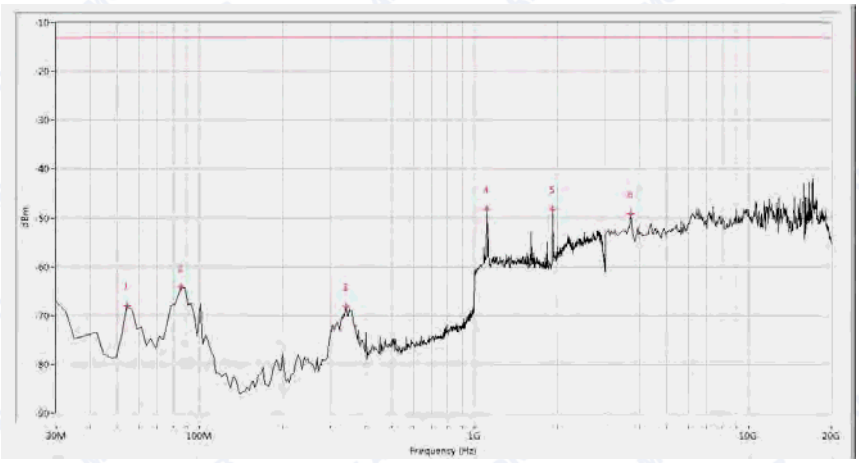
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
78.379	-65.11	-13.0	52.1	-0.0	Vertical	PASS
199.327	-77.60	-13.0	64.6	6.6	Vertical	PASS
891.147	-60.78	-13.0	47.8	19.3	Vertical	PASS
1693.267	-54.83	-13.0	41.8	122.1	Vertical	PASS
2531.172	-49.79	-13.0	36.8	136.6	Vertical	PASS
12604.115	-33.73	-13.0	20.7	230.1	Vertical	PASS

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



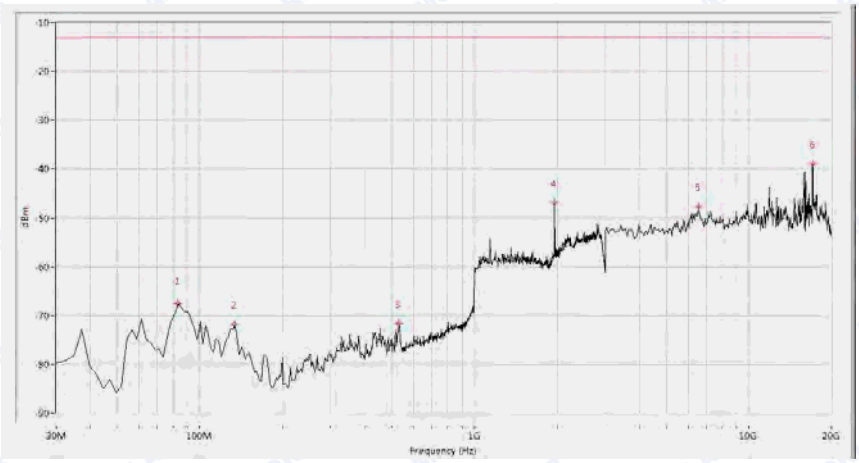
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-64.92	-13.0	51.9	81.3	Horizontal	PASS
134.015	-71.69	-13.0	58.7	-0.0	Horizontal	PASS
1927.681	-47.40	-13.0	34.4	177.0	Horizontal	N.A
3720.698	-49.65	-13.0	36.6	-0.0	Horizontal	PASS
6603.491	-48.59	-13.0	35.6	150.5	Horizontal	PASS
17074.813	-39.56	-13.0	26.6	296.2	Horizontal	PASS

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



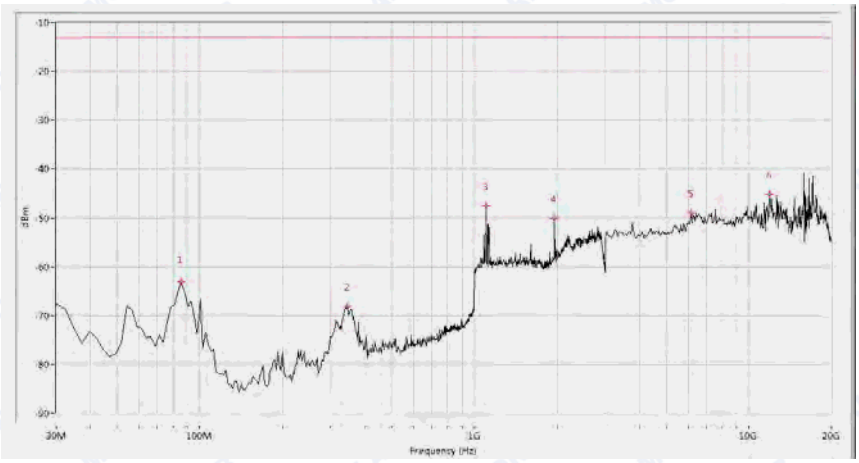
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.97	-13.0	55.0	119.5	Vertical	PASS
85.636	-64.21	-13.0	51.2	214.6	Vertical	PASS
339.626	-68.17	-13.0	55.2	155.9	Vertical	PASS
1109.726	-48.22	-13.0	35.2	1.1	Vertical	PASS
1932.668	-48.21	-13.0	35.2	304.9	Vertical	N.A
3720.698	-49.06	-13.0	36.1	210.2	Vertical	PASS

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



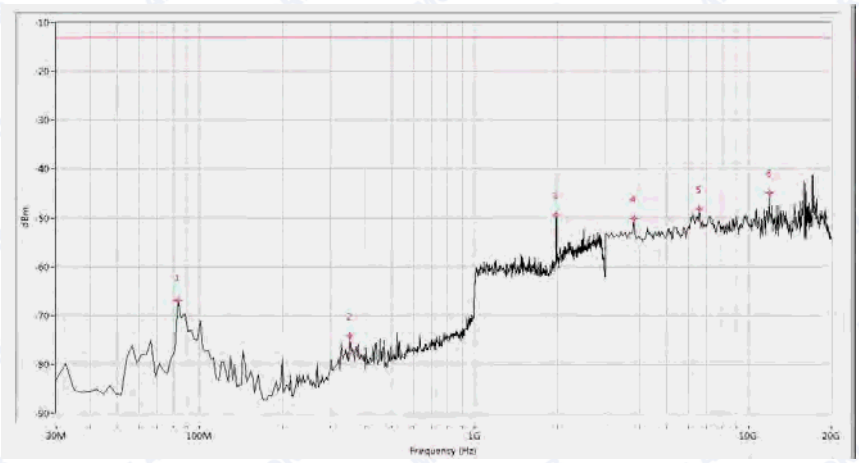
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-67.47	-13.0	54.5	75.8	Horizontal	PASS
134.015	-71.85	-13.0	58.8	36.3	Horizontal	PASS
530.723	-71.58	-13.0	58.6	252.6	Horizontal	PASS
1957.606	-46.91	-13.0	33.9	257.9	Horizontal	PASS
6561.097	-47.66	-13.0	34.7	330.6	Horizontal	PASS
17074.813	-39.03	-13.0	26.0	280.3	Horizontal	PASS

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



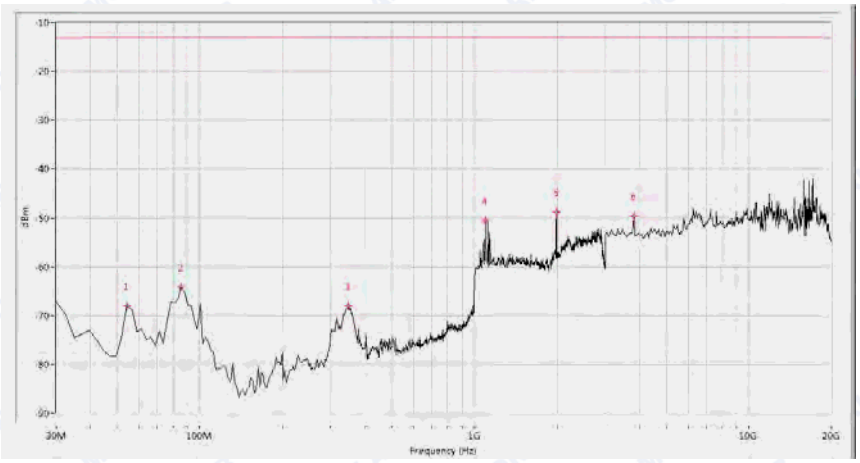
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-63.00	-13.0	50.0	183.8	Vertical	PASS
344.464	-68.10	-13.0	55.1	146.6	Vertical	PASS
1104.738	-47.60	-13.0	34.6	50.0	Vertical	PASS
1957.606	-50.06	-13.0	37.1	306.7	Vertical	N.A
6179.551	-49.01	-13.0	36.0	360.0	Vertical	PASS
11860.349	-45.13	-13.0	32.1	107.5	Vertical	PASS

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



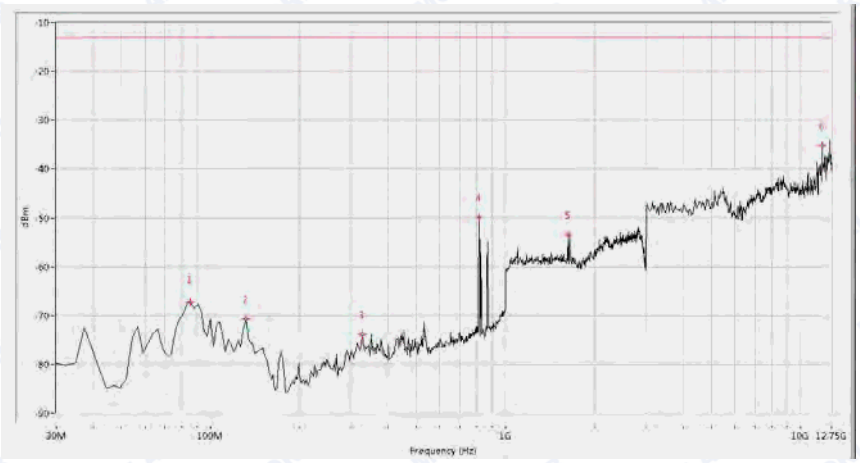
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-66.89	-13.0	53.9	127.2	Horizontal	PASS
351.721	-74.15	-13.0	61.2	122.6	Horizontal	PASS
1982.544	-49.45	-13.0	36.5	27.9	Horizontal	N.A
3805.486	-50.11	-13.0	37.1	324.5	Horizontal	PASS
6603.491	-48.21	-13.0	35.2	100.6	Horizontal	PASS
11860.349	-44.91	-13.0	31.9	195.7	Horizontal	PASS

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



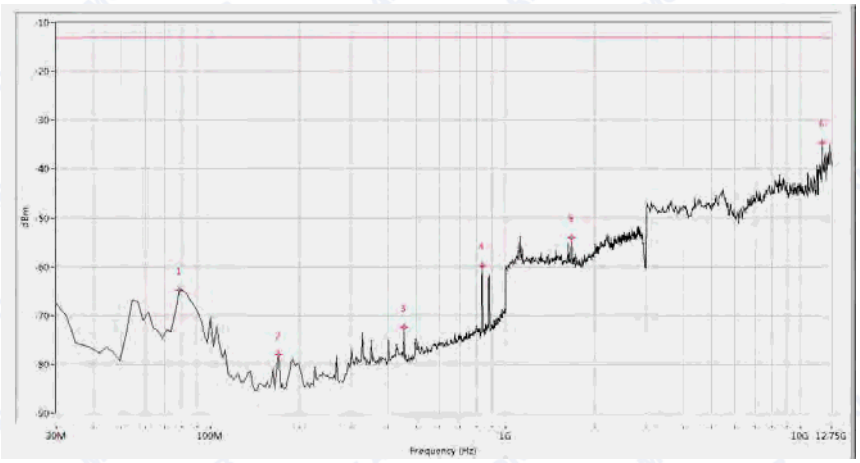
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.05	-13.0	55.0	356.2	Vertical	PASS
85.636	-64.10	-13.0	51.1	47.7	Vertical	PASS
346.883	-68.05	-13.0	55.1	141.1	Vertical	PASS
1094.763	-50.62	-13.0	37.6	5.9	Vertical	PASS
1987.531	-48.83	-13.0	35.8	276.6	Vertical	N.A
3805.486	-49.61	-13.0	36.6	176.4	Vertical	PASS

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



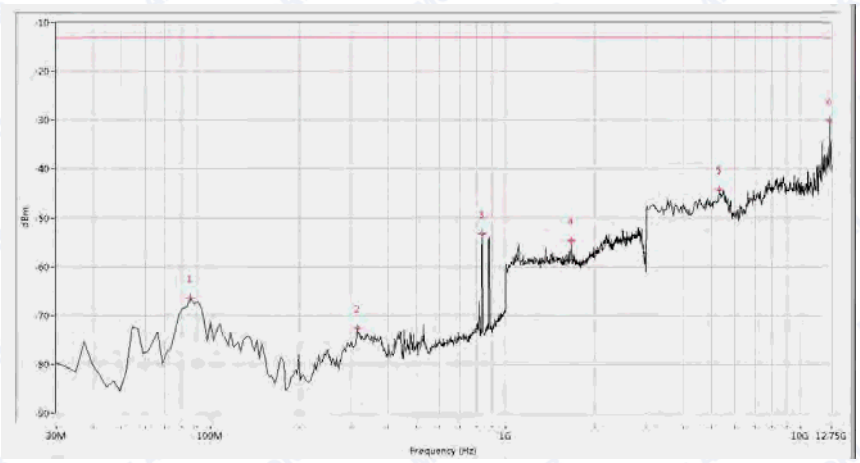
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-67.15	-13.0	54.1	345.0	Horizontal	PASS
131.596	-70.62	-13.0	57.6	-0.0	Horizontal	PASS
327.531	-73.79	-13.0	60.8	108.9	Horizontal	PASS
816.160	-49.81	-13.0	36.8	91.3	Horizontal	PASS
1628.429	-53.34	-13.0	40.3	114.1	Horizontal	PASS
11850.374	-35.14	-13.0	22.1	210.7	Horizontal	PASS

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



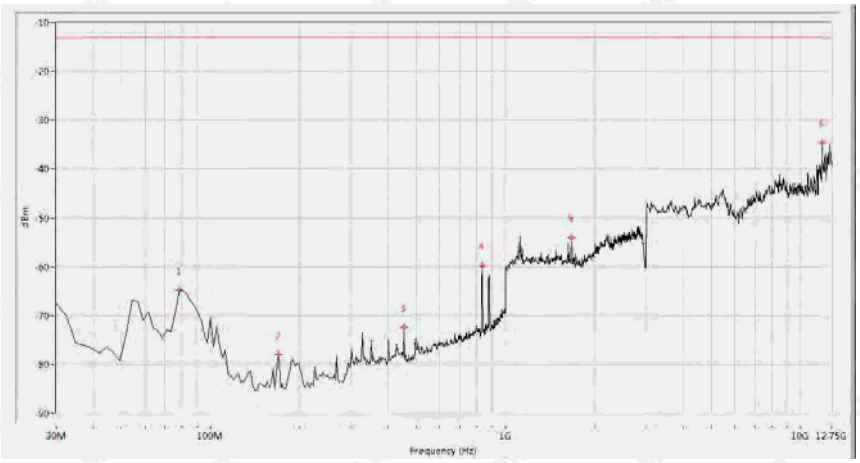
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
78.379	-64.79	-13.0	51.8	10.1	Vertical	PASS
170.299	-77.92	-13.0	64.9	46.2	Vertical	PASS
453.317	-72.46	-13.0	59.5	116.2	Vertical	PASS
833.092	-59.67	-13.0	46.7	94.0	Vertical	PASS
1668.329	-54.01	-13.0	41.0	253.6	Vertical	PASS
11850.374	-34.62	-13.0	21.6	114.0	Vertical	PASS

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



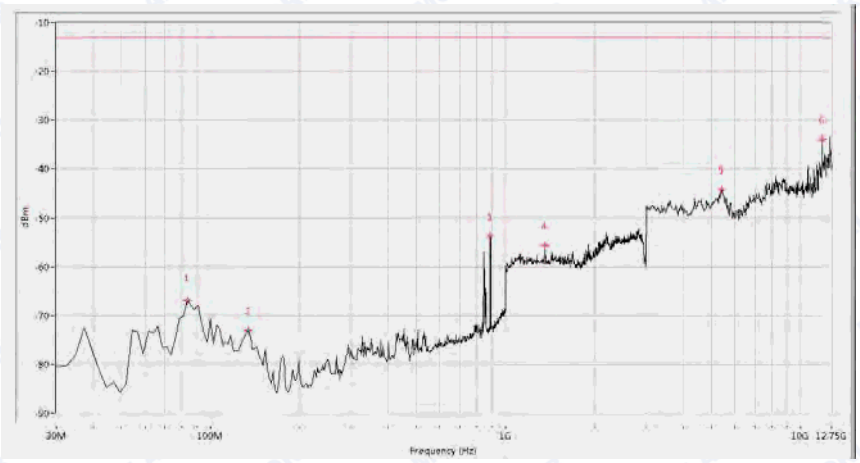
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-66.37	-13.0	53.4	346.1	Horizontal	PASS
315.436	-72.63	-13.0	59.6	256.0	Horizontal	PASS
833.092	-53.22	-13.0	40.2	105.4	Horizontal	PASS
1668.329	-54.70	-13.0	41.7	258.9	Horizontal	PASS
5309.850	-44.19	-13.0	31.2	-0.0	Horizontal	PASS
12628.429	-30.08	-13.0	17.1	158.2	Horizontal	PASS

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



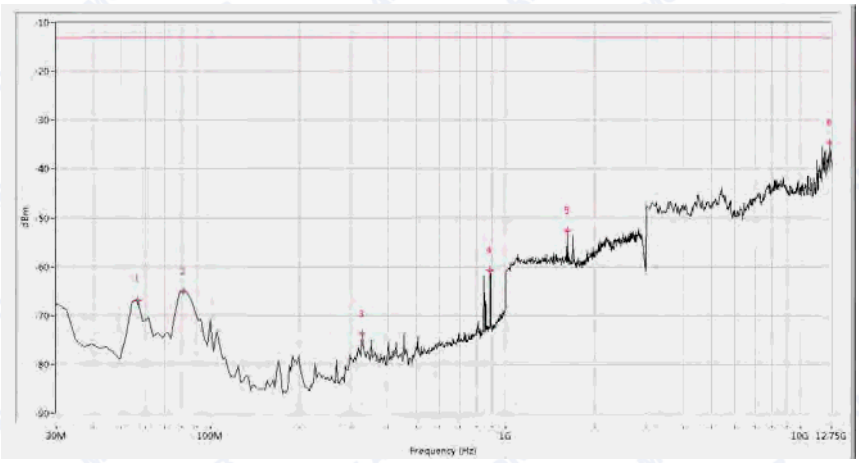
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
78.379	-64.79	-13.0	51.8	10.1	Vertical	PASS
170.299	-77.92	-13.0	64.9	46.2	Vertical	PASS
453.317	-72.46	-13.0	59.5	116.2	Vertical	PASS
833.092	-59.67	-13.0	46.7	94.0	Vertical	PASS
1668.329	-54.01	-13.0	41.0	253.6	Vertical	PASS
11850.374	-34.62	-13.0	21.6	114.0	Vertical	PASS

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



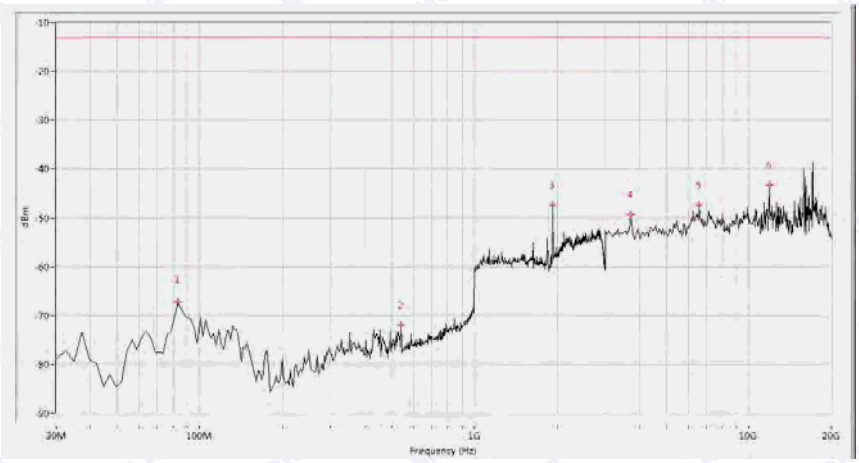
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-66.95	-13.0	53.9	-0.0	Horizontal	PASS
134.015	-73.00	-13.0	60.0	106.7	Horizontal	PASS
888.728	-53.67	-13.0	40.7	167.5	Horizontal	PASS
1364.090	-55.69	-13.0	42.7	16.5	Horizontal	PASS
5407.107	-44.28	-13.0	31.3	0.5	Horizontal	PASS
11850.374	-33.98	-13.0	21.0	107.9	Horizontal	PASS

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



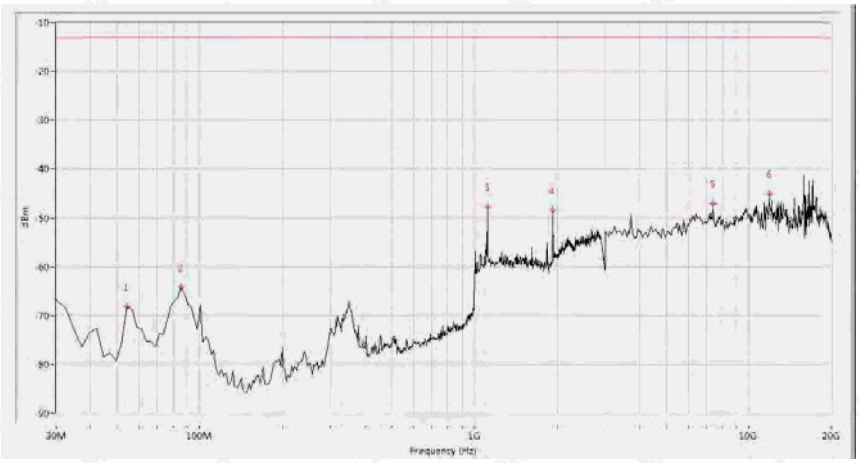
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
56.608	-66.82	-13.0	53.8	353.4	Vertical	PASS
80.798	-64.91	-13.0	51.9	-0.0	Vertical	PASS
327.531	-73.76	-13.0	60.8	106.0	Vertical	PASS
888.728	-60.70	-13.0	47.7	110.1	Vertical	PASS
1618.454	-52.69	-13.0	39.7	256.3	Vertical	PASS
12604.115	-34.48	-13.0	21.5	341.9	Vertical	PASS

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



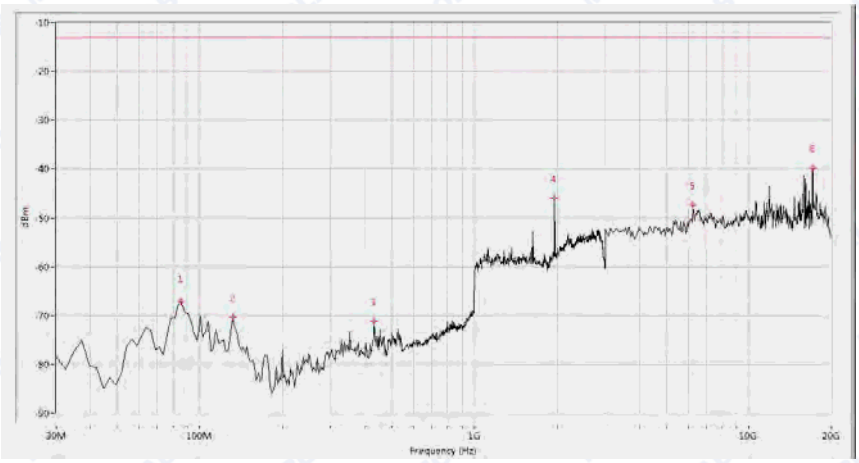
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-67.26	-13.0	54.3	153.6	Horizontal	PASS
540.399	-71.88	-13.0	58.9	268.4	Horizontal	PASS
1932.668	-47.32	-13.0	34.3	101.5	Horizontal	N.A
3720.698	-49.33	-13.0	36.3	16.8	Horizontal	PASS
6603.491	-47.39	-13.0	34.4	1.4	Horizontal	PASS
11860.349	-43.25	-13.0	30.3	304.9	Horizontal	PASS

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



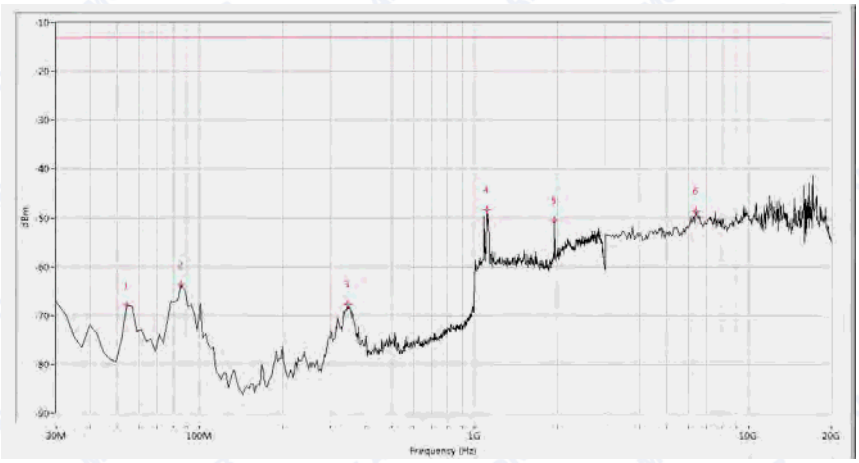
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.15	-13.0	55.1	70.7	Vertical	PASS
85.636	-64.19	-13.0	51.2	6.1	Vertical	PASS
1114.713	-47.63	-13.0	34.6	134.8	Vertical	PASS
1932.668	-48.50	-13.0	35.5	275.1	Vertical	N.A
7408.978	-46.99	-13.0	34.0	-0.0	Vertical	PASS
11860.349	-45.09	-13.0	32.1	360.0	Vertical	PASS

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



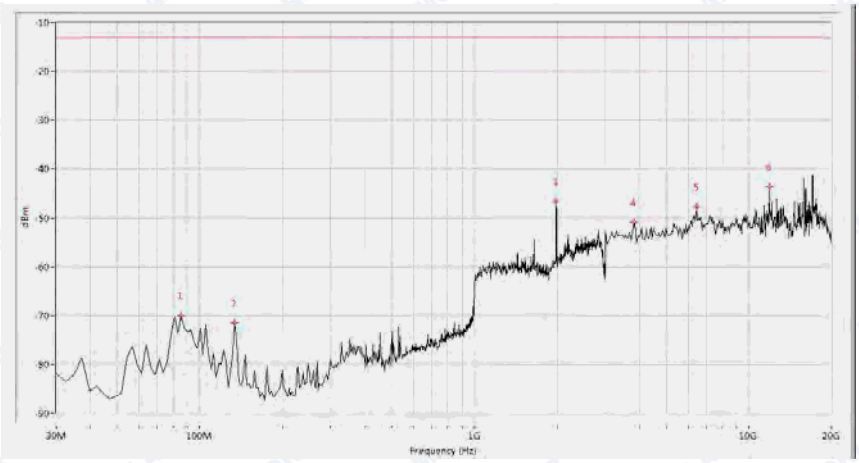
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-67.10	-13.0	54.1	65.2	Horizontal	PASS
131.596	-70.35	-13.0	57.3	184.7	Horizontal	PASS
431.546	-71.15	-13.0	58.2	328.0	Horizontal	PASS
1957.606	-45.97	-13.0	33.0	41.2	Horizontal	PASS
6264.339	-47.37	-13.0	34.4	51.7	Horizontal	PASS
17074.813	-39.71	-13.0	26.7	266.5	Horizontal	PASS

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



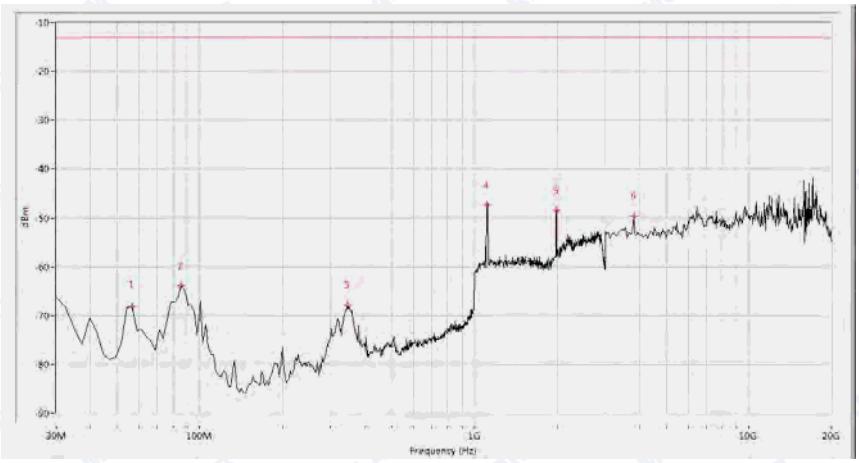
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.81	-13.0	54.8	352.9	Vertical	PASS
85.636	-63.73	-13.0	50.7	42.6	Vertical	PASS
344.464	-67.71	-13.0	54.7	184.3	Vertical	PASS
1109.726	-48.41	-13.0	35.4	42.5	Vertical	PASS
1957.606	-50.57	-13.0	37.6	198.2	Vertical	N.A
6433.915	-48.73	-13.0	35.7	301.9	Vertical	PASS

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



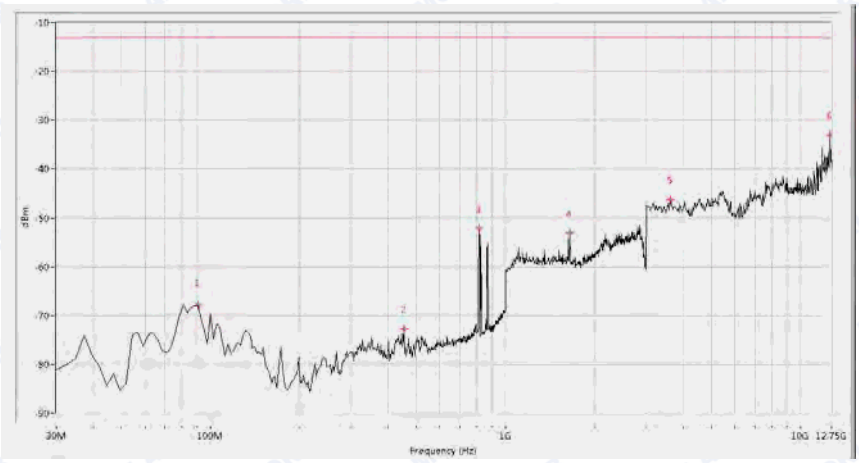
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-70.10	-13.0	57.1	227.3	Horizontal	PASS
134.015	-71.40	-13.0	58.4	145.6	Horizontal	PASS
1982.544	-46.58	-13.0	33.6	25.9	Horizontal	N.A
3805.486	-50.89	-13.0	37.9	255.1	Horizontal	PASS
6476.309	-47.65	-13.0	34.7	261.3	Horizontal	PASS
11860.349	-43.56	-13.0	30.6	107.3	Horizontal	PASS

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



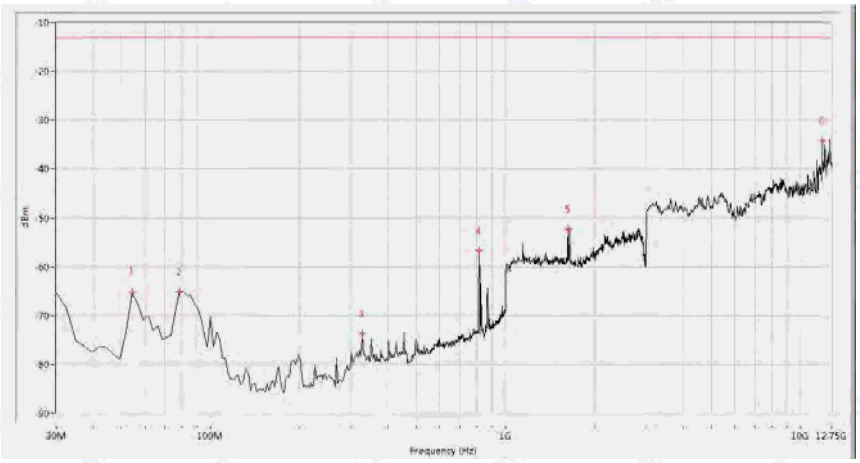
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
56.608	-68.15	-13.0	55.2	359.1	Vertical	PASS
85.636	-63.88	-13.0	50.9	179.5	Vertical	PASS
344.464	-67.79	-13.0	54.8	168.7	Vertical	PASS
1109.726	-47.42	-13.0	34.4	296.1	Vertical	PASS
1987.531	-48.43	-13.0	35.4	66.6	Vertical	N.A
3805.486	-49.68	-13.0	36.7	325.3	Vertical	PASS

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



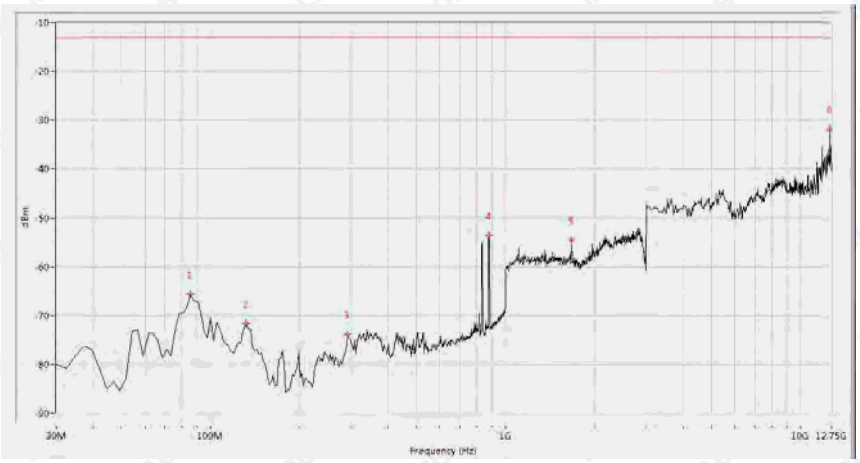
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
90.474	-67.77	-13.0	54.8	165.0	Horizontal	PASS
453.317	-72.71	-13.0	59.7	138.4	Horizontal	PASS
816.160	-52.14	-13.0	39.1	99.8	Horizontal	PASS
1653.367	-53.16	-13.0	40.2	101.1	Horizontal	PASS
3632.170	-46.21	-13.0	33.2	140.3	Horizontal	PASS
12628.429	-32.94	-13.0	19.9	357.6	Horizontal	PASS

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



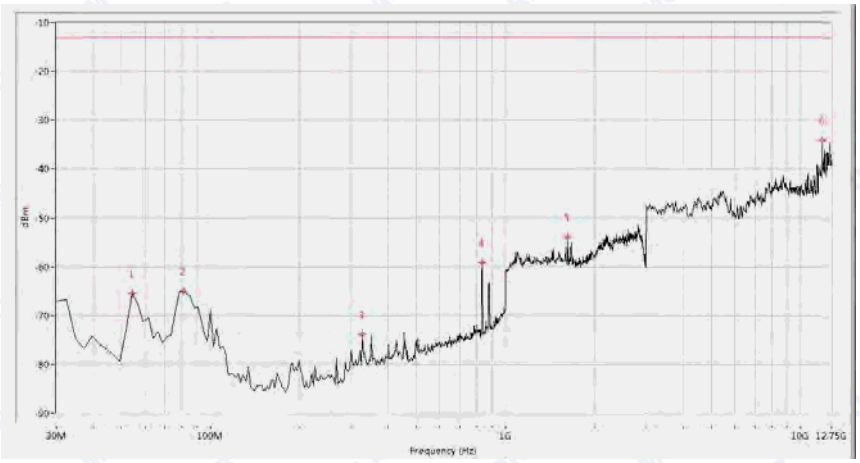
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-65.36	-13.0	52.4	345.9	Vertical	PASS
78.379	-65.11	-13.0	52.1	-0.0	Vertical	PASS
327.531	-73.62	-13.0	60.6	96.2	Vertical	PASS
816.160	-56.81	-13.0	43.8	19.9	Vertical	PASS
1628.429	-52.33	-13.0	39.3	82.6	Vertical	PASS
11850.374	-34.17	-13.0	21.2	347.2	Vertical	PASS

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



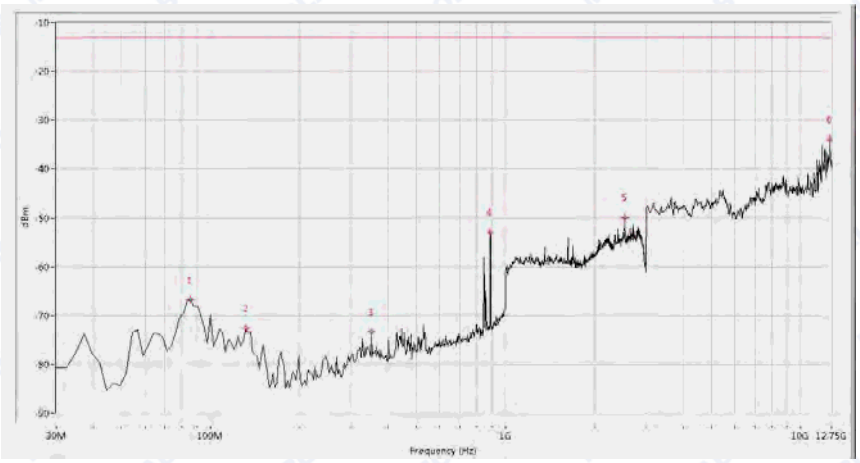
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-65.65	-13.0	52.7	15.6	Horizontal	PASS
131.596	-71.57	-13.0	58.6	71.7	Horizontal	PASS
291.247	-73.80	-13.0	60.8	133.8	Horizontal	PASS
879.052	-53.58	-13.0	40.6	350.9	Horizontal	PASS
1673.317	-54.54	-13.0	41.5	360.0	Horizontal	PASS
12604.115	-31.88	-13.0	18.9	144.9	Horizontal	PASS

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



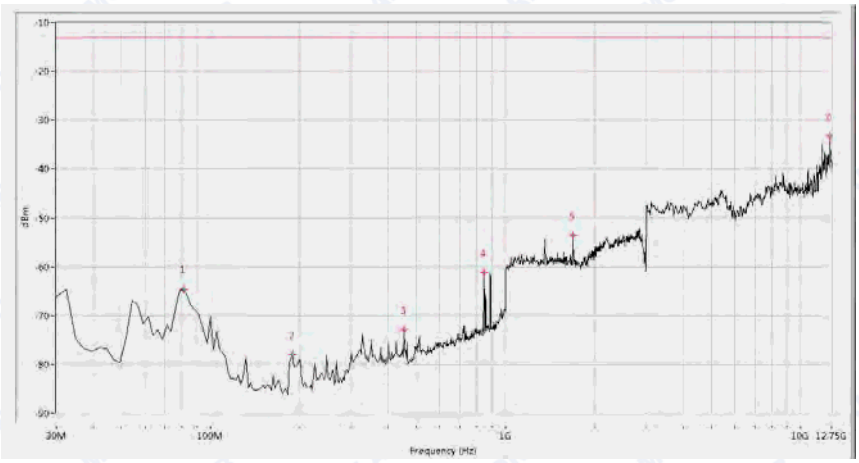
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-65.38	-13.0	52.4	341.3	Vertical	PASS
80.798	-64.94	-13.0	51.9	-0.0	Vertical	PASS
327.531	-73.88	-13.0	60.9	246.2	Vertical	PASS
833.092	-59.11	-13.0	46.1	39.4	Vertical	PASS
1623.441	-53.93	-13.0	40.9	13.1	Vertical	PASS
11850.374	-34.13	-13.0	21.1	58.8	Vertical	PASS

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



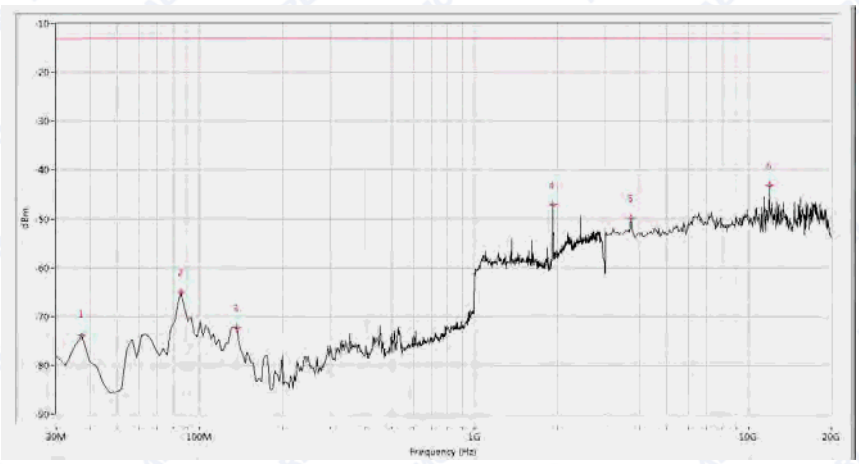
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-66.73	-13.0	53.7	174.5	Horizontal	PASS
131.596	-72.56	-13.0	59.6	242.4	Horizontal	PASS
351.721	-73.36	-13.0	60.4	118.4	Horizontal	PASS
888.728	-52.88	-13.0	39.9	360.0	Horizontal	PASS
2531.172	-49.92	-13.0	36.9	128.8	Horizontal	PASS
12628.429	-33.89	-13.0	20.9	155.9	Horizontal	PASS

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



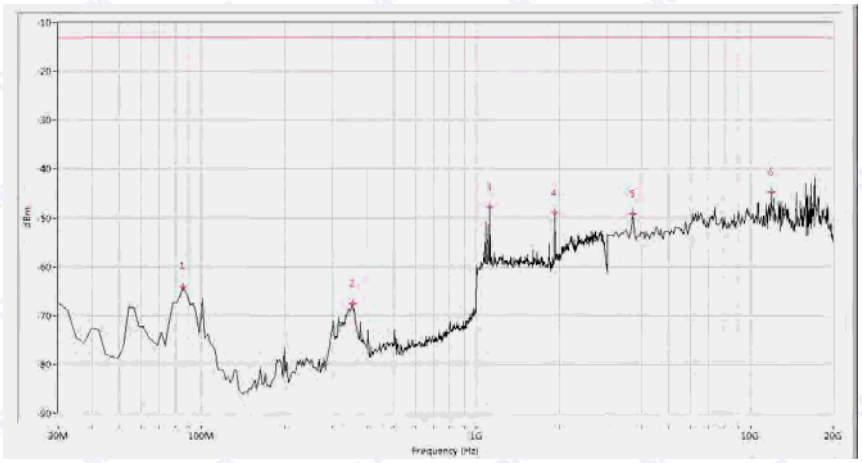
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
80.798	-64.69	-13.0	51.7	1.8	Vertical	PASS
189.651	-77.94	-13.0	64.9	333.8	Vertical	PASS
453.317	-72.95	-13.0	60.0	360.0	Vertical	PASS
845.187	-61.14	-13.0	48.1	27.9	Vertical	PASS
1693.267	-53.49	-13.0	40.5	273.3	Vertical	PASS
12604.115	-33.30	-13.0	20.3	128.9	Vertical	PASS

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



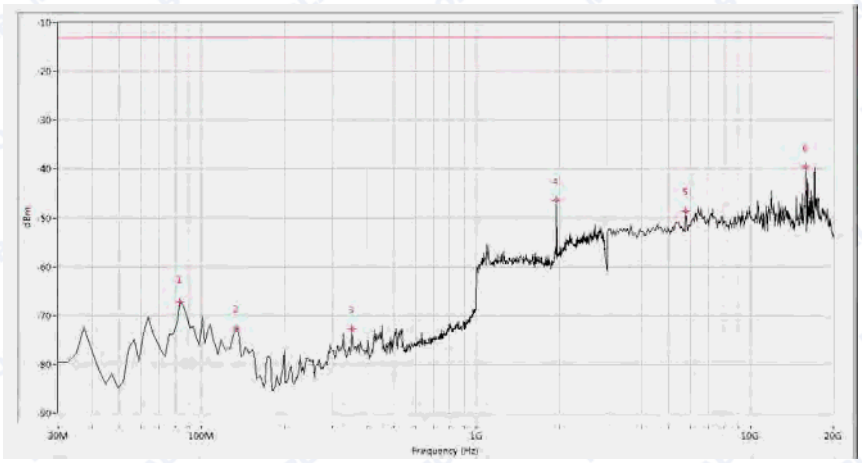
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
37.257	-73.86	-13.0	60.9	297.5	Horizontal	PASS
85.636	-64.94	-13.0	51.9	44.9	Horizontal	PASS
136.434	-72.22	-13.0	59.2	344.1	Horizontal	PASS
1932.668	-46.99	-13.0	34.0	312.5	Horizontal	N.A
3720.698	-49.76	-13.0	36.8	4.8	Horizontal	PASS
11860.349	-43.16	-13.0	30.2	76.1	Horizontal	PASS

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



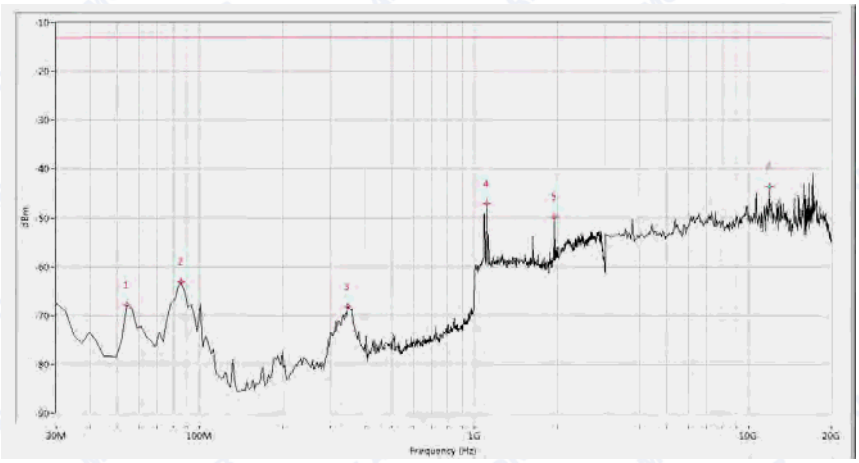
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-64.16	-13.0	51.2	30.4	Vertical	PASS
354.140	-67.51	-13.0	54.5	180.3	Vertical	PASS
1119.701	-47.77	-13.0	34.8	152.5	Vertical	PASS
1927.681	-48.96	-13.0	36.0	303.1	Vertical	N.A
3720.698	-49.20	-13.0	36.2	133.3	Vertical	PASS
11860.349	-44.65	-13.0	31.6	360.0	Vertical	PASS

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



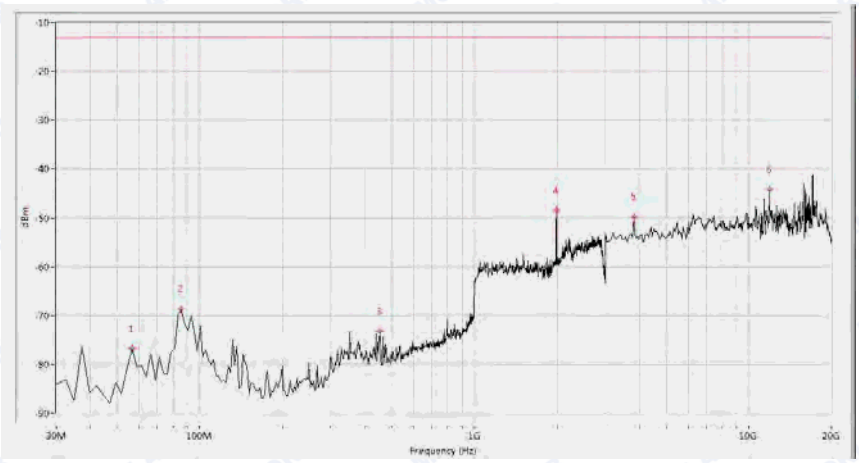
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-67.22	-13.0	54.2	195.5	Horizontal	PASS
134.015	-72.63	-13.0	59.6	108.2	Horizontal	PASS
351.721	-72.70	-13.0	59.7	276.1	Horizontal	PASS
1957.606	-46.48	-13.0	33.5	270.9	Horizontal	PASS
5798.005	-48.70	-13.0	35.7	318.4	Horizontal	PASS
15845.387	-39.67	-13.0	26.7	304.8	Horizontal	PASS

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



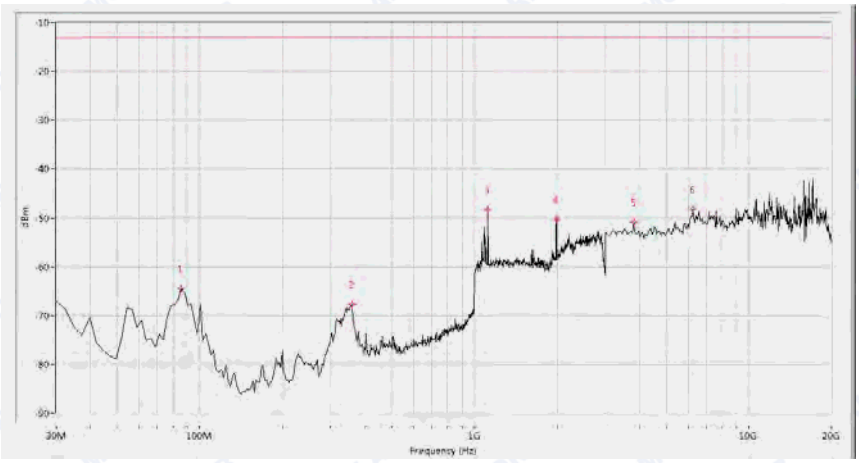
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-67.85	-13.0	54.8	122.6	Vertical	PASS
85.636	-63.09	-13.0	50.1	128.6	Vertical	PASS
344.464	-68.21	-13.0	55.2	182.1	Vertical	PASS
1109.726	-47.04	-13.0	34.0	44.1	Vertical	PASS
1957.606	-49.83	-13.0	36.8	30.3	Vertical	N.A
11860.349	-43.61	-13.0	30.6	226.2	Vertical	PASS

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



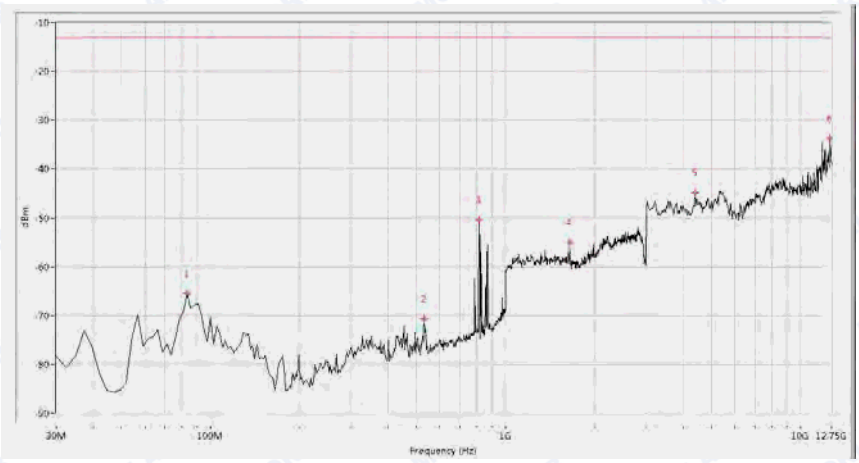
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
56.608	-76.64	-13.0	63.6	224.3	Horizontal	PASS
85.636	-68.55	-13.0	55.5	74.9	Horizontal	PASS
453.317	-73.25	-13.0	60.3	165.2	Horizontal	PASS
1987.531	-48.45	-13.0	35.5	103.8	Horizontal	N.A
3805.486	-49.69	-13.0	36.7	247.9	Horizontal	PASS
11860.349	-44.15	-13.0	31.1	233.4	Horizontal	PASS

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



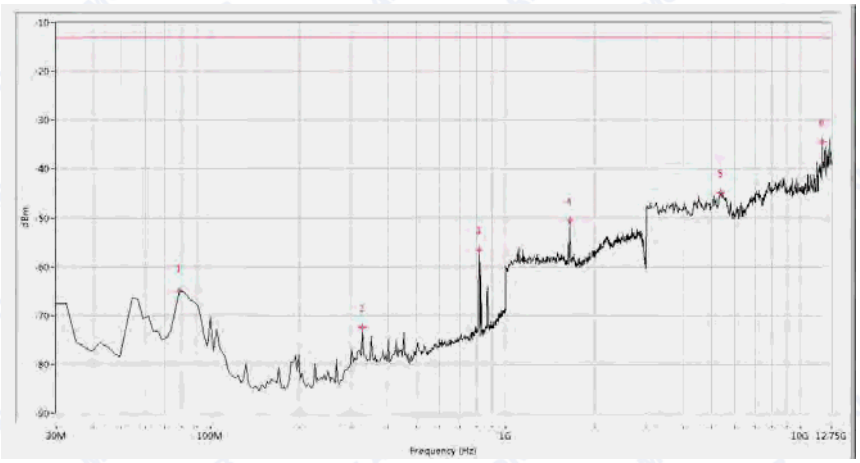
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-64.42	-13.0	51.4	334.0	Vertical	PASS
358.978	-67.68	-13.0	54.7	162.3	Vertical	PASS
1119.701	-48.34	-13.0	35.3	240.8	Vertical	PASS
1987.531	-50.30	-13.0	37.3	140.8	Vertical	N.A
3805.486	-50.93	-13.0	37.9	179.8	Vertical	PASS
6264.339	-48.19	-13.0	35.2	248.2	Vertical	PASS

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



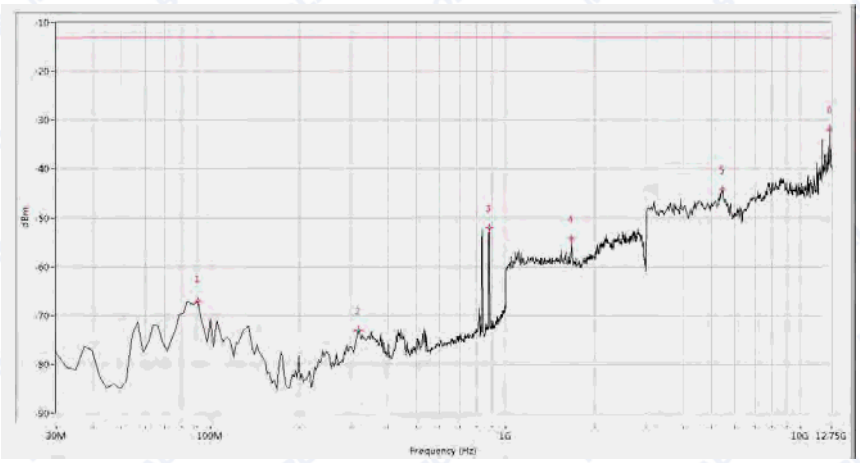
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-65.44	-13.0	52.4	28.2	Horizontal	PASS
530.723	-70.68	-13.0	57.7	152.6	Horizontal	PASS
816.160	-50.46	-13.0	37.5	77.3	Horizontal	PASS
1653.367	-55.06	-13.0	42.1	106.7	Horizontal	PASS
4410.224	-44.85	-13.0	31.8	166.6	Horizontal	PASS
12628.429	-33.82	-13.0	20.8	205.8	Horizontal	PASS

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



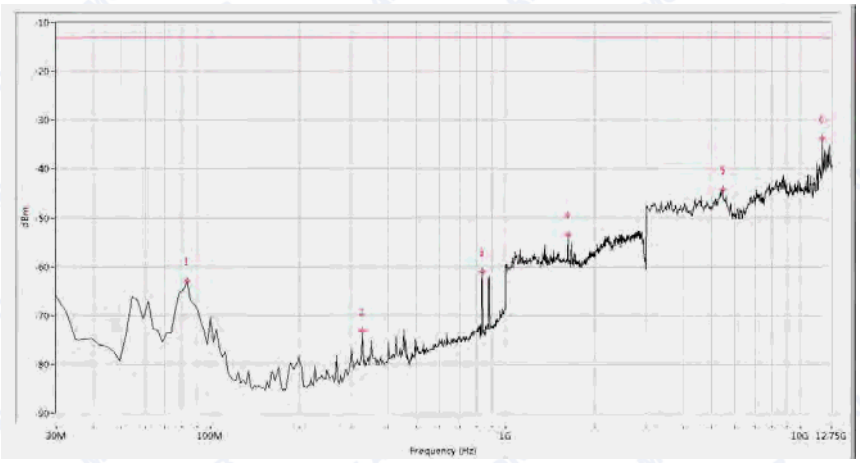
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
78.379	-65.00	-13.0	52.0	0.6	Vertical	PASS
327.531	-72.42	-13.0	59.4	243.1	Vertical	PASS
816.160	-56.60	-13.0	43.6	29.7	Vertical	PASS
1653.367	-50.48	-13.0	37.5	360.0	Vertical	PASS
5382.793	-44.81	-13.0	31.8	194.1	Vertical	PASS
11850.374	-34.45	-13.0	21.4	83.8	Vertical	PASS

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



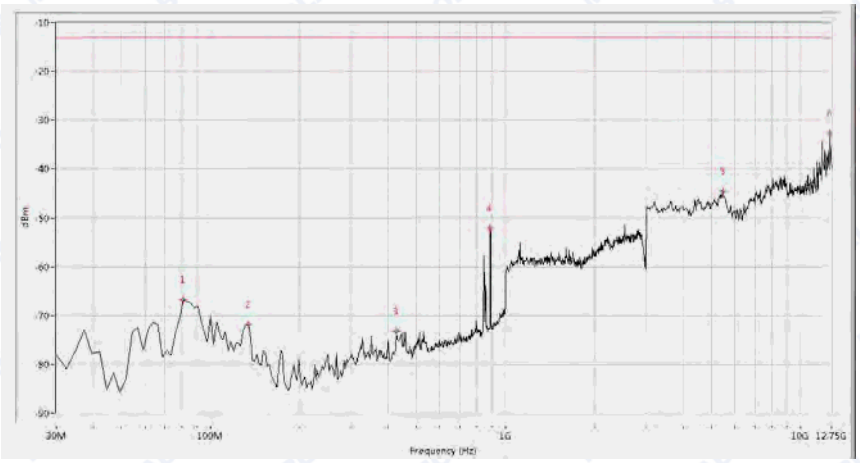
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
90.474	-67.04	-13.0	54.0	134.5	Horizontal	PASS
317.855	-73.03	-13.0	60.0	252.4	Horizontal	PASS
879.052	-51.97	-13.0	39.0	99.6	Horizontal	PASS
1673.317	-54.26	-13.0	41.3	265.0	Horizontal	PASS
5431.421	-44.20	-13.0	31.2	82.3	Horizontal	PASS
12628.429	-31.91	-13.0	18.9	160.1	Horizontal	PASS

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



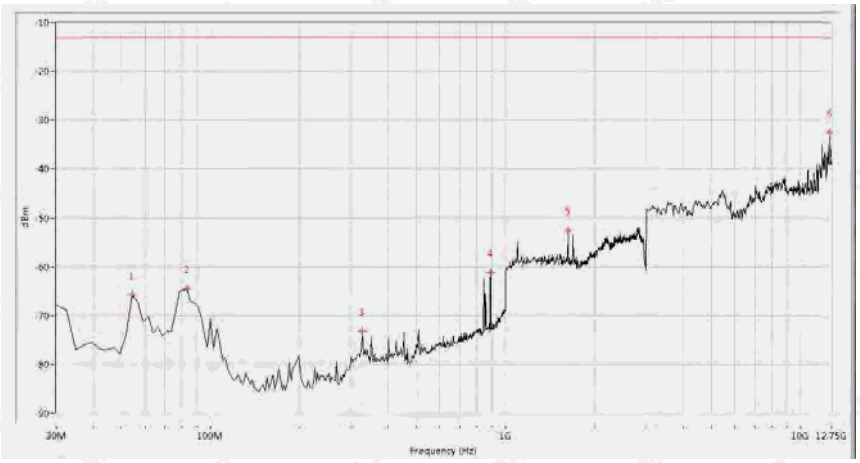
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-62.90	-13.0	49.9	5.3	Vertical	PASS
327.531	-73.28	-13.0	60.3	160.4	Vertical	PASS
833.092	-60.99	-13.0	48.0	21.8	Vertical	PASS
1628.429	-53.45	-13.0	40.4	167.7	Vertical	PASS
5455.736	-44.22	-13.0	31.2	140.0	Vertical	PASS
11850.374	-33.82	-13.0	20.8	172.4	Vertical	PASS

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



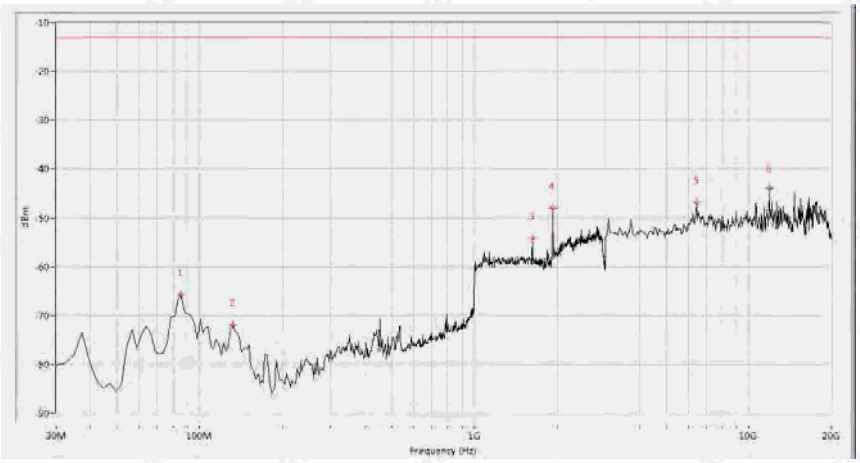
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
80.798	-66.71	-13.0	53.7	38.8	Horizontal	PASS
134.015	-71.75	-13.0	58.7	-0.0	Horizontal	PASS
426.708	-73.19	-13.0	60.2	182.9	Horizontal	PASS
888.728	-52.06	-13.0	39.1	94.9	Horizontal	PASS
5455.736	-44.58	-13.0	31.6	281.8	Horizontal	PASS
12628.429	-32.81	-13.0	19.8	208.6	Horizontal	PASS

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



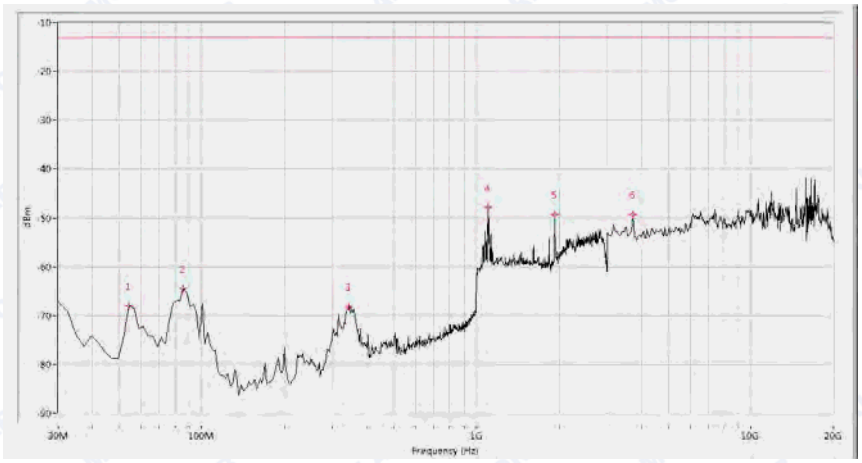
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-65.82	-13.0	52.8	314.5	Vertical	PASS
83.217	-64.50	-13.0	51.5	323.1	Vertical	PASS
327.531	-73.14	-13.0	60.1	187.6	Vertical	PASS
891.147	-61.22	-13.0	48.2	66.8	Vertical	PASS
1628.429	-52.66	-13.0	39.7	287.5	Vertical	PASS
12628.429	-32.53	-13.0	19.5	11.6	Vertical	PASS

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



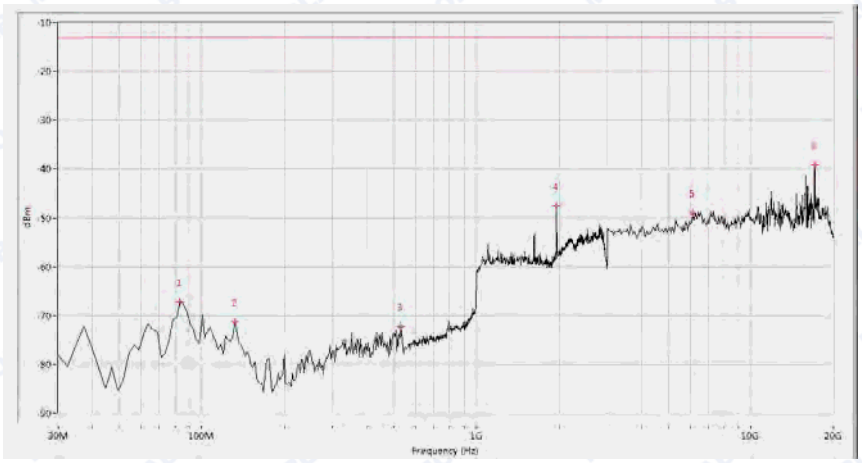
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-65.81	-13.0	52.8	30.5	Horizontal	PASS
131.596	-71.88	-13.0	58.9	354.2	Horizontal	PASS
1628.429	-54.14	-13.0	41.1	230.5	Horizontal	PASS
1932.668	-48.02	-13.0	35.0	150.5	Horizontal	N.A
6476.309	-46.91	-13.0	33.9	85.6	Horizontal	PASS
11860.349	-43.92	-13.0	30.9	-0.0	Horizontal	PASS

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



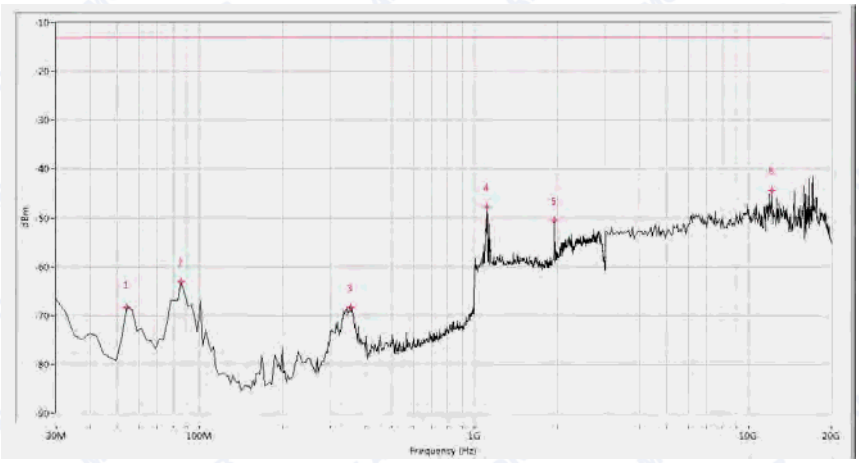
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.01	-13.0	55.0	345.1	Vertical	PASS
85.636	-64.46	-13.0	51.5	100.0	Vertical	PASS
342.045	-68.09	-13.0	55.1	179.6	Vertical	PASS
1104.738	-47.89	-13.0	34.9	359.2	Vertical	PASS
1927.681	-49.23	-13.0	36.2	305.3	Vertical	N.A
3720.698	-49.35	-13.0	36.4	136.3	Vertical	PASS

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



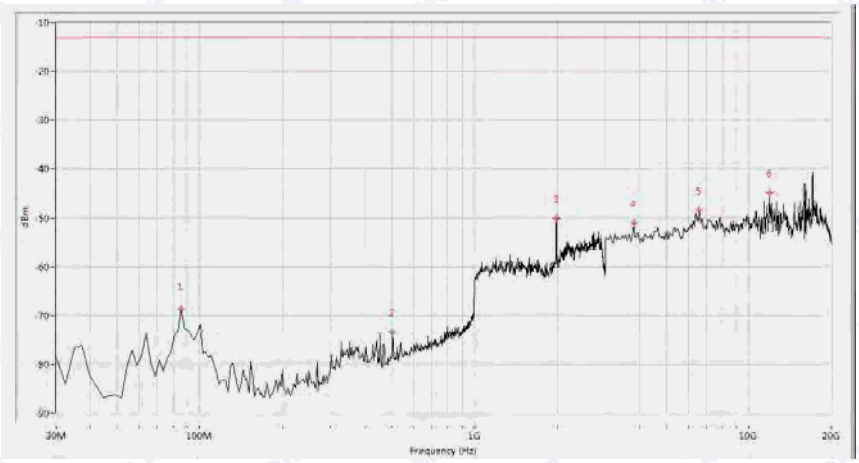
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-67.23	-13.0	54.2	52.3	Horizontal	PASS
131.596	-71.31	-13.0	58.3	208.8	Horizontal	PASS
530.723	-72.24	-13.0	59.2	139.1	Horizontal	PASS
1957.606	-47.51	-13.0	34.5	360.0	Horizontal	PASS
6137.157	-48.95	-13.0	35.9	156.1	Horizontal	PASS
17074.813	-39.19	-13.0	26.2	170.3	Horizontal	PASS

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



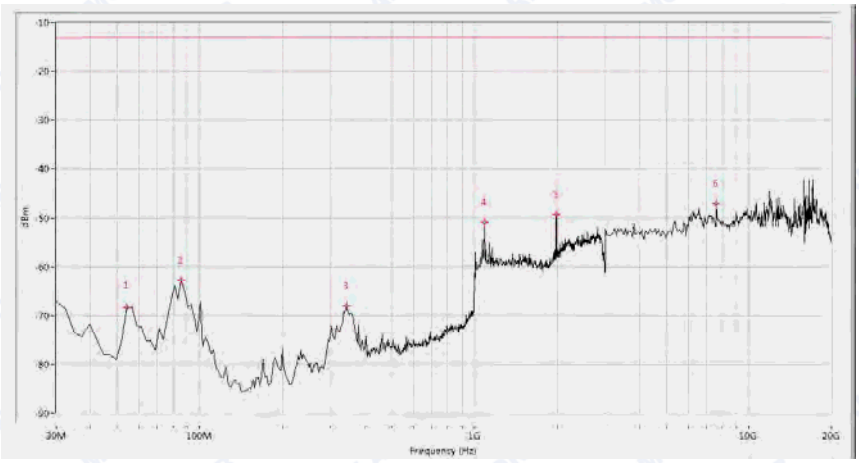
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.28	-13.0	55.3	360.0	Vertical	PASS
85.636	-63.06	-13.0	50.1	349.5	Vertical	PASS
354.140	-68.29	-13.0	55.3	176.9	Vertical	PASS
1109.726	-47.75	-13.0	34.8	142.1	Vertical	PASS
1957.606	-50.57	-13.0	37.6	142.1	Vertical	N.A
12114.713	-44.34	-13.0	31.3	143.4	Vertical	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-68.55	-13.0	55.6	123.5	Horizontal	PASS
504.115	-73.32	-13.0	60.3	45.4	Horizontal	PASS
1987.531	-50.12	-13.0	37.1	19.5	Horizontal	N.A
3805.486	-51.02	-13.0	38.0	29.0	Horizontal	PASS
6603.491	-48.46	-13.0	35.5	239.7	Horizontal	PASS
11860.349	-44.77	-13.0	31.8	107.6	Horizontal	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
54.190	-68.26	-13.0	55.3	21.7	Vertical	PASS
85.636	-62.76	-13.0	49.8	-0.0	Vertical	PASS
342.045	-68.05	-13.0	55.1	154.5	Vertical	PASS
1089.776	-50.81	-13.0	37.8	67.0	Vertical	PASS
1987.531	-49.23	-13.0	36.2	31.7	Vertical	N.A
7620.948	-47.13	-13.0	34.1	318.6	Vertical	PASS

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

** END OF REPORT **