

Report No.: SZ13080066W01



FCC TEST REPORT



Issued to

Corporativo Lanix S.A. de C.V.

For

Smartphone

Model Name: Ilium S600
Trade Name: Lanix
Brand Name: Lanix
FCC ID : ZC4S600
Standard: 47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E
Test date: 2013-8-16 to 2013-8-25
Issue date: 2013-8-27

By

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2013.8.27

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Date

2013.8.27



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TABLE OF CONTENTS

1.	GENERAL INFORMATION	3
1.1	EUT Description	3
1.2	Test Standards and Results	5
1.3	Facilities and Accreditations	6
2.	47 CFR PART 2, PART 22H & 24E REQUIREMENTS	7
2.1	Conducted RF Output Power	7
2.2	Peak to Average Ratio.....	19
2.3	99% Occupied Bandwidth	25
2.4	Frequency Stability	45
2.5	Conducted Out of Band Emissions	51
2.6	Band Edge	83
2.7	Transmitter Radiated Power (EIRP/ERP)	94
2.8	Radiated Out of Band Emissions	107

Change History		
Issue	Date	Reason for change
1.0	Aug 26, 2013	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: Smartphone
Serial No.....: (n.a, marked #1 by test site)
Hardware Version: V1.0
Software Version: V1
Applicant: Corporativo Lanix S.A. de C.V.
Carretera Internacional Hermosillo-Nogales Km 8.5,Hermosillo
Sonora, Mexico
Manufacturer: Tinno Mobile Technology Corp.
4/F, H-3 Building, OCT Eastern industrial Park, No.1 XiangShan
East Road.,Nan Shan District, Shenzhen, P.R. China.
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
Multislot Class.....: GPRS: Multislot Class12,EGPRS: Multislot Class12
Antenna Type.....: PIFA Antenna
Emission Designators: GSM 850:250KGXW,GSM 1900:250KGXW
EGPRS850:250KG7W, EGPRS1900:250KG7W,
WCDMA 850:4M18F9W ,WCDMA1900:4M17F9W

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula $F(n)=824.2+0.2*(n-128)$, $128 \leq n \leq 251$; 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 $F(n)=1850.2+0.2*(n-512)$, $512 \leq n \leq 810$; 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 $F(n)=826.4+0.2*(n-4132)$, $4132 \leq n \leq 4233$; 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 $F(n)=1852.4+0.2*(n-9262)$, $9262 \leq n \leq 9538$; 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 (10-1-09 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-09 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-09 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

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

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

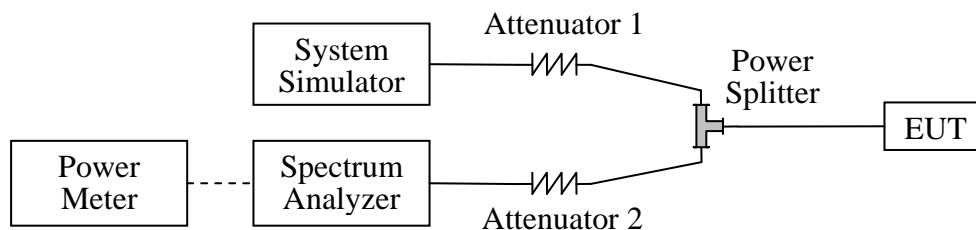
2.1 Conducted RF Output Power

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	2012.05	2014.05
Spectrum Analyzer	Agilent	E7405A	US44210471	2012.05	2014.05
Power Meter	Agilent	E4418B	GB43318055	2012.05	2014.05
Power Sensor	Agilent	8482A	MY41091706	2012.05	2014.05
Power Splitter	Weinschel	1506A	NW521	2012.05	2014.05
Attenuator 1	Resnet	20dB	(n.a.)	2012.05	2014.05
Attenuator 2	Resnet	3dB	(n.a.)	2012.05	2014.05

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:

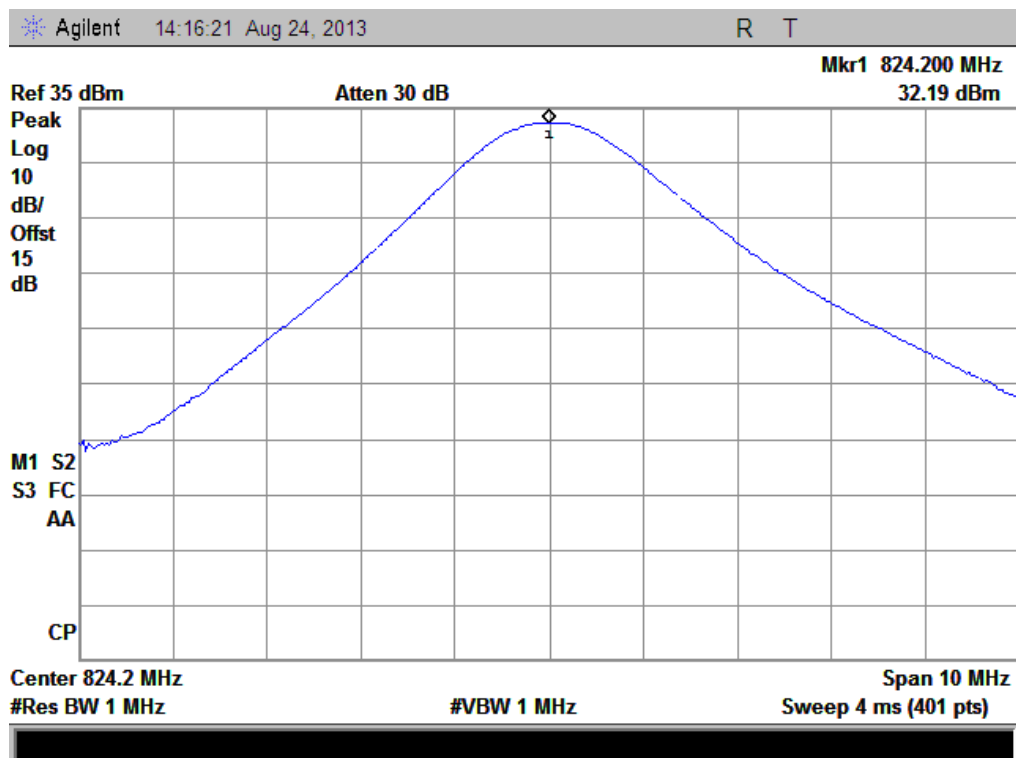
Band	Channel	Frequency (MHz)	Measured Output Power		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 850MHz	128	824.2	32.19	Plot A1 to A3	35	PASS
	190	836.6	32.11			PASS
	251	848.8	31.95			PASS
GSM 1900MHz	512	1850.2	30.42	Plot B1 to B3	32	PASS
	661	1880.0	29.89			PASS
	810	1909.8	29.03			PASS
GPRS 850MHz	128	824.2	31.16	Plot C1 to C3 ^{Note 1}	35	PASS
	190	836.6	31.07			PASS
	251	848.8	30.90			PASS
GPRS 1900MHz	512	1850.2	29.01	Plot D1 to D3 ^{Note 1}	32	PASS
	661	1880.0	28.49			PASS
	810	1909.8	27.68			PASS
EGPRS 850MHz	128	824.2	31.15	Plot E1 to E3 ^{Note 1}	35	PASS
	190	836.6	31.06			PASS
	251	848.8	30.88			PASS
EGPRS 1900MHz	512	1850.2	28.99	Plot F1 to F3 ^{Note 1}	32	PASS
	661	1880.0	28.47			PASS
	810	1909.8	27.63			PASS

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

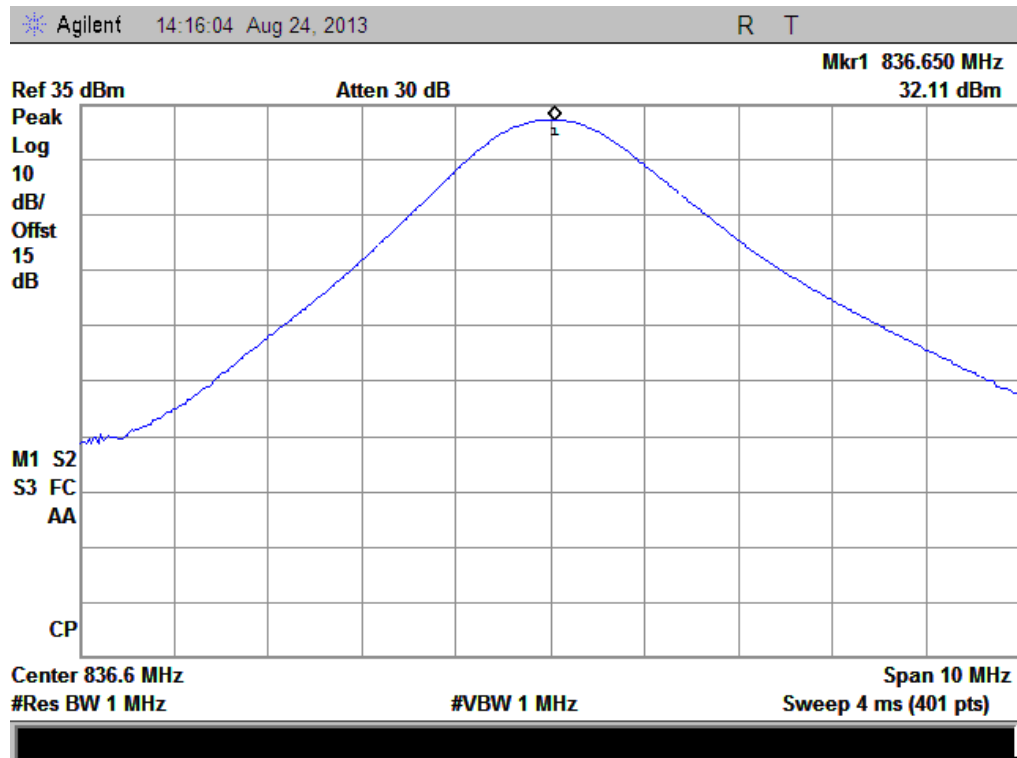
2. WCDMA Model Test Verdict:

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	24.83	24.86	24.55	24.53	24.56	23.59
HSDPA	1	24.76	24.79	24.61	24.47	24.52	23.57
	2	24.75	24.78	24.59	24.45	24.51	23.53
	3	24.27	24.29	24.13	23.98	24.04	23.07
	4	24.25	24.27	24.11	23.96	24.01	23.05
HSUPA	1	24.73	24.75	24.57	24.42	24.51	24.47
	2	22.69	22.71	22.59	22.61	22.64	22.55
	3	23.75	23.69	23.61	23.53	23.54	23.41
	4	22.67	22.73	22.59	22.51	22.53	22.46
	5	24.71	24.73	24.59	24.41	24.49	24.45
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA was tested by power meter.						

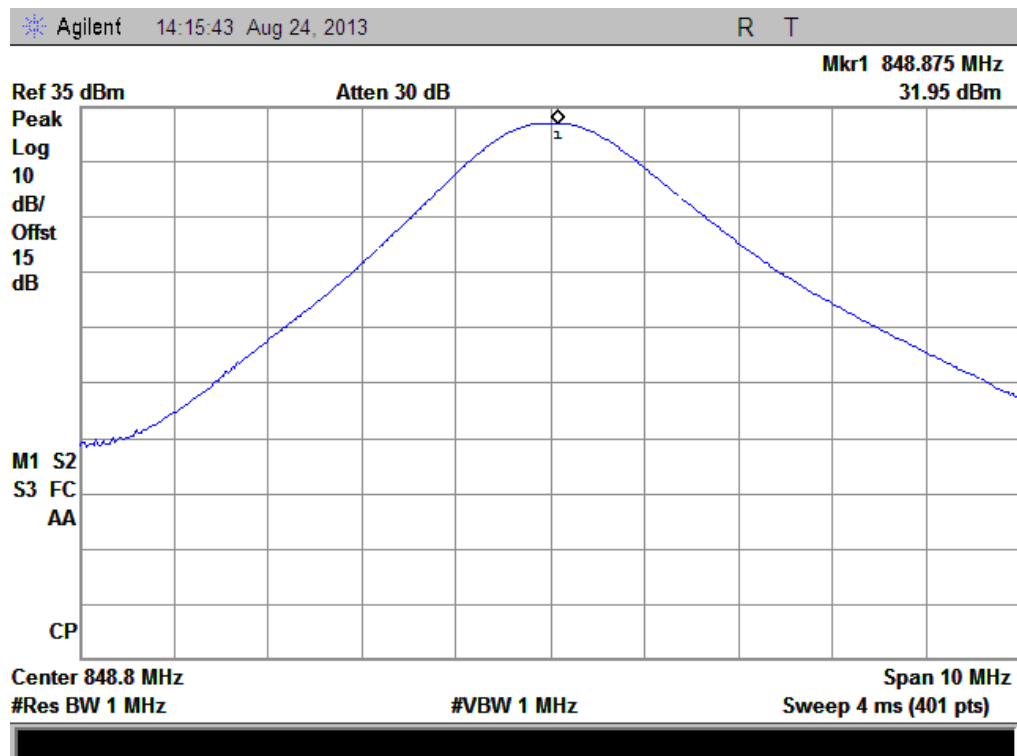
3. GSM Model Test Plots:



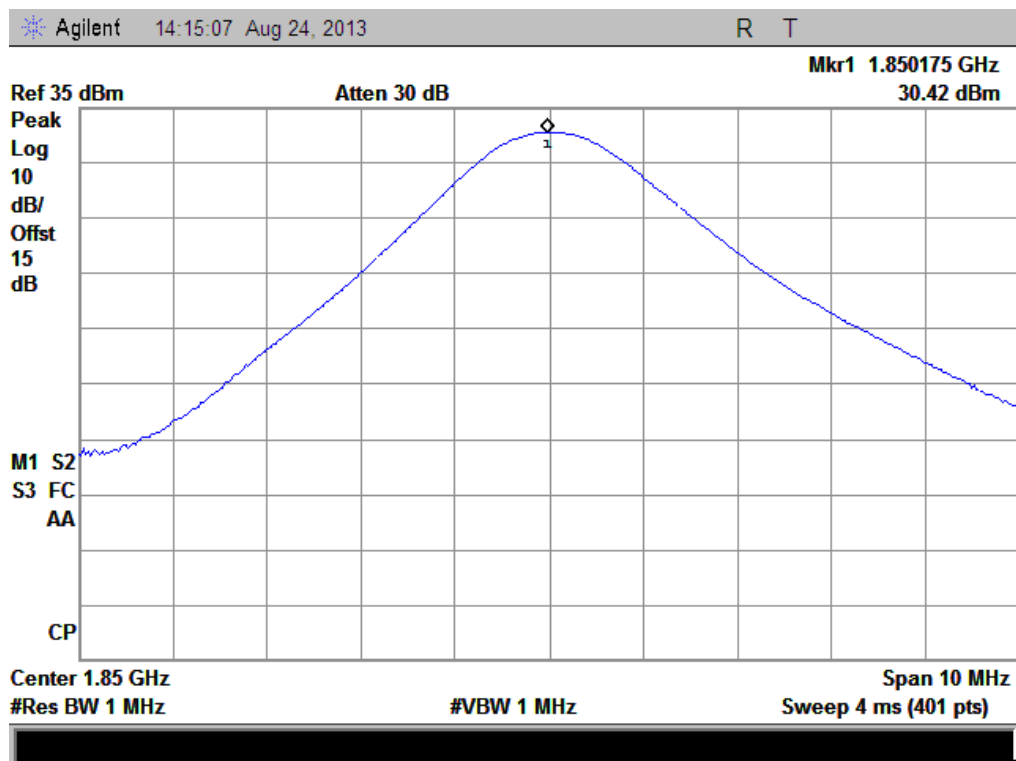
(Plot A1: GSM 850MHz Channel = 128)



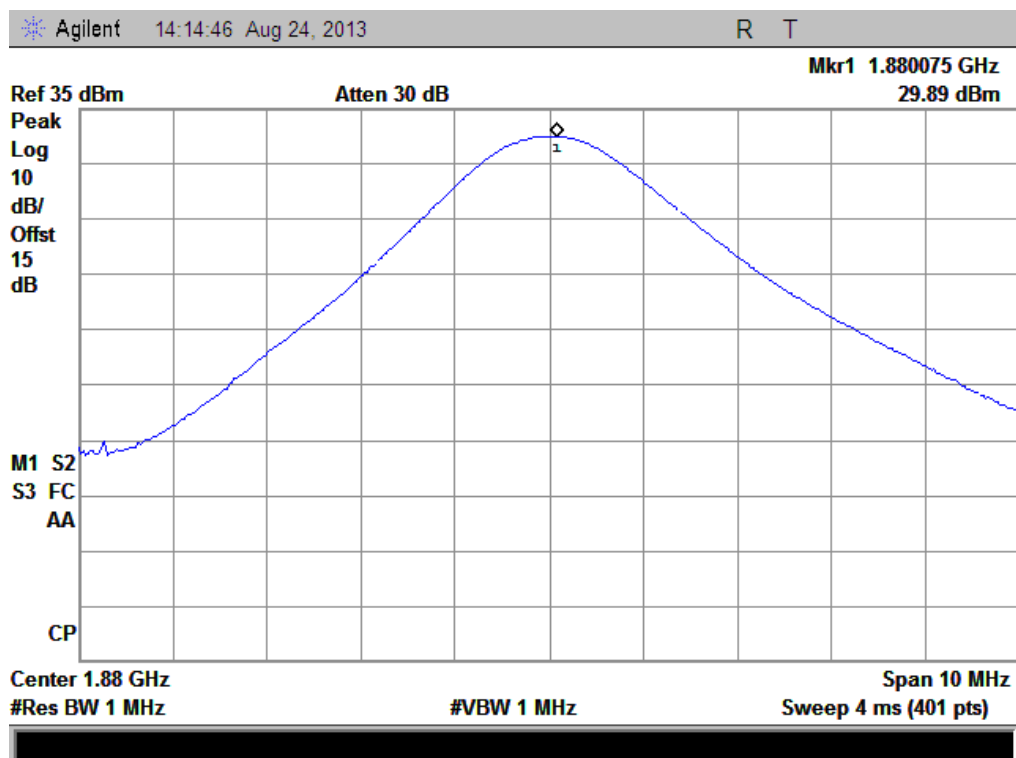
(Plot A2: GSM 850MHz Channel = 190)



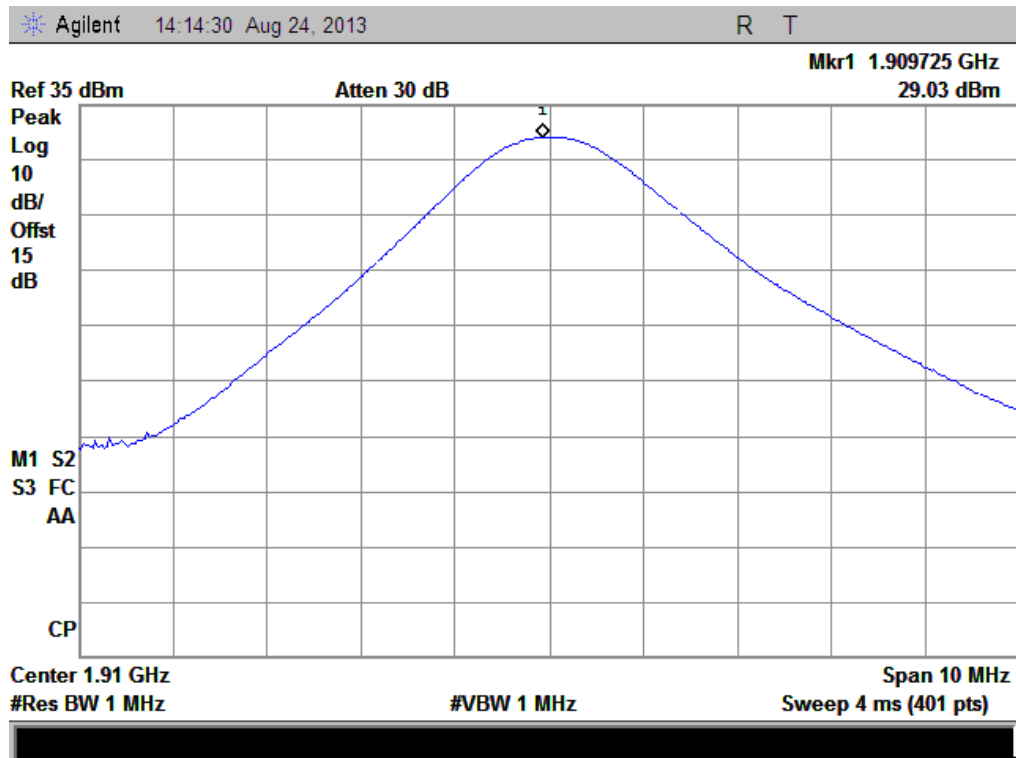
(Plot A3: GSM 850MHz Channel = 251)



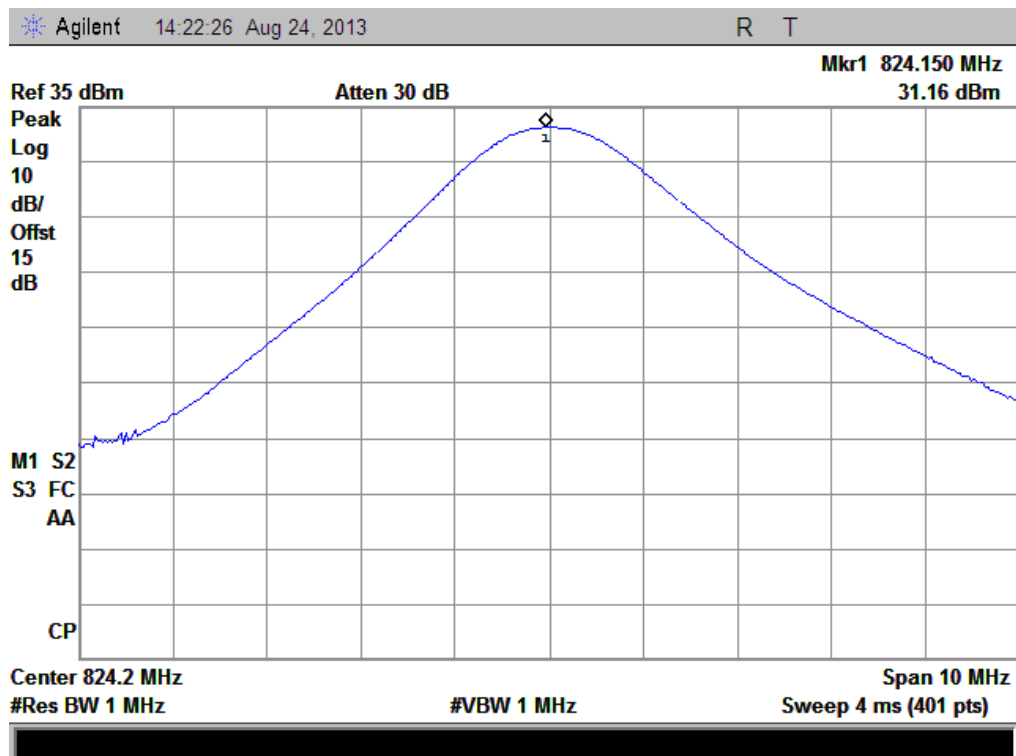
(Plot B1: GSM 1900MHz Channel = 512)



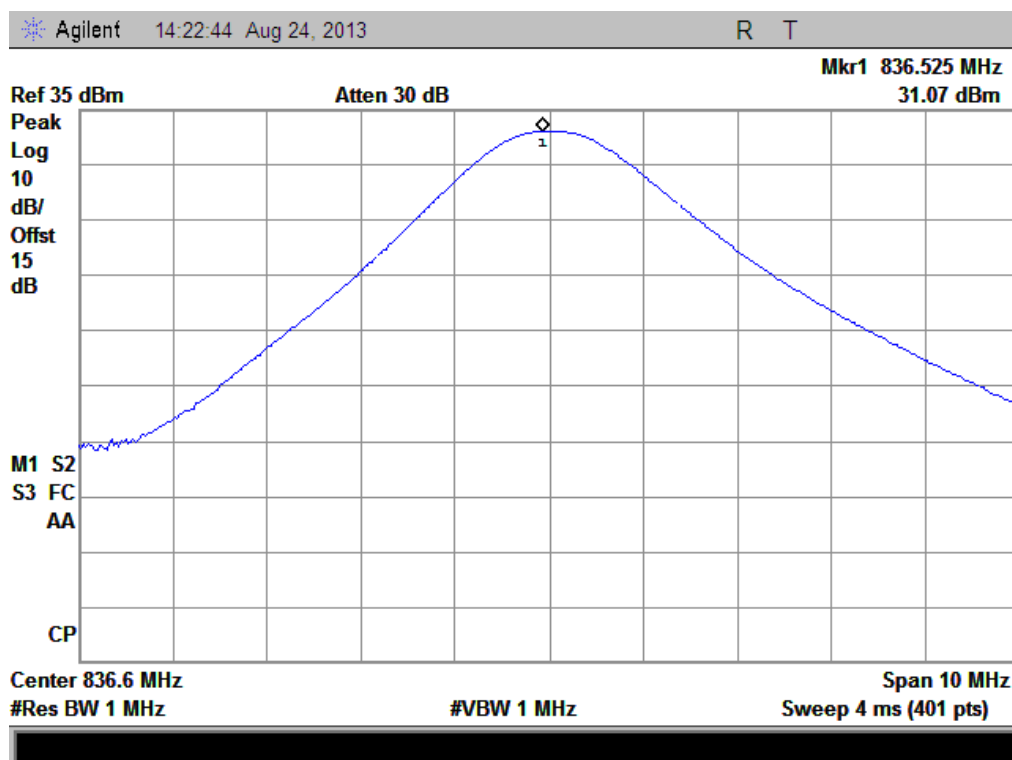
(Plot B2: GSM 1900MHz Channel = 661)



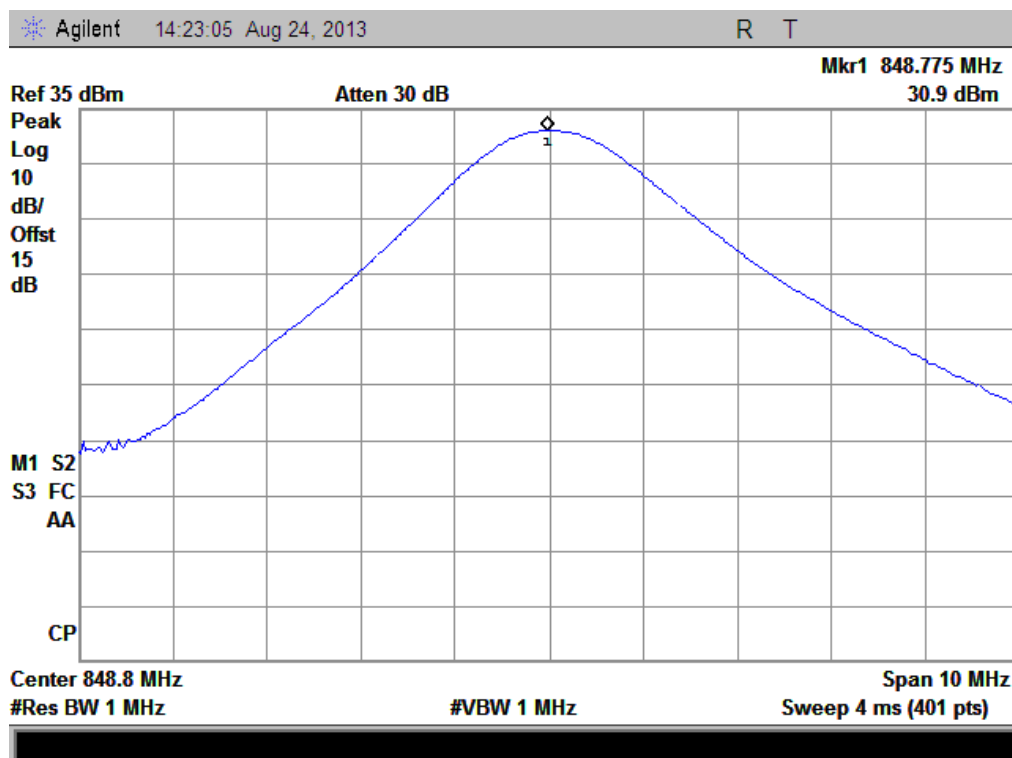
(Plot B3: GSM 1900Hz Channel = 810)



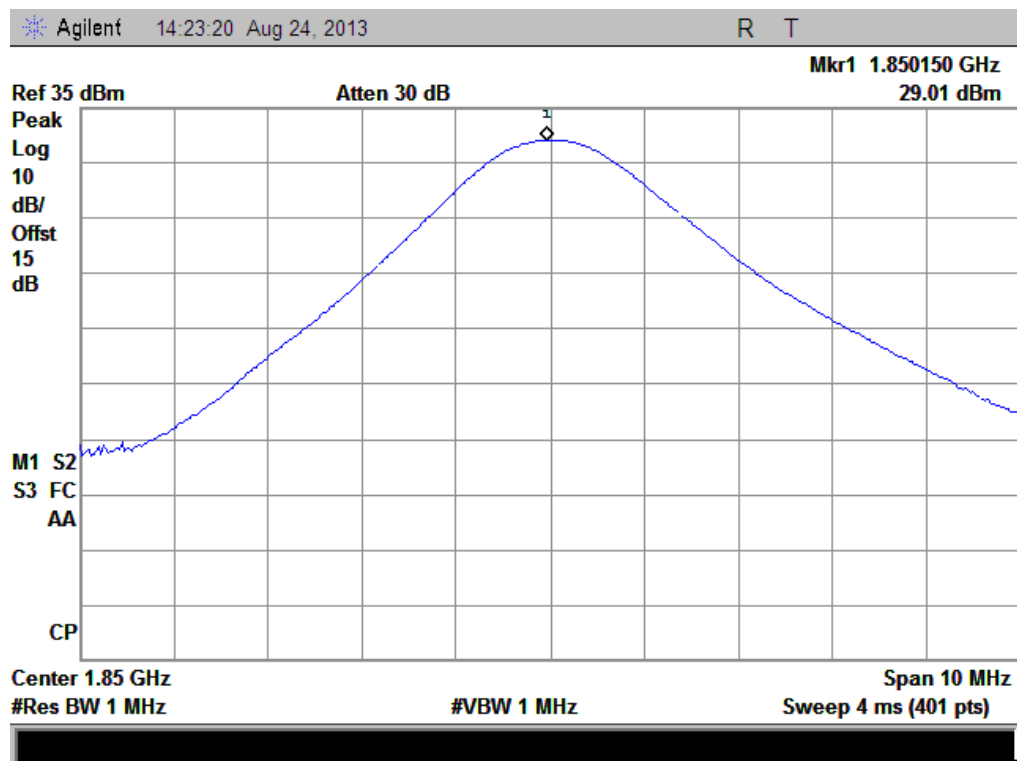
(Plot C 1: GPRS 850MHz Channel = 128)



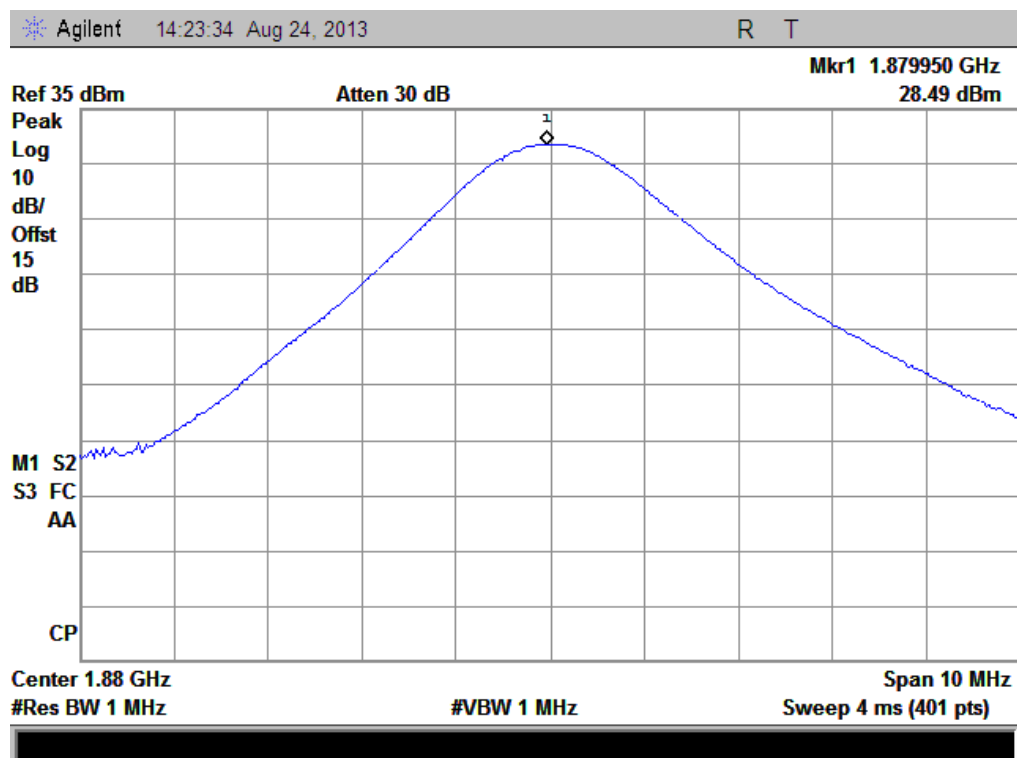
(Plot C 2: GPRS 850MHz Channel = 190)



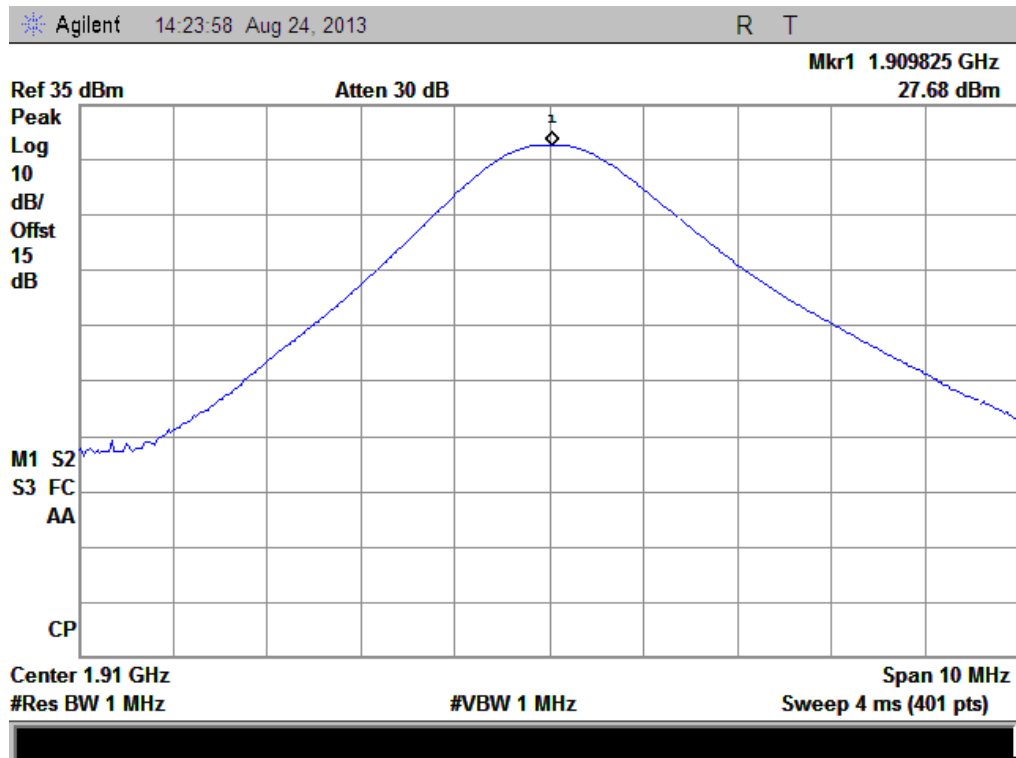
(Plot C 3: GPRS 850MHz Channel = 251)



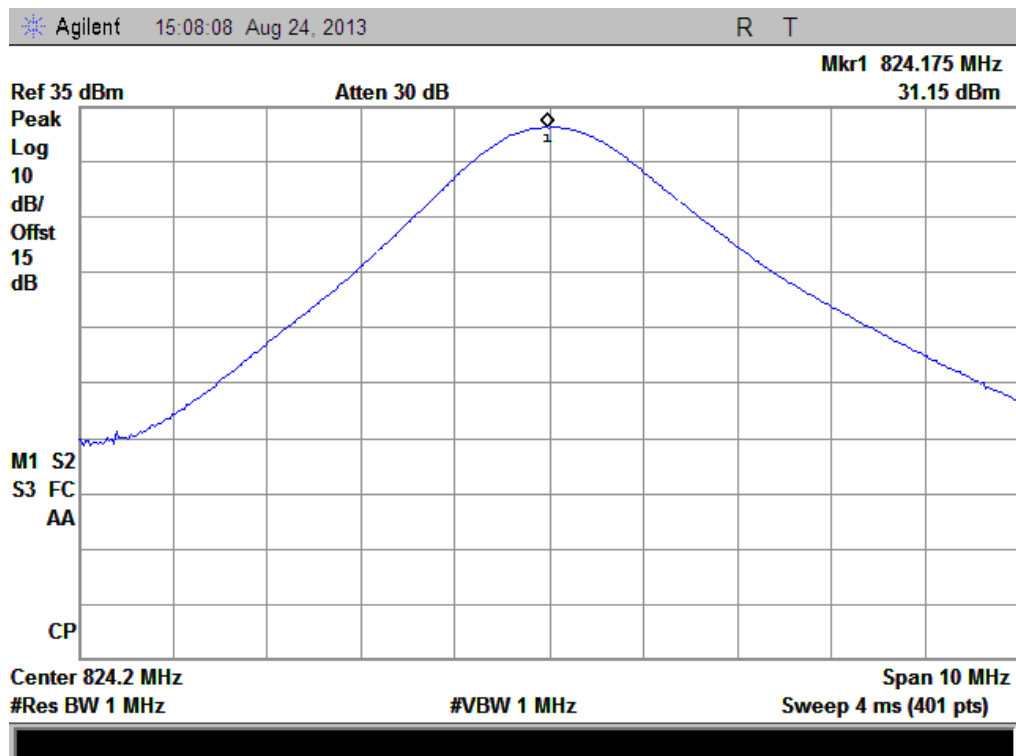
(Plot D 1: GPRS 1900MHz Channel = 512)



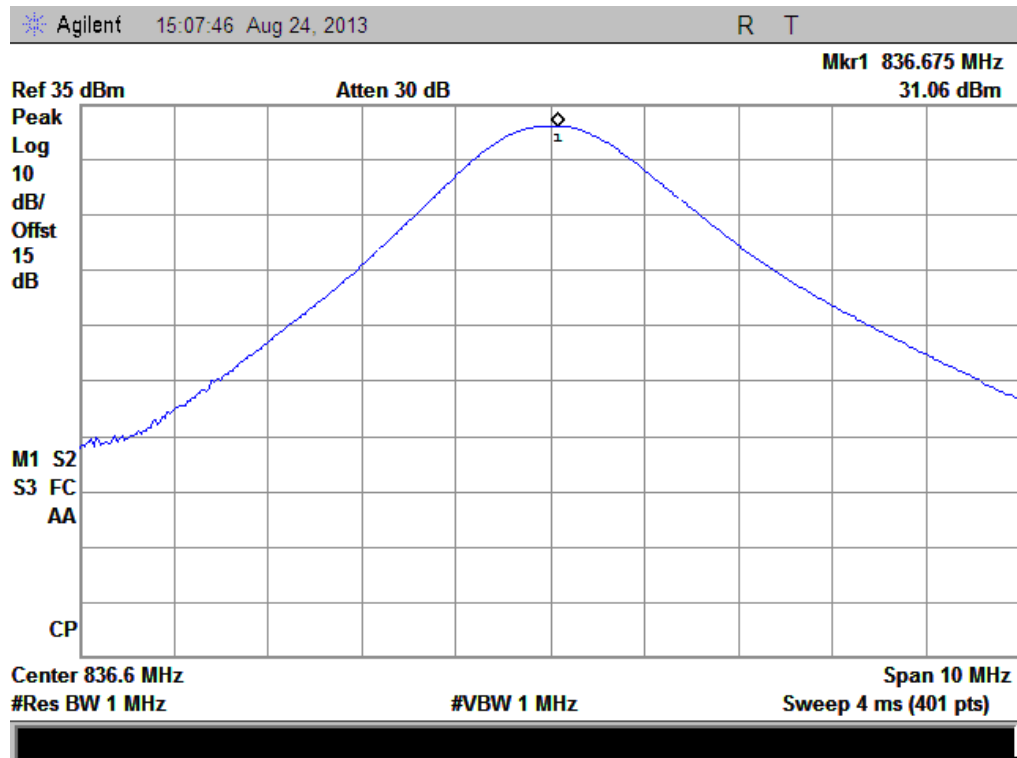
(Plot D 2: GPRS 1900MHz Channel = 661)



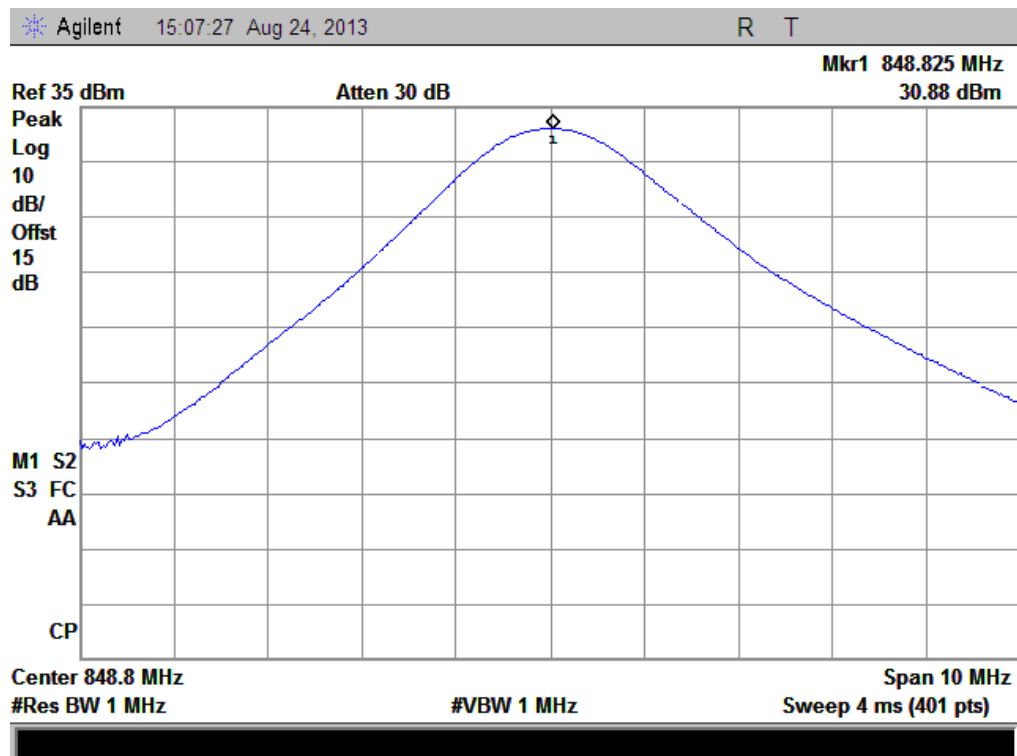
(Plot D 3: GPRS 1900MHz Channel = 810)



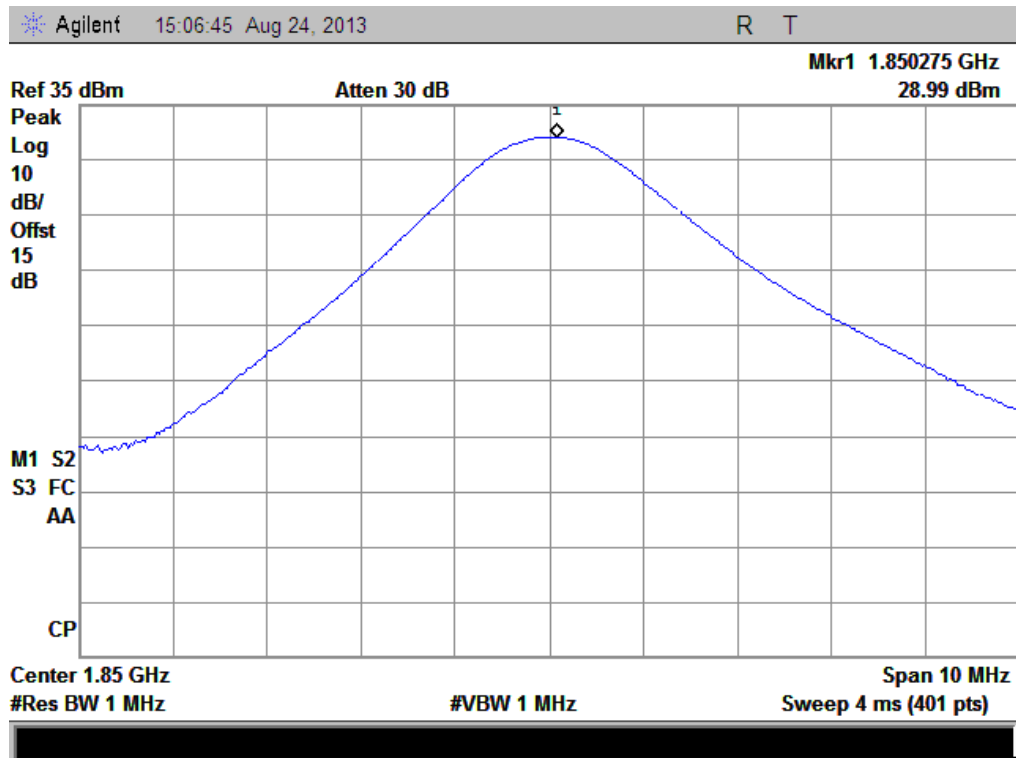
(Plot E1: EGPRS 850MHz Channel = 128)



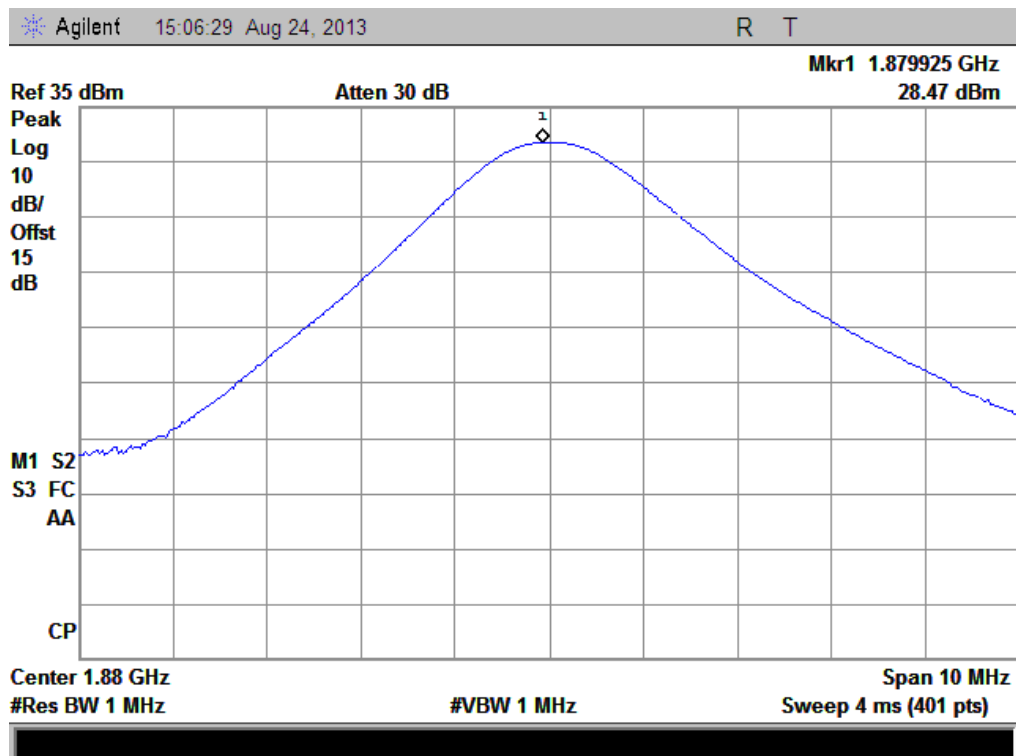
(Plot E2: EGPRS 850MHz Channel = 190)



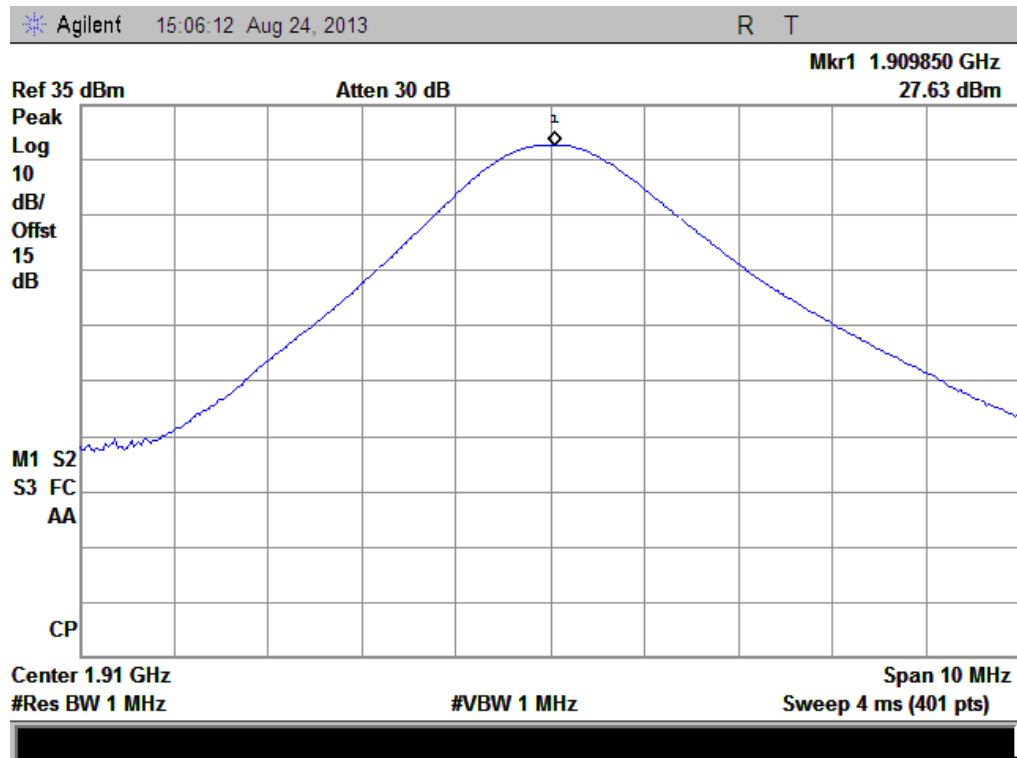
(Plot E3: EGPRS 850MHz Channel = 251)



(Plot F1: EGPRS 1900MHz Channel = 512)



(Plot F2: EGPRS 1900MHz Channel = 661)



(Plot F3: EGPRS 1900Hz Channel = 810)

2.2 Peak to Average Ratio

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:

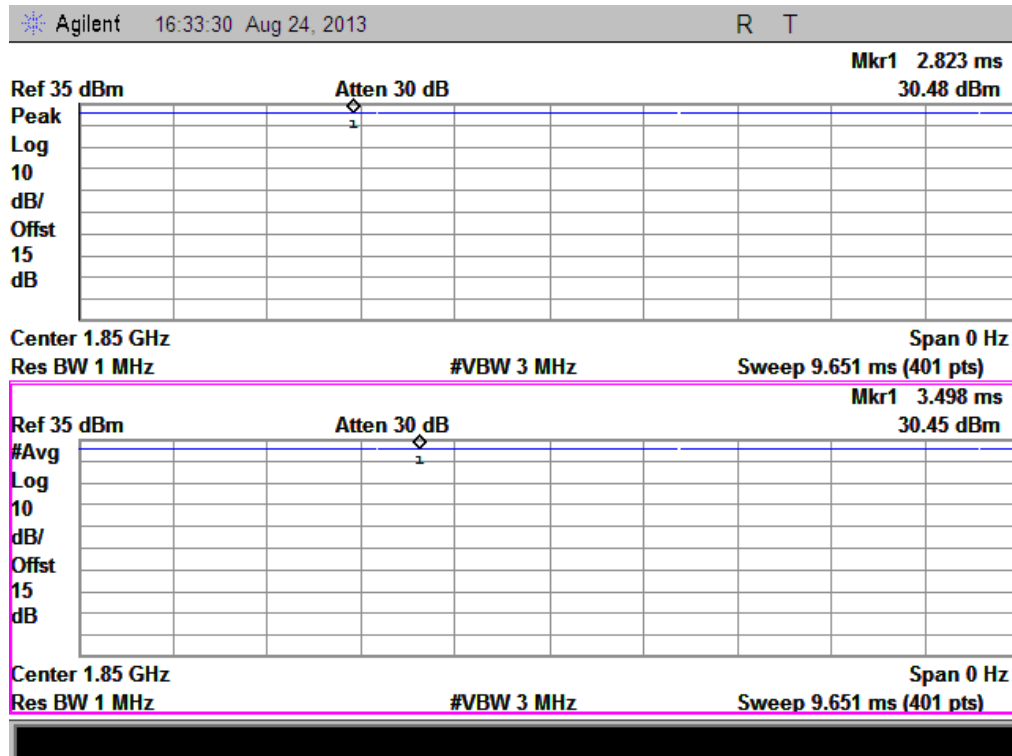
- Set RBW=1MHz, VBW=1MHz, peak detector in spectrum analyzer.
- Set EUT in maximum output power, and triggered the bust signal.
- Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average ratio.

B. For UMTS operating mode:

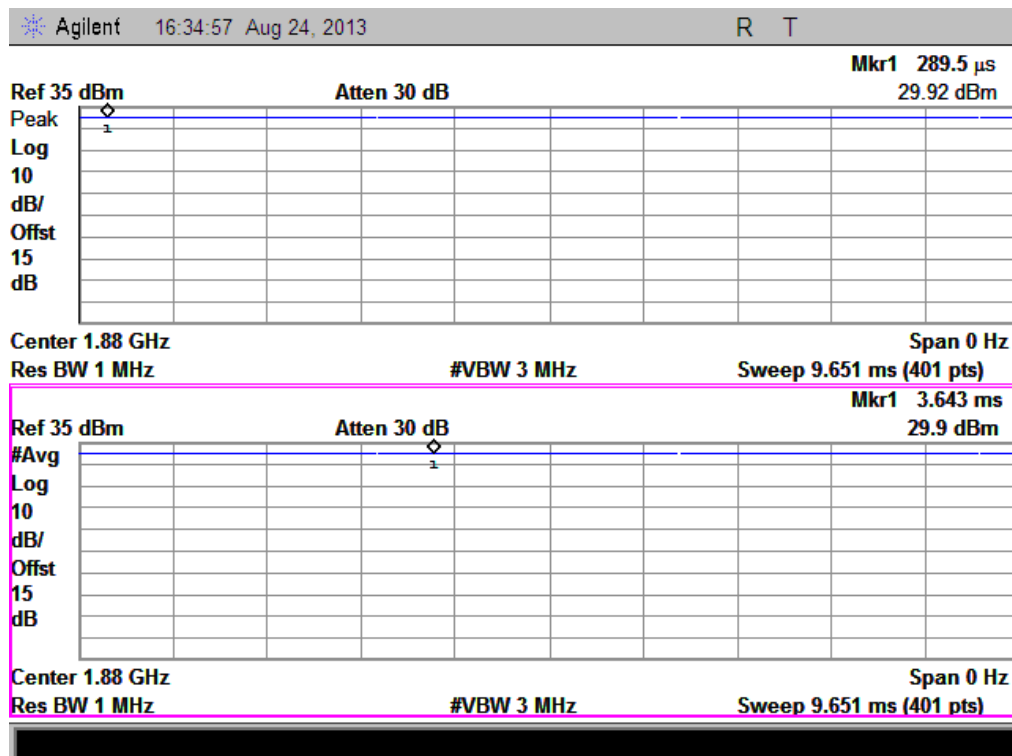
- Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
- The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1%.

1. Test Verdict:

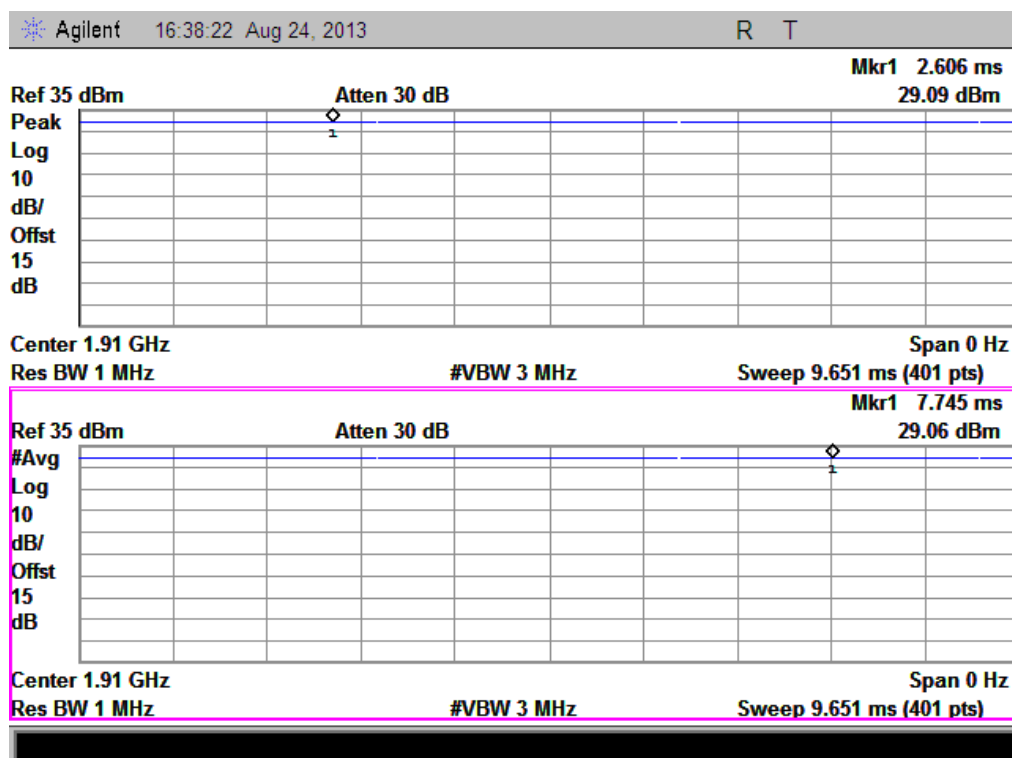
Band	Channel	Frequency (MHz)	Peak to Average ratio		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 1900MHz	512	1850.2	0.03	Plot A1 to A3	13	PASS
	661	1880.0	0.02			PASS
	810	1909.8	0.03			PASS
EGPRS 1900MHz	512	1850.2	0.04	Plot B1 to B3	13	PASS
	661	1880.0	0.02			PASS
	810	1909.8	0.03			PASS
WCDMA 1900MHz	9262	1852.4	2.96	Plot C1 to C3	13	PASS
	9400	1880	3.06			PASS
	9538	1907.6	3.07			PASS



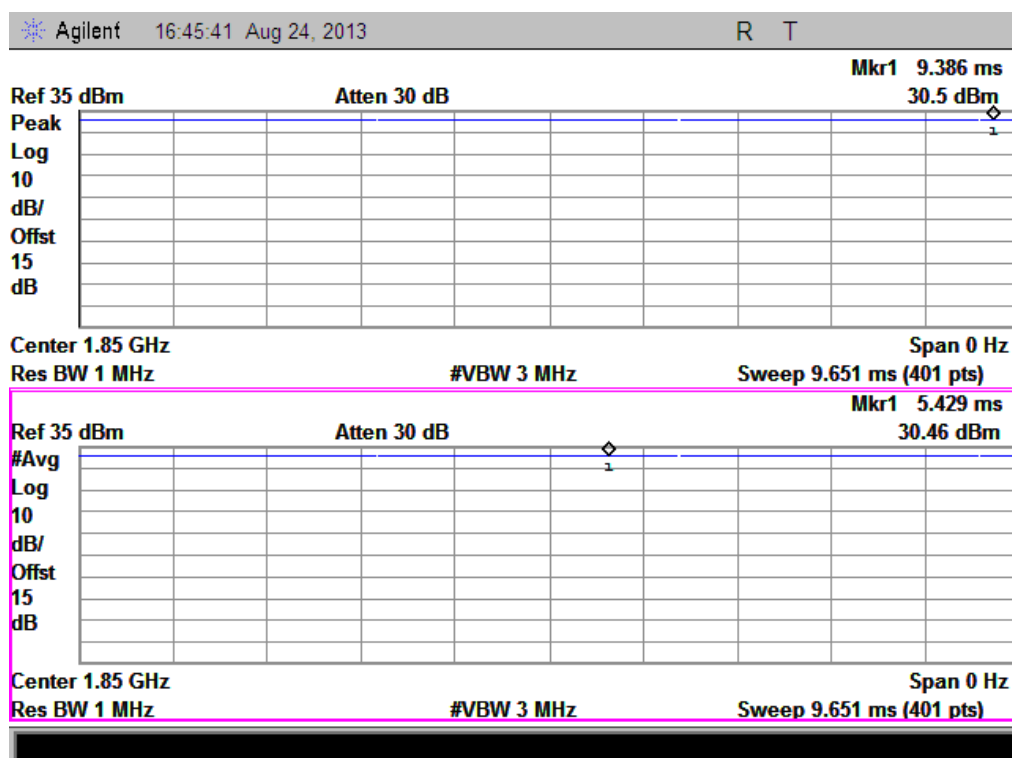
(Plot A1: GSM 1900 MHz Channel = 512)



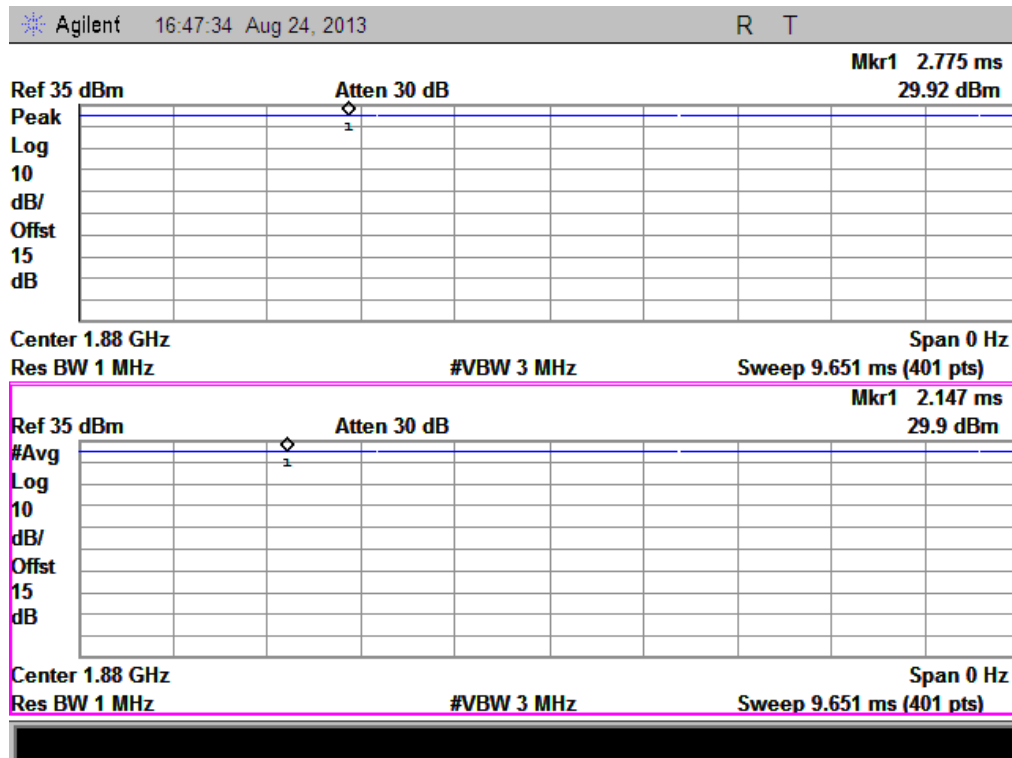
(Plot A2: GSM 1900 MHz Channel = 661)



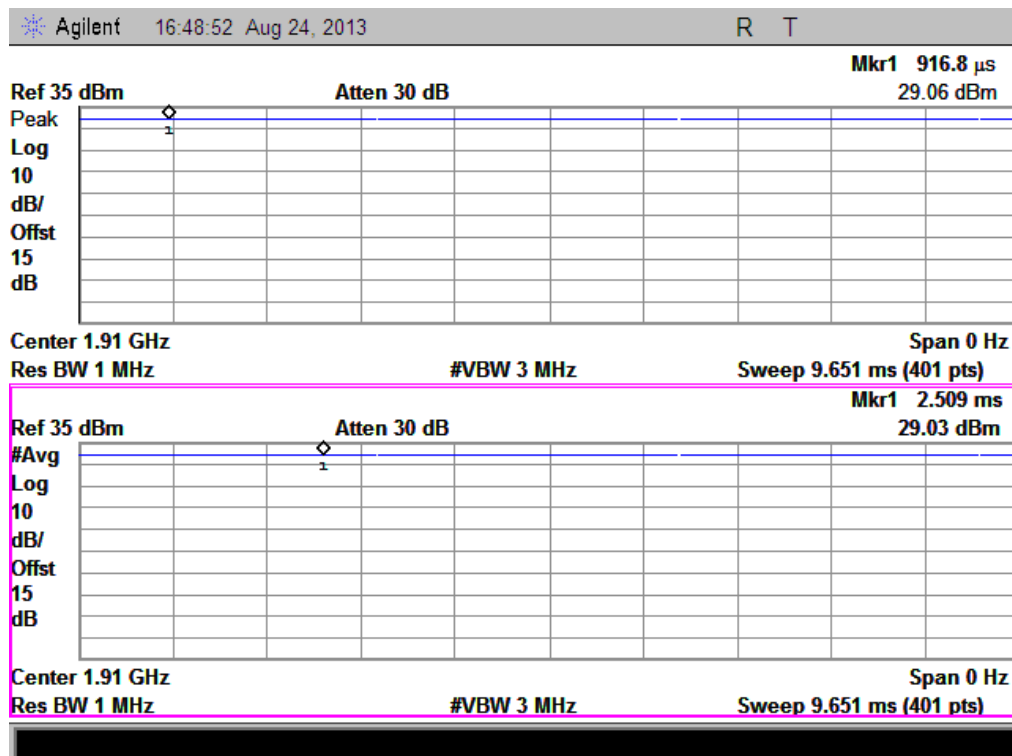
(Plot A3: GSM 1900MHz Channel = 810)



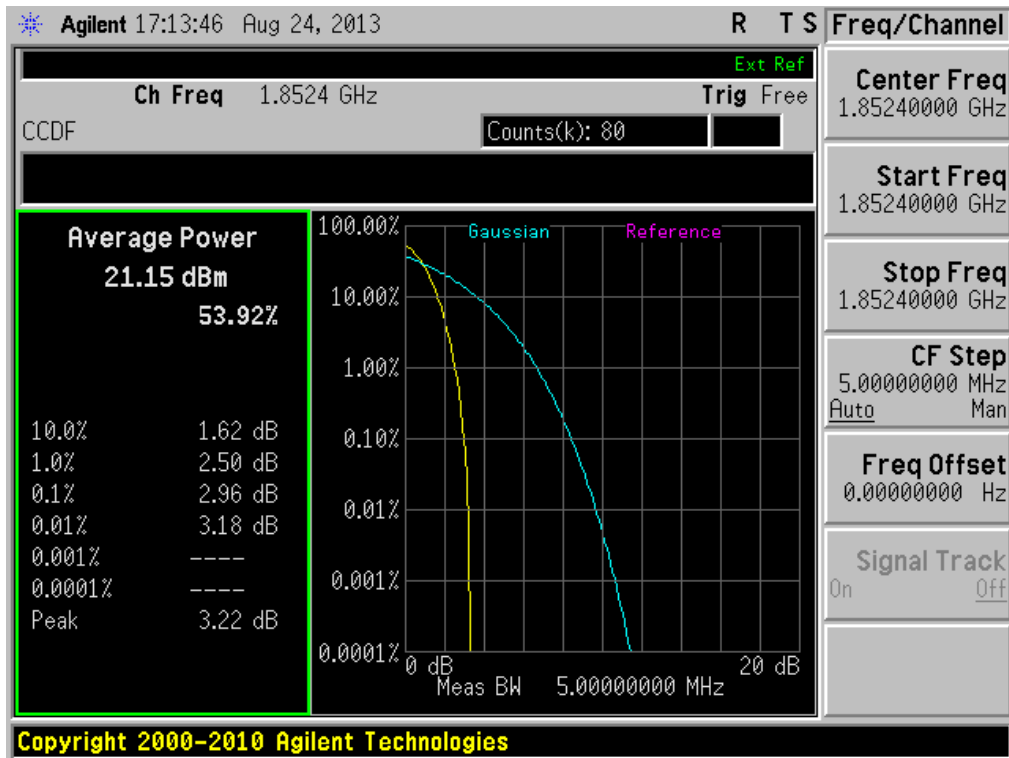
(Plot B1: EGPRS 1900MHz Channel = 512)



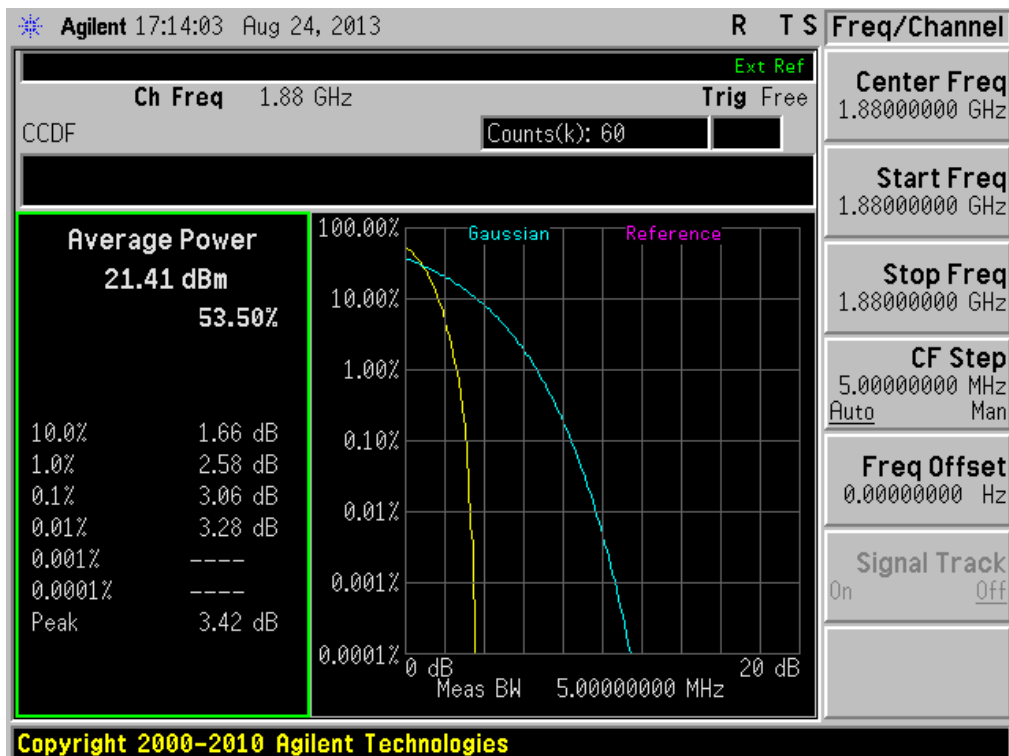
(Plot B2: EGPRS 1900MHz Channel = 661)



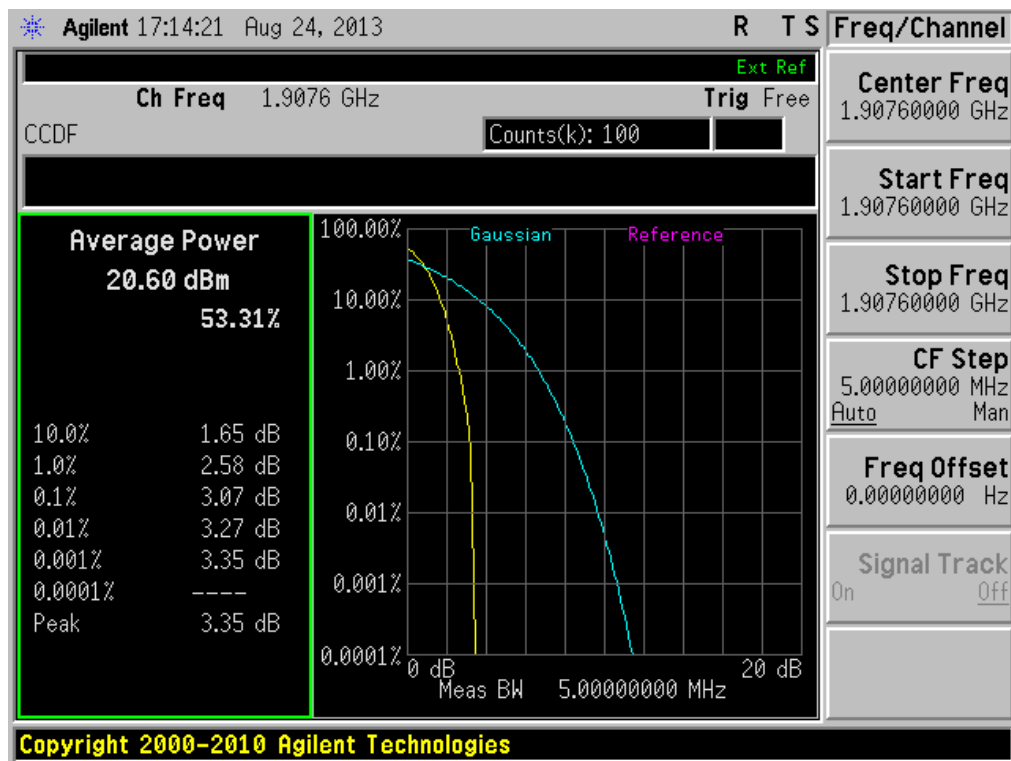
(Plot B3: EGPRS 1900MHz Channel = 810)



(Plot C1: WCDMA 1900MHz Channel = 9262)



(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

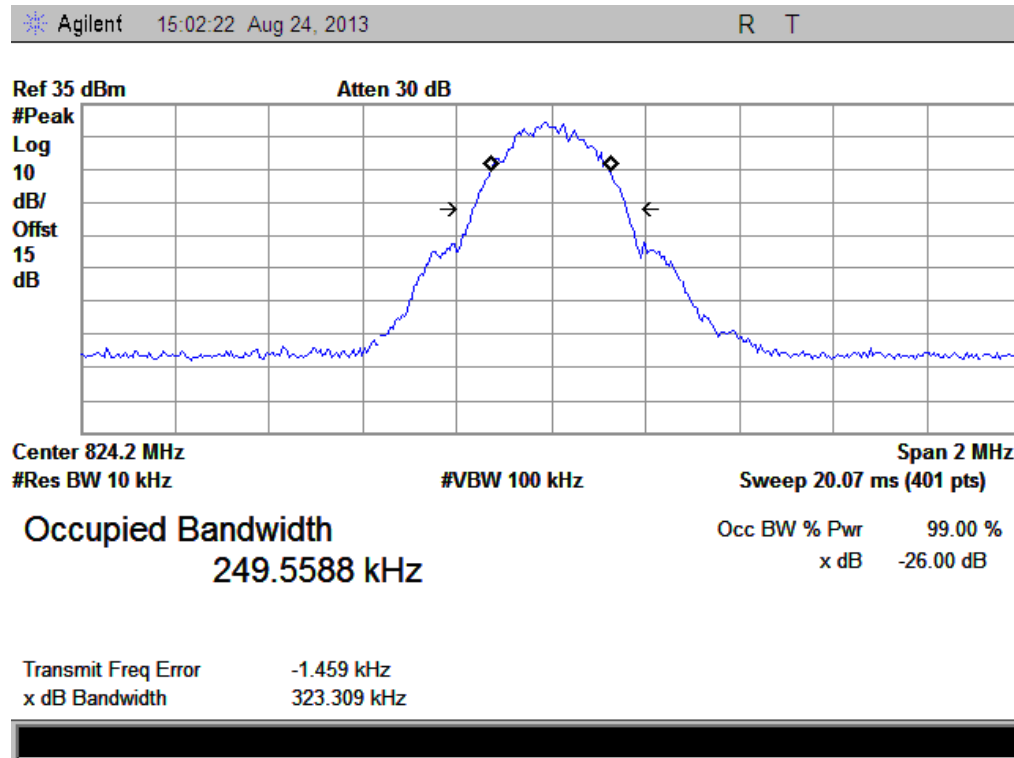
Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

2. Test Verdict:

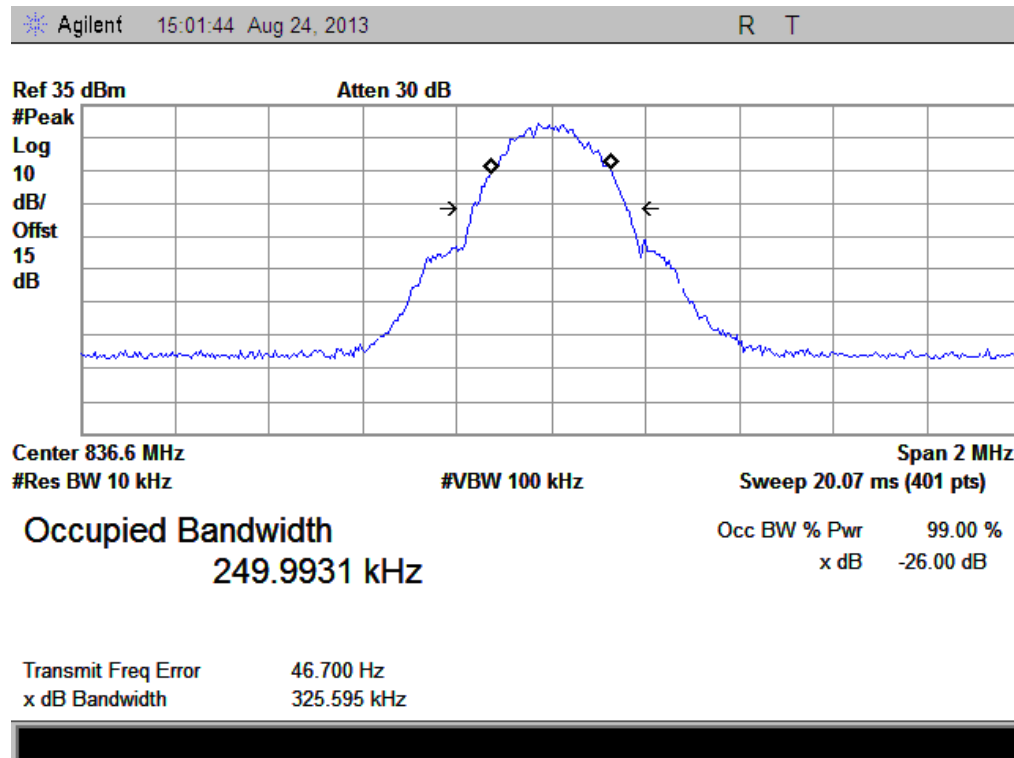
Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
EDGE 850MHz	128	824.2	323.309 KHz	249.5588 KHz	Plot A
	190	836.6	325.595 KHz	249.9931 KHz	Plot B
	251	848.8	316.139 KHz	248.3833 KHz	Plot C
EDGE 1900MHz	512	1850.2	322.119 KHz	250.3483 KHz	Plot D
	661	1880.0	319.531 KHz	246.3912 KHz	Plot E
	810	1909.8	324.085 KHz	250.3193 KHz	Plot F
WCDMA 850MHz	4132	826.4	4.712MHz	4.1777MHz	Plot G
	4175	835	4.706MHz	4.1730MHz	Plot H
	4233	846.6	4.730MHz	4.1685MHz	Plot I
WCDMA 1900MHz	9262	1852.4	4.697MHz	4.1579MHz	Plot J
	9400	1880	4.721MHz	4.1637MHz	Plot K
	9538	1907.6	4.723MHz	4.1682MHz	Plot L
HSDPA 850MHz	4132	826.4	4.739MHz	4.1721MHz	Plot M
	4175	835	4.691MHz	4.1613MHz	Plot N
	4233	846.6	4.724MHz	4.1840MHz	Plot O
HSDPA 1900MHz	9262	1852.4	4.734MHz	4.1723MHz	Plot P
	9400	1880	4.715MHz	4.1726MHz	Plot Q
	9538	1907.6	4.695MHz	4.1666MHz	Plot R
HSUPA 850MHz	4132	826.4	4.714MHz	4.1796MHz	Plot S
	4175	835	4.703MHz	4.1505MHz	Plot T
	4233	846.6	4.739MHz	4.1810MHz	Plot U
HSUPA 1900MHz	9262	1852.4	4.746MHz	4.1630MHz	Plot V

Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
	9400	1880	4.710MHz	4.1418MHz	Plot W
	9538	1907.6	4.711MHz	4.1622MHz	Plot X
GSM 850MHz	128	824.2	315.761KHz	248.4017 KHz	Plot Y
	190	836.6	311.141 KHz	250.2288 KHz	Plot Z
	251	848.8	316.747 KHz	247.8940 KHz	Plot A1
GSM 1900MHz	512	1850.2	322.337 KHz	250.3285 KHz	Plot B1
	661	1880.0	311.850 KHz	242.1987 KHz	Plot C1
	810	1909.8	324.685 KHz	248.1866 KHz	Plot D1
GPRS 850MHz	128	824.2	331.762 KHz	249.3979 KHz	Plot E1
	190	836.6	327.669 KHz	247.5138 KHz	Plot F1
	251	848.8	321.516 KHz	243.3702 KHz	Plot G1
GPRS 1900MHz	512	1850.2	322.992 KHz	250.4011 KHz	Plot H1
	661	1880.0	324.083 KHz	243.9363 KHz	Plot I2
	810	1909.8	319.230 KHz	247.8985 KHz	Plot J2

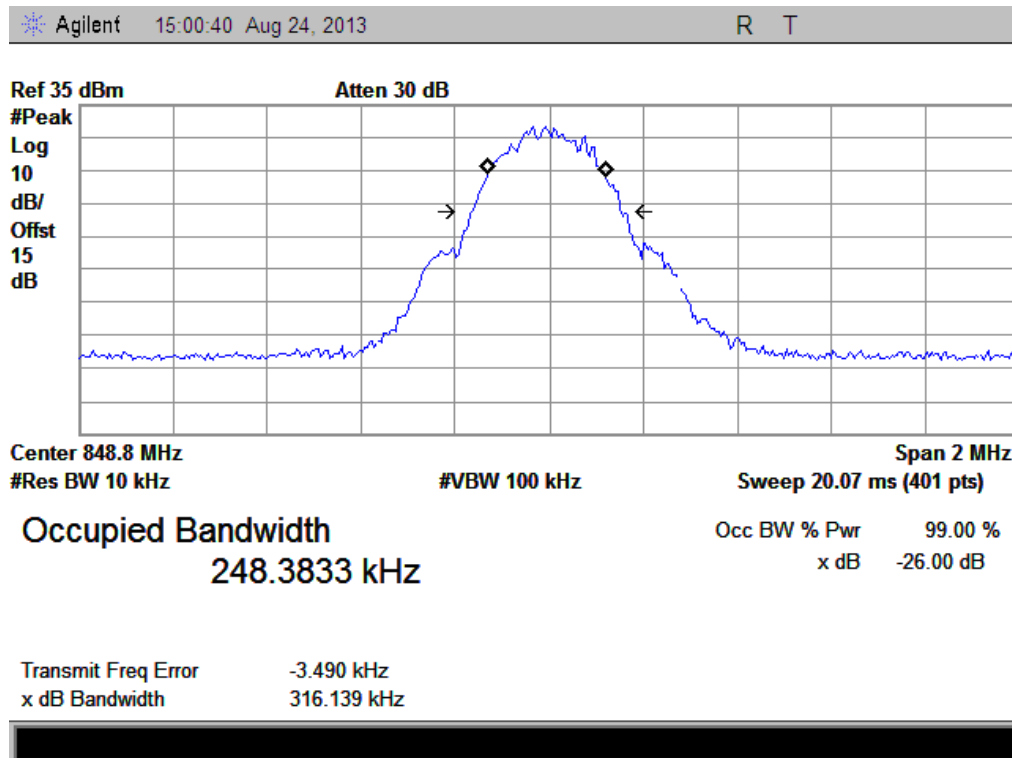
3. Test Plots:



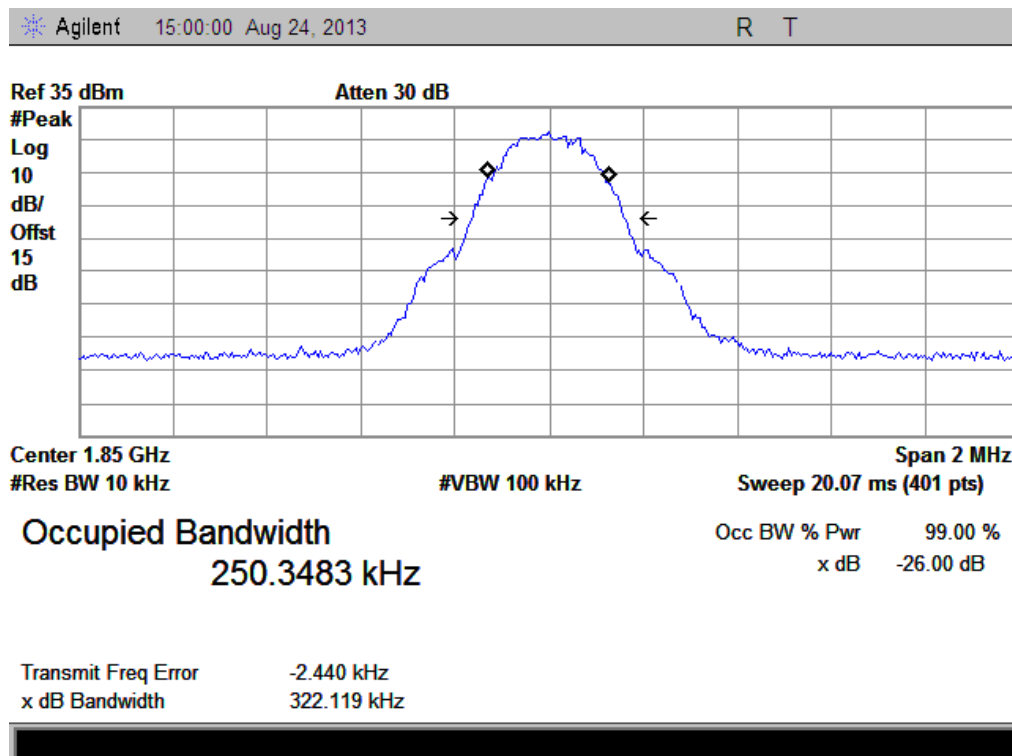
(Plot A: EGPRS 850MHz Channel = 128)



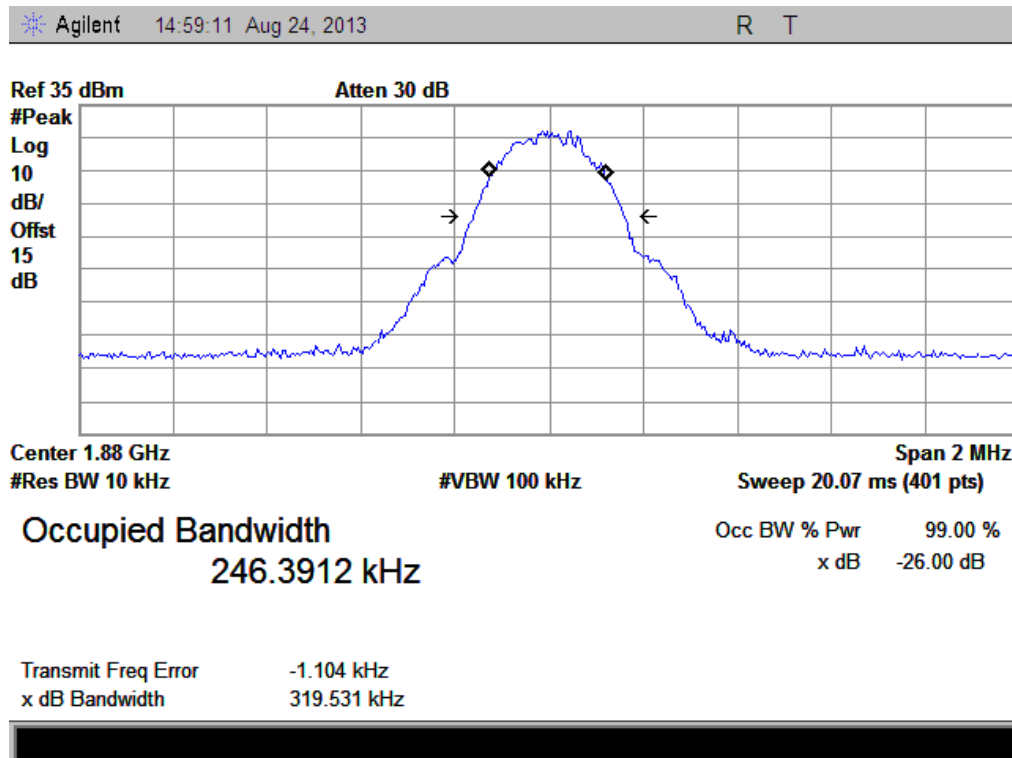
(Plot B: EGPRS 850MHz Channel = 190)



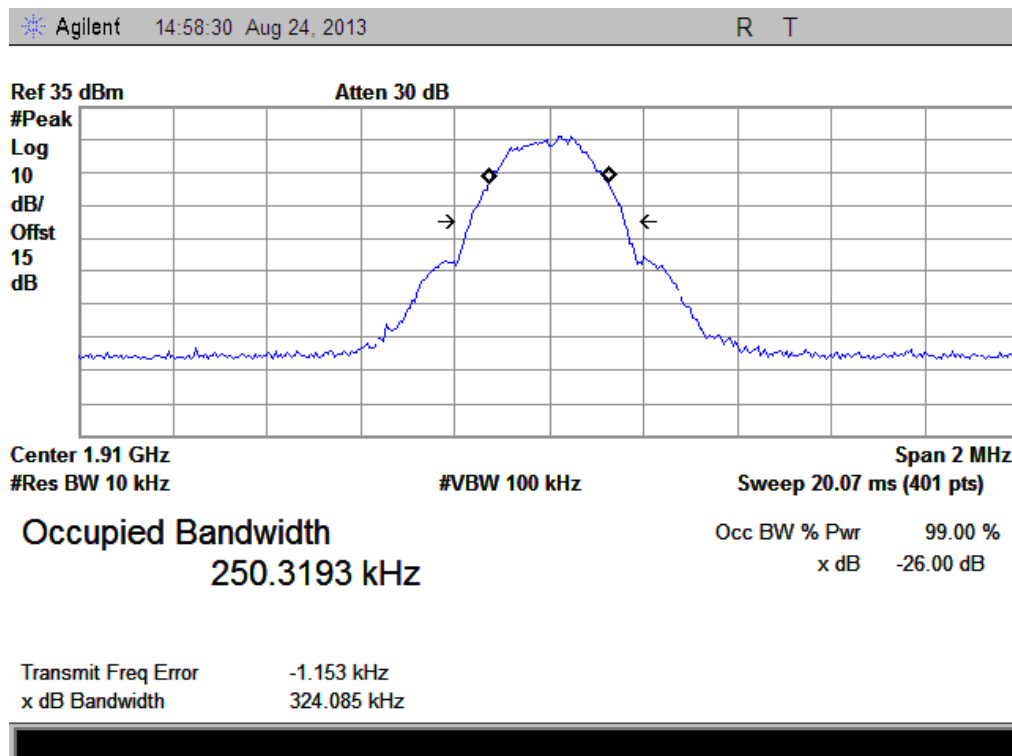
(Plot C: EGPRS 850MHz Channel = 251)



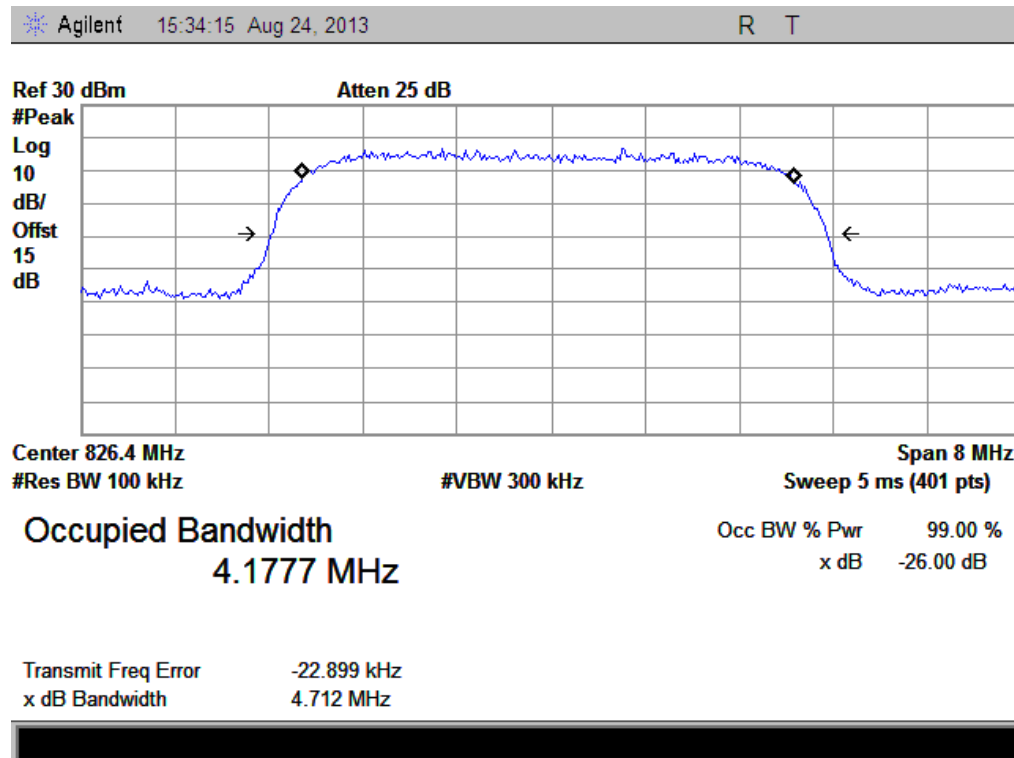
(Plot D: EGPRS1900MHz Channel = 512)



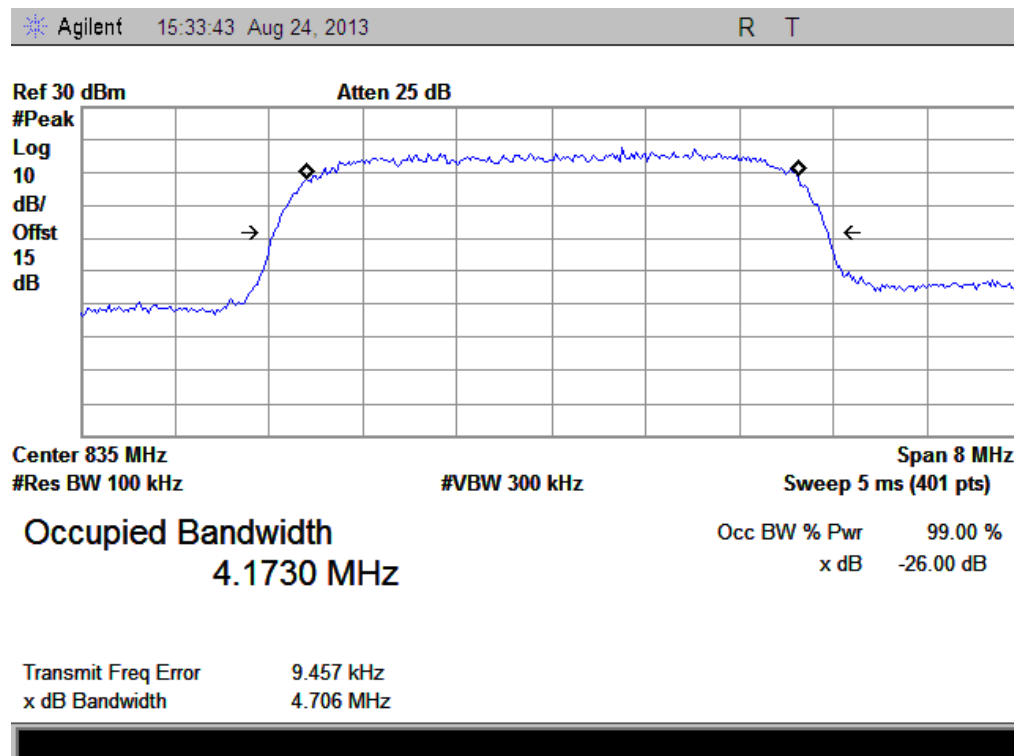
(Plot E: EGPRS1900MHz Channel = 661)



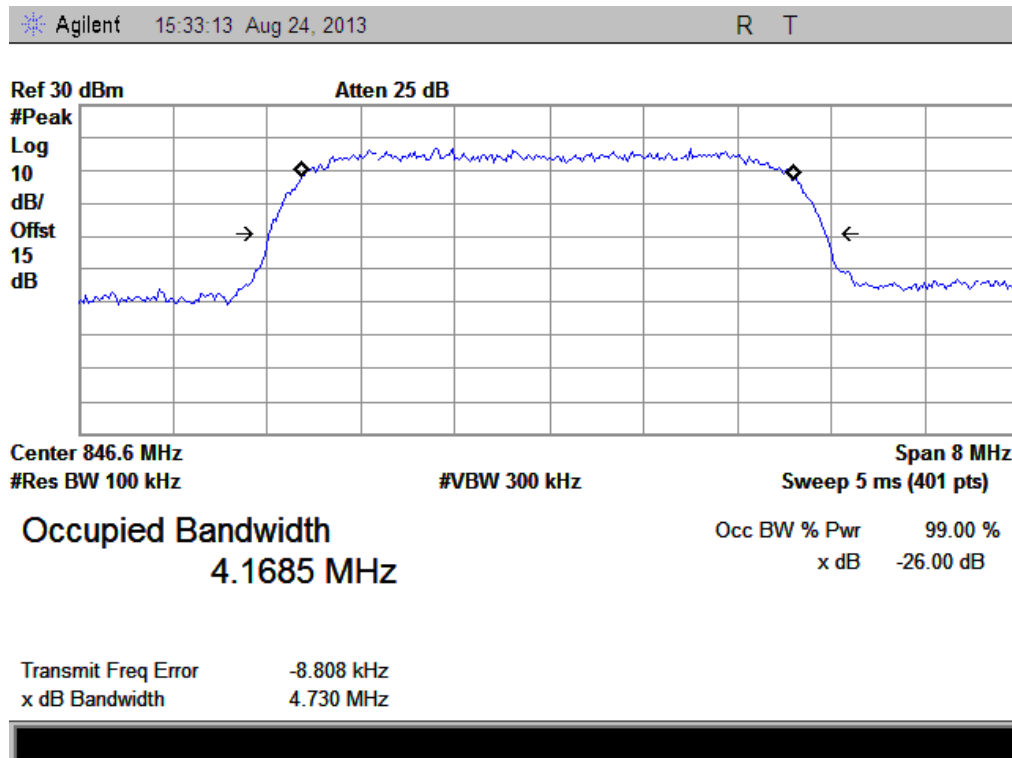
(Plot F: EGPRS 1900MHz Channel = 810)



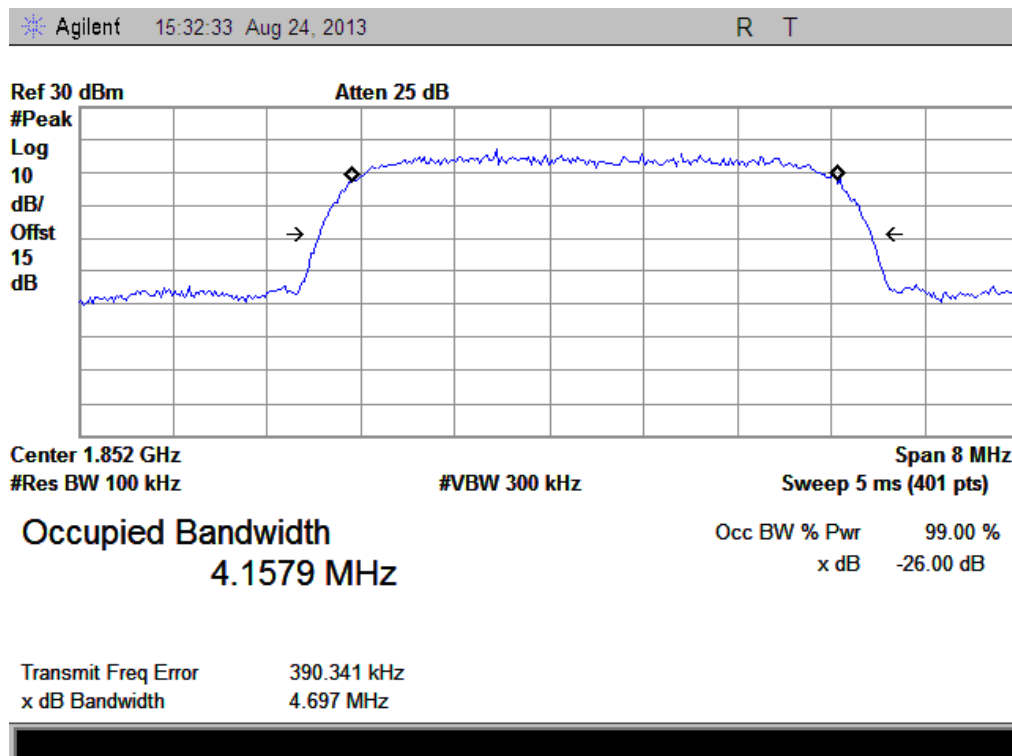
(Plot G: WCDMA 850MHz Channel = 4132)



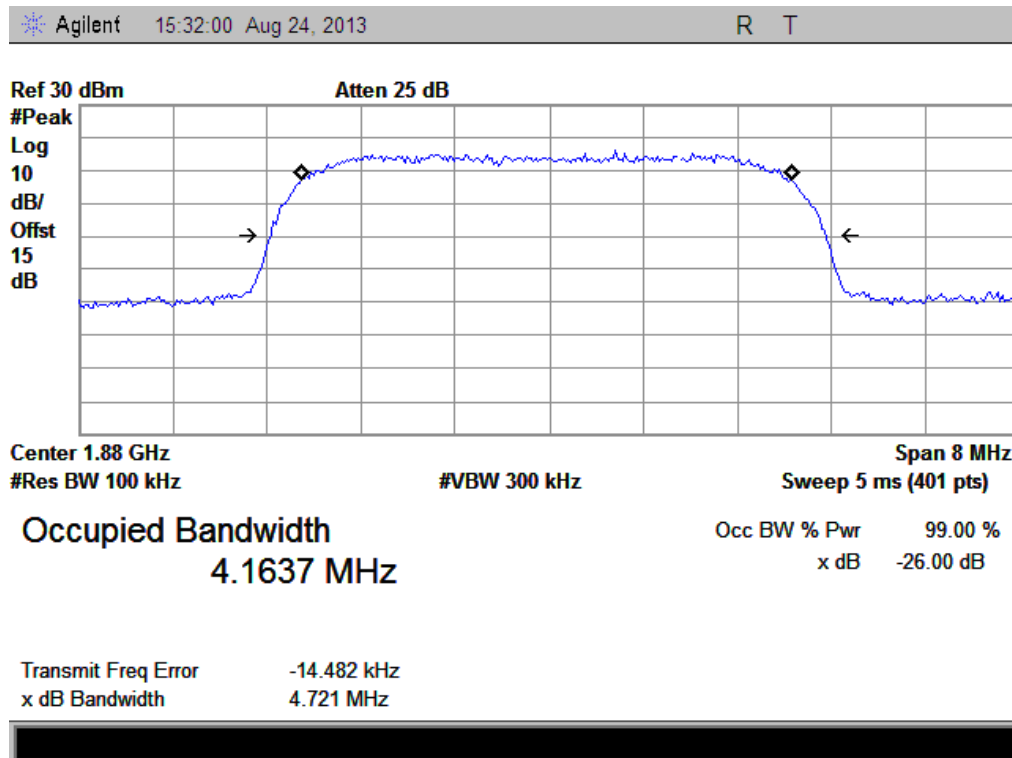
(Plot H: WCDMA 850 MHz Channel = 4175)



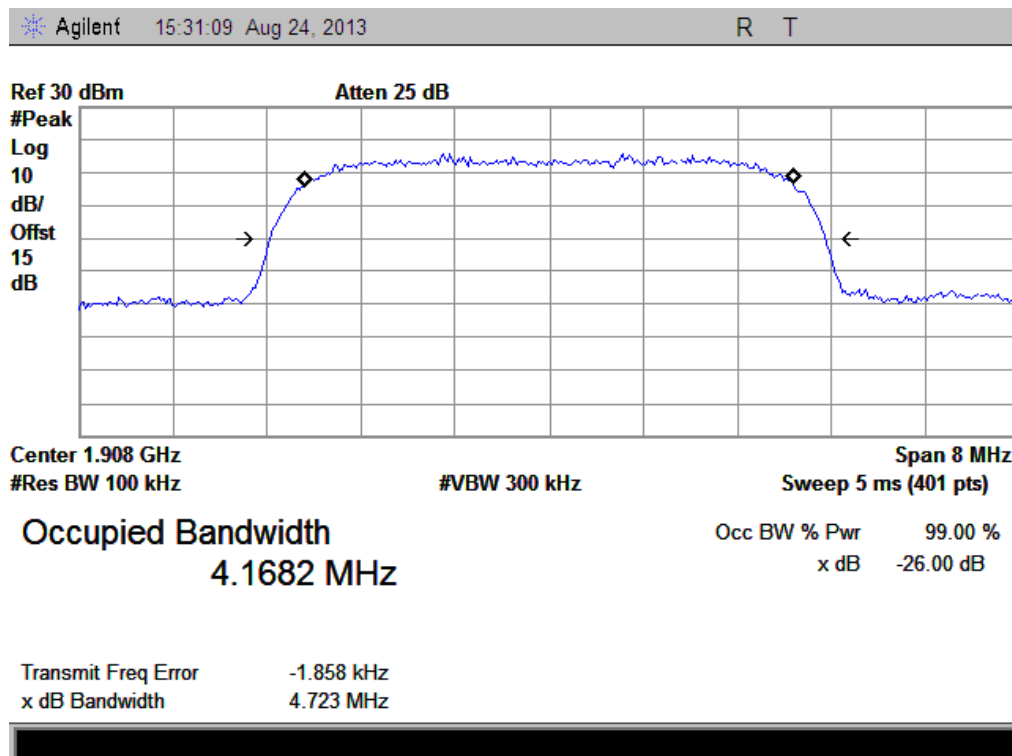
(Plot I: WCDMA 850MHz Channel = 4233)



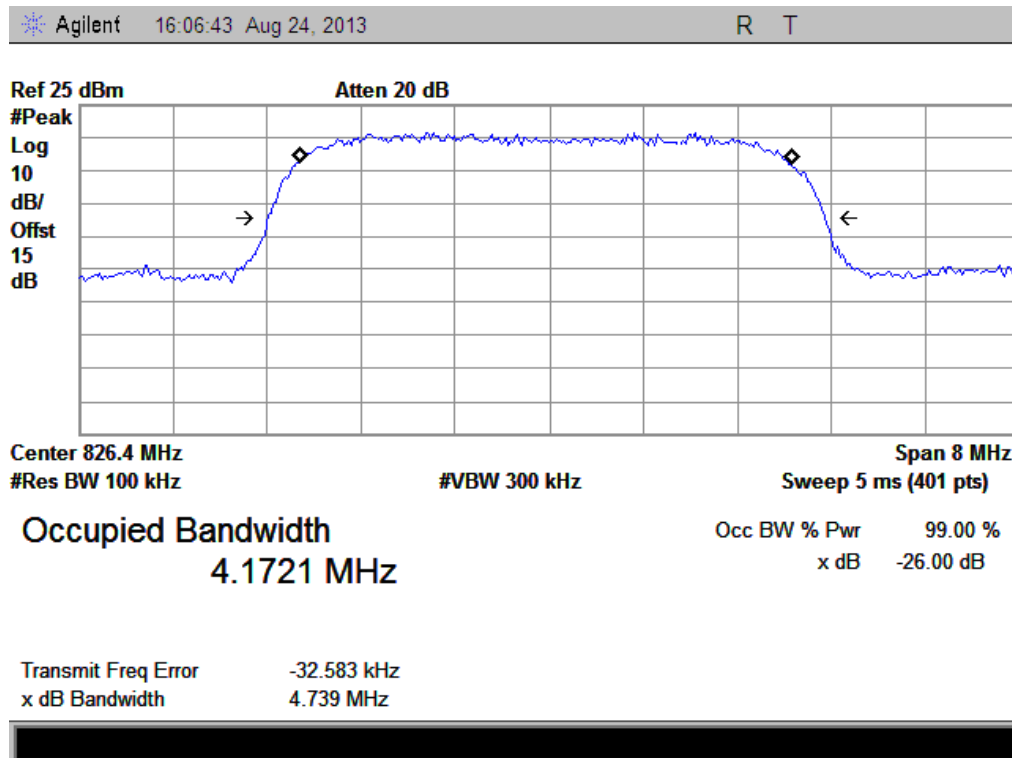
(Plot J: WCDMA 1900MHz Channel = 9262)



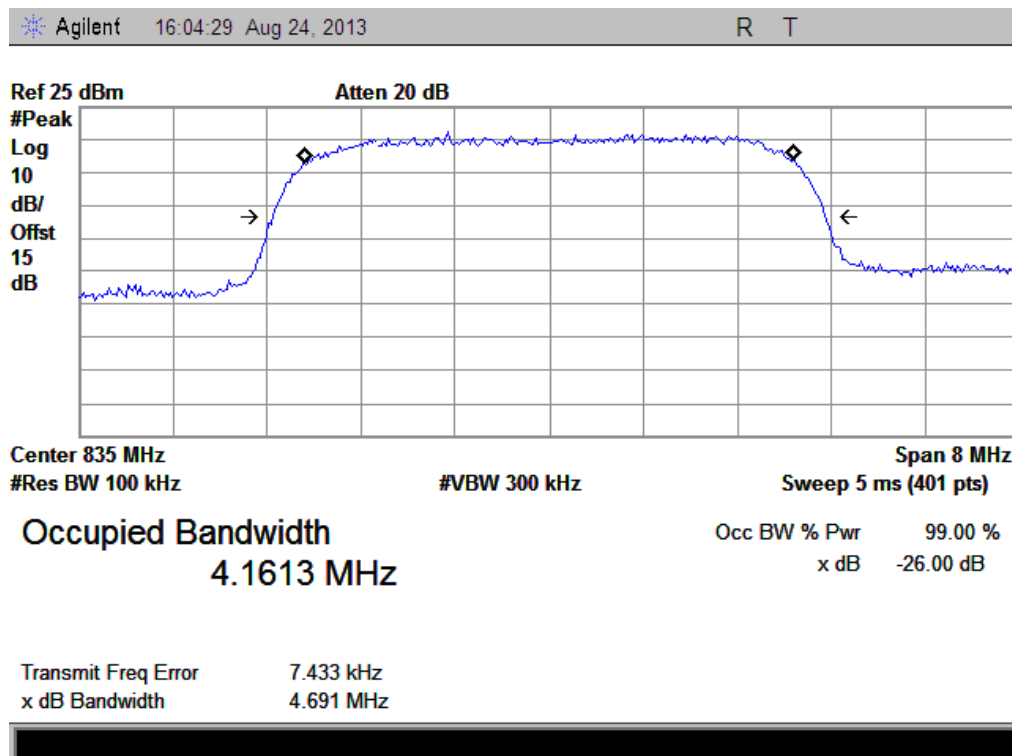
(Plot K: WCDMA 1900 MHz Channel = 9400)



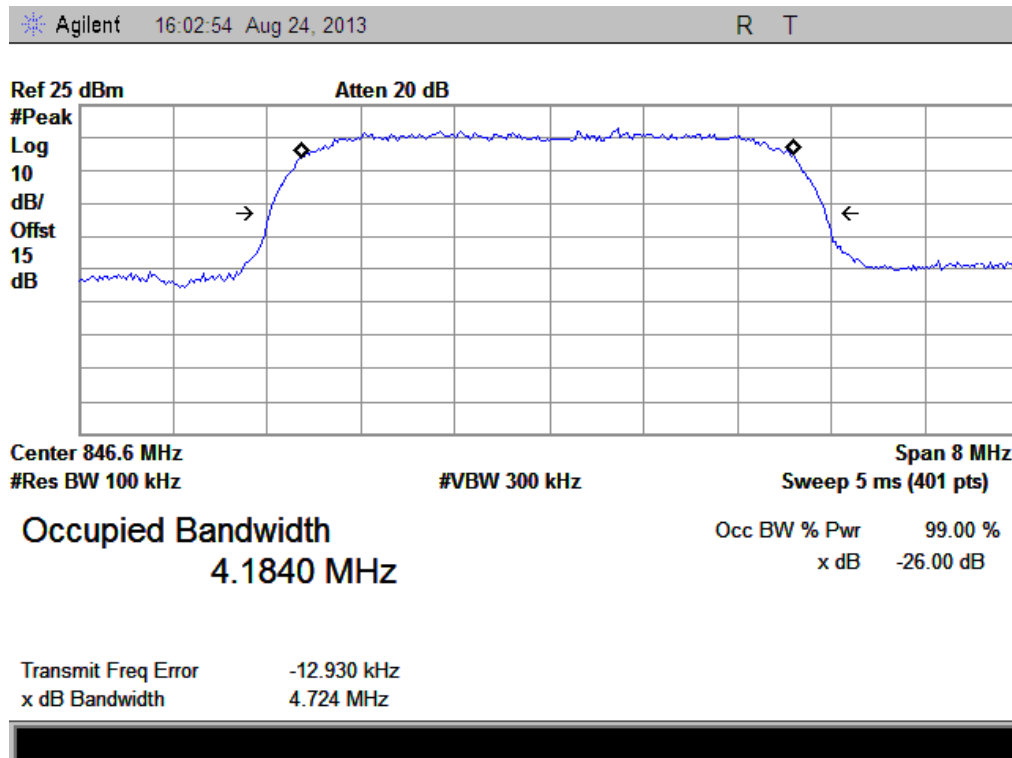
(Plot L: WCDMA1900MHz Channel = 9538)



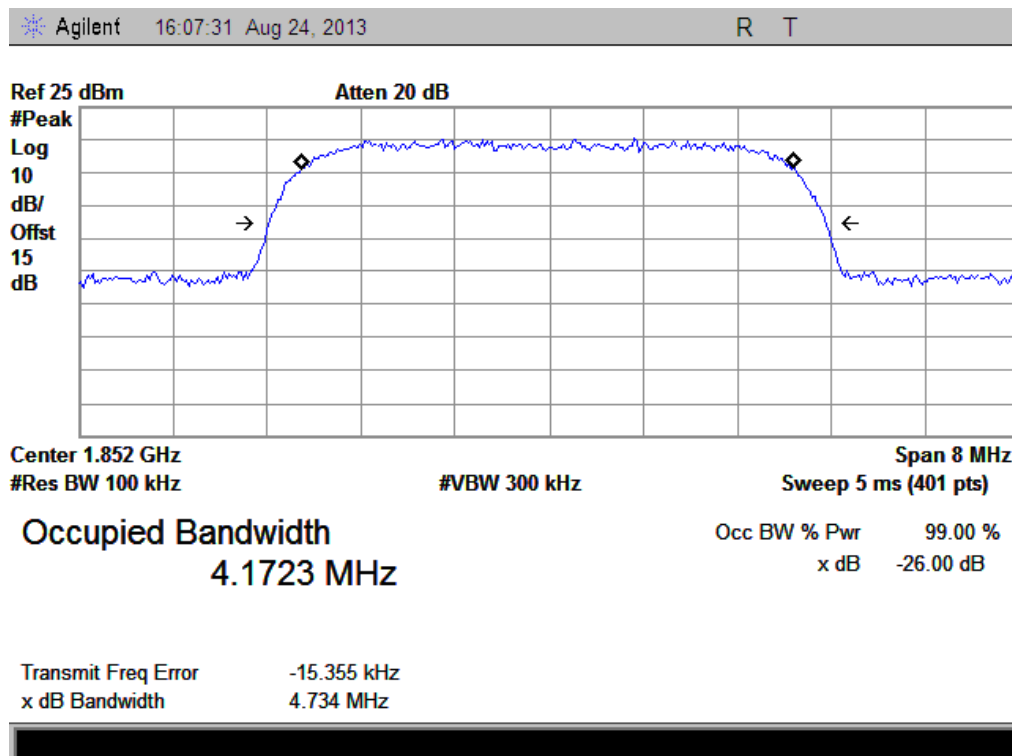
(Plot M: HSDPA 850MHz Channel = 4132)



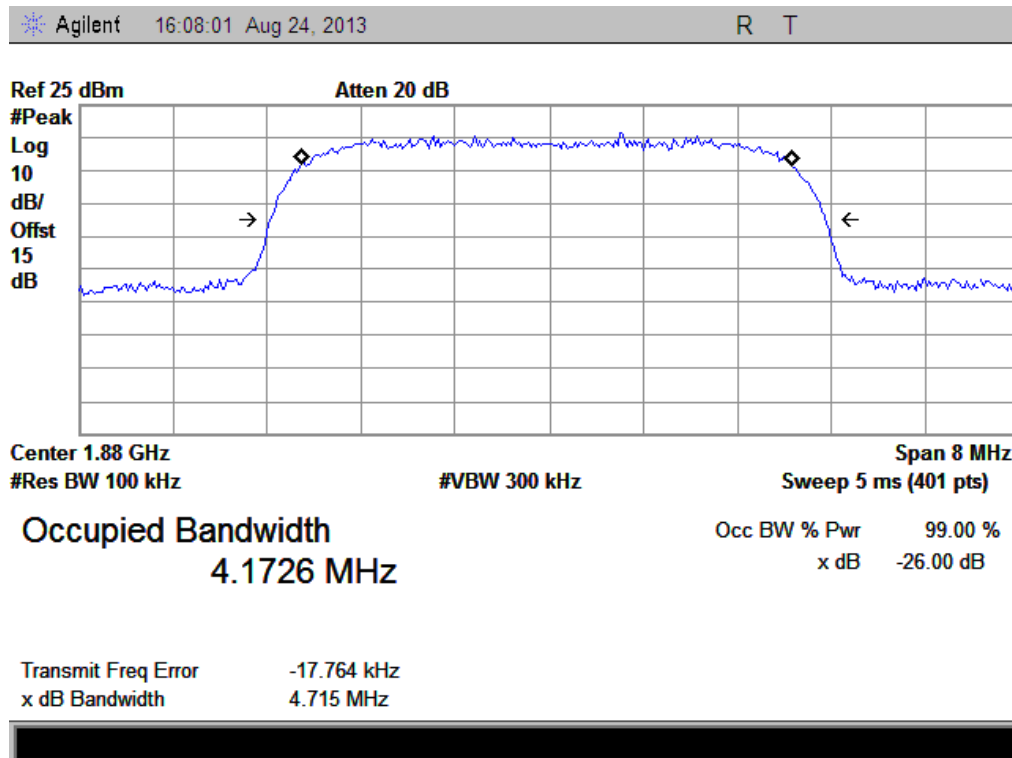
(Plot N: HSDPA850 MHz Channel = 4175)



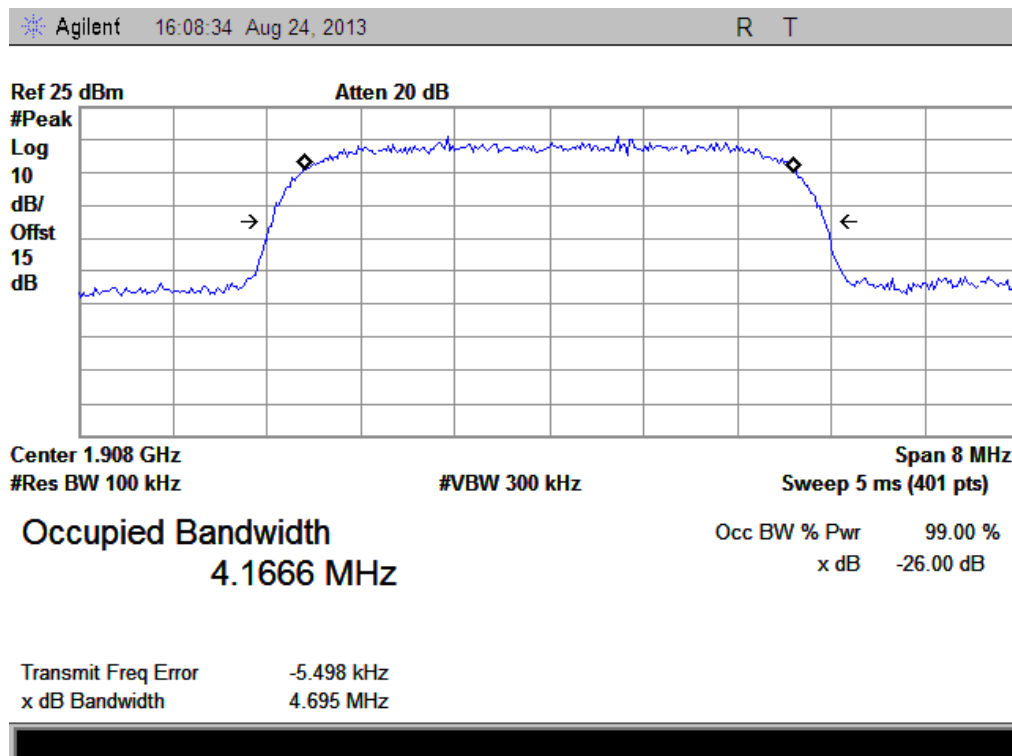
(Plot O: HSDPA 850 MHz Channel = 4233)



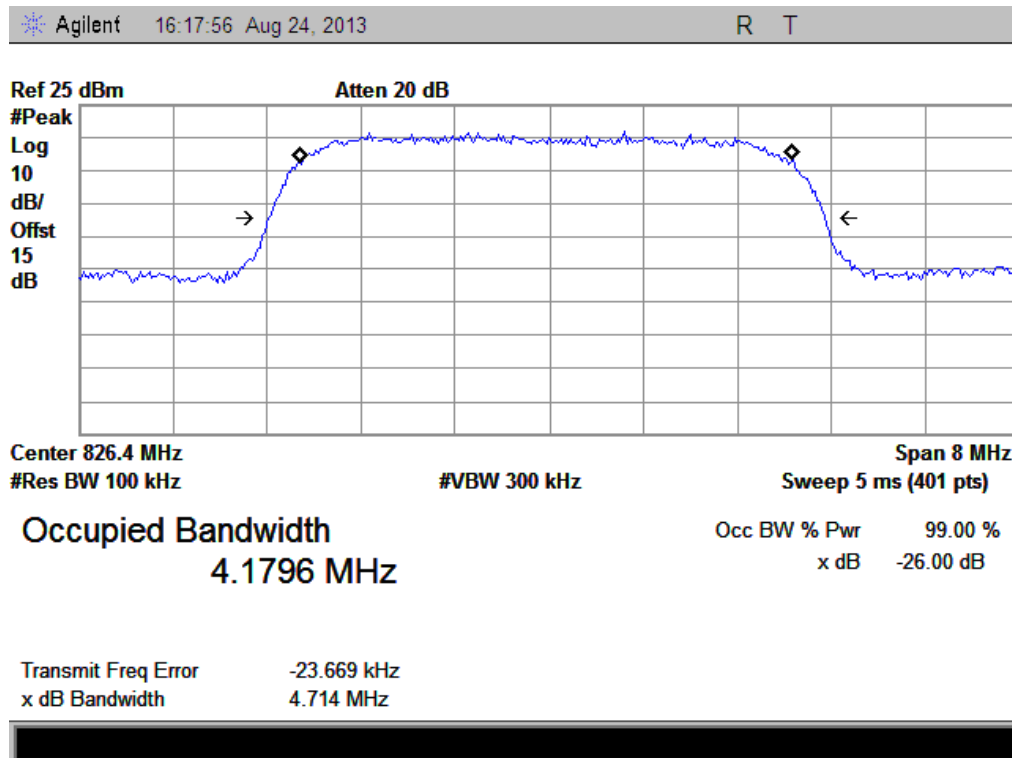
(Plot P: HSDPA1900 MHz Channel = 9262)



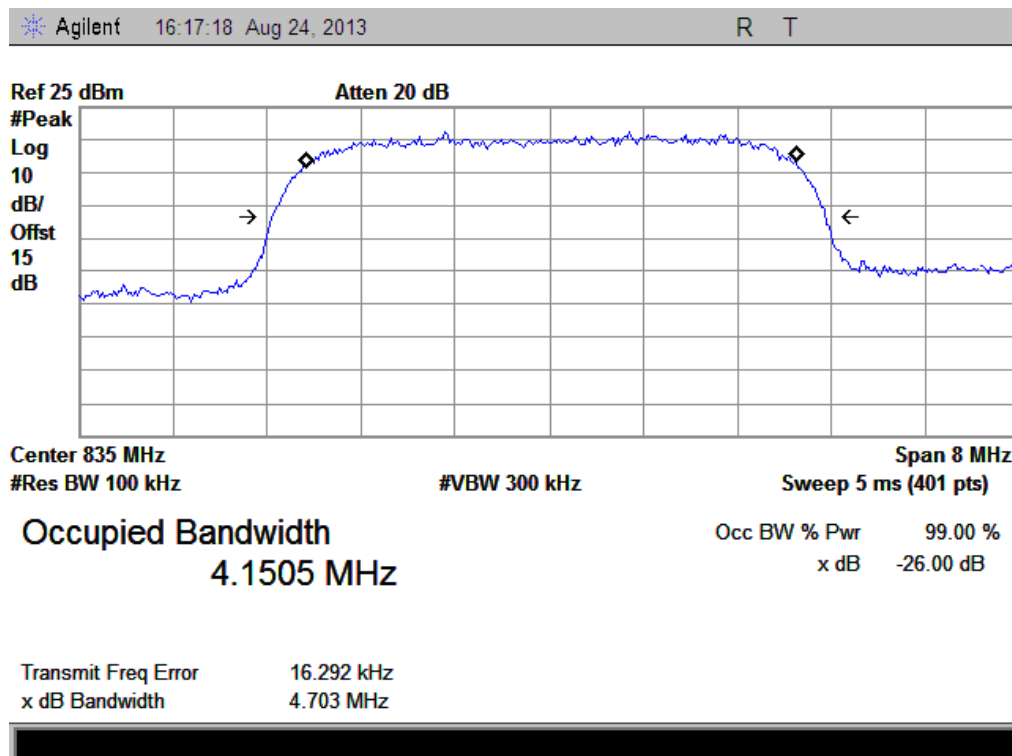
(Plot Q: HSDPA1900 MHz Channel = 9400)



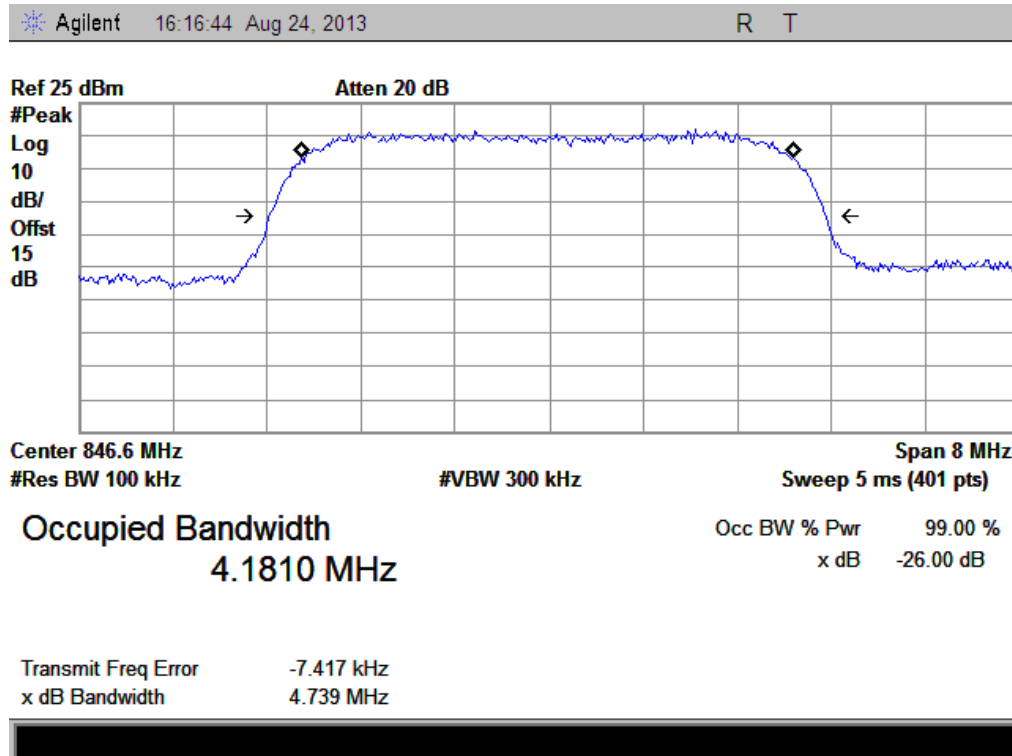
(Plot R: HSDPA 1900 MHz Channel = 9538)



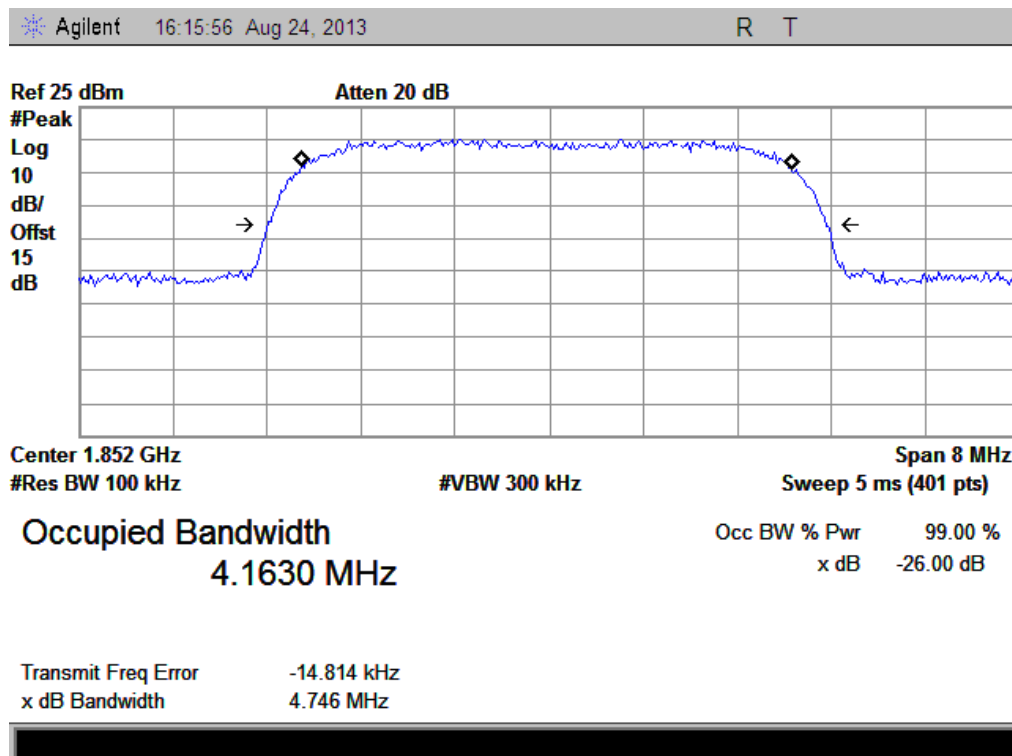
(Plot S: HSUPA850 MHz Channel = 4132)



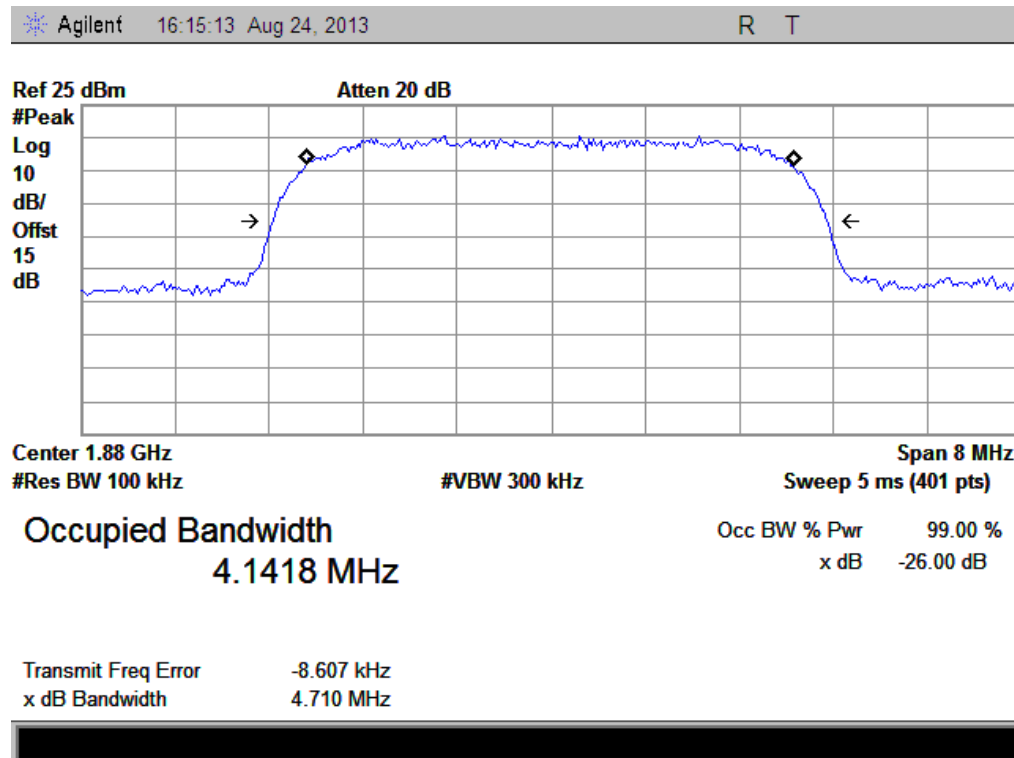
(Plot T: HSUPA850 MHz Channel = 4175)



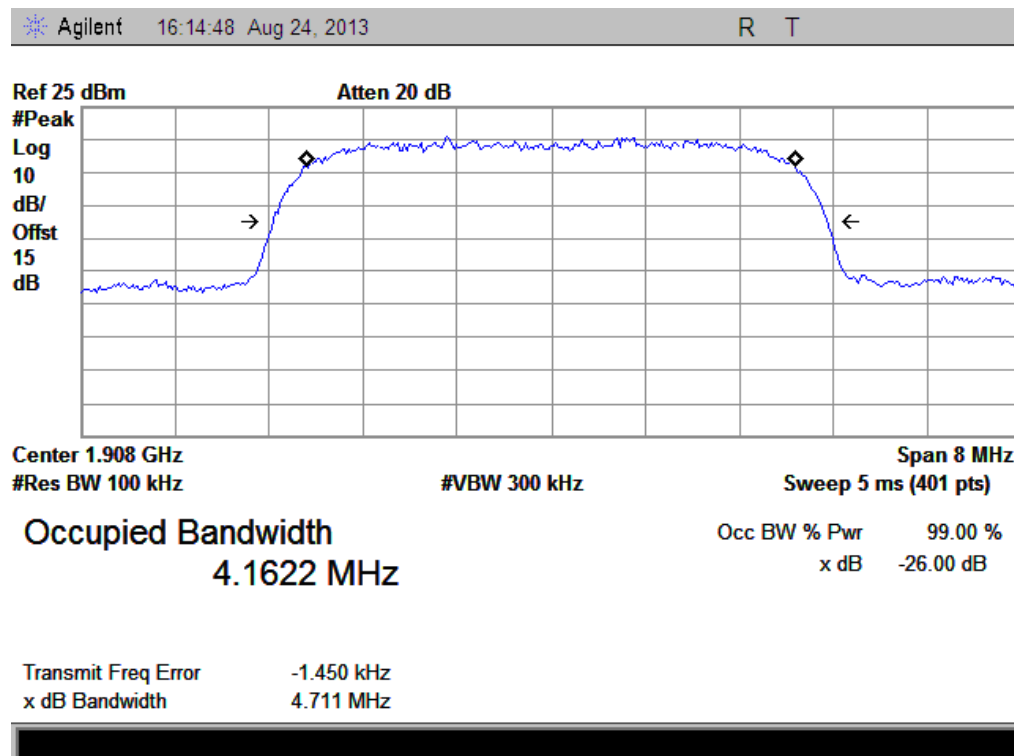
(Plot U: HSUPA850 MHz Channel = 4233)



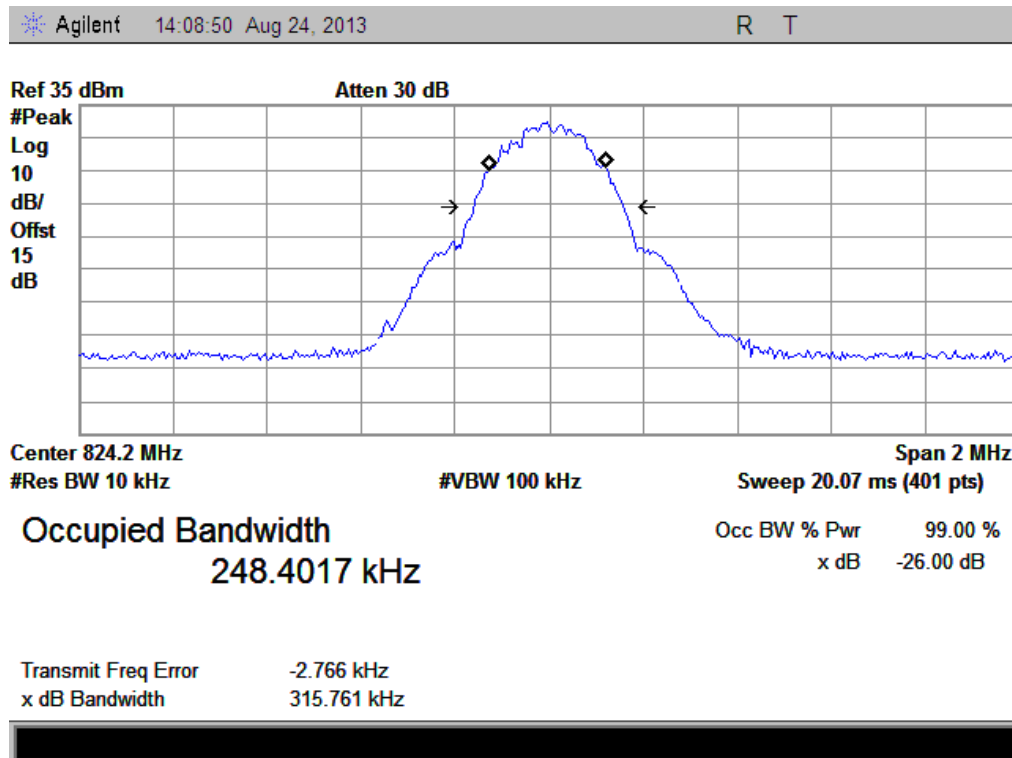
(Plot V: HSUPA1900 MHz Channel = 9262)



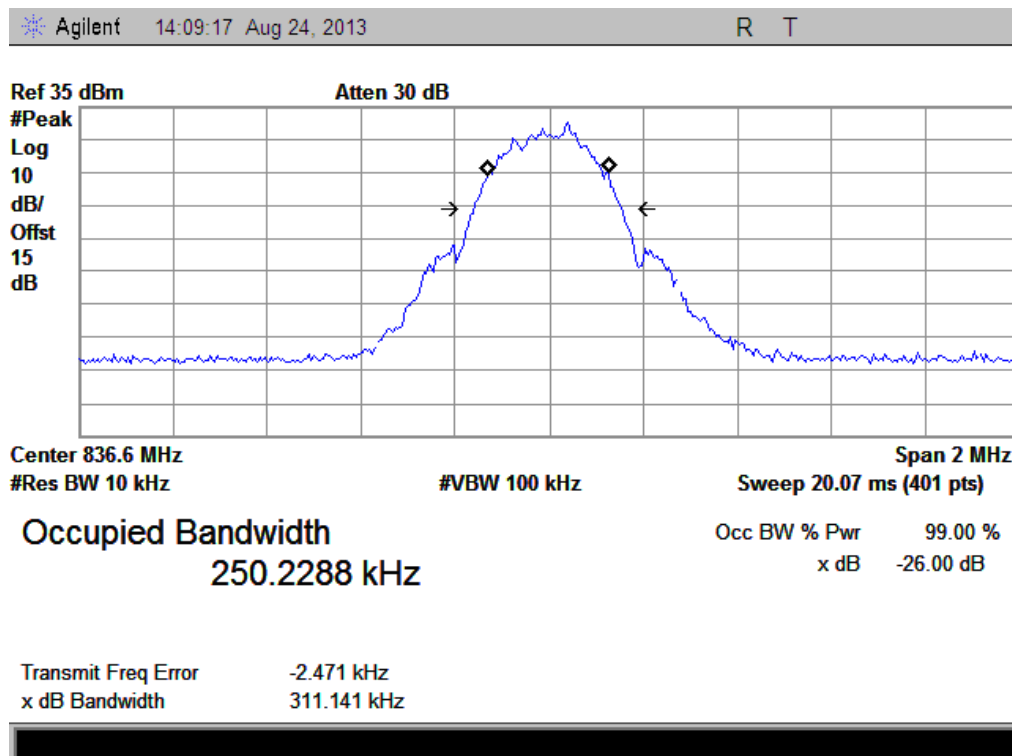
(Plot W: HSUPA1900 MHz Channel = 9400)



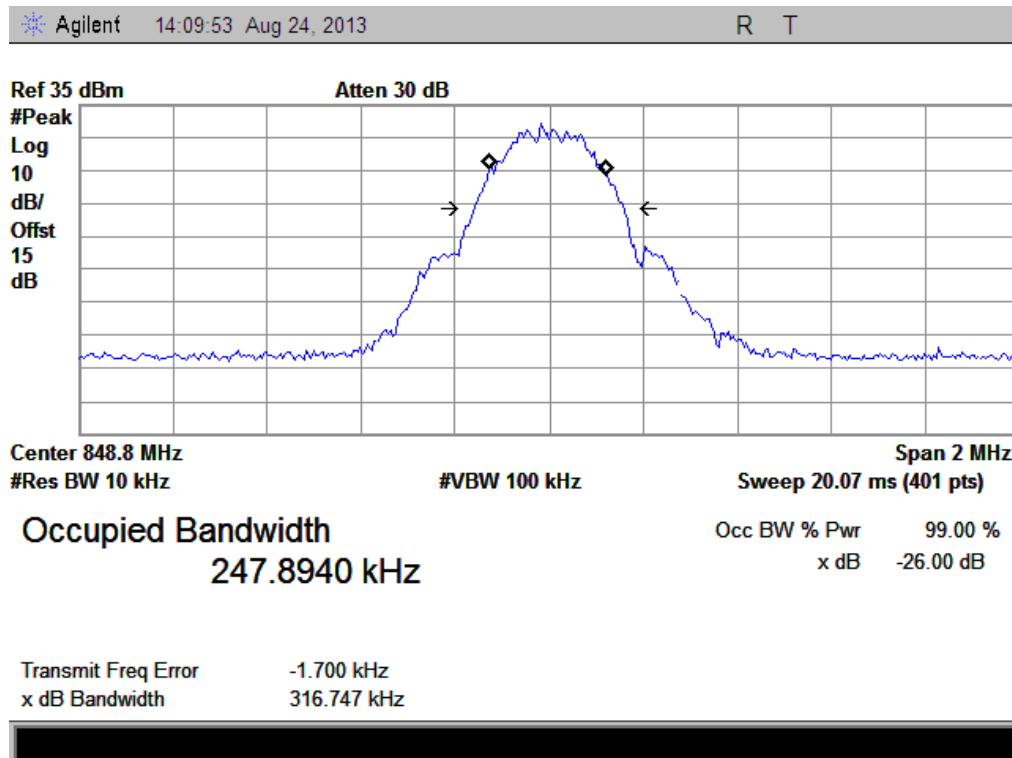
(Plot X: HSUPA1900 MHz Channel = 9538)



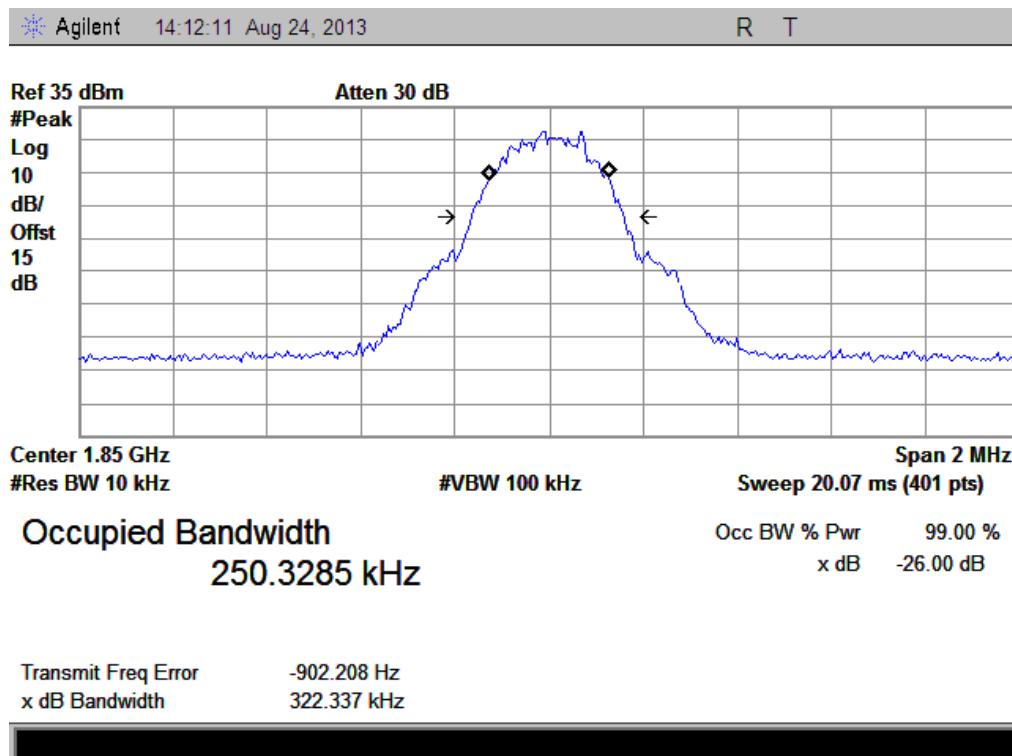
(Plot Y: GSM 850MHz Channel = 128)



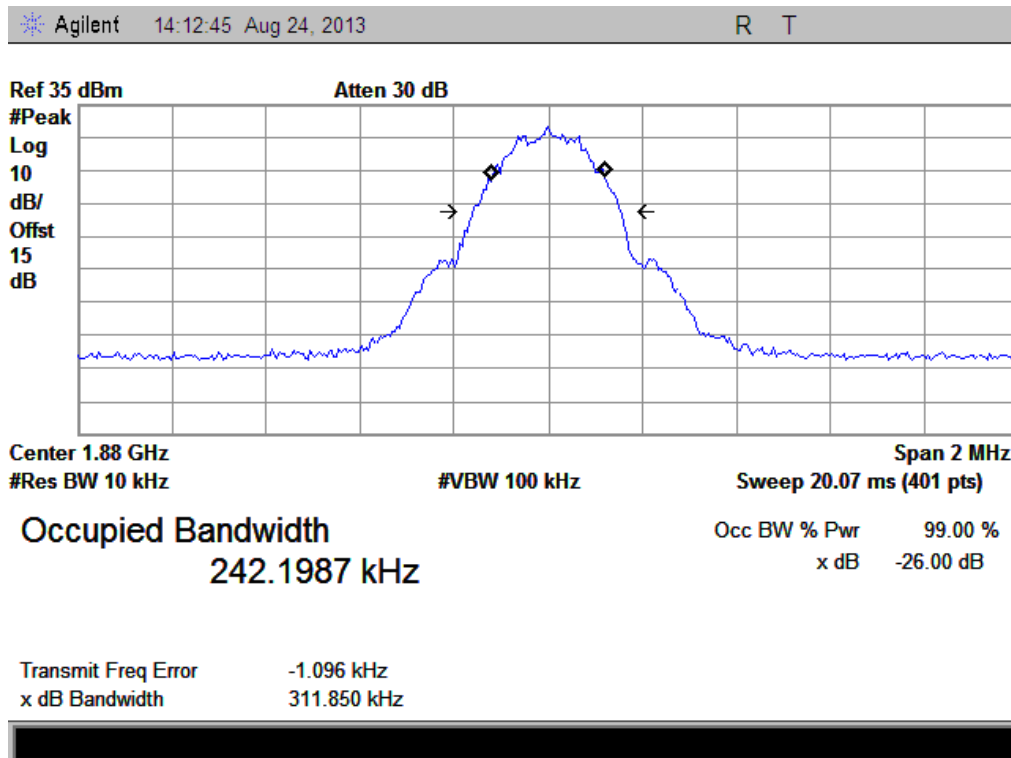
(Plot Z: GSM 850MHz Channel = 190)



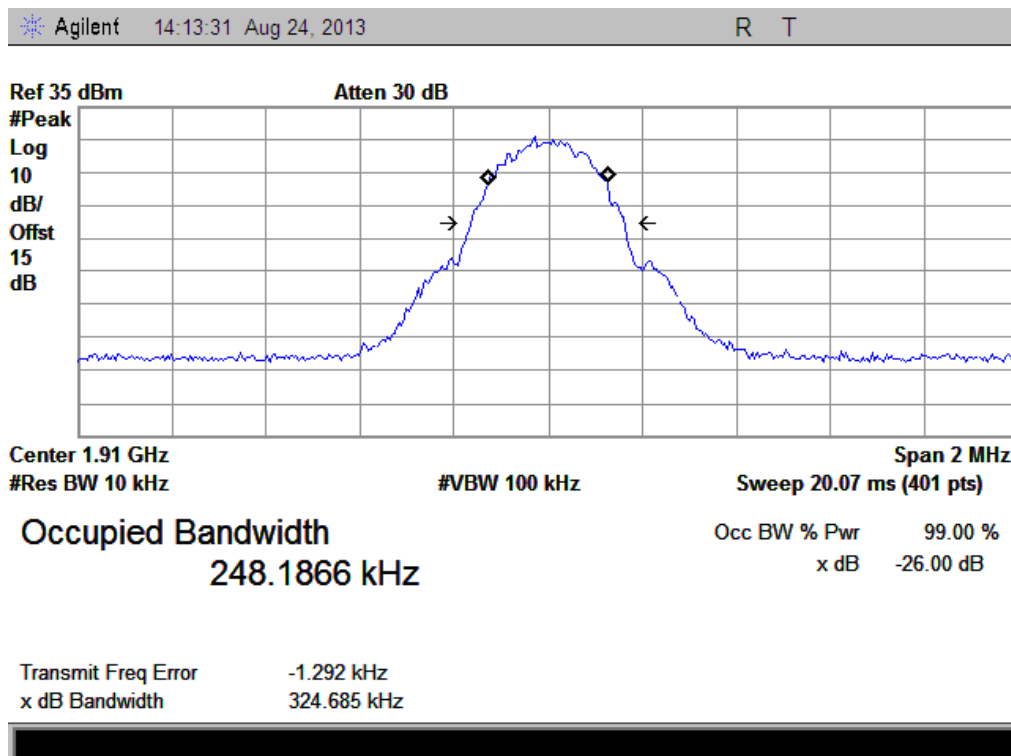
(Plot A1: GSM 850MHz Channel = 251)



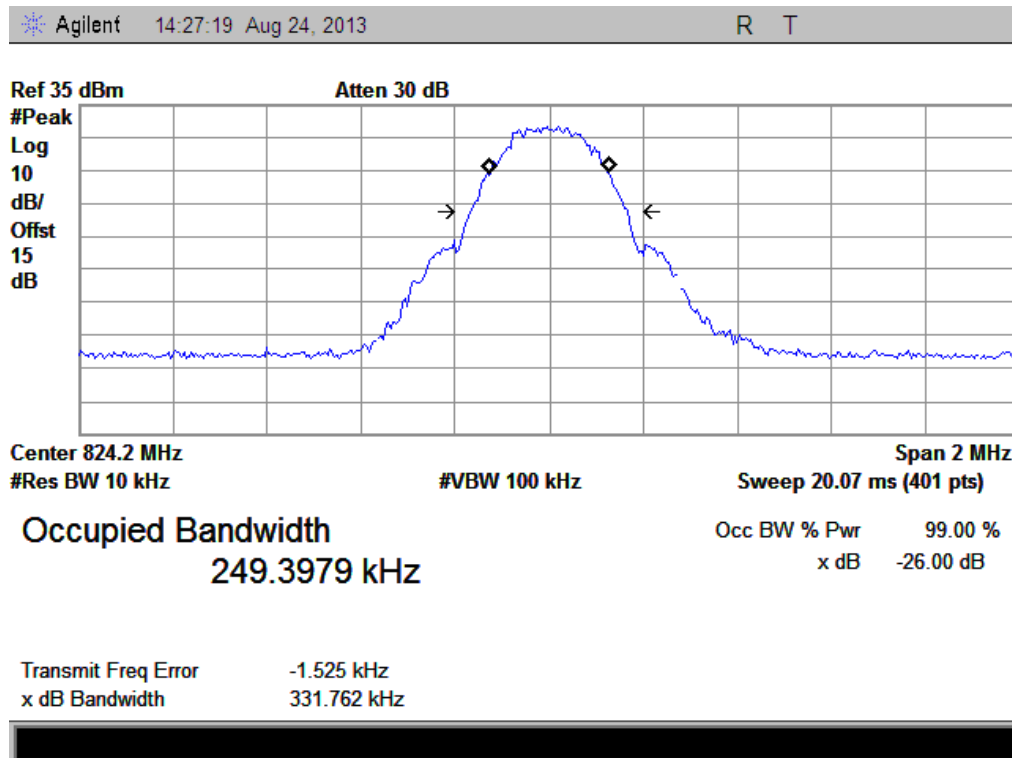
(Plot B1: GSM 1900MHz Channel = 512)



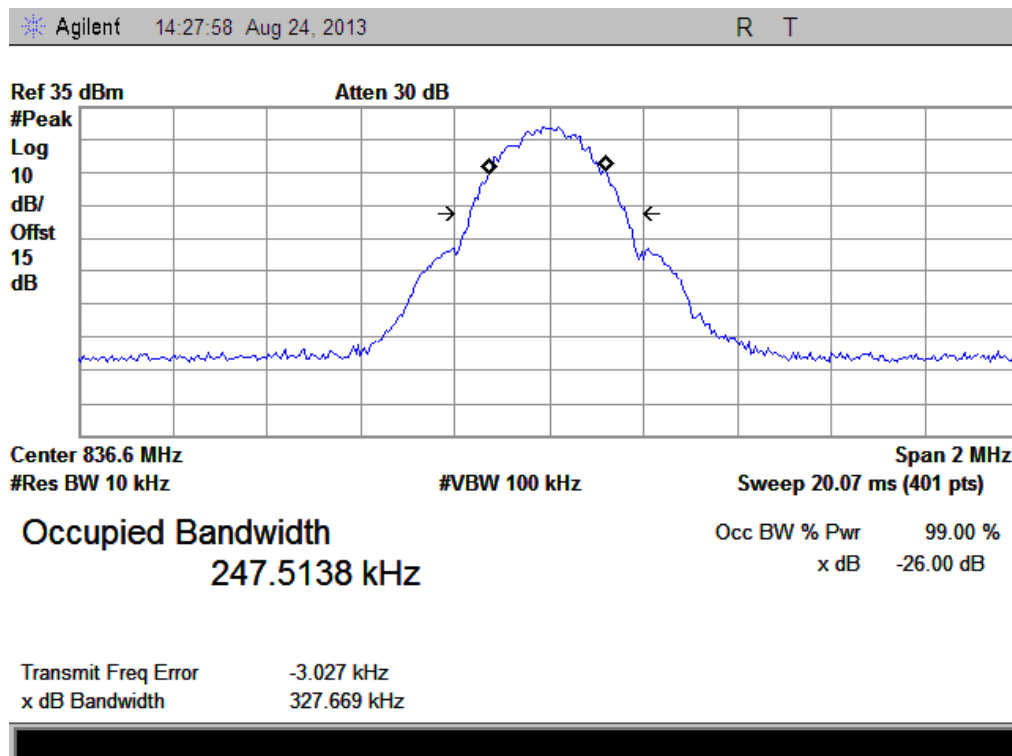
(Plot C1: GSM 1900MHz Channel = 661)



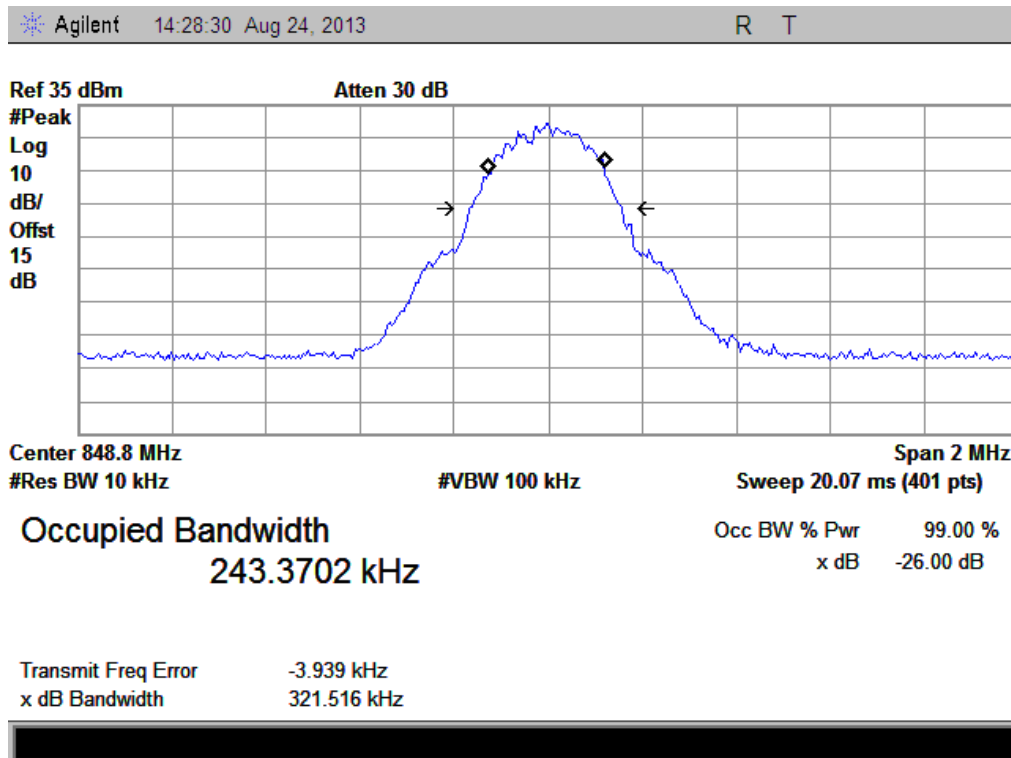
(Plot D1: GSM 1900MHz Channel = 810)



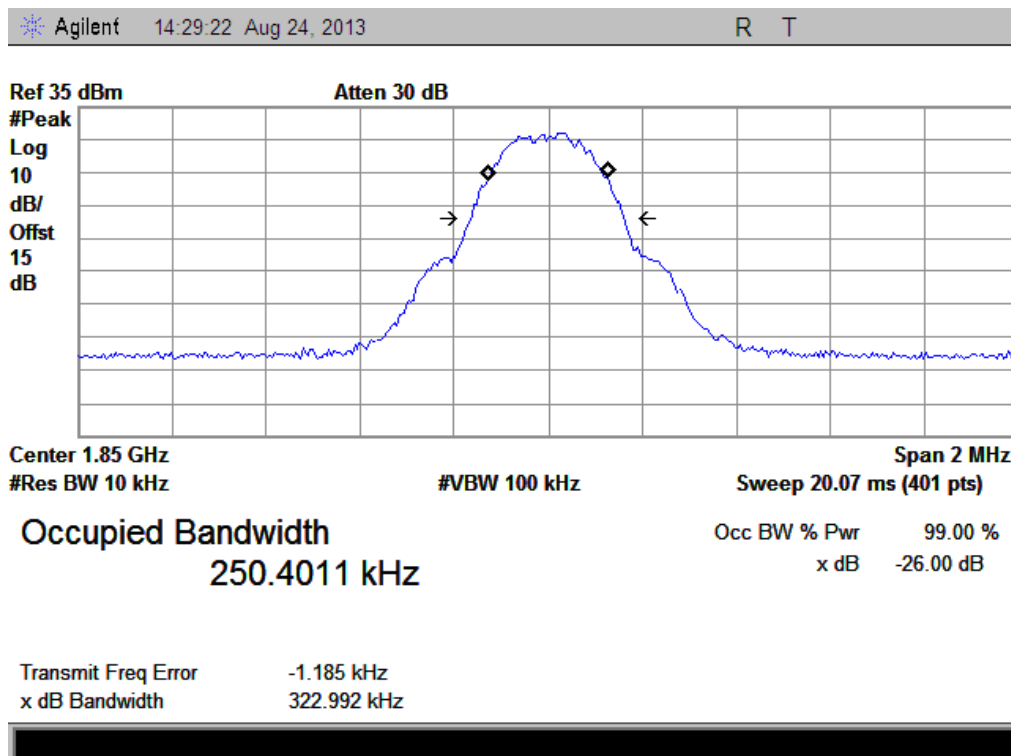
(Plot E1: GPRS 850MHz Channel = 128)



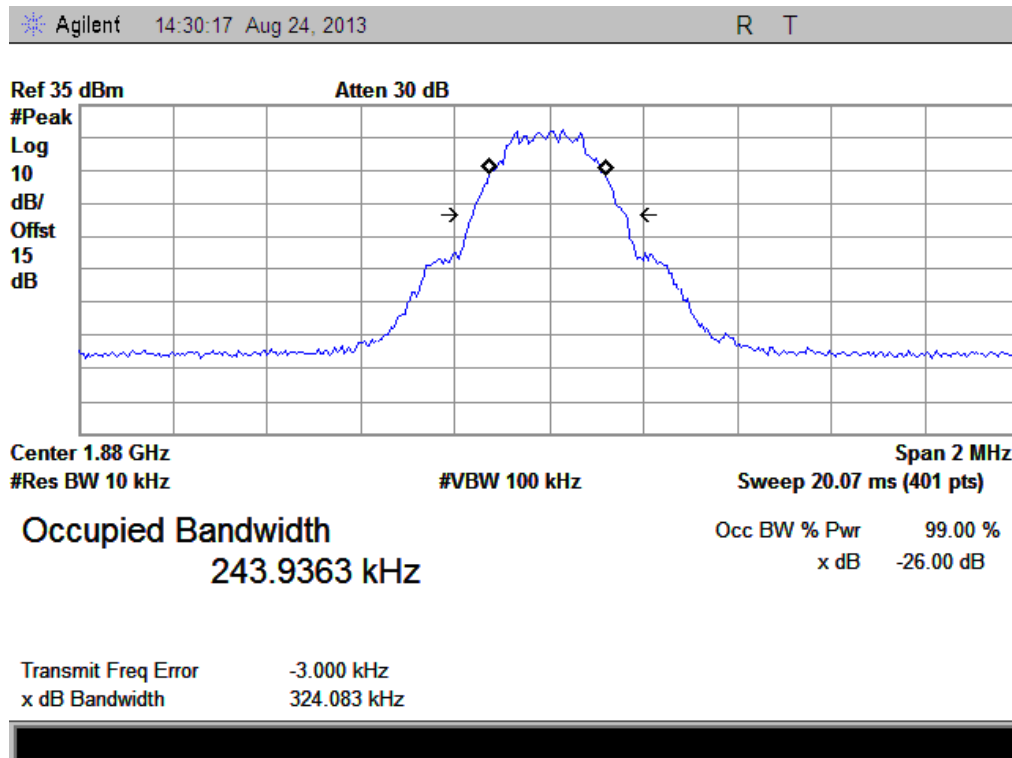
(Plot F1: GPRS 850MHz Channel = 190)



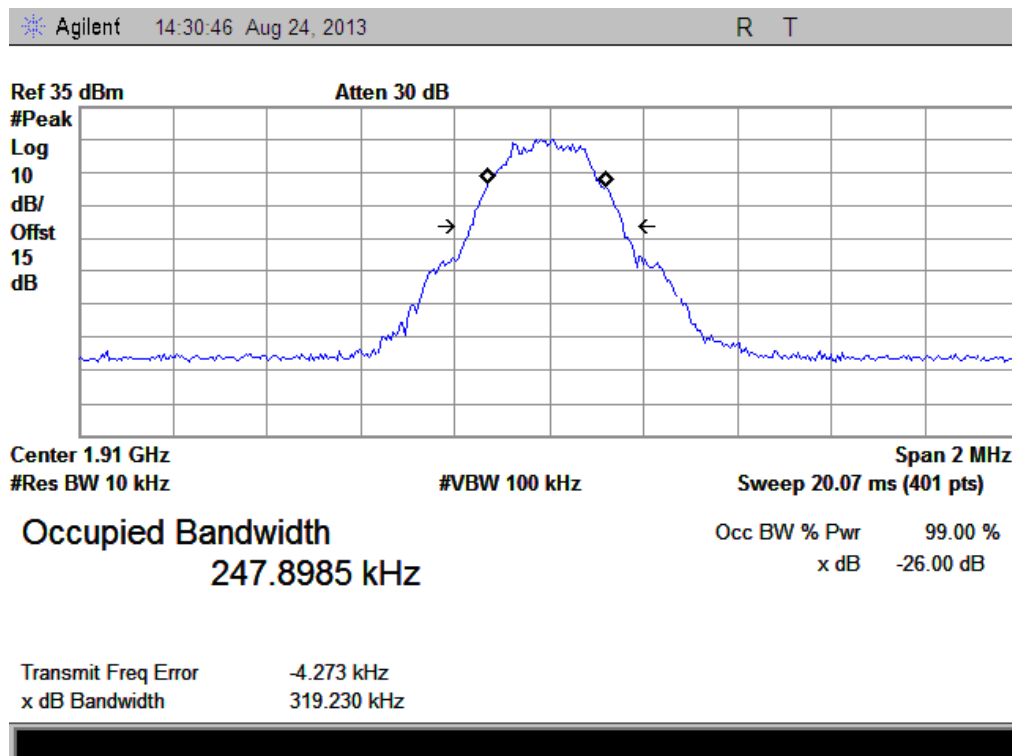
(Plot G1: GPRS850MHz Channel = 251)



(Plot H1: GPRS 1900MHz Channel = 512)



(Plot I1: GPRS 1900MHz Channel = 661)



(Plot J1: GPRS 1900MHz Channel = 810)

2.4 Frequency Stability

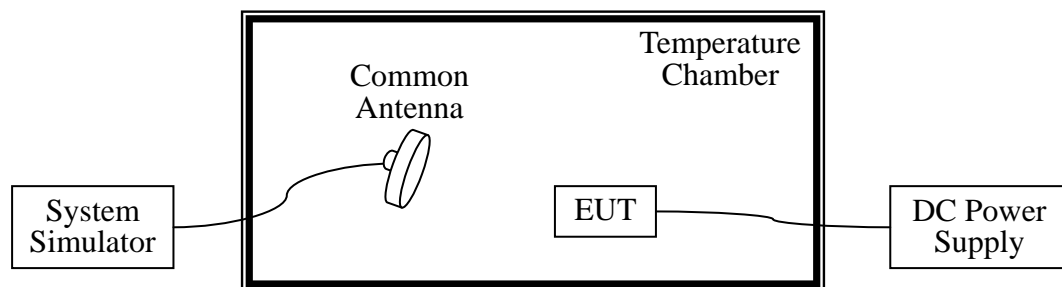
2.4.1 Requirement

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:

- The temperature is varied from -30°C to $+50^{\circ}\text{C}$ at intervals of not more than 10°C .
- 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	2012.05	2014.05
DC Power Supply	Good Will	GPS-3030DD	EF920938	2012.05	2014.05
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2012.05	2014.05

2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC 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 ± 2.5 ppm, and 1900MHz is ± 1 ppm.

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	
3.7	-30	-15.11	±2060.5	-17.55	±2091.5	-11.62	±2122	PASS
	-20	-13.02		38.15		19.30		
	-10	10.25		-22.06		18.30		
	0	22.12		-16.11		-19.53		
	+10	32.07		17.76		28.93		
	+20	-7.98		15.64		19.66		
	+30	26.21		3.67		22.19		
	+40	11.10		13.95		-7.53		
	+55	35.28		6.23		13.78		
4.2	+25	-14.73		-18.15		-7.53		
3.6	+25	-12.77		38.15		13.78		

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	
3.7	-30	12.21	±1850.2	11.82	±1880.0	-15.07	±1909.8	PASS
	-20	-12.33		-21.22		21.30		
	-10	-13.20		22.15		21.01		
	0	11.53		19.35		-12.62		
	+10	31.18		21.31		19.30		
	+20	28.07		-17.52		18.30		
	+30	16.22		28.62		-17.53		
	+40	-18.00		17.25		28.98		
	+55	39.98		-19.52		19.62		
4.2	+25	38.28		30.11		20.11		
3.6	+25	-8.02		-18.09		-11.74		

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	
3.7	-30	11.53	±2060.5	-15.02	±2091.5	18.59	±2122	PASS
	-20	2.47		38.15		-2.93		
	-10	-10.76		-22.06		12.33		
	0	-2.11		-16.11		15.22		
	+10	13.33		17.76		13.37		
	+20	5.33		15.64		10.76		
	+30	-2.56		3.67		-16.51		
	+40	10.61		13.95		-2.10		
	+55	12.51		-17.55		-12.99		
4.2	+25	11.53		13.95		-7.53		
3.6	+25	-17.77		16.22		16.07		

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	
3.7	-30	10.61	±1850.2	27.71	±1880.0	-15.33	±1909.8	PASS
	-20	11.53		13.22		31.54		
	-10	2.47		25.22		12.94		
	0	-10.76		-11.21		49.12		
	+10	-2.11		10.82		64.85		
	+20	13.33		9.44		-1.71		
	+30	5.33		17.06		5.39		
	+40	5.33		11.26		3.05		
	+55	-2.56		13.82		3.11		
4.2	+25	17.60		27.11		11.35		
3.6	+25	-18.01		12.19		10.08		

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	
3.7	-30	-17.39	±2066	19.07	±2087.5	-19.05	±2116.5	PASS
	-20	-3.40		13.45		17.17		
	-10	16.42		1.31		14.11		
	0	30.18		-12.52		-17.39		
	+10	32.07		30.62		11.90		
	+20	-7.98		13.45		6.63		
	+30	26.21		-12.52		28.93		
	+40	11.10		30.62		19.66		
	+55	-6.18		21.45		22.19		
4.2	+25	-6.18		13.45		-19.08		
3.6	+25	18.66		1.31		17.17		

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	
3.7	-30	18.85	±1852.4	12.18	±1880.0	-18.22	±1907.6	PASS
	-20	5.05		-14.06		14.81		
	-10	19.62		18.79		-3.07		
	0	30.40		22.39		17.42		
	+10	13.45		37.27		-10.39		
	+20	1.31		2.37		17.47		
	+30	-12.52		-13.47		27.84		
	+40	-13.55		-5.71		-2.53		
	+55	23.21		14.58		20.95		
4.2	+25	18.85		12.18		14.81		
3.6	+25	5.05		-14.06		-3.07		

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	
3.7	-30	-16.61	±2066	-11.32	±2087.5	14.22	±2116.5	PASS
	-20	-3.01		31.21		21.01		
	-10	21.71		-8.31		-15.37		
	0	20.12		-13.95		-13.96		
	+10	-15.01		-24.37		35.23		
	+20	22.71		12.88		-8.31		
	+30	16.32		-14.75		-13.95		
	+40	-11.28		23.37		14.41		
	+55	10.33		7.93		21.57		
4.2	+25	-3.01		35.23		-24.37		
3.6	+25	21.71		-8.31		11.02		

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	
3.7	-30	-11.69	±1852.4	15.31	±1880	9.61	±1907.6	PASS
	-20	10.12		-11.21		-13.02		
	-10	-19.02		10.60		-8.51		
	0	21.71		-4.81		5.64		
	+10	23.12		34.31		-3.85		
	+20	-13.01		8.36		9.57		
	+30	21.71		-25.88		27.54		
	+40	16.32		29.43		-12.52		
	+55	-11.65		-12.27		-2.83		
4.2	+25	10.12		14.37		-13.02		
3.6	+25	-13.09		-11.21		-8.51		

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	
3.7	-30	-16.27	±2066	-11.79	±2087.5	27.42	±2116.5	PASS
	-20	-12.61		-0.44		37.01		
	-10	-13.09		0.09		-7.32		
	0	-0.38		-6.64		-4.91		
	+10	-11.85		24.25		21.35		
	+20	29.57		9.63		-5.94		
	+30	-11.79		23.76		13.78		
	+40	-0.44		-4.57		28.45		
	+55	1.71		-11.79		27.42		
4.2	+25	-16.20		-0.44		37.01		
3.6	+25	-15.61		0.01		-17.88		

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	
3.7	-30	18.03	±1852.4	20.84	±1880	-6.57	±1907.6	PASS
	-20	15.01		13.53		32.02		
	-10	19.62		14.59		12.94		
	0	30.40		-6.88		19.11		
	+10	13.45		55.91		14.85		
	+20	11.31		59.30		-11.72		
	+30	-12.52		11.35		16.31		
	+40	16.10		21.93		3.94		
	+55	-6.18		23.84		3.99		
4.2	+25	18.85		53.59		15.36		
3.6	+25	5.05		14.51		11.03		

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.

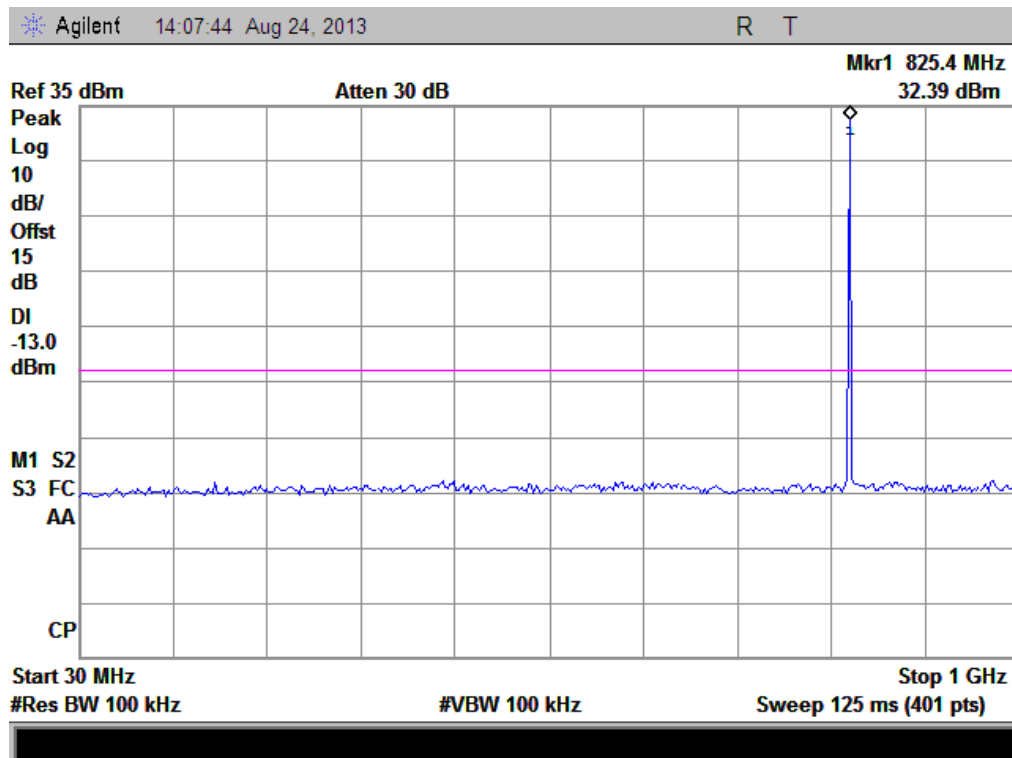
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-21.36	Plot A1toA1.1	-13	PASS
	190	836.6	-21.54	Plot A2toA2.1		PASS
	251	848.8	-21.70	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	-21.12	Plot B1toB1.1	-13	PASS
	661	1880.0	-20.89	Plot B2toB2.1		PASS
	810	1909.8	-21.37	Plot B3toB3.1		PASS
EDGE 850MHz	128	824.2	-20.67	Plot C1toC1.1	-13	PASS
	190	836.6	-21.27	Plot C2toC2.1		PASS
	251	848.8	-21.08	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	-20.88	Plot D1toD1.1	-13	PASS
	661	1880.0	-19.50	Plot D2toD2.1		PASS
	810	1909.8	-20.85	Plot D3toD3.1		PASS
WCDMA 850MHz	4132	826.4	-24.79	Plot E1toE1.1	-13	PASS
	4175	835	< -25	Plot E2toE2.1		PASS
	4233	846.6	-24.47	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

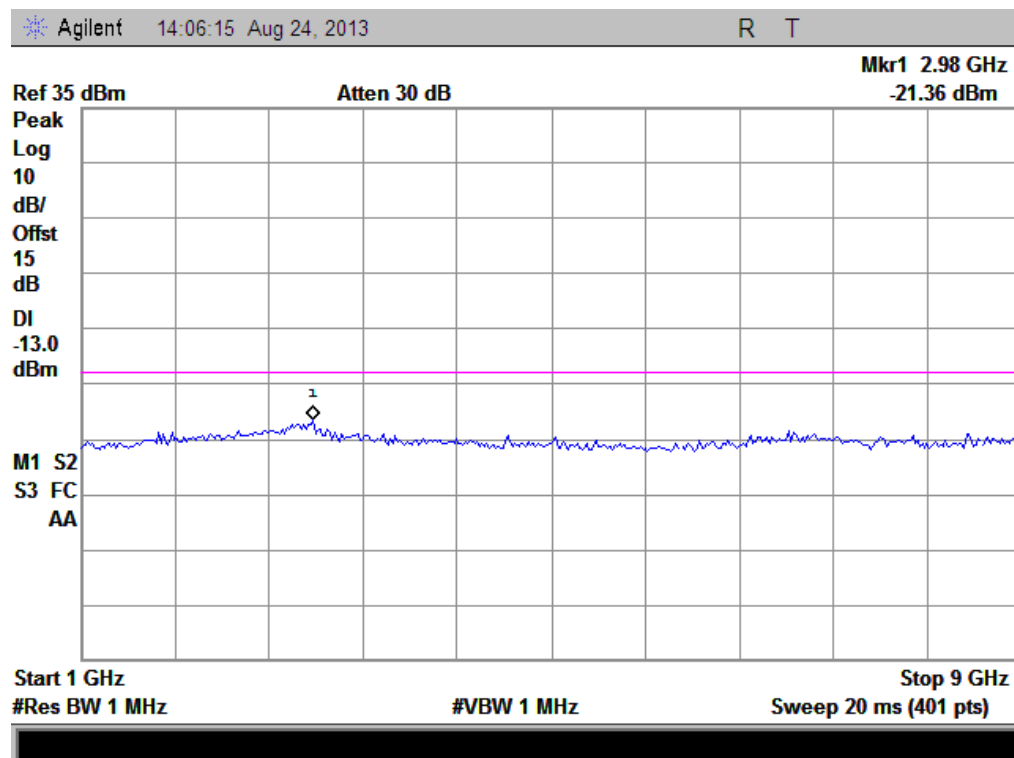
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
850MHz	4175	835	< -25	Plot G2toG2.1		PASS
	4233	846.6	< -25	Plot G3toG3.1		PASS
HSDPA 1900MHz	9262	1852.4	< -25	Plot H1toH1.1	-13	PASS
	9400	1880	< -25	Plot H2toH2.1		PASS
	9538	1907.6	< -25	Plot H3toH3.1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

2. Test Plots for the Whole Measurement Frequency Range:

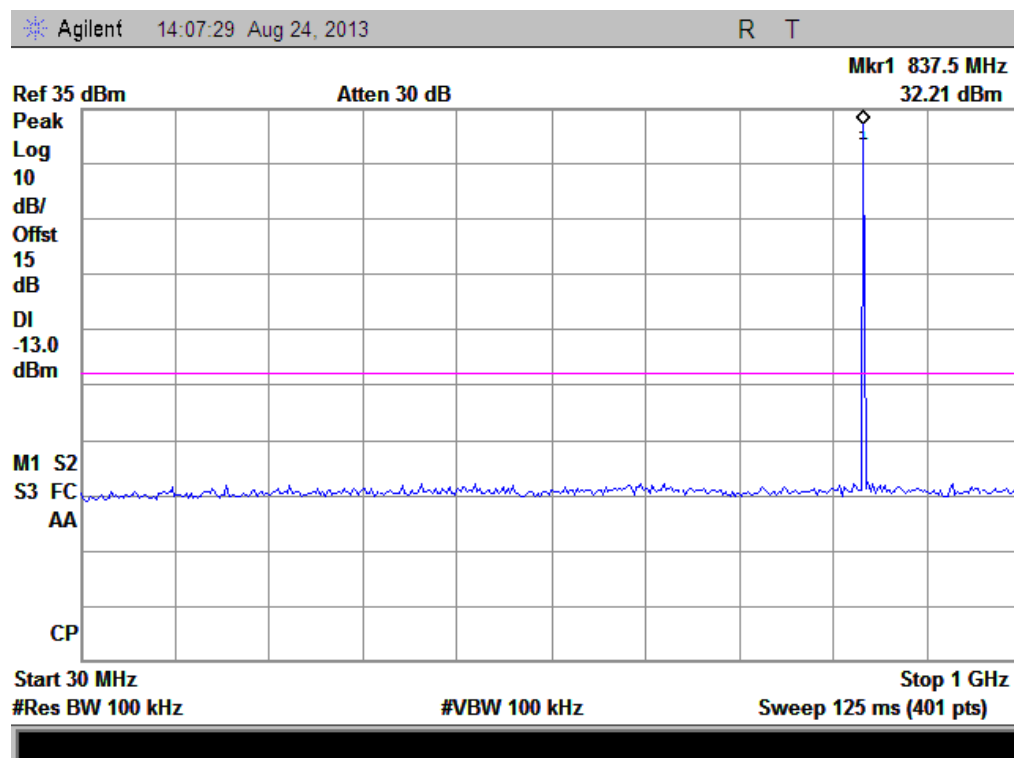
Note: the power of the EUT transmitting frequency should be ignored.



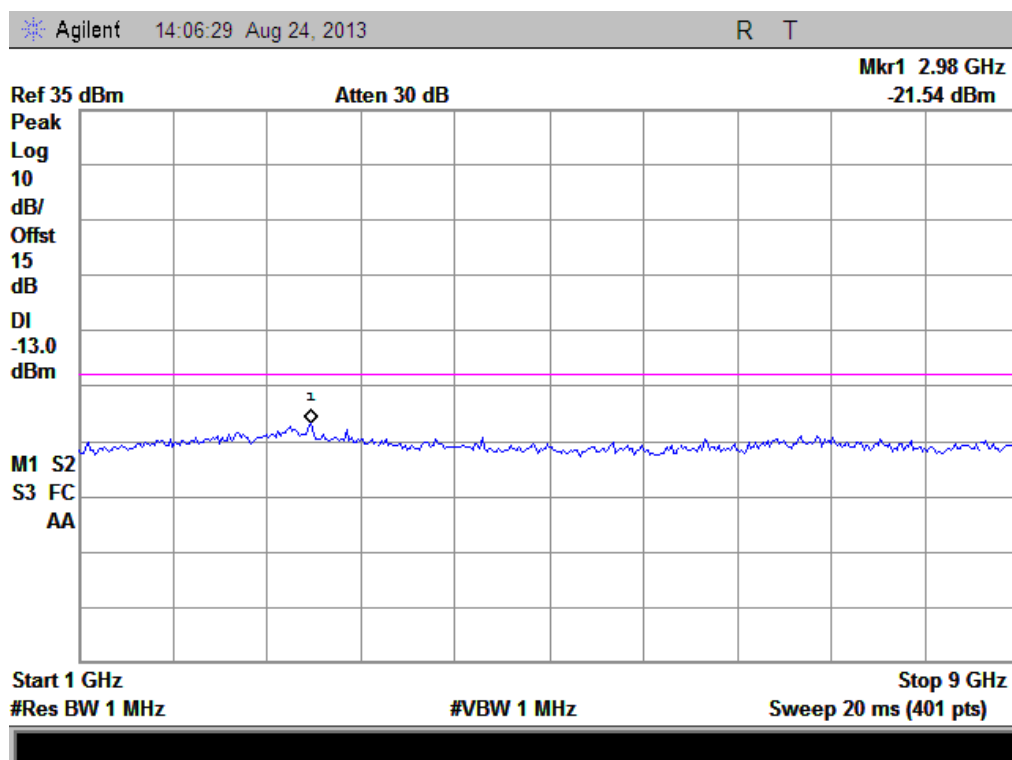
(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)



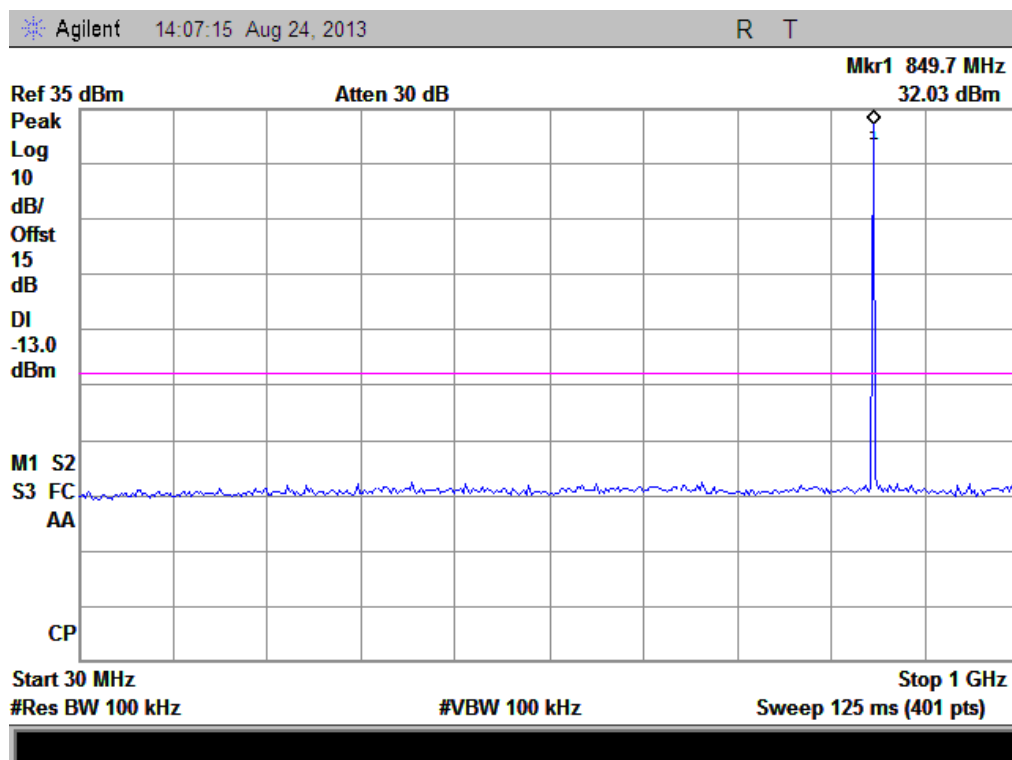
(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)



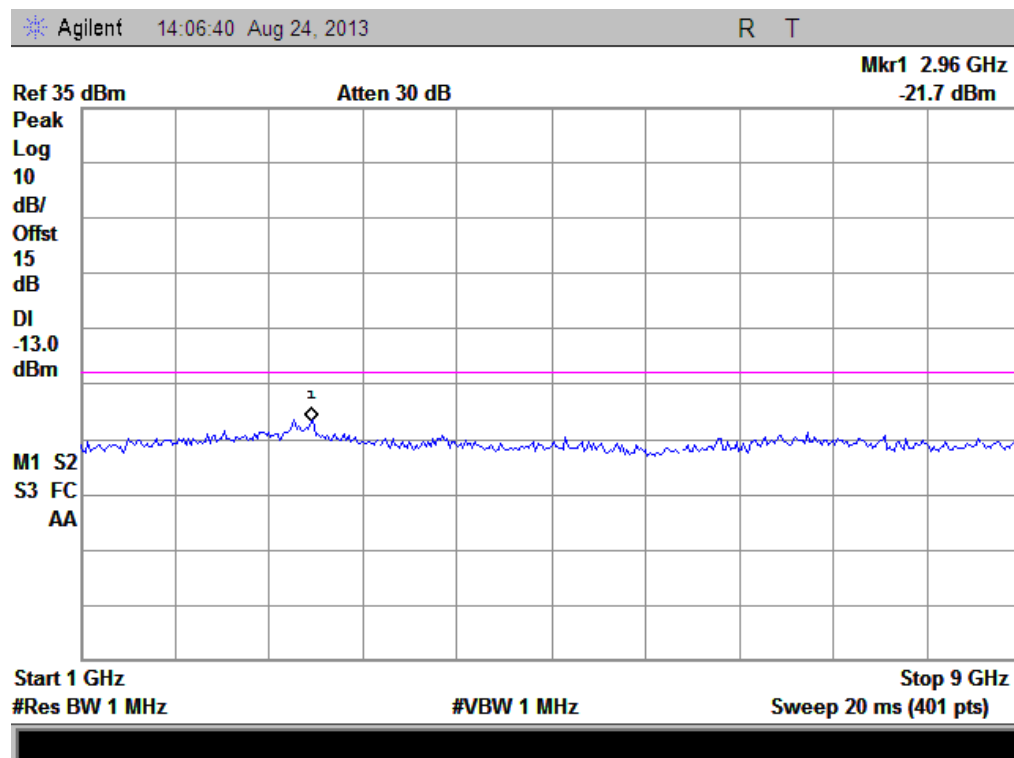
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



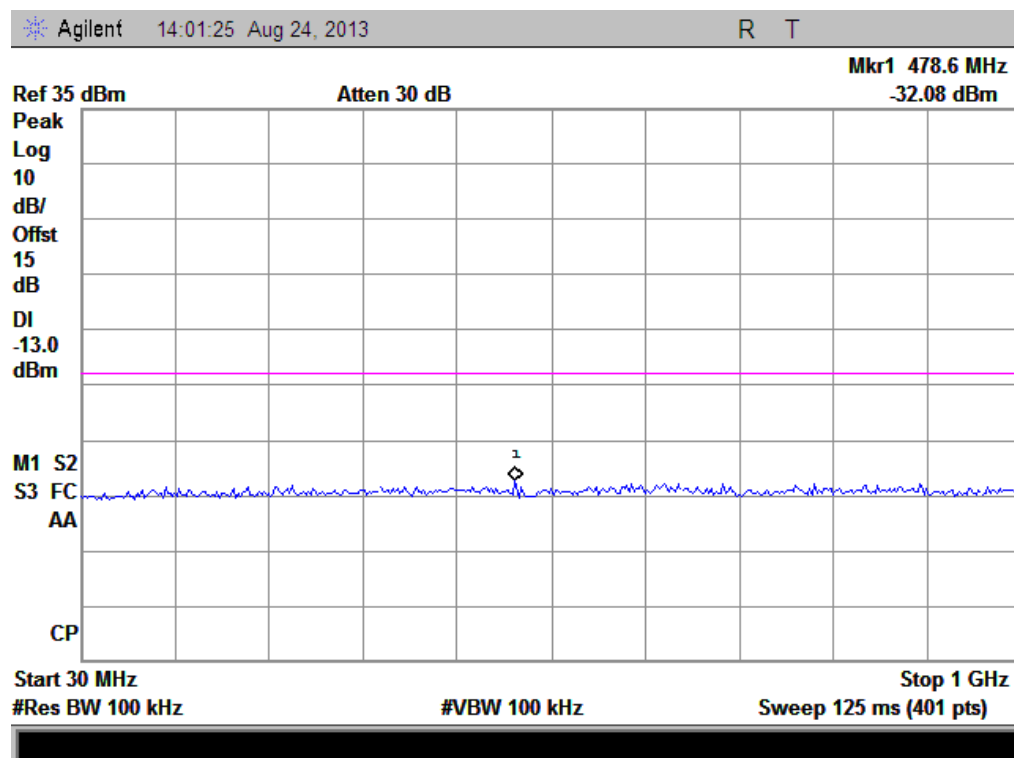
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



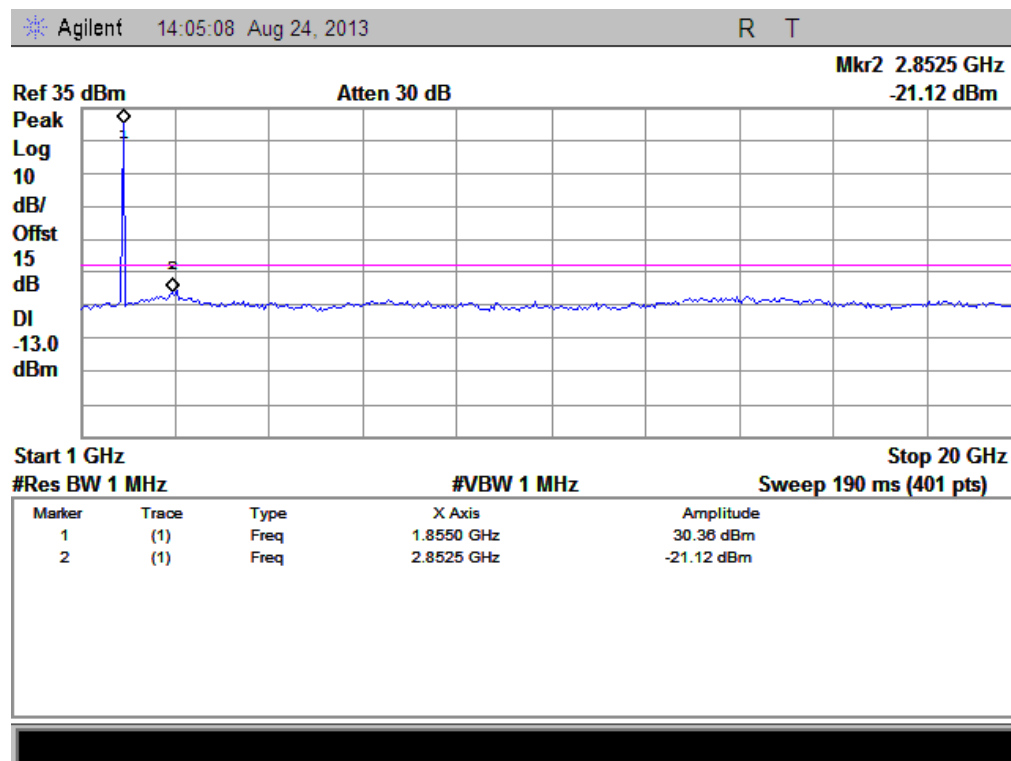
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



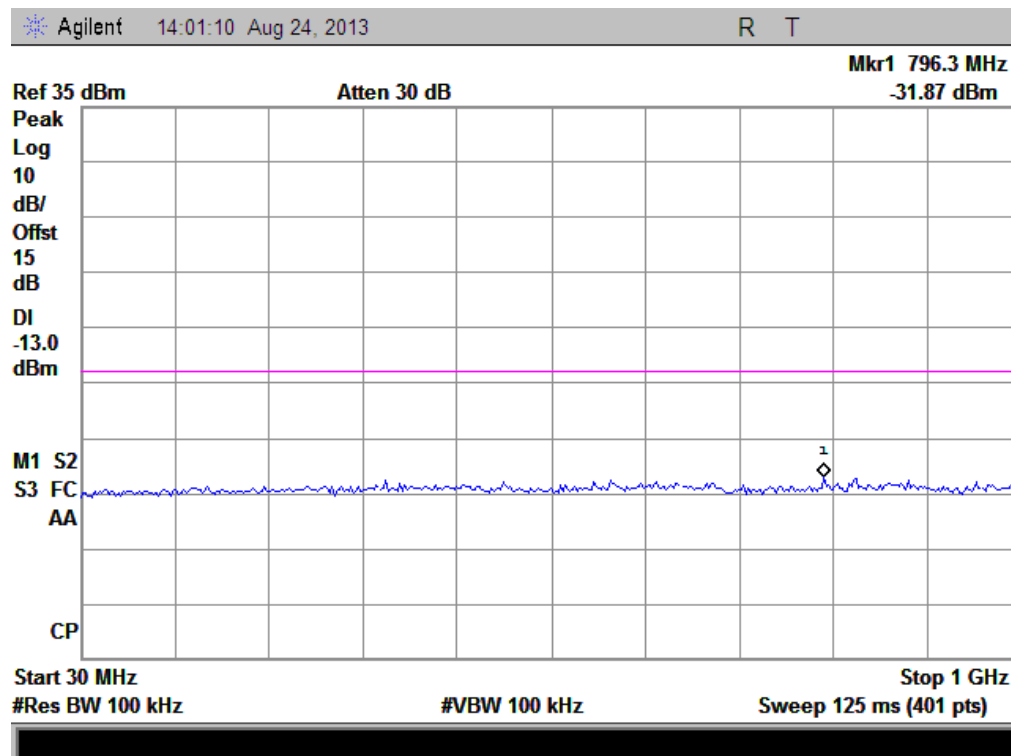
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



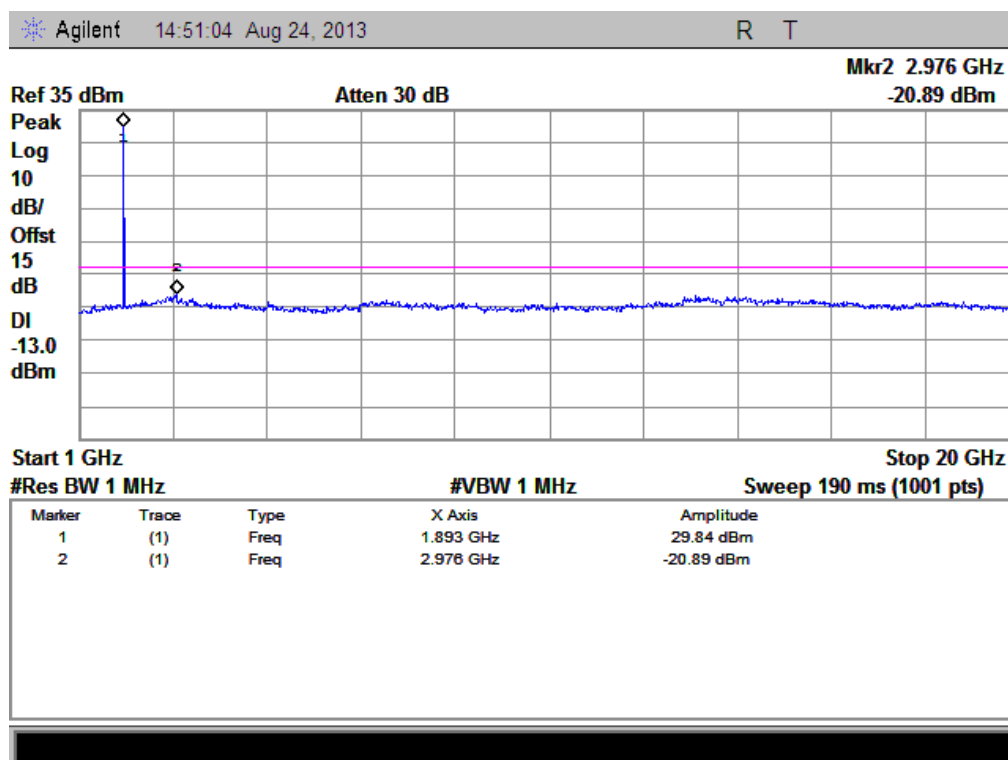
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



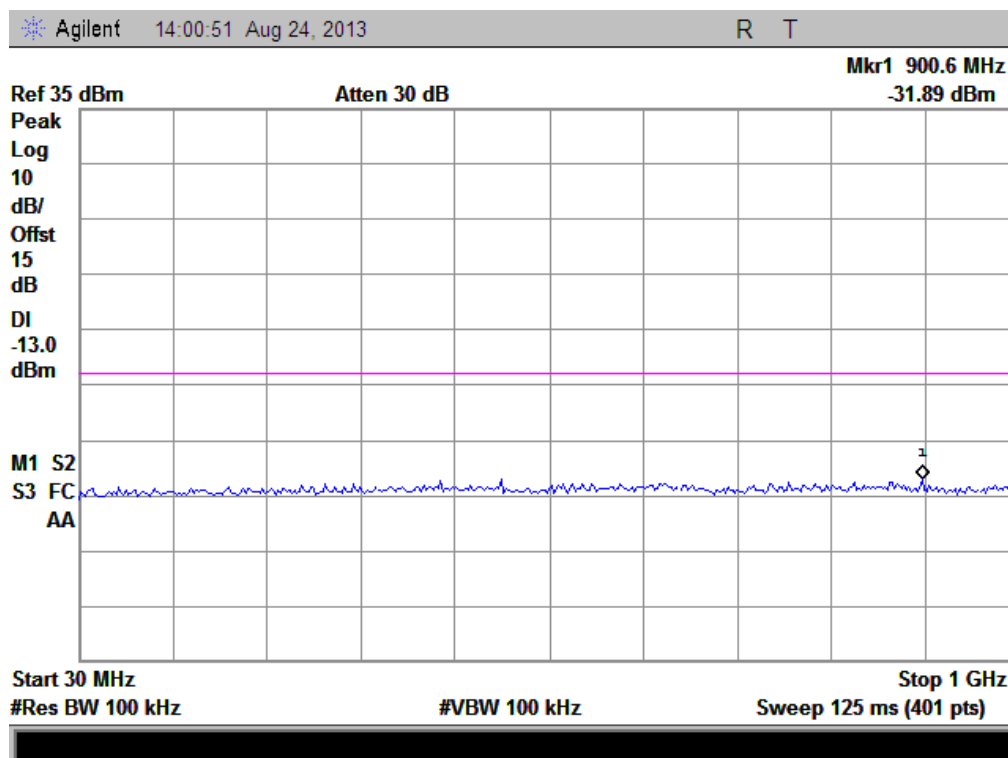
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



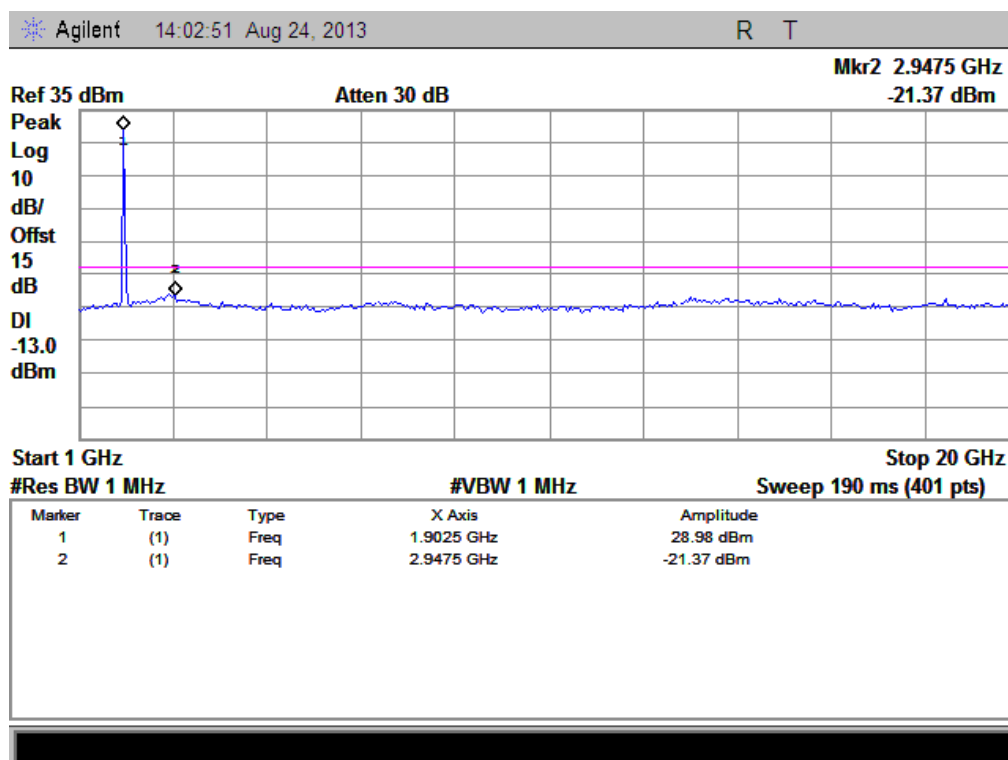
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)



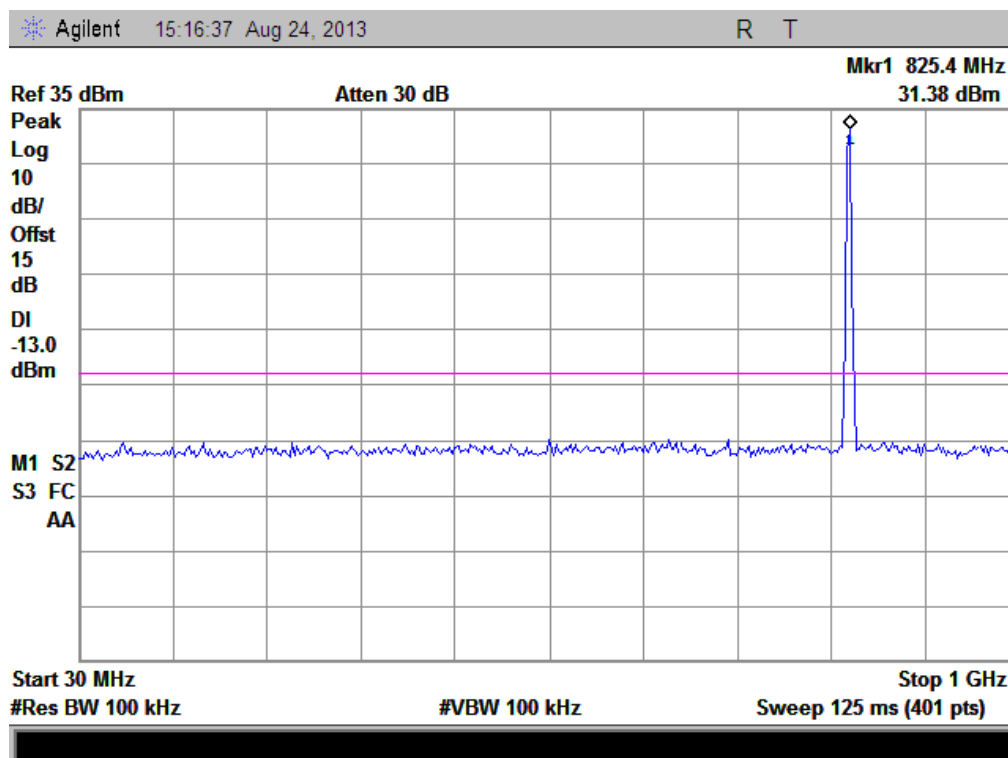
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



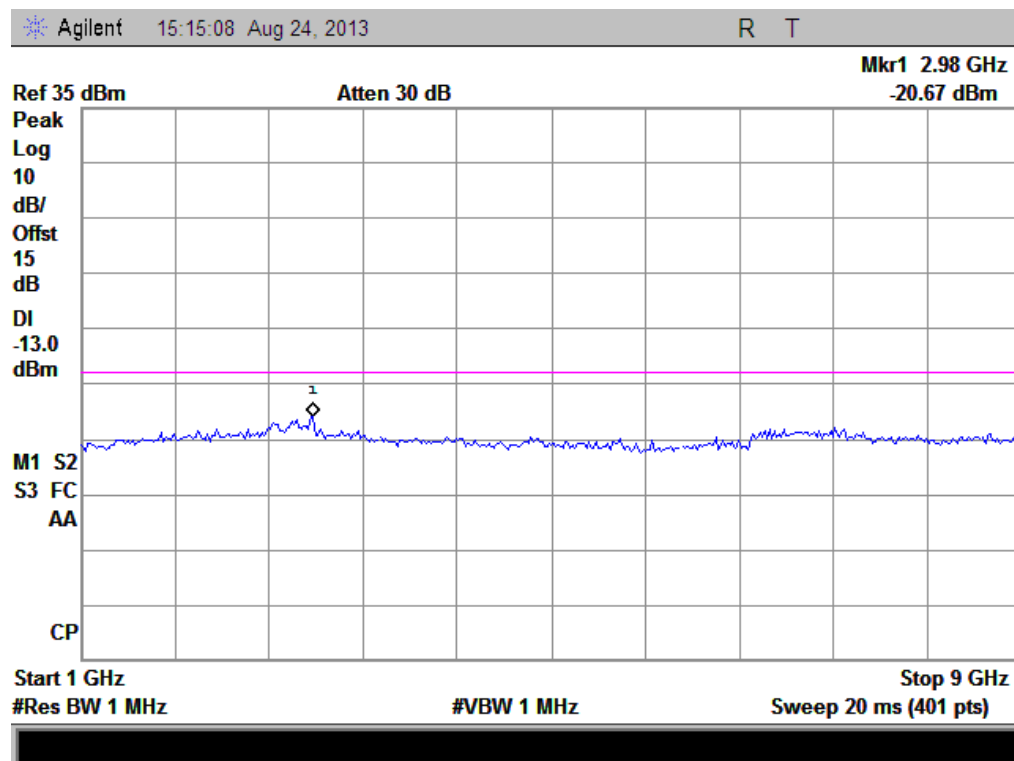
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



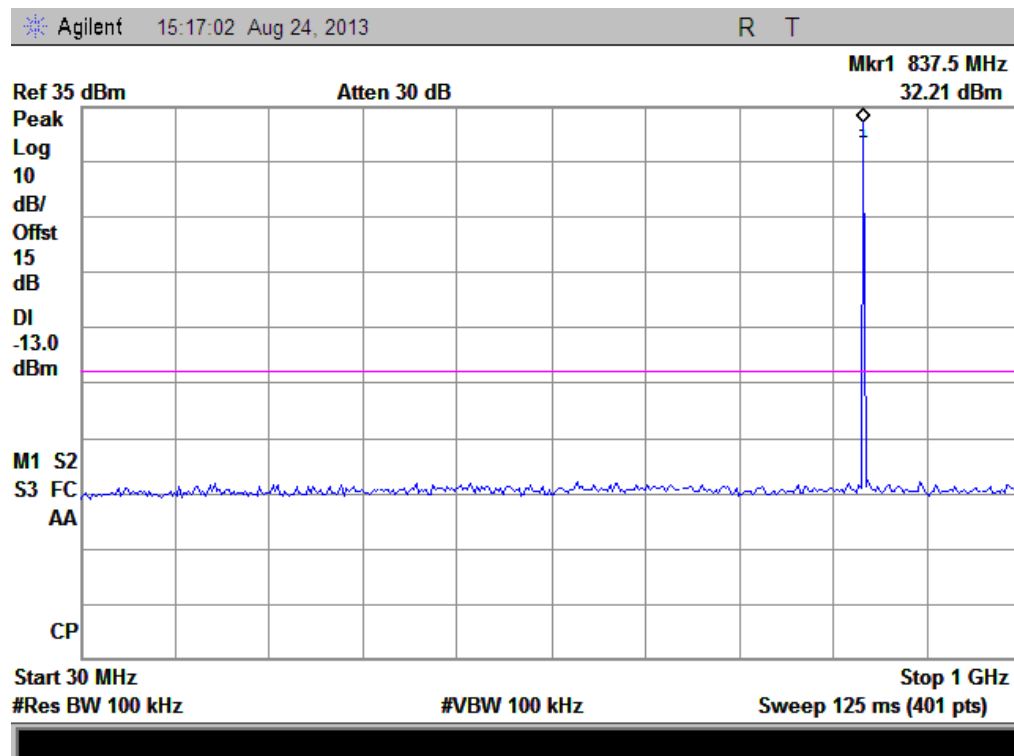
(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



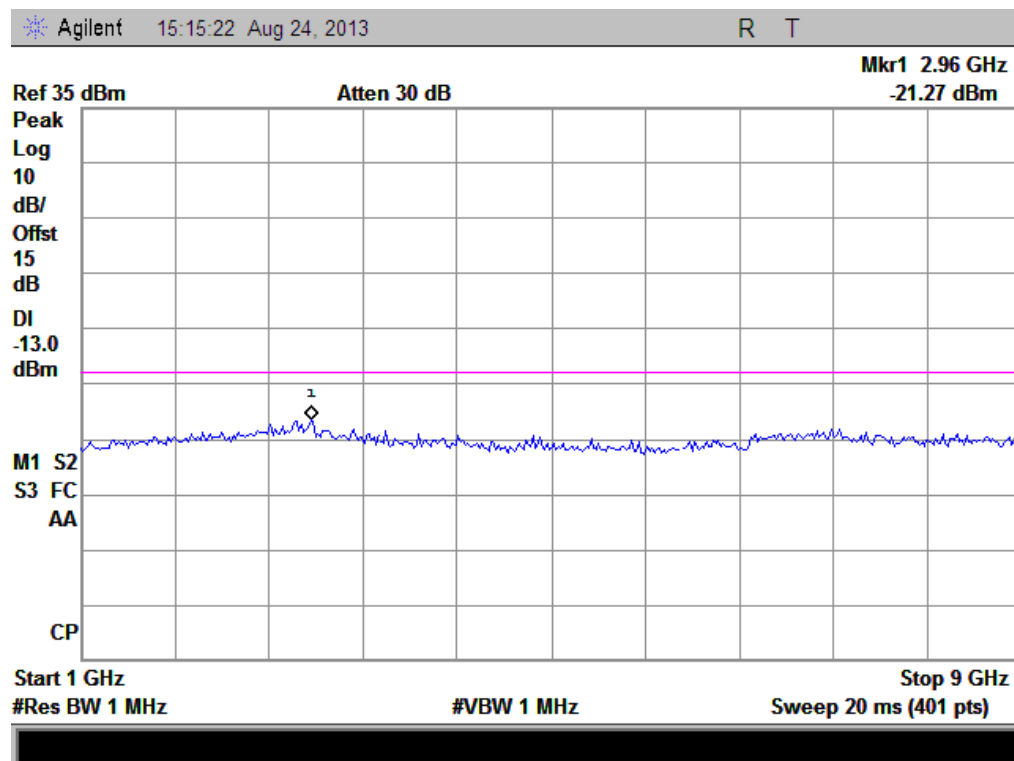
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)



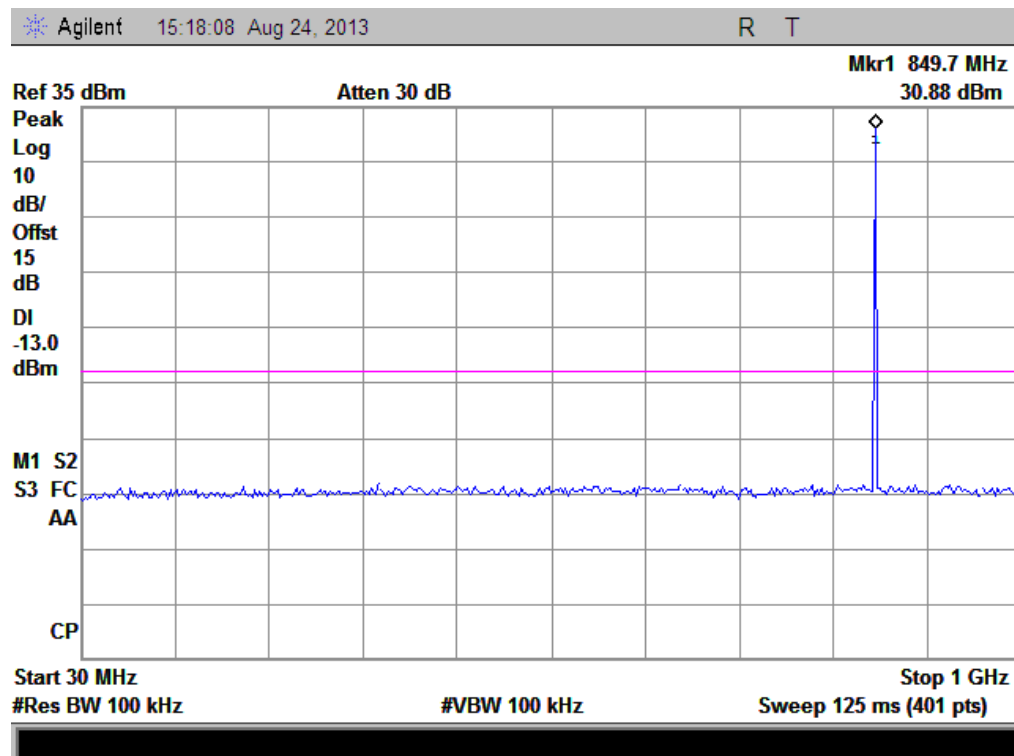
(Plot C1.1: EDGE 850MHz Channel = 128, 1GHz to 9GHz)



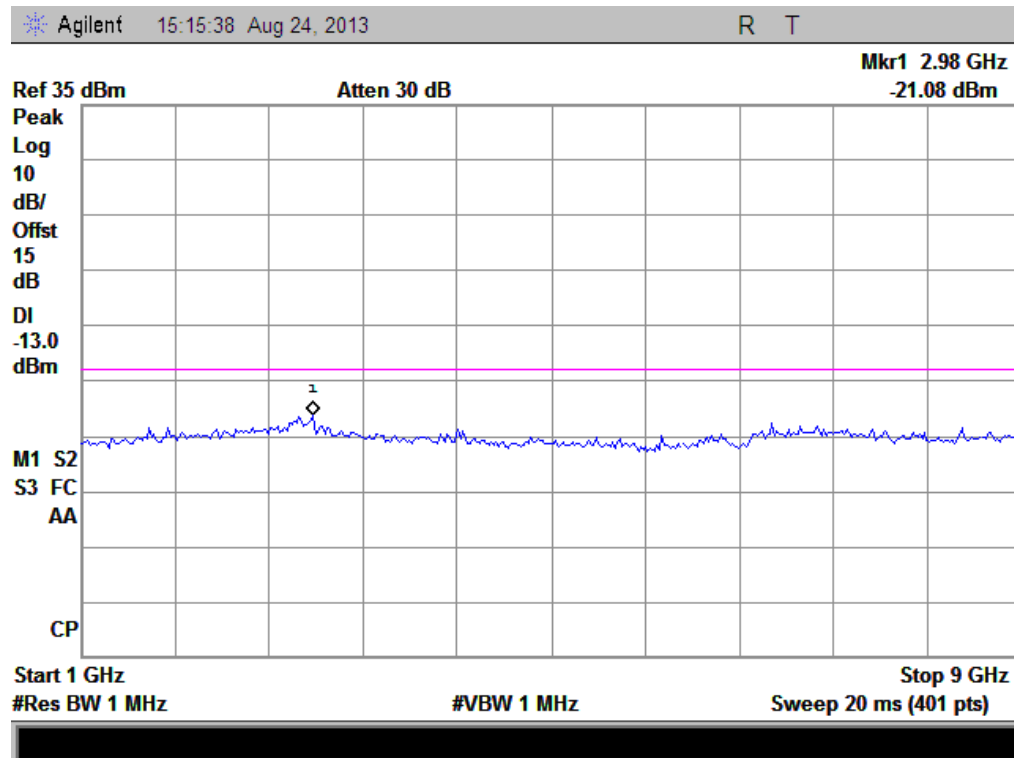
(Plot C2: EDGE 850MHz Channel = 190, 30MHz to 1GHz)



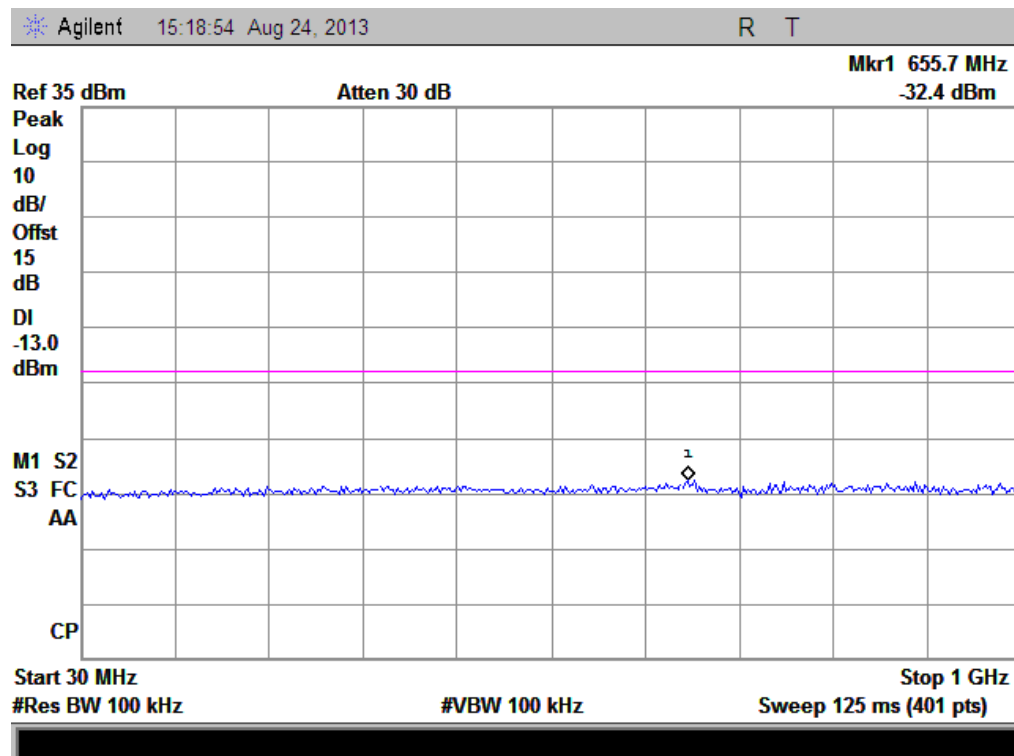
(Plot C2.1: EDGE 850MHz Channel = 190, 1GHz to 9GHz)



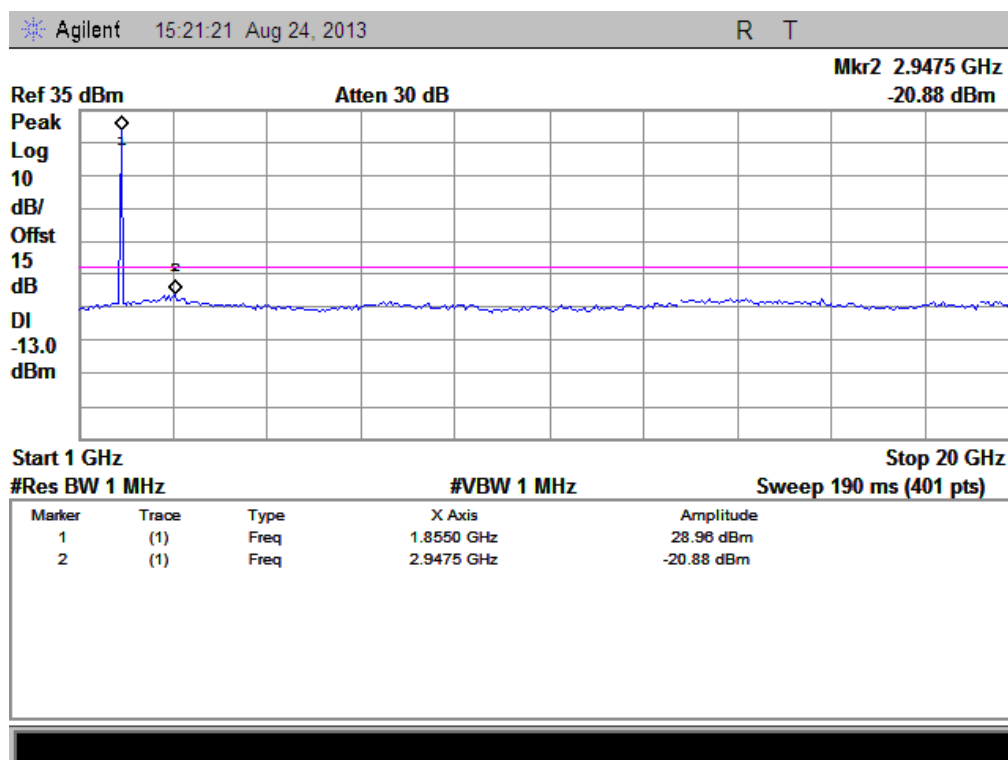
(Plot C3: EDGE 850MHz Channel = 251, 30MHz to 1GHz)



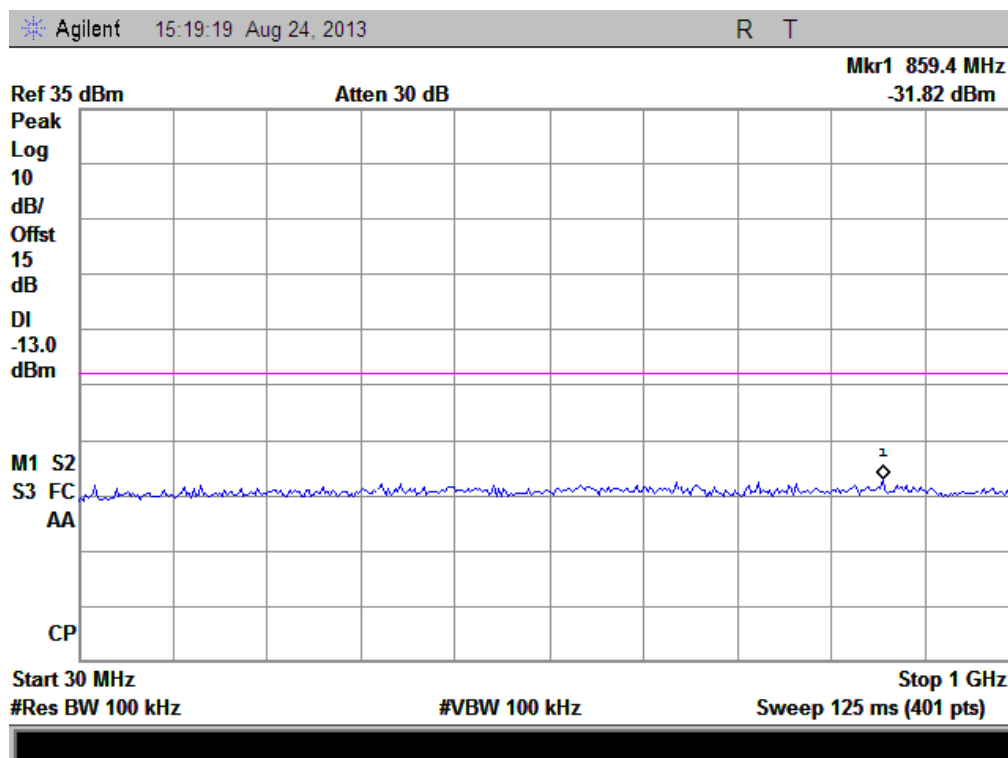
(Plot C3.1: EDGE 850MHz Channel = 251, 1GHz to 9GHz)



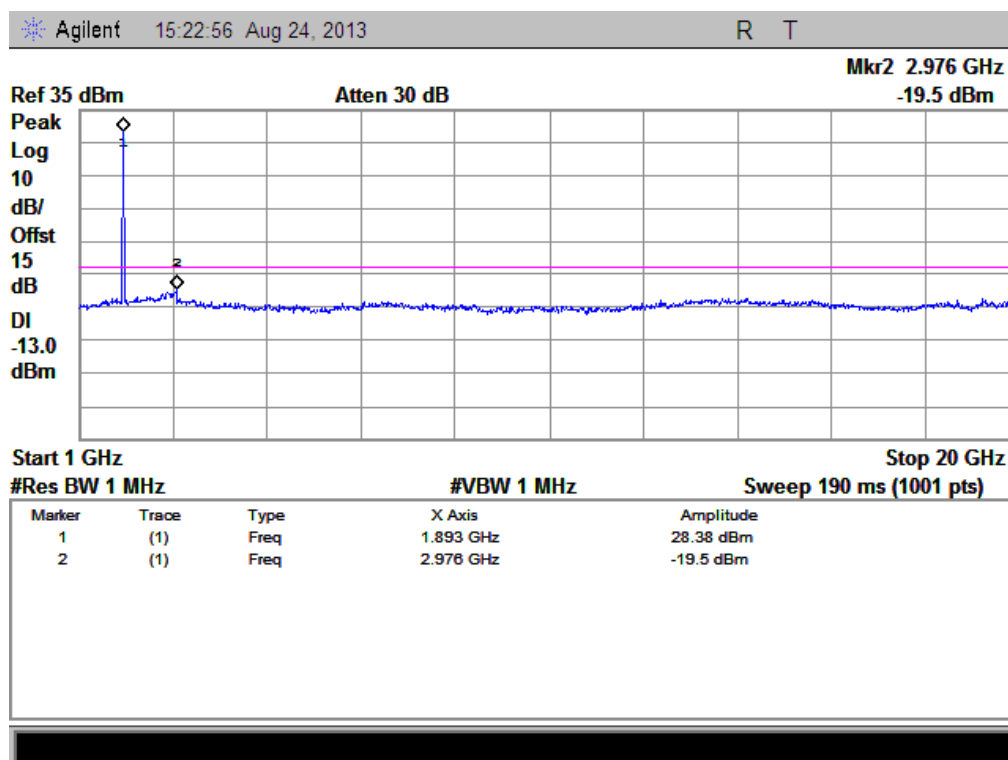
(Plot D1: EDGE 1900MHz Channel = 512, 30MHz to 1GHz)



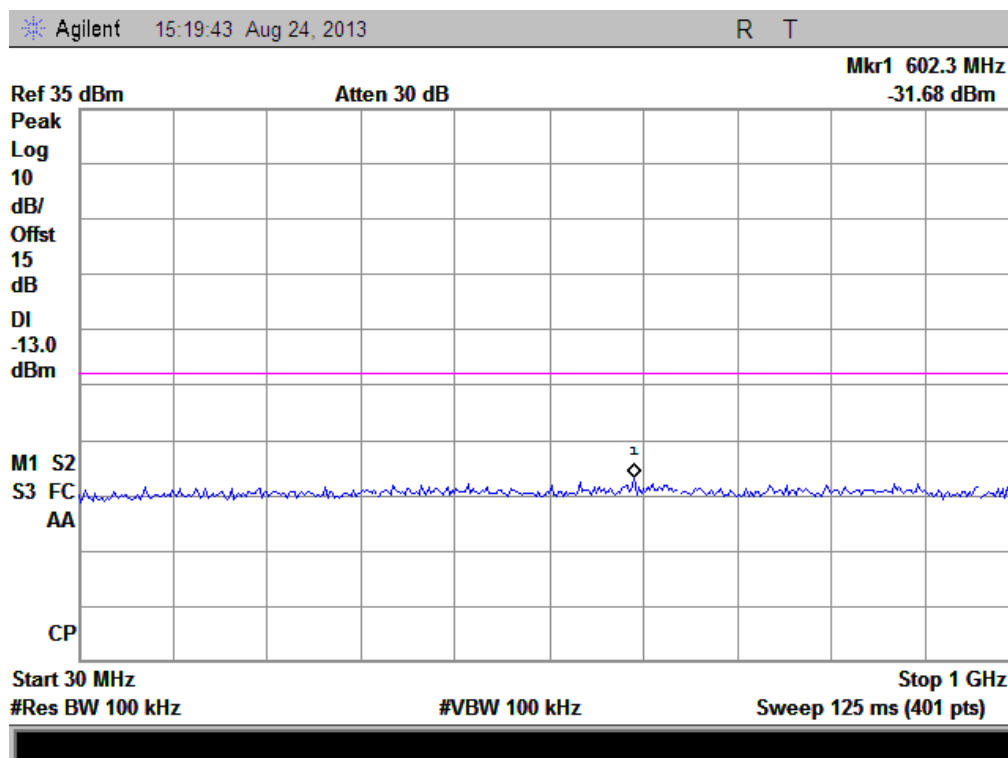
(Plot D1.1: EDGE 1900MHz Channel = 512, 1GHz to 20GHz)



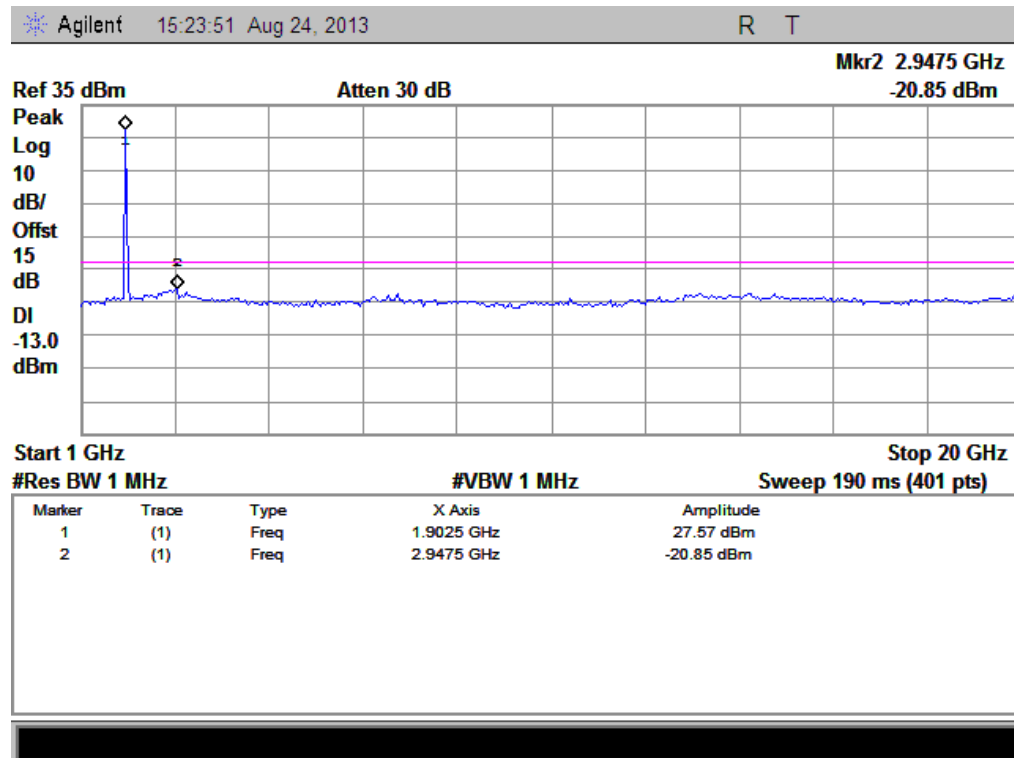
(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



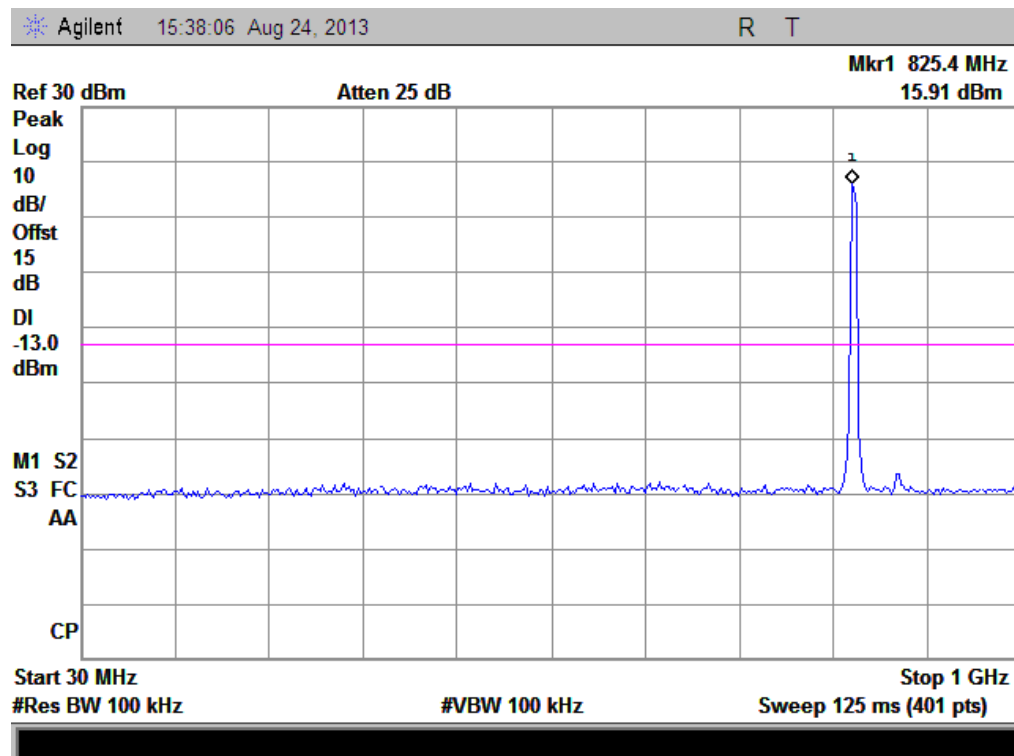
(Plot D2.1: EDGE 1900MHz Channel = 661,1GHz to 20GHz)



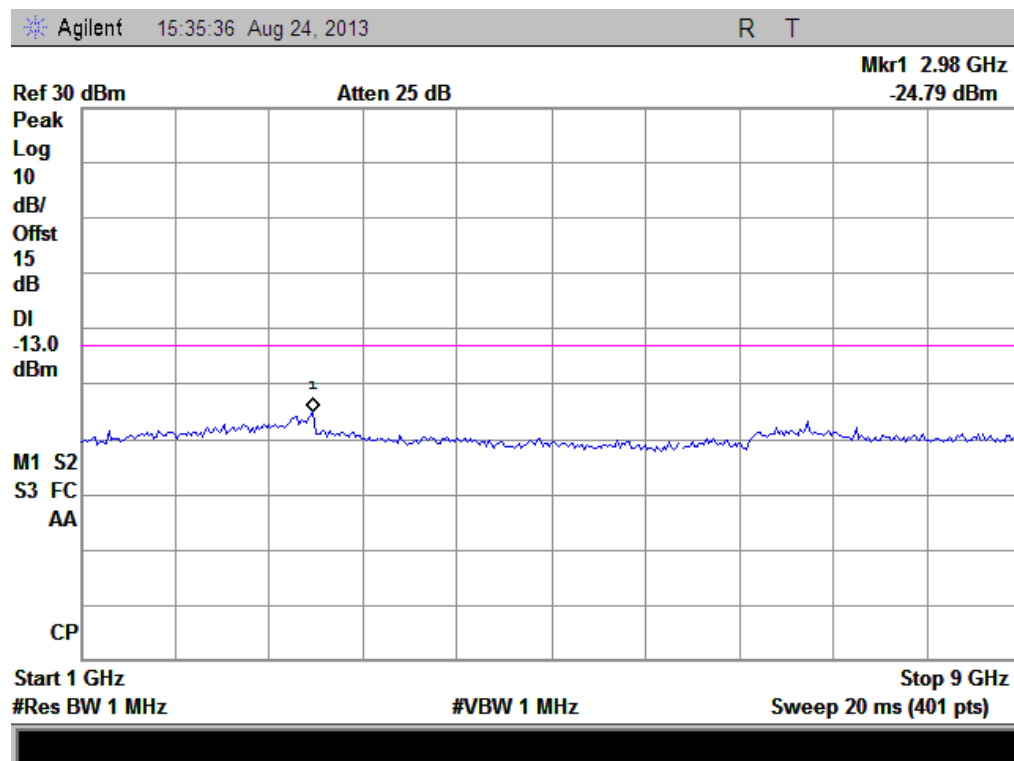
(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)



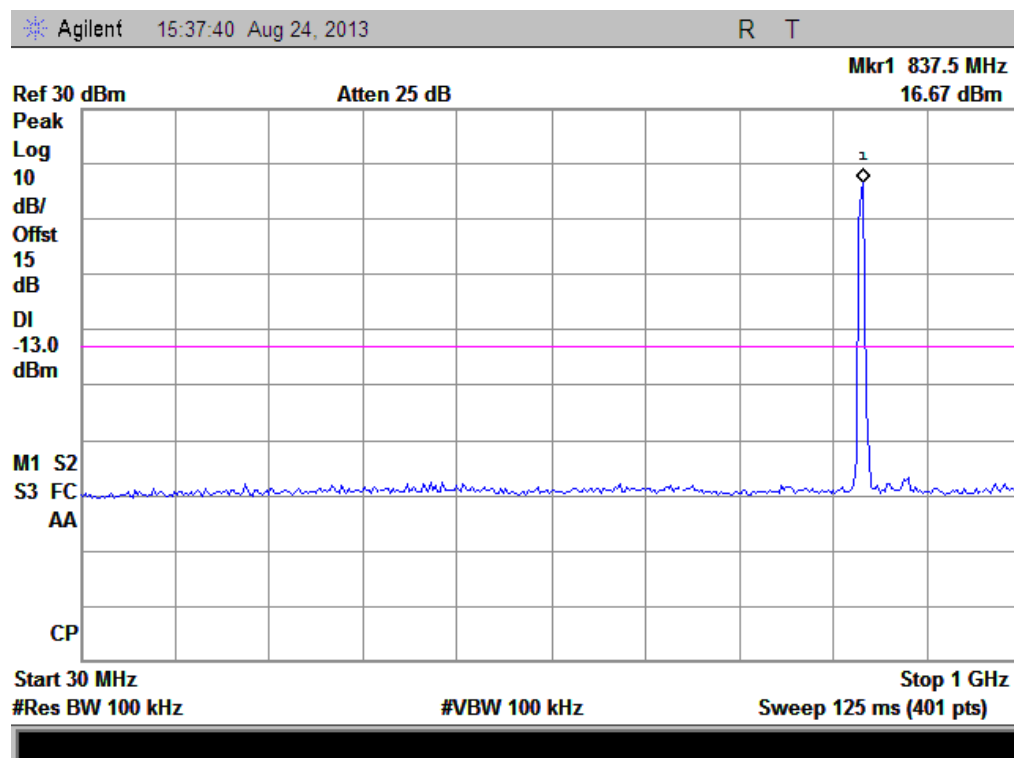
(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



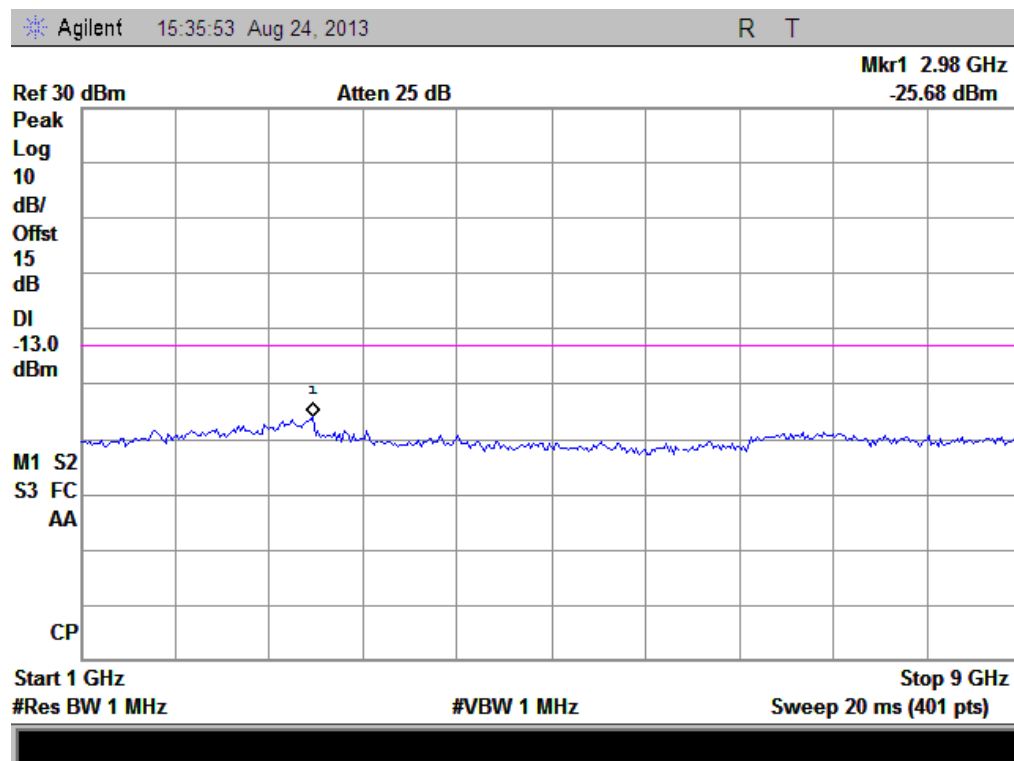
(Plot E1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)



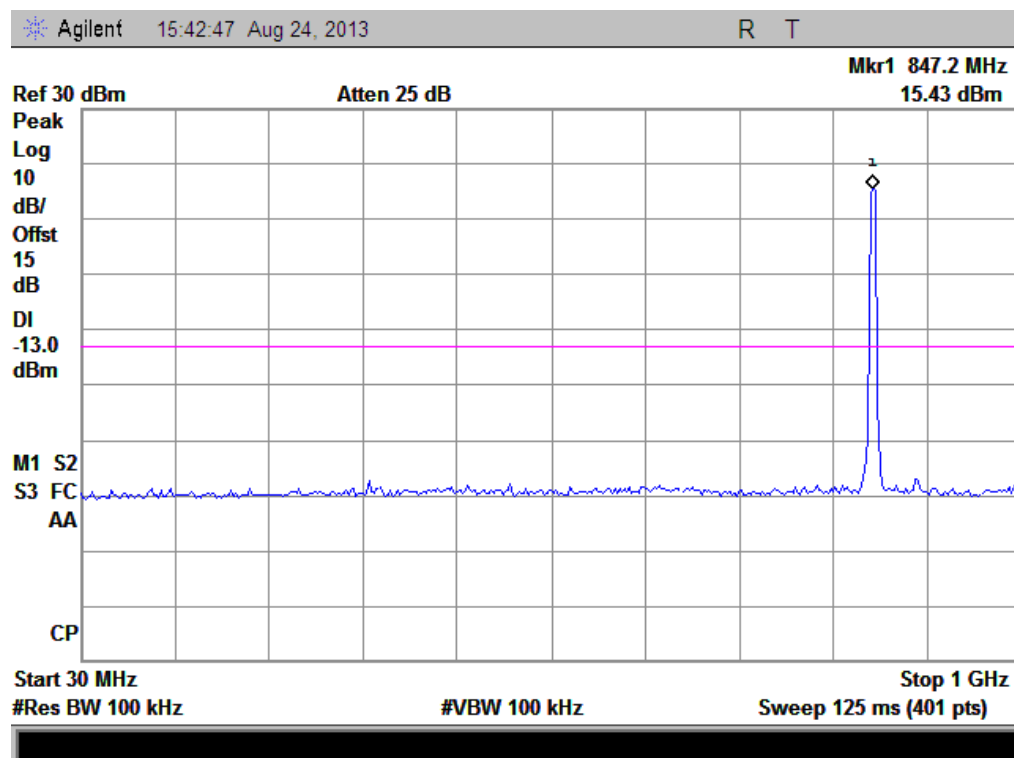
(Plot E1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)



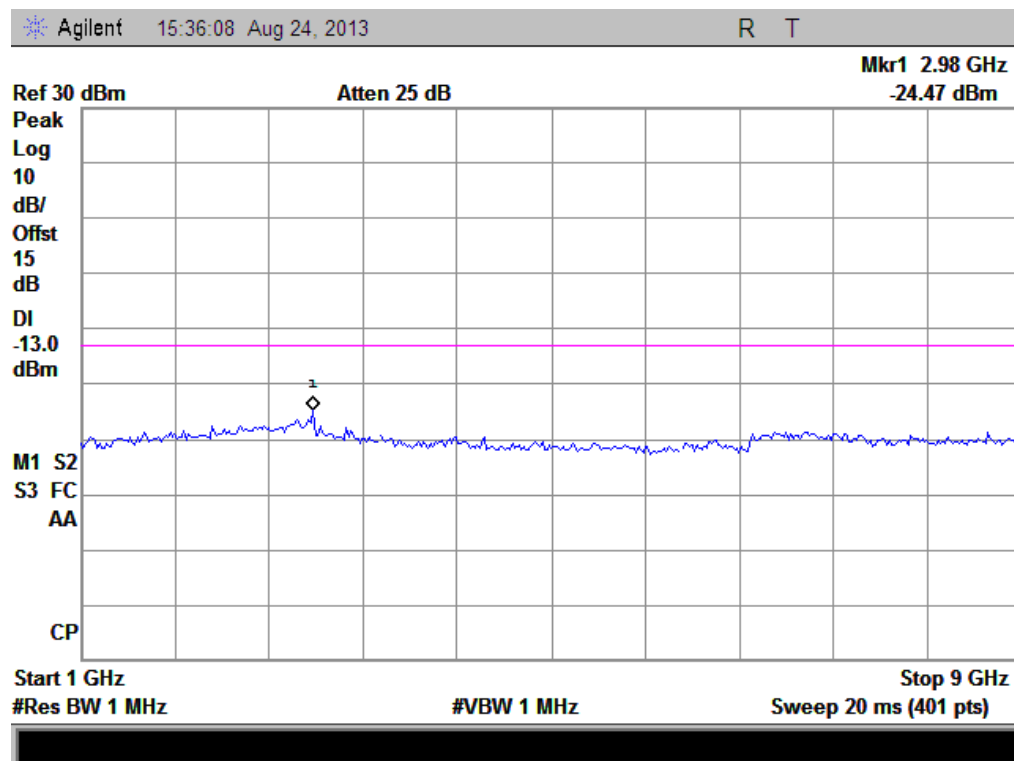
(Plot E2: WCDMA850MHz Channel = 4175, 30MHz to 1GHz)



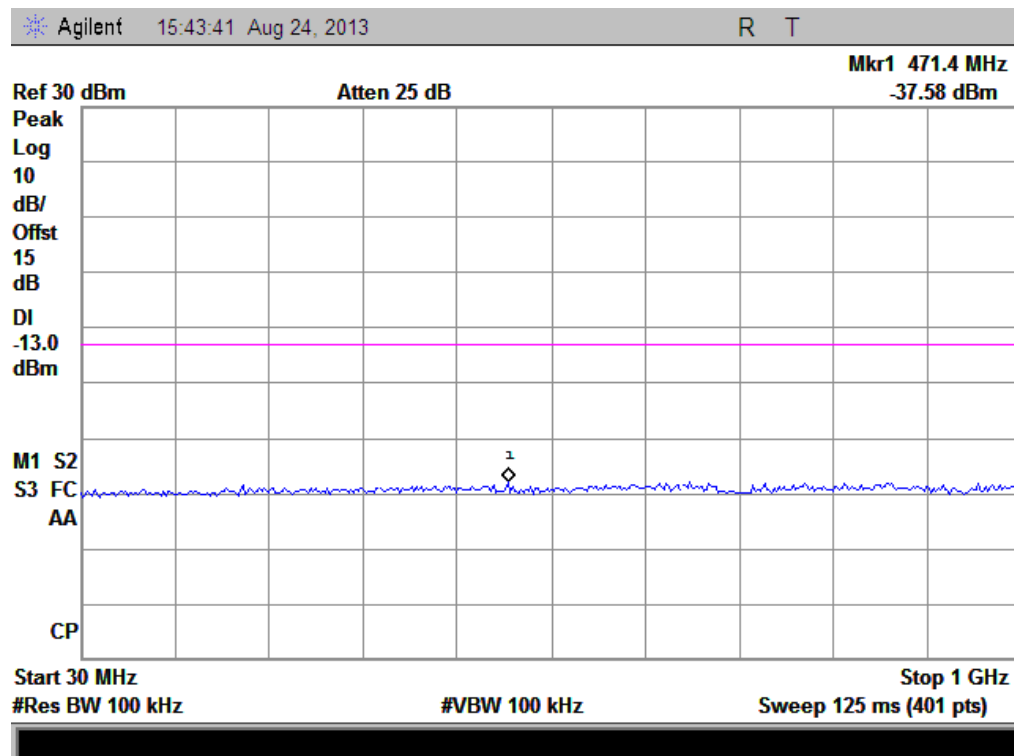
(Plot E2.1: WCDMA850MHz Channel = 4175, 1GHz to 9GHz)



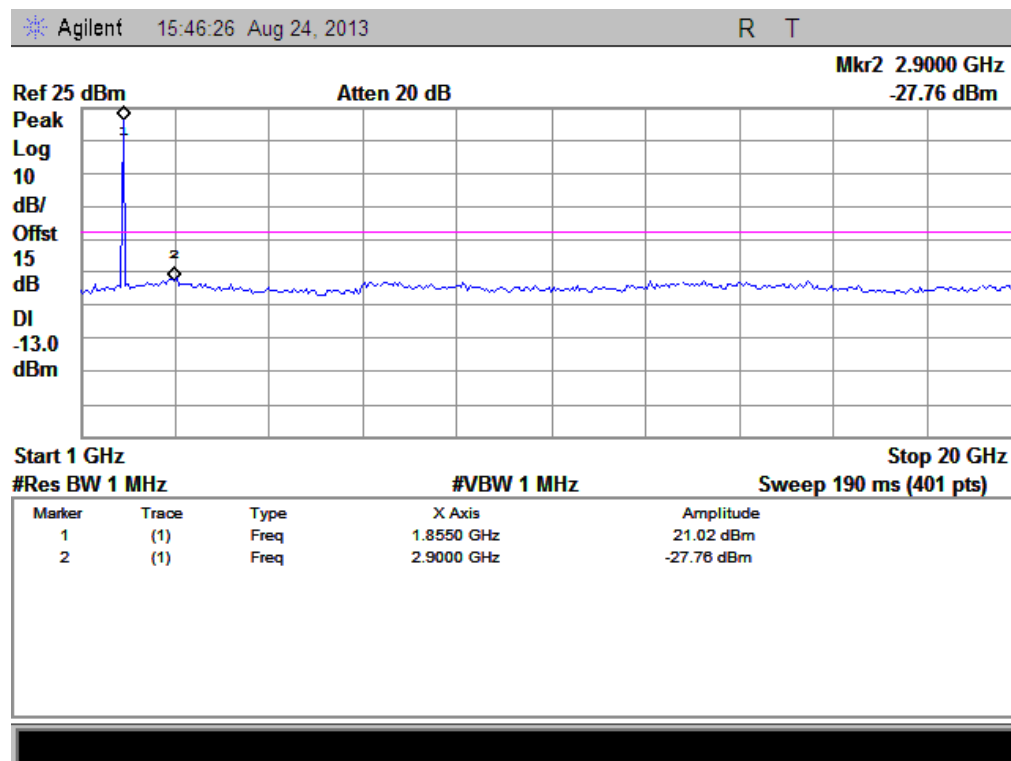
(Plot E3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)



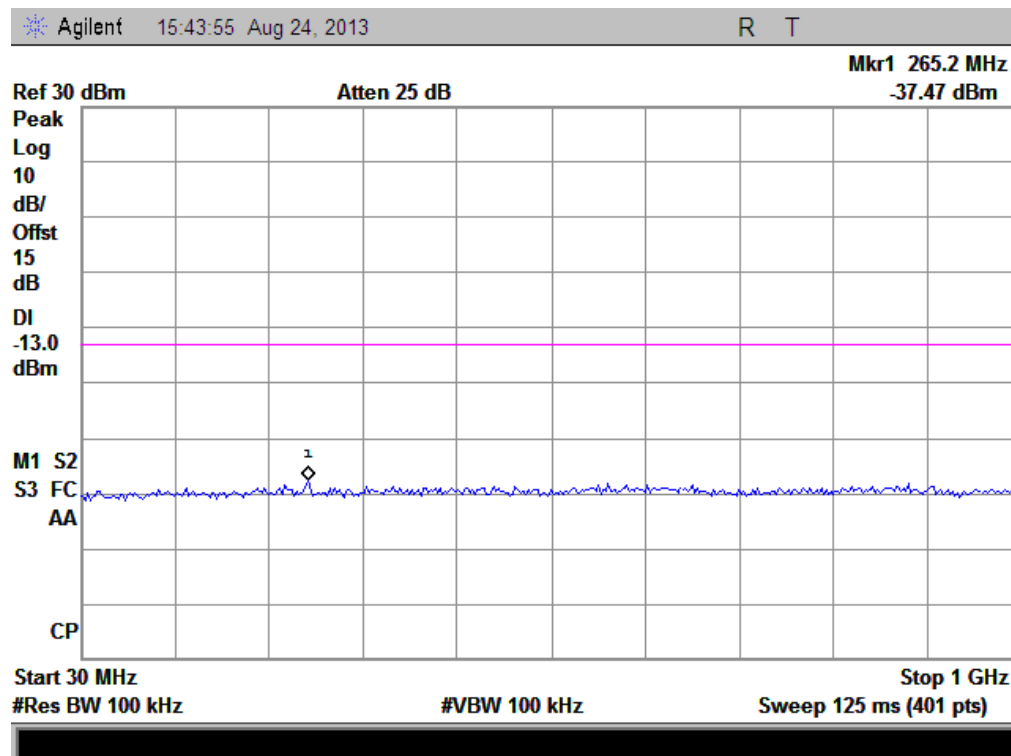
(Plot E3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)



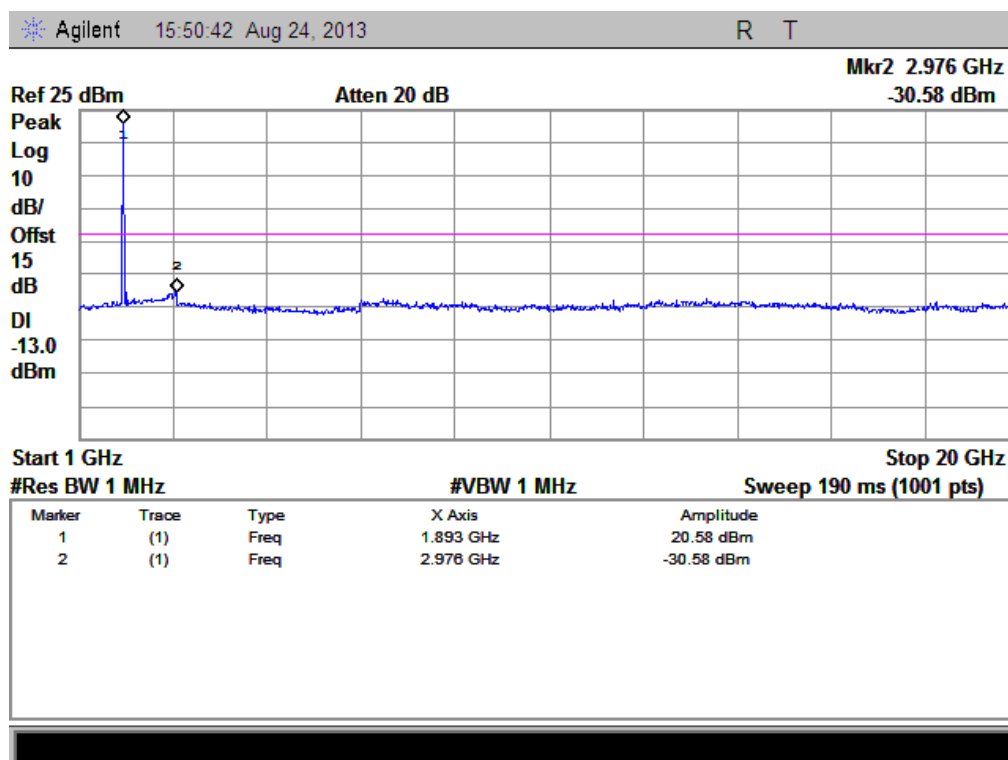
(Plot F1: WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)



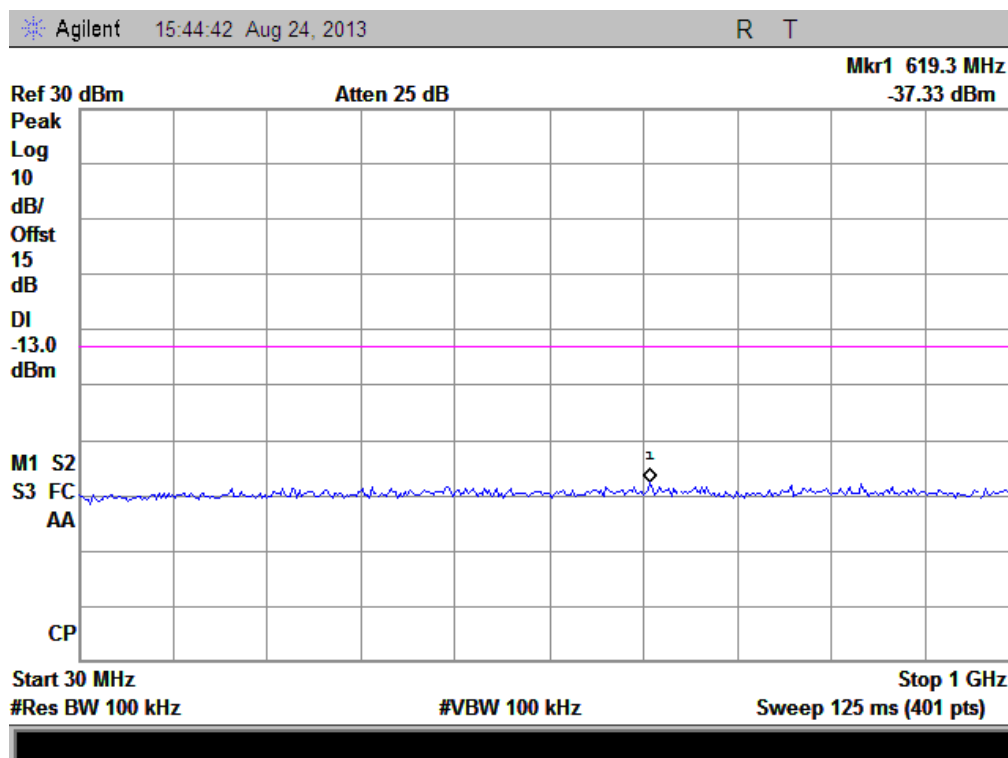
(Plot F1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)



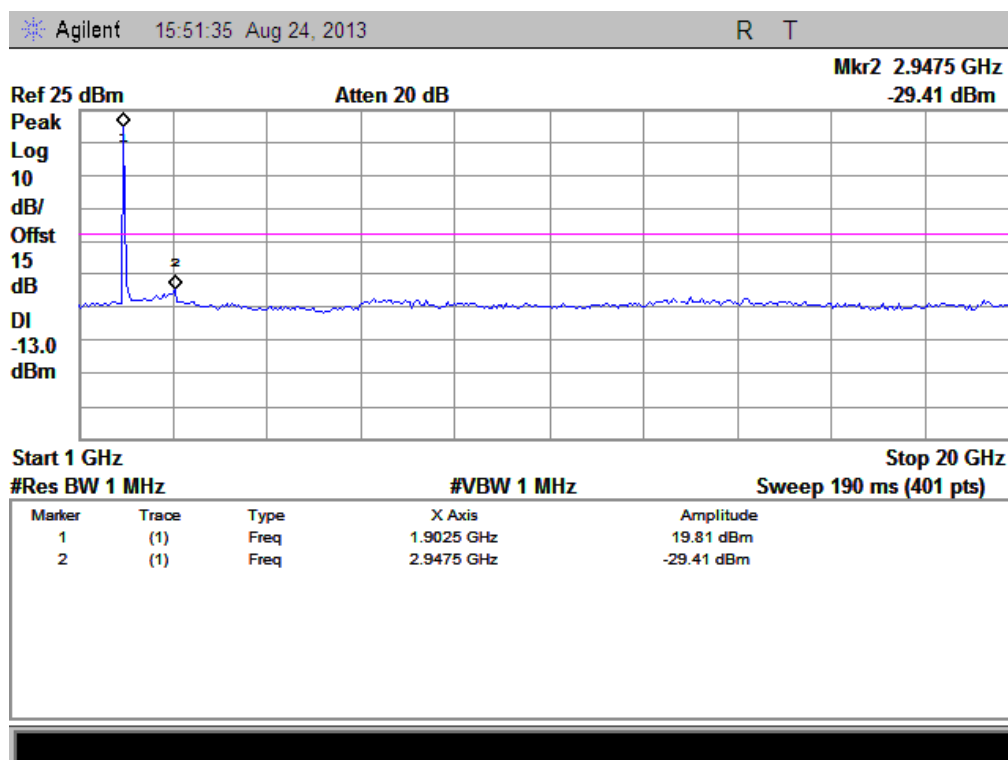
(Plot F2: WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)



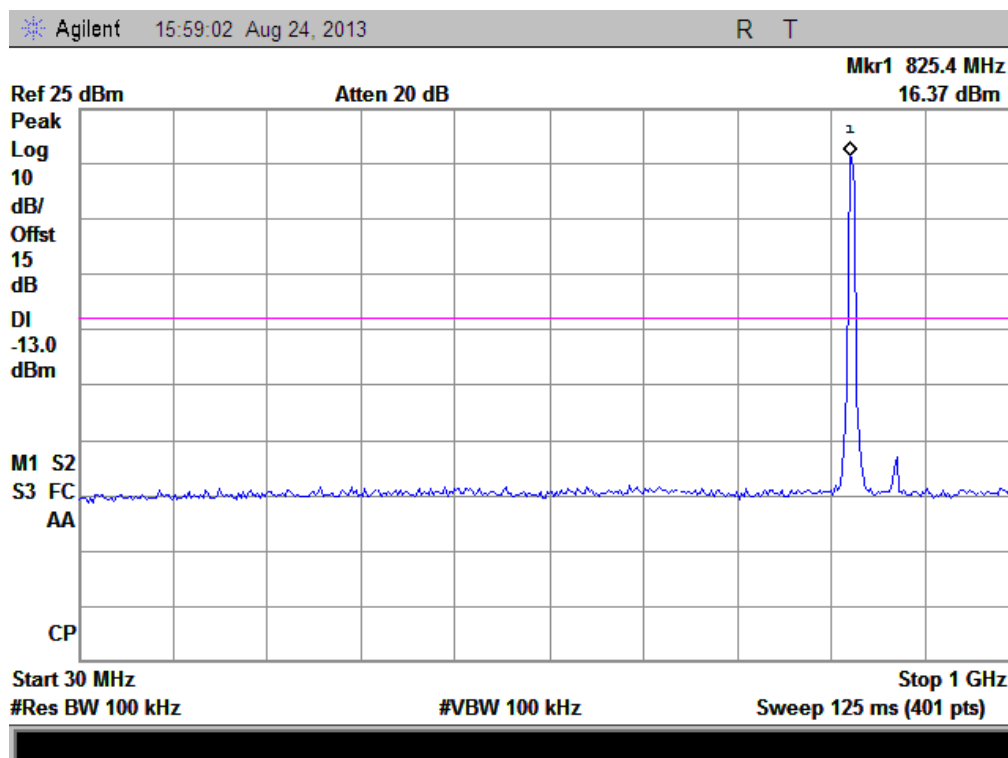
(Plot F2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)



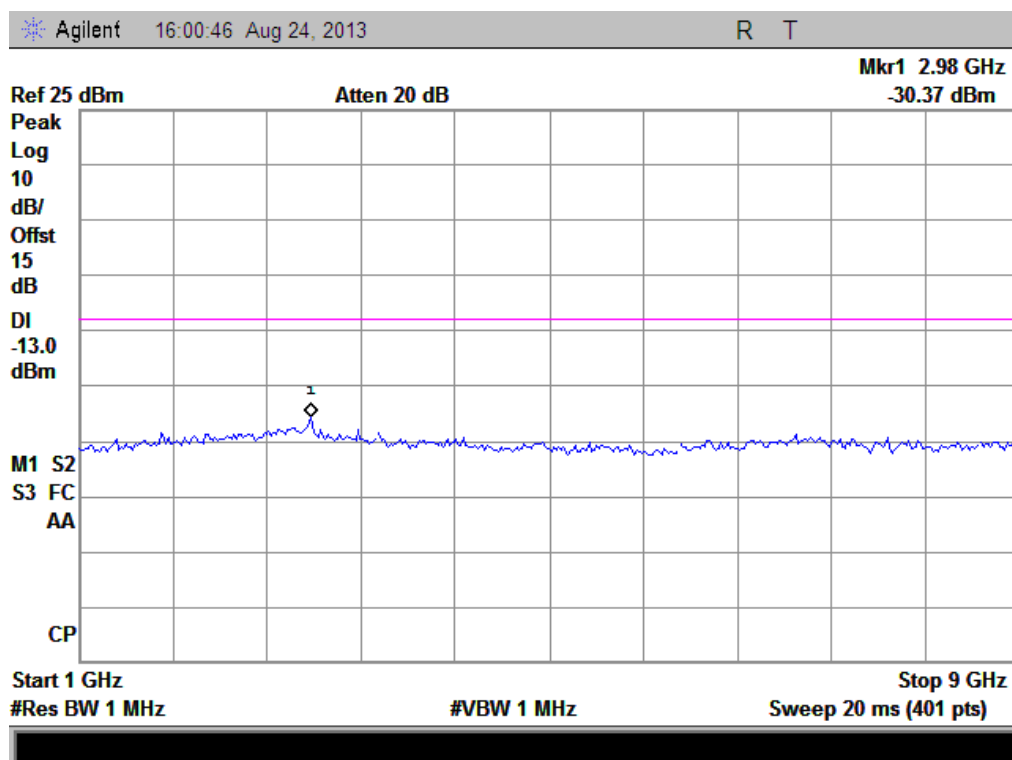
(Plot F3: WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)



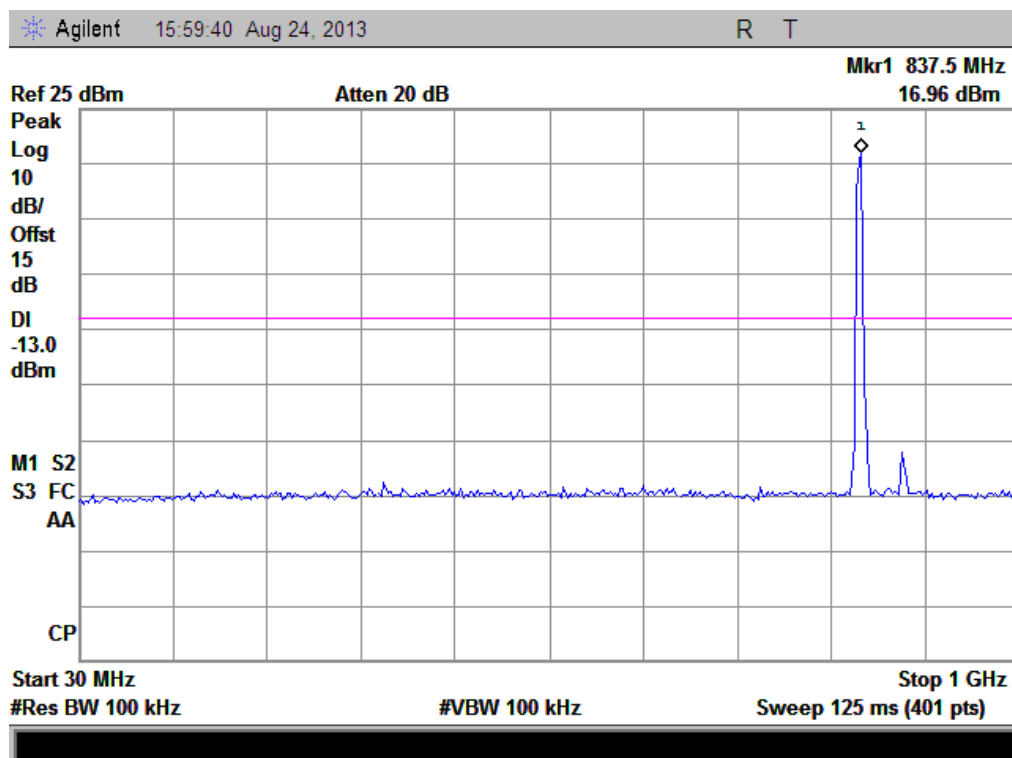
(Plot F3.1: WCDMA1900MHz Channel = 9538 1GHz to 20GHz)



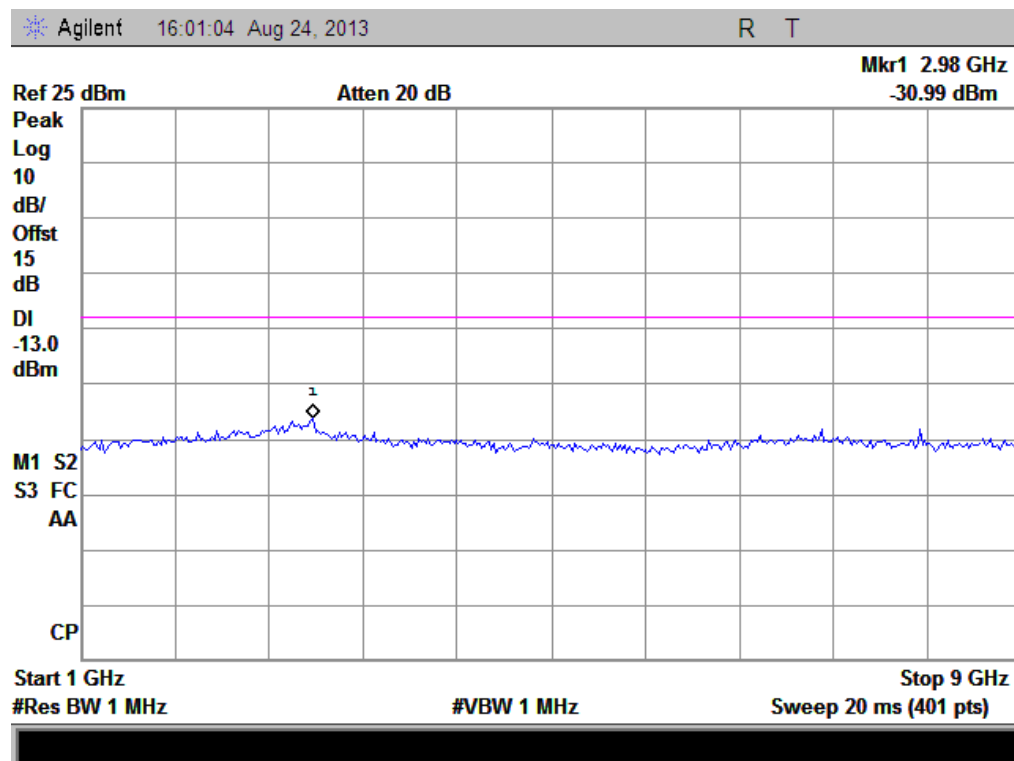
(Plot G1: HSDPA 850MHz Channel = 4132, 30MHz to 1GHz)



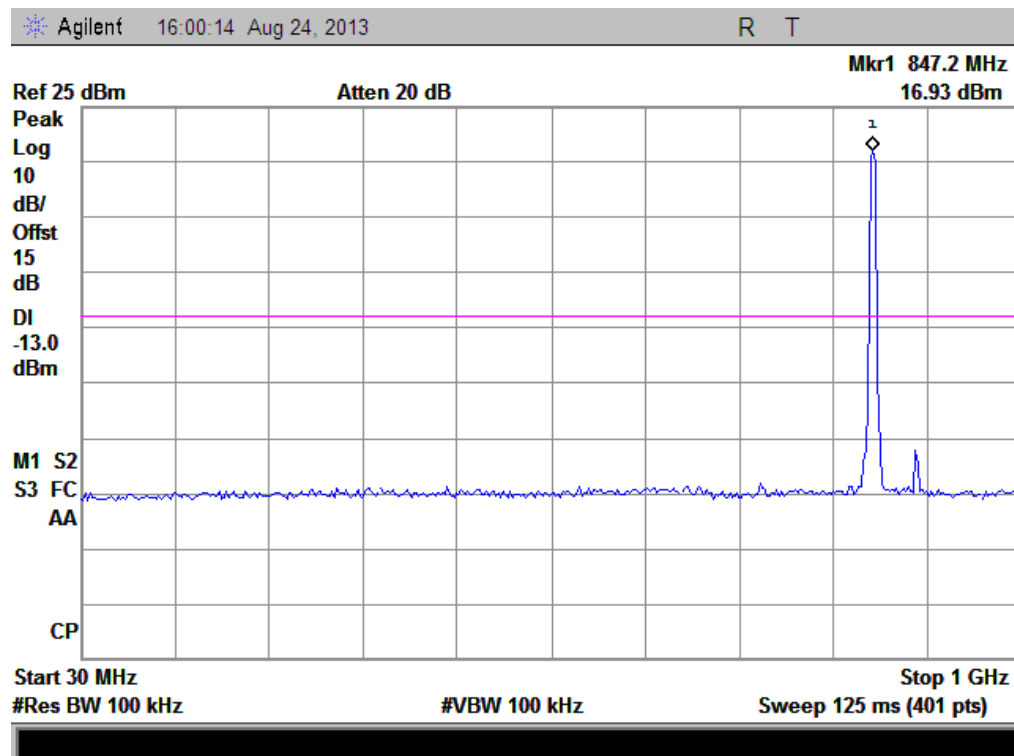
(Plot G1.1: HSDPA 850MHz Channel = 4132, 1GHz to 9GHz)



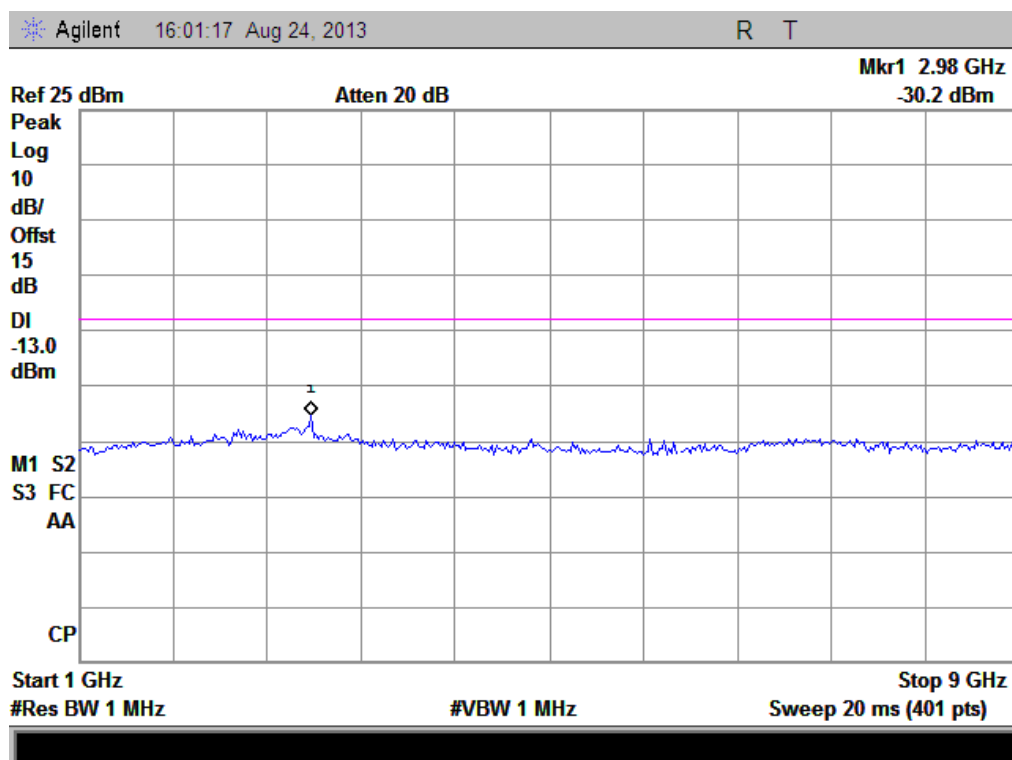
(Plot G2: HSDPA 850MHz Channel = 4175, 30MHz to 1GHz)



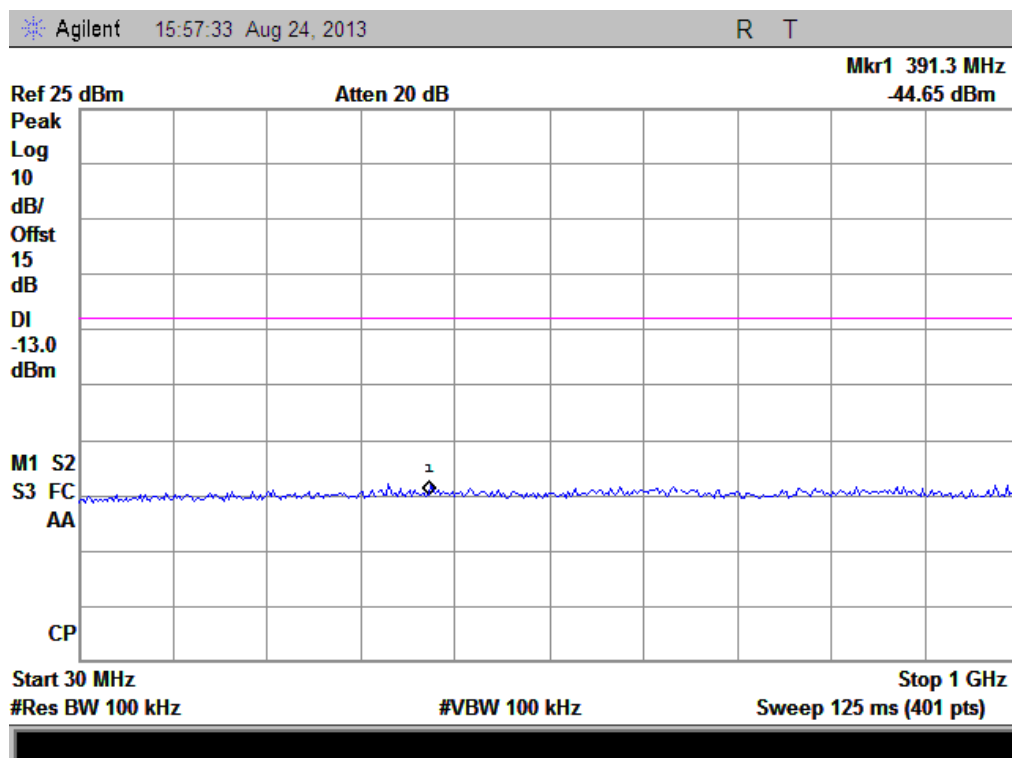
(Plot G2.1: HSDPA 850MHz Channel = 4175, 1GHz to 9GHz)



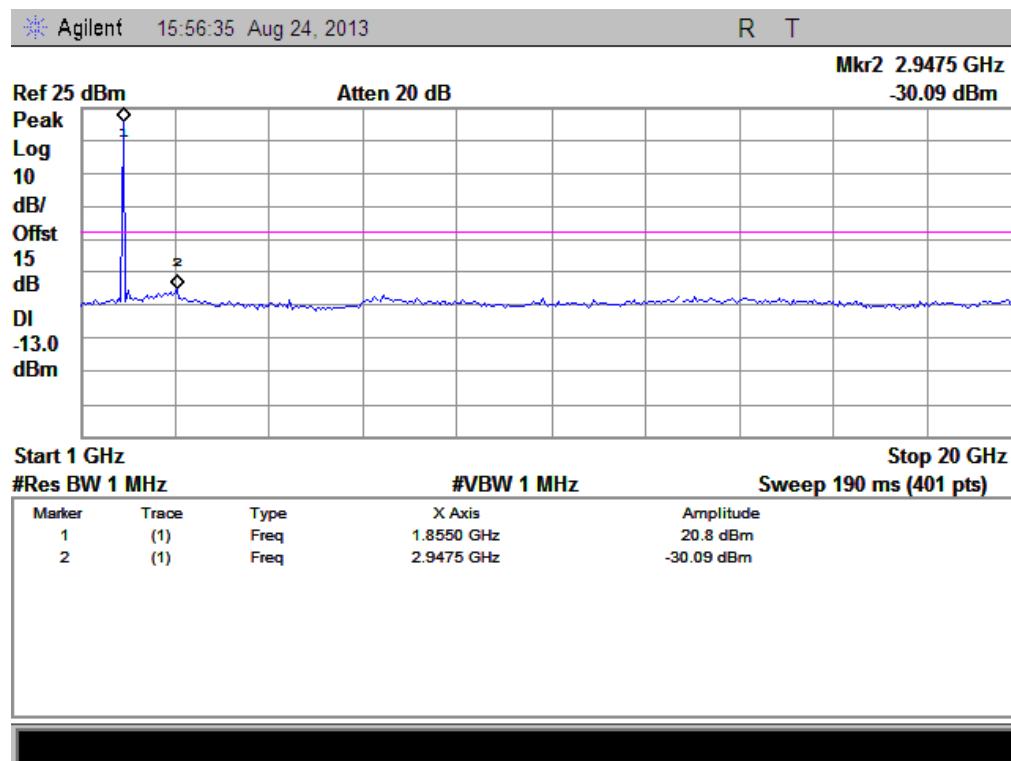
(Plot G3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)



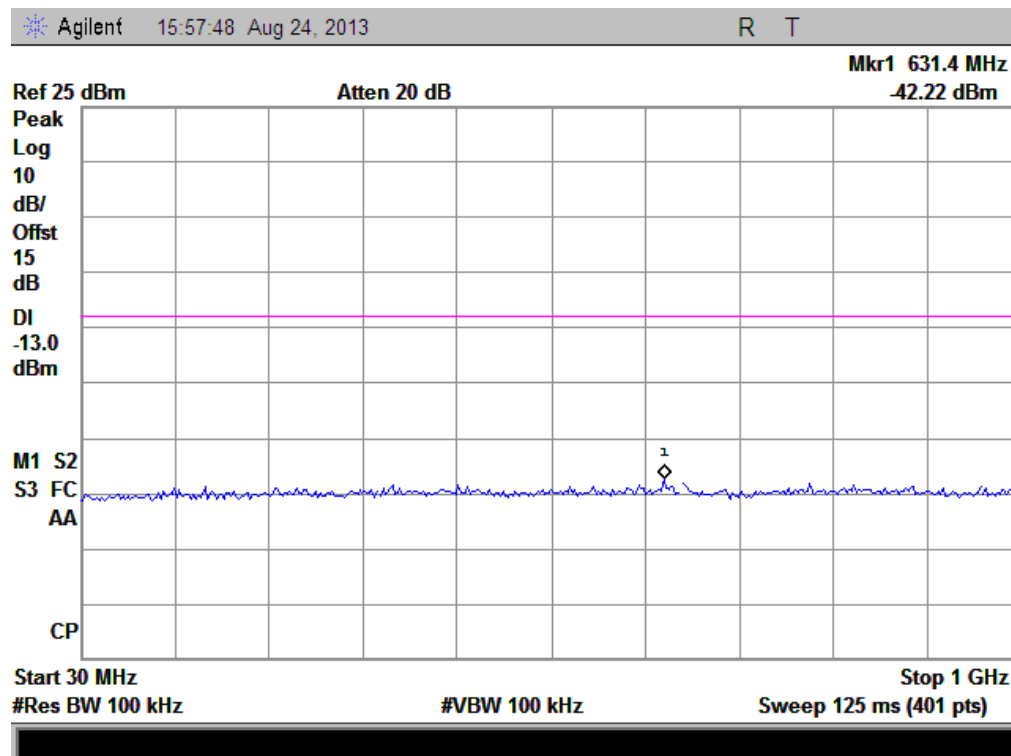
(Plot G3.1: HSDPA850MHz Channel = 4233, 1GHz to 9GHz)



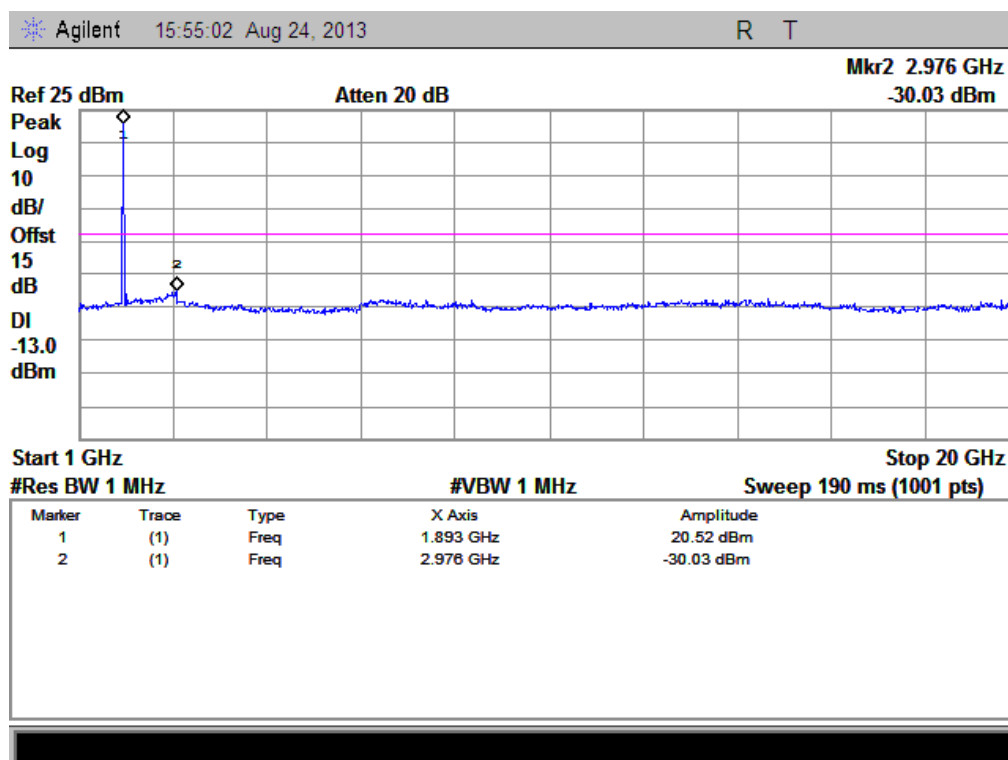
(Plot H1: HSDPA1900MHz Channel = 9262, 30MHz to 1GHz)



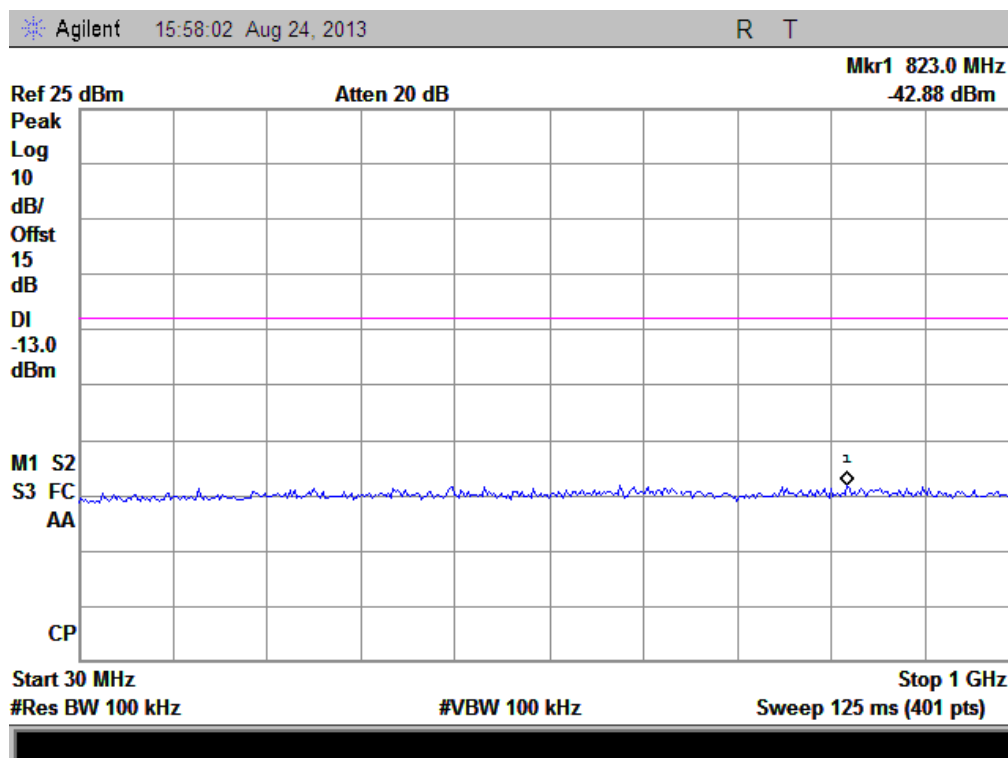
(Plot H1.1: HSDPA1900MHz Channel = 9262, 1GHz to 20GHz)



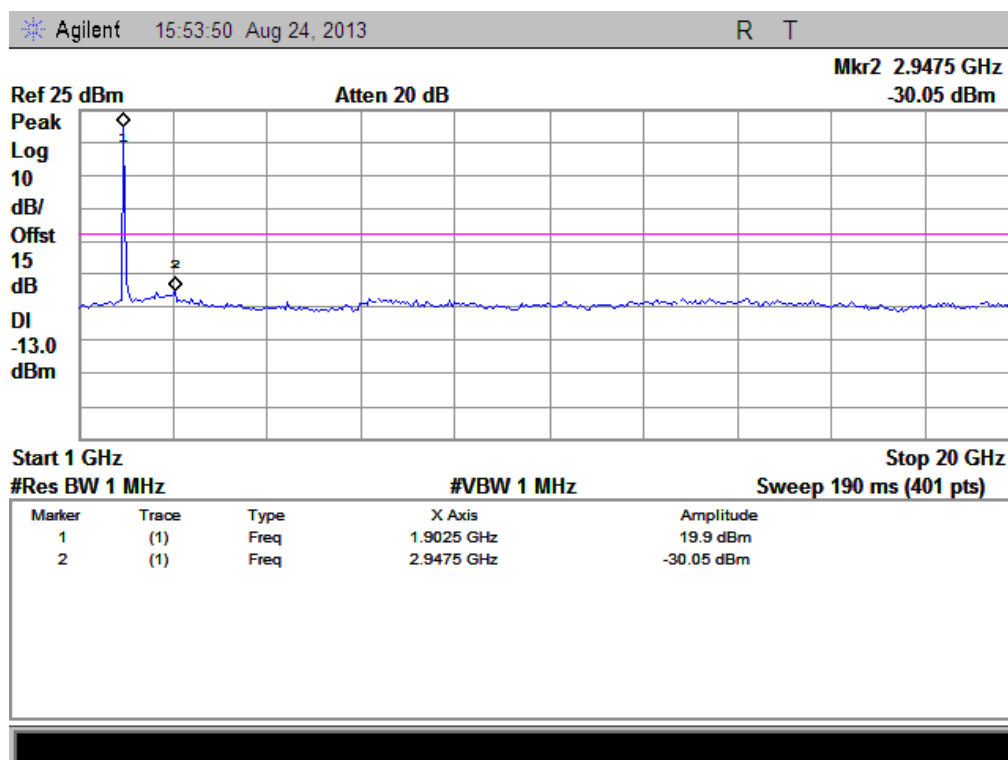
(Plot H2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)



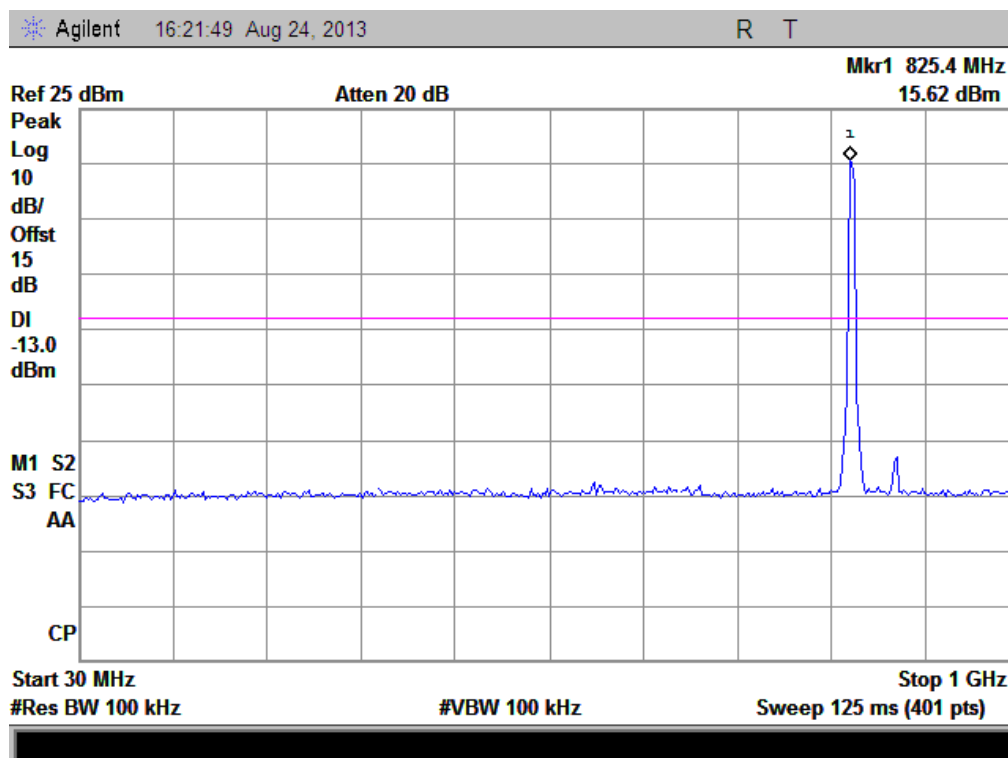
(Plot H2.1: HSDPA1900MHz Channel = 9400, 1GHz to 20GHz)



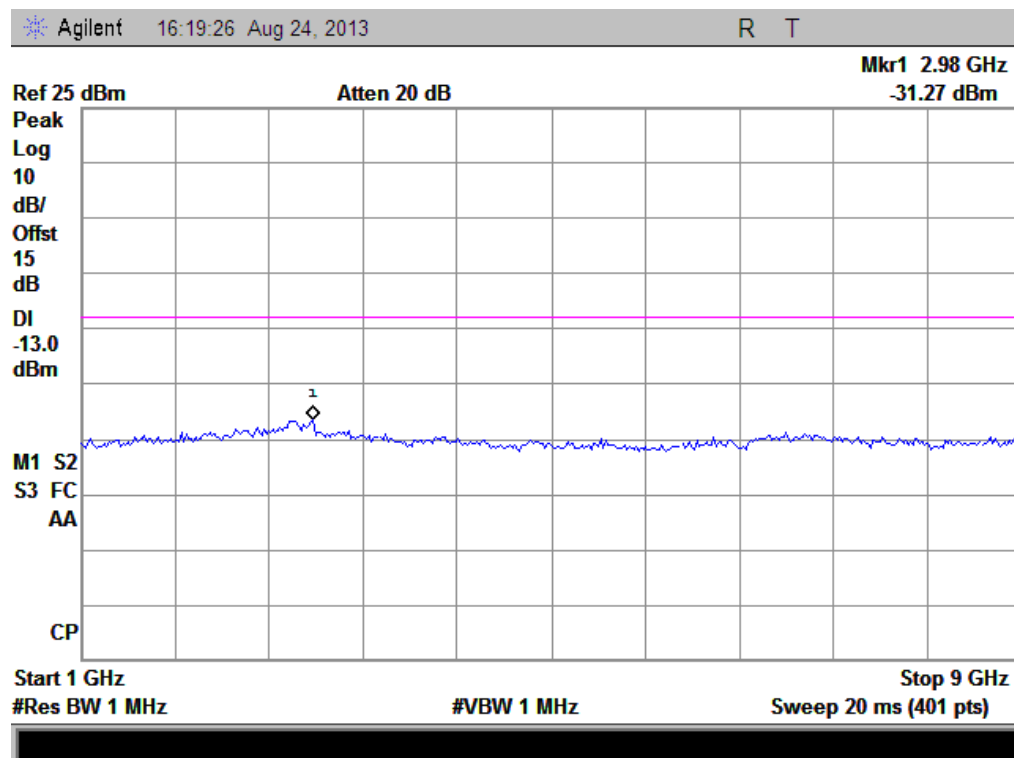
(Plot H3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)



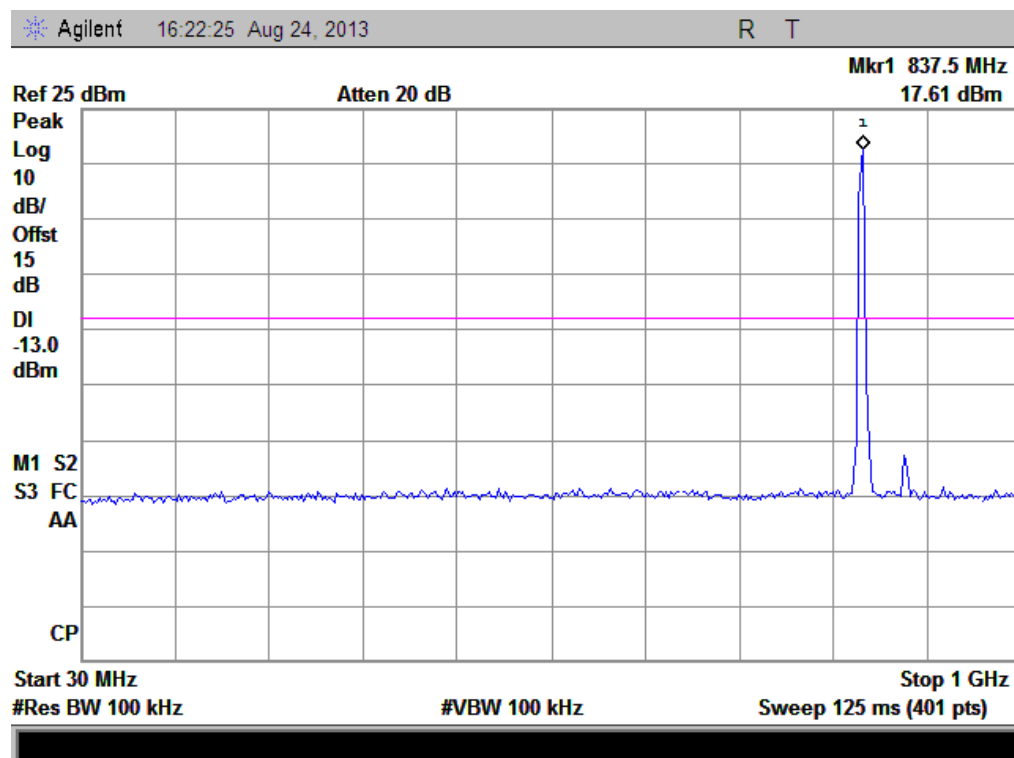
(Plot H3.1: HSDPA1900MHz Channel = 9538 1GHz to 20GHz)



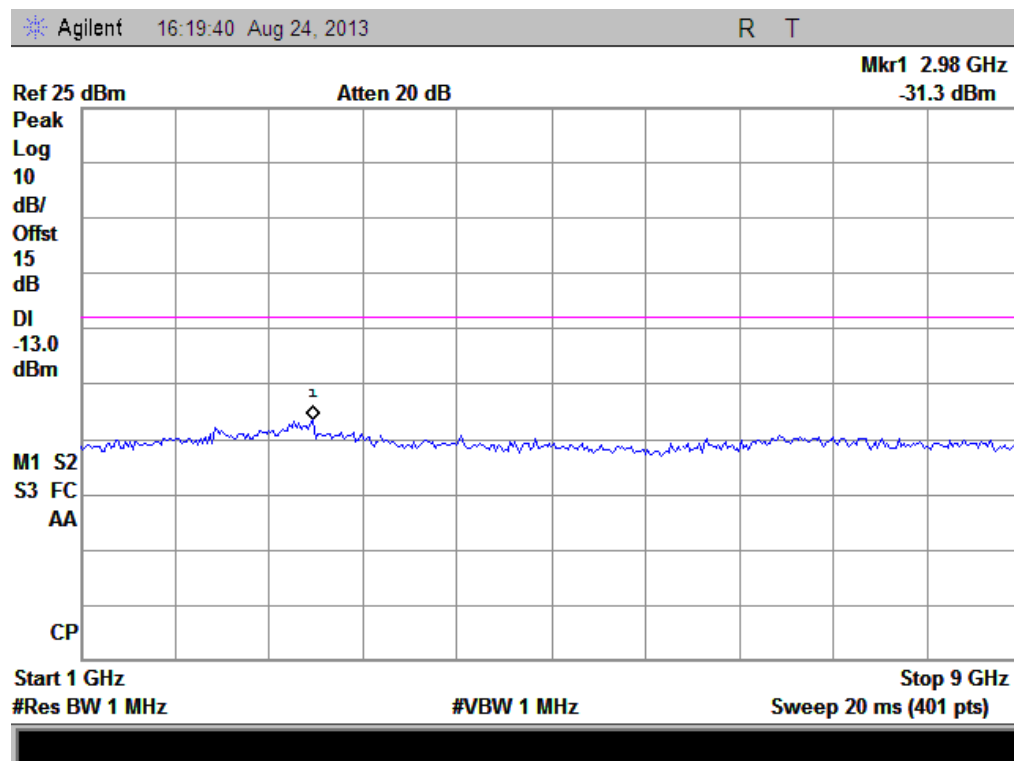
(Plot I 1: HSUPA 850MHz Channel = 4132, 30MHz to 1GHz)



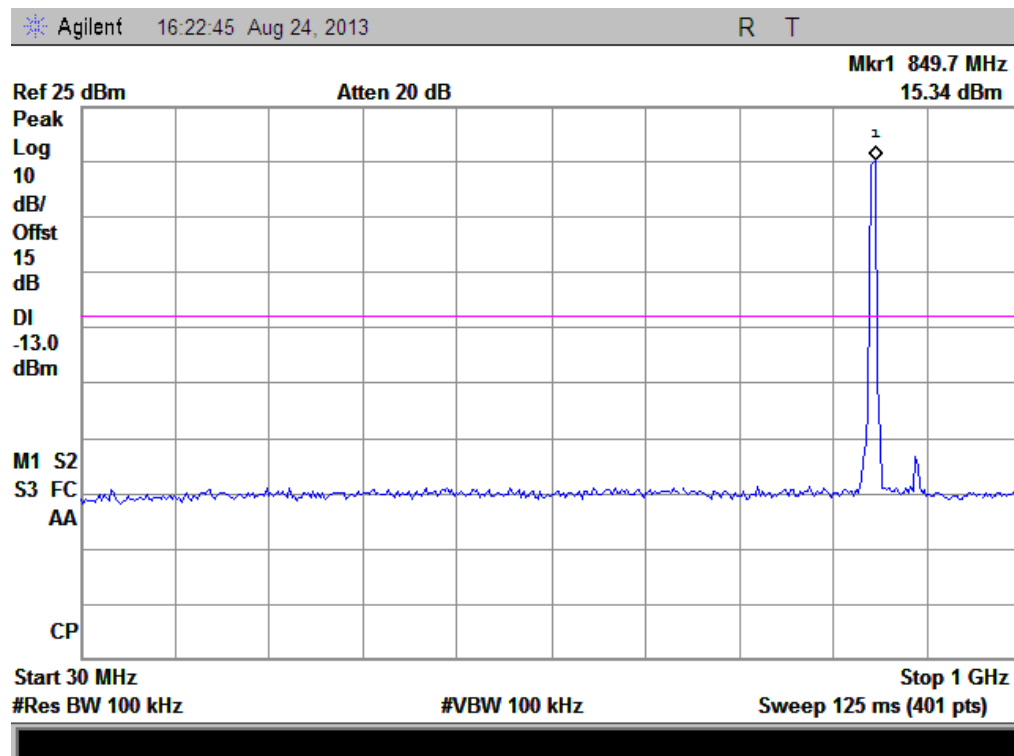
(Plot I1.1: HSUPA 850MHz Channel = 4132, 1GHz to 9GHz)



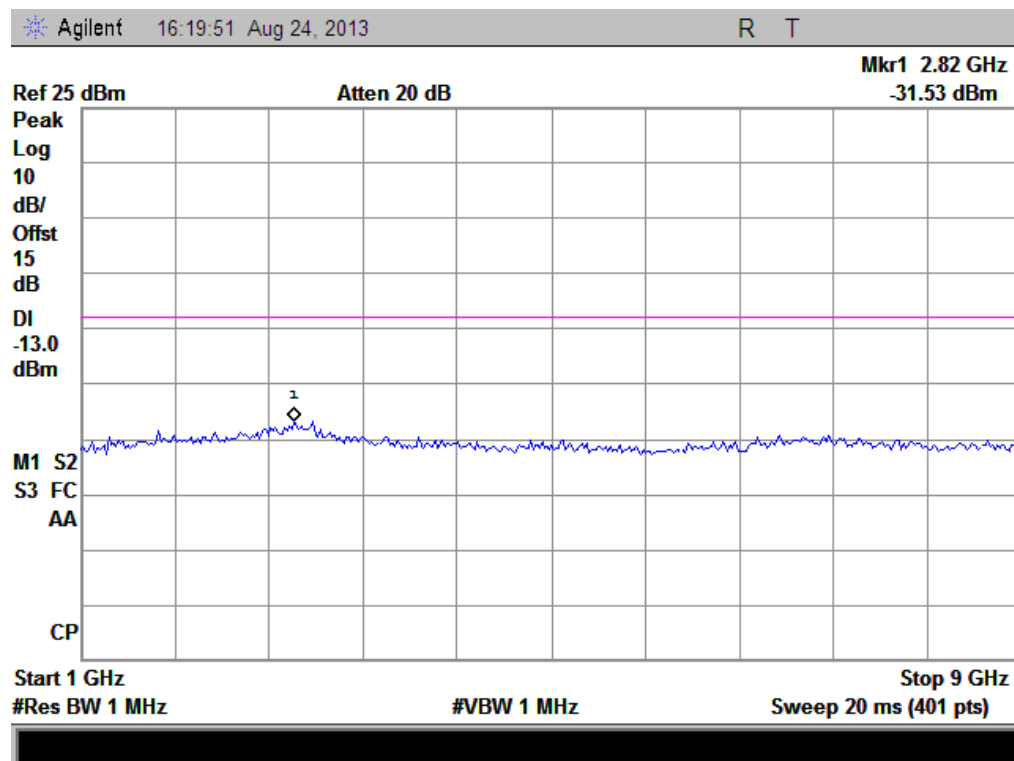
(Plot I 2: HSUPA 850MHz Channel = 4175, 30MHz to 1GHz)



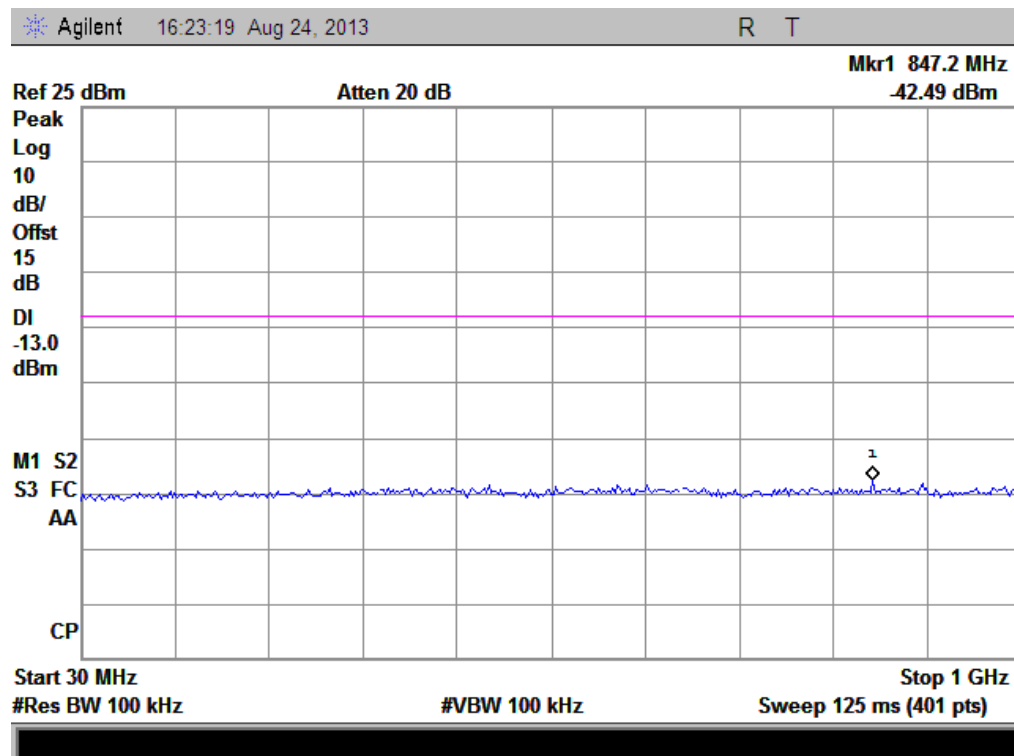
(Plot I2.1: HSUPA 850MHz Channel = 4175, 1GHz to 9GHz)



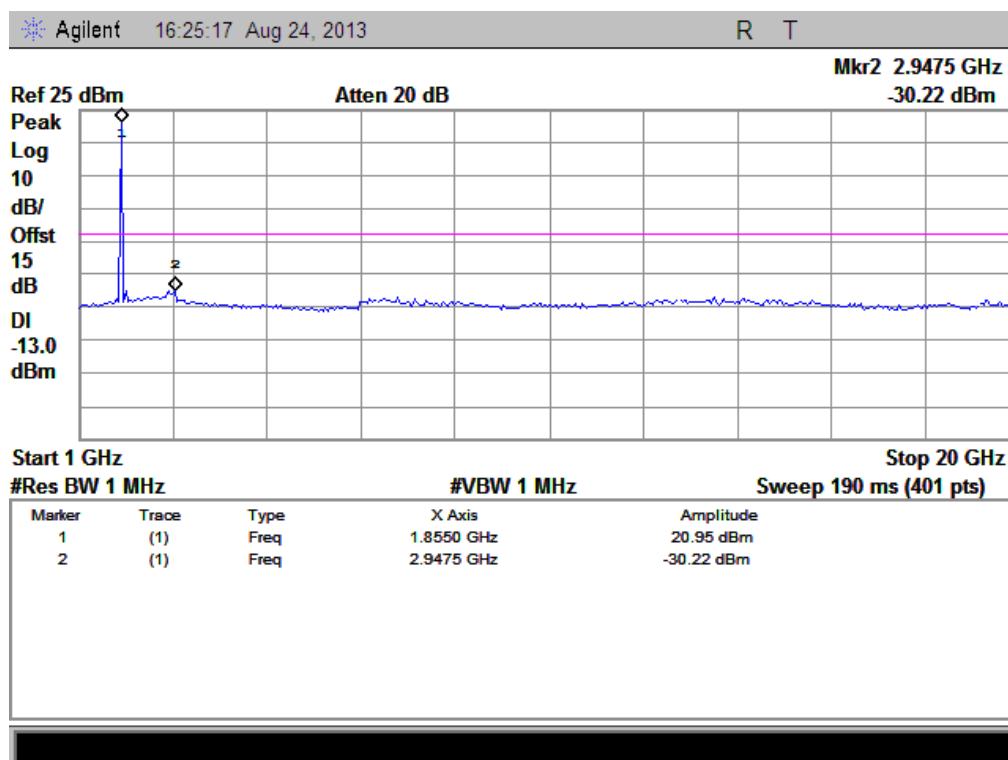
(Plot I 3: HSUPA850MHz Channel = 4233, 30MHz to 1GHz)



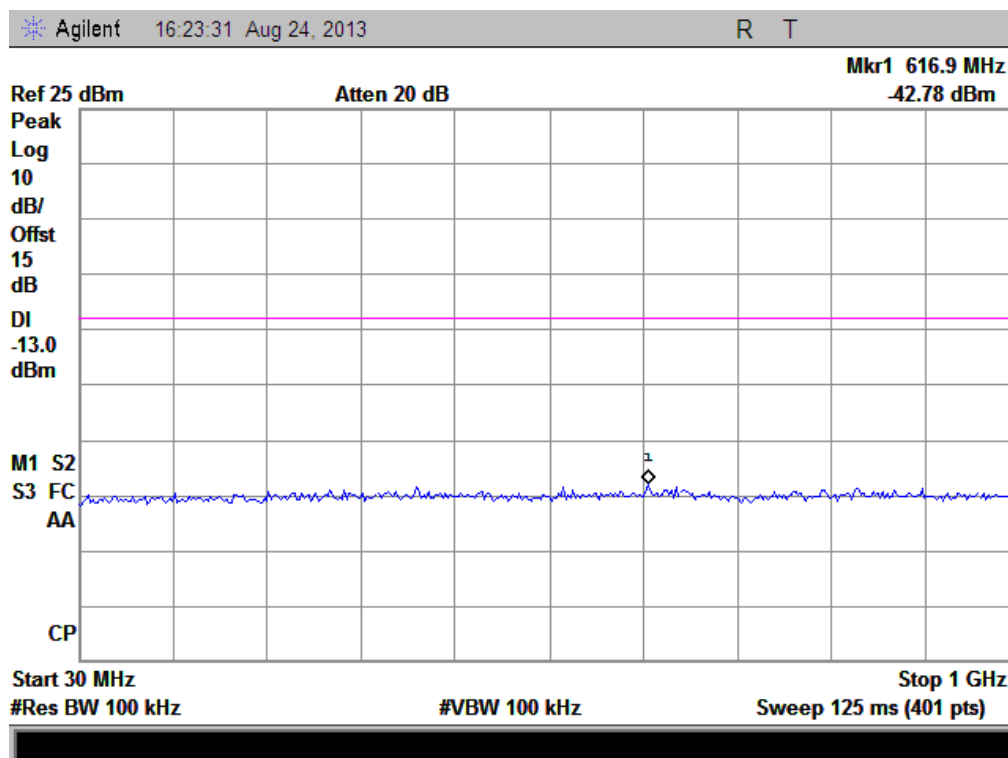
(Plot I3.1: HSUPA850MHz Channel = 4233, 1GHz to 9GHz)



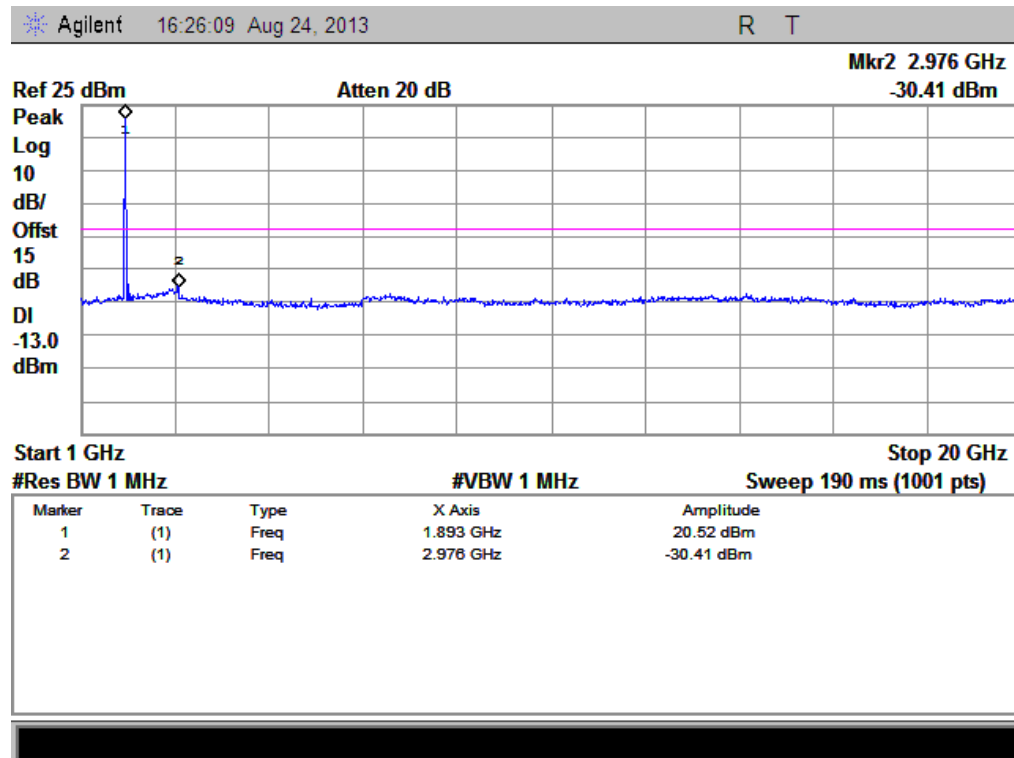
(Plot J 1: HSUPA1900MHz Channel = 9262, 30MHz to 1GHz)



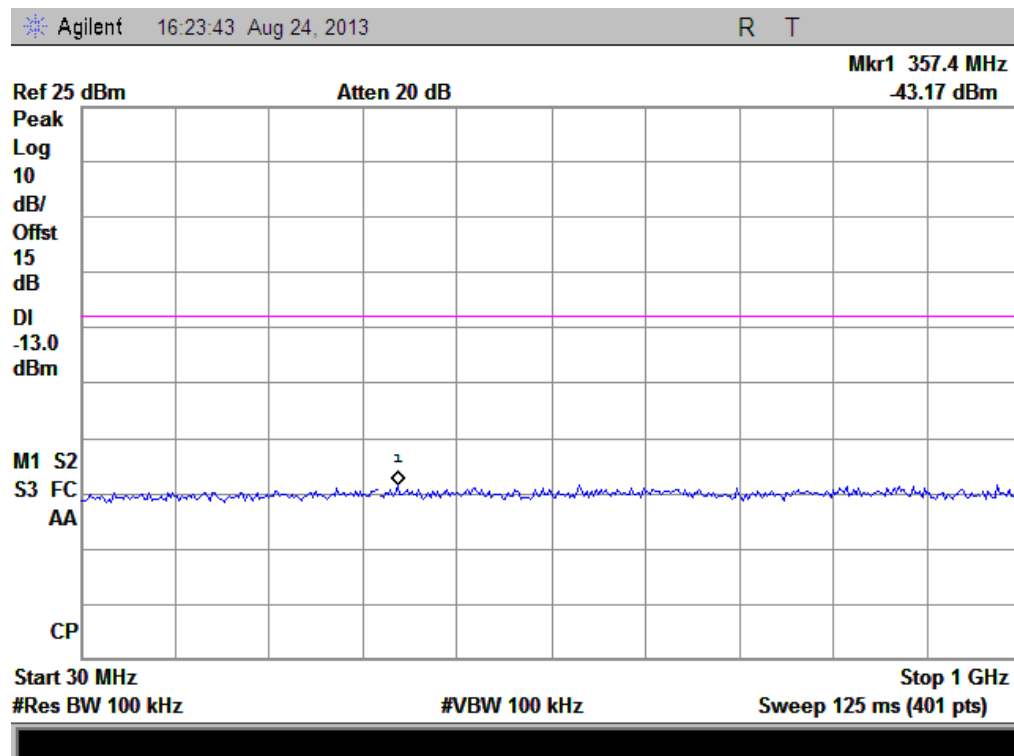
(Plot J1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)



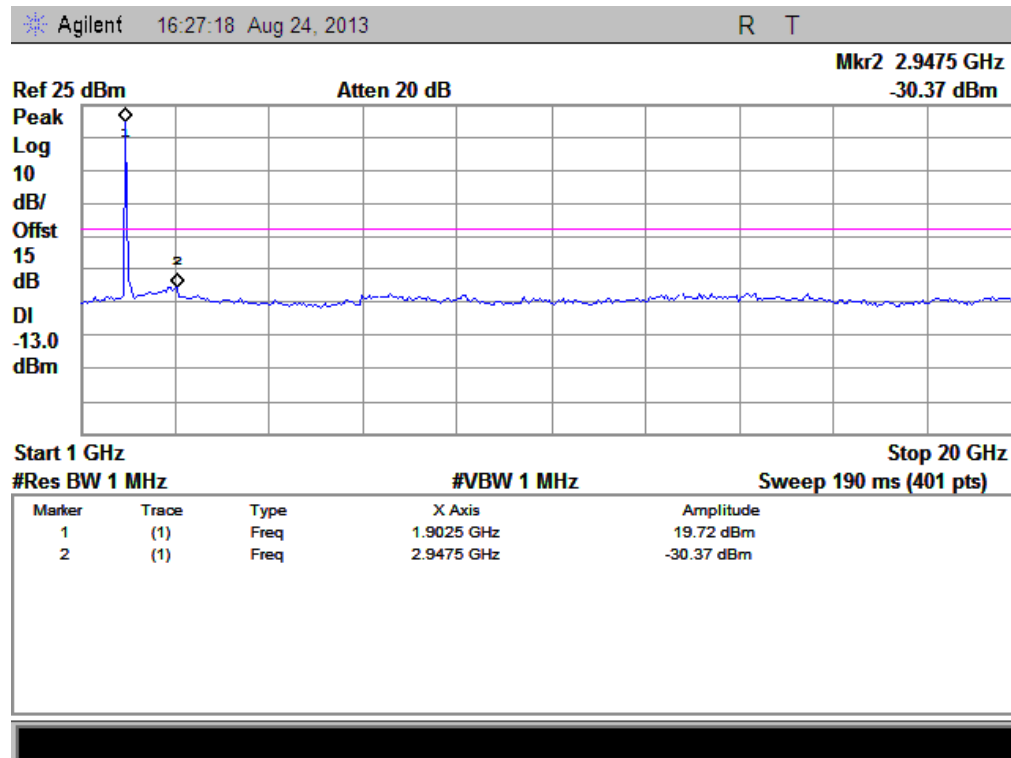
(Plot J 2: HSUPA1900MHz Channel = 9400, 30MHz to 1GHz)



(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)

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.

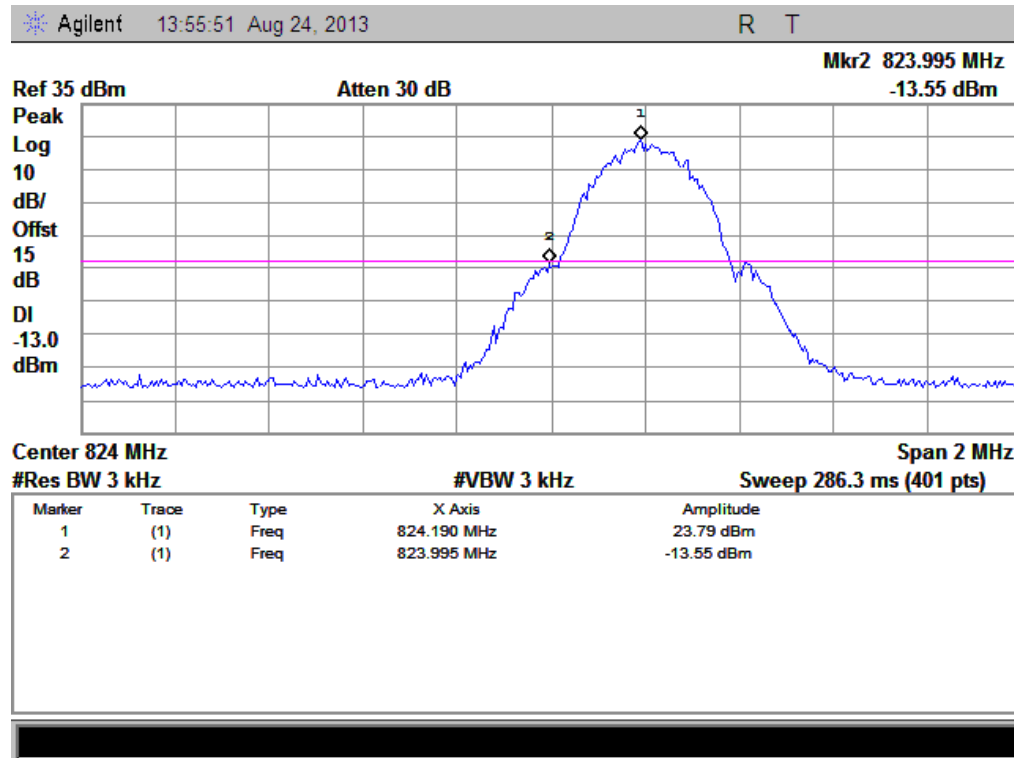
2.6.3 Test Result

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

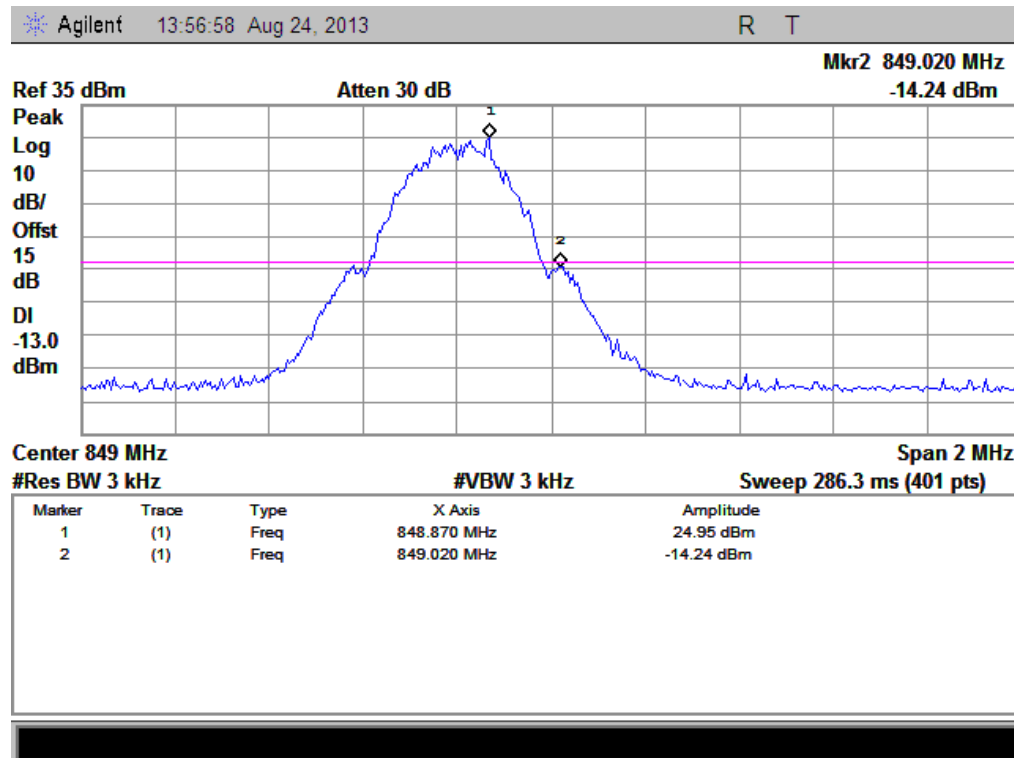
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-13.55	Plat A	-13	PASS
	251	848.8	-14.24	Plot B		PASS
GSM 1900MHz	512	1850.2	-16.33	Plat C	-13	PASS
	810	1909.8	-15.58	Plot D		PASS
EDGE 850MHz	128	824.2	-14.32	Plat E	-13	PASS
	251	848.8	-14.18	Plot F		PASS
EDGE 1900MHz	512	1850.2	-17.49	Plat G	-13	PASS
	810	1909.8	-18.29	Plot H		PASS
WCDMA 850MHz	4132	826.4	-14.44	Plat I	-13	PASS
	4233	846.6	-14.58	Plot J		PASS
WCDMA 1900MHz	9262	1852.4	-15.34	Plat K	-13	PASS
	9538	1907.6	-16.28	Plot L		PASS
HSDPA 850MHz	4132	826.4	-14.49	Plat M	-13	PASS
	4233	846.6	-15.20	Plot N		PASS
HSDPA 1900MHz	9262	1852.4	-16.04	Plat O	-13	PASS
	9538	1907.6	-16.20	Plot P		PASS
HSUPA 850MHz	4132	826.4	-13.90	Plat Q	-13	PASS
	4233	846.6	-14.78	Plot R		PASS
HSUPA 1900MHz	9262	1852.4	-14.96	Plat S	-13	PASS
	9538	1907.6	-16.65	Plot T		PASS

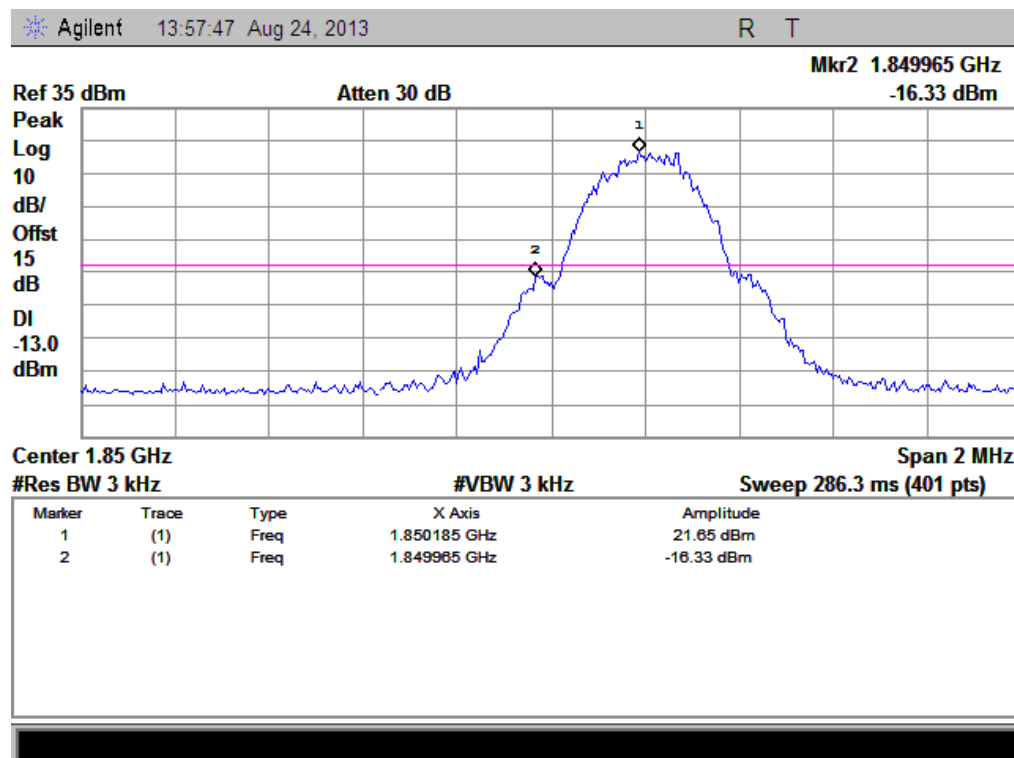
2. Test Plots:



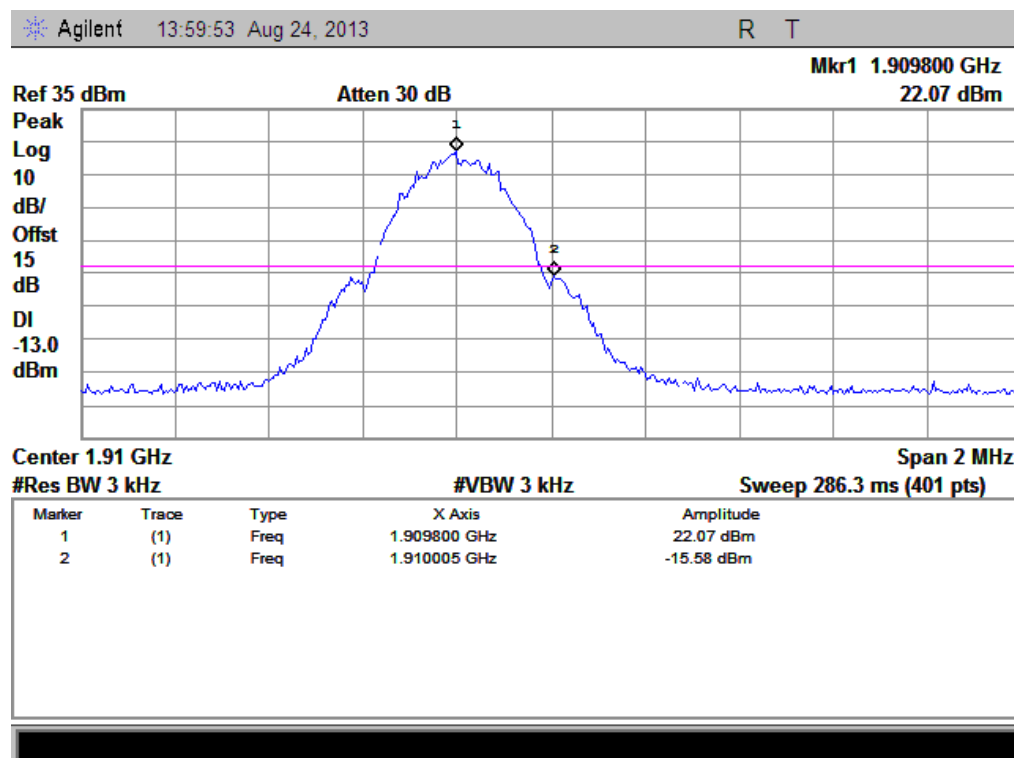
(Plot A: GSM 850 Channel = 128)



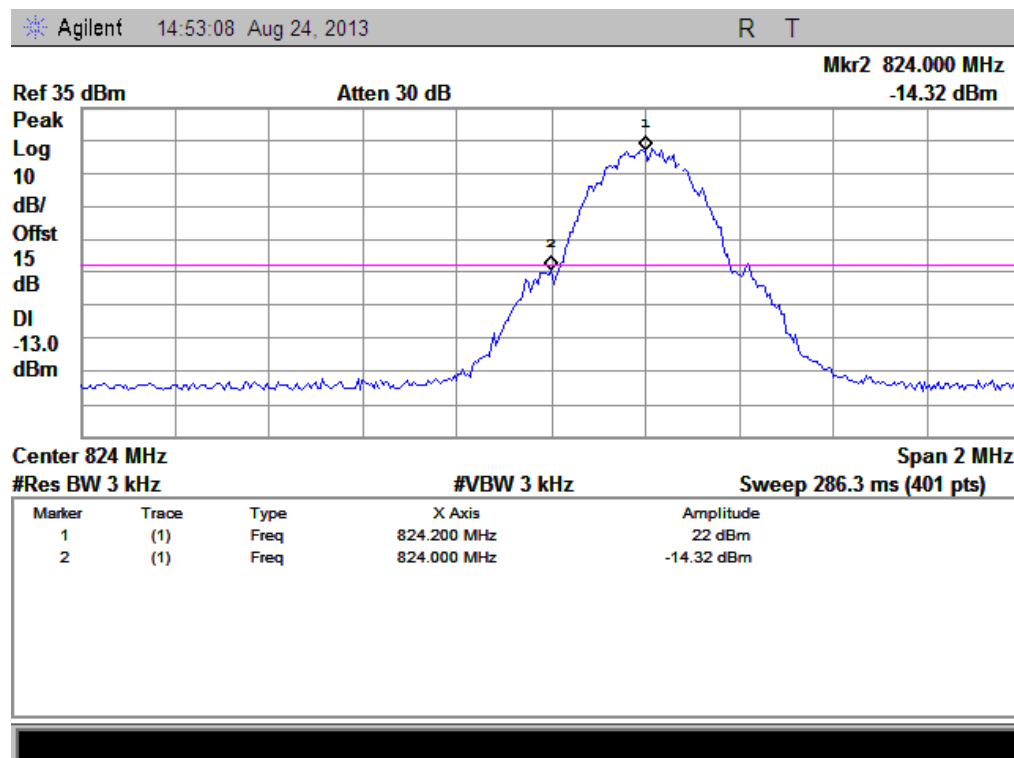
(Plot B: GSM 850 Channel = 251)



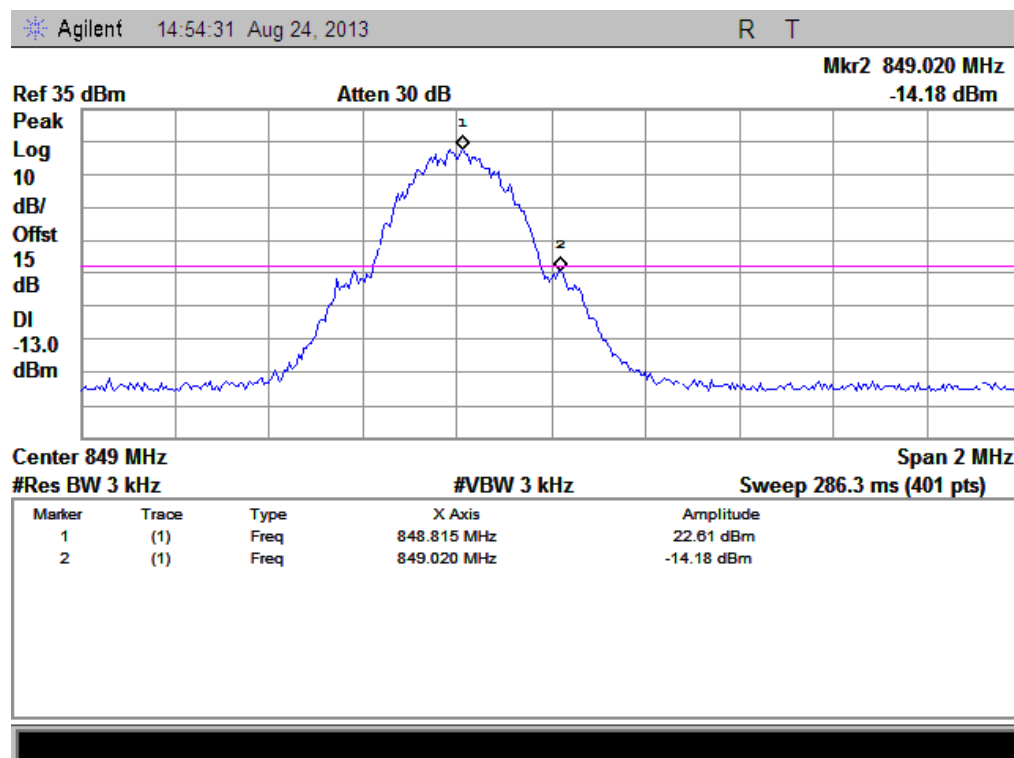
(Plot C: GSM 1900 Channel = 512)



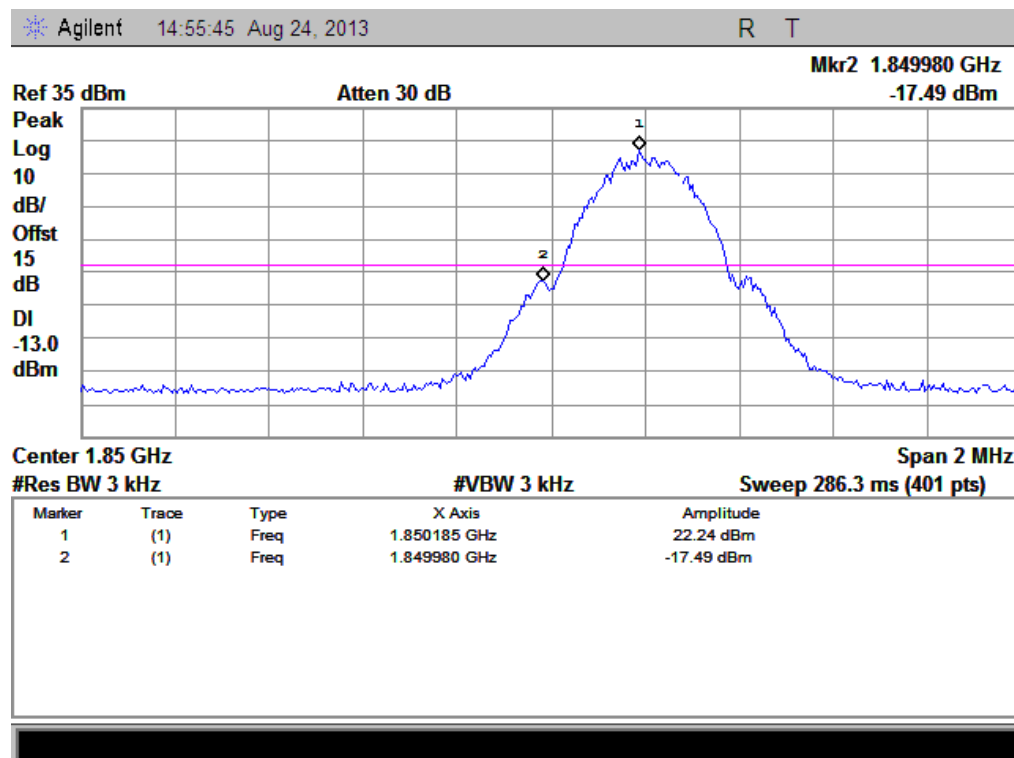
(Plot D: GSM 1900 Channel = 810)



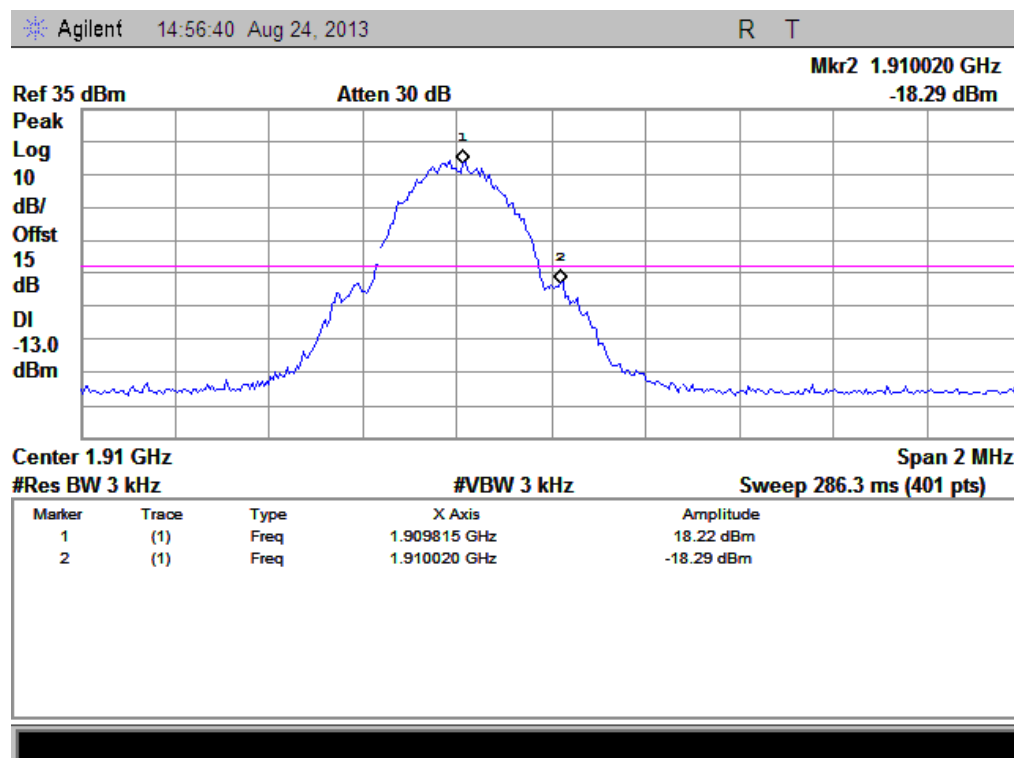
(Plot E: EGPRS 850 Channel = 128)



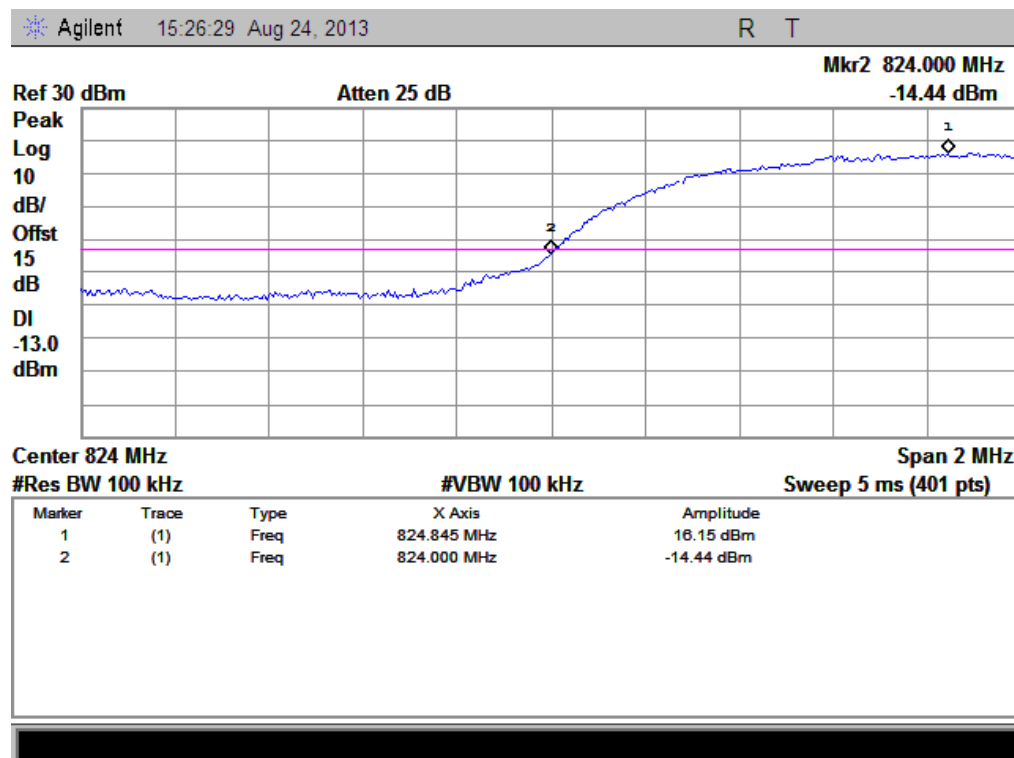
(Plot F: EGPRS 850 Channel = 251)



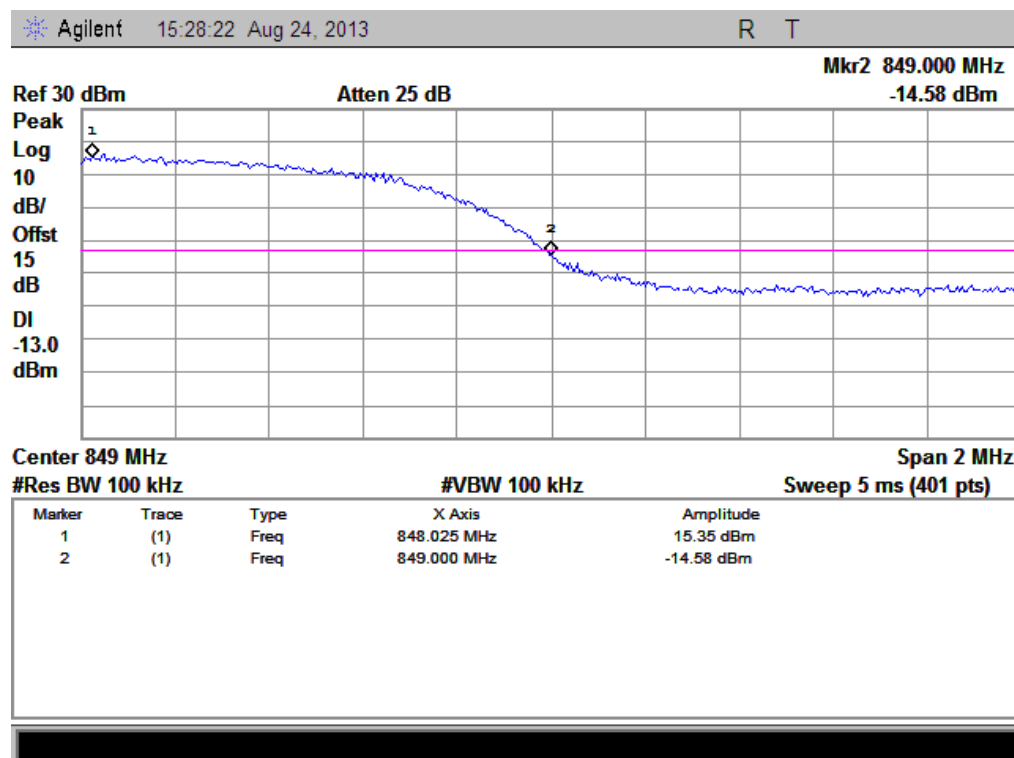
(Plot G: EGPRS 1900 Channel = 512)



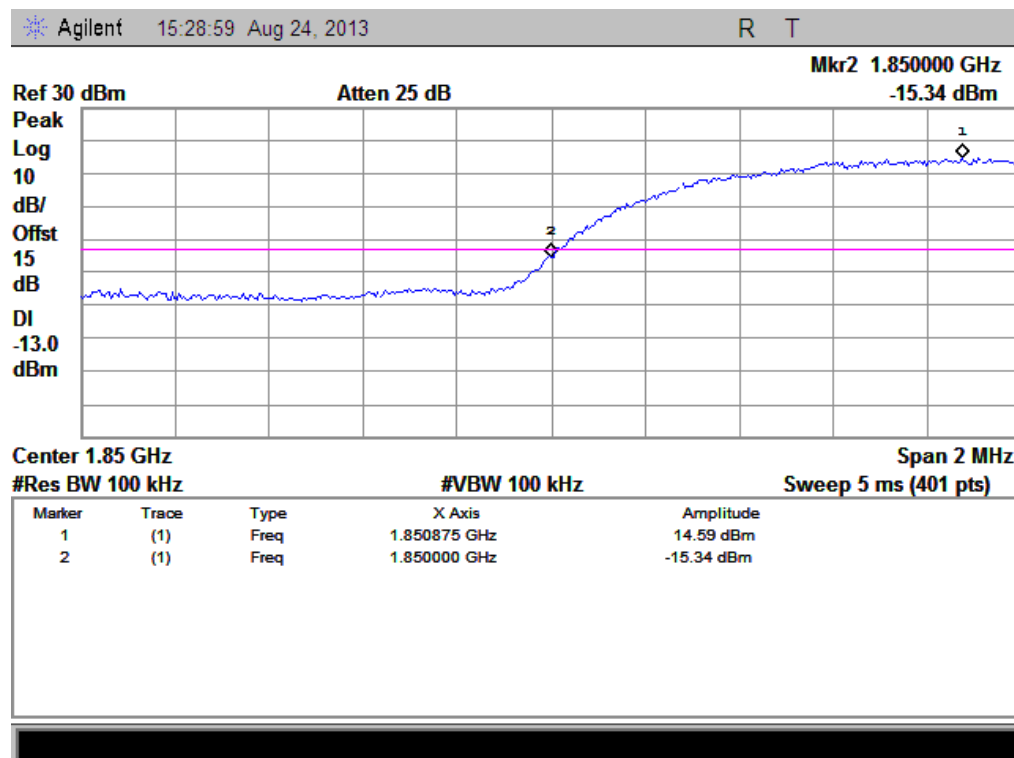
(Plot H: EGPRS 1900 Channel = 810)



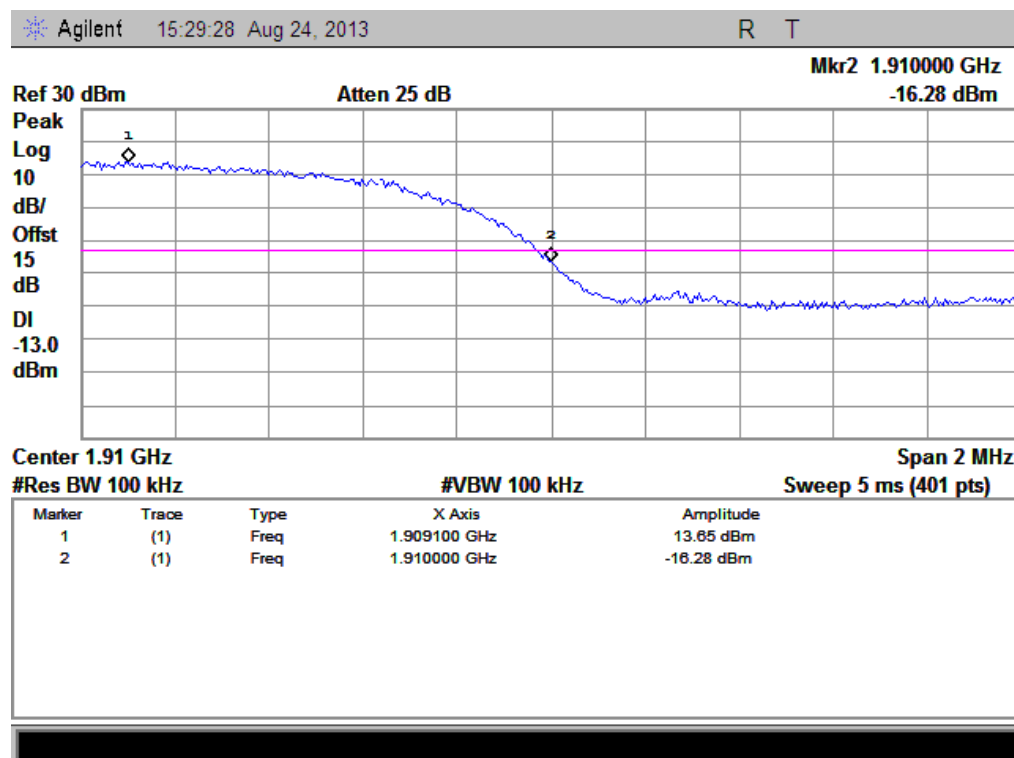
(Plot I: WCDMA 850 Channel = 4132)



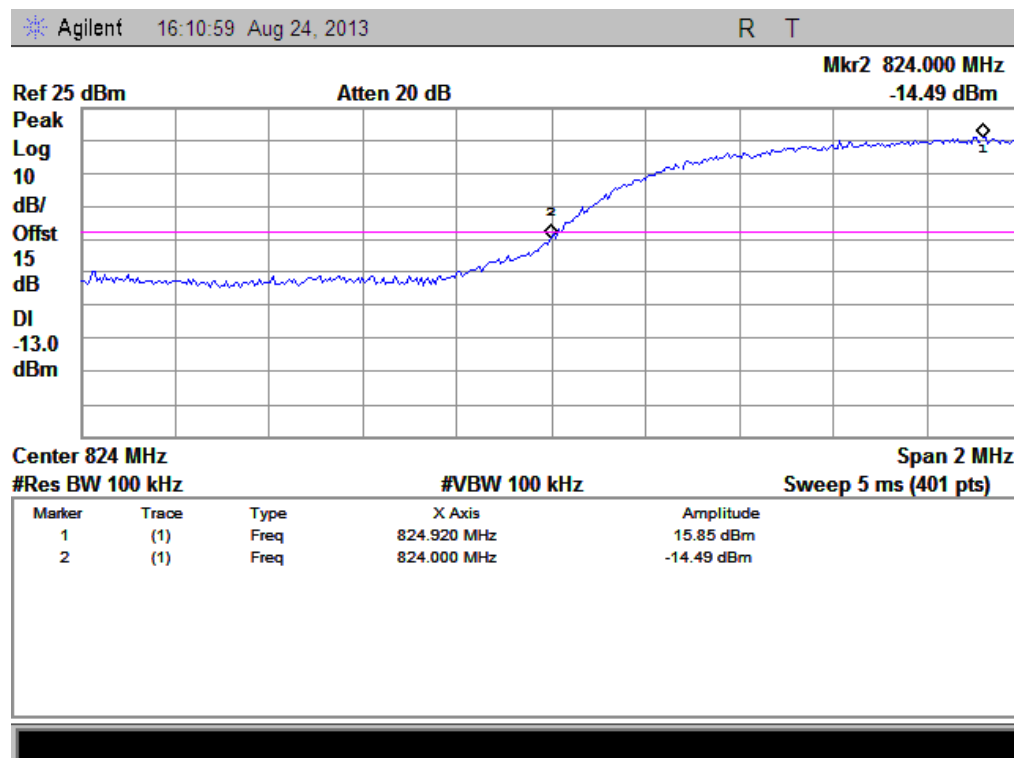
(Plot J: WCDMA 850 Channel = 4233)



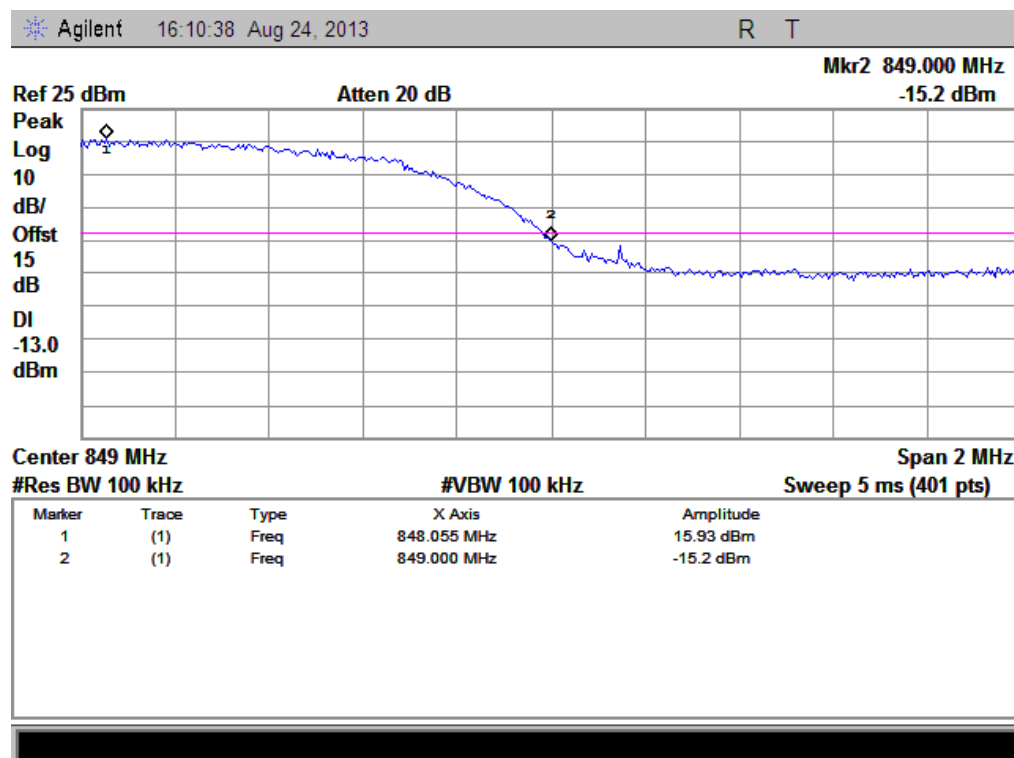
(Plot K: WCDMA 1900 Channel = 9262)



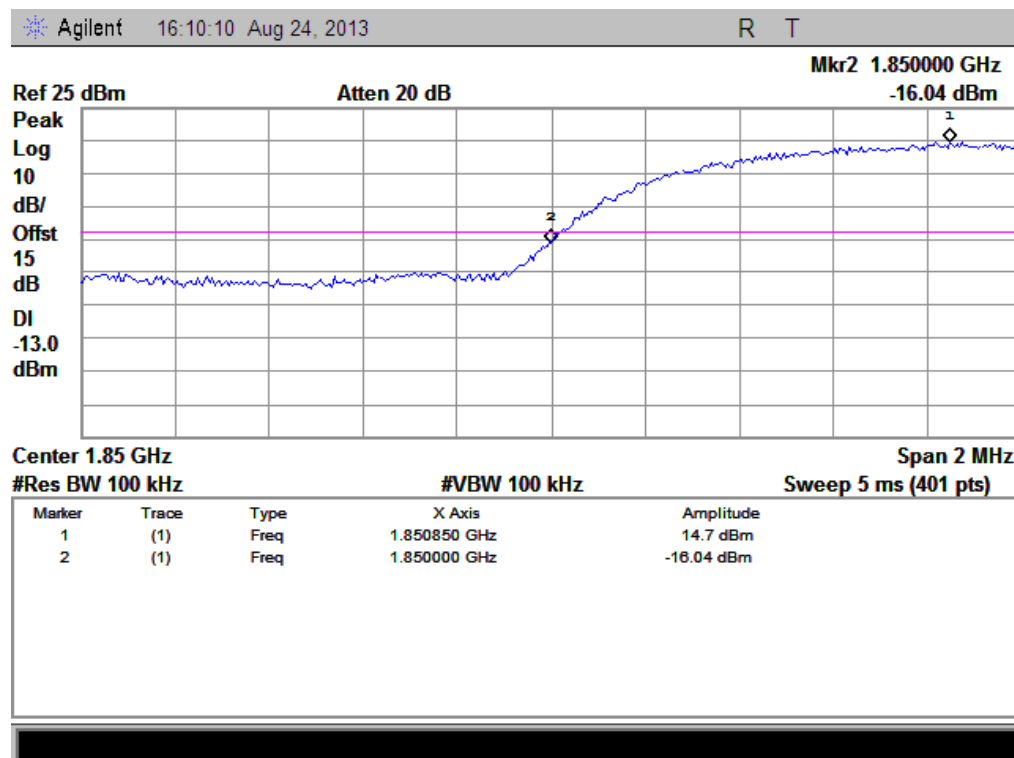
(Plot L: WCDMA 1900 Channel = 9538)



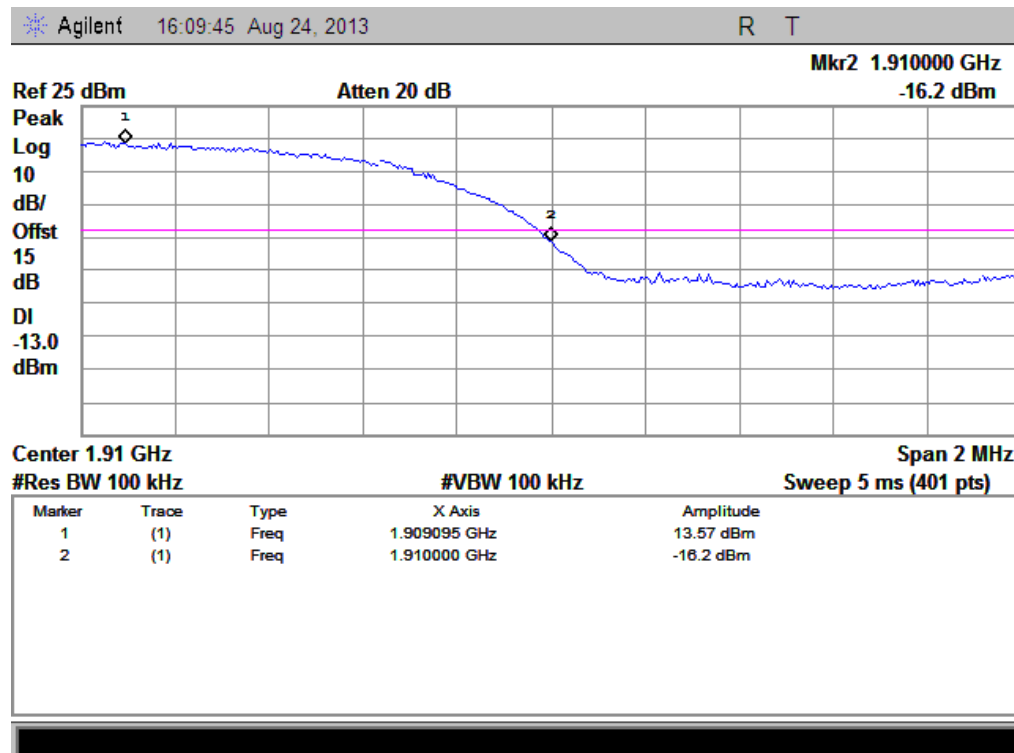
(Plot M: HSDPA 850 Channel = 4132)



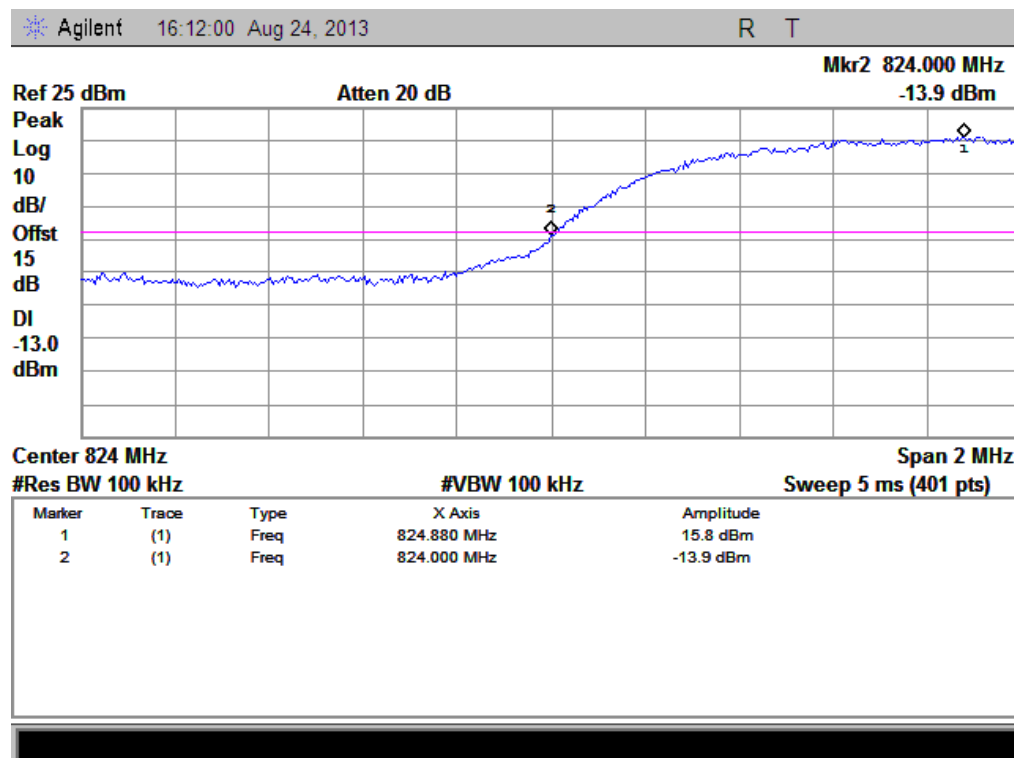
(Plot N: HSDPA850 Channel = 4233)



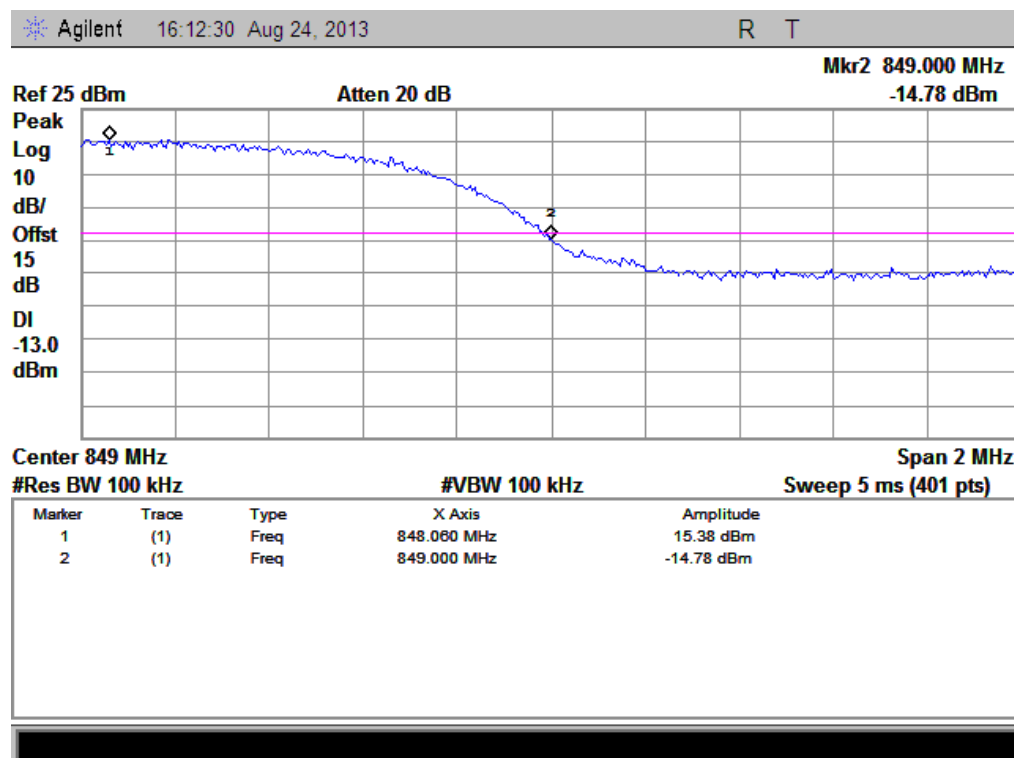
(Plot O: HSDPA 1900 Channel = 9262)



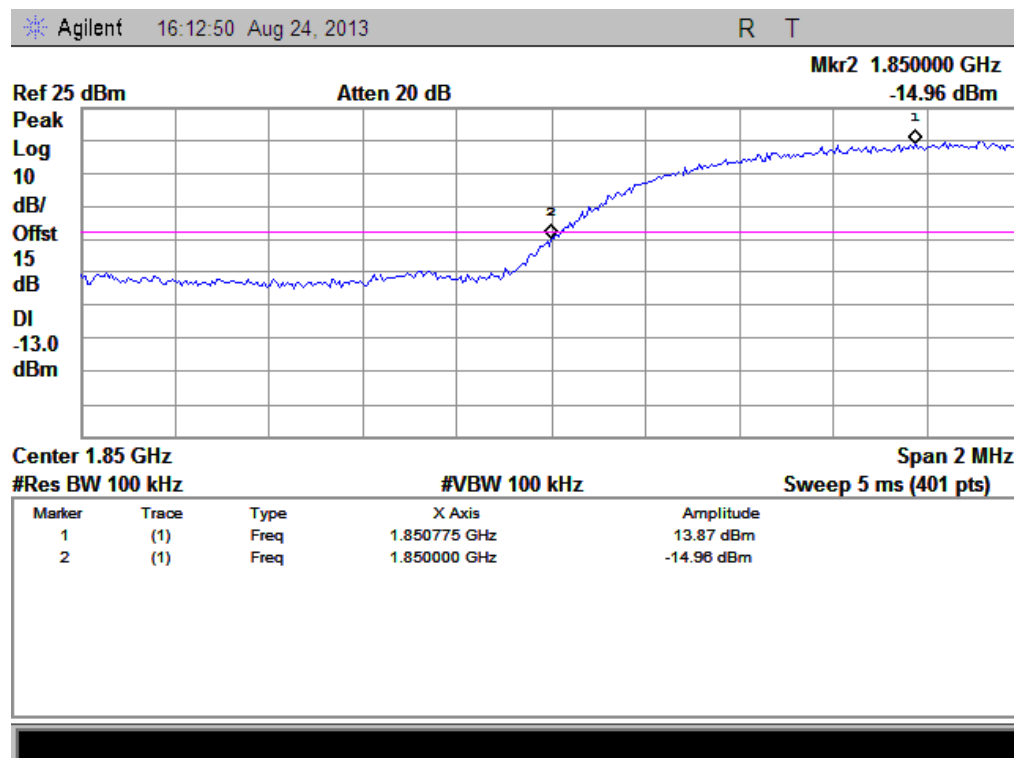
(Plot P: HSDPA 1900 Channel = 9538)



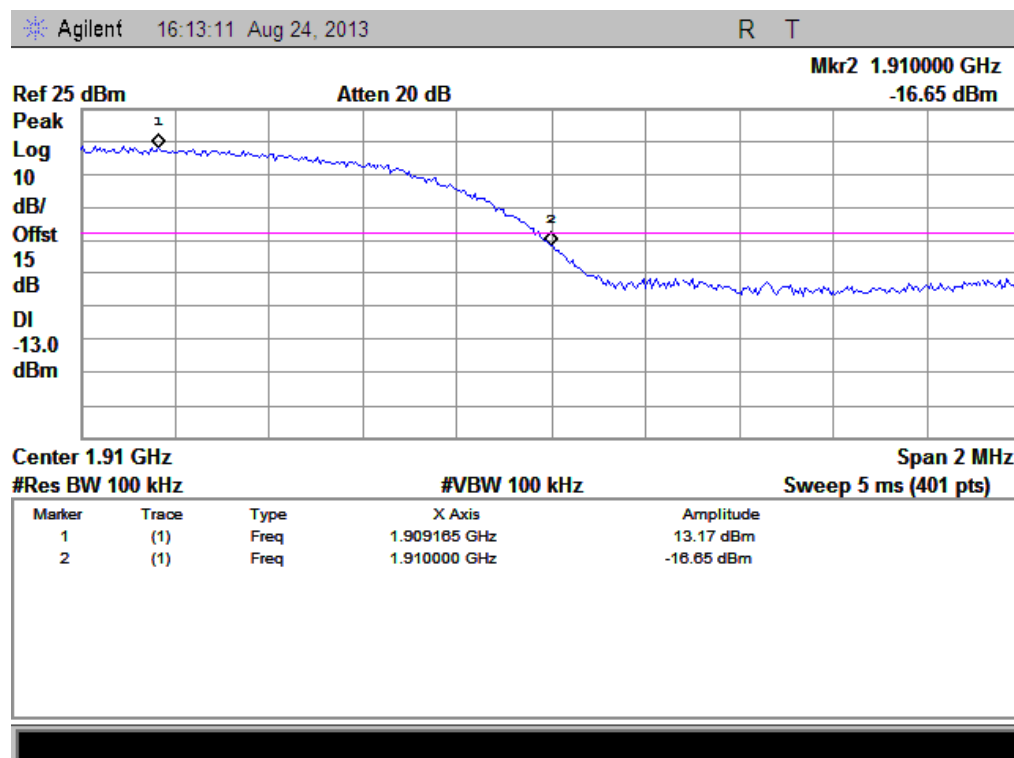
(Plot Q: HSUPA 850 Channel = 4132)



(Plot R: HSUPA850 Channel = 4233)



(Plot S: HSUPA 1900 Channel = 9262)



(Plot T: HSUPA 1900 Channel = 9538)

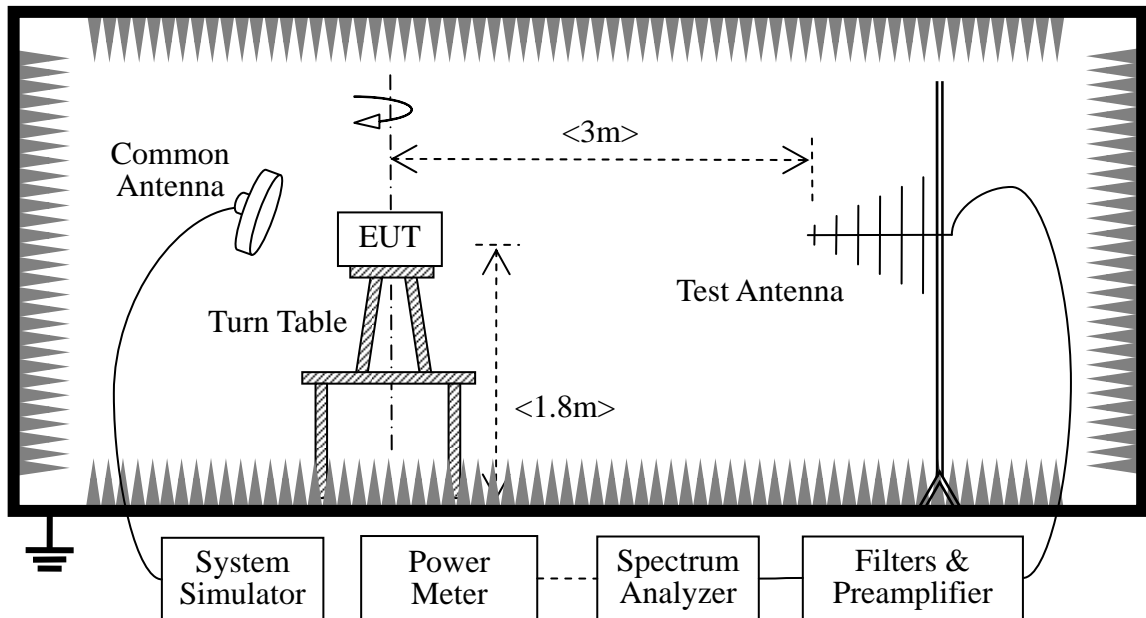
2.7 Transmitter Radiated Power (EIRP/ERP)

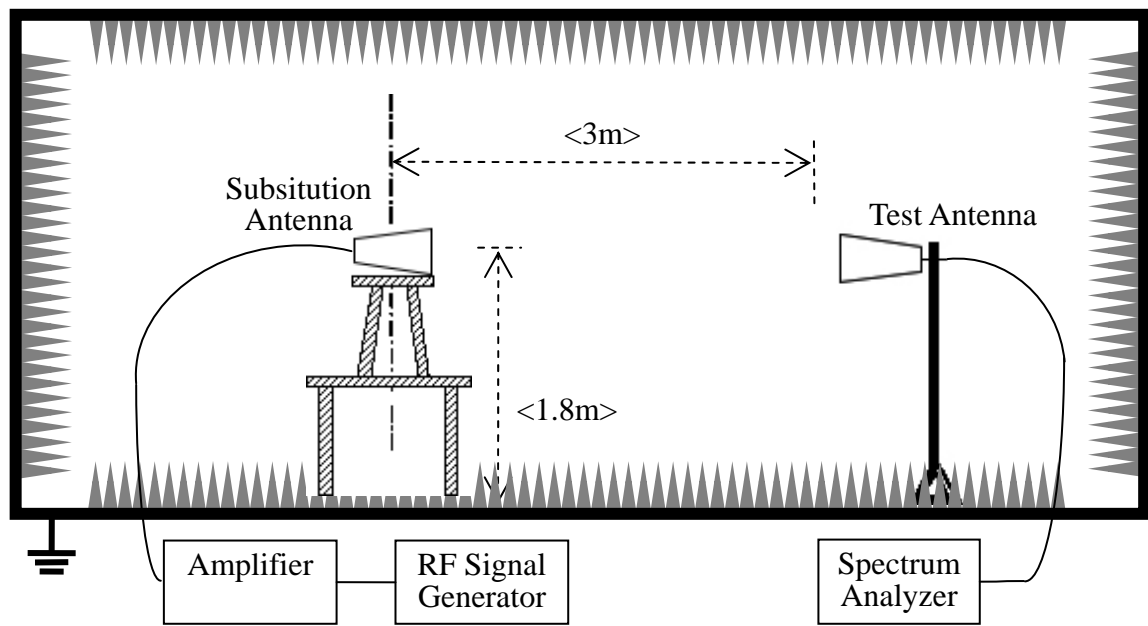
2.7.1 Requirement

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 32.19dBm, GSM 1900 30.42dBm, EGPRS 850 31.15dBm, EGPRS1900 28.99.WCDMA 850 24.86 dBm, WCDMA 1900 24.56 dBm 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	2012.05	2014.05
Spectrum Analyzer	Agilent	E7405A	US44210471	2012.05	2014.05
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2012.05	2014.05
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2012.05	2014.05
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	9120D-963	2012.05	2014.05

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2012.05	2014.05
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2012.05	2014.05

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:

$$P[\text{dBm}] = P_{\text{SUBST_TX}} - L_{\text{SUBST_CABLES}} + G_{\text{SUBST_TX_ANT}}$$

P_{EUT}

Where $P_{\text{SUBST_TX}}$ is signal generator level,

P_{EUT} is measured power level from EUT

$P_{\text{SUBST_CABLES}}$ is cable losses including TX cable,

$G_{\text{SUBST_TX_ANT}}$ is substitution antenna gain.

During the test, the data of $P[\text{dBm}]$ was added in the Test Spectrum Analyzer, so Spectrum Analyze reading is the final values which contain the data of $P[\text{dBm}]$.

1. GSM Model Test Verdict:

1.1 GSM 850,GPRS850, EGPRS850MHz

Channel /Frequency GSM (MHz)	PCL	Measured ERP							Limit		Verdict
		dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
128/ 824.2	5	33.46	2.218	0.5	-10.25	-31.28	1.68	Plot A	38.5	7	PASS
190/ 836.6	5	33.68	2.333	0.48	-10.24	-34.88	1.68				PASS
251/ 848.8	5	33.71	2.350	0.54	-10.58	-34.85	1.68				PASS

Channel/Frequency GPRS (MHz)	PCL	Measured ERP							Limit		Verdict
		dBm	W	P _{SUBS_T_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
128/ 824.2	5	32.37	1.726	0.24	-10.37	-33.81	1.68	Plot B	38.5	7	PASS
190/ 836.6	5	32.79	1.901	0.88	-10.53	-33.59	1.68				PASS
251/ 848.8	5	32.68	1.854	0.53	-10.62	-33.83	1.68				PASS

Channel/Frequency EGPRS (MHz)	PCL	Measured ERP							Limit		Verdict
		dBm	W	P _{SUBS_T_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
128/ 824.2	5	32.35	1.718	0.61	-10.17	-33.42	1.68	Plot C	38.5	7	PASS
190/ 836.6	5	33.06	2.023	0.50	-10.43	-34.24	1.68				PASS
251/ 848.8	5	33.41	2.193	0.46	-10.38	-34.63	1.68				PASS

1.2 GSM 1900,GPRS1900,EGPRS1900MHz

Channel/Frequency GSM (MHz)	PCL	Measured EIRP							Limit		Verdict
		dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
512/ 1850.2	0	29.93	0.984	-6.19	-12.58	-26.07	10.05	Plot D	33	2	PASS
661/ 1880.0	0	28.90	0.776	-6.20	-12.74	-25.05	10.05				PASS
810/ 1909.8	0	28.58	0.721	-9.23	-12.63	-27.76	10.05				PASS

Channel/Frequency GPRS (MHz)	PCL	Measured EIRP							Limit		Verdict
		dBm	W	PSUBS T_TX	PEUT	LSUBS T_CABLES	GSUBST_TX X_ANT	Refer to Plot	dBm	W	
512/ 1850.2	0	30.05	1.012	-5.28	-12.85	-25.28	10.05	Plot E	33	2	PASS
661/ 1880.0	0	28.62	0.728	-5.49	-12.64	-24.06	10.05				PASS
810/ 1909.8	0	28.65	0.733	-5.35	-12.39	-23.95	10.05				PASS

Channel/Frequency EGPRS (MHz)	PCL	Measured EIRP							Limit		Verdict
		dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
512/ 1850.2	0	30.42	1.102	-6.48	-12.58	-26.85	10.05	Plot F	33	2	PASS
661/ 1880.0	0	30.00	1.000	-6.80	-12.74	-26.75	10.05				PASS
810/ 1909.8	0	28.94	0.783	-5.06	-12.63	-23.95	10.05				PASS

1.3 WCDMA850,HSDPA850,HSUPA850MHz

Channel/Frequency WCDMA (MHz)	Measured ERP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
4132/ 826.4	26.94	0.494	0.57	-10.54	-28.05	1.68	Plot G	38.5	7	PASS
4175/ 835	26.98	0.499	0.81	-10.26	-27.85	1.68				PASS
4233/ 846.6	27.12	0.515	0.46	-10.69	-28.34	1.68				PASS

Channel/Frequency HSDPA (MHz)	Measured ERP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
4132/ 826.4	26.89	0.489	0.57	-10.24	-28.00	1.68	Plot H	38.5	7	PASS
4175/ 835	26.91	0.491	0.66	-10.38	-27.93	1.68				PASS
4233/ 846.6	27.65	0.582	0.70	-10.53	-28.63	1.68				PASS

Channel/Frequency HSUPA (MHz)	Measured ERP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CABLES}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
4132/ 826.4	26.61	0.458	0.88	-10.82	-27.41	1.68	Plot I	38.5	7	PASS
4175/ 835	27.27	0.533	0.30	-10.63	-28.65	1.68				PASS
4233/ 846.6	27.76	0.597	0.66	-10.71	-28.78	1.68				PASS

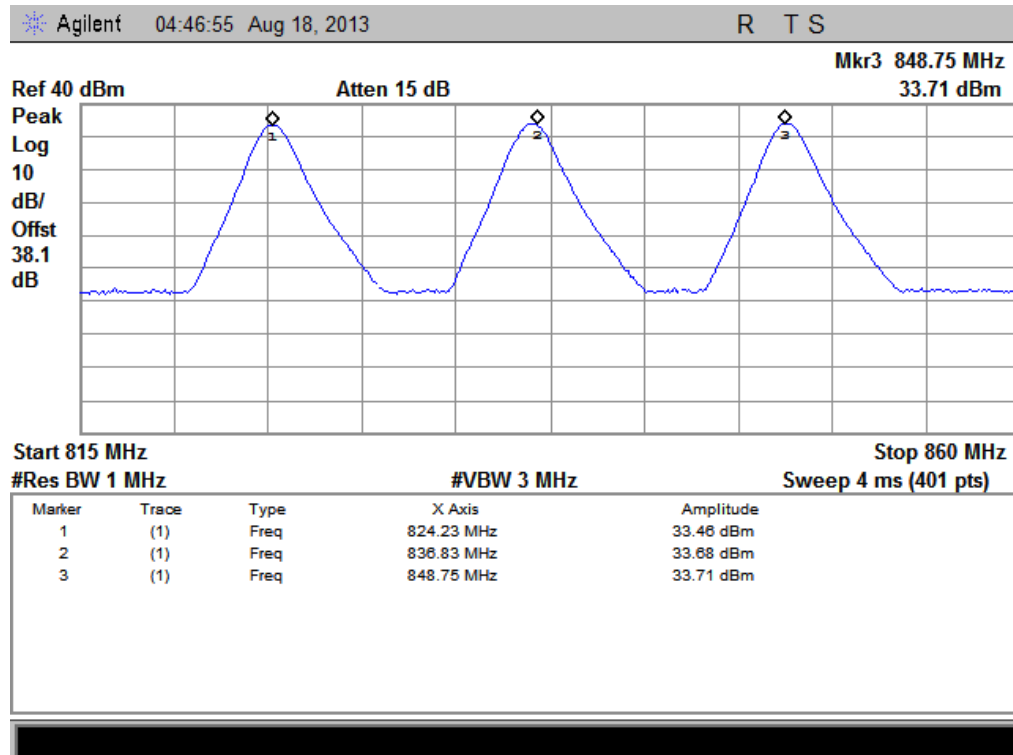
1.4 WCDMA1900,HSDPA1900,HSUPA1900MHz

Channel/Frequency WCDMA (MHz)	Measured EIRP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CHANNELS}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
9262/ 1852.4	24.74	0.298	-8.82	-12.25	-23.51	10.05	Plot J	33	2	PASS
9400/ 1880	24.63	0.290	-9.08	-12.68	-23.66	10.05				PASS
9538/ 1907.6	24.01	0.252	-8.93	-12.53	-22.89	10.05				PASS

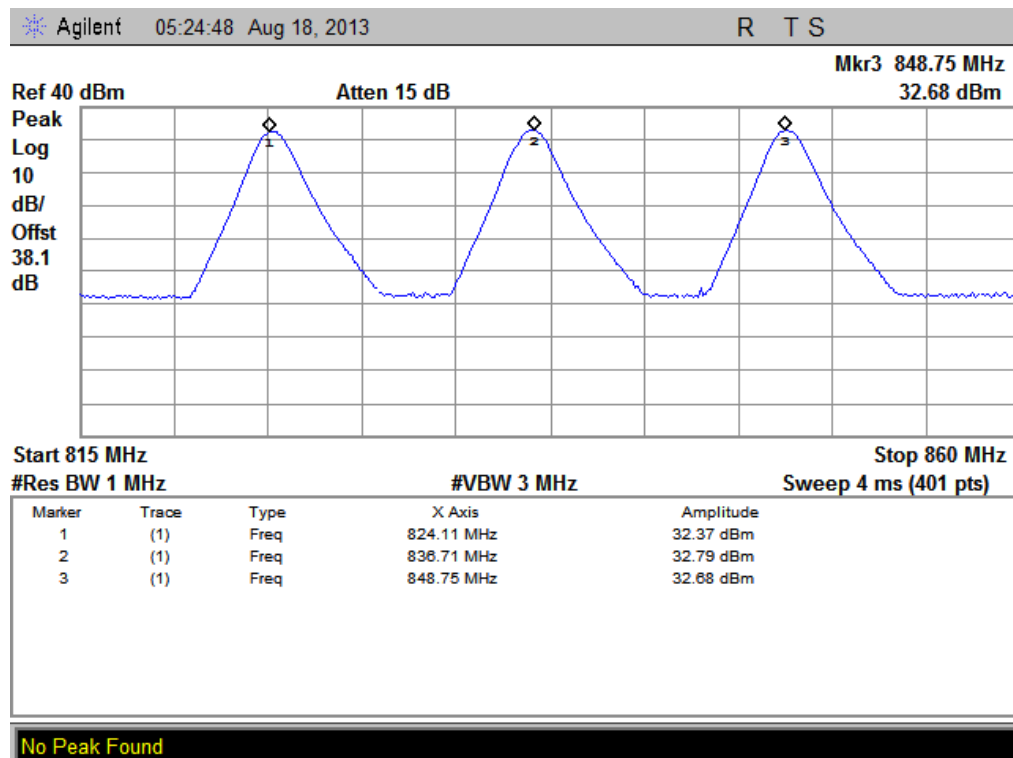
Channel/Frequency HSDPA (MHz)	Measured EIRP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CHANNELS}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
9262/ 1852.4	24.81	0.303	-5.13	-12.81	-19.89	10.05	Plot K	33	2	PASS
9400/ 1880	24.51	0.282	-9.47	-12.93	-23.93	10.05				PASS
9538/ 1907.6	24.05	0.254	-7.50	-12.75	-21.50	10.05				PASS

Channel/Frequency HSUPA (MHz)	Measured EIRP							Limit		Verdict
	dBm	W	P _{SUBST_TX}	P _{EUT}	L _{SUBST_CHANNELS}	G _{SUBST_TX_ANT}	Refer to Plot	dBm	W	
9262/ 1852.4	24.74	0.297	-8.21	-12.46	-22.90	10.05	Plot L	33	2	PASS
9400/ 1880	24.66	0.292	-7.64	-12.38	-22.25	10.05				PASS
9538/ 1907.6	24.06	0.254	-9.15	-12.54	-23.16	10.05				PASS

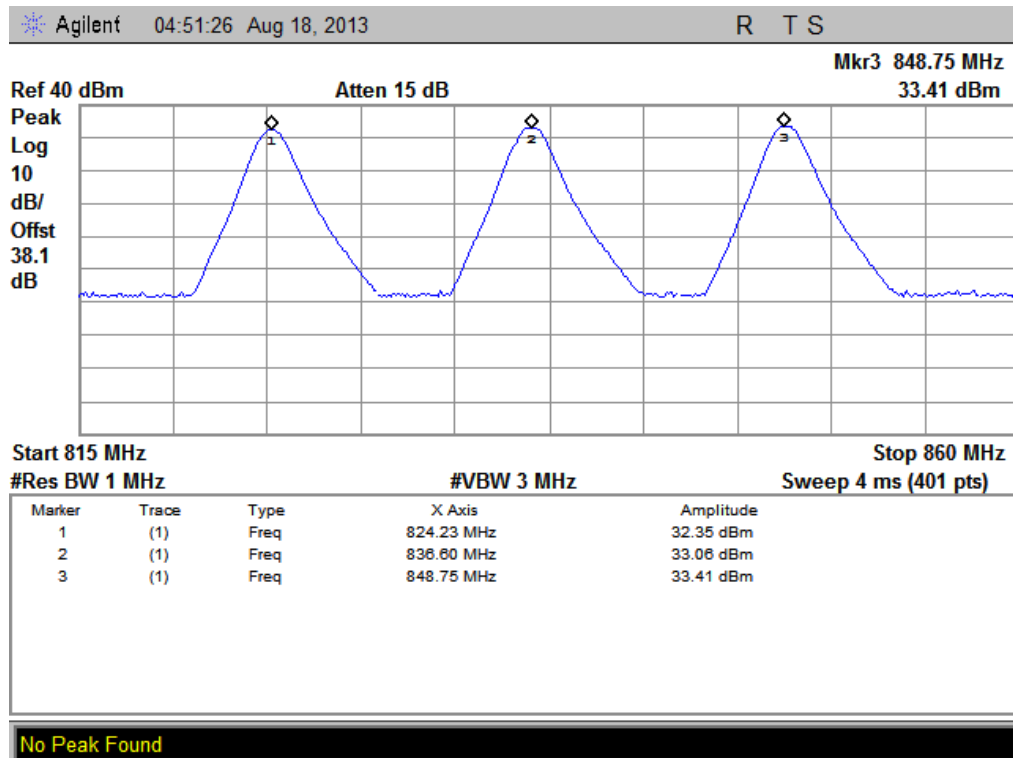
2. Test Plots:



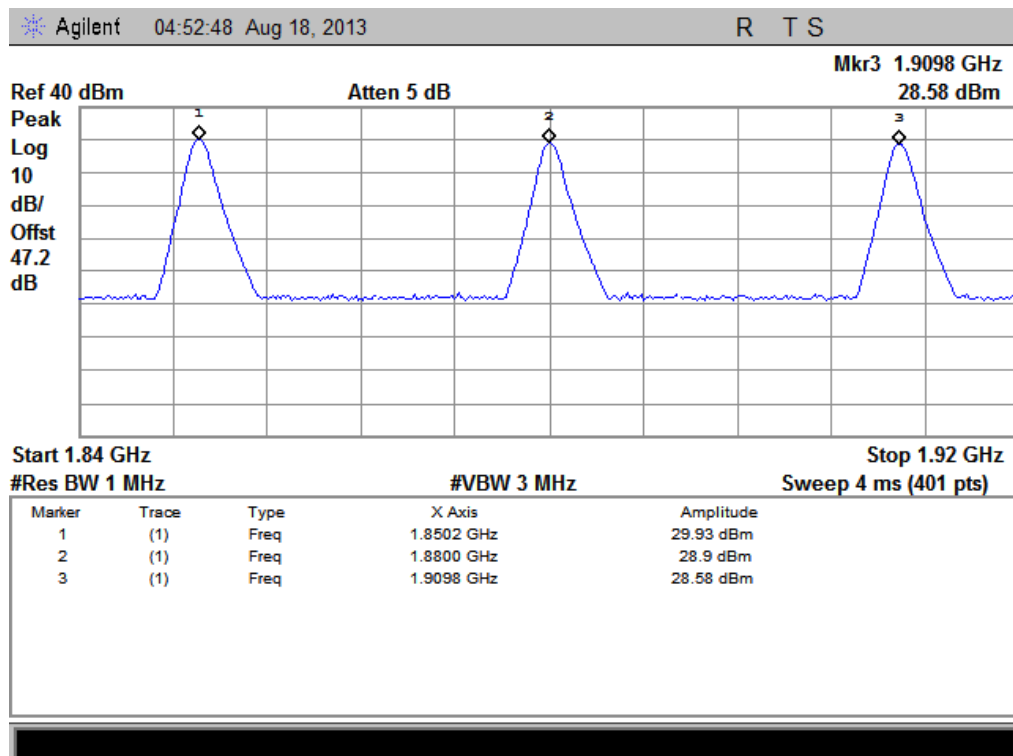
(Plot A: GSM 850MHz Channel = 128, 190, 251)



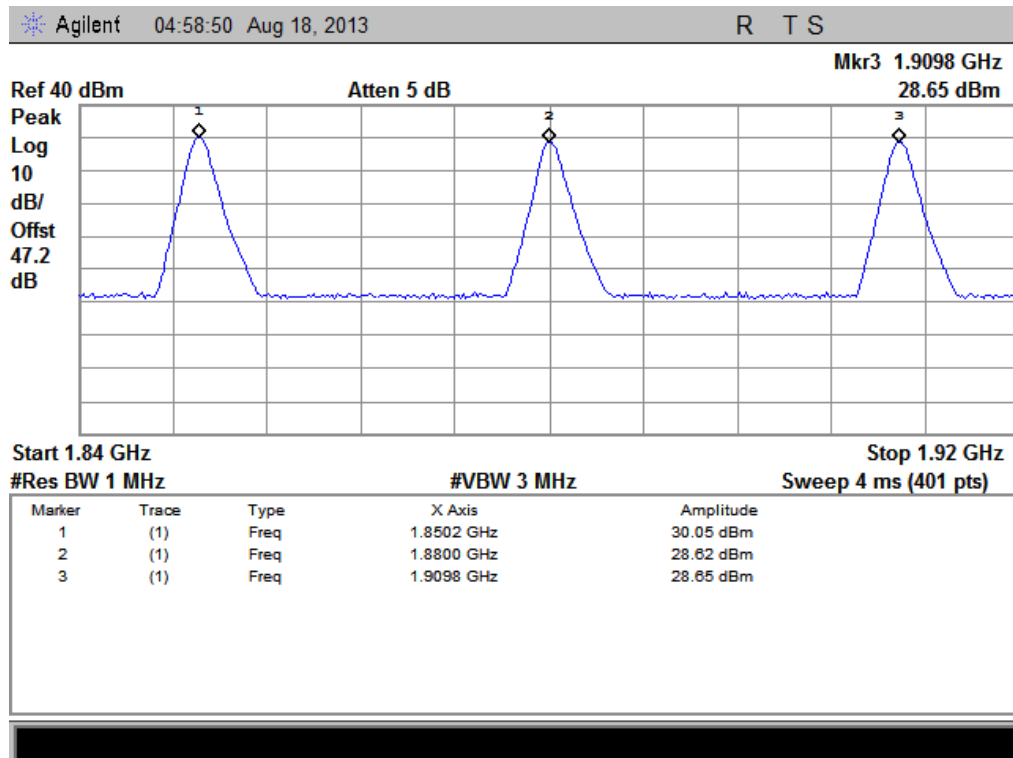
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



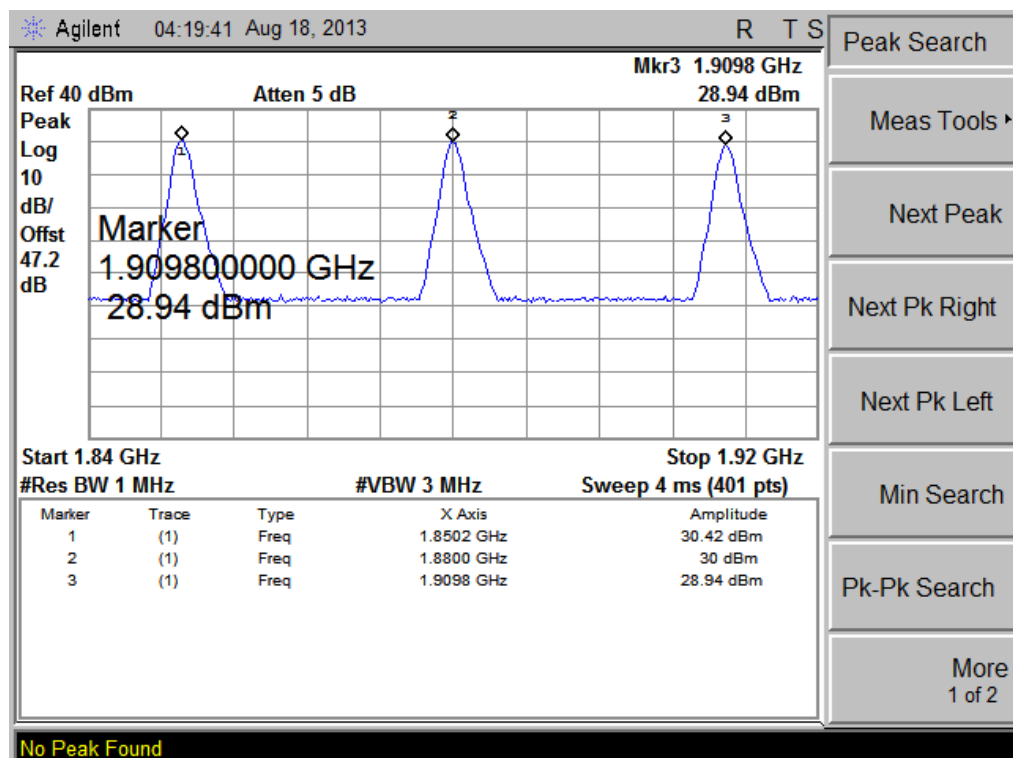
(Plot C: EGPRS 850MHz Channel = 128, 190, 251)



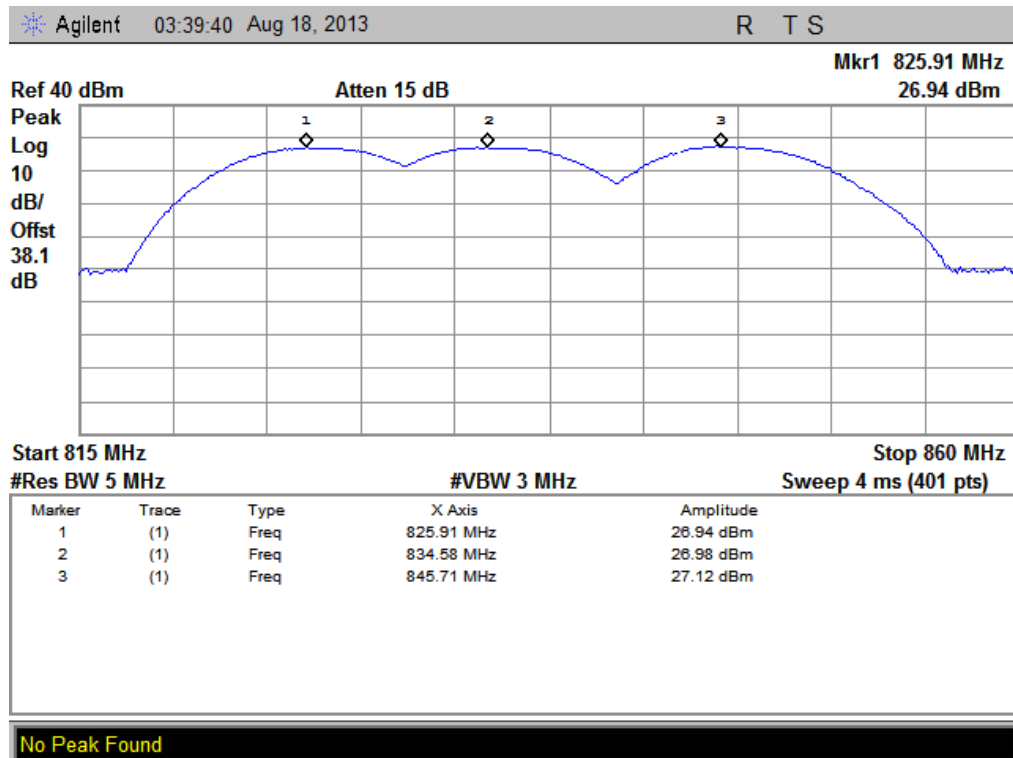
(Plot D: GSM 1900MHz Channel = 512, 661, 810)



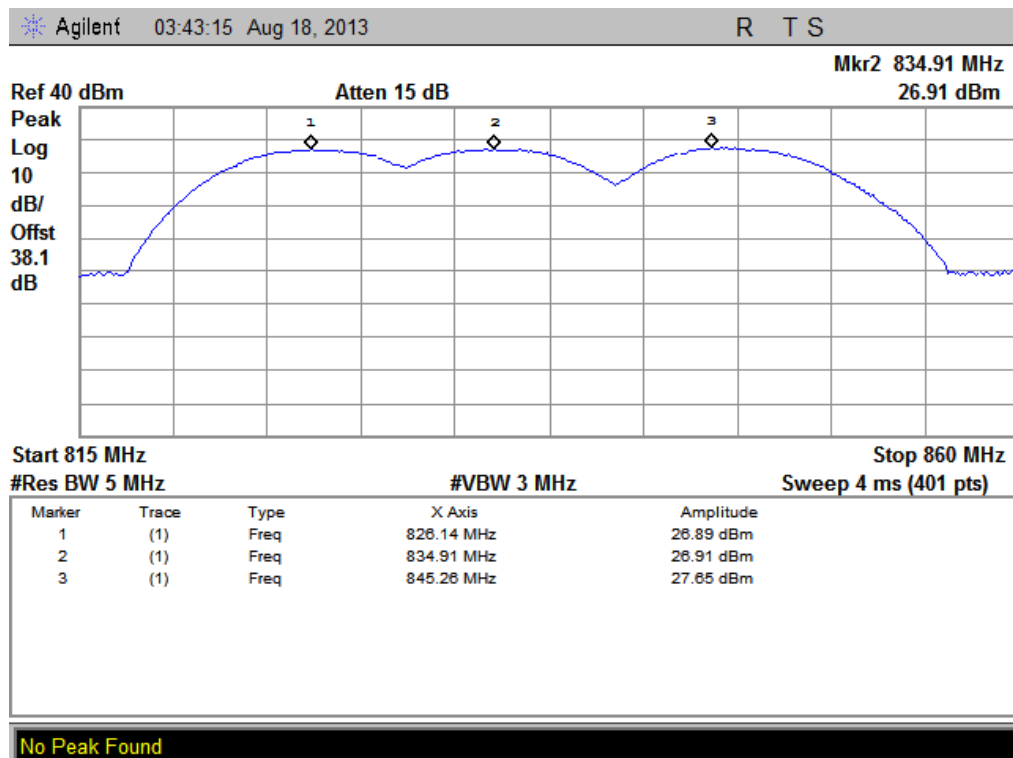
(Plot E: GPRS 1900MHz Channel = 512, 661, 810)



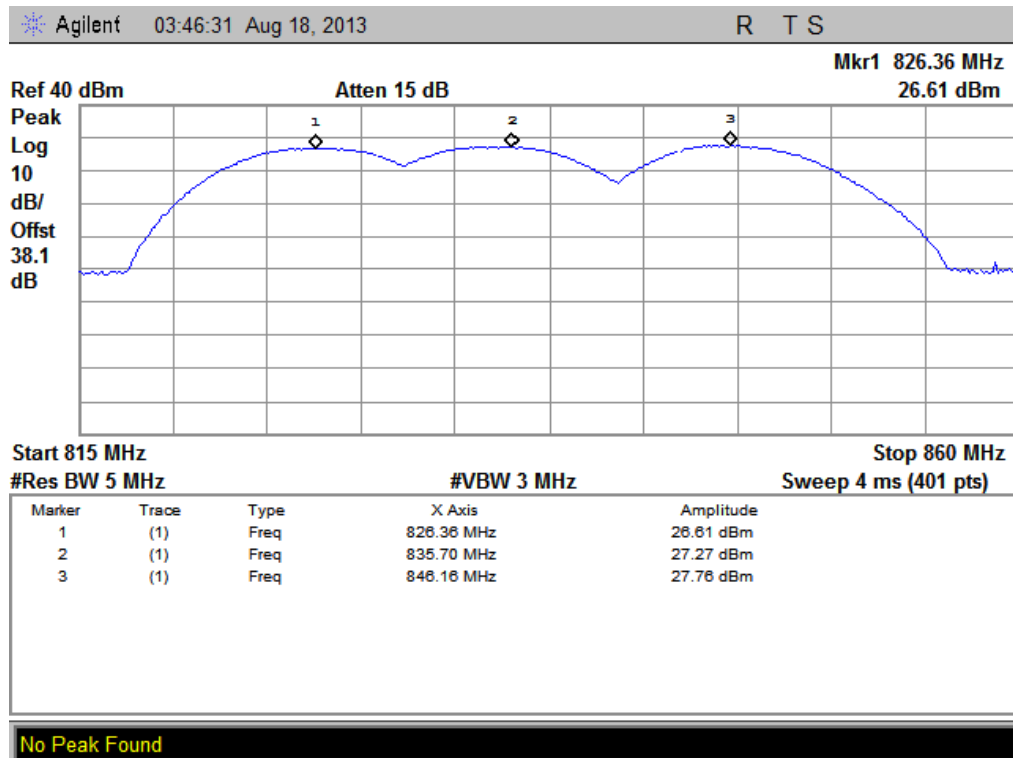
(Plot F: EGPRS 1900MHz Channel = 512, 661, 810)



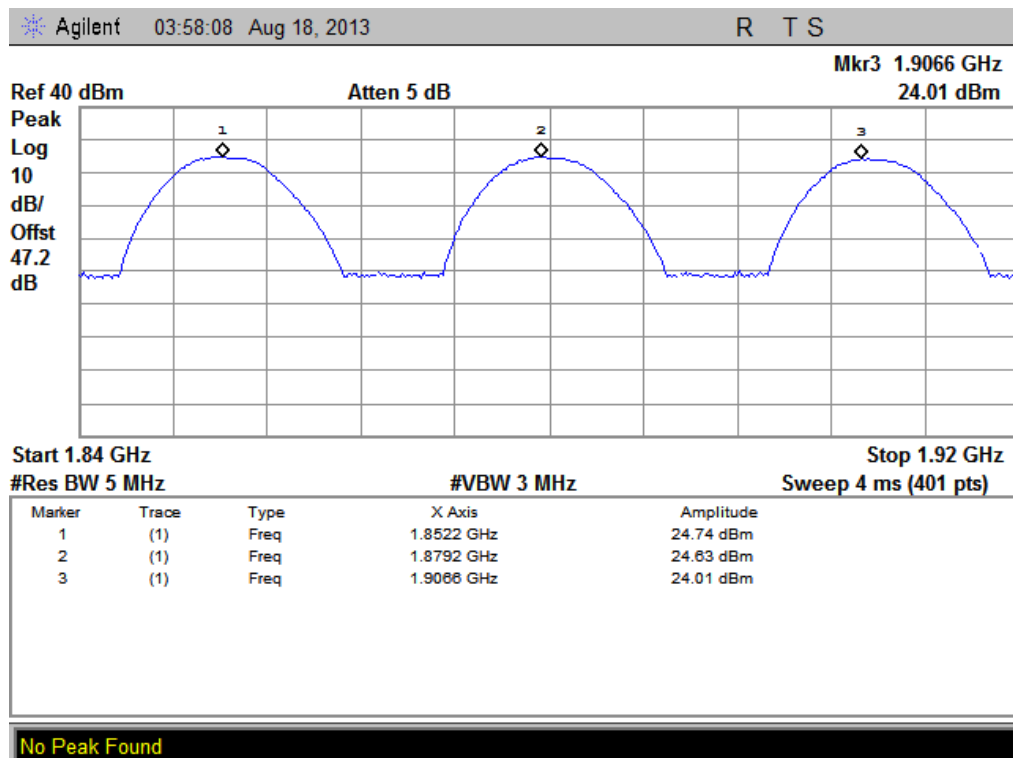
(Plot G: WCDMA 850 MHz Channel = 4132, 4175, 4233)



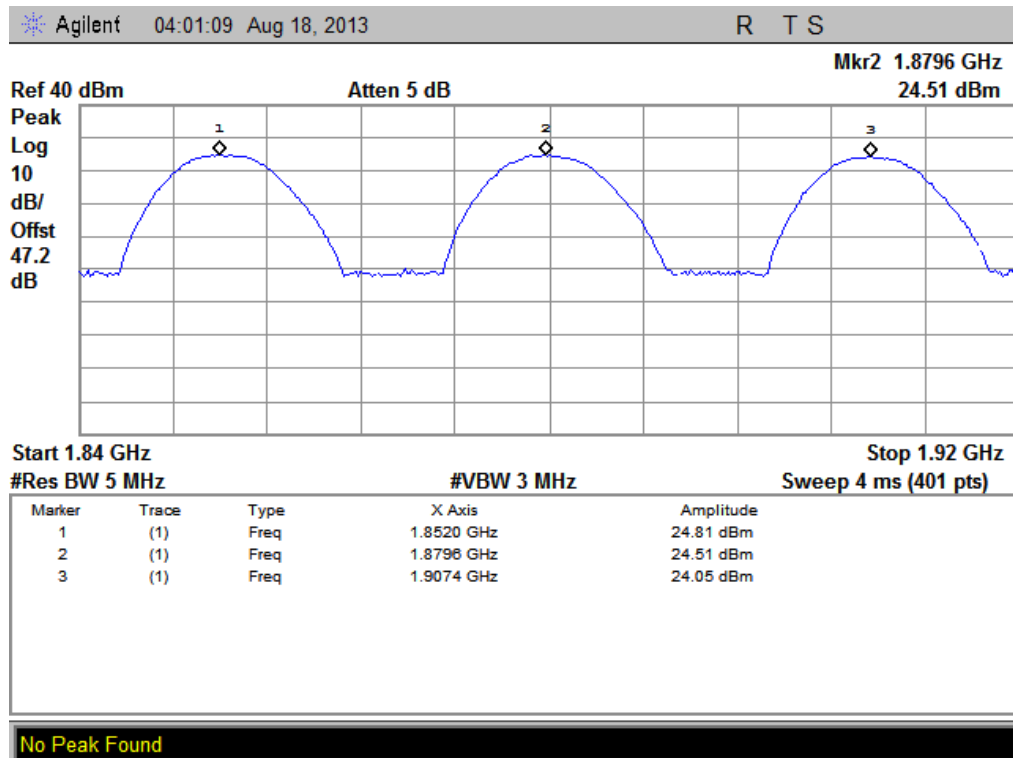
(Plot H: HSDPA 850 MHz Channel = 4132, 4175, 4233)



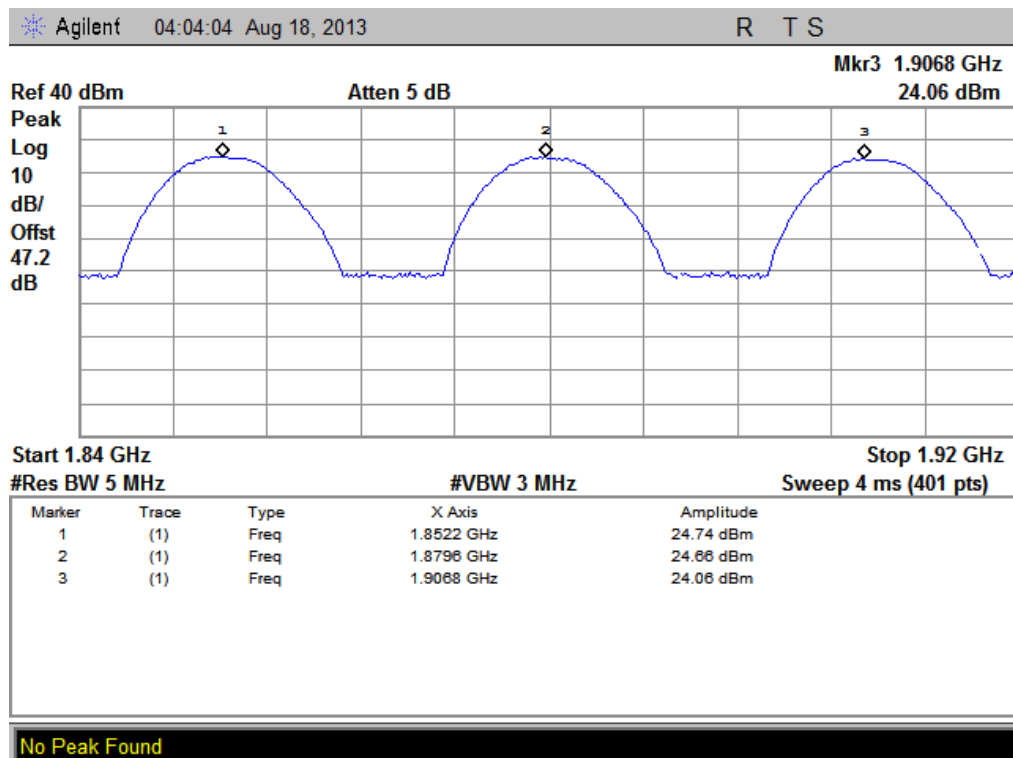
(Plot I: HSUPA 850 MHz Channel = 4132, 4175, 4233)



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



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



(Plot L: HSUPA1900 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	2012.05	2014.05
Spectrum Analyzer	Agilent	E7405A	US44210471	2012.05	2014.05
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2012.05	2014.05
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2012.05	2014.05
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2012.05	2014.05
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2012.05	2014.05
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2012.05	2014.05
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2012.05	2014.05

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.

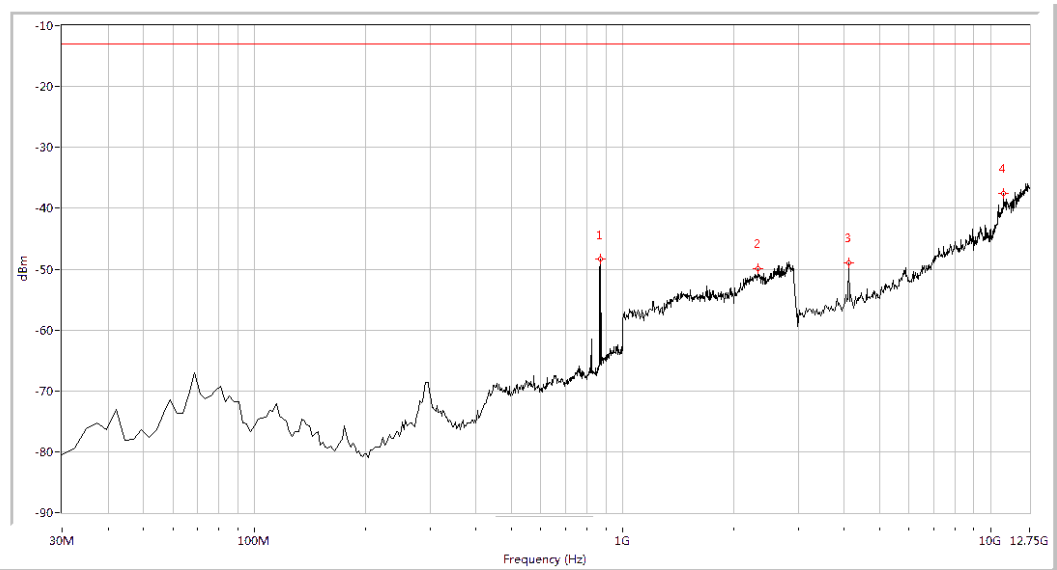
1. Test Verdict:

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

2. Test Plots for the Whole Measurement Frequency Range:

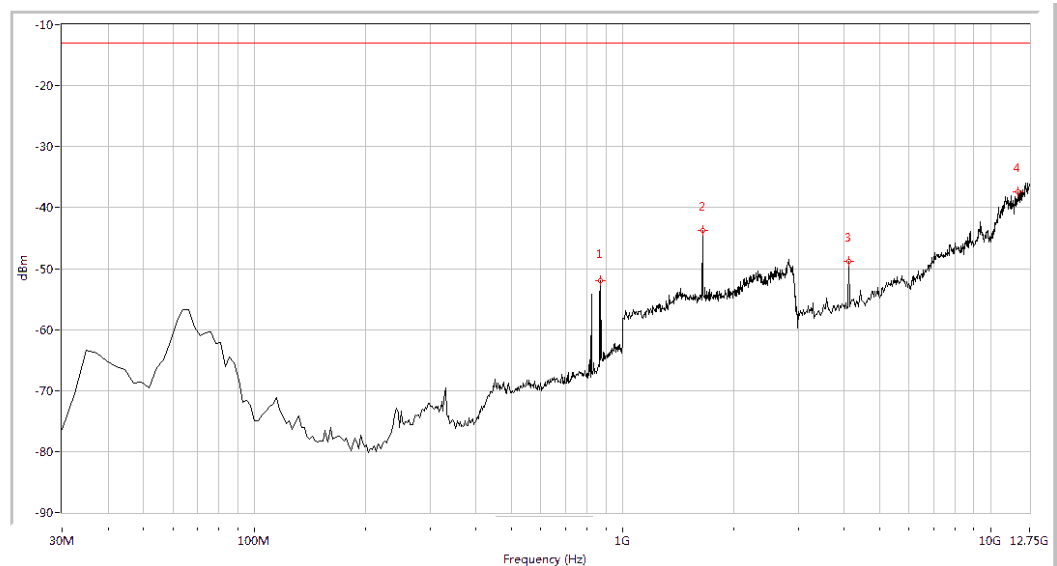
Note1: the power of the EUT transmitting frequency should be ignored.

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.



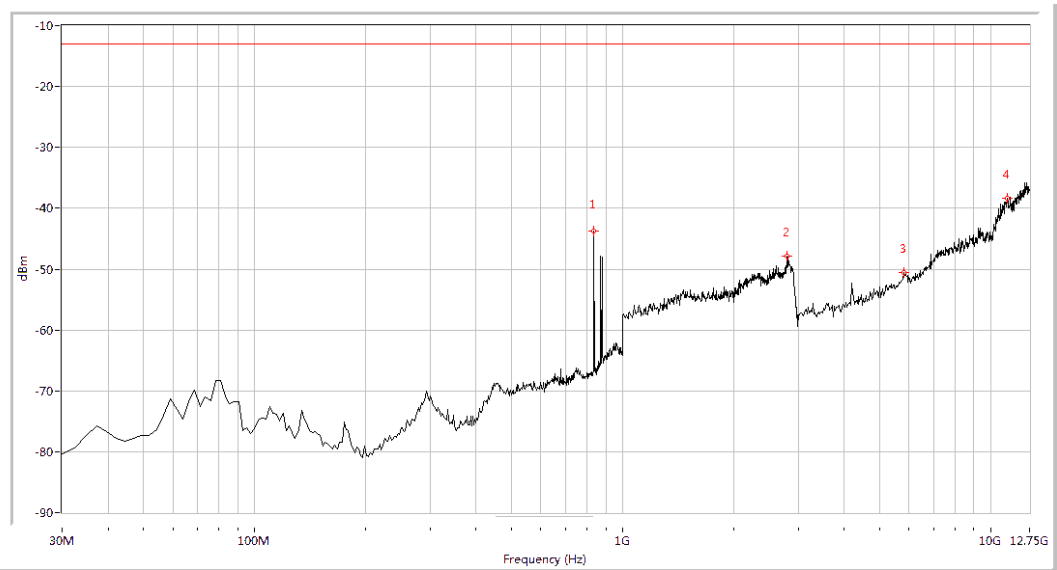
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-48.27	-13.0	35.3	123.9	Horizontal	PASS
2331.671	-50.00	-13.0	37.0	330.2	Horizontal	PASS
4118.454	-48.97	-13.0	36.0	43.6	Horizontal	PASS
10829.177	-37.58	-13.0	24.6	232.6	Horizontal	PASS

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



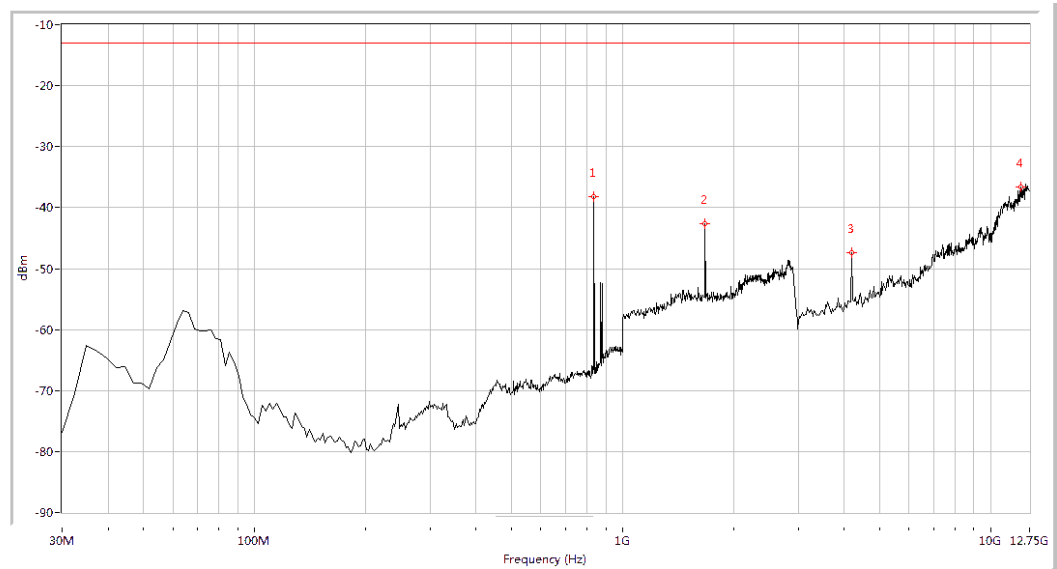
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-51.92	-13.0	38.9	121.7	Vertical	PASS
1648.379	-43.80	-13.0	30.8	123.7	Vertical	PASS
4118.454	-48.87	-13.0	35.9	246.4	Vertical	PASS
11874.688	-37.47	-13.0	24.5	116.9	Vertical	PASS

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



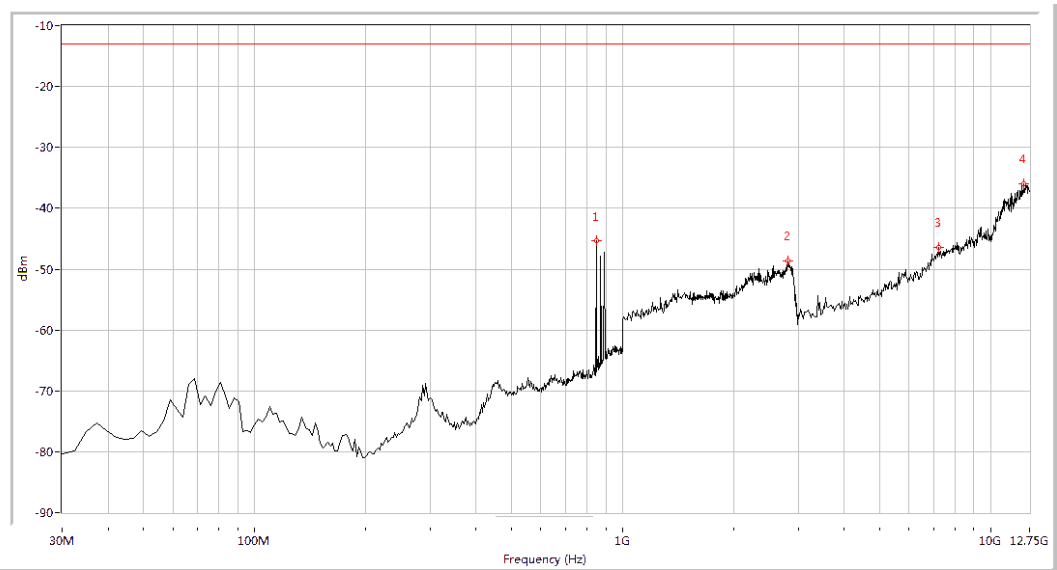
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-43.71	-13.0	30.7	189.5	Horizontal	PASS
2795.511	-47.89	-13.0	34.9	22.4	Horizontal	PASS
5796.135	-50.48	-13.0	37.5	122.5	Horizontal	PASS
11072.319	-38.30	-13.0	25.3	317.9	Horizontal	PASS

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



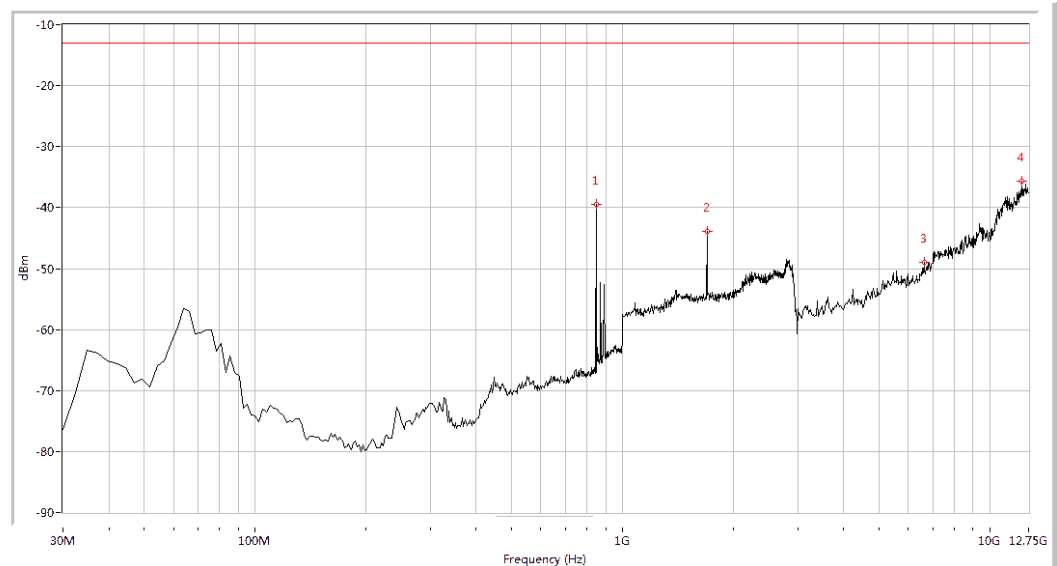
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-38.20	-13.0	25.2	172.5	Vertical	PASS
1673.317	-42.65	-13.0	29.6	321.6	Vertical	PASS
4191.397	-47.43	-13.0	34.4	245.0	Vertical	PASS
12044.888	-36.68	-13.0	23.7	152.0	Vertical	PASS

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



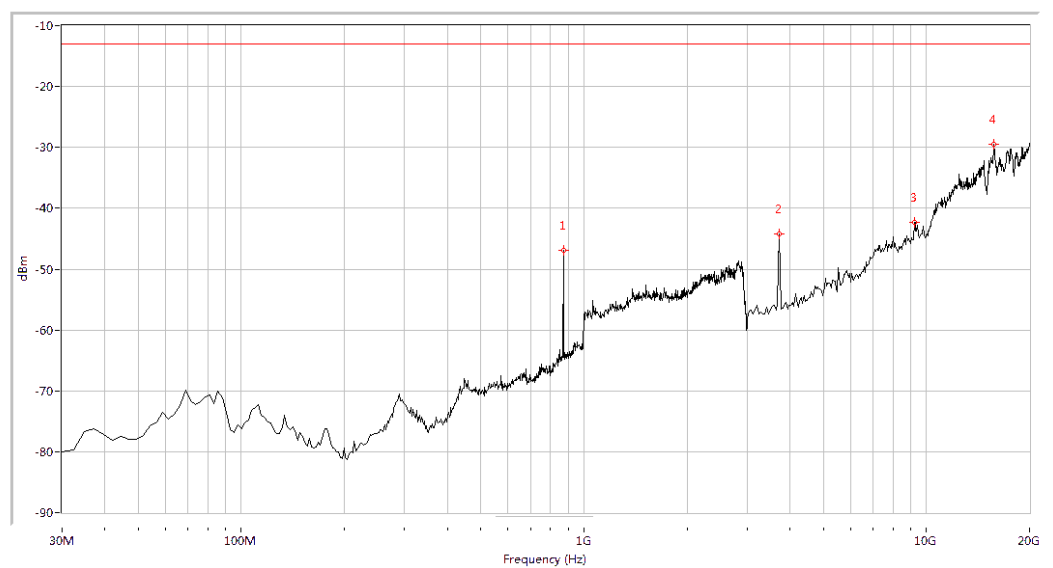
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-45.40	-13.0	32.4	209.9	Horizontal	PASS
2815.461	-48.61	-13.0	35.6	299.7	Horizontal	PASS
7230.673	-46.44	-13.0	33.4	186.1	Horizontal	PASS
12288.030	-36.00	-13.0	23.0	192.4	Horizontal	PASS

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



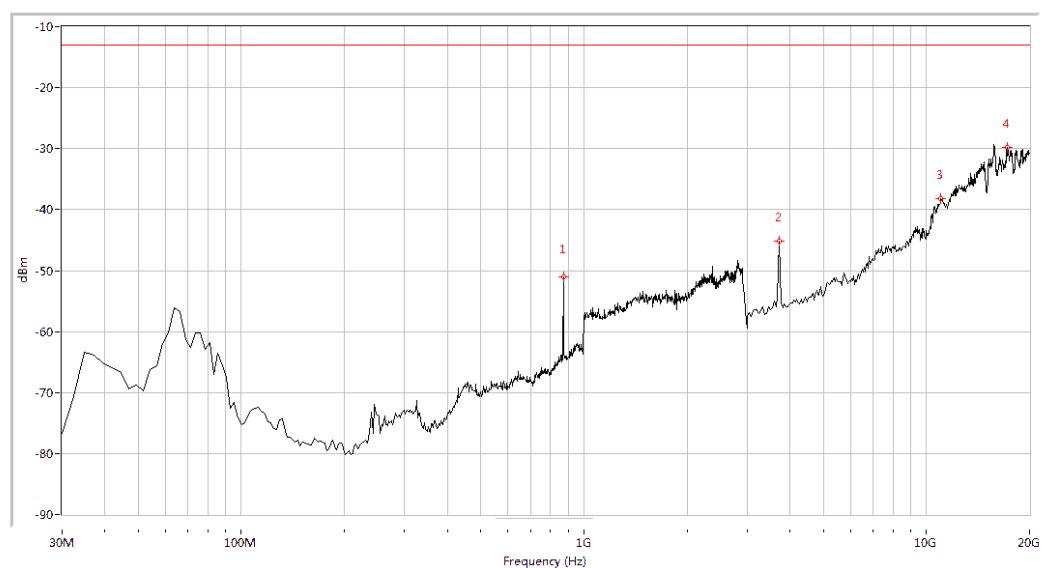
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-39.46	-13.0	26.5	141.1	Vertical	PASS
1698.254	-43.89	-13.0	30.9	307.5	Vertical	PASS
6622.818	-48.97	-13.0	36.0	47.0	Vertical	PASS
12215.087	-35.71	-13.0	22.7	159.0	Vertical	PASS

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



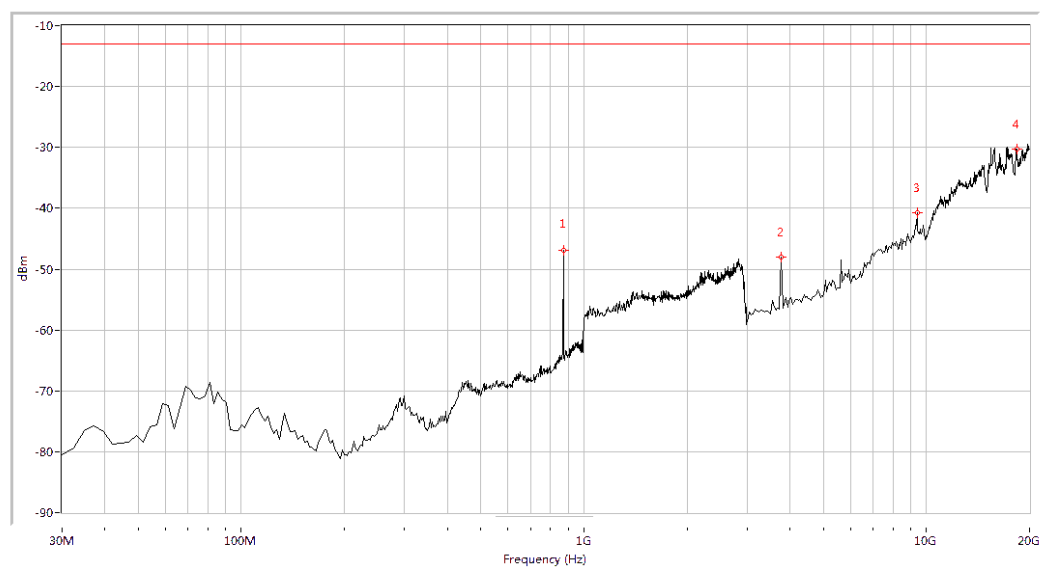
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.91	-13.0	33.9	330.4	Horizontal	PASS
3720.698	-44.17	-13.0	31.2	49.9	Horizontal	PASS
9231.920	-42.26	-13.0	29.3	360.0	Horizontal	PASS
15760.599	-29.55	-13.0	16.6	74.8	Horizontal	PASS

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



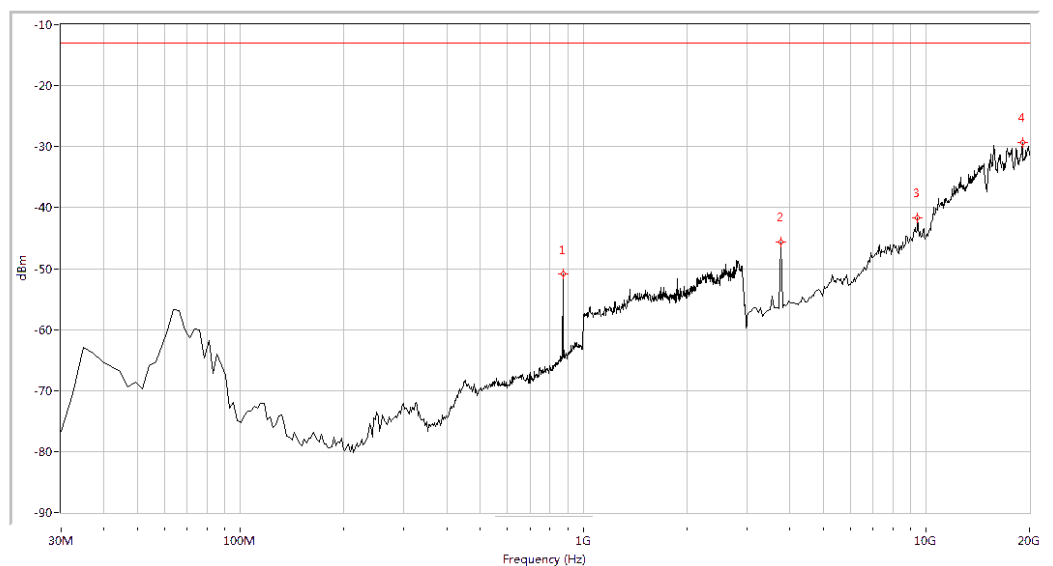
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-51.07	-13.0	38.1	39.5	Vertical	PASS
3720.698	-45.18	-13.0	32.2	292.2	Vertical	PASS
11012.469	-38.12	-13.0	25.1	106.6	Vertical	PASS
17201.995	-29.83	-13.0	16.8	106.6	Vertical	PASS

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



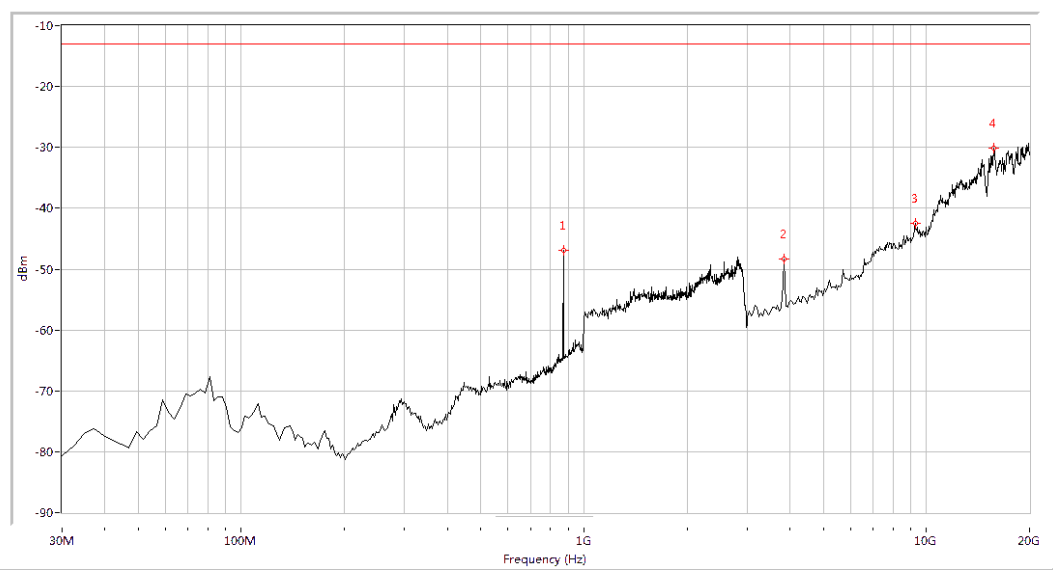
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.93	-13.0	33.9	144.1	Horizontal	PASS
3763.092	-48.02	-13.0	35.0	352.3	Horizontal	PASS
9401.496	-40.78	-13.0	27.8	356.6	Horizontal	PASS
18346.633	-30.24	-13.0	17.2	196.3	Horizontal	PASS

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



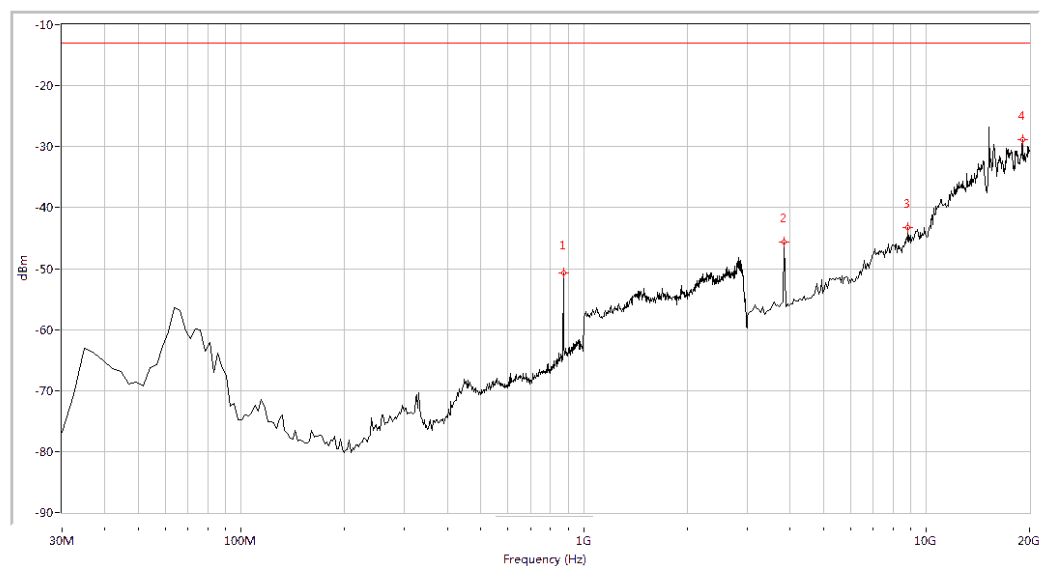
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.87	-13.0	37.9	128.5	Vertical	PASS
3763.092	-45.60	-13.0	32.6	195.4	Vertical	PASS
9443.890	-41.75	-13.0	28.8	315.1	Vertical	PASS
19067.332	-29.30	-13.0	16.3	358.1	Vertical	PASS

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



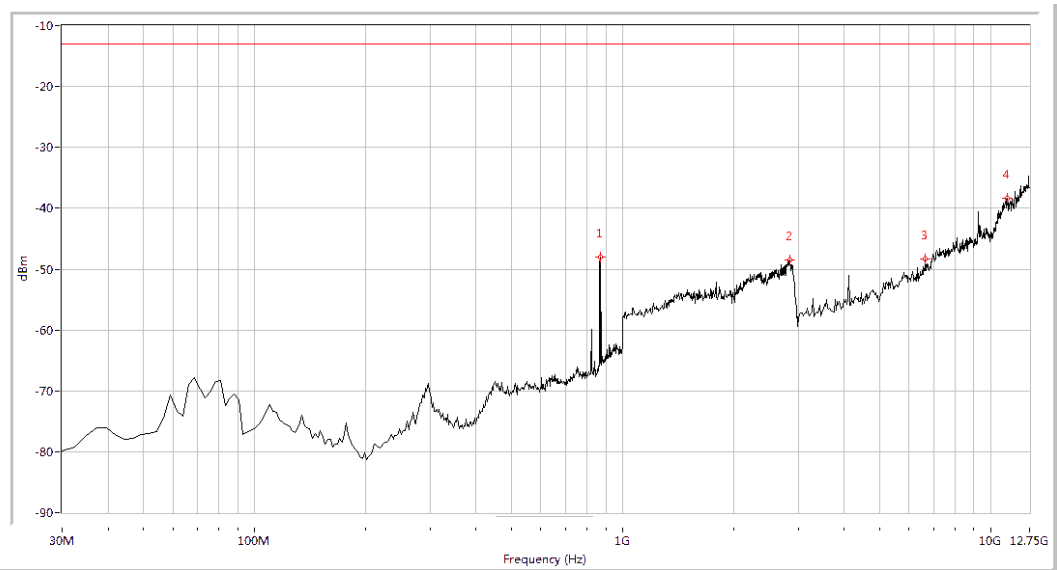
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.86	-13.0	33.9	318.6	Horizontal	PASS
3847.880	-48.28	-13.0	35.3	253.9	Horizontal	PASS
9274.314	-42.43	-13.0	29.4	-0.0	Horizontal	PASS
15760.599	-30.08	-13.0	17.1	214.1	Horizontal	PASS

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



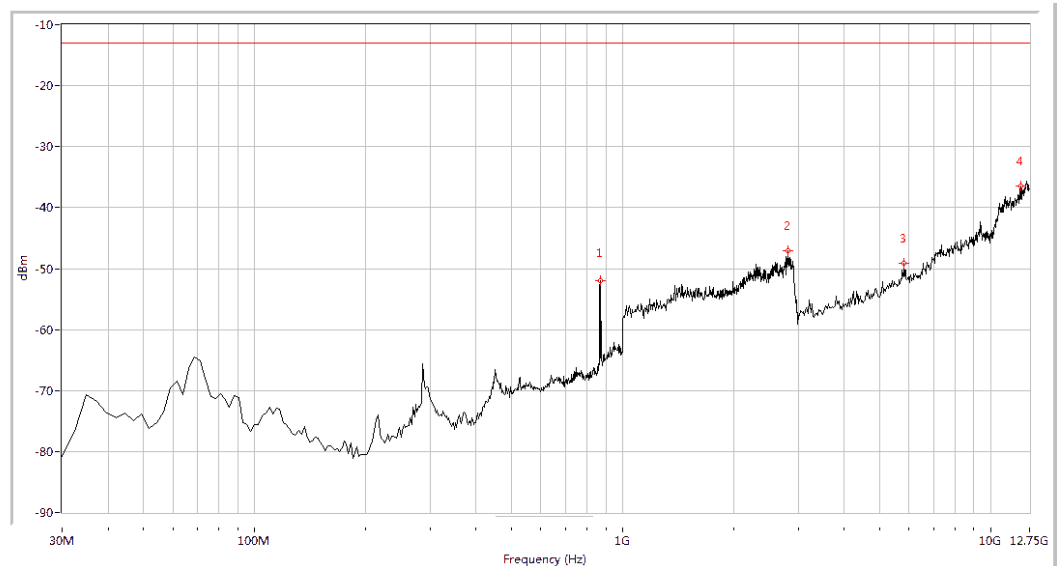
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.67	-13.0	37.7	124.0	Vertical	PASS
3847.880	-45.61	-13.0	32.6	236.4	Vertical	PASS
8850.374	-43.32	-13.0	30.3	42.8	Vertical	PASS
19067.332	-28.90	-13.0	15.9	358.6	Vertical	PASS

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



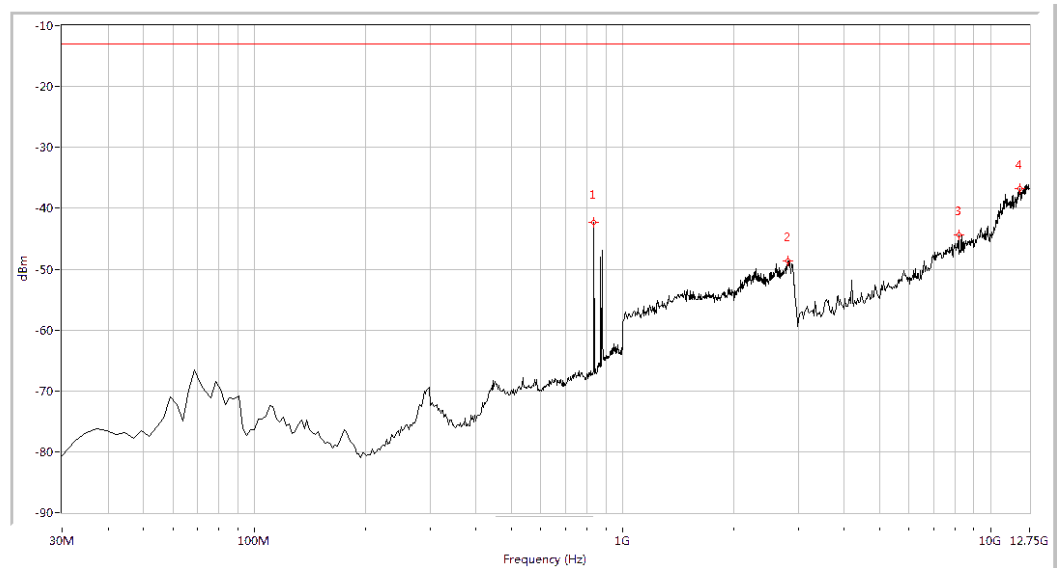
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-48.00	-13.0	35.0	126.9	Horizontal	PASS
2850.374	-48.50	-13.0	35.5	306.0	Horizontal	PASS
6647.132	-48.27	-13.0	35.3	145.2	Horizontal	PASS
11096.633	-38.29	-13.0	25.3	260.9	Horizontal	PASS

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



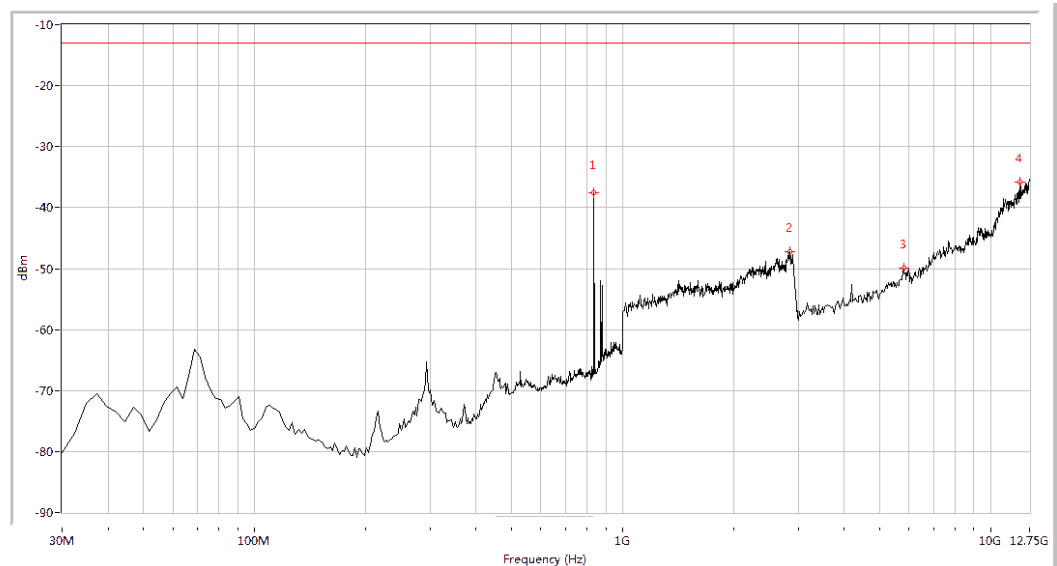
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-52.04	-13.0	39.0	49.6	Vertical	PASS
2805.486	-47.04	-13.0	34.0	360.0	Vertical	PASS
5820.449	-49.19	-13.0	36.2	360.0	Vertical	PASS
12044.888	-36.39	-13.0	23.4	357.6	Vertical	PASS

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



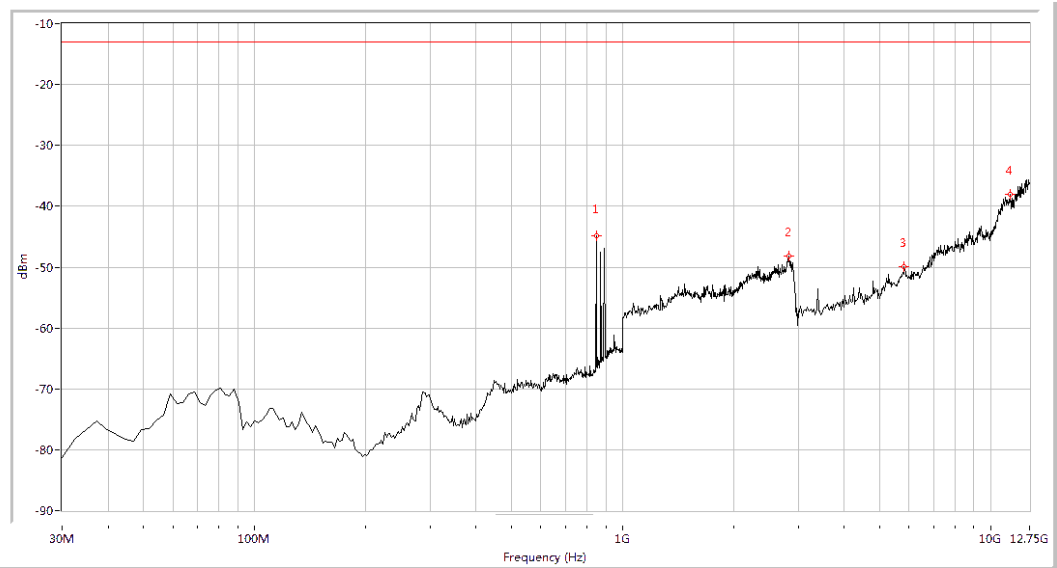
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-42.32	-13.0	29.3	204.4	Horizontal	PASS
2810.474	-48.71	-13.0	35.7	39.1	Horizontal	PASS
8178.928	-44.41	-13.0	31.4	220.8	Horizontal	PASS
12020.574	-36.78	-13.0	23.8	109.5	Horizontal	PASS

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



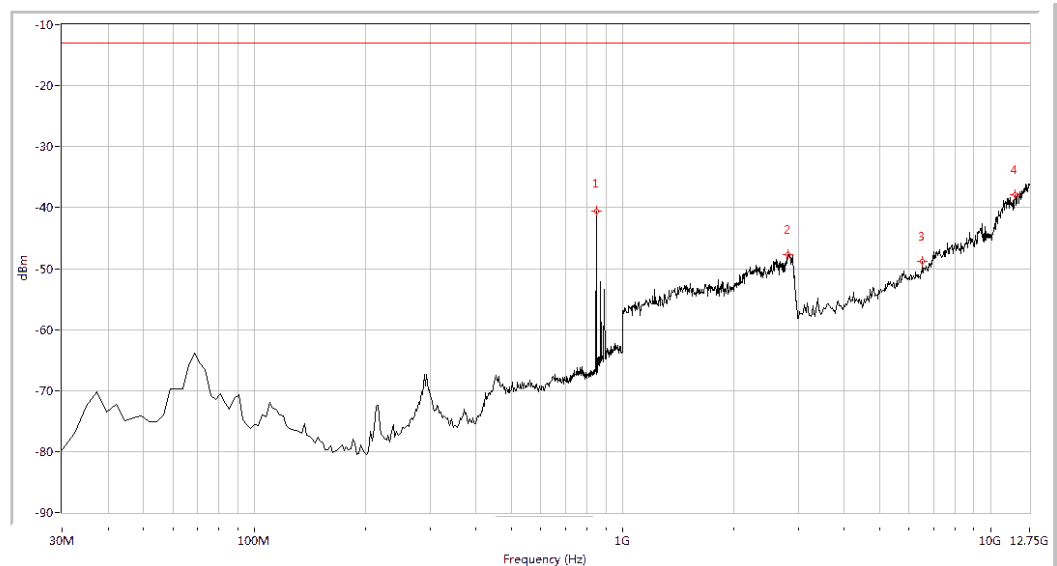
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-37.52	-13.0	24.5	142.6	Vertical	PASS
2850.374	-47.16	-13.0	34.2	274.4	Vertical	PASS
5796.135	-49.97	-13.0	37.0	5.1	Vertical	PASS
12020.574	-35.86	-13.0	22.9	153.1	Vertical	PASS

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



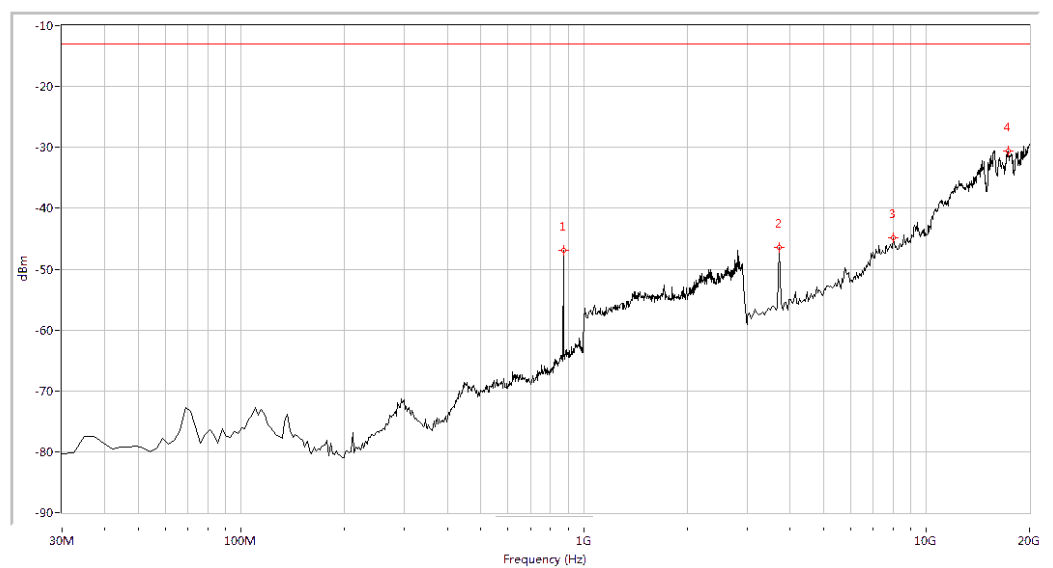
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-44.90	-13.0	31.9	208.6	Horizontal	PASS
2825.436	-48.25	-13.0	35.2	180.2	Horizontal	PASS
5820.449	-49.94	-13.0	36.9	80.5	Horizontal	PASS
11266.833	-38.00	-13.0	25.0	274.0	Horizontal	PASS

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



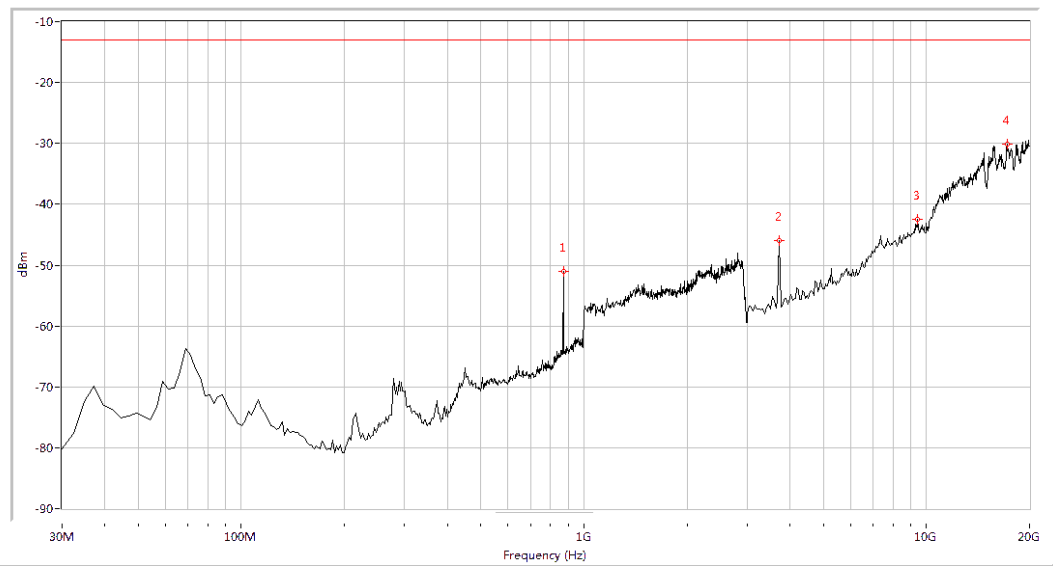
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-40.62	-13.0	27.6	153.4	Vertical	PASS
2810.474	-47.75	-13.0	34.8	94.9	Vertical	PASS
6525.561	-48.74	-13.0	35.7	304.1	Vertical	PASS
11631.546	-37.85	-13.0	24.8	33.9	Vertical	PASS

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



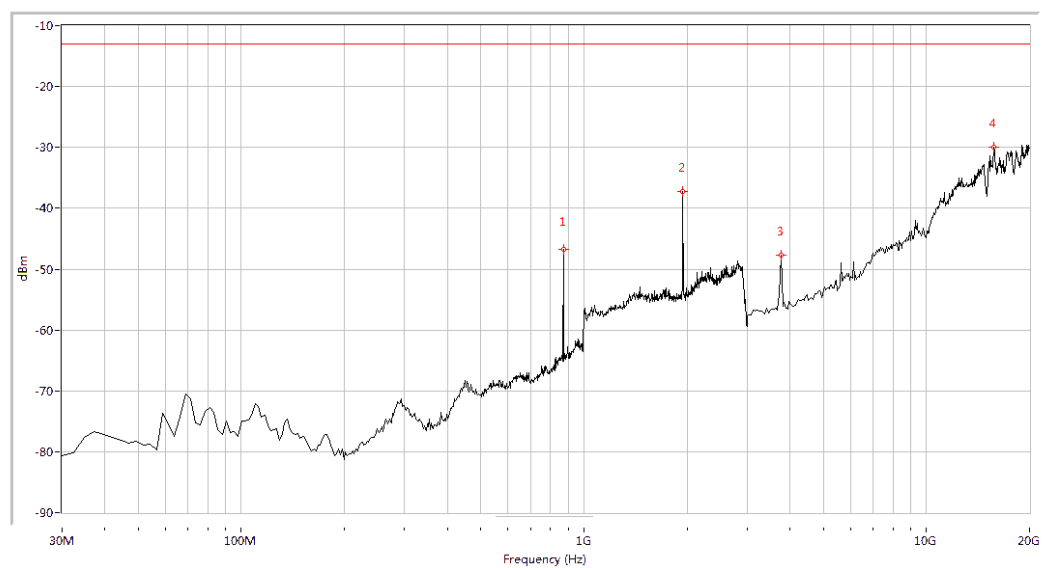
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.96	-13.0	34.0	101.4	Horizontal	PASS
3720.698	-46.47	-13.0	33.5	-0.0	Horizontal	PASS
8002.494	-44.92	-13.0	31.9	47.8	Horizontal	PASS
17286.783	-30.58	-13.0	17.6	137.8	Horizontal	PASS

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



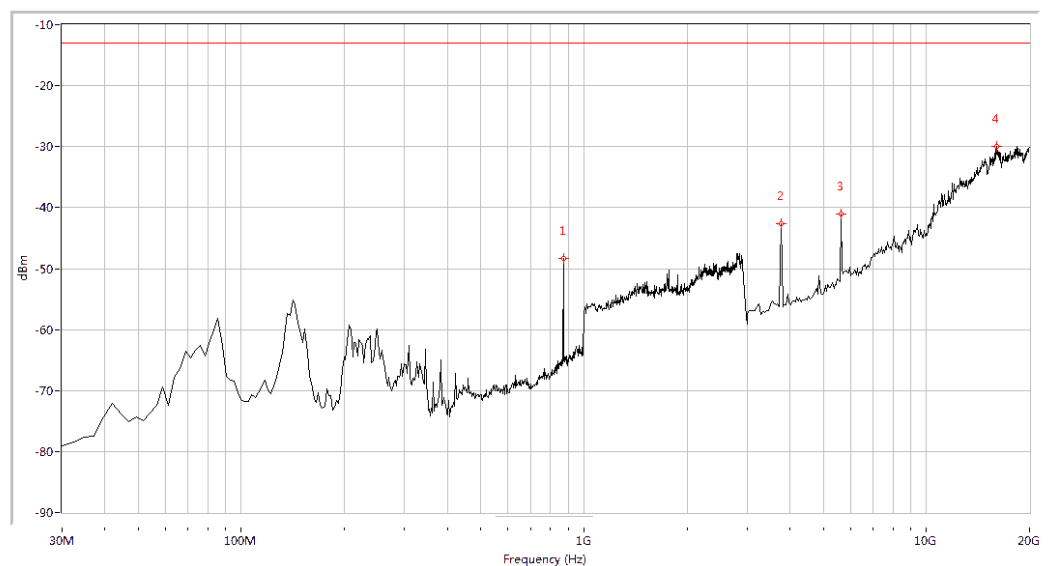
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.96	-13.0	38.0	51.0	Vertical	PASS
3720.698	-45.95	-13.0	32.9	259.6	Vertical	PASS
9443.890	-42.53	-13.0	29.5	153.7	Vertical	PASS
17201.995	-30.07	-13.0	17.1	360.0	Vertical	PASS

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



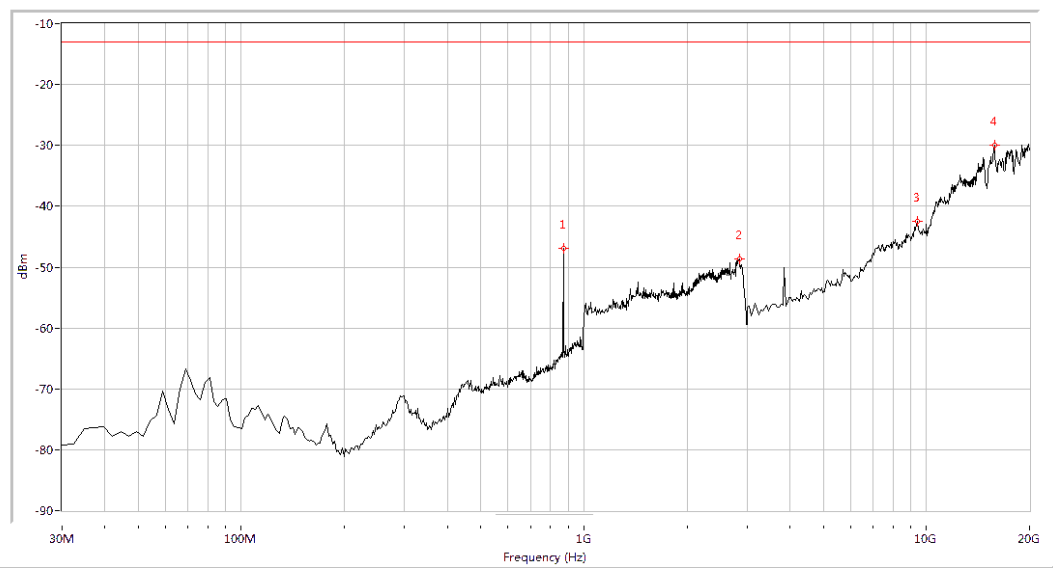
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.70	-13.0	33.7	136.3	Horizontal	PASS
1947.631	-37.28	-13.0	24.3	223.8	Horizontal	PASS
3763.092	-47.72	-13.0	34.7	72.0	Horizontal	PASS
15760.599	-30.04	-13.0	17.0	320.1	Horizontal	PASS

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



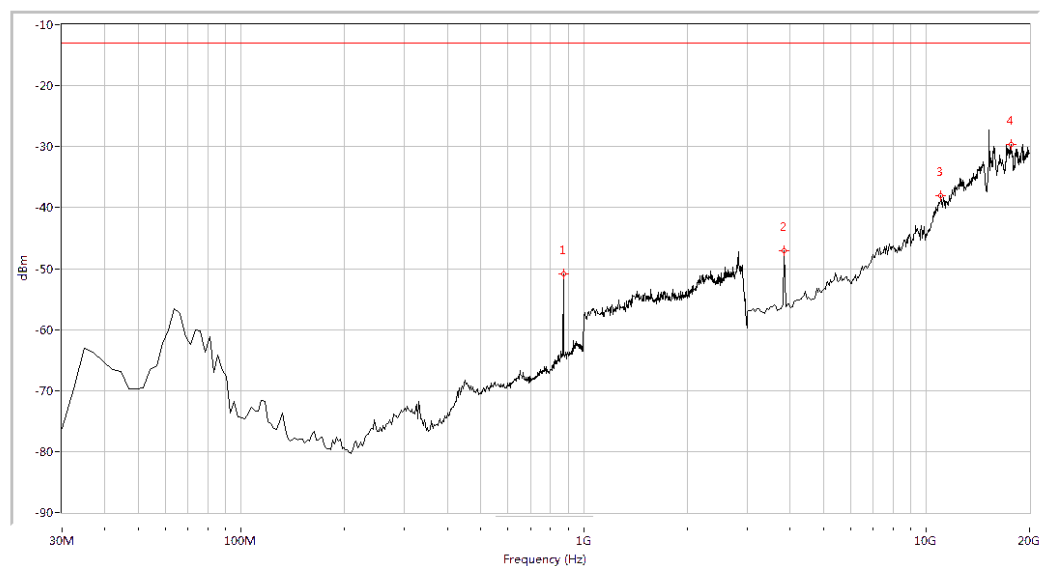
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-48.34	-13.0	35.3	138.5	Vertical	PASS
3763.092	-42.68	-13.0	29.7	149.0	Vertical	PASS
5628.429	-41.04	-13.0	28.0	82.1	Vertical	PASS
16014.963	-30.00	-13.0	17.0	203.5	Vertical	PASS

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



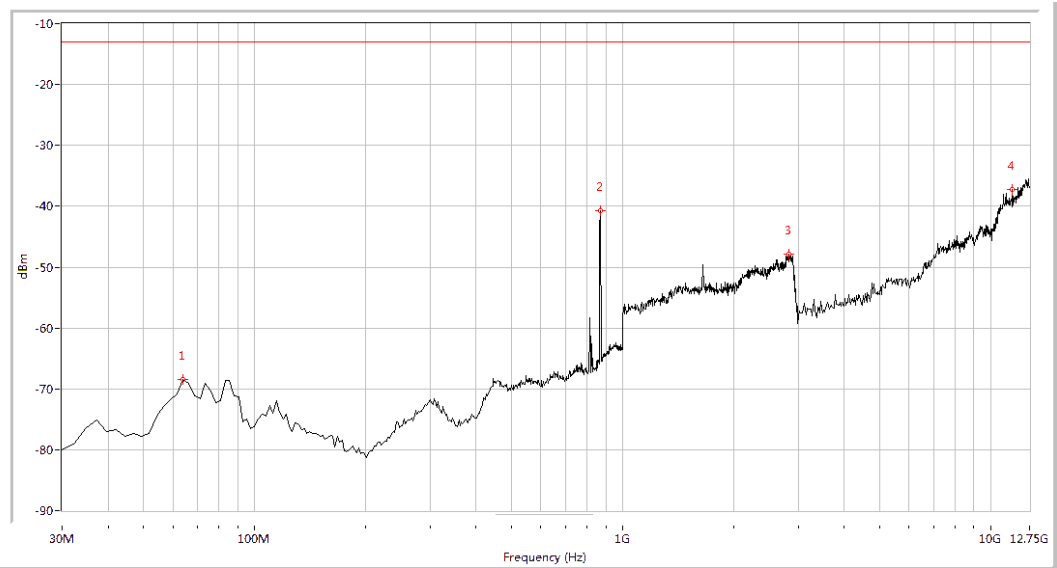
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-46.83	-13.0	33.8	149.6	Horizontal	PASS
2850.374	-48.60	-13.0	35.6	51.4	Horizontal	PASS
9443.890	-42.45	-13.0	29.4	235.9	Horizontal	PASS
15802.993	-29.96	-13.0	17.0	358.9	Horizontal	PASS

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



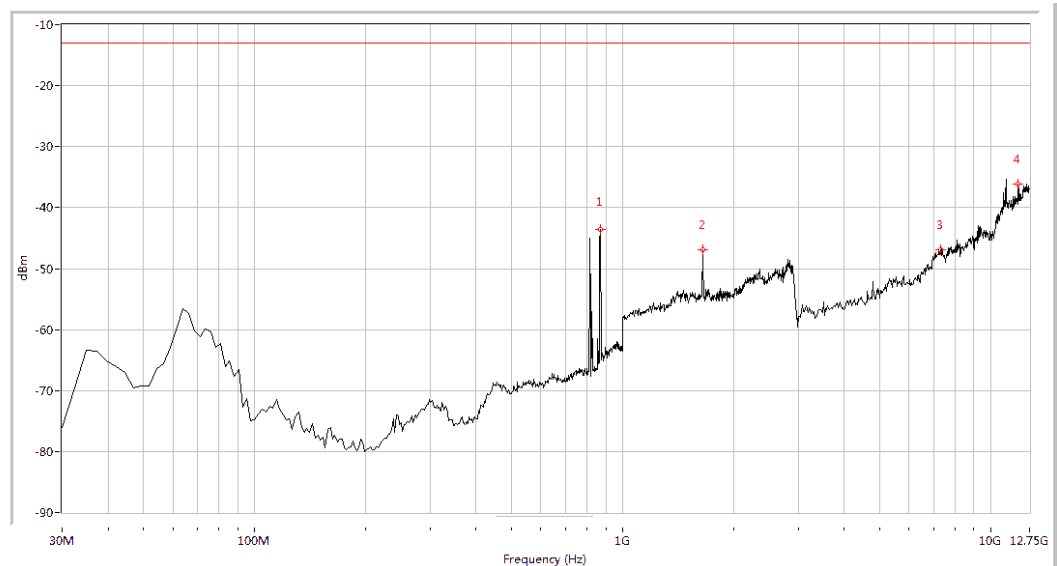
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.90	-13.0	37.9	122.5	Vertical	PASS
3847.880	-47.02	-13.0	34.0	254.1	Vertical	PASS
11012.469	-38.01	-13.0	25.0	278.2	Vertical	PASS
17625.935	-29.72	-13.0	16.7	336.2	Vertical	PASS

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



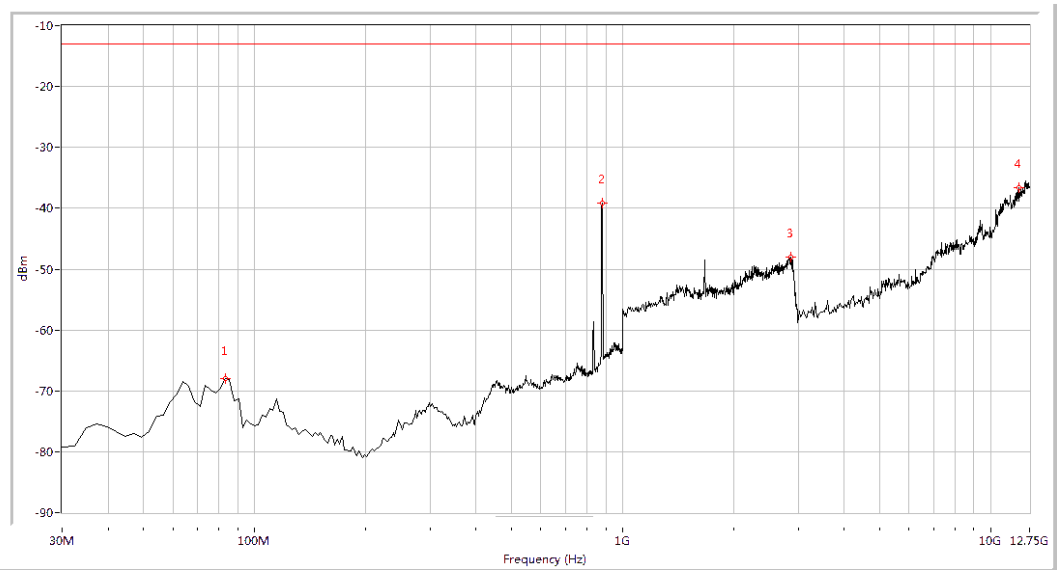
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-68.45	-13.0	55.4	76.7	Horizontal	PASS
869.377	-40.66	-13.0	27.7	154.5	Horizontal	PASS
2835.411	-47.85	-13.0	34.8	355.5	Horizontal	PASS
11461.347	-37.27	-13.0	24.3	360.0	Horizontal	PASS

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



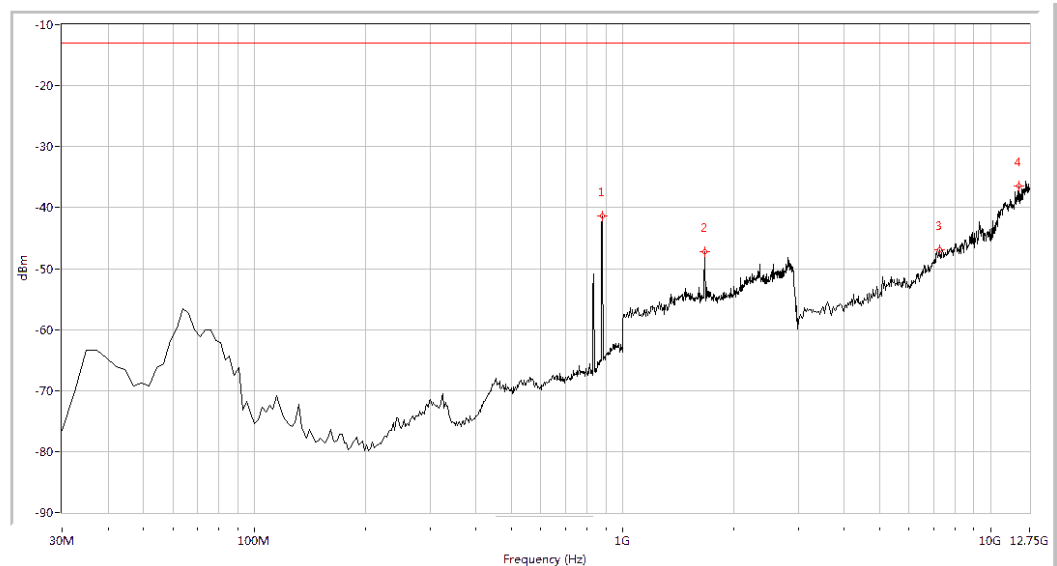
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-43.56	-13.0	30.6	298.4	Vertical	PASS
1648.379	-46.95	-13.0	34.0	282.9	Vertical	PASS
7327.930	-46.97	-13.0	34.0	4.7	Vertical	PASS
11874.688	-36.19	-13.0	23.2	81.5	Vertical	PASS

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



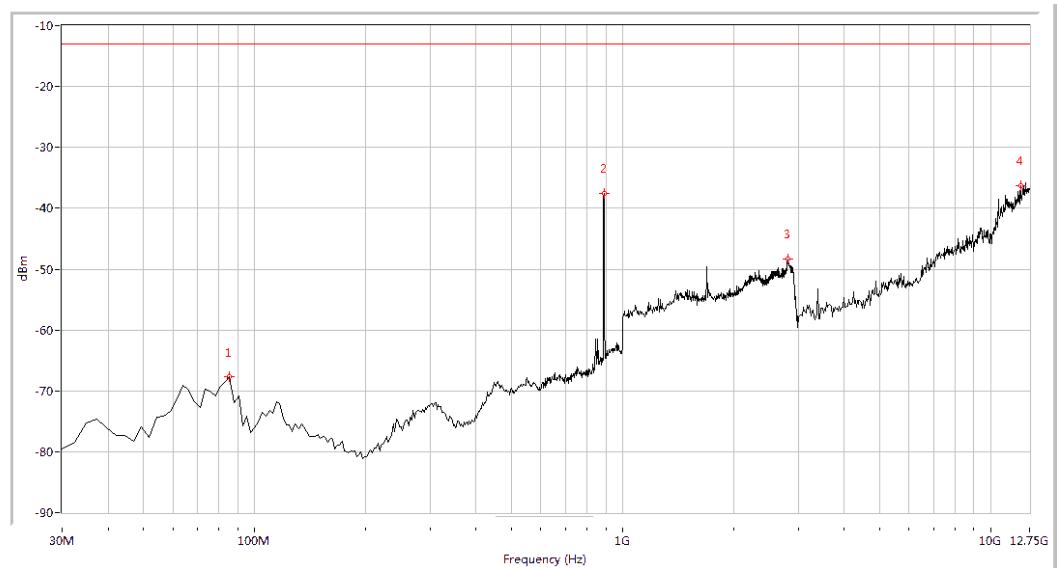
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-68.00	-13.0	55.0	152.0	Horizontal	PASS
879.052	-39.18	-13.0	26.2	103.6	Horizontal	PASS
2870.324	-48.00	-13.0	35.0	276.9	Horizontal	PASS
11899.002	-36.54	-13.0	23.5	55.2	Horizontal	PASS

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



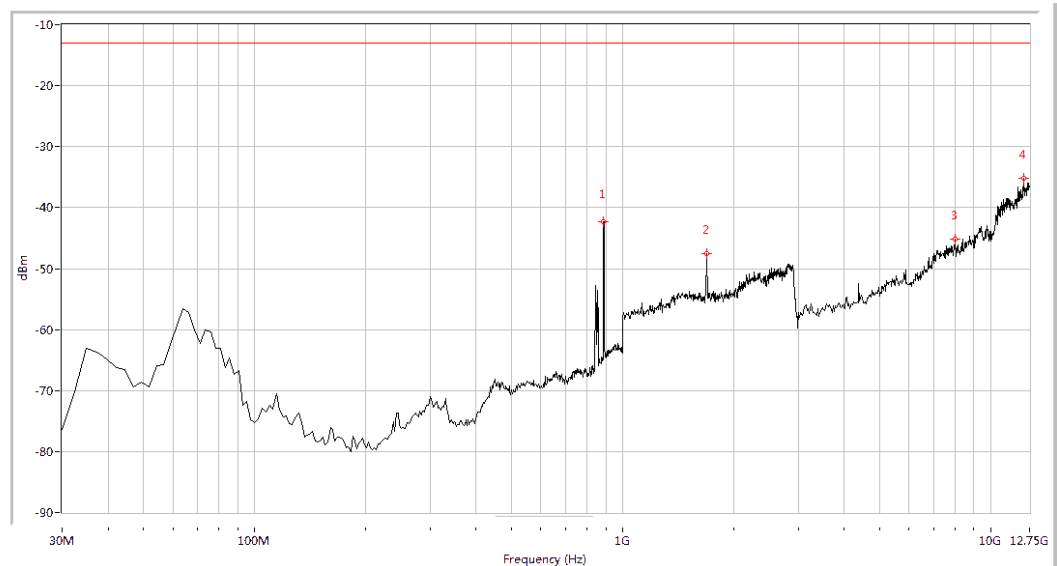
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-41.38	-13.0	28.4	268.4	Vertical	PASS
1668.329	-47.29	-13.0	34.3	294.6	Vertical	PASS
7254.988	-46.86	-13.0	33.9	360.0	Vertical	PASS
11899.002	-36.44	-13.0	23.4	56.3	Vertical	PASS

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



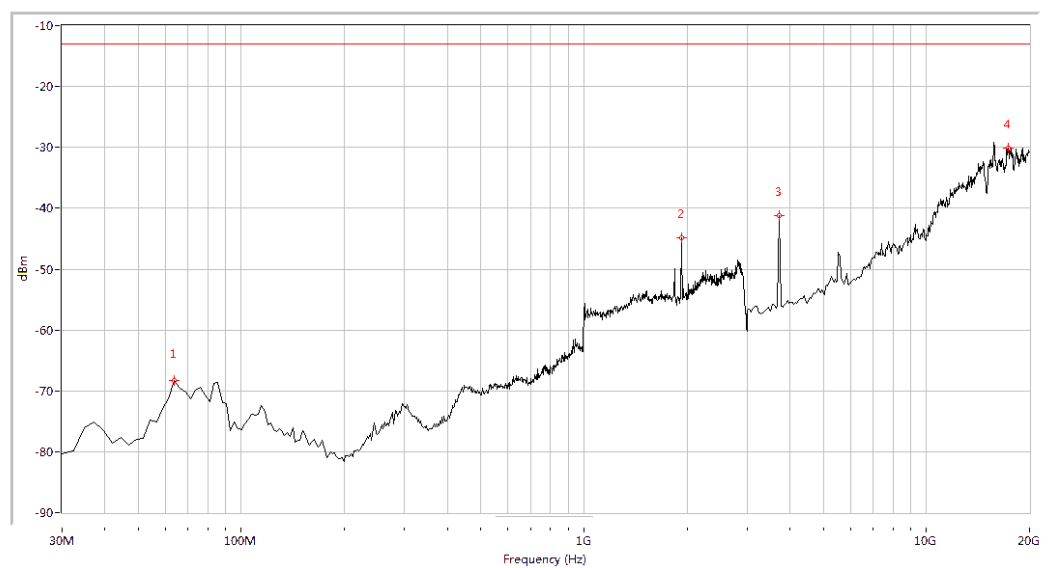
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-67.66	-13.0	54.7	169.5	Horizontal	PASS
891.147	-37.53	-13.0	24.5	309.7	Horizontal	PASS
2810.474	-48.31	-13.0	35.3	242.6	Horizontal	PASS
12044.888	-36.34	-13.0	23.3	138.2	Horizontal	PASS

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



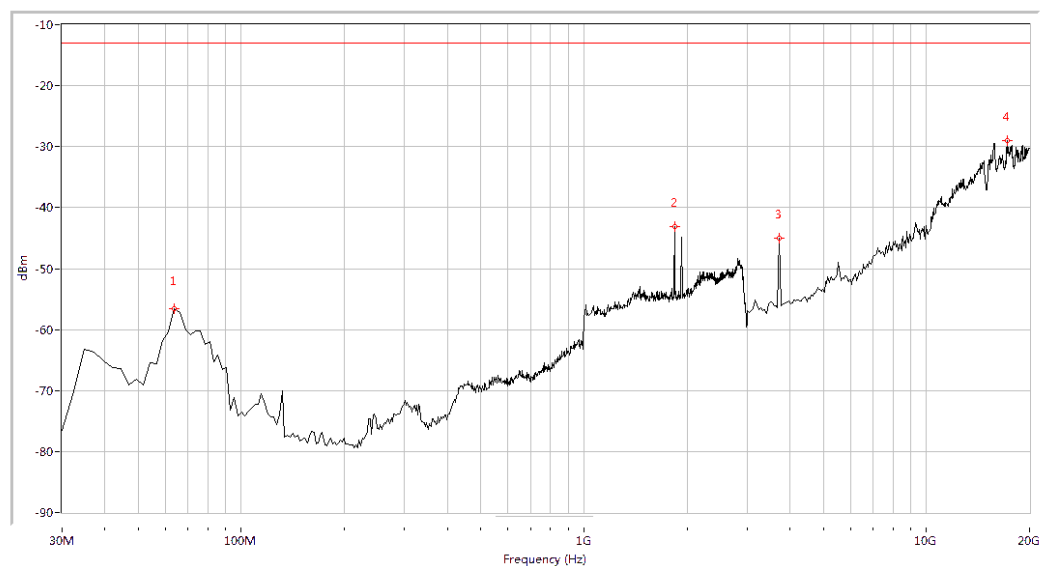
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
888.728	-42.25	-13.0	29.2	26.5	Vertical	PASS
1693.267	-47.54	-13.0	34.5	276.2	Vertical	PASS
7984.414	-45.15	-13.0	32.2	343.0	Vertical	PASS
12263.716	-35.11	-13.0	22.1	293.3	Vertical	PASS

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



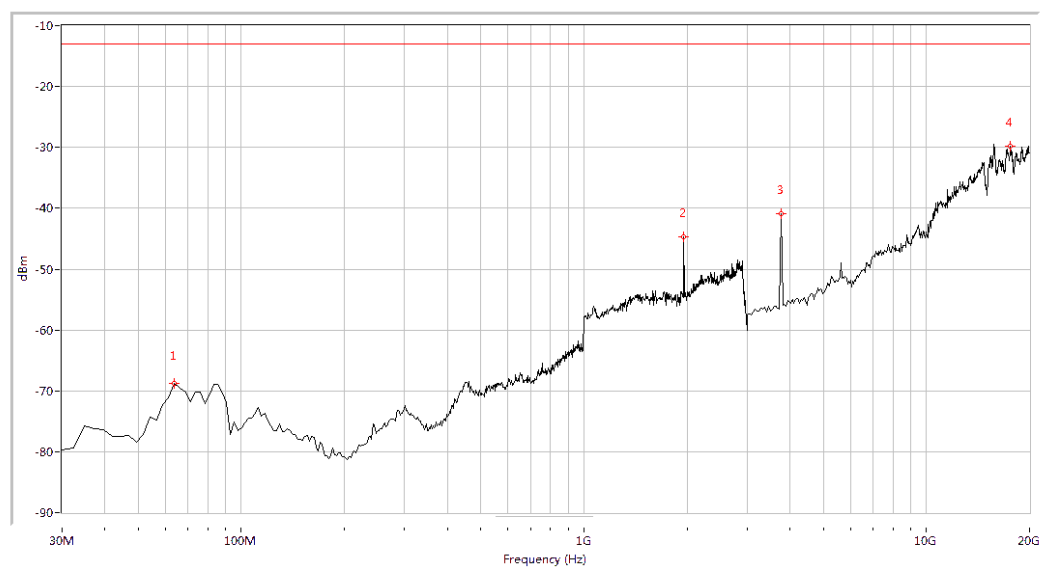
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-68.35	-13.0	55.3	63.0	Horizontal	PASS
1927.681	-44.85	-13.0	31.9	46.6	Horizontal	PASS
3720.698	-41.20	-13.0	28.2	63.3	Horizontal	PASS
17286.783	-30.17	-13.0	17.2	120.7	Horizontal	PASS

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



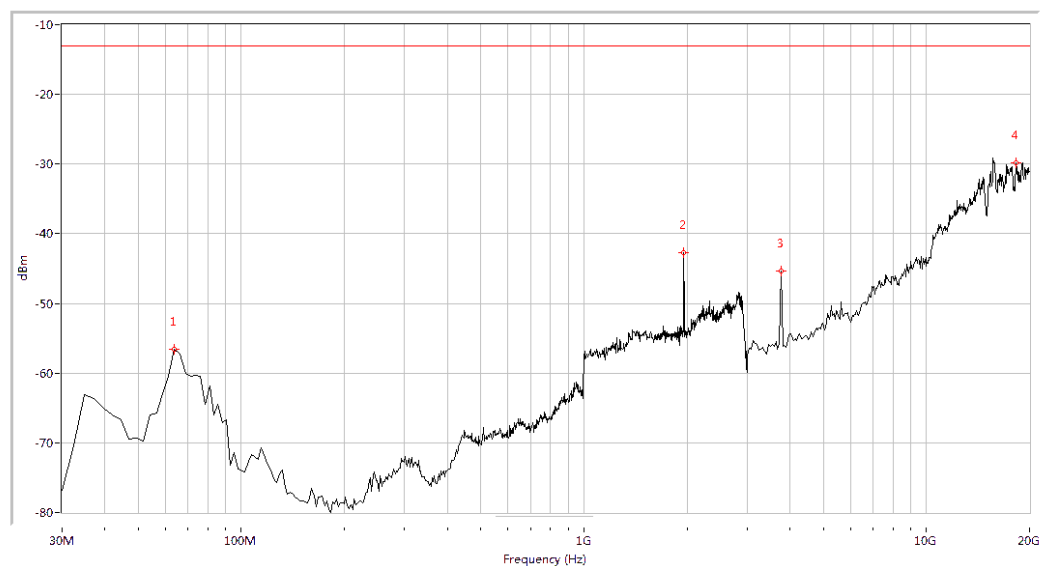
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-56.56	-13.0	43.6	354.3	Vertical	PASS
1837.905	-43.09	-13.0	30.1	259.4	Vertical	PASS
3720.698	-45.06	-13.0	32.1	293.3	Vertical	PASS
17201.995	-28.94	-13.0	15.9	-0.0	Vertical	PASS

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



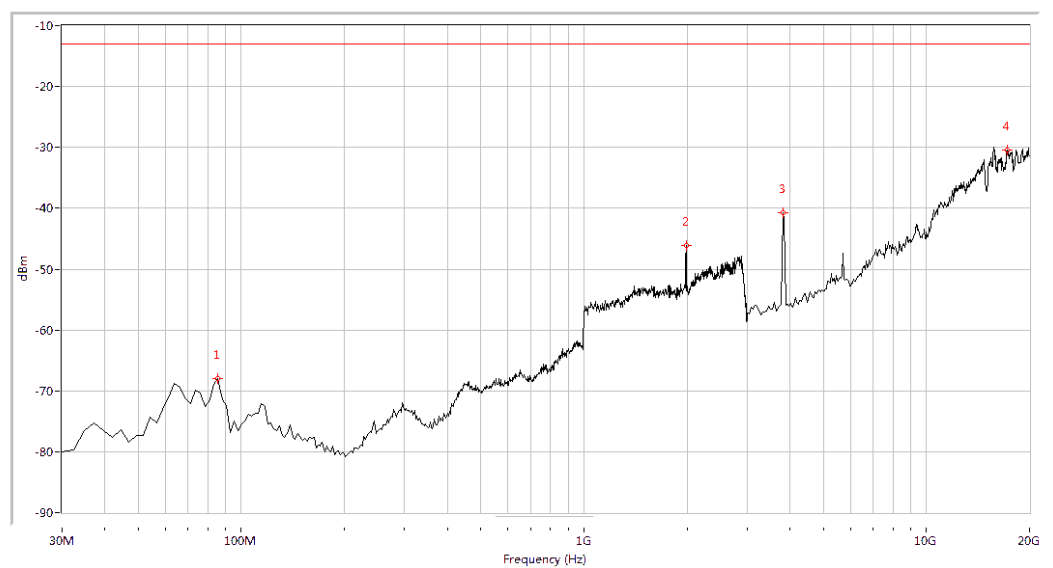
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-68.83	-13.0	55.8	77.5	Horizontal	PASS
1957.606	-44.71	-13.0	31.7	52.9	Horizontal	PASS
3763.092	-40.83	-13.0	27.8	51.8	Horizontal	PASS
17583.541	-29.72	-13.0	16.7	360.0	Horizontal	PASS

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



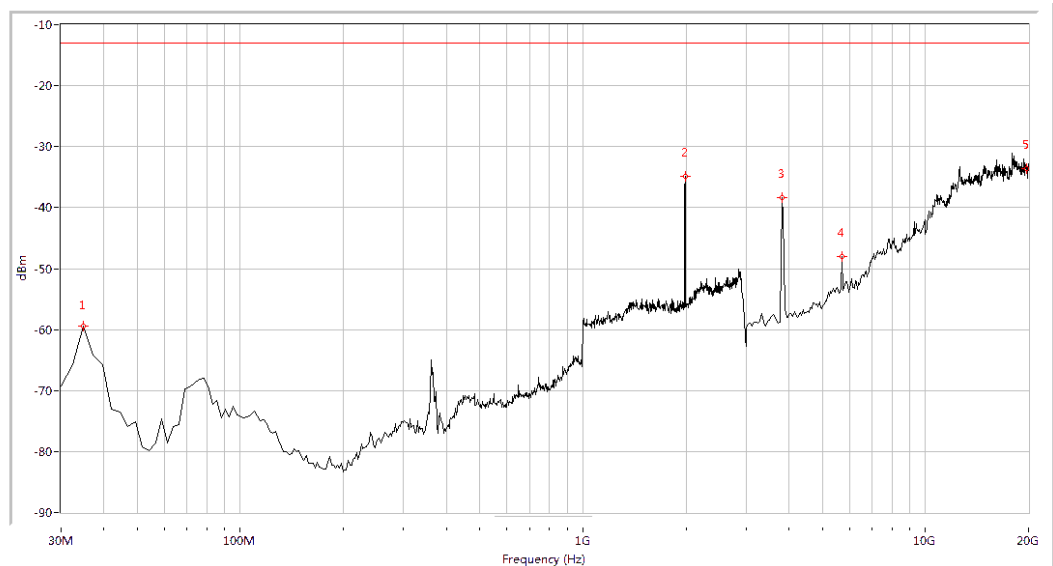
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
63.865	-56.60	-13.0	43.6	336.7	Vertical	PASS
1957.606	-42.66	-13.0	29.7	149.7	Vertical	PASS
3763.092	-45.38	-13.0	32.4	282.1	Vertical	PASS
18304.239	-29.84	-13.0	16.8	138.5	Vertical	PASS

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



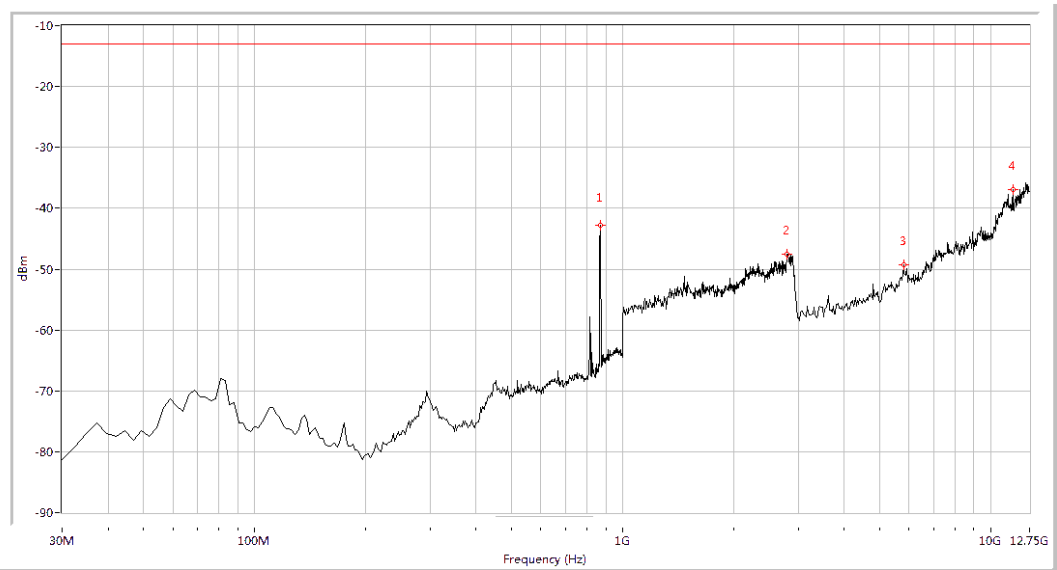
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
85.636	-67.93	-13.0	54.9	168.6	Horizontal	PASS
1987.531	-46.12	-13.0	33.1	235.7	Horizontal	PASS
3805.486	-40.68	-13.0	27.7	73.0	Horizontal	PASS
17201.995	-30.38	-13.0	17.4	122.5	Horizontal	PASS

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



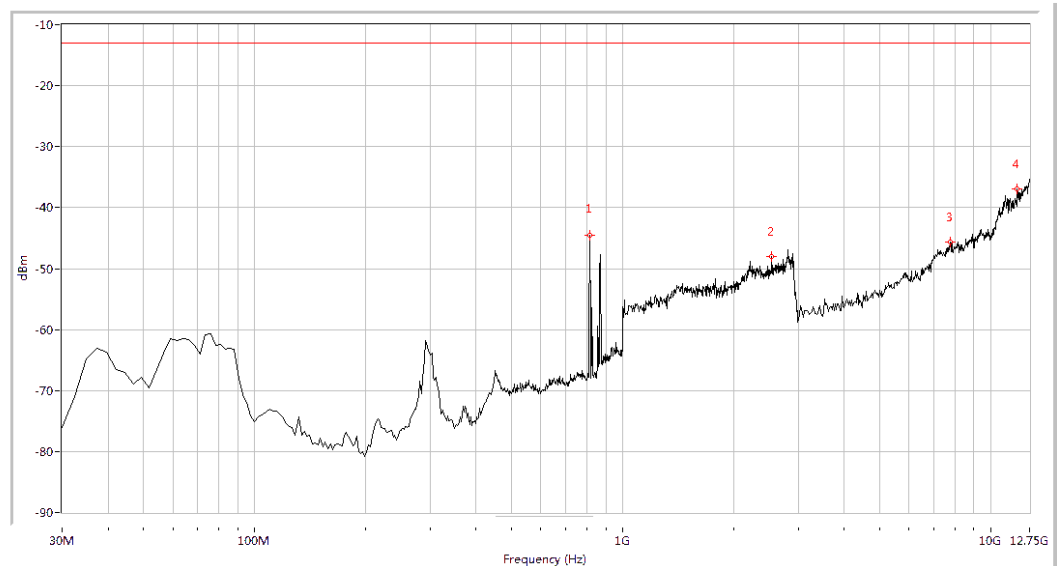
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
34.838	-59.41	-13.0	46.4	334.0	Vertical	PASS
1987.531	-34.85	-13.0	21.9	316.4	Vertical	PASS
3805.486	-38.40	-13.0	25.4	143.6	Vertical	PASS
5713.217	-47.99	-13.0	35.0	168.1	Vertical	PASS
19703.242	-33.61	-13.0	20.6	85.3	Vertical	PASS

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



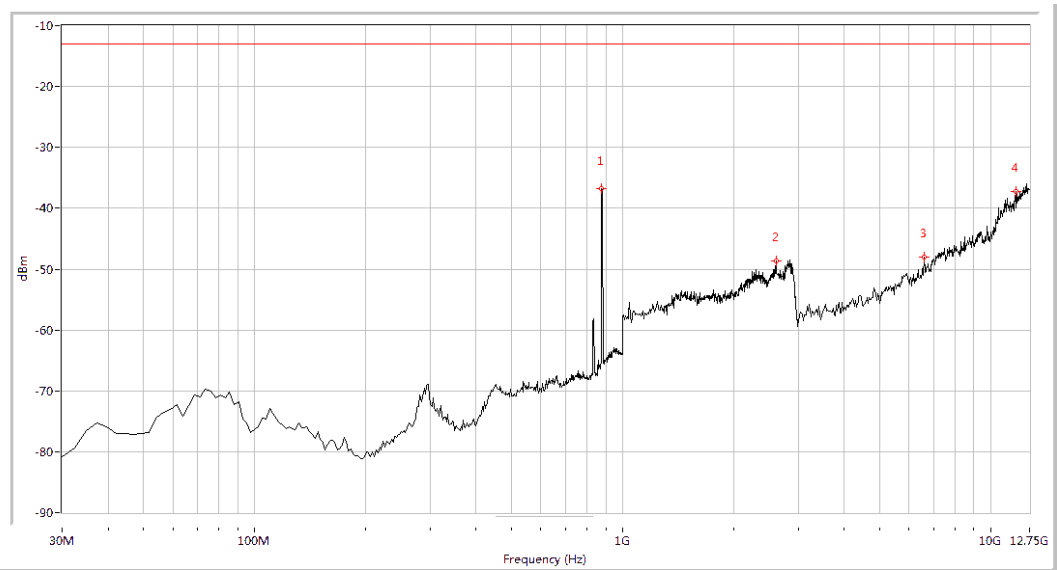
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
869.377	-42.73	-13.0	29.7	147.1	Horizontal	PASS
2795.511	-47.58	-13.0	34.6	228.9	Horizontal	PASS
5796.135	-49.36	-13.0	36.4	258.0	Horizontal	PASS
11485.661	-36.89	-13.0	23.9	331.3	Horizontal	PASS

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



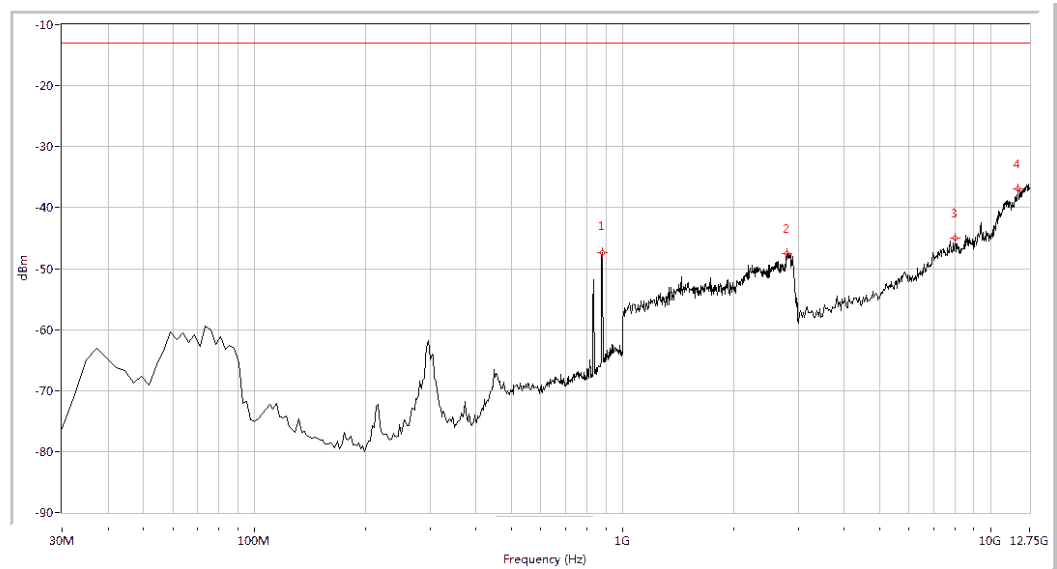
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
813.741	-44.55	-13.0	31.6	147.8	Vertical	PASS
2536.160	-47.95	-13.0	35.0	254.6	Vertical	PASS
7765.586	-45.69	-13.0	32.7	101.2	Vertical	PASS
11801.746	-36.97	-13.0	24.0	193.1	Vertical	PASS

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



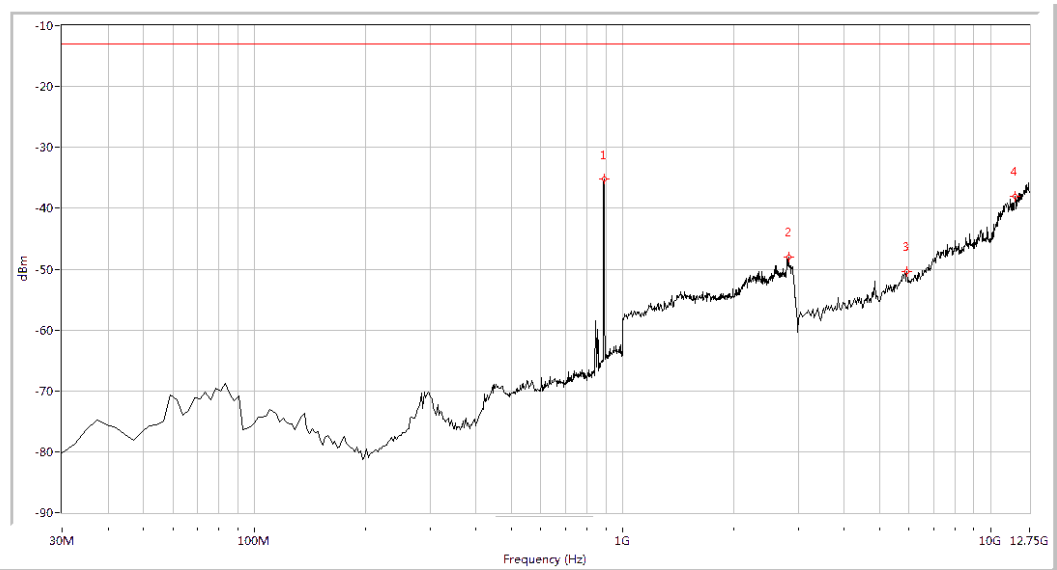
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
876.633	-36.84	-13.0	23.8	299.5	Horizontal	PASS
2610.973	-48.70	-13.0	35.7	132.2	Horizontal	PASS
6598.504	-48.08	-13.0	35.1	360.0	Horizontal	PASS
11680.175	-37.31	-13.0	24.3	172.7	Horizontal	PASS

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



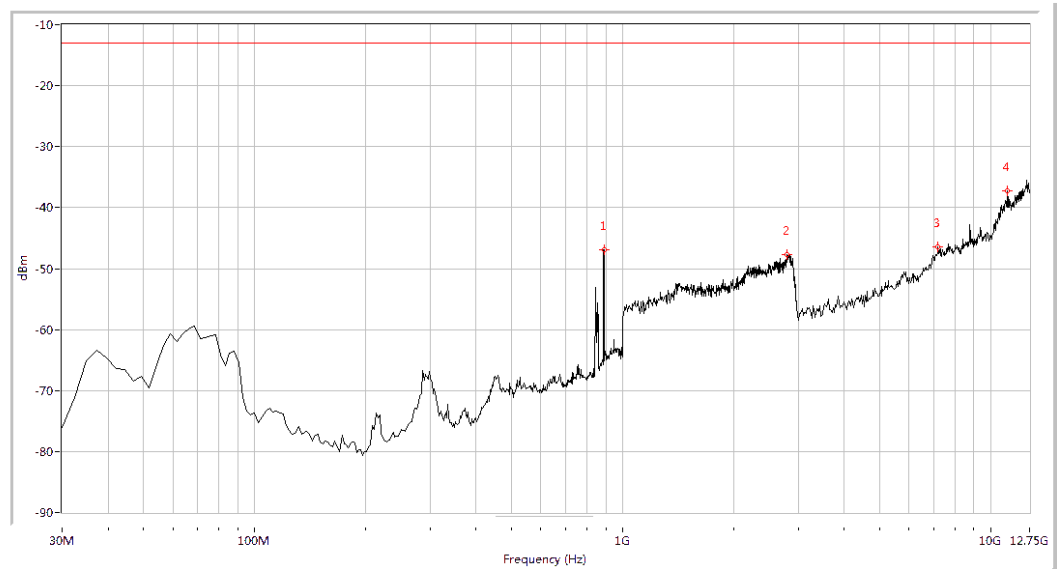
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-47.36	-13.0	34.4	292.6	Vertical	PASS
2790.524	-47.52	-13.0	34.5	230.3	Vertical	PASS
8008.728	-44.93	-13.0	31.9	308.6	Vertical	PASS
11850.374	-36.93	-13.0	23.9	359.2	Vertical	PASS

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



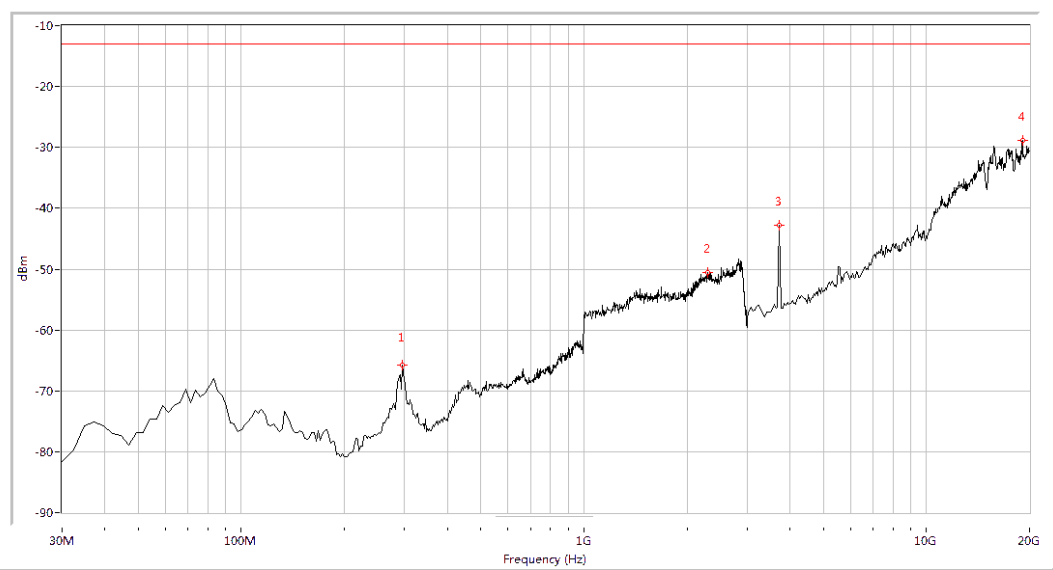
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-35.27	-13.0	22.3	89.4	Horizontal	PASS
2825.436	-48.02	-13.0	35.0	3.4	Horizontal	PASS
5917.706	-50.36	-13.0	37.4	194.3	Horizontal	PASS
11655.860	-38.04	-13.0	25.0	104.3	Horizontal	PASS

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



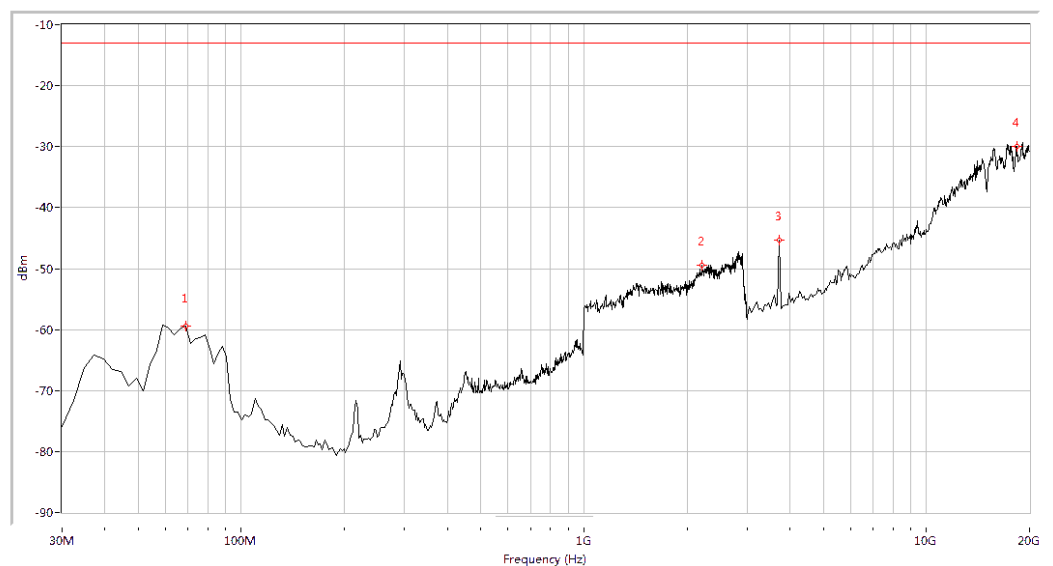
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-46.98	-13.0	34.0	62.2	Vertical	PASS
2800.499	-47.68	-13.0	34.7	59.3	Vertical	PASS
7182.045	-46.45	-13.0	33.4	148.9	Vertical	PASS
11120.948	-37.29	-13.0	24.3	331.5	Vertical	PASS

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



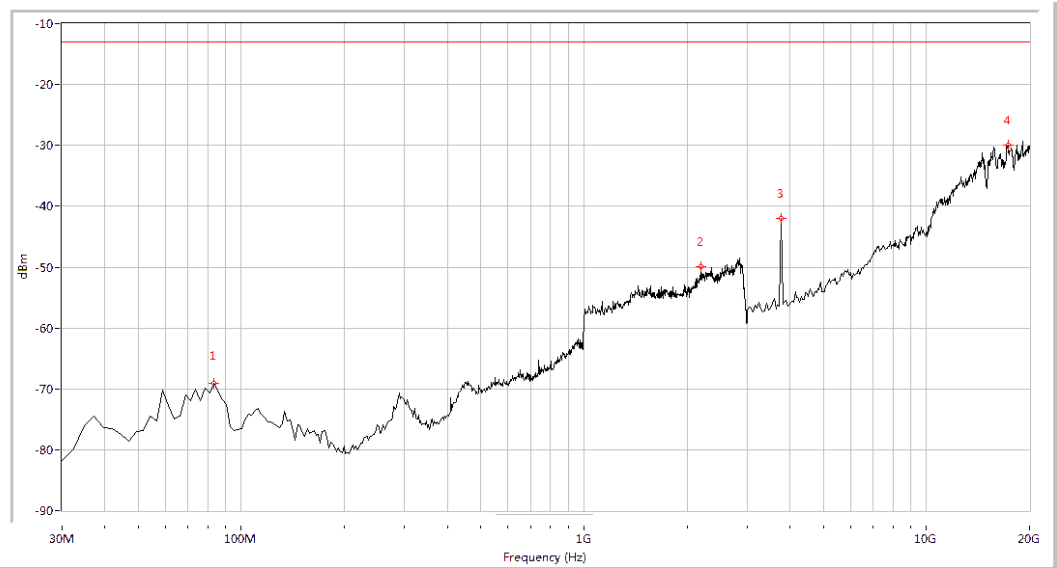
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
296.085	-65.84	-13.0	52.8	247.5	Horizontal	PASS
2301.746	-50.49	-13.0	37.5	18.7	Horizontal	PASS
3720.698	-42.82	-13.0	29.8	60.8	Horizontal	PASS
19067.332	-28.85	-13.0	15.9	194.8	Horizontal	PASS

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



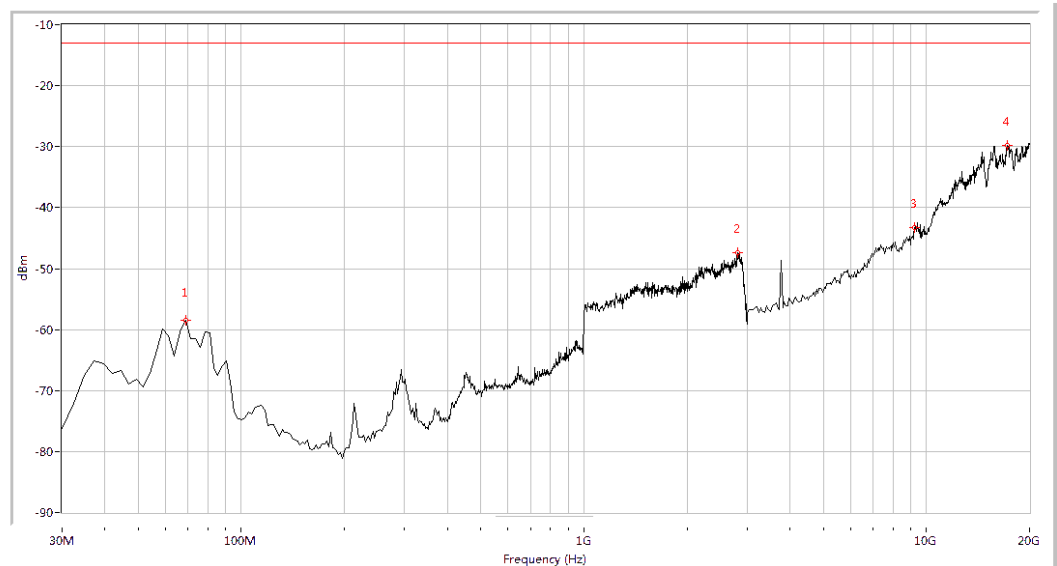
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-59.49	-13.0	46.5	5.1	Vertical	PASS
2211.970	-49.49	-13.0	36.5	298.8	Vertical	PASS
3720.698	-45.38	-13.0	32.4	294.9	Vertical	PASS
18346.633	-29.98	-13.0	17.0	53.0	Vertical	PASS

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



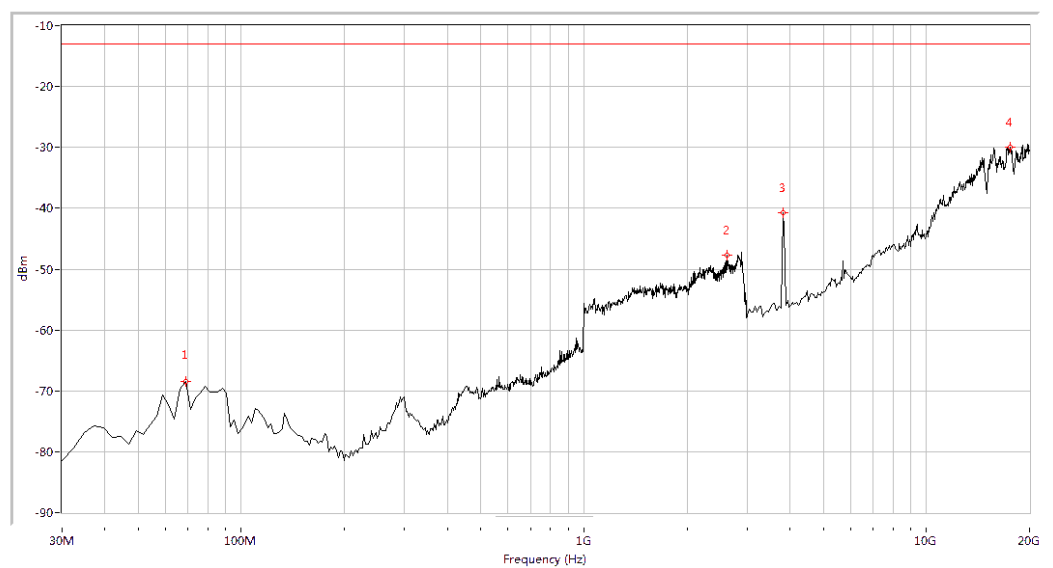
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-69.07	-13.0	56.1	207.7	Horizontal	PASS
2197.007	-49.96	-13.0	37.0	191.0	Horizontal	PASS
3763.092	-42.00	-13.0	29.0	70.8	Horizontal	PASS
17286.783	-29.91	-13.0	16.9	144.1	Horizontal	PASS

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



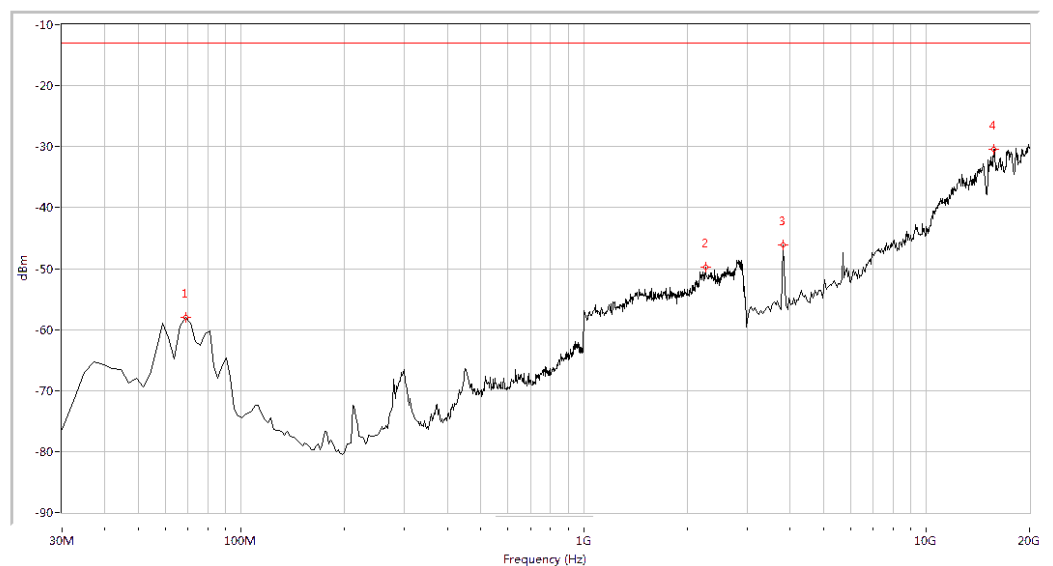
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-58.53	-13.0	45.5	-0.0	Vertical	PASS
2820.449	-47.44	-13.0	34.4	206.3	Vertical	PASS
9231.920	-43.24	-13.0	30.2	108.3	Vertical	PASS
17201.995	-29.75	-13.0	16.7	76.0	Vertical	PASS

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



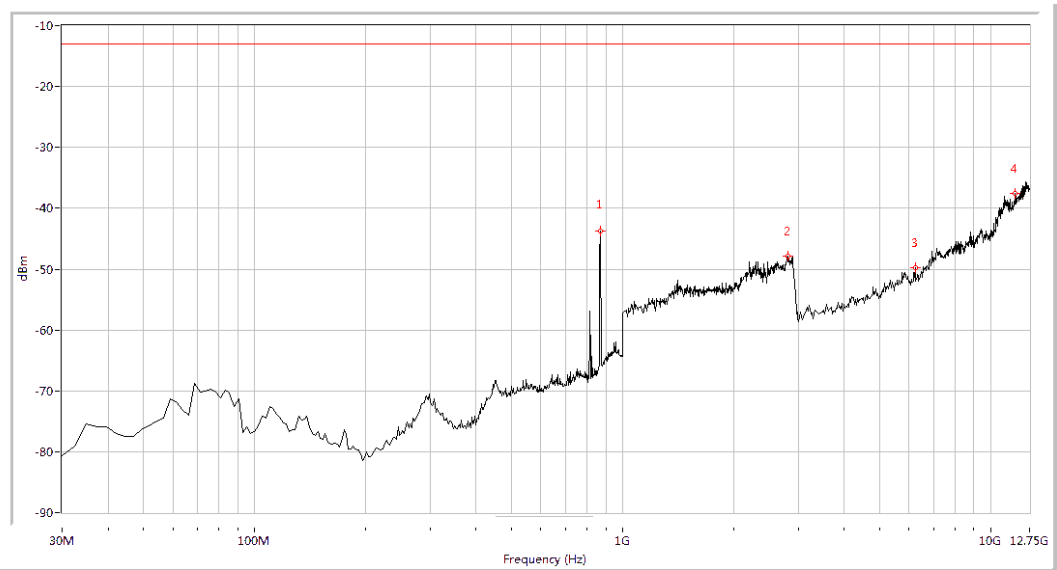
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-68.53	-13.0	55.5	99.4	Horizontal	PASS
2610.973	-47.75	-13.0	34.8	39.7	Horizontal	PASS
3805.486	-40.75	-13.0	27.8	59.2	Horizontal	PASS
17541.147	-29.92	-13.0	16.9	309.5	Horizontal	PASS

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



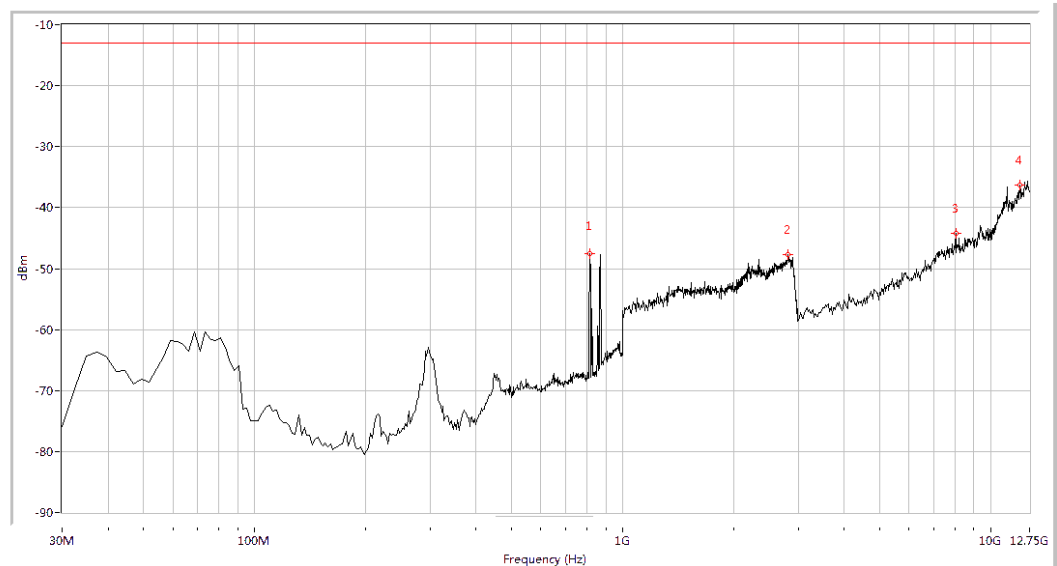
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-58.02	-13.0	45.0	36.2	Vertical	PASS
2271.820	-49.75	-13.0	36.8	-0.0	Vertical	PASS
3805.486	-46.18	-13.0	33.2	269.8	Vertical	PASS
15760.599	-30.38	-13.0	17.4	75.6	Vertical	PASS

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



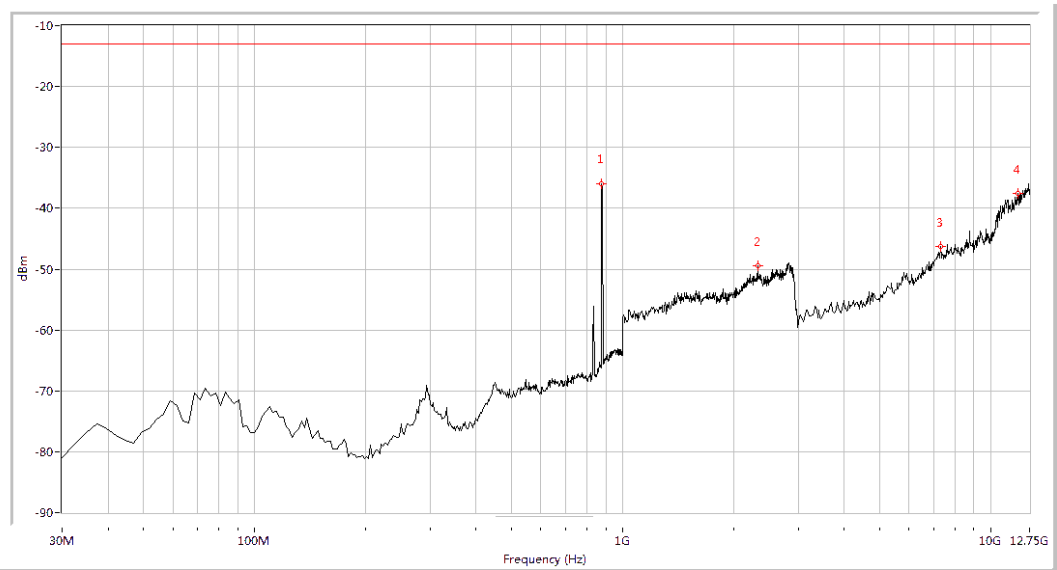
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-43.77	-13.0	30.8	172.8	Horizontal	PASS
2810.474	-47.79	-13.0	34.8	281.2	Horizontal	PASS
6233.791	-49.79	-13.0	36.8	357.4	Horizontal	PASS
11655.860	-37.51	-13.0	24.5	113.2	Horizontal	PASS

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



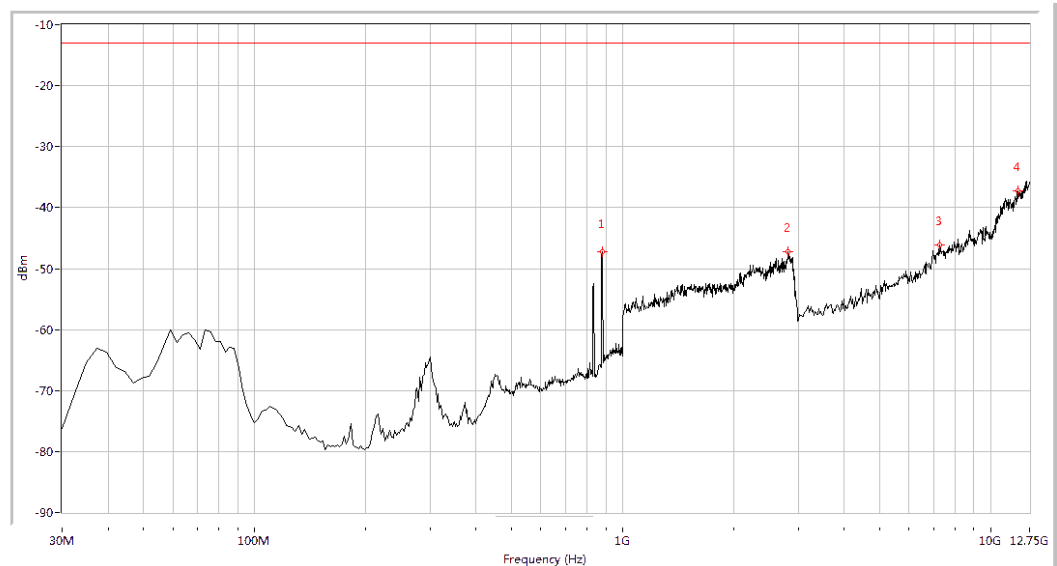
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
816.160	-47.48	-13.0	34.5	168.6	Vertical	PASS
2815.461	-47.76	-13.0	34.8	360.0	Vertical	PASS
8033.042	-44.27	-13.0	31.3	96.5	Vertical	PASS
11971.945	-36.33	-13.0	23.3	290.2	Vertical	PASS

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



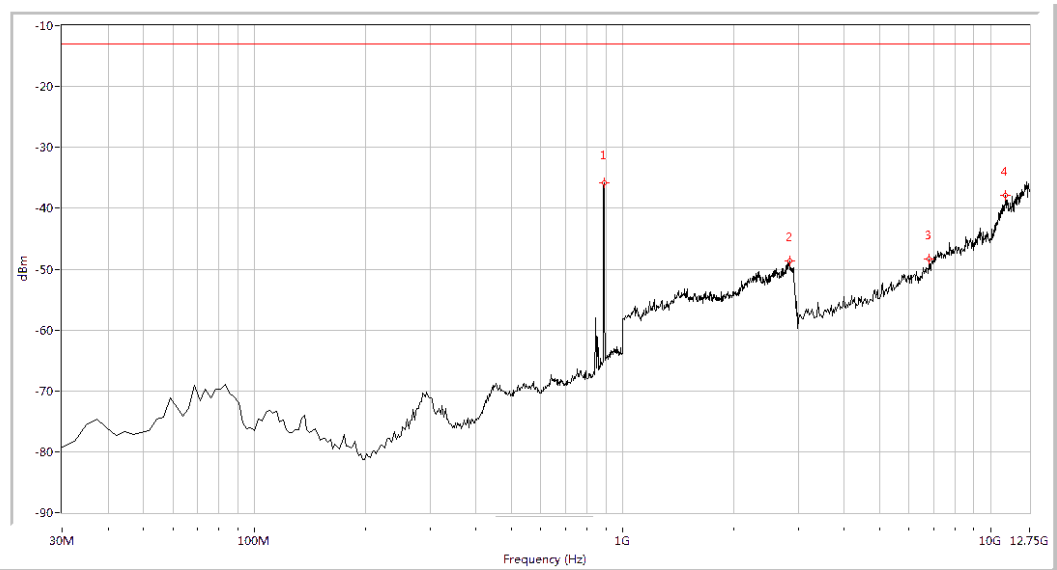
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
876.633	-36.02	-13.0	23.0	168.7	Horizontal	PASS
2326.683	-49.48	-13.0	36.5	2.5	Horizontal	PASS
7327.930	-46.28	-13.0	33.3	21.3	Horizontal	PASS
11874.688	-37.62	-13.0	24.6	272.8	Horizontal	PASS

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



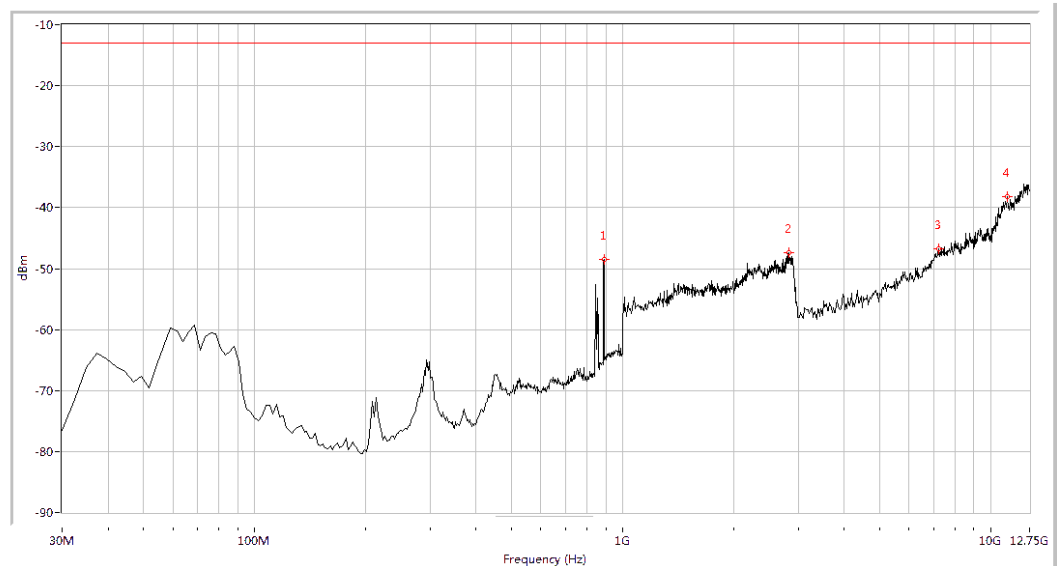
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-47.16	-13.0	34.2	101.7	Vertical	PASS
2810.474	-47.20	-13.0	34.2	199.9	Vertical	PASS
7279.302	-46.08	-13.0	33.1	272.2	Vertical	PASS
11874.688	-37.31	-13.0	24.3	58.2	Vertical	PASS

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



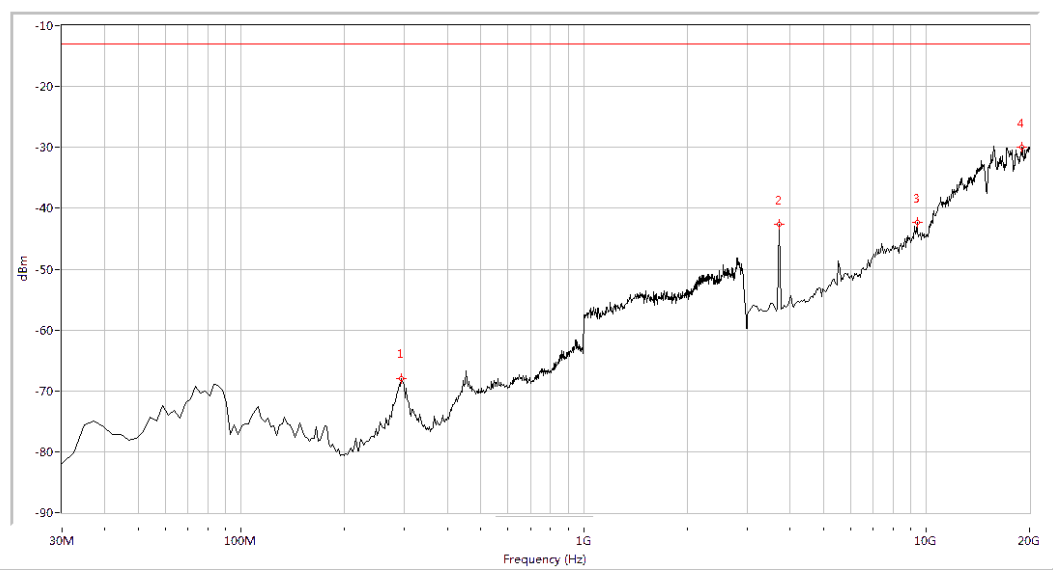
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-35.75	-13.0	22.8	171.0	Horizontal	PASS
2840.399	-48.67	-13.0	35.7	360.0	Horizontal	PASS
6817.332	-48.37	-13.0	35.4	82.8	Horizontal	PASS
10975.062	-37.87	-13.0	24.9	284.8	Horizontal	PASS

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



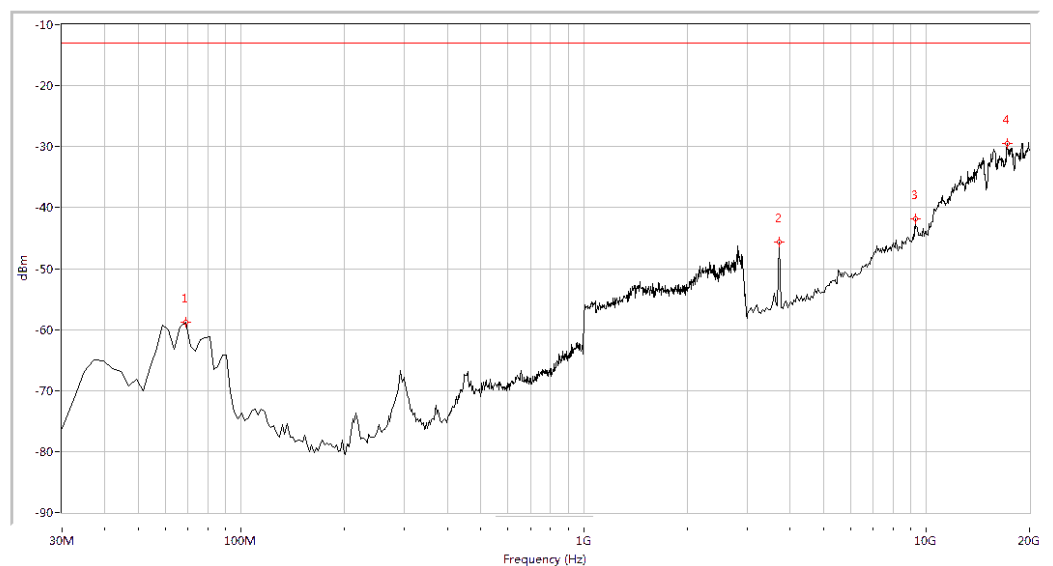
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-48.43	-13.0	35.4	73.4	Vertical	PASS
2825.436	-47.42	-13.0	34.4	290.7	Vertical	PASS
7206.359	-46.69	-13.0	33.7	138.1	Vertical	PASS
11096.633	-38.27	-13.0	25.3	126.6	Vertical	PASS

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



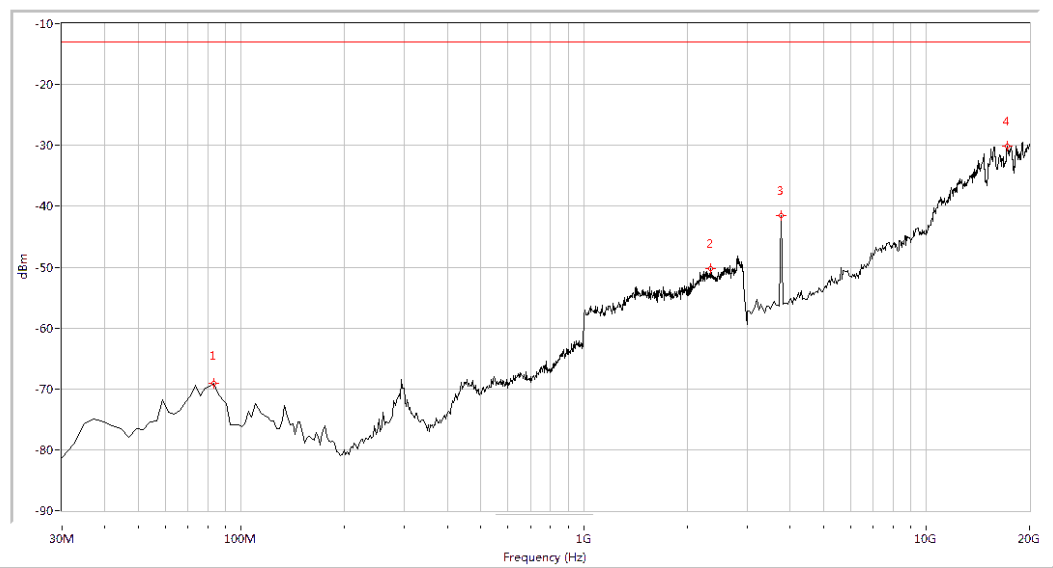
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
293.666	-68.03	-13.0	55.0	244.9	Horizontal	PASS
3720.698	-42.65	-13.0	29.7	93.9	Horizontal	PASS
9401.496	-42.34	-13.0	29.3	278.8	Horizontal	PASS
19024.938	-29.98	-13.0	17.0	35.8	Horizontal	PASS

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



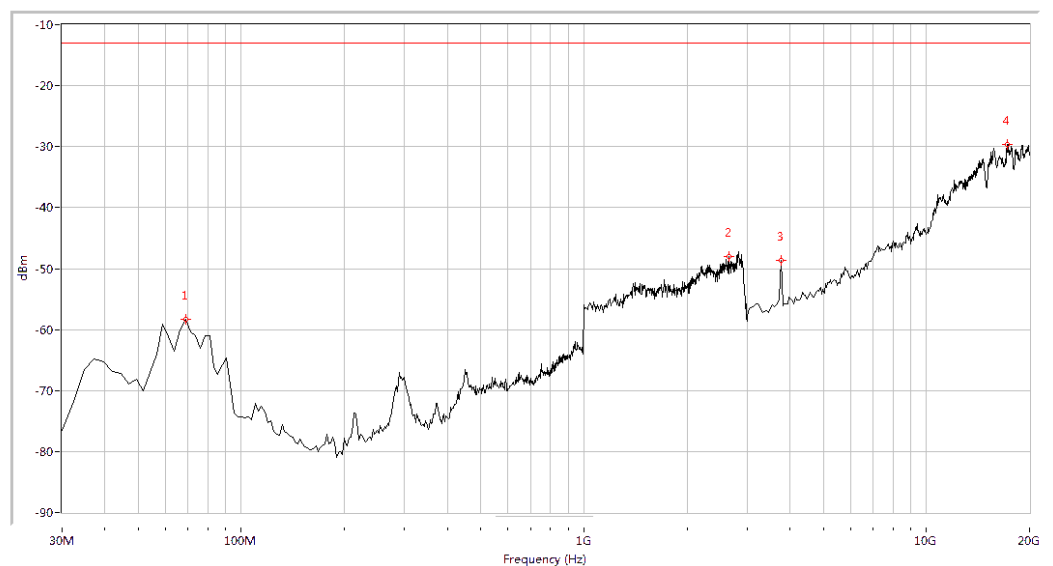
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-58.85	-13.0	45.8	5.3	Vertical	PASS
3720.698	-45.71	-13.0	32.7	292.2	Vertical	PASS
9274.314	-41.79	-13.0	28.8	360.0	Vertical	PASS
17201.995	-29.55	-13.0	16.5	342.1	Vertical	PASS

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



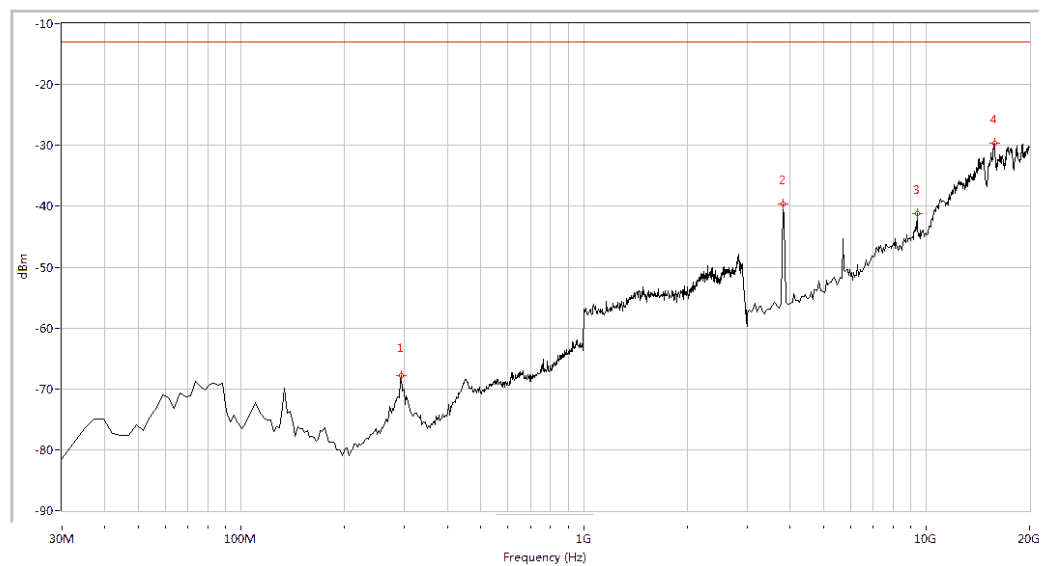
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
83.217	-69.11	-13.0	56.1	220.0	Horizontal	PASS
2351.621	-50.32	-13.0	37.3	160.5	Horizontal	PASS
3763.092	-41.47	-13.0	28.5	72.3	Horizontal	PASS
17201.995	-30.13	-13.0	17.1	257.9	Horizontal	PASS

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



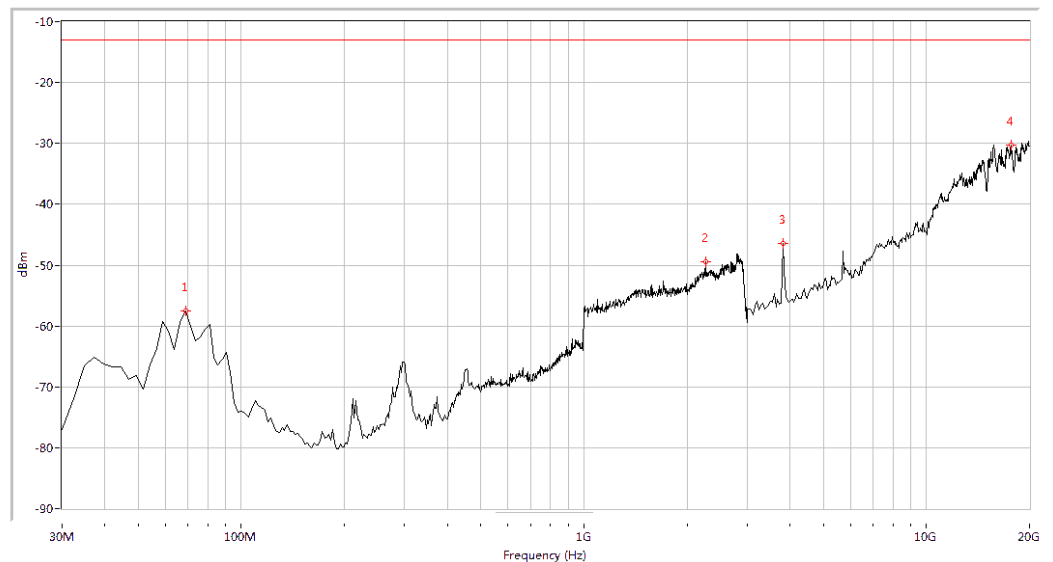
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-58.29	-13.0	45.3	5.7	Vertical	PASS
2645.885	-48.02	-13.0	35.0	85.3	Vertical	PASS
3763.092	-48.73	-13.0	35.7	289.8	Vertical	PASS
17201.995	-29.62	-13.0	16.6	241.9	Vertical	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
293.666	-67.75	-13.0	54.7	76.0	Horizontal	PASS
3805.486	-39.65	-13.0	26.6	57.4	Horizontal	PASS
9401.496	-41.17	-13.0	28.2	130.3	Horizontal	PASS
15802.993	-29.57	-13.0	16.6	356.9	Horizontal	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
68.703	-57.60	-13.0	44.6	-0.0	Vertical	PASS
2271.820	-49.41	-13.0	36.4	133.2	Vertical	PASS
3805.486	-46.42	-13.0	33.4	276.9	Vertical	PASS
17625.935	-30.35	-13.0	17.3	81.6	Vertical	PASS

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

** END OF REPORT **