



RF TEST REPORT

Report No.: SET2013-05815
Product: Toughshield
FCC ID: OHV-R500PLUS
Model No.: R500+
Applicant: Toughshield devices ltd
Address: 2nd Floor, Belgravia House, 34-44 Circular Road, Douglas, Isle of Man. IM1 1AE
Issued by: CCIC-SET
Lab Location: Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen China
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Test Report

Product: Toughshield

Brand Name.....: Toughshield

Trade Name.....: Toughshield

Applicant.....: Toughshield devices ltd

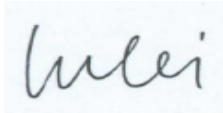
Applicant Address: 2nd Floor, Belgravia House, 34-44 Circular Road, Douglas,
Isle of Man. IM1 1AE

Manufacturer: Toughshield devices ltd

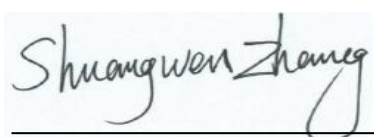
Manufacturer Address: 2nd Floor, Belgravia House, 34-44 Circular Road, Douglas,
Isle of Man. IM1 1AE

Test Standards: 47 CFR Part 2(10-1-12 Edition) Frequency Allocations and
Radio Treaty Matters; General Rules and Regulations
47 CFR Part 22(10-1-12 Edition) Public Mobile Services
47 CFR Part 24(10-1-12 Edition) Personal Communications
Services

Test Result.....: PASS

Tested by:  2013-10-18

Lu Lei, Test Engineer

Reviewed by:  2013-10-18

Shuangwen Zhang, Senior EGINEER

Product:  2013-10-18

Wu Li'an, Manager



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Change History		
Issue	Date	Reason for change
1.0	Oct 18, 2013	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type.....: Toughshield
 Serial No.....: (n.a, marked #1 by test site)
 FCC ID: OHV-R500PLUS
 Hardware Version: S103M001P000
 Software Version: R500+_VER_2.0_01010_20130820
 Frequency Range: GSM 850MHz:
 Tx: 824.20 - 848.80MHz (at intervals of 200kHz);
 Rx: 869.20 - 893.80MHz (at intervals of 200kHz)
 GSM 1900MHz:
 Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);
 Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)
 WCDMA 850MHz
 Tx: 826.4 - 846.6MHz (at intervals of 200kHz);
 Rx: 871.4 - 891.6MHz (at intervals of 200kHz)
 WCDMA 1900MHz
 Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);
 Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
 Modulation Type.....: GSM,GPRS Mode with GMSK Modulation
 EDGE Mode with 8PSK Modulation
 WCDMA Mode with QPSK Modulation
 HSDPA Mode with QPSK Modulation
 HSUPA Mode with QPSK Modulation
 HSPA+ Mode with QPSK Modulation
 Multislot Class.....: GPRS: Multislot Class12,EGPRS: Multislot Class12
 Antenna Type.....: PIFA Antenna
 Emission Designators: GSM 850:251KGXW,GSM 1900:253KGXW
 EGPRS850:250KG7W, EGPRS1900:246KG7W,
 WCDMA 850:4M19F9W ,WCDMA1900:4M19F9W
 HSDPA 850: 4M18F9W; HSDPA 1900: 4M17F9W
 HSUPA 850: 4M19F9W; HSUPA 1900: 4M19F9W
 HSPA+ 850: 4M19F9W; HSPA+ 1900: 4M19F9W

Note 1: The transmitter (Tx) frequency arrangement of the Cellular 850MHz band used by the EUT can be represented with the formula $F(n)=824.2+0.2*(n-128)$, $128 \leq n \leq 251$; the lowest, middle, highest channel numbers (ARFCNs) 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 (10-1-12 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-12 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-12 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	2.1049	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 Test Facilities

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4(m) fully anechoic chamber was used for the radiated spurious emissions test.

1.3.2 Test Environment Conditions

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

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

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

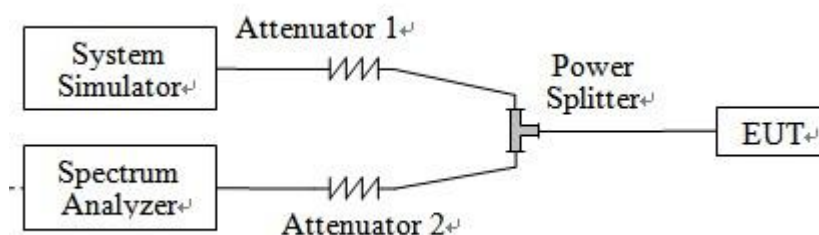
2.1 Conducted RF Output Power

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.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
System Simulator	Agilent	E5515C	GB43130131	2013.06.10
Spectrum Analyzer	Agilent	E7405A	US44210471	2013.06.10
Power Meter	Agilent	E4418B	GB43318055	2013.06.10
Power Sensor	Agilent	8482A	MY41091706	2013.06.10
Power Splitter	Weinschel	1506A	NW521	2013.06.10
Attenuator 1	Resnet	20dB	(n.a.)	2013.06.10
Attenuator 2	Resnet	3dB	(n.a.)	2013.06.10

The Cal. Interval was one year.

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:

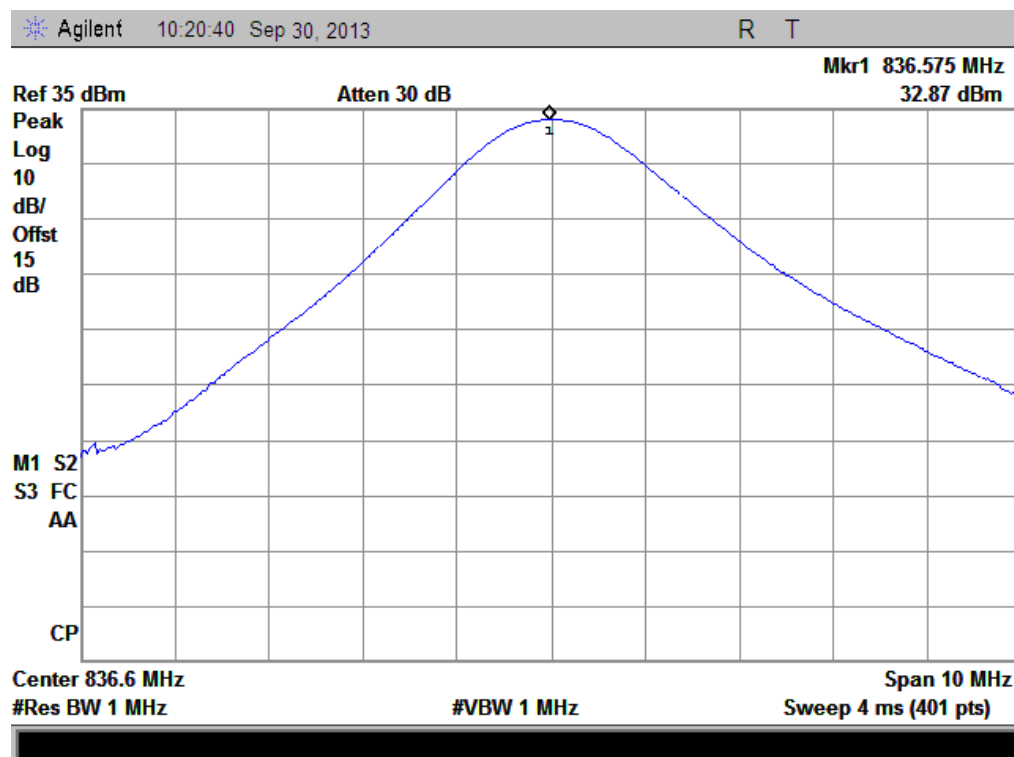
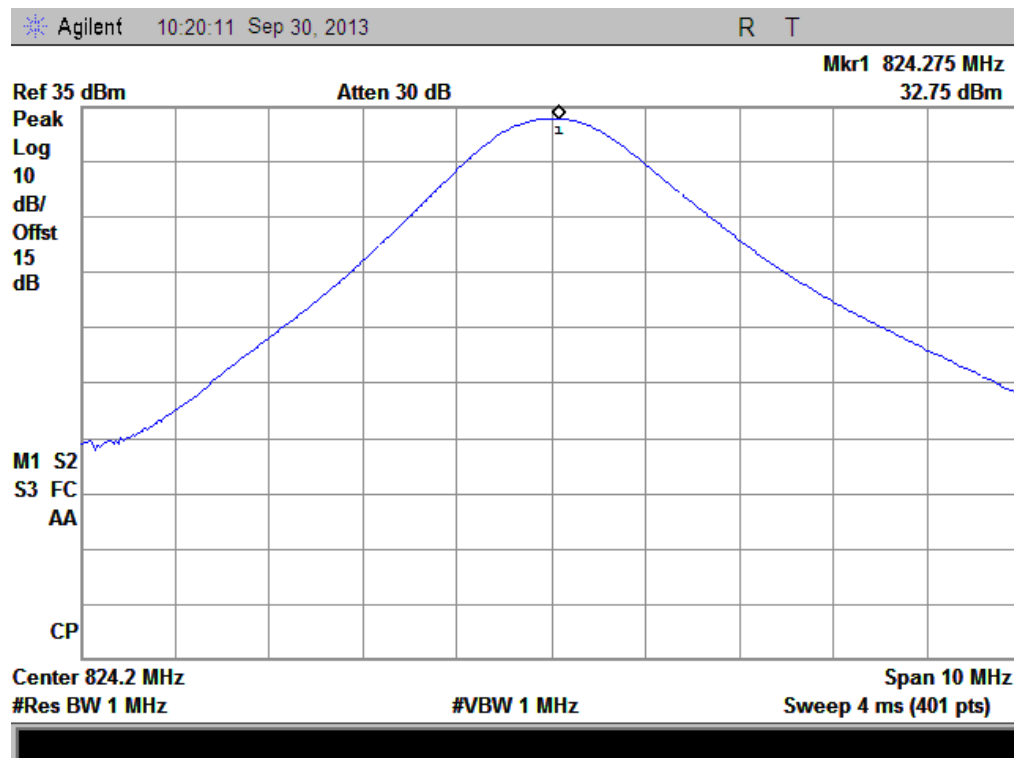
Band	Channel	Frequency (MHz)	Measured Output Power		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 850MHz	128	824.2	32.75	Plot A1 to A3	35	PASS
	190	836.6	32.87			PASS
	251	848.8	32.83			PASS
GSM 1900MHz	512	1850.2	28.85	Plot B1 to B3	32	PASS
	661	1880.0	28.85			PASS
	810	1909.8	28.44			PASS
GPRS 850MHz	128	824.2	32.15	Plot C1 to C3 ^{Note 1}	35	PASS
	190	836.6	32.34			PASS
	251	848.8	32.28			PASS
GPRS 1900MHz	512	1850.2	27.75	Plot D1 to D3 ^{Note 1}	32	PASS
	661	1880.0	27.75			PASS
	810	1909.8	27.52			PASS
EGPRS 850MHz	128	824.2	32.72	Plot E1 to E3 ^{Note 1}	35	PASS
	190	836.6	32.90			PASS
	251	848.8	32.85			PASS
EGPRS 1900MHz	512	1850.2	29.11	Plot F1 to F3 ^{Note 1}	32	PASS
	661	1880.0	29.18			PASS
	810	1909.8	28.87			PASS

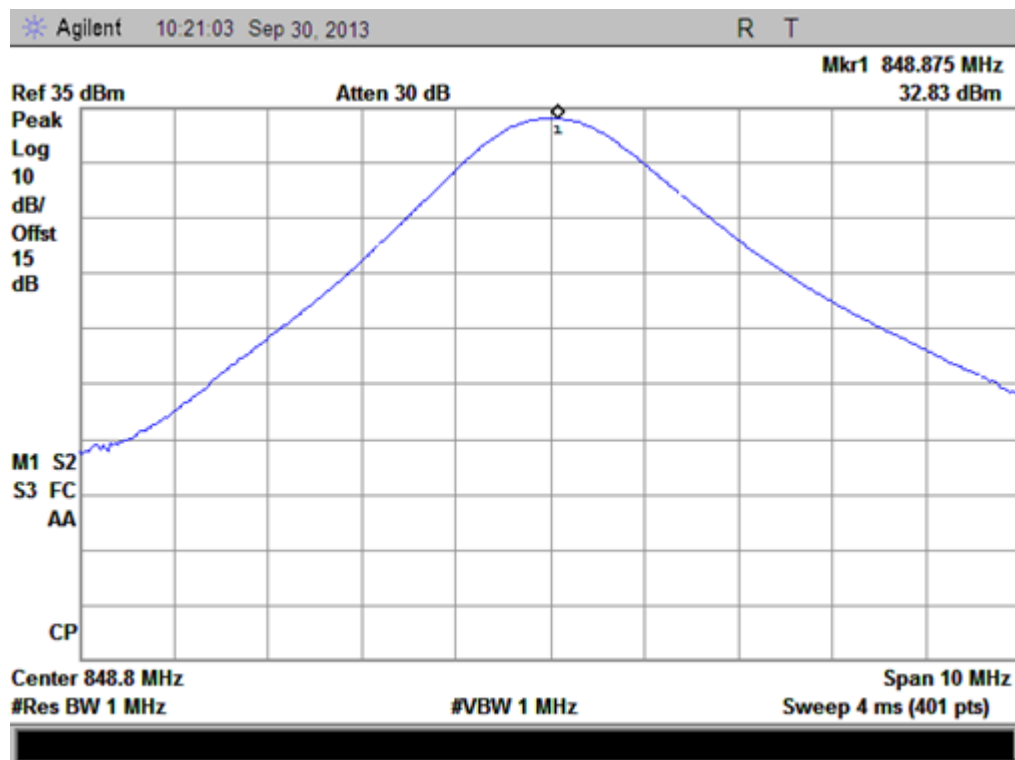
Note 1: For the GPRS and EGPRS model, all the slots were tested and just the worst data was record in this report.

2. WCDMA Model Test Verdict:

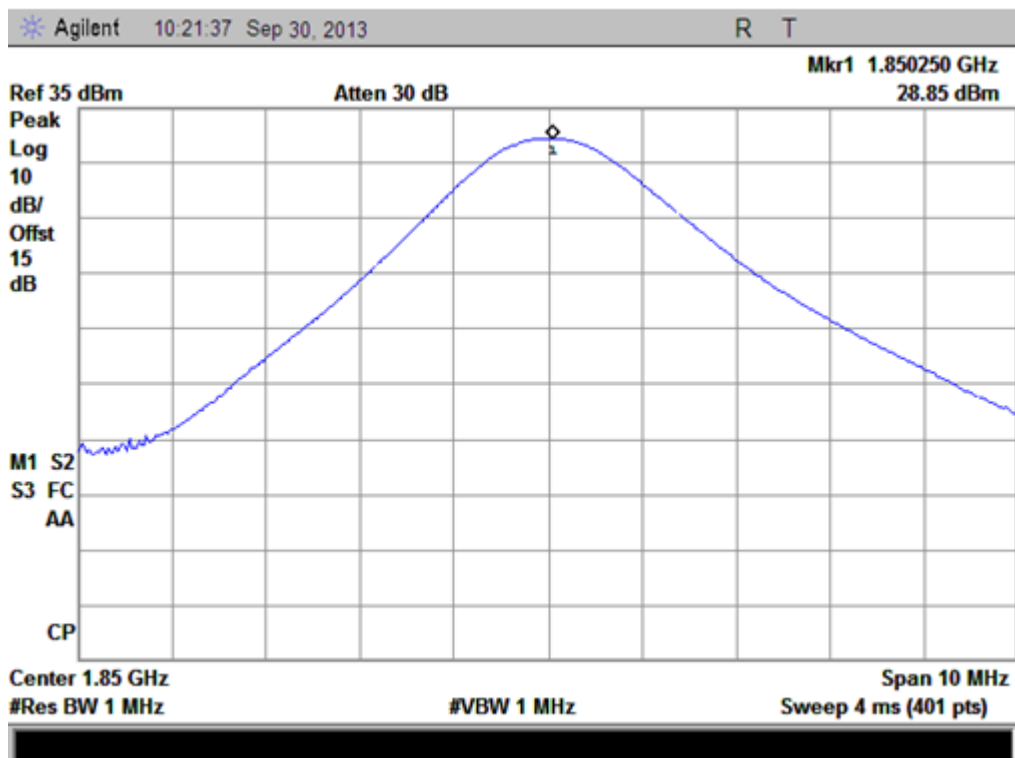
Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	23.62	23.69	23.62	23.32	23.40	23.35
HSDPA	1	23.58	23.63	23.61	23.08	23.13	23.12
	2	23.53	23.61	23.57	23.23	23.25	23.21
	3	23.07	23.15	23.13	23.09	23.15	23.05
	4	23.04	23.12	23.11	23.05	23.12	23.10
HSUPA	1	23.57	23.61	23.55	23.21	23.22	23.12
	2	22.66	22.72	22.67	21.49	21.54	21.45
	3	23.58	23.60	23.66	22.53	22.56	22.49
	4	22.63	22.71	22.63	21.49	21.53	21.52
	5	23.55	23.61	23.60	23.39	23.51	23.41
HSPA+	1	23.55	23.59	23.52	23.49	23.50	23.49
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA /HSPA+ was tested by power meter.						

3. GSM Model Test Plots:

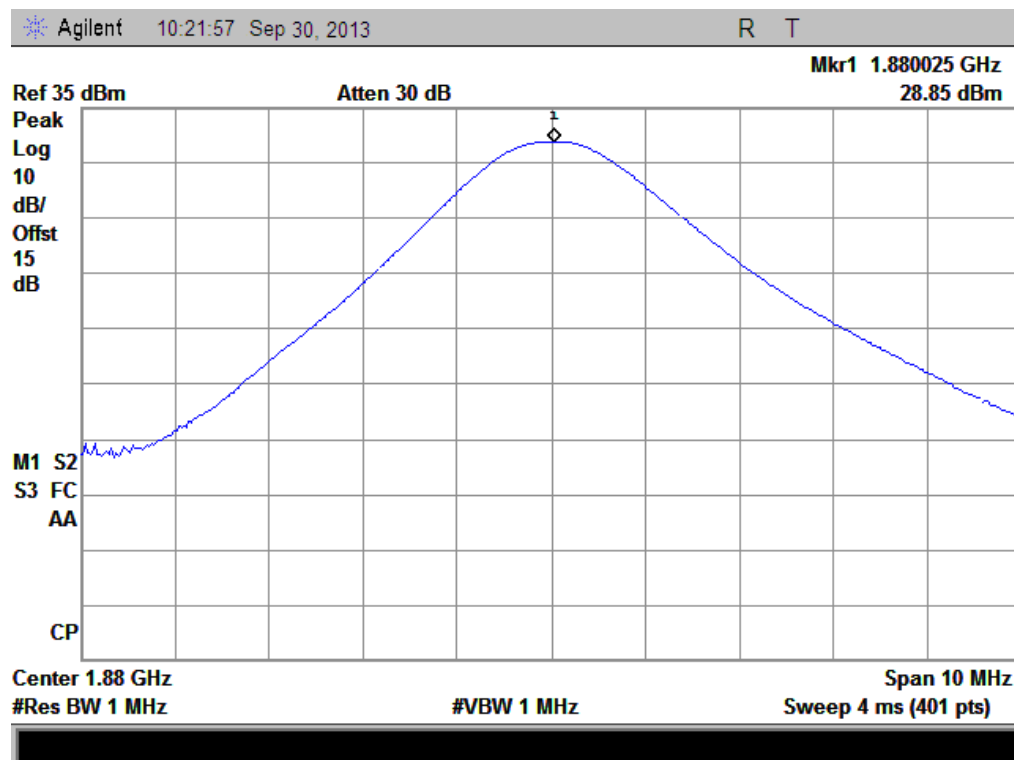




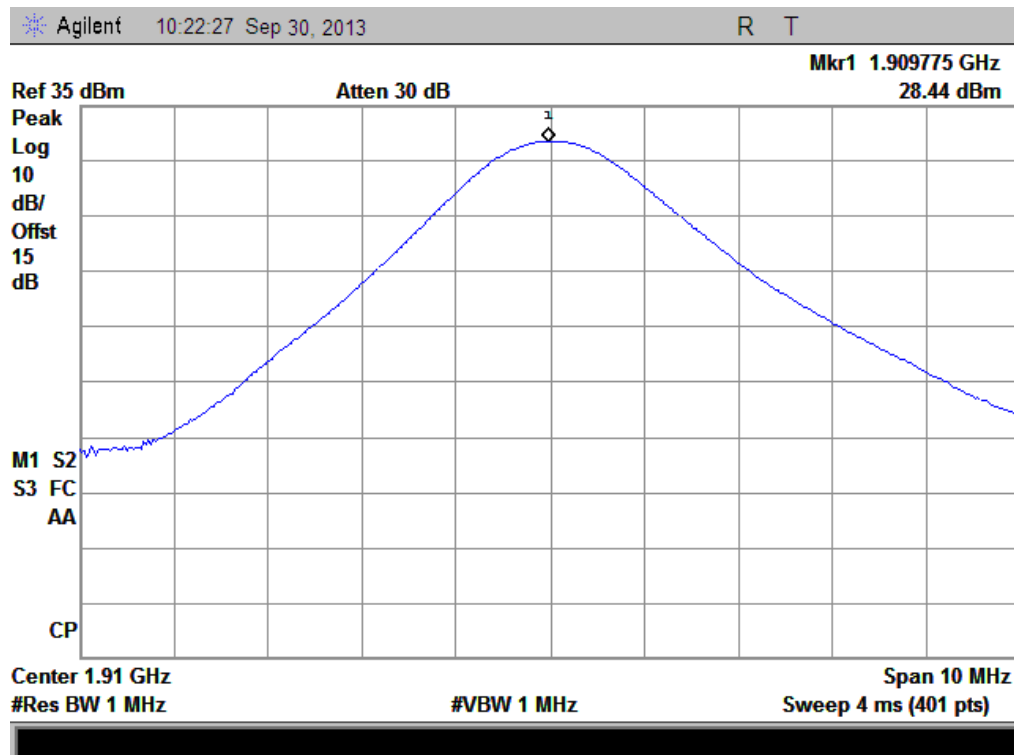
(Plot A3: GSM 850MHz Channel = 251)



(Plot B1: GSM 1900MHz Channel = 512)

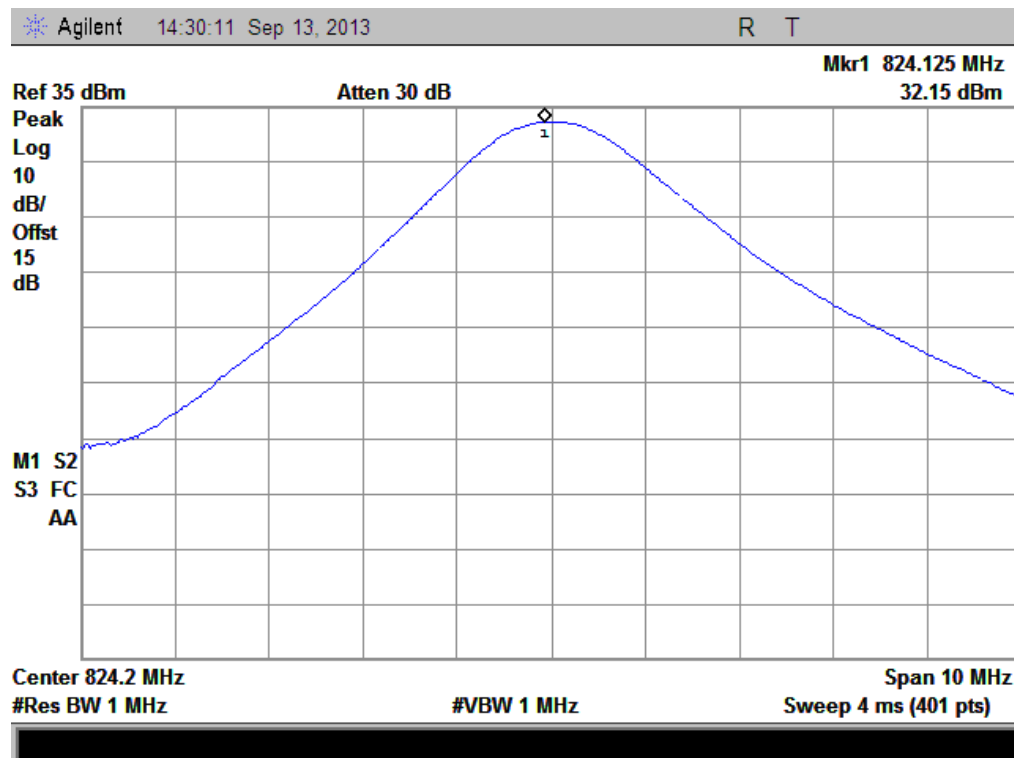


(Plot B2: GSM 1900MHz Channel = 661)



(Plot B3: GSM 1900MHz Channel = 810)

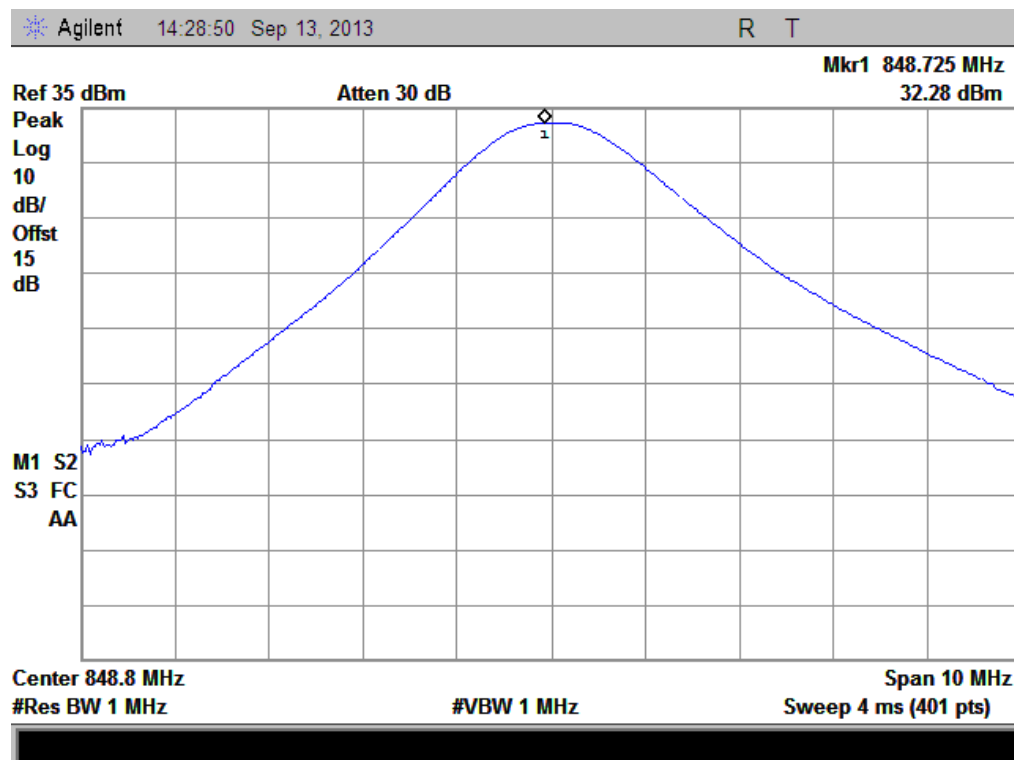
4. GPRS Model Test Plots:



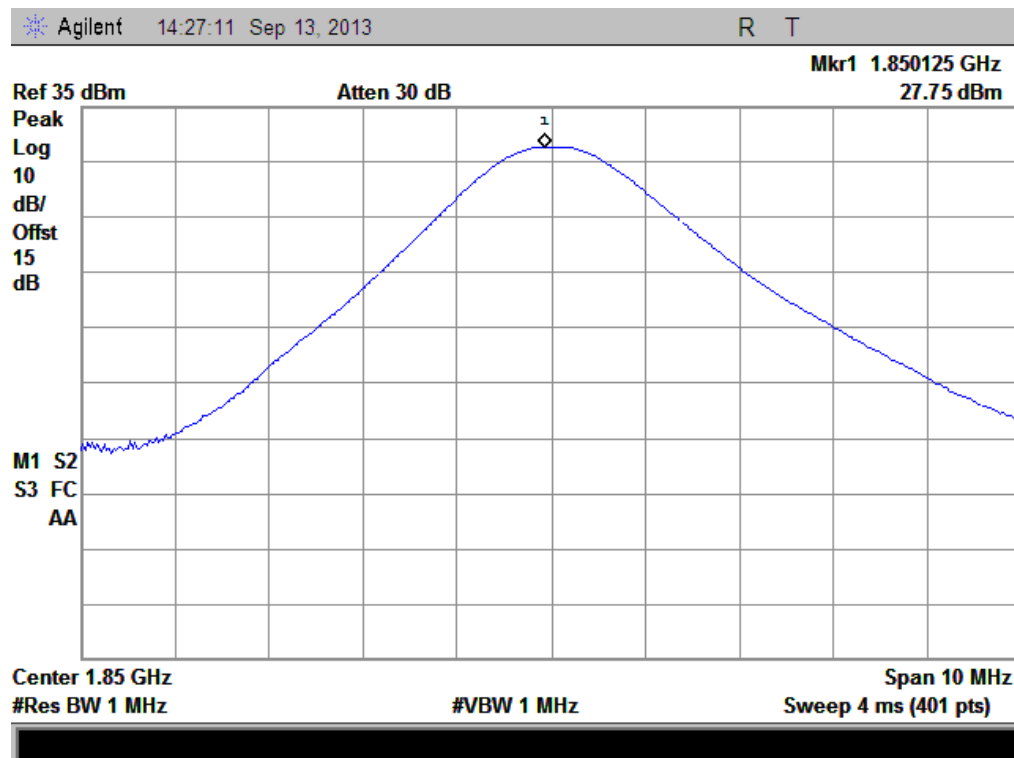
(Plot C1: GPRS 850MHz Channel = 128)



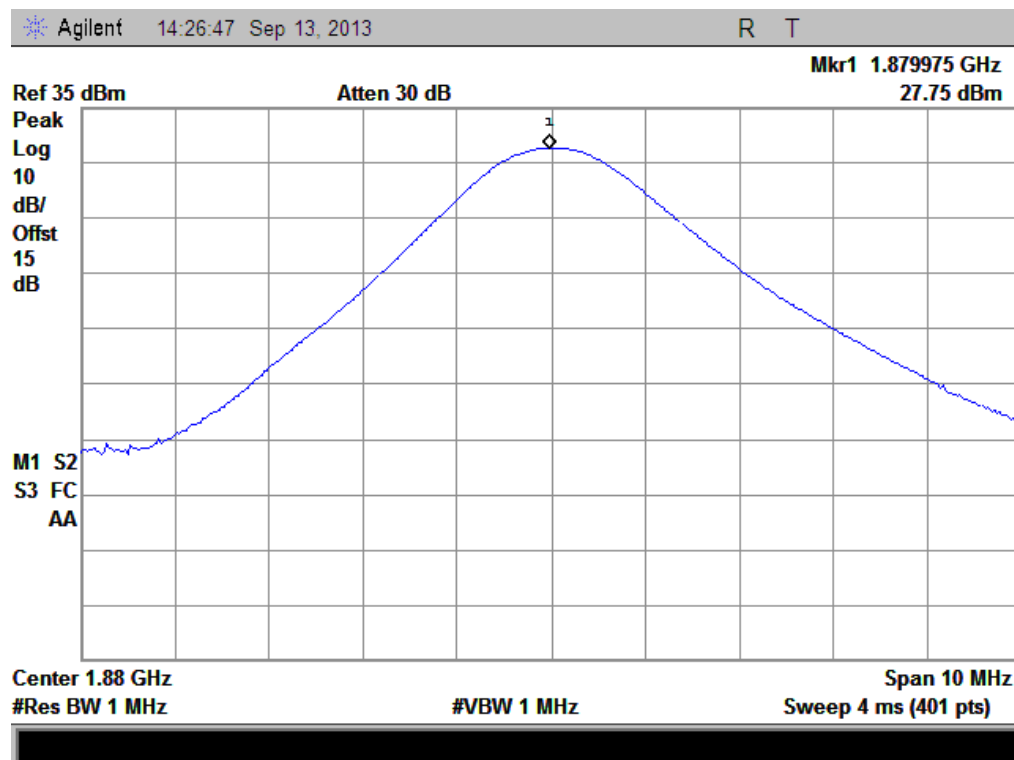
(Plot C2: GPRS 850MHz Channel = 190)



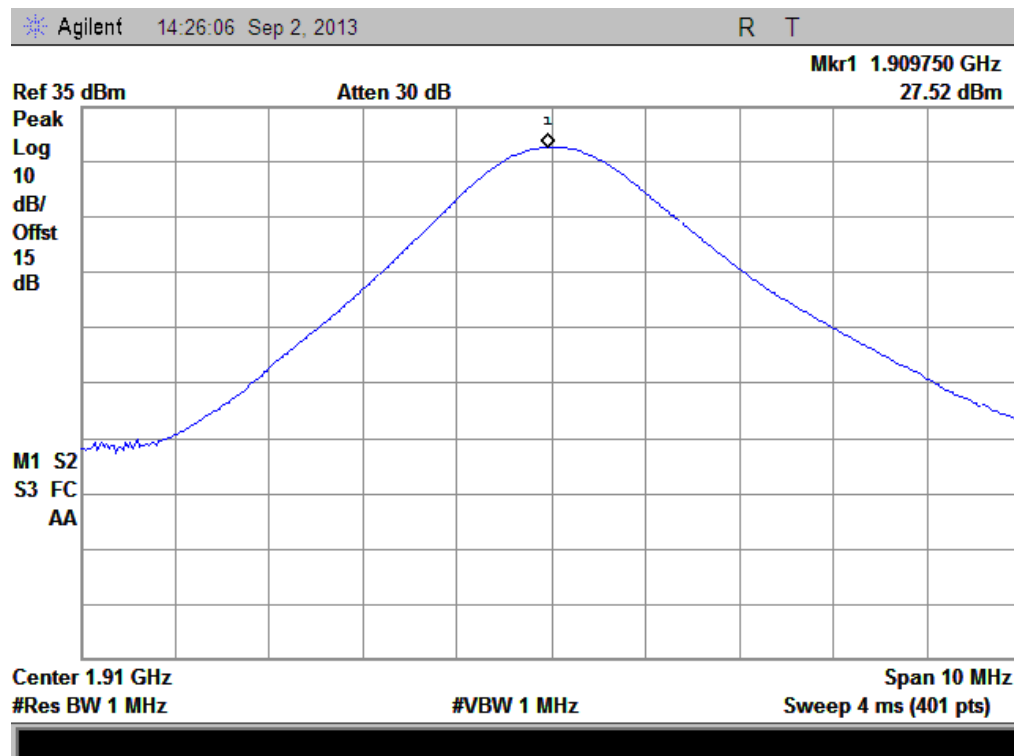
(Plot C3: GPRS 850MHz Channel = 251)



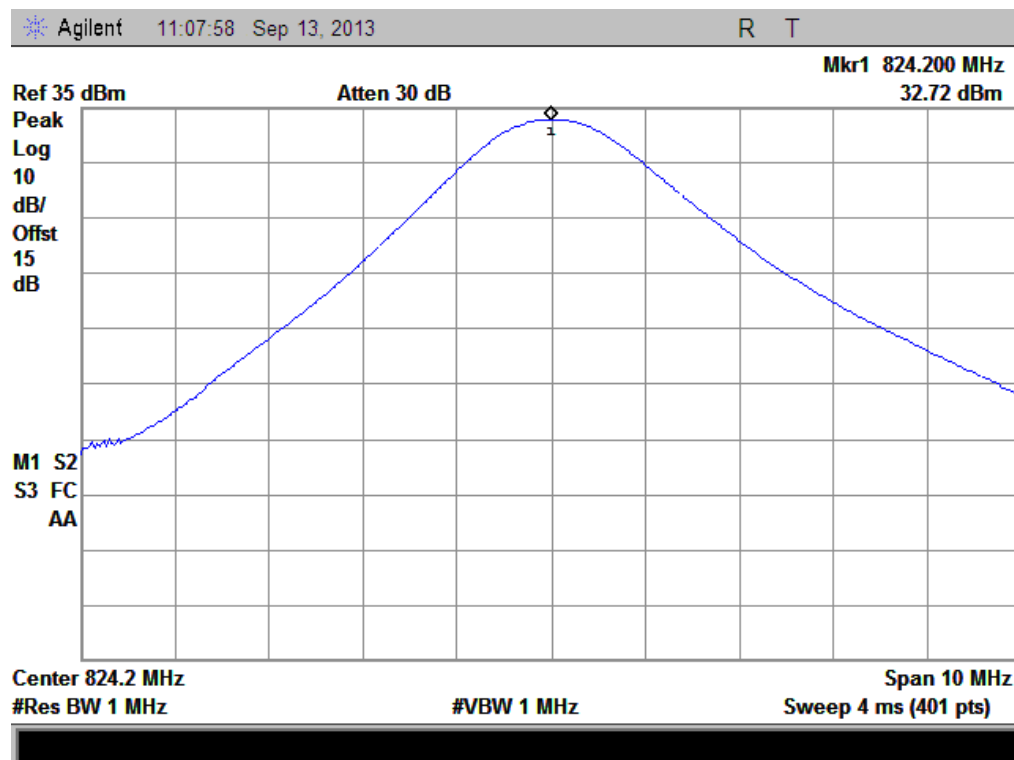
(Plot D1: GPRS 1900MHz Channel = 512)



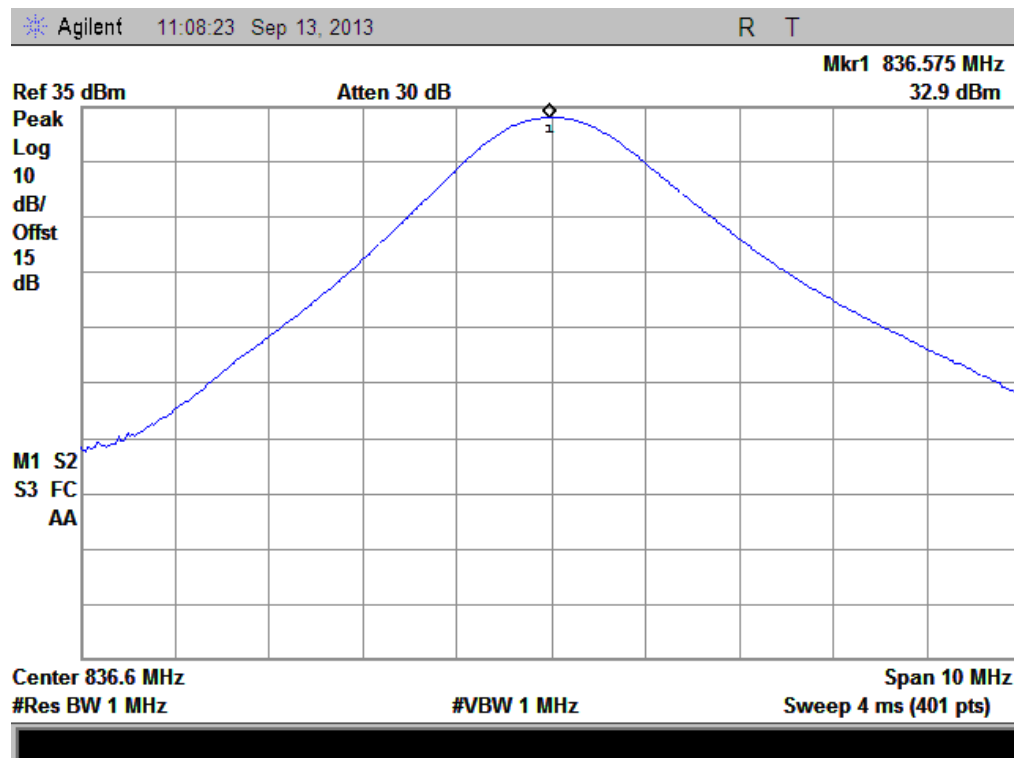
(Plot D2: GPRS 1900MHz Channel = 661)



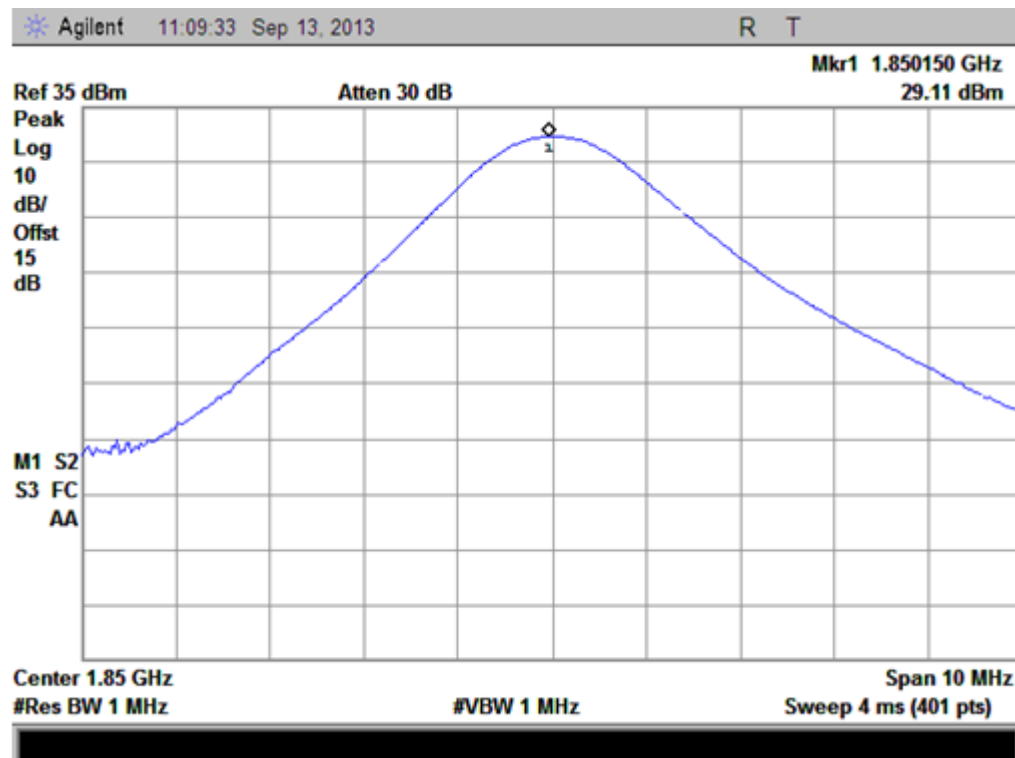
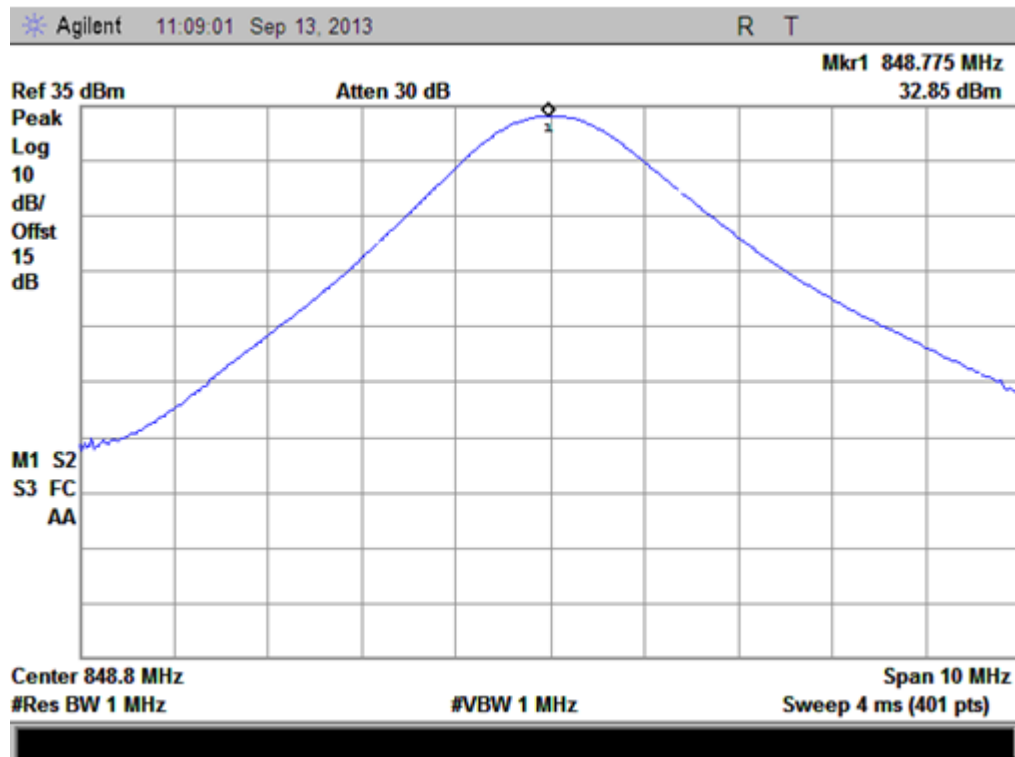
(Plot D3: GPRS 1900Hz Channel = 810)

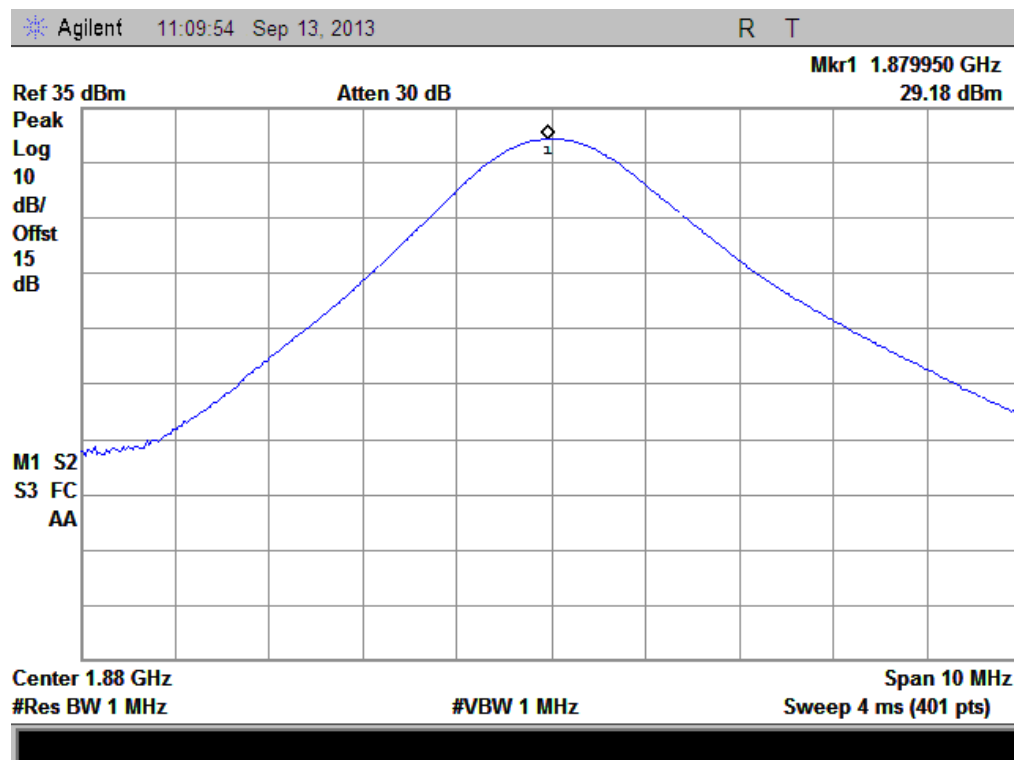


(Plot E1: EDGE 850MHz Channel = 128)

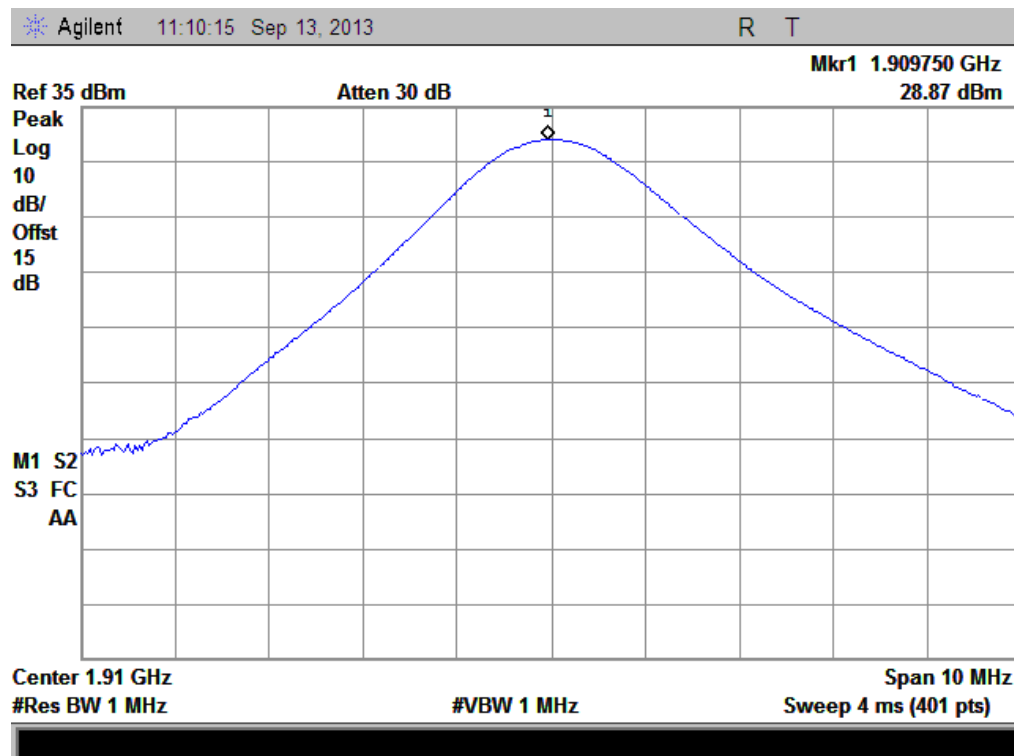


(Plot E2: EDGE 850MHz Channel = 190)





(Plot F2: EDGE 1900MHz Channel = 661)



(Plot F3: EDGE 1900MHz 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:

- a. Set RBW=1MHz, VBW=3MHz, peak detector in spectrum analyzer.
- b. Set EUT in maximum output power, and triggered the burst signal.
- c. Measured respectively the peak level and mean level, and the deviation was recorded as Peak to Average ratio.

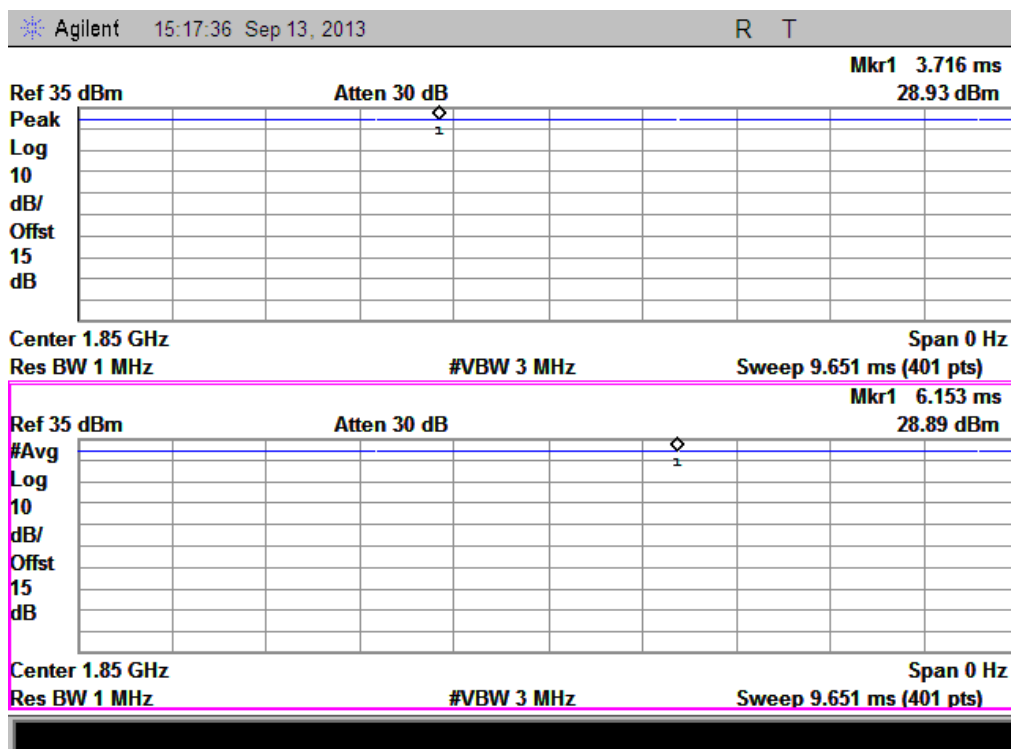
B. For UMTS operating mode:

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

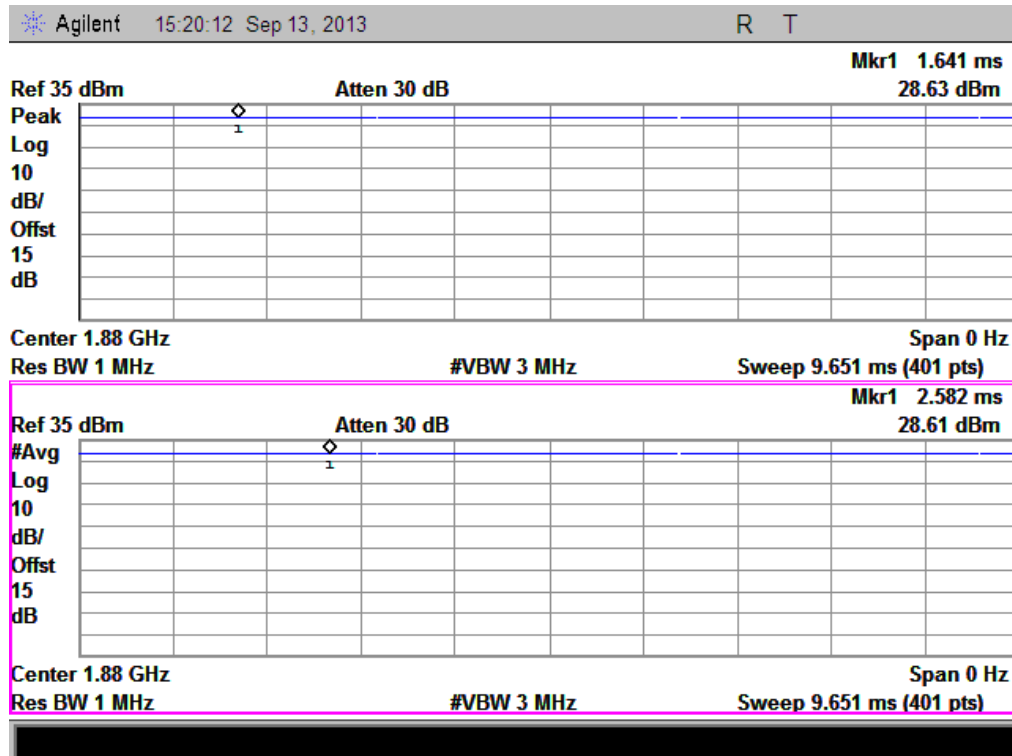


1. Test Verdict:

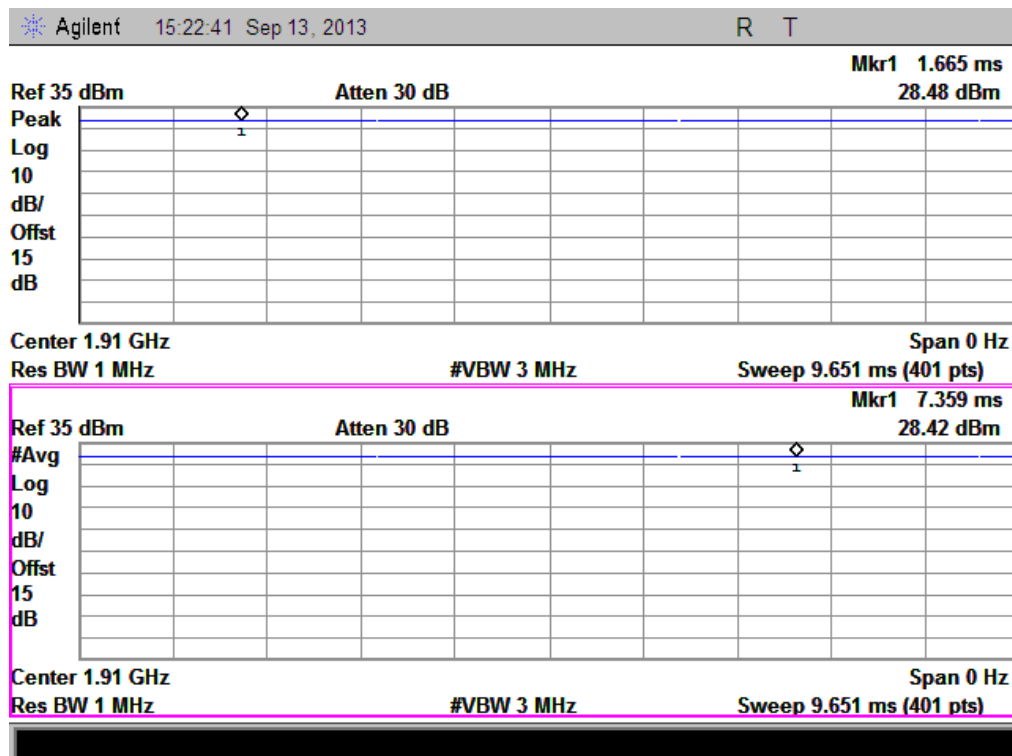
Band	Channel	Frequency (MHz)	Peak to Average ratio		Limit	Verdict
			dBm	Refer to Plot	dBm	
GSM 1900MHz	512	1850.2	0.04	Plot A1 to A3	13	PASS
	661	1880.0	0.02			PASS
	810	1909.8	0.06			PASS
EGPRS 1900MHz	512	1850.2	0.03	Plot B1 to B3	13	PASS
	661	1880.0	0.02			PASS
	810	1909.8	0.05			PASS
WCDMA 1900MHz	9262	1852.4	3.04	Plot C1 to C3	13	PASS
	9400	1880	3.23			PASS
	9538	1907.6	3.16			PASS
HSDPA 1900MHz	9262	1852.4	3.58	Plot D1 to D3	13	PASS
	9400	1880	3.55			PASS
	9538	1907.6	3.43			PASS
HSUPA 1900MHz	9262	1852.4	3.45	Plot E1 to E3	13	PASS
	9400	1880	3.67			PASS
	9538	1907.6	3.63			PASS
HSPA+ 1900MHz	9262	1852.4	5.39	Plot F1 to F3	13	PASS
	9400	1880	5.63			PASS
	9538	1907.6	5.63			PASS



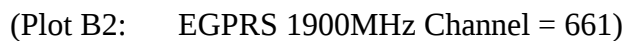
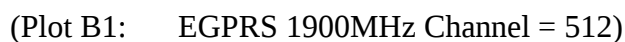
(Plot A1: GSM 1900 MHz Channel = 512)

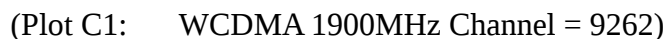
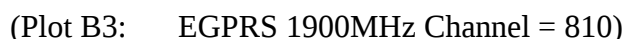


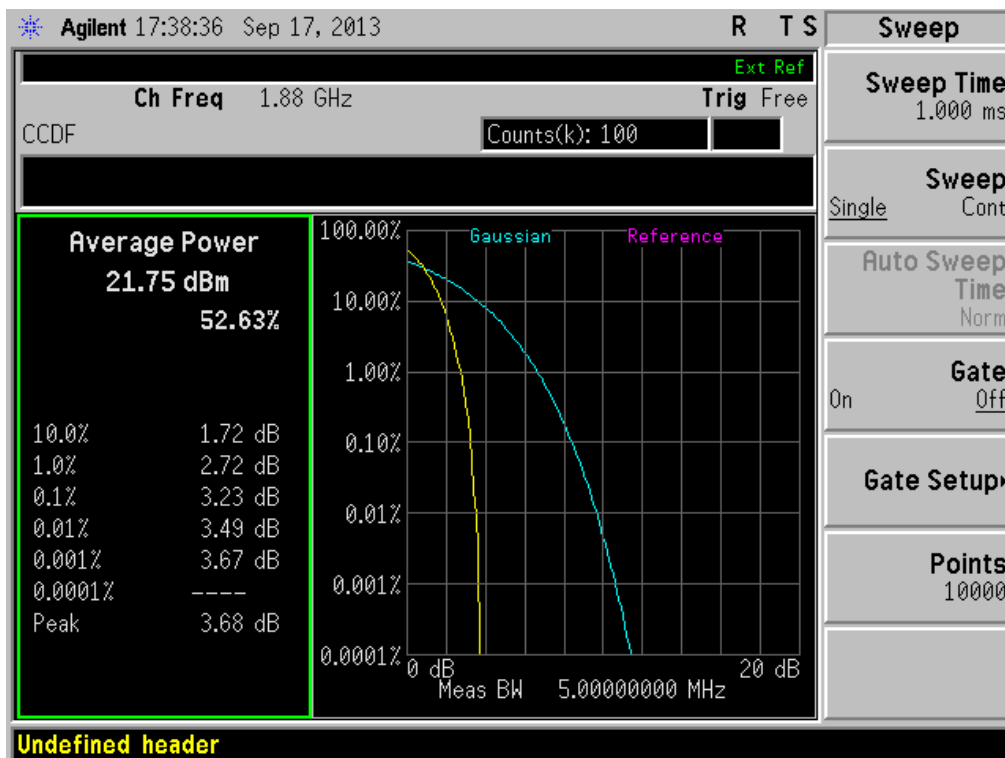
(Plot A2: GSM 1900 MHz Channel = 661)



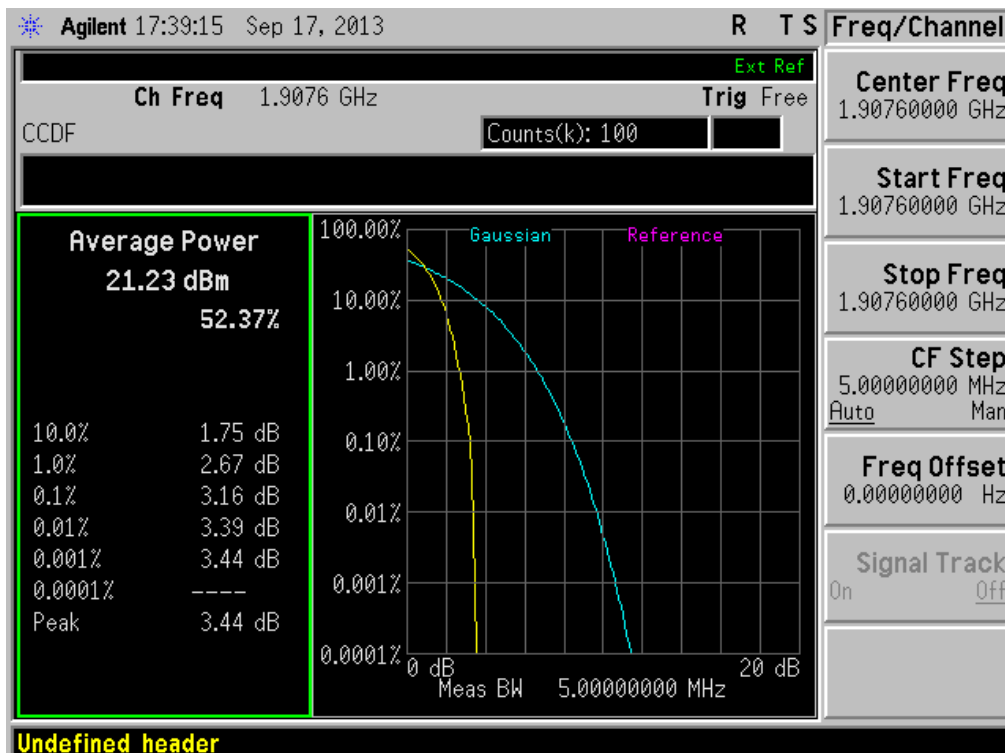
(Plot A3: GSM 1900MHz Channel = 810)



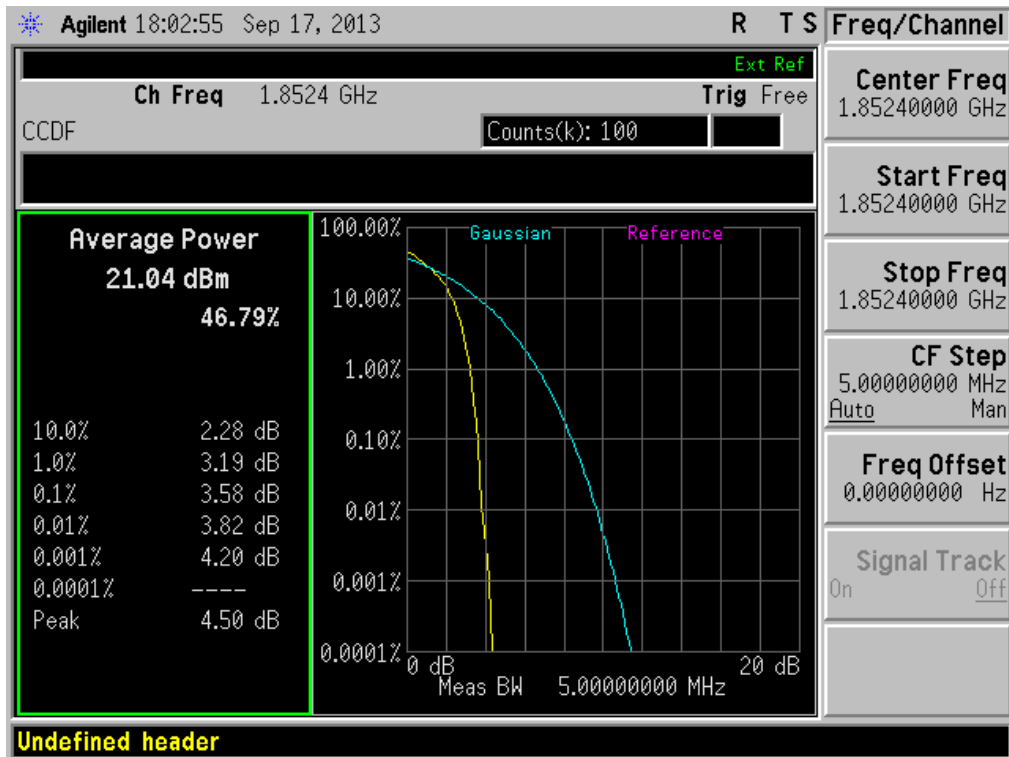




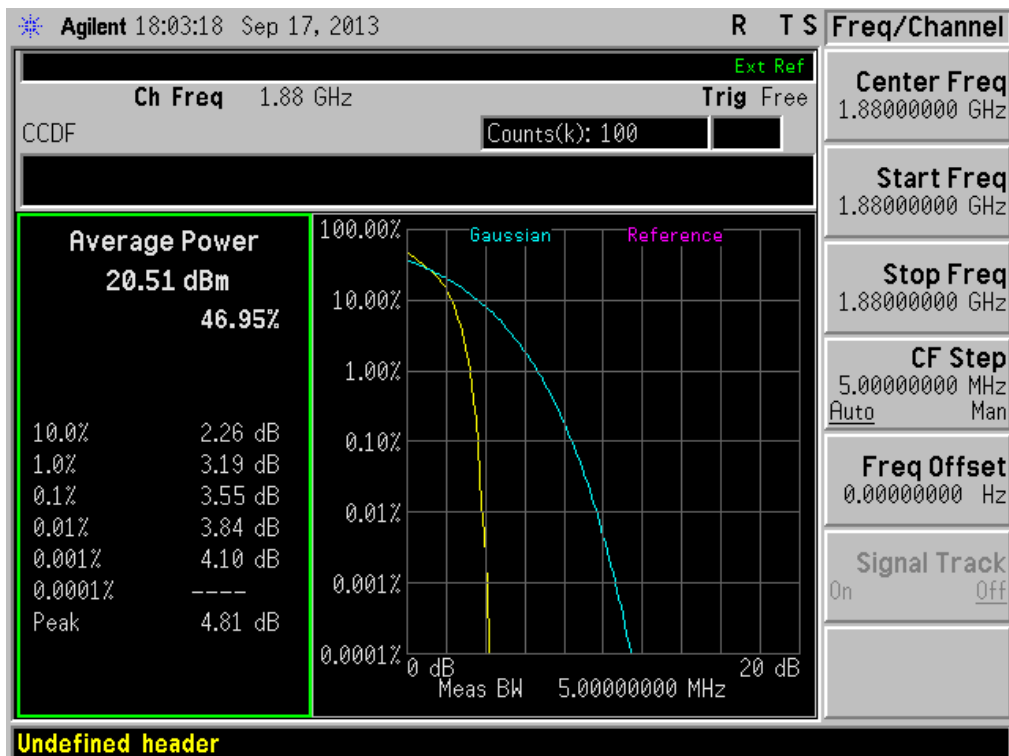
(Plot C2: WCDMA 1900MHz Channel = 9400)



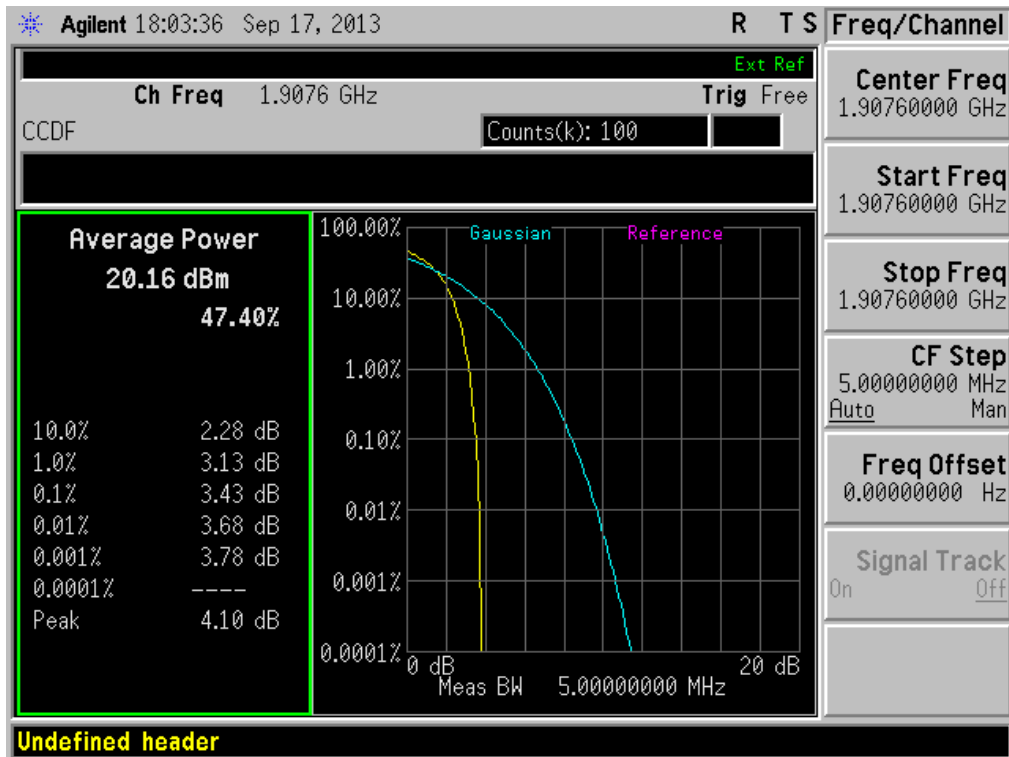
(Plot C3: WCDMA 1900MHz Channel = 9538)



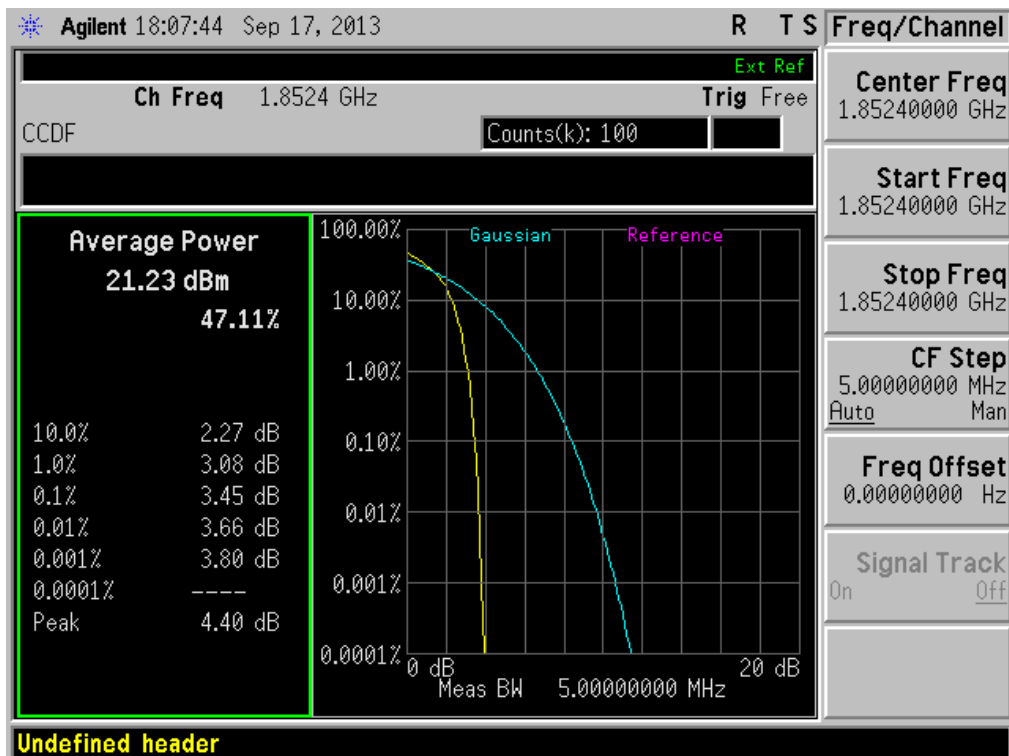
(Plot D1: HSDPA 1900MHz Channel = 9262)



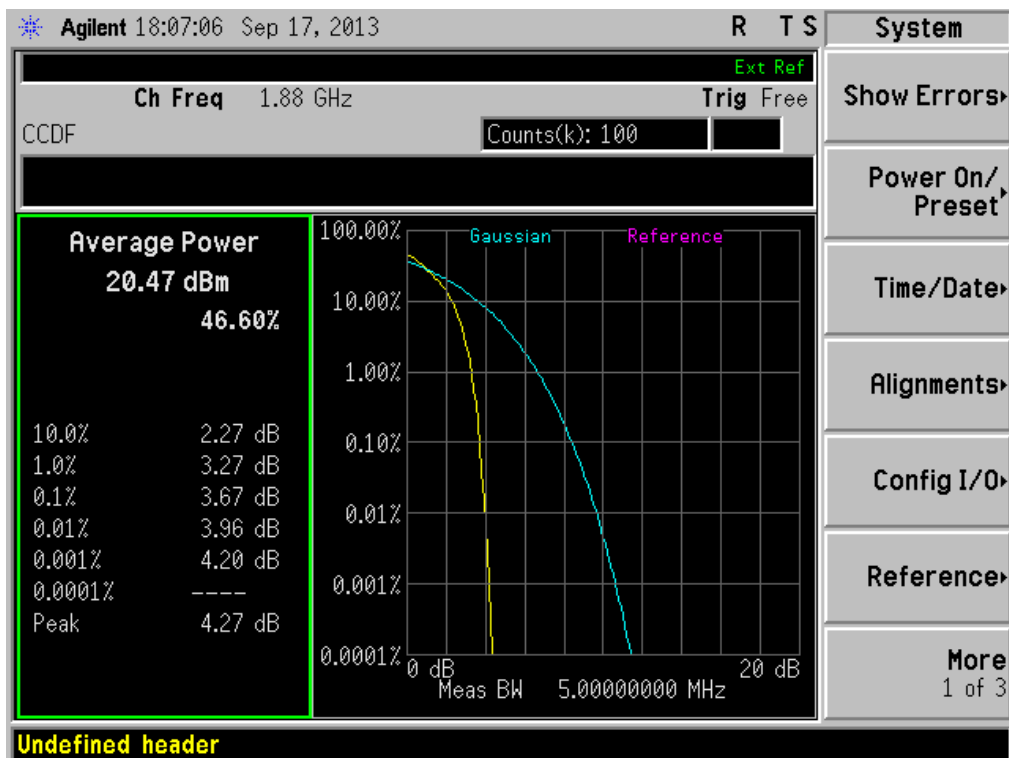
(Plot D2: HSDPA 1900MHz Channel = 9400)



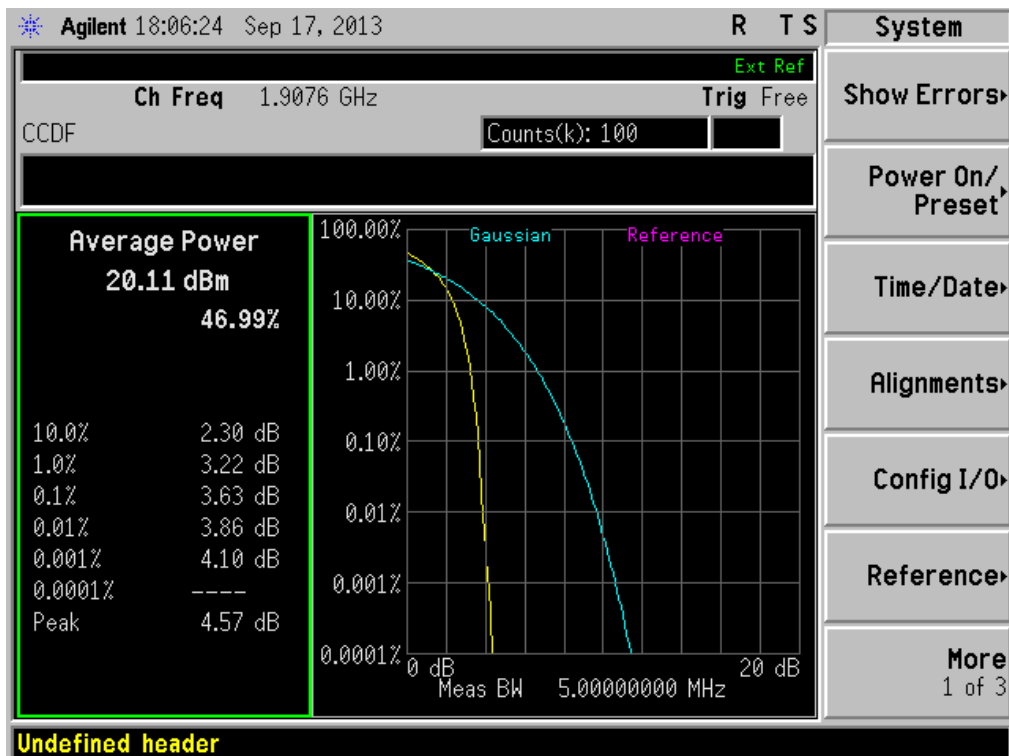
(Plot D3: HSDPA 1900MHz Channel = 9538)



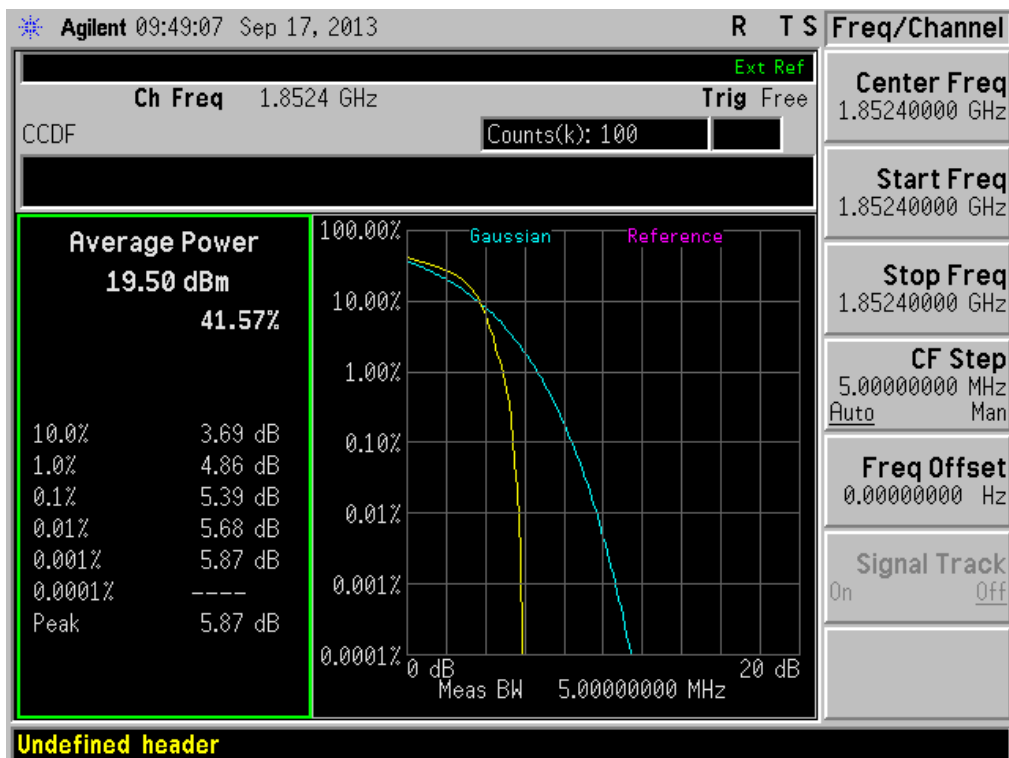
(Plot E1: HSUPA 1900MHz Channel = 9262)



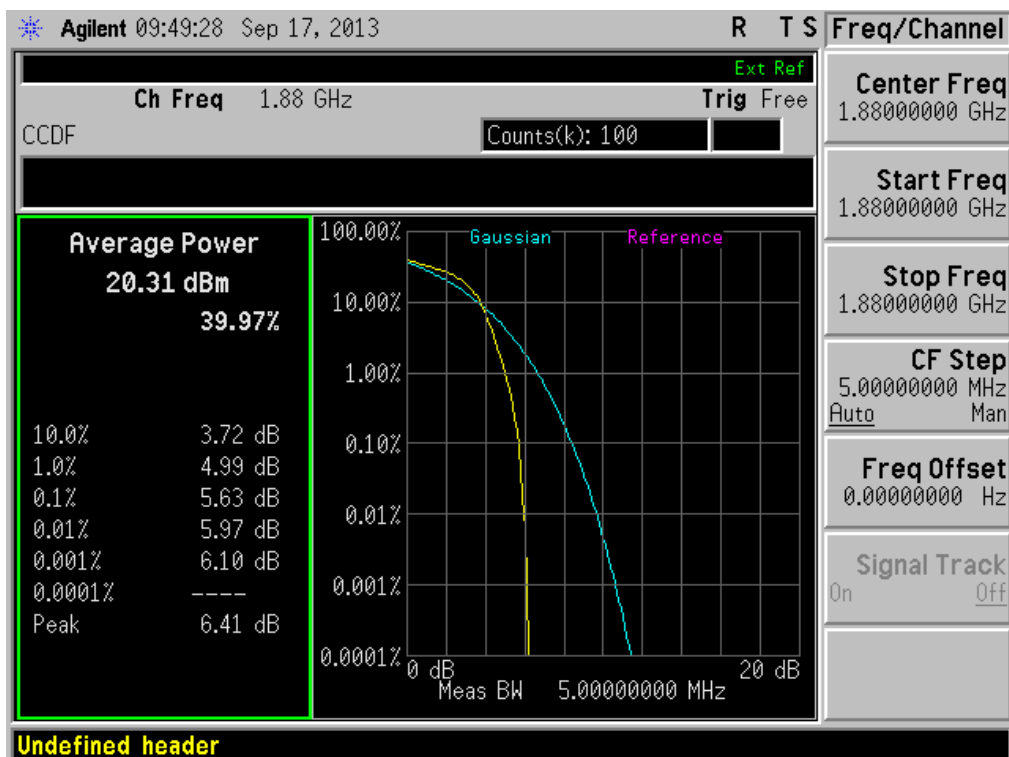
(Plot E2: HSUPA 1900MHz Channel = 9400)



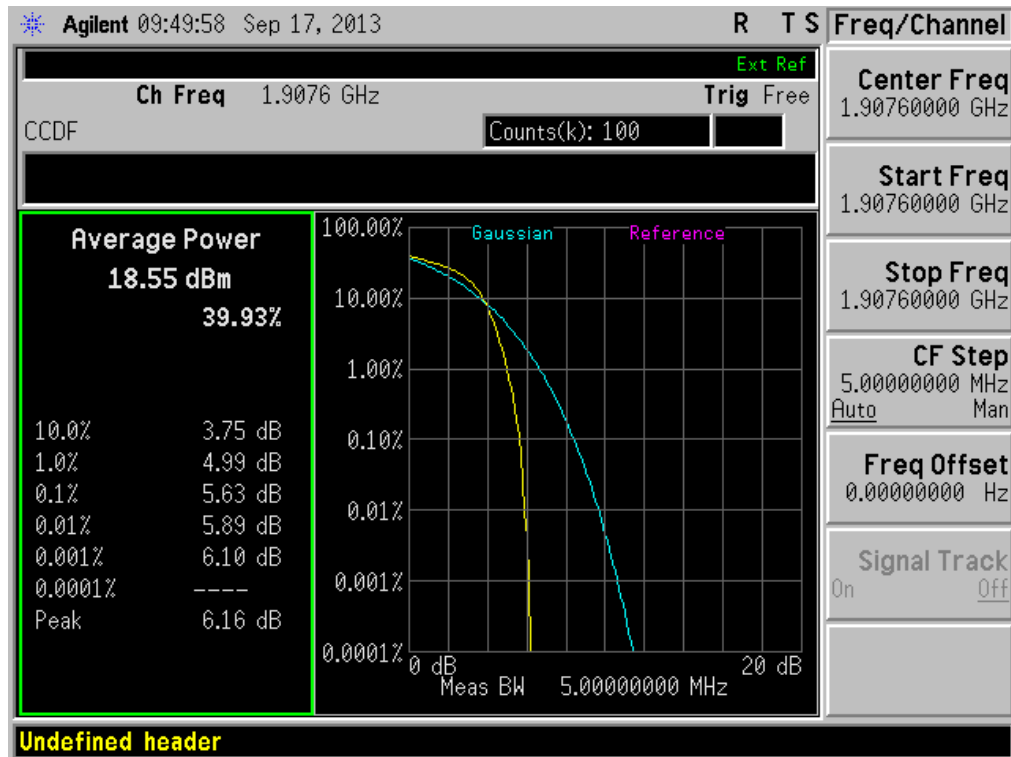
(Plot E3: HSUPA 1900MHz Channel = 9538)



(Plot F1: HSPA+ 1900MHz Channel = 9262)



(Plot F2: HSPA+ 1900MHz Channel = 9400)



(Plot F3: HSPA+ 1900MHz Channel = 9538)

2.3 99% Occupied Bandwidth

2.3.1 Definition

According to FCC section 2.1049, 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.

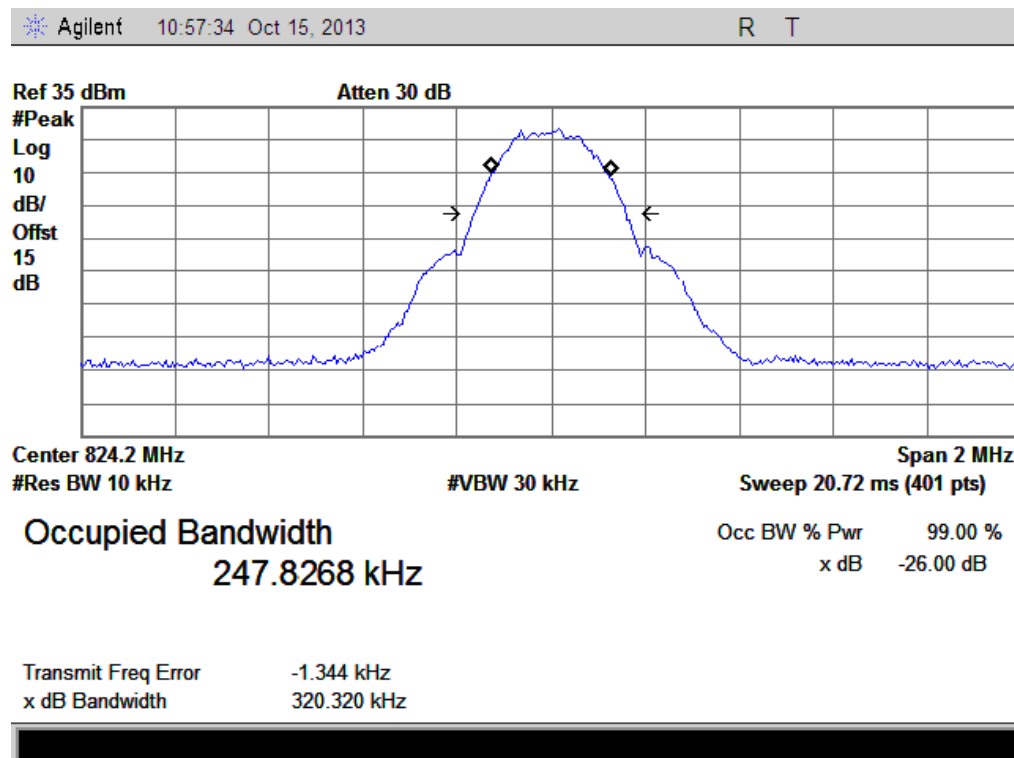
1. Test Verdict:

Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
EDGE 850MHz	128	824.2	320.320 KHz	247.8268 KHz	Plot A
	190	836.6	327.524 KHz	249.7921 KHz	Plot B
	251	848.8	325.753 KHz	246.4190 KHz	Plot C
EDGE 1900MHz	512	1850.2	315.023 KHz	246.4792 KHz	Plot D
	661	1880.0	310.982 KHz	242.9471KHz	Plot E
	810	1909.8	315.153 KHz	242.1242 KHz	Plot F
WCDMA 850MHz	4132	826.4	4.728MHz	4.1778MHz	Plot G
	4175	835	4.716MHz	4.1925MHz	Plot H
	4233	846.6	4.722MHz	4.1866MHz	Plot I
WCDMA 1900MHz	9262	1852.4	4.702MHz	4.1855MHz	Plot J
	9400	1880	4.715MHz	4.1776MHz	Plot K
	9538	1907.6	4.721MHz	4.1789MHz	Plot L
HSDPA 850MHz	4132	826.4	4.584MHz	4.1728MHz	Plot M
	4175	835	4.618MHz	4.1755MHz	Plot N
	4233	846.6	4.548MHz	4.1464MHz	Plot O
HSDPA 1900MHz	9262	1852.4	4.587MHz	4.1650MHz	Plot P
	9400	1880	4.558MHz	4.1670MHz	Plot Q
	9538	1907.6	4.577MHz	4.1573MHz	Plot R
HSUPA 850MHz	4132	826.4	4.719MHz	4.1879MHz	Plot S

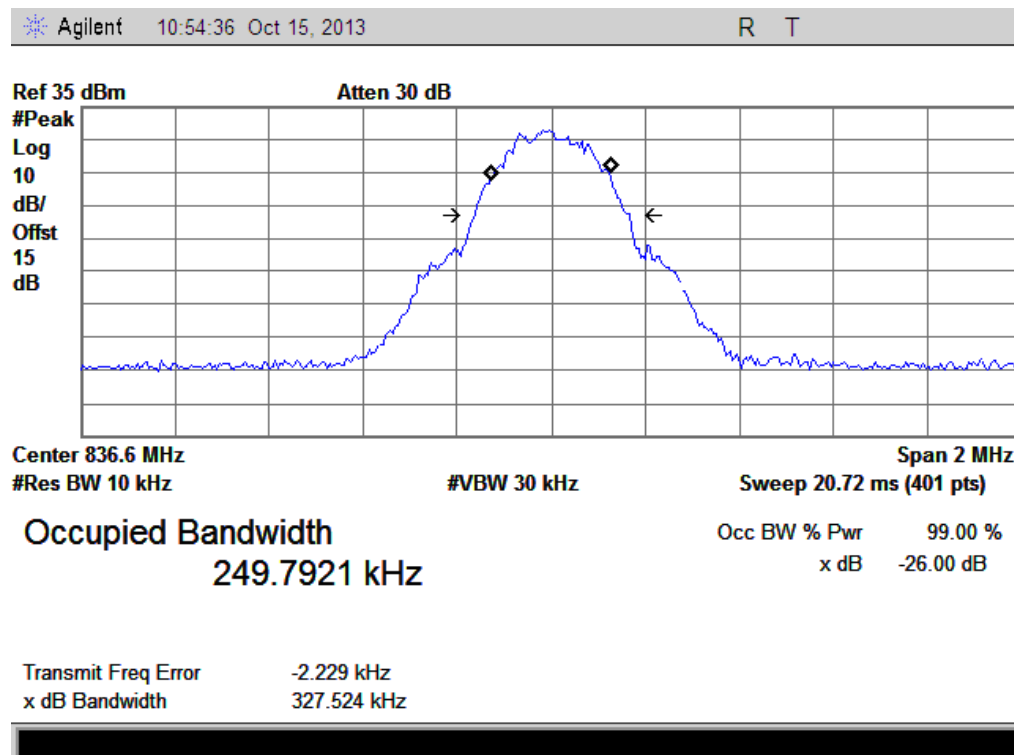


Band	Channel	Frequency (MHz)	26dB bandwidth	99% Occupied Bandwidth	Refer to Plot
	4175	835	4.727MHz	4.1771MHz	Plot T
	4233	846.6	4.718MHz	4.1837MHz	Plot U
HSUPA 1900MHz	9262	1852.4	4.703MHz	4.1809MHz	Plot V
	9400	1880	4.744MHz	4.1894MHz	Plot W
	9538	1907.6	4.728MHz	4.1746MHz	Plot X
HSPA+ 850MHz	4132	826.4	4.707MHz	4.1794MHz	Plot Y
	4175	835	4.725MHz	4.1906MHz	Plot Z
	4233	846.6	4.695MHz	4.1799MHz	Plot A1
HSPA+ 1900MHz	9262	1852.4	4.714MHz	4.1708MHz	Plot B1
	9400	1880	4.736MHz	4.1718MHz	Plot C1
	9538	1907.6	4.704MHz	4.1899MHz	Plot D1
GSM 850MHz	128	824.2	324.320 KHz	249.6438 KHz	Plot E1
	190	836.6	321.587 KHz	249.4292 KHz	Plot F1
	251	848.8	314.927 KHz	245.7216 KHz	Plot G1
GSM 1900MHz	512	1850.2	317.897 KHz	253.2693 KHz	Plot H1
	661	1880.0	313.703 KHz	245.2372 KHz	Plot I1
	810	1909.8	317.166 KHz	250.2936 KHz	Plot J1
GPRS 850MHz	128	824.2	313.133 KHz	245.6538 KHz	Plot W1
	190	836.6	317.458 KHz	250.9165 KHz	Plot X1
	251	848.8	319.830 KHz	246.5651 KHz	Plot Y1
GPRS 1900MHz	512	1850.2	317.700 KHz	242.0955 KHz	Plot Z1
	661	1880.0	314.715 KHz	242.5933 KHz	Plot A2
	810	1909.8	318.155 KHz	249.9352 KHz	Plot B2

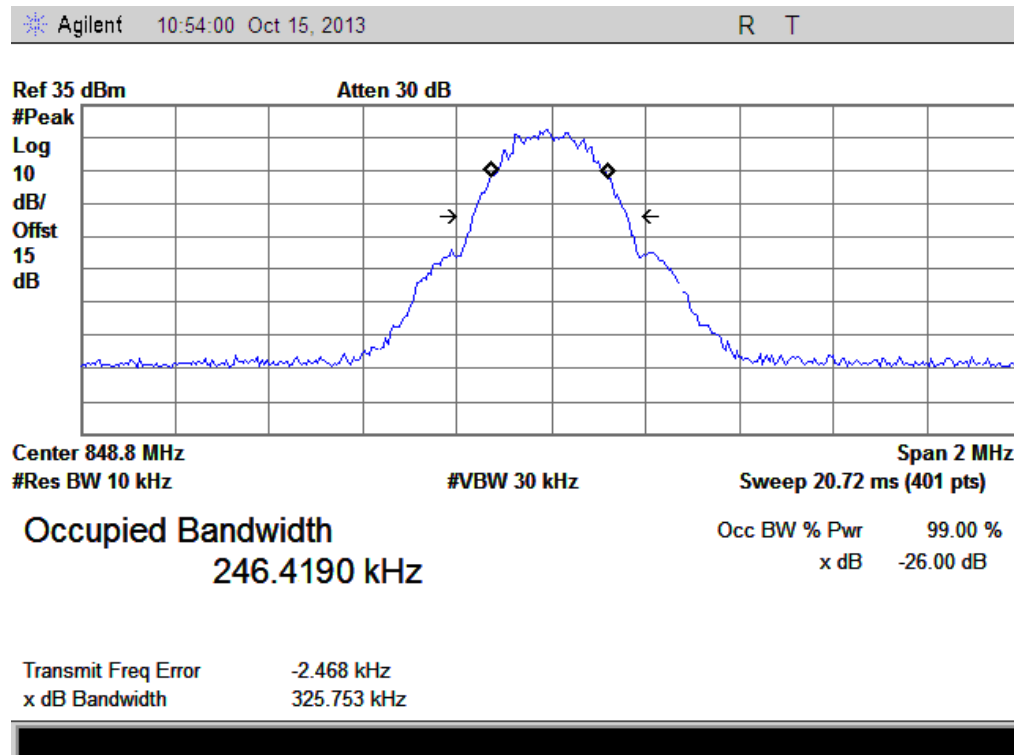
2. Test Plots:



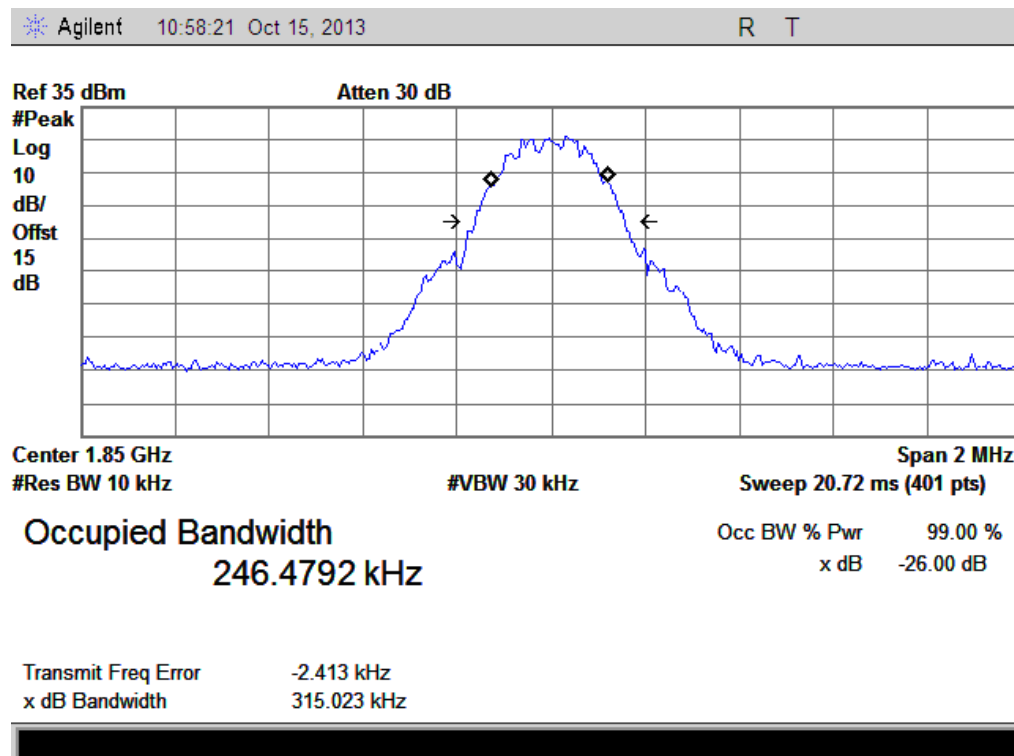
(Plot A: EGPRS 850MHz Channel = 128)



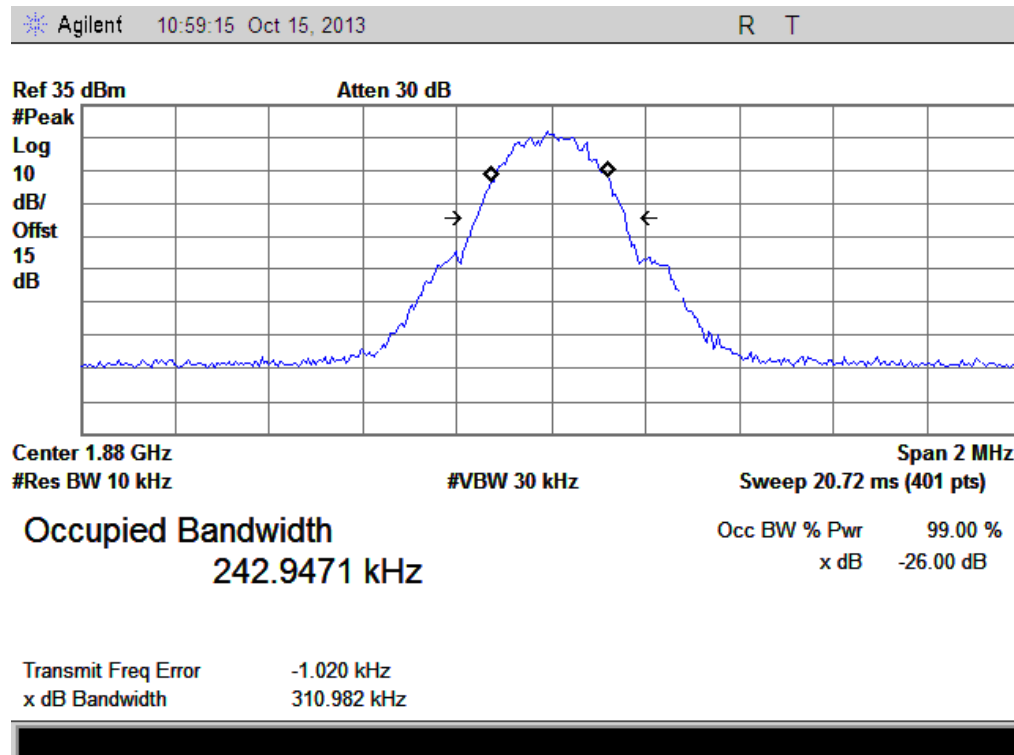
(Plot B: EGPRS 850MHz Channel = 190)



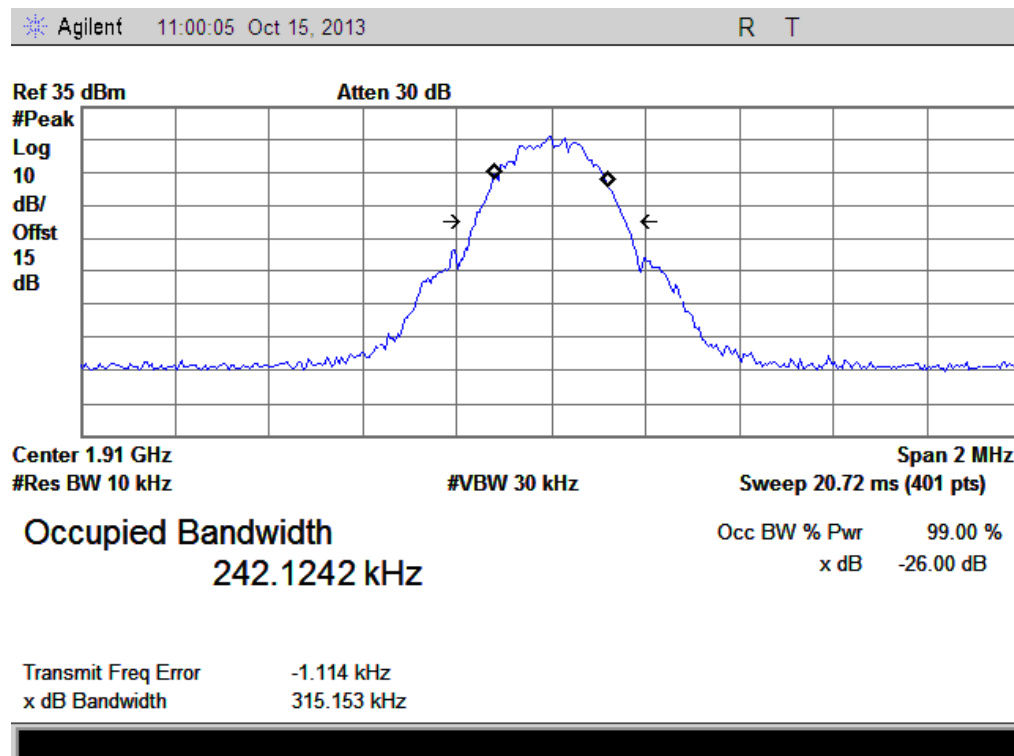
(Plot C: EGPRS 850MHz Channel = 251)



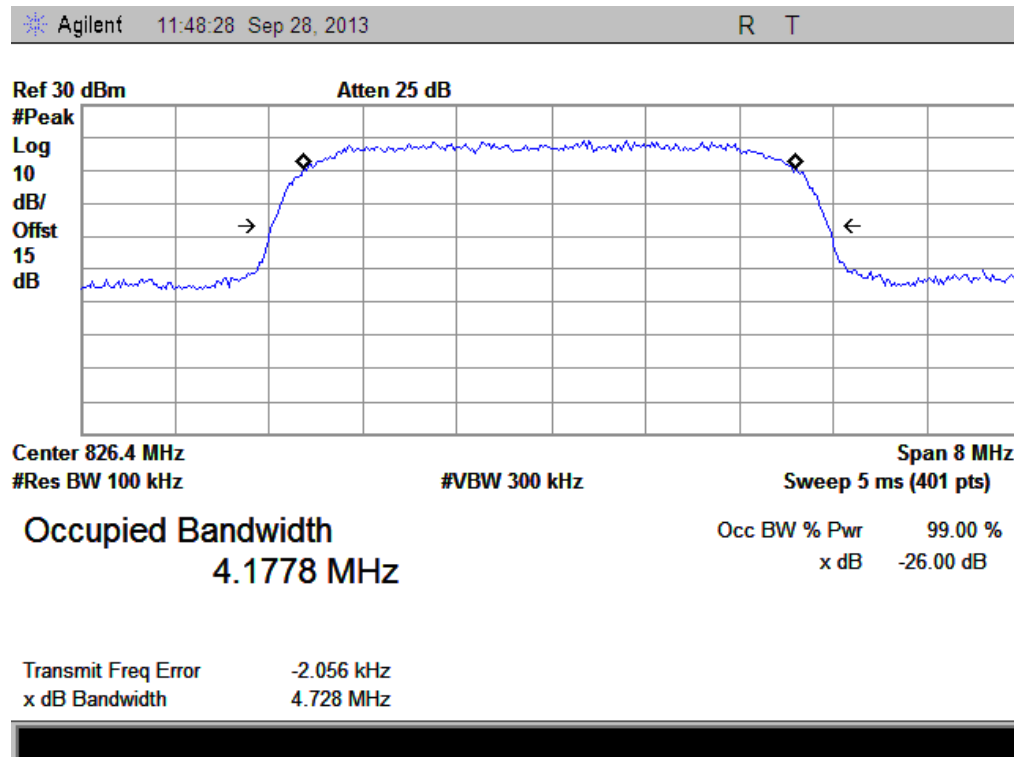
(Plot D: EGPRS1900MHz Channel = 512)



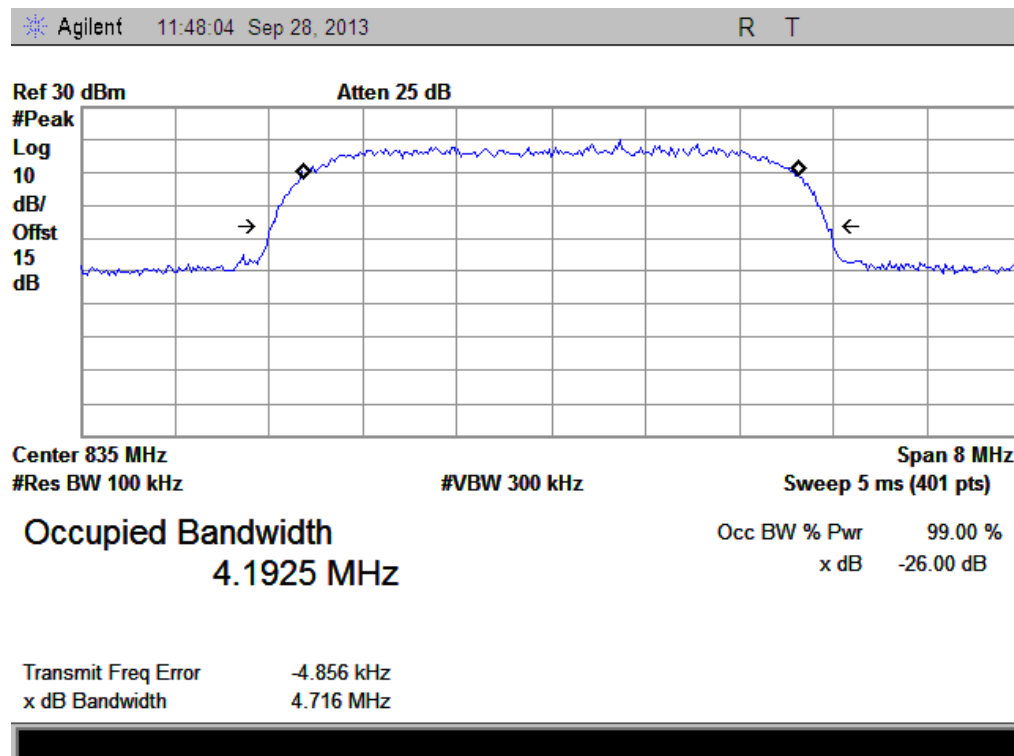
(Plot E: EGPRS1900MHz Channel = 661)



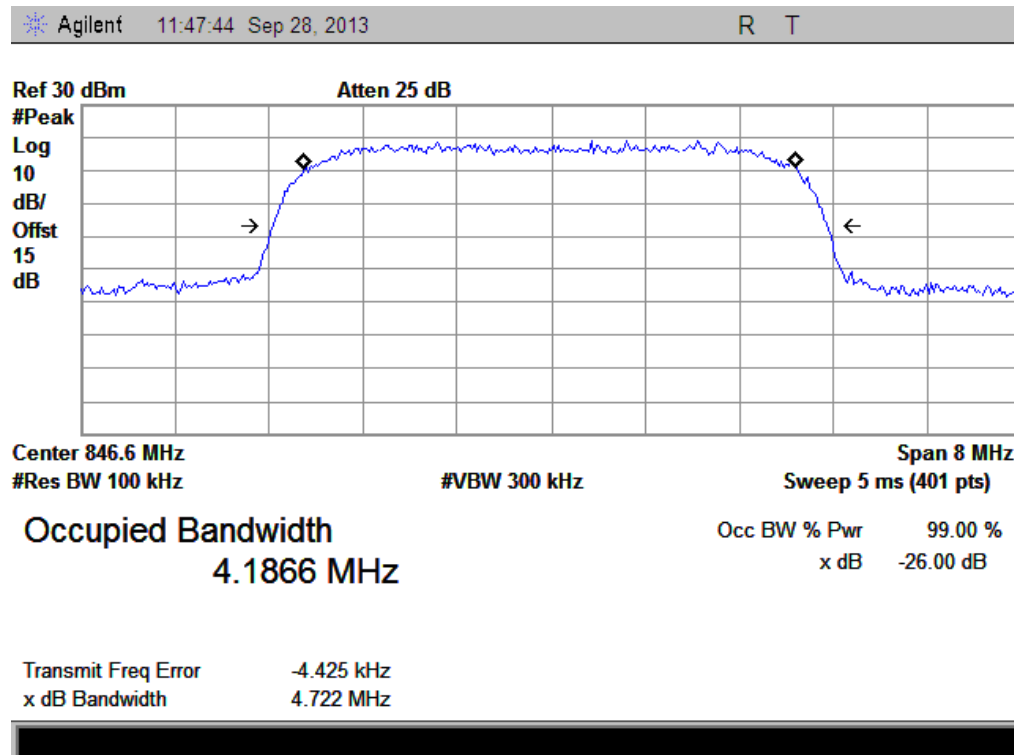
(Plot F: EGPRS 1900MHz Channel = 810)



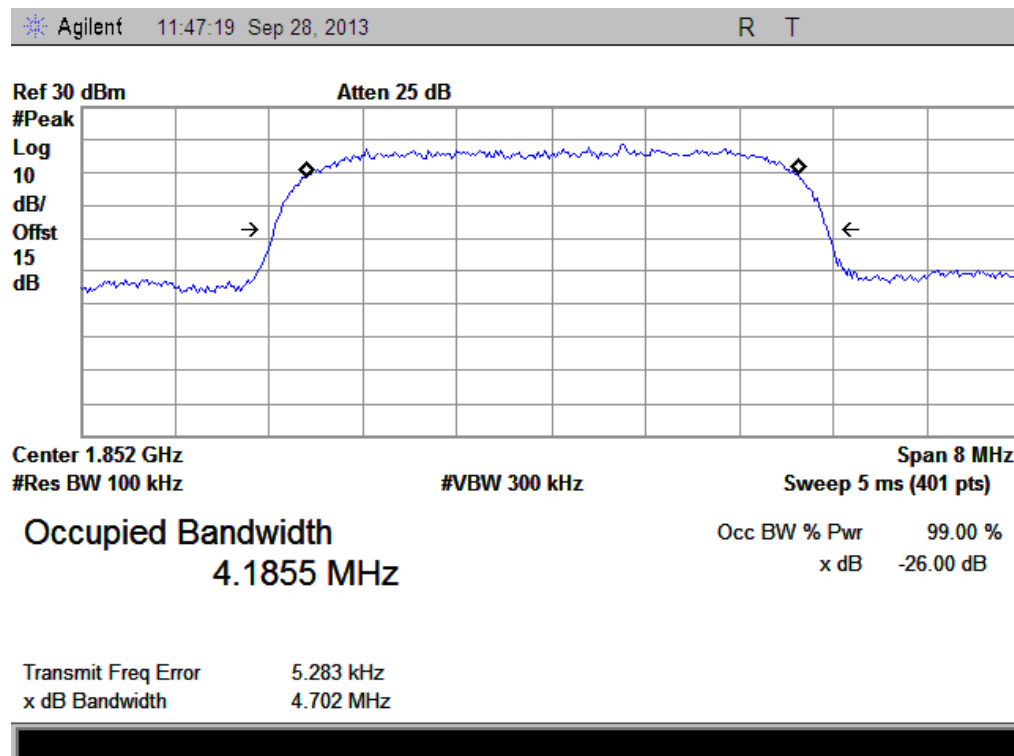
(Plot G: WCDMA 850MHz Channel = 4132)



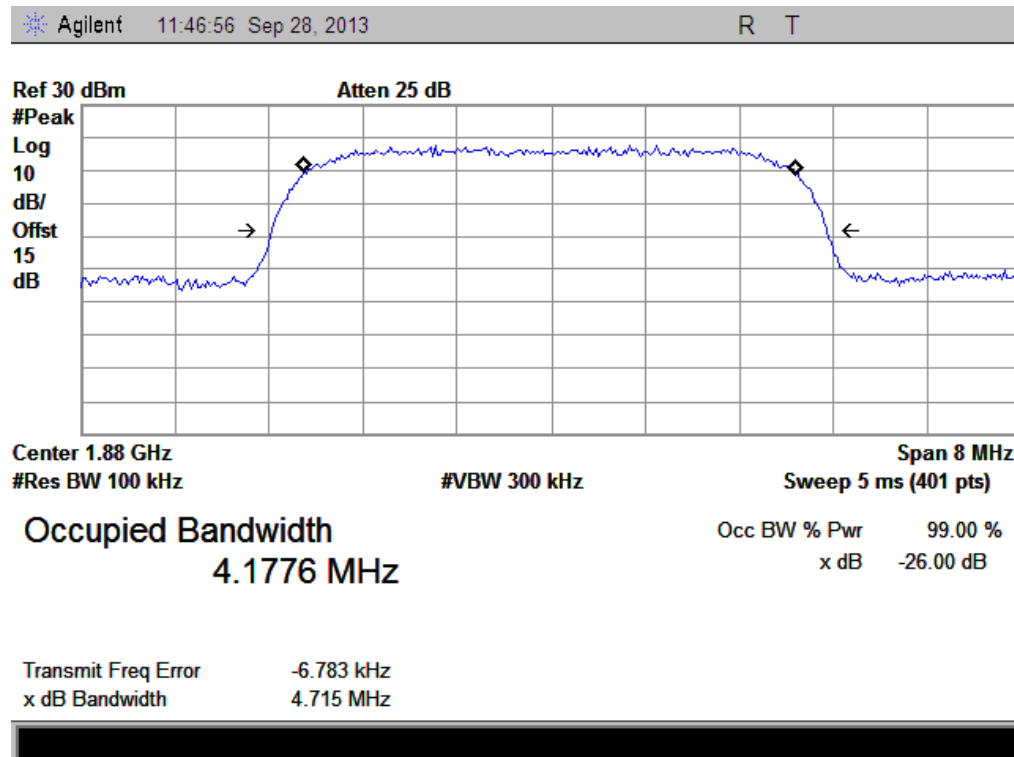
(Plot H: WCDMA 850 MHz Channel = 4175)



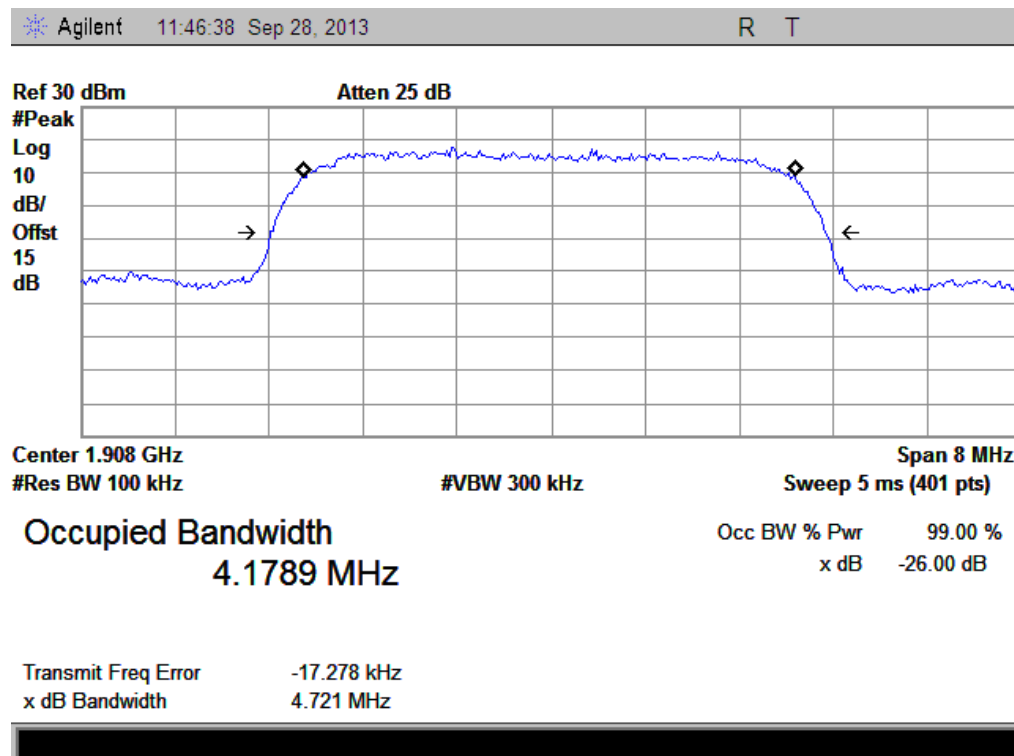
(Plot I: WCDMA 850MHz Channel = 4233)



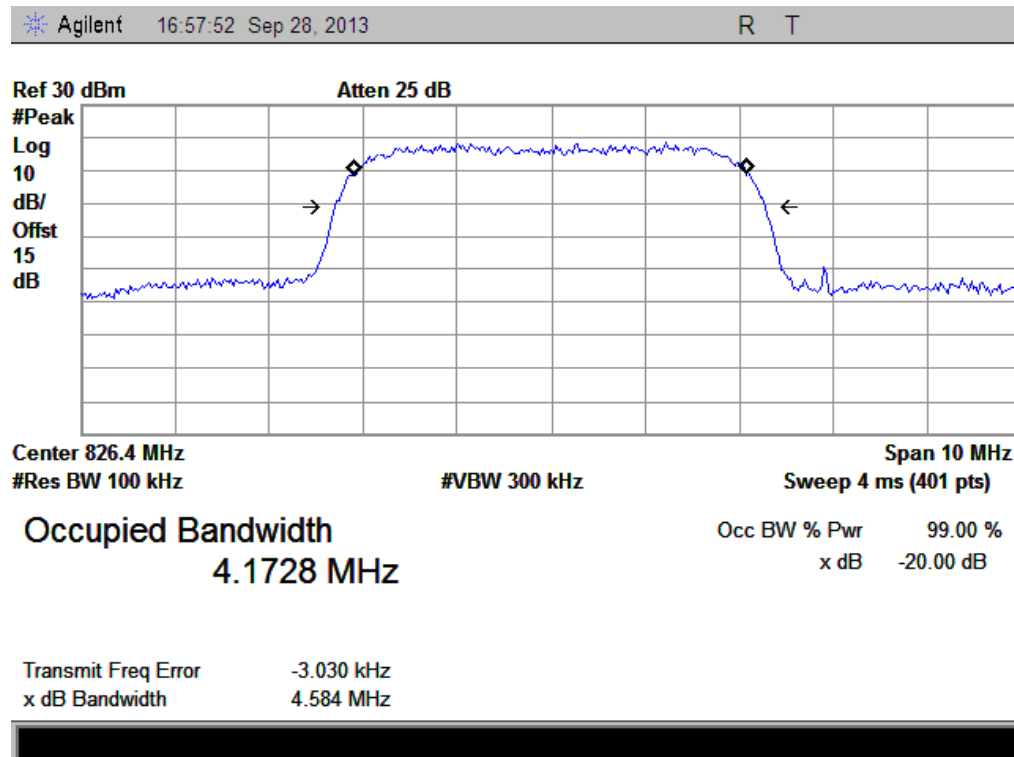
(Plot J: WCDMA 1900MHz Channel = 9262)



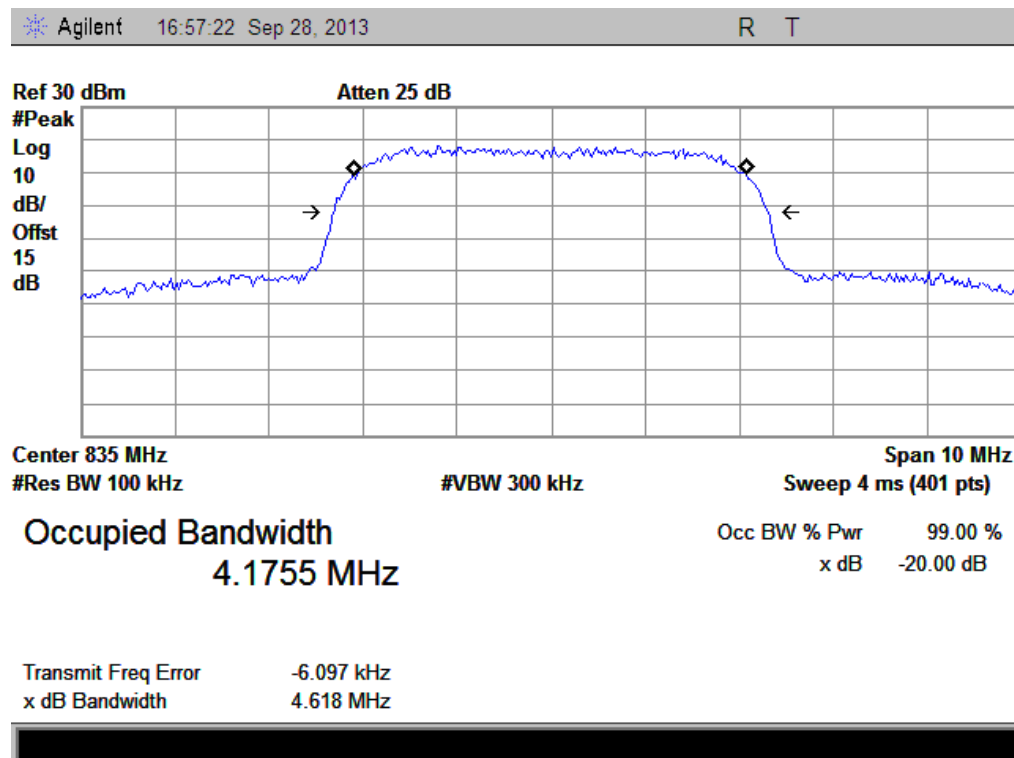
(Plot K: WCDMA 1900 MHz Channel = 9400)



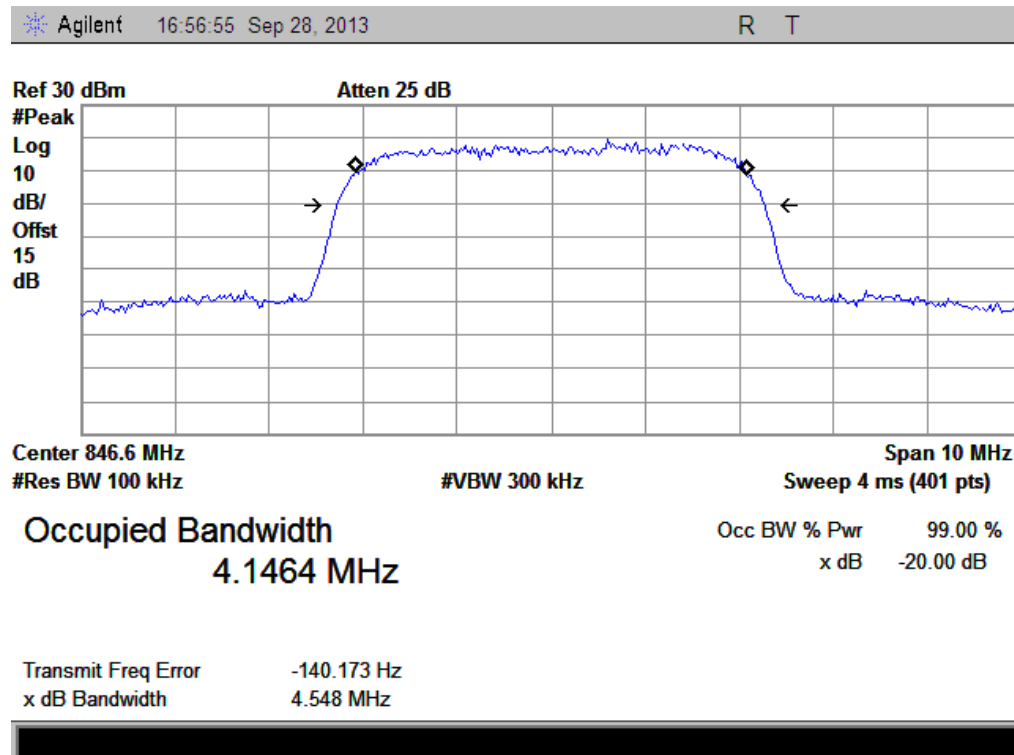
(Plot L: WCDMA1900MHz Channel = 9538)



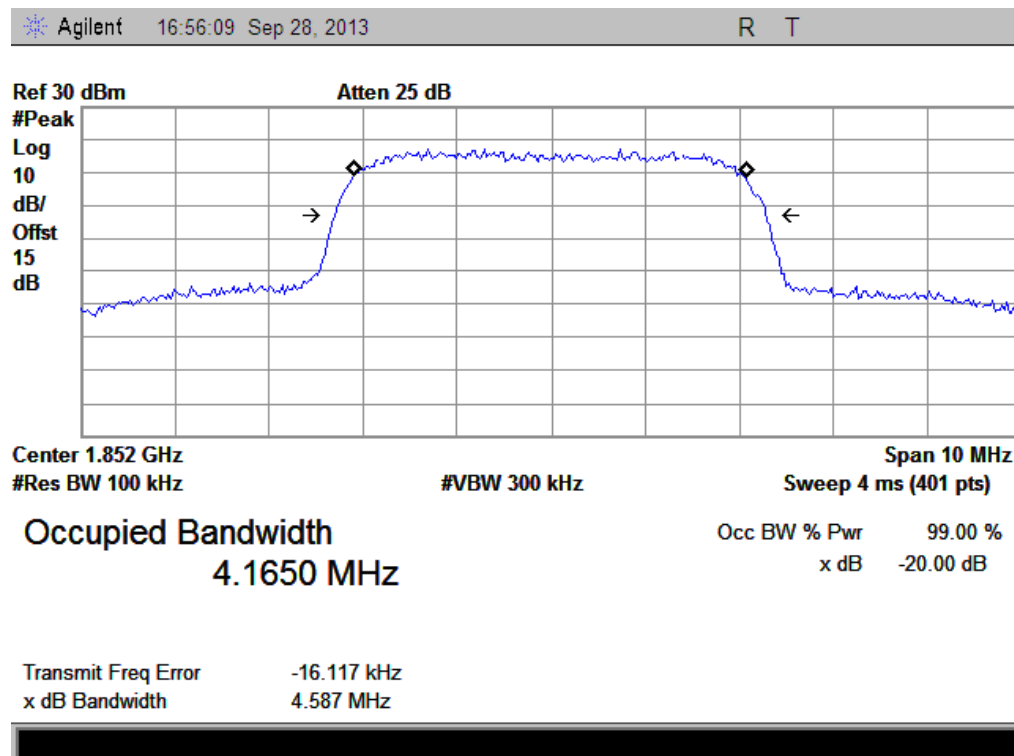
(Plot M: HSDPA 850MHz Channel = 4132)



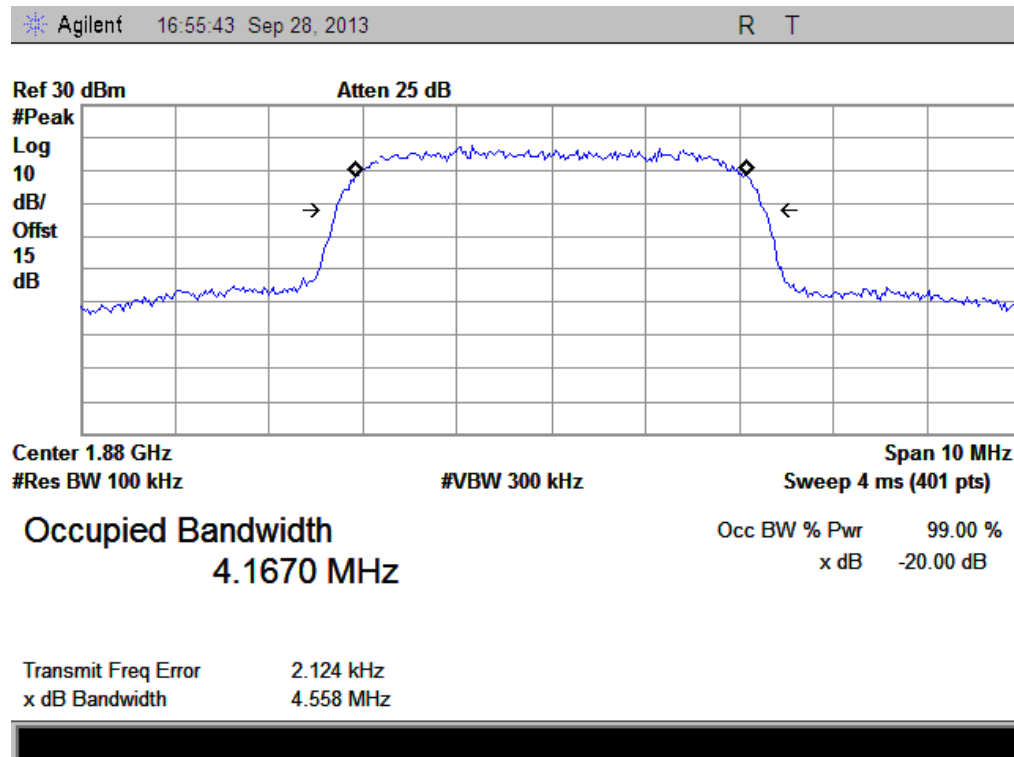
(Plot N: HSDPA850 MHz Channel = 4175)



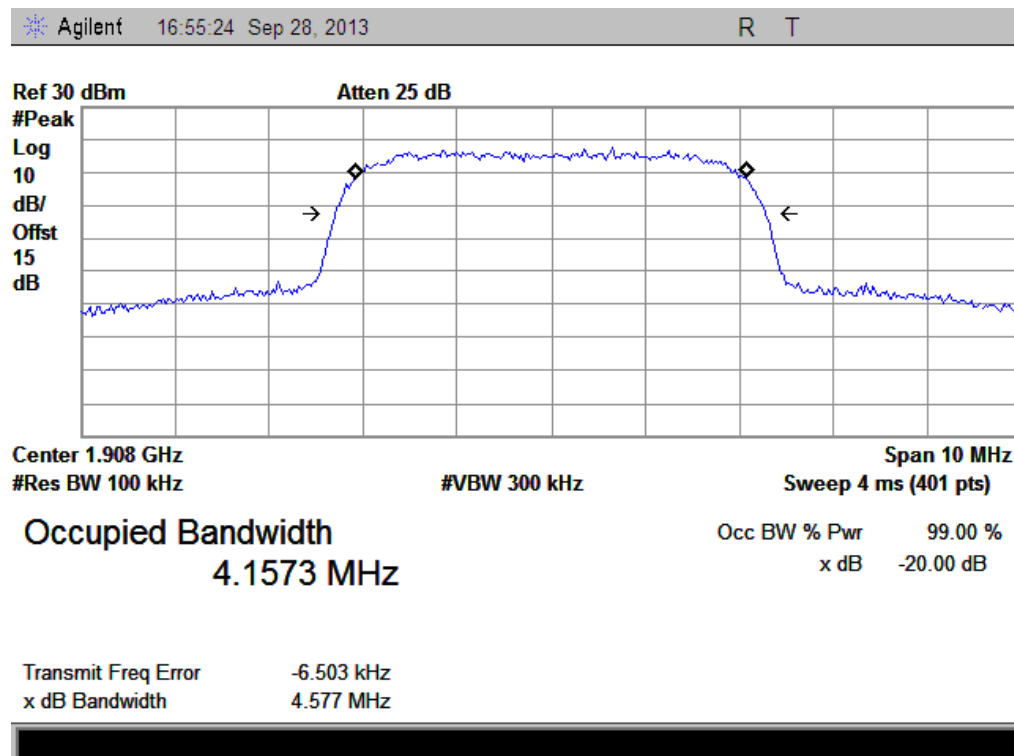
(Plot O: HSDPA 850 MHz Channel = 4233)



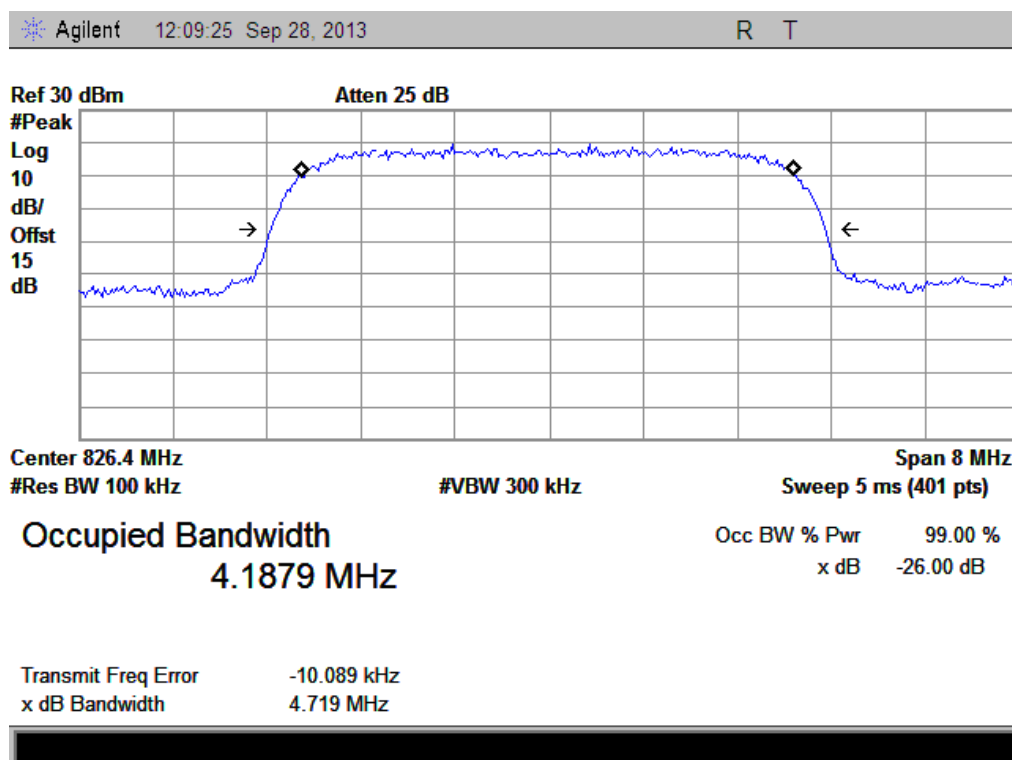
(Plot P: HSDPA1900 MHz Channel = 9262)



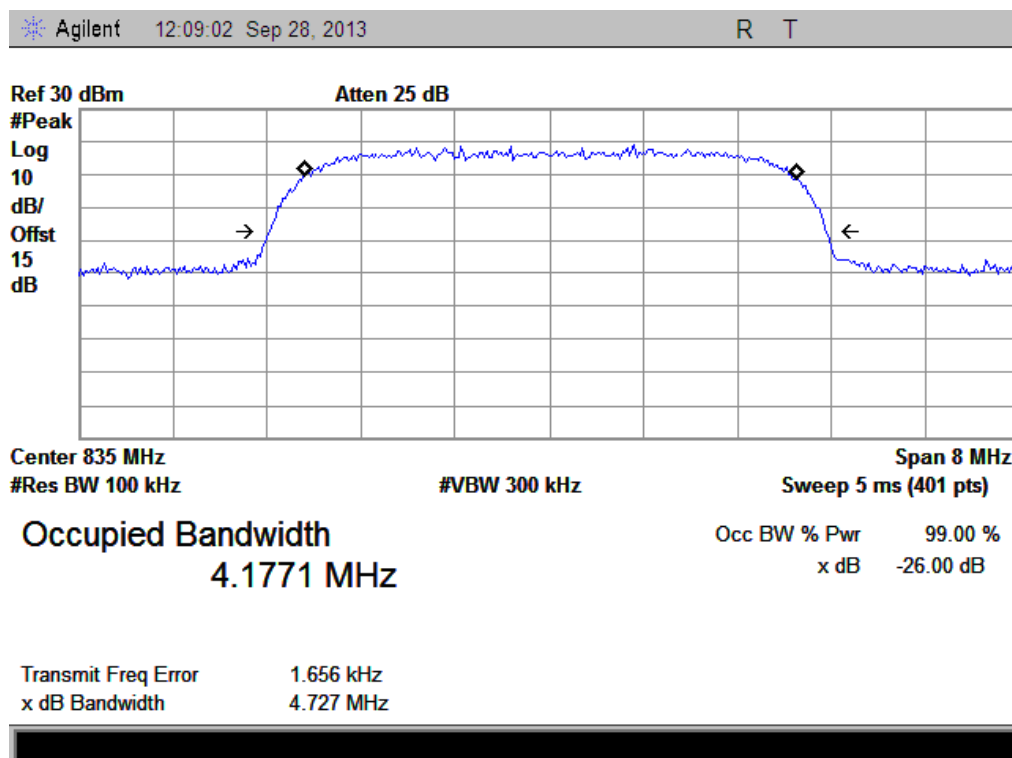
(Plot Q: HSDPA1900 MHz Channel = 9400)



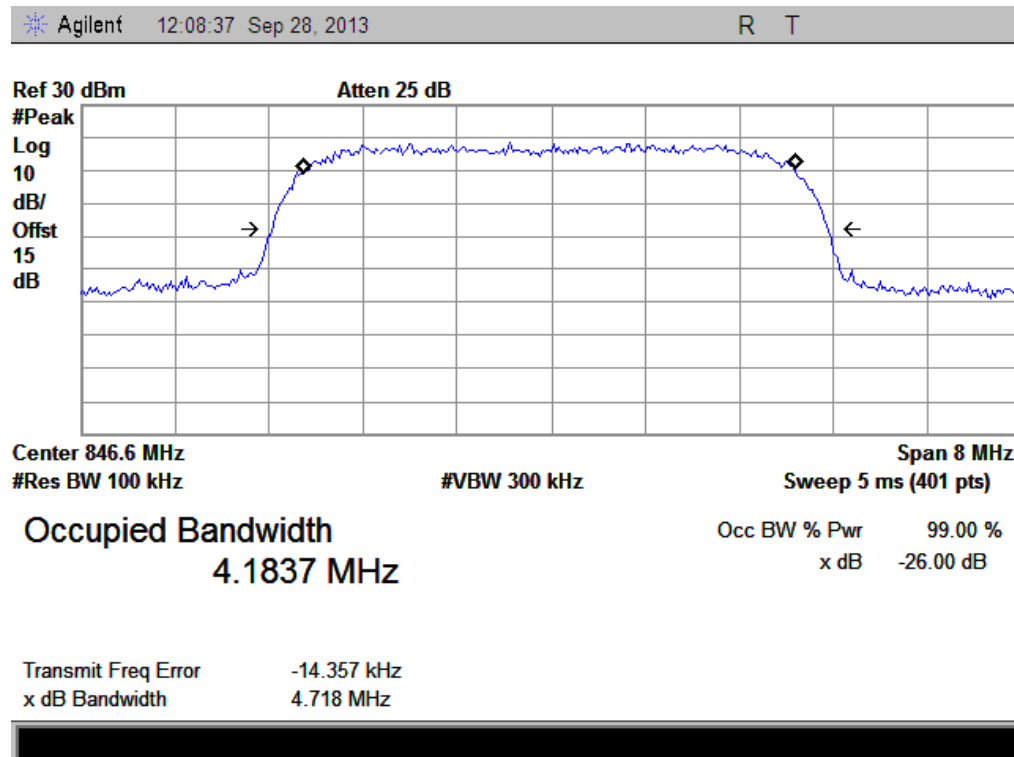
(Plot R: HSDPA 1900 MHz Channel = 9538)



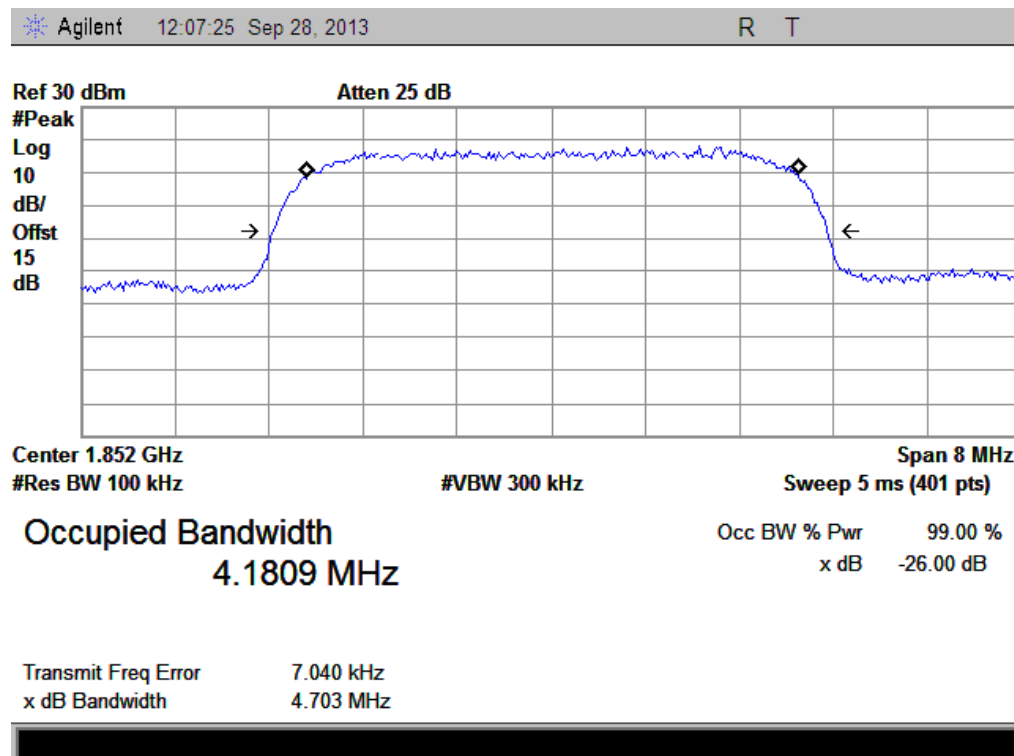
(Plot S: HSUPA850 MHz Channel = 4132)



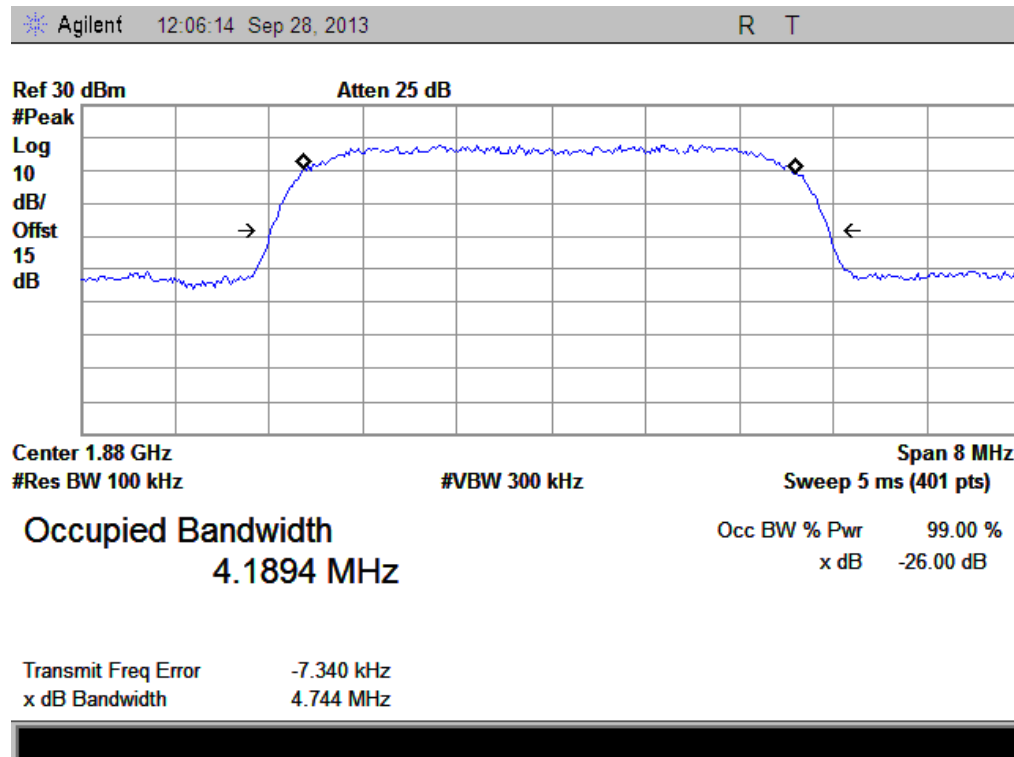
(Plot T: HSUPA850 MHz Channel = 4175)



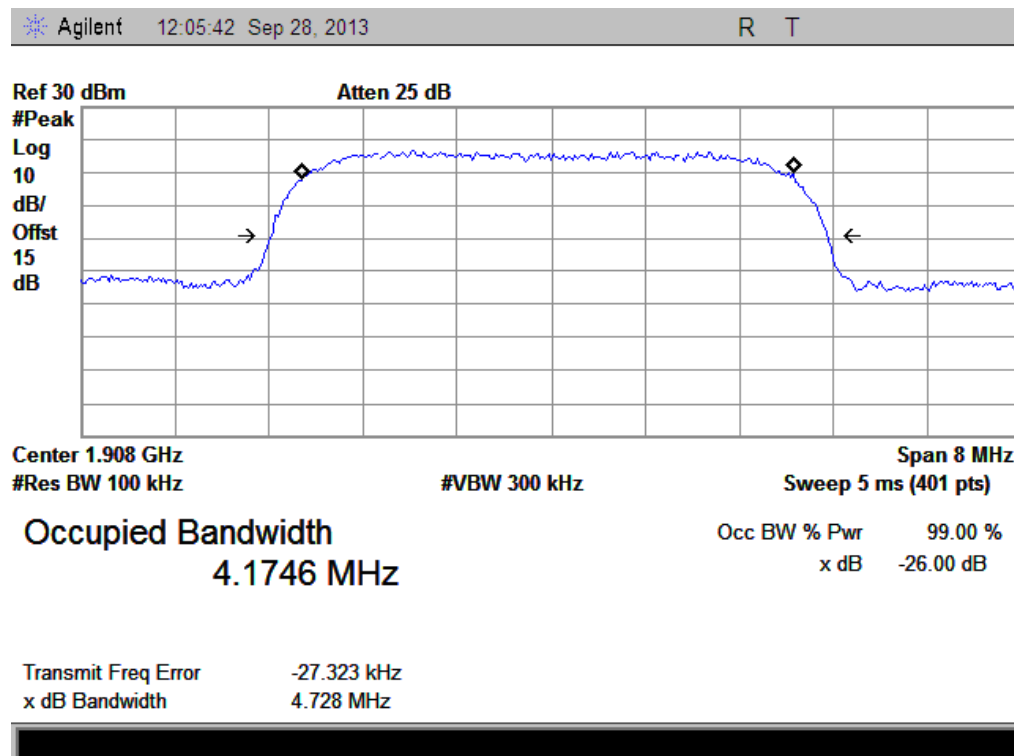
(Plot U: HSUPA850 MHz Channel = 4233)



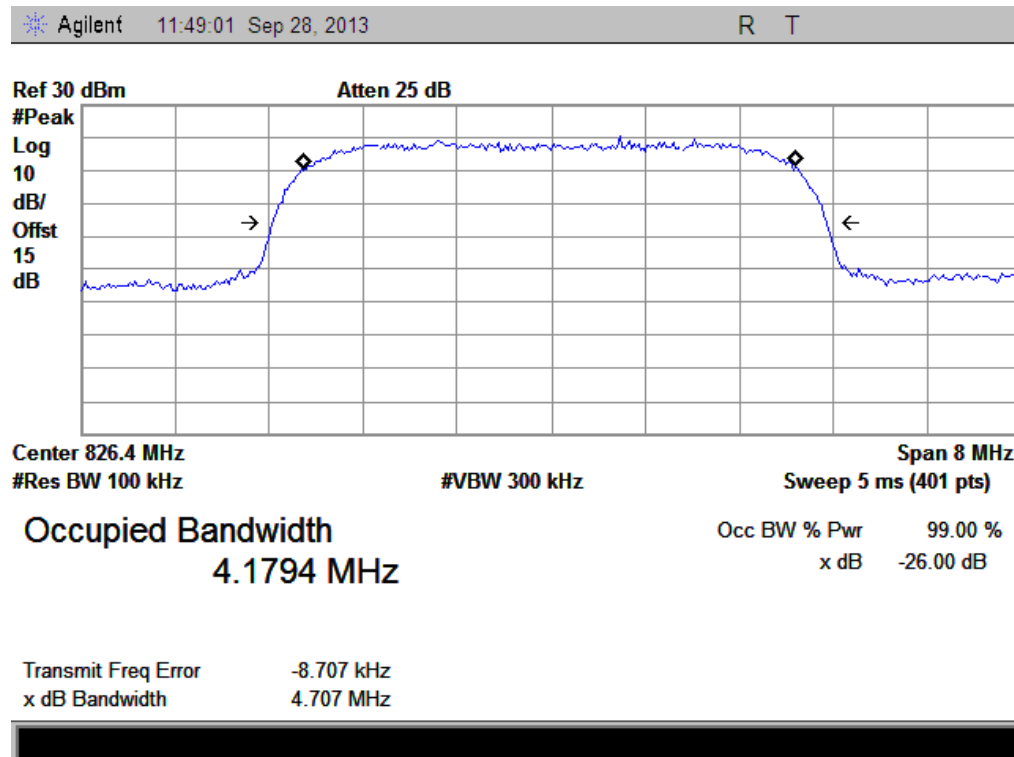
(Plot V: HSUPA1900 MHz Channel = 9262)



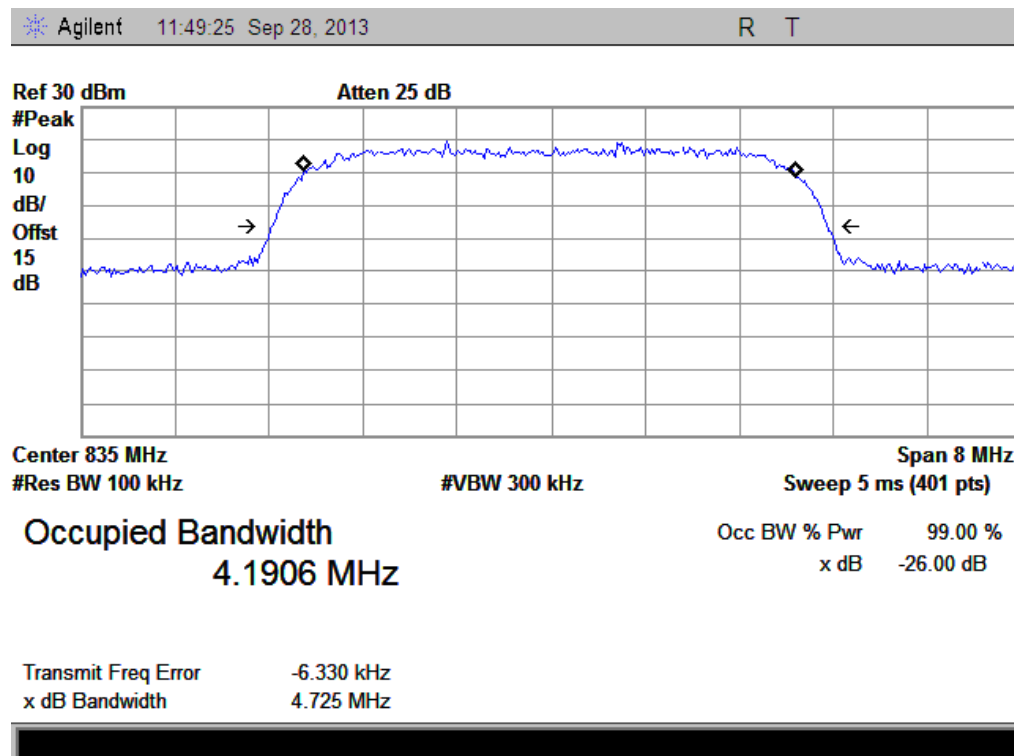
(Plot W: HSUPA1900 MHz Channel = 9400)



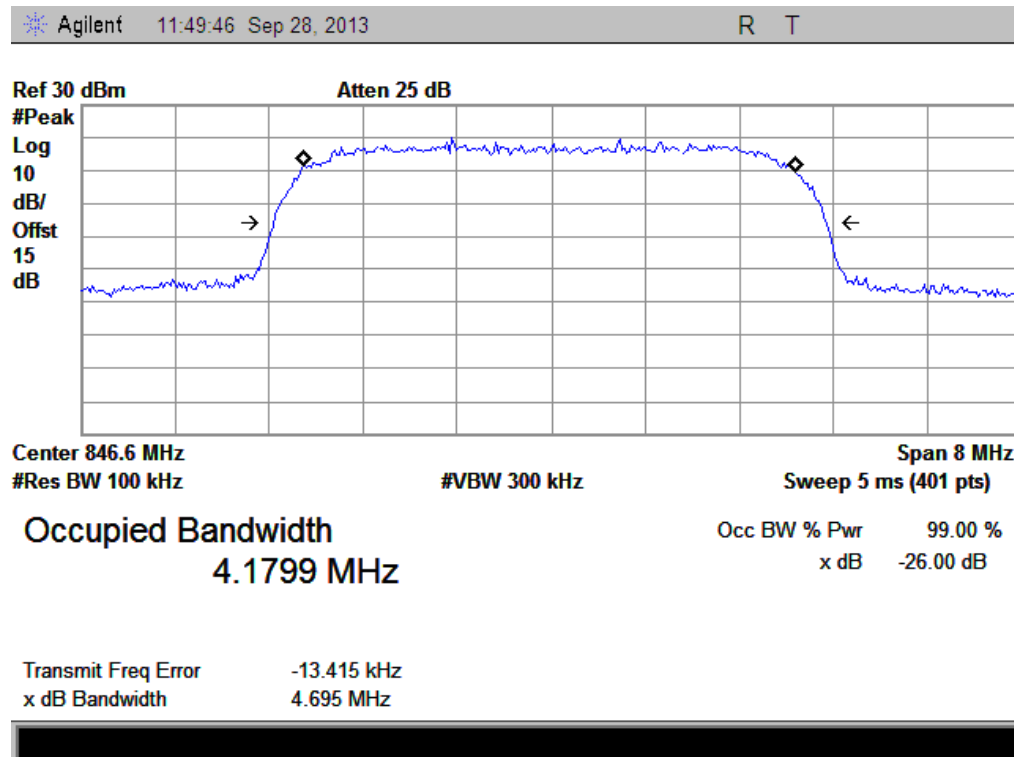
(Plot X: HSUPA1900 MHz Channel = 9538)



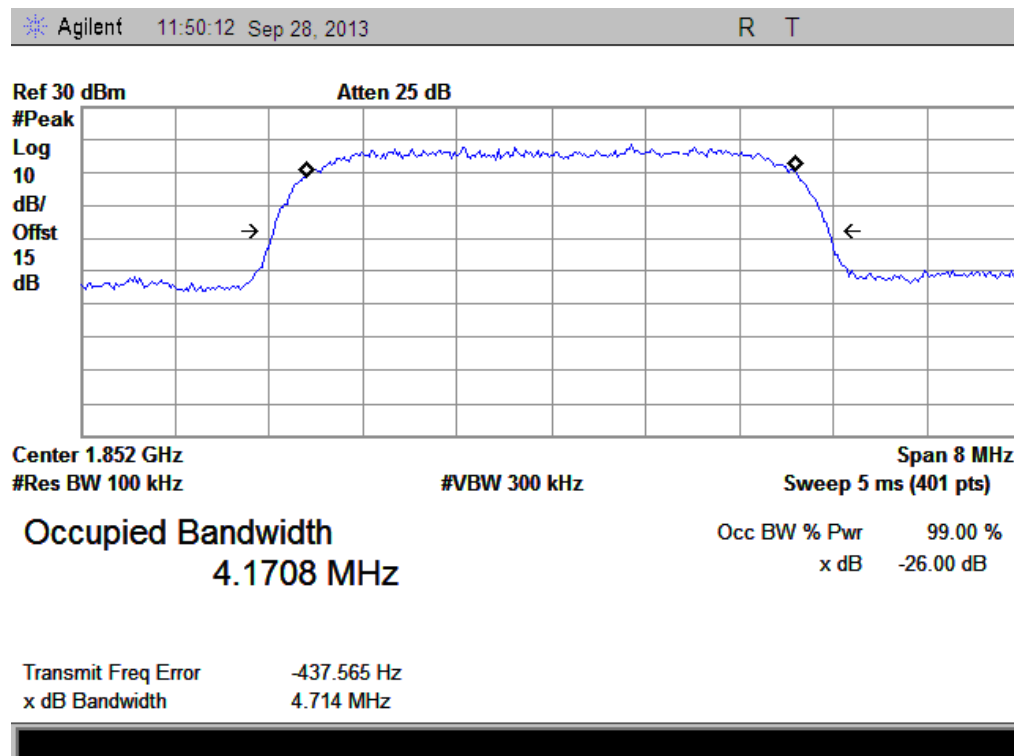
(Plot Y: HSPA+ 850 MHz Channel = 4132)



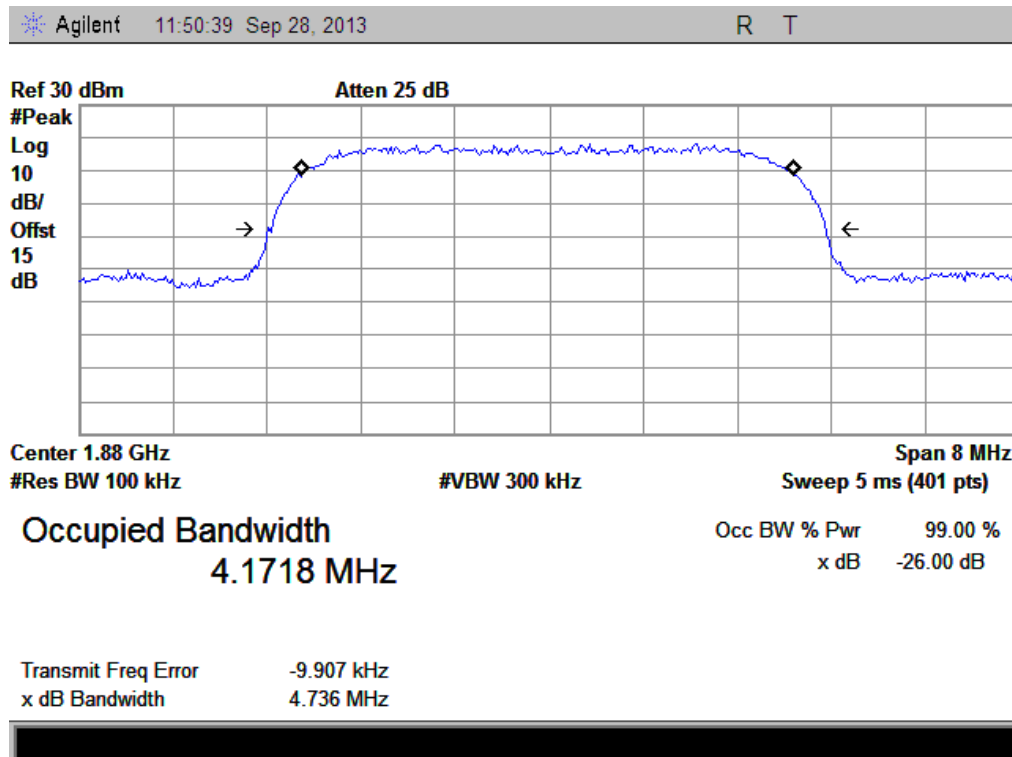
(Plot Z: HSPA+850 MHz Channel = 4175)



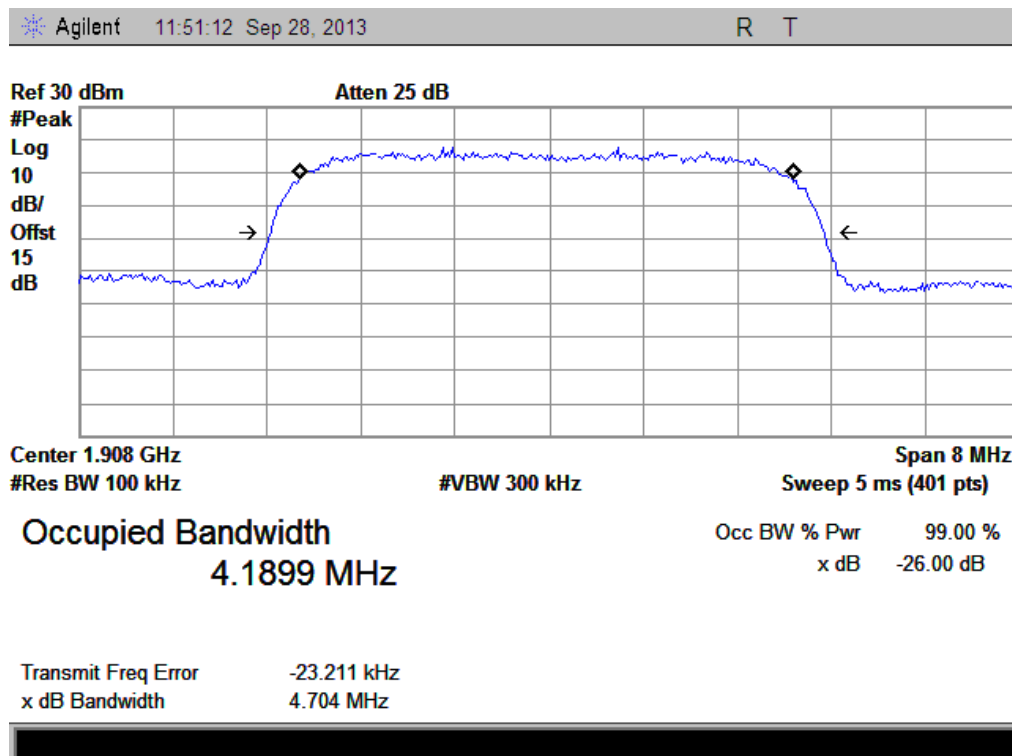
(Plot A1: HSPA+ 850 MHz Channel = 4233)



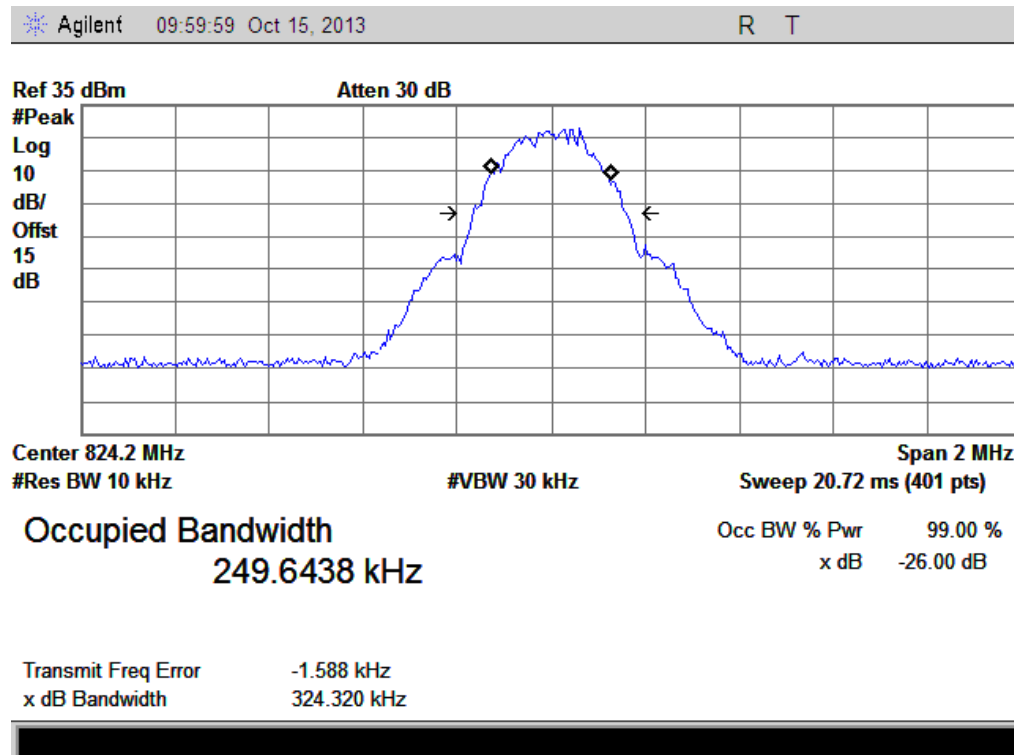
(Plot B1: HSPA+1900 MHz Channel = 9262)



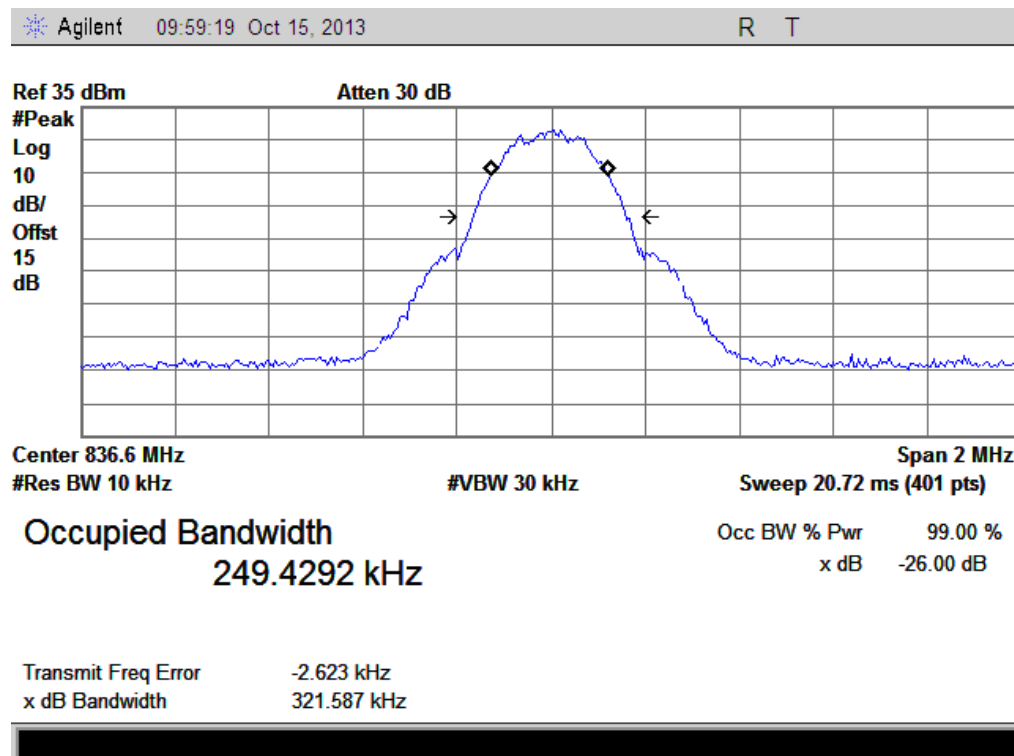
(Plot C1: HSPA+1900 MHz Channel = 9400)



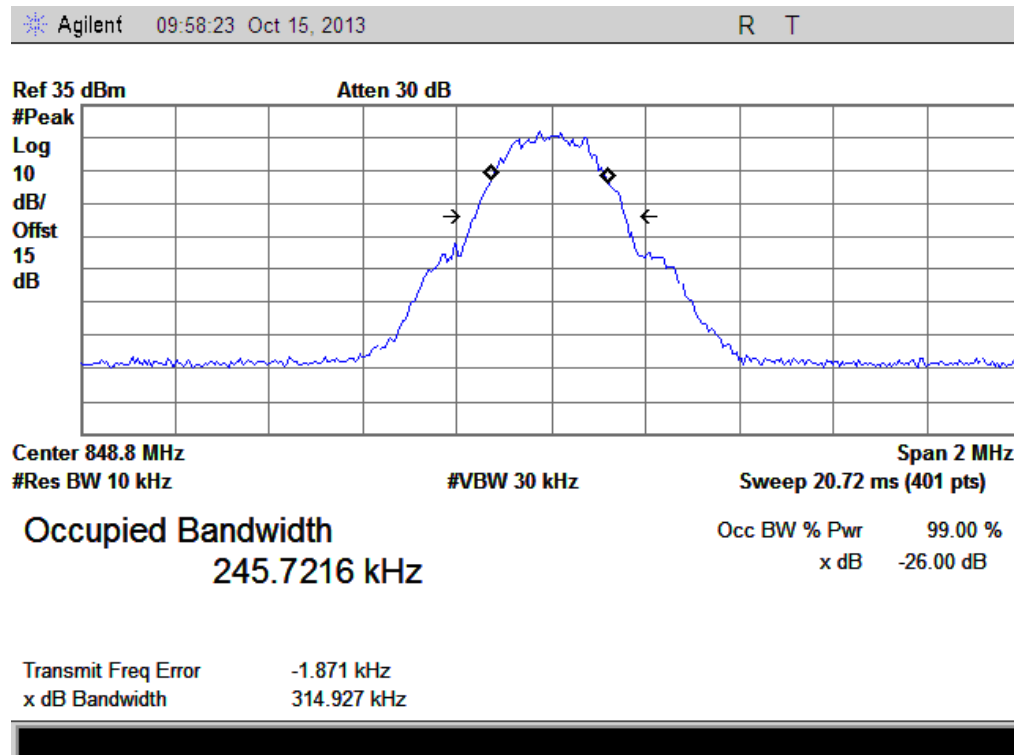
(Plot D1: HSPA+1900 MHz Channel = 9538)



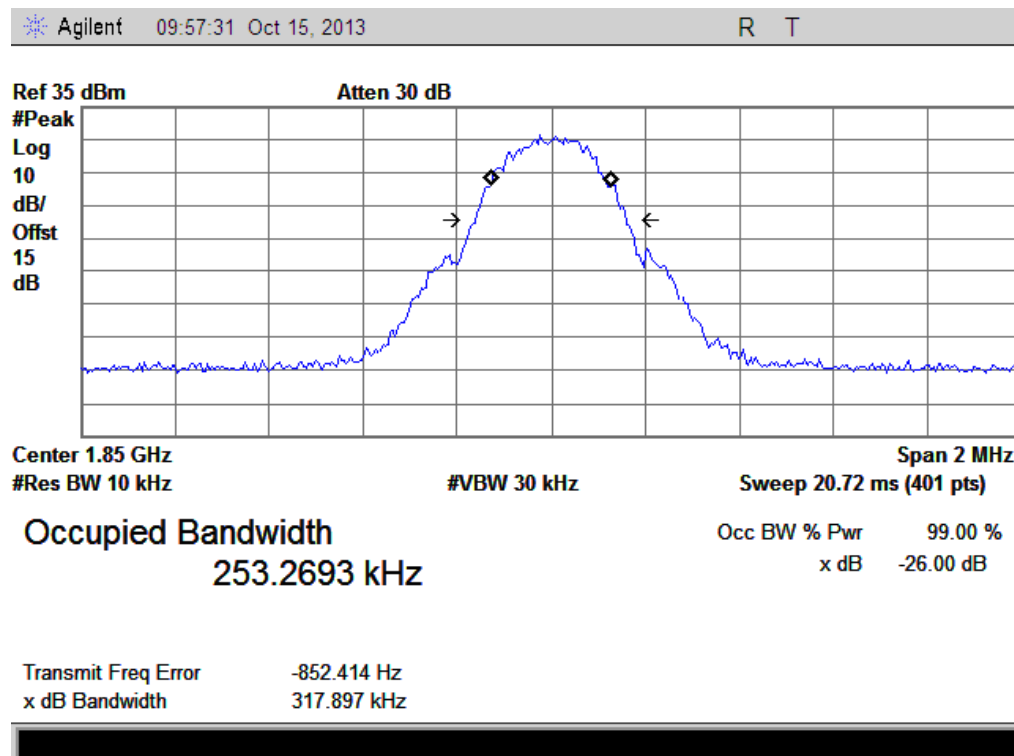
(Plot E1: GSM 850MHz Channel = 128)



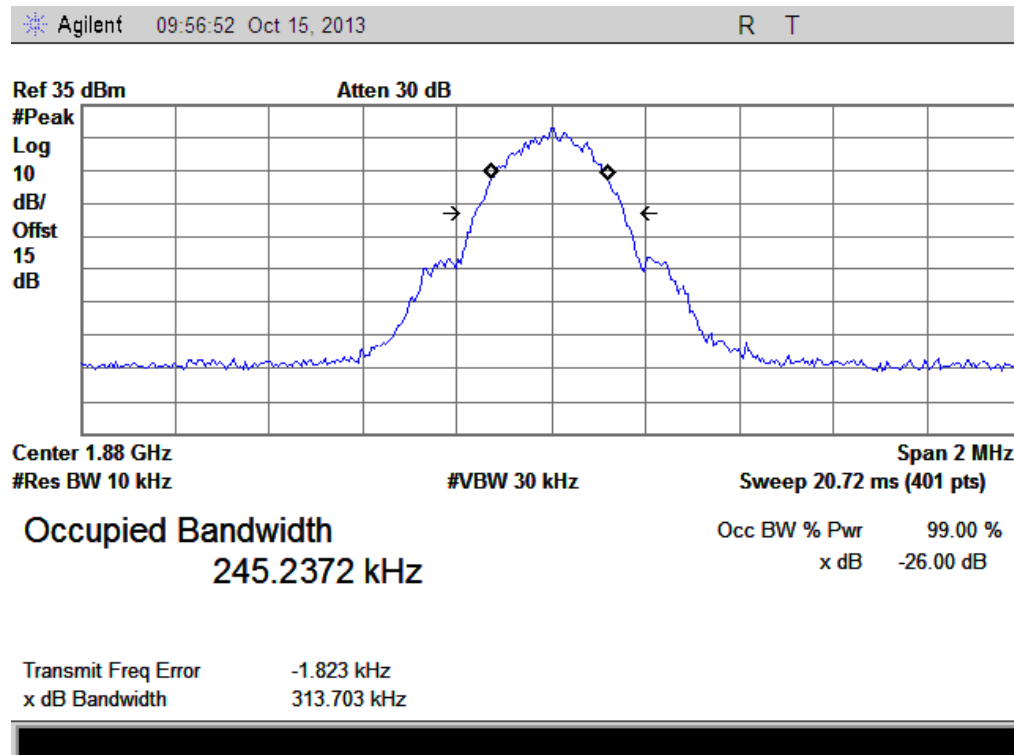
(Plot F1: GSM 850MHz Channel = 190)



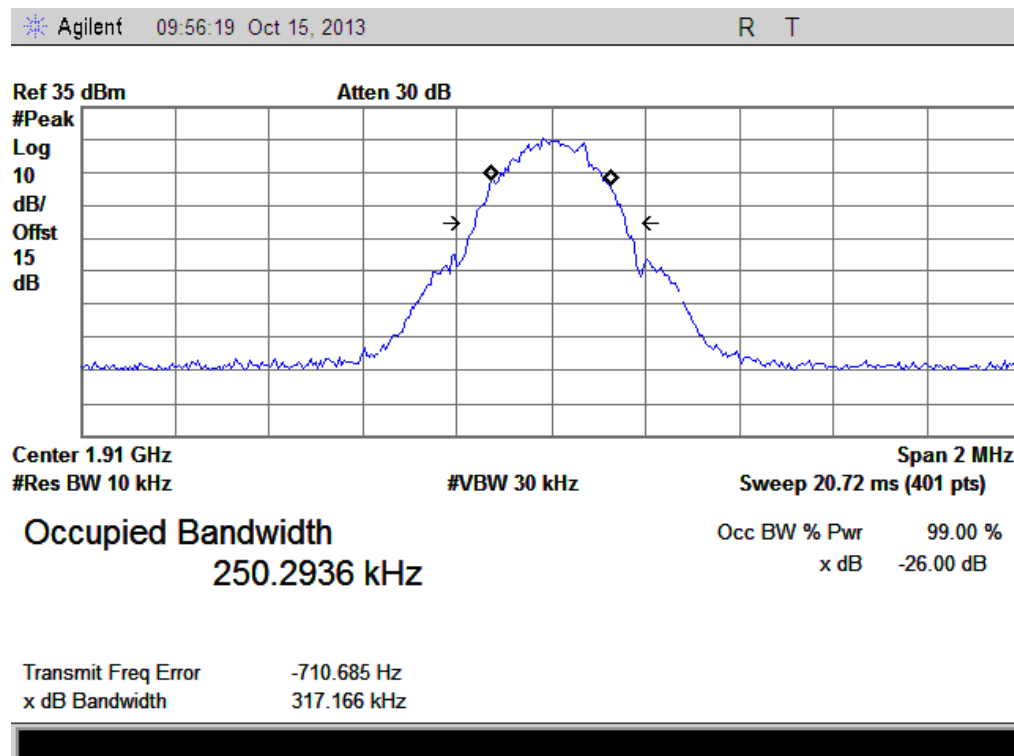
(Plot G1: GSM 850MHz Channel = 251)



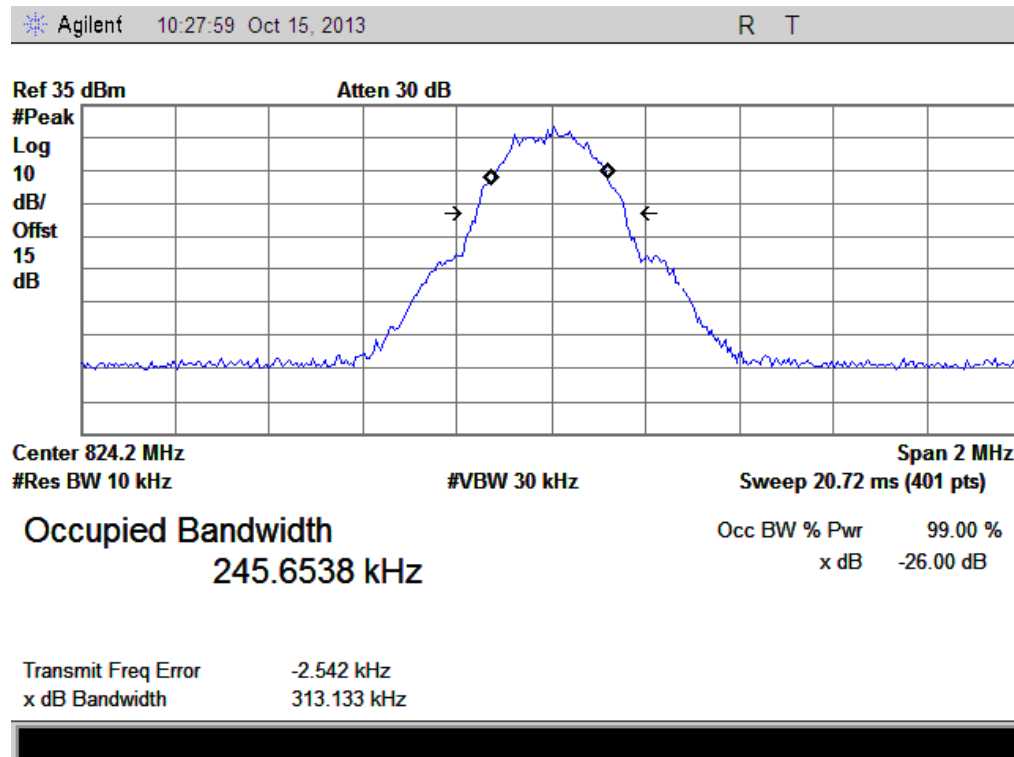
(Plot H1: GSM 1900MHz Channel = 512)



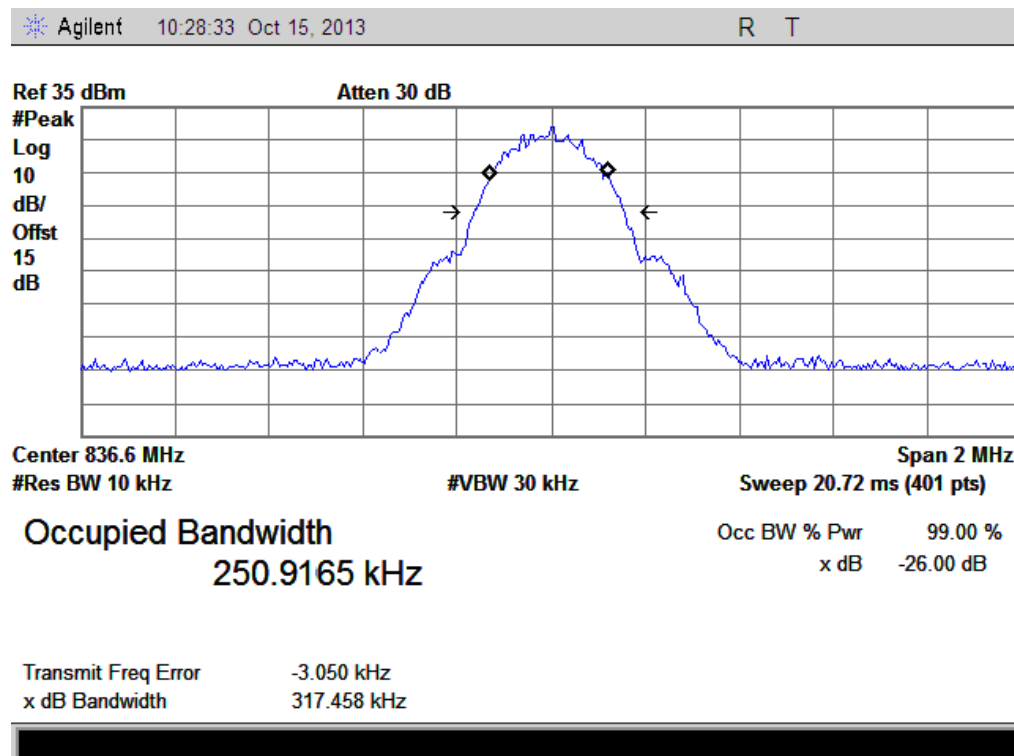
(Plot I1: GSM 1900MHz Channel = 661)



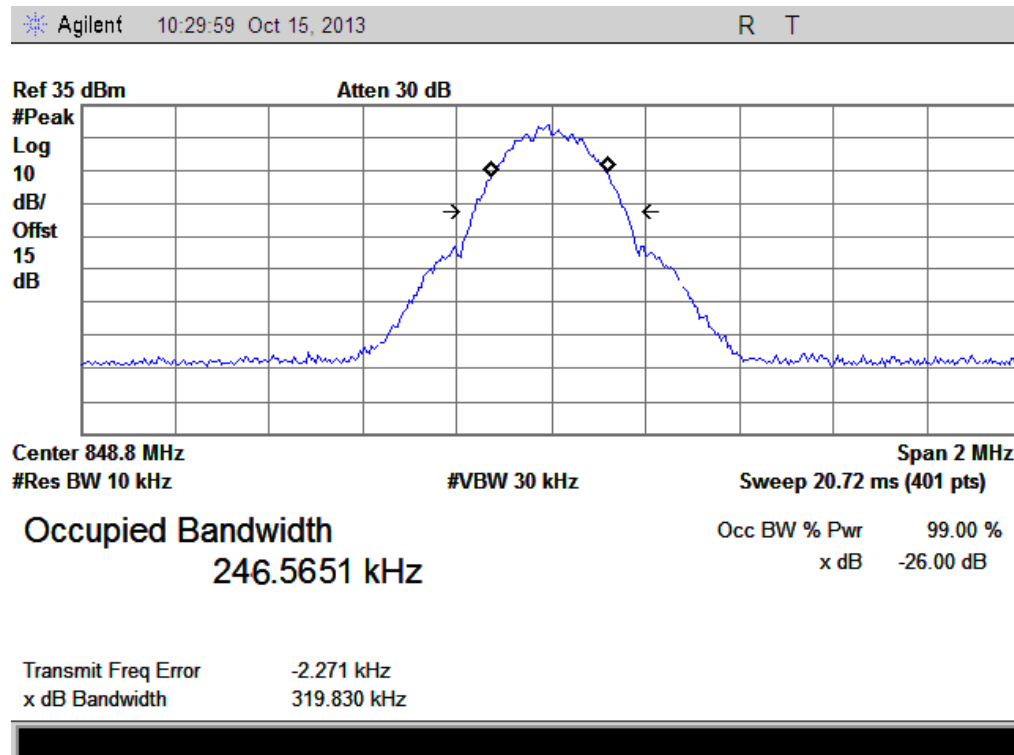
(Plot J1: GSM 1900MHz Channel = 810)



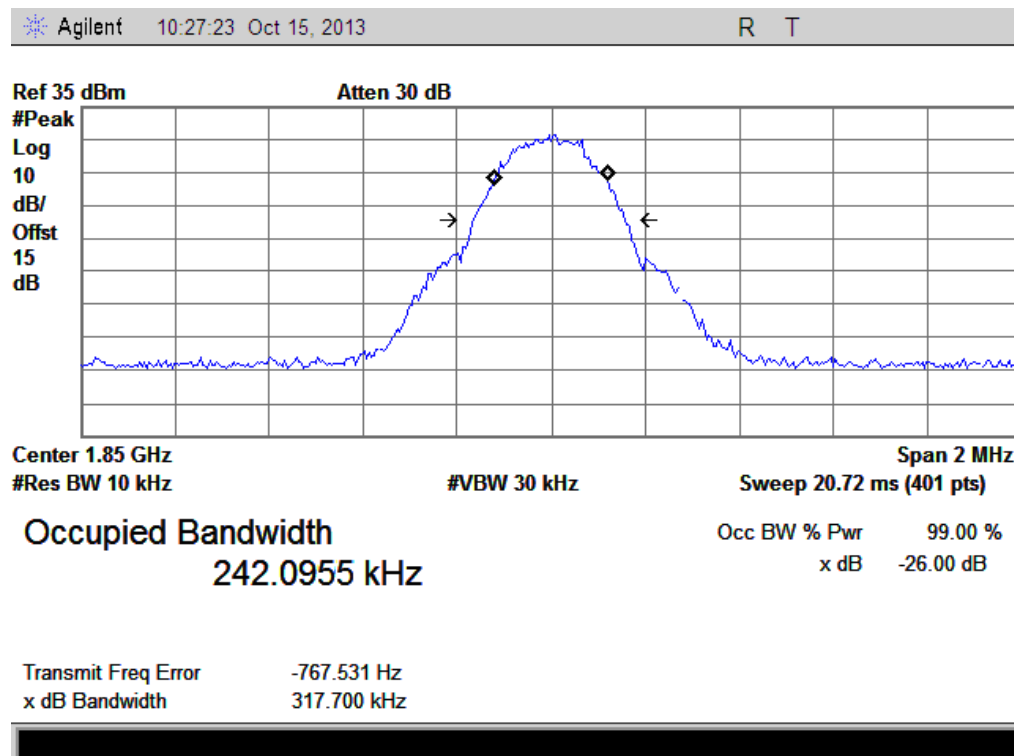
(Plot W1: GPRS 850MHz Channel = 128)



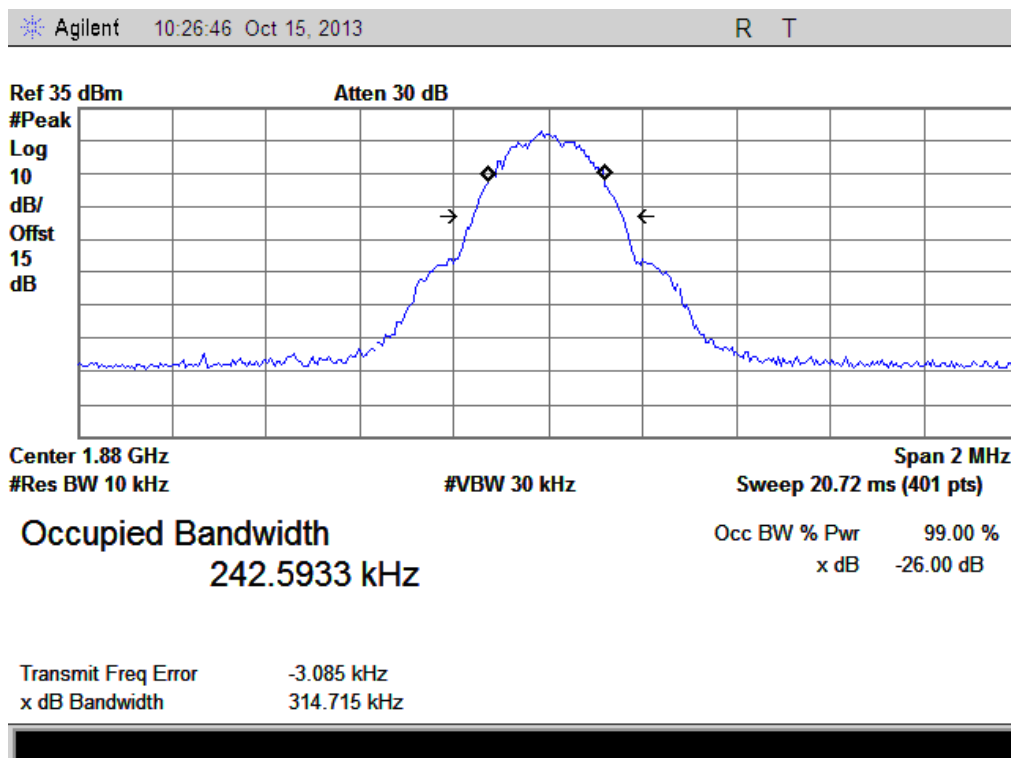
(Plot X1: GPRS 850MHz Channel = 190)



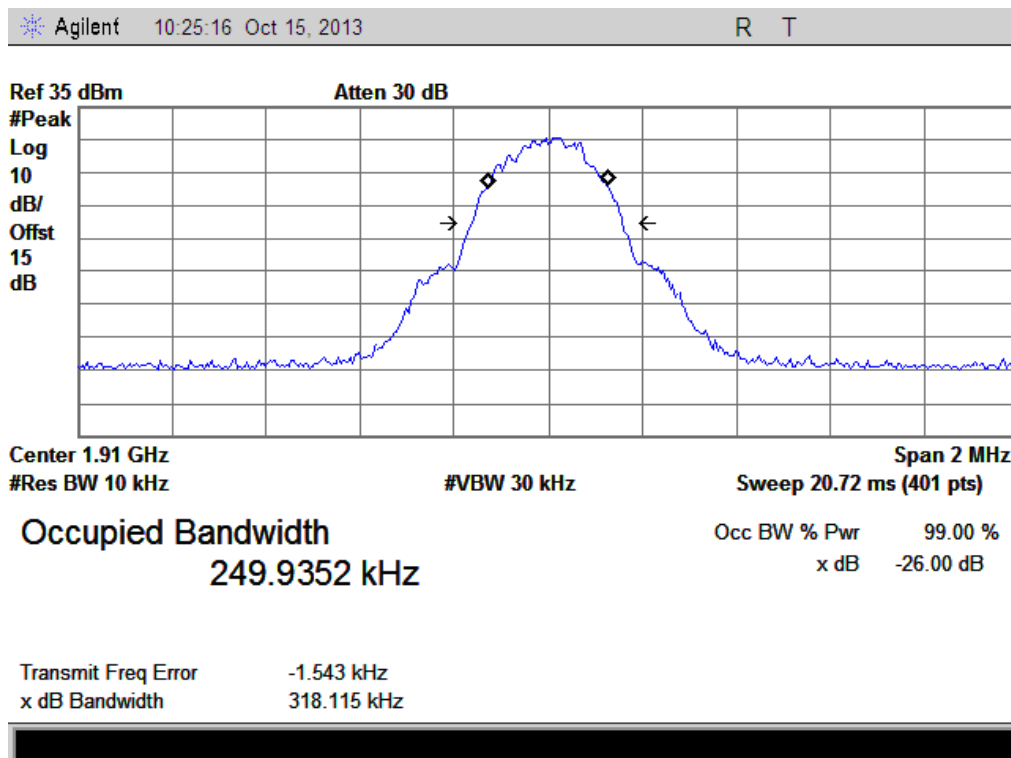
(PlotY1:GPRS850MHz Channel = 251)



(Plot Z1: GPRS 1900MHz Channel = 512)



(Plot A2: GPRS 1900MHz Channel = 661)



(Plot B2: GPRS 1900MHz Channel = 810)

2.4 Frequency Stability

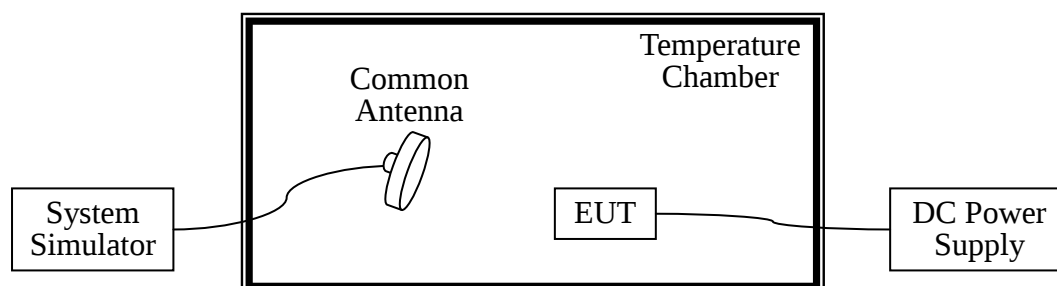
2.4.1 Requirement

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

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

2.4.2 Test Description

1. Test Setup:



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

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2013.05	2014.05
DC Power Supply	Good Will	GPS-3030DD	EF920938	2013.05	2014.05
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2013.05	2014.05

2.4.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC and 3.4VDC, which are specified by the applicant; the normal temperature here used is 25 °C. The frequency

deviation limit of 850MHz band is $\pm 2.5\text{ppm}$, and 1900MHz is $\pm 1\text{ppm}$

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	-21.42	±2060.5	20.12	±2091.5	17.25	±2122	PASS
	-20	19.15		16.31		-11.07		
	-10	-2.15		-17.56		15.22		
	0	30.16		32.11		7.05		
	+10	21.99		-25.03		3.02		
	+20	-19.16		-17.19		10.52		
	+30	35.26		19.36		-13.21		
	+40	42.63		19.64		-2.11		
	+50	35.28		22.27		-12.99		
4.2	+25	-14.73		28.95		-51.58		
3.6	+25	-17.02		31.09		16.11		

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	-0.59	±1850.2	-15.27	±1880.0	11.24	±1909.8	PASS
	-20	21.45		19.32		-15.71		
	-10	13.45		25.31		-16.22		
	0	1.31		30.26		19.32		
	+10	-12.52		-29.21		25.31		
	+20	30.62		19.33		30.26		
	+30	13.45		-19.27		-29.21		
	+40	-12.52		26.29		19.33		
	+50	30.62		18.97		-19.27		
4.2	+25	-0.59		-16.28		26.29		
3.6	+25	21.01		19.32		18.97		

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	-2.15	±2060.5	25.12	±2091.5	18.51	±2122	PASS
	-20	40.06		12.56		11.33		
	-10	1.99		-13.59		-17.55		
	0	-19.86		37.10		38.10		
	+10	31.52		-20.03		-22.06		
	+20	16.27		-11.08		-16.11		
	+30	31.91		13.76		17.76		
	+40	-2.15		12.22		15.64		
	+55	33.05		10.07		3.67		
4.2	+25	11.07		13.95		13.95		
3.6	+25	-19.86		6.23		11.33		

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	-13.77	±1850.2	23.62	±1880.0	2.47	±1909.8	PASS
	-20	0.62		7.23		-11.76		
	-10	1.65		-24.78		-12.21		
	0	2.47		-1.26		13.33		
	+10	-10.76		-18.68		5.33		
	+20	-2.11		-21.61		35.26		
	+30	13.33		14.58		-26.78		
	+40	5.33		-0.68		19.54		
	+55	-2.56		36.87		-16.67		
4.2	+25	17.60		3.88		26.79		
3.6	+25	-8.09		13.12		19.93		

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	17.29	±2066	11.87	±2087.5	-1.20	±2116.5	PASS
	-20	-7.32		-0.59		-19.38		
	-10	-3.40		21.45		7.57		
	0	16.47		13.45		4.22		
	+10	30.18		1.31		-17.39		
	+20	32.07		-12.52		11.90		
	+30	-7.98		30.62		6.63		
	+40	26.21		13.45		28.93		
	+55	11.10		-12.52		19.66		
4.2	+25	-6.18		30.62		22.19		
3.6	+25	18.66		-18.00		-18.70		

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	-4.75	±1852.4	-13.47	±1880.0	-8.99	±1907.6	PASS
	-20	18.85		12.18		23.60		
	-10	5.05		-14.06		14.81		
	0	19.62		18.79		-3.07		
	+10	30.40		22.39		17.42		
	+20	13.45		37.27		-10.39		
	+30	1.31		2.37		17.47		
	+40	-12.52		-13.47		27.84		
	+55	-13.55		-5.71		-2.53		
4.2	+25	23.21		14.58		20.95		
3.6	+25	22.00		26.37		-23.22		

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	27.46	±2066	-24.37	±2087.5	15.81	±2116.5	PASS
	-20	-8.56		-13.96		14.41		
	-10	20.65		35.23		21.57		
	0	12.88		-8.31		-24.37		
	+10	-14.75		-13.95		-13.96		
	+20	8.78		-24.37		35.23		
	+30	-1.49		12.88		-8.31		
	+40	17.14		-14.75		-13.95		
	+55	-23.61		23.37		26.37		
4.2	+25	32.03		7.93		7.90		
3.6	+25	17.51		-31.21		1.78		

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	11.87	±1852.4	-3.01	±1880	2.61	± 1907.6	PASS
	-20	-16.65		21.71		-8.38		
	-10	20.12		14.37		-13.02		
	0	-3.01		-11.21		-8.51		
	+10	21.71		10.60		5.64		
	+20	20.12		-4.81		-3.85		
	+30	-15.01		34.31		9.57		
	+40	22.71		8.36		27.54		
	+55	16.32		-25.88		-12.52		
4.2	+25	-11.28		29.43		-2.83		
3.6	+25	10.33		-2.27		14.42		

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	25.52	±2066	13.5	±2087.5	13.55	±2116.5	PASS
	-20	-16.20		-19.33		27.42		
	-10	-12.61		-11.79		37.01		
	0	-13.09		-0.44		-7.32		
	+10	-0.38		0.01		-4.91		
	+20	-11.85		-6.64		21.35		
	+30	29.57		24.25		-5.94		
	+40	-11.79		9.63		13.78		
	+55	-0.44		23.76		28.45		
4.2	+25	1.71		-4.57		29.11		
3.6	+25	1.54		5.25		-7.70		

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	31.57	±1852.4	-11.79	±1880	8.69	±1907.6	PASS
	-20	27.13		-0.44		2.01		
	-10	7.62		0.01		-4.75		
	0	2.31		13.82		16.38		
	+10	-4.73		-15.25		-1.76		
	+20	16.22		-11.79		23.52		
	+30	-1.55		-0.44		-0.38		
	+40	23.16		1.15		-11.85		
	+55	13.79		-7.94		-5.91		
4.2	+25	-7.08		6.81		25.48		
3.6	+25	22.58		-1.83		-15.78		

11. HSPA+ 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4123 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.7	-30	26.32	±2066	13.5	±2087.5	17.51	±2116.5	PASS
	-20	-17.20		-17.71		22.32		
	-10	-12.61		-2.44		31.05		
	0	-13.09		0.01		-17.22		
	+10	-0.38		-16.31		-14.51		
	+20	-11.85		-11.79		21.35		
	+30	29.57		-0.44		-5.94		
	+40	-11.79		0.01		13.78		
	+55	-0.44		23.76		28.45		
4.2	+25	8.71		-4.57		29.11		
3.6	+25	11.54		15.25		-6.75		

12. HSPA+ 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.7	-30	-16.20	±1852.4	-15.31	±1880	-0.44	± 1907.6	PASS
	-20	-12.61		-11.79		0.01		
	-10	-13.09		-0.44		13.82		
	0	-0.38		0.01		-15.25		
	+10	-11.85		-15.31		-11.79		
	+20	29.57		-11.79		-0.44		
	+30	-11.79		-0.44		1.15		
	+40	-0.44		11.01		-17.94		
	+55	13.75		-16.64		-0.44		
4.2	+25	11.54		24.25		10.05		
3.6	+25	-16.27		9.63		13.82		

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:

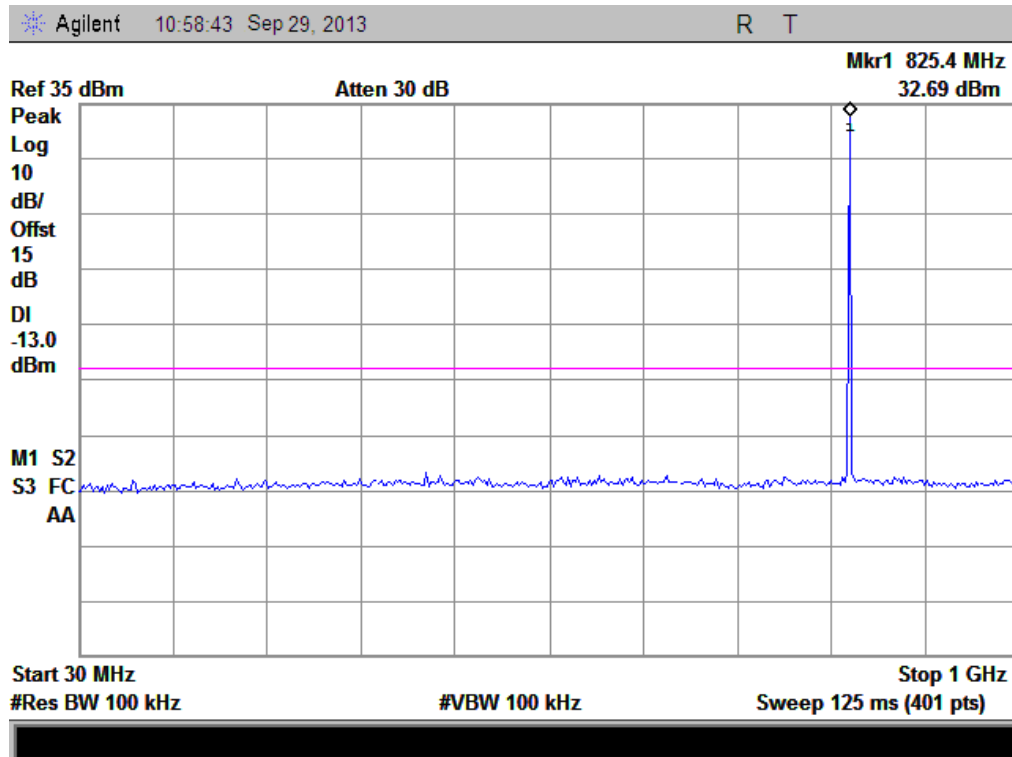
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-20.70	Plot A1toA1.1	-13	PASS
	190	836.6	-20.88	Plot A2toA2.1		PASS
	251	848.8	-20.89	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	-22.09	Plot B1toB1.1	-13	PASS
	661	1880.0	-21.30	Plot B2toB2.1		PASS
	810	1909.8	-21.80	Plot B3toB3.1		PASS
EDGE 850MHz	128	824.2	-21.06	Plot C1toC1.1	-13	PASS
	190	836.6	-21.34	Plot C2toC2.1		PASS
	251	848.8	-21.33	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	-21.45	Plot D1toD1.1	-13	PASS
	661	1880.0	-19.97	Plot D2toD2.1		PASS
	810	1909.8	-21.36	Plot D3toD3.1		PASS
WCDMA 850MHz	4132	826.4	<-25	Plot E1toE1.1	-13	PASS
	4175	835	<-25	Plot E2toE2.1		PASS
	4233	846.6	<-25	Plot E3toE3.1		PASS
WCDMA 1900MHz	9262	1852.4	<-25	Plot F1toF1.1	-13	PASS
	9400	1880	<-25	Plot F2toF2.1		PASS
	9538	1907.6	<-25	Plot F3toF3.1		PASS
HSDPA	4132	826.4	<-25	Plot G1toG1.1	-13	PASS



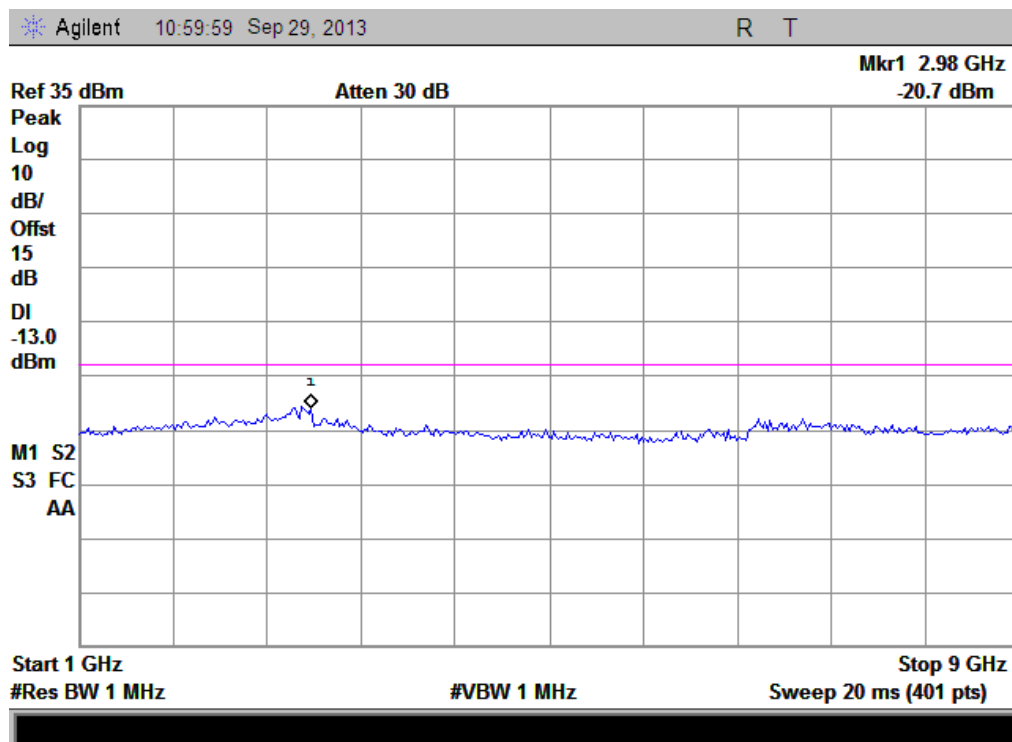
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
850MHz	4175	835	< -25	Plot G2toG2.1		PASS
	4233	846.6	< -25	Plot G3toG3.1		PASS
HSDPA 1900MHz	9262	1852.4	< -25	Plot H1toH1.1	-13	PASS
	9400	1880	< -25	Plot H2toH2.1		PASS
	9538	1907.6	< -25	Plot H3toH3.1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

2. Test Plots for the Whole Measurement Frequency Range:

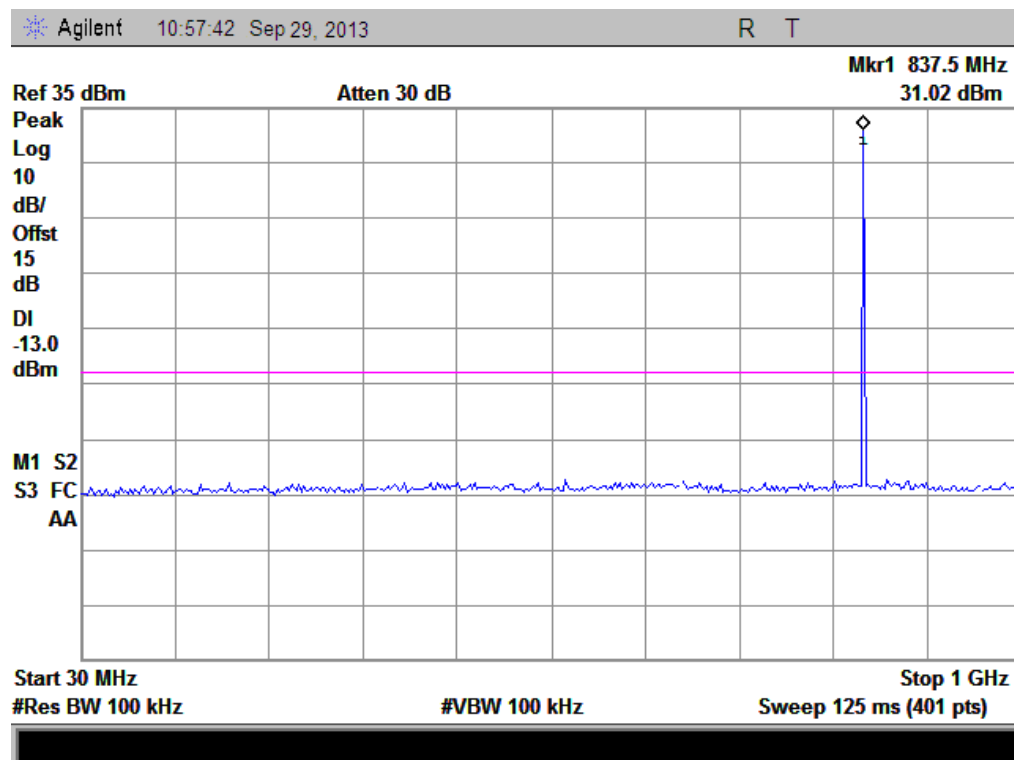
Note: the power of the EUT transmitting frequency should be ignored.



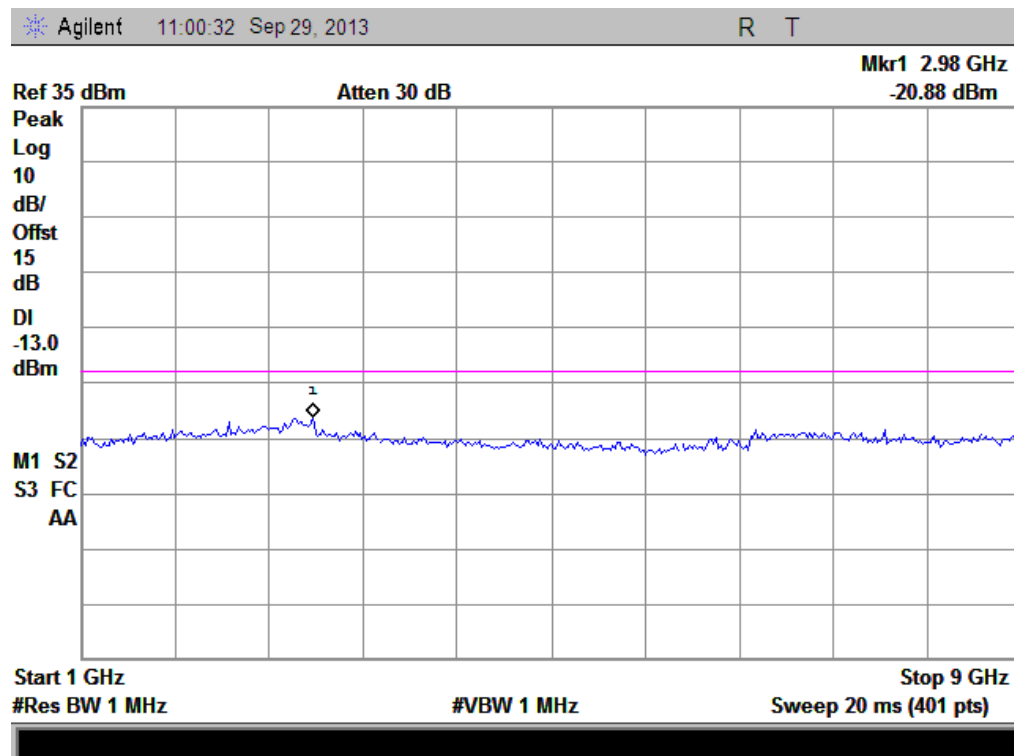
(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)



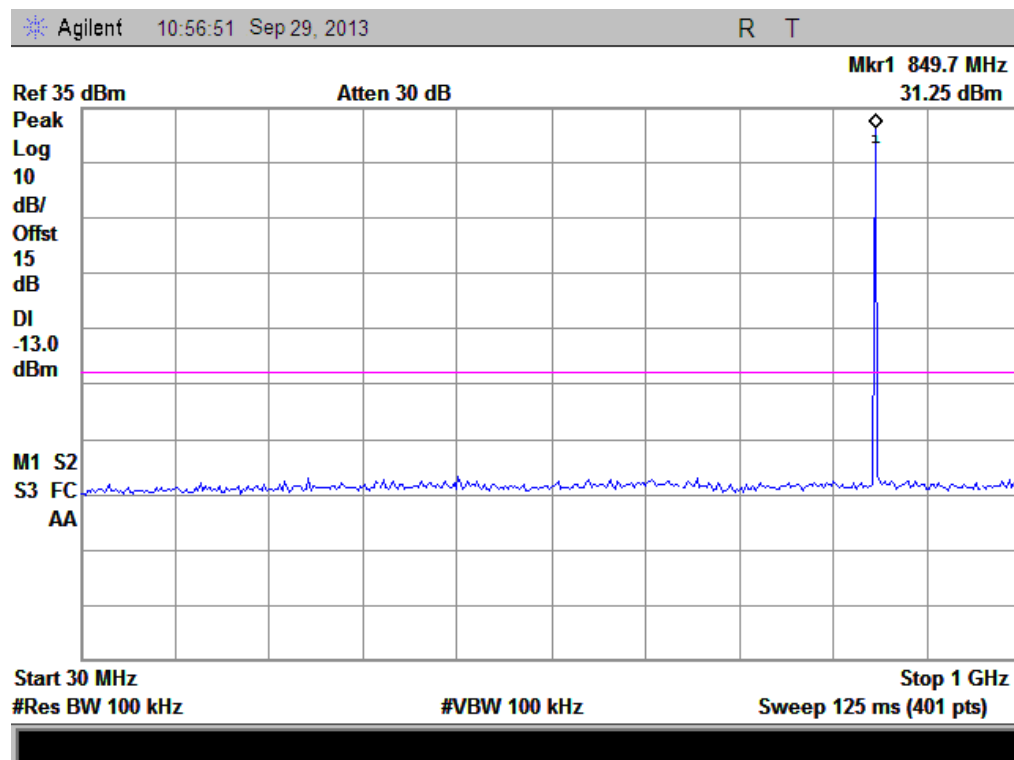
(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)



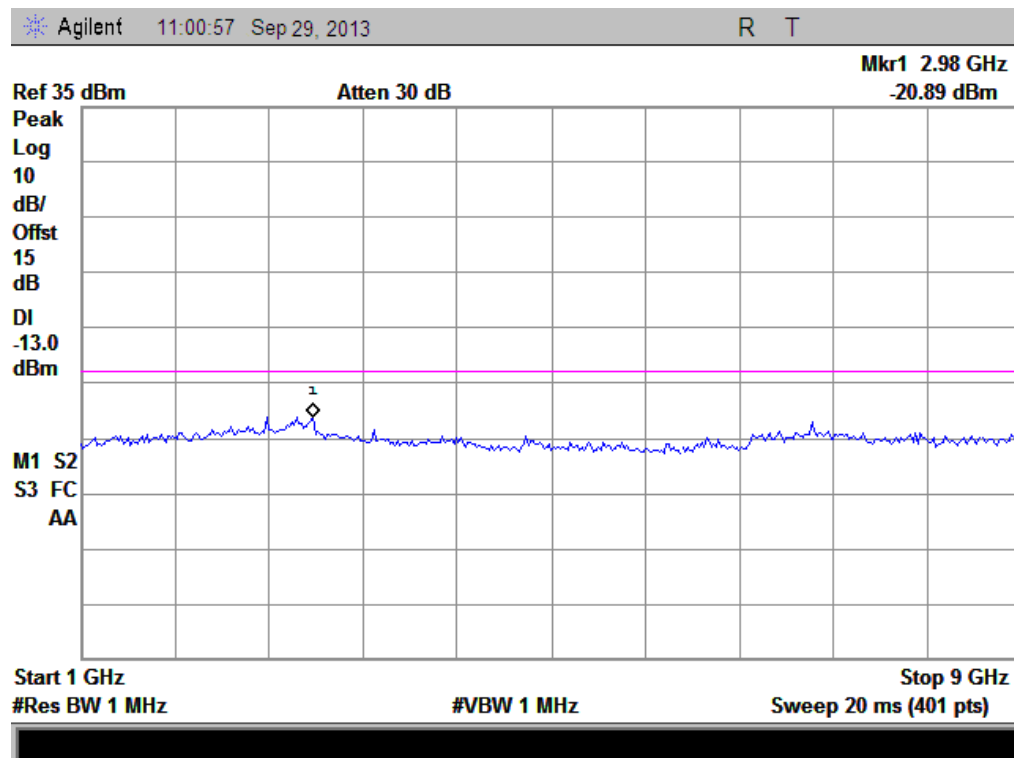
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



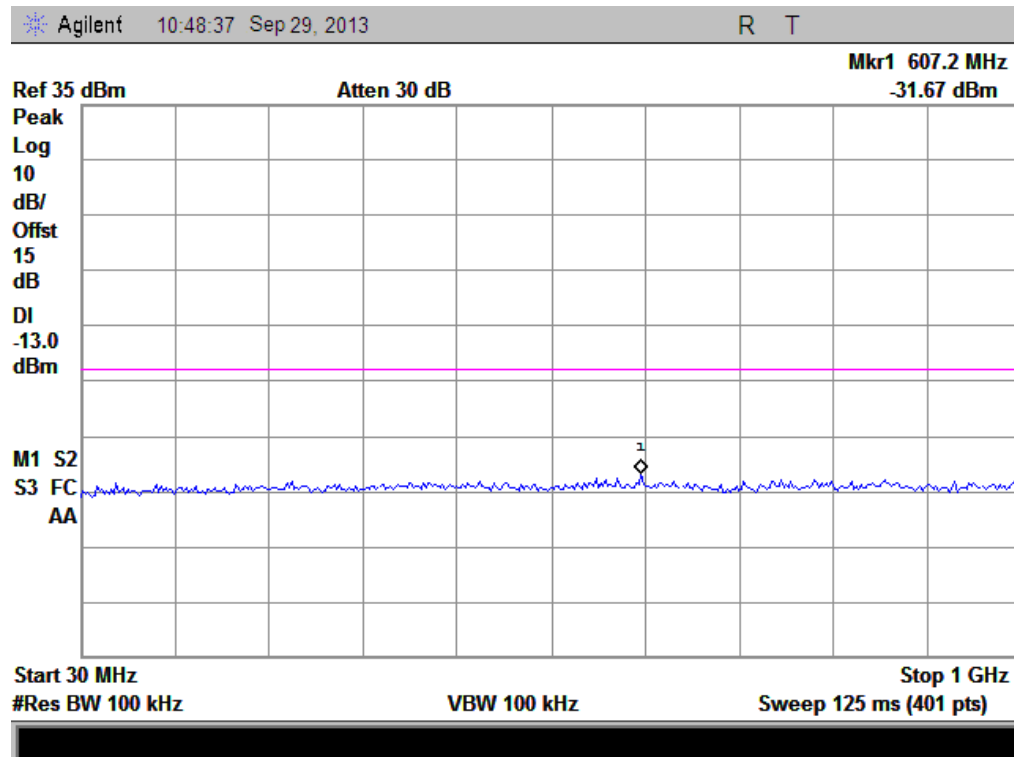
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



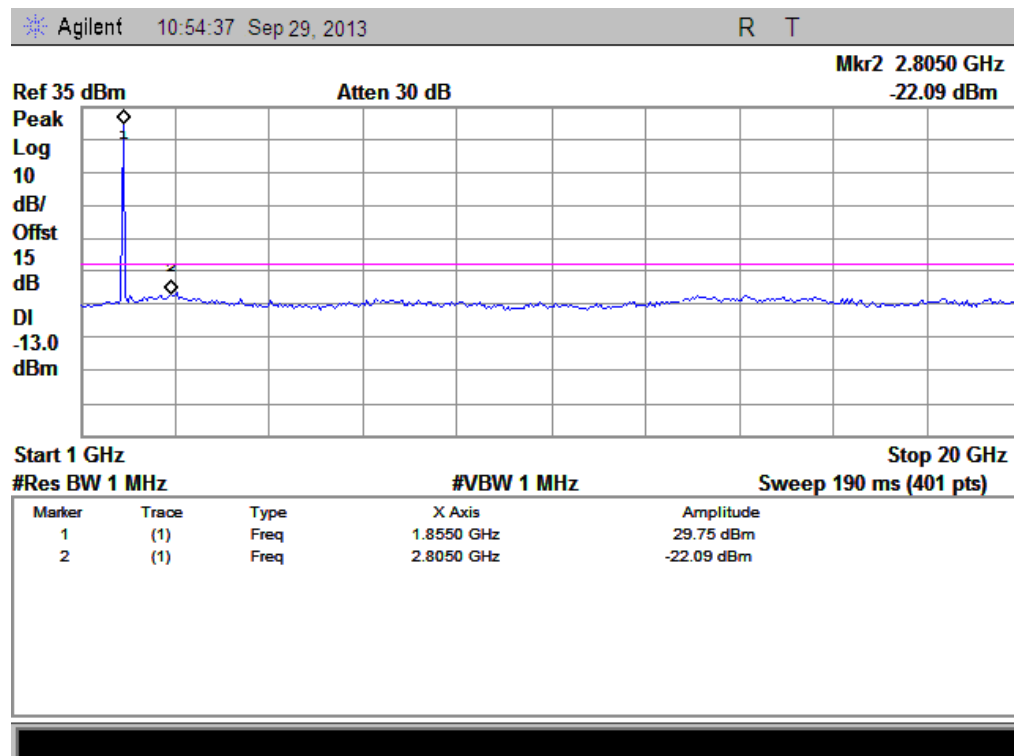
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



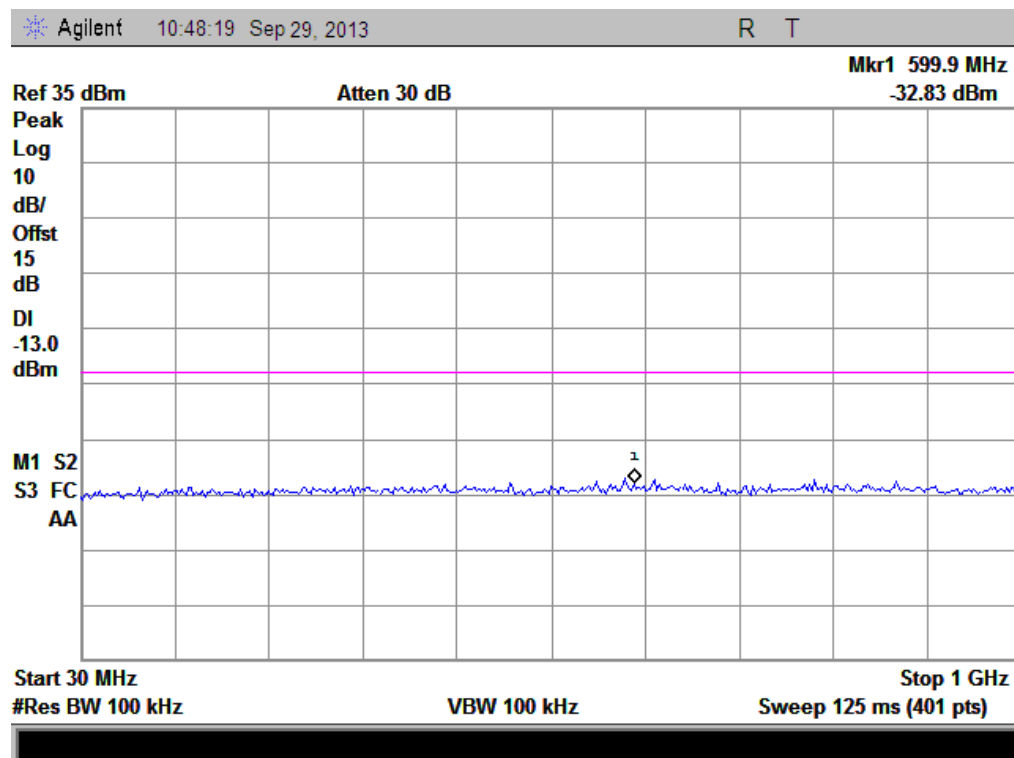
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



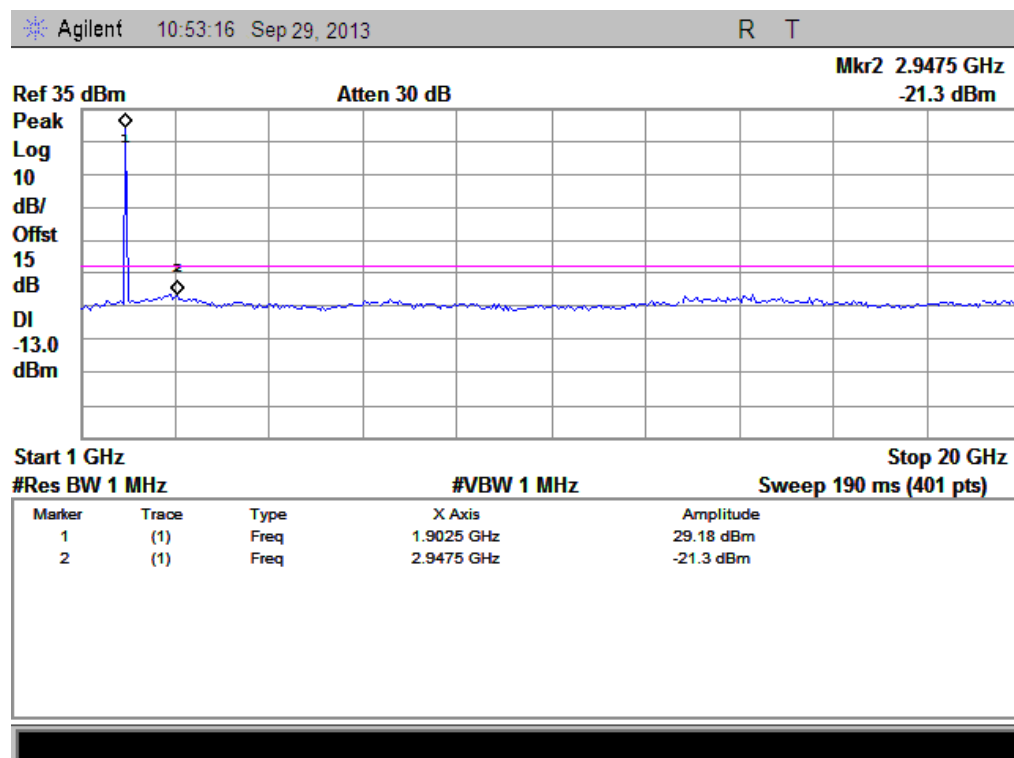
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



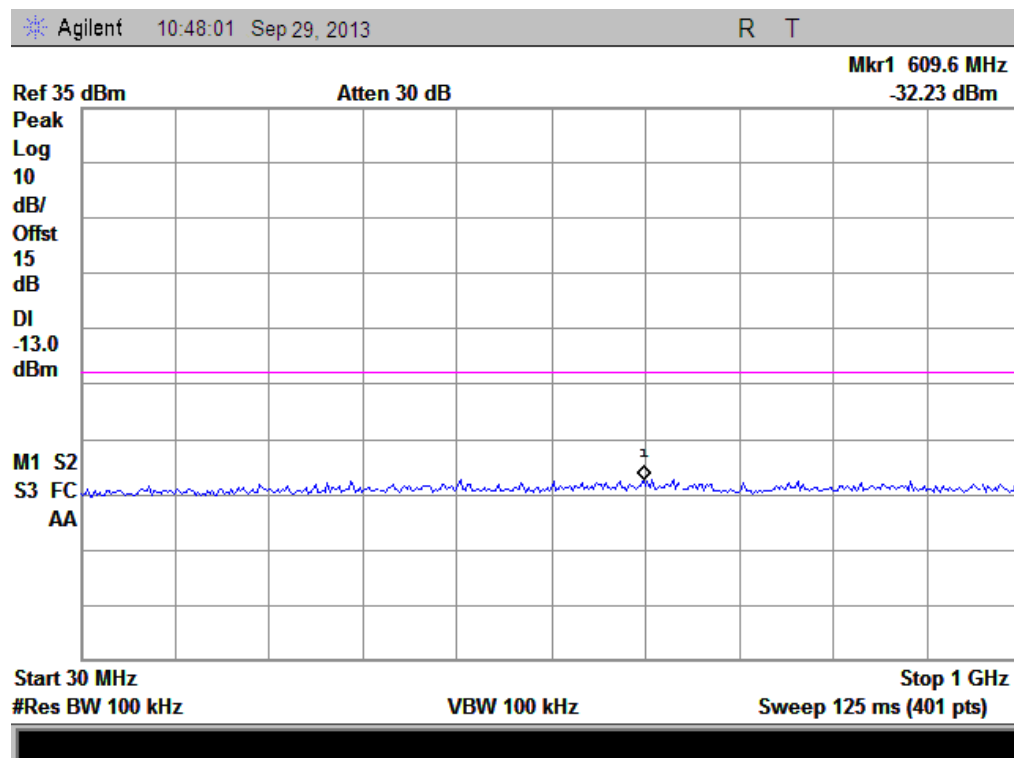
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



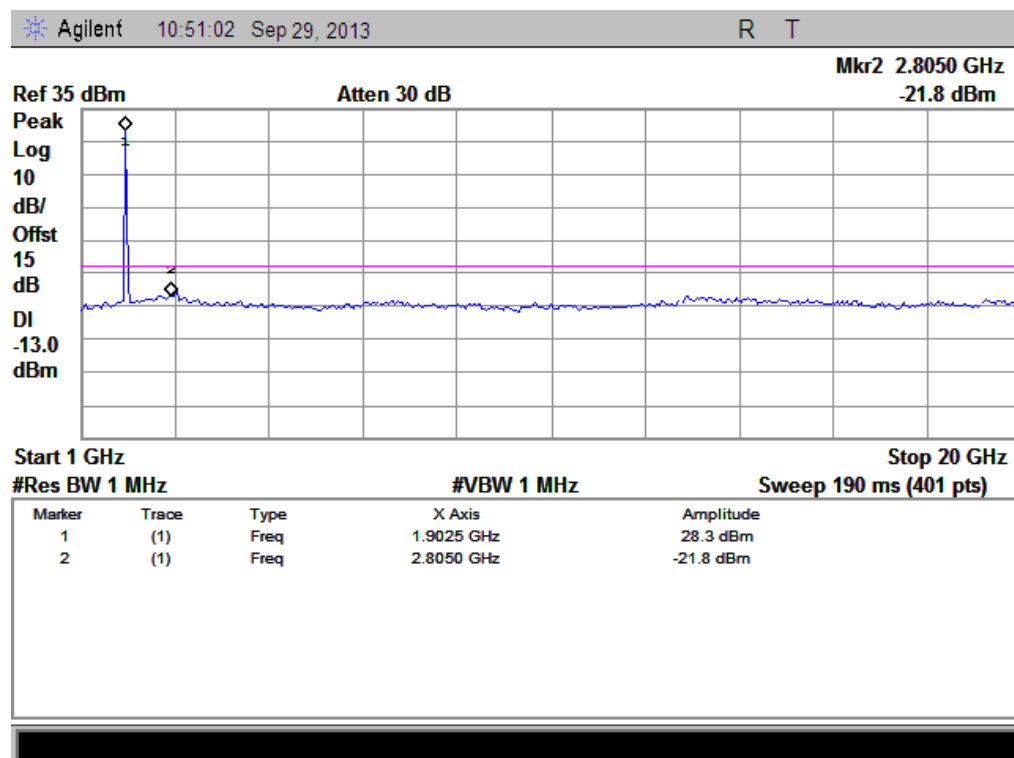
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)



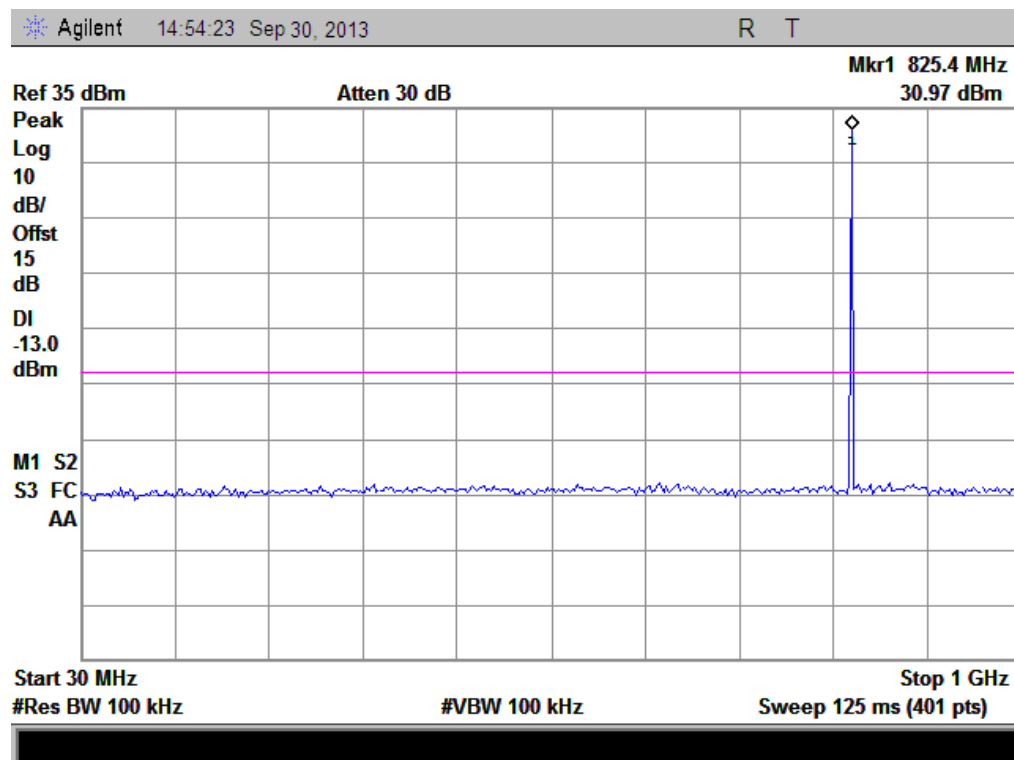
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



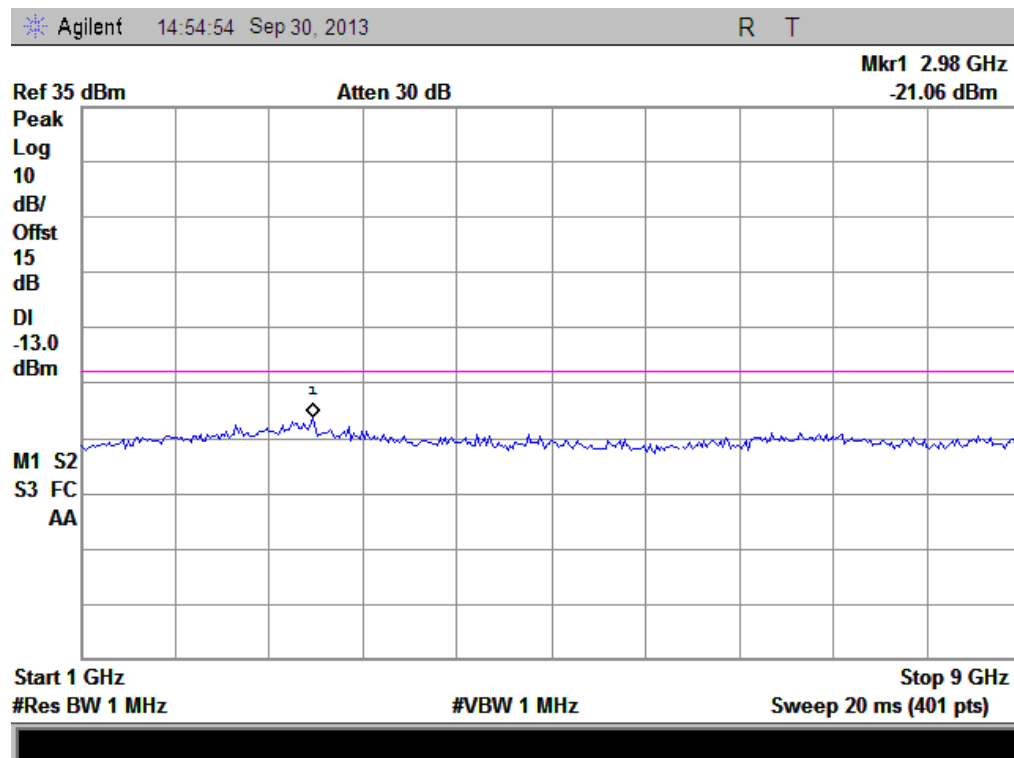
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



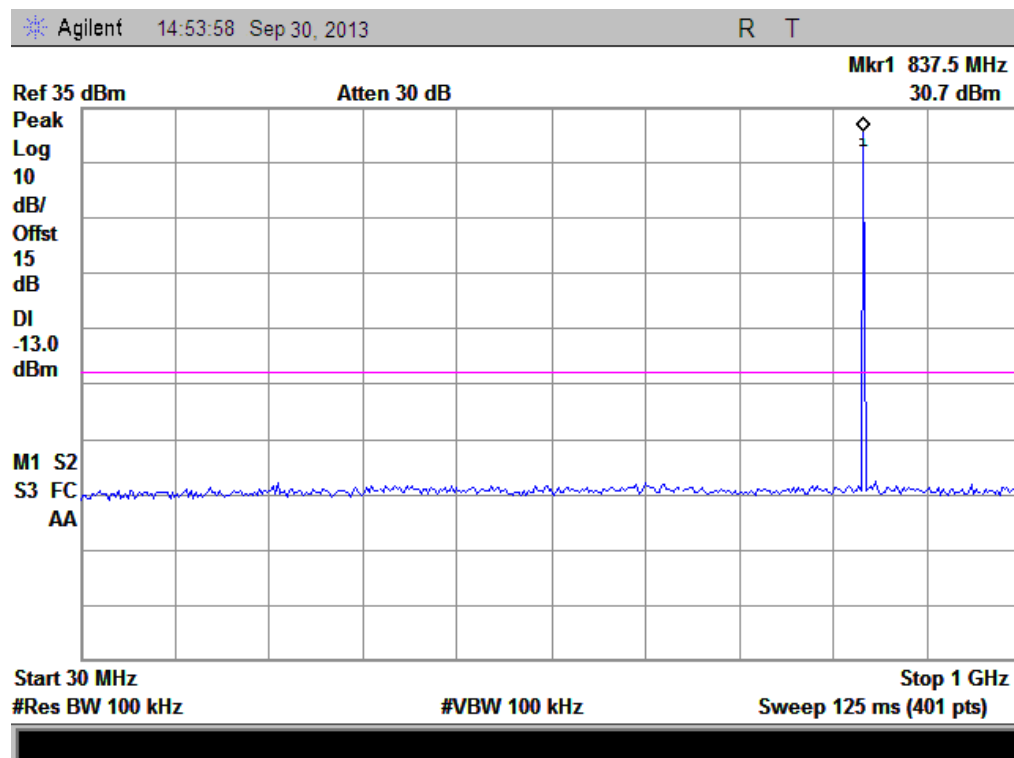
(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



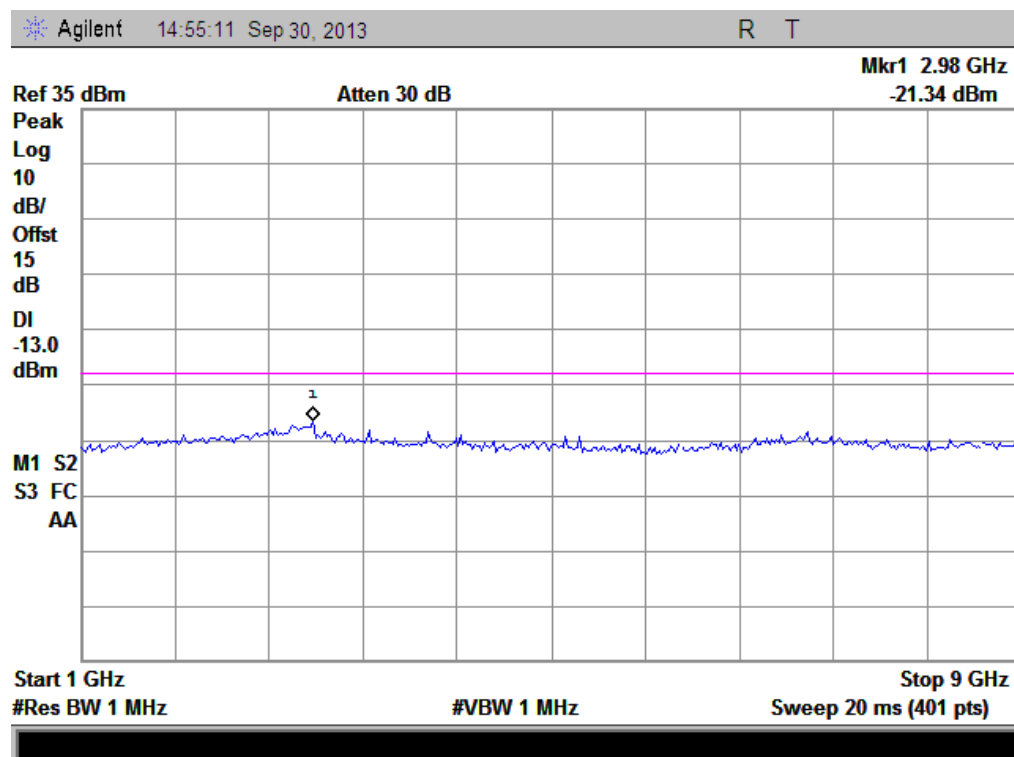
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)



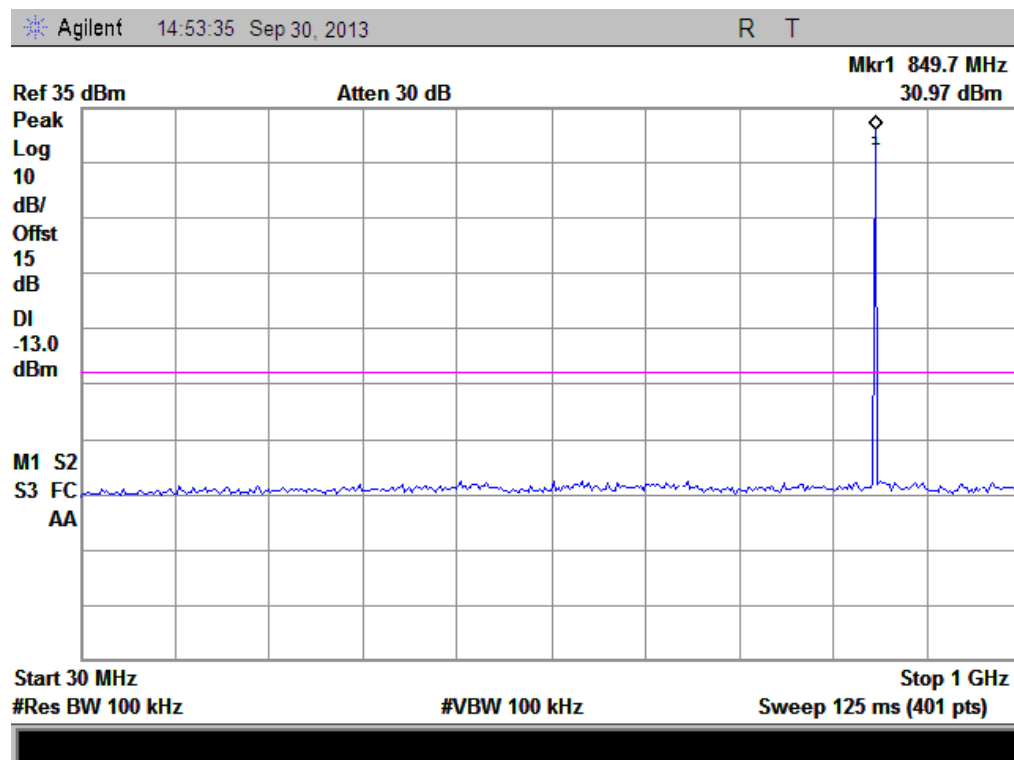
(Plot C1.1: EDGE 850MHz Channel = 128, 1GHz to 9GHz)



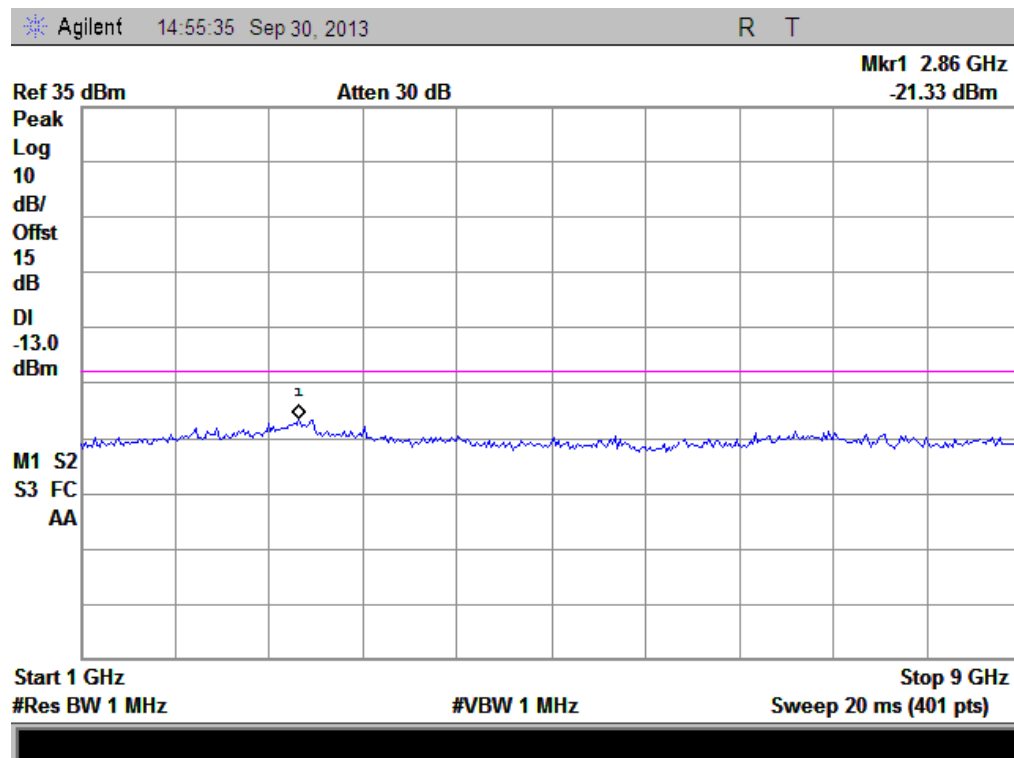
(Plot C2: EDGE 850MHz Channel = 190, 30MHz to 1GHz)



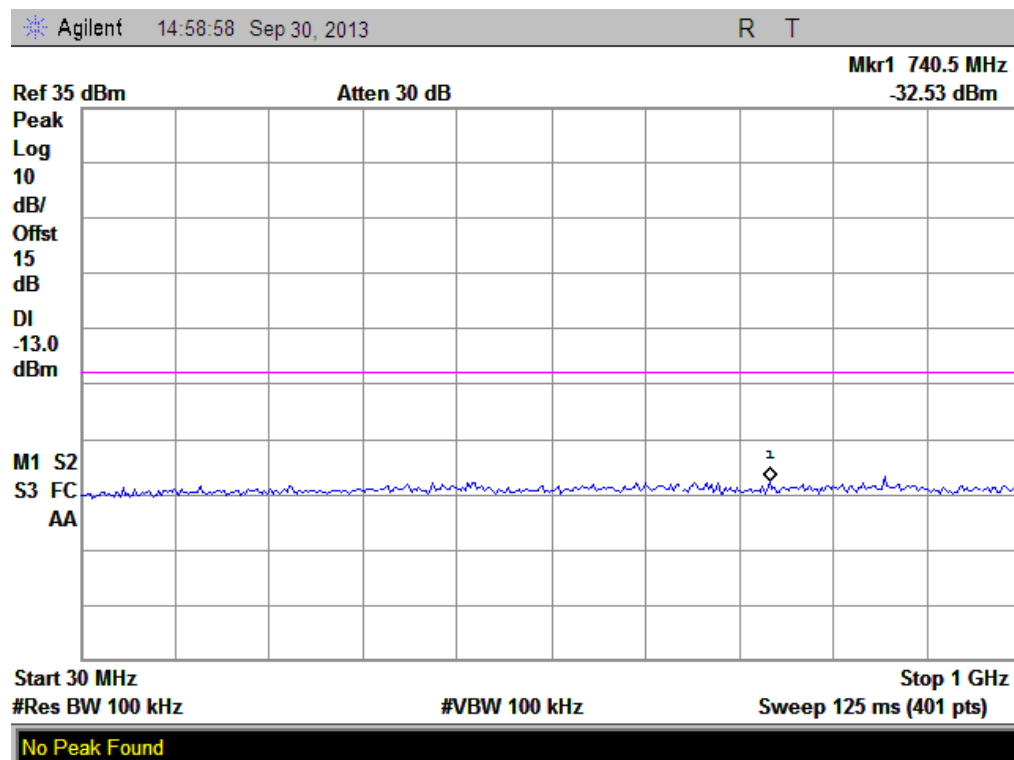
(Plot C2.1: EDGE 850MHz Channel = 190, 1GHz to 9GHz)



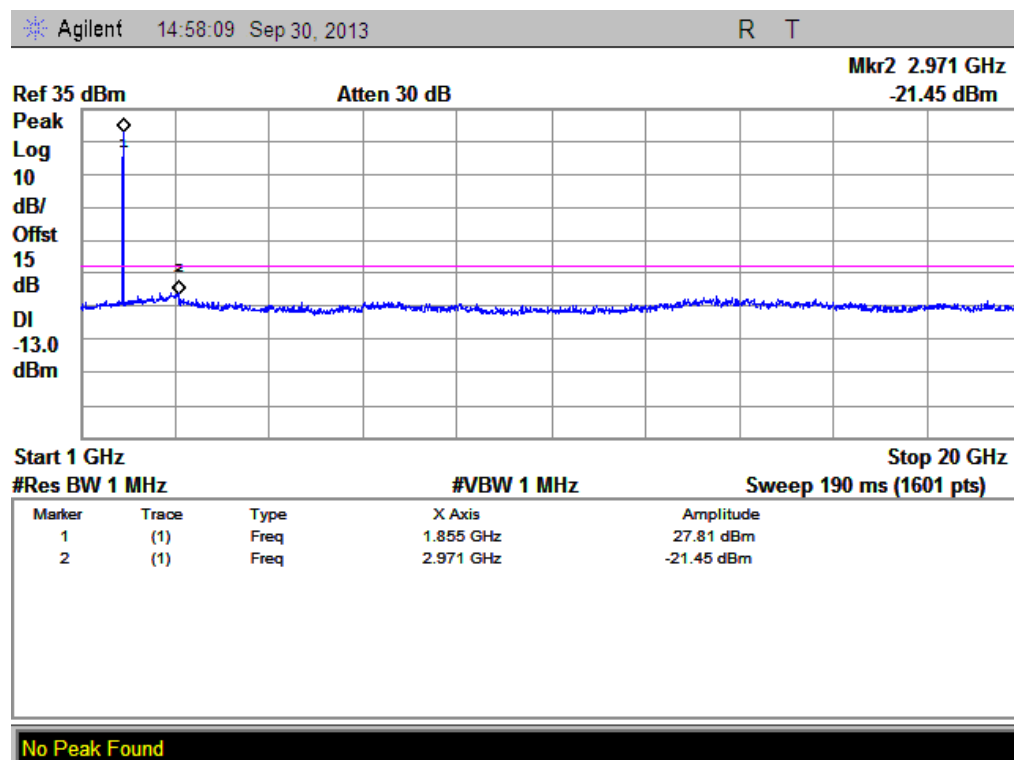
(Plot C3: EDGE 850MHz Channel = 251, 30MHz to 1GHz)



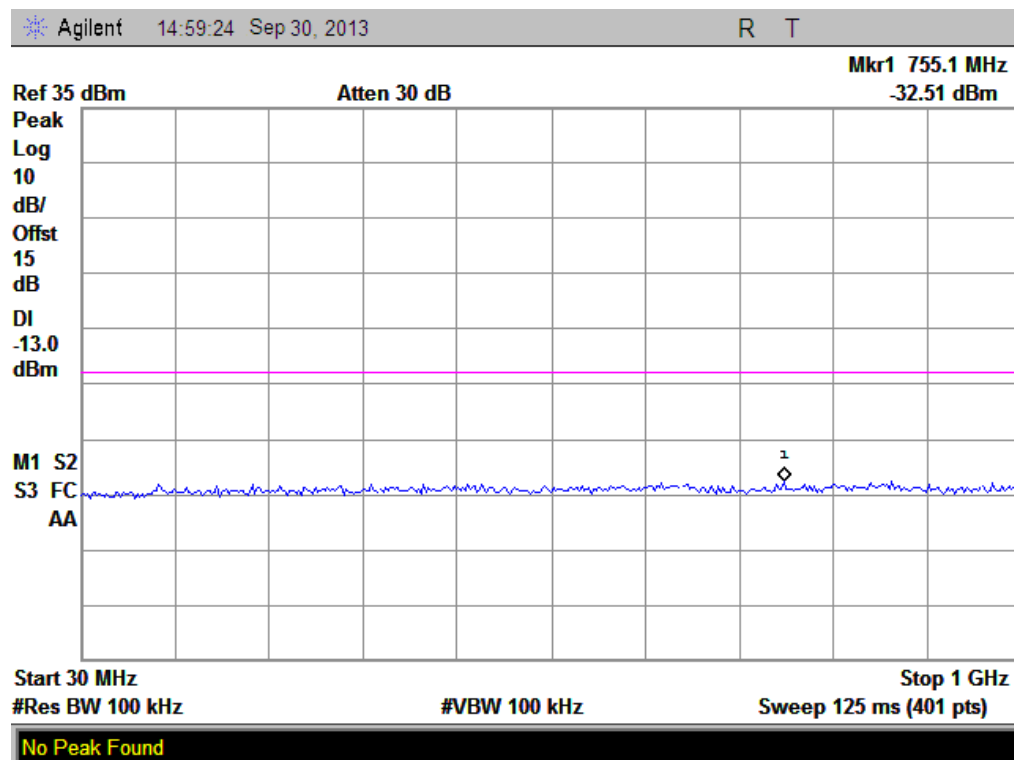
(Plot C3.1: EDGE 850MHz Channel = 251, 1GHz to 9GHz)



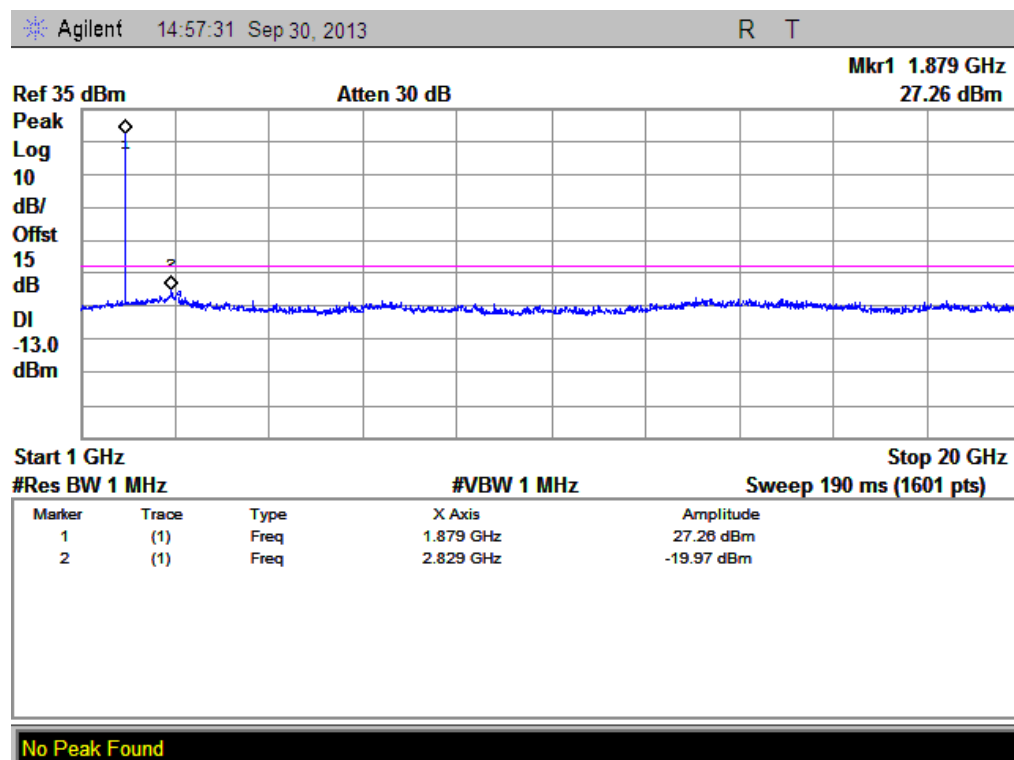
(Plot D1: EDGE 1900MHz Channel = 512, 30MHz to 1GHz)



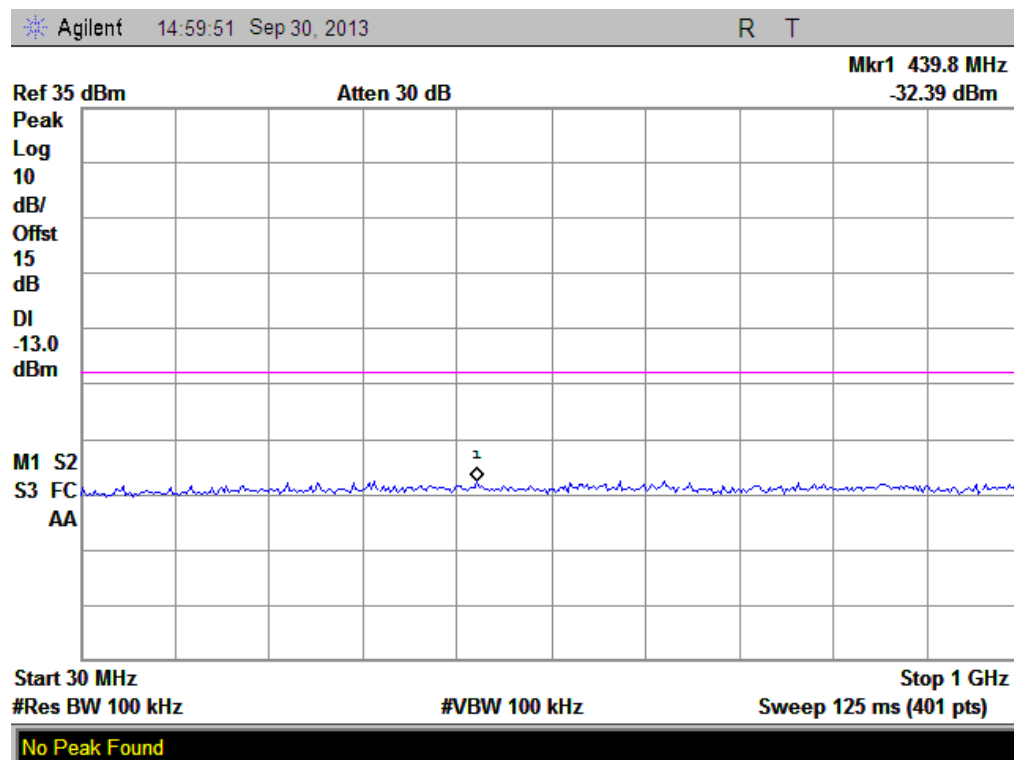
(Plot D1.1: EDGE 1900MHz Chnnel = 512, 1GHz to 20GHz)



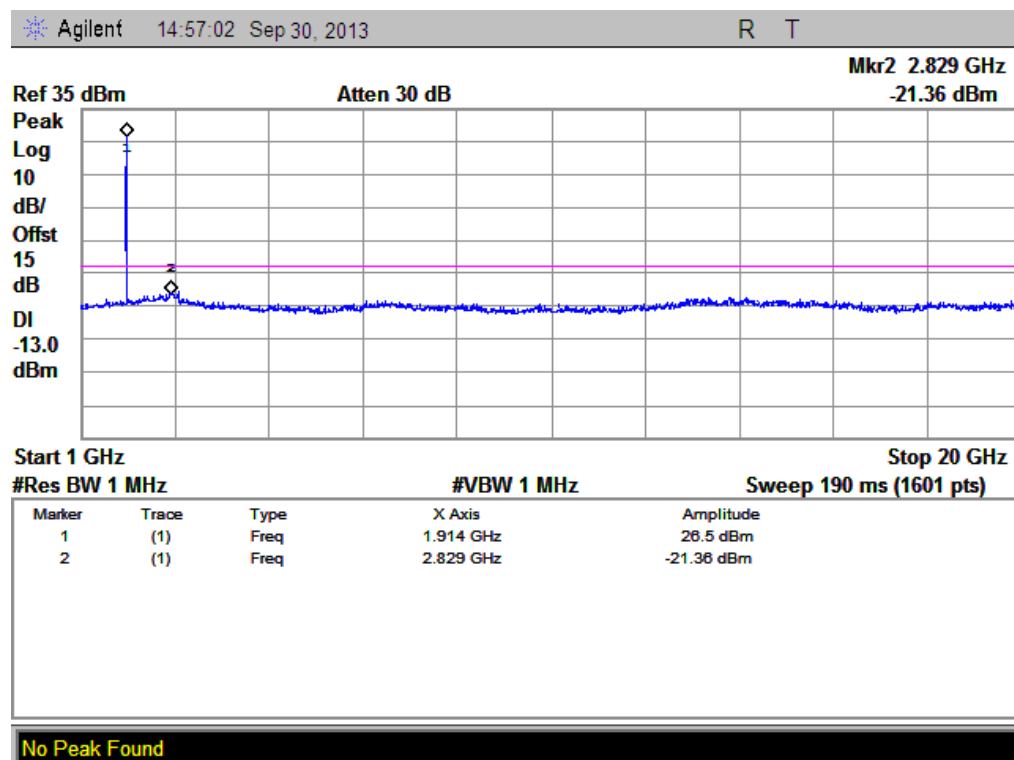
(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



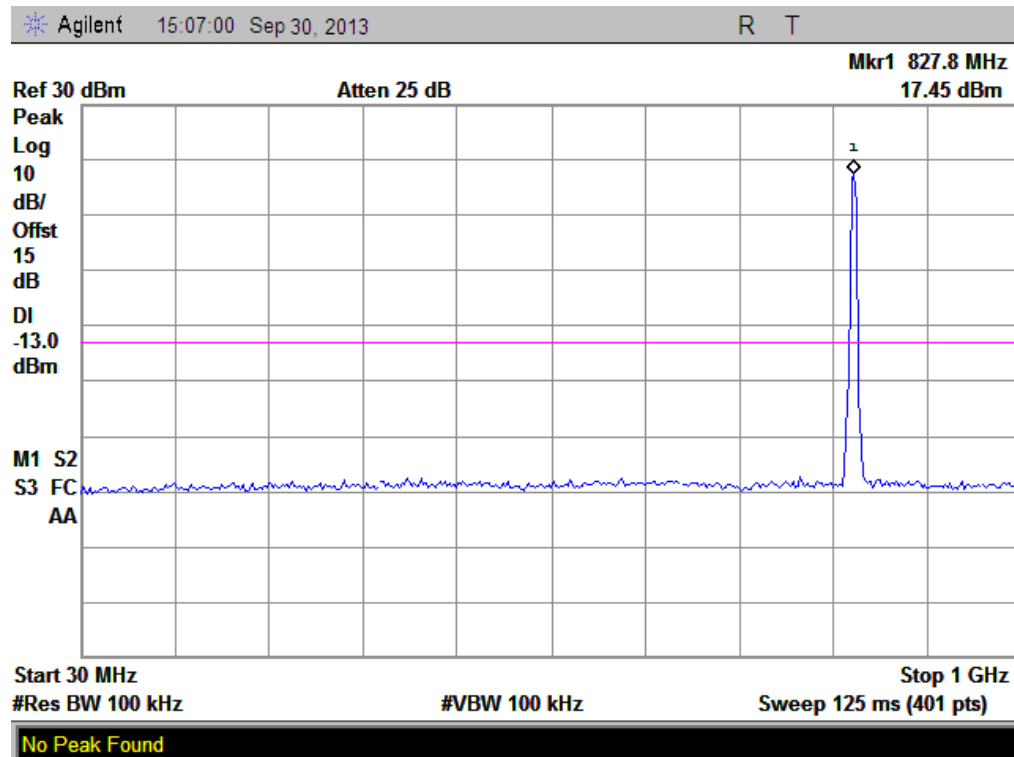
(Plot D2.1: EDGE 1900MHz Channel = 661, 1GHz to 20GHz)



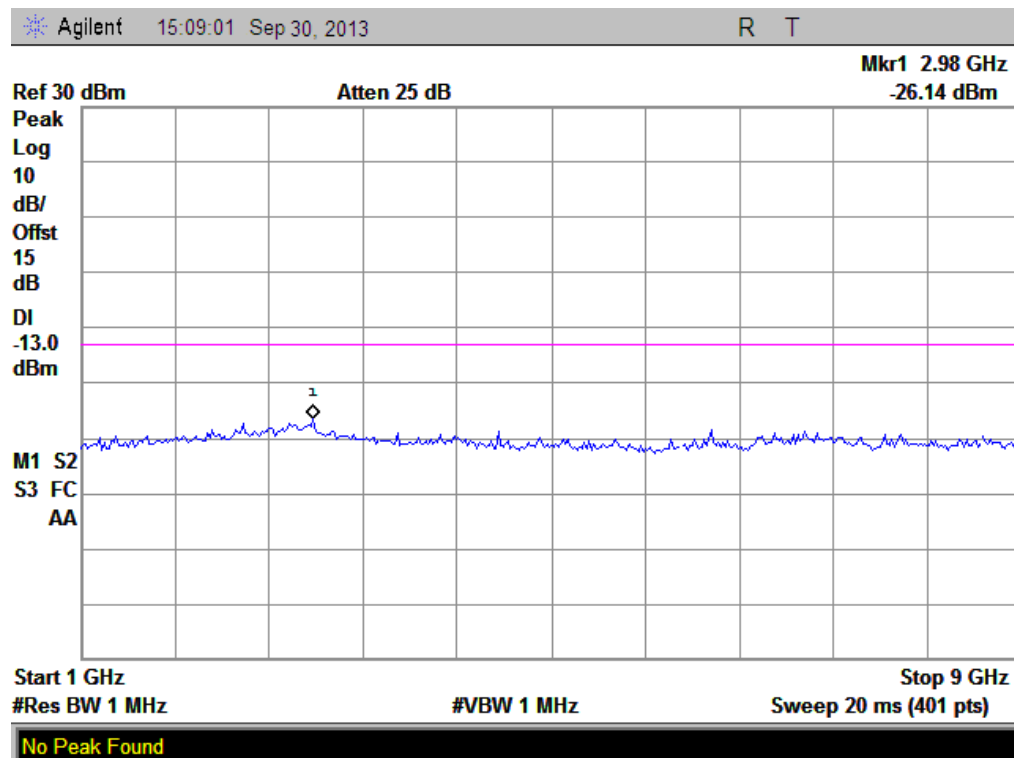
(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)



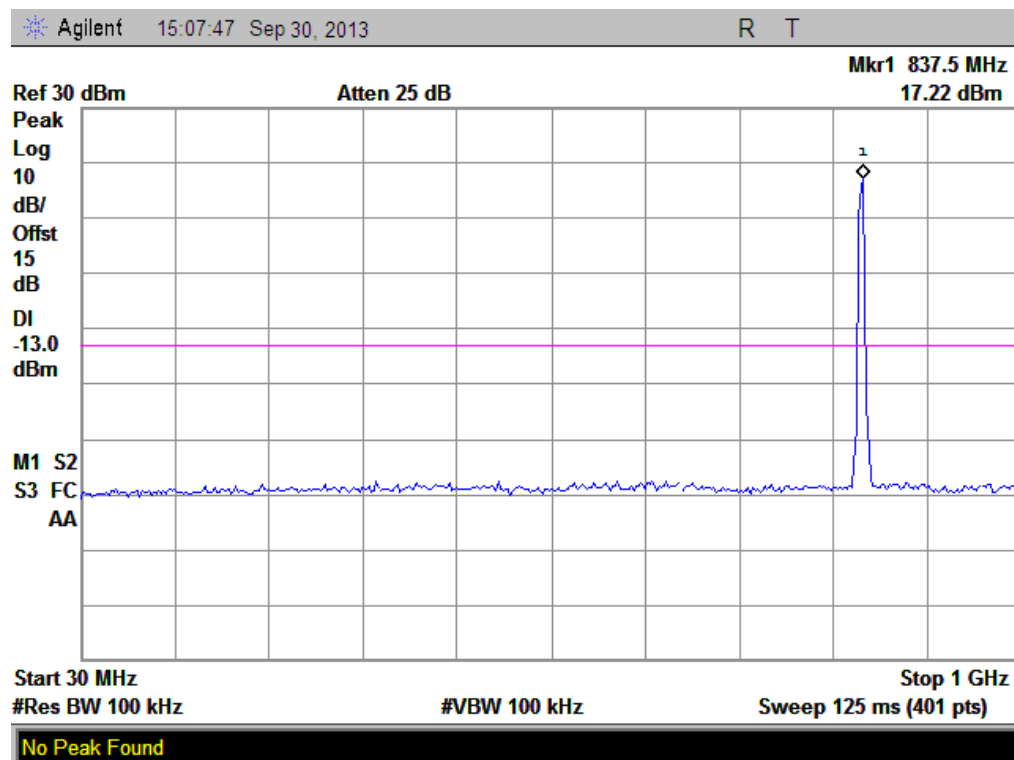
(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



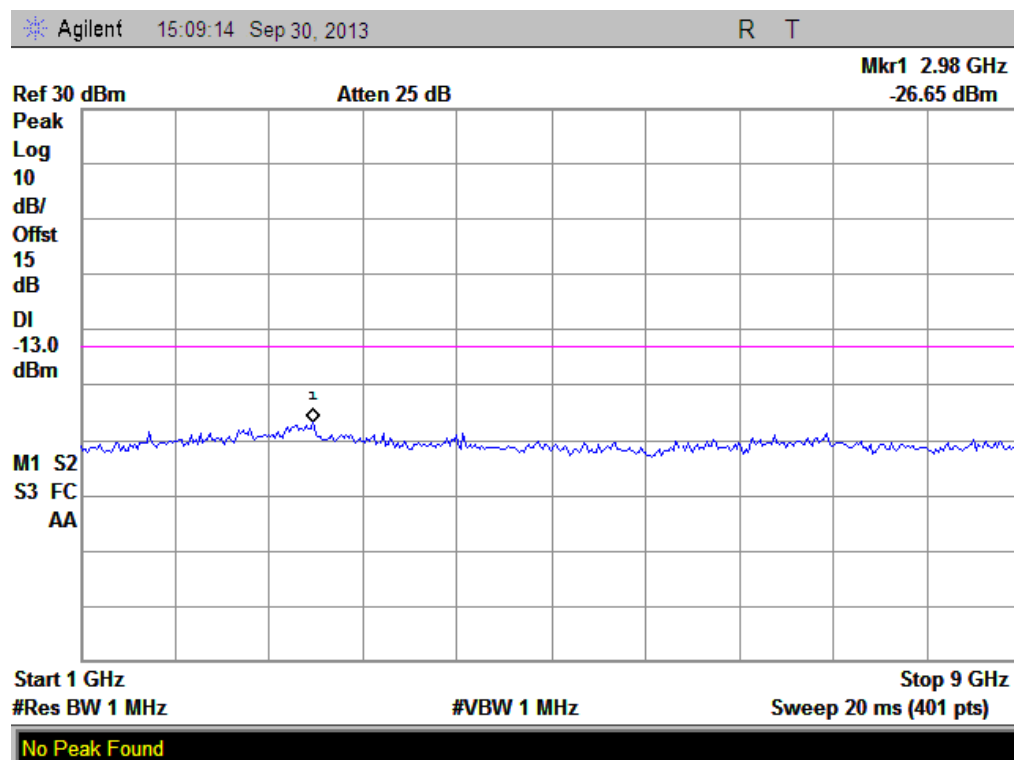
(Plot E1: WCDMA850MHz Channel = 4132, 30MHz to 1GHz)



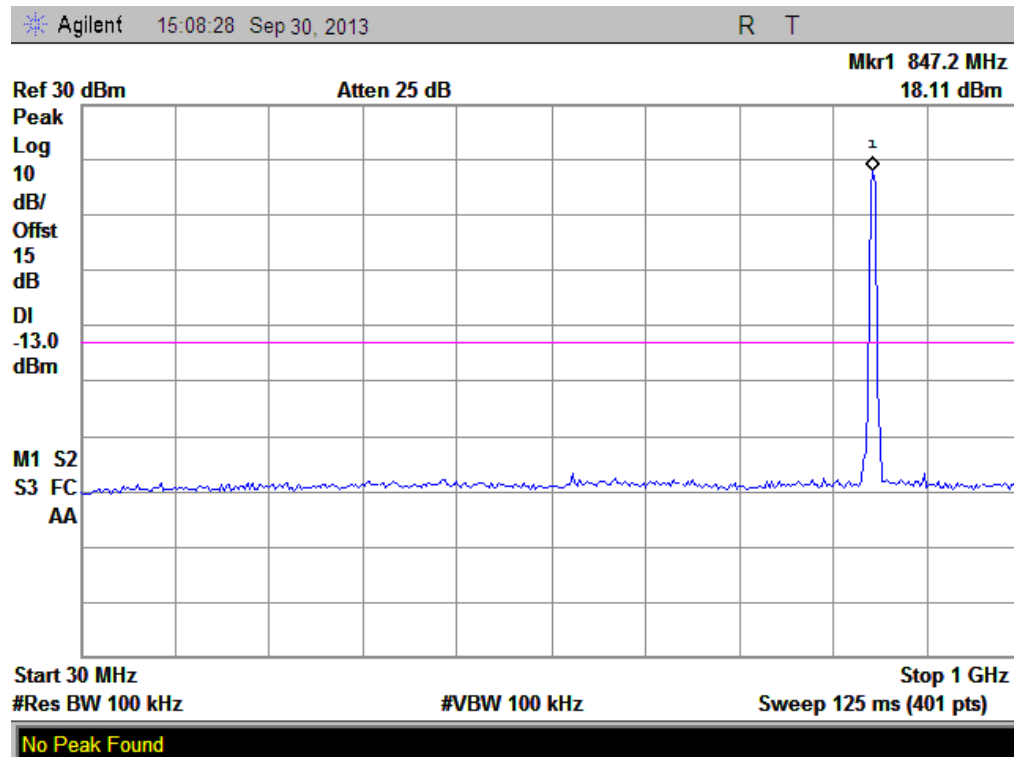
(Plot E1.1: WCDMA850MHz Channel = 4132, 1GHz to 9GHz)



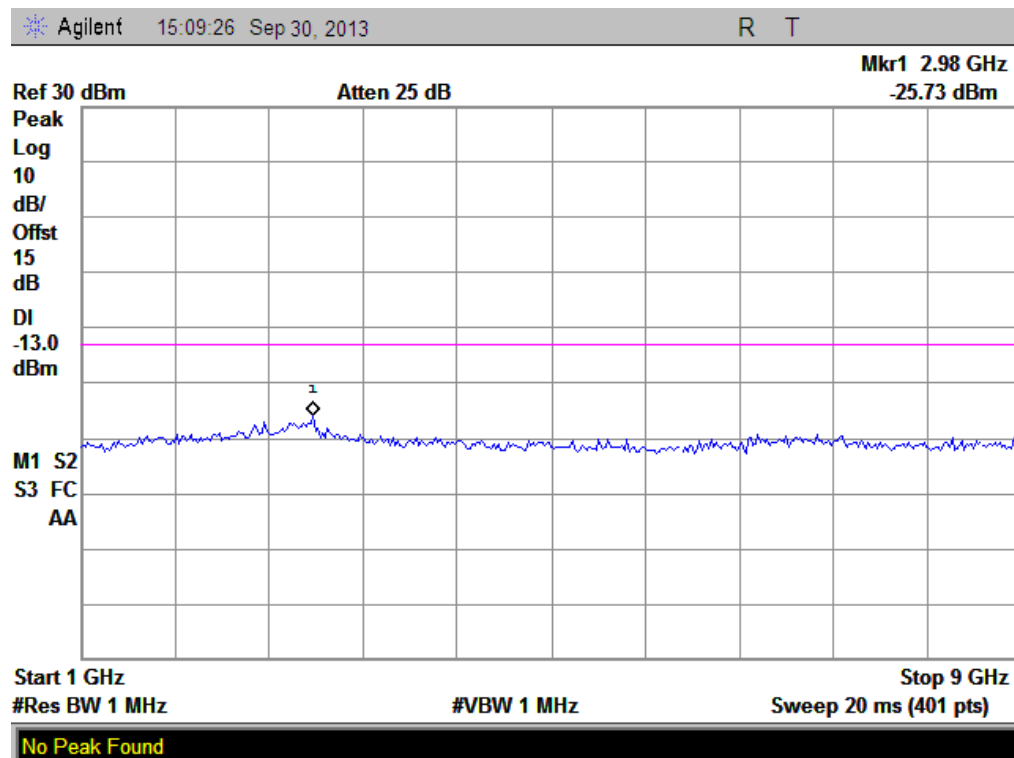
(Plot E2: WCDMA850MHz Channel = 4175, 30MHz to 1GHz)



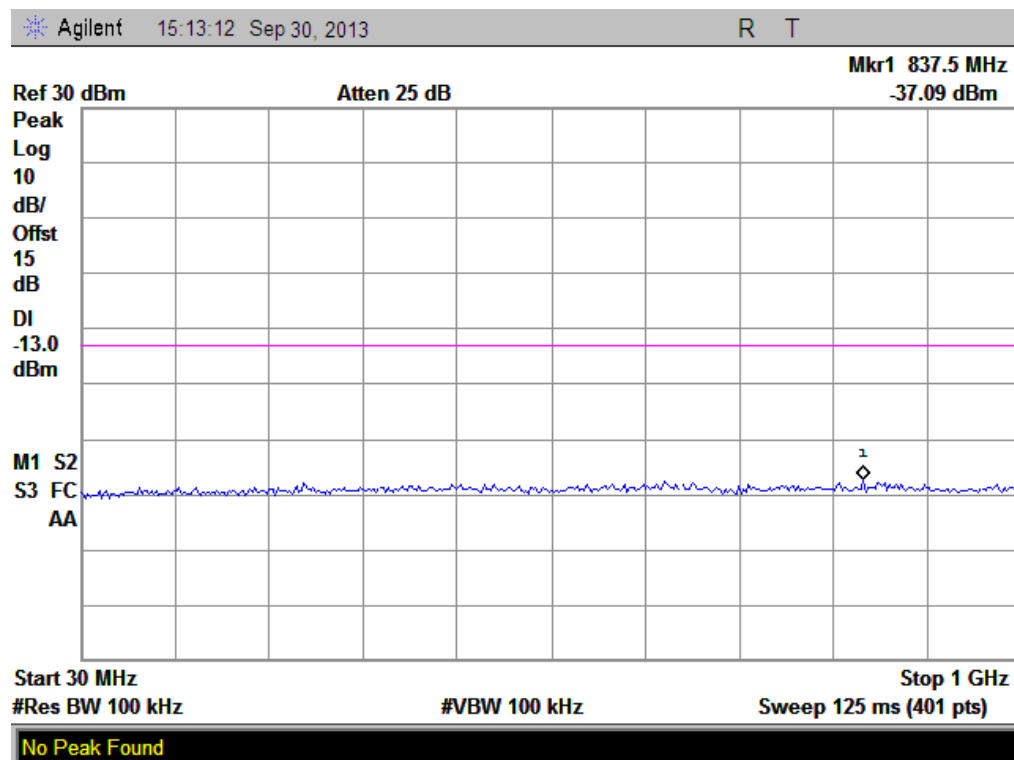
(Plot E2.1: WCDMA850MHz Channel = 4175, 1GHz to 9GHz)



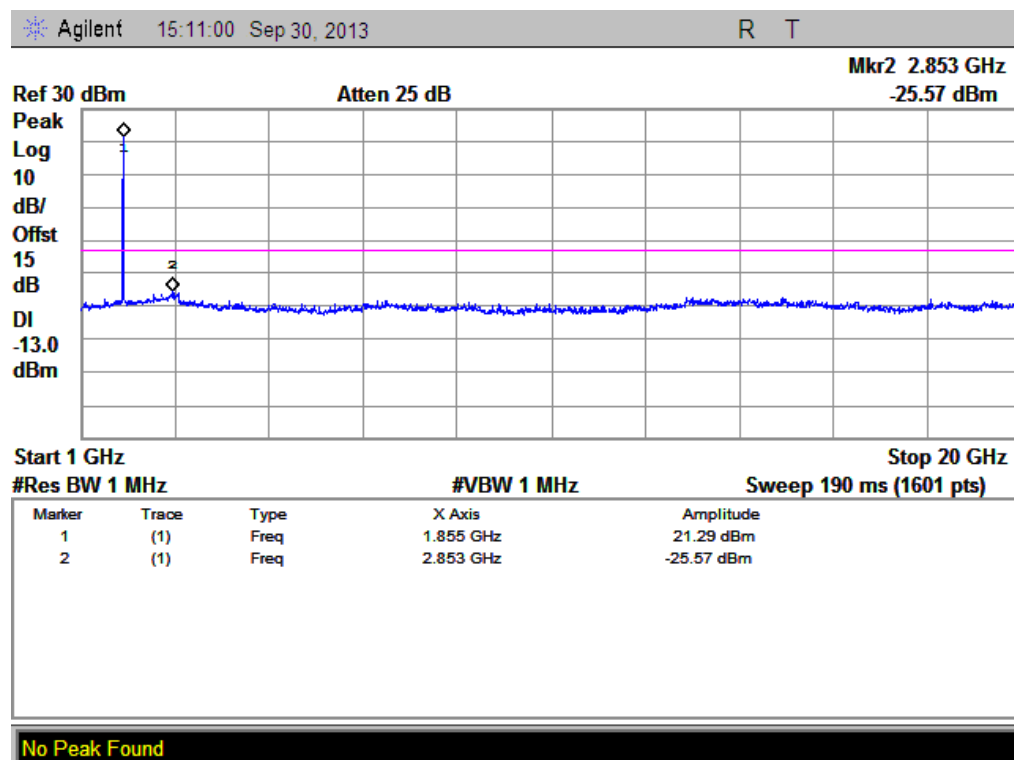
(Plot E3: WCDMA850MHz Channel = 4233, 30MHz to 1GHz)



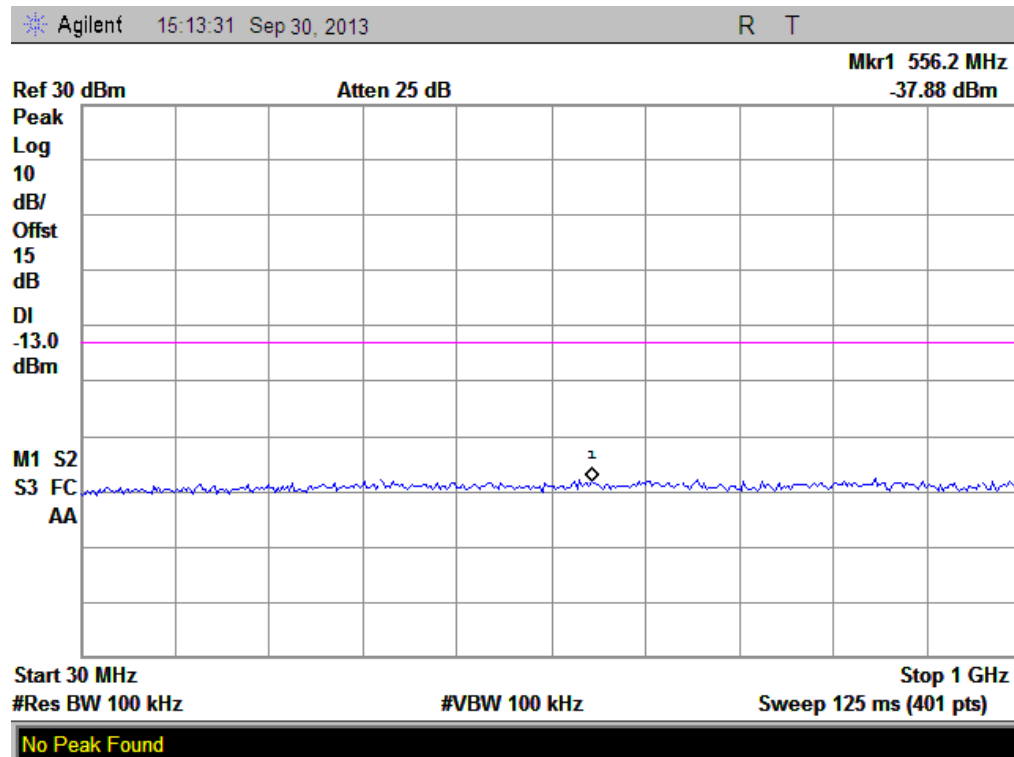
(Plot E3.1: WCDMA850MHz Channel = 4233, 1GHz to 9GHz)



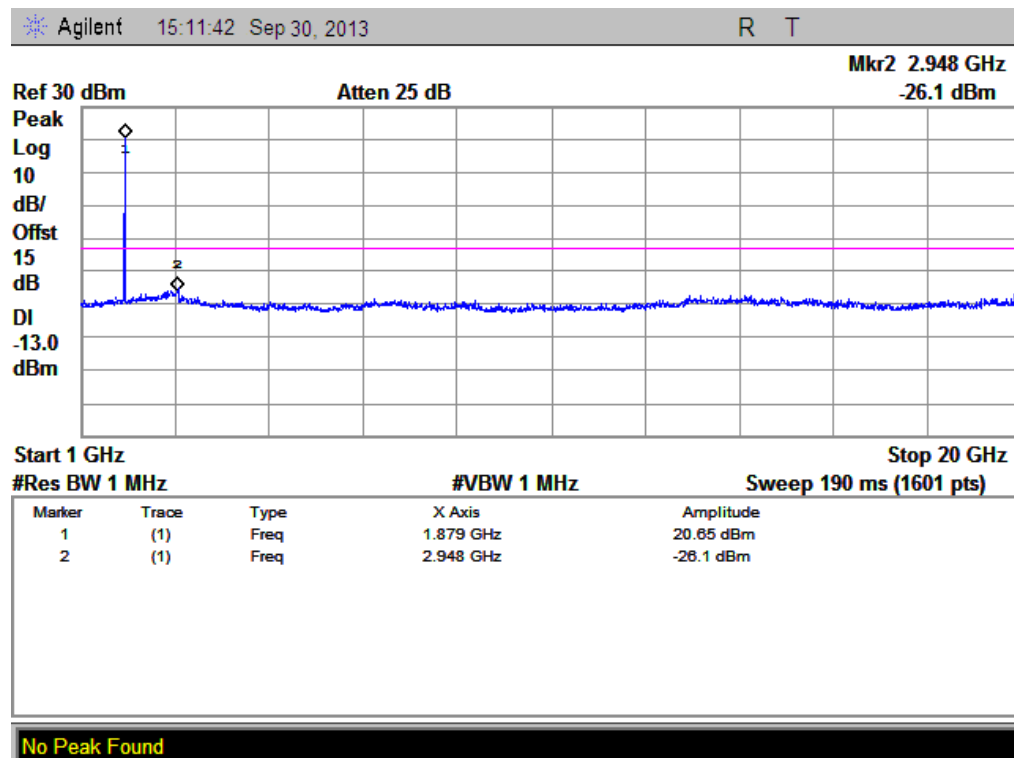
(Plot F1: WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)



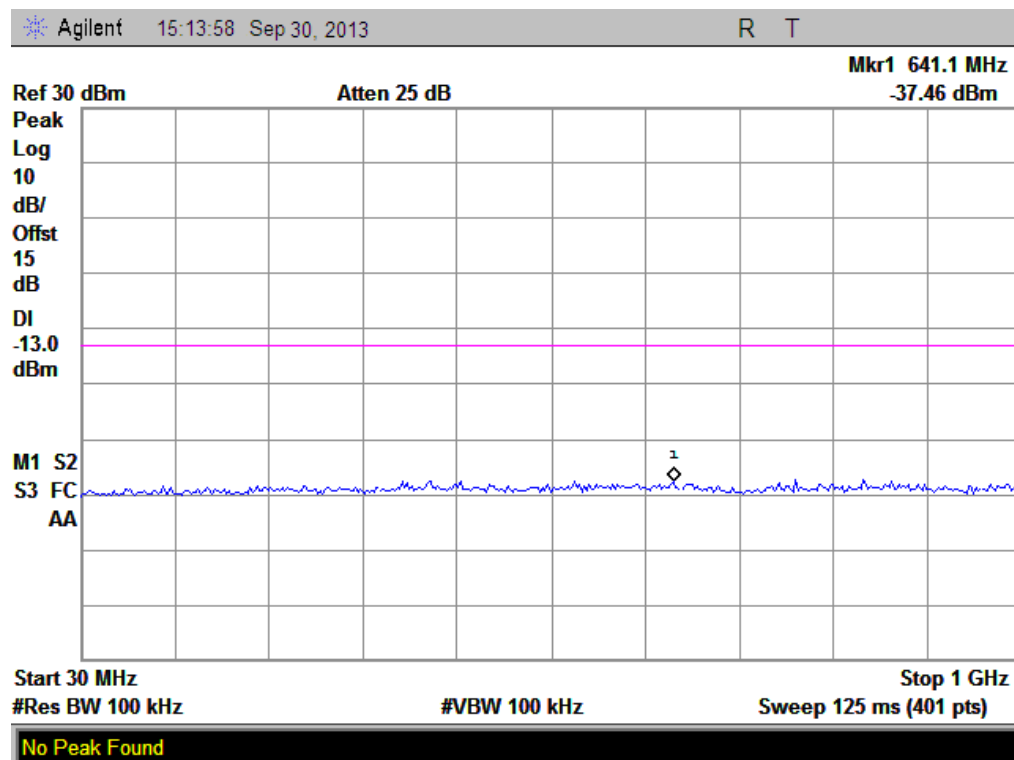
(Plot F1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)



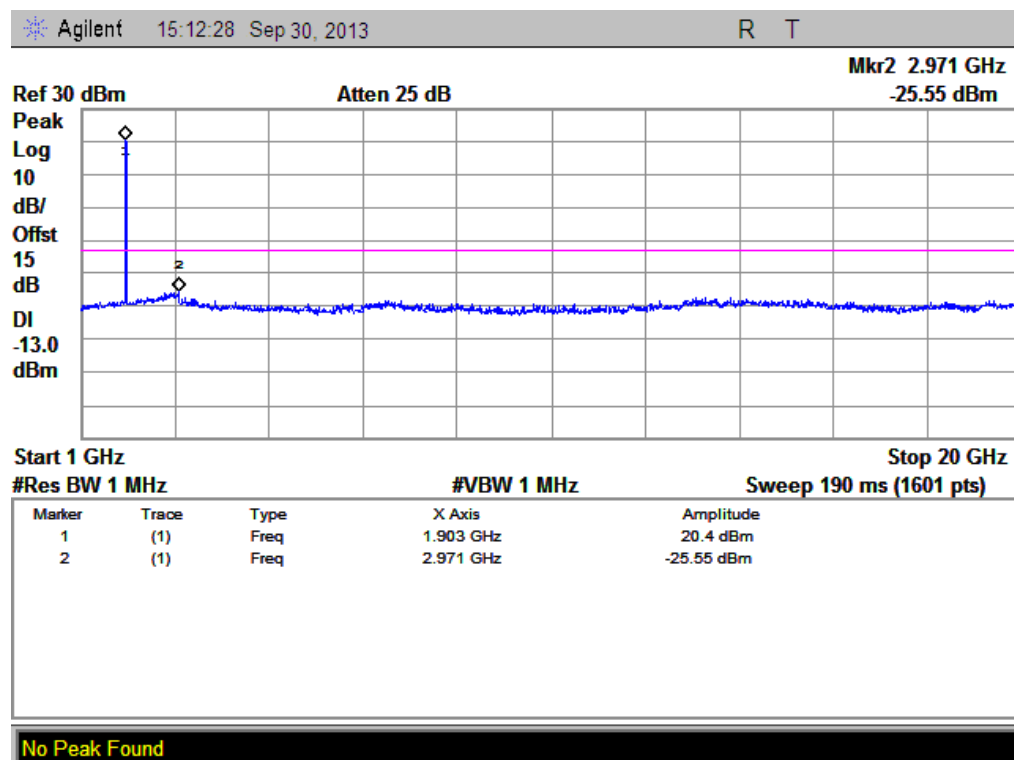
(Plot F2: WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)



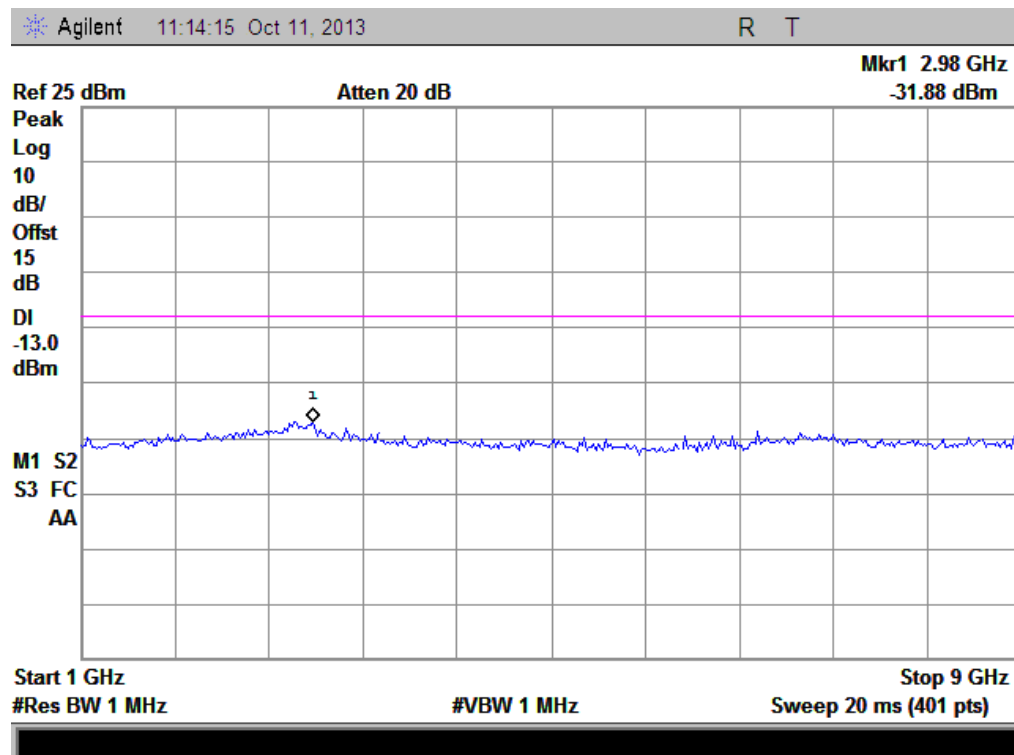
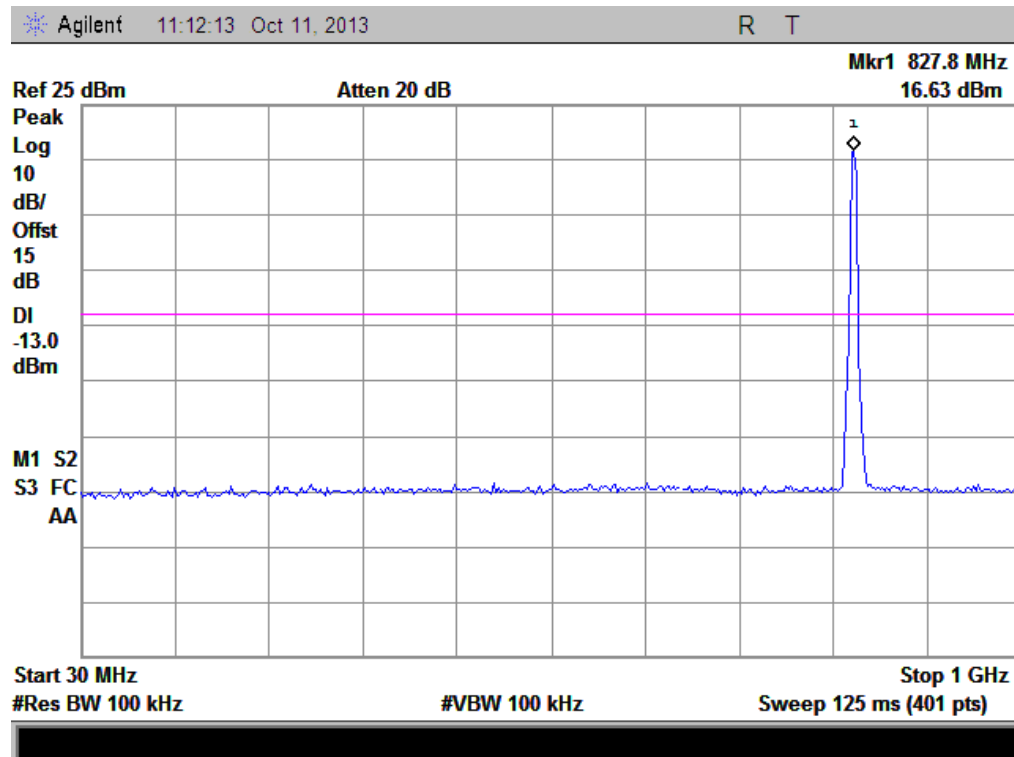
(Plot F2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)

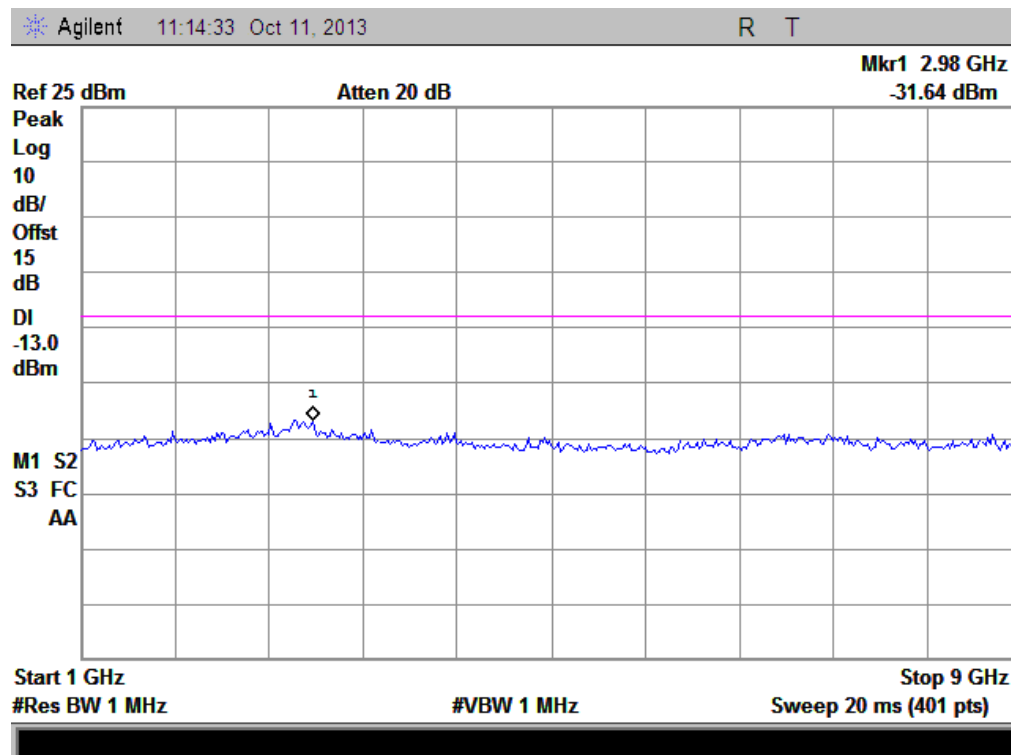
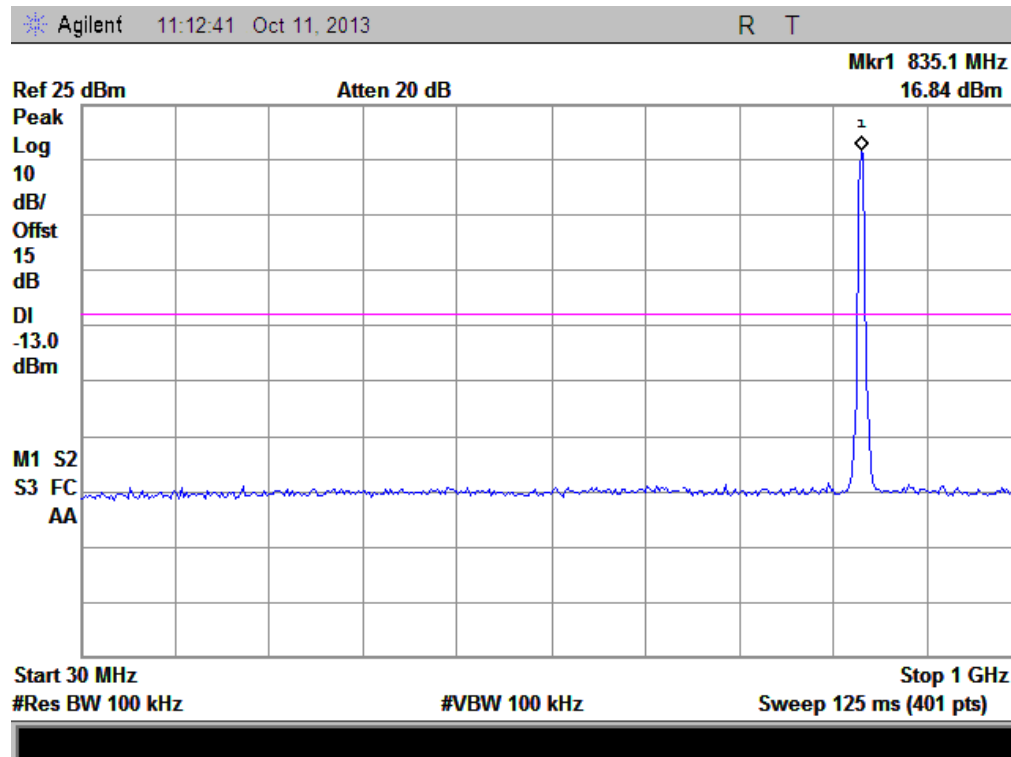


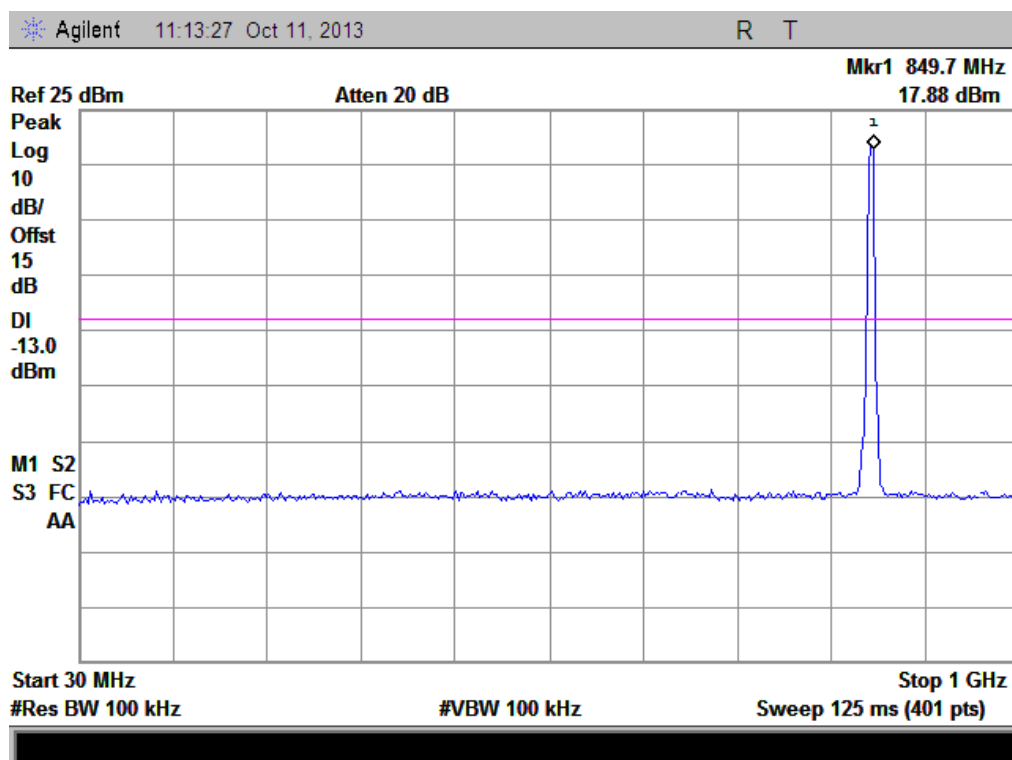
(Plot F3: WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)



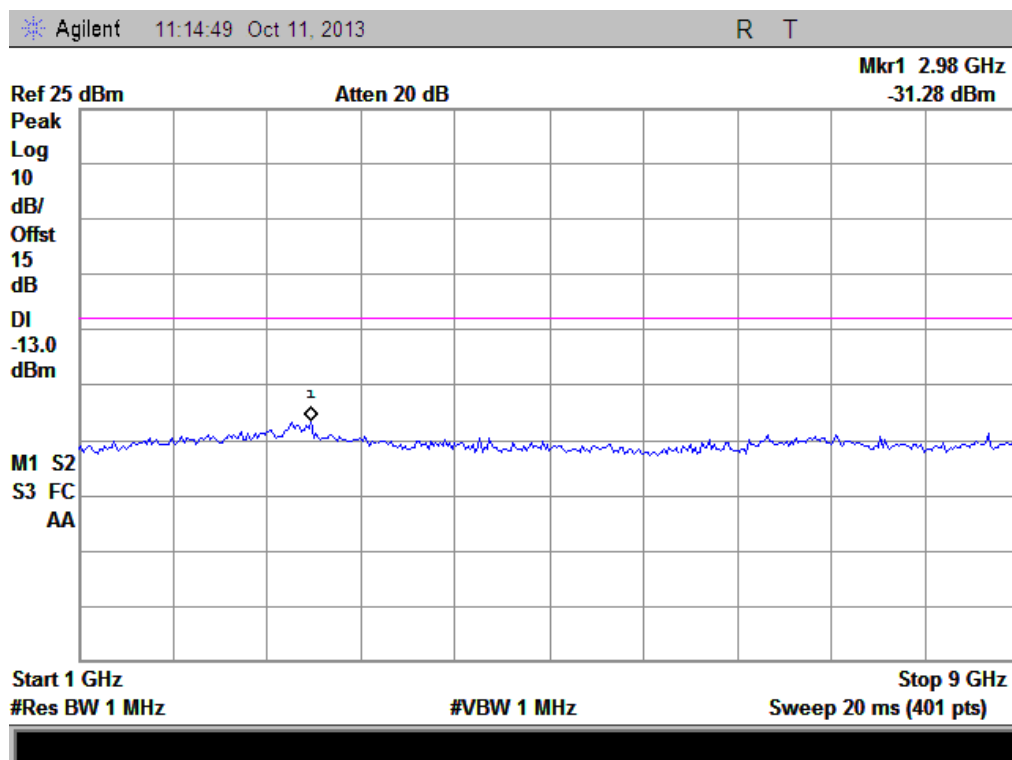
(Plot F3.1: WCDMA1900MHz Channel = 9538 1GHz to 20GHz)



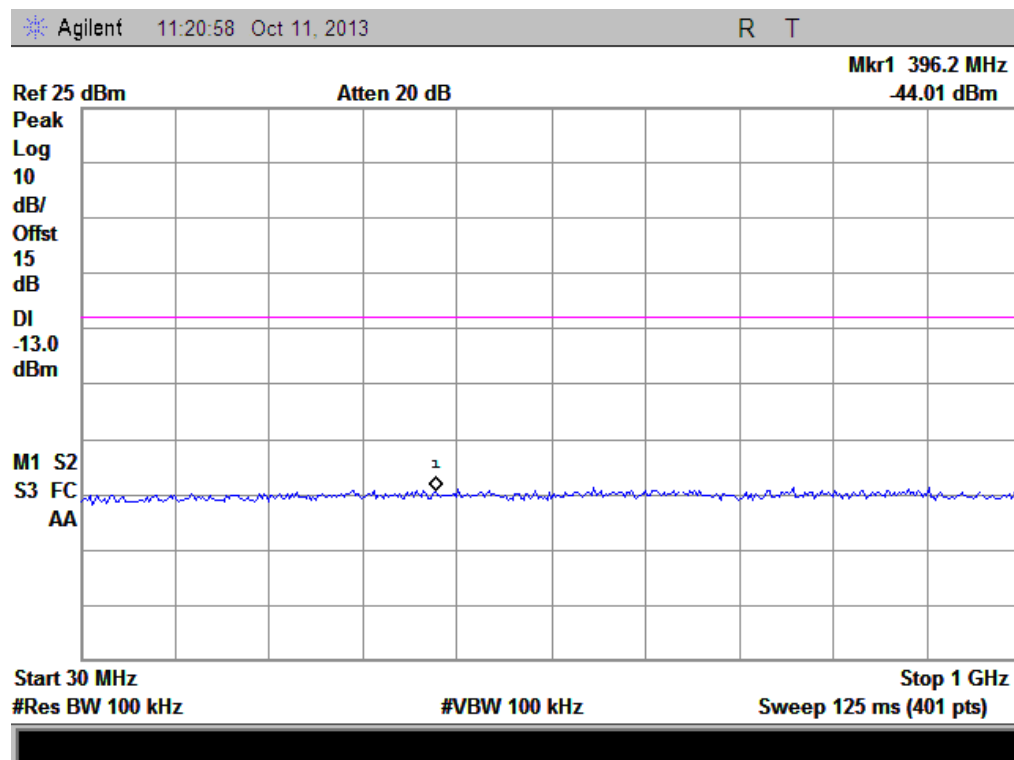




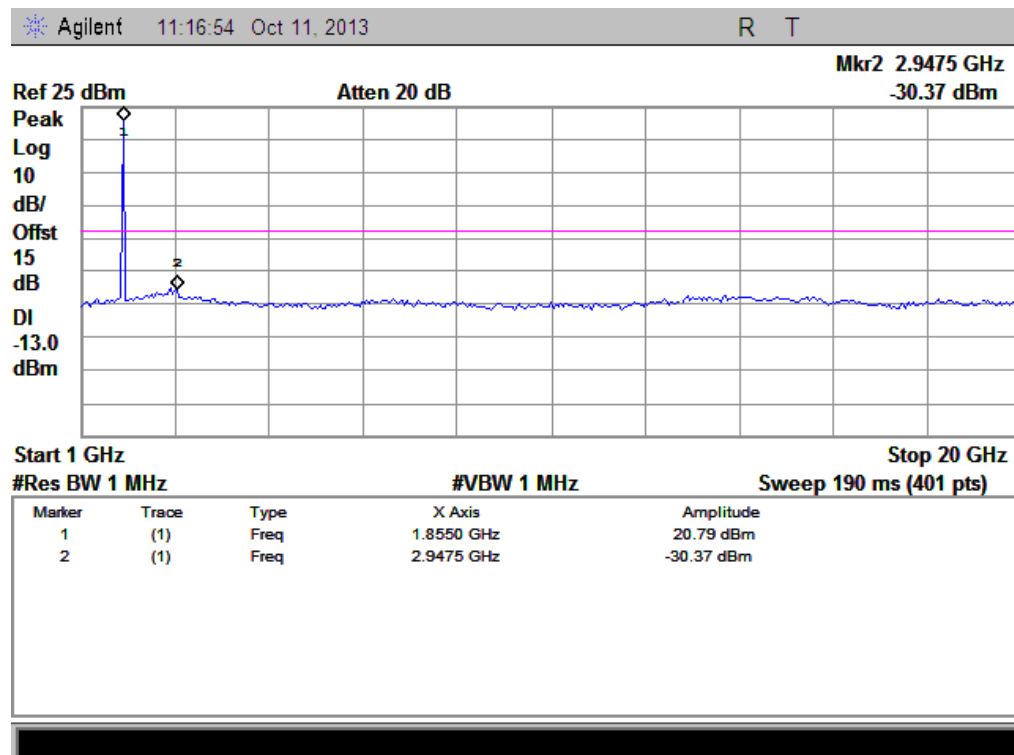
(Plot G3: HSDPA850MHz Channel = 4233, 30MHz to 1GHz)



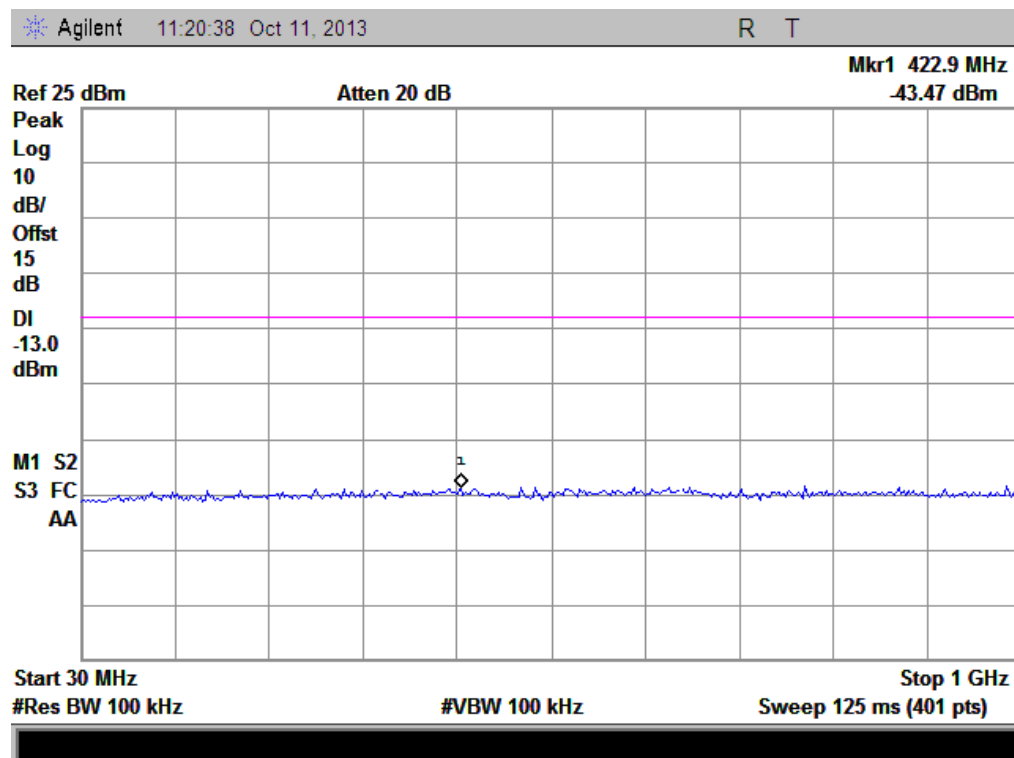
(Plot G3.1: HSDPA850MHz Channel = 4233, 1GHz to 9GHz)



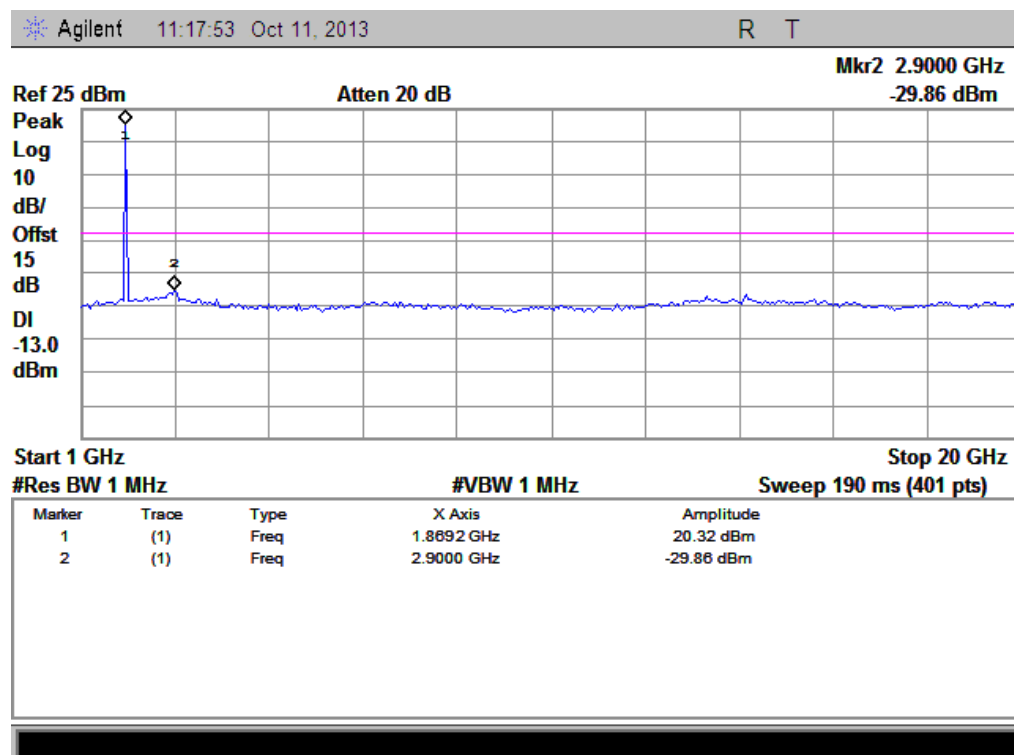
(Plot H1: HSDPA1900MHz Channel = 9262, 30MHz to 1GHz)



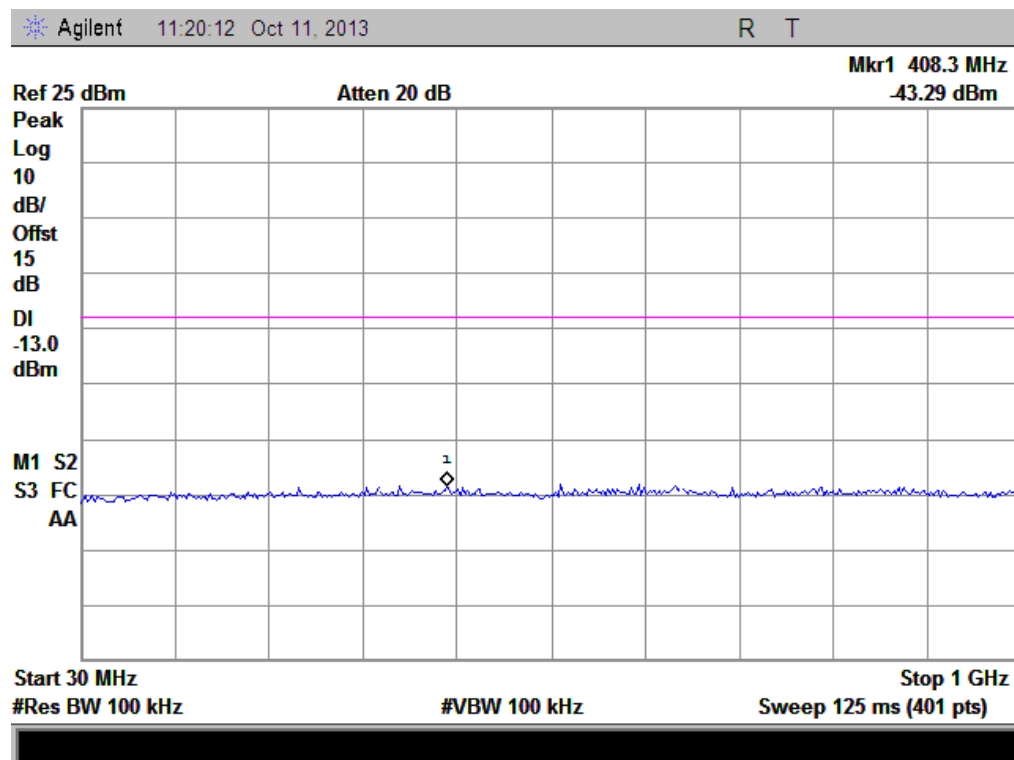
(Plot H1.1: HSDPA1900MHz Channel = 9262, 1GHz to 20GHz)



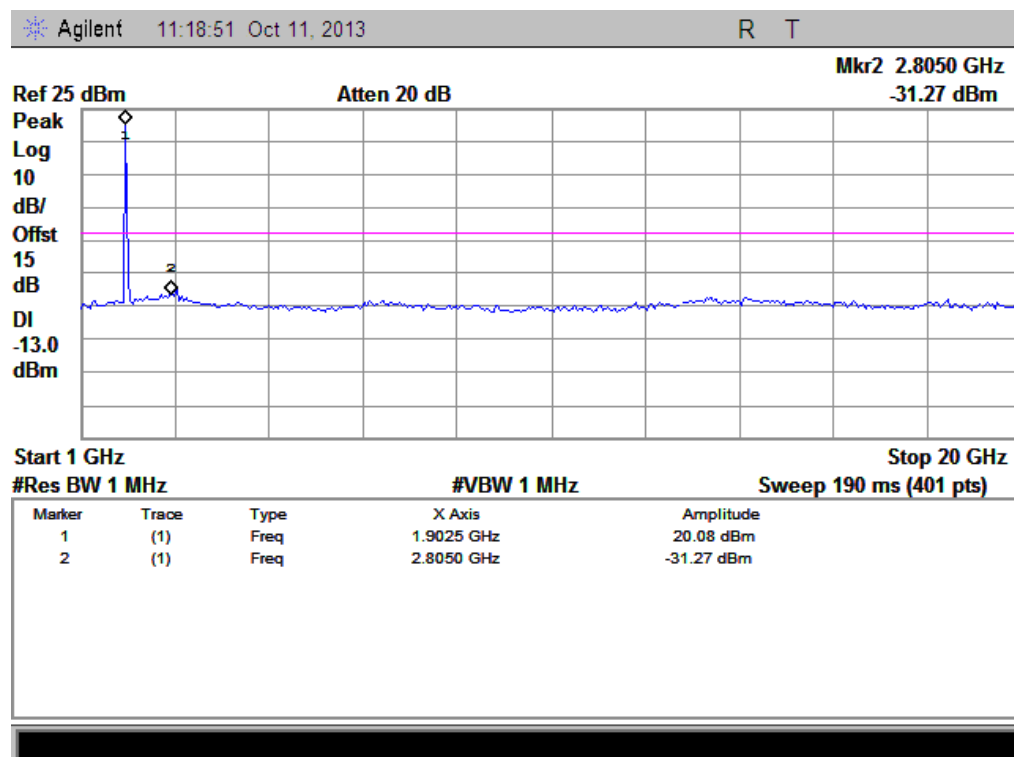
(Plot H2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)



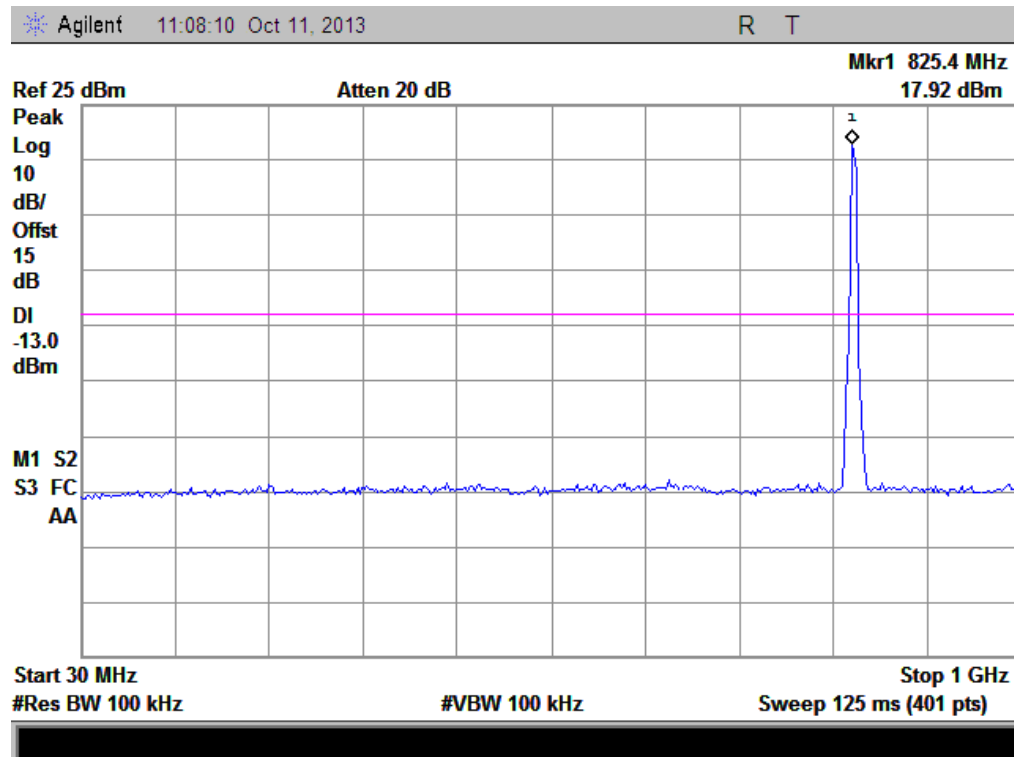
(Plot H2.1: HSDPA1900MHz Channel = 9400, 1GHz to 20GHz)



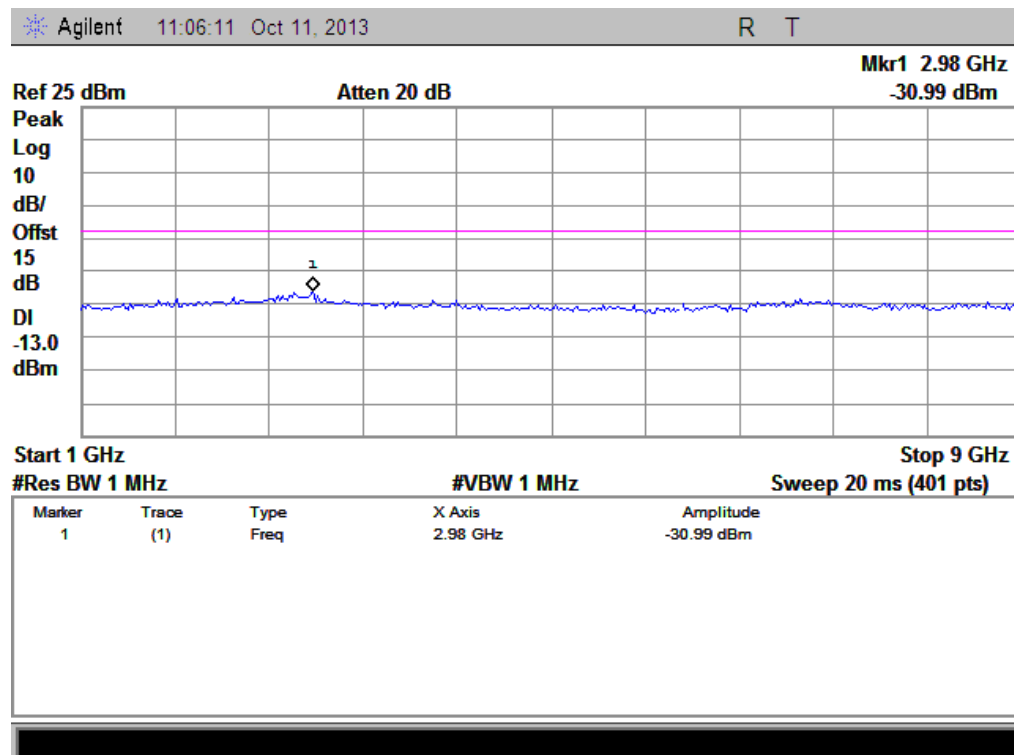
(Plot H3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)



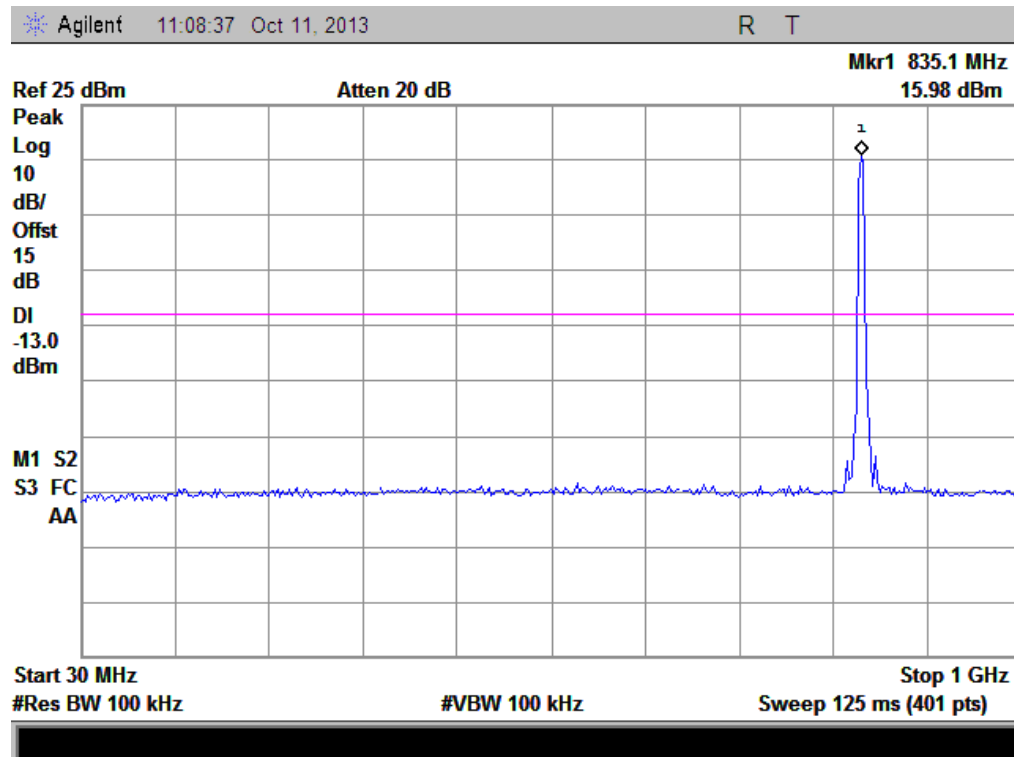
(Plot H3.1: HSDPA1900MHz Channel = 9538 1GHz to 20GHz)



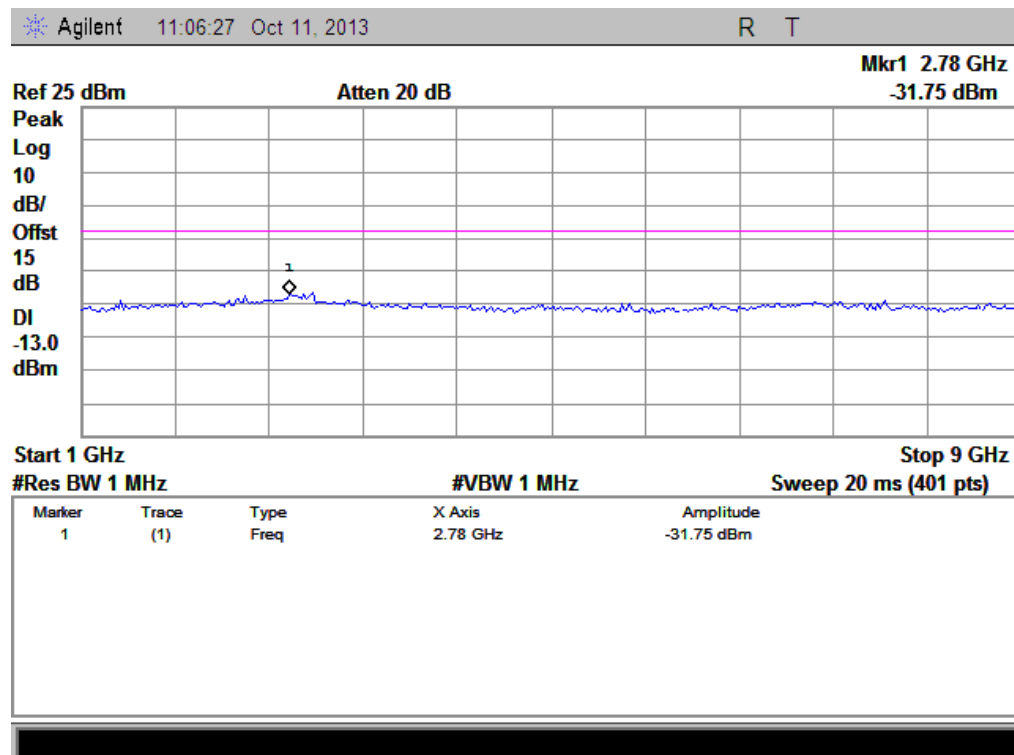
(Plot I 1: HSUPA 850MHz Channel = 4132, 30MHz to 1GHz)



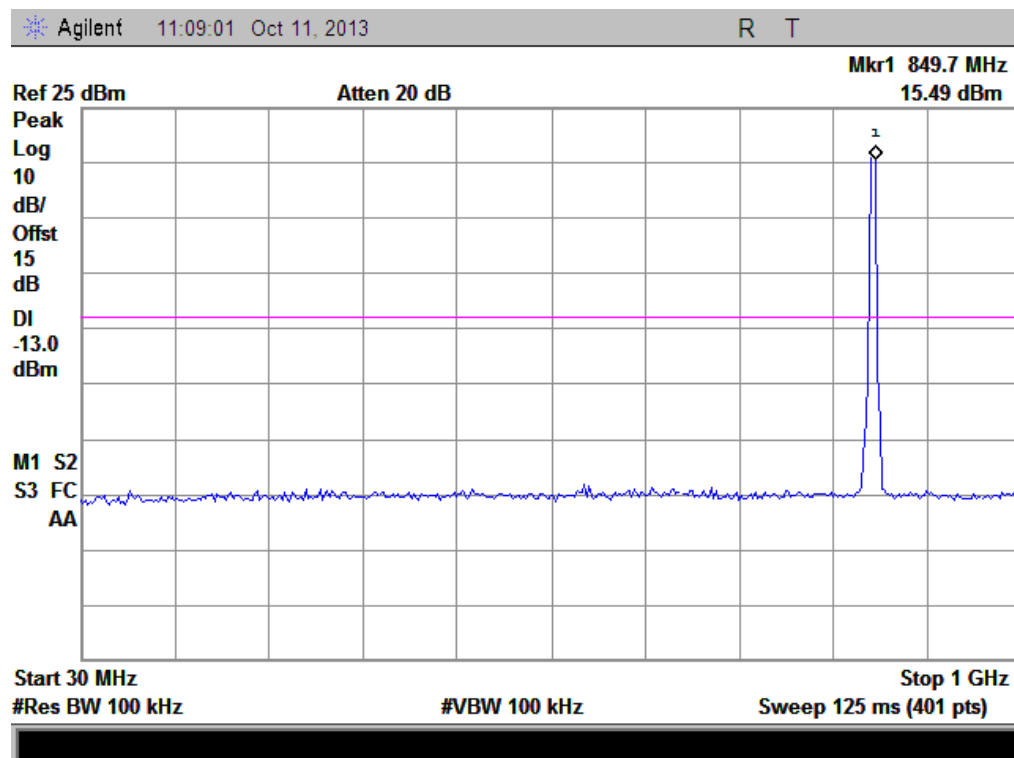
(Plot II.1: HSUPA 850MHz Channel = 4132, 1GHz to 9GHz)



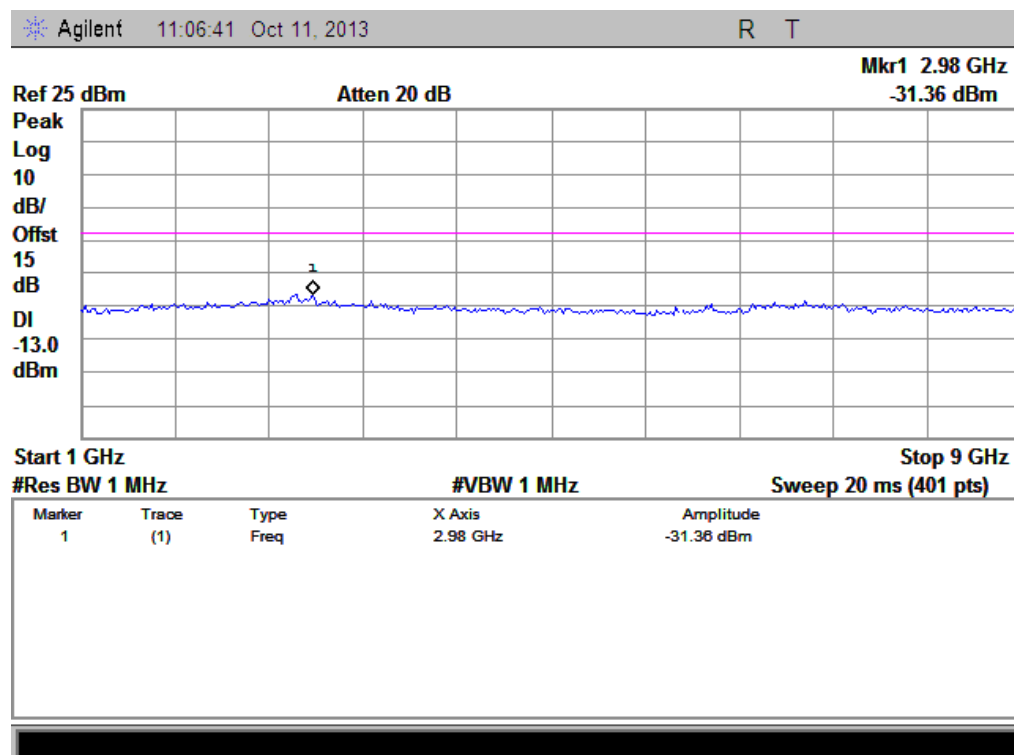
(Plot I 2: HSUPA 850MHz Channel = 4175, 30MHz to 1GHz)



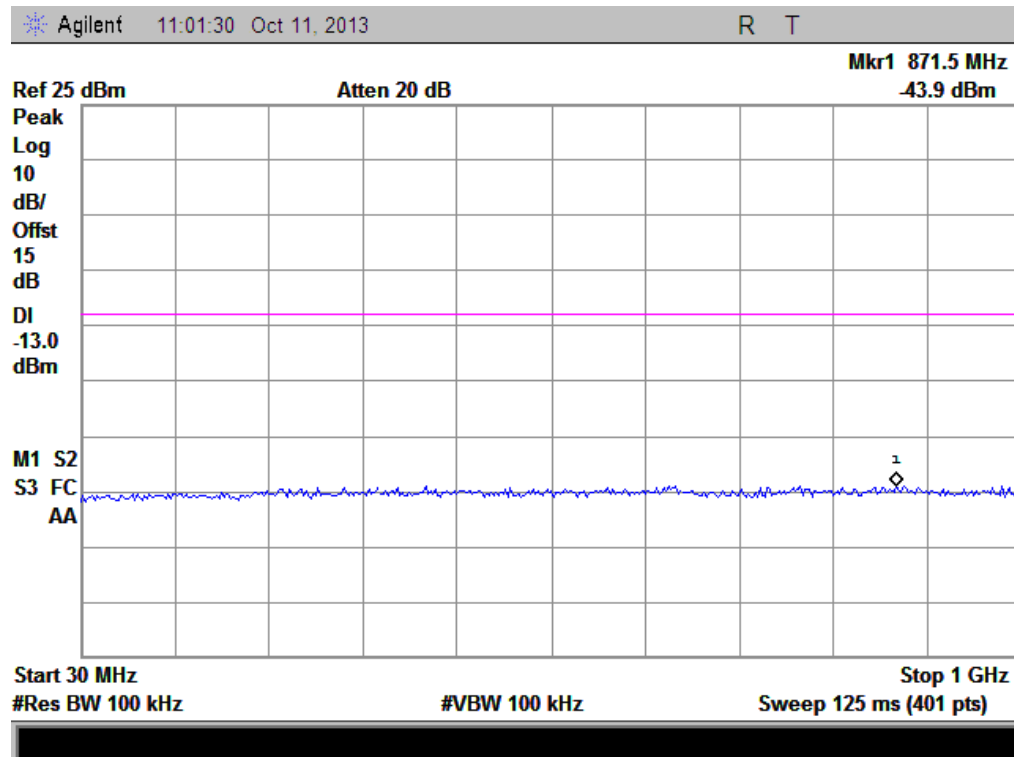
(Plot I2.1: HSUPA 850MHz Channel = 4175, 1GHz to 9GHz)



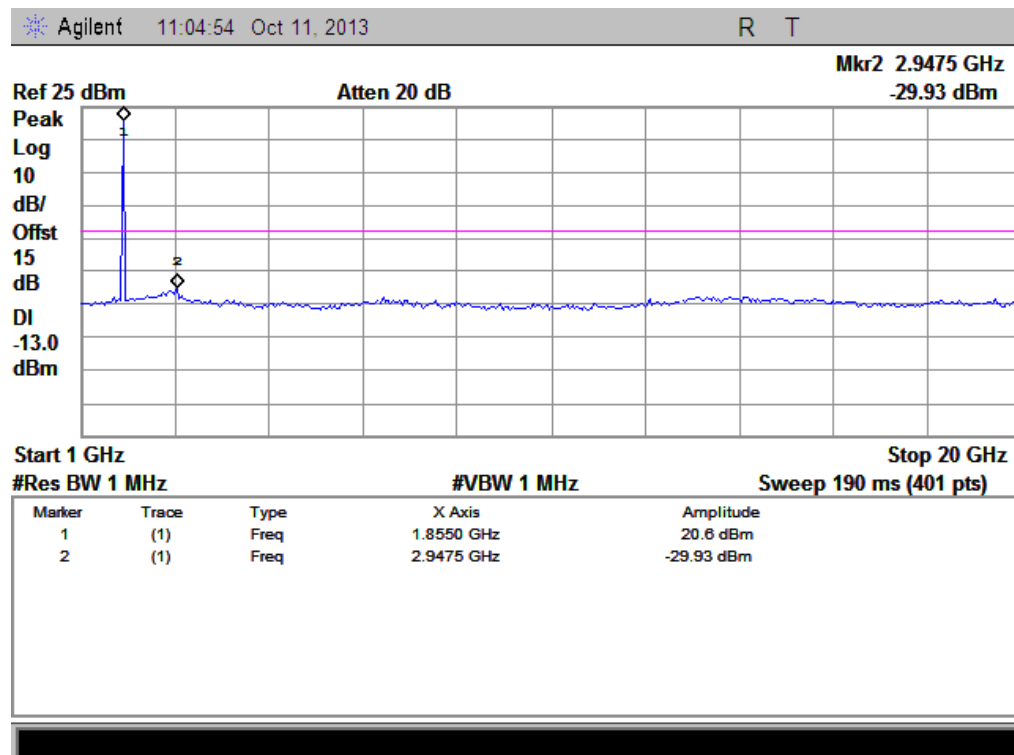
(Plot I 3: HSUPA850MHz Channel = 4233, 30MHz to 1GHz)



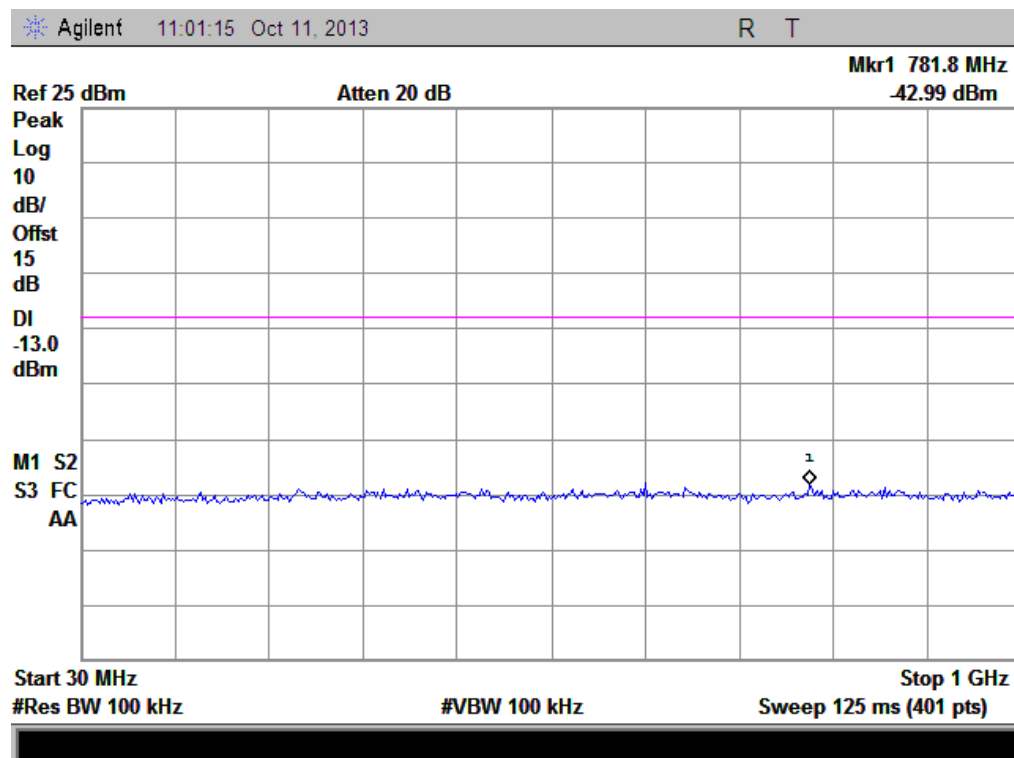
(Plot I3.1: HSUPA850MHz Channel = 4233, 1GHz to 9GHz)



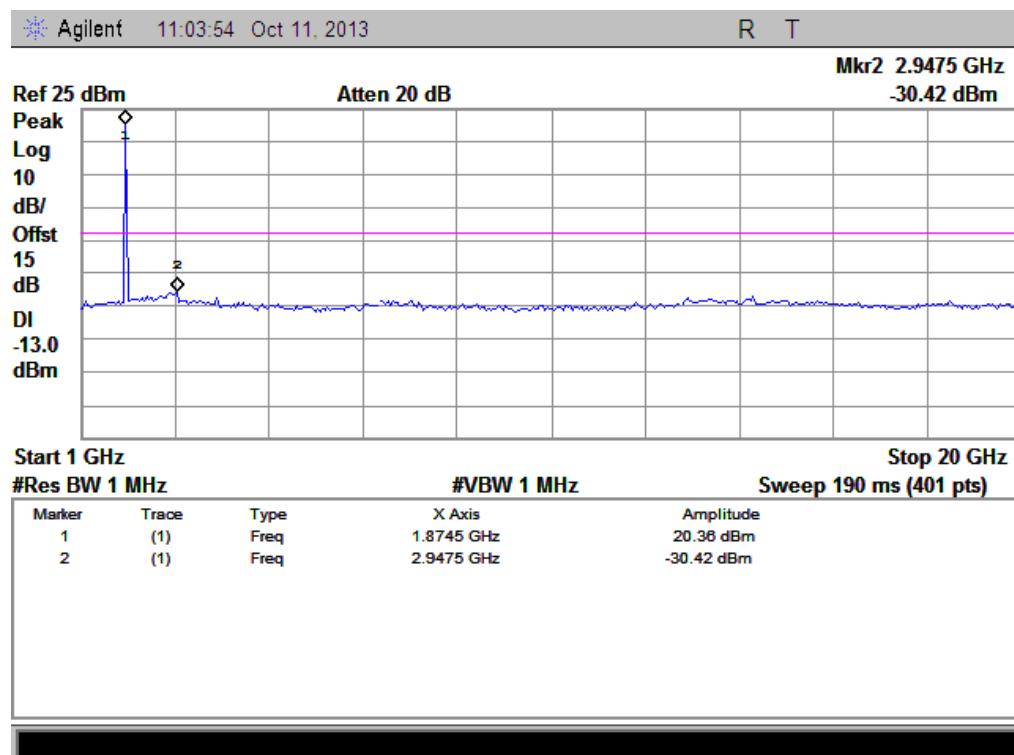
(Plot J 1: HSUPA1900MHz Channel = 9262, 30MHz to 1GHz)



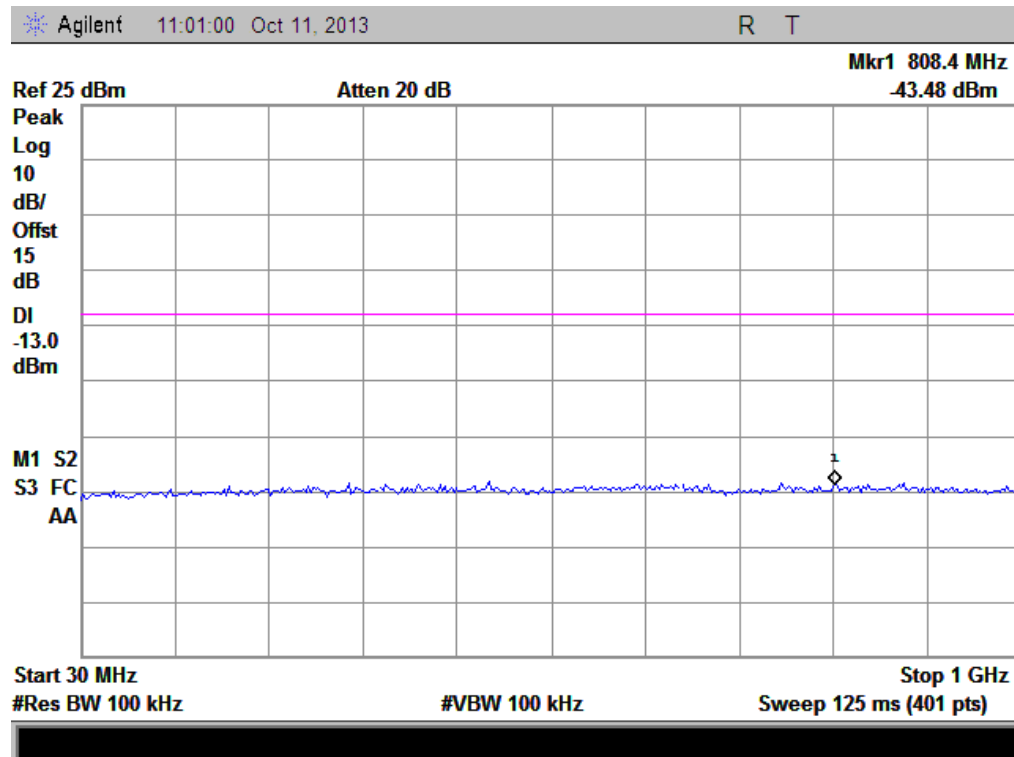
(Plot J1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)



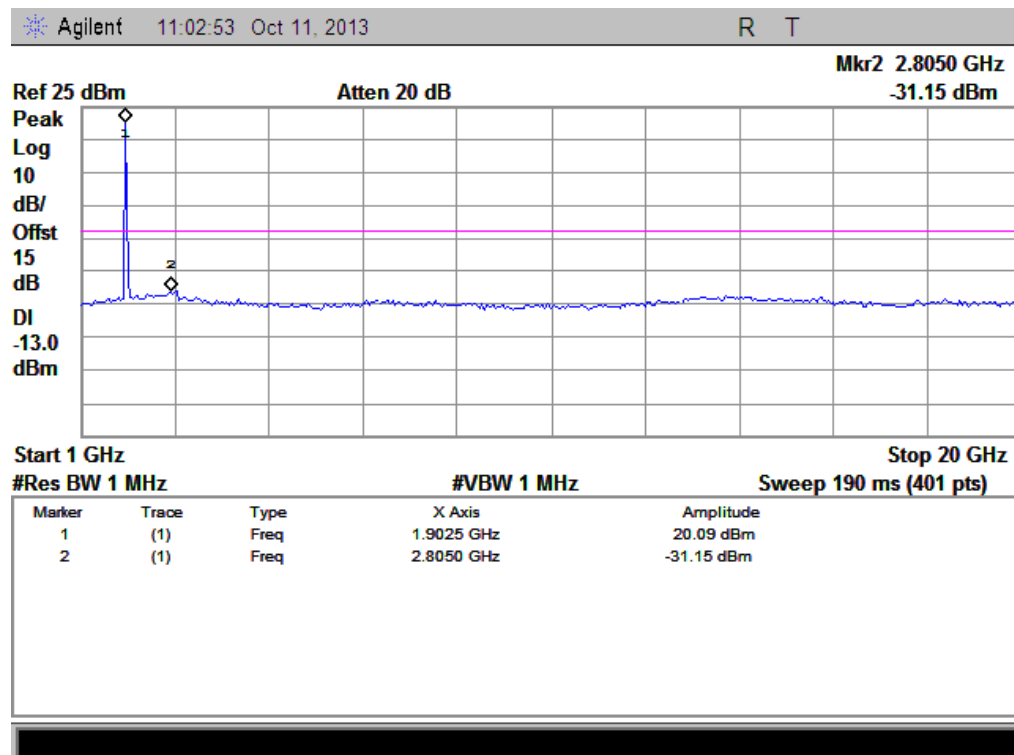
(Plot J 2: HSUPA1900MHz Channel = 9400, 30MHz to 1GHz)



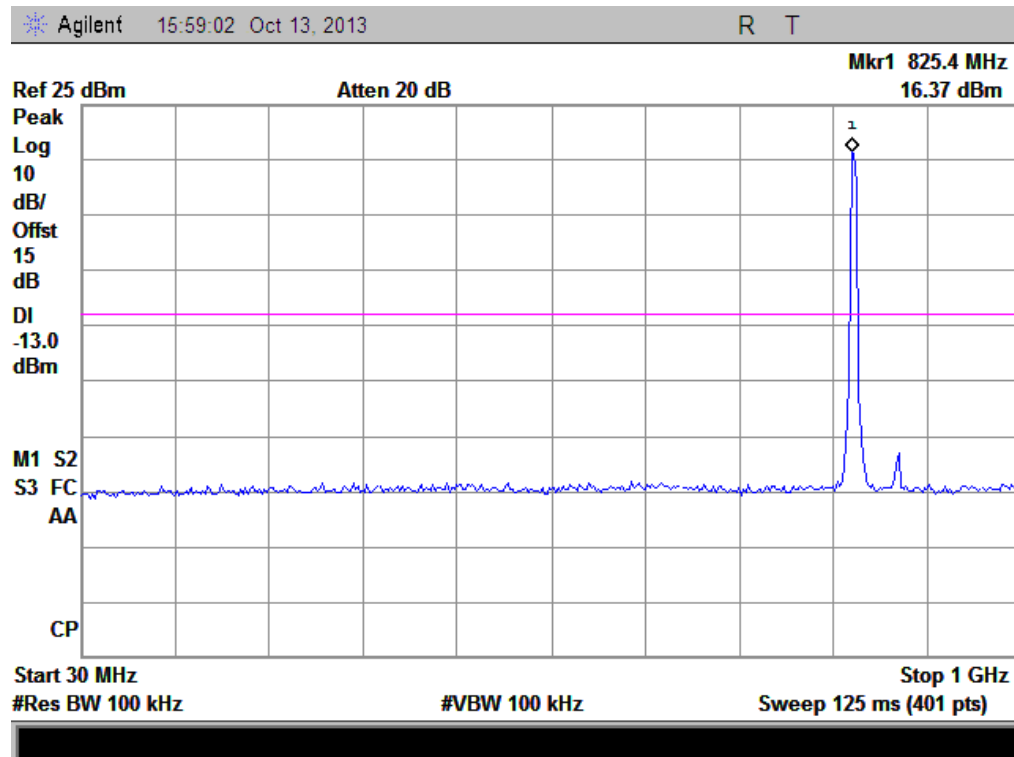
(Plot J2.1: HSUPA1900MHz Channel = 9400, 1GHz to 20GHz)



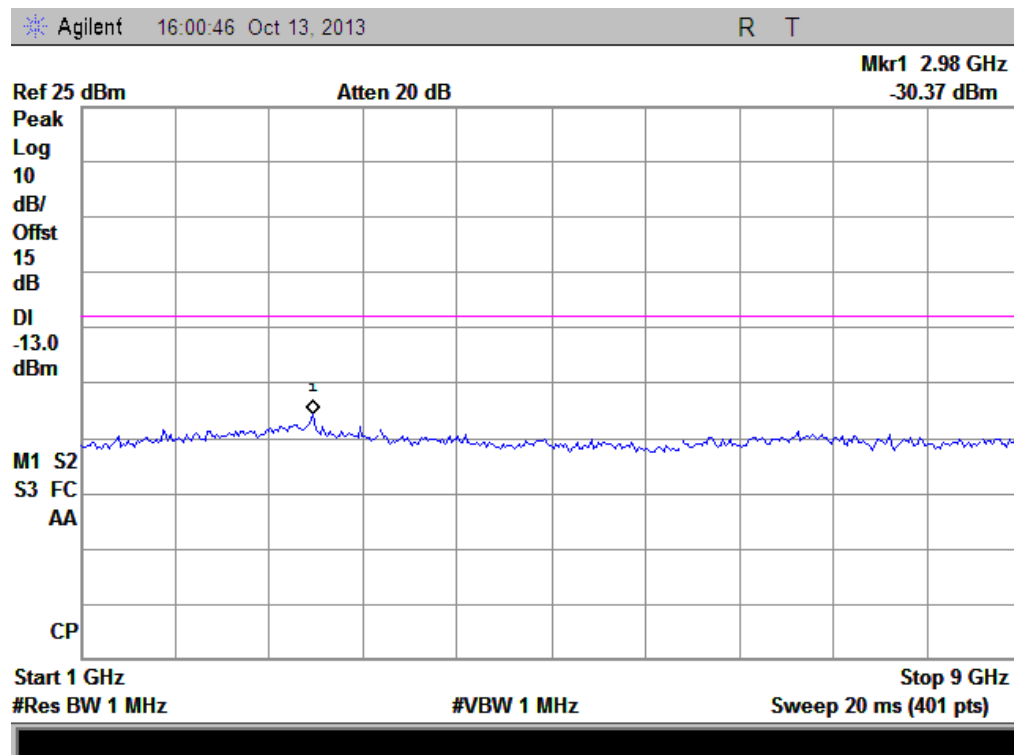
(Plot J 3: HSUPA1900MHz Channel = 9538, 30MHz to 1GHz)



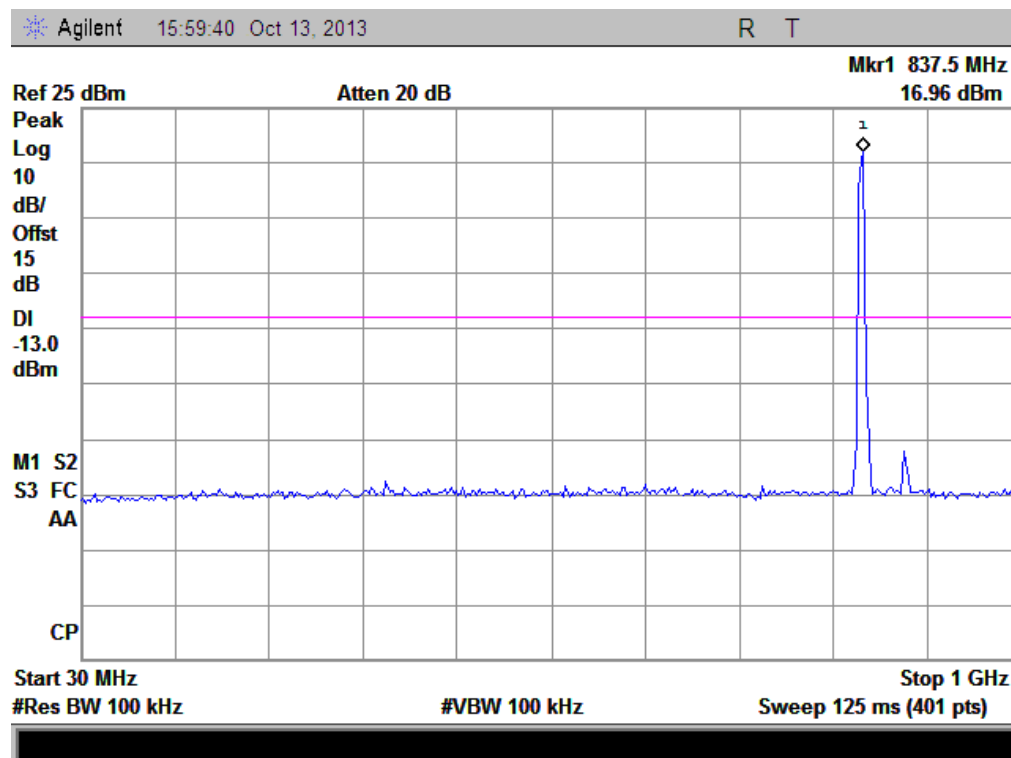
(Plot J3.1: HSUPA1900MHz Channel = 9538 1GHz to 20GHz)



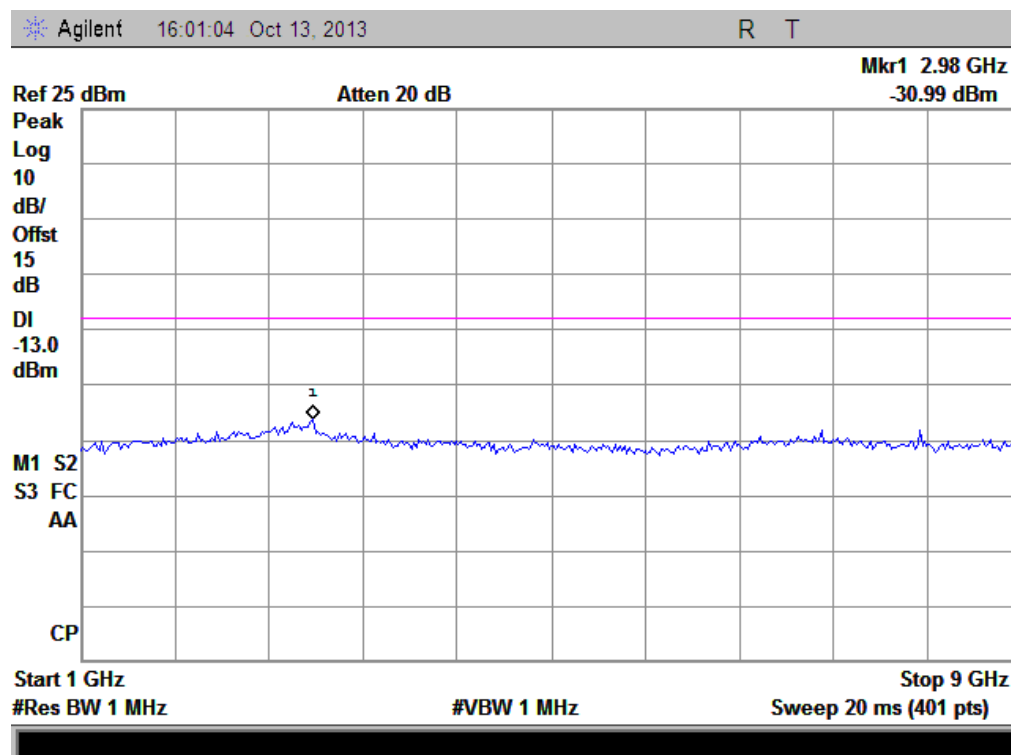
(Plot K 1: HSPA+ 850MHz Channel = 4132, 30MHz to 1GHz)



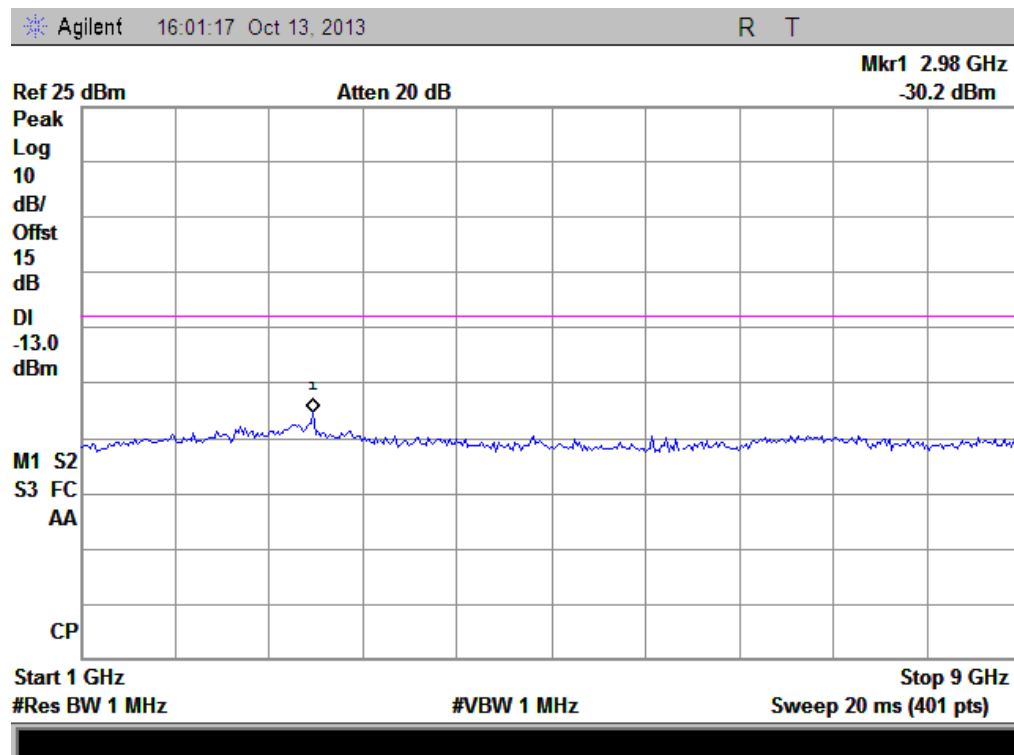
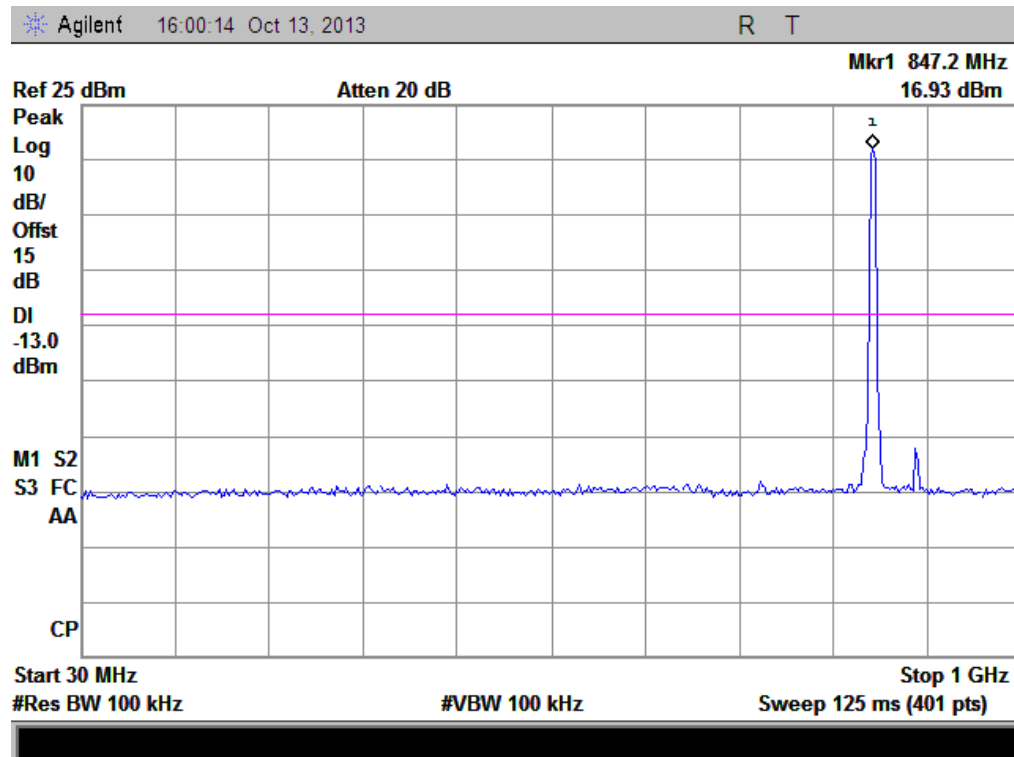
(Plot K1.1: HSPA+ 850MHz Channel = 4132, 1GHz to 9GHz)

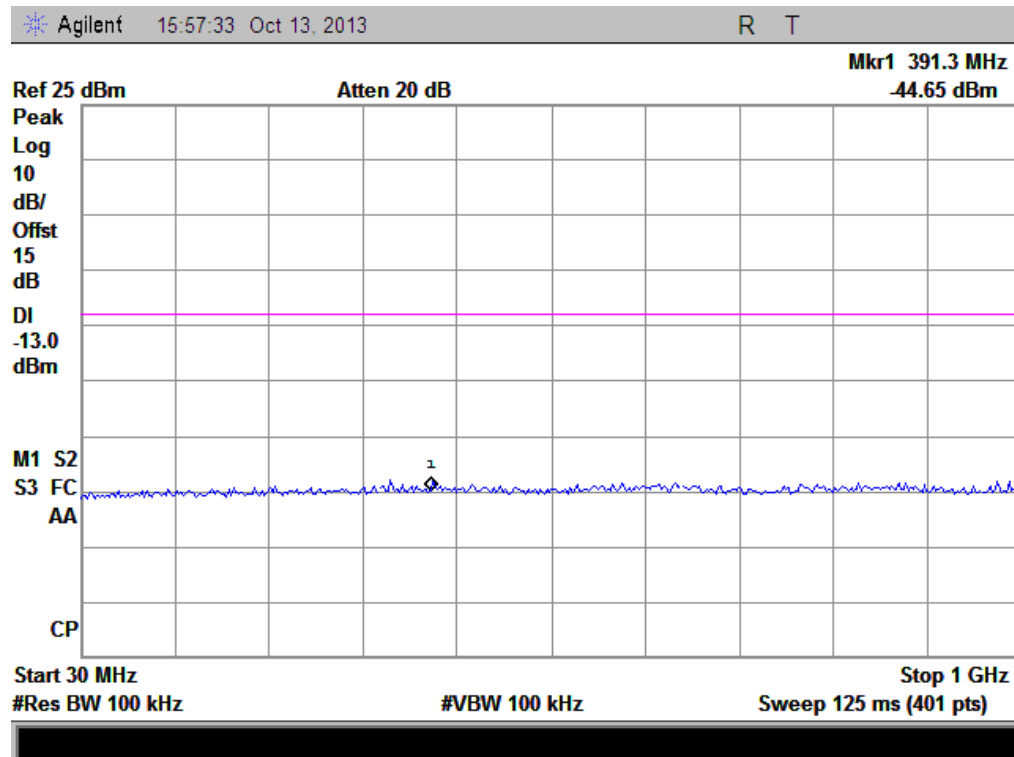


(Plot K 2: HSPA+ 850MHz Channel = 4175, 30MHz to 1GHz)

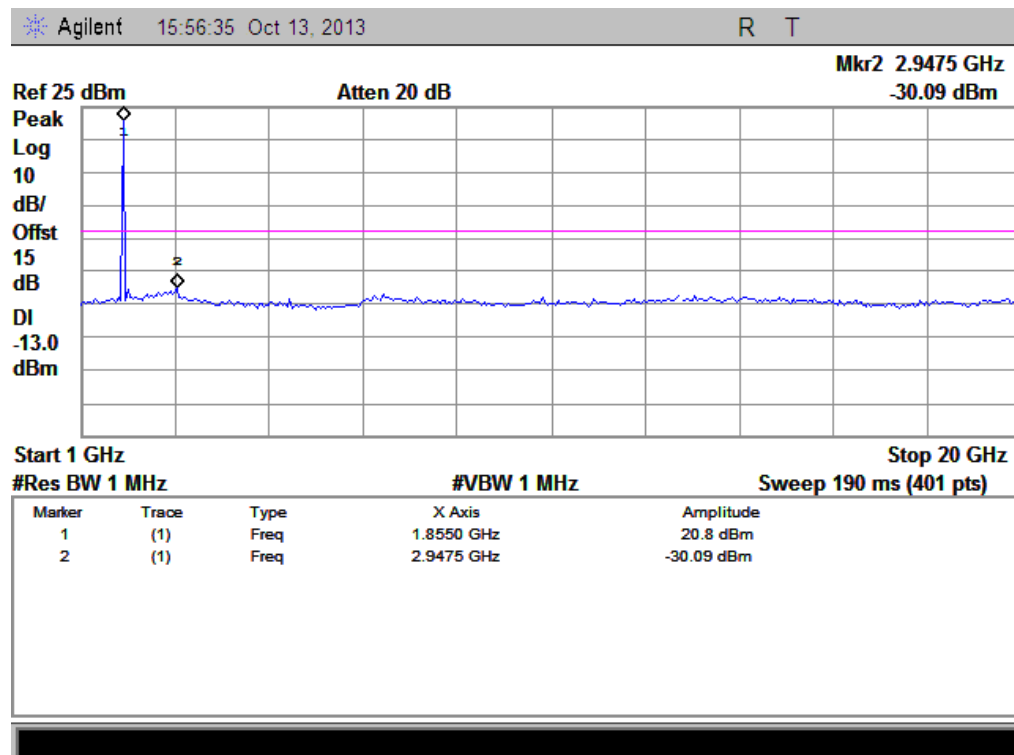


(Plot K2.1: HSPA+ 850MHz Channel = 4175, 1GHz to 9GHz)

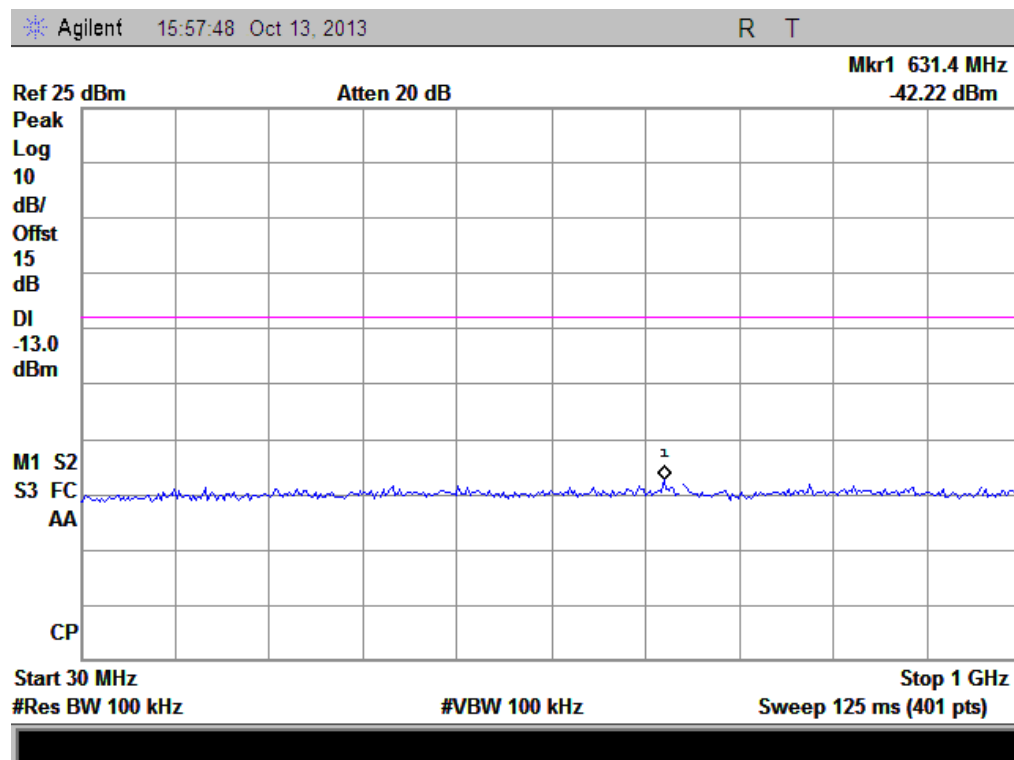




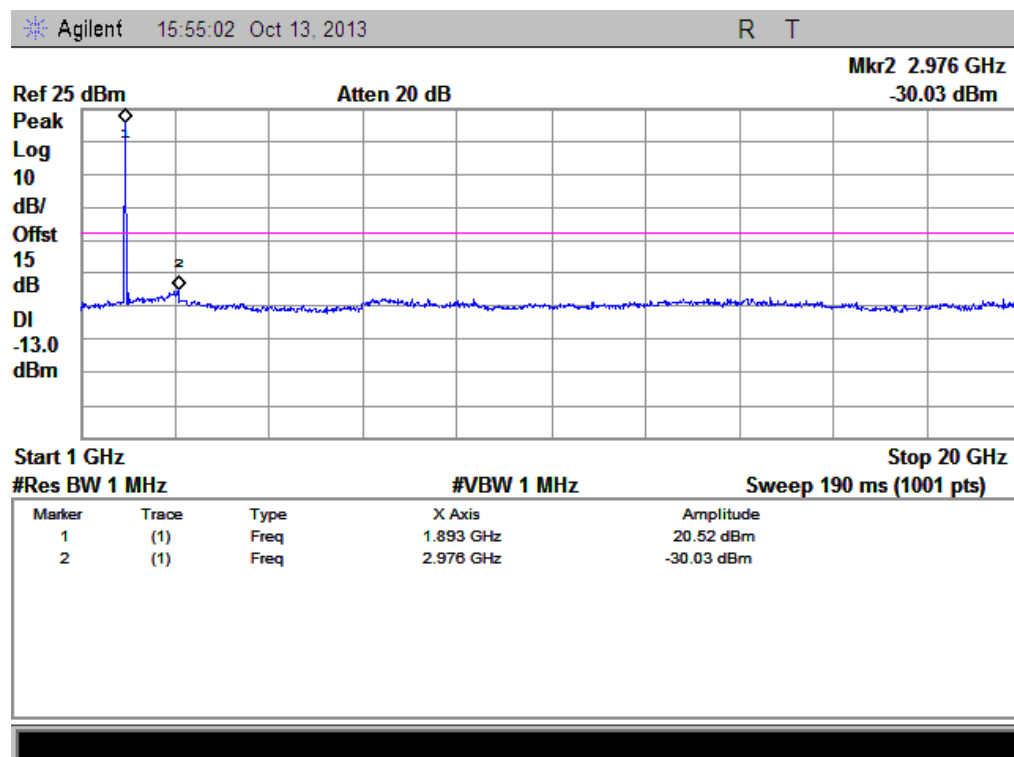
(Plot L 1: HSPA+1900MHz Channel = 9262, 30MHz to 1GHz)



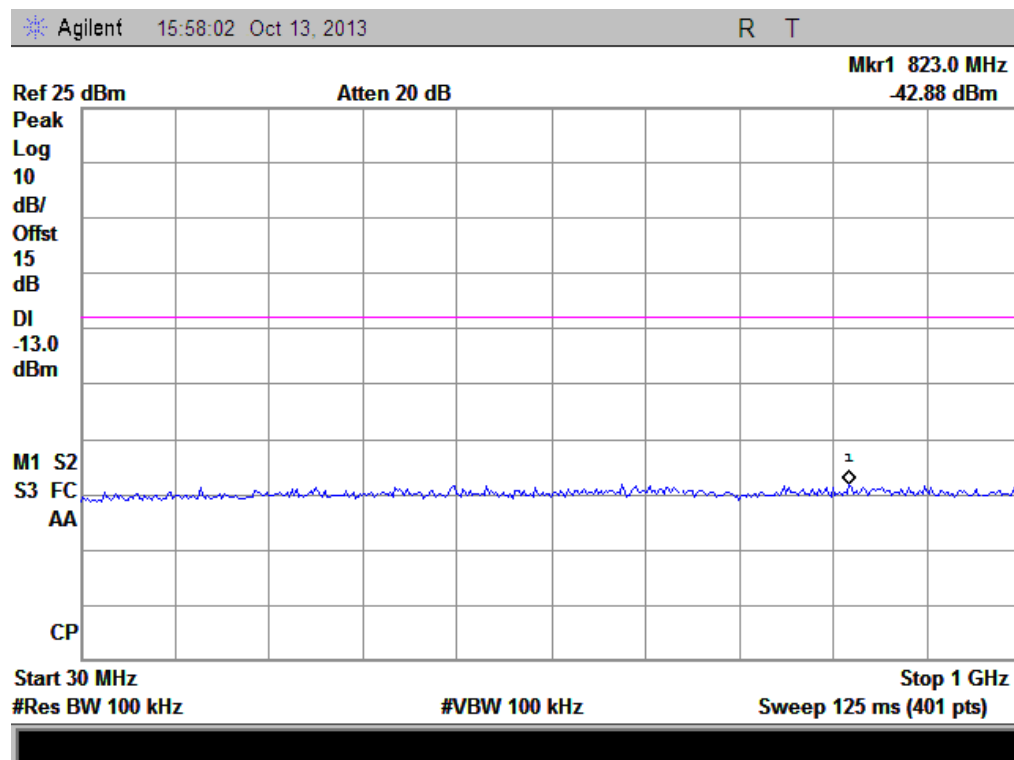
(Plot L1.1: HSPA+1900MHz Channel = 9262, 1GHz to 20GHz)



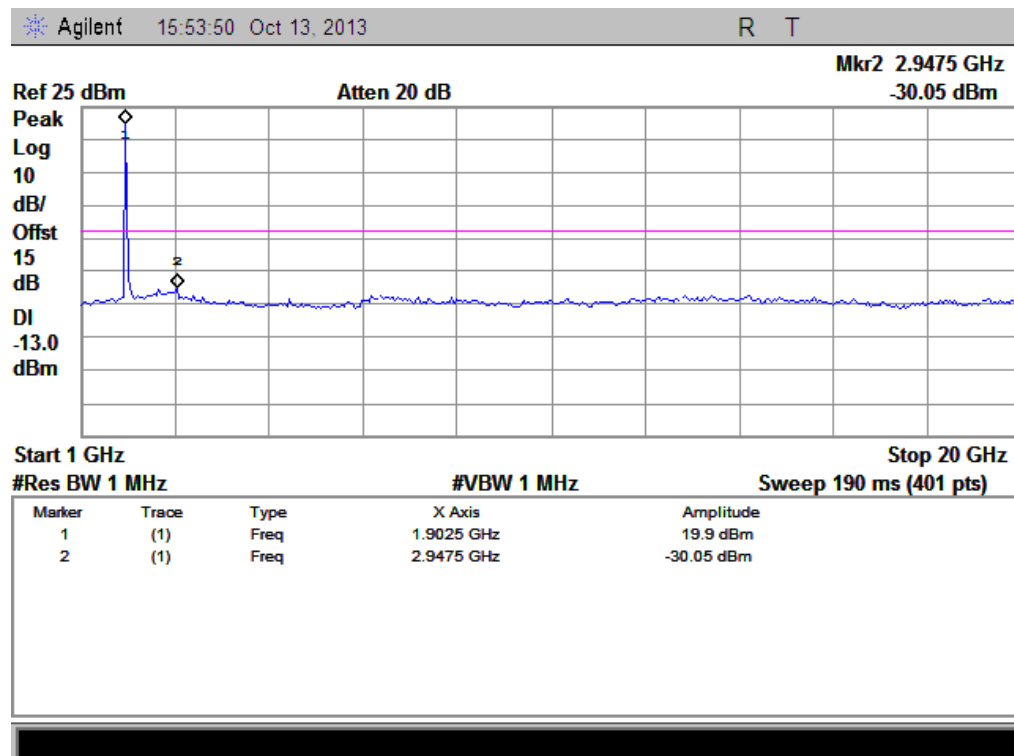
(Plot L 2: HSPA+1900MHz Channel = 9400, 30MHz to 1GHz)



(Plot L2.1: HSPA+1900MHz Channel = 9400, 1GHz to 20GHz)



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



(Plot L3.1: HSPA+1900MHz Channel = 9538 1GHz to 20GHz)

2.6 Band Edge

2.6.1 Requirement

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

2.6.2 Test Description

See section 2.1.2 of this report.

2.6.3 Test Result

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

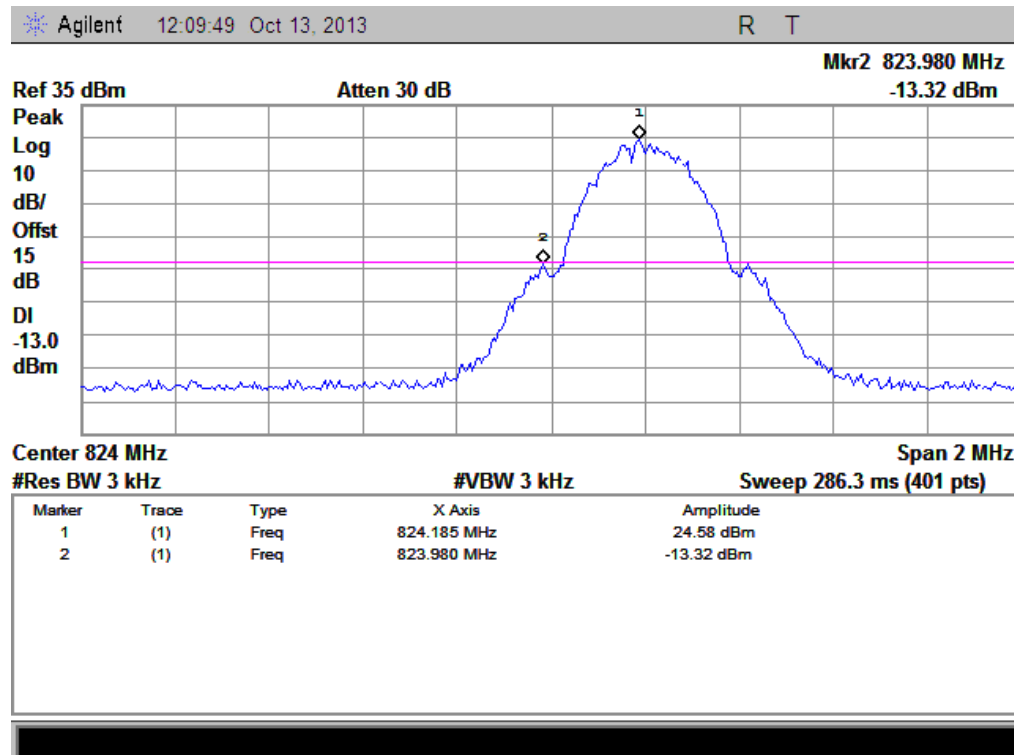
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-13.32	Plat A	-13	PASS
	251	848.8	-13.38	Plot B		PASS
GSM 1900MHz	512	1850.2	-16.97	Plat C	-13	PASS
	810	1909.8	-17.04	Plot D		PASS
EDGE 850MHz	128	824.2	-14.70	Plat E	-13	PASS
	251	848.8	-14.73	Plot F		PASS
EDGE 1900MHz	512	1850.2	-19.53	Plat G	-13	PASS
	810	1909.8	-19.31	Plot H		PASS
WCDMA 850MHz	4132	826.4	-14.44	Plat I	-13	PASS
	4233	846.6	-13.69	Plot J		PASS
WCDMA 1900MHz	9262	1852.4	-15.15	Plat K	-13	PASS
	9538	1907.6	-15.97	Plot L		PASS
HSDPA 850MHz	4132	826.4	-15.27	Plat M	-13	PASS
	4233	846.6	-14.60	Plot N		PASS
HSDPA 1900MHz	9262	1852.4	-15.71	Plat O	-13	PASS
	9538	1907.6	-16.99	Plot P		PASS
HSUPA 850MHz	4132	826.4	-15.46	Plat Q	-13	PASS
	4233	846.6	-14.41	Plot R		PASS
HSUPA 1900MHz	9262	1852.4	-15.40	Plat S	-13	PASS
	9538	1907.6	-16.10	Plot T		PASS

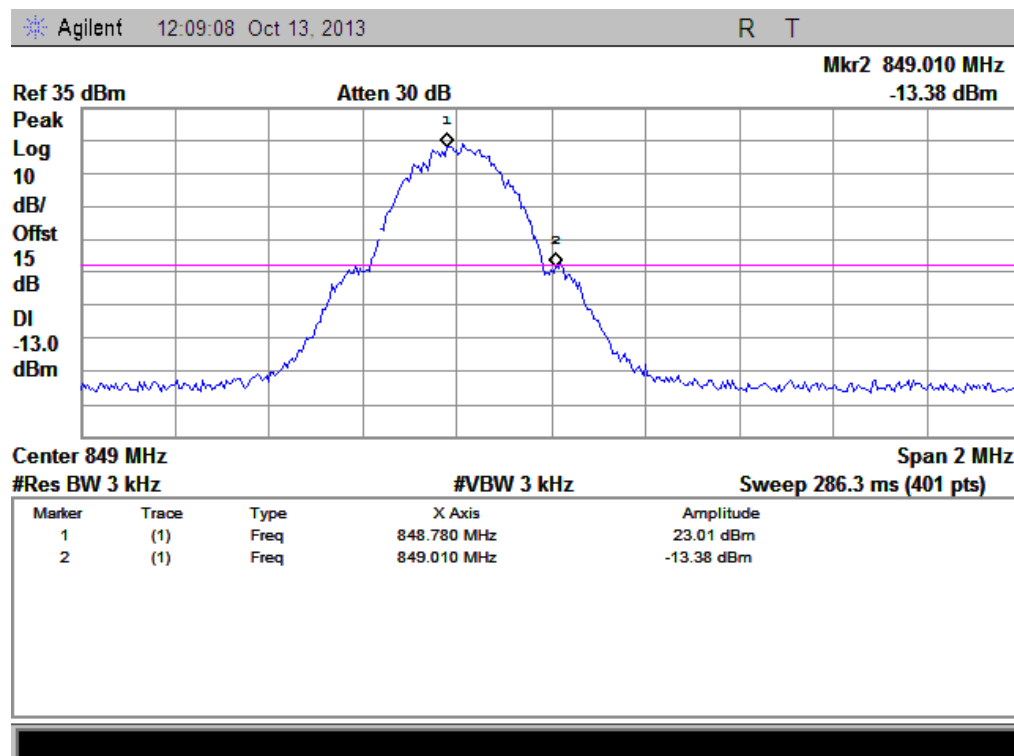


HSPA+ 850MHz	4132	826.4	-15.20	Plat U	-13	PASS
	4233	846.6	-14.67	Plot V		PASS
HSPA+ 1900MHz	9262	1852.4	-16.40	Plat W	-13	PASS
	9538	1907.6	-16.85	Plot X		PASS

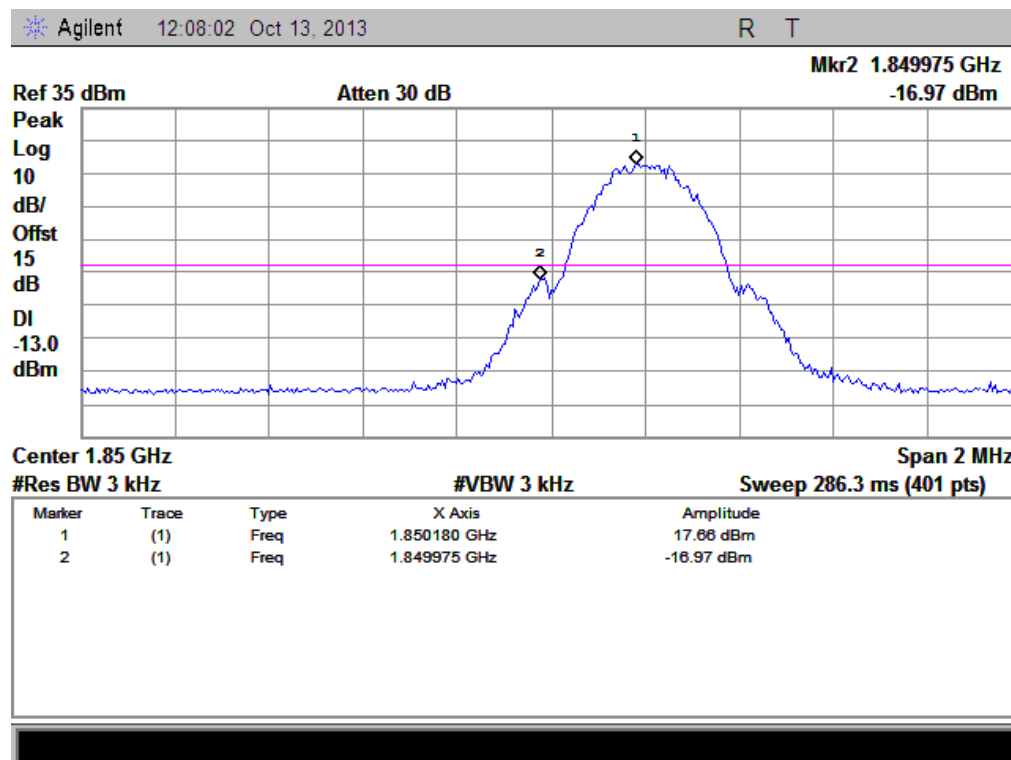
2. Test Plots:



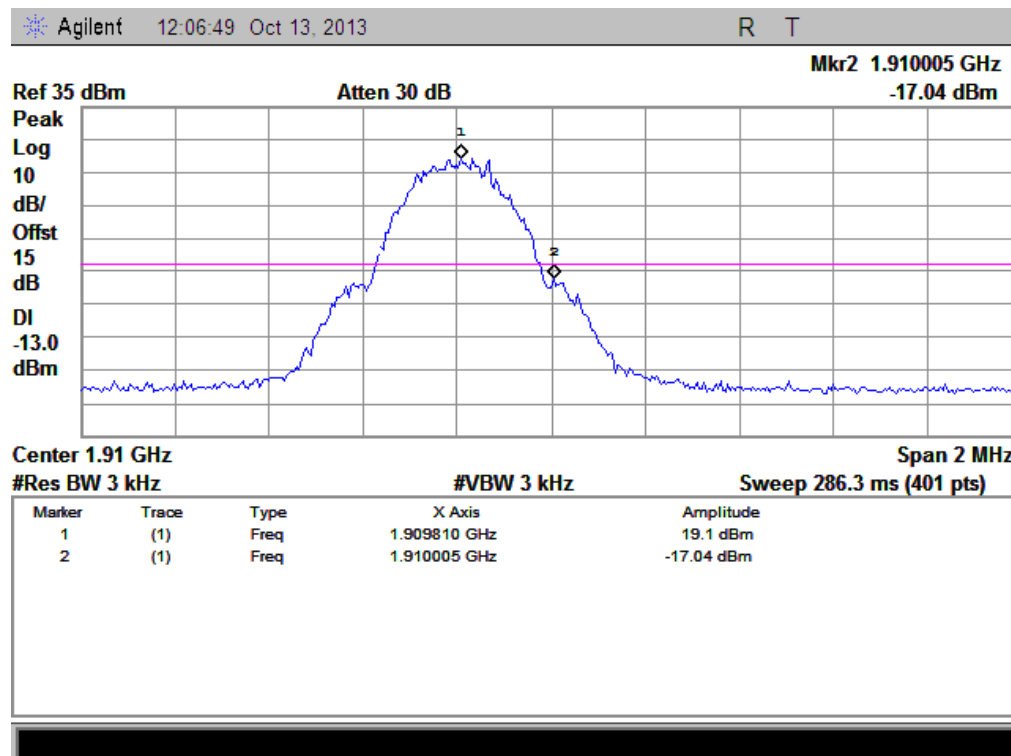
(Plot 1: GSM 850 Channel = 128)



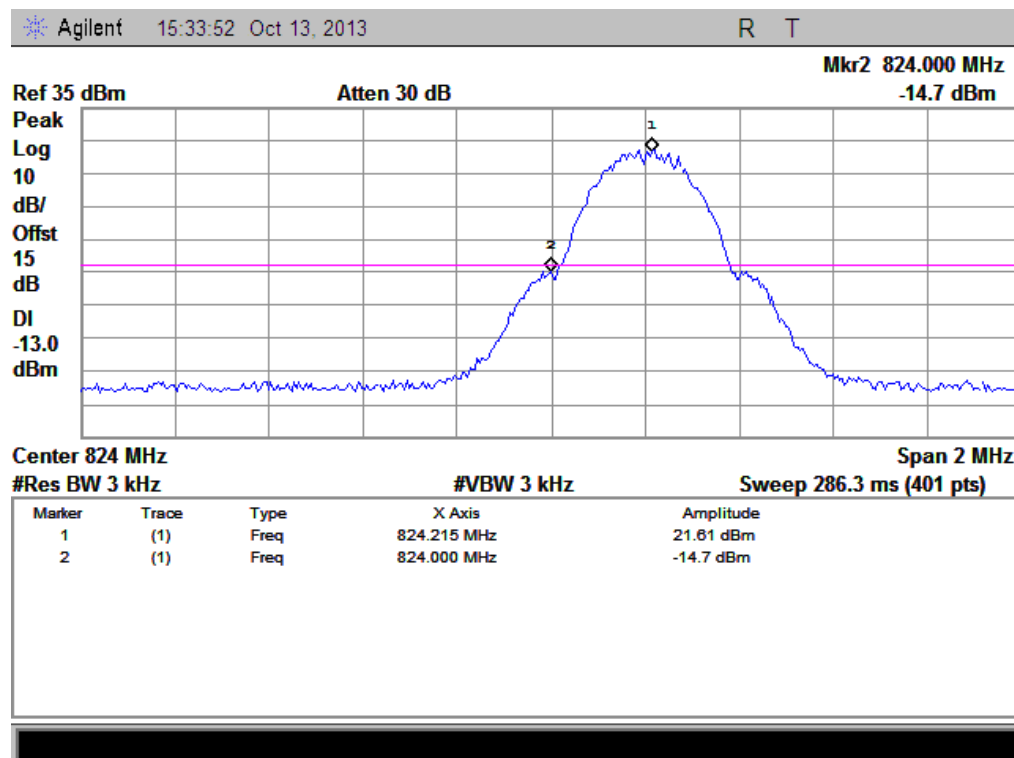
(Plot 2: GSM 850 Channel = 251)



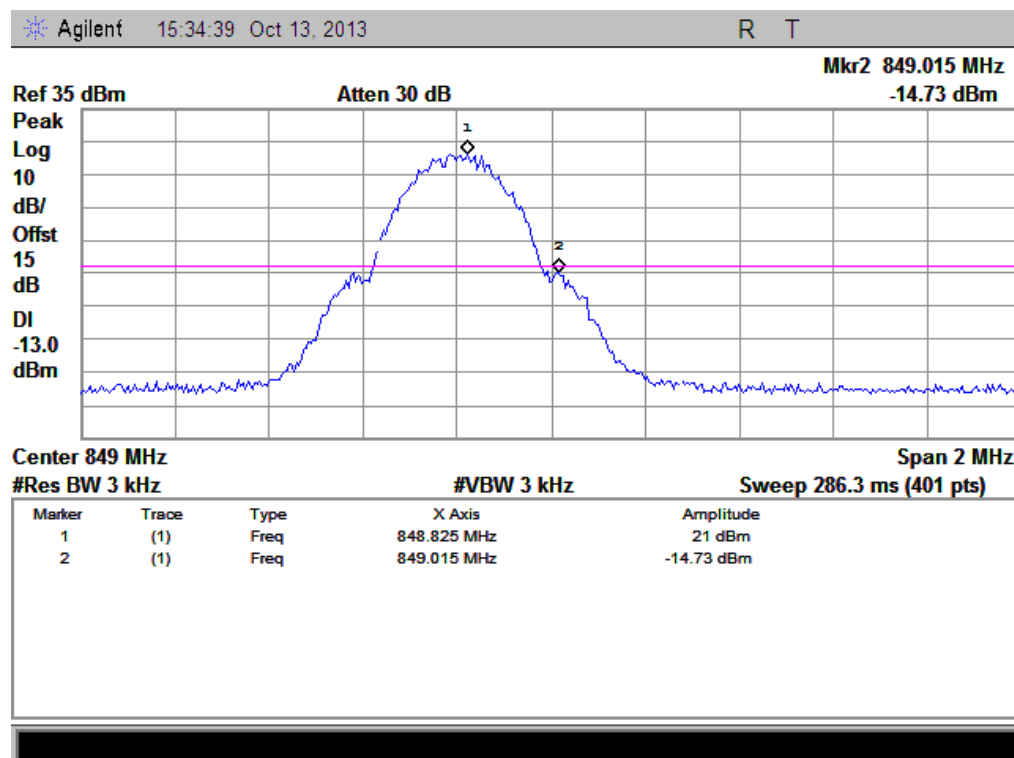
(Plot 3: GSM 1900 Channel = 512)



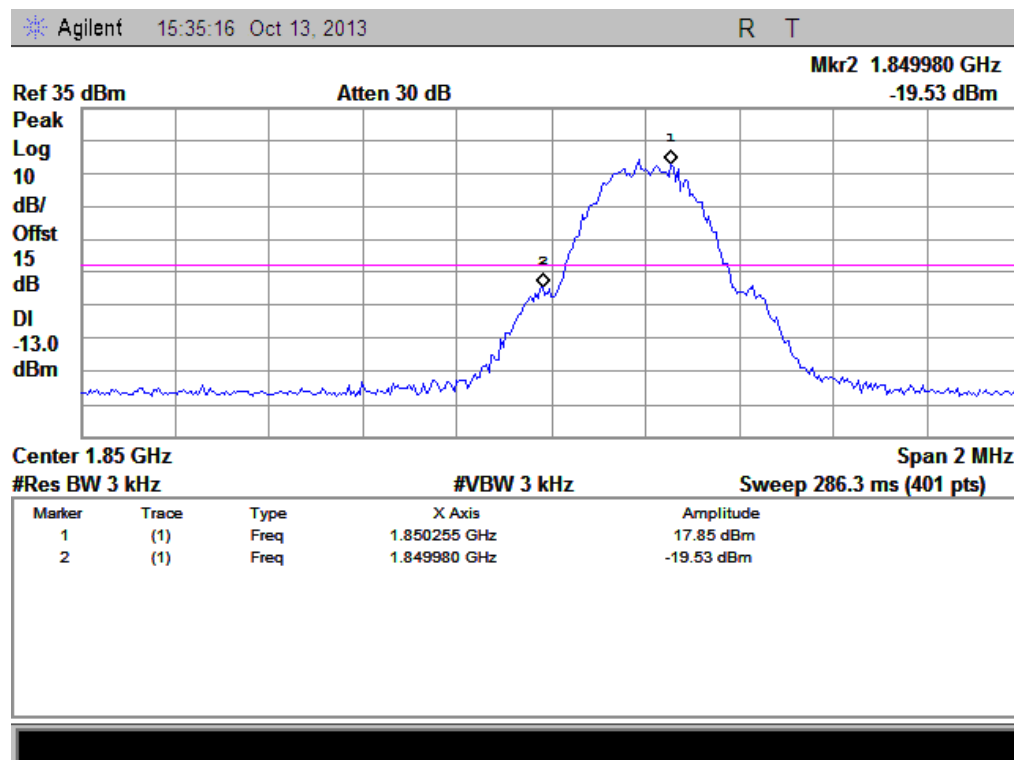
(Plot 4: GSM 1900 Channel = 810)



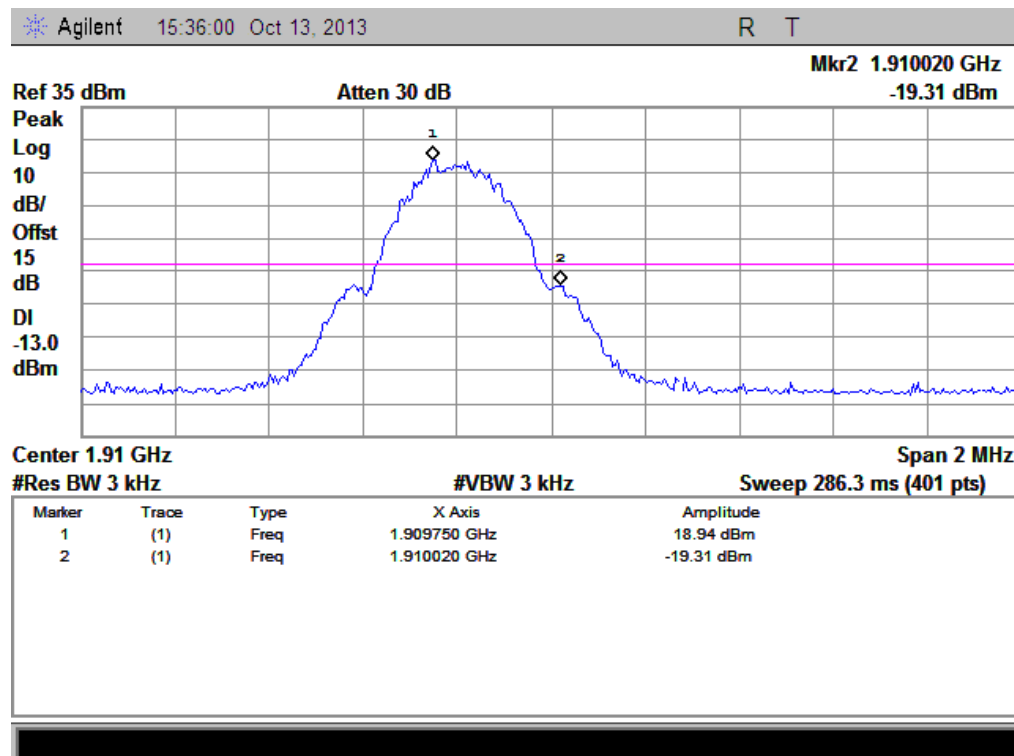
(Plot 5: EDGE850 Channel = 128)



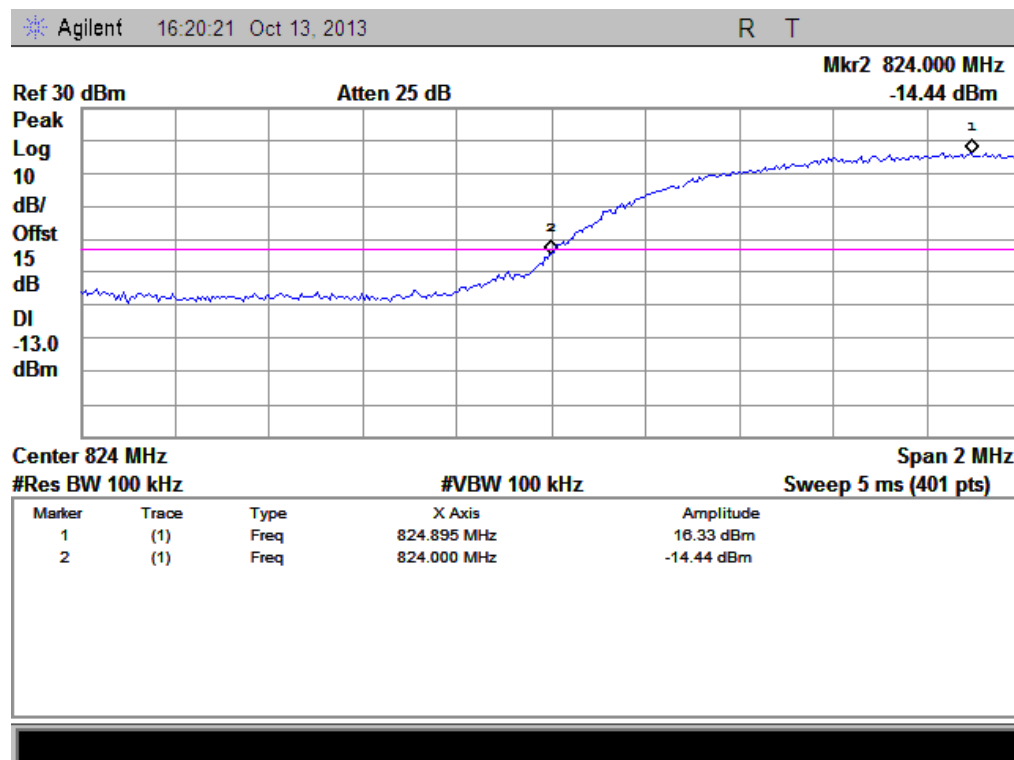
(Plot 6: EDGE 850 Channel = 251)



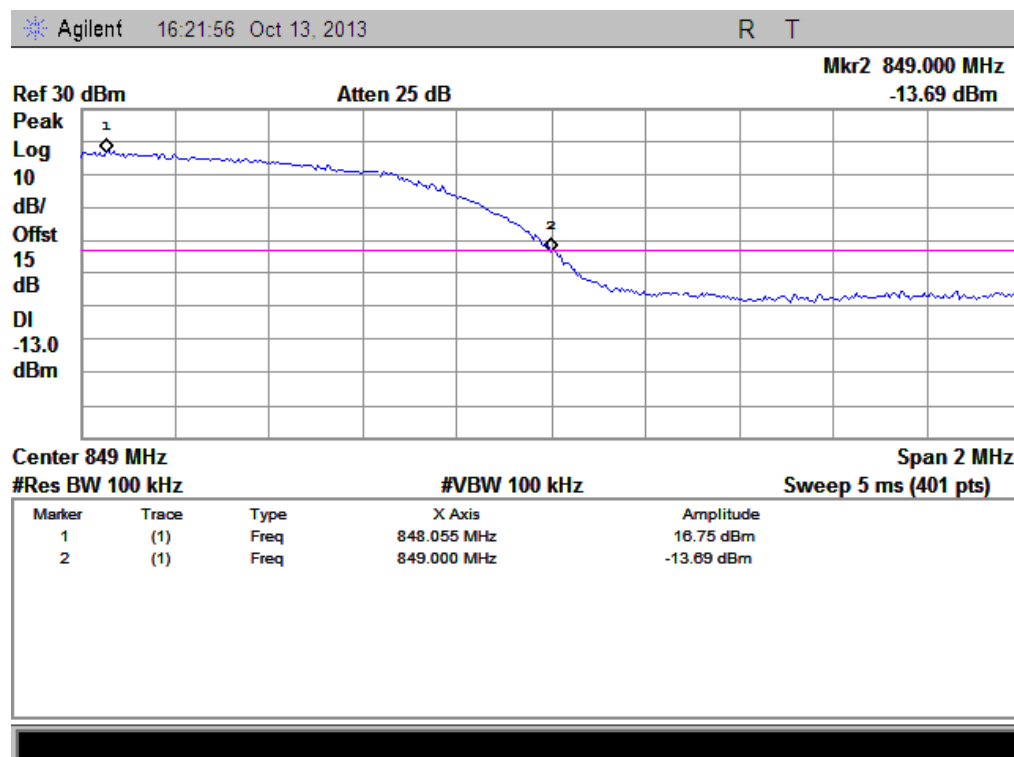
(Plot 7: EDGE 1900 Channel = 512)



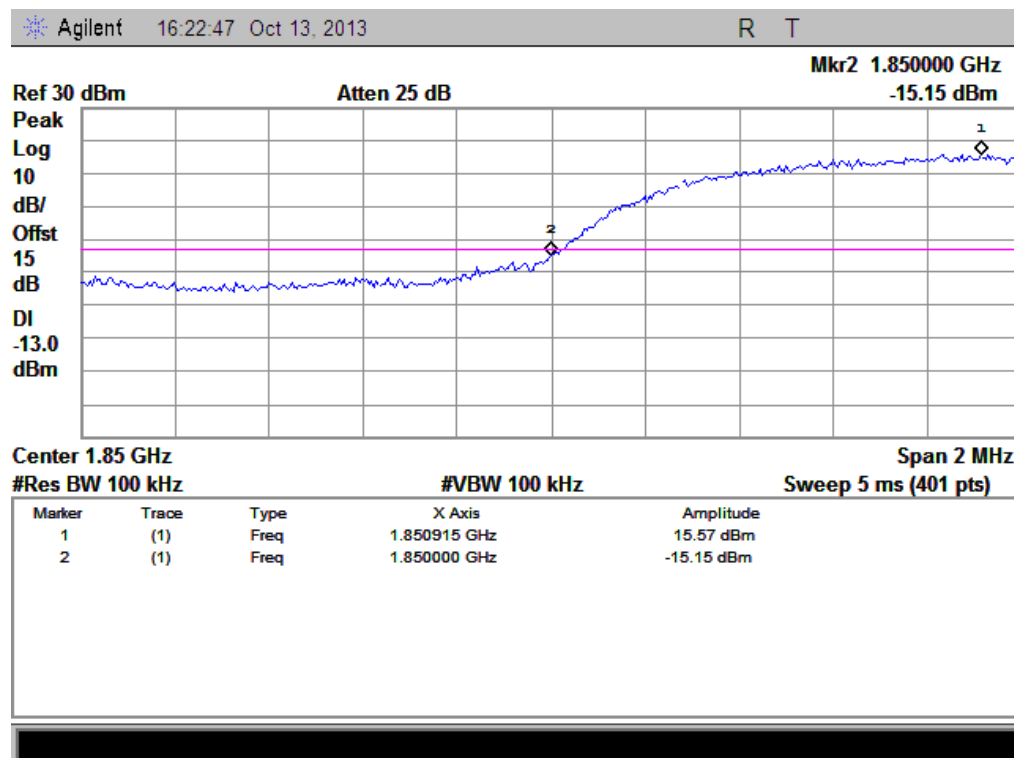
(Plot 8: EDGE 1900 Channel = 810)



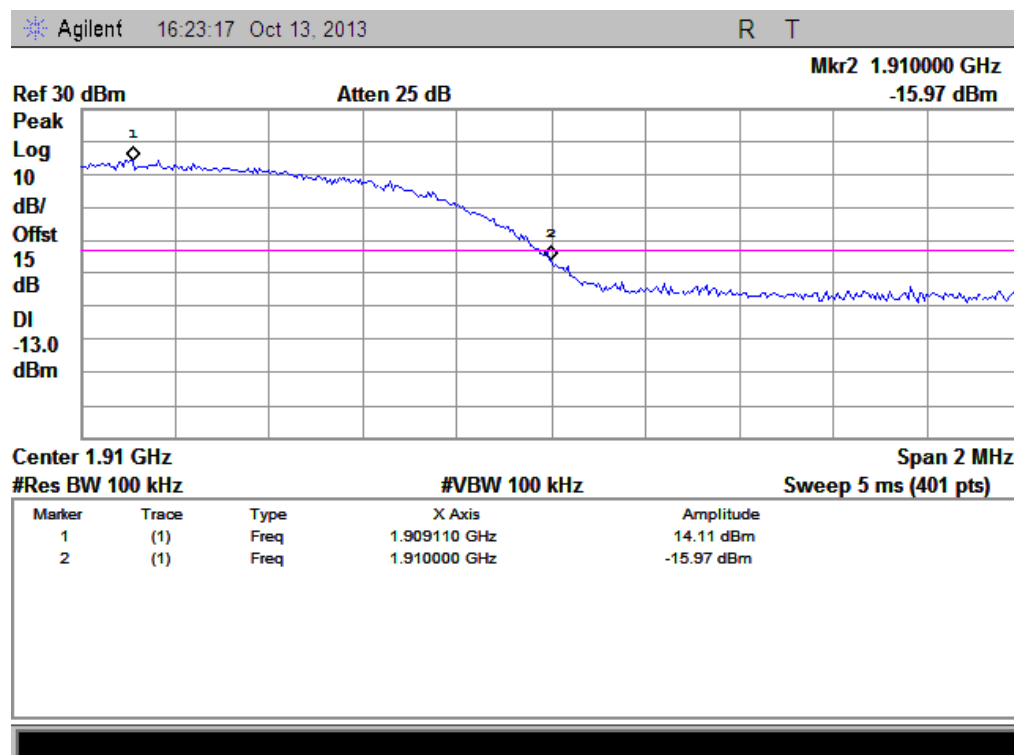
(Plot I: WCDMA 850 Channel = 4132)



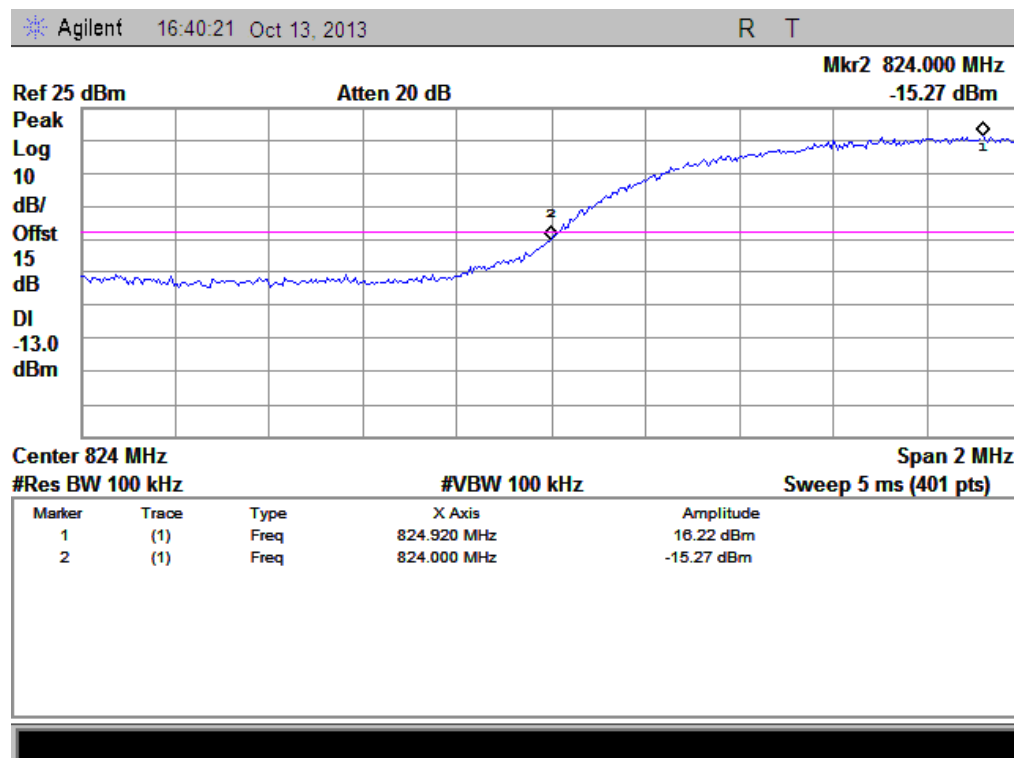
(Plot J: WCDMA 850 Channel = 4233)



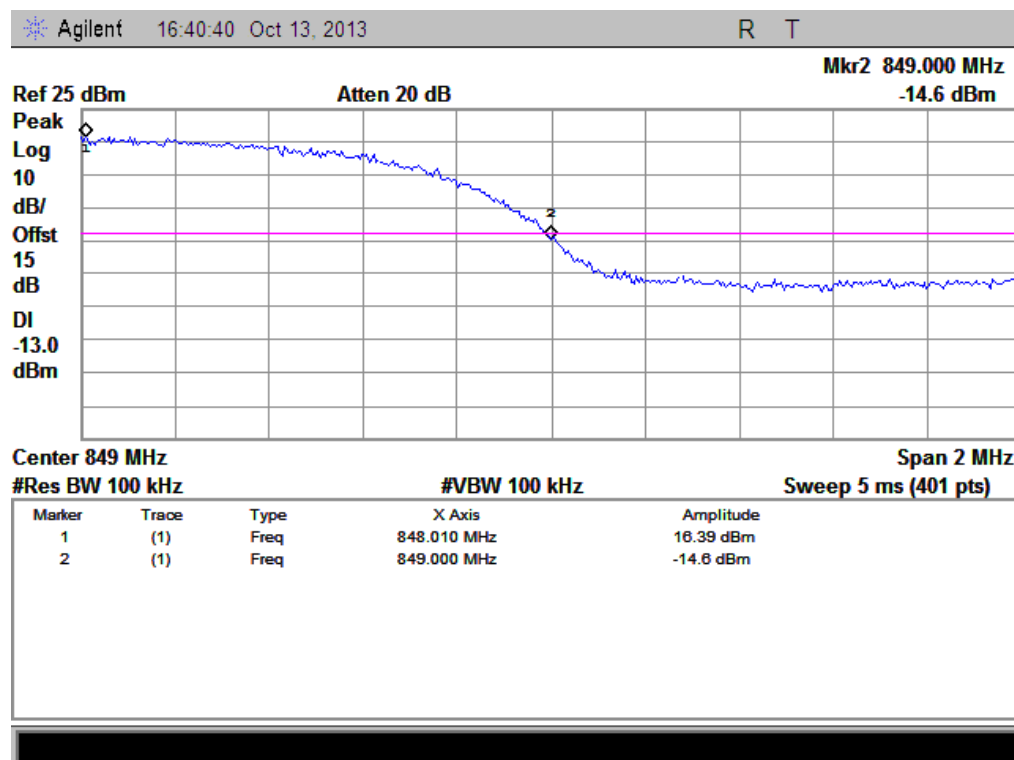
(Plot K: WCDMA 1900 Channel = 9262)



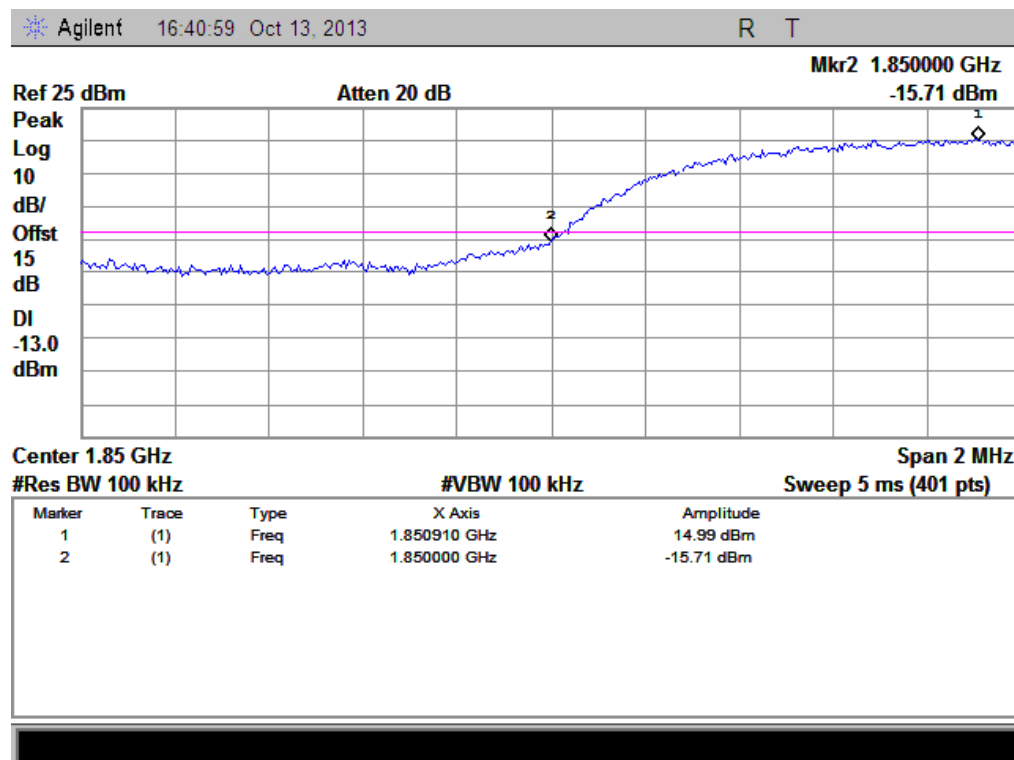
(Plot L: WCDMA 1900 Channel = 9538)



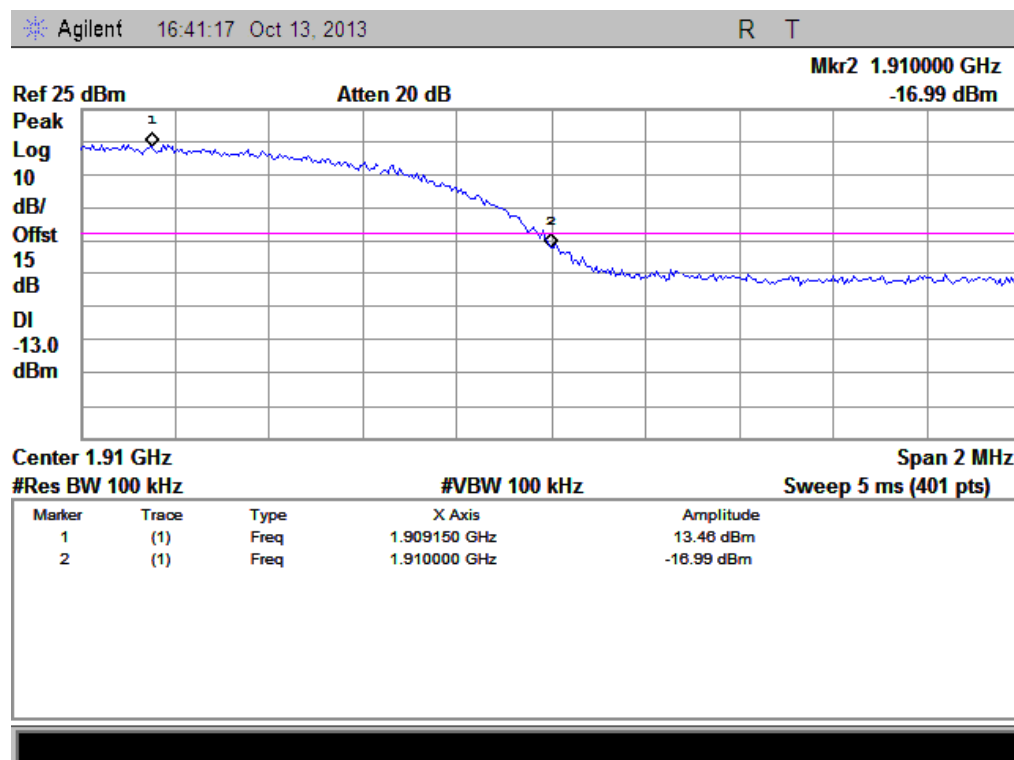
(Plot M: HSDPA 850 Channel = 4132)



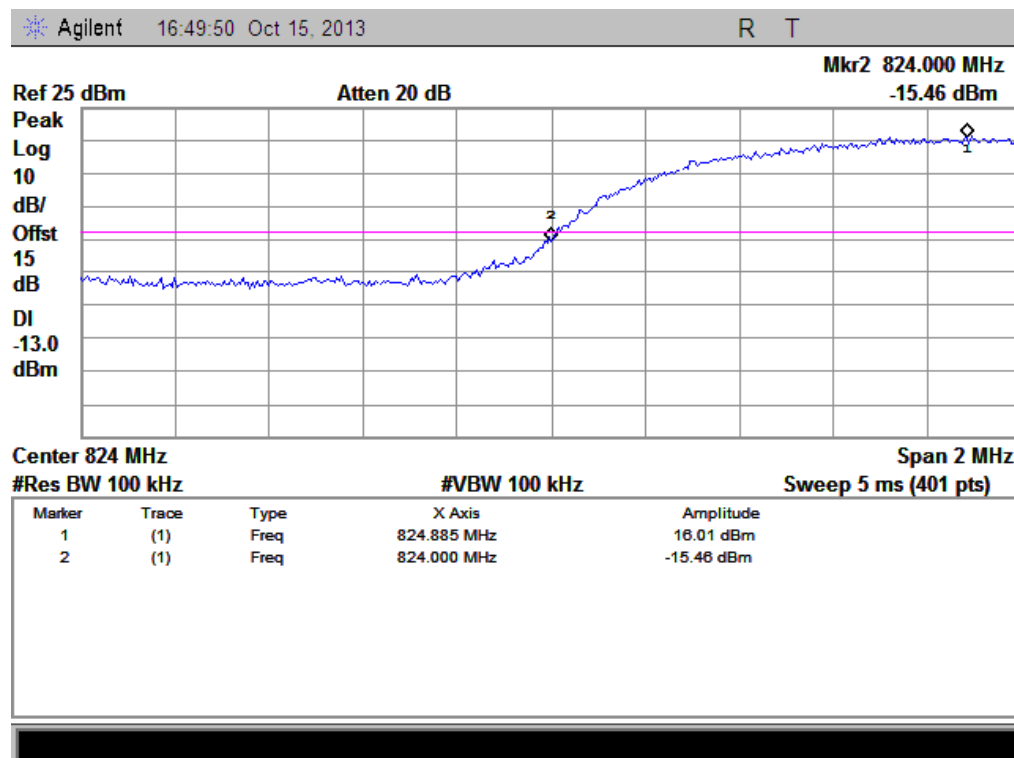
(Plot N: HSDPA850 Channel = 4233)



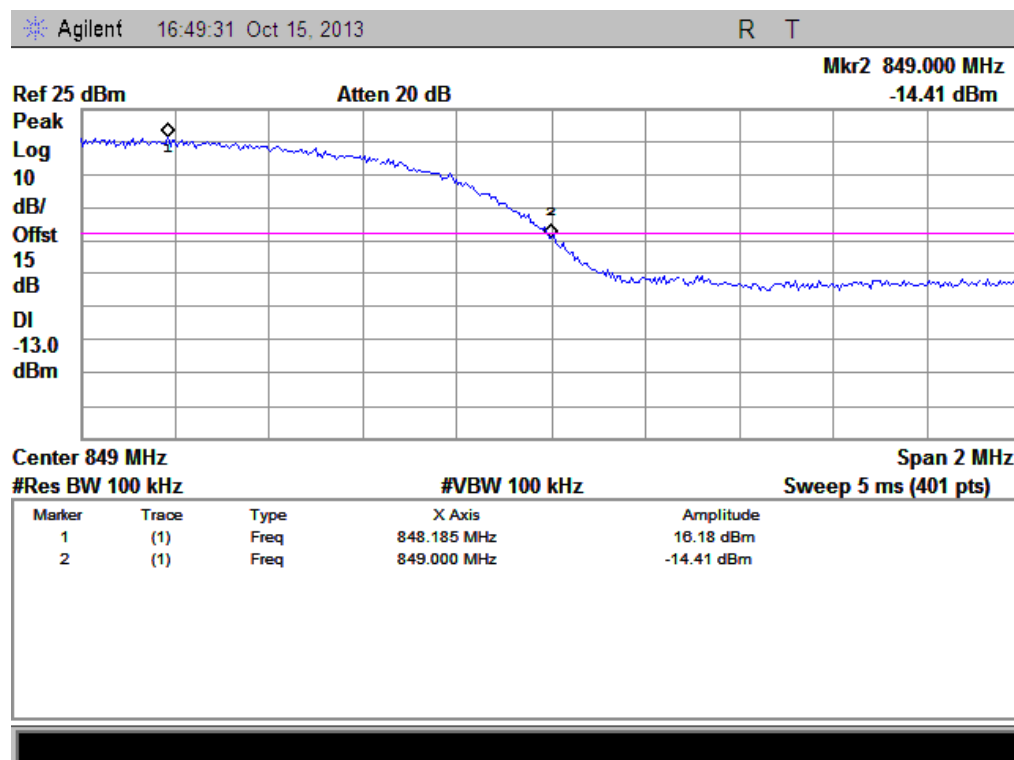
(Plot O: HSDPA 1900 Channel = 9262)



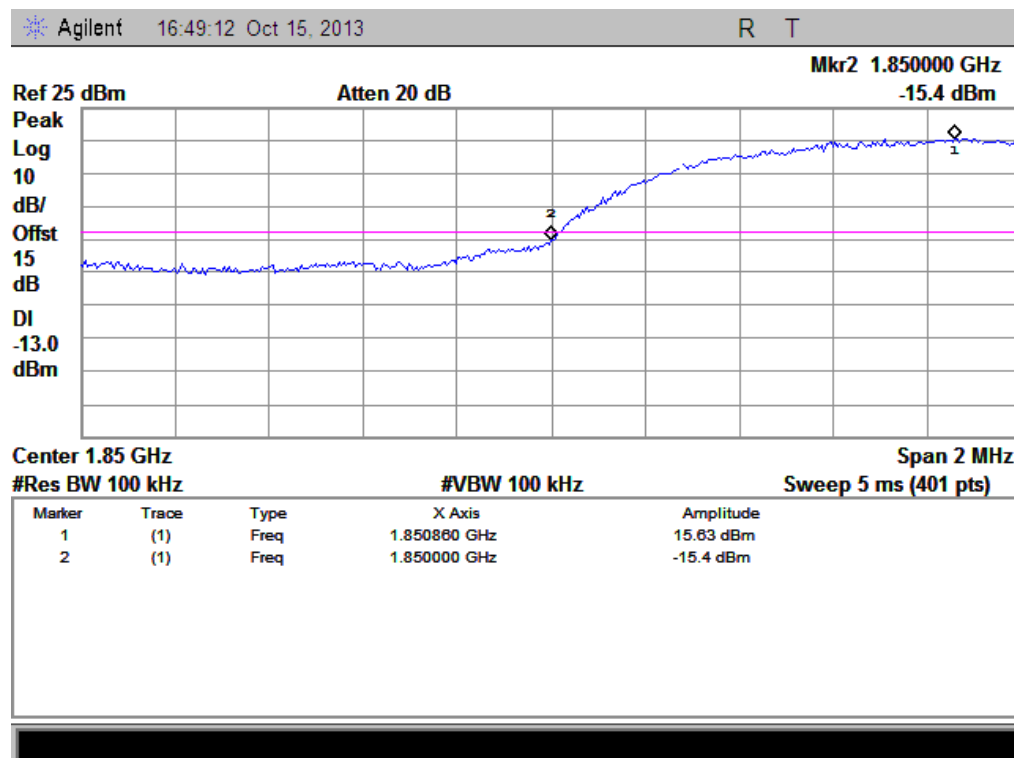
(Plot P: HSDPA 1900 Channel = 9538)



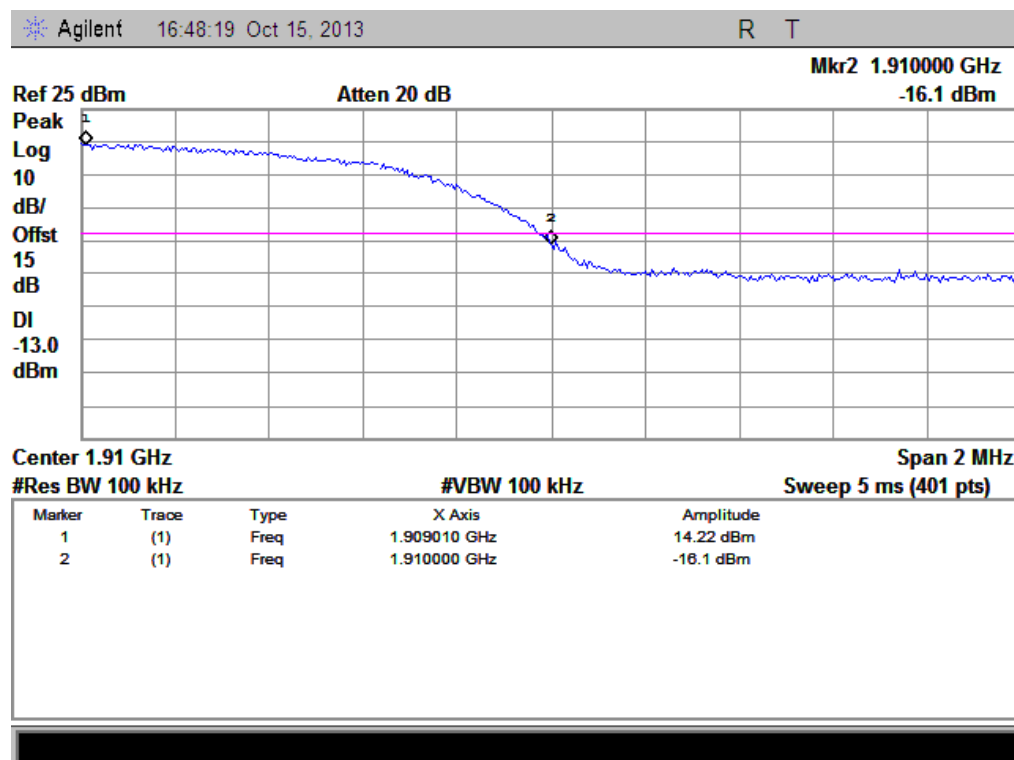
(Plot Q: HSUPA 850 Channel = 4132)



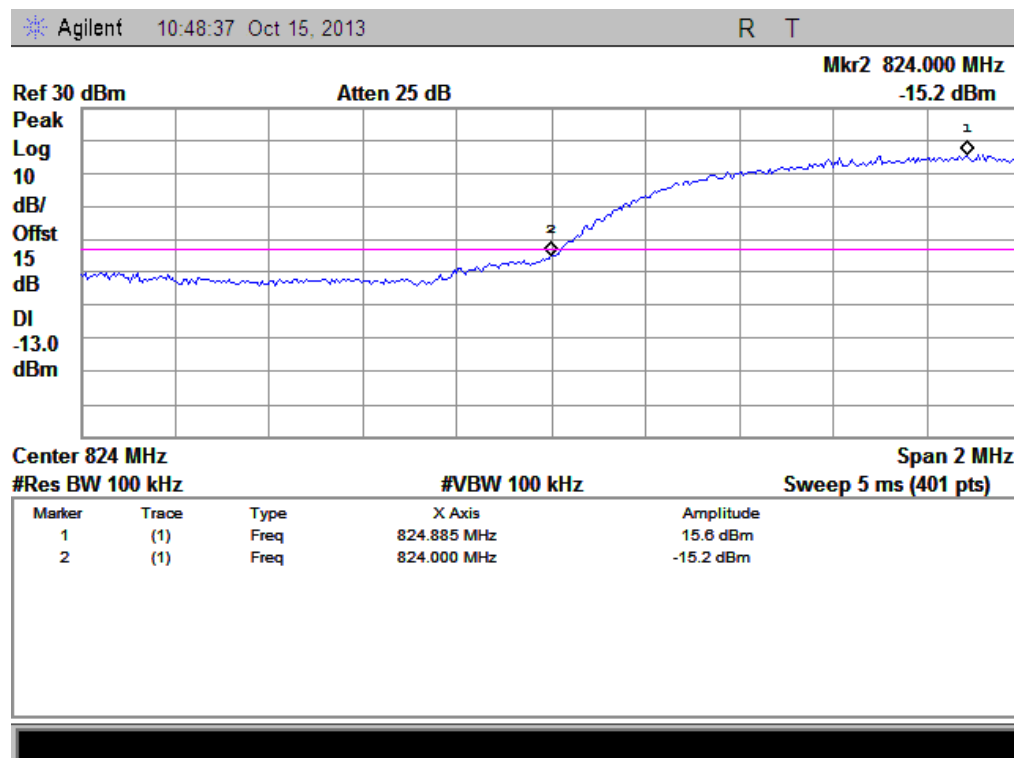
(Plot R: HSUPA850 Channel = 4233)



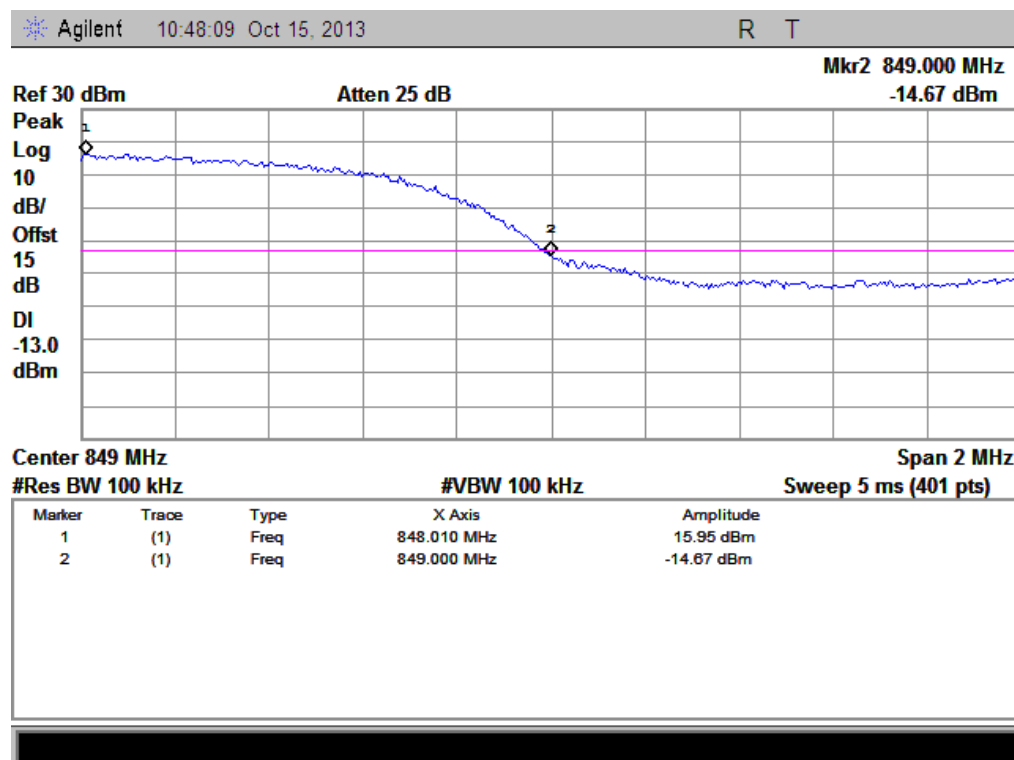
(Plot S: HSUPA 1900 Channel = 9262)



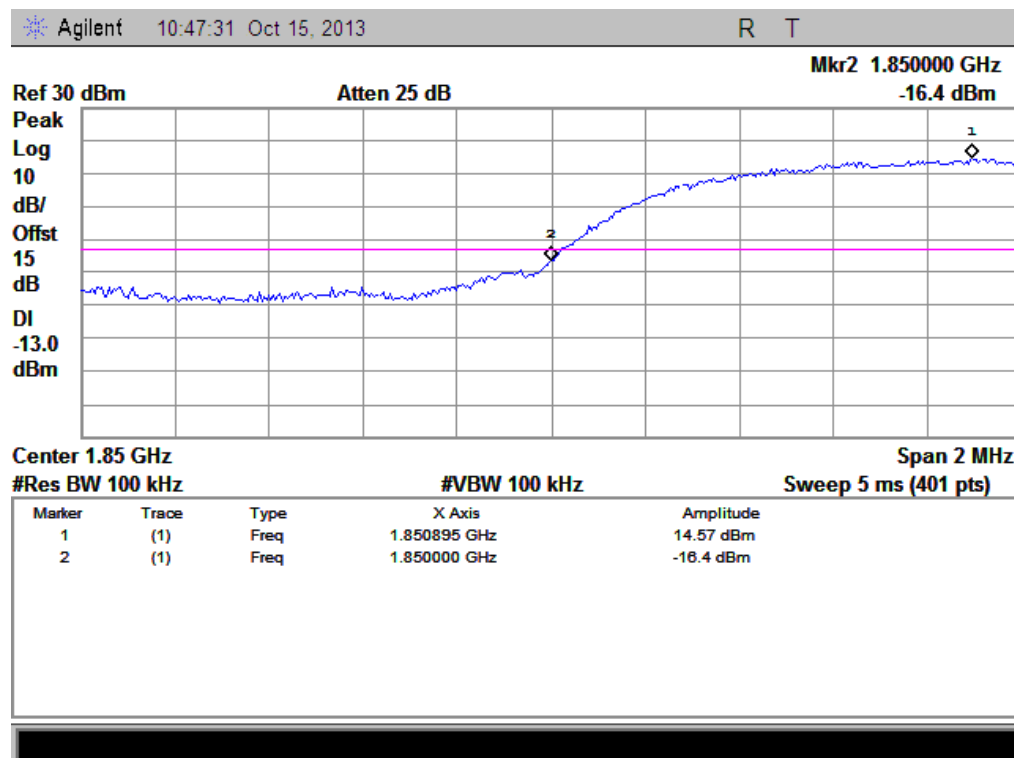
(Plot T: HSUPA 1900 Channel = 9538)



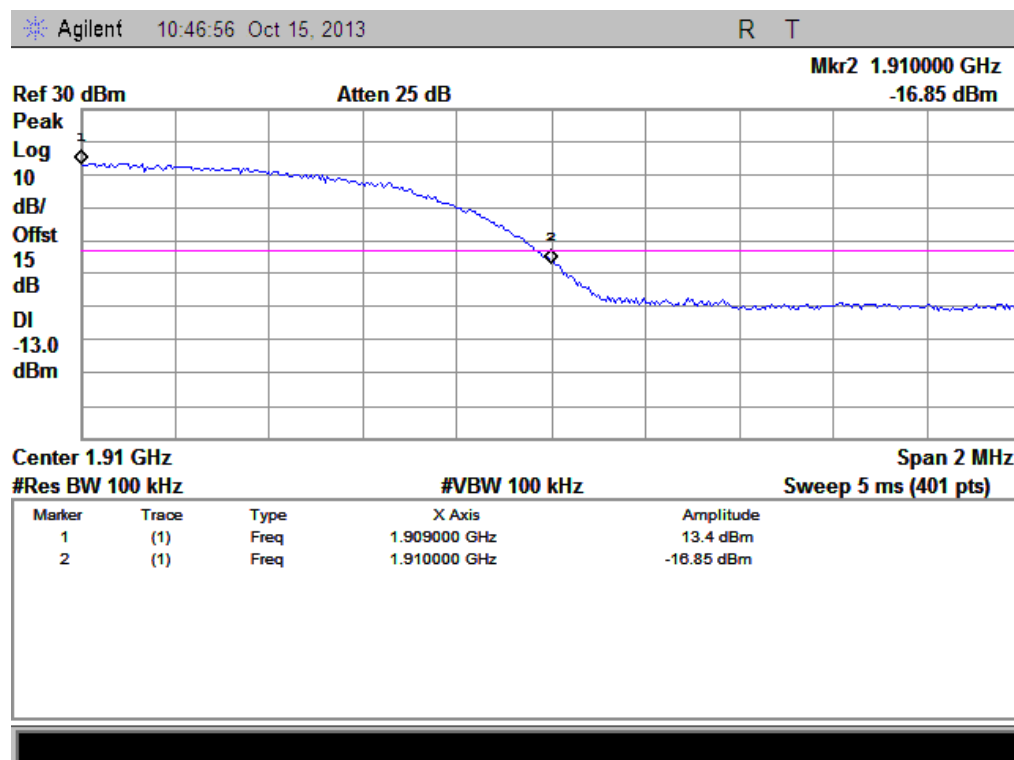
(Plot U: HSPA+ 850 Channel = 4132)



(Plot V: HSPA+ 850 Channel = 4233)



(Plot W: HSPA+ 1900 Channel = 9262)



(Plot X: HSPA+ 1900 Channel = 9538)

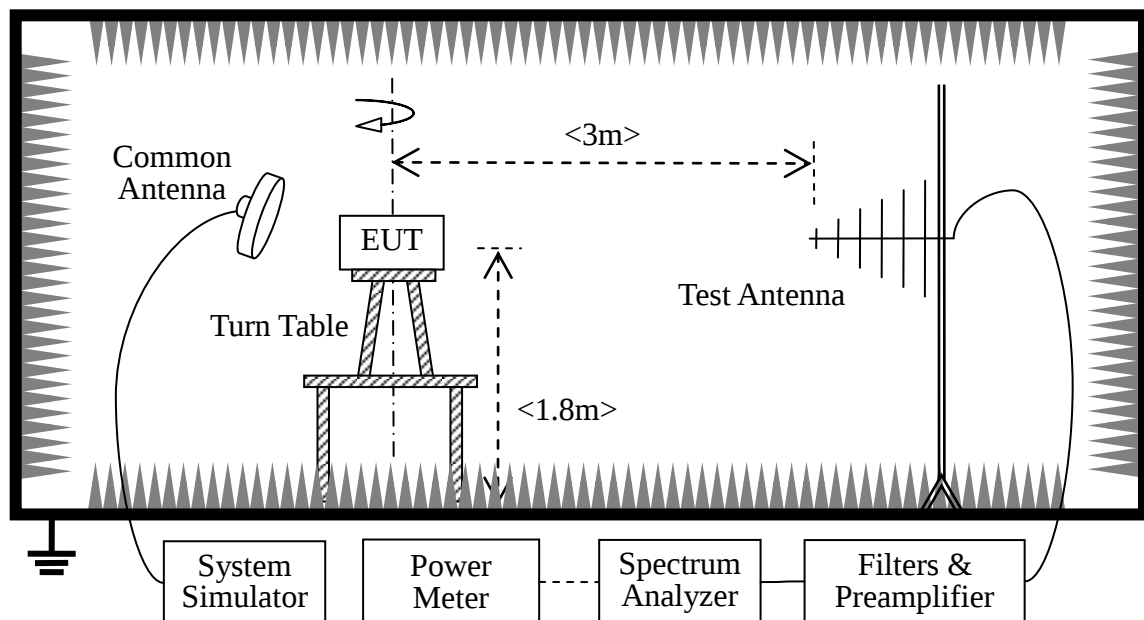
2.7 Transmitter Radiated Power (EIRP/ERP)

2.7.1 Requirement

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

2.7.2 Test Description

1. Test Setup:



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

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

- GSM Maximum RF output power: GSM 850 32.87dBm, GSM 1900 28.85dBm, EGPRS 850 32.90dBm, EGPRS 29.18, WCDMA 850 23.69dBm, WCDMA 1900 23.49 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
System Simulator	Agilent	E5515C	GB43130131	2013.06.10
Spectrum Analyzer	Agilent	E7405A	US44210471	2013.06.10
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	(n.a.)	2013.06.10
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2013.06.10
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2013.06.10
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2013.06.10
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2013.06.10
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2013.06.10
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2013.06.10
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2013.06.10

The Cal. Interval was one year.

2.7.3 Test Result

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

The substitution corrections are obtained as described below:

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

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

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

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

$P_{\text{SUBST_RX}}$ is receiver level,

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

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

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

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



1. GSM Model Test Verdict:

Band	Channel	Frequency (MHz)	PCL	Measured ERP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.20	5	33.51	2.244	Plot A	38.5	7	PASS
	190	836.60	5	33.91	2.460				PASS
	251	848.80	5	34.27	2.673				PASS
GPRS 850MHz	128	824.20	5	33.48	2.228	Plot B ^{Note 1}	38.5	7	PASS
	190	836.60	5	34.40	2.754				PASS
	251	848.80	5	34.19	2.624				PASS
EGPRS 850MHz	128	824.20	5	33.25	2.113	Plot C ^{Note 1}	38.5	7	PASS
	190	836.60	5	34.04	2.535				PASS
	251	848.80	5	34.35	2.723				PASS

Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	30.95	1.245	Plot D	33	2	PASS
	661	1880.0	0	30.00	1.000				PASS
	810	1909.8	0	29.15	0.822				PASS
GPRS 1900MHz	512	1850.2	0	29.70	0.933	Plot E ^{Note 1}	33	2	PASS
	661	1880.0	0	29.11	0.815				PASS
	810	1909.8	0	29.40	0.871				PASS
EGPRS 1900MHz	512	1850.2	0	29.94	0.986	Plot F ^{Note 1}	33	2	PASS
	661	1880.0	0	29.21	0.834				PASS
	810	1909.8	0	29.38	0.867				PASS

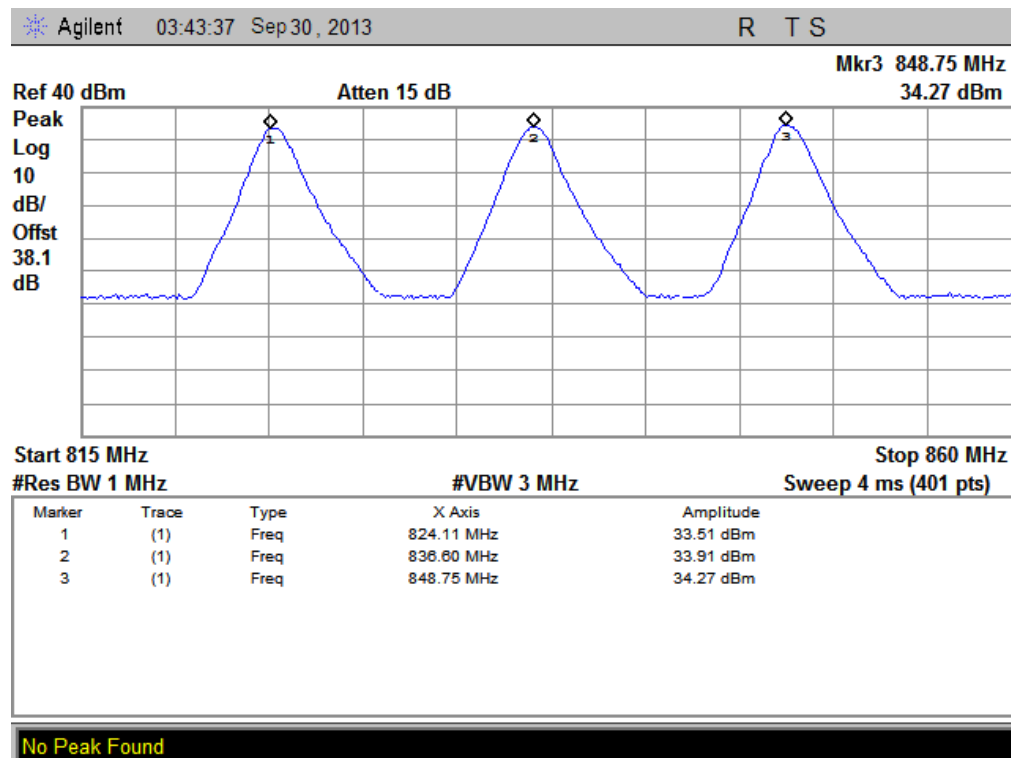
Note 1: For the GPRS and EGPRS model, all the slots were tested and just the worst data was record in this report.

2. WCDMA Model Test Verdict:

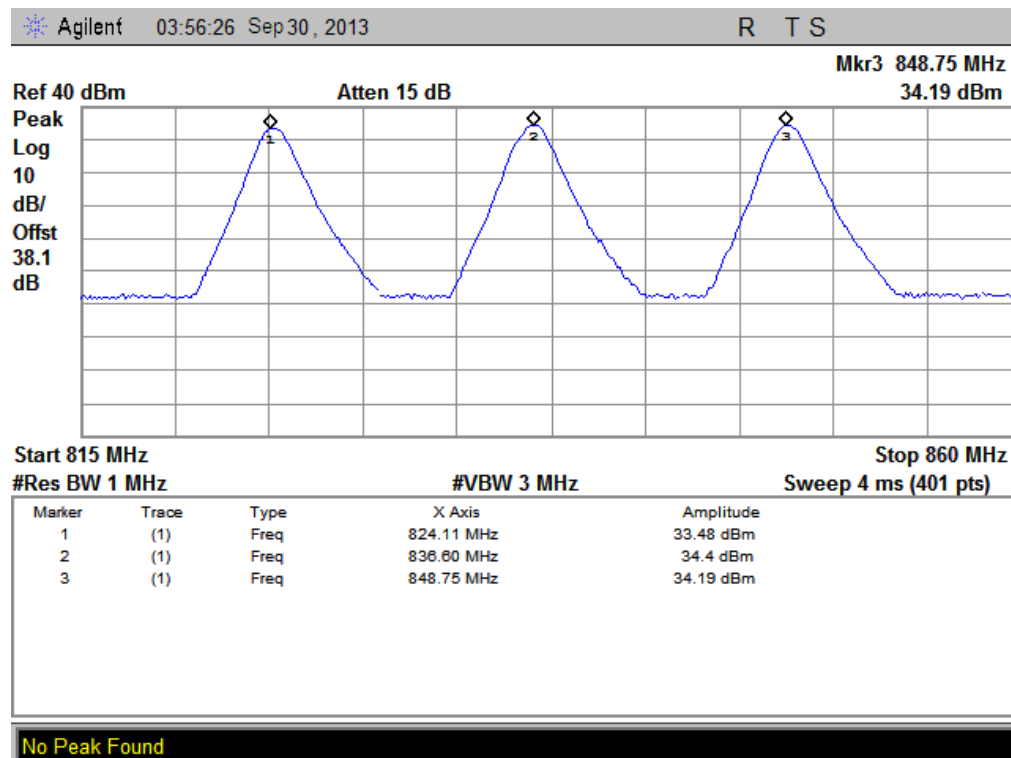
Band	Channel	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
WCDMA 850MHz	4132	826.4	27.43	0.553	Plot G	38.5	7	PASS
	4175	835	27.49	0.561				PASS
	4233	846.6	27.22	0.527				PASS
HSDPA 850MHz	4132	826.4	27.38	0.547	Plot H	38.5	7	PASS
	4175	835	27.45	0.556				PASS
	4233	846.6	27.00	0.501				PASS
HSUPA 850MHz	4132	826.4	27.58	0.573	Plot I	38.5	7	PASS
	4175	835	27.40	0.550				PASS
	4233	846.6	27.21	0.526				PASS
HSPA+ 850MHz	4132	826.4	27.49	0.561	Plot J	38.5	7	PASS
	4175	835	27.39	0.548				PASS
	4233	846.6	27.11	0.514				PASS

Band	Channel	Frequency (MHz)	Measured EIRP			Limit		Verdict
			dBm	W		dBm	W	
WCDMA 1900MHz	9262	1852.4	25.39	0.346	Plot K	33	2	PASS
	9400	1880	25.86	0.385				PASS
	9538	1907.6	26.15	0.412				PASS
HSDPA 1900MHz	9262	1852.4	25.26	0.336	Plot L	33	2	PASS
	9400	1880	25.89	0.388				PASS
	9538	1907.6	26.00	0.398				PASS
HSUPA 1900MHz	9262	1852.4	25.22	0.333	Plot M	33	2	PASS
	9400	1880	25.53	0.357				PASS
	9538	1907.6	26.02	0.400				PASS
HSPA+ 1900MHz	9262	1852.4	25.37	0.344	Plot N	33	2	PASS
	9400	1880	25.77	0.378				PASS
	9538	1907.6	26.03	0.401				PASS

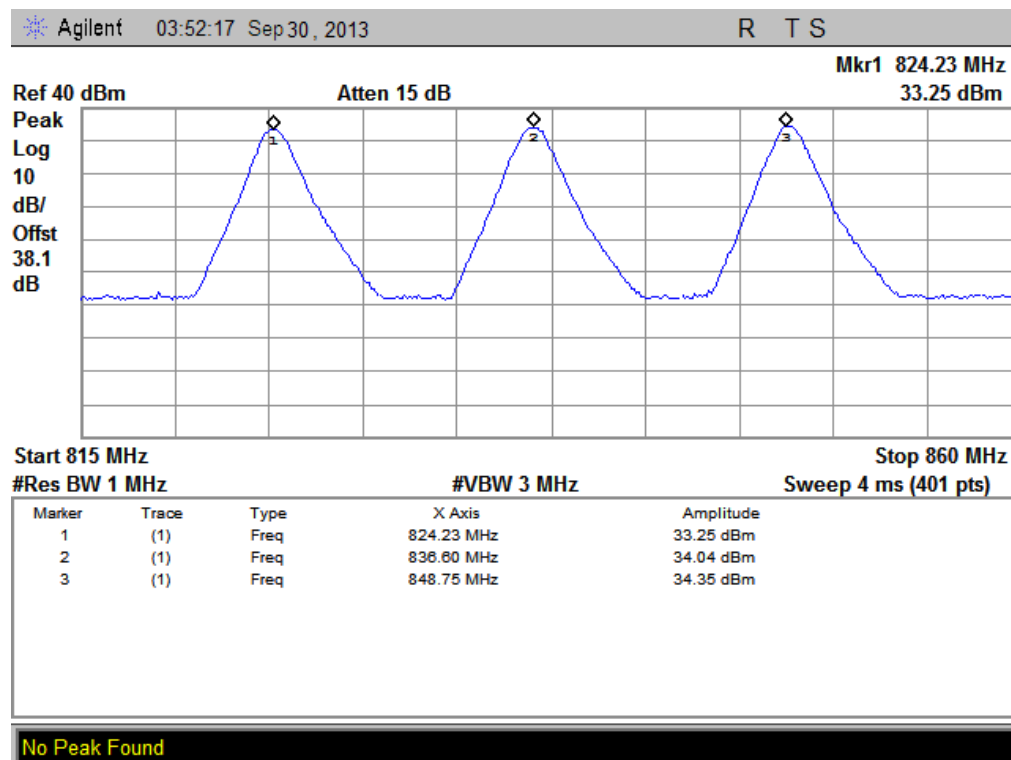
3. Test Plots:



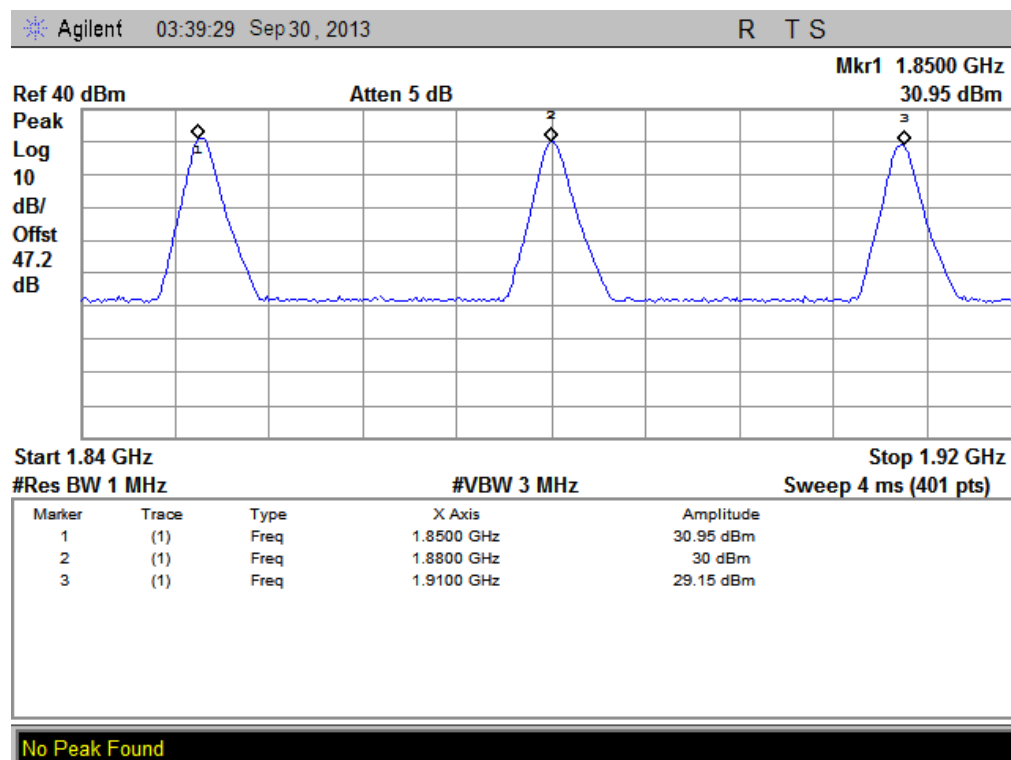
(Plot A: GSM 850MHz Channel = 128, 190, 251)



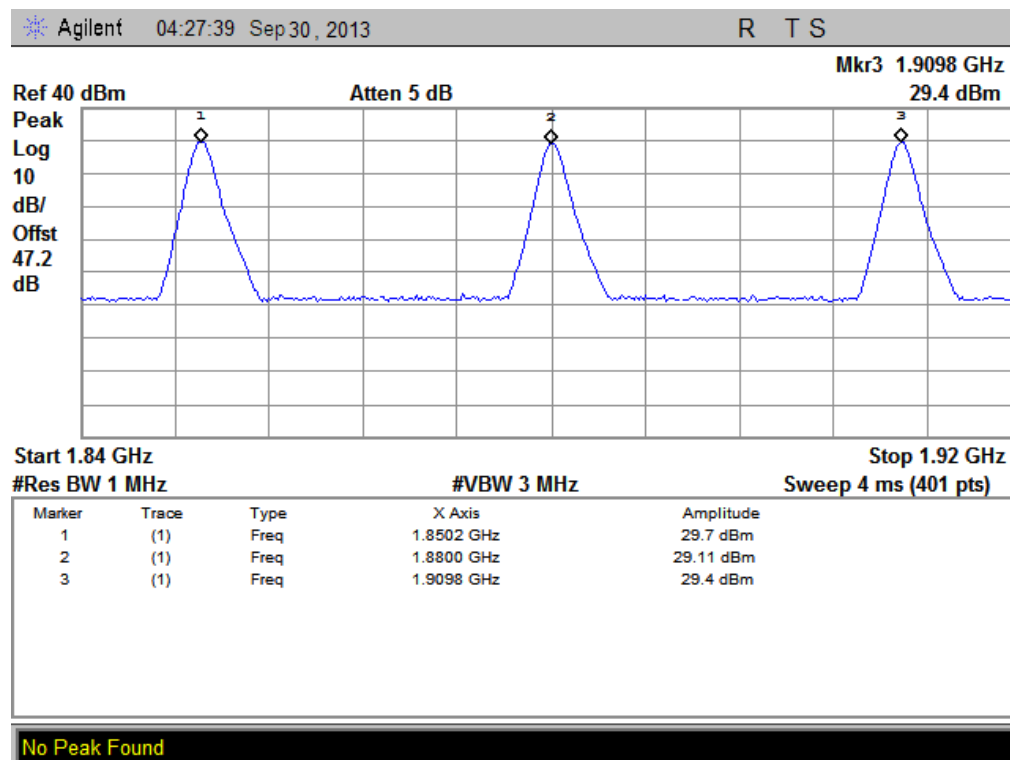
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



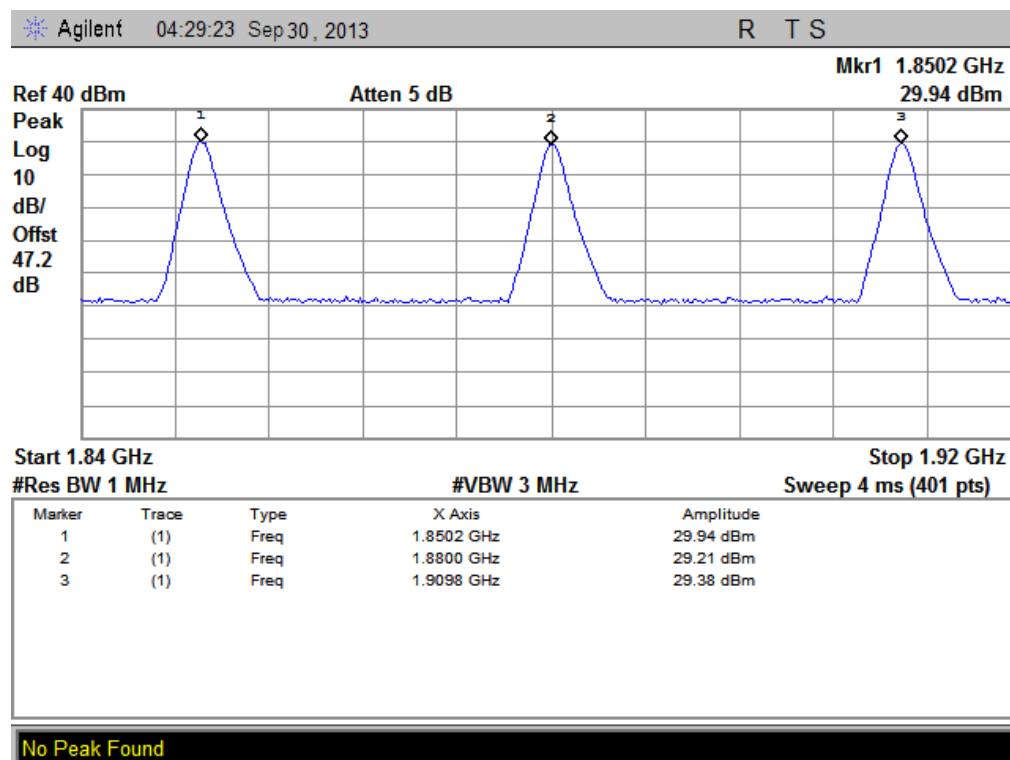
(Plot C: EGPRS 850MHz Channel = 128, 190, 251)



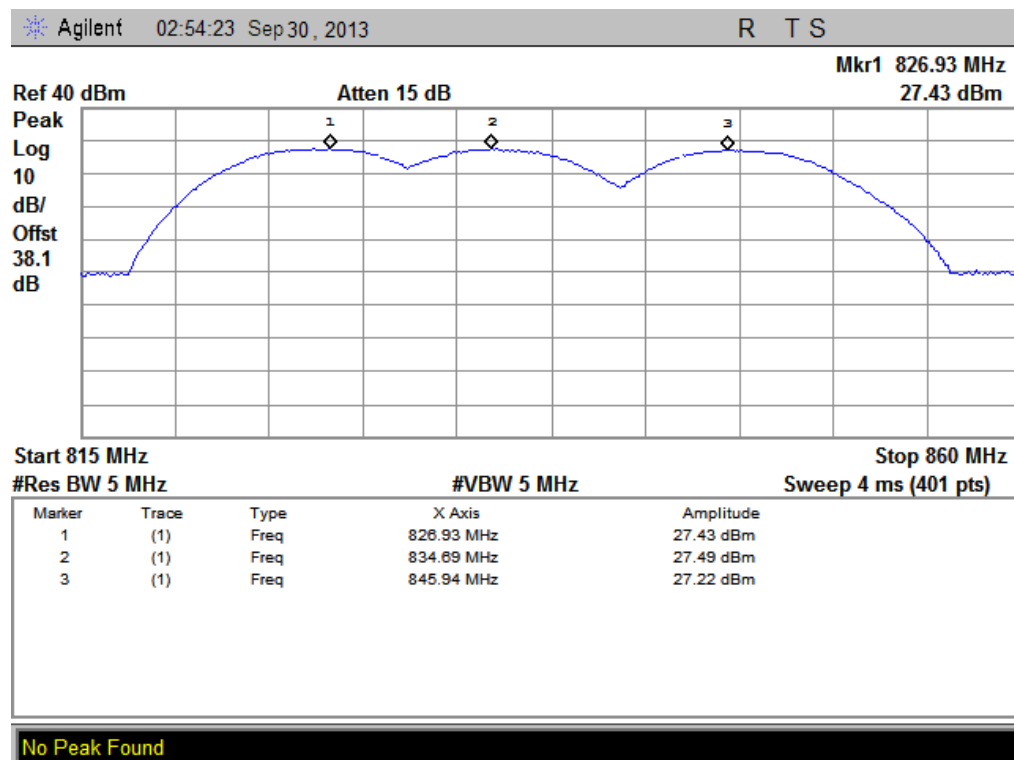
(Plot D: GSM1900MHz Channel = 512, 661, 810)



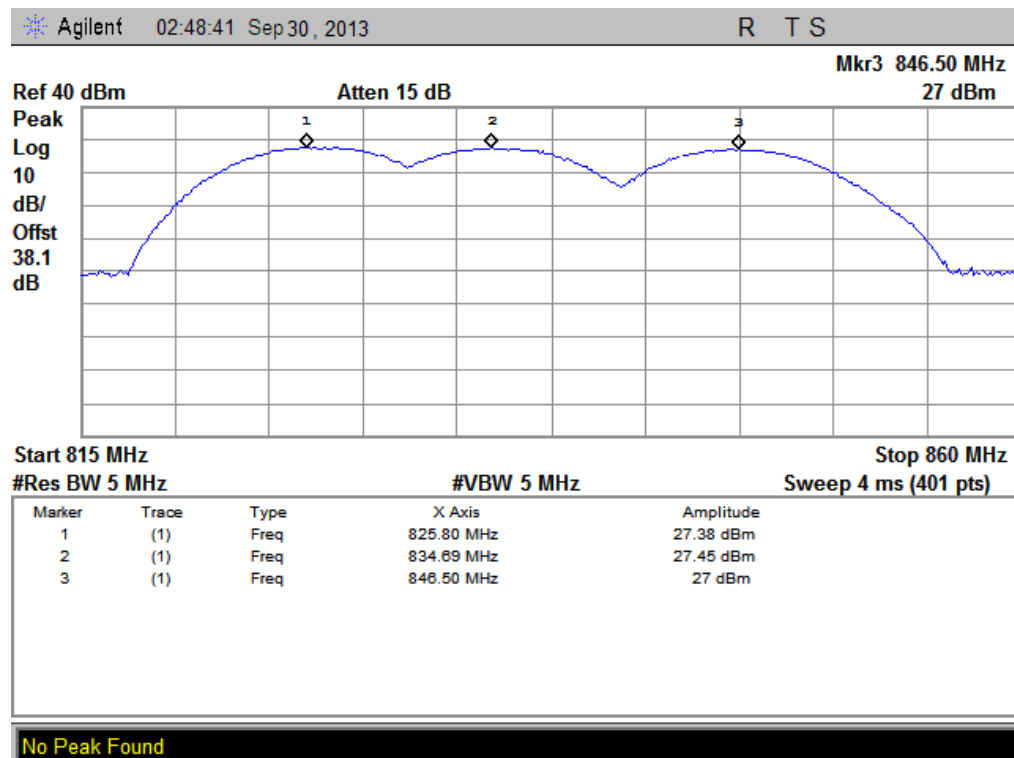
(Plot E: GPRS 1900MHz Channel = 512, 661, 810)



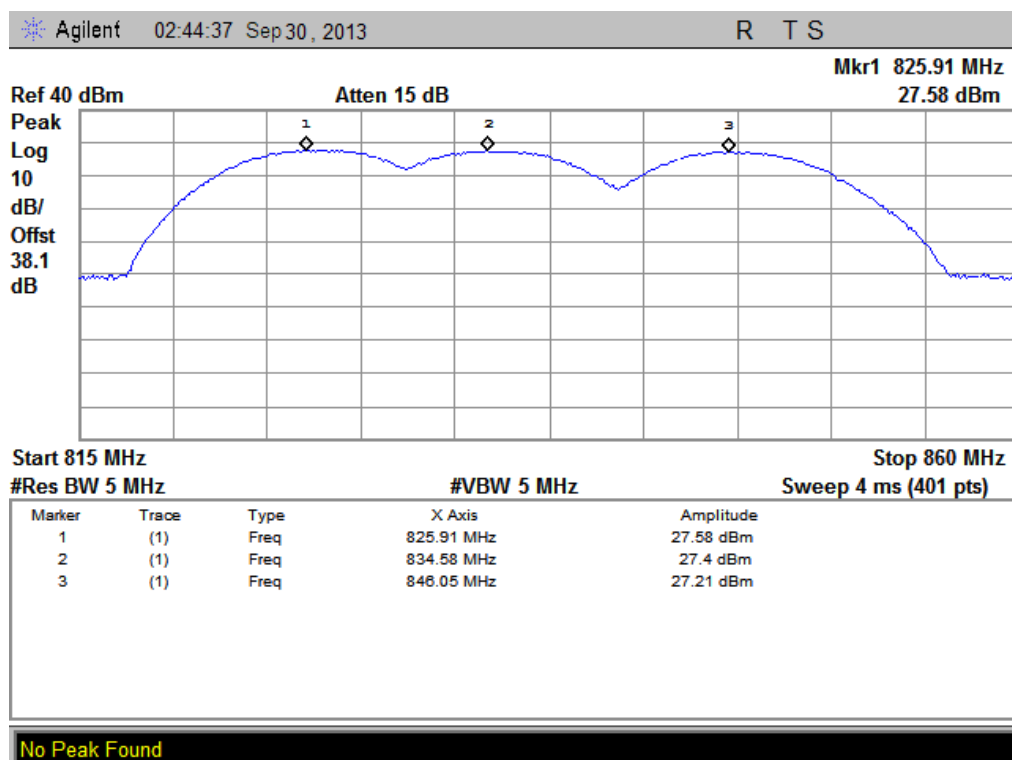
(Plot F: EGPRS 1900MHz Channel = 512, 661, 810)



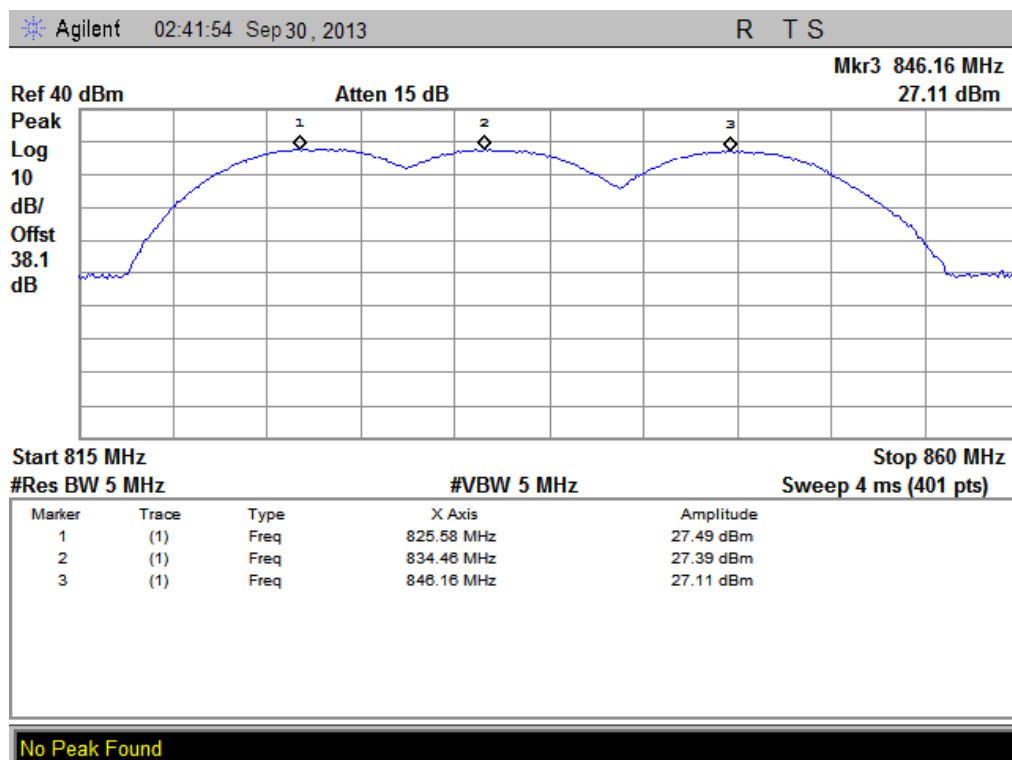
(Plot G: WCDMA 850 MHz Channel = 4132, 4175, 4233)



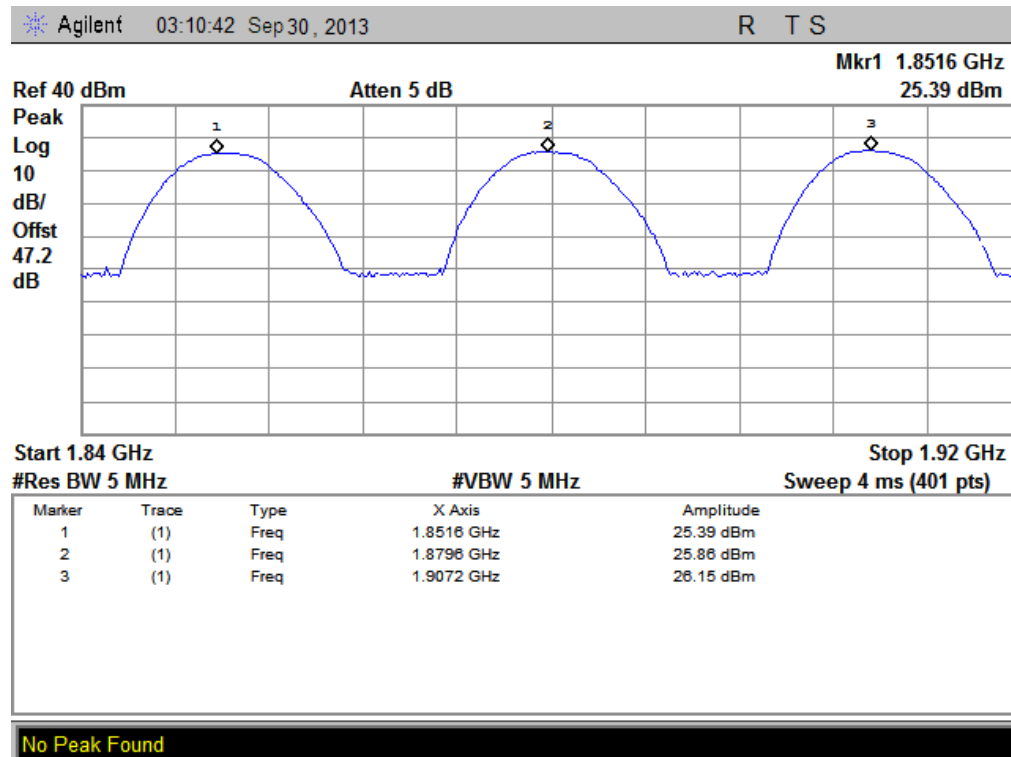
(Plot H: HSDPA 850 MHz Channel = 4132, 4175, 4233)



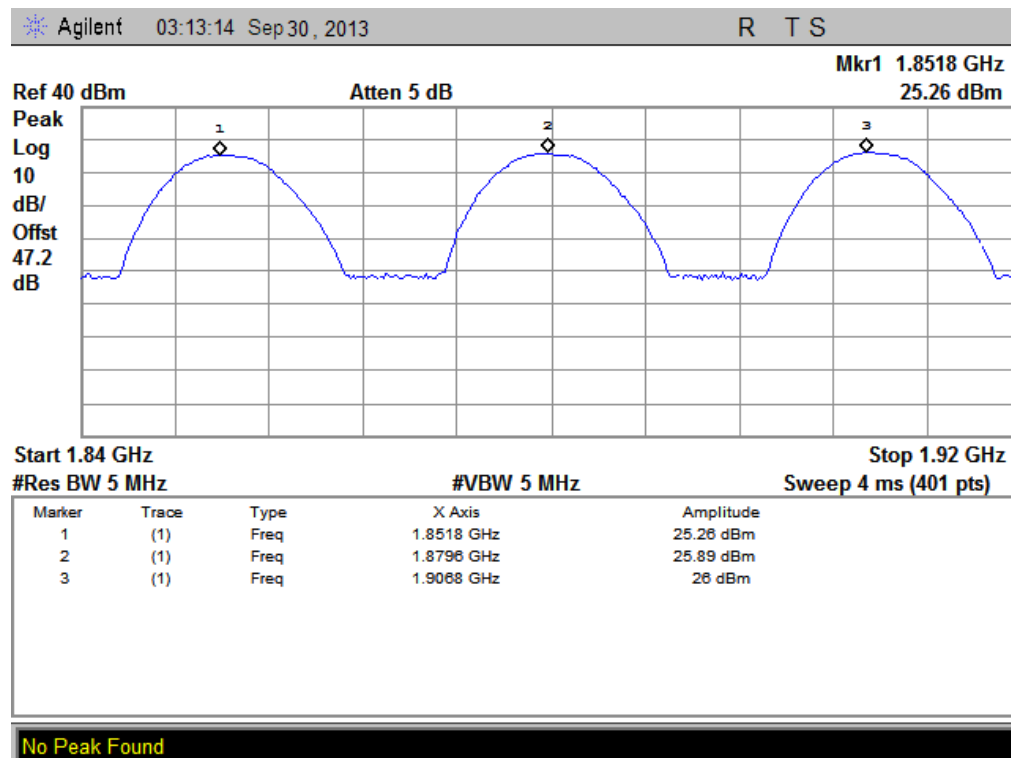
(Plot I: HSUPA 850 MHz Channel = 4132, 4175, 4233)



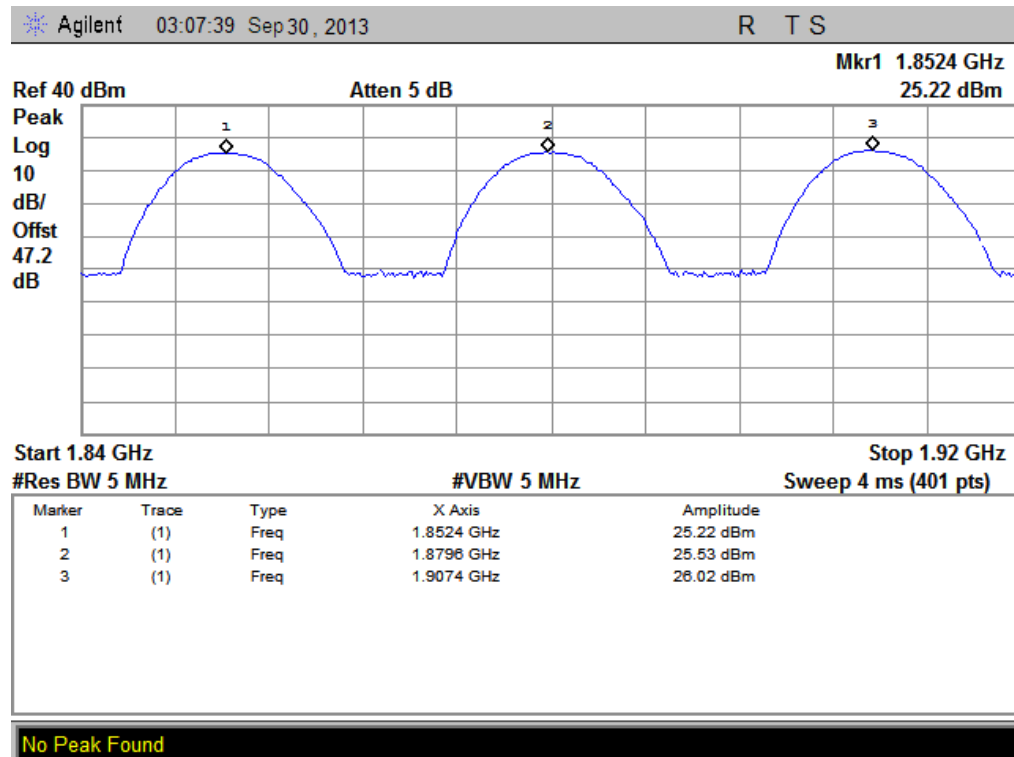
(Plot J: HSPA+ 850 MHz Channel = 4132, 4175, 4233)



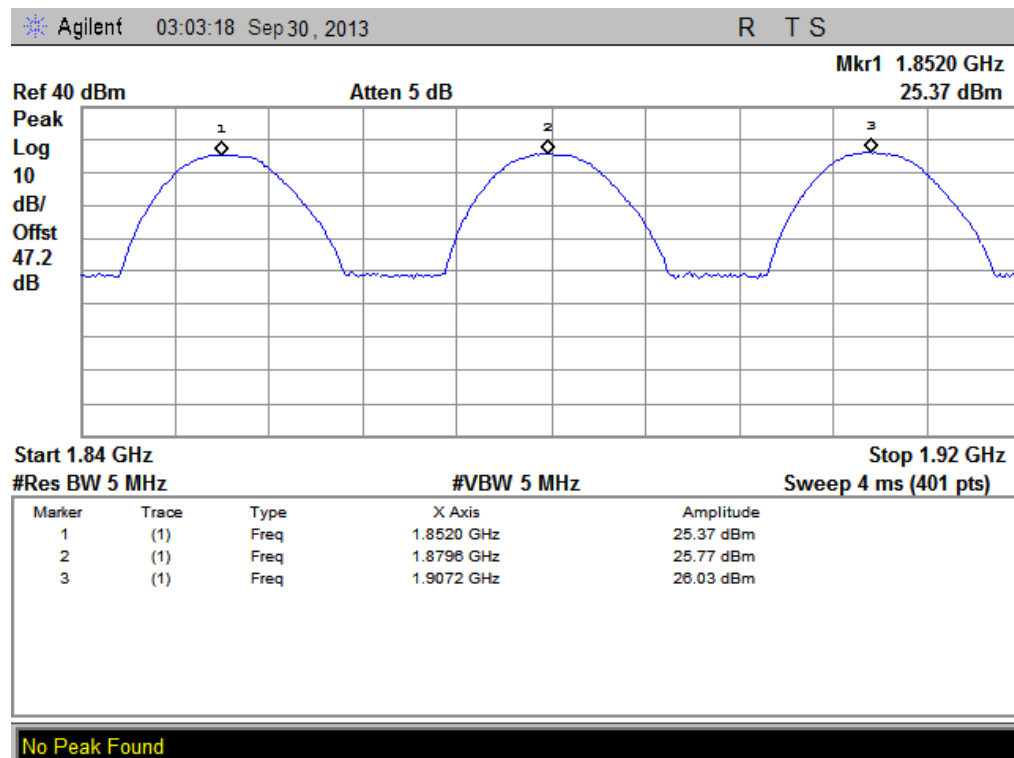
(Plot K: WCDMA 1900 MHz Channel = 9262, 9400, 9538)



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



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



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

2.8 Radiated Out of Band Emissions

2.8.1 Requirement

According to FCC section 22.917(a) and section 24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43+10\log(P)$ dB. This calculated to be -13dBm.

2.8.2 Test Description

See section 2.7.2 of this report.

Equipment List:

Description	Manufacturer	Model	Serial No.	Cal. Date
System Simulator	Agilent	E5515C	GB43130131	2013.06.10
Spectrum Analyzer	Agilent	E7405A	US44210471	2013.06.10
Full-Anechoic Chamber	Albatross	12.8m*6.8m*6.4m	(n.a.)	2013.06.10
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2013.06.10
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2013.06.10
Substitution Antenna	Schwarzbeck	BBHA 9120C	9120C-384	2013.06.10
Pre-AMPs	lucix	S10M100L3802	S020180L3203	2013.06.10
Notch Filter	COM-MW	ZBSF-C836.5-25-X	NA	2013.06.10
Notch Filter	COM-MW	ZBSF-C1747.5-75-X2	NA	2013.06.10
Notch Filter	COM-MW	ZBSF-C1880-60-X2	NA	2013.06.10

The Cal. Interval was one year.

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

2.8.3 Test Result

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



1. Test Verdict:

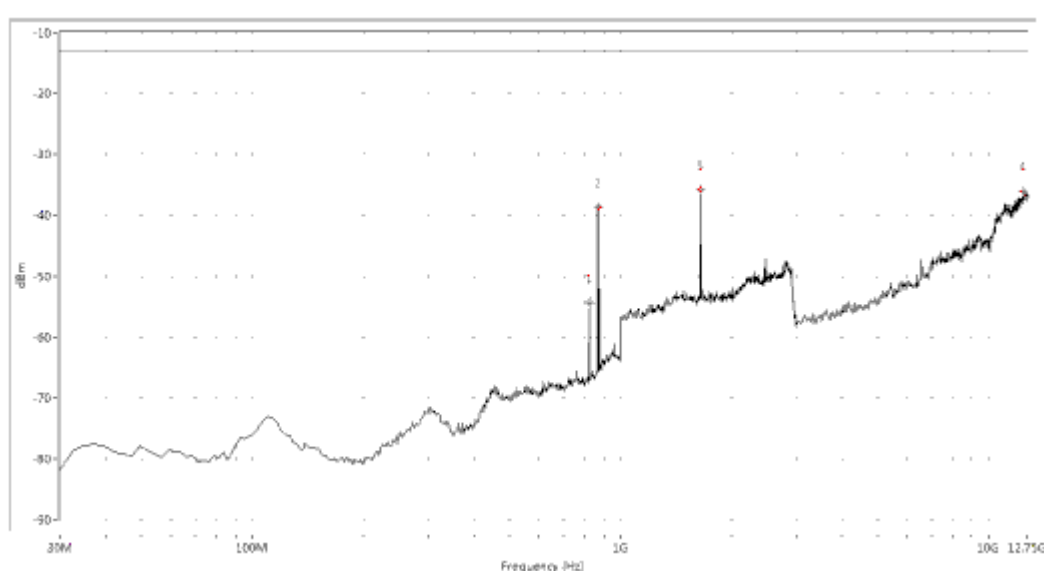
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GSM 850MHz	128	824.2	< -25	< -25	Plot A.1/A.2	-13	PASS
	190	836.6	< -25	< -25	Plot A.3/A.4		PASS
	251	848.8	< -25	< -25	Plot A.5/A.6		PASS
GSM 1900MHz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

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
HSPA+ 1900MHz	9662	1852.4	< -25	< -25	Plot L.1/L.2	-13	PASS
	9800	1880	< -25	< -25	Plot L.3/L.4		PASS
	9938	1907.6	< -25	< -25	Plot L.5/L.6		PASS

2. Test Plots for the Whole Measurement Frequency Range:

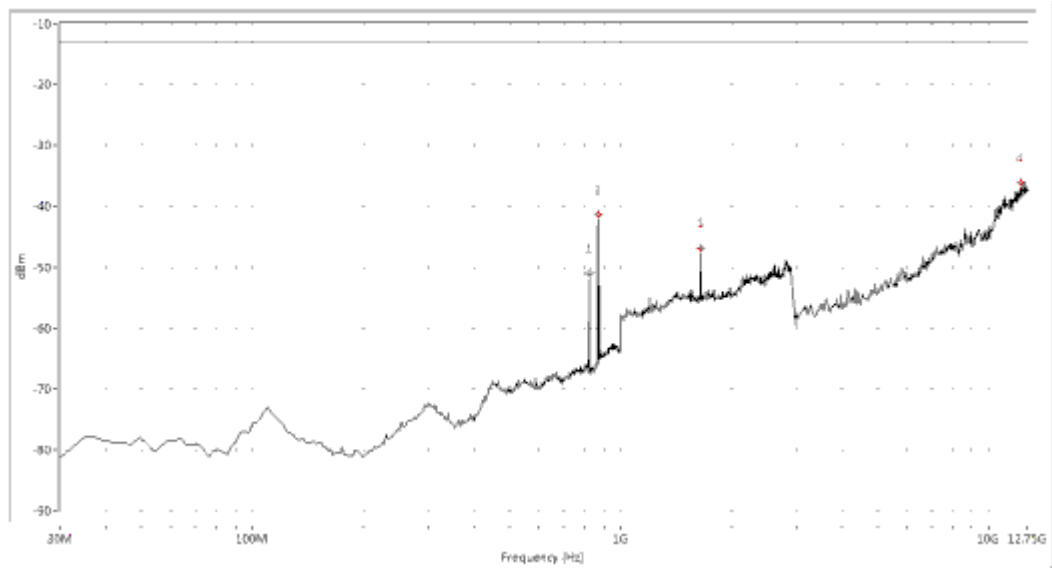
Note1: the power of the EUT transmitting frequency should be ignored.

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



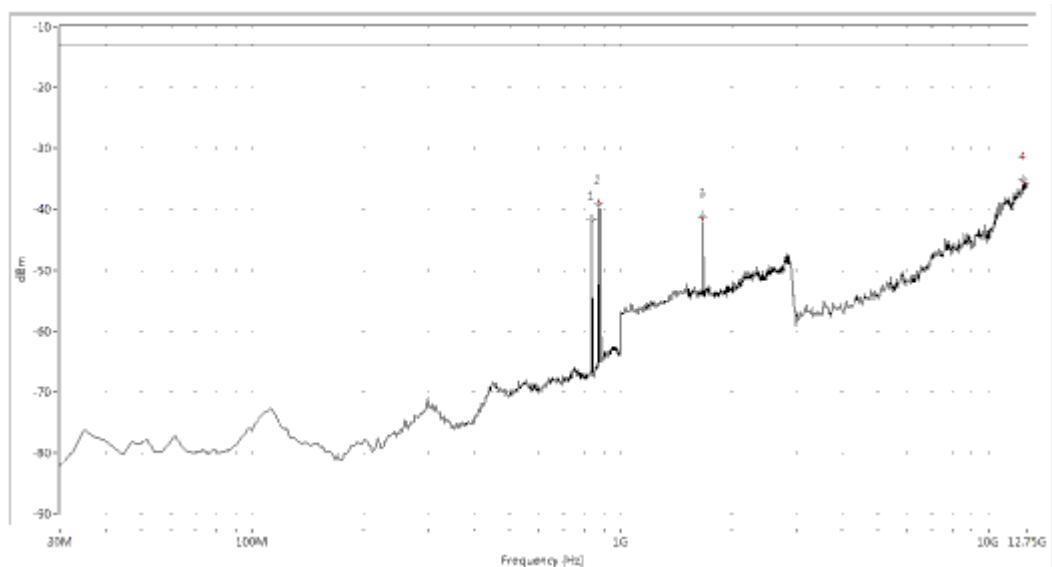
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
823.416	-54.43	-13.0	41.4	42.8	Horizontal	PASS
871.796	-38.68	-13.0	25.7	144.4	Horizontal	PASS
1648.379	-35.88	-13.0	22.9	28.0	Horizontal	PASS
12433.915	-35.99	-13.0	23.0	236.3	Horizontal	PASS

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



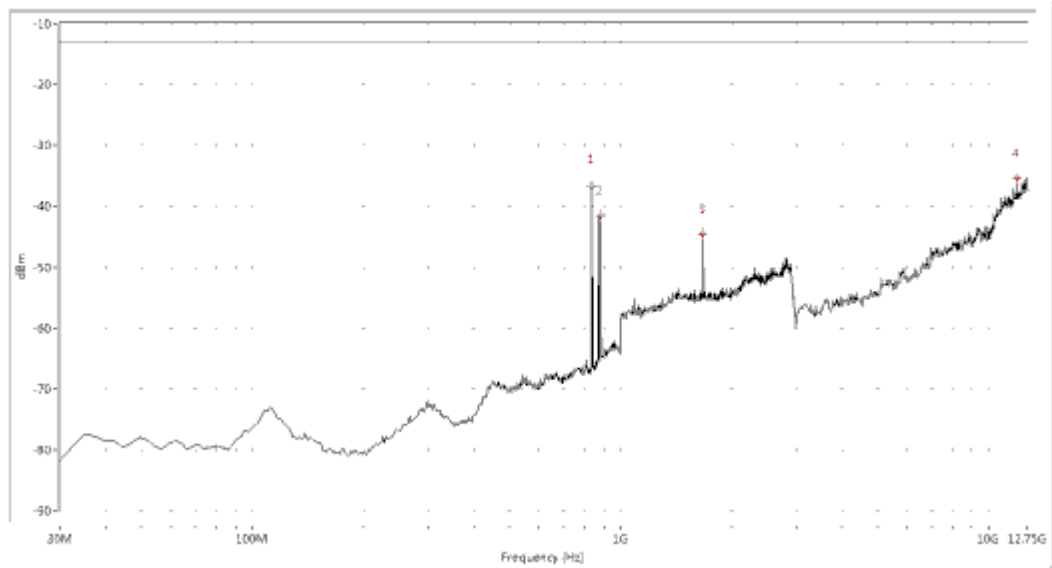
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
823.416	-51.04	-13.0	38.0	312.0	Vertical	PASS
871.796	-41.37	-13.0	28.4	142.0	Vertical	PASS
1648.379	-46.86	-13.0	33.9	306.4	Vertical	PASS
12239.401	-36.16	-13.0	23.2	85.2	Vertical	PASS

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



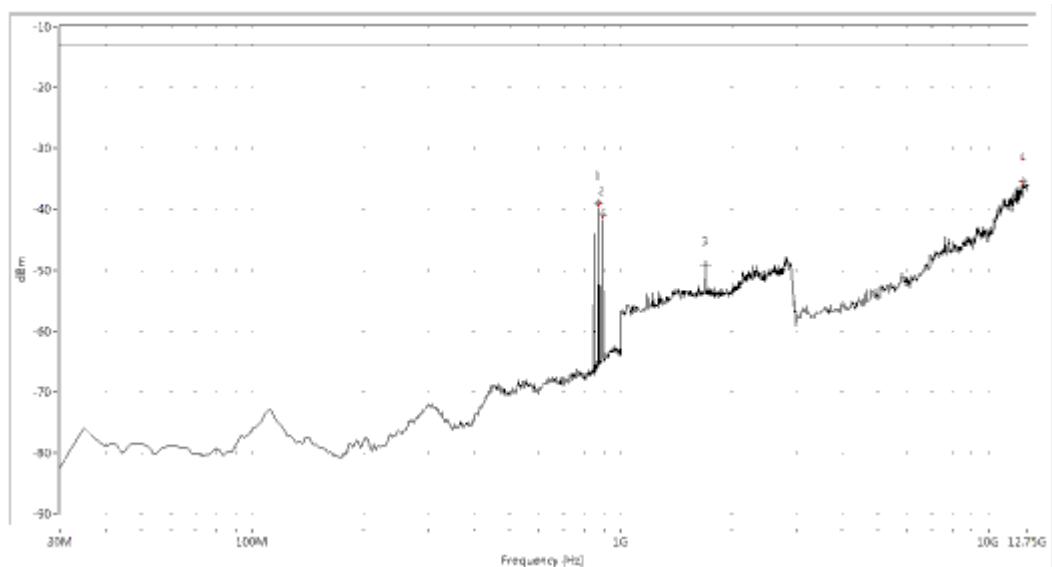
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-41.76	-13.0	28.8	12.0	Horizontal	PASS
871.796	-39.21	-13.0	26.2	145.6	Horizontal	PASS
1673.317	-41.20	-13.0	28.2	234.5	Horizontal	PASS
12458.229	-35.17	-13.0	22.2	294.1	Horizontal	PASS

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



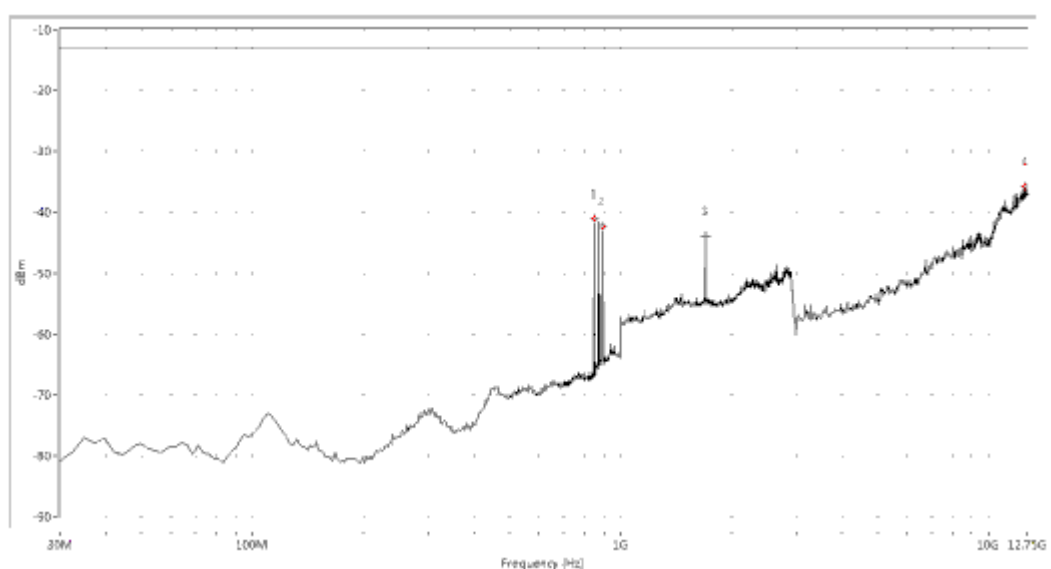
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-36.75	-13.0	23.7	231.3	Vertical	PASS
879.052	-41.55	-13.0	28.6	136.8	Vertical	PASS
1673.317	-44.55	-13.0	31.6	290.0	Vertical	PASS
11923.317	-35.37	-13.0	22.4	349.2	Vertical	PASS

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



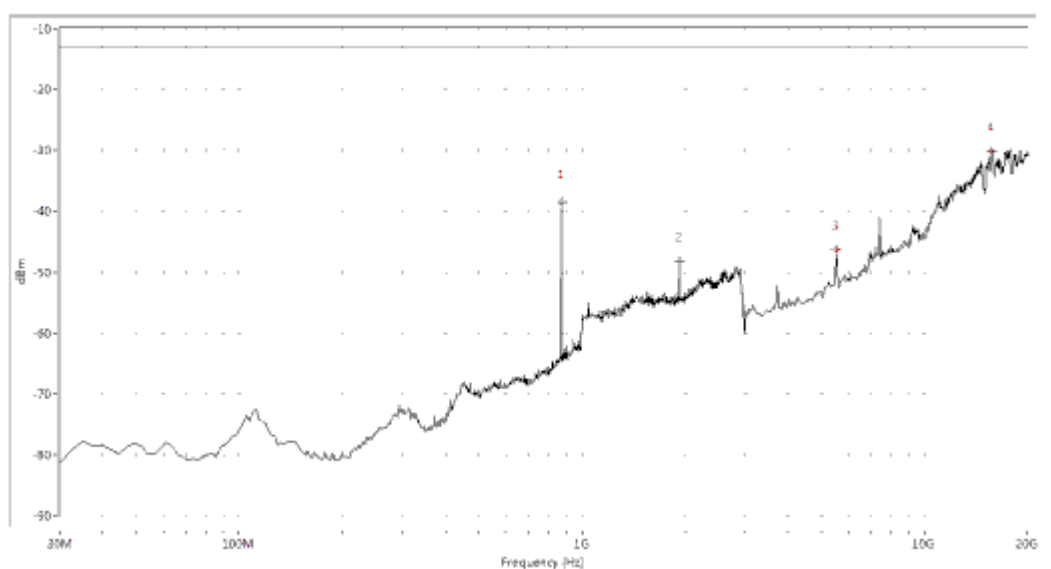
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-39.02	-13.0	26.0	142.9	Horizontal	PASS
891.147	-40.95	-13.0	28.0	159.6	Horizontal	PASS
1698.254	-49.05	-13.0	36.1	186.5	Horizontal	PASS
12409.601	-35.28	-13.0	22.3	40.6	Horizontal	PASS

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



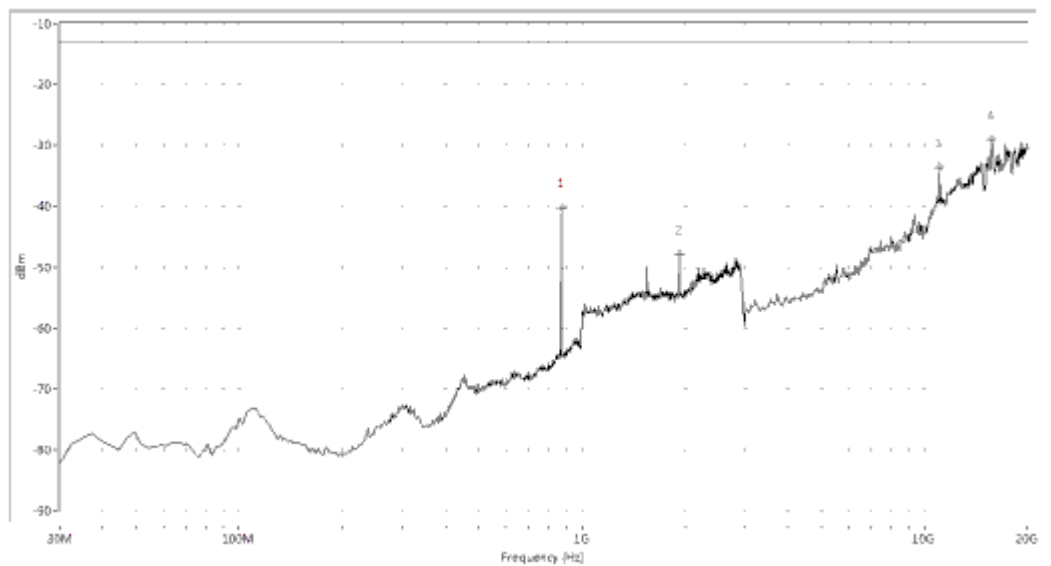
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-41.09	-13.0	28.1	224.4	Vertical	PASS
891.147	-42.35	-13.0	29.3	136.4	Vertical	PASS
1698.254	-43.96	-13.0	31.0	306.3	Vertical	PASS
12628.429	-35.90	-13.0	22.9	191.7	Vertical	PASS

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



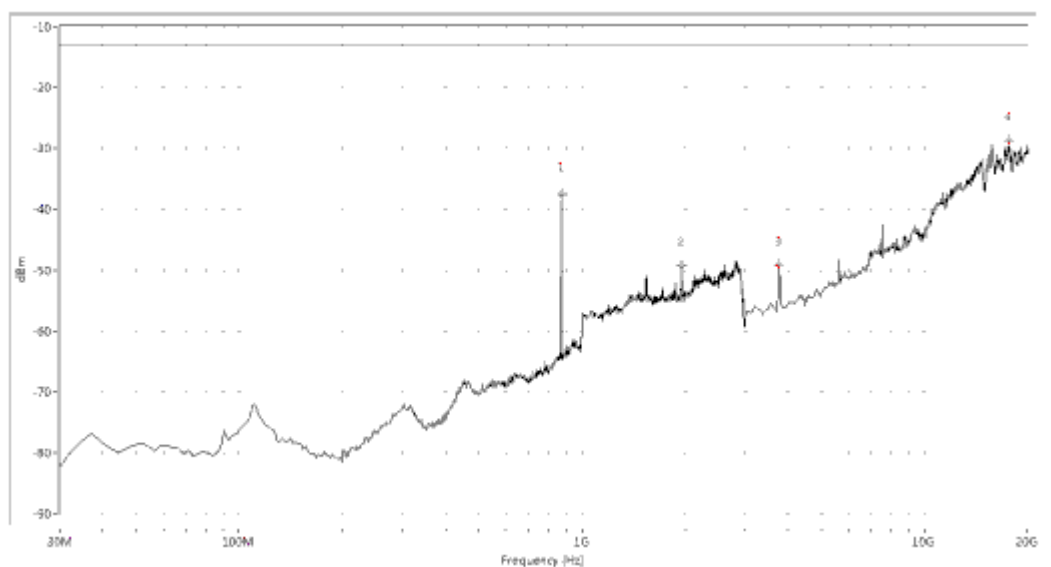
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-38.44	-13.0	25.4	306.3	Horizontal	PASS
1927.681	-48.23	-13.0	35.2	335.7	Horizontal	PASS
5543.641	-46.31	-13.0	33.3	275.0	Horizontal	PASS
15718.204	-30.09	-13.0	17.1	118.0	Horizontal	PASS

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



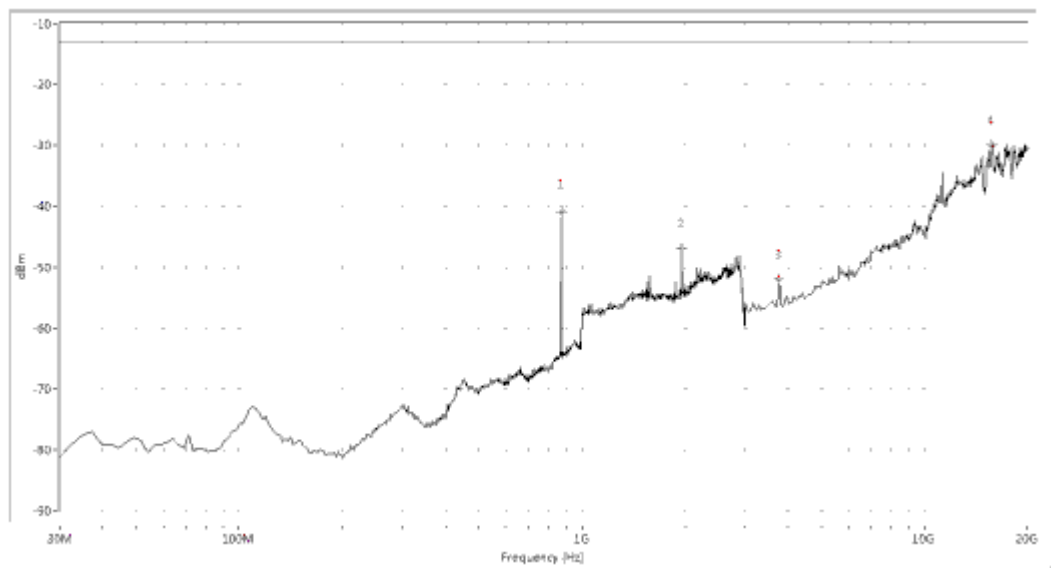
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-40.25	-13.0	27.3	147.2	Vertical	PASS
1927.681	-47.93	-13.0	34.9	236.4	Vertical	PASS
11097.257	-33.65	-13.0	20.7	69.3	Vertical	PASS
15760.599	-29.05	-13.0	16.0	244.6	Vertical	PASS

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



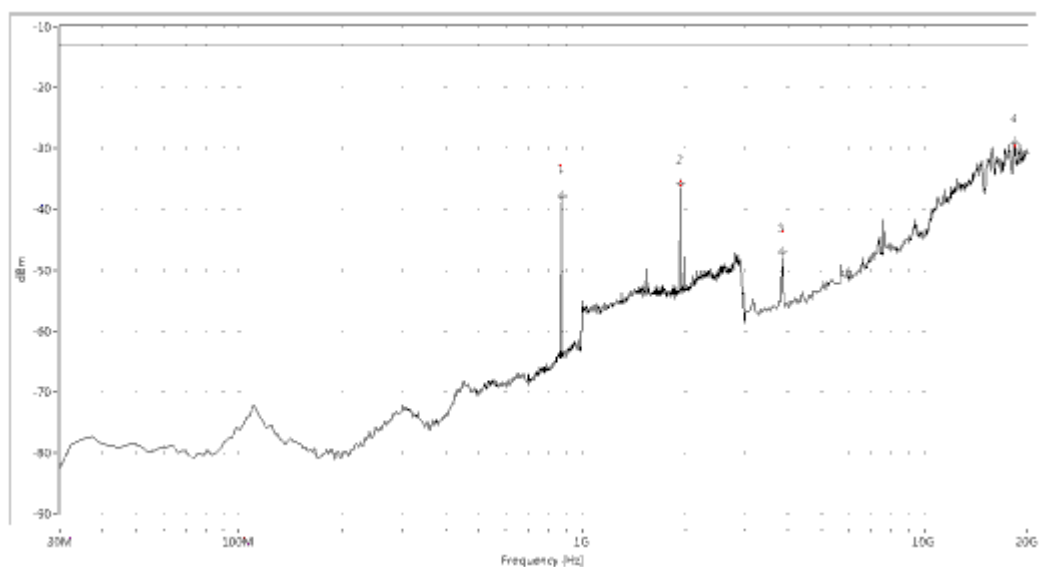
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-37.53	-13.0	24.5	148.2	Horizontal	PASS
1957.606	-49.32	-13.0	36.3	128.0	Horizontal	PASS
3763.092	-49.14	-13.0	36.1	67.3	Horizontal	PASS
17625.935	-28.68	-13.0	15.7	247.1	Horizontal	PASS

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



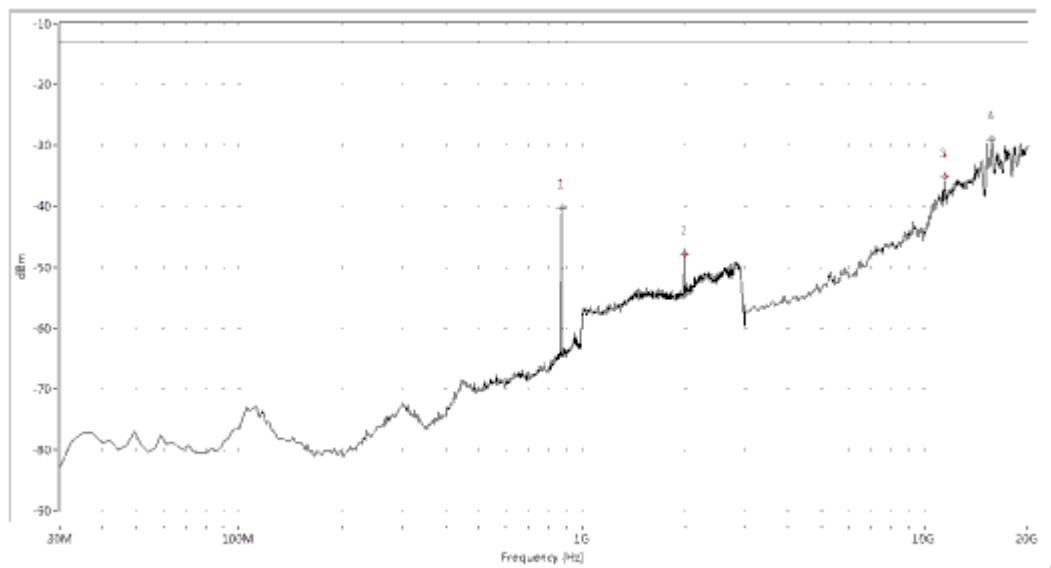
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-40.93	-13.0	27.9	137.1	Vertical	PASS
1957.606	-46.91	-13.0	33.9	70.4	Vertical	PASS
3763.092	-51.92	-13.0	38.9	191.2	Vertical	PASS
15760.599	-29.90	-13.0	16.9	159.9	Vertical	PASS

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



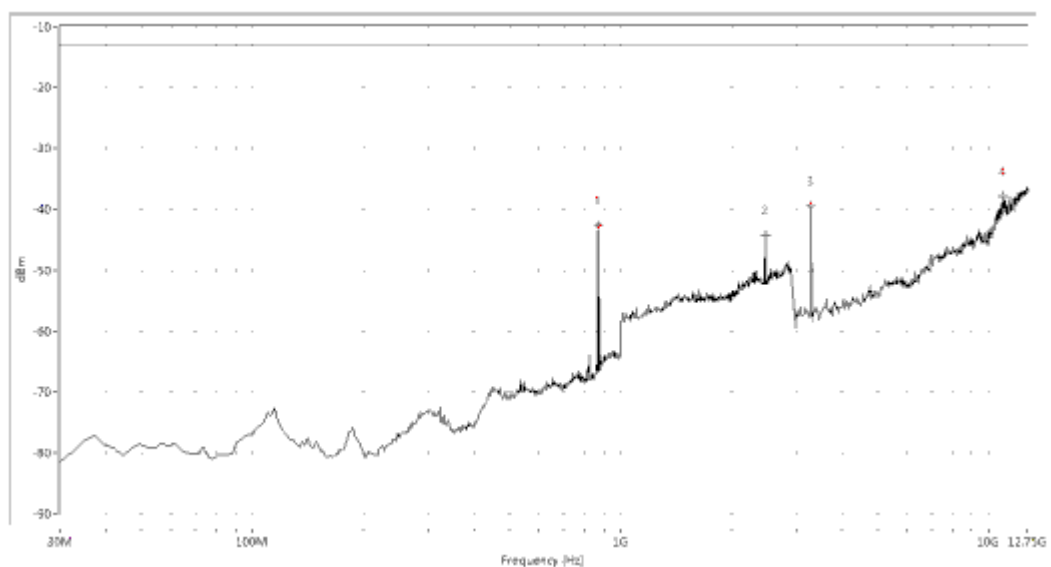
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-37.86	-13.0	24.9	140.7	Horizontal	PASS
1942.643	-35.76	-13.0	22.8	109.8	Horizontal	PASS
3847.880	-47.14	-13.0	34.1	54.4	Horizontal	PASS
18346.633	-29.08	-13.0	16.1	165.3	Horizontal	PASS

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



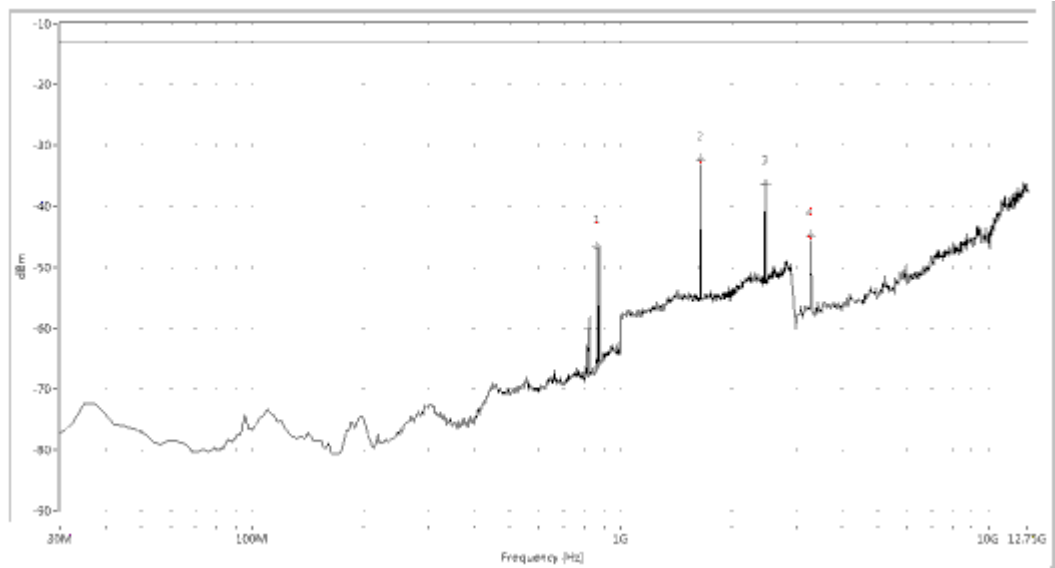
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-40.20	-13.0	27.2	141.2	Vertical	PASS
1987.531	-47.91	-13.0	34.9	339.8	Vertical	PASS
11436.409	-35.25	-13.0	22.3	54.1	Vertical	PASS
15760.599	-29.08	-13.0	16.1	63.9	Vertical	PASS

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



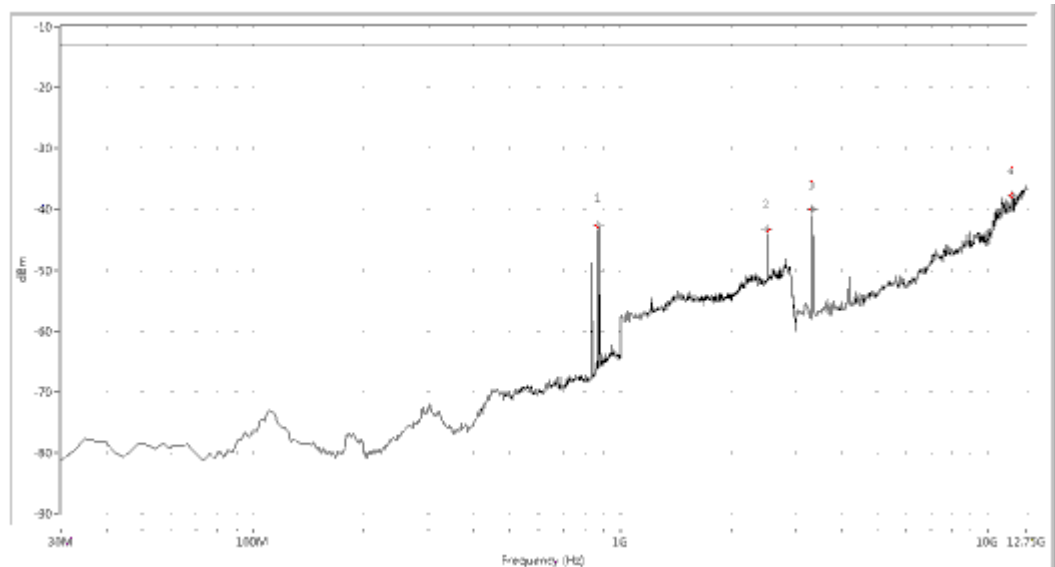
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-42.61	-13.0	29.6	26.1	Horizontal	PASS
2471.322	-44.24	-13.0	31.2	173.1	Horizontal	PASS
3291.771	-39.43	-13.0	26.4	66.0	Horizontal	PASS
10975.062	-37.90	-13.0	24.9	96.8	Horizontal	PASS

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



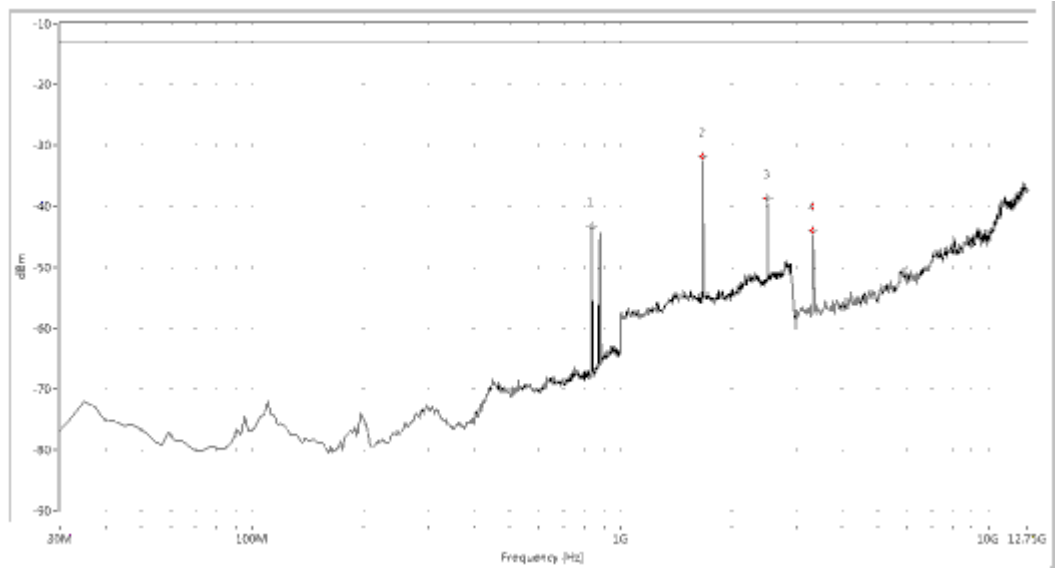
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
866.958	-46.83	-13.0	33.8	76.0	Vertical	PASS
1648.379	-32.40	-13.0	19.4	327.2	Vertical	PASS
2471.322	-36.34	-13.0	23.3	17.6	Vertical	PASS
3291.771	-44.84	-13.0	31.8	20.9	Vertical	PASS

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



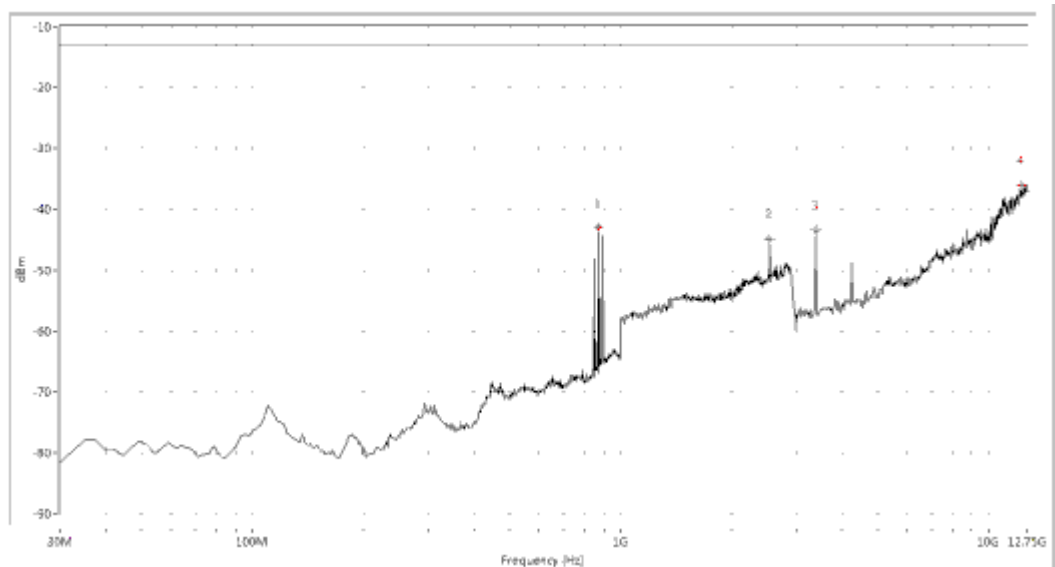
\Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-42.64	-13.0	29.6	28.0	Horizontal	PASS
2506.234	-43.34	-13.0	30.3	352.4	Horizontal	PASS
3340.399	-40.09	-13.0	27.1	38.8	Horizontal	PASS
11655.860	-37.76	-13.0	24.8	294.7	Horizontal	PASS

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



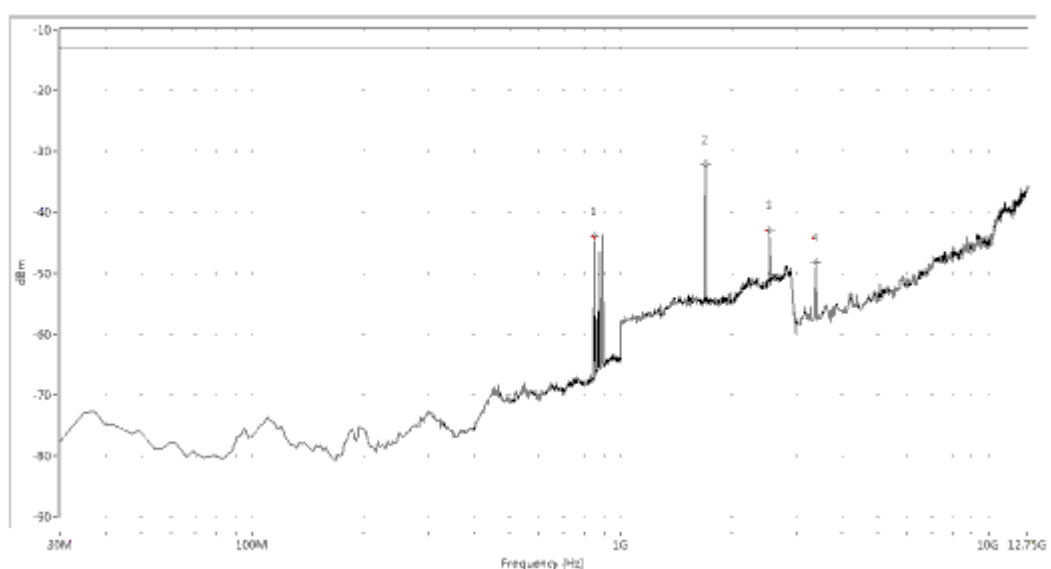
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-43.49	-13.0	30.5	345.5	Vertical	PASS
1673.317	-31.84	-13.0	18.8	317.3	Vertical	PASS
2506.234	-38.63	-13.0	25.6	64.8	Vertical	PASS
3340.399	-44.02	-13.0	31.0	1.4	Vertical	PASS

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



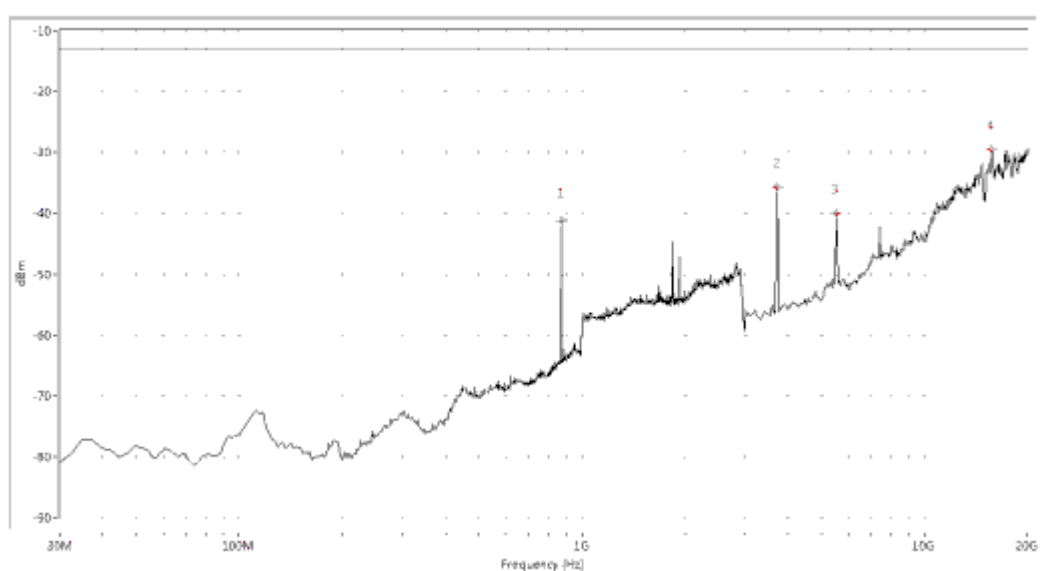
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-42.94	-13.0	29.9	26.1	Horizontal	PASS
2541.147	-44.78	-13.0	31.8	305.6	Horizontal	PASS
3389.027	-43.37	-13.0	30.4	49.2	Horizontal	PASS
12263.716	-35.95	-13.0	23.0	283.9	Horizontal	PASS

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



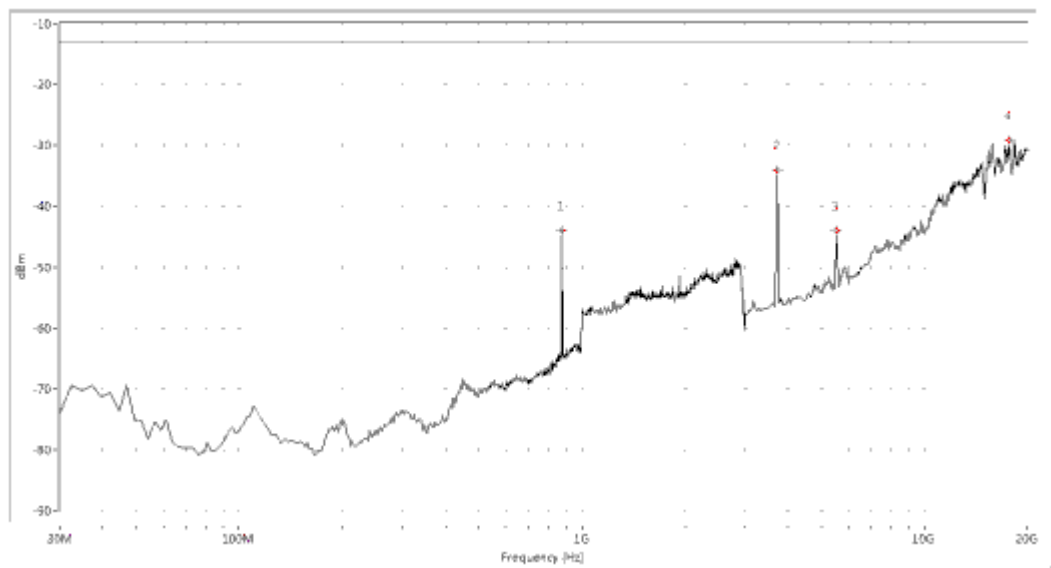
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-43.95	-13.0	30.9	241.6	Vertical	PASS
1698.254	-32.25	-13.0	19.2	319.2	Vertical	PASS
2541.147	-42.91	-13.0	29.9	83.0	Vertical	PASS
3389.027	-48.23	-13.0	35.2	30.1	Vertical	PASS

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



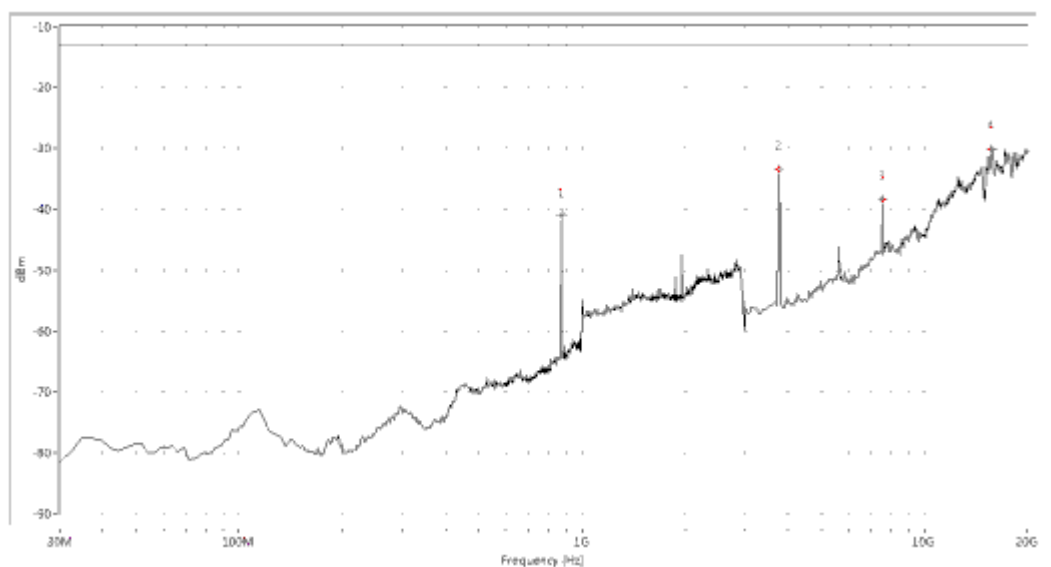
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-41.24	-13.0	28.2	25.0	Horizontal	PASS
3720.698	-35.65	-13.0	22.6	33.2	Horizontal	PASS
5543.641	-40.01	-13.0	27.0	360.0	Horizontal	PASS
15760.599	-29.46	-13.0	16.5	270.9	Horizontal	PASS

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



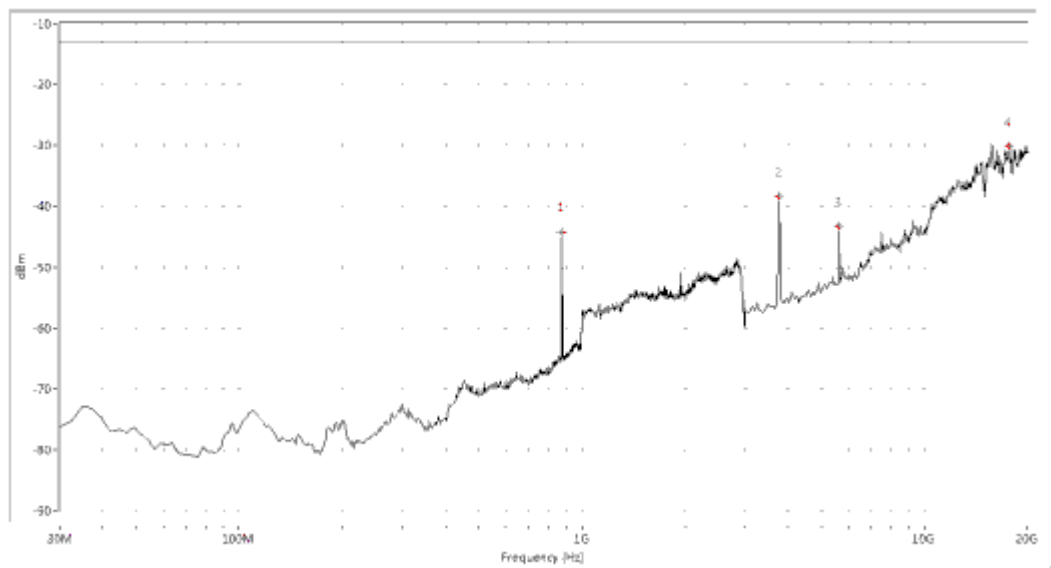
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
874.214	-43.84	-13.0	30.8	297.4	Vertical	PASS
3720.698	-34.12	-13.0	21.1	-0.0	Vertical	PASS
5543.641	-43.99	-13.0	31.0	13.5	Vertical	PASS
17625.935	-29.20	-13.0	16.2	0.3	Vertical	PASS

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



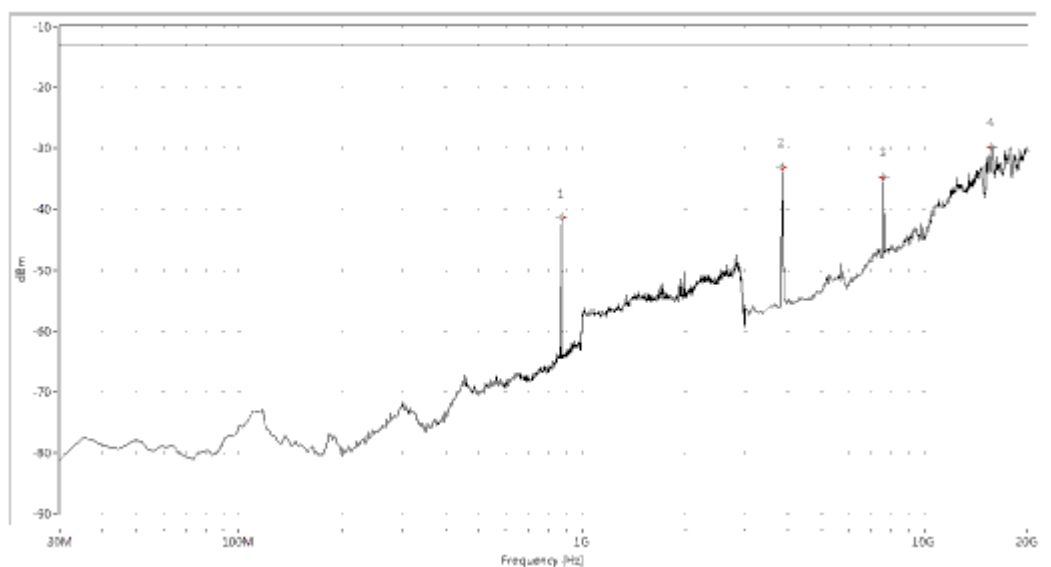
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-40.97	-13.0	28.0	20.6	Horizontal	PASS
3763.092	-33.49	-13.0	20.5	48.8	Horizontal	PASS
7536.160	-38.39	-13.0	25.4	360.0	Horizontal	PASS
15760.599	-30.19	-13.0	17.2	193.9	Horizontal	PASS

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



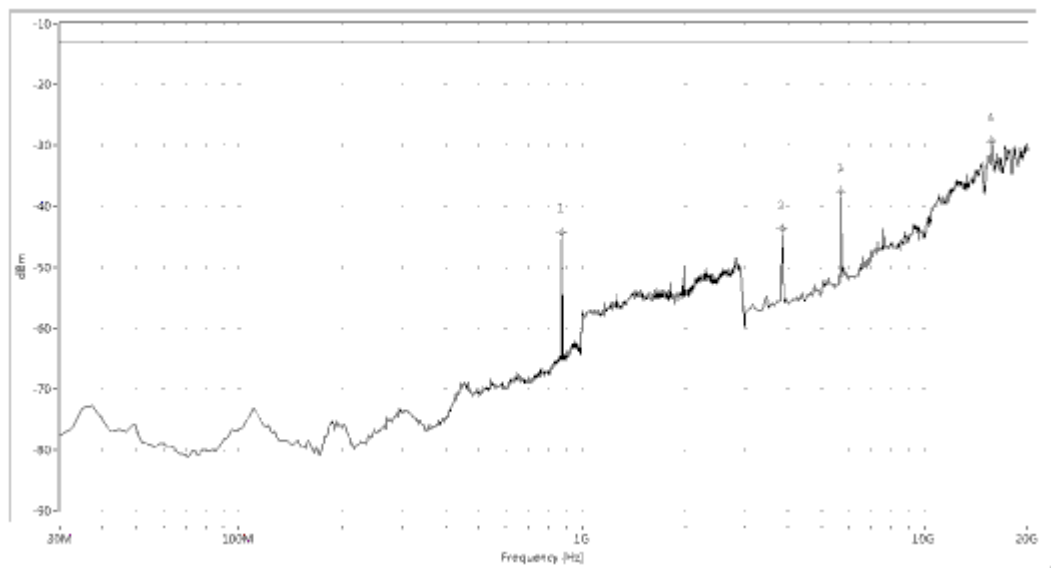
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
874.214	-44.16	-13.0	31.2	282.2	Vertical	PASS
3763.092	-38.37	-13.0	25.4	356.5	Vertical	PASS
5628.429	-43.27	-13.0	30.3	39.6	Vertical	PASS
17710.723	-30.18	-13.0	17.2	174.3	Vertical	PASS

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



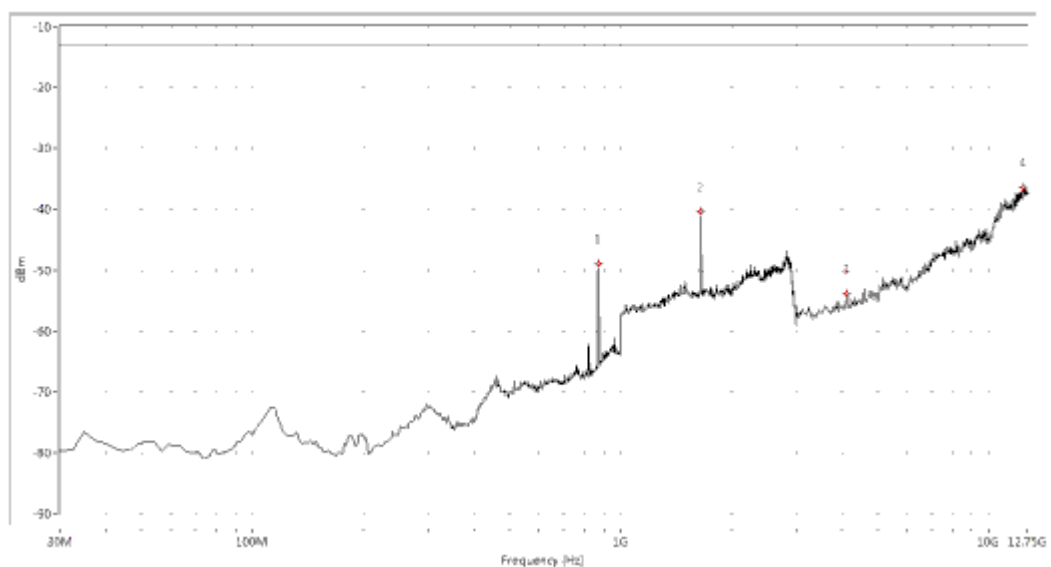
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-41.35	-13.0	28.4	25.4	Horizontal	PASS
3847.880	-33.11	-13.0	20.1	64.2	Horizontal	PASS
7620.948	-34.69	-13.0	21.7	22.5	Horizontal	PASS
15760.599	-29.80	-13.0	16.8	237.6	Horizontal	PASS

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



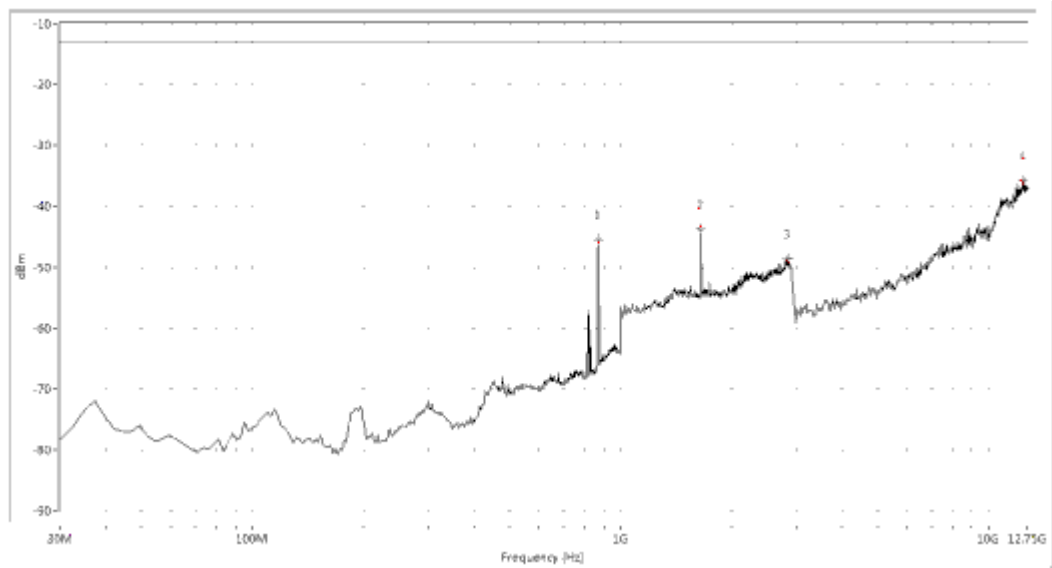
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
874.214	-44.37	-13.0	31.4	163.7	Vertical	PASS
3847.880	-43.72	-13.0	30.7	360.0	Vertical	PASS
5713.217	-37.61	-13.0	24.6	9.1	Vertical	PASS
15760.599	-29.25	-13.0	16.3	91.6	Vertical	PASS

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



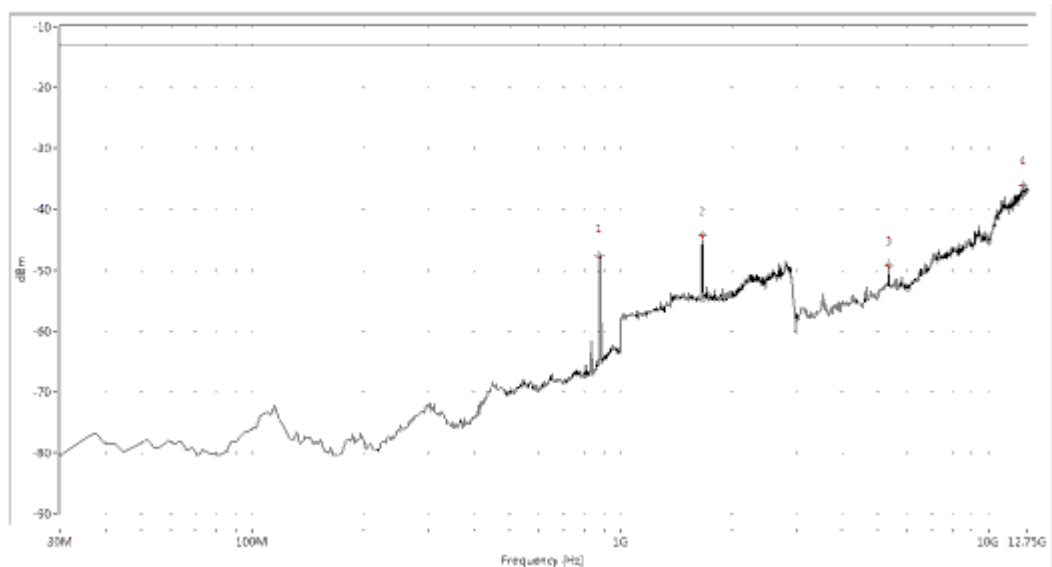
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
869.377	-48.94	-13.0	35.9	122.5	Horizontal	PASS
1653.367	-40.46	-13.0	27.5	357.6	Horizontal	PASS
4118.454	-53.81	-13.0	40.8	248.7	Horizontal	PASS
12458.229	-36.53	-13.0	23.5	149.4	Horizontal	PASS

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



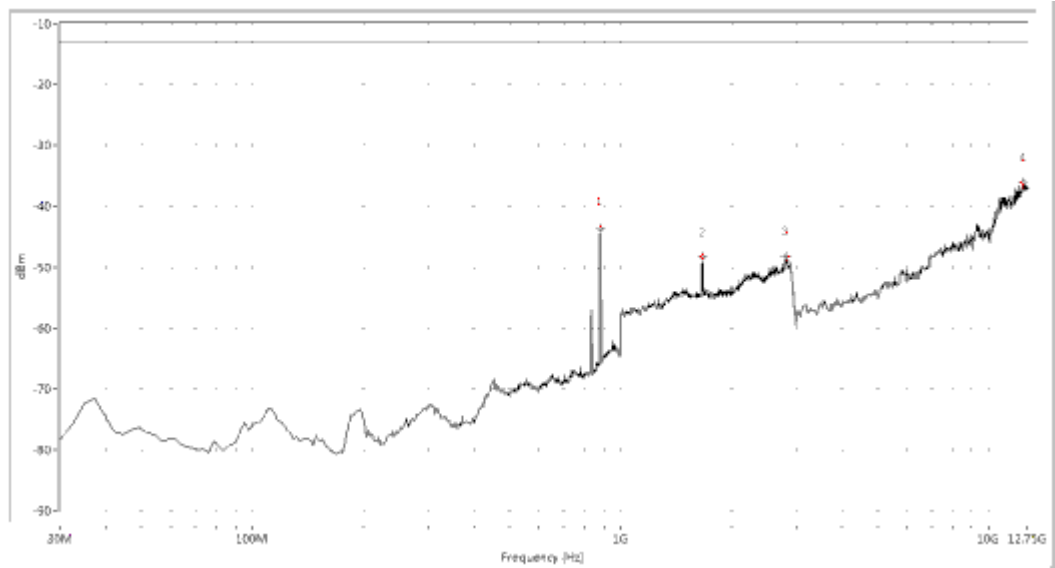
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
869.377	-45.42	-13.0	32.4	338.5	Vertical	PASS
1653.367	-43.75	-13.0	30.7	333.6	Vertical	PASS
2840.399	-48.43	-13.0	35.4	217.1	Vertical	PASS
12409.601	-35.70	-13.0	22.7	151.1	Vertical	PASS

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



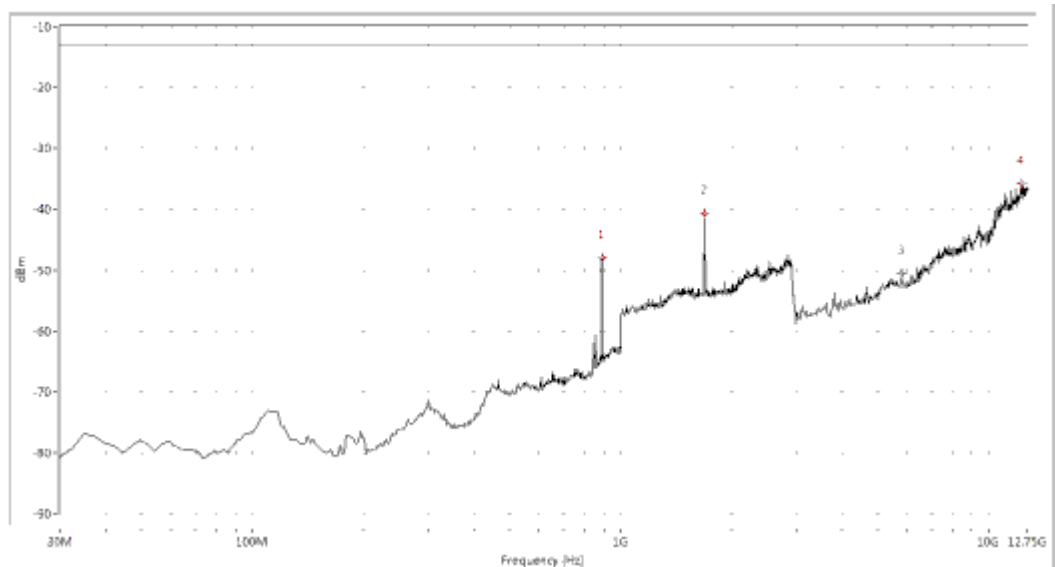
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
876.633	-47.77	-13.0	34.8	31.5	Horizontal	PASS
1668.329	-44.17	-13.0	31.2	24.2	Horizontal	PASS
5358.479	-49.10	-13.0	36.1	25.1	Horizontal	PASS
12433.915	-36.02	-13.0	23.0	4.7	Horizontal	PASS

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



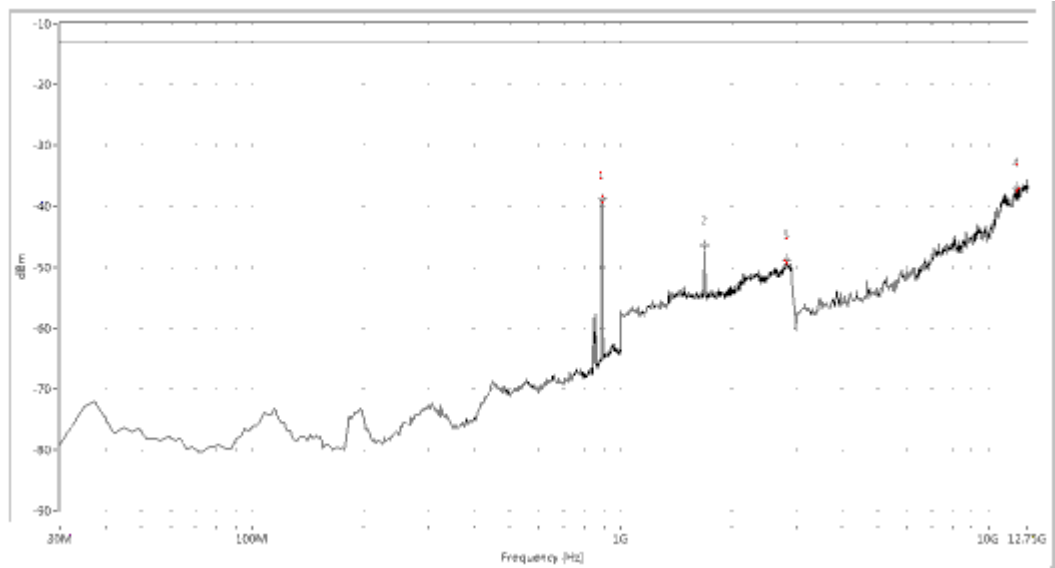
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-43.73	-13.0	30.7	3.5	Vertical	PASS
1668.329	-48.30	-13.0	35.3	296.9	Vertical	PASS
2820.449	-48.24	-13.0	35.2	356.9	Vertical	PASS
12458.229	-36.10	-13.0	23.1	-0.0	Vertical	PASS

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



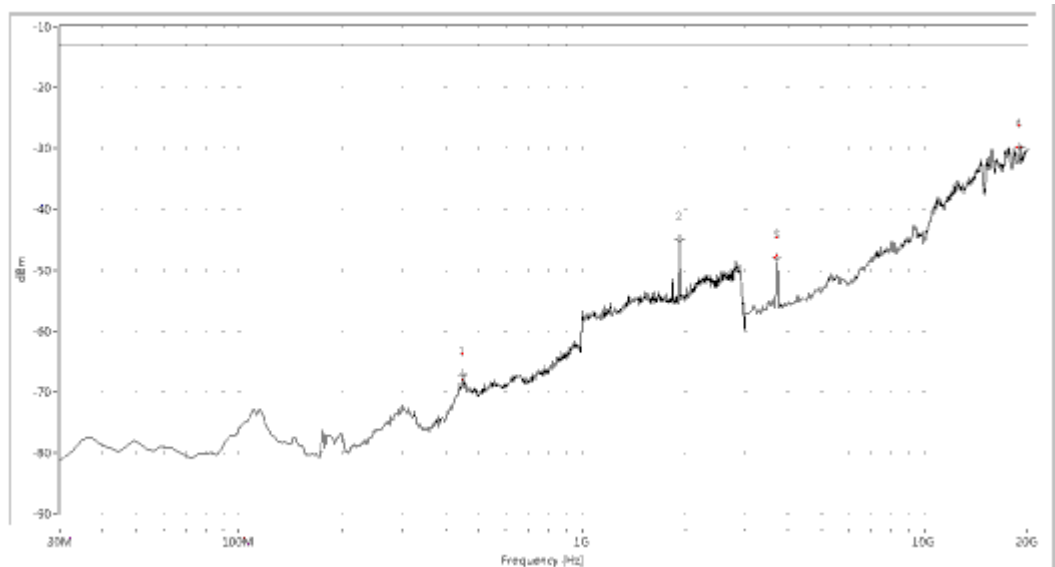
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-48.03	-13.0	35.0	30.2	Horizontal	PASS
1688.279	-40.67	-13.0	27.7	0.8	Horizontal	PASS
5796.135	-50.55	-13.0	37.5	17.6	Horizontal	PASS
12312.344	-35.79	-13.0	22.8	359.5	Horizontal	PASS

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



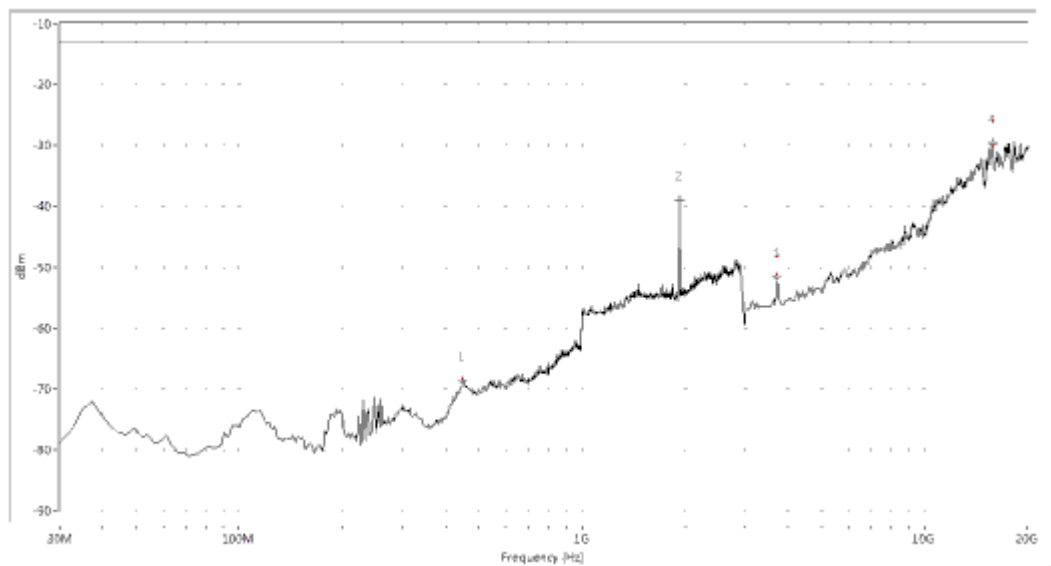
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-38.84	-13.0	25.8	349.5	Vertical	PASS
1688.279	-46.46	-13.0	33.5	309.2	Vertical	PASS
2830.424	-48.76	-13.0	35.8	176.0	Vertical	PASS
11923.317	-36.87	-13.0	23.9	147.1	Vertical	PASS

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



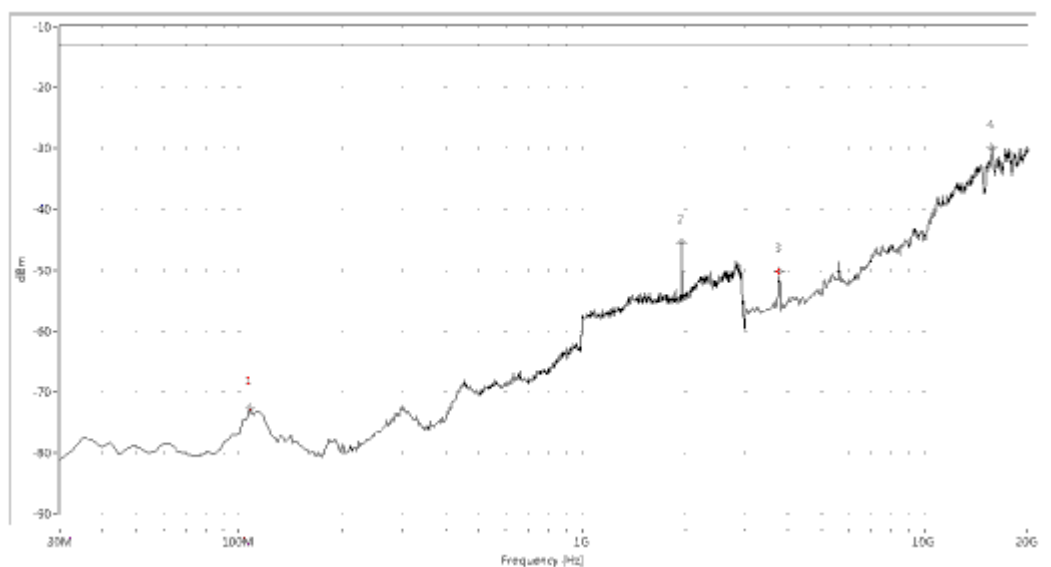
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
450.898	-67.19	-13.0	54.2	180.2	Horizontal	PASS
1932.668	-45.04	-13.0	32.0	51.8	Horizontal	PASS
3720.698	-47.96	-13.0	35.0	48.8	Horizontal	PASS
18982.544	-29.78	-13.0	16.8	145.9	Horizontal	PASS

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



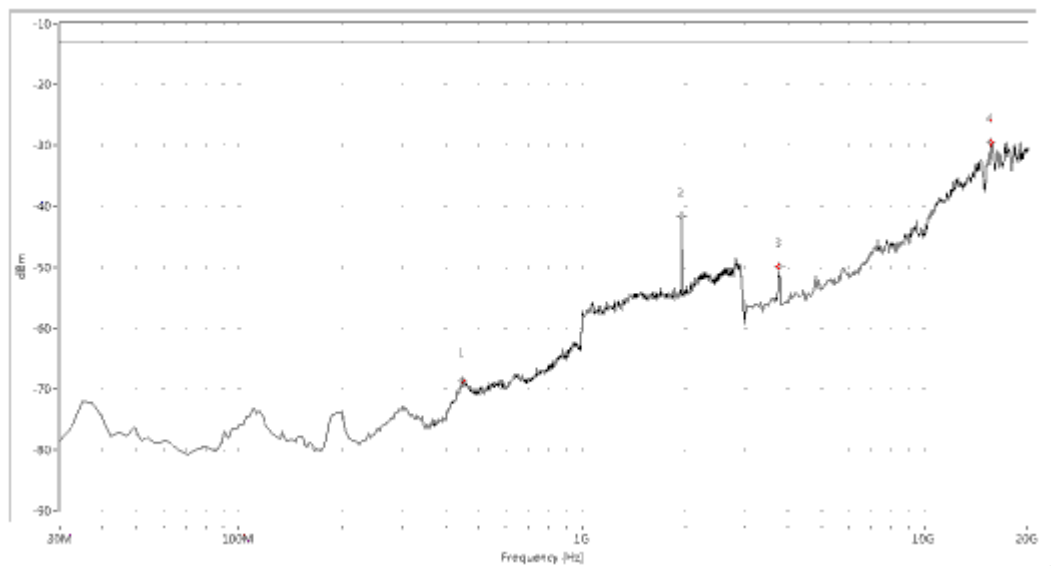
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
448.479	-68.72	-13.0	55.7	154.9	Vertical	PASS
1927.681	-39.03	-13.0	26.0	116.6	Vertical	PASS
3720.698	-51.69	-13.0	38.7	327.5	Vertical	PASS
15802.993	-29.59	-13.0	16.6	-0.0	Vertical	PASS

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



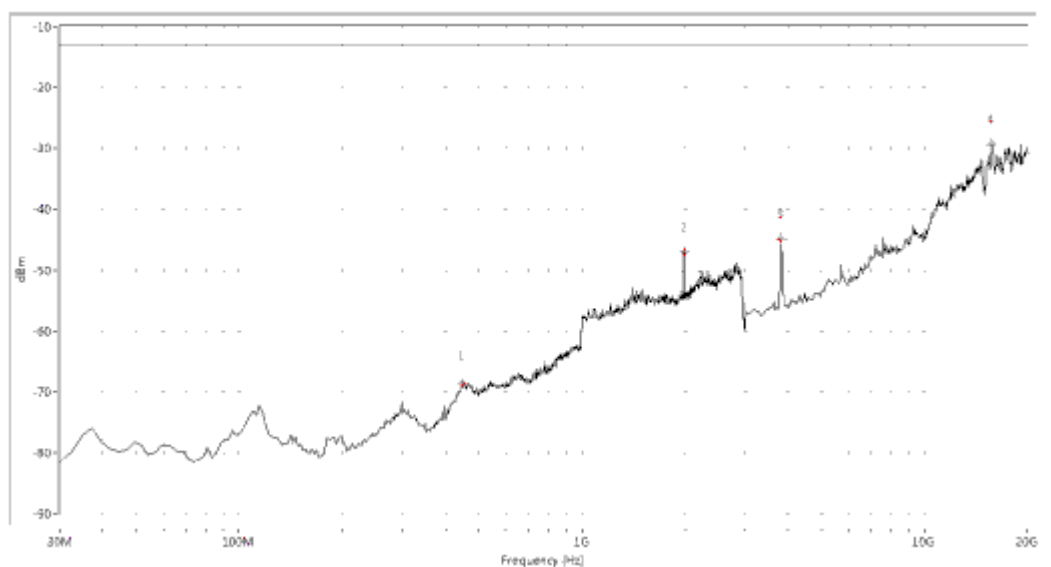
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
107.406	-72.69	-13.0	59.7	305.8	Horizontal	PASS
1957.606	-45.50	-13.0	32.5	39.8	Horizontal	PASS
3763.092	-50.26	-13.0	37.3	359.7	Horizontal	PASS
15760.599	-30.03	-13.0	17.0	216.6	Horizontal	PASS

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



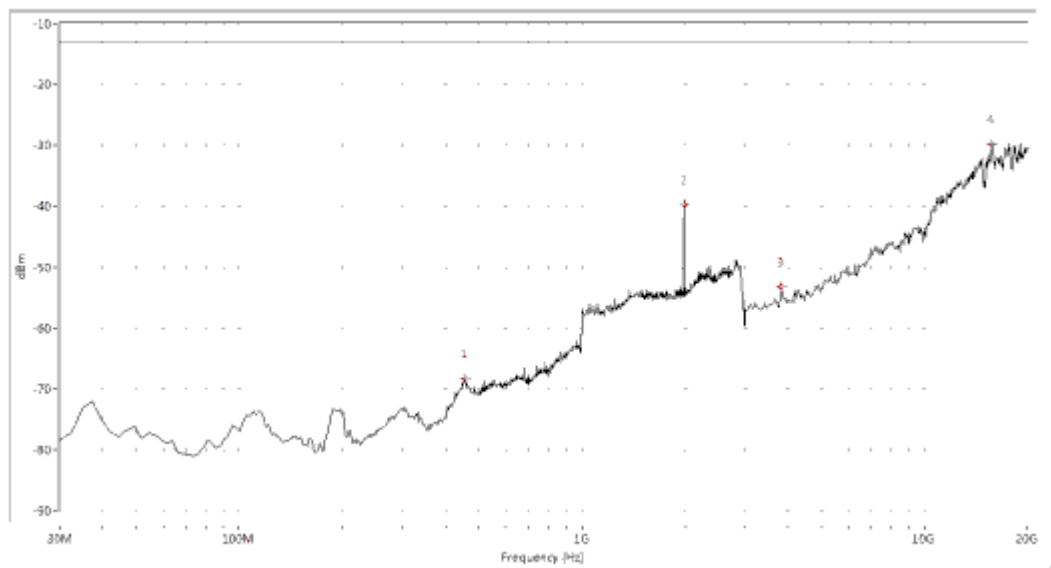
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
446.060	-68.69	-13.0	55.7	360.0	Vertical	PASS
1957.606	-41.74	-13.0	28.7	138.9	Vertical	PASS
3763.092	-49.94	-13.0	36.9	356.2	Vertical	PASS
15675.810	-29.49	-13.0	16.5	360.0	Vertical	PASS

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



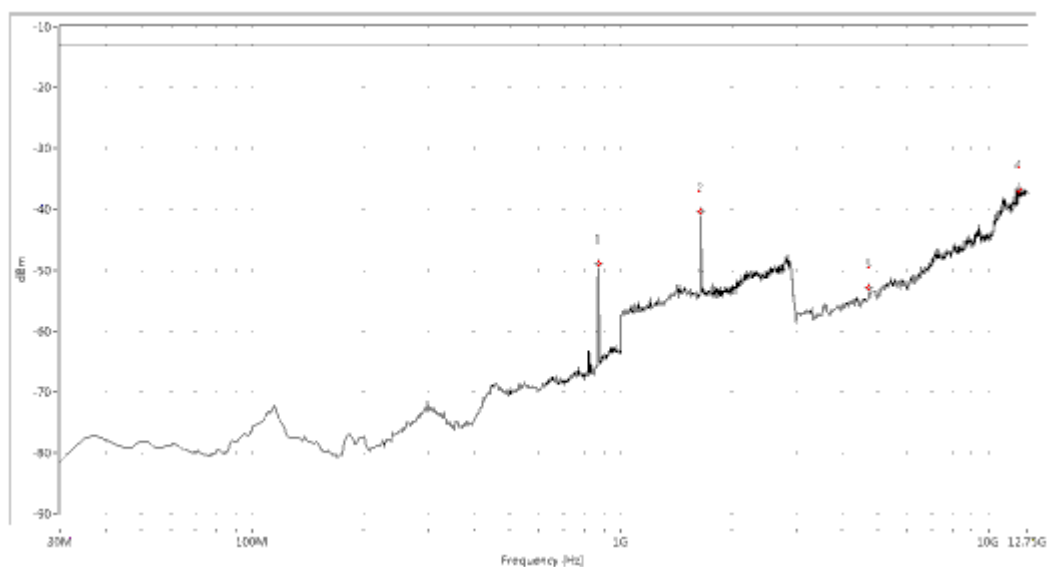
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
446.060	-68.61	-13.0	55.6	227.9	Horizontal	PASS
1987.531	-47.12	-13.0	34.1	221.0	Horizontal	PASS
3805.486	-44.92	-13.0	31.9	-0.0	Horizontal	PASS
15760.599	-29.36	-13.0	16.4	358.9	Horizontal	PASS

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



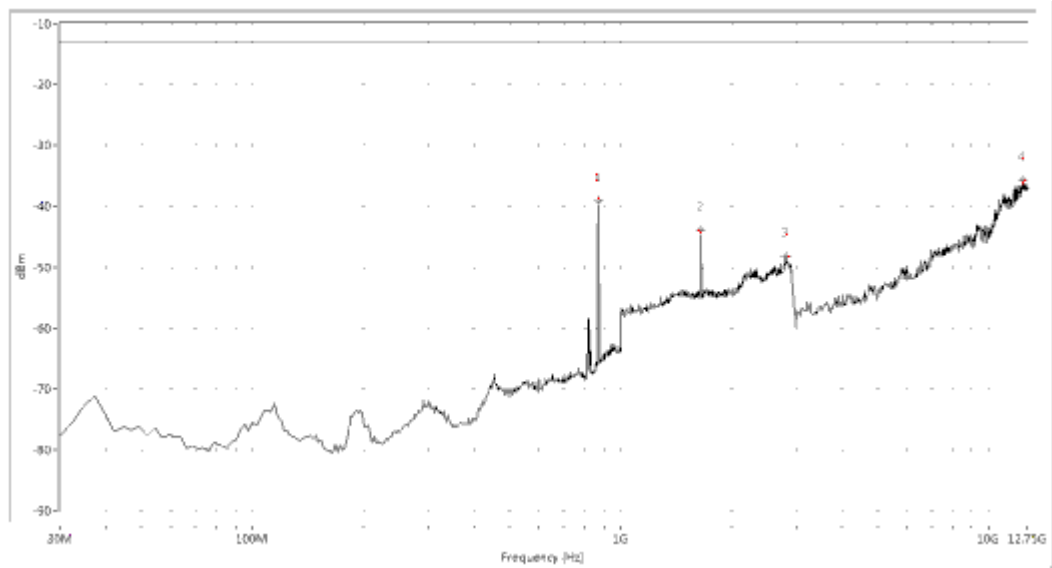
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
455.736	-68.35	-13.0	55.4	308.8	Vertical	PASS
1987.531	-39.81	-13.0	26.8	210.0	Vertical	PASS
3805.486	-53.32	-13.0	40.3	3.7	Vertical	PASS
15760.599	-29.75	-13.0	16.7	82.2	Vertical	PASS

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



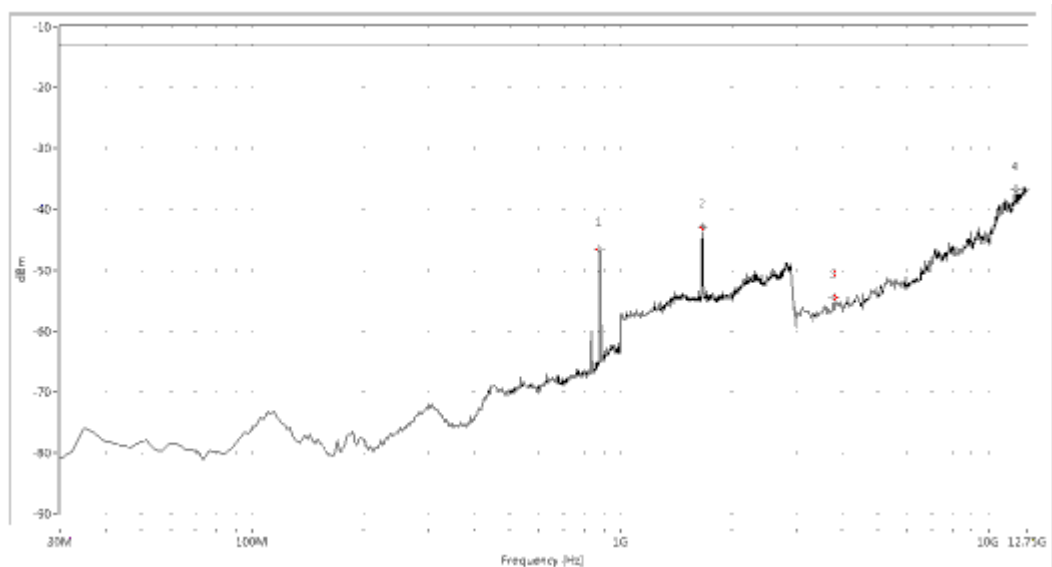
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-49.05	-13.0	36.0	360.0	Horizontal	PASS
1653.367	-40.42	-13.0	27.4	348.8	Horizontal	PASS
4726.309	-52.96	-13.0	40.0	151.1	Horizontal	PASS
12044.888	-36.56	-13.0	23.6	254.1	Horizontal	PASS

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



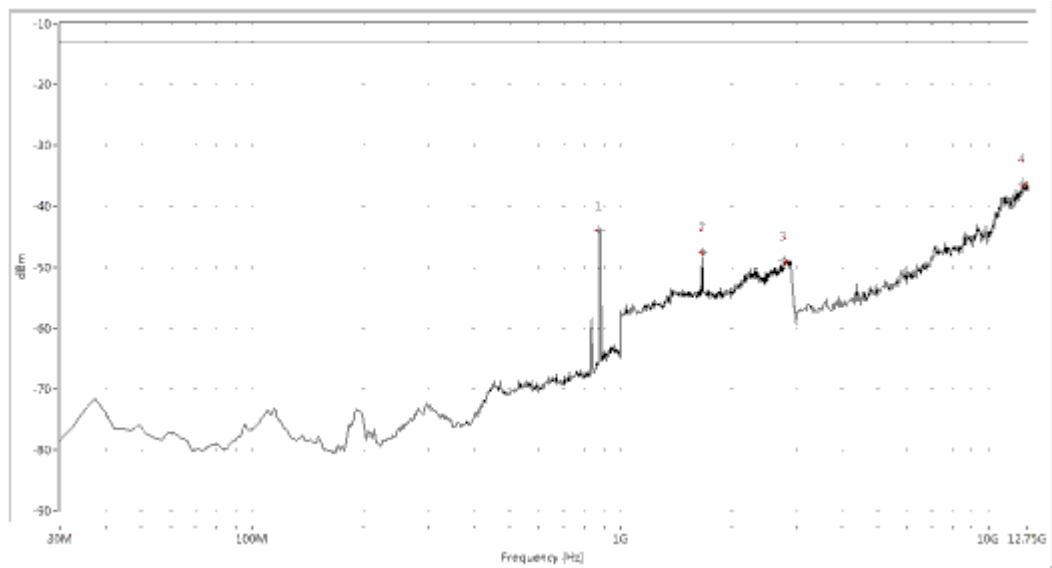
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-39.13	-13.0	26.1	332.7	Vertical	PASS
1653.367	-43.84	-13.0	30.8	320.6	Vertical	PASS
2810.474	-48.13	-13.0	35.1	234.0	Vertical	PASS
12385.287	-35.66	-13.0	22.7	359.2	Vertical	PASS

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



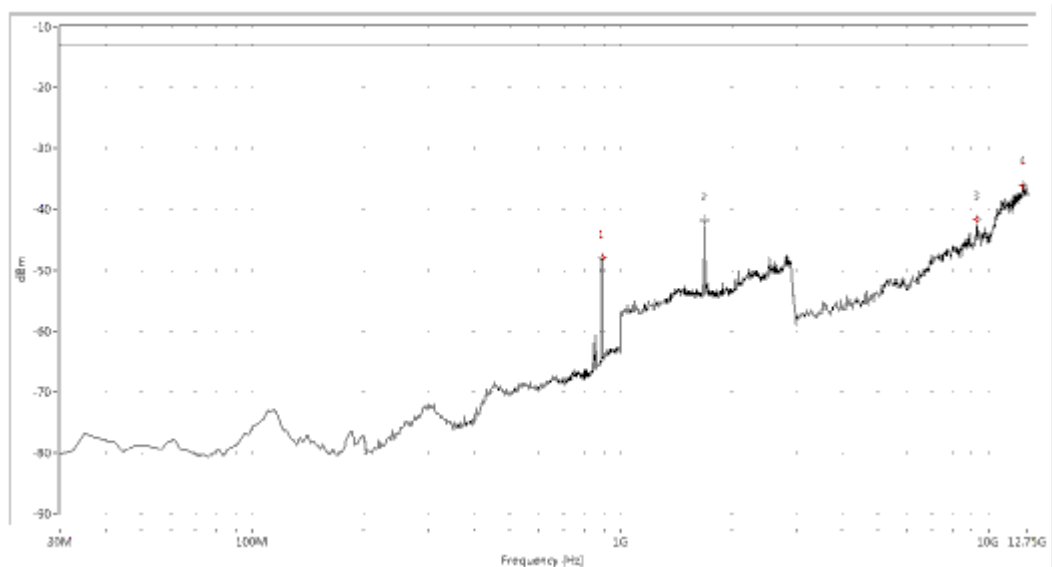
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
876.633	-46.64	-13.0	33.6	32.8	Horizontal	PASS
1668.329	-42.90	-13.0	29.9	358.9	Horizontal	PASS
3802.369	-54.56	-13.0	41.6	216.3	Horizontal	PASS
11874.688	-36.73	-13.0	23.7	129.3	Horizontal	PASS

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



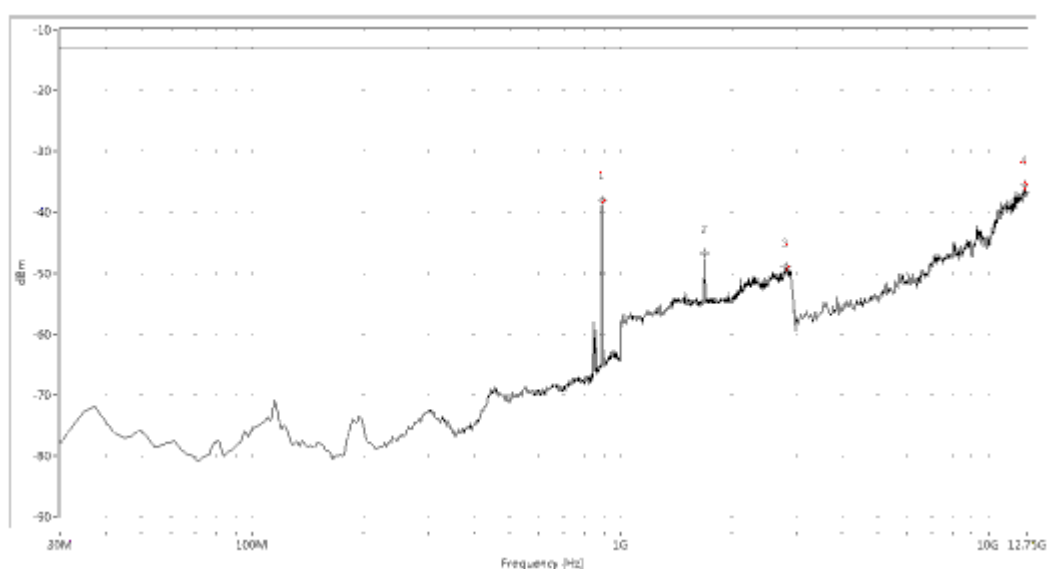
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
876.633	-43.84	-13.0	30.8	151.9	Vertical	PASS
1668.329	-47.58	-13.0	34.6	301.7	Vertical	PASS
2780.549	-49.01	-13.0	36.0	244.0	Vertical	PASS
12385.287	-36.28	-13.0	23.3	360.0	Vertical	PASS

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



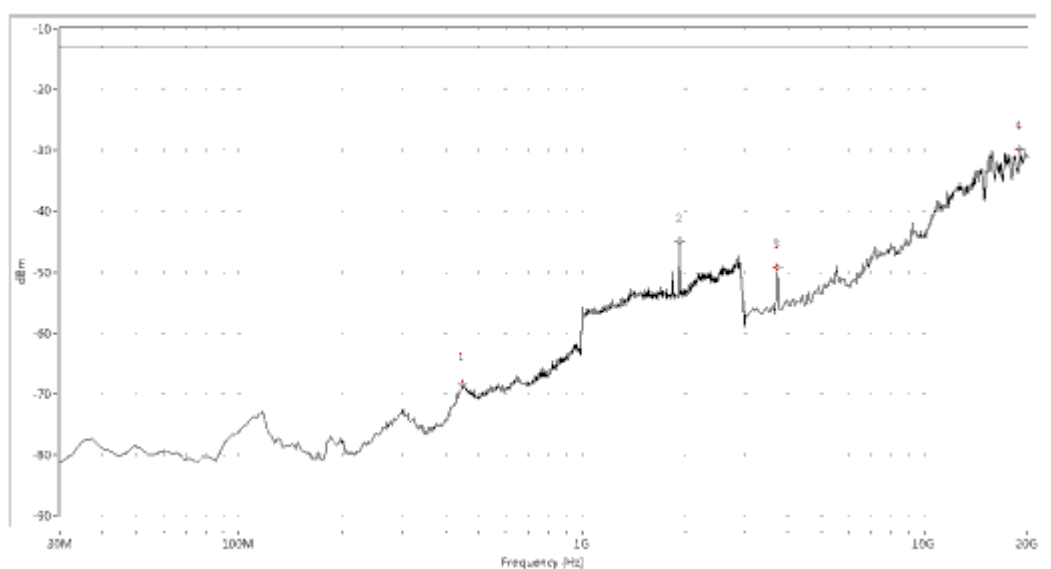
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-47.96	-13.0	35.0	2.6	Horizontal	PASS
1688.279	-41.78	-13.0	28.8	6.4	Horizontal	PASS
9297.382	-41.75	-13.0	28.8	322.0	Horizontal	PASS
12409.601	-35.96	-13.0	23.0	261.0	Horizontal	PASS

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



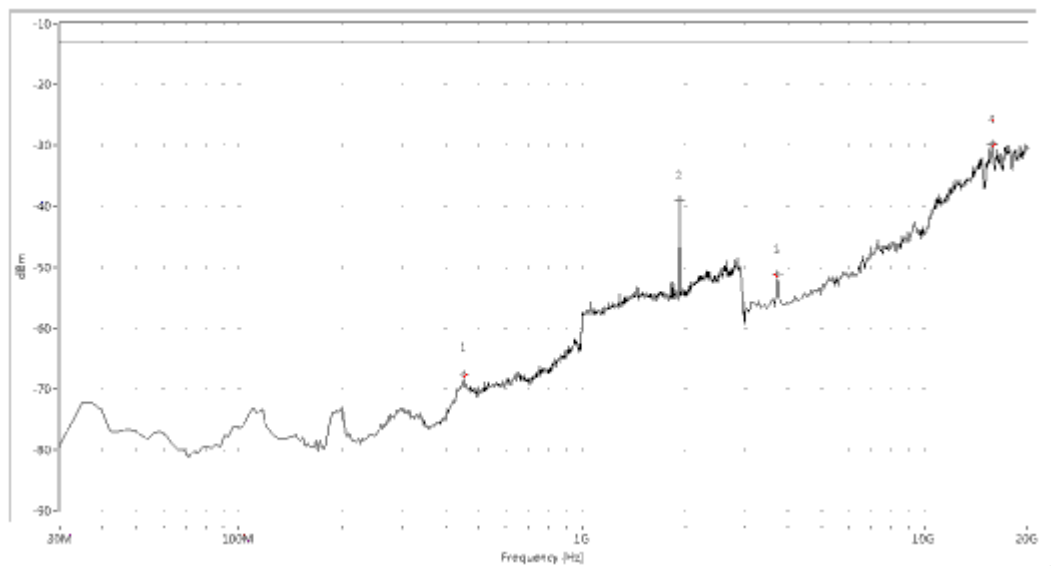
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-38.10	-13.0	25.1	132.2	Vertical	PASS
1688.279	-46.81	-13.0	33.8	294.1	Vertical	PASS
2810.474	-48.95	-13.0	35.9	284.8	Vertical	PASS
12555.486	-35.53	-13.0	22.5	205.8	Vertical	PASS

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



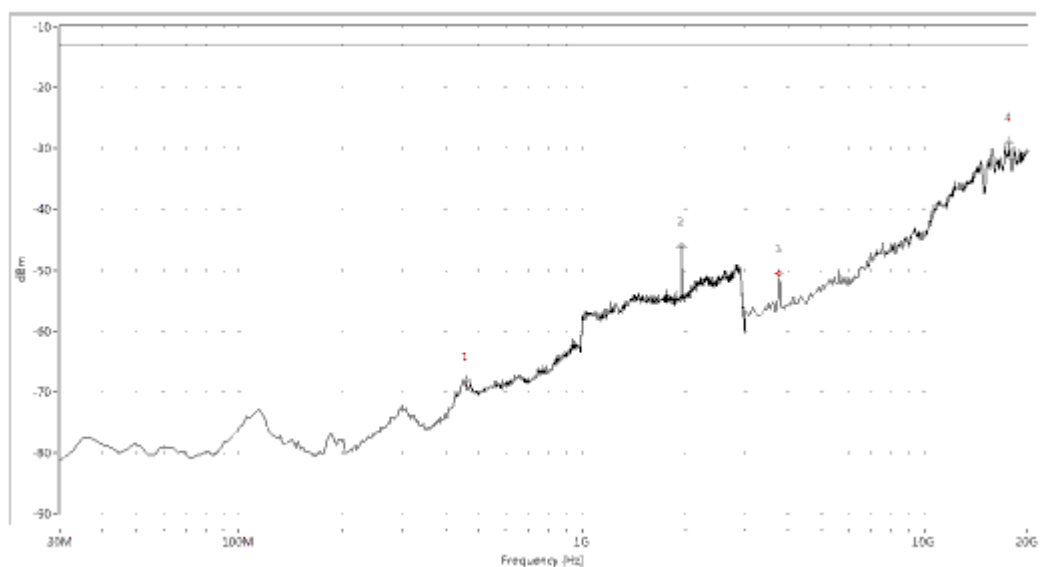
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
448.479	-68.39	-13.0	55.4	351.9	Horizontal	PASS
1927.681	-45.02	-13.0	32.0	56.7	Horizontal	PASS
3720.698	-49.36	-13.0	36.4	60.4	Horizontal	PASS
19024.938	-29.81	-13.0	16.8	306.5	Horizontal	PASS

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



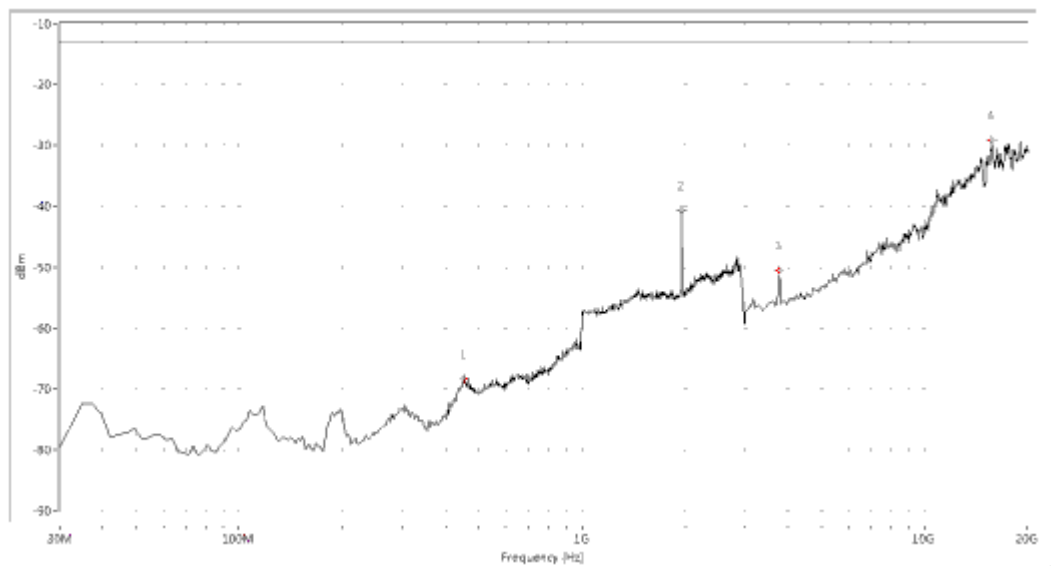
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
453.317	-67.60	-13.0	54.6	16.0	Vertical	PASS
1932.668	-38.97	-13.0	26.0	151.1	Vertical	PASS
3720.698	-51.15	-13.0	38.1	344.7	Vertical	PASS
15802.993	-29.74	-13.0	16.7	222.6	Vertical	PASS

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



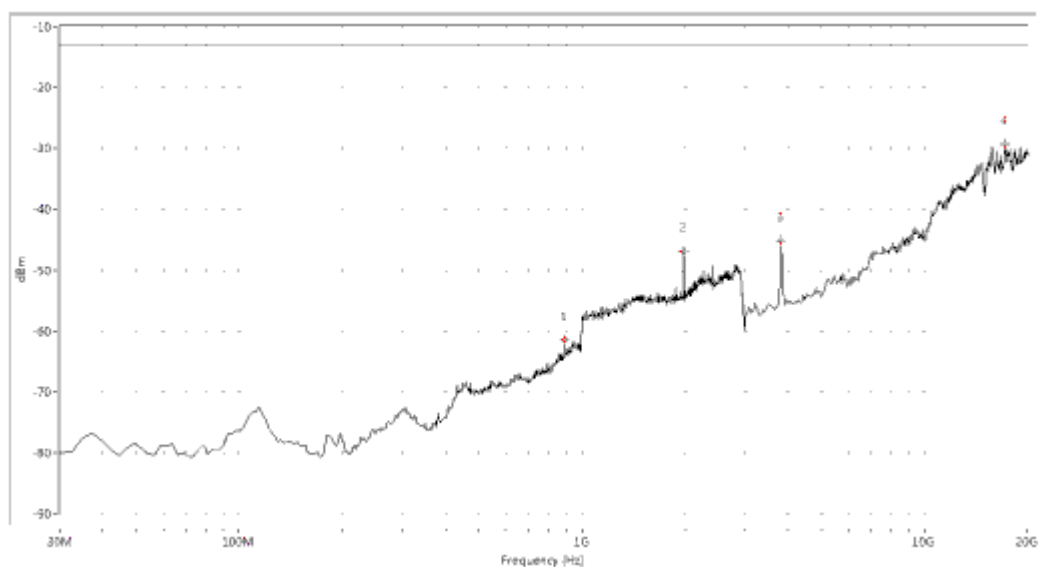
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
458.155	-68.21	-13.0	55.2	162.6	Horizontal	PASS
1957.606	-46.16	-13.0	33.2	303.0	Horizontal	PASS
3763.092	-50.54	-13.0	37.5	32.1	Horizontal	PASS
17710.723	-29.02	-13.0	16.0	229.6	Horizontal	PASS

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



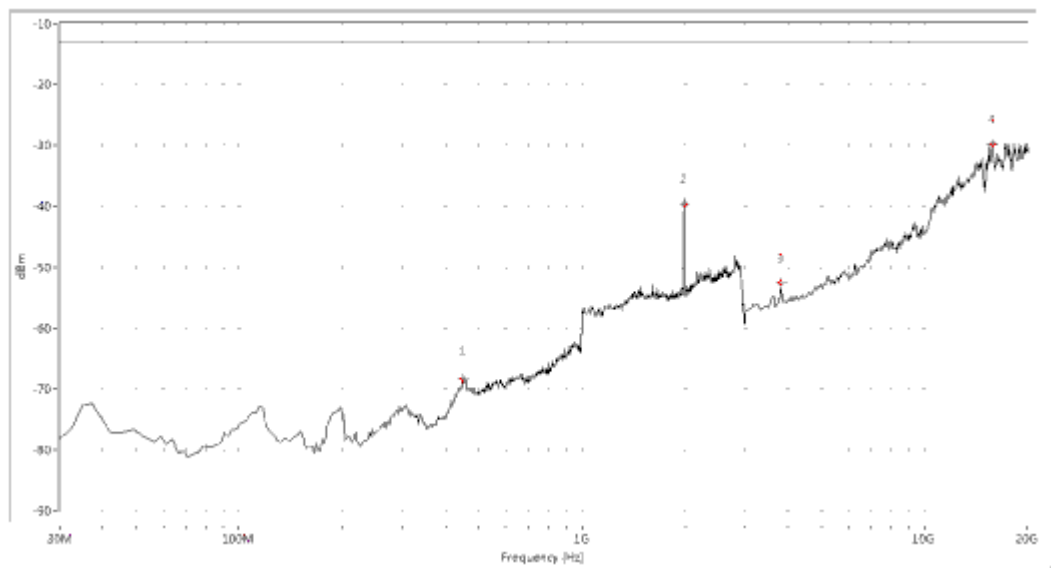
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
453.317	-68.26	-13.0	55.3	270.9	Vertical	PASS
1957.606	-40.67	-13.0	27.7	142.7	Vertical	PASS
3763.092	-50.62	-13.0	37.6	15.4	Vertical	PASS
15760.599	-29.19	-13.0	16.2	307.3	Vertical	PASS

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



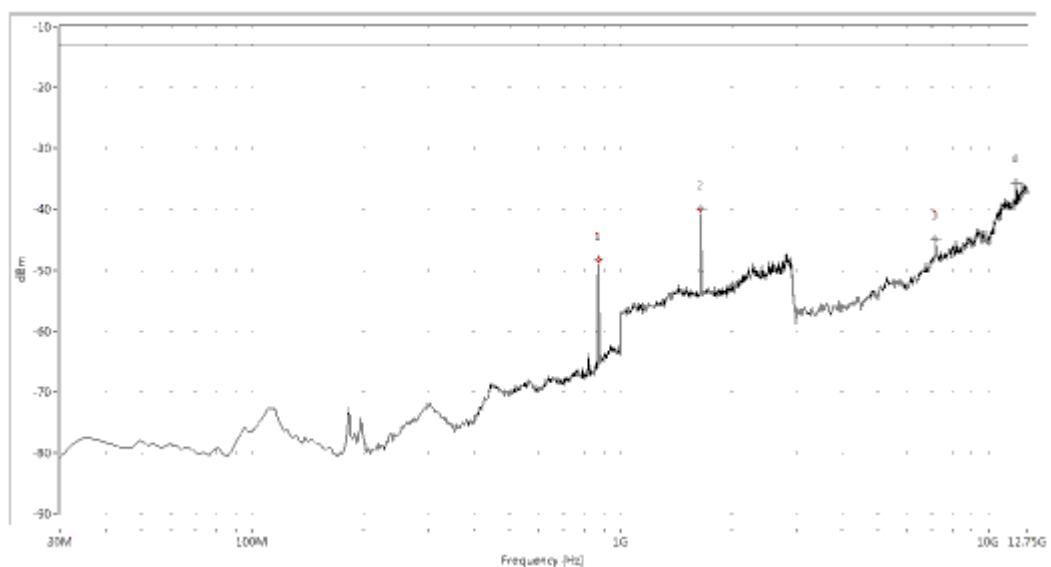
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-61.48	-13.0	48.5	358.3	Horizontal	PASS
1982.544	-46.87	-13.0	33.9	224.8	Horizontal	PASS
3805.486	-45.24	-13.0	32.2	56.7	Horizontal	PASS
17201.995	-29.35	-13.0	16.4	185.9	Horizontal	PASS

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



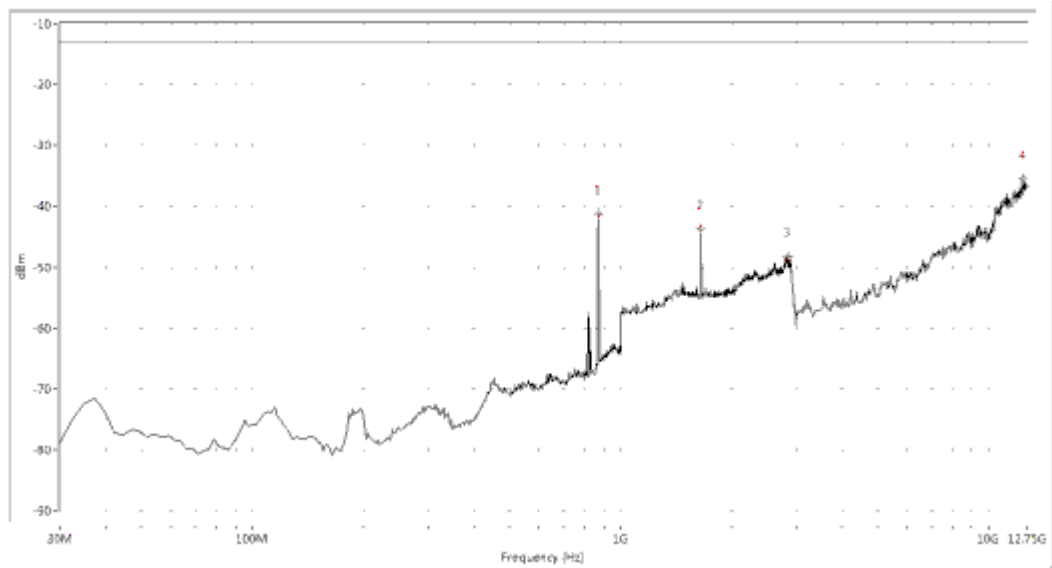
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
450.898	-68.36	-13.0	55.4	-0.0	Vertical	PASS
1987.531	-39.58	-13.0	26.6	181.7	Vertical	PASS
3805.486	-52.60	-13.0	39.6	360.0	Vertical	PASS
15802.993	-29.87	-13.0	16.9	259.7	Vertical	PASS

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



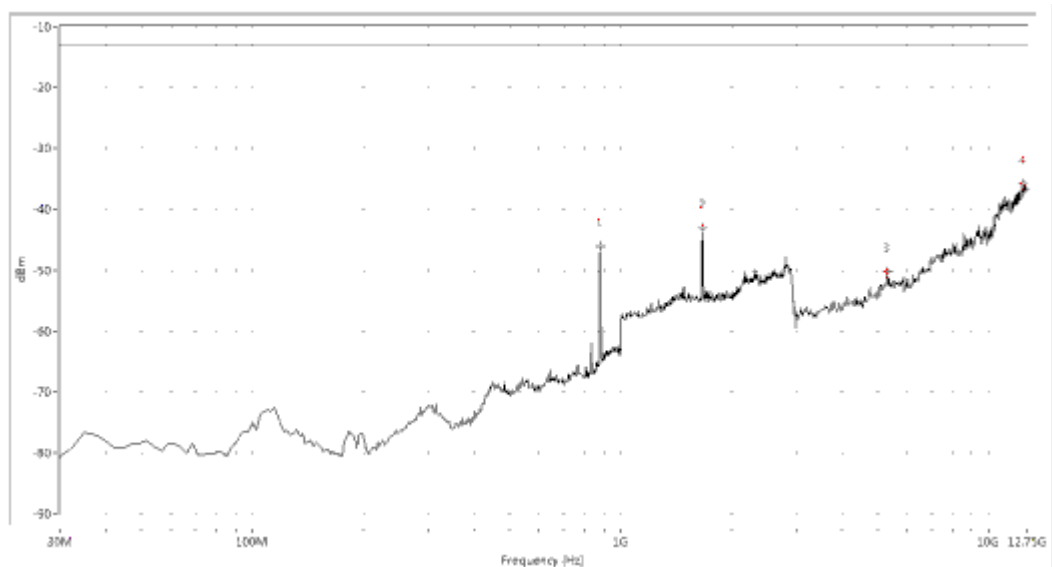
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-48.35	-13.0	35.4	33.2	Horizontal	PASS
1653.367	-39.98	-13.0	27.0	-0.0	Horizontal	PASS
7182.045	-44.79	-13.0	31.8	360.0	Horizontal	PASS
11874.688	-35.72	-13.0	22.7	304.5	Horizontal	PASS

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



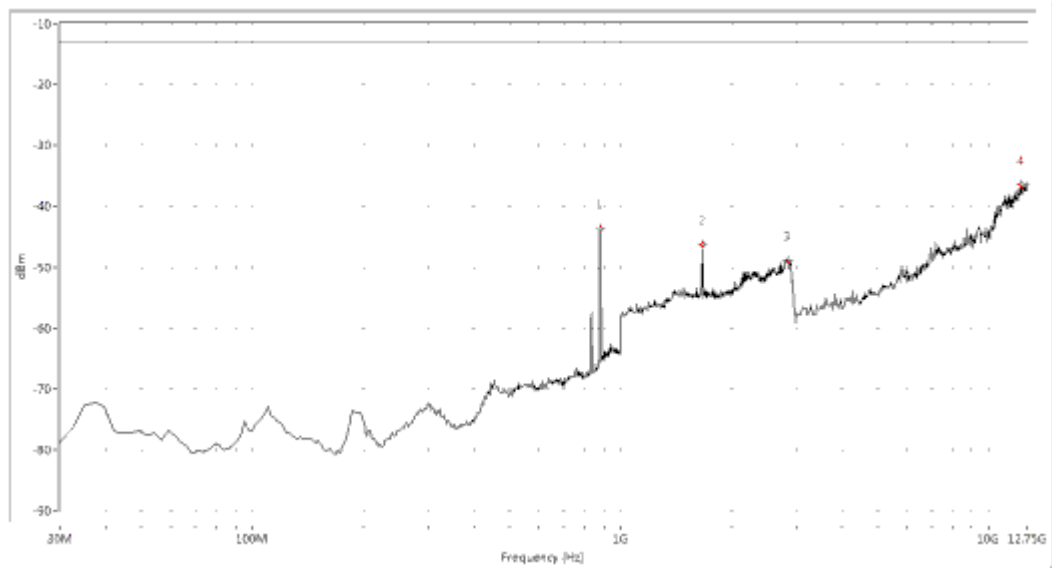
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-41.24	-13.0	28.2	73.7	Vertical	PASS
1653.367	-43.67	-13.0	30.7	322.3	Vertical	PASS
2840.399	-48.18	-13.0	35.2	101.6	Vertical	PASS
12482.544	-35.48	-13.0	22.5	346.8	Vertical	PASS

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



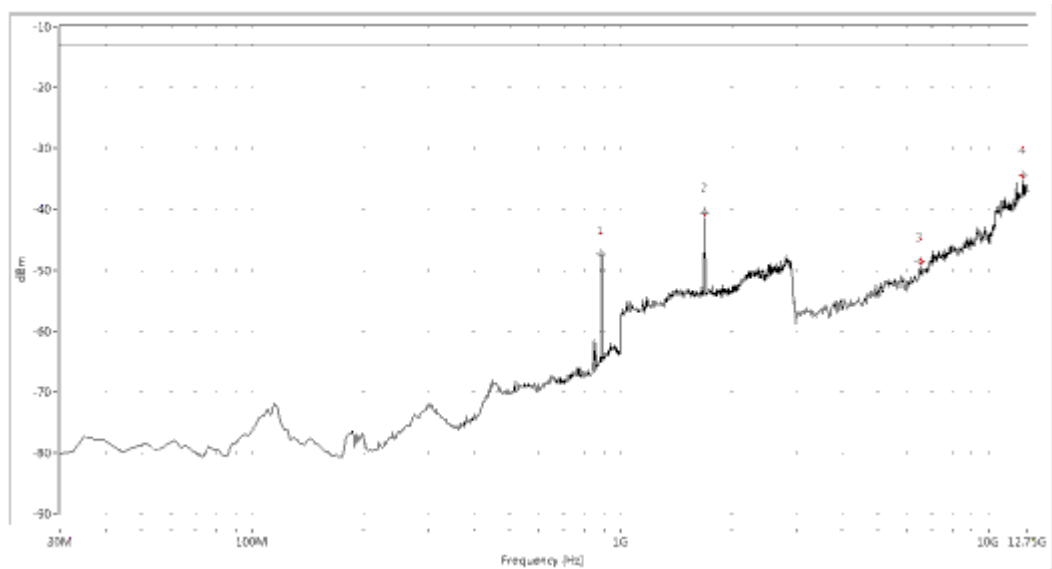
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-46.12	-13.0	33.1	26.9	Horizontal	PASS
1668.329	-43.09	-13.0	30.1	-0.0	Horizontal	PASS
5309.850	-50.19	-13.0	37.2	131.0	Horizontal	PASS
12458.229	-35.78	-13.0	22.8	311.0	Horizontal	PASS

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



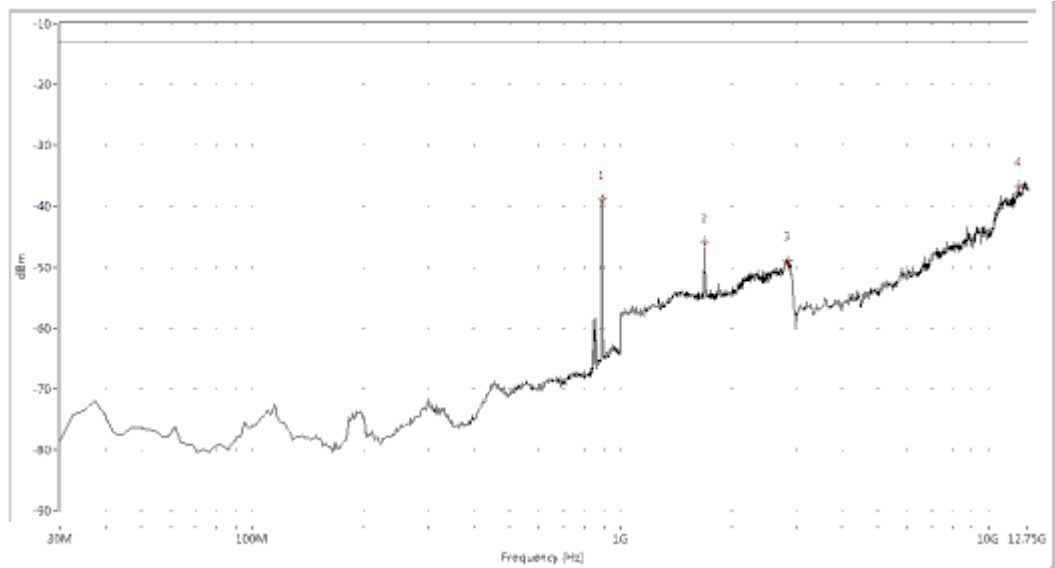
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
879.052	-43.68	-13.0	30.7	335.0	Vertical	PASS
1668.329	-46.33	-13.0	33.3	325.7	Vertical	PASS
2840.399	-48.77	-13.0	35.8	213.0	Vertical	PASS
12288.030	-36.52	-13.0	23.5	316.3	Vertical	PASS

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



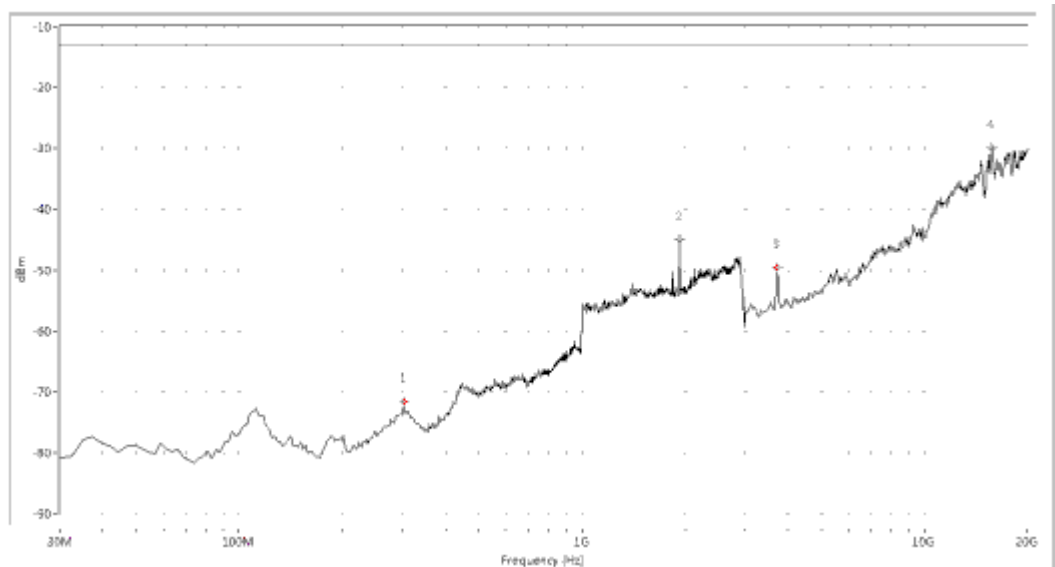
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
888.728	-47.41	-13.0	34.4	28.0	Horizontal	PASS
1688.279	-40.63	-13.0	27.6	359.2	Horizontal	PASS
6501.247	-48.63	-13.0	35.6	50.7	Horizontal	PASS
12482.544	-34.44	-13.0	21.4	194.7	Horizontal	PASS

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



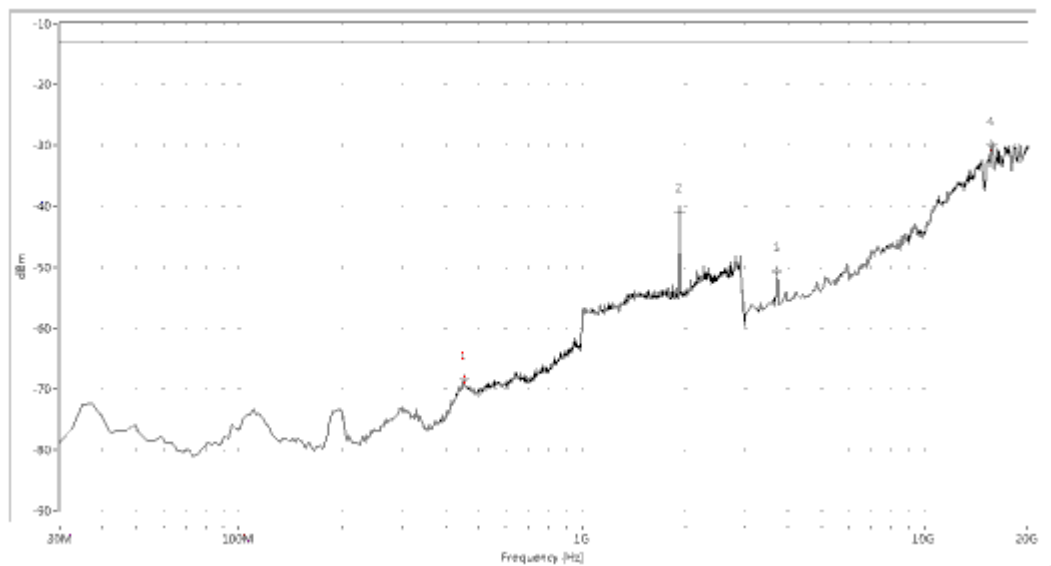
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
891.147	-38.87	-13.0	25.9	78.9	Vertical	PASS
1688.279	-45.85	-13.0	32.9	311.4	Vertical	PASS
2840.399	-48.79	-13.0	35.8	251.9	Vertical	PASS
12044.888	-36.64	-13.0	23.6	102.5	Vertical	PASS

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



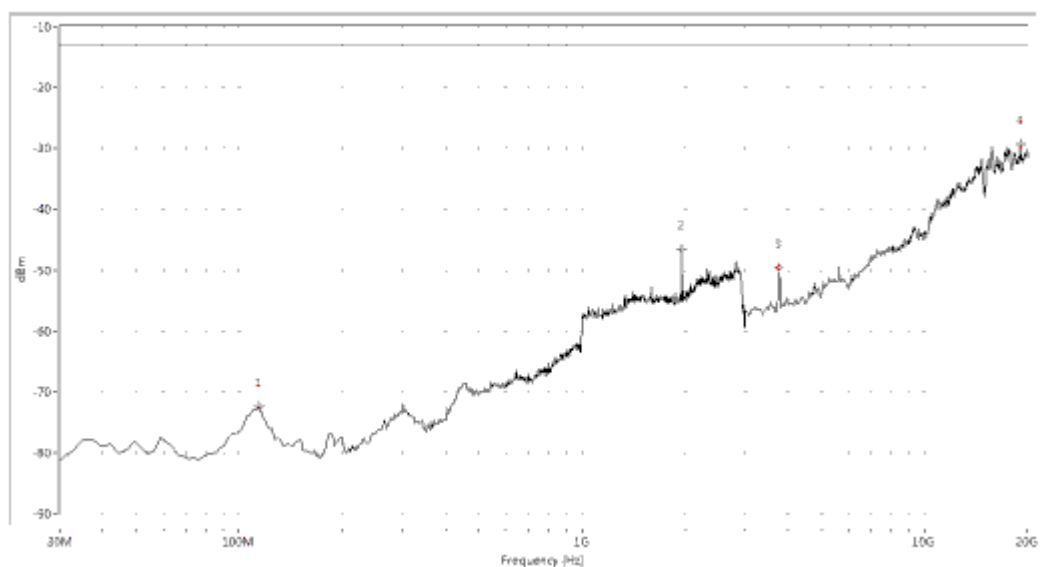
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
303.342	-71.70	-13.0	58.7	238.6	Horizontal	PASS
1927.681	-45.00	-13.0	32.0	181.9	Horizontal	PASS
3720.698	-49.58	-13.0	36.6	52.6	Horizontal	PASS
15760.599	-30.01	-13.0	17.0	360.0	Horizontal	PASS

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



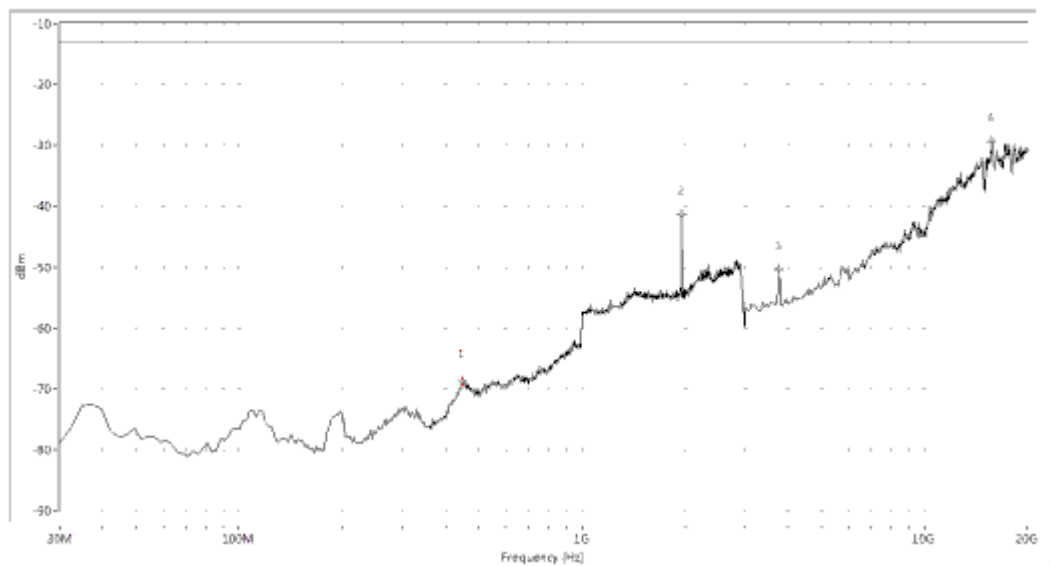
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
453.317	-68.50	-13.0	55.5	218.4	Vertical	PASS
1927.681	-40.91	-13.0	27.9	150.5	Vertical	PASS
3720.698	-50.75	-13.0	37.8	320.3	Vertical	PASS
15760.599	-30.01	-13.0	17.0	41.0	Vertical	PASS

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



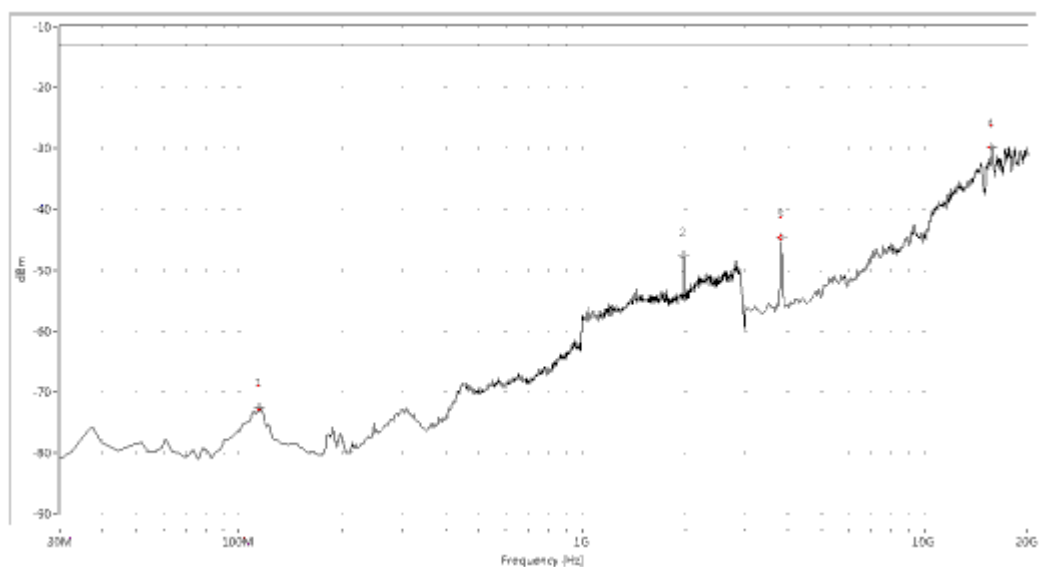
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
114.663	-72.41	-13.0	59.4	240.1	Horizontal	PASS
1957.606	-46.63	-13.0	33.6	187.5	Horizontal	PASS
3763.092	-49.60	-13.0	36.6	358.6	Horizontal	PASS
19067.332	-29.32	-13.0	16.3	296.6	Horizontal	PASS

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



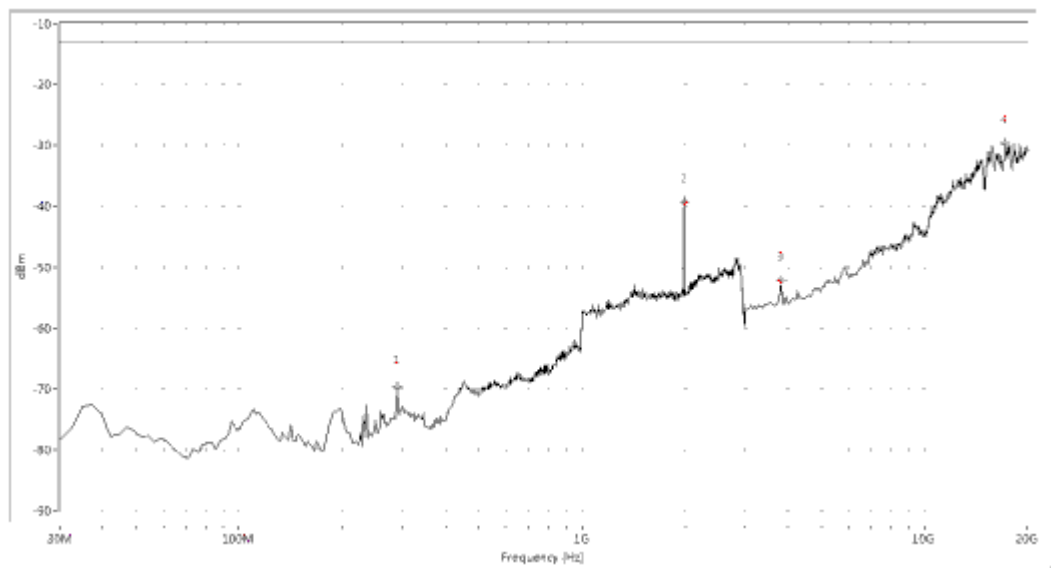
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
446.060	-68.78	-13.0	55.8	33.2	Vertical	PASS
1957.606	-41.43	-13.0	28.4	44.0	Vertical	PASS
3763.092	-50.44	-13.0	37.4	-0.0	Vertical	PASS
15760.599	-29.38	-13.0	16.4	268.4	Vertical	PASS

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



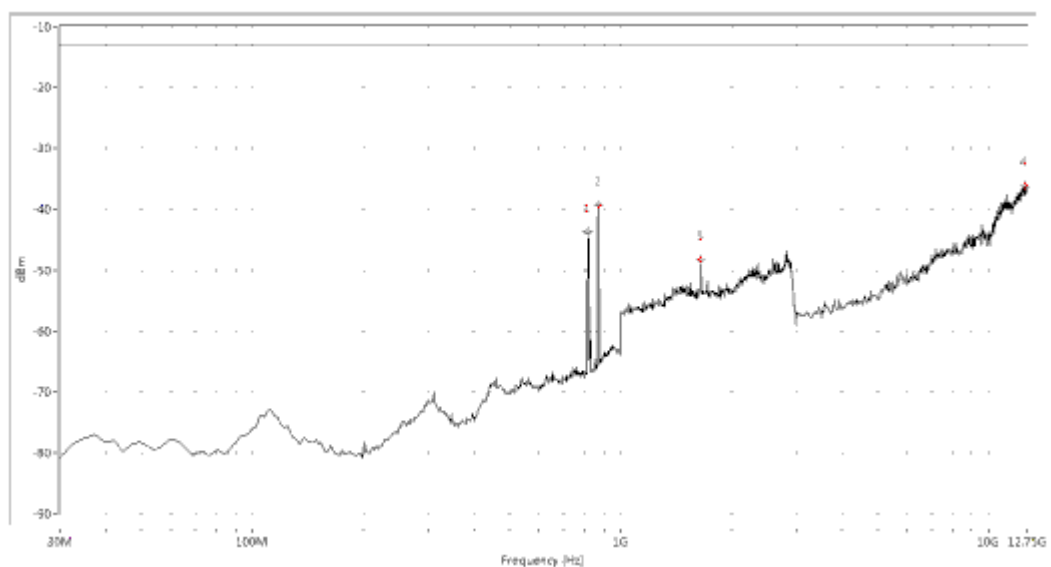
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
114.663	-72.63	-13.0	59.6	78.2	Horizontal	PASS
1982.544	-47.74	-13.0	34.7	38.1	Horizontal	PASS
3805.486	-44.71	-13.0	31.7	38.0	Horizontal	PASS
15760.599	-29.85	-13.0	16.8	341.1	Horizontal	PASS

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



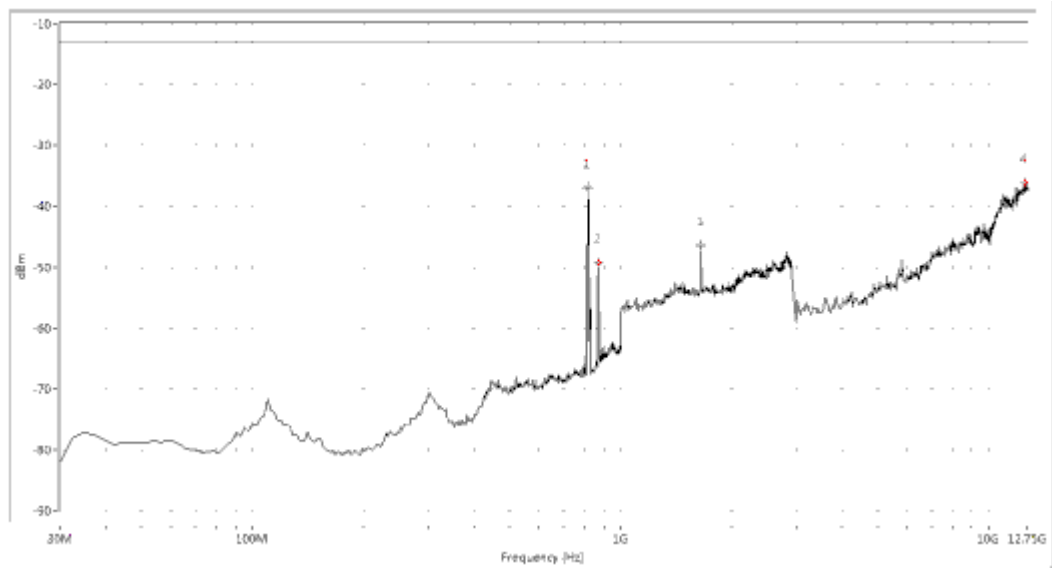
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
288.828	-69.69	-13.0	56.7	88.3	Vertical	PASS
1987.531	-39.38	-13.0	26.4	181.3	Vertical	PASS
3805.486	-52.19	-13.0	39.2	2.4	Vertical	PASS
17244.389	-29.60	-13.0	16.6	64.1	Vertical	PASS

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



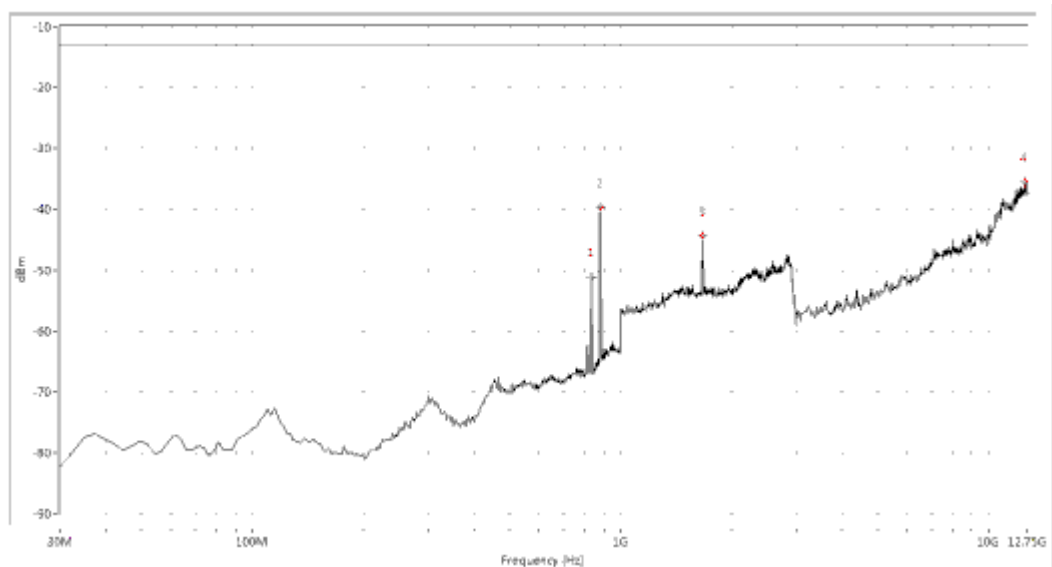
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
816.160	-43.80	-13.0	30.8	220.8	Horizontal	PASS
869.377	-39.24	-13.0	26.2	306.4	Horizontal	PASS
1653.367	-48.28	-13.0	35.3	20.9	Horizontal	PASS
12555.486	-36.11	-13.0	23.1	218.4	Horizontal	PASS

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



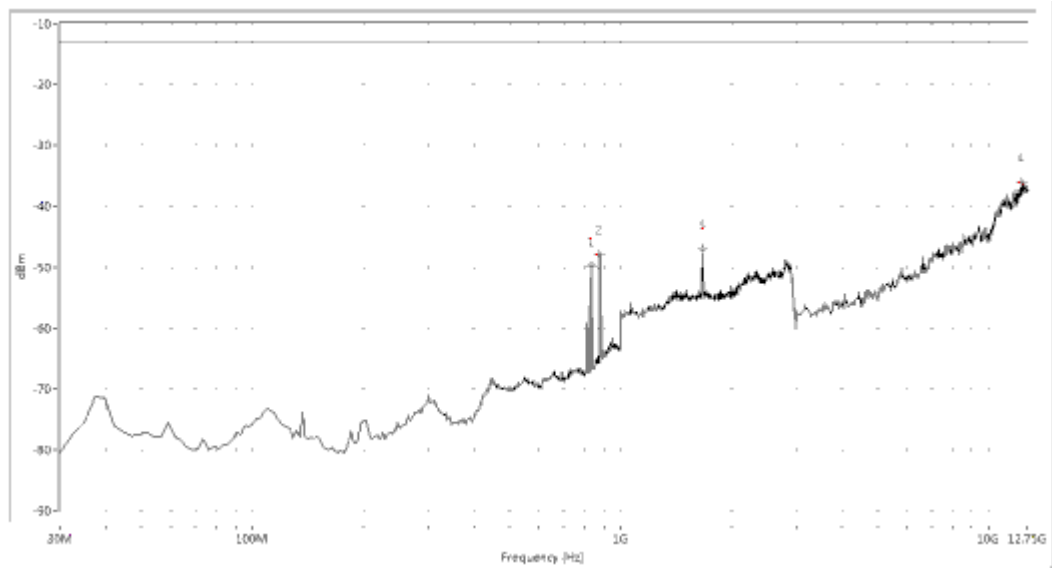
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
816.160	-36.86	-13.0	23.9	148.5	Vertical	PASS
871.796	-49.32	-13.0	36.3	196.5	Vertical	PASS
1653.367	-46.48	-13.0	33.5	112.4	Vertical	PASS
12506.858	-36.16	-13.0	23.2	163.0	Vertical	PASS

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



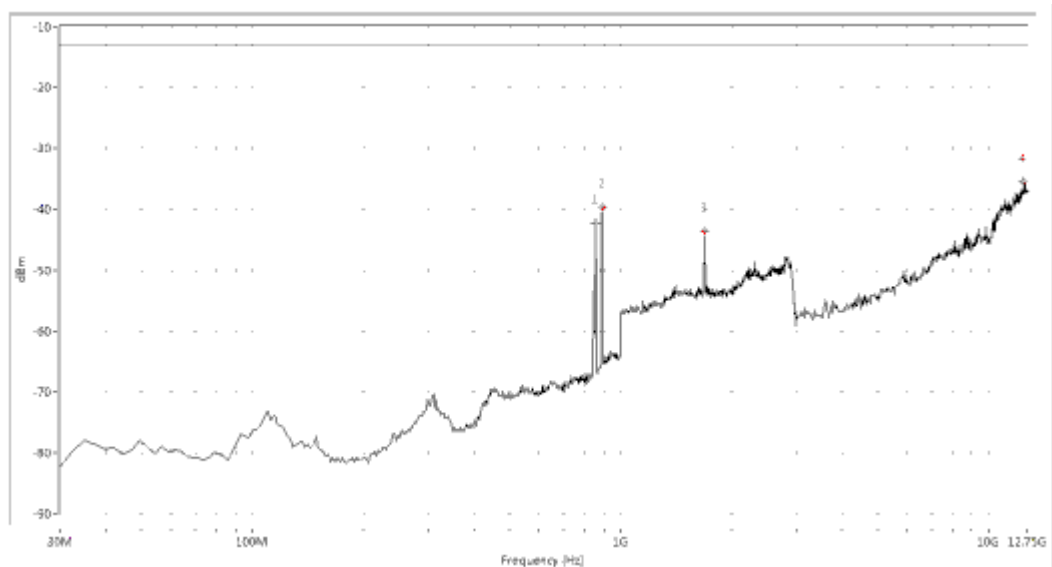
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-51.15	-13.0	38.1	47.7	Horizontal	PASS
879.052	-39.55	-13.0	26.5	149.3	Horizontal	PASS
1668.329	-44.34	-13.0	31.3	39.0	Horizontal	PASS
12555.486	-35.45	-13.0	22.4	289.9	Horizontal	PASS

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



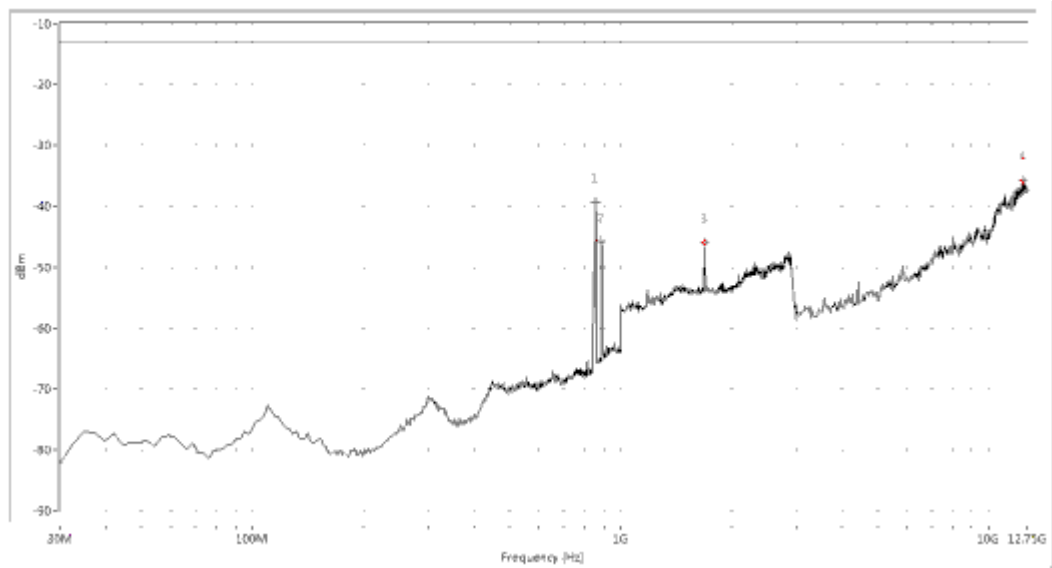
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-49.72	-13.0	36.7	127.7	Vertical	PASS
876.633	-47.93	-13.0	34.9	236.7	Vertical	PASS
1668.329	-47.14	-13.0	34.1	109.4	Vertical	PASS
12263.716	-35.91	-13.0	22.9	44.4	Vertical	PASS

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



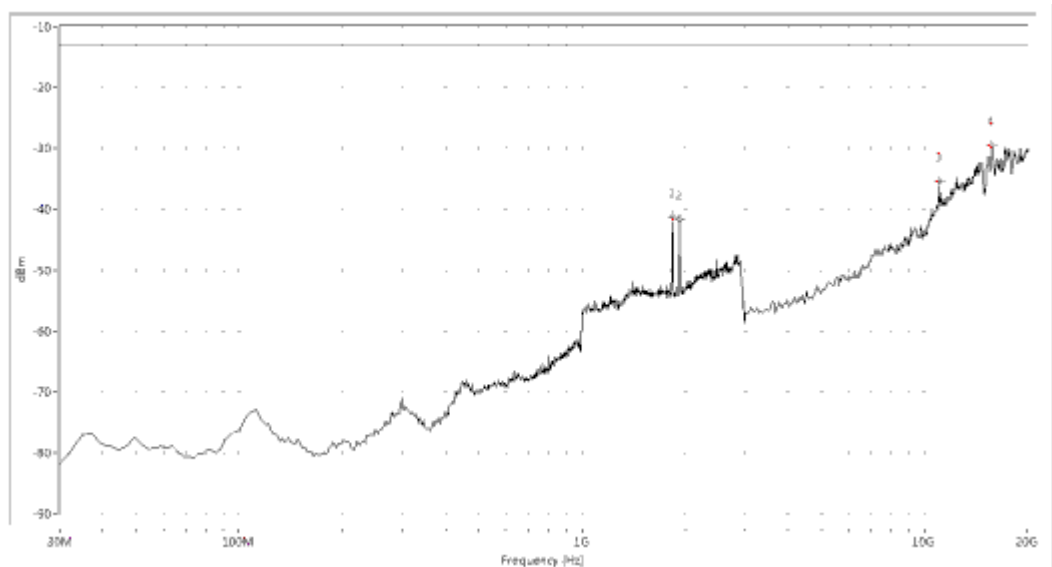
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
854.863	-42.28	-13.0	29.3	32.0	Horizontal	PASS
891.147	-39.61	-13.0	26.6	139.2	Horizontal	PASS
1688.279	-43.63	-13.0	30.6	51.4	Horizontal	PASS
12458.229	-35.48	-13.0	22.5	-0.0	Horizontal	PASS

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



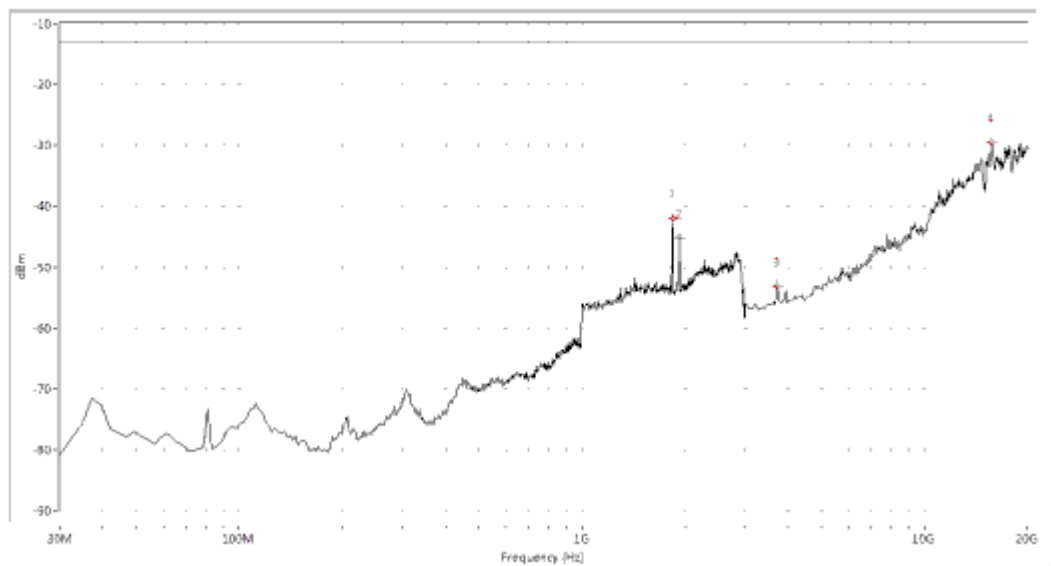
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
854.863	-39.27	-13.0	26.3	128.8	Vertical	PASS
888.728	-45.76	-13.0	32.8	74.9	Vertical	PASS
1688.279	-45.94	-13.0	32.9	120.5	Vertical	PASS
12409.601	-35.70	-13.0	22.7	268.8	Vertical	PASS

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



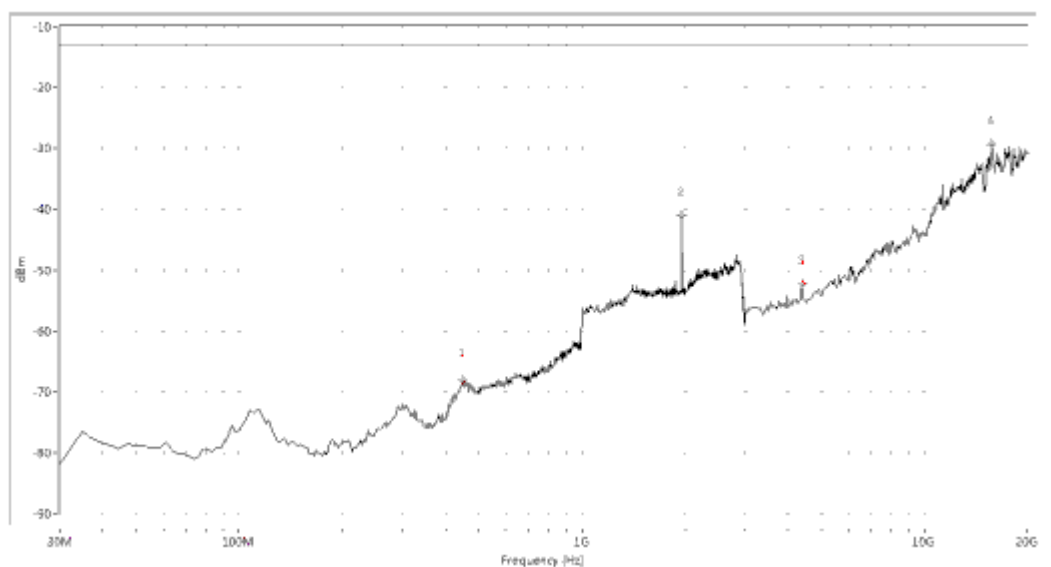
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-41.14	-13.0	28.1	216.9	Horizontal	PASS
1927.681	-41.65	-13.0	28.7	238.1	Horizontal	PASS
11097.257	-35.30	-13.0	22.3	9.5	Horizontal	PASS
15760.599	-29.49	-13.0	16.5	285.4	Horizontal	PASS

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



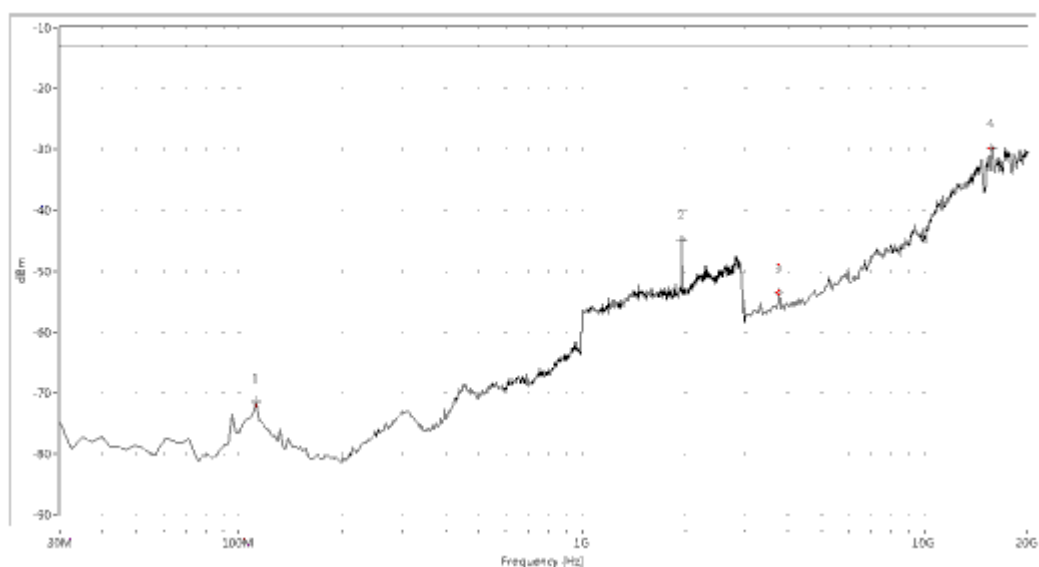
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-41.98	-13.0	29.0	90.4	Vertical	PASS
1932.668	-45.23	-13.0	32.2	240.1	Vertical	PASS
3720.698	-53.09	-13.0	40.1	41.4	Vertical	PASS
15760.599	-29.41	-13.0	16.4	237.8	Vertical	PASS

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



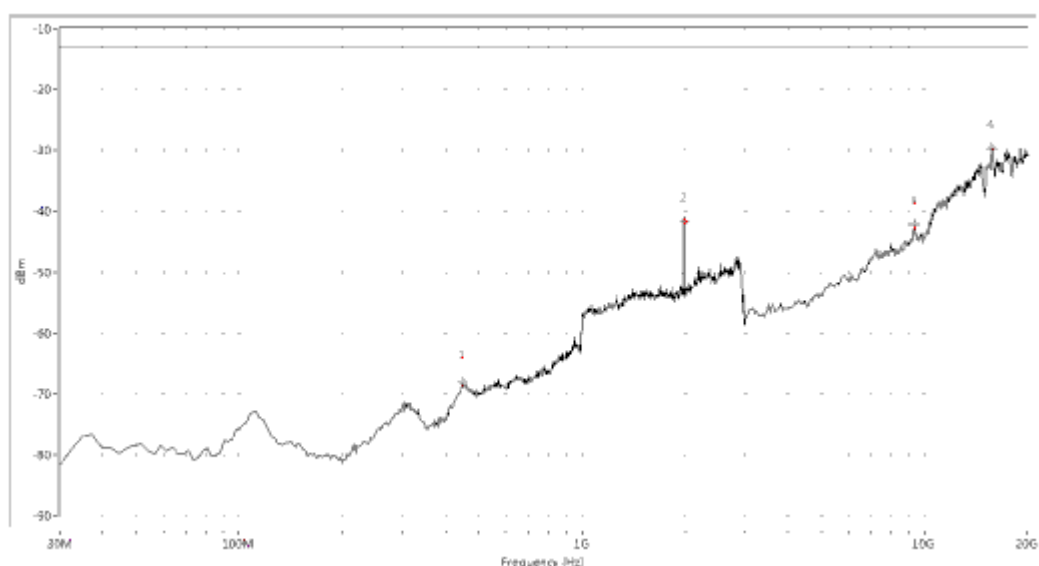
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
450.898	-68.15	-13.0	55.1	137.7	Horizontal	PASS
1957.606	-41.10	-13.0	28.1	198.4	Horizontal	PASS
4399.002	-52.26	-13.0	39.3	237.5	Horizontal	PASS
15760.599	-29.38	-13.0	16.4	122.5	Horizontal	PASS

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



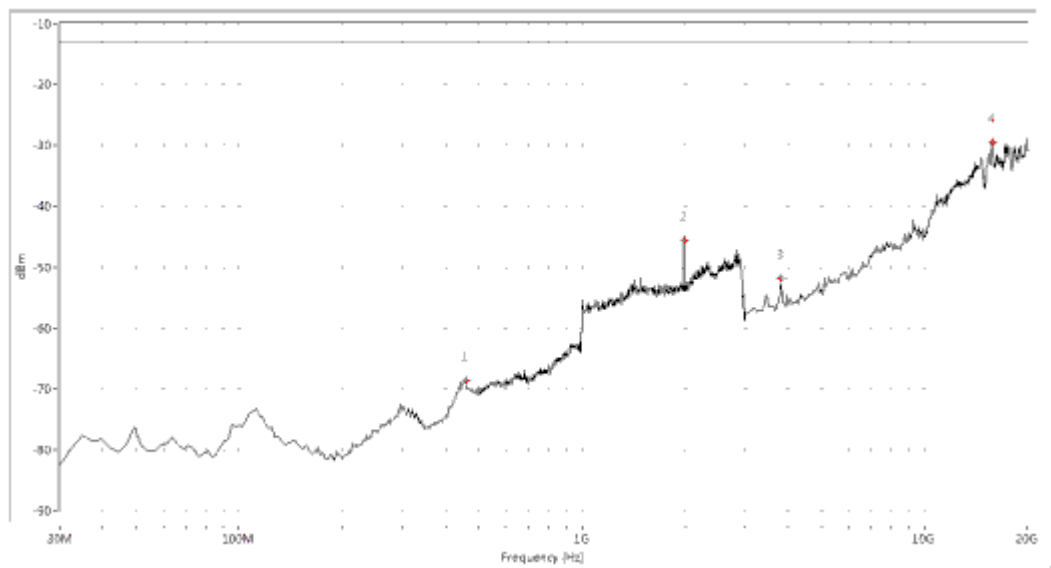
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-71.49	-13.0	58.5	-0.0	Vertical	PASS
1957.606	-44.80	-13.0	31.8	331.6	Vertical	PASS
3763.092	-53.53	-13.0	40.5	244.9	Vertical	PASS
15760.599	-29.73	-13.0	16.7	337.2	Vertical	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
450.898	-68.21	-13.0	55.2	358.5	Horizontal	PASS
1987.531	-41.61	-13.0	28.6	358.1	Horizontal	PASS
9359.102	-42.14	-13.0	29.1	360.0	Horizontal	PASS
15760.599	-29.58	-13.0	16.6	286.6	Horizontal	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
458.155	-68.60	-13.0	55.6	85.3	Vertical	PASS
1987.531	-45.68	-13.0	32.7	271.3	Vertical	PASS
3805.486	-51.77	-13.0	38.8	203.9	Vertical	PASS
15802.993	-29.42	-13.0	16.4	360.0	Vertical	PASS

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

**** END OF REPORT ****