



Report No.: SZ12090039W03



FCC TEST REPORT

Issued to

TCT Mobile Limited

For

HSPA USB Modem

Model Name: One Touch X221F
 Trade Name: Alcatel
 Brand Name: Alcatel
 FCC ID : RAD314
 Standard: 47 CFR Part 22 Subpart H
 47 CFR Part 24 Subpart E
 Test date: 2012-9-5 to 2012-10-10
 Issue date: 2012-10-10

by
Shenzhen Morlab Communication Technology Co., Ltd.



Tested by Nie Quan
 Nie Quan

Date 2012.10.10

Reviewed by Peng Huarui
 Peng Huarui

Date 2012.10.10



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Change History		
Issue	Date	Reason for change
1.0	October 10, 2012	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: HSPA USB Modem
Serial No.....: (n.a, marked #1 by test site)
Hardware Version: PIO
Software Version: S1_B15001S_1110000_B10001S
Applicant: TCT Mobile Limited
5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech
Park, Pudong Area Shanghai, P.R. China. 201203
Manufacturer: TCL COMMUNICATION TECHNOLOGY HOLDINGS
LIMITED
70 Huifeng 4rd,ZhongKai Hi-tech Development District ,
Huizhou,Guangdong 516006 P.R.China
Frequency Range: GSM 850MHz:
Tx: 824.20 - 848.80MHz (at intervals of 200kHz);
Rx: 869.20 - 893.80MHz (at intervals of 200kHz)
GSM 1900MHz:
Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);
Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)
WCDMA 1900MHz
Tx: 1852.4 - 1907.6MHz (at intervals of 200kHz);
Rx: 1932.4 - 1987.6MHz (at intervals of 200kHz)
Modulation Type.....: GPRS/GSM Mode with GMSK Modulation
EDGE Mode with 8PSK Modulation
WCDMA Mode with QPSK Modulation
HSDPA Mode with QPSK Modulation
HSUPA Mode with QPSK Modulation
Multislot Class.....: GPRS: Multislot Class12,EGPRS: Multislot Class12
Antenna Type.....: PIFA Antenna
Emission Designators: GSM:256KGXW,
EGPRS:251KG7W,
WCDMA:4M14F9W

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

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

512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The transmitter (Tx) frequency arrangement of the WCDMA 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 4: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

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

No.	Identity	Document Title
1	47 CFR Part 2 (10-1-09 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-09 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-09 Edition)	Personal Communications Services

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

No.	Section	Description	Result
1	2.1046	Conducted RF Output Power	PASS
2	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 Facilities

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

All measurement facilities used to collect the measurement data are located at 3/F, Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

1.3.2 Test Environment Conditions

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

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

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

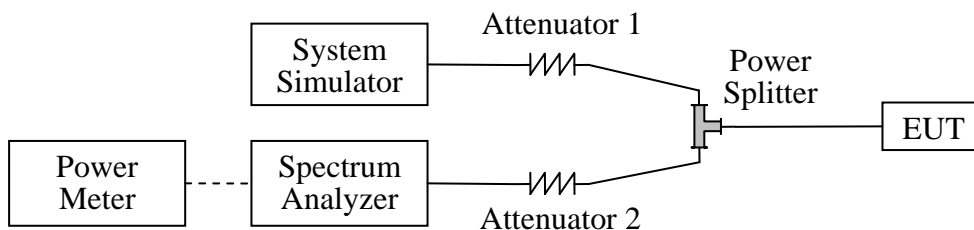
2.1 Conducted RF Output Power

2.1.1 Requirement

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

2.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

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

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
System Simulator	Agilent	E5515C	GB43130131	2012.05
Spectrum Analyzer	Agilent	E7405A	US44210471	2012.05
Power Meter	Agilent	E4418B	GB43318055	2012.05
Power Splitter	Weinschel	1506A	NW521	(n.a.)
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)

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:

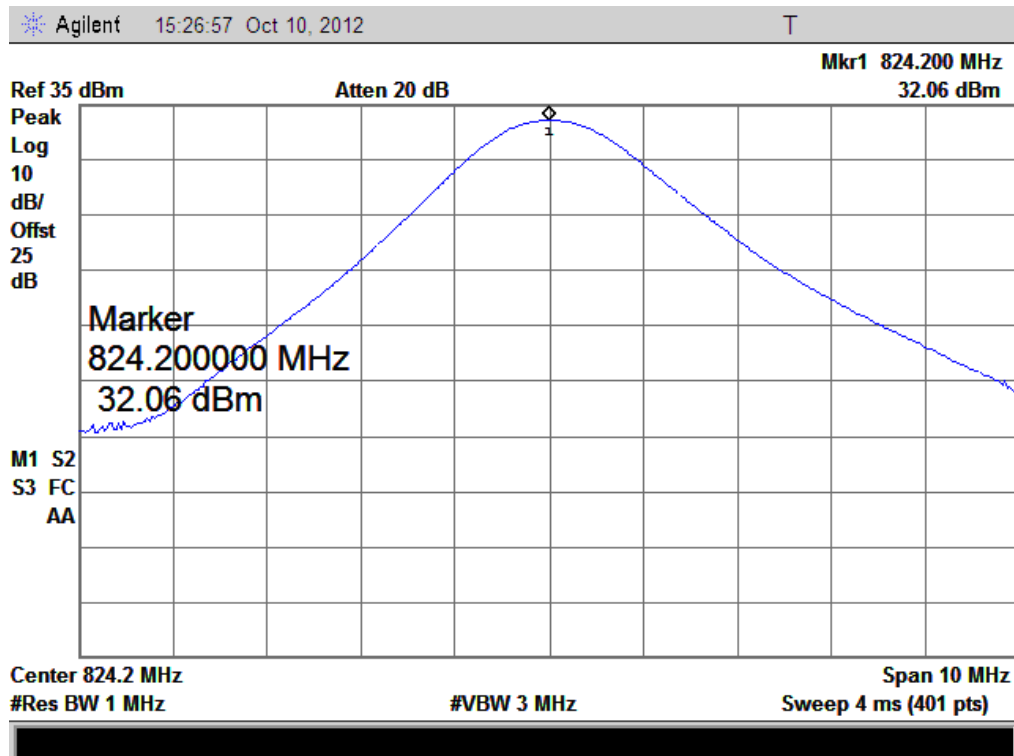
Band	Channel	Frequency (MHz)	Measured Output Power		Limit dBm	Verdict
			dBm	Refer to Plot		
GSM 850MHz	128	824.2	32.06	Plot A1 to A3	35	PASS
	190	836.6	31.45			PASS
	251	848.8	31.91			PASS
GSM 1900MHz	512	1850.2	30.29	Plot B1 to B3	32	PASS
	661	1880.0	29.87			PASS
	810	1909.8	29.89			PASS
GPRS 850MHz	128	824.2	31.26	Plot C1 to C3 ^{Note 1}	35	PASS
	190	836.6	31.23			PASS
	251	848.8	31.48			PASS
GPRS 1900MHz	512	1850.2	30.15	Plot D1 to D3 ^{Note 1}	32	PASS
	661	1880.0	29.80			PASS
	810	1909.8	29.80			PASS
EGPRS 850MHz	128	824.2	28.50	Plot E1 to E3 ^{Note 1}	35	PASS
	190	836.6	27.99			PASS
	251	848.8	28.01			PASS
EGPRS 1900MHz	512	1850.2	27.31	Plot F1 to F3 ^{Note 1}	32	PASS
	661	1880.0	26.92			PASS
	810	1909.8	26.74			PASS

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

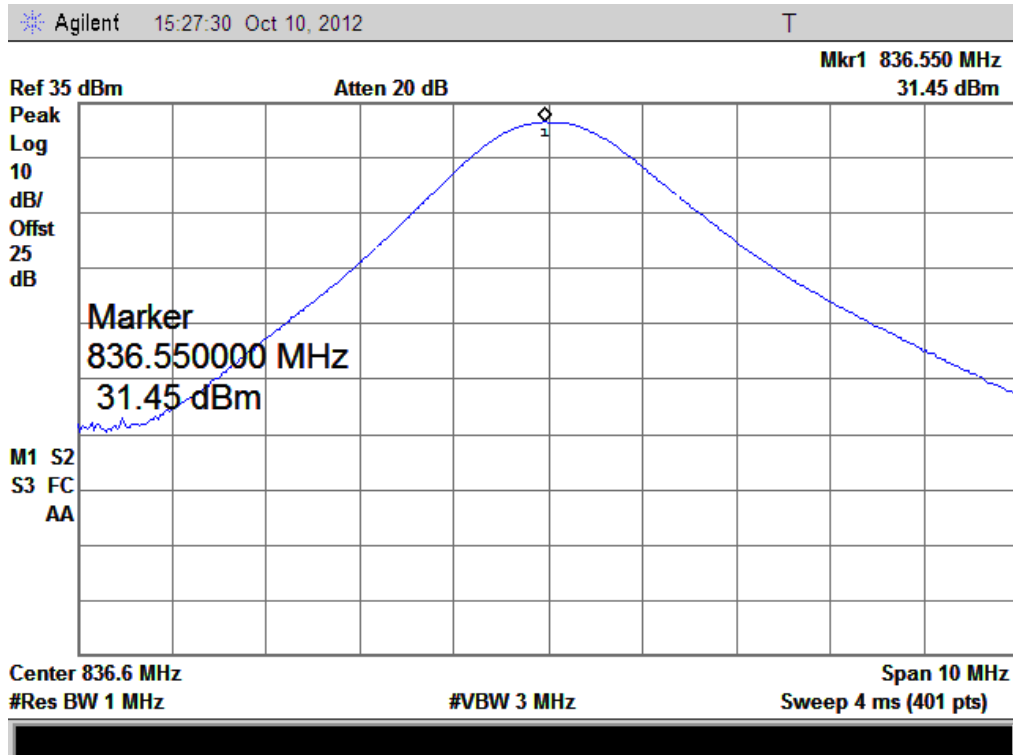
2. WCDMA Model Test Verdict:

Item	band	WCDMA 1900		
	ARFCN	9262	9400	9538
	subtest	dBm		
5.2(WCDMA)	non	22.06	23.43	23.02
HSDPA	1	21.89	23.21	22.85
	2	21.90	23.19	22.80
	3	21.45	22.74	22.29
	4	21.48	22.69	22.26
HSUPA	1	21.75	23.01	22.57
	2	20.01	21.05	20.52
	3	20.85	21.98	21.49
	4	20.05	21.00	20.59
	5	21.69	22.95	22.52

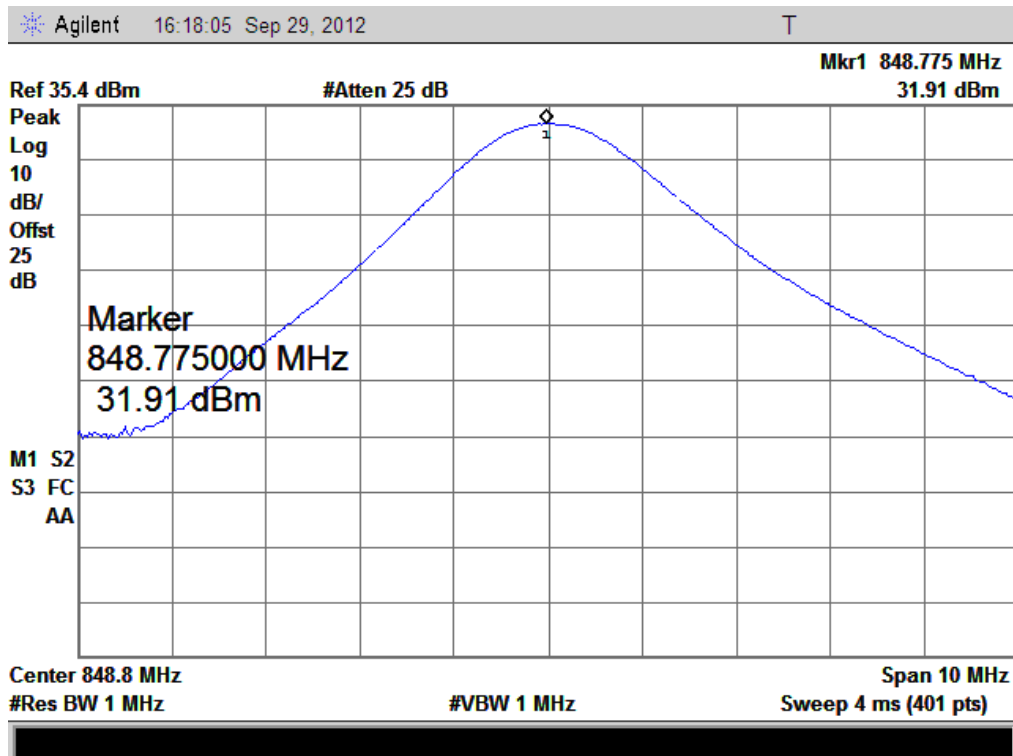
3. GSM Model Test Plots:



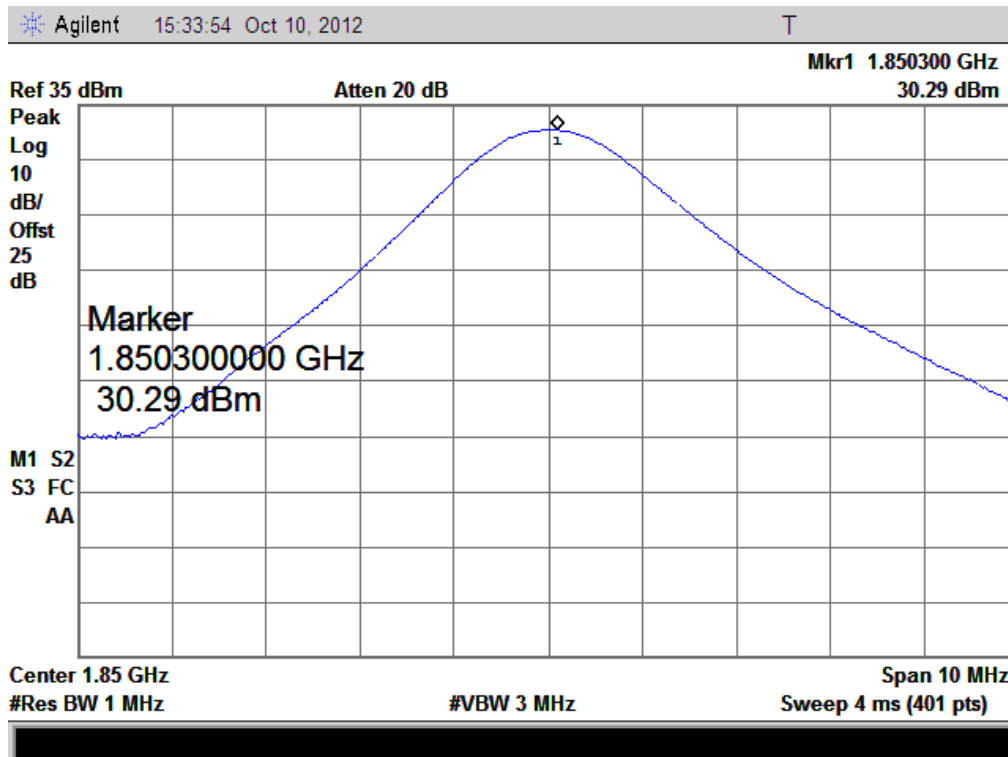
(Plot A1: GSM 850MHz Channel = 128)



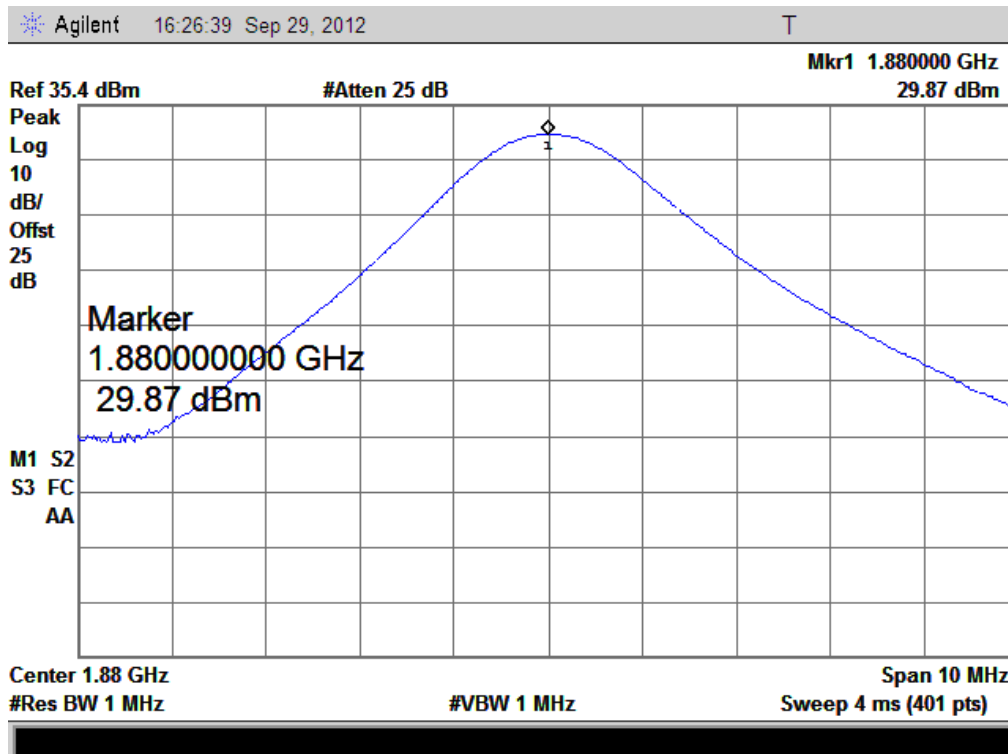
(Plot A2: GSM 850MHz Channel = 190)



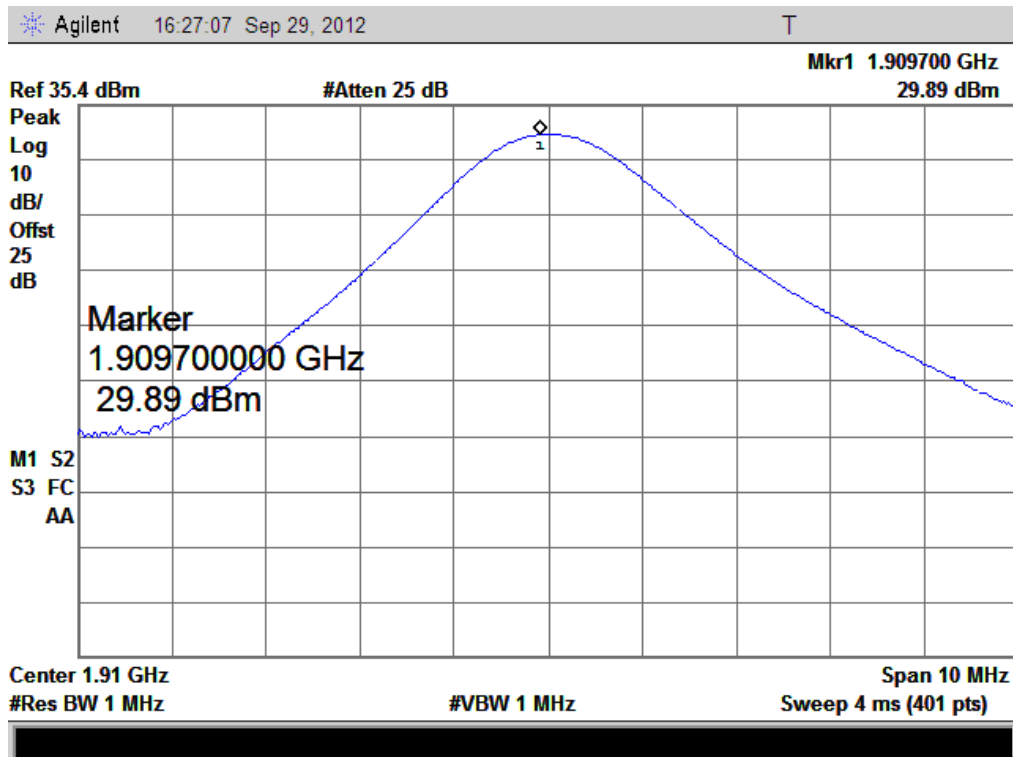
(Plot A3: GSM 850MHz Channel = 251)



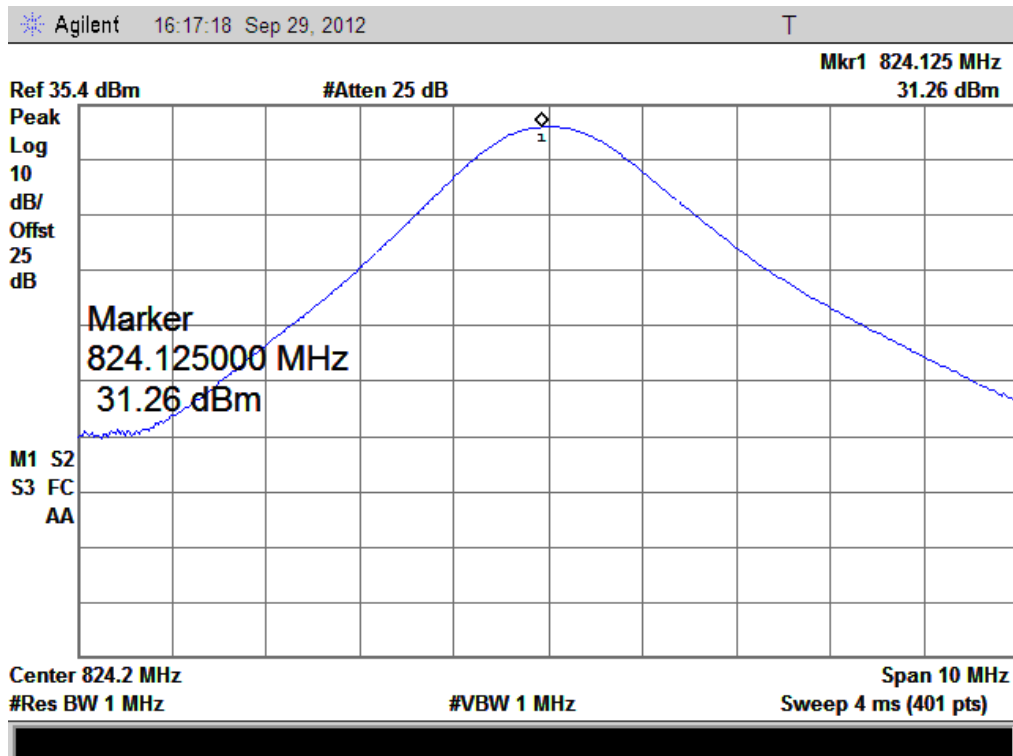
(Plot B1: GSM 1900MHz Channel = 512)



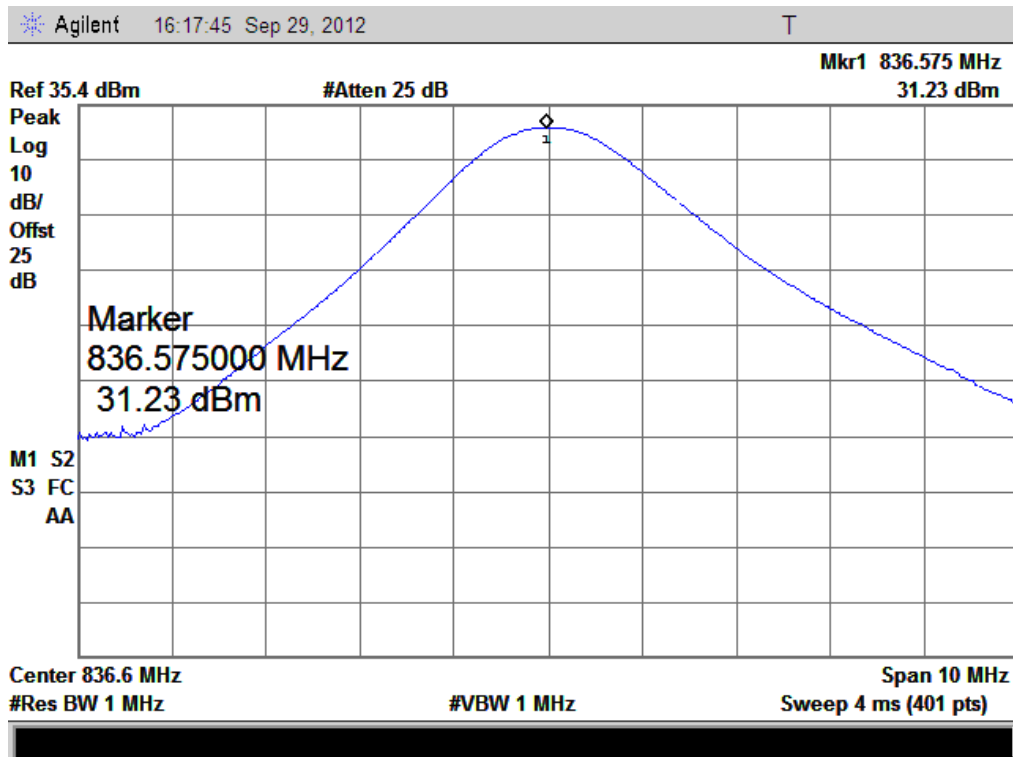
(Plot B2: GSM 1900MHz Channel = 661)



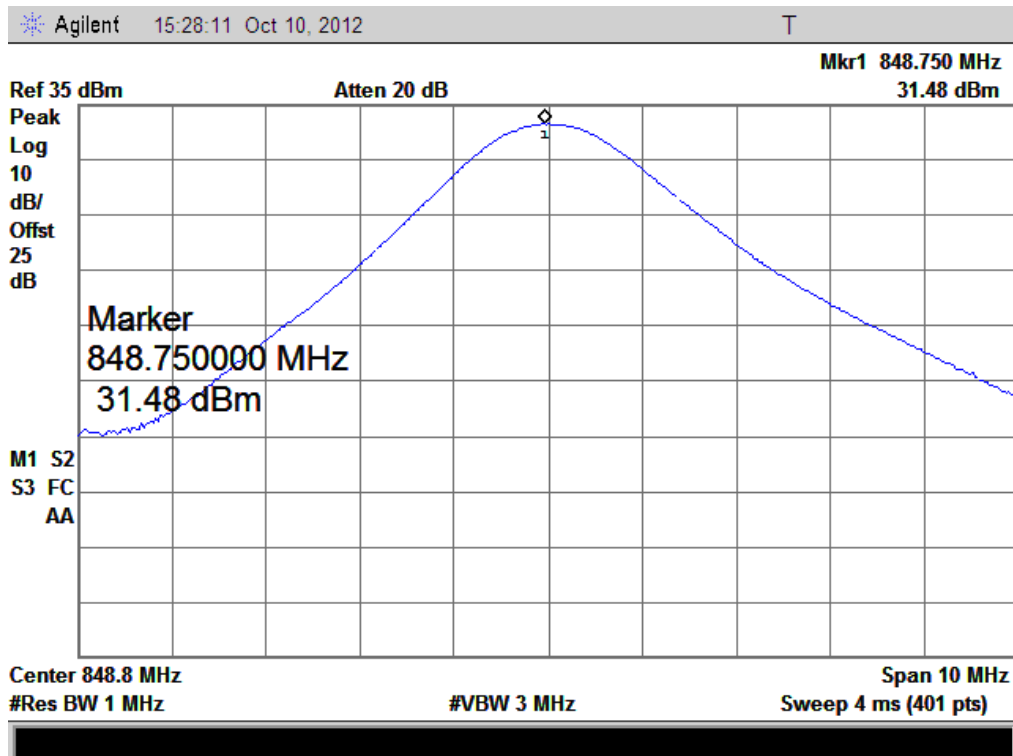
(Plot B3: GSM 1900MHz Channel = 810)



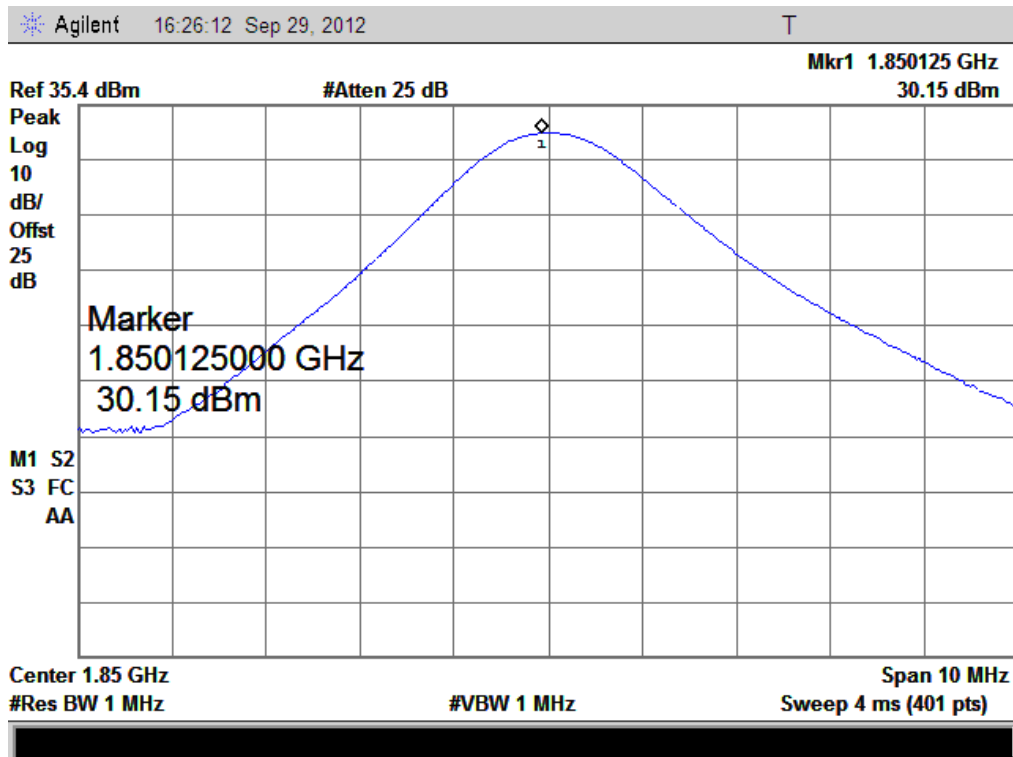
(Plot C1: GPRS 850MHz Channel = 128)



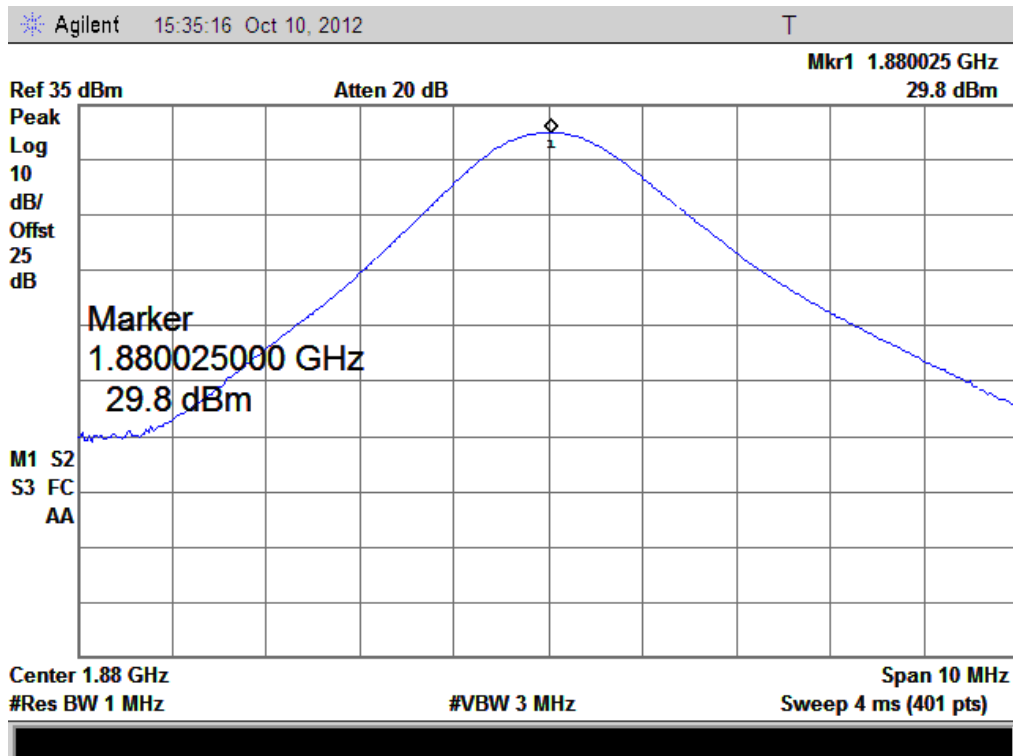
(Plot C2: GPRS 850MHz Channel = 190)



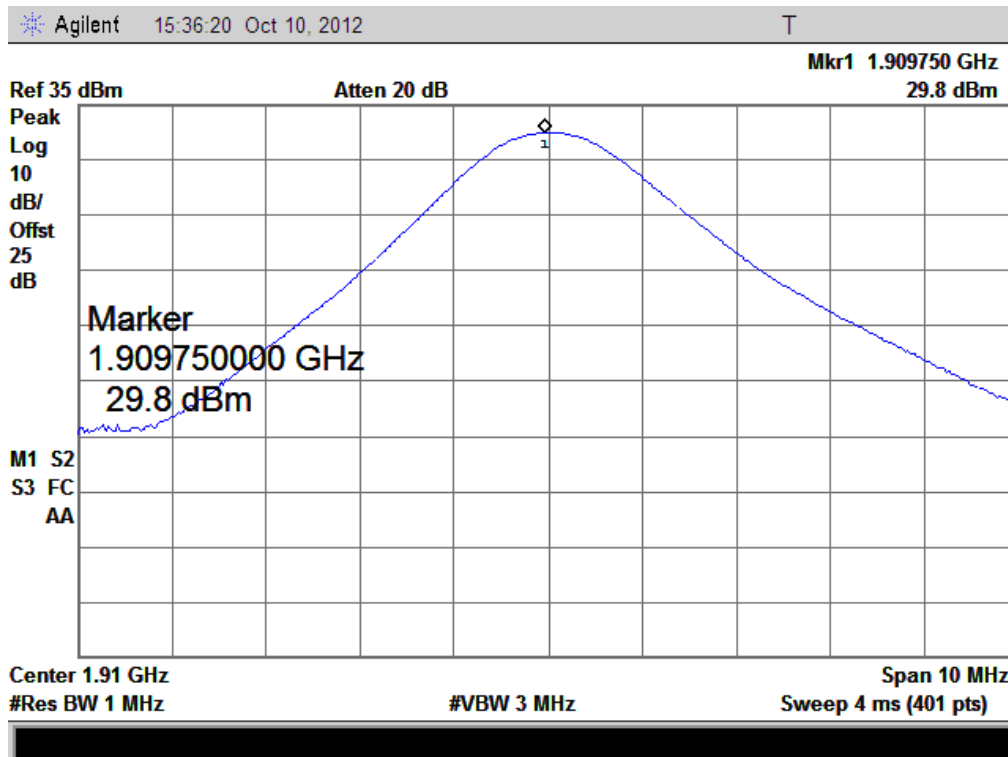
(Plot C3: GPRS 850MHz Channel = 251)



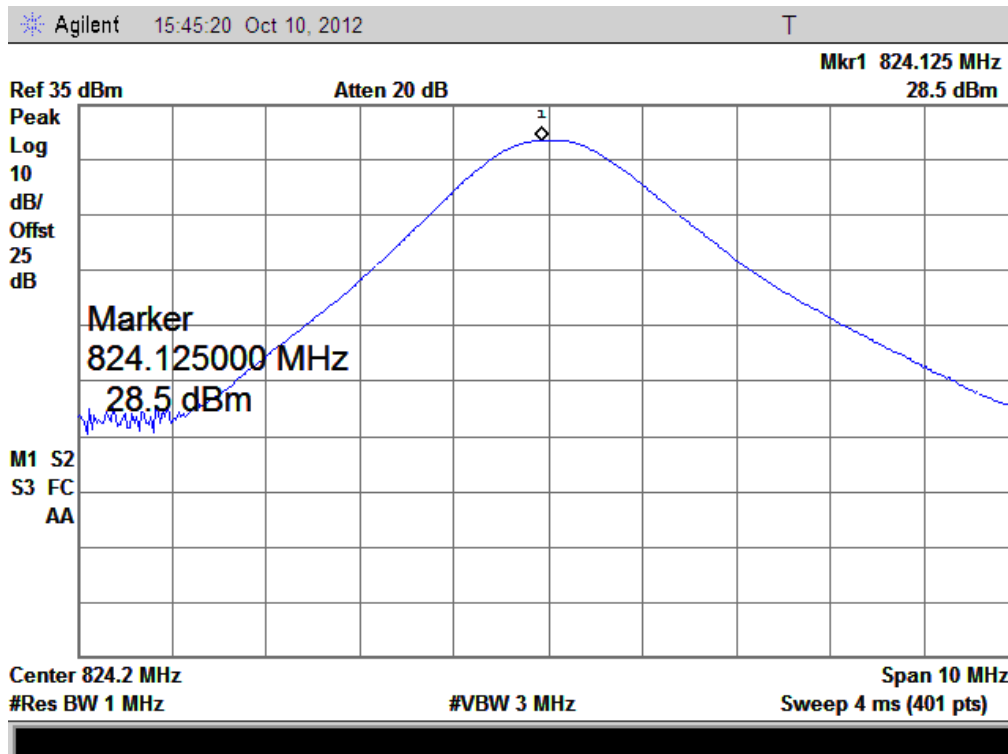
(Plot D1: GPRS 1900MHz Channel = 512)



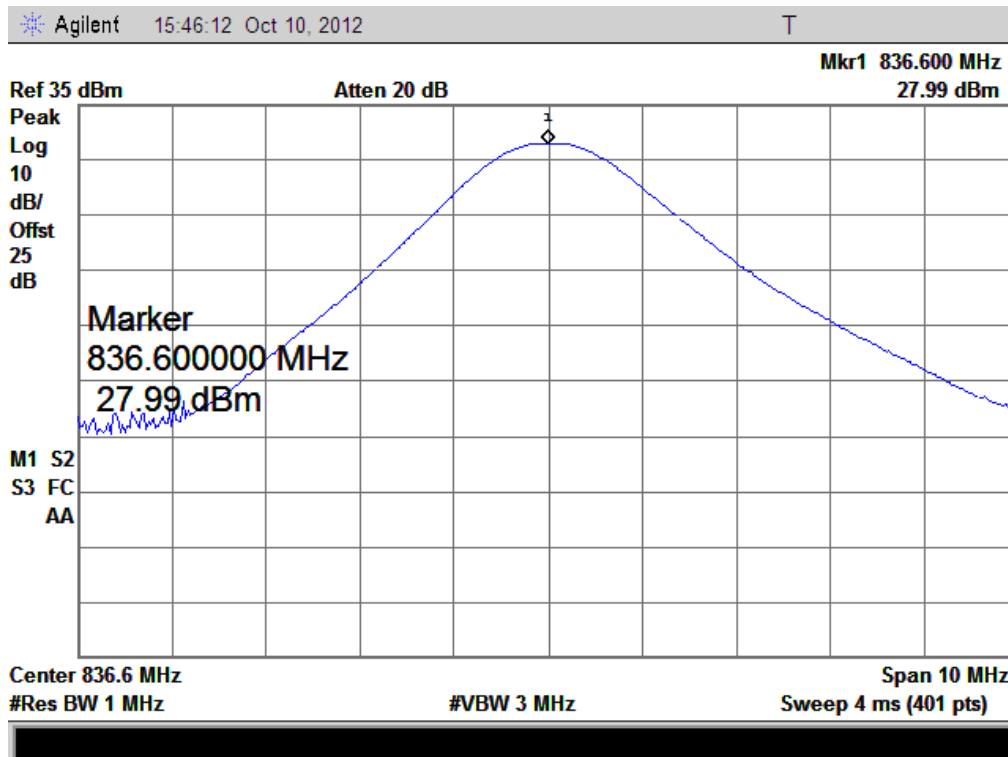
(Plot D2: GPRS 1900MHz Channel = 661)



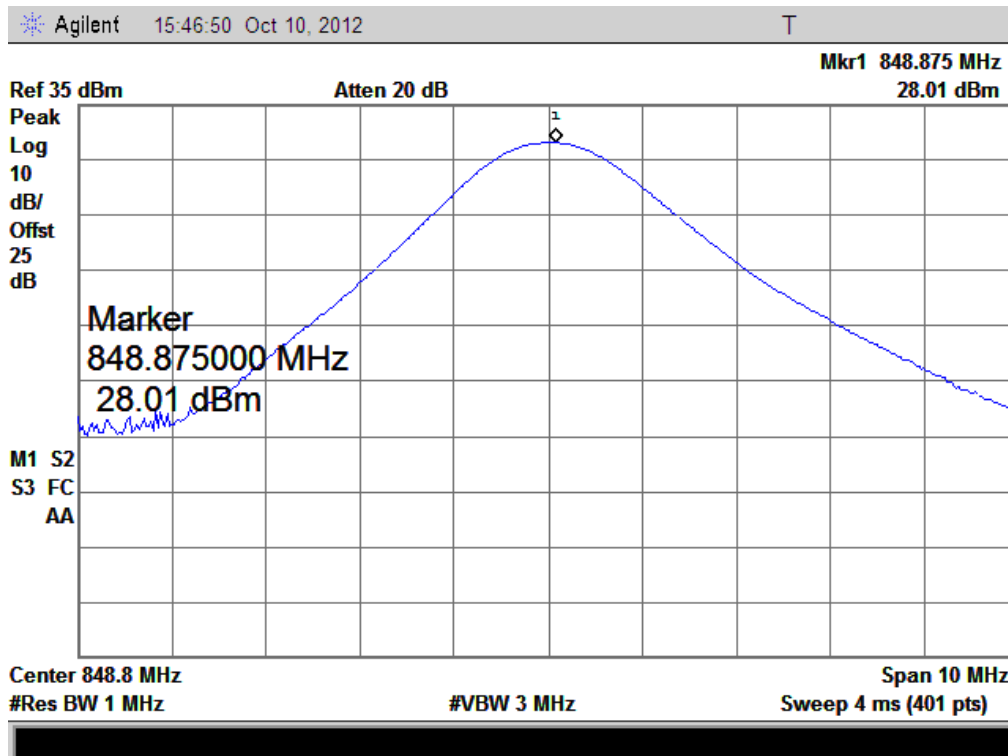
(Plot D3: GPRS 1900Hz Channel = 810)



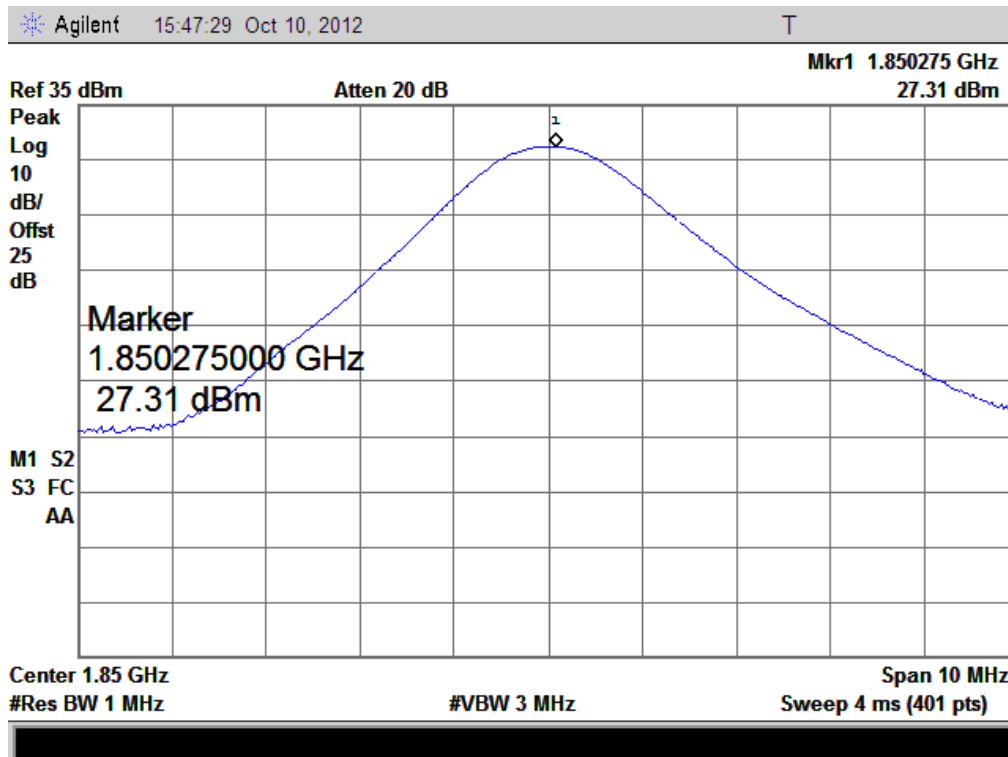
(Plot E 1: EGPRS 850MHz Channel = 128)



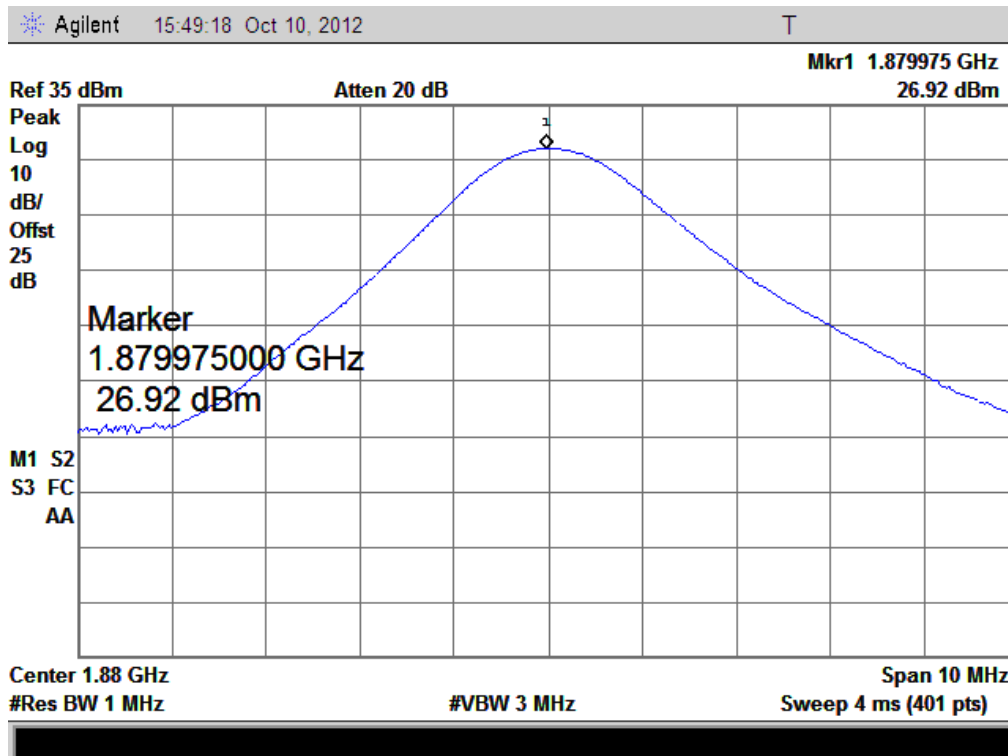
(Plot E 2: EGPRS 850MHz Channel = 190)



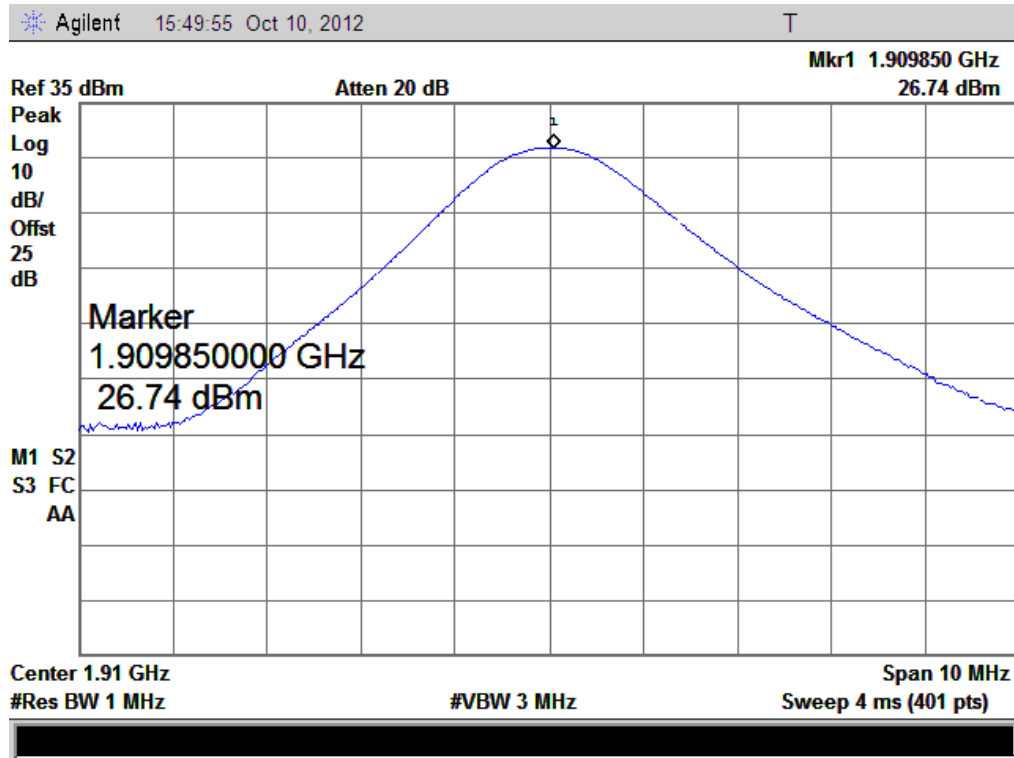
(Plot E 3: EGPRS 850MHz Channel = 251)



(Plot F 1: EGPRS 1900MHz Channel = 512)



(Plot F 2: EGPRS 1900MHz Channel = 661)



(Plot F 3: EGPRS 1900MHz Channel = 810)

2.2 99% Occupied Bandwidth

2.2.1 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,

2.2.2 Test Description

See section 2.1.2 of this report.

2.2.3 Test Verdict

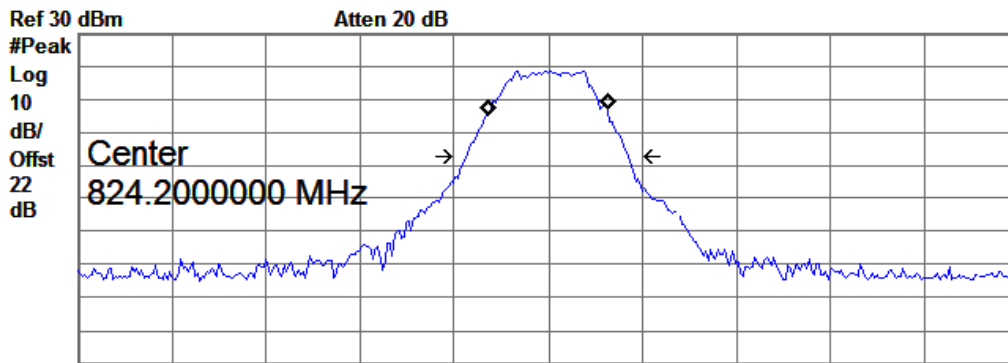
Here the lowest, middle and highest channels are selected to perform testing to verify the 99% occupied bandwidth.

1. Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth	Refer to Plot
GSM 850MHz	128	824.2	251.6780 kHz	Plot A
	190	836.6	254.1286 kHz	Plot B
	251	848.8	255.6554 kHz	Plot C
GSM 1900MHz	512	1850.2	254.7615 kHz	Plot D
	661	1880.0	251.3859 kHz	Plot E
	810	1909.8	254.1142 kHz	Plot F
EDGE 850MHz	128	824.2	248.8657 kHz	Plot G
	190	836.6	251.1701 kHz	Plot H
	251	848.8	245.3651 kHz	Plot I
EDGE 1900MHz	512	1850.2	245.7703 kHz	Plot J
	661	1880.0	248.4337 kHz	Plot K
	810	1909.8	247.7135 kHz	Plot L
WCDMA 1900MHz	9400	1880	4.1233 MHz	Plot M
HSDPA 1900MHz	9400	1880	4.1442 MHz	Plot N
HSUPA 1900MHz	9400	1880	4.1304 MHz	Plot O

2. Test Plots:

Agilent 14:59:12 Sep 15, 2012 T



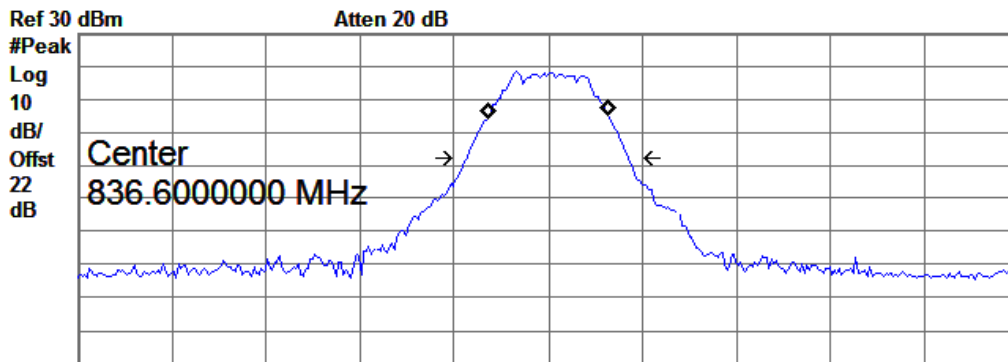
Center 824.2 MHz Span 2 MHz
 #Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
 251.6780 kHz x dB -26.00 dB

Transmit Freq Error -785.100 Hz
 x dB Bandwidth 341.764 kHz

(Plot A: GSM 850MHz Channel = 128)

Agilent 14:58:18 Sep 15, 2012 T



Center 836.6 MHz Span 2 MHz
 #Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

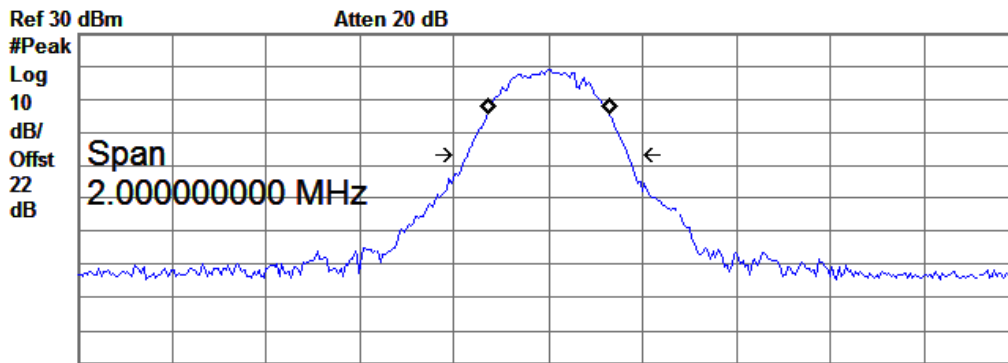
Occupied Bandwidth Occ BW % Pwr 99.00 %
 254.1286 kHz x dB -26.00 dB

Transmit Freq Error -154.309 Hz
 x dB Bandwidth 338.552 kHz

(Plot B: GSM 850MHz Channel = 190)



Agilent 14:57:28 Sep 15, 2012 T



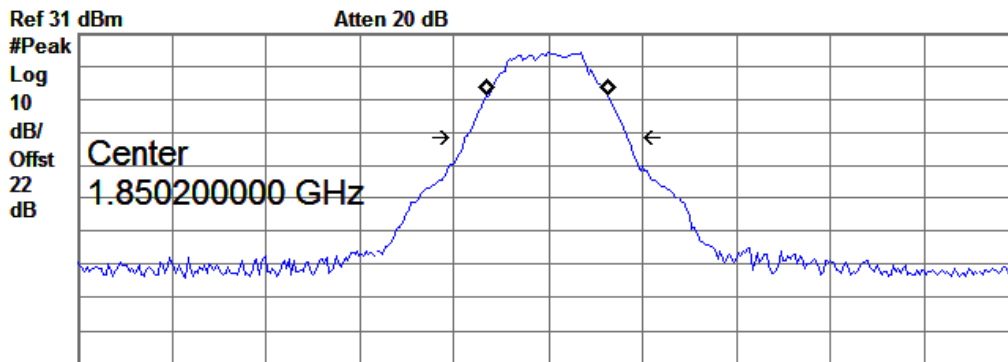
Center 848.8 MHz Span 2 MHz
#Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
255.6554 kHz x dB -26.00 dB

Transmit Freq Error 922.161 Hz
x dB Bandwidth 337.903 kHz

(Plot C: GSM 850MHz Channel = 251)

Agilent 14:32:15 Sep 15, 2012 T



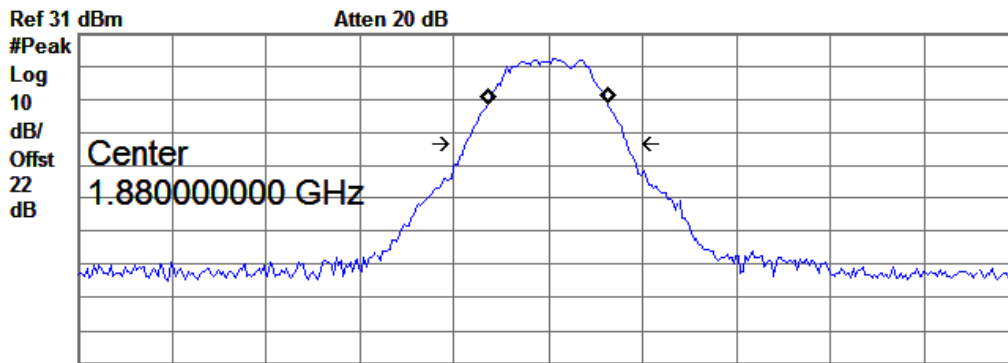
Center 1.85 GHz Span 2 MHz
#Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
254.7615 kHz x dB -26.00 dB

Transmit Freq Error -1.119 kHz
x dB Bandwidth 343.529 kHz

(Plot D: GSM 1900MHz Channel = 512)

Agilent 14:31:35 Sep 15, 2012 T



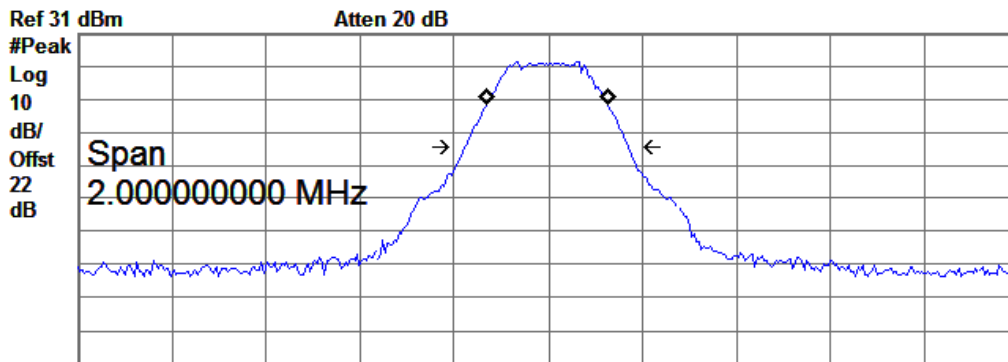
Center 1.88 GHz Span 2 MHz
 #Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
 251.3859 kHz x dB -26.00 dB

Transmit Freq Error -1.036 kHz
 x dB Bandwidth 341.589 kHz

(Plot E: GSM 1900MHz Channel = 661)

Agilent 14:31:03 Sep 15, 2012 T



Center 1.91 GHz Span 2 MHz
 #Res BW 30 kHz #VBW 300 kHz Sweep 5 ms (401 pts)

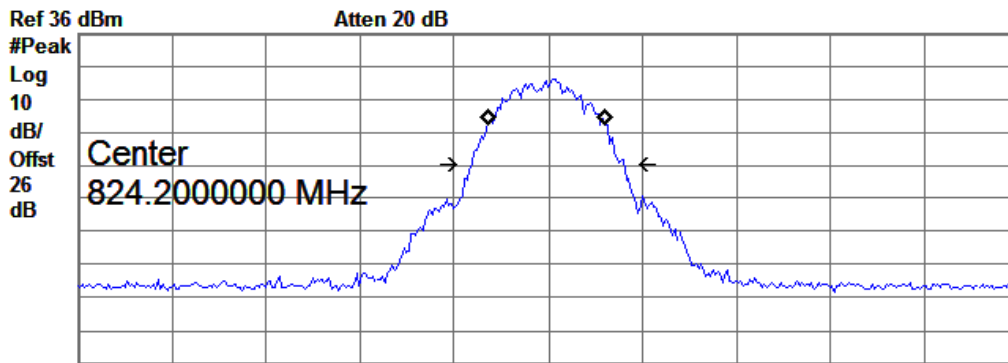
Occupied Bandwidth Occ BW % Pwr 99.00 %
 254.1142 kHz x dB -26.00 dB

Transmit Freq Error -1.461 kHz
 x dB Bandwidth 345.490 kHz

(Plot F: GSM 1900MHz Channel = 810)



Agilent 11:49:43 Sep 28, 2012 T



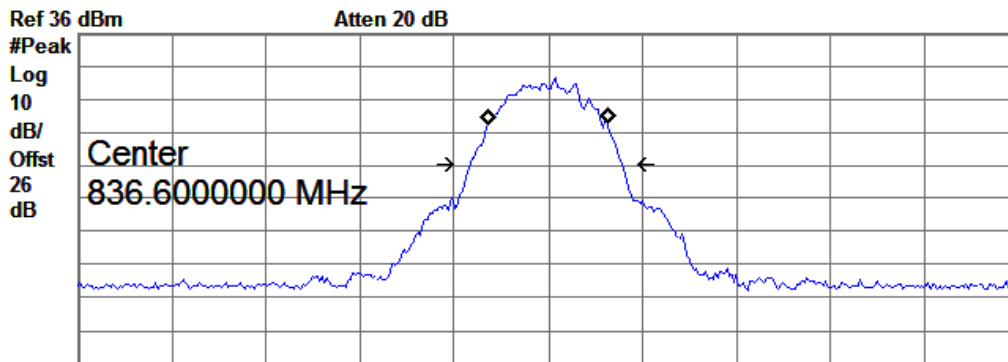
Center 824.2 MHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth 248.8657 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -2.584 kHz
x dB Bandwidth 323.795 kHz

(Plot G: EDGE 850MHz Channel = 128)

Agilent 11:49:15 Sep 28, 2012 T



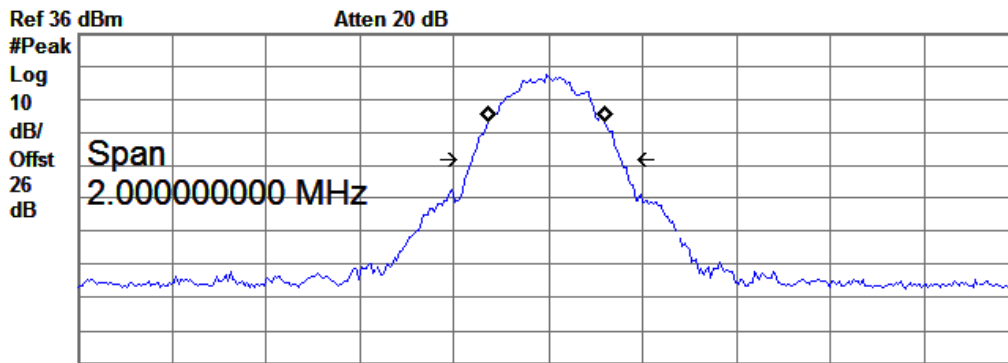
Center 836.6 MHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth 251.1701 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -899.494 Hz
x dB Bandwidth 318.145 kHz

(Plot H: EDGE 850MHz Channel = 190)

Agilent 11:48:40 Sep 28, 2012 T



Center 848.8 MHz #Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts) Span 2 MHz

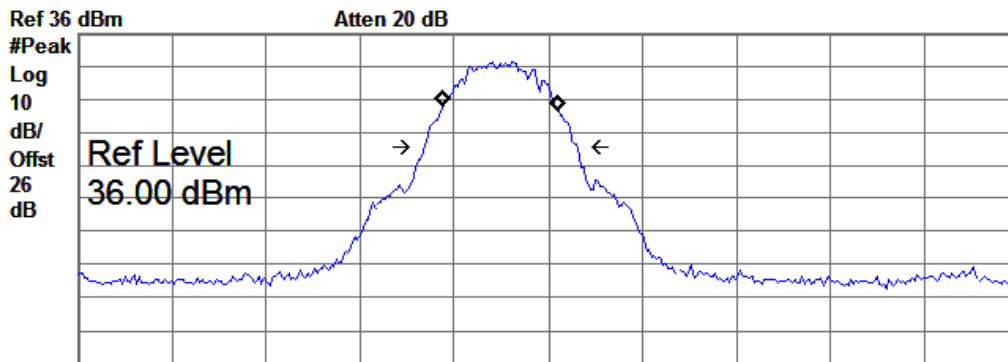
Occupied Bandwidth
245.3651 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -2.765 kHz
x dB Bandwidth 314.756 kHz

(Plot I: EDGE 850MHz Channel = 251)

Agilent 12:08:01 Sep 28, 2012 T



Center 1.85 GHz #Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts) Span 2 MHz

Occupied Bandwidth
245.7703 kHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

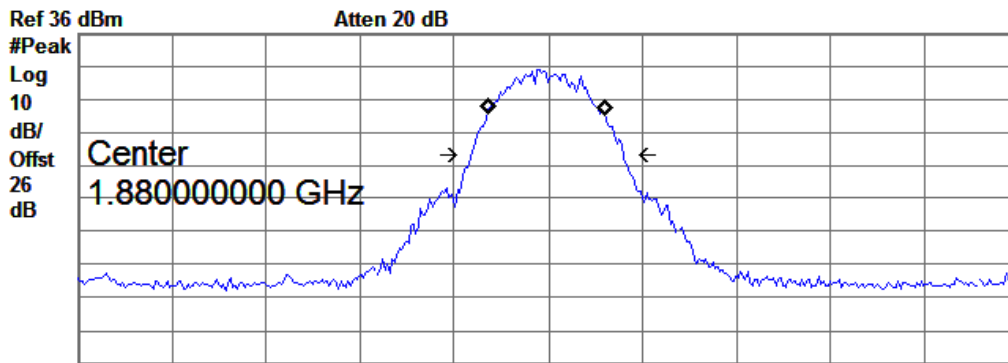
Transmit Freq Error -101.765 kHz
x dB Bandwidth 323.723 kHz

No Peak Found

(Plot J: EDGE 1900MHz Channel = 512)



Agilent 12:08:30 Sep 28, 2012 T



Center 1.88 GHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

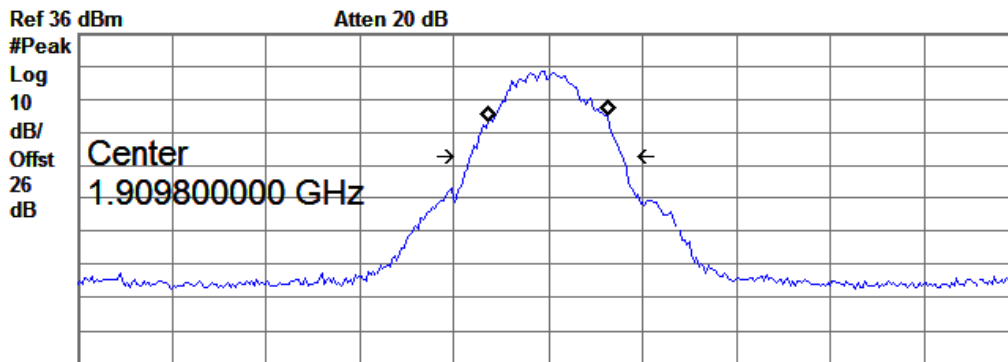
Occupied Bandwidth Occ BW % Pwr 99.00 %
248.4337 kHz x dB -26.00 dB

Transmit Freq Error -2.771 kHz
x dB Bandwidth 320.501 kHz

No Peak Found

(Plot K: EDGE 1900MHz Channel = 661)

Agilent 12:09:04 Sep 28, 2012 T



Center 1.91 GHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
247.7135 kHz x dB -26.00 dB

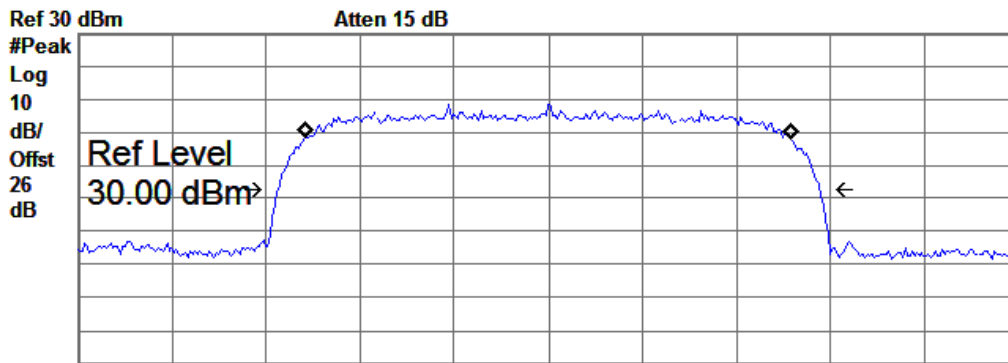
Transmit Freq Error -1.130 kHz
x dB Bandwidth 320.844 kHz

No Peak Found

(Plot L: EDGE 1900MHz Channel = 810)



Agilent 14:31:51 Sep 28, 2012 T



Center 1.88 GHz Span 8 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 80.26 ms (401 pts)

Occupied Bandwidth
4.1233 MHz

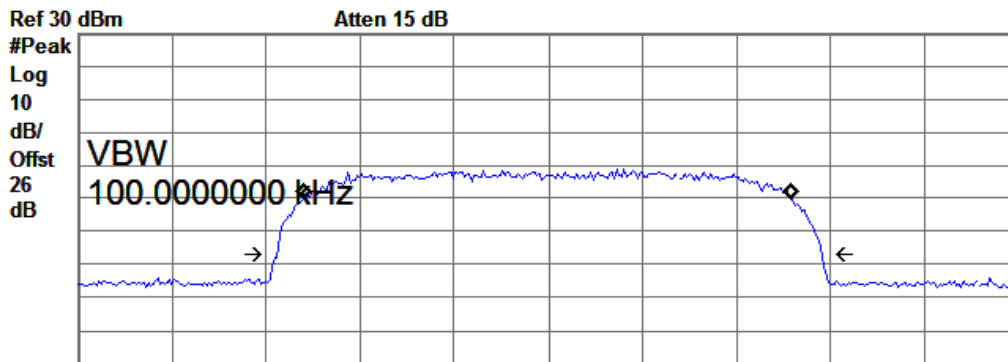
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 2.273 kHz
x dB Bandwidth 4.613 MHz

No Peak Found

(Plot M: WCDMA 1900MHz Channel = 9400)

Agilent 16:52:41 Sep 28, 2012 T



Center 1.88 GHz Span 8 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 80.26 ms (401 pts)

Occupied Bandwidth
4.1442 MHz

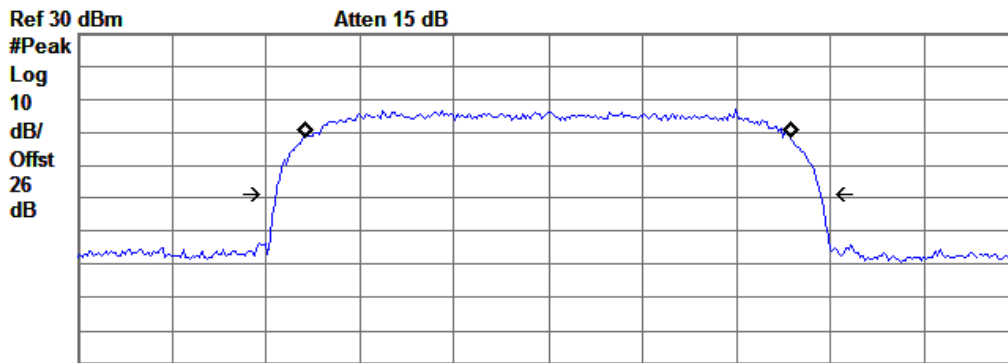
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -3.058 kHz
x dB Bandwidth 4.629 MHz

No Peak Found

(Plot N: HSDPA 1900MHz Channel = 9400)

Agilent 20:04:16 Sep 28, 2012 T



Center 1.88 GHz #Res BW 10 kHz #VBW 100 kHz Sweep 80.26 ms (401 pts) Span 8 MHz

Occupied Bandwidth
4.1304 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -4.719 kHz
x dB Bandwidth 4.631 MHz

No Peak Found

(Plot O: HSUPA1900MHz Channel = 9400)

2.3 Frequency Stability

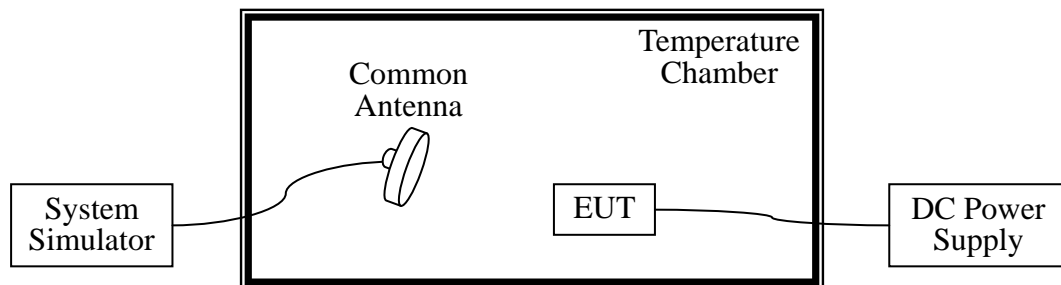
2.3.1 Requirement

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 $+50^{\circ}\text{C}$ 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.

2.3.2 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
System Simulator	Agilent	E5515C	GB43130131	2012.05
DC Power Supply	Good Will	GPS-3030DD	EF920938	2012.05
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2012.05

2.3.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC and 3.6VDC, which are specified by the applicant; the normal temperature here used is 25°C . The frequency

deviation limit of 850MHz band is ± 2.5 ppm, and 1900MHz is ± 1 ppm

1. GSM 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.7	-30	10.72	± 2060.5	-9.66	± 2091.5	5.05	± 2122	PASS
	-20	-11.17		19.70		8.41		
	-10	17.28		-11.06		1.19		
	0	-23.03		21.06		34.30		
	+10	-13.02		13.05		17.11		
	+20	-10.39		-12.76		-15.51		
	+30	27.75		-2.05		19.46		
	+40	5.31		-3.77		-6.80		
+50	-22.19	5.39	7.58					
4.2	+25	23.74	19.65	23.11				
3.6	+25	23.29	-20.70	-14.93				

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	-10.39	± 1850.2	38.28	± 1880.0	27.27	± 1909.8	PASS
	-20	27.75		-2.15		9.49		
	-10	5.31		40.06		-12.90		
	0	-22.19		1.99		12.66		
	+10	23.74		-19.86		5.05		
	+20	-10.39		-2.32		3.02		
	+30	-18.89		23.12		-13.01		
	+40	44.49		11.33		0.51		
+50	40.72	-17.55	21.45					
4.2	+25	16.15	38.10	-16.04				
3.6	+25	32.34	-22.06	-21.86				

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	-3.10	±2060.5	23.12	±2091.5	8.51	±2122	PASS
	-20	38.28		11.33		-12.90		
	-10	-2.15		-17.55		12.66		
	0	40.06		38.10		5.05		
	+10	1.99		-22.06		3.02		
	+20	-19.86		-16.11		10.76		
	+30	39.56		17.76		-16.51		
	+40	46.60		15.64		-2.10		
+50	39.98	3.67	-12.99					
4.2	+25	-15.71		13.95		-7.53		
3.6	+25	-17.70		6.23		6.78		

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		
+50	-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 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	17.29	±1852.4	18.25	±1880.0	-8.99	±1907.6	PASS
	-20	-7.32		2.49		23.60		
	-10	-3.40		-10.71		14.81		
	0	16.47		-7.77		-3.07		
	+10	30.18		21.97		17.42		
	+20	-2.62		11.87		-10.39		
	+30	22.31		-0.59		17.47		
	+40	0.32		21.45		27.84		
	+50	-13.55		-5.71		-2.53		
4.2	+25	23.21	14.58	20.95				
3.6	+25	22.00	26.37	-23.22				

6. 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		
	+50	16.32		-25.88		-12.52		
4.2	+25	-11.28	29.43	-2.83				
3.6	+25	10.33	-2.27	14.42				

7. 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	14.55	±1852.4	30.18	±1880	-12.97	±1907.6	PASS
	-20	7.15		19.36		12.35		
	-10	8.69		-5.91		29.57		
	0	2.01		7.29		-6.20		
	+10	-4.75		-4.52		-12.61		
	+20	16.38		31.70		-13.09		
	+30	-1.76		33.66		-0.38		
	+40	23.52		1.15		-11.85		
	+50	13.79		-7.94		-5.91		
4.2	+25	-7.08		6.81		25.48		
3.6	+25	22.58		-1.83		-15.78		

2.4 Conducted Out of Band Emissions

2.4.1 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.

2.4.2 Test Description

See section 2.1.2 of this report.

2.4.3 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.

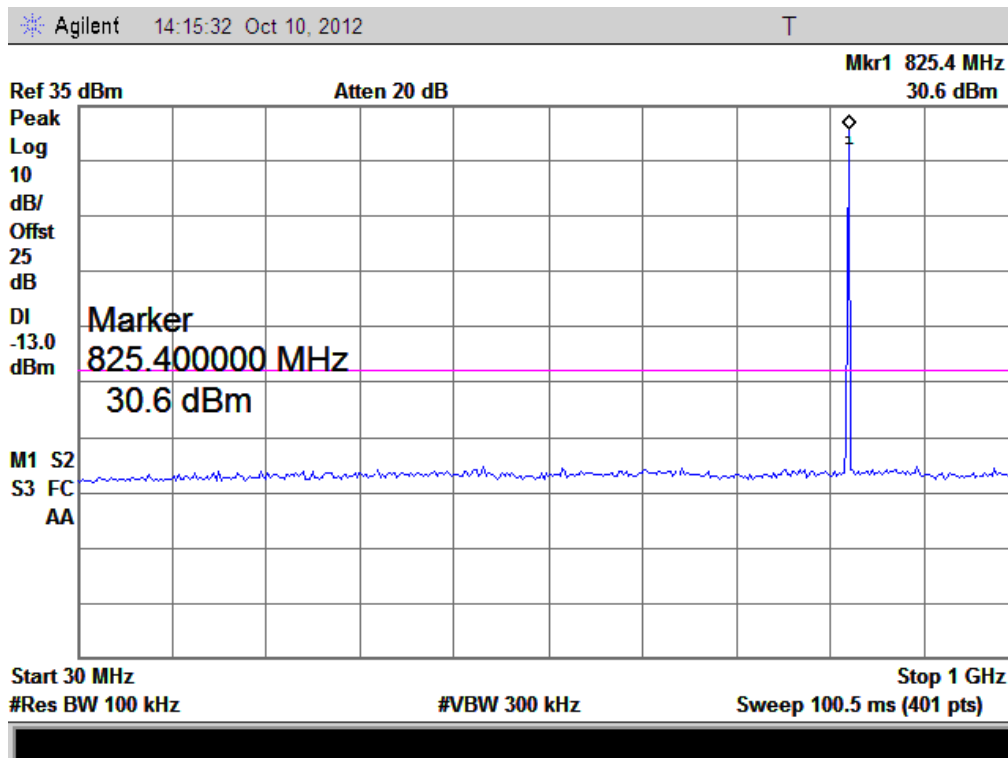
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-18.47	Plot A1toA1.1	-13	PASS
	190	836.6	-19.78	Plot A2toA2.1		PASS
	251	848.8	-19.95	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	-23.26	Plot B1toB1.1	-13	PASS
	661	1880.0	-23.16	Plot B2toB2.1		PASS
	810	1909.8	-23.51	Plot B3toB3.1		PASS
EDGE 850MHz	128	824.2	< -25	Plot C1toC1.1	-13	PASS
	190	836.6	< -25	Plot C2toC2.1		PASS
	251	848.8	< -25	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	-20.31	Plot D1toD1.1	-13	PASS
	661	1880.0	-20.80	Plot D2toD2.1		PASS
	810	1909.8	-21.29	Plot D3toD3.1		PASS
WCDMA 1900MHz	9262	1852.4	< -25	Plot E1toE1.1	-13	PASS
	9400	1880	< -25	Plot E2toE2.1		PASS
	9538	1907.6	< -25	Plot E3toE3.1		PASS
HSDPA 1900MHz	9262	1852.4	< -25	Plot F1toF1.1	-13	PASS
	9400	1880	< -25	Plot F2toF2.1		PASS
	9538	1907.6	< -25	Plot F3toF3.1		PASS

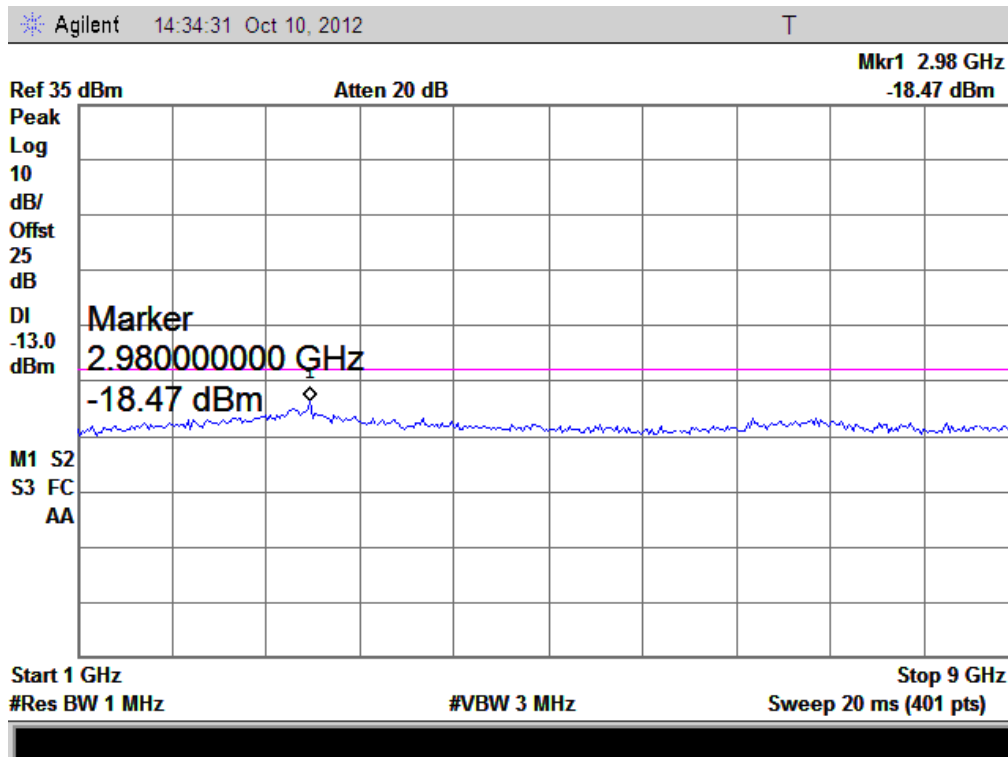
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
HSUPA 1900MHz	9262	1852.4	< -25	Plot G1toG1.1	-13	PASS
	9400	1880	< -25	Plot G2toG2.1		PASS
	9538	1907.6	< -25	Plot G3toG3.1		PASS

2. Test Plots for the Whole Measurement Frequency Range:

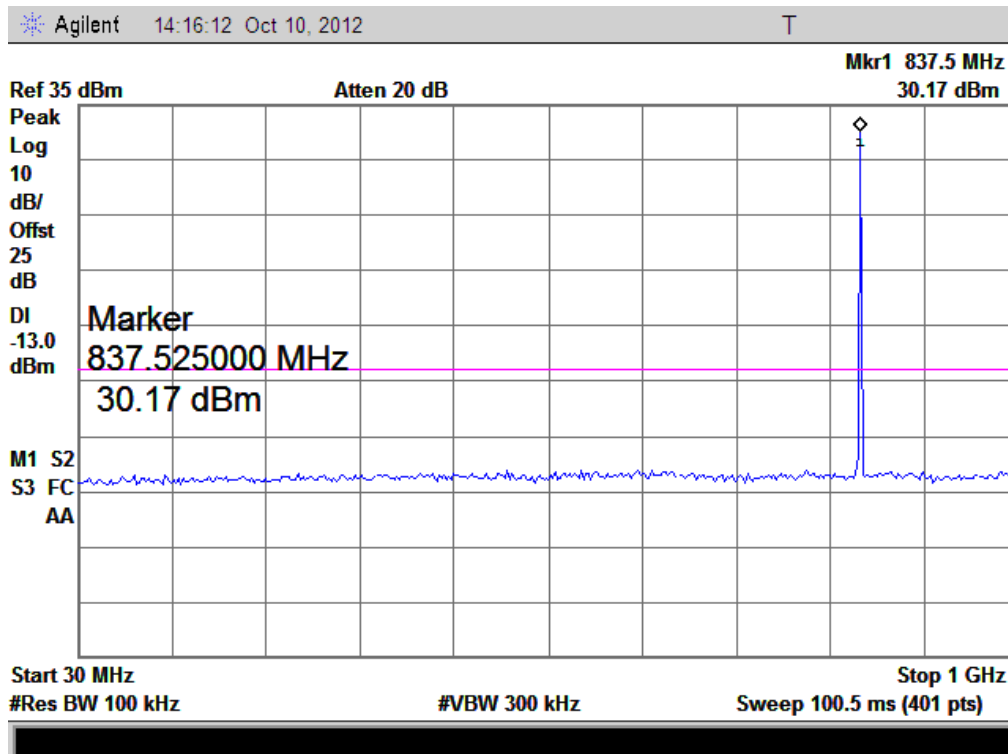
Note: the power of the EUT transmitting frequency should be ignored.



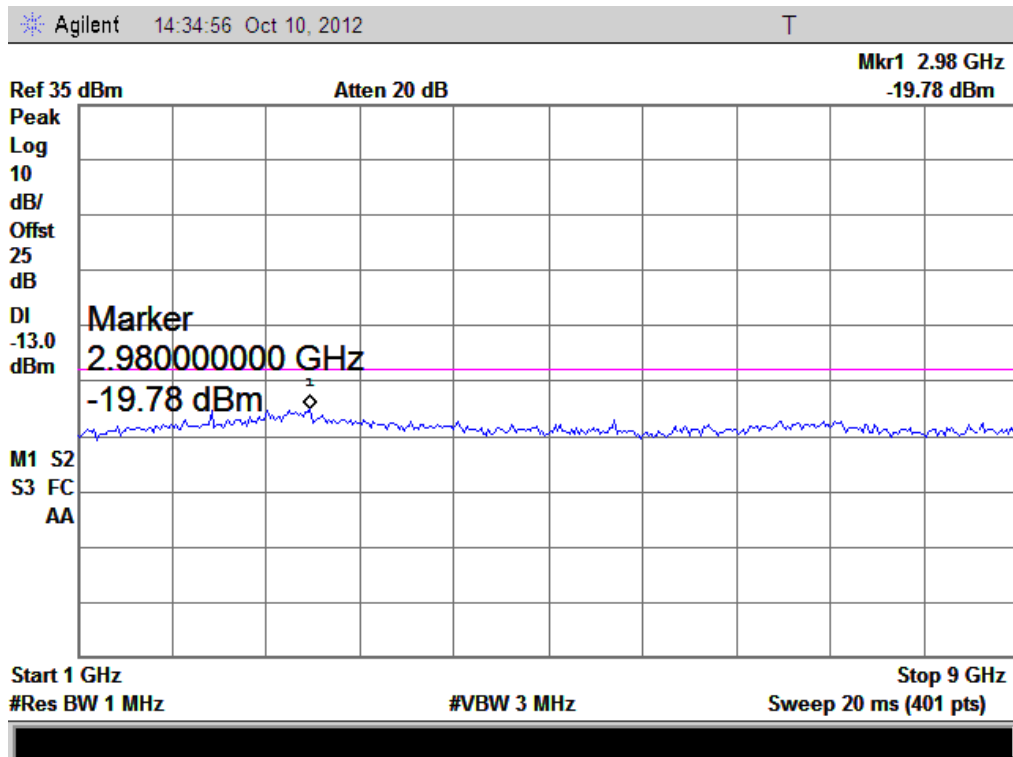
(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)



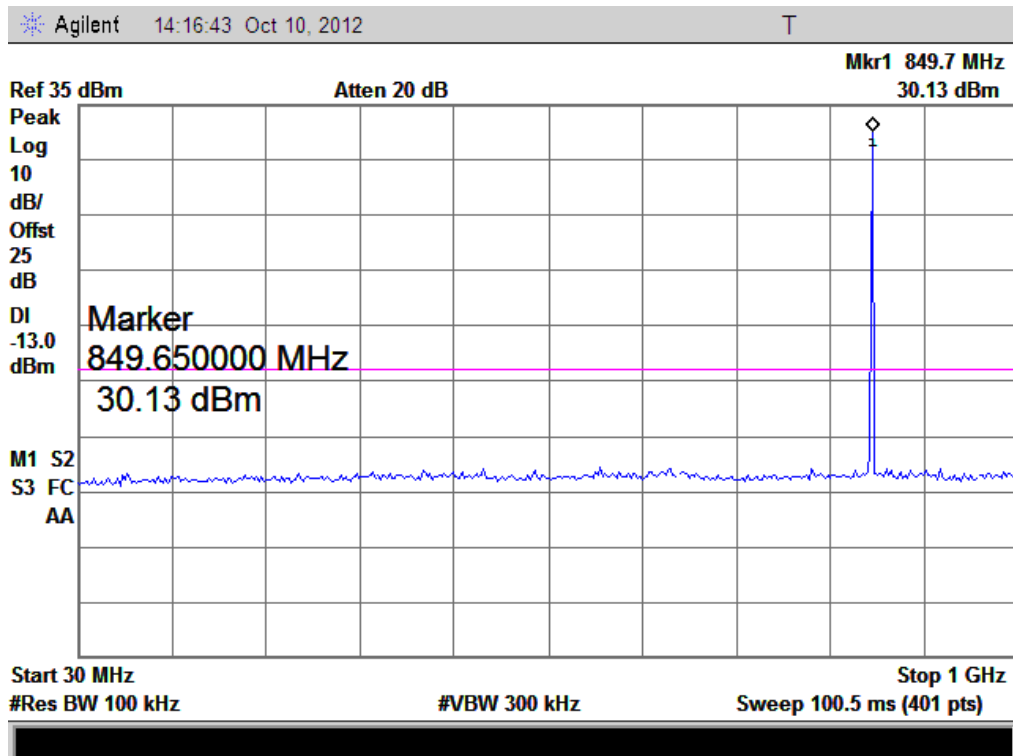
(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)



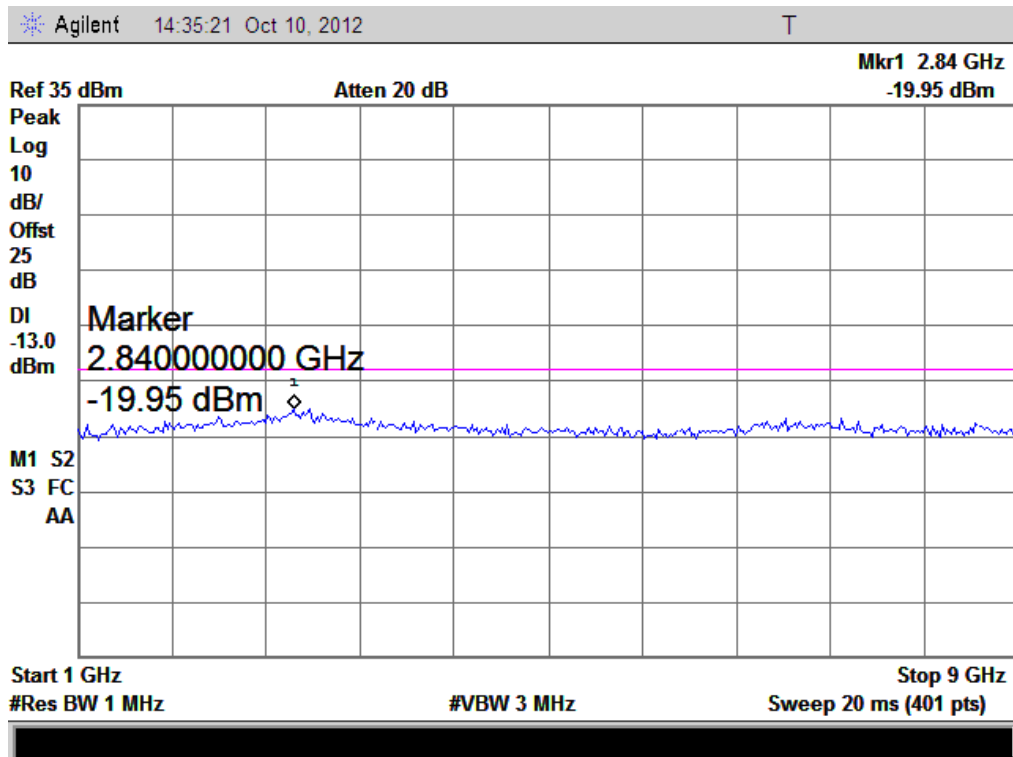
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



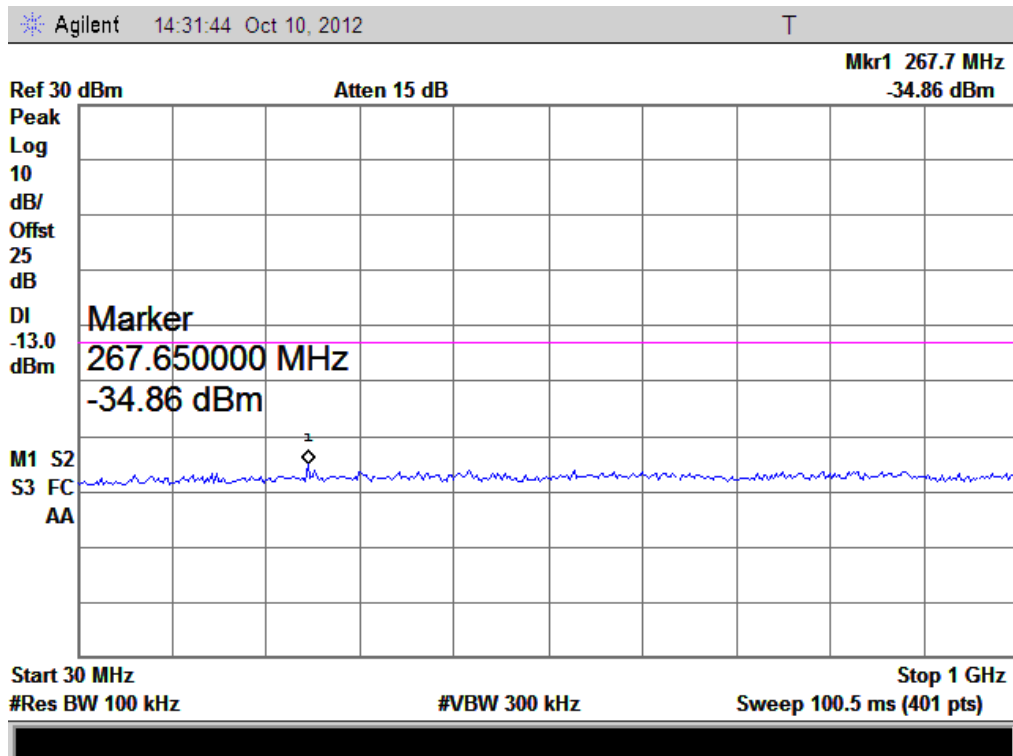
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



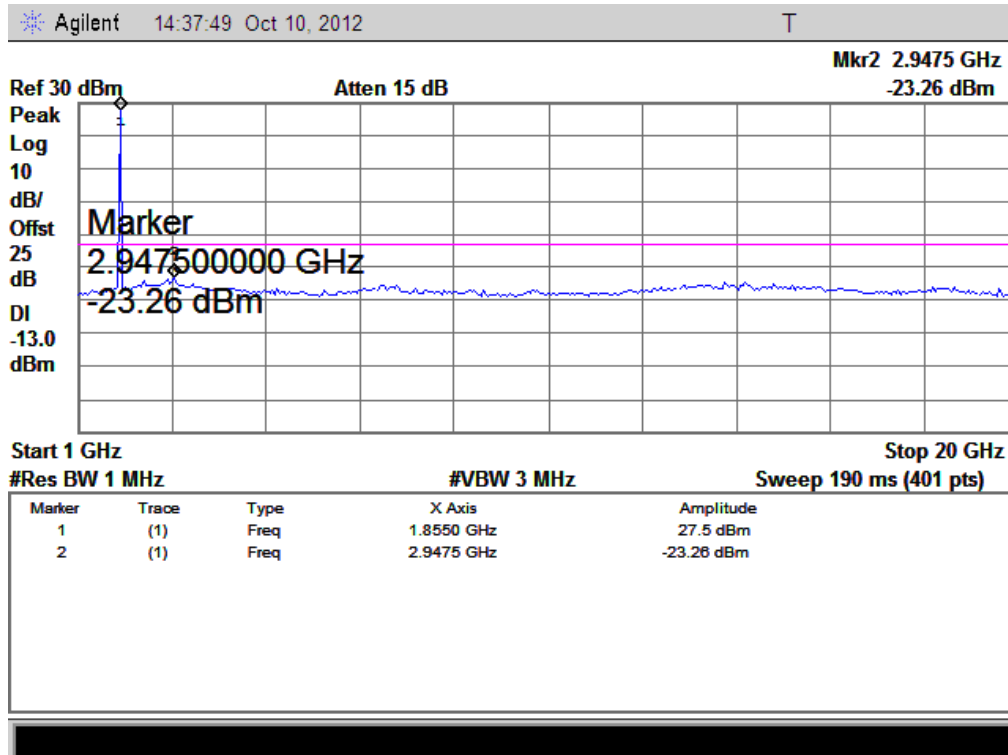
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



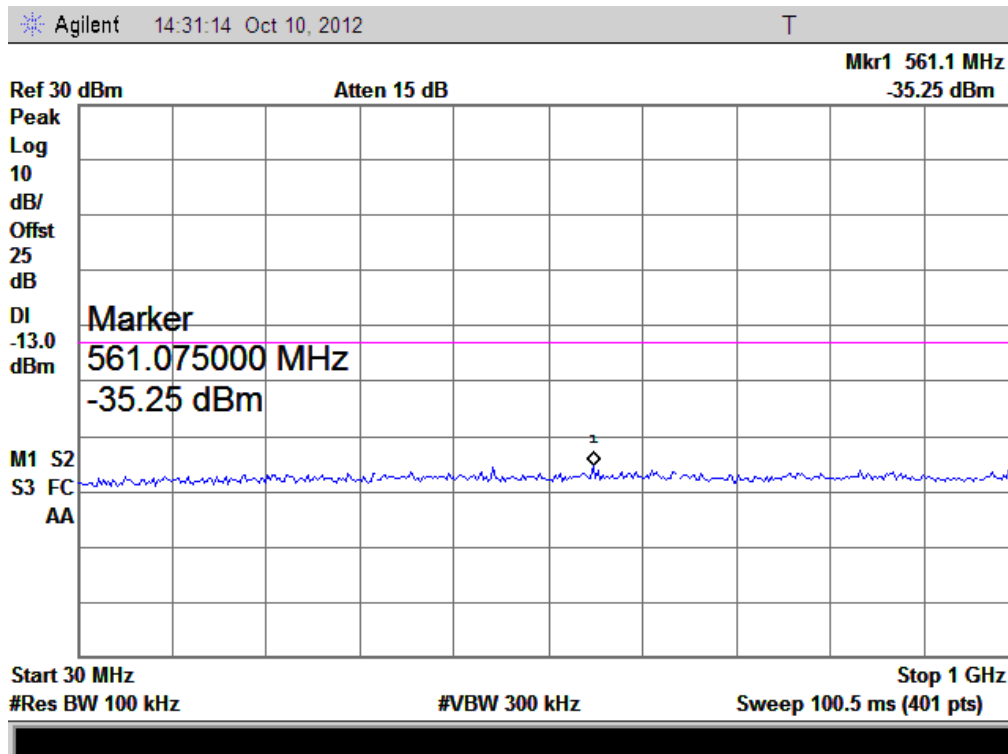
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



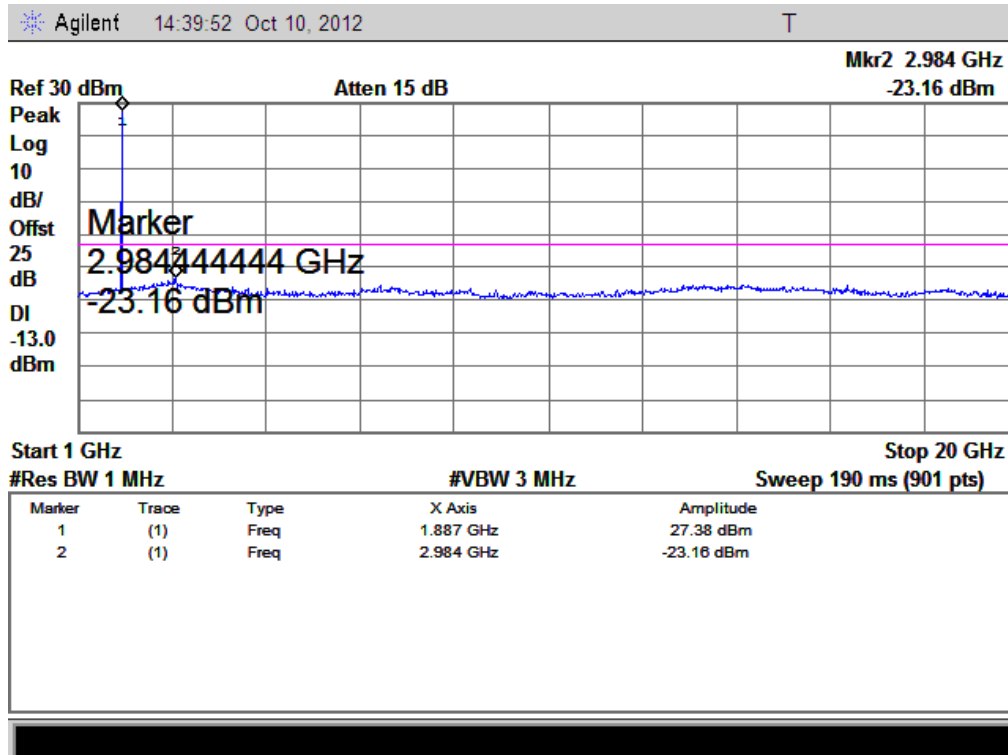
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



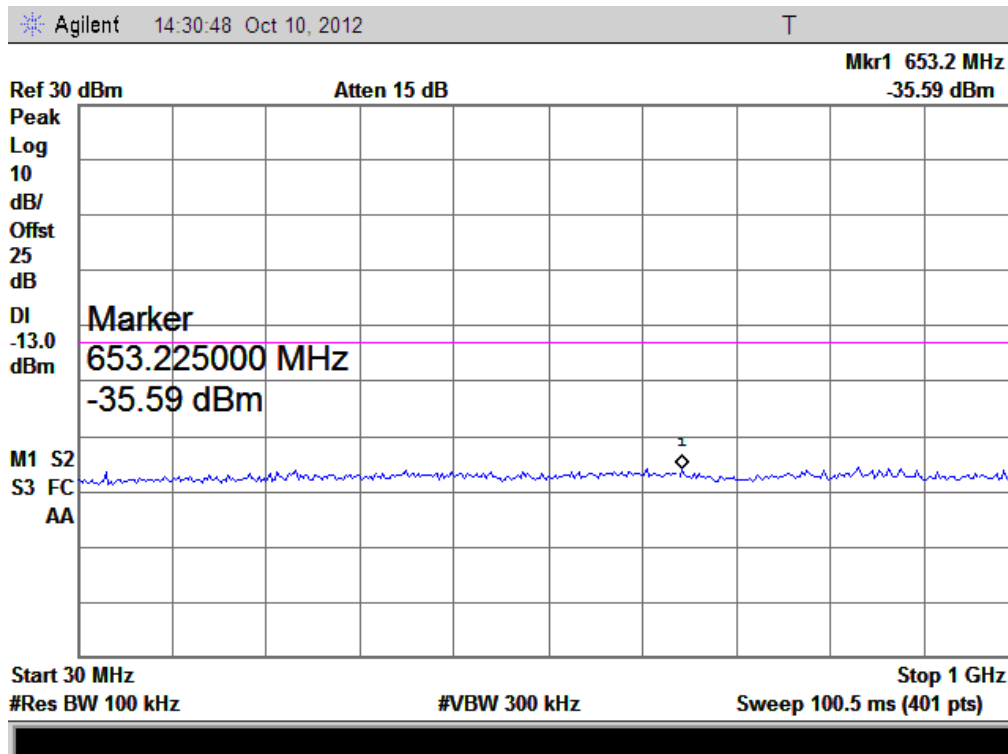
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



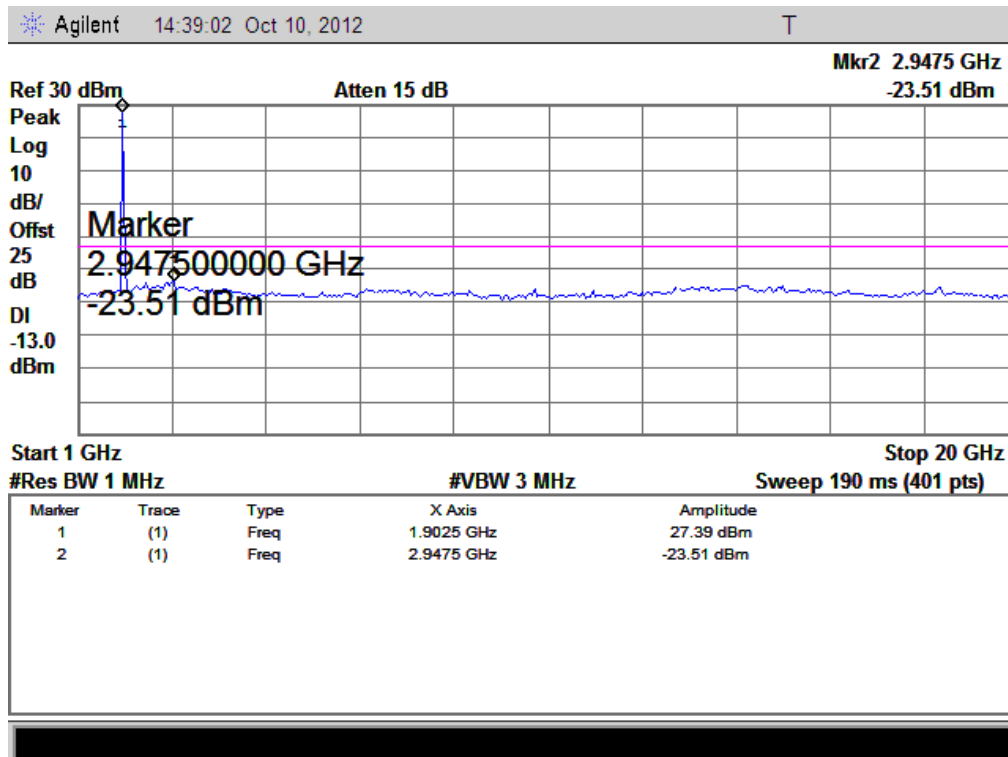
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)



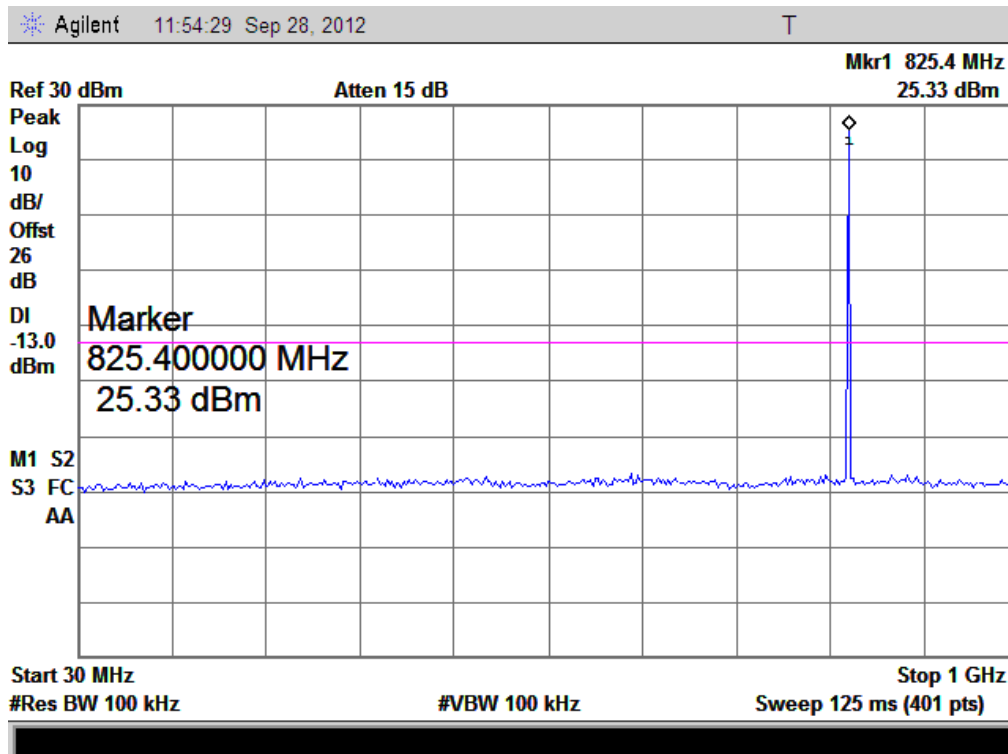
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



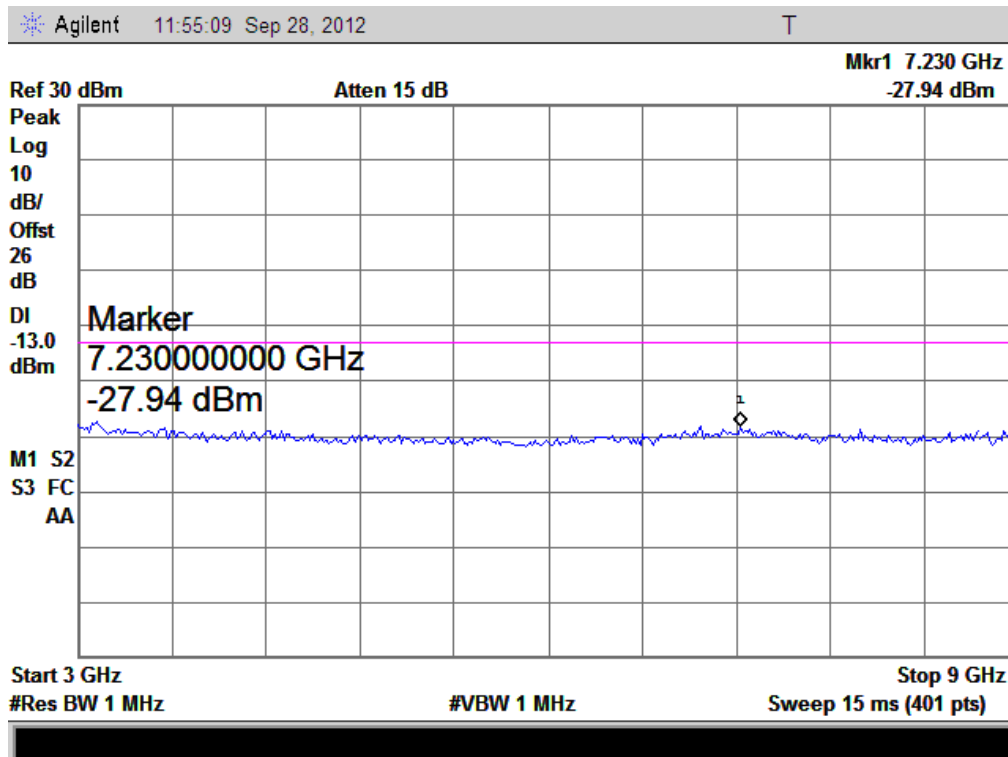
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



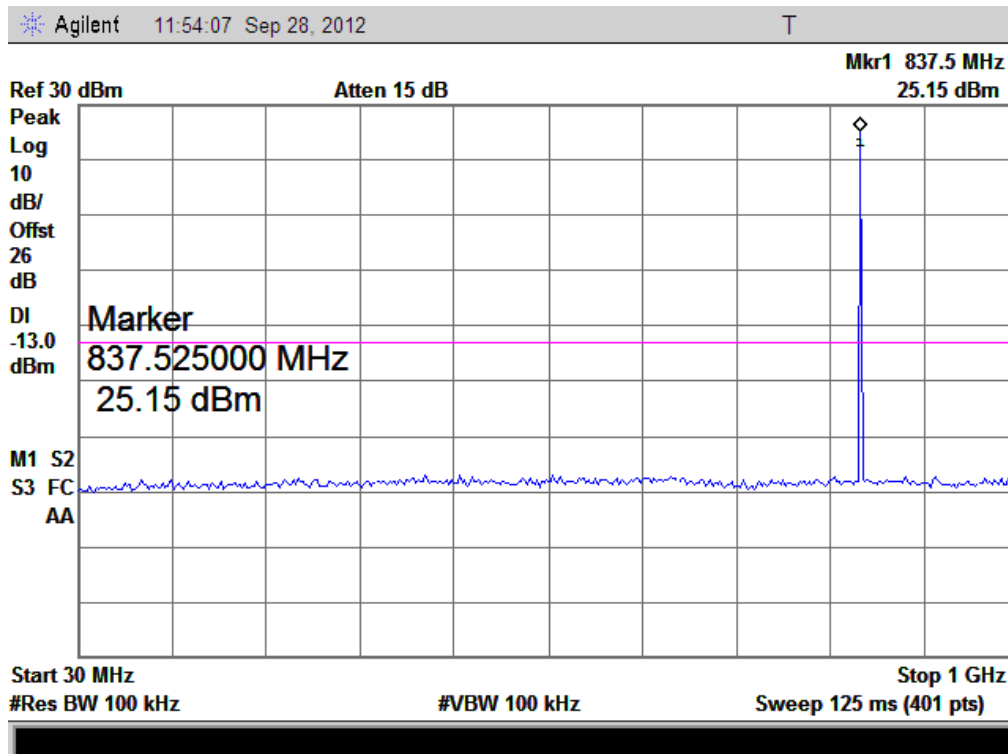
(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



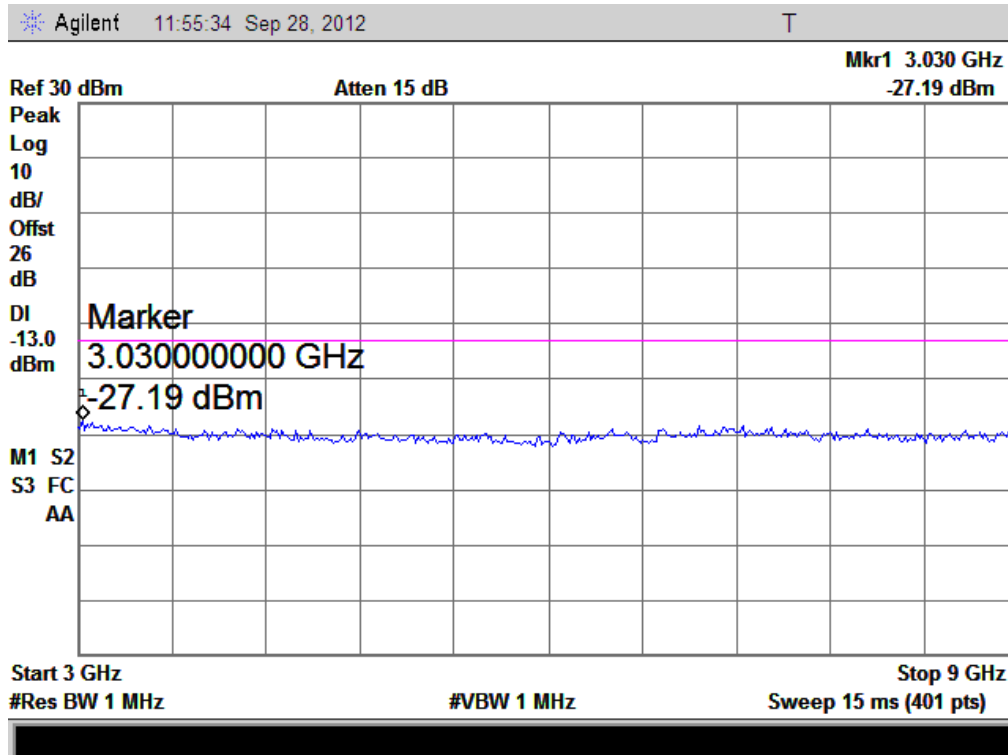
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)



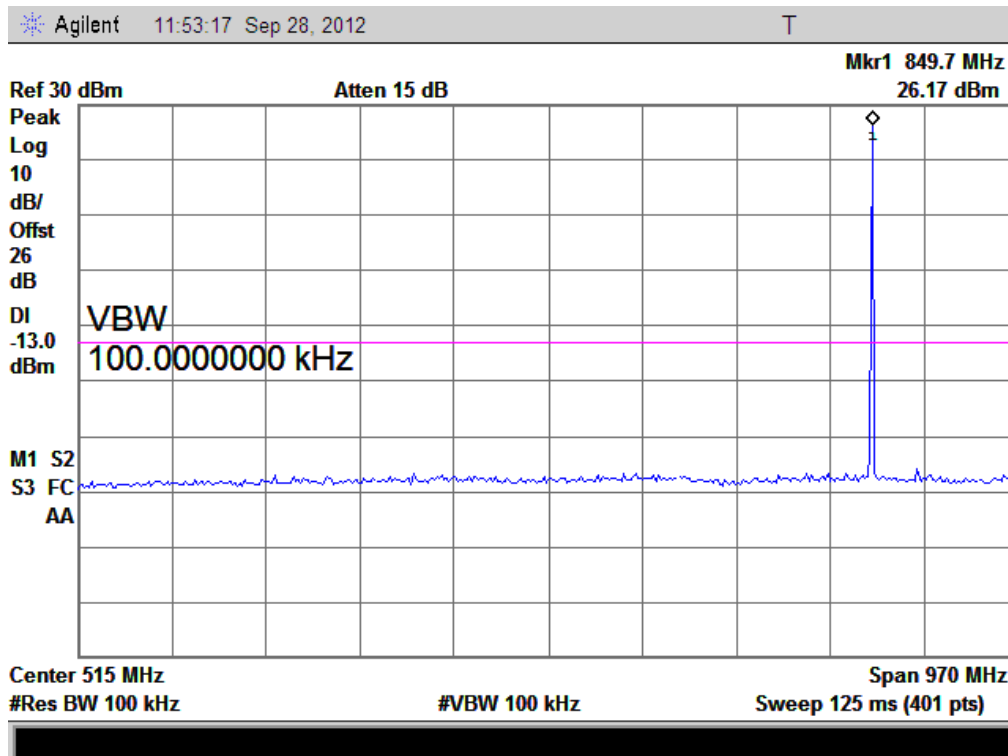
(Plot C1.1: EDGE 850MHz Channel = 128, 1GHz to 9GHz)



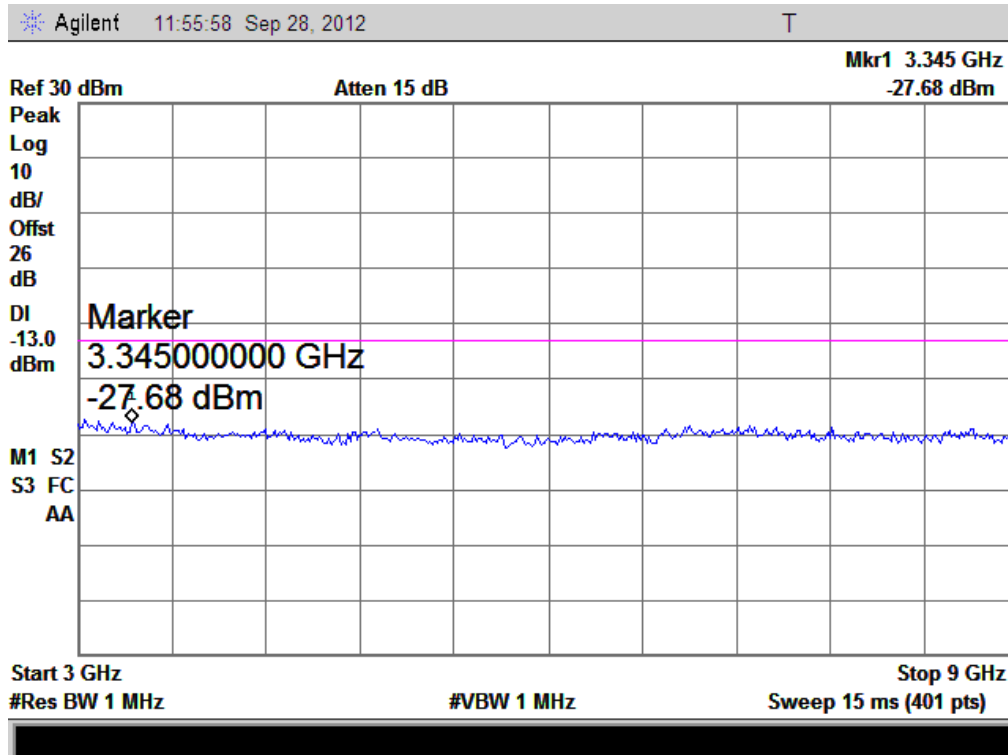
(Plot C2: EDGE 850MHz Channel = 190, 30MHz to 1GHz)



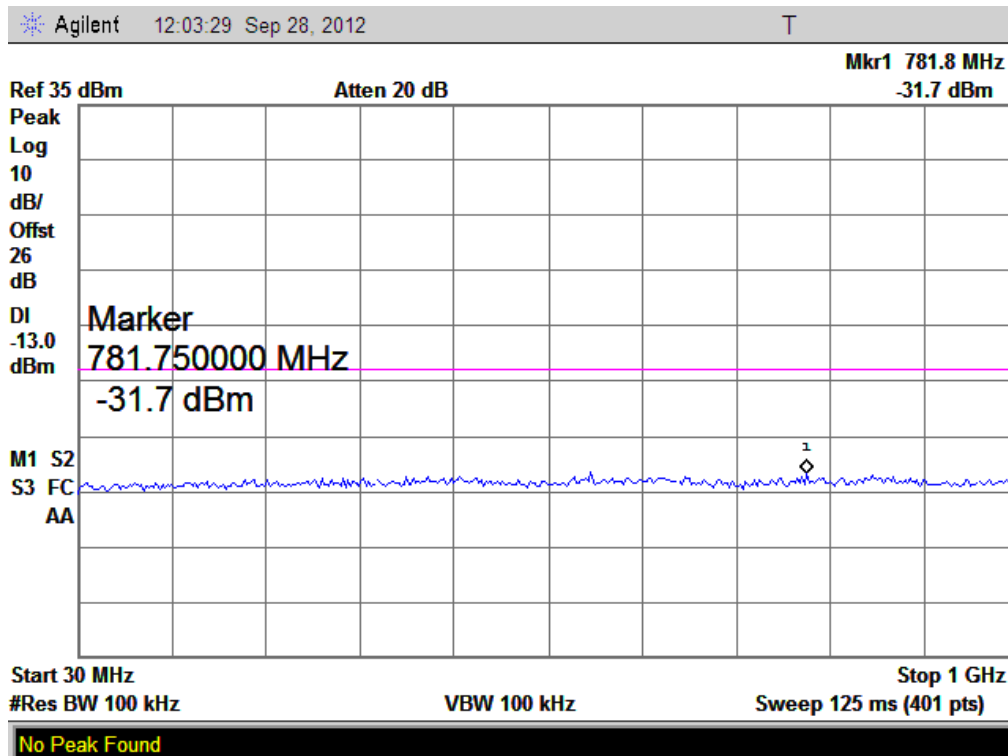
(Plot C2.1: EDGE 850MHz Channel = 190, 1GHz to 9GHz)



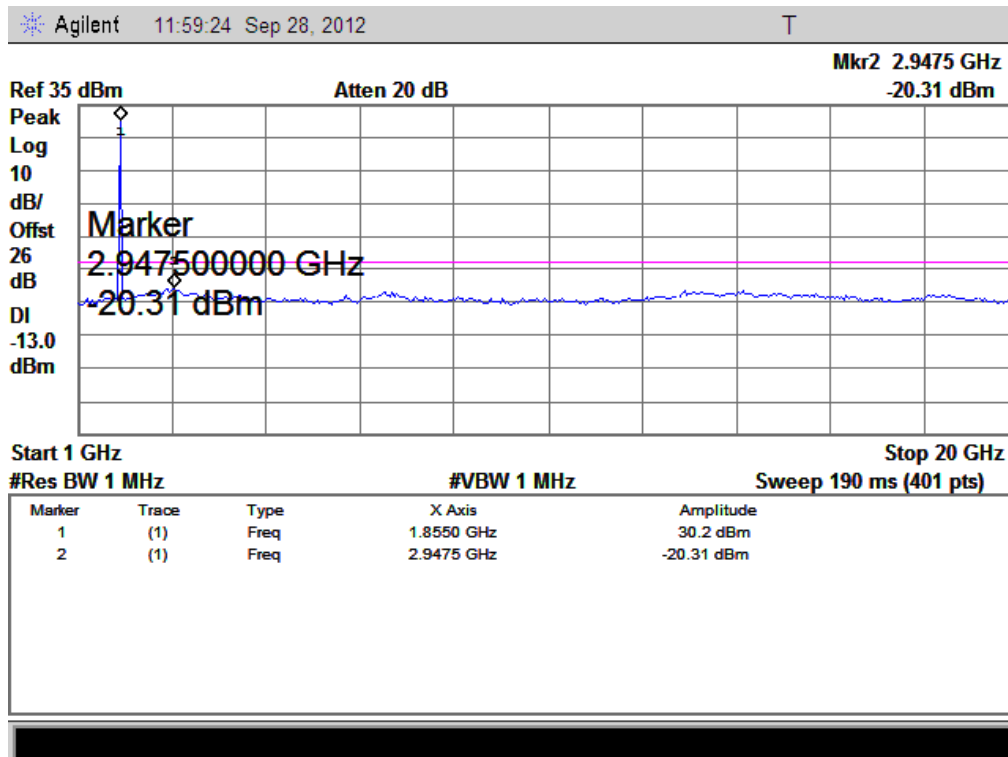
(Plot C3: EDGE 850MHz Channel = 251, 30MHz to 1GHz)



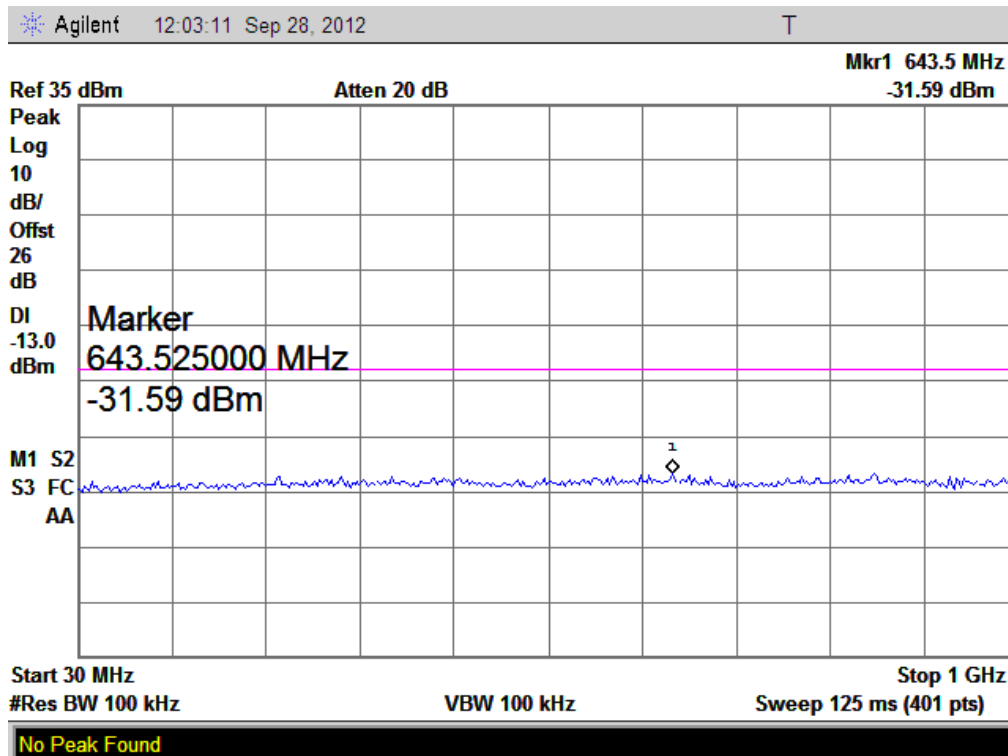
(Plot C3.1: EDGE 850MHz Channel = 251, 1GHz to 9GHz)



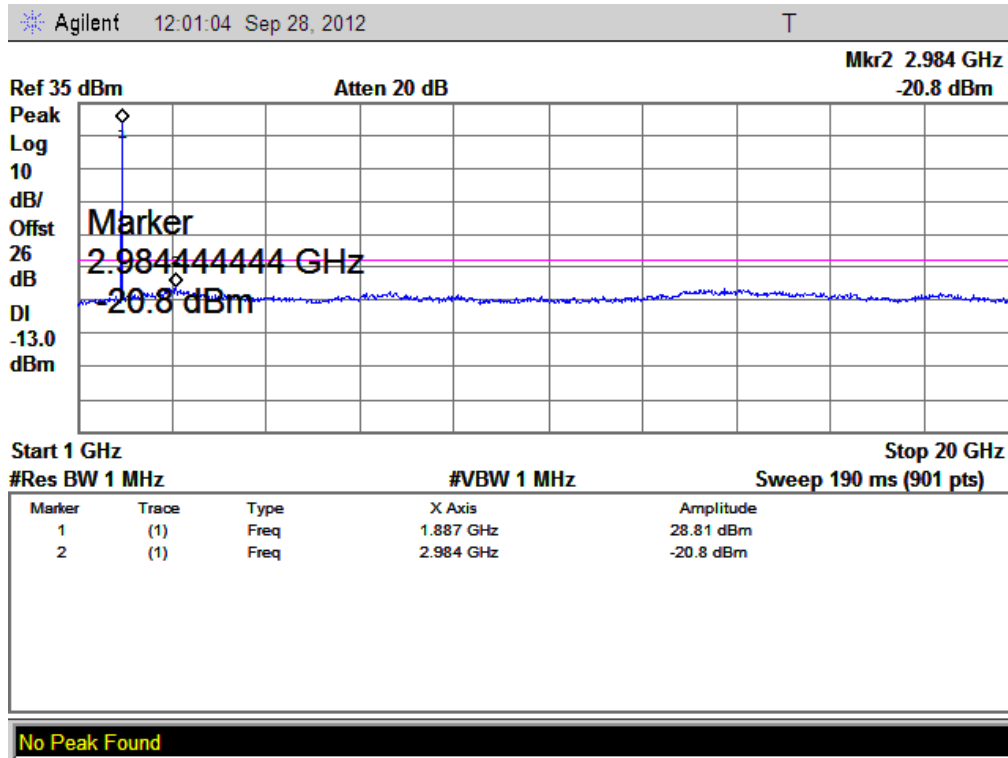
(Plot D1: EDGE 1900MHz Channel = 512, 30MHz to 1GHz)



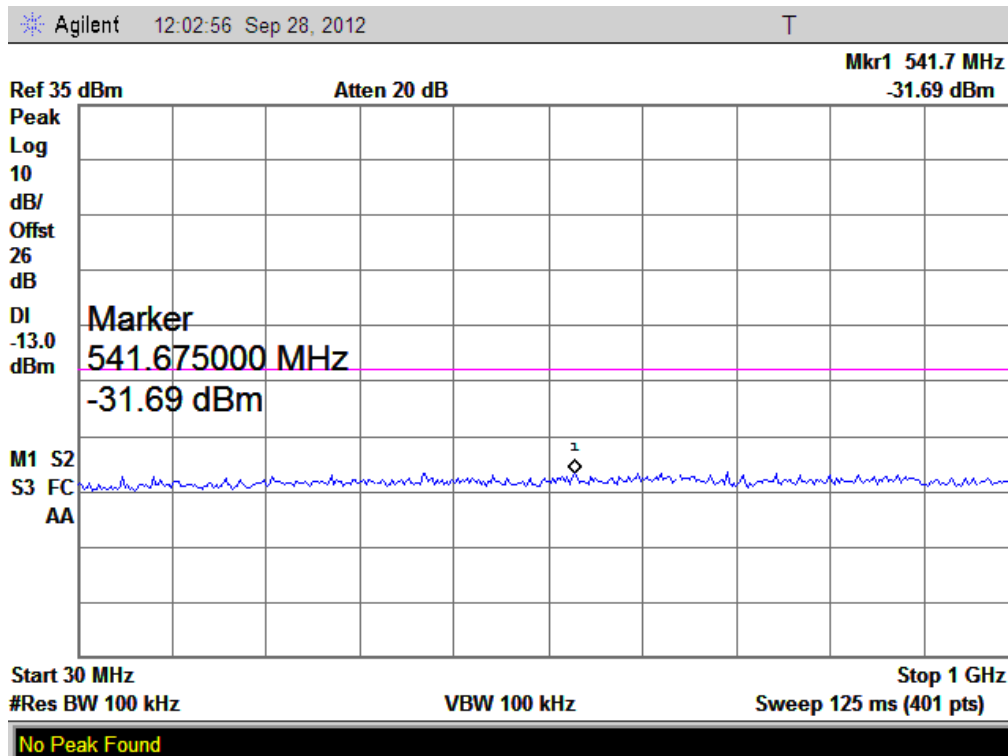
(Plot D1.1: EDGE 1900MHz Channel = 512, 1GHz to 20GHz)



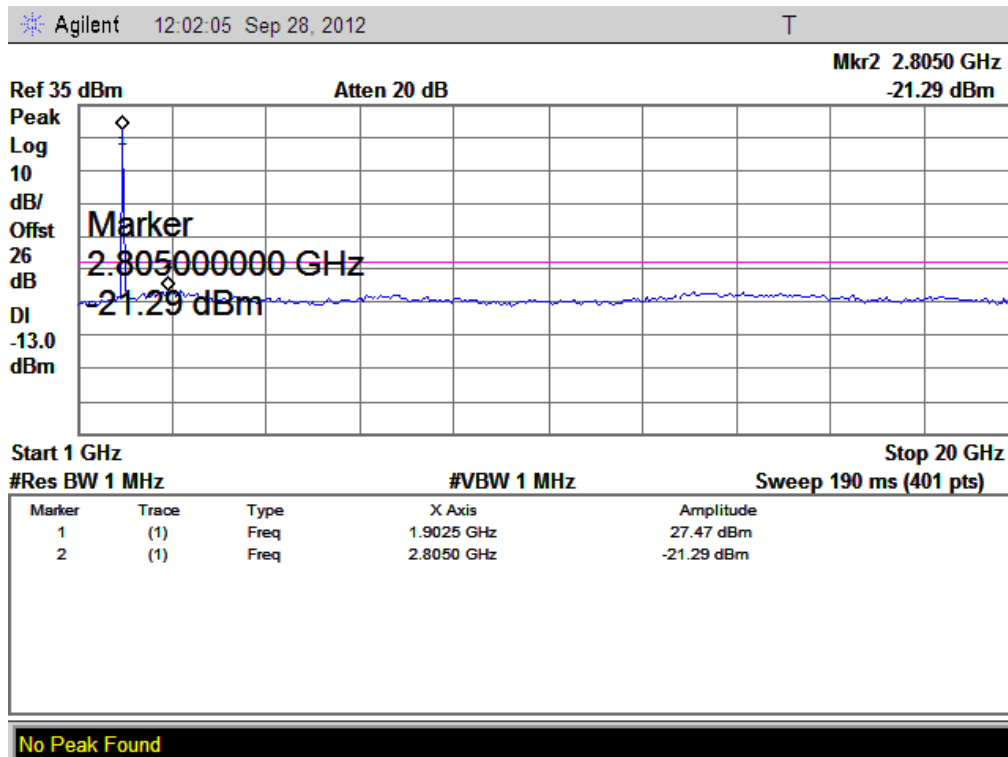
(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



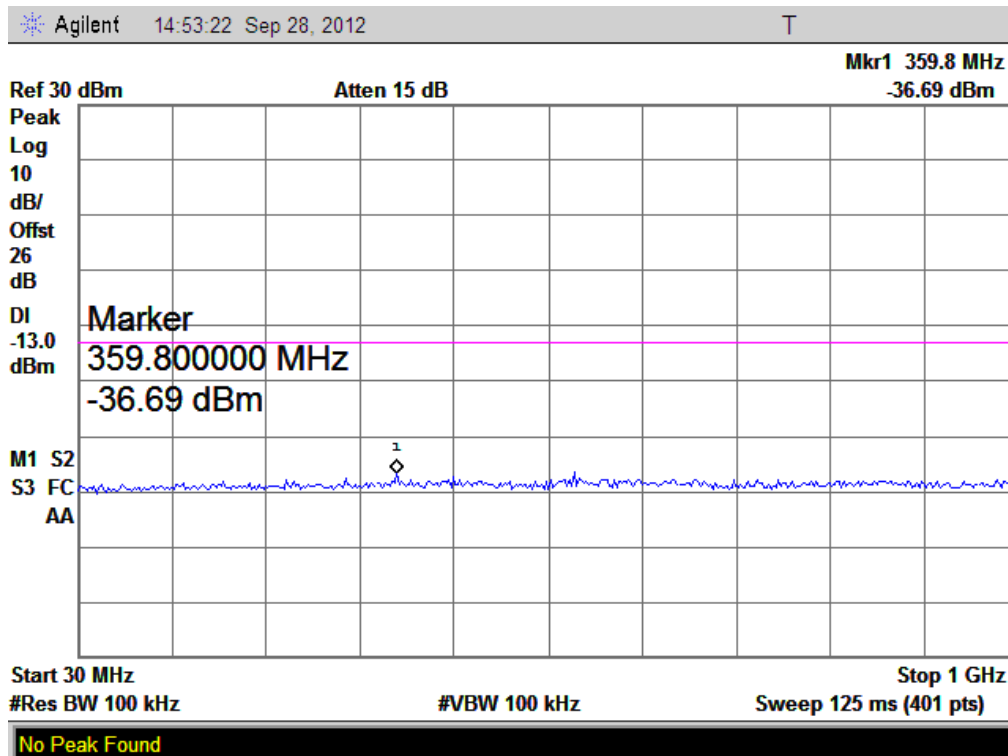
(Plot D2.1: EDGE 1900MHz Channel = 661,1GHz to 20GHz)



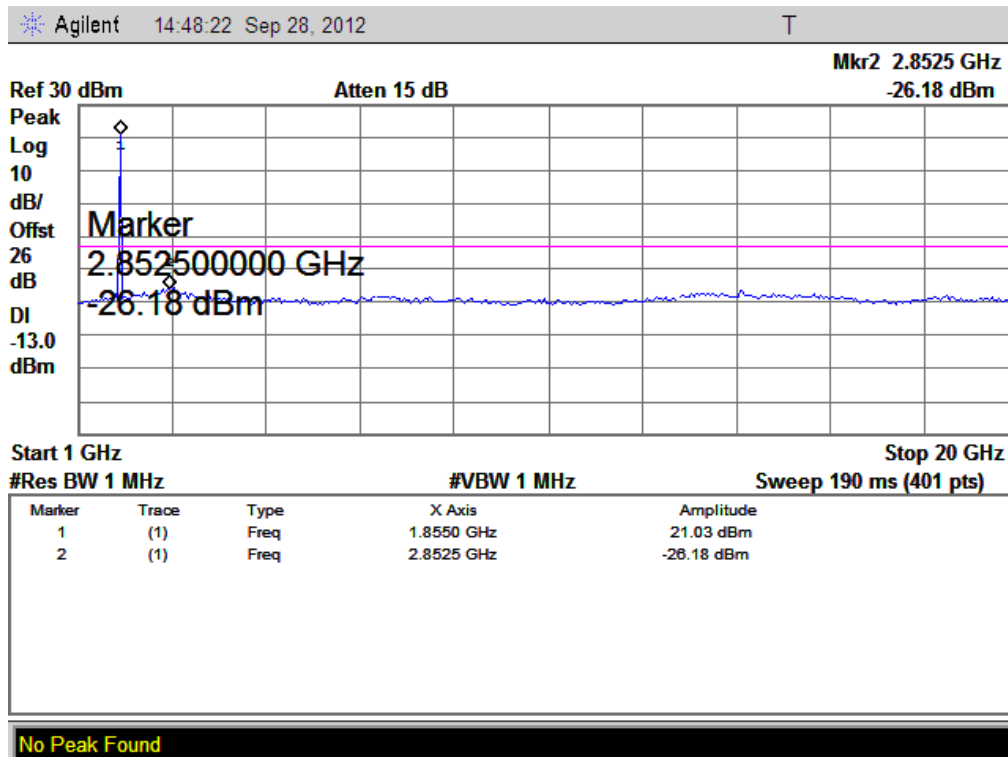
(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)



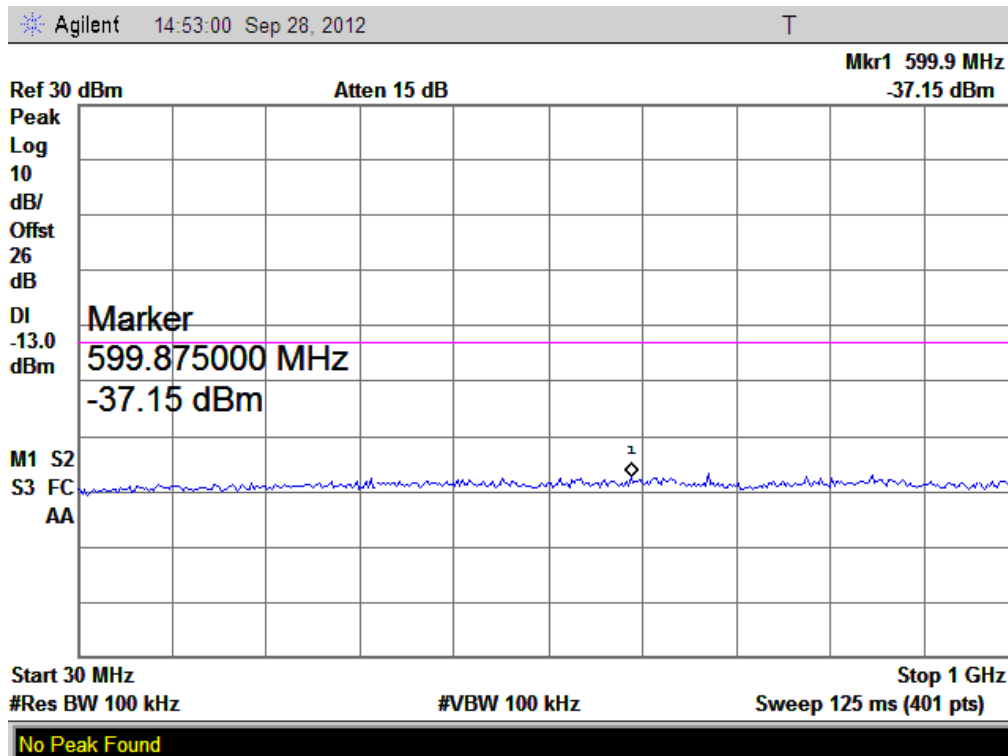
(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



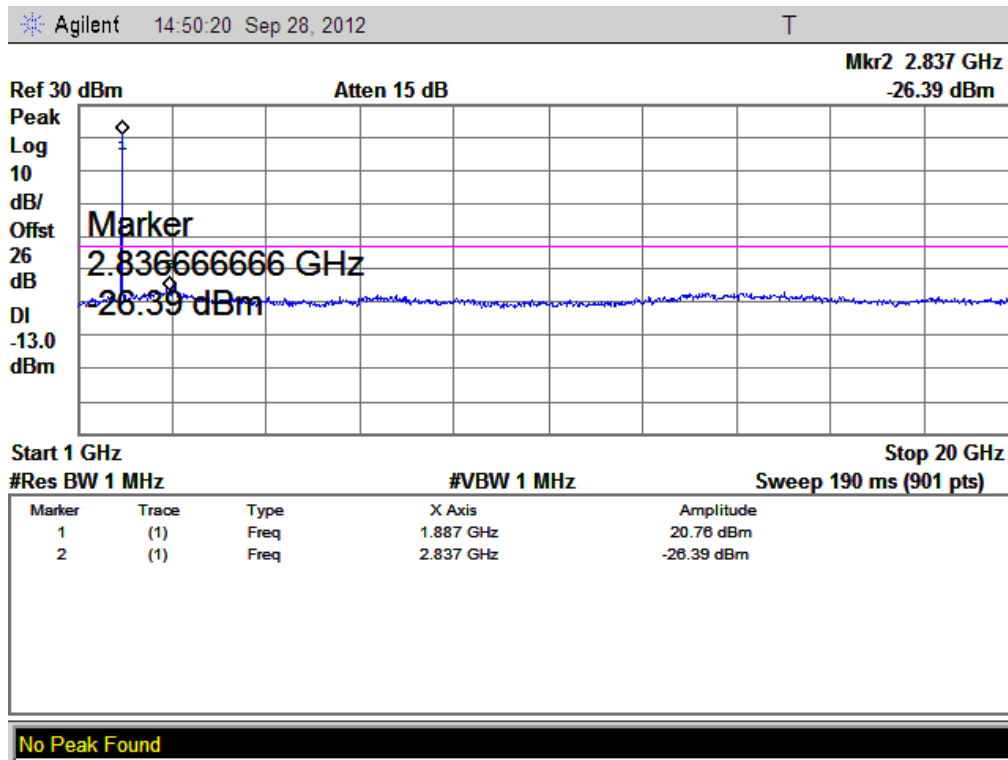
(Plot E1: WCDMA1900MHz Channel = 9262, 30MHz to 1GHz)



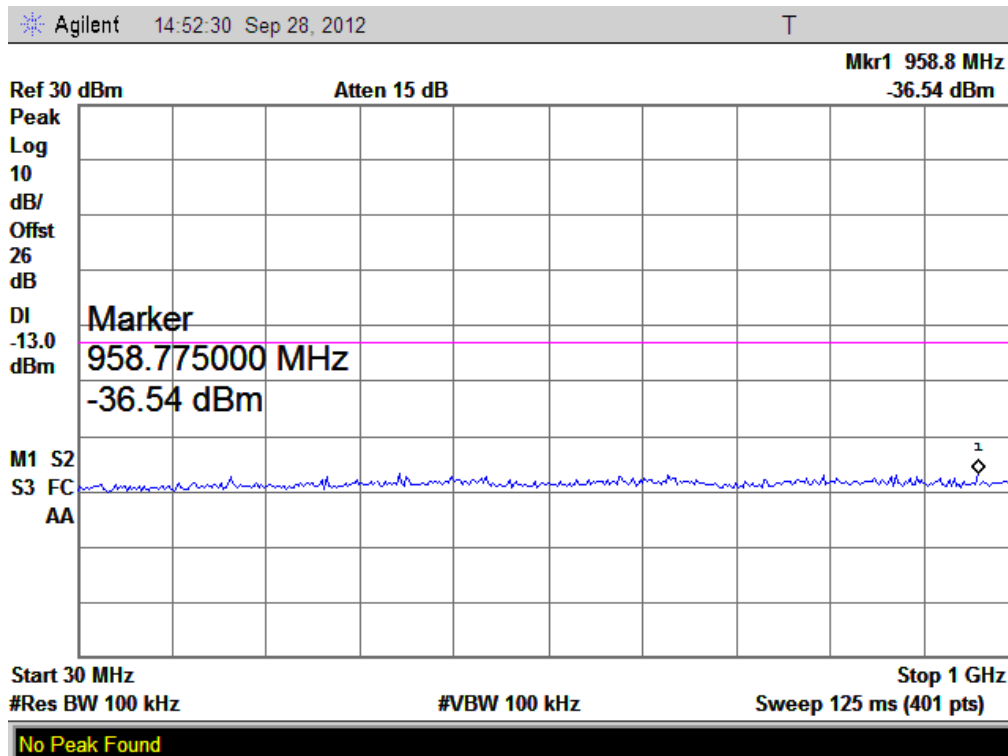
(Plot E1.1: WCDMA1900MHz Channel = 9262, 1GHz to 20GHz)



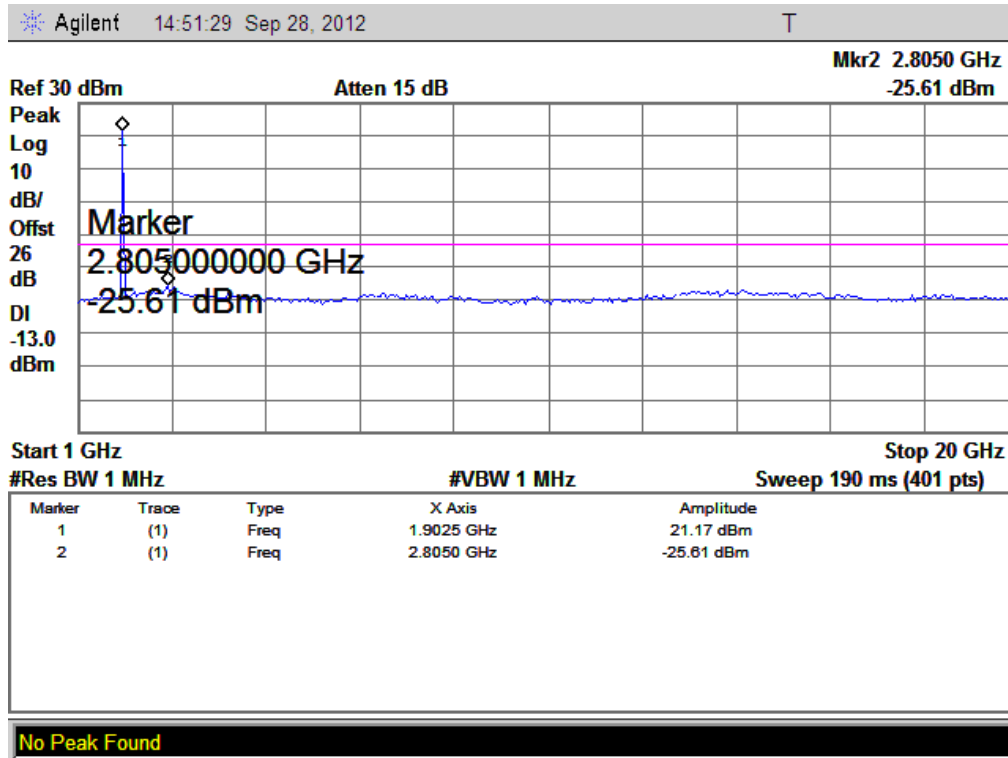
(Plot E2: WCDMA1900MHz Channel = 9400, 30MHz to 1GHz)



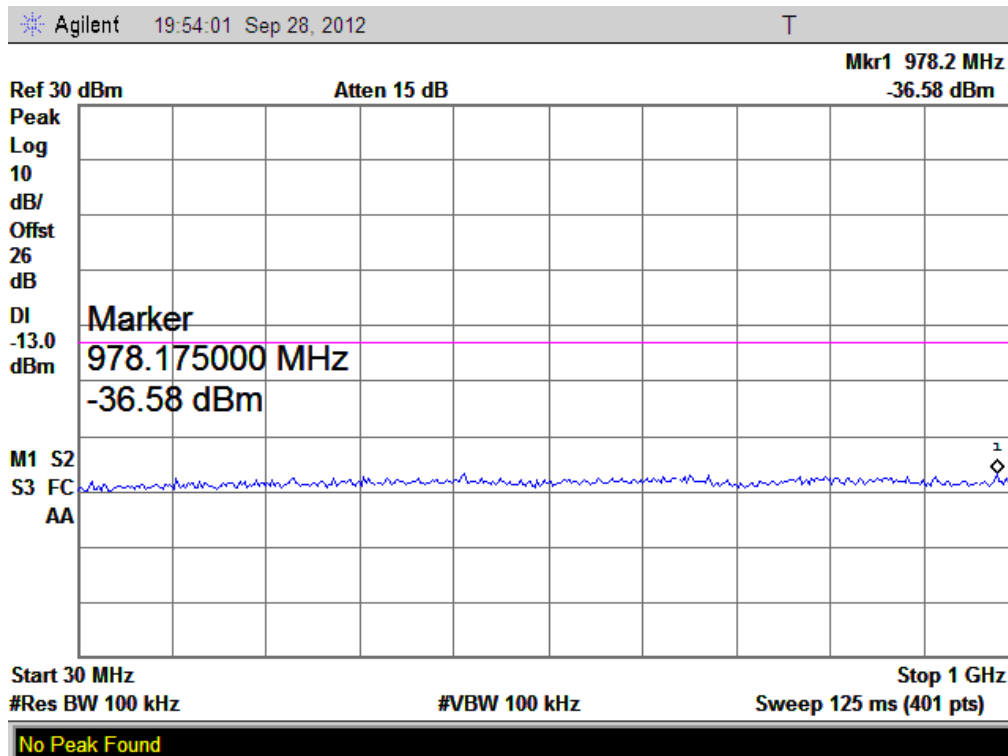
(Plot E2.1: WCDMA1900MHz Channel = 9400, 1GHz to 20GHz)



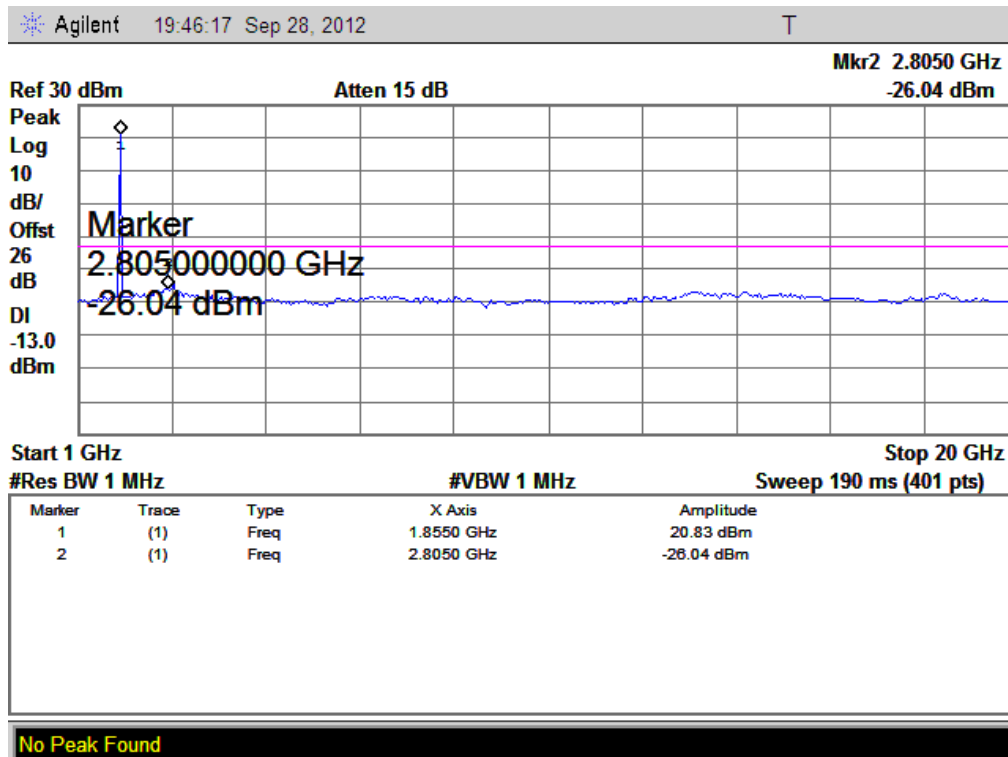
(Plot E3: WCDMA1900MHz Channel = 9538, 30MHz to 1GHz)



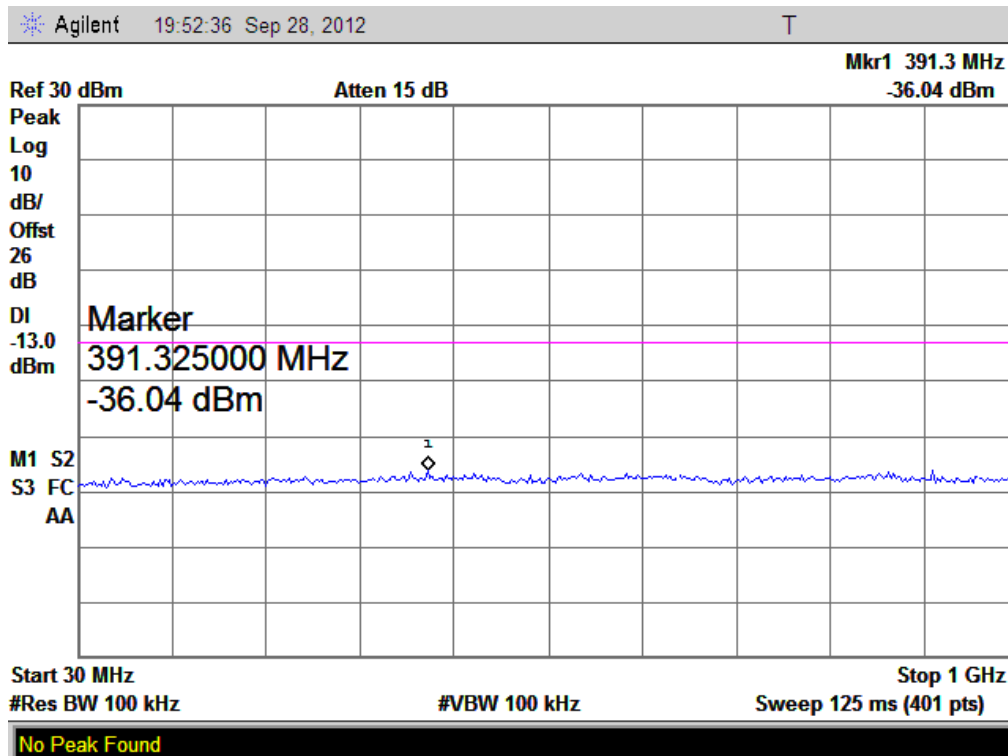
(Plot E3.1: WCDMA1900MHz Channel = 9538 1GHz to 20GHz)



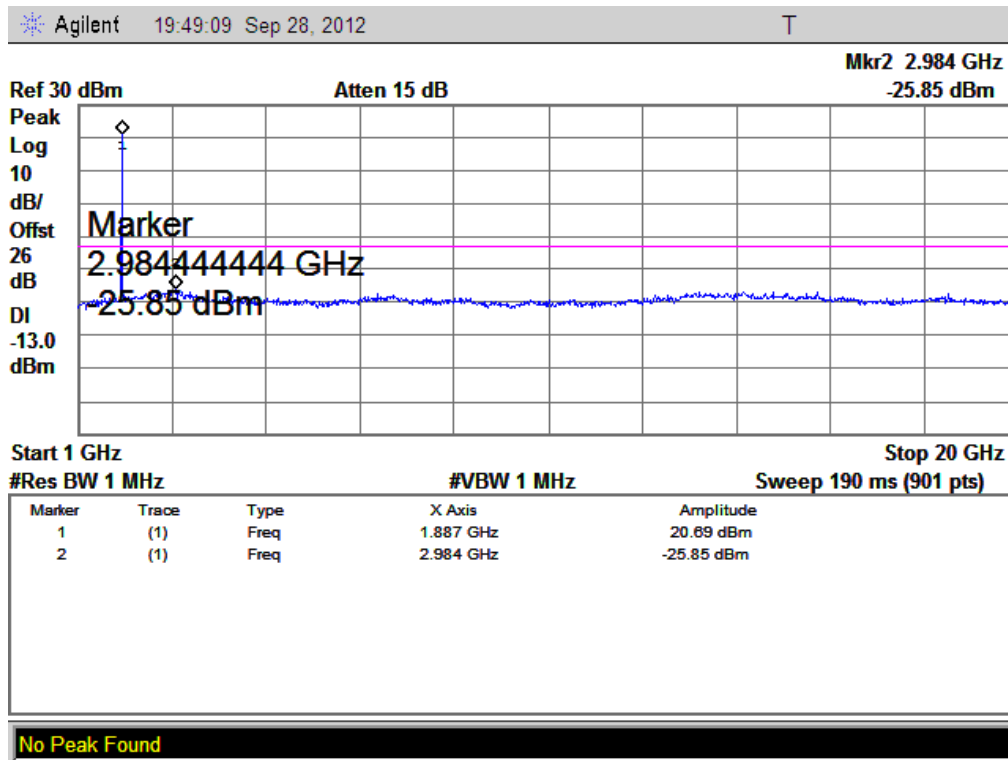
(Plot F1: HSDPA1900MHz Channel = 9262, 30MHz to 1GHz)



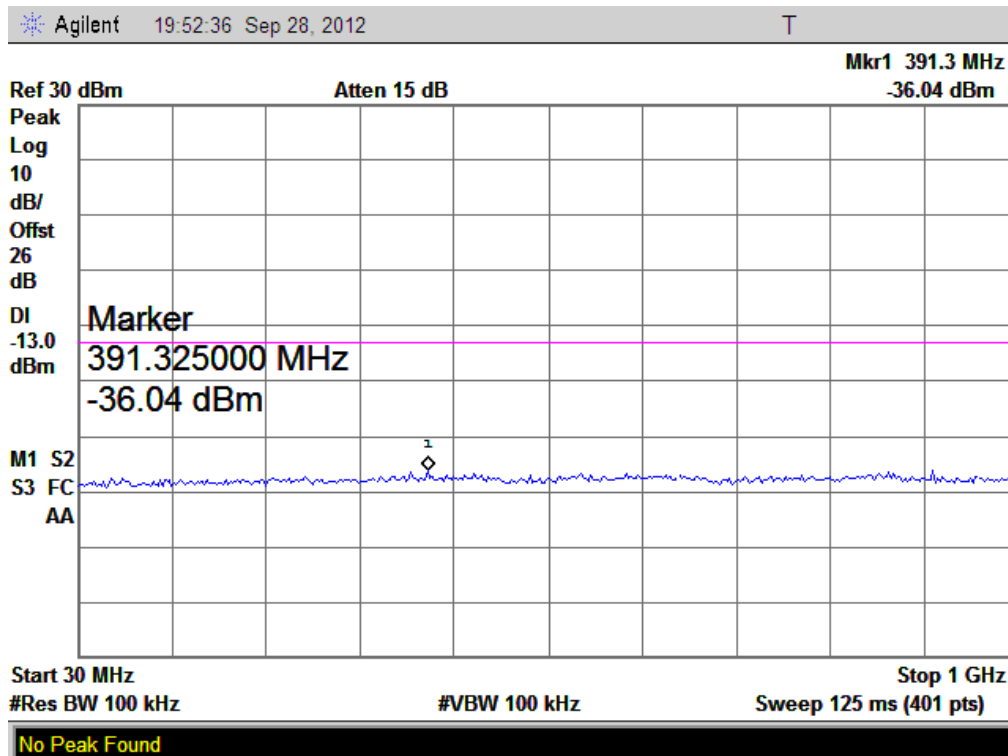
(Plot F1.1: HSDPA1900MHz Channel = 9262, 1GHz to 20GHz)



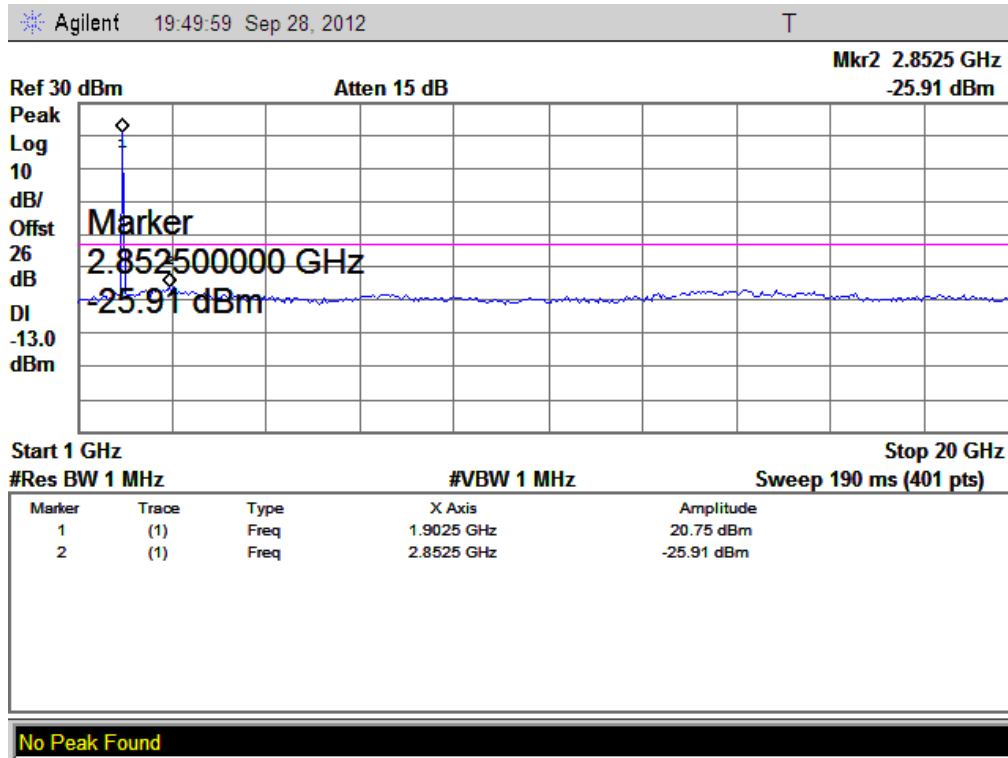
(Plot F2: HSDPA1900MHz Channel = 9400, 30MHz to 1GHz)



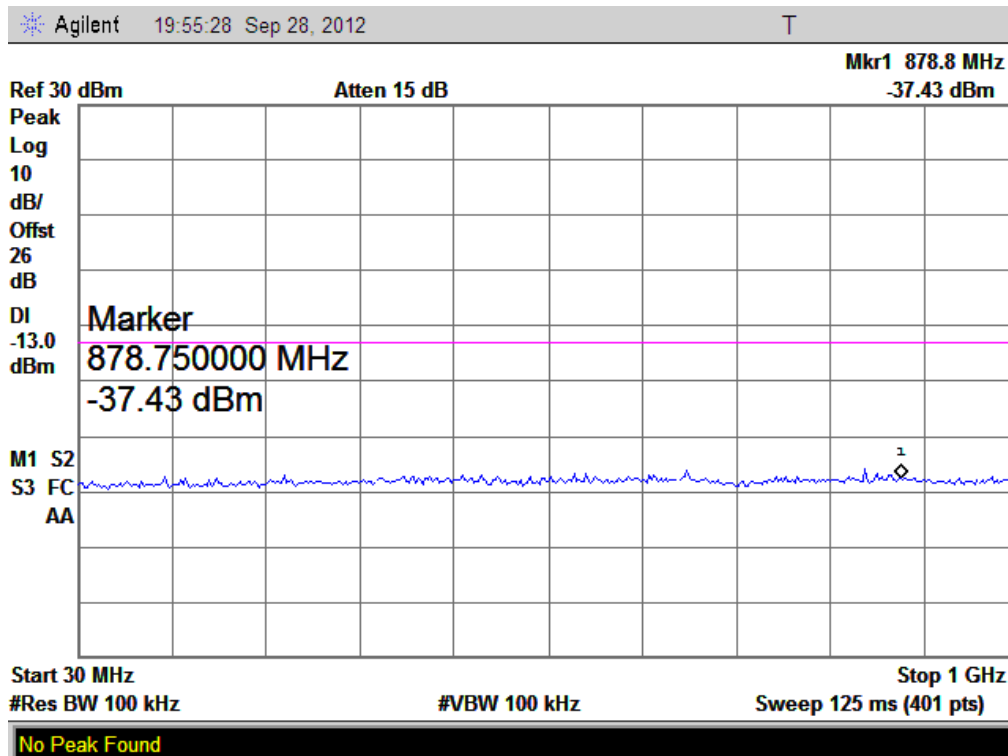
(Plot F2.1: HSDPA1900MHz Channel = 9400, 1GHz to 20GHz)



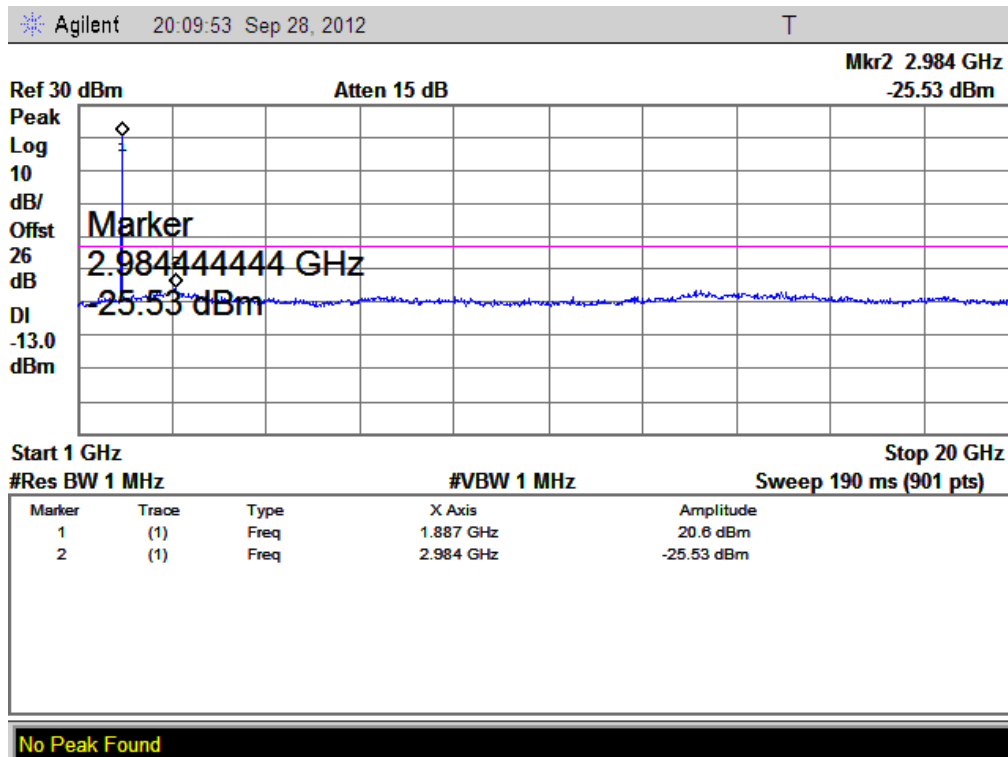
(Plot F3: HSDPA1900MHz Channel = 9538, 30MHz to 1GHz)



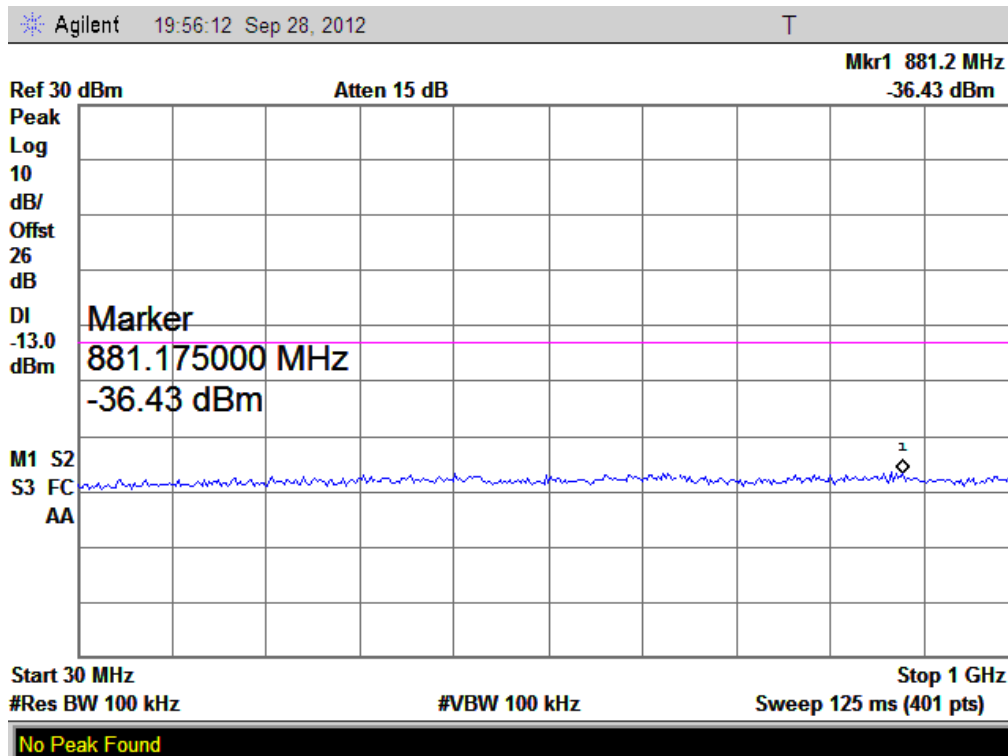
(Plot F3.1: HSDPA1900MHz Channel = 9538 1GHz to 20GHz)



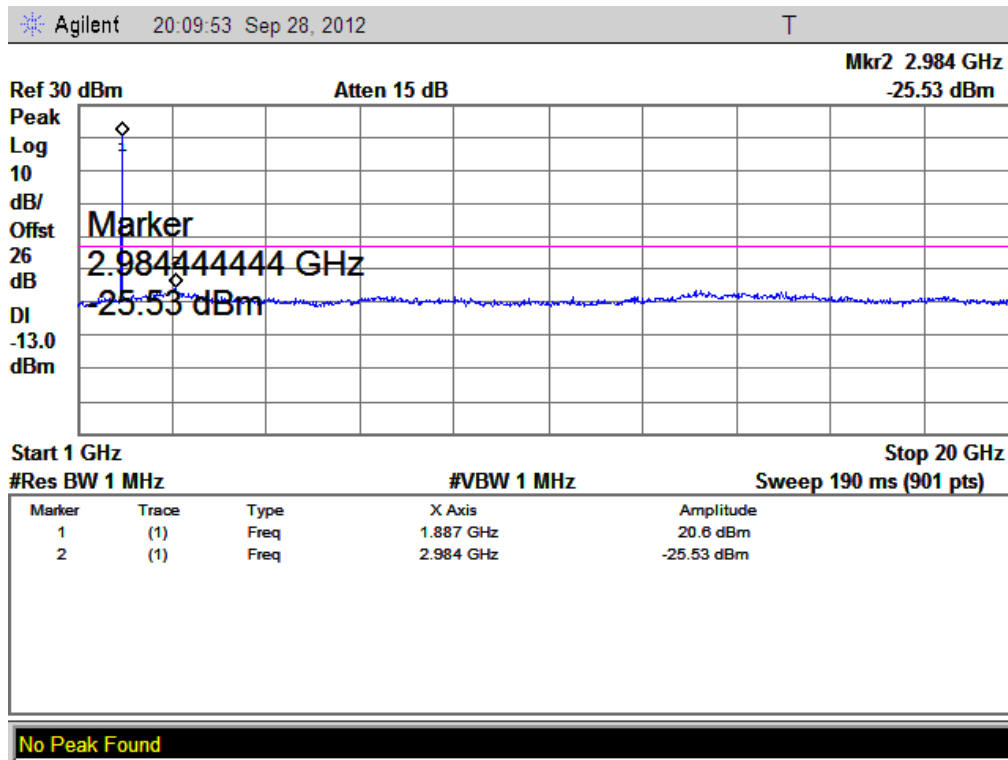
(Plot G 1: HSUPA1900MHz Channel = 9262, 30MHz to 1GHz)



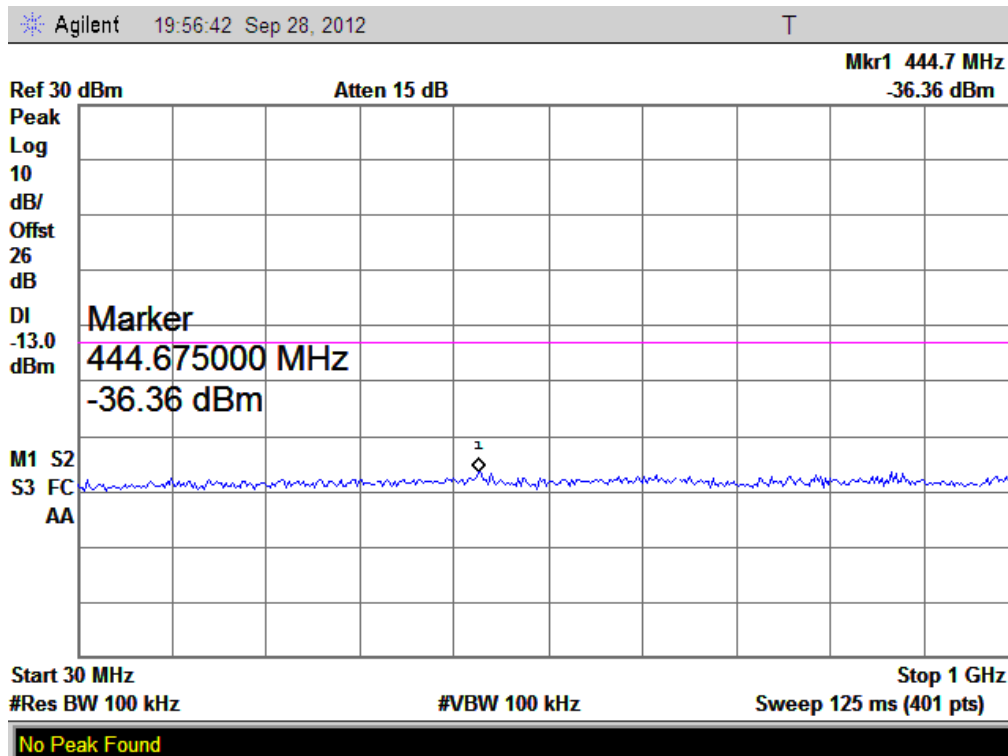
(Plot G1.1: HSUPA1900MHz Channel = 9262, 1GHz to 20GHz)



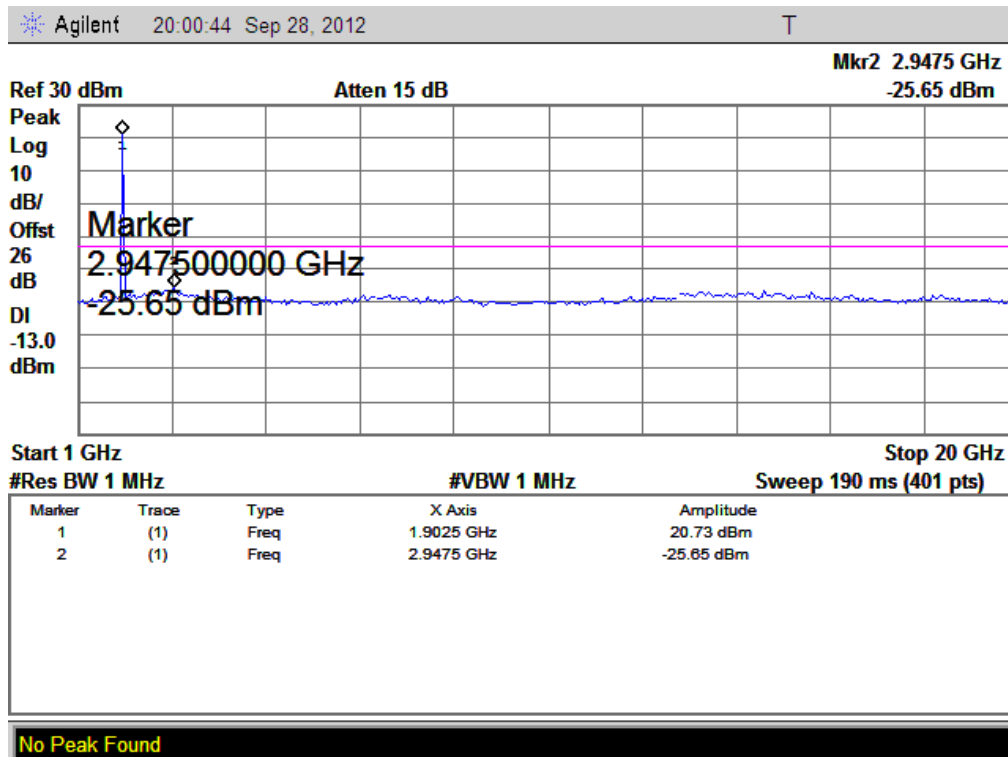
(Plot G2: HSUPA1900MHz Channel = 9400, 30MHz to 1GHz)



(Plot G2.1: HSUPA1900MHz Channel = 9400, 1GHz to 20GHz)



(Plot G3: HSUPA1900MHz Channel = 9538, 30MHz to 1GHz)



(Plot G3.1: HSUPA1900MHz Channel = 9538 1GHz to 20GHz)

2.5 Band Edge

2.5.1 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.

2.5.2 Test Description

See section 2.1.2 of this report.

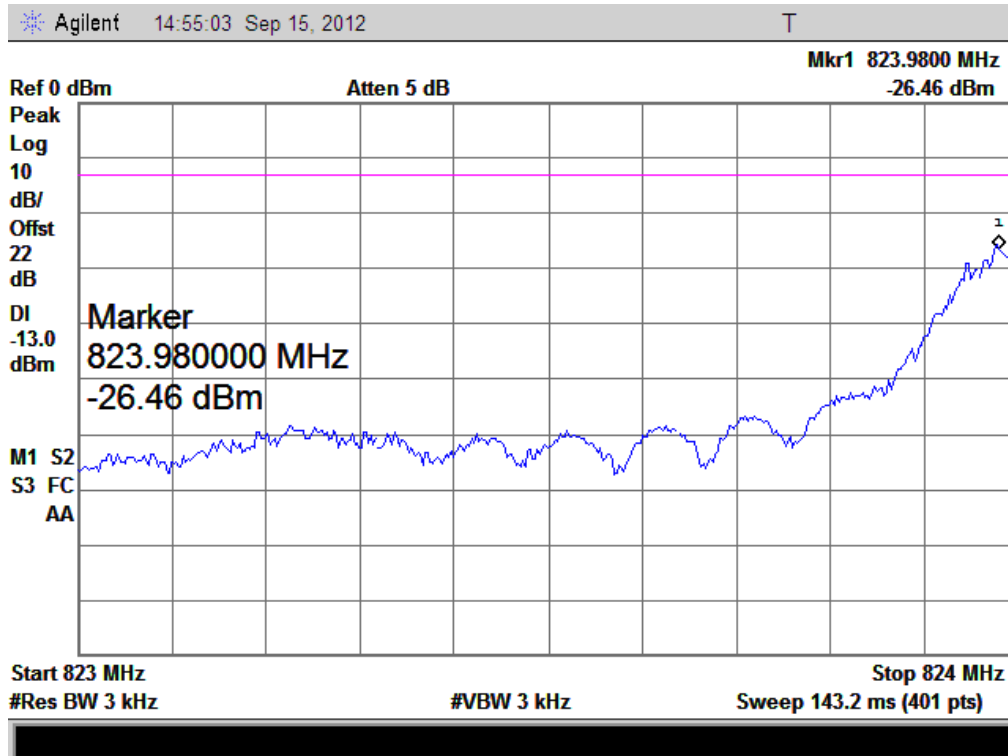
2.5.3 Test Result

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

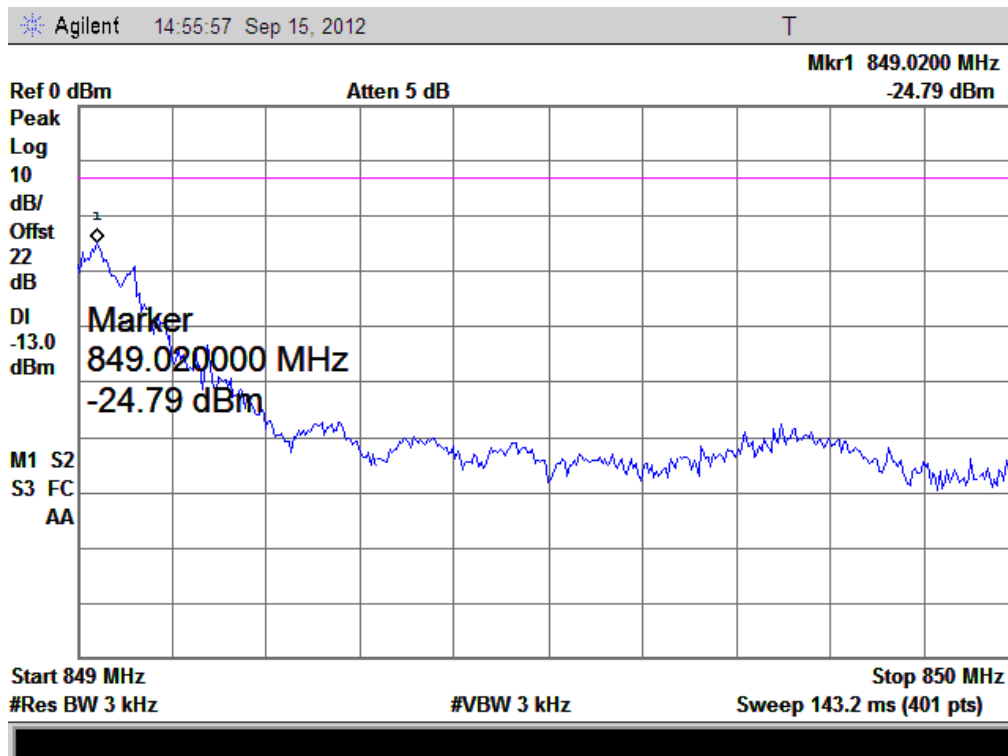
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-26.46	Plat A	-13	PASS
	251	848.8	-24.79	Plot B		PASS
GSM 1900MHz	512	1850.2	-19.90	Plat C	-13	PASS
	810	1909.8	-23.41	Plot D		PASS
EDGE 850MHz	128	824.2	-21.32	Plat E	-13	PASS
	251	848.8	-20.12	Plot F		PASS
EDGE 1900MHz	512	1850.2	-18.02	Plat G	-13	PASS
	810	1909.8	-15.52	Plot H		PASS
WCDMA 1900MHz	9262	1852.4	-34.76	Plat I	-13	PASS
	9538	1907.6	-37.48	Plot J		PASS
HSDPA 1900MHz	9262	1852.4	-24.01	Plat K	-13	PASS
	9538	1907.6	-28.75	Plot L		PASS
HSUPA 1900MHz	9262	1852.4	-23.13	Plat M	-13	PASS
	9538	1907.6	-28.00	Plot N		PASS

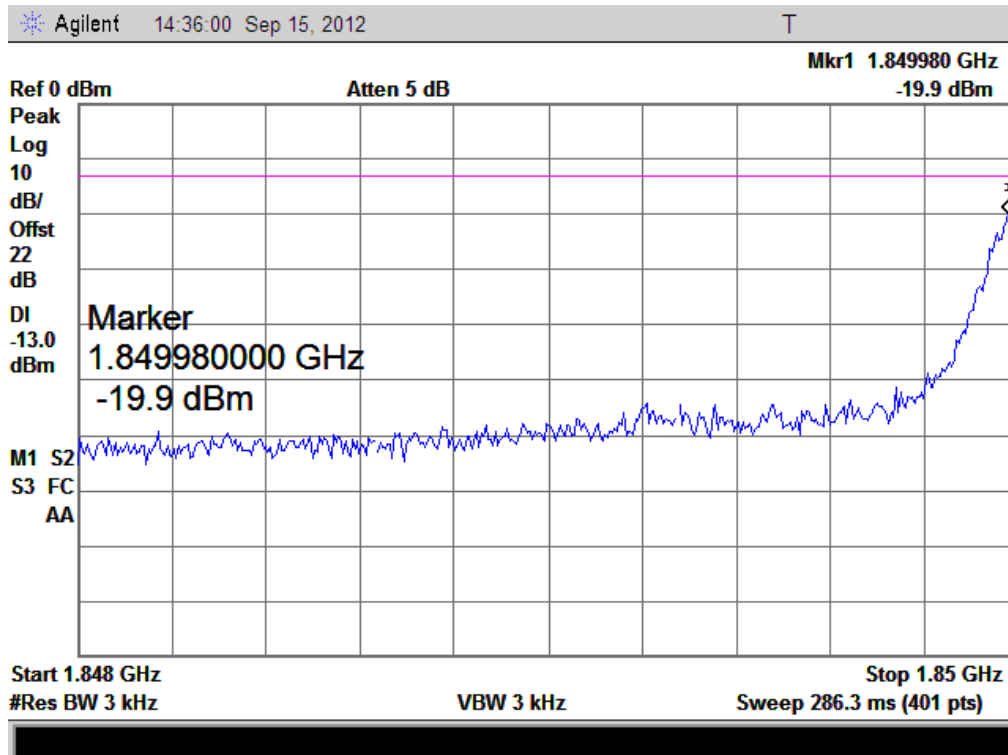
2. Test Plots:



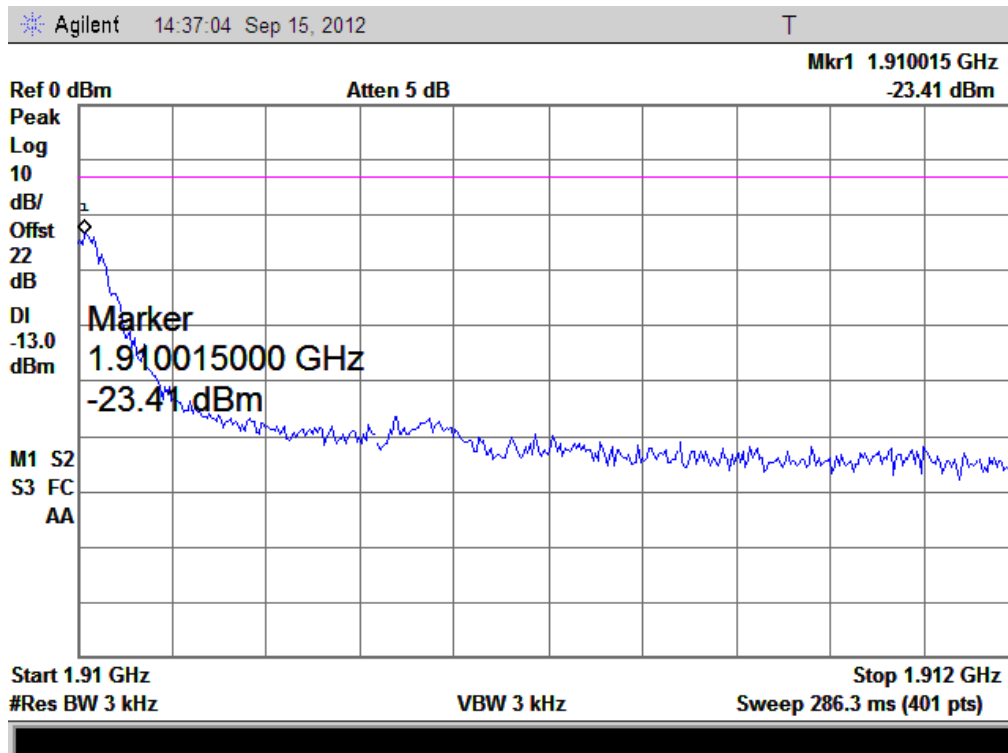
(Plot A: GSM 850 Channel = 128)



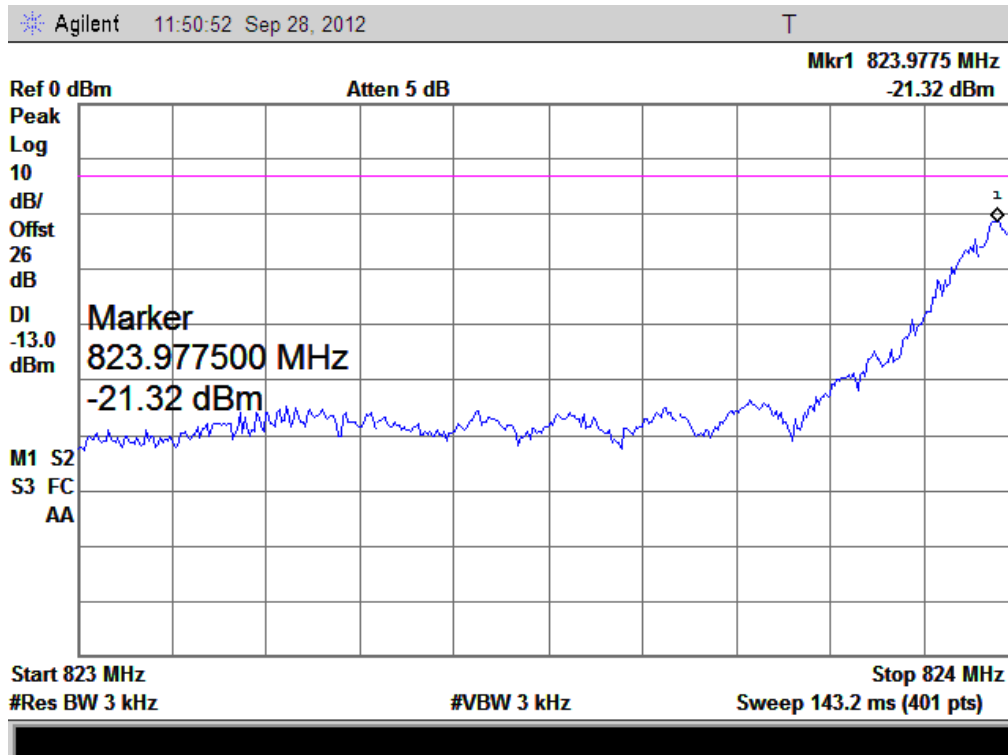
(Plot B: GSM 850 Channel = 251)



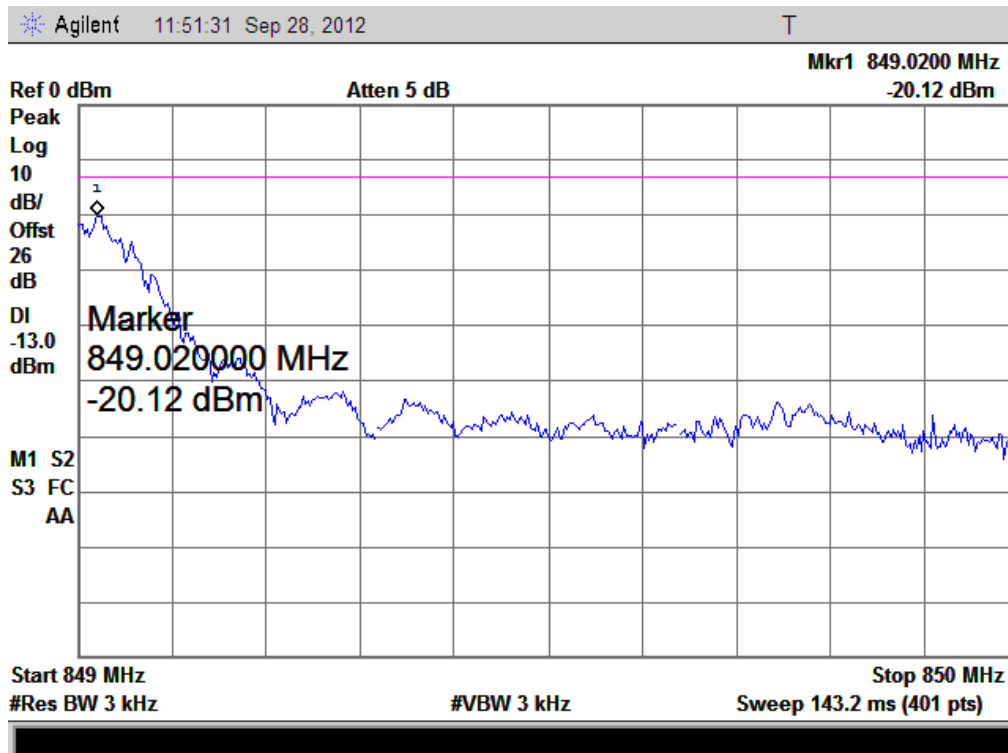
(Plot C: GSM 1900 Channel = 512)



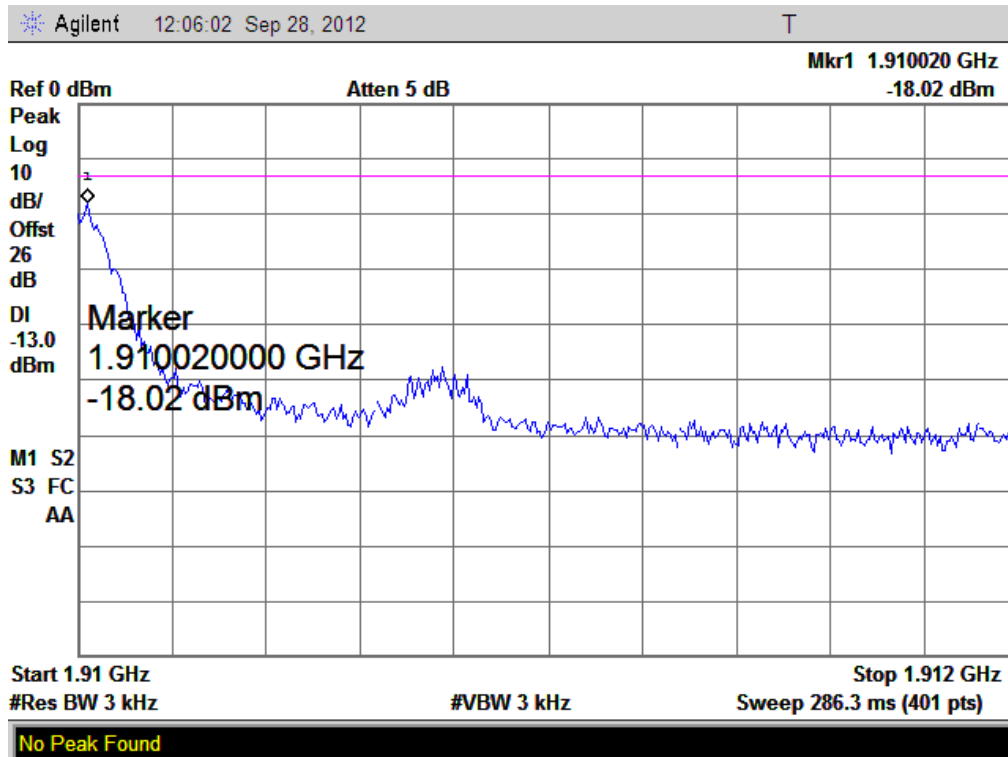
(Plot D: GSM 1900 Channel = 810)



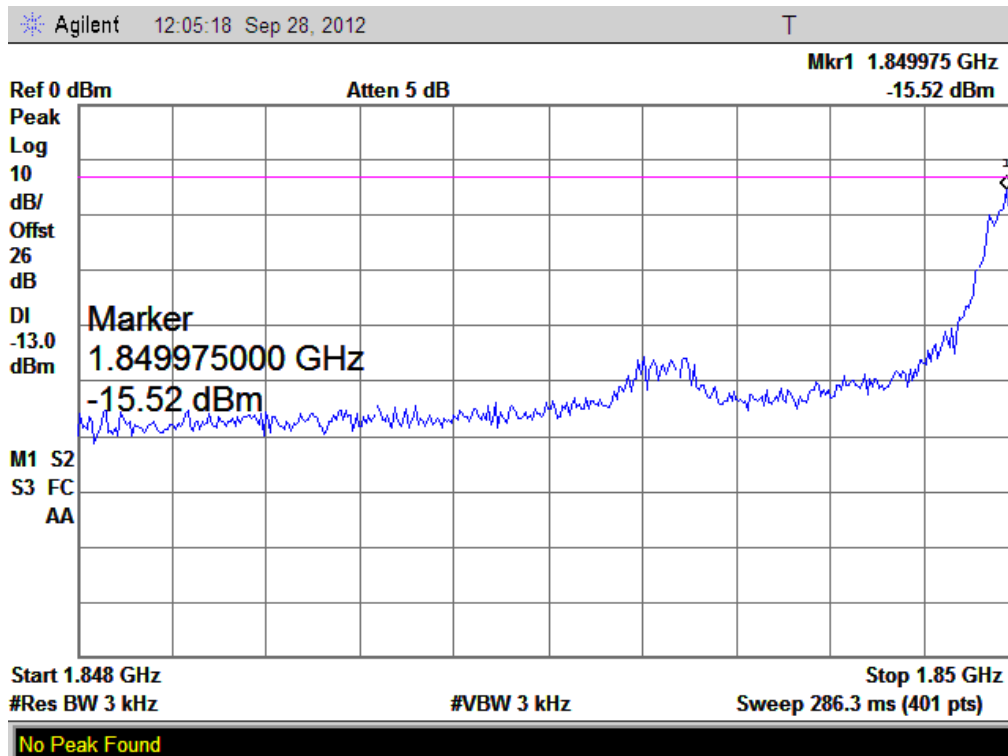
(Plot E: EDGE 850 Channel = 128)



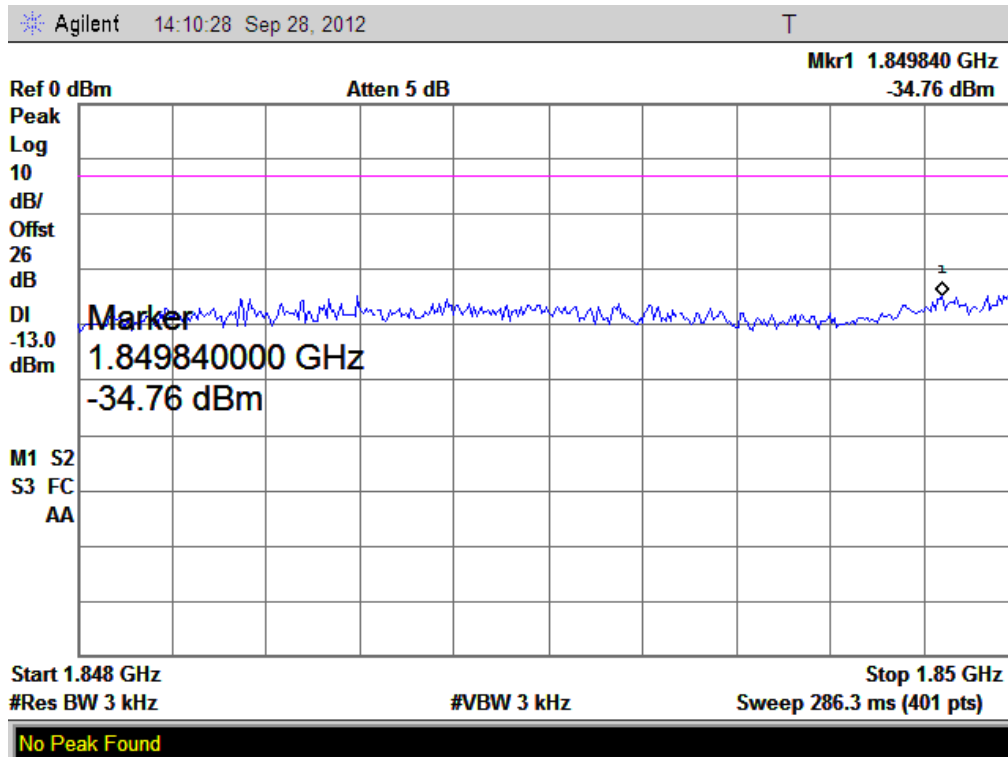
(Plot F: EDGE 850 Channel = 251)



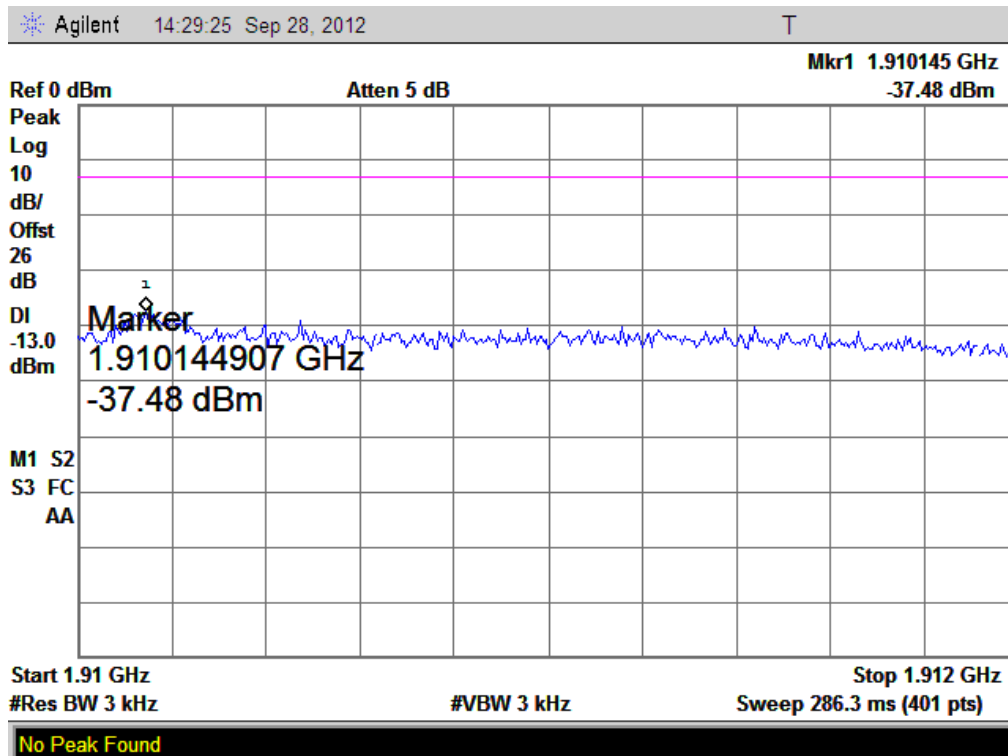
(Plot G: EDGE 1900 Channel = 512)



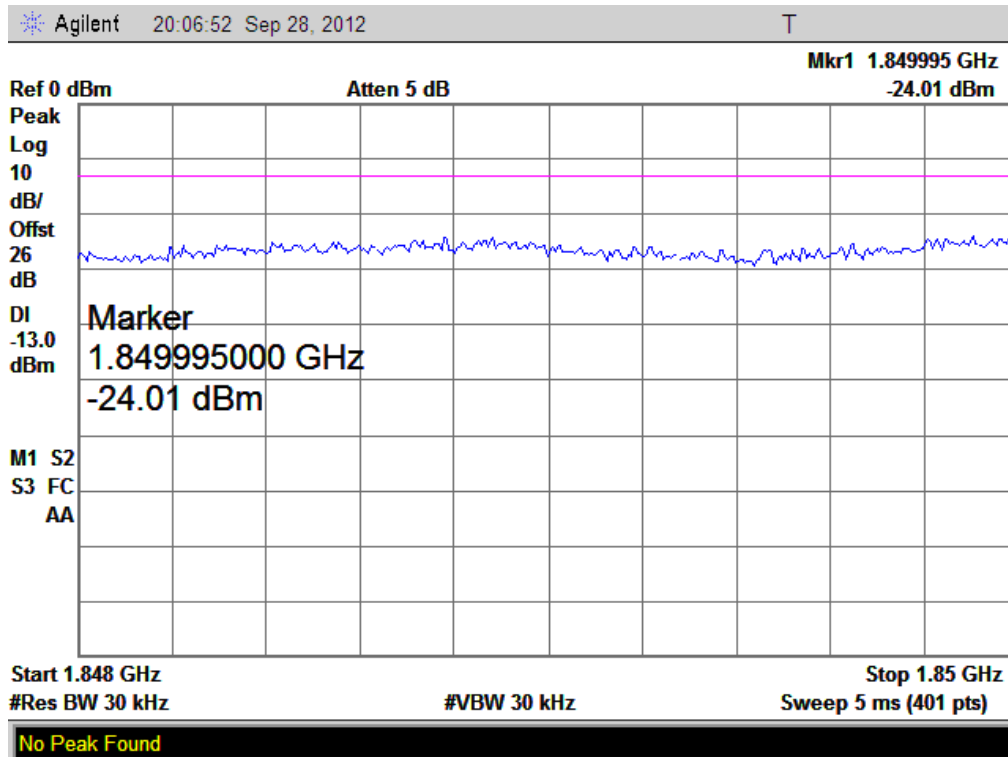
(Plot H: EDGE 1900 Channel = 810)



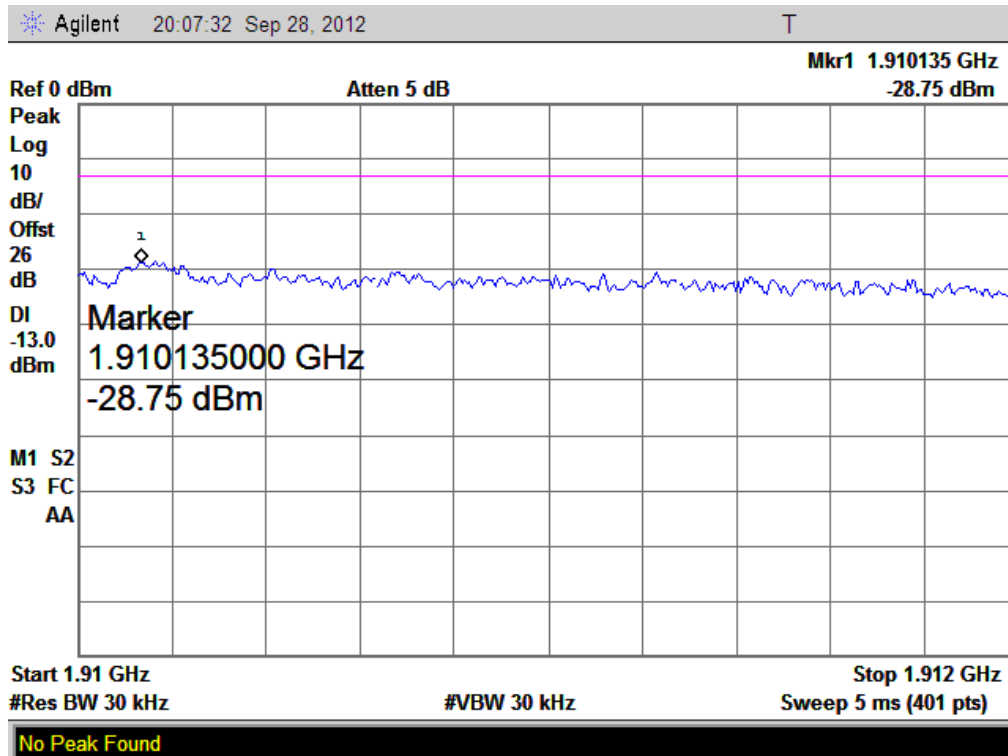
(Plot I: WCDMA 1900 Channel = 9262)



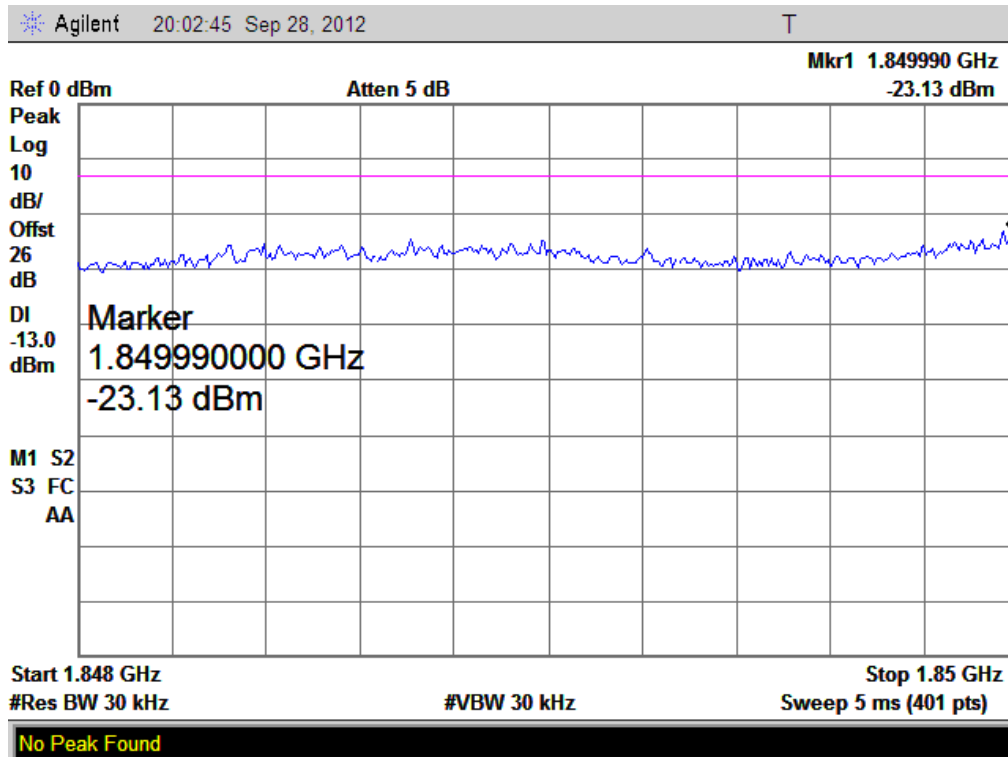
(Plot J: WCDMA 1900 Channel = 9538)



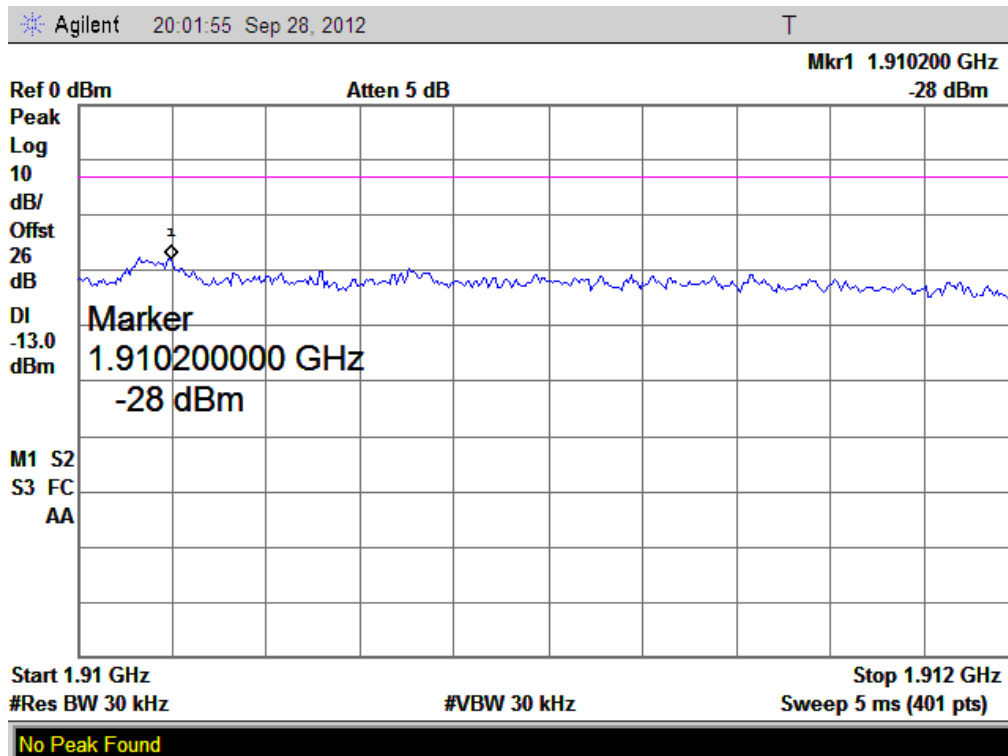
(Plot K: HSDPA 1900 Channel = 9262)



(Plot L: HSDPA 1900 Channel = 9538)



(Plot M: HSUPA 1900 Channel = 9262)



(Plot N: HSUPA 1900 Channel = 9538)

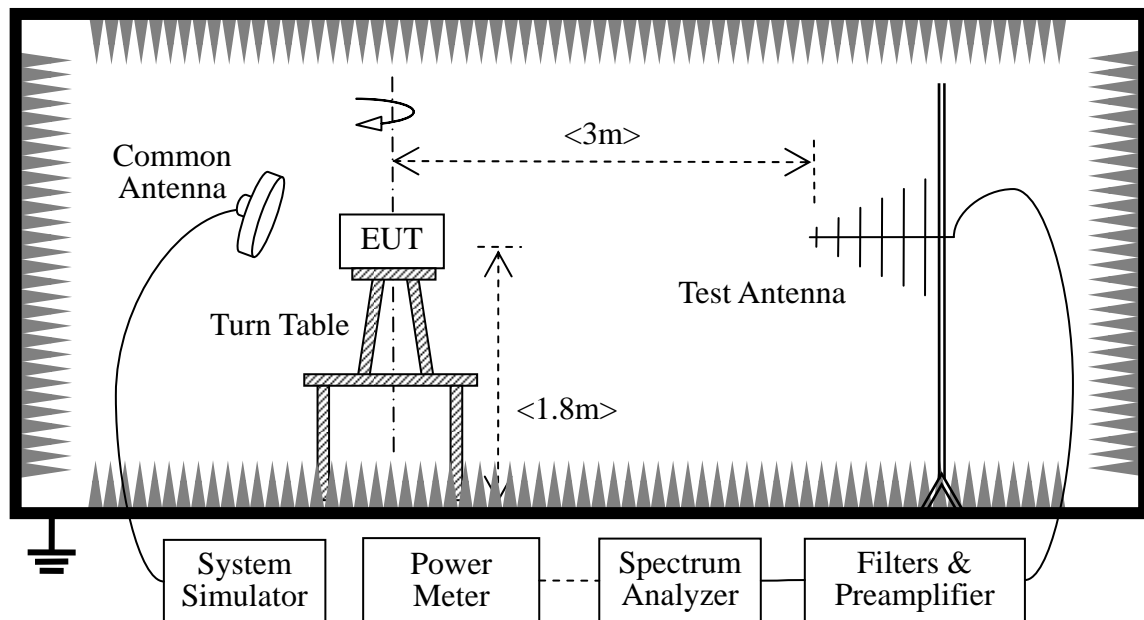
2.6 Transmitter Radiated Power (EIRP/ERP)

2.6.1 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.

2.6.2 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: GSM850 32.35dBm, GSM 1900 28.19dBm, WCDMA 850 22.32, WCDMA 1900 22.58, Please refer to section 2.1.3 of this report.

- Step size (dB): 3dB

- Minimum RF power: GSM850 3.1dBm, GSM 1900 0.3dBm, WCDMA 850 2.09dBm, 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	2012.05
Spectrum Analyzer	Agilent	E7405A	US44210471	2012.05
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2012.05
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2012.05
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2012.05

2.6.3 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	31.36	1.367729	Plot A	38.5	7	PASS
	190	836.60	5	31.66	1.465548				PASS
	251	848.80	5	32.00	1.584893				PASS
GPRS 850MHz	128	824.20	5	31.07	1.279381	Plot B ^{Note 1}	38.5	7	PASS
	190	836.60	5	31.36	1.367729				PASS
	251	848.80	5	31.65	1.646217				PASS
EGPRS 850MHz	128	824.20	5	31.53	1.422329	Plot C ^{Note 1}	38.5	7	PASS
	190	836.60	5	30.39	1.093956				PASS
	251	848.80	5	30.47	1.114295				PASS

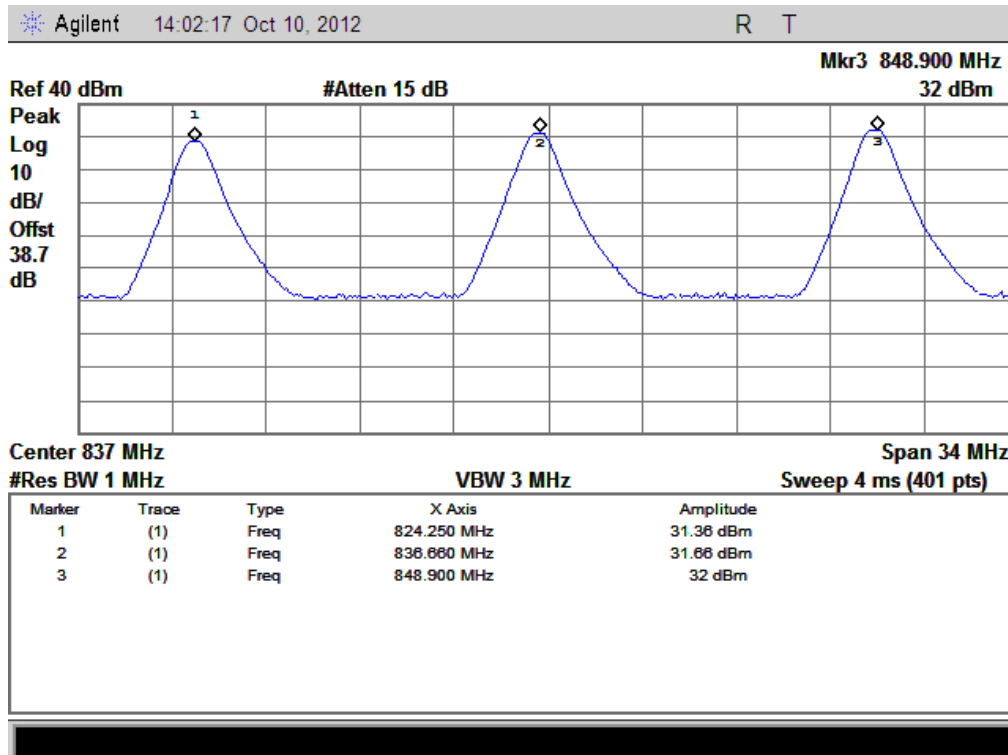
Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	29.25	0.841395	Plot D	33	2	PASS
	661	1880.0	0	28.85	0.767361				PASS
	810	1909.8	0	28.54	0.714496				PASS
GPRS 1900MHz	512	1850.2	0	27.40	0.549541	Plot E ^{Note 1}	33	2	PASS
	661	1880.0	0	27.18	0.522396				PASS
	810	1909.8	0	27.04	0.505825				PASS
EGPRS 1900MHz	512	1850.2	0	28.06	0.639735	Plot F ^{Note 1}	33	2	PASS
	661	1880.0	0	27.39	0.548277				PASS
	810	1909.8	0	27.05	0.506991				PASS

2. WCDMA Model Test Verdict:

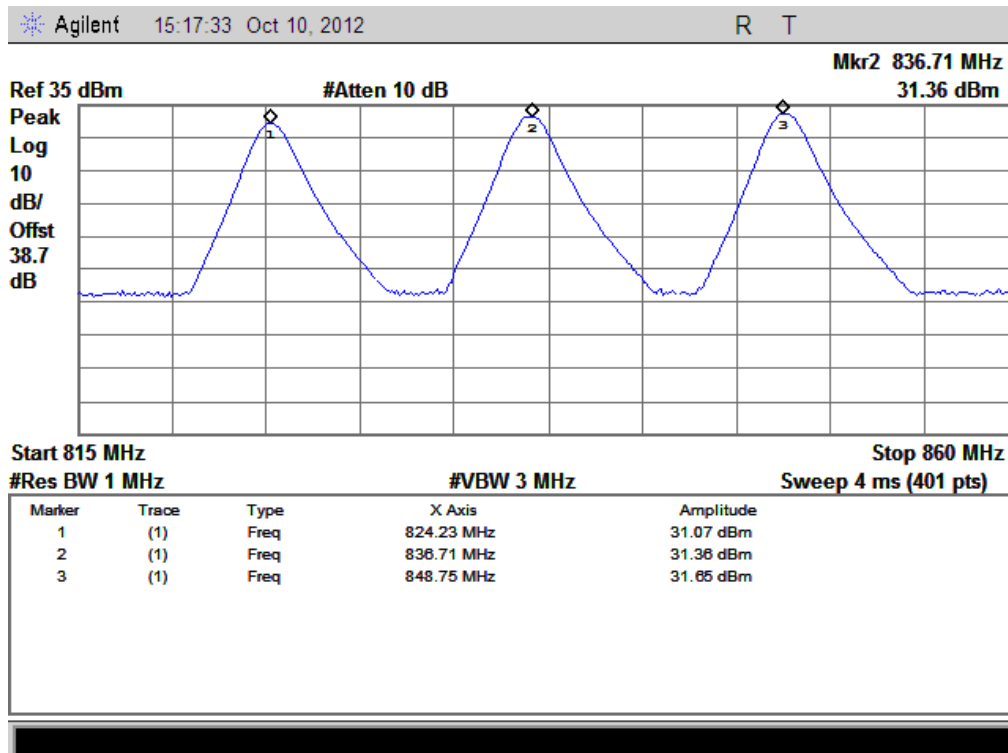
Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA 1900MHz	9262	1852.4	22.07	0.16107	33	2	PASS
	9400	1880	22.13	0.16331			PASS
	9538	1907.6	22.12	0.16293			PASS
HSDPA 1900MHz	9262	1852.4	22.19	0.16558	33	2	PASS
	9400	1880	22.22	0.16673			PASS
	9538	1907.6	22.06	0.16069			PASS
HSUPA 1900MHz	9262	1852.4	22.13	0.16331	33	2	PASS
	9400	1880	22.11	0.16256			PASS
	9538	1907.6	22.06	0.16069			PASS

Note2: For the WCDMA and HSDPA test band, the measured output power was calculated by the reading of the Power Meter.

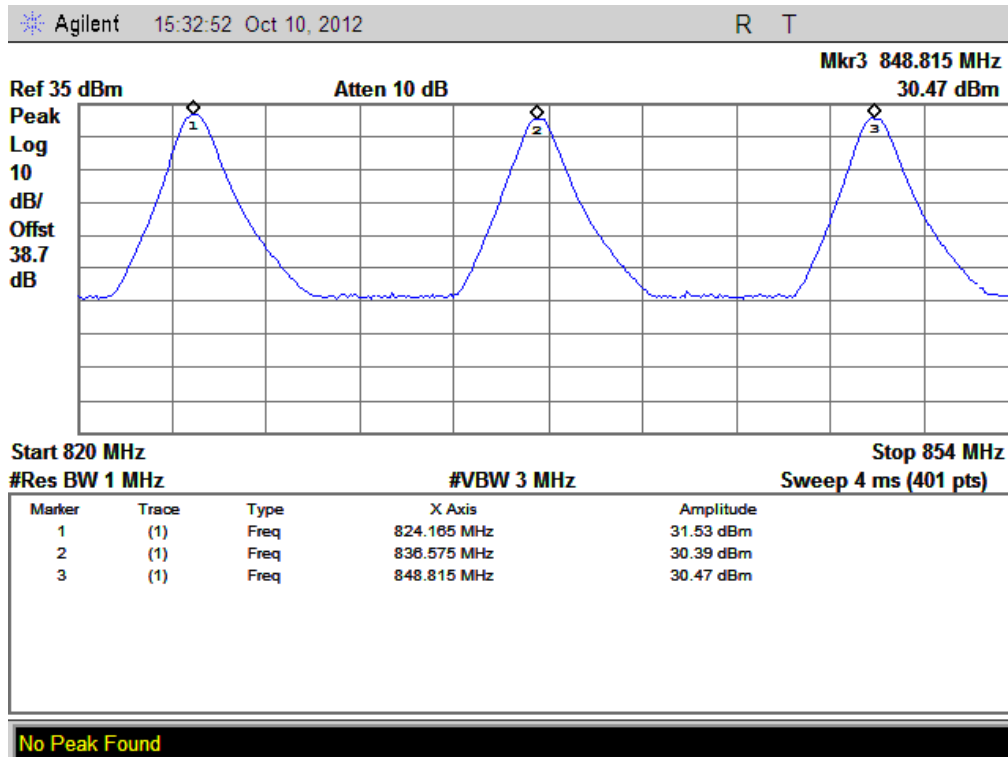
3. Test Plots:



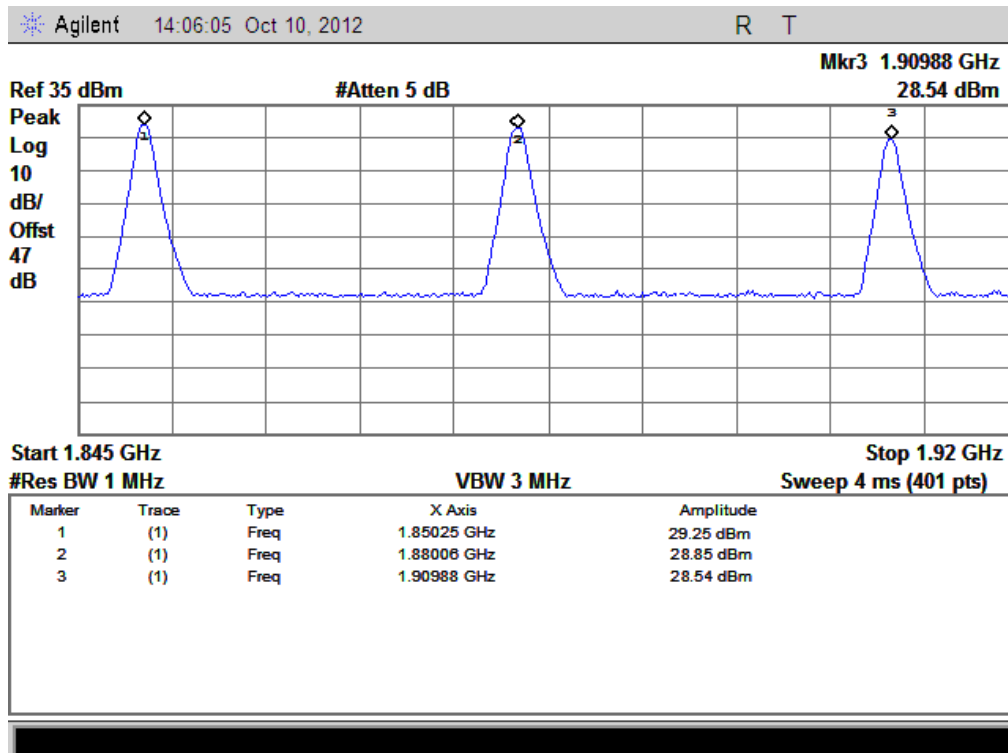
(Plot A: GSM 850MHz Channel = 128, 190, 251)



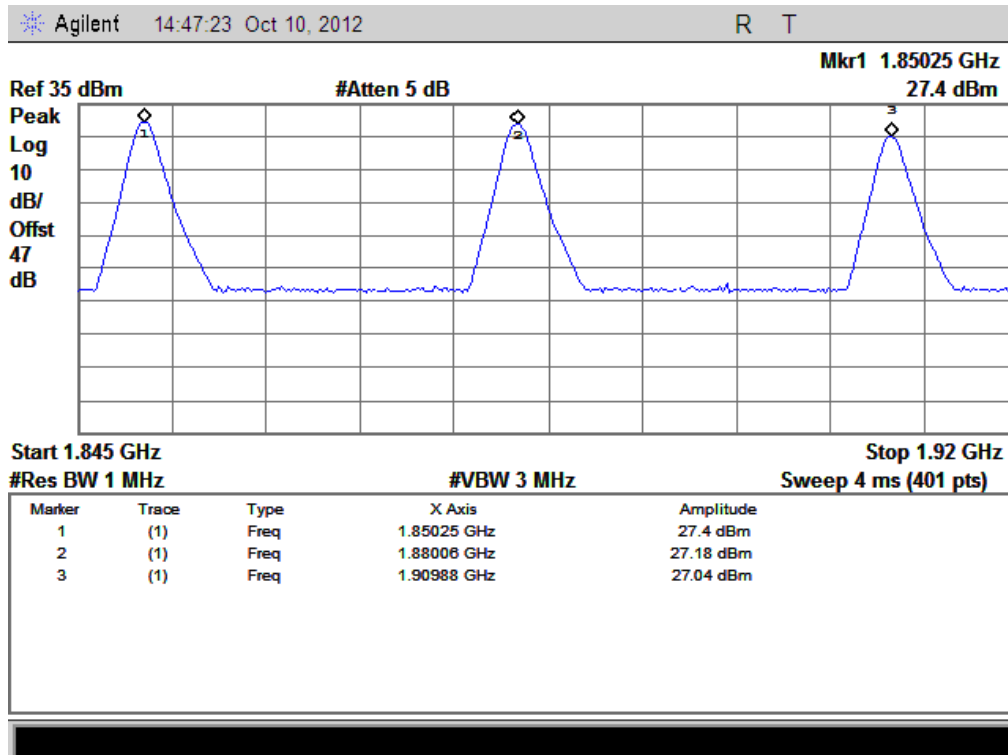
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



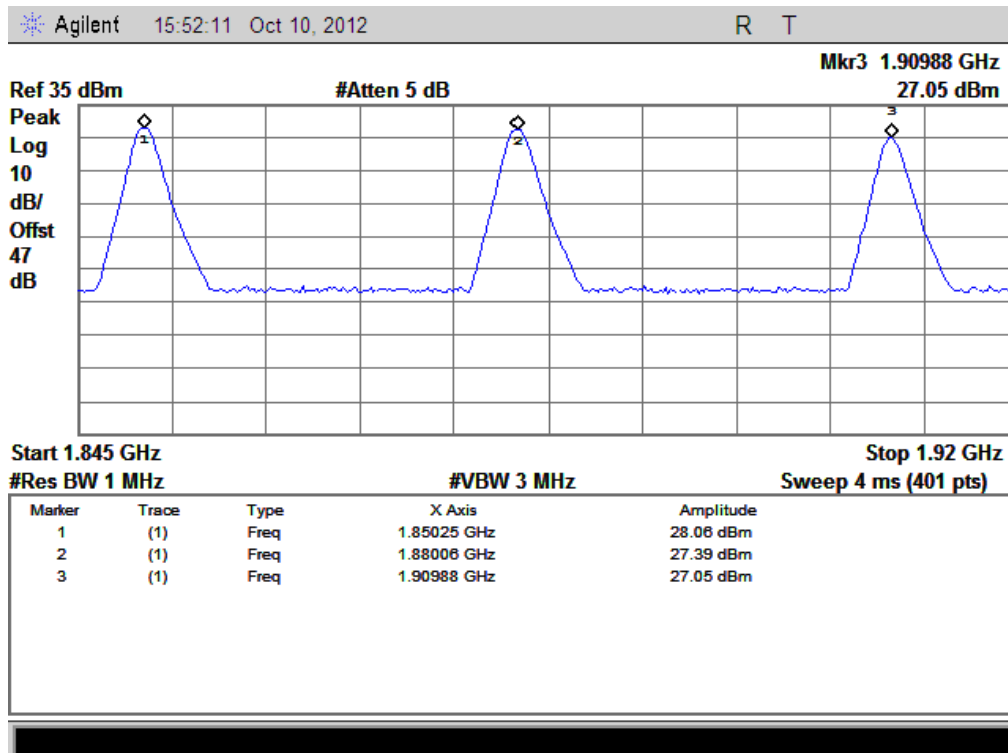
(Plot C: EDGE 850MHz Channel = 128, 190, 251)



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



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



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

2.7 Radiated Out of Band Emissions

2.7.1 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.

2.7.2 Test Description

See section 2.6.2 of this report.

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

2.7.3 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:

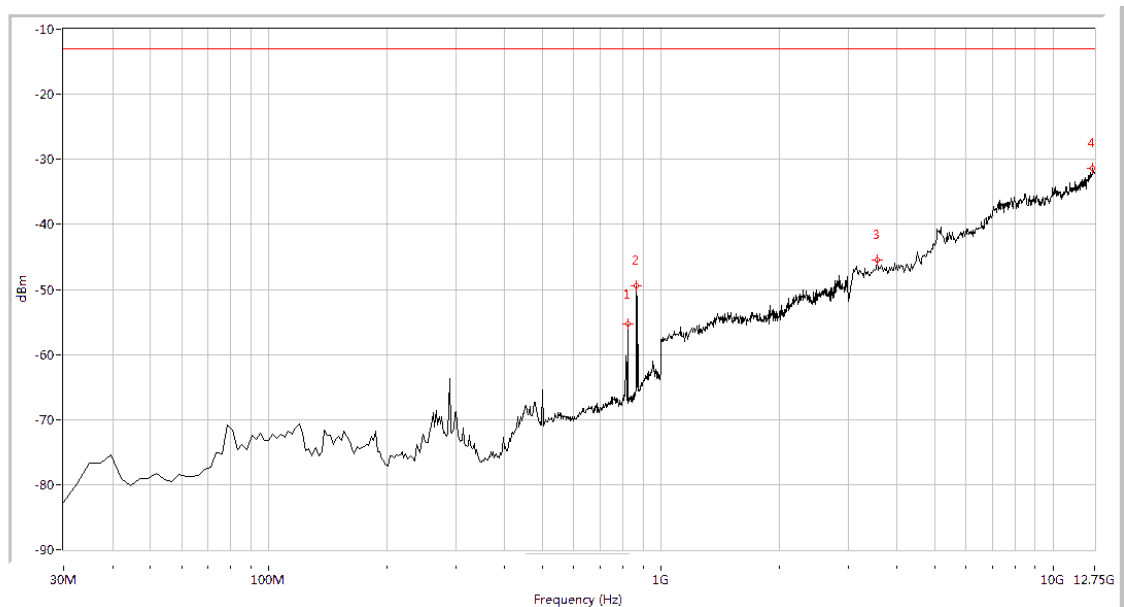
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
GSM 850MHz	128	824.2	< -25	< -25	Plot A.1/A.2	-13	PASS
	190	836.6	< -25	< -25	Plot A.3/A.4		PASS
	251	848.8	< -25	< -25	Plot A.5/A.6		PASS
GSM 1900MHz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

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)		Refer to Plot	Limit (dBm)	Verdict
			Test Antenna Horizontal	Test Antenna Vertical			
1900MHz	9400	1880	< -25	< -25	Plot F.3/F.4		PASS
	9538	1907.6	< -25	< -25	Plot F.5/F.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 1900MHz	9262	1852.4	< -25	< -25	Plot J.1/J.2	-13	PASS
	9400	1880	< -25	< -25	Plot J.3/J.4		PASS
	9538	1907.6	< -25	< -25	Plot J.5/J.6		PASS

2. Test Plots for the Whole Measurement Frequency Range:

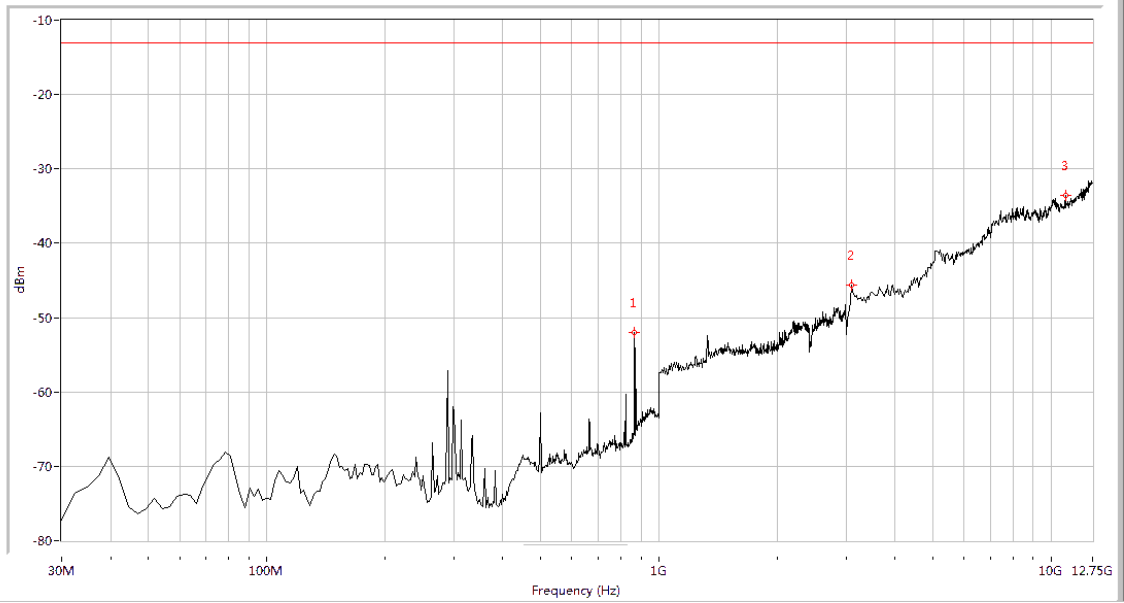
Note1: the power of the EUT transmitting frequency should be ignored.

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



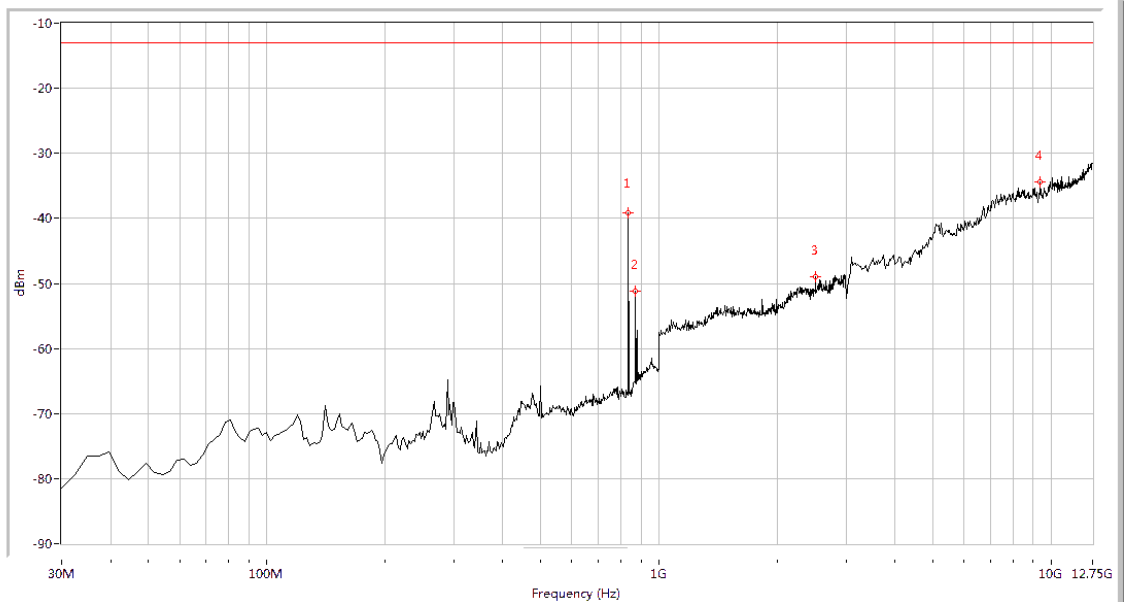
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
823.416	-55.38	-13.0	42.4	193.1	Horizontal	PASS
866.958	-49.51	-13.0	36.5	51.8	Horizontal	PASS
3559.227	-45.51	-13.0	32.5	4.2	Horizontal	PASS
12604.115	-31.32	-13.0	18.3	43.3	Horizontal	PASS

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



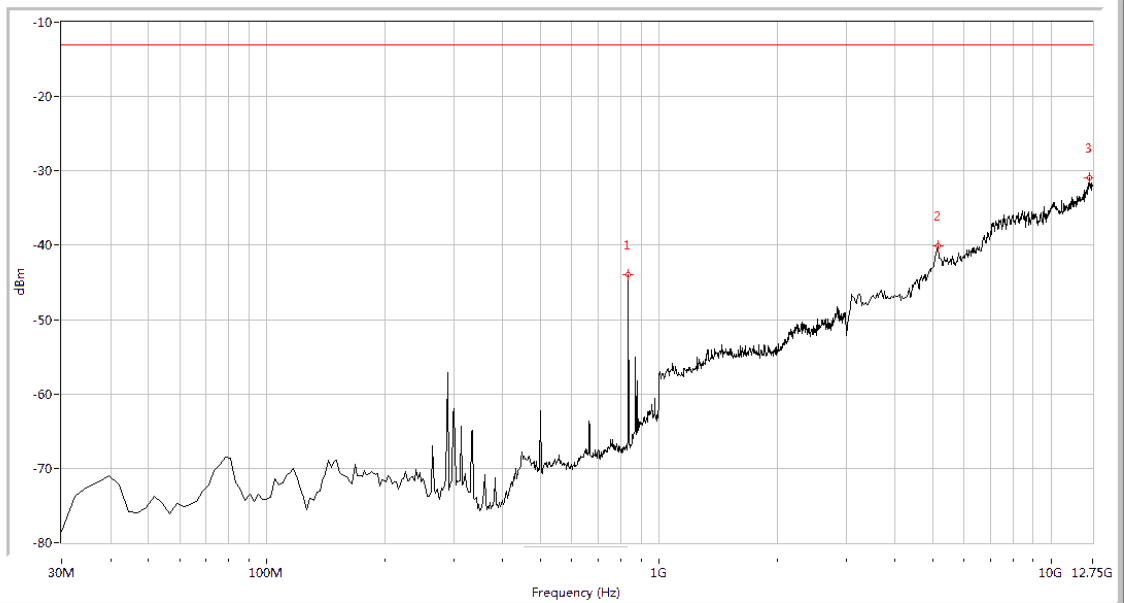
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
866.958	-52.02	-13.0	39.0	347.3	Vertical	PASS
3097.257	-45.62	-13.0	32.6	-0.0	Vertical	PASS
10877.805	-33.51	-13.0	20.5	341.7	Vertical	PASS

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



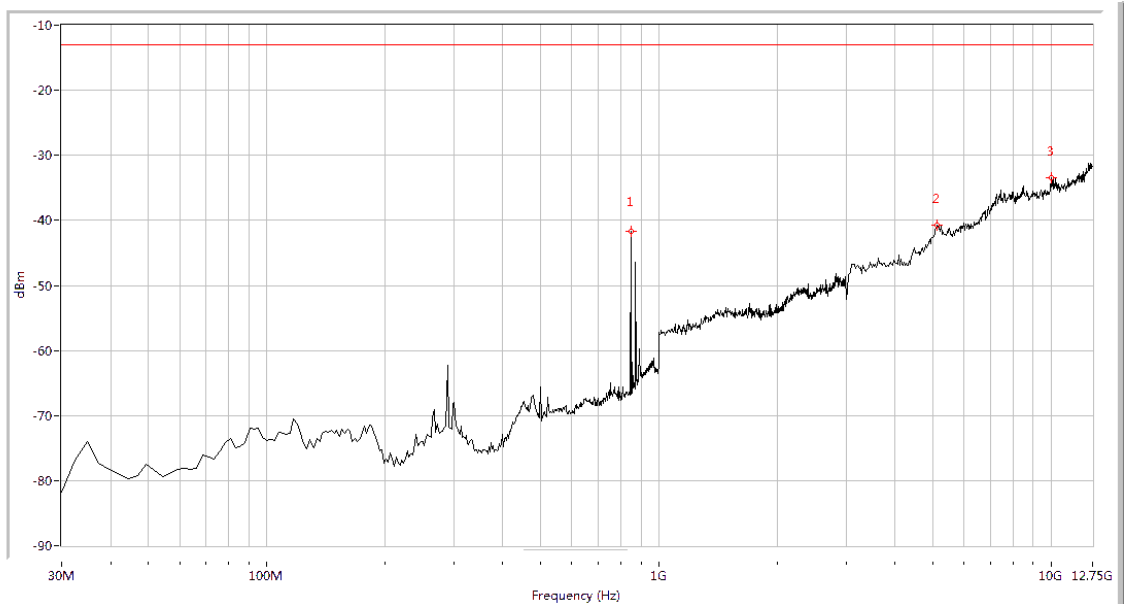
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-39.20	-13.0	26.2	81.6	Horizontal	PASS
871.796	-51.20	-13.0	38.2	-0.0	Horizontal	PASS
2506.234	-48.96	-13.0	36.0	360.0	Horizontal	PASS
9370.324	-34.43	-13.0	21.4	111.0	Horizontal	PASS

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



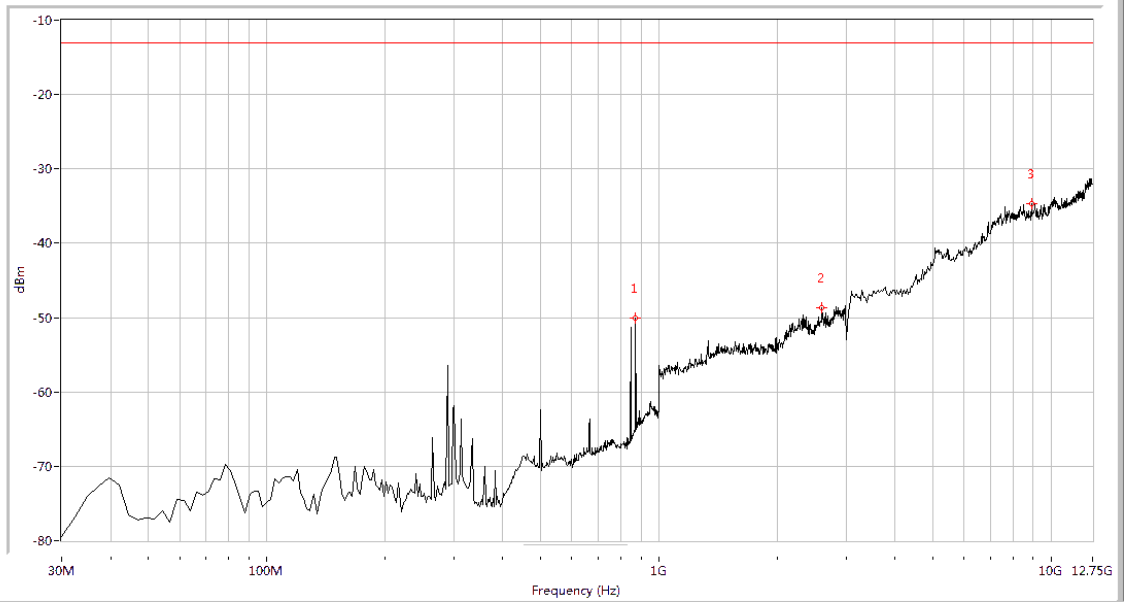
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-44.00	-13.0	31.0	106.6	Vertical	PASS
5139.651	-40.05	-13.0	27.1	278.8	Vertical	PASS
12531.172	-30.99	-13.0	18.0	101.1	Vertical	PASS

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



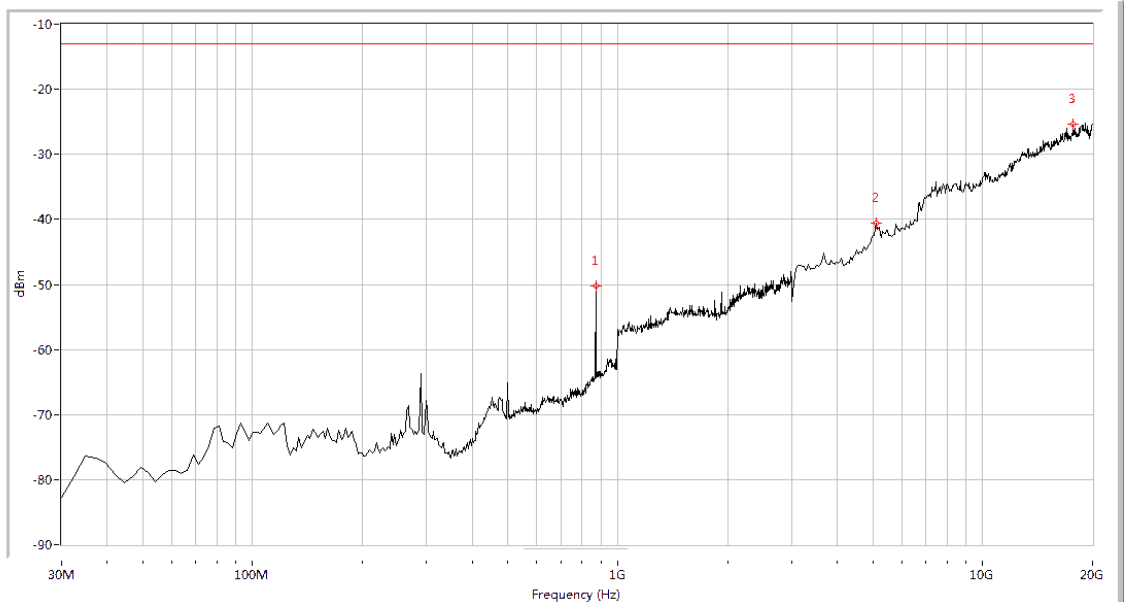
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-41.63	-13.0	28.6	123.9	Horizontal	PASS
5115.337	-40.67	-13.0	27.7	253.7	Horizontal	PASS
10026.808	-33.50	-13.0	20.5	37.3	Horizontal	PASS

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



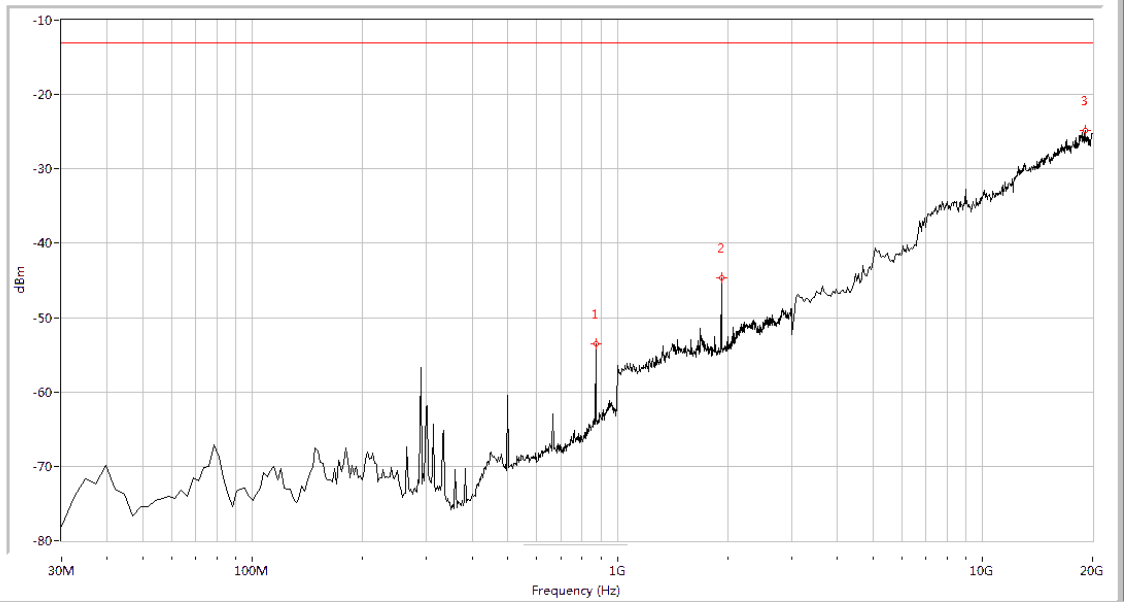
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.09	-13.0	37.1	144.2	Vertical	PASS
2605.985	-48.70	-13.0	35.7	292.3	Vertical	PASS
8908.354	-34.73	-13.0	21.7	82.4	Vertical	PASS

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



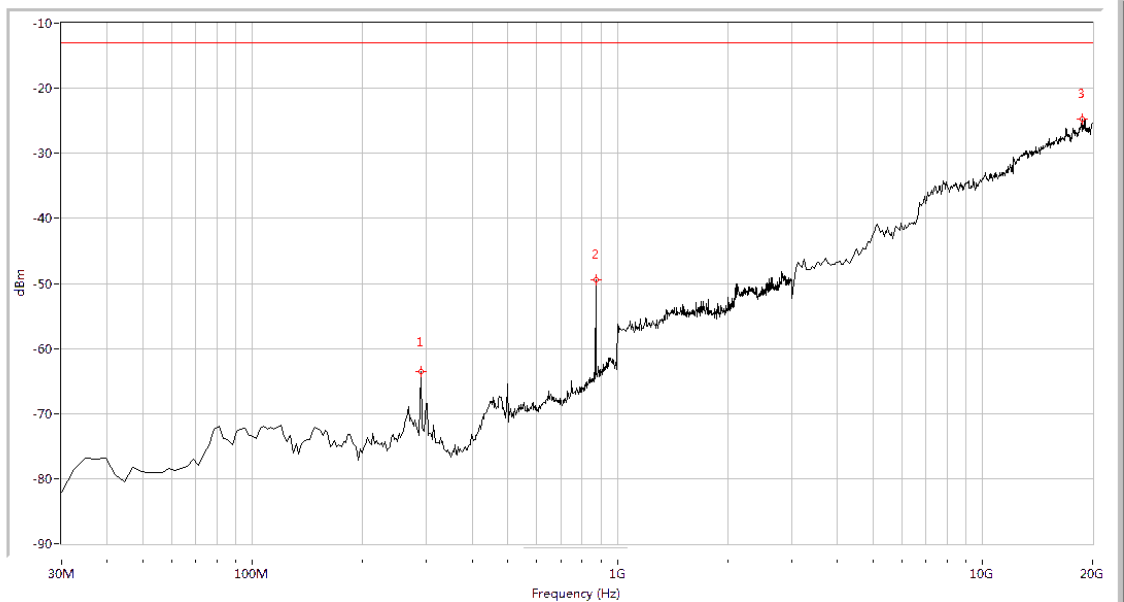
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.23	-13.0	37.2	356.6	Horizontal	PASS
5119.701	-40.64	-13.0	27.6	16.8	Horizontal	PASS
17710.723	-25.31	-13.0	12.3	318.3	Horizontal	PASS

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



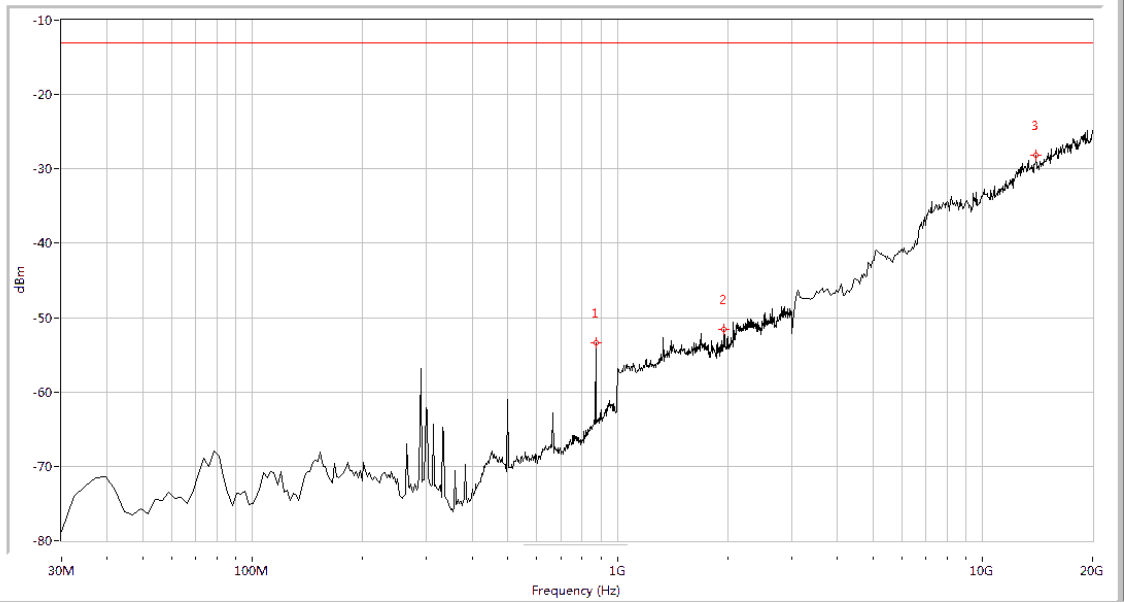
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.48	-13.0	40.5	352.6	Vertical	PASS
1927.681	-44.72	-13.0	31.7	179.7	Vertical	PASS
19067.332	-24.87	-13.0	11.9	349.5	Vertical	PASS

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



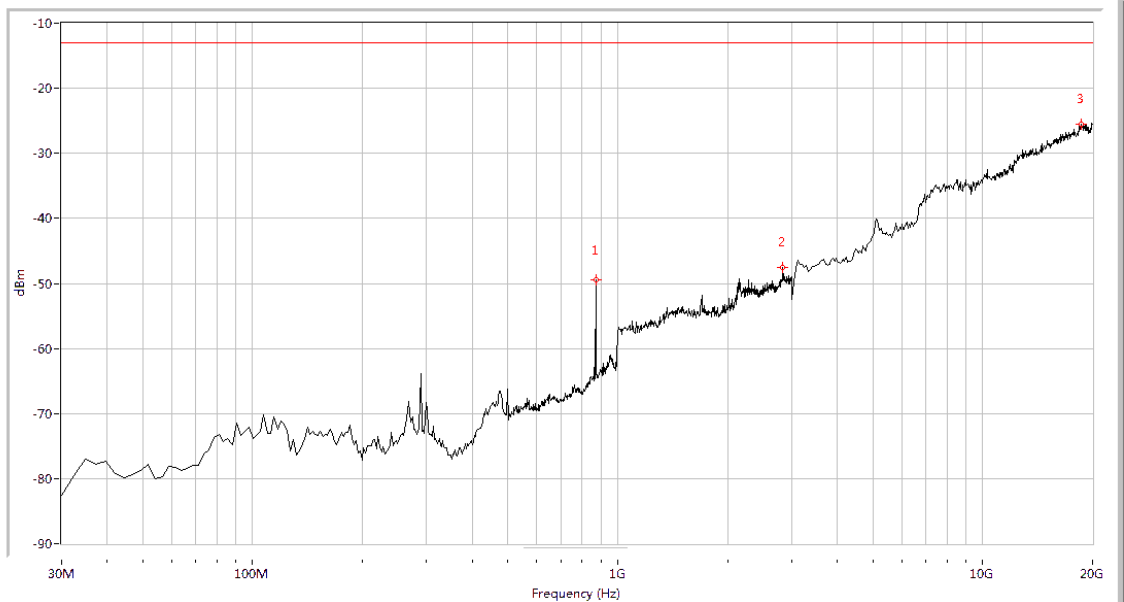
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
288.828	-63.61	-13.0	50.6	247.2	Horizontal	PASS
871.796	-49.41	-13.0	36.4	323.5	Horizontal	PASS
18685.786	-24.75	-13.0	11.7	163.2	Horizontal	PASS

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



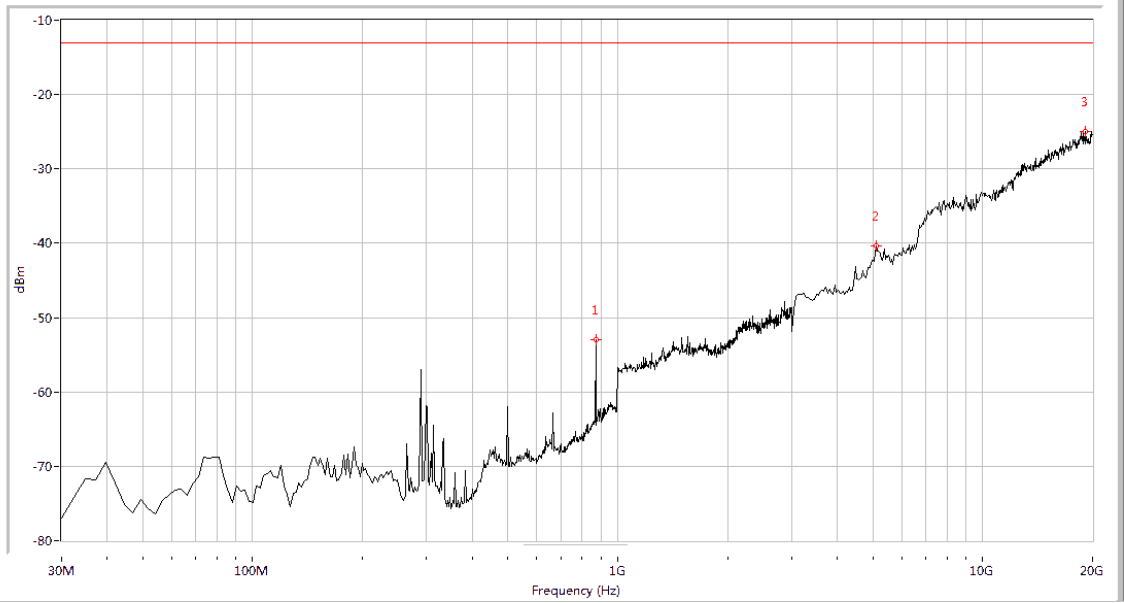
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.45	-13.0	40.4	343.9	Vertical	PASS
1957.606	-51.58	-13.0	38.6	286.8	Vertical	PASS
14022.444	-28.10	-13.0	15.1	204.1	Vertical	PASS

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



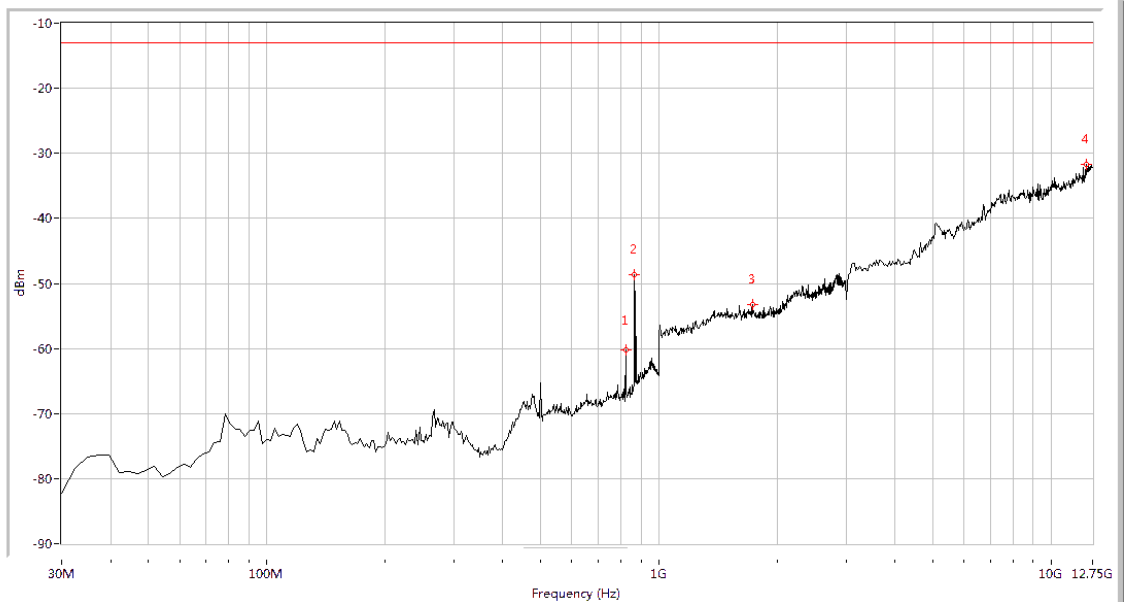
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-49.46	-13.0	36.5	327.2	Horizontal	PASS
2835.411	-47.53	-13.0	34.5	179.7	Horizontal	PASS
18643.392	-25.51	-13.0	12.5	358.7	Horizontal	PASS

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



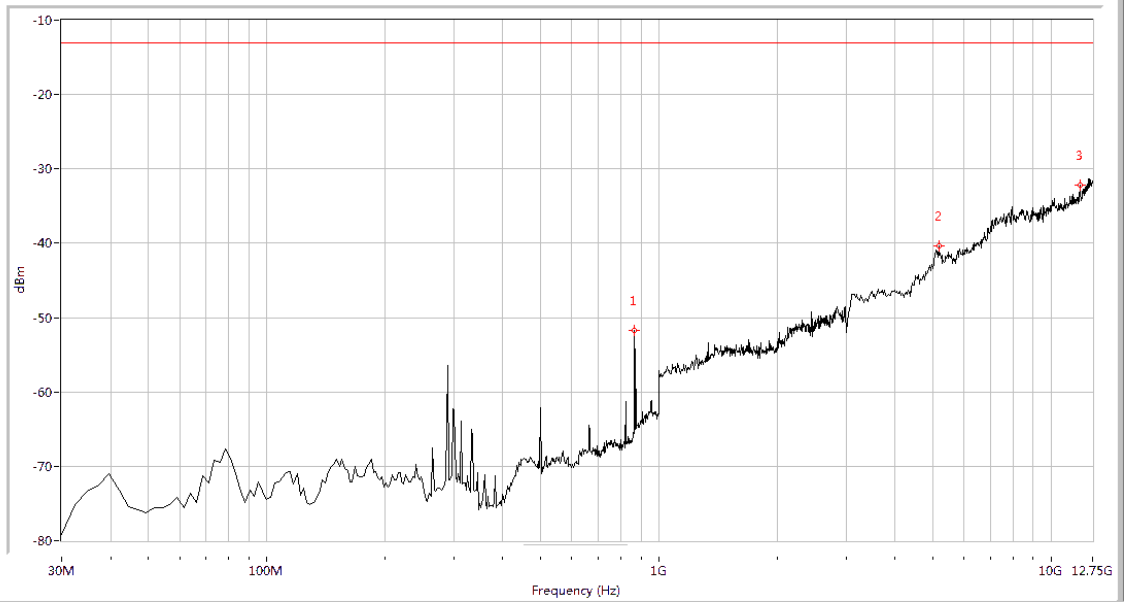
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.00	-13.0	40.0	226.4	Vertical	PASS
5119.701	-40.42	-13.0	27.4	341.3	Vertical	PASS
19109.726	-24.96	-13.0	12.0	171.7	Vertical	PASS

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



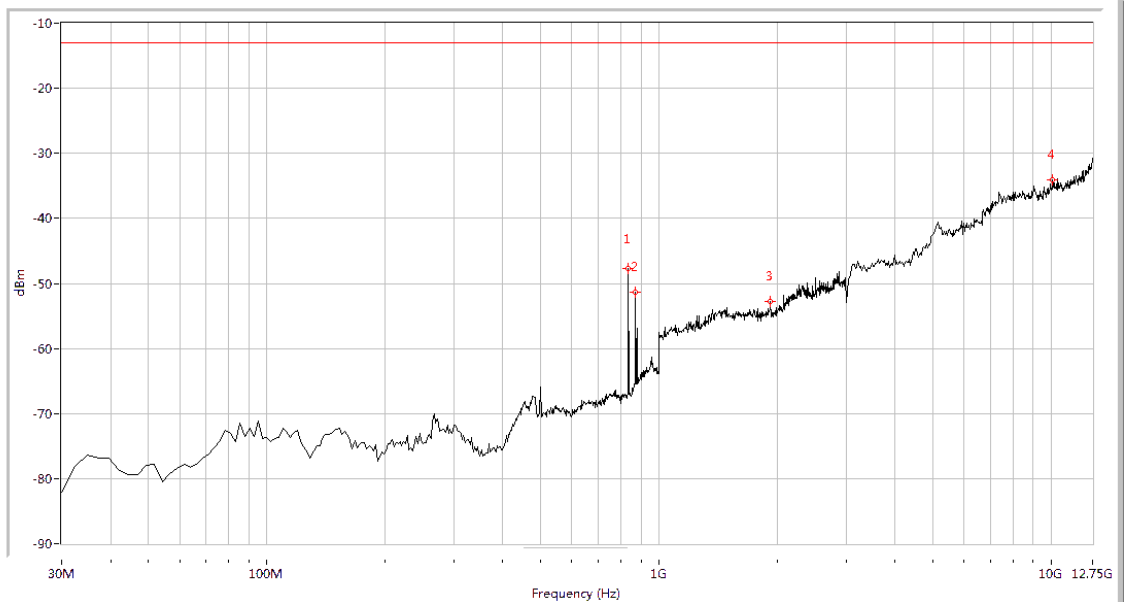
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
823.416	-60.15	-13.0	47.1	0.0	Horizontal	PASS
866.958	-48.63	-13.0	35.6	0.0	Horizontal	PASS
1733.167	-53.22	-13.0	40.2	0.0	Horizontal	PASS
12312.344	-31.68	-13.0	18.7	0.0	Horizontal	PASS

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



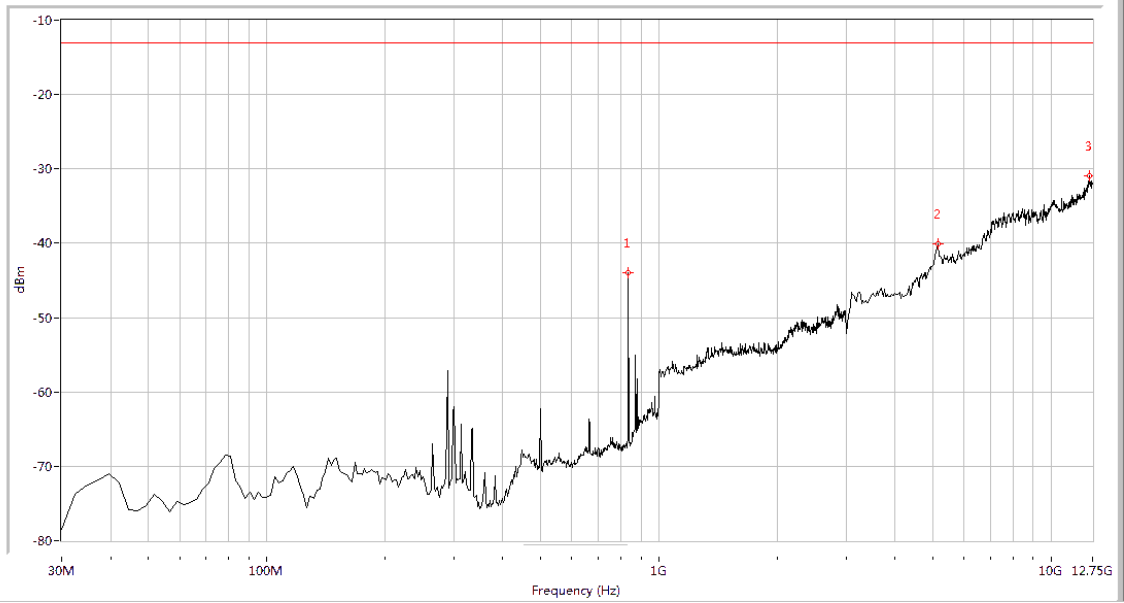
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
866.958	-51.78	-13.0	38.8	147.4	Vertical	PASS
5163.965	-40.38	-13.0	27.4	33.9	Vertical	PASS
11850.374	-32.22	-13.0	19.2	213.6	Vertical	PASS

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



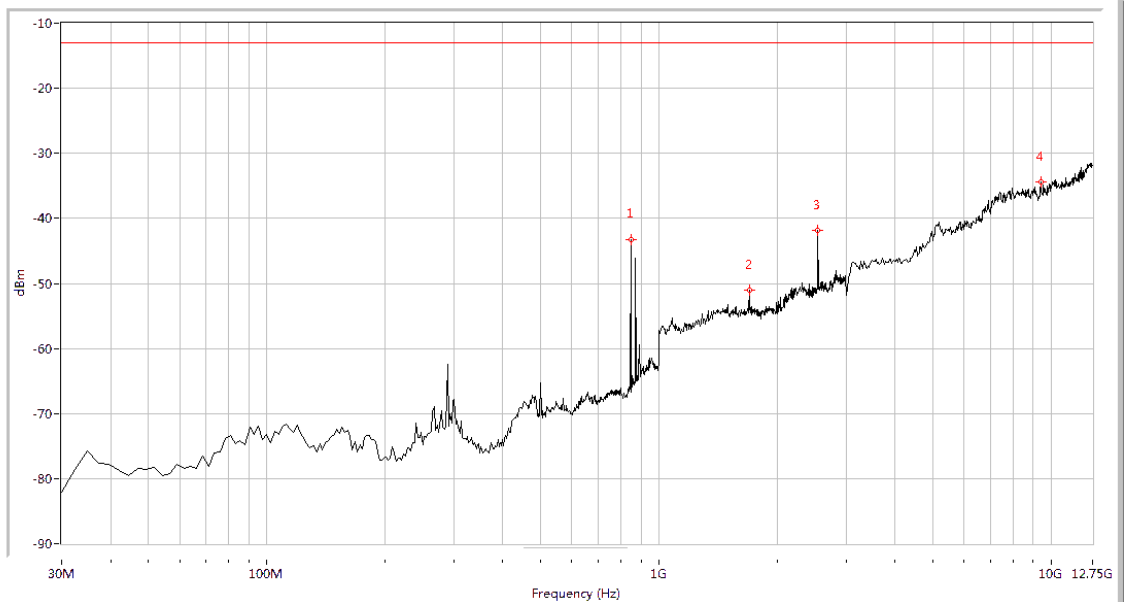
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-47.70	-13.0	34.7	0.0	Horizontal	PASS
871.796	-51.28	-13.0	38.3	0.0	Horizontal	PASS
1922.693	-52.82	-13.0	39.8	0.0	Horizontal	PASS
10099.751	-34.04	-13.0	21.0	0.0	Horizontal	PASS

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



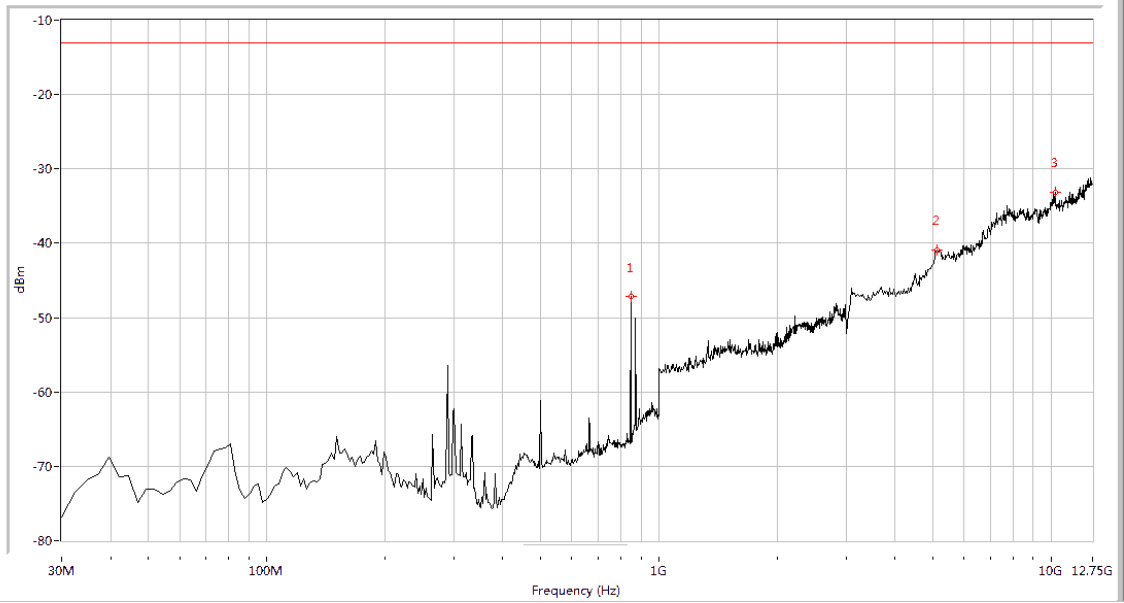
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
835.511	-44.00	-13.0	31.0	174.5	Vertical	PASS
5139.651	-40.05	-13.0	27.1	31.3	Vertical	PASS
12531.172	-30.99	-13.0	18.0	296.8	Vertical	PASS

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



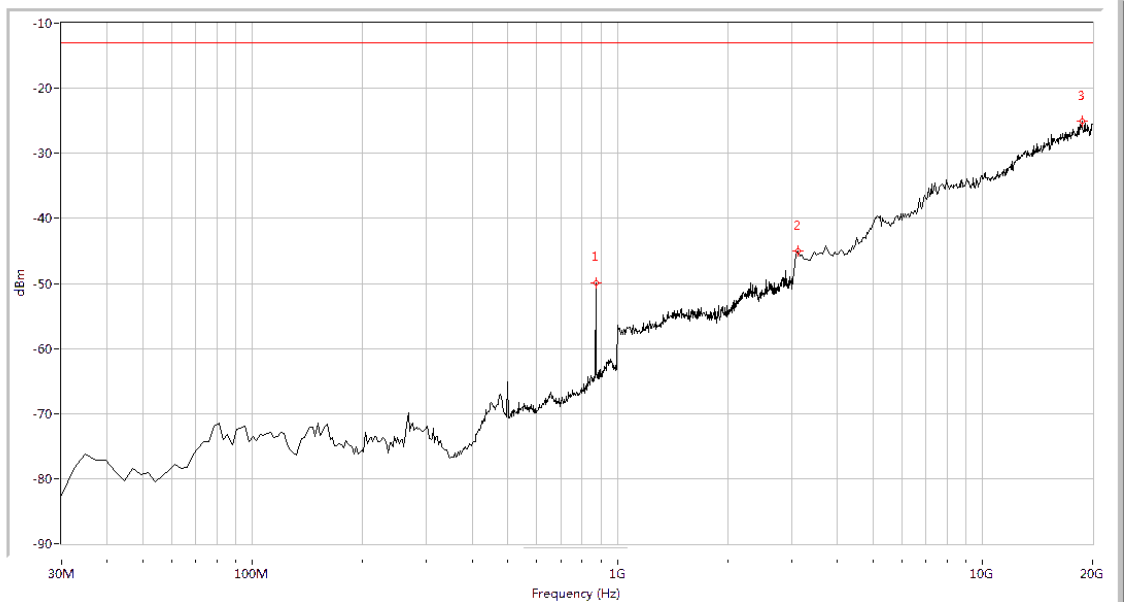
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-43.28	-13.0	30.3	146.8	Horizontal	PASS
1698.254	-51.06	-13.0	38.1	158.5	Horizontal	PASS
2541.147	-41.78	-13.0	28.8	145.1	Horizontal	PASS
9418.953	-34.44	-13.0	21.4	166.2	Horizontal	PASS

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



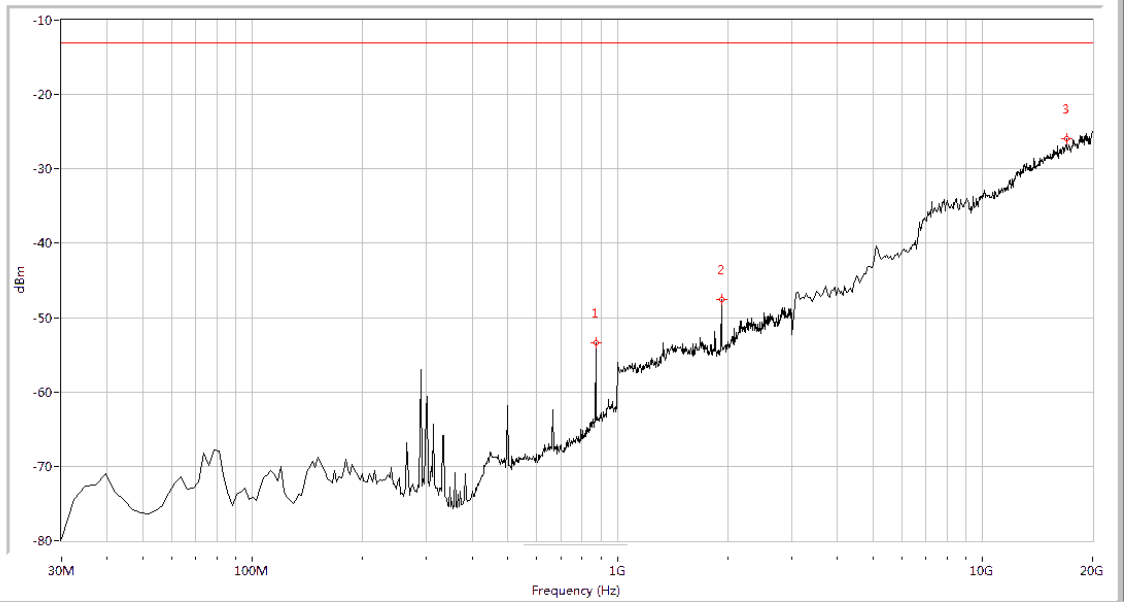
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
847.606	-47.11	-13.0	34.1	191.8	Vertical	PASS
5115.337	-40.91	-13.0	27.9	109.2	Vertical	PASS
10245.636	-33.21	-13.0	20.2	1.0	Vertical	PASS

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



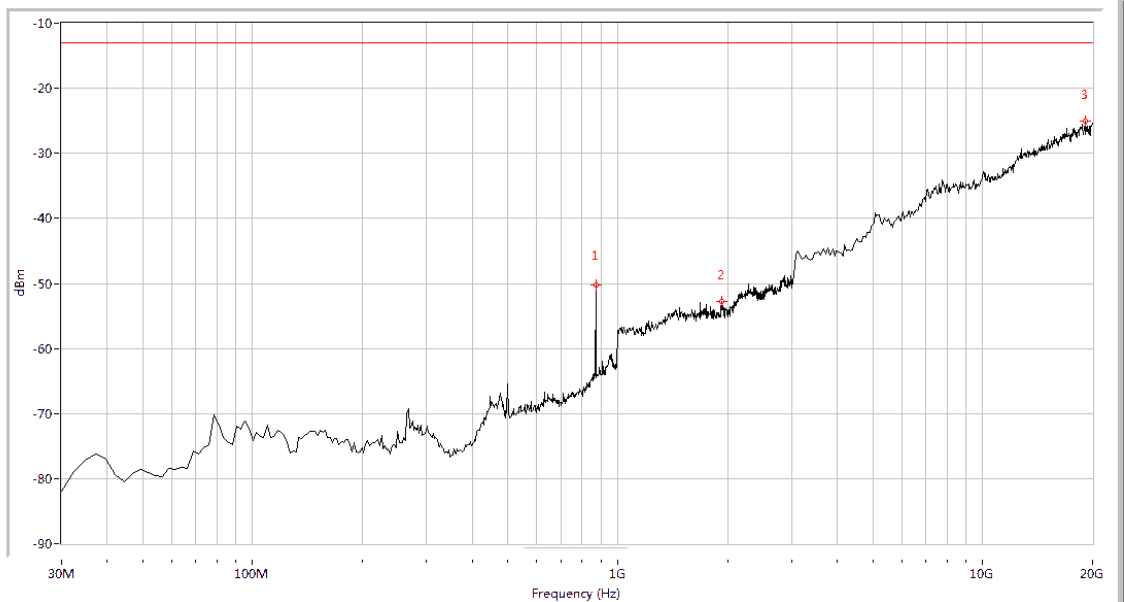
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-49.90	-13.0	36.9	0.0	Horizontal	PASS
3127.182	-45.01	-13.0	32.0	0.0	Horizontal	PASS
18728.180	-25.02	-13.0	12.0	0.0	Horizontal	PASS

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



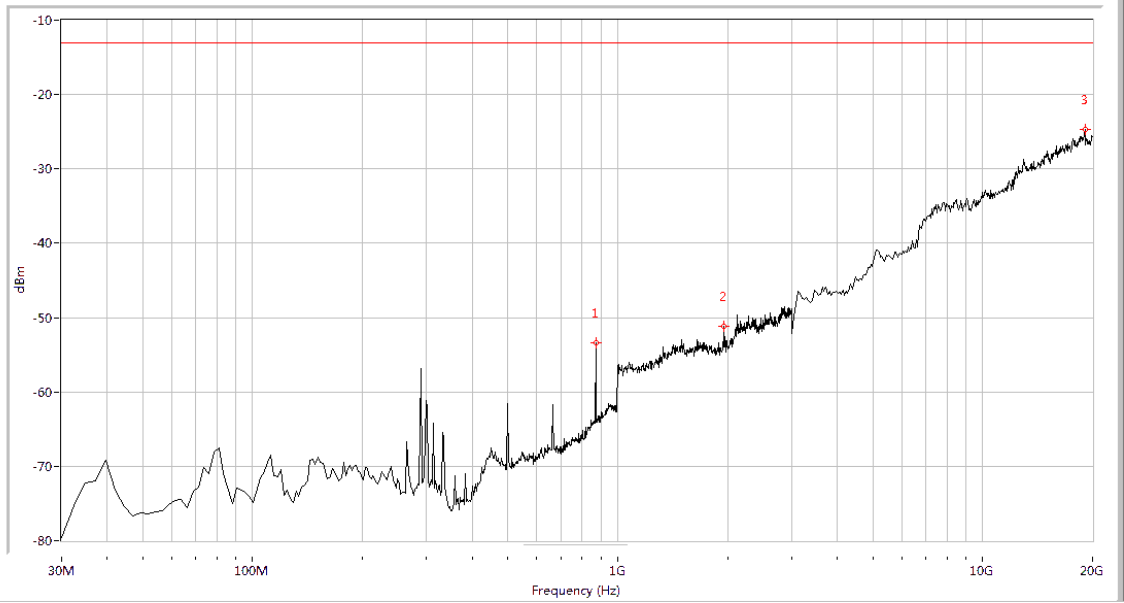
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.40	-13.0	40.4	233.2	Vertical	PASS
1927.681	-47.60	-13.0	34.6	358.0	Vertical	PASS
16990.025	-25.97	-13.0	13.0	130.7	Vertical	PASS

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



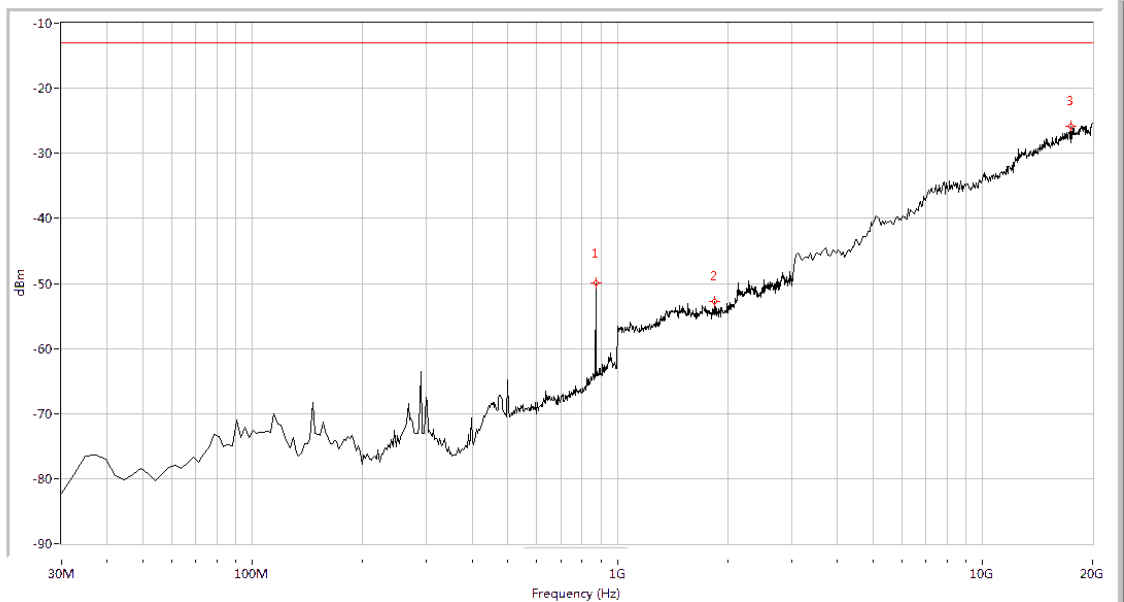
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-50.19	-13.0	37.2	0.0	Horizontal	PASS
1927.681	-52.81	-13.0	39.8	0.0	Horizontal	PASS
19109.726	-25.11	-13.0	12.1	0.0	Horizontal	PASS

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



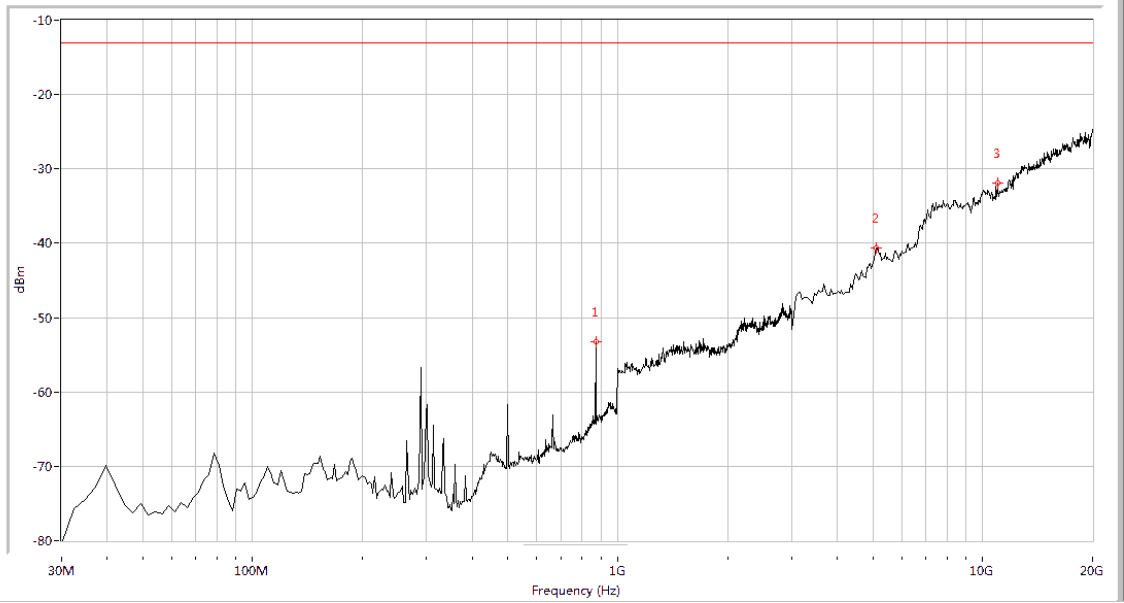
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.41	-13.0	40.4	360.0	Vertical	PASS
1957.606	-51.15	-13.0	38.2	251.7	Vertical	PASS
19109.726	-24.63	-13.0	11.6	300.9	Vertical	PASS

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



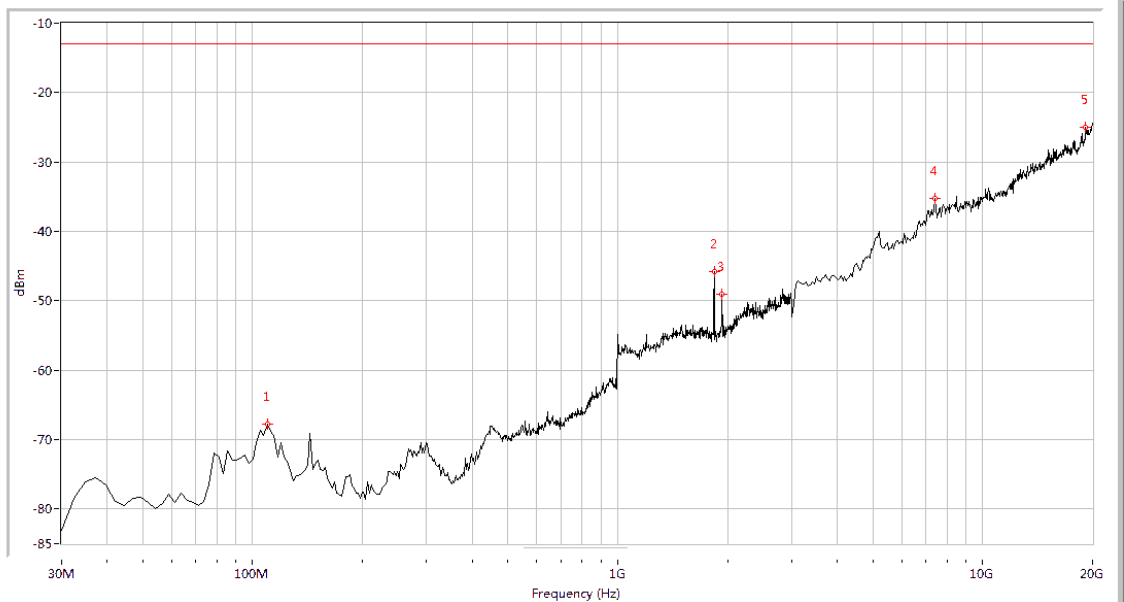
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-49.99	-13.0	37.0	348.9	Horizontal	PASS
1847.880	-52.77	-13.0	39.8	30.4	Horizontal	PASS
17413.965	-25.78	-13.0	12.8	91.2	Horizontal	PASS

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



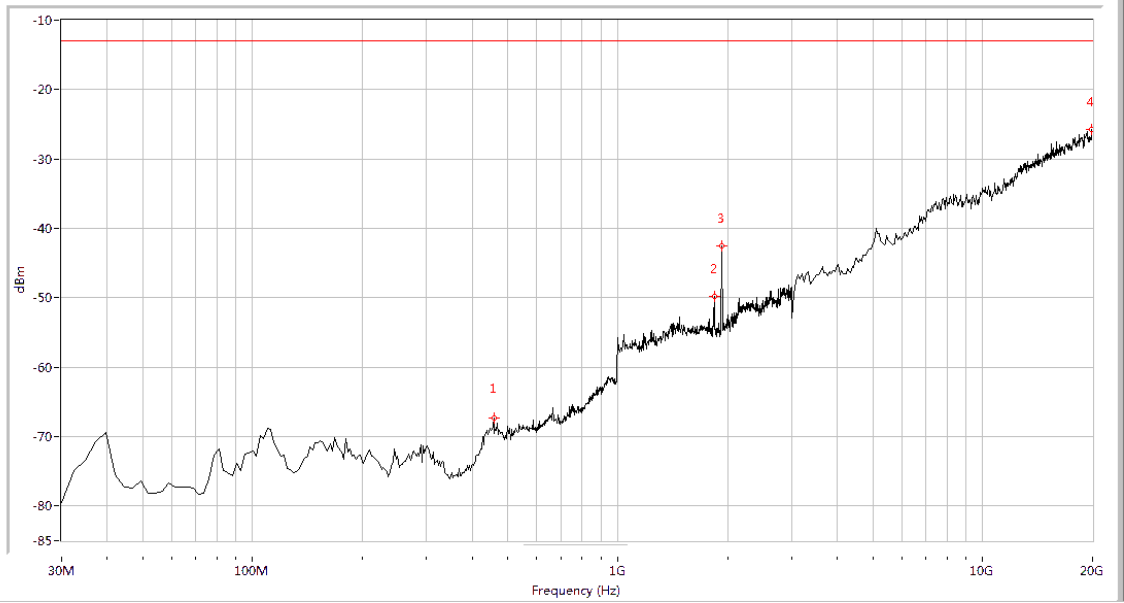
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
871.796	-53.30	-13.0	40.3	360.0	Vertical	PASS
5119.701	-40.69	-13.0	27.7	189.0	Vertical	PASS
10970.075	-31.97	-13.0	19.0	123.2	Vertical	PASS

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



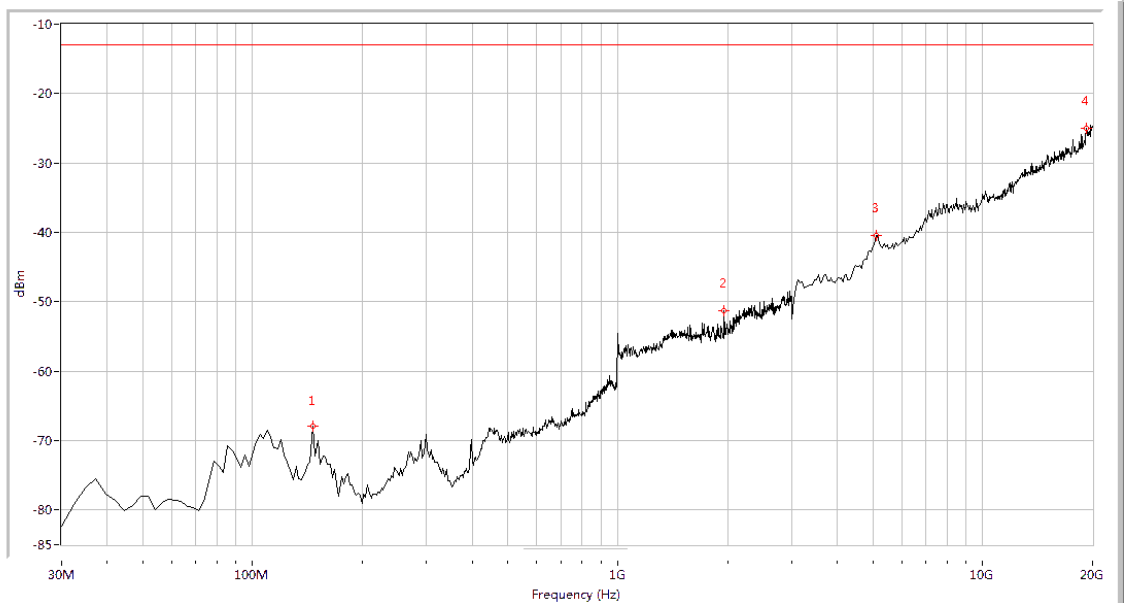
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-45.82	-13.0	32.8	41.7	Horizontal	PASS
1932.668	-49.03	-13.0	36.0	67.0	Horizontal	PASS
7408.978	-35.32	-13.0	22.3	74.6	Horizontal	PASS
19152.120	-24.93	-13.0	11.9	2.8	Horizontal	PASS

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



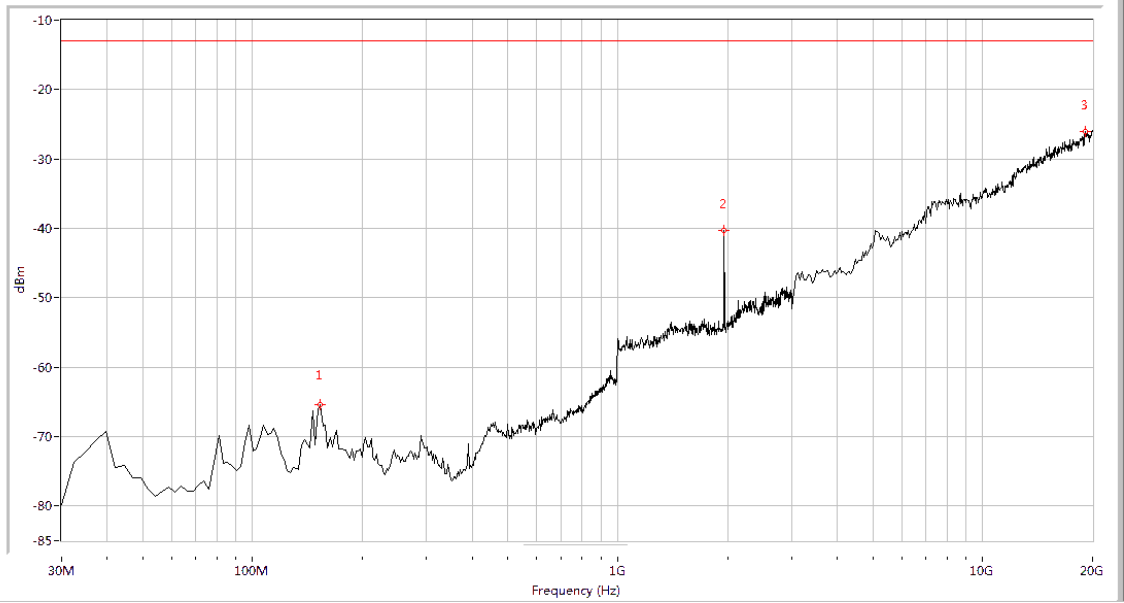
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
458.155	-67.30	-13.0	54.3	247.6	Vertical	PASS
1837.905	-49.74	-13.0	36.7	247.3	Vertical	PASS
1932.668	-42.48	-13.0	29.5	278.6	Vertical	PASS
19915.212	-25.77	-13.0	12.8	175.1	Vertical	PASS

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



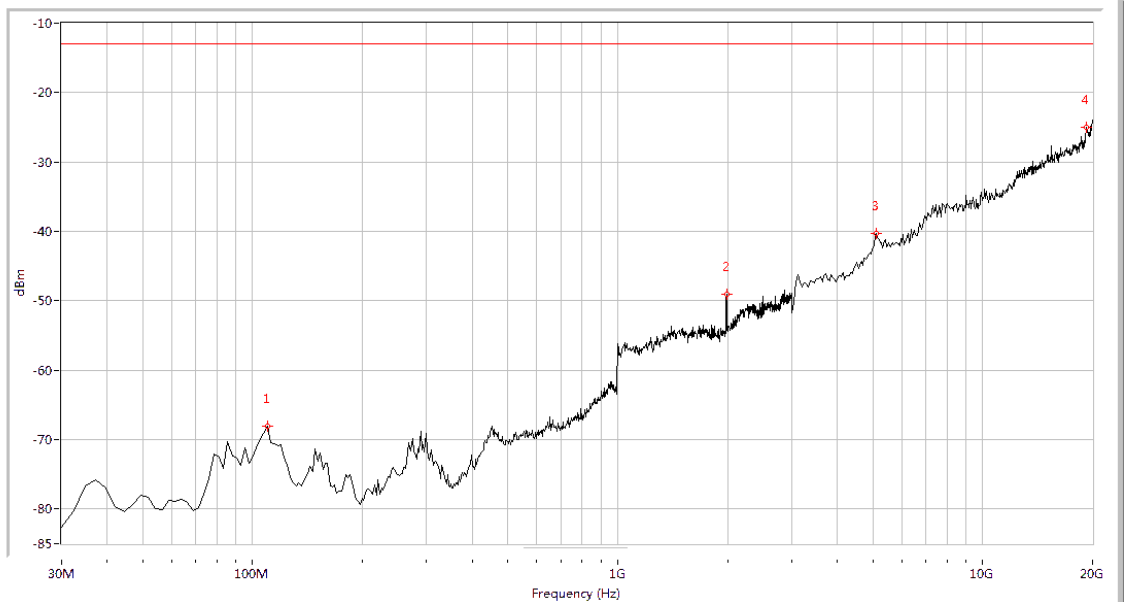
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1957.606	-51.25	-13.0	38.3	239.4	Horizontal	PASS
5119.701	-40.49	-13.0	27.5	71.5	Horizontal	PASS
19279.302	-25.01	-13.0	12.0	37.3	Horizontal	PASS

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



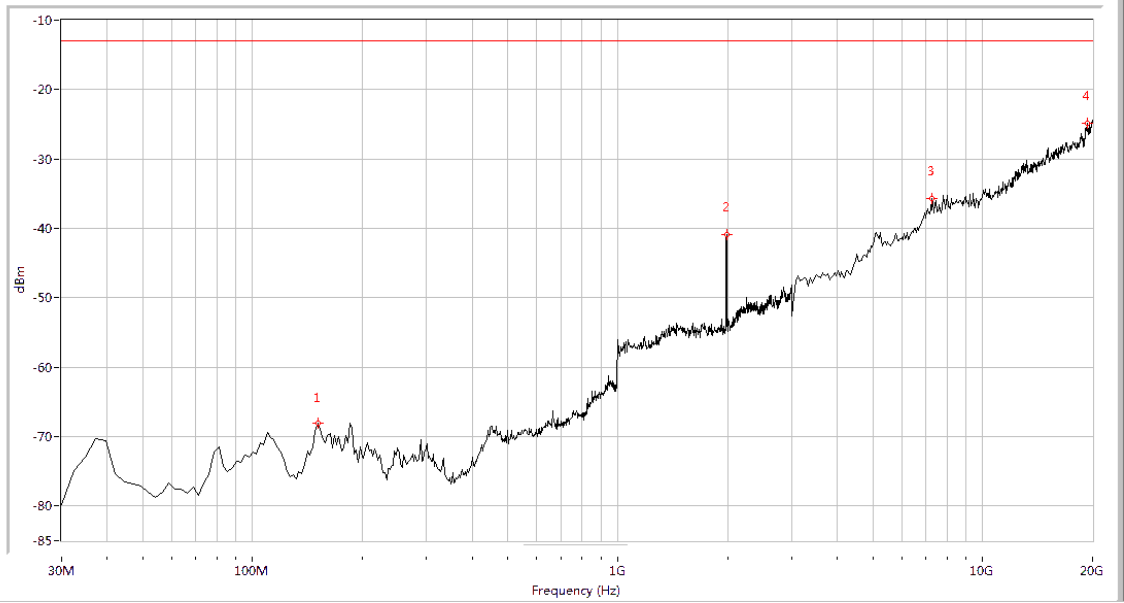
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
153.367	-65.39	-13.0	52.4	169.7	Vertical	PASS
1957.606	-40.30	-13.0	27.3	82.4	Vertical	PASS
19067.332	-26.08	-13.0	13.1	1.4	Vertical	PASS

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



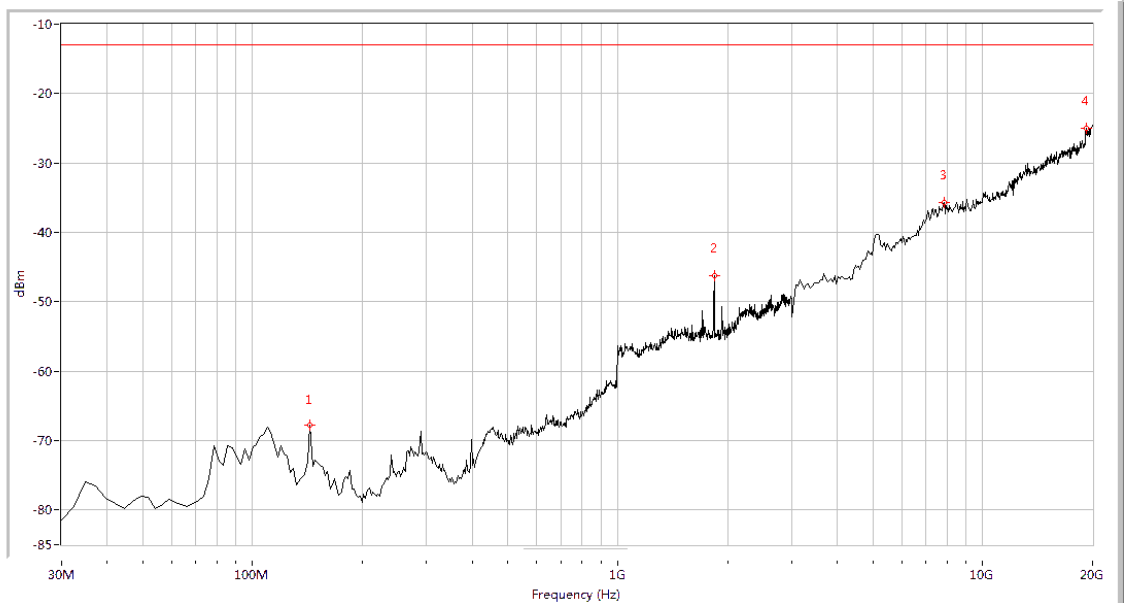
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.01	-13.0	55.0	117.3	Horizontal	PASS
1987.531	-49.08	-13.0	36.1	15.3	Horizontal	PASS
5119.701	-40.29	-13.0	27.3	360.0	Horizontal	PASS
19236.908	-24.94	-13.0	11.9	56.3	Horizontal	PASS

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



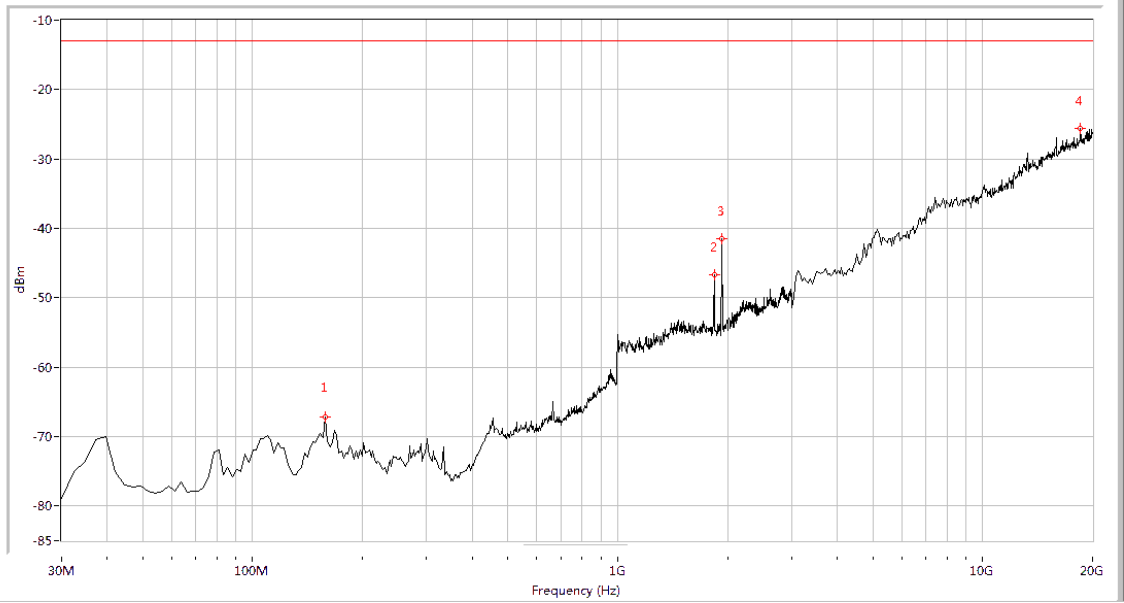
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
150.948	-68.02	-13.0	55.0	128.4	Vertical	PASS
1987.531	-40.93	-13.0	27.9	58.9	Vertical	PASS
7239.401	-35.66	-13.0	22.7	9.8	Vertical	PASS
19321.696	-24.87	-13.0	11.9	52.2	Vertical	PASS

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



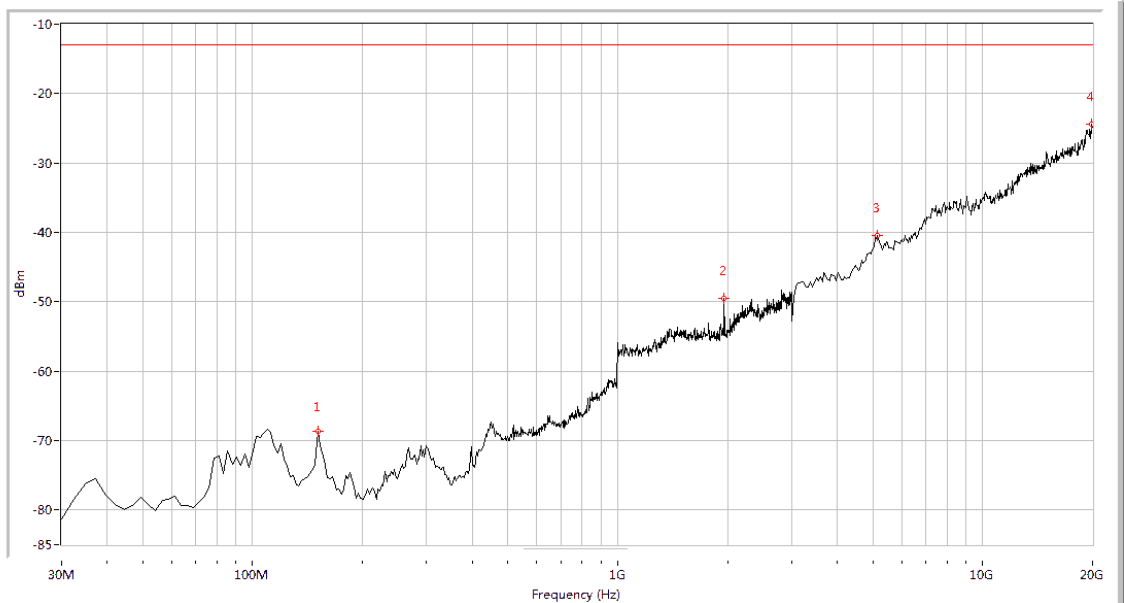
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-46.27	-13.0	33.3	100.2	Horizontal	PASS
7832.918	-35.76	-13.0	22.8	177.5	Horizontal	PASS
19194.514	-24.96	-13.0	12.0	1.5	Horizontal	PASS

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



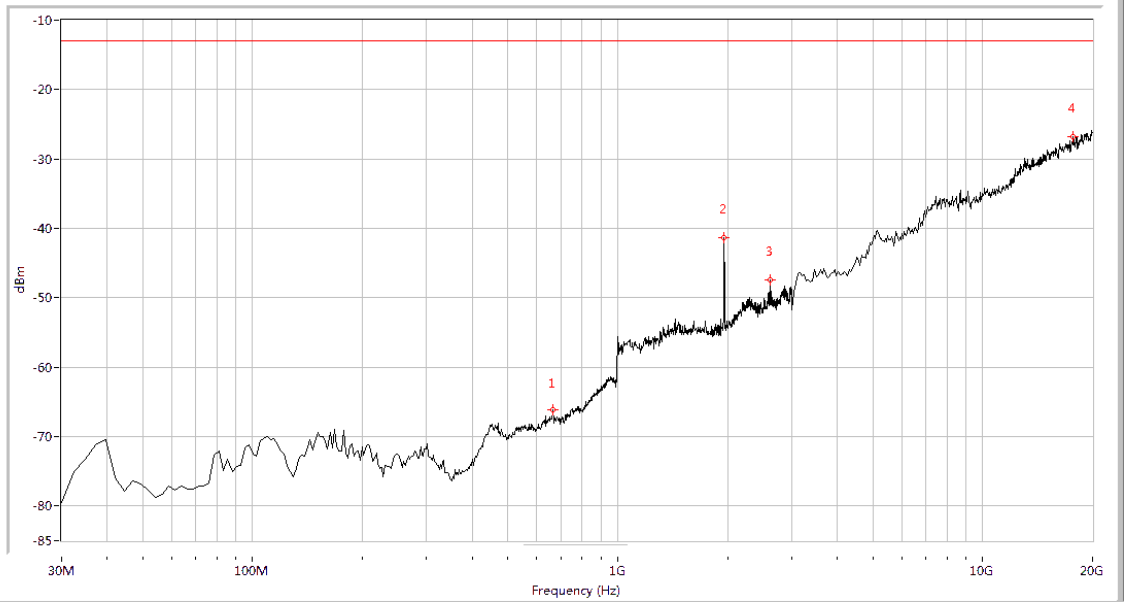
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
158.204	-67.24	-13.0	54.2	206.1	Vertical	PASS
1837.905	-46.73	-13.0	33.7	289.3	Vertical	PASS
1932.668	-41.47	-13.0	28.5	360.0	Vertical	PASS
18558.603	-25.64	-13.0	12.6	4.2	Vertical	PASS

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



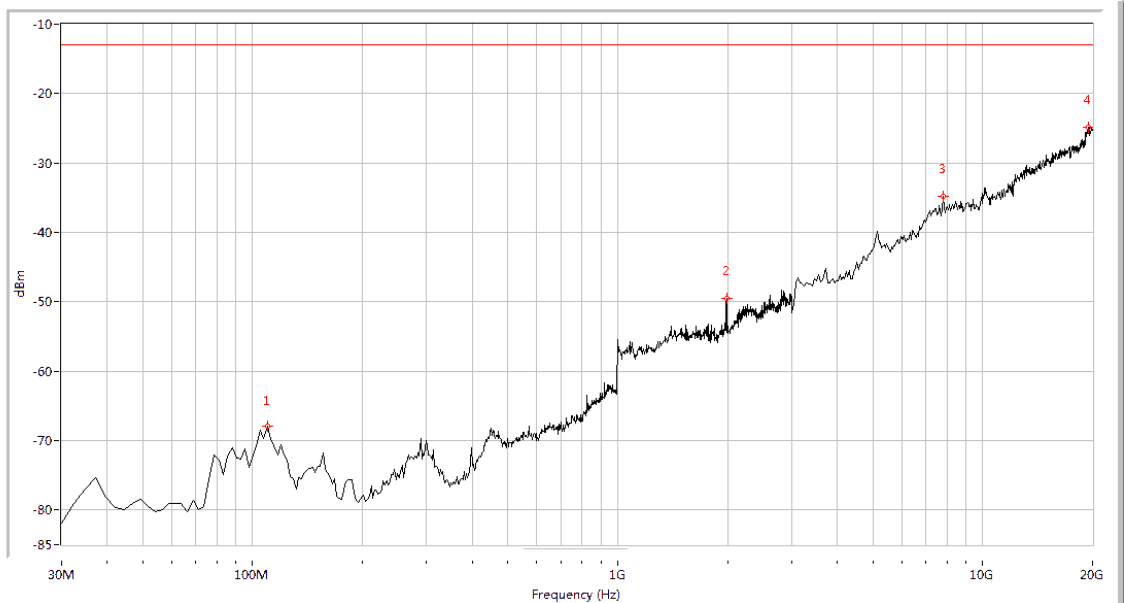
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1957.606	-49.46	-13.0	36.5	67.7	Horizontal	PASS
5162.095	-40.38	-13.0	27.4	97.4	Horizontal	PASS
19872.818	-24.37	-13.0	11.4	149.4	Horizontal	PASS

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



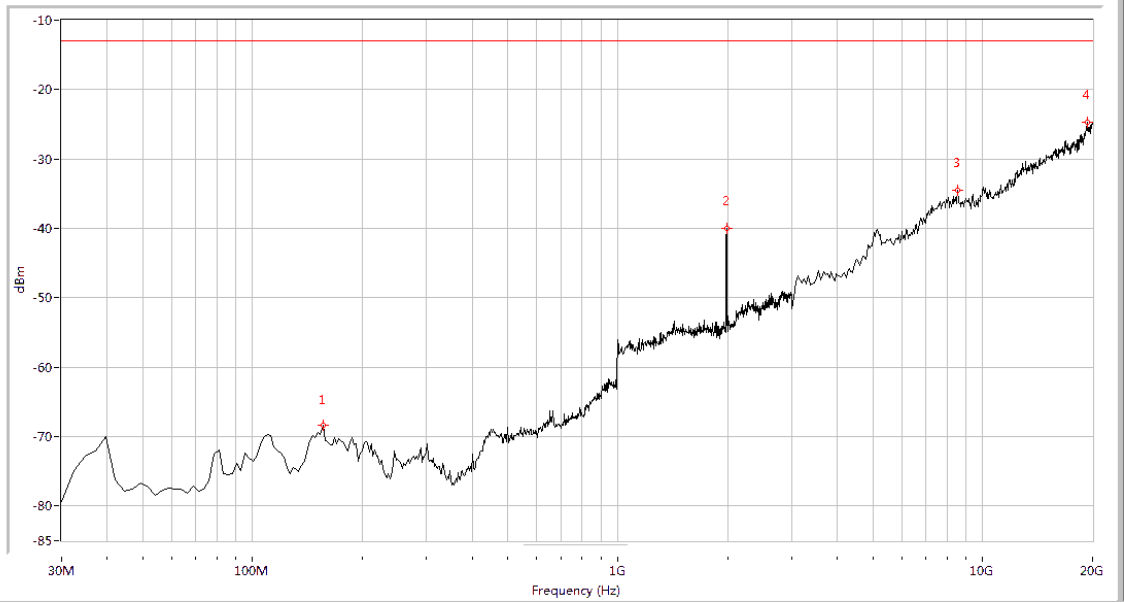
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
666.185	-66.09	-13.0	53.1	194.0	Vertical	PASS
1957.606	-41.29	-13.0	28.3	201.6	Vertical	PASS
2625.935	-47.40	-13.0	34.4	149.6	Vertical	PASS
17710.723	-26.84	-13.0	13.8	243.1	Vertical	PASS

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



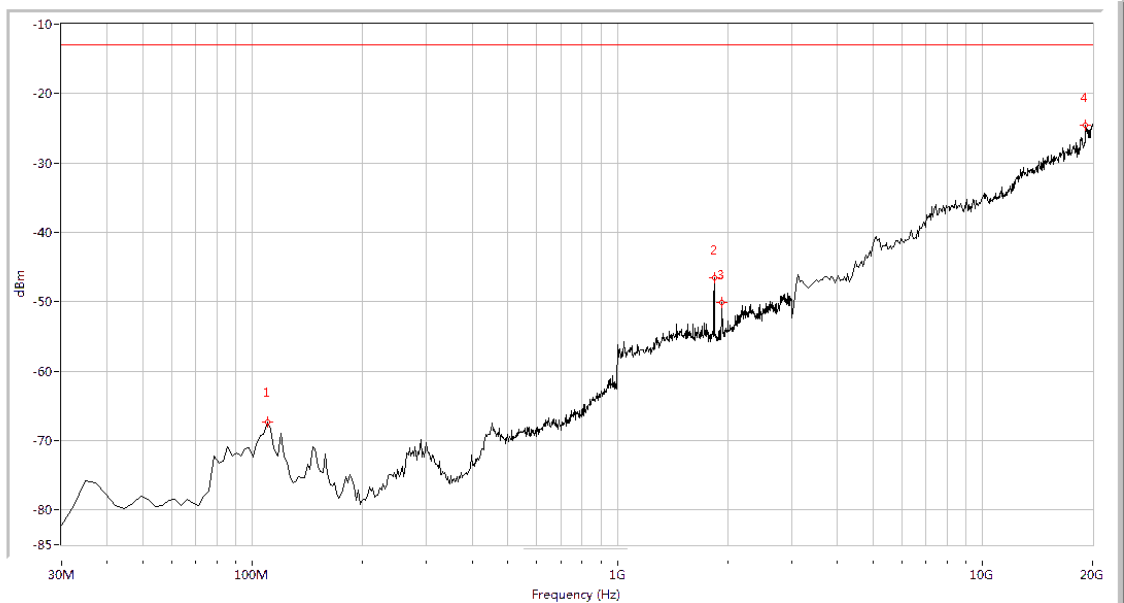
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1987.531	-49.56	-13.0	36.6	263.6	Horizontal	PASS
7790.524	-34.83	-13.0	21.8	145.5	Horizontal	PASS
19491.272	-24.87	-13.0	11.9	145.5	Horizontal	PASS

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



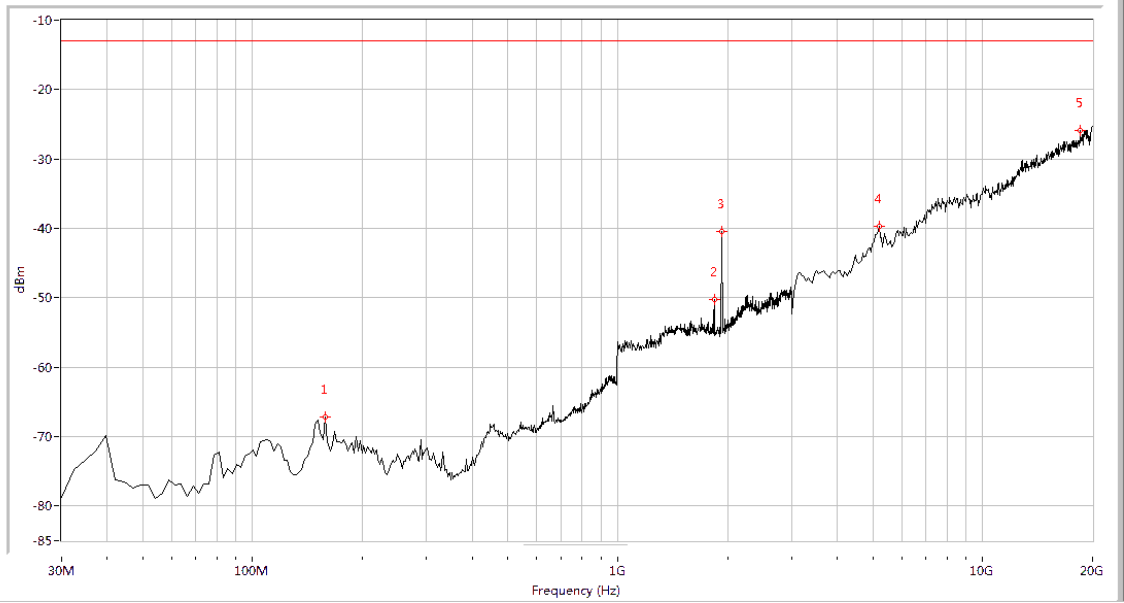
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
155.786	-68.32	-13.0	55.3	115.2	Vertical	PASS
1987.531	-40.03	-13.0	27.0	192.0	Vertical	PASS
8553.616	-34.46	-13.0	21.5	45.5	Vertical	PASS
19406.484	-24.70	-13.0	11.7	71.6	Vertical	PASS

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



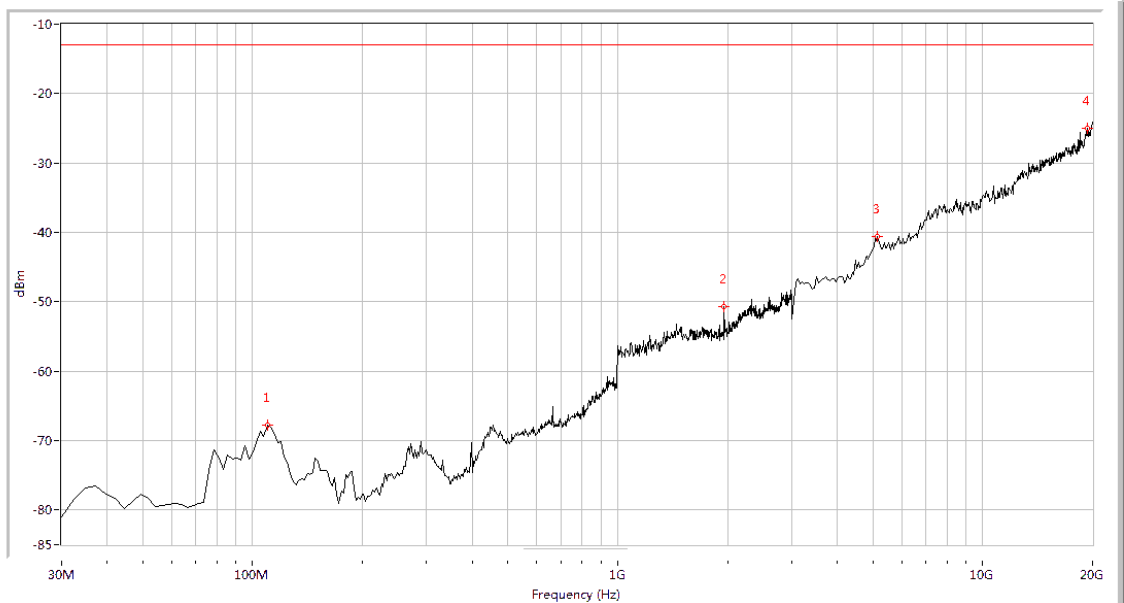
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-46.51	-13.0	33.5	78.9	Horizontal	PASS
1932.668	-50.04	-13.0	37.0	66.7	Horizontal	PASS
19152.120	-24.53	-13.0	11.5	93.2	Horizontal	PASS

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



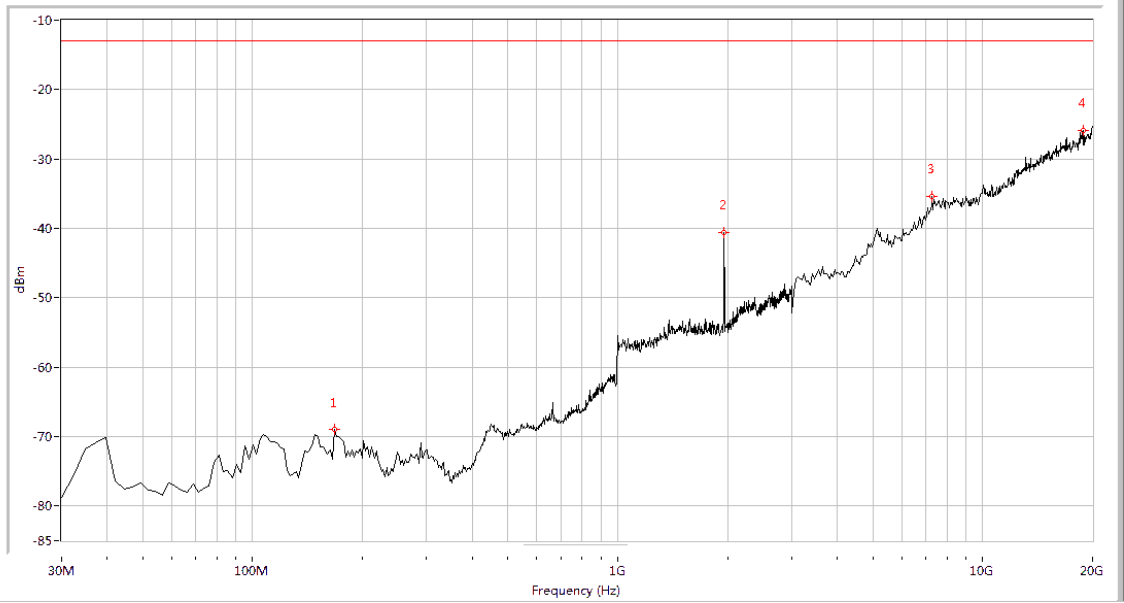
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1837.905	-50.21	-13.0	37.2	69.6	Vertical	PASS
1932.668	-40.50	-13.0	27.5	4.0	Vertical	PASS
5204.489	-39.71	-13.0	26.7	-0.0	Vertical	PASS
18516.209	-25.82	-13.0	12.8	325.7	Vertical	PASS

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



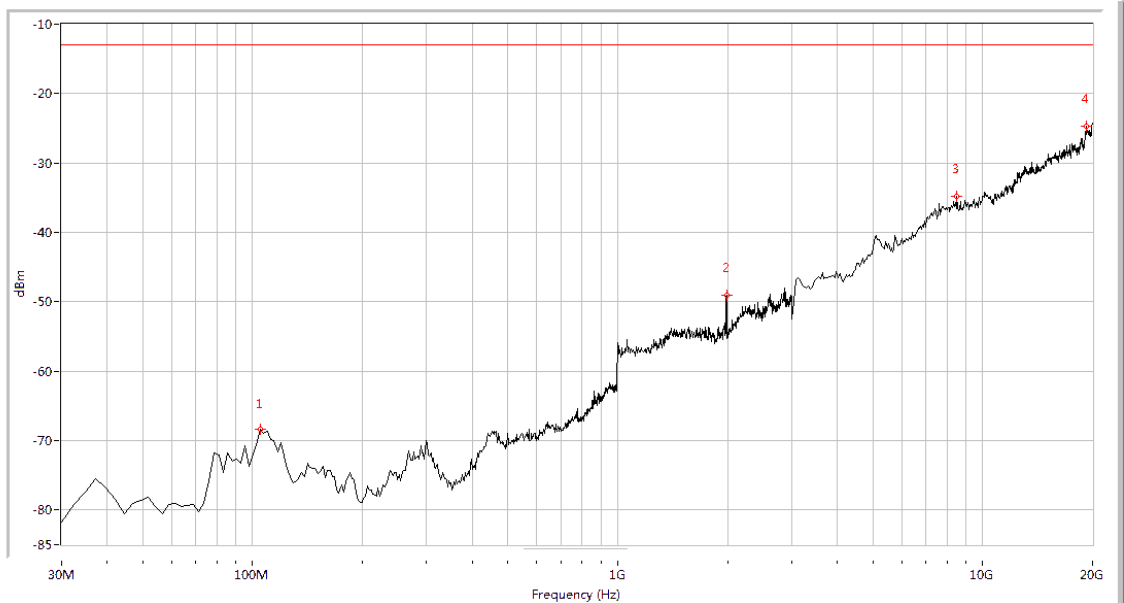
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1957.606	-50.74	-13.0	37.7	63.8	Horizontal	PASS
5162.095	-40.67	-13.0	27.7	360.0	Horizontal	PASS
19406.484	-25.04	-13.0	12.0	-0.0	Horizontal	PASS

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



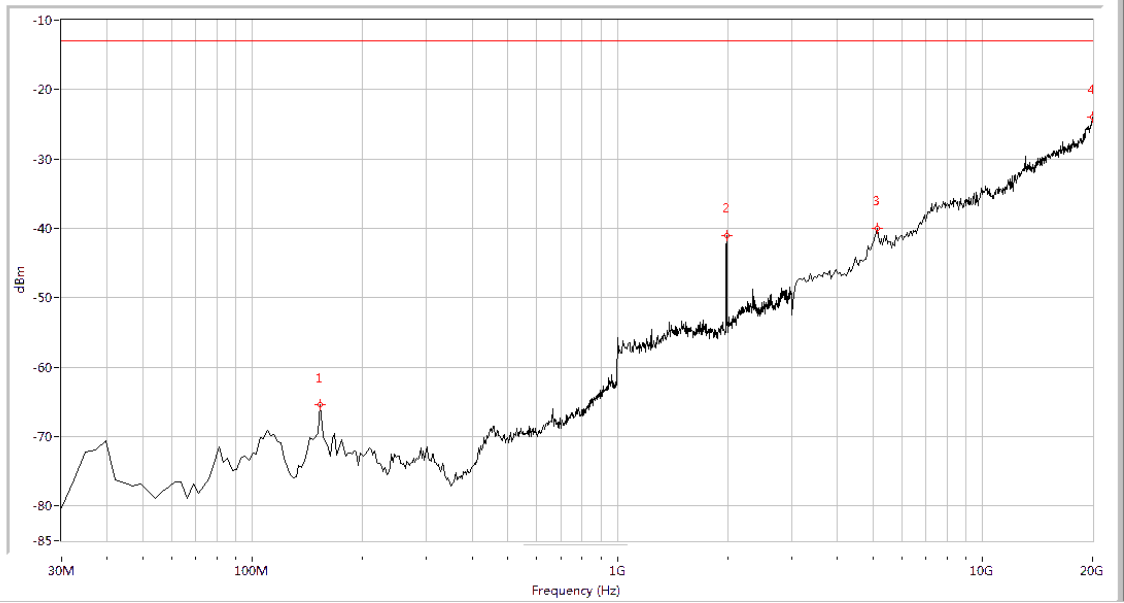
Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
167.880	-68.90	-13.0	55.9	205.0	Vertical	PASS
1957.606	-40.56	-13.0	27.6	-0.0	Vertical	PASS
7281.796	-35.46	-13.0	22.5	-0.0	Vertical	PASS
18855.362	-25.84	-13.0	12.8	210.2	Vertical	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
1987.531	-49.10	-13.0	36.1	226.5	Horizontal	PASS
8511.222	-34.84	-13.0	21.8	144.2	Horizontal	PASS
19194.514	-24.77	-13.0	11.8	284.1	Horizontal	PASS

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



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
153.367	-65.44	-13.0	52.4	190.1	Vertical	PASS
1987.531	-41.07	-13.0	28.1	106.5	Vertical	PASS
5162.095	-40.06	-13.0	27.1	258.8	Vertical	PASS
19957.606	-24.02	-13.0	11.0	-0.0	Vertical	PASS

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

** END OF REPORT **