



Report No.: SZ12090024W01



FCC TEST REPORT

Issued to

Reach Tec(Xiamen) CO.,LTD

For

REACH9771

Model Name: REACH9771
 Trade Name: N/A
 Brand Name: Cincinnati Bell
 FCC ID : Z5J-REACH9771
 Standard: 47 CFR Part 22 Subpart H
 47 CFR Part 24 Subpart E
 47 CFR Part 27 Subpart L,
 Test date: 2012-9-5 to 2012-9-22
 Issue date: 2012-9-22

Shenzhen Morlab Communications Technology Co., Ltd.



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Reviewed by Peng Huarui
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Date 2012.9.22

Date 2012.09.22

Date 2012.9.22



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Change History		
Issue	Date	Reason for change
1.0	Sep 22, 2012	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: REACH9771
Serial No.....: (n.a, marked #1 by test site)
Hardware Version: 9771 V3.1
Software Version: E9771-eng 2.3.5 GRJ90 eng.Root.20120825.052322.test-keys
Applicant: Reach Tec(Xiamen) CO.,LTD
5th Floor, 51#, Wang Hai Road, Software Park II, Xiamen, Fujian
Province
Manufacturer: Reach Tec(Xiamen) CO.,LTD
5th Floor, 51#, Wang Hai Road, Software Park II, Xiamen, Fujian
Province
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 1700MHz
Tx: 1712.4 - 1752.6MHz (at intervals of 200kHz);
Rx: 2112.4 - 2152.6MHz (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
Multislot Class.....: GPRS: Multislot Class12,EGPRS: Multislot Class12
Antenna Type.....: PIFA Antenna
Emission Designators: GSM:247KGXW,
EGPRS:246KG7W,
WCDMA:4M18F9W

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 1700MHz band used by the

EUT can be represented with the formula $F(n)=1712.4+0.2*(n-1312)$, $1312 \leq n \leq 1513$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 1312 (1712.4MHz), 1412 (1732.4MHz) and 1513 (1752.6MHz).

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 27 (10-1-09 Edition)	Personal Communications Services
4	47 CFR Part 27 (10-1-09 Edition)	Miscellaneous Wireless 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	2.1049,27.53	99% Occupied Bandwidth	PASS
3	2.1055,22.355 24.235,27.54	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 27.53	Band Edge	PASS
6	22.913,24.232 27.50	Transmitter Radiated Power (EIPR/ERP)	PASS
7	2.1053,2.1057 22.917,24.238 27.53	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 27L REQUIREMENTS

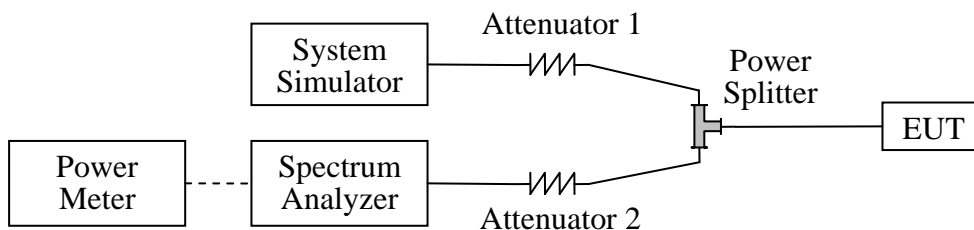
2.1 Conducted RF Output Power

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:

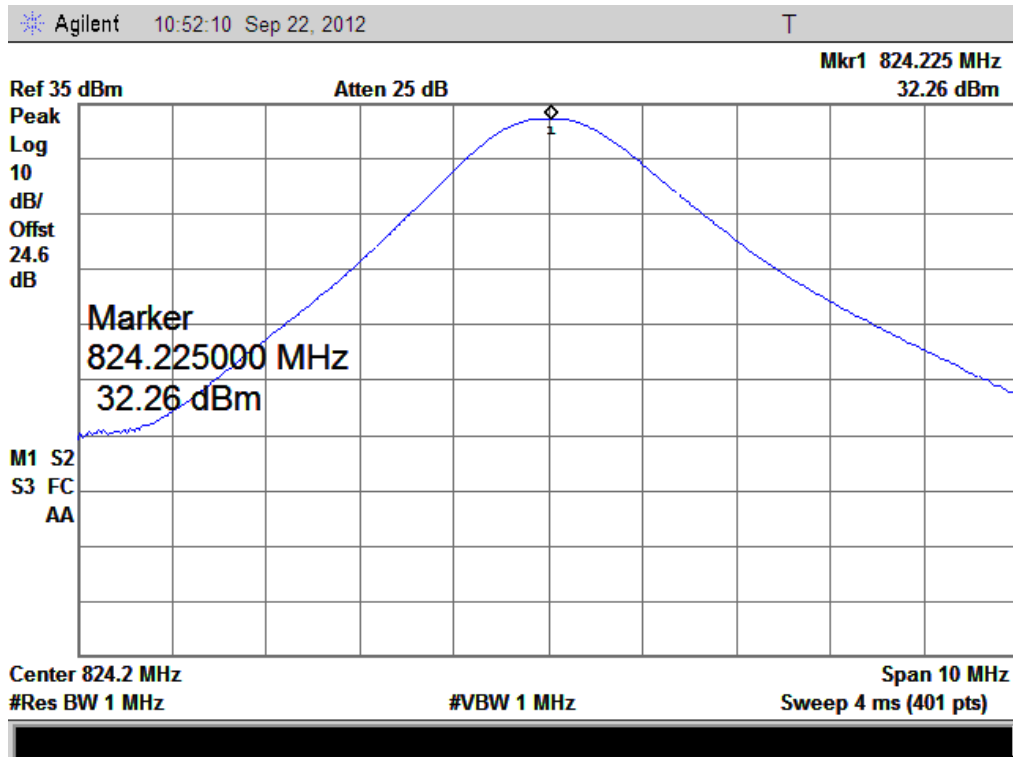
Band	Channel	Frequency (MHz)	Measured Output Power		Limit dBm	Verdict
			dBm	Refer to Plot		
GSM 850MHz	128	824.2	32.26	Plot A1 to A3	35	PASS
	190	836.6	32.47			PASS
	251	848.8	32.68			PASS
GSM 1900MHz	512	1850.2	28.51	Plot B1 to B3	32	PASS
	661	1880.0	27.72			PASS
	810	1909.8	27.26			PASS
GPRS 850MHz	128	824.2	31.33	Plot C1 to C3 ^{Note 1}	35	PASS
	190	836.6	31.53			PASS
	251	848.8	31.74			PASS
GPRS 1900MHz	512	1850.2	28.08	Plot D1 to D3 ^{Note 1}	32	PASS
	661	1880.0	27.58			PASS
	810	1909.8	27.1			PASS
EGPRS 850MHz	128	824.2	32.24	Plot E1 to E3 ^{Note 1}	35	PASS
	190	836.6	32.44			PASS
	251	848.8	32.66			PASS
EGPRS 1900MHz	512	1850.2	28.5	Plot F1 to F3 ^{Note 1}	32	PASS
	661	1880.0	27.69			PASS
	810	1909.8	27.18			PASS

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

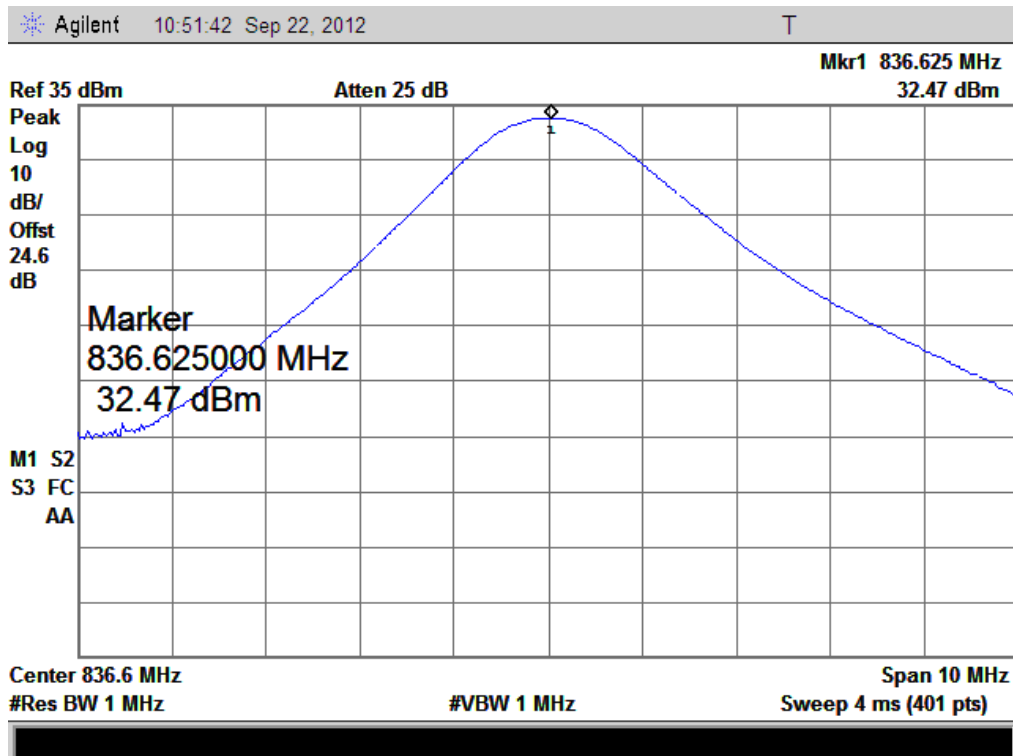
2. WCDMA Model Test Verdict:

Item	band	WCDMA 1700		
	ARFCN	1312	1412	1513
	subtest	dBm		
5.2(WCDMA)	non	21.66	21.45	21.61
HSDPA	1	21.62	21.39	21.55
	2	21.61	21.41	21.53
	3	21.13	20.91	21.06
	4	21.11	20.87	21.09

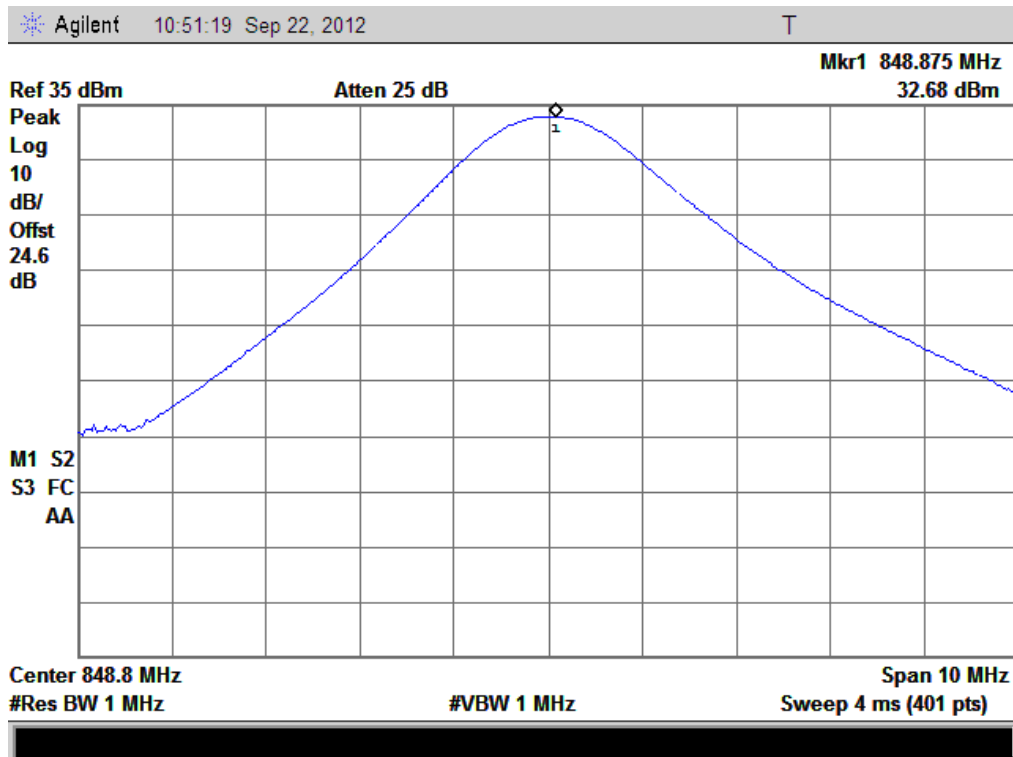
3. GSM Model Test Plots:



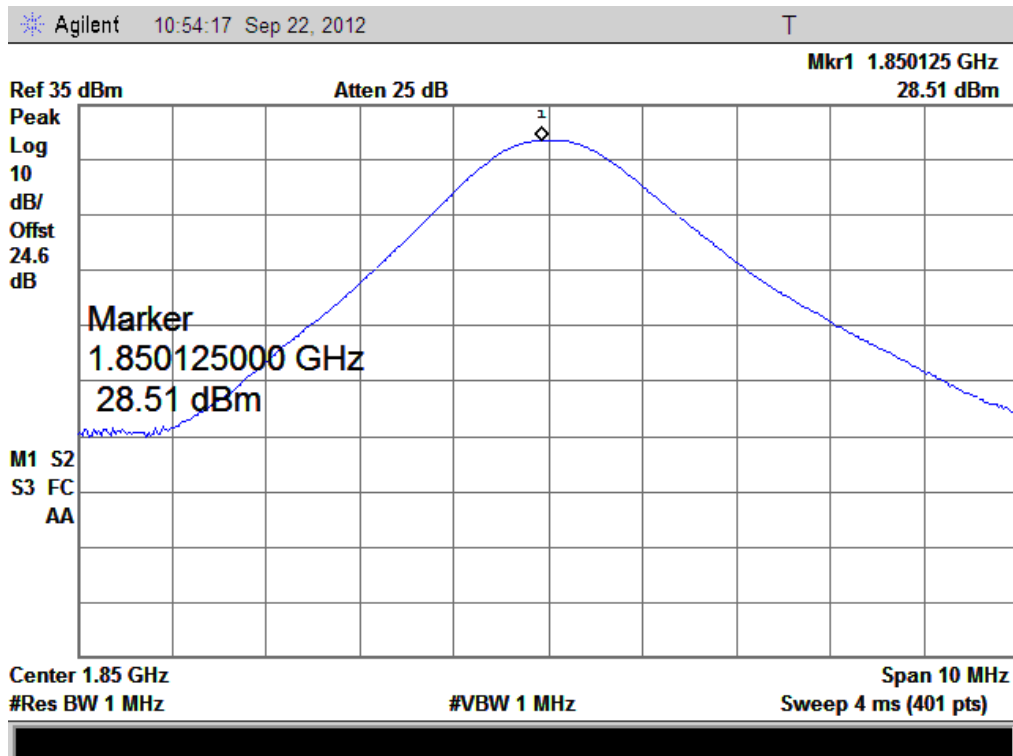
(Plot A1: GSM 850MHz Channel = 128)



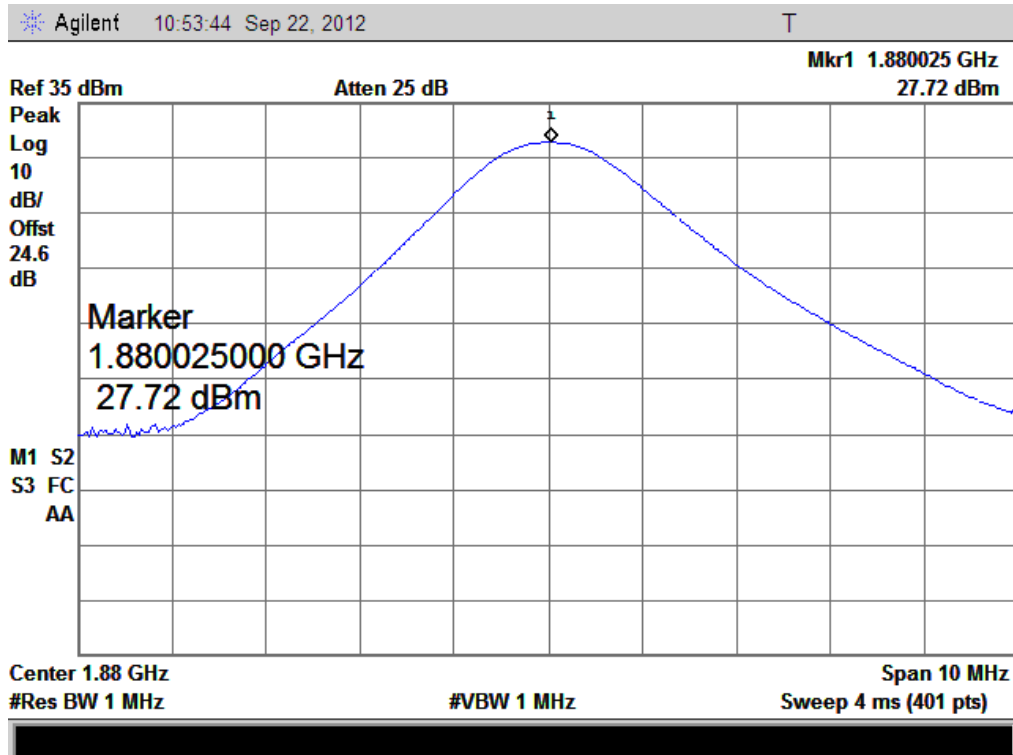
(Plot A2: GSM 850MHz Channel = 190)



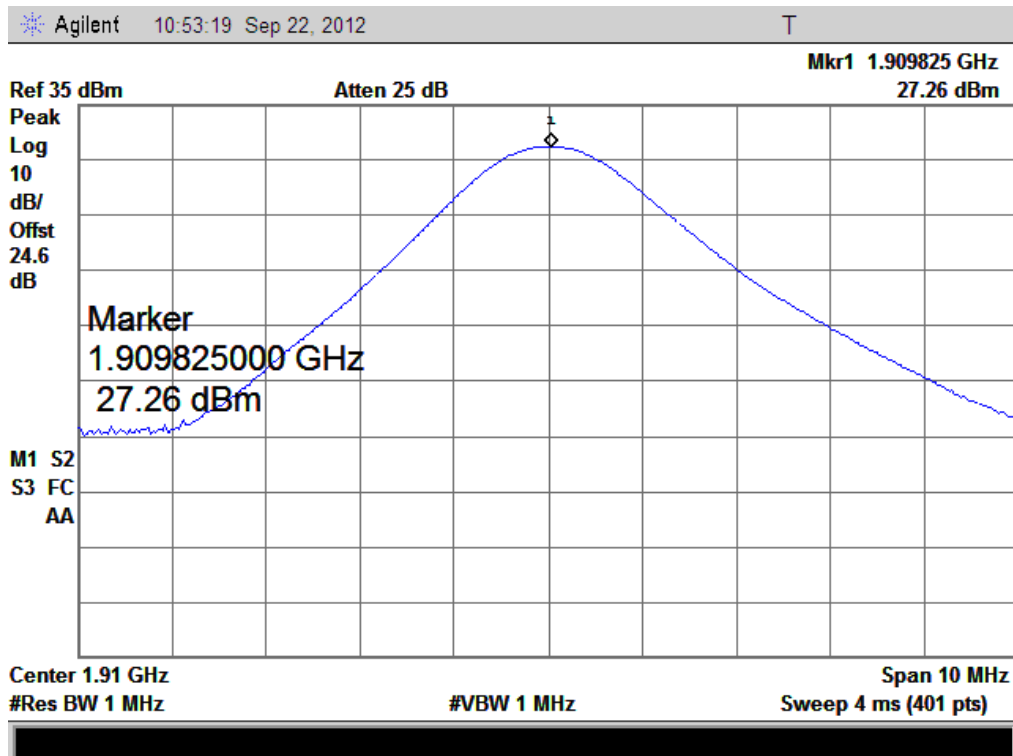
(Plot A3: GSM 850MHz Channel = 251)



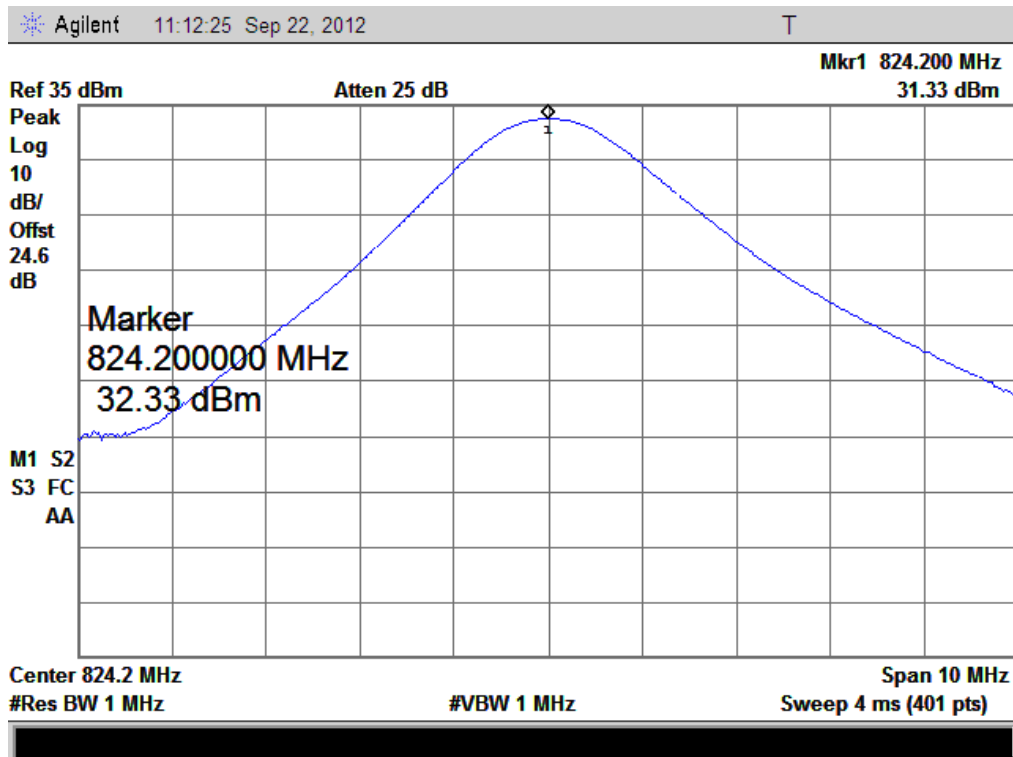
(Plot B1: GSM 1900MHz Channel = 512)



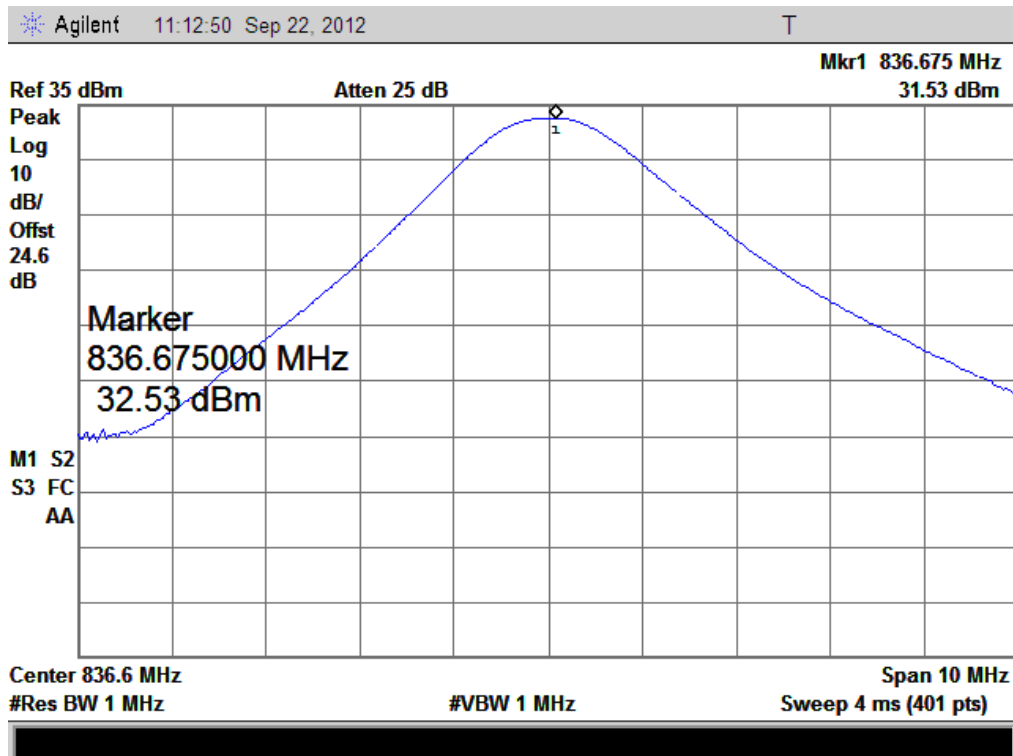
(Plot B2: GSM 1900MHz Channel = 661)



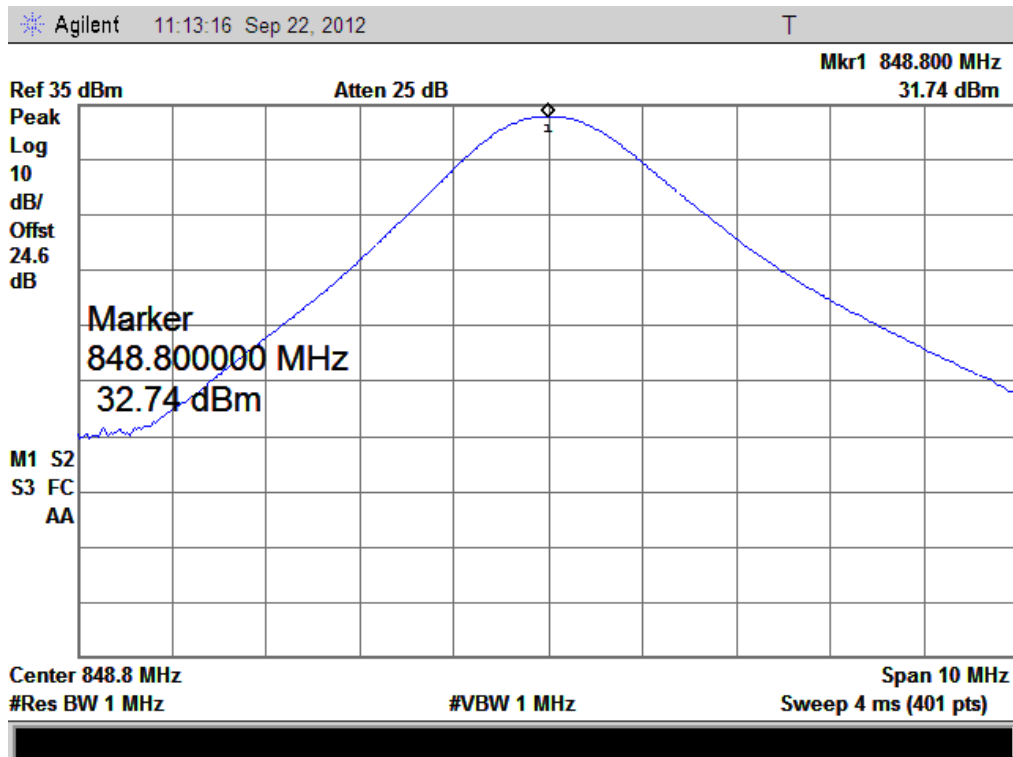
(Plot B3: GSM 1900MHz Channel = 810)



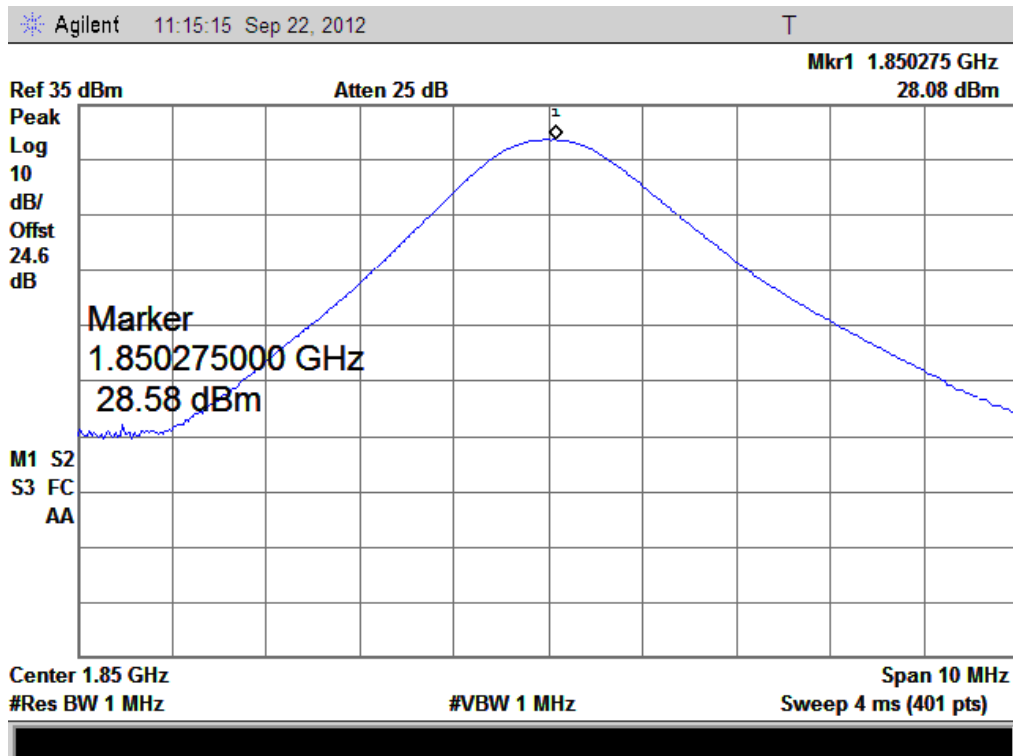
(Plot C1: GPRS 850MHz Channel = 128)



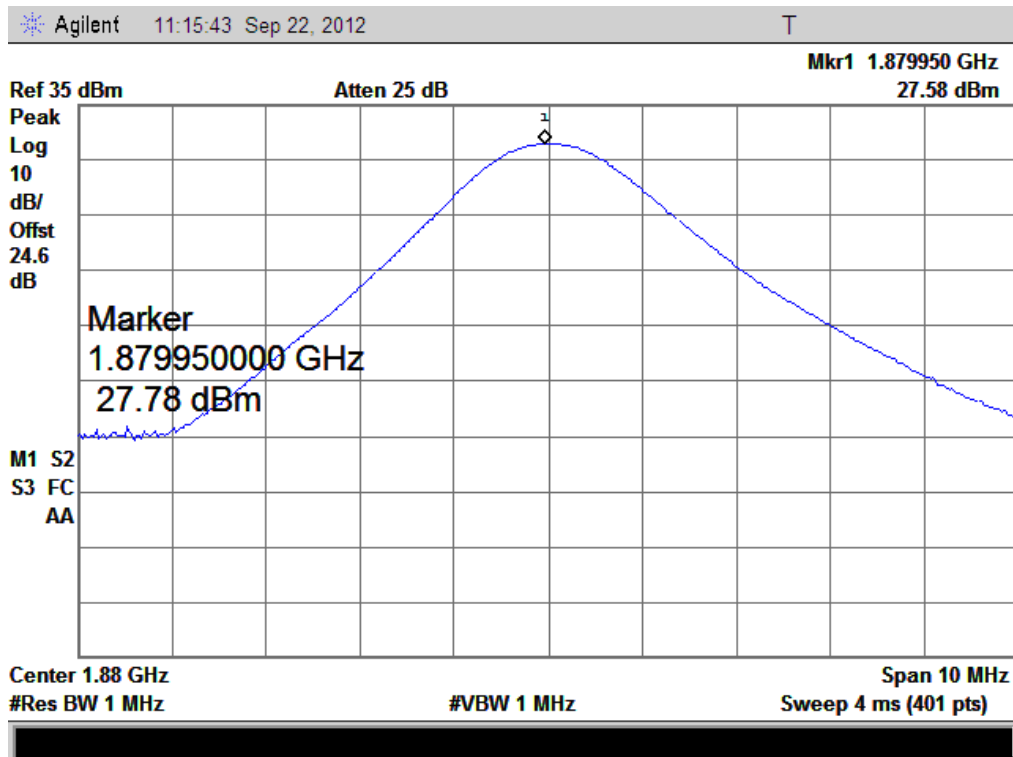
(Plot C2: GPRS 850MHz Channel = 190)



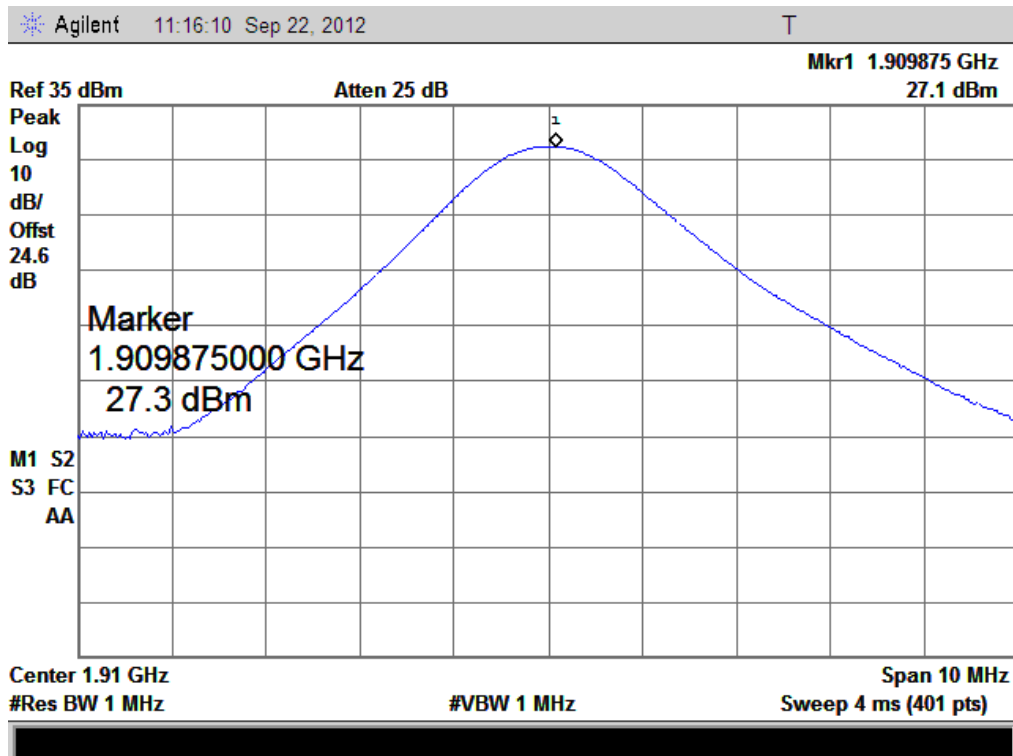
(Plot C3: GPRS 850MHz Channel = 251)



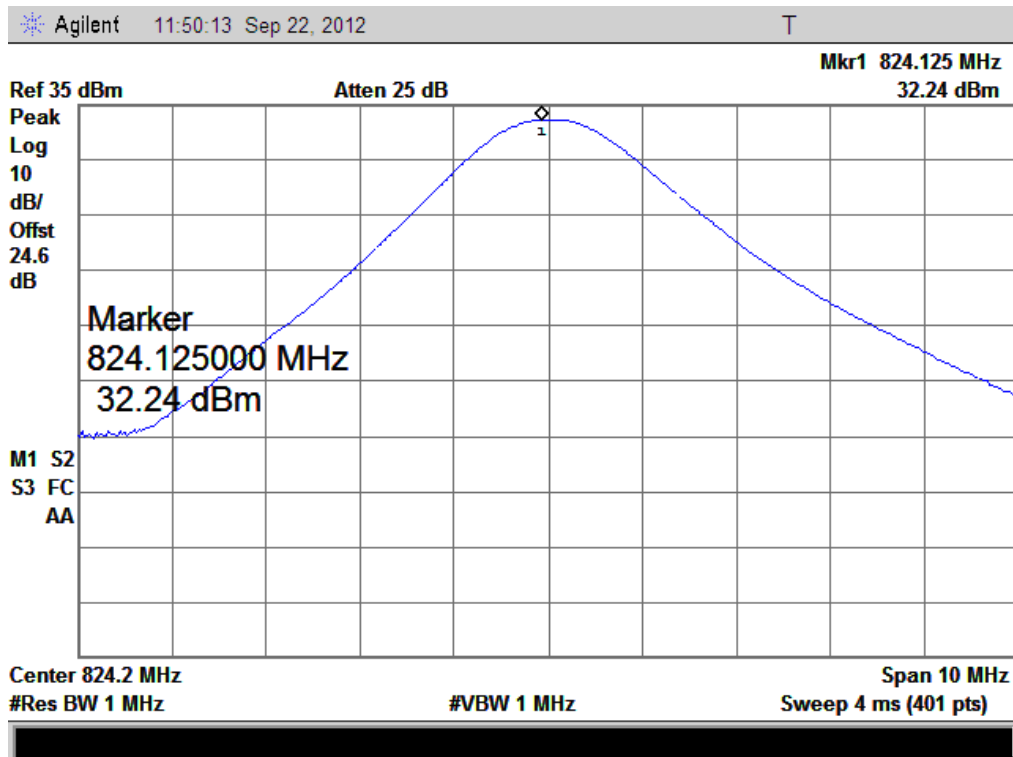
(Plot D1: GPRS 1900MHz Channel = 512)



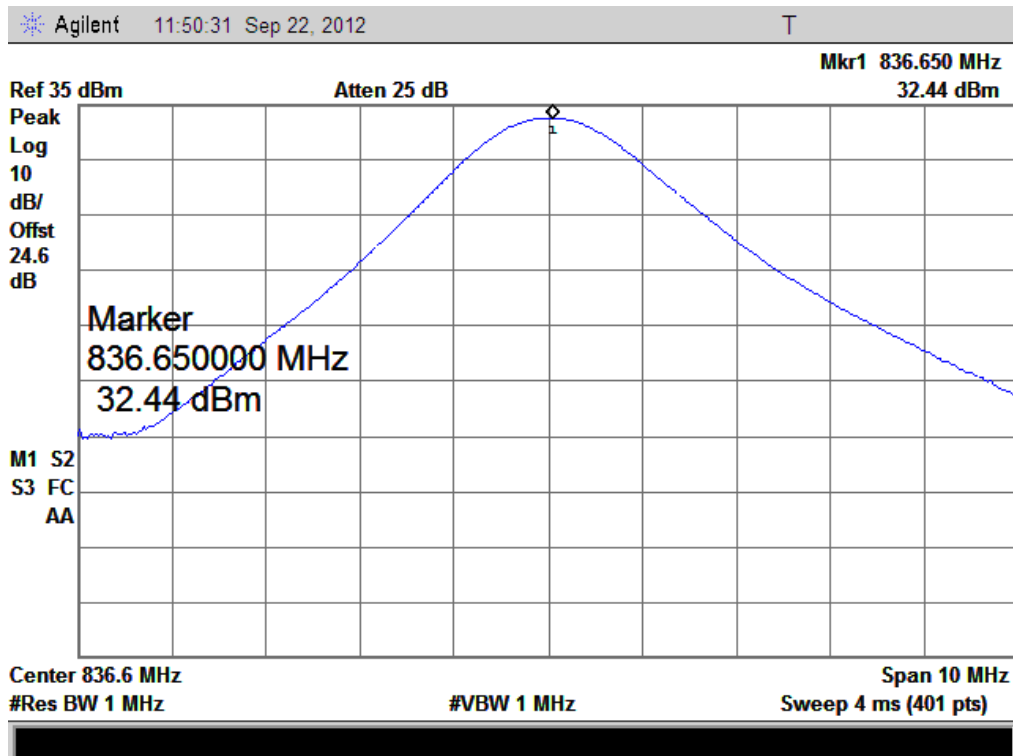
(Plot D2: GPRS 1900MHz Channel = 661)



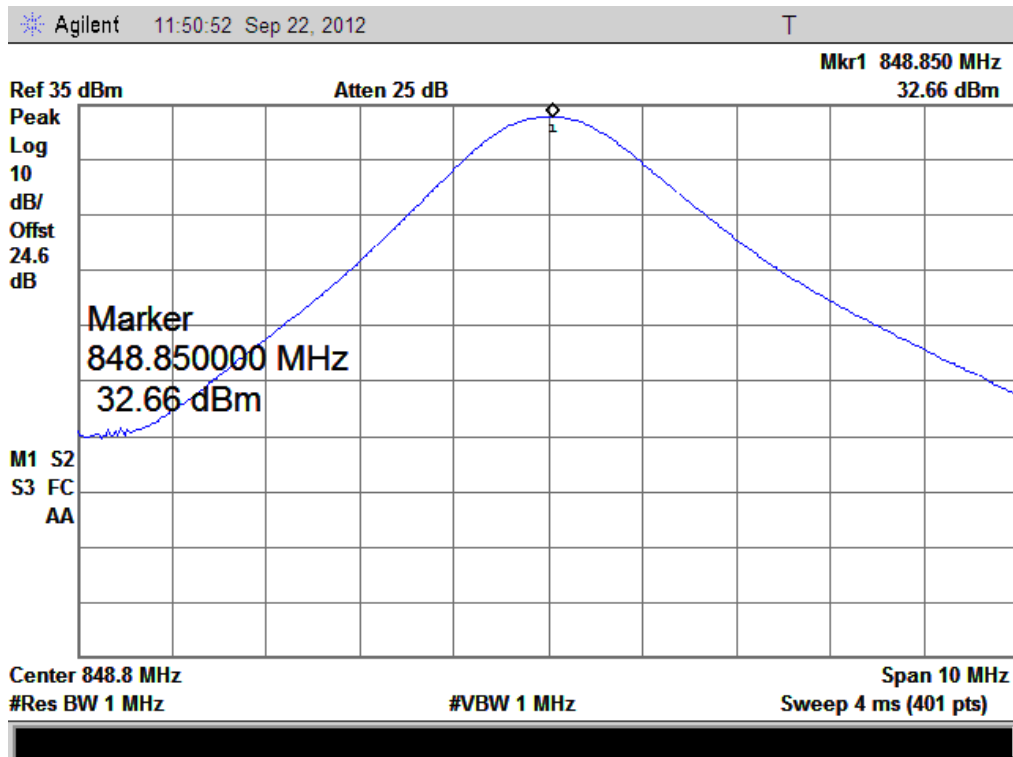
(Plot D3: GPRS 1900MHz Channel = 810)



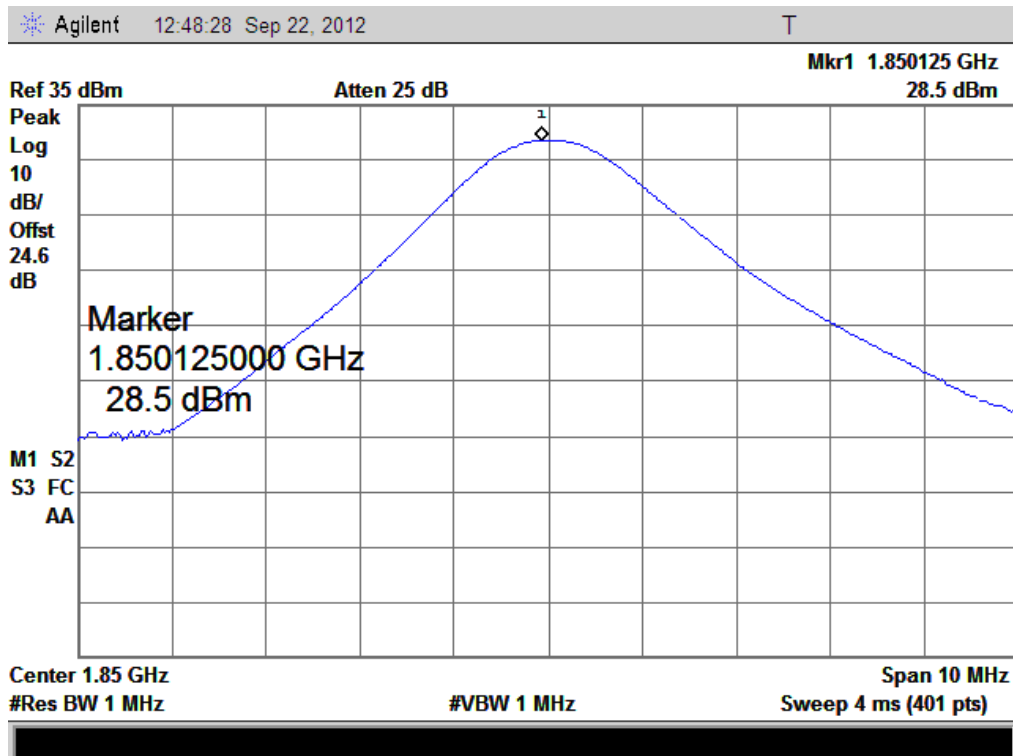
(Plot E 1: EGPRS 850MHz Channel = 128)



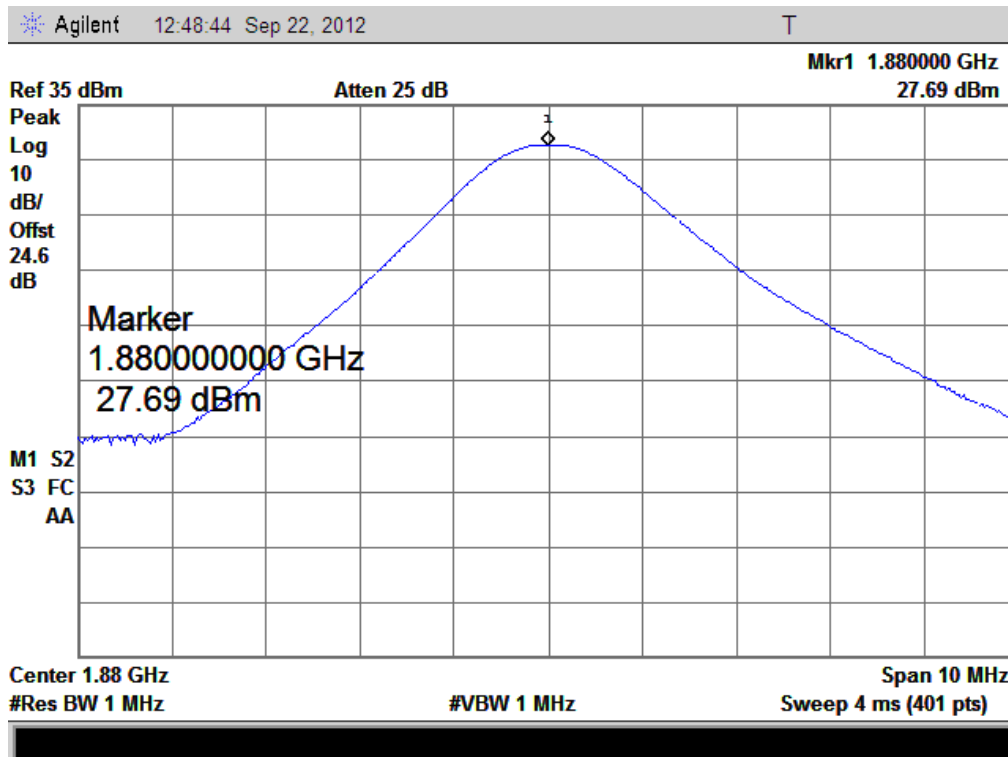
(Plot E 2: EGPRS 850MHz Channel = 190)



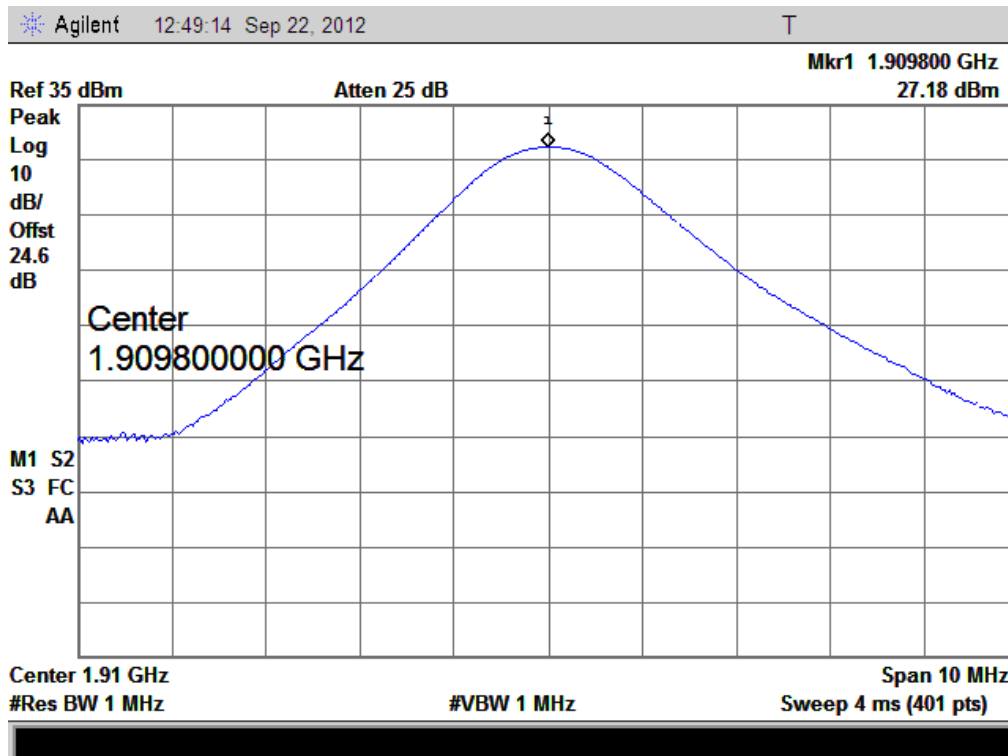
(Plot E 3: EGPRS 850MHz Channel = 251)



(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.

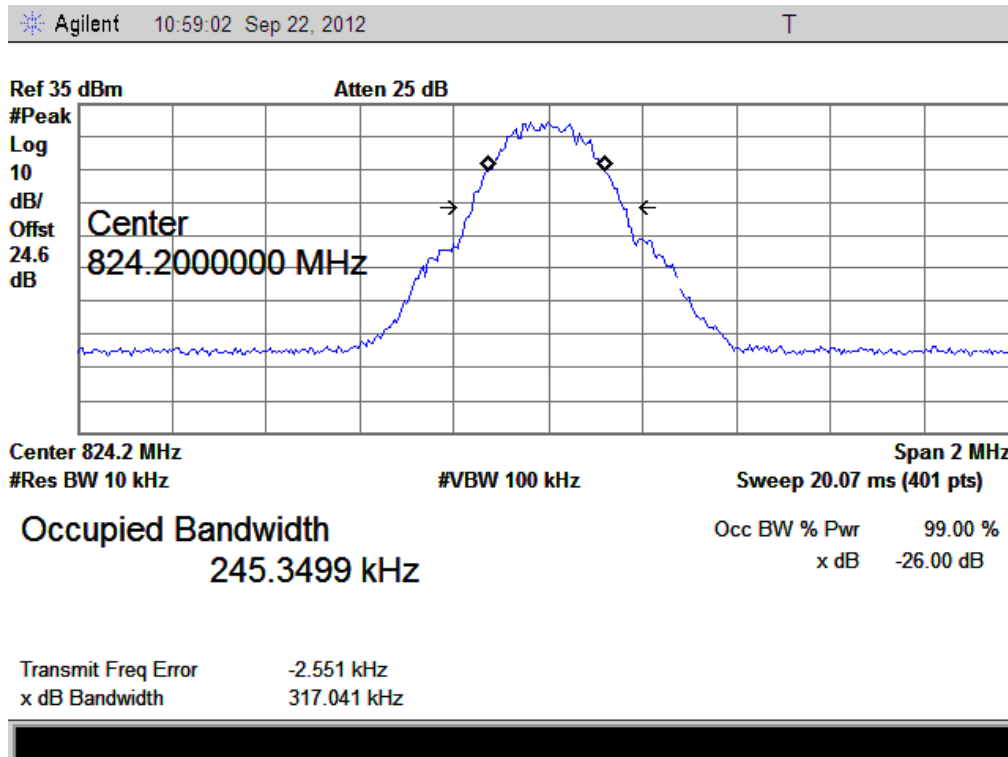
2.2.3 Test Verdict

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

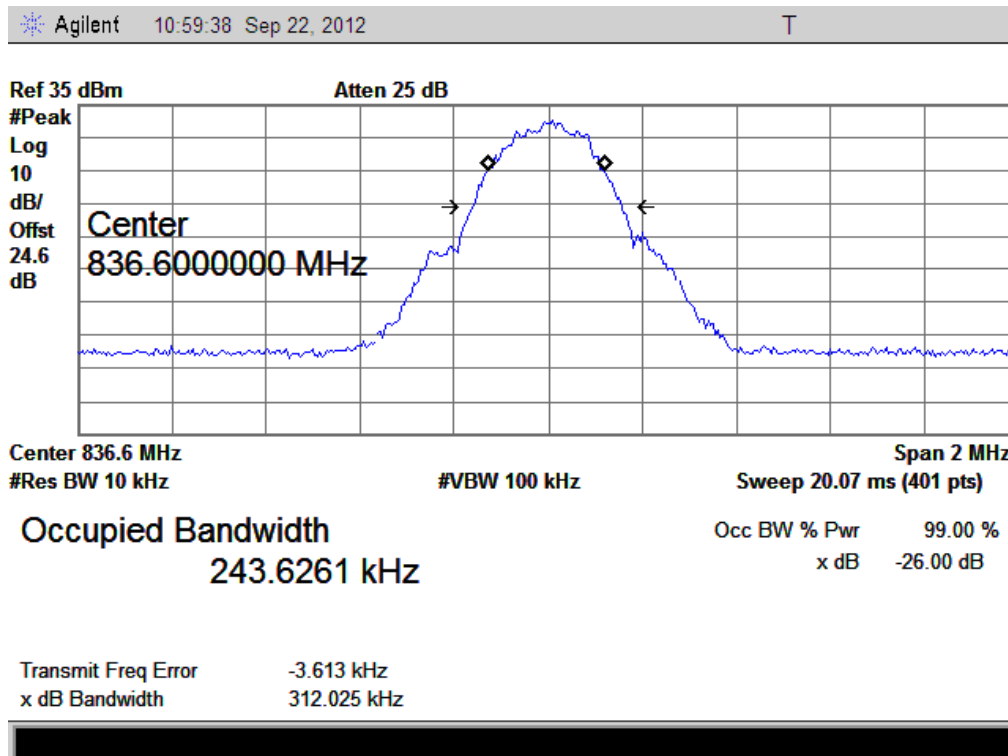
1. Test Verdict:

Band	Channel	Frequency (MHz)	99% Occupied Bandwidth	Refer to Plot
GSM 850MHz	128	824.2	245.3499kHz	Plot A
	190	836.6	243.6261kHz	Plot B
	251	848.8	245.3324kHz	Plot C
GSM 1900MHz	512	1850.2	245.2836kHz	Plot D
	661	1880.0	247.0286kHz	Plot E
	810	1909.8	241.5635kHz	Plot F
EDGE 850MHz	128	824.2	246.7030kHz	Plot G
	190	836.6	245.7816kHz	Plot H
	251	848.8	244.9476kHz	Plot I
EDGE 1900MHz	512	1850.2	240.0264kHz	Plot J
	661	1880.0	246.2104kHz	Plot K
	810	1909.8	246.2510kHz	Plot L
WCDMA 1700MHz	1412	1880	4.1826 MHz	Plot N

2. Test Plots:

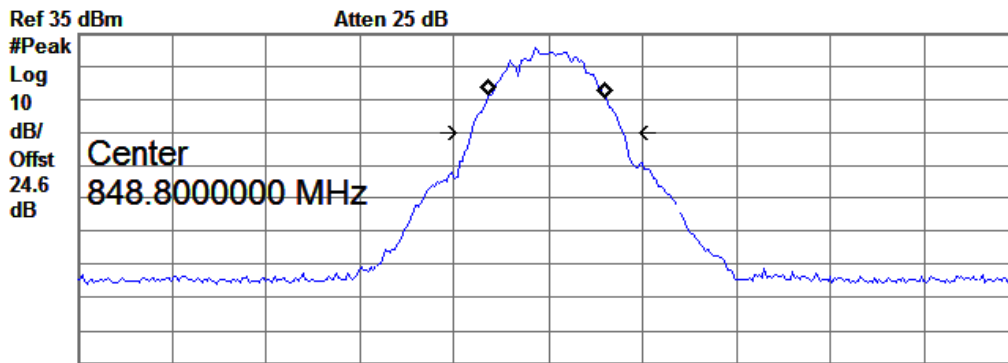


(Plot A: GSM 850MHz Channel = 128)



(Plot B: GSM 850MHz Channel = 190)

Agilent 11:00:35 Sep 22, 2012 T



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

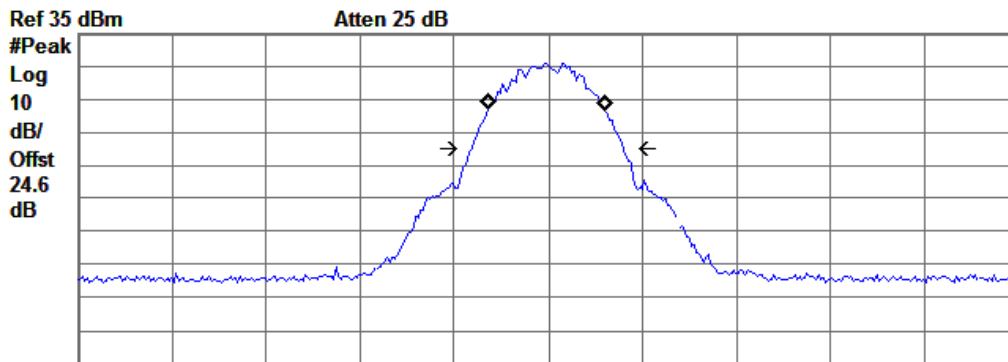
Occupied Bandwidth
 245.3324 kHz

Occ BW % Pwr 99.00 %
 x dB -26.00 dB

Transmit Freq Error -1.954 kHz
 x dB Bandwidth 322.539 kHz

(Plot C: GSM 850MHz Channel = 251)

Agilent 10:55:42 Sep 22, 2012 T



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

Occupied Bandwidth
 245.2836 kHz

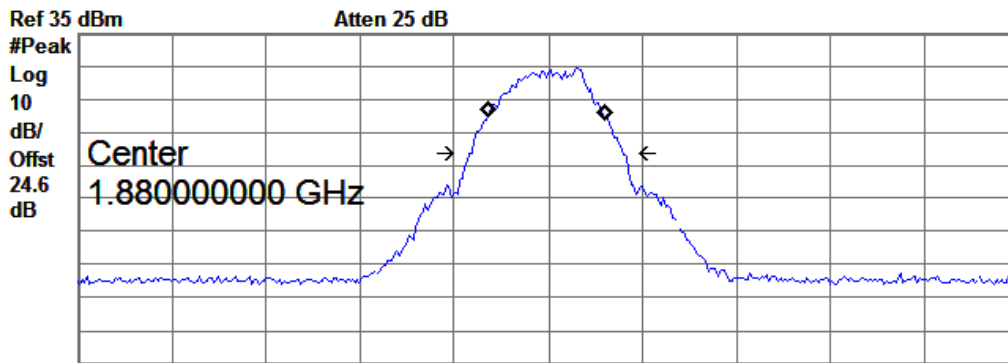
Occ BW % Pwr 99.00 %
 x dB -26.00 dB

Transmit Freq Error -1.658 kHz
 x dB Bandwidth 321.153 kHz

(Plot D: GSM 1900MHz Channel = 512)



Agilent 10:56:22 Sep 22, 2012 T



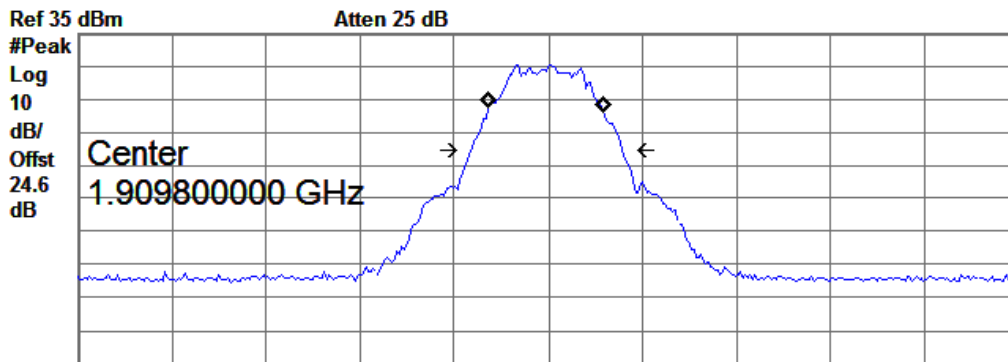
Center 1.88 GHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth 247.0286 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -3.098 kHz
x dB Bandwidth 324.732 kHz

(Plot E: GSM 1900MHz Channel = 661)

Agilent 10:57:57 Sep 22, 2012 T



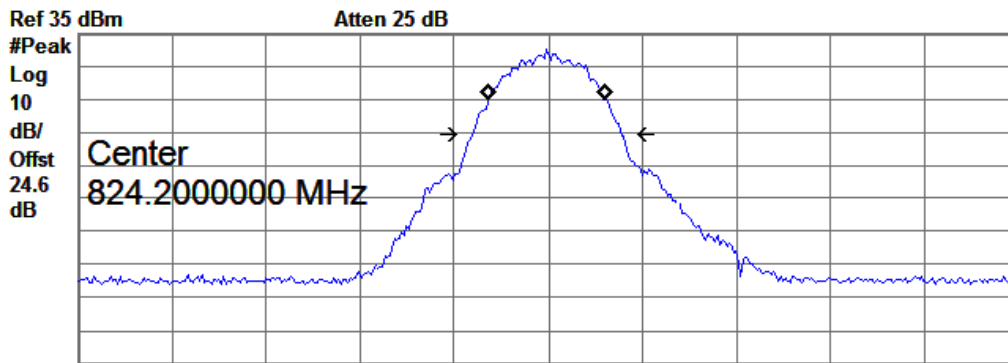
Center 1.91 GHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth 241.5635 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -3.375 kHz
x dB Bandwidth 318.421 kHz

(Plot F: GSM 1900MHz Channel = 810)

Agilent 11:48:57 Sep 22, 2012 T



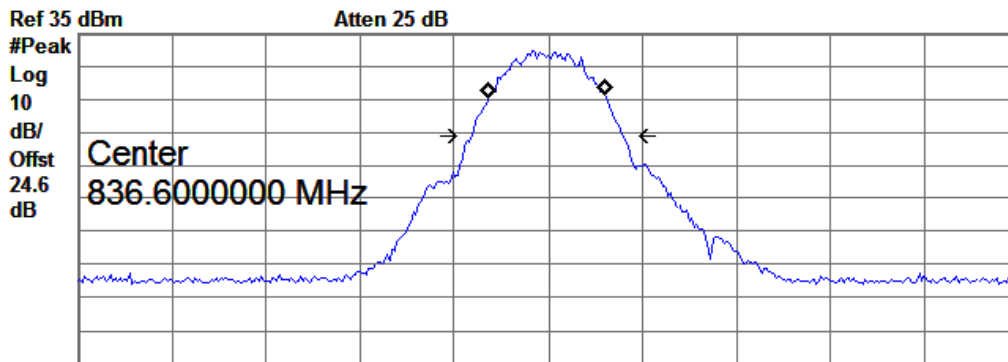
Center 824.2 MHz Span 2 MHz
 #Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
 246.7030 kHz x dB -26.00 dB

Transmit Freq Error -1.246 kHz
 x dB Bandwidth 313.297 kHz

(Plot G: EDGE 850MHz Channel = 128)

Agilent 11:48:03 Sep 22, 2012 T



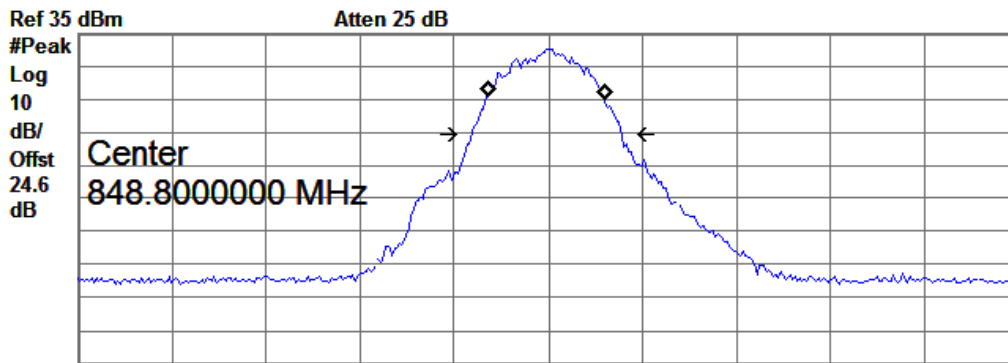
Center 836.6 MHz Span 2 MHz
 #Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
 245.7816 kHz x dB -26.00 dB

Transmit Freq Error -1.562 kHz
 x dB Bandwidth 321.994 kHz

(Plot H: EDGE 850MHz Channel = 190)

Agilent 11:47:15 Sep 22, 2012 T



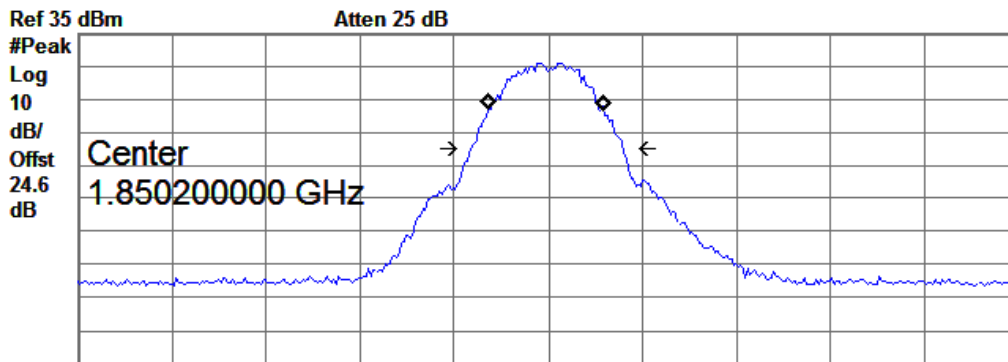
Center 848.8 MHz Span 2 MHz
 #Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth Occ BW % Pwr 99.00 %
 244.9476 kHz x dB -26.00 dB

Transmit Freq Error -3.907 kHz
 x dB Bandwidth 315.788 kHz

(Plot I: EDGE 850MHz Channel = 251)

Agilent 12:47:16 Sep 22, 2012 T



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

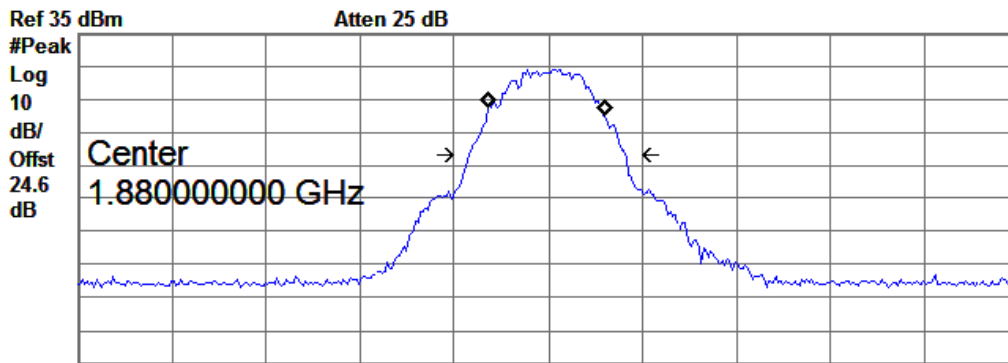
Occupied Bandwidth Occ BW % Pwr 99.00 %
 240.0264 kHz x dB -26.00 dB

Transmit Freq Error -2.835 kHz
 x dB Bandwidth 320.374 kHz

(Plot J: EDGE 1900MHz Channel = 512)



Agilent 12:46:14 Sep 22, 2012 T



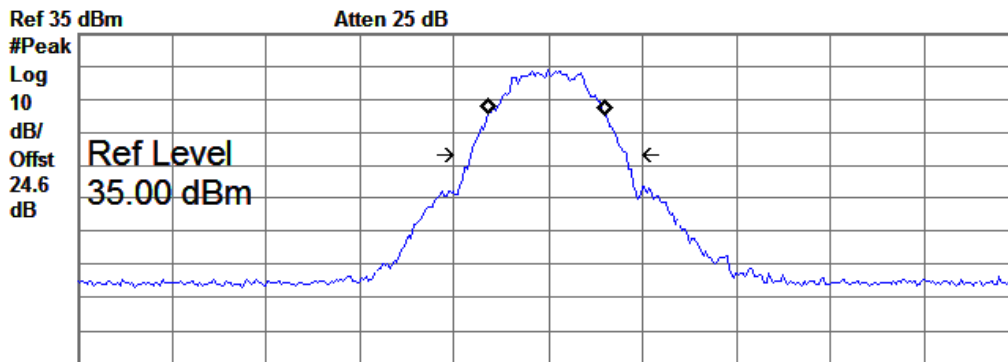
Center 1.88 GHz Span 2 MHz
#Res BW 10 kHz #VBW 100 kHz Sweep 20.07 ms (401 pts)

Occupied Bandwidth 246.2104 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -2.180 kHz
x dB Bandwidth 328.208 kHz

(Plot K: EDGE 1900MHz Channel = 661)

Agilent 12:45:29 Sep 22, 2012 T



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

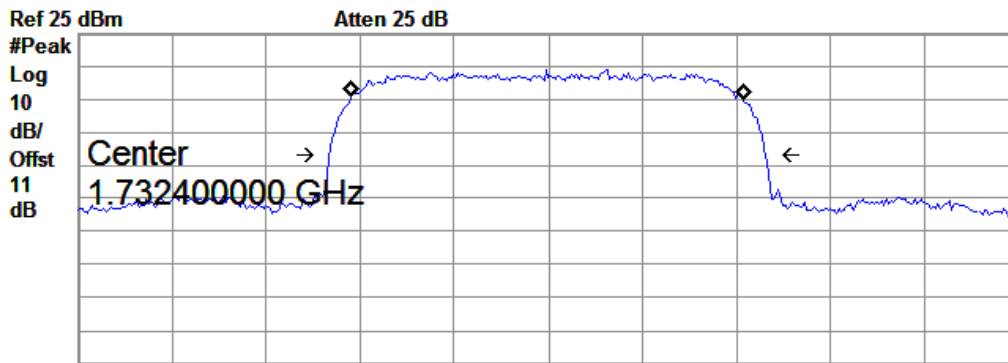
Occupied Bandwidth 246.2510 kHz Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -1.588 kHz
x dB Bandwidth 329.169 kHz

(Plot L: EDGE 1900MHz Channel = 810)



Agilent 11:32:08 Sep 6, 2012 T



Center 1.732 GHz Span 10 MHz
#Res BW 30 kHz #VBW 300 kHz Sweep 11.15 ms (401 pts)

Occupied Bandwidth 4.1826 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -5.649 kHz
x dB Bandwidth 4.640 MHz

(Plot M: WCDMA 1700MHz Channel = 1412)

2.3 Frequency Stability

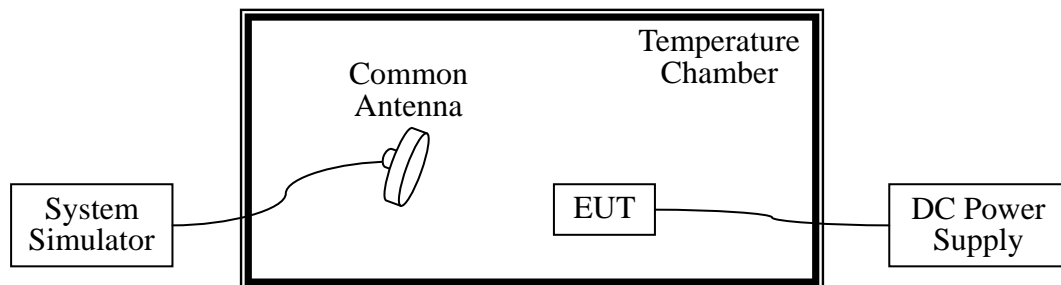
2.3.1 Requirement

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 and AWS1700 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 1700MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 1312 (1712.4MHz)		Channel = 1412 (1732.4MHz)		Channel = 1513 (1752.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.7	-30	17.29	±4281	11.87	±4331	-9.81	±4381.5	PASS
	-20	-7.32		-0.59		-23.82		
	-10	-3.40		21.45		26.39		
	0	16.47		13.45		30.98		
	+10	30.18		1.31		-2.65		
	+20	32.07		-12.52		18.30		
	+30	-7.98		30.62		-12.57		
	+40	26.21		13.45		28.93		
	+50	11.10		-12.52		19.66		
4.2	+25	-6.18		30.62		22.19		
3.6	+25	18.66		-18.00		-18.70		

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

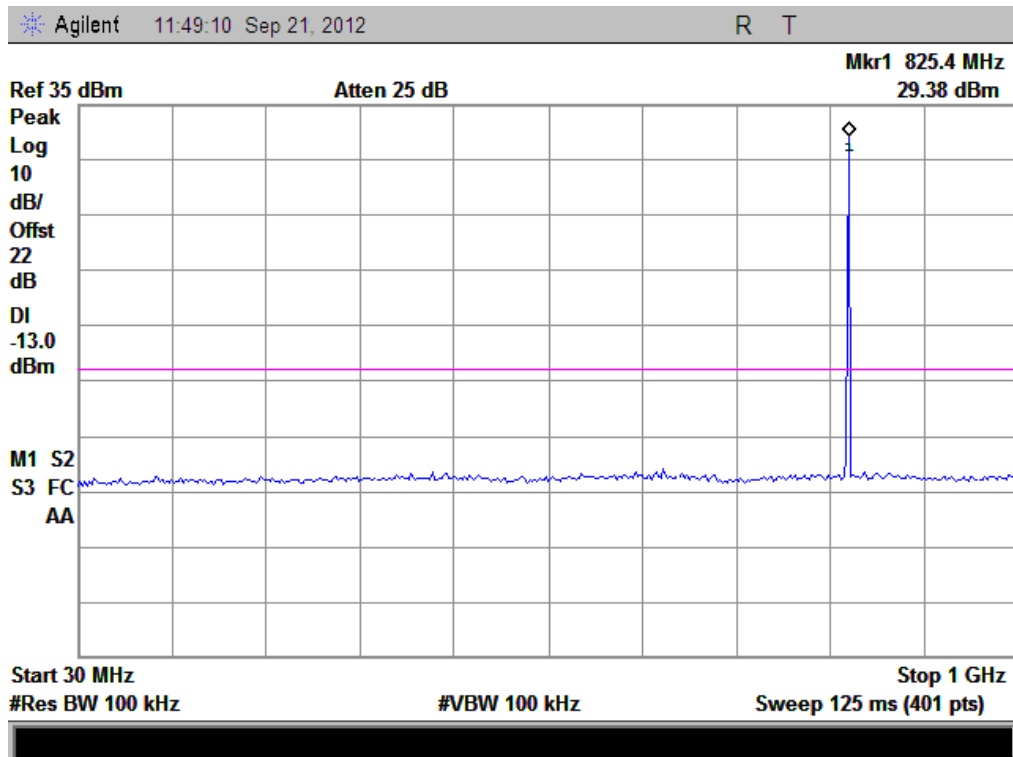
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

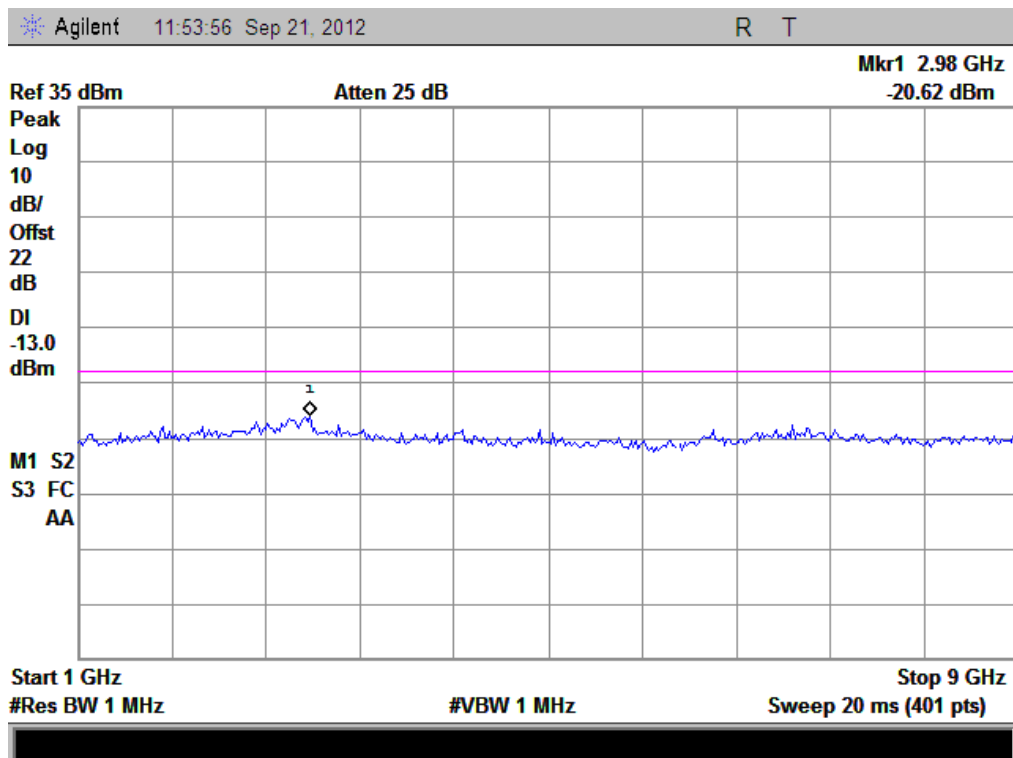
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-20.62	Plot A1toA1.1	-13	PASS
	190	836.6	-19.95	Plot A2toA2.1		PASS
	251	848.8	-19.59	Plot A3toA3.1		PASS
GSM 1900MHz	512	1850.2	< -25	Plot B1toB1.1	-13	PASS
	661	1880.0	< -25	Plot B2toB2.1		PASS
	810	1909.8	< -25	Plot B3toB3.1		PASS
EDGE 850MHz	128	824.2	-21.58	Plot C1toC1.1	-13	PASS
	190	836.6	-22.58	Plot C2toC2.1		PASS
	251	848.8	-21.87	Plot C3toC3.1		PASS
EDGE 1900MHz	512	1850.2	< -25	Plot D1toD1.1	-13	PASS
	661	1880.0	< -25	Plot D2toD2.1		PASS
	810	1909.8	< -25	Plot D3toD3.1		PASS
WCDMA 1700MHz	4132	1712.4	< -25	Plot E1toE1.1	-13	PASS
	4175	1732.4	< -25	Plot E2toE2.1		PASS
	4233	1752.6	< -25	Plot E3toE3.1		PASS

2. Test Plots for the Whole Measurement Frequency Range:

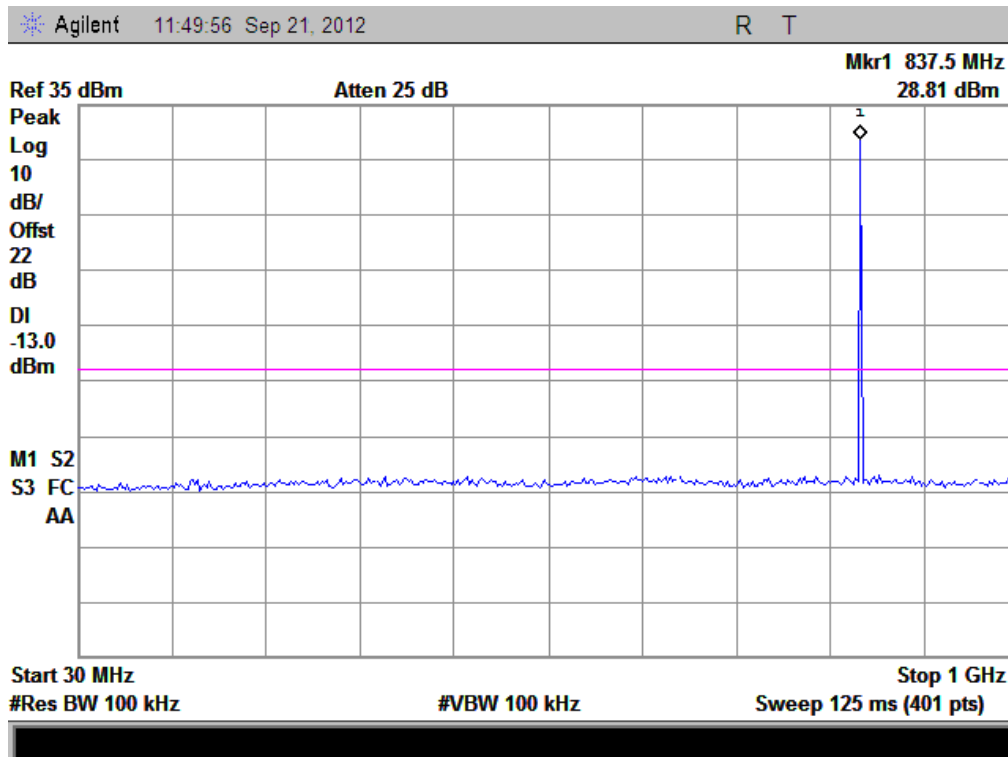
Note: the power of the EUT transmitting frequency should be ignored.



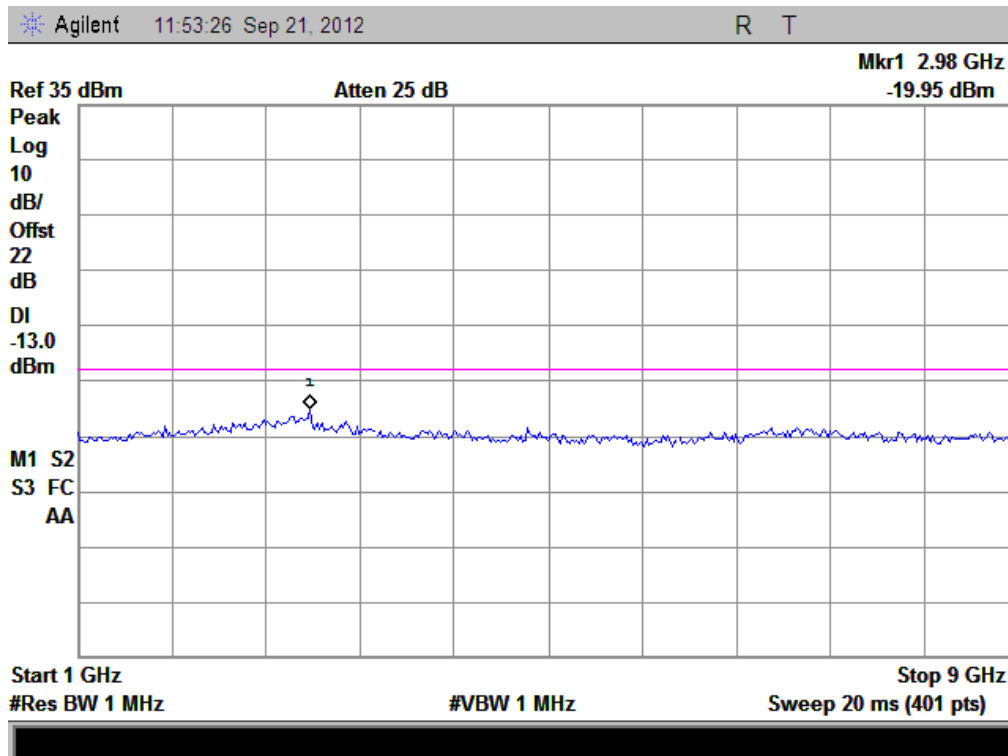
(Plot A1: GSM 850MHz Channel = 128, 30MHz to 1GHz)



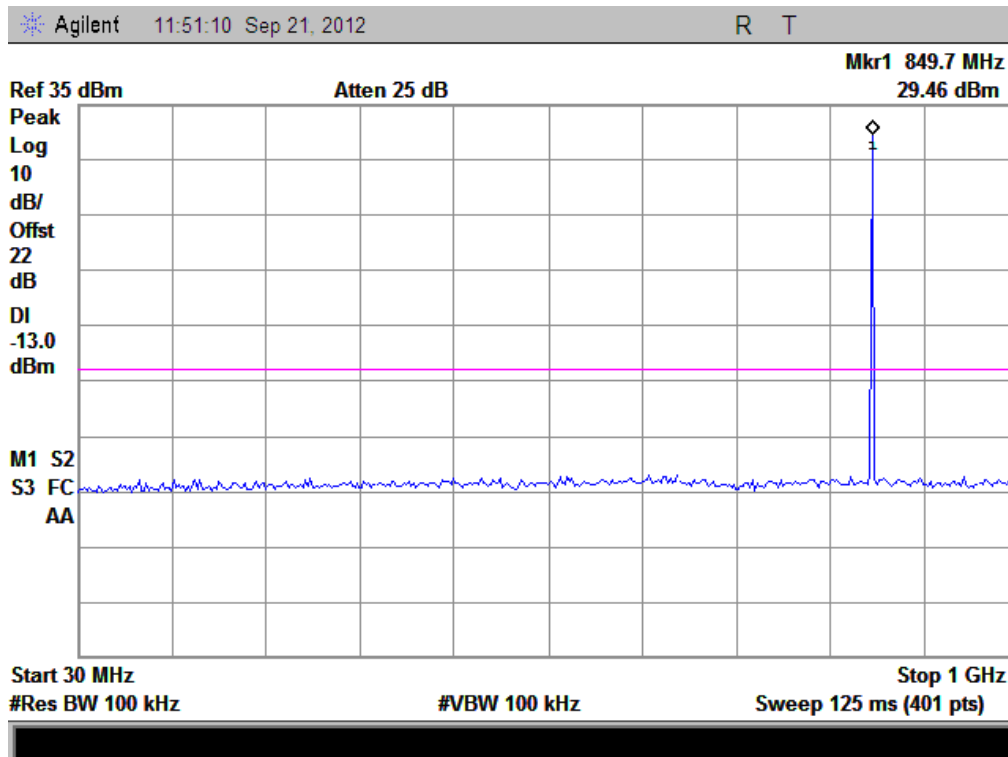
(Plot A1.1: GSM 850MHz Channel = 128, 1GHz to 9GHz)



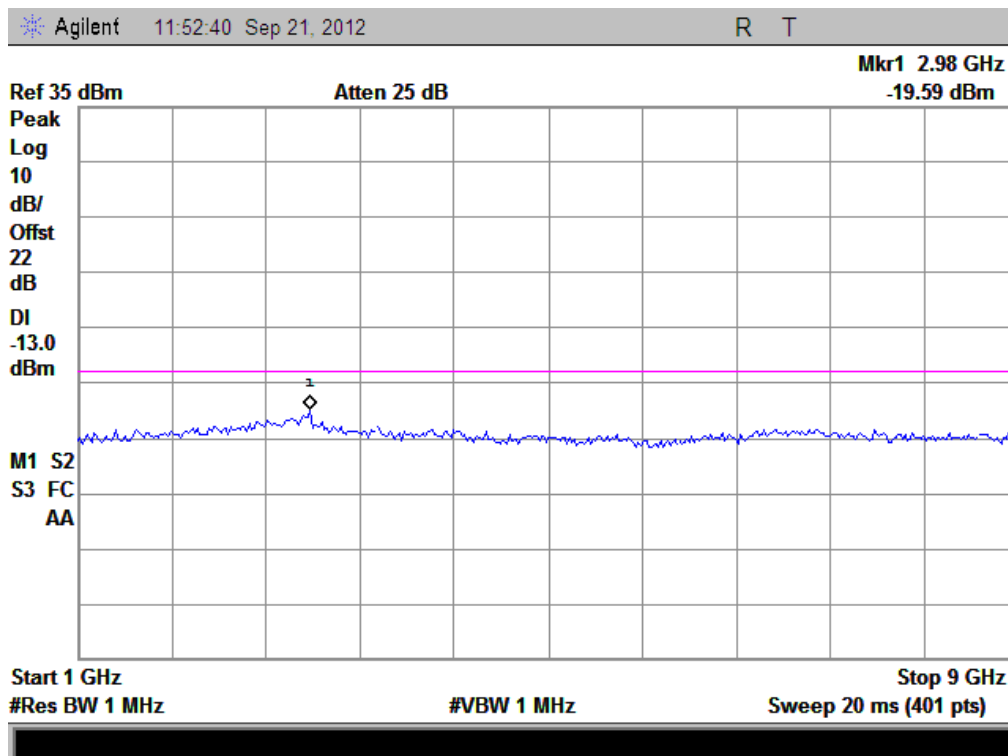
(Plot A2: GSM 850MHz Channel = 190, 30MHz to 1GHz)



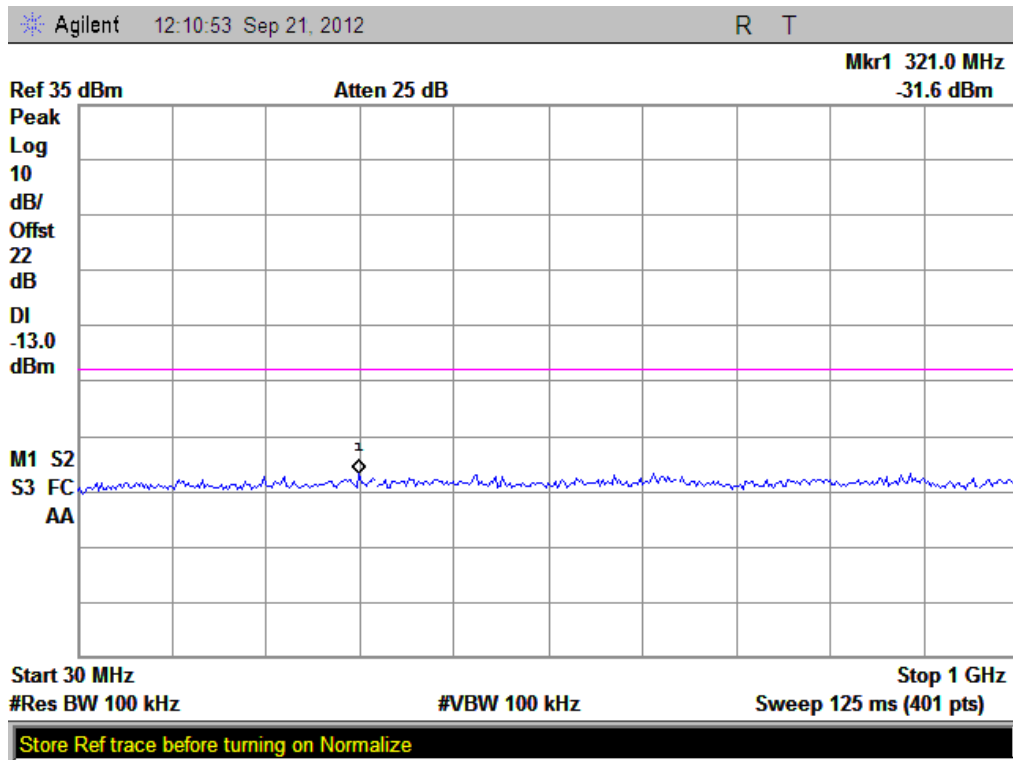
(Plot A2.1: GSM 850MHz Channel = 190, 1GHz to 9GHz)



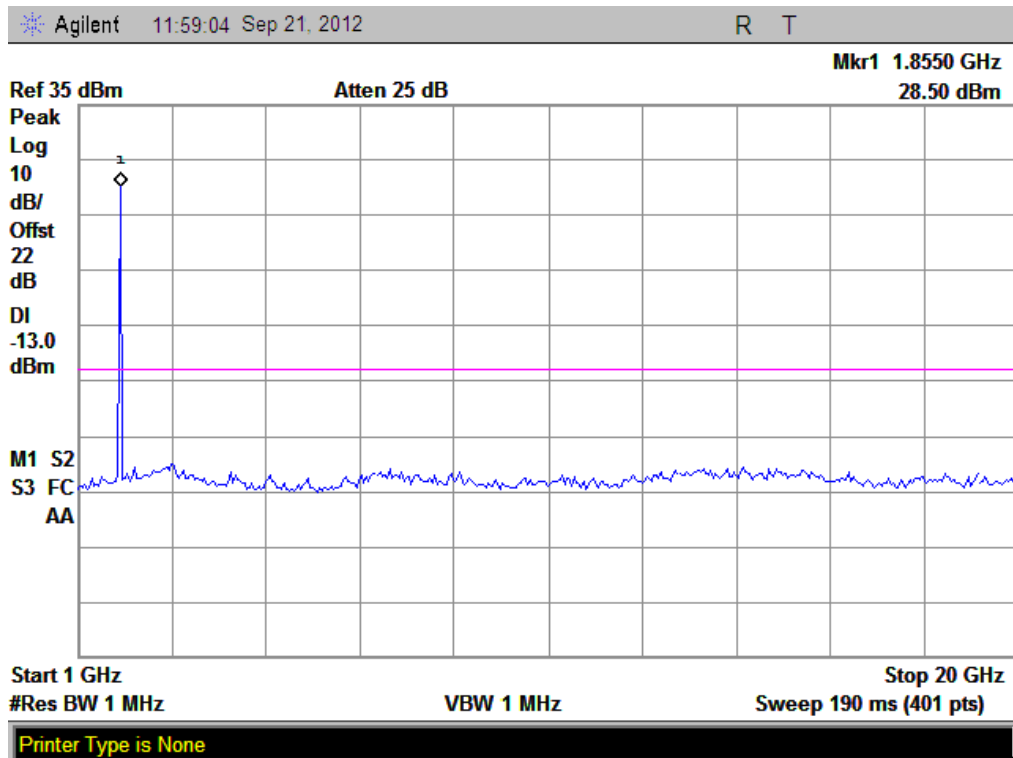
(Plot A3: GSM 850MHz Channel = 251, 30MHz to 1GHz)



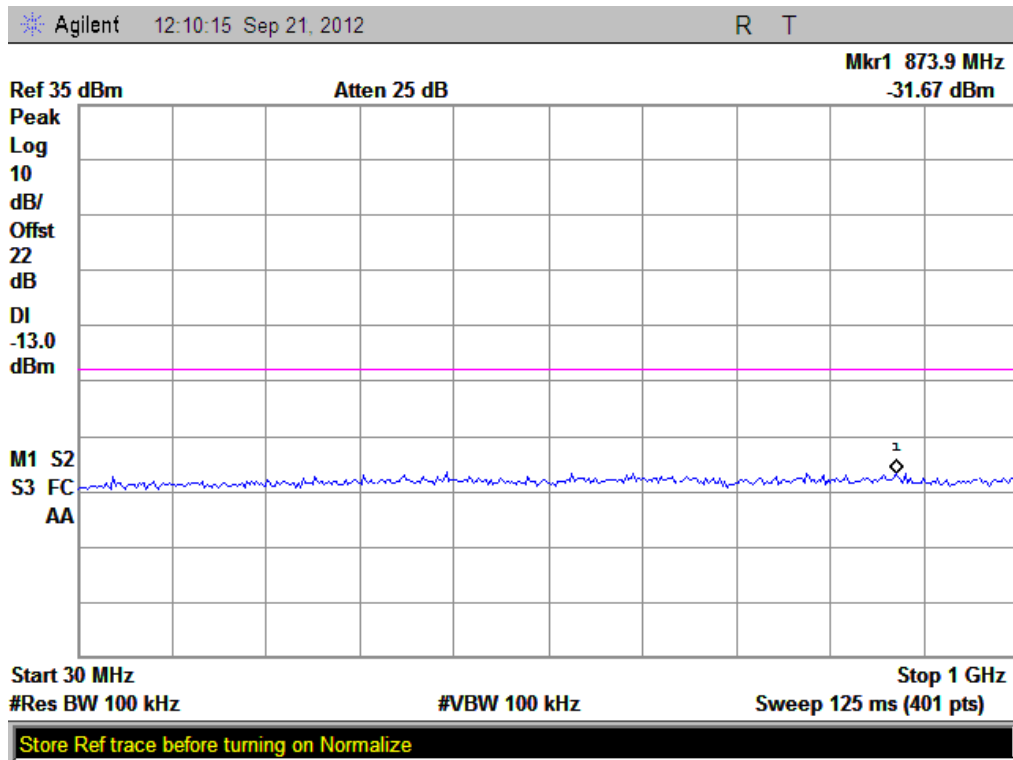
(Plot A3.1: GSM 850MHz Channel = 251, 1GHz to 9GHz)



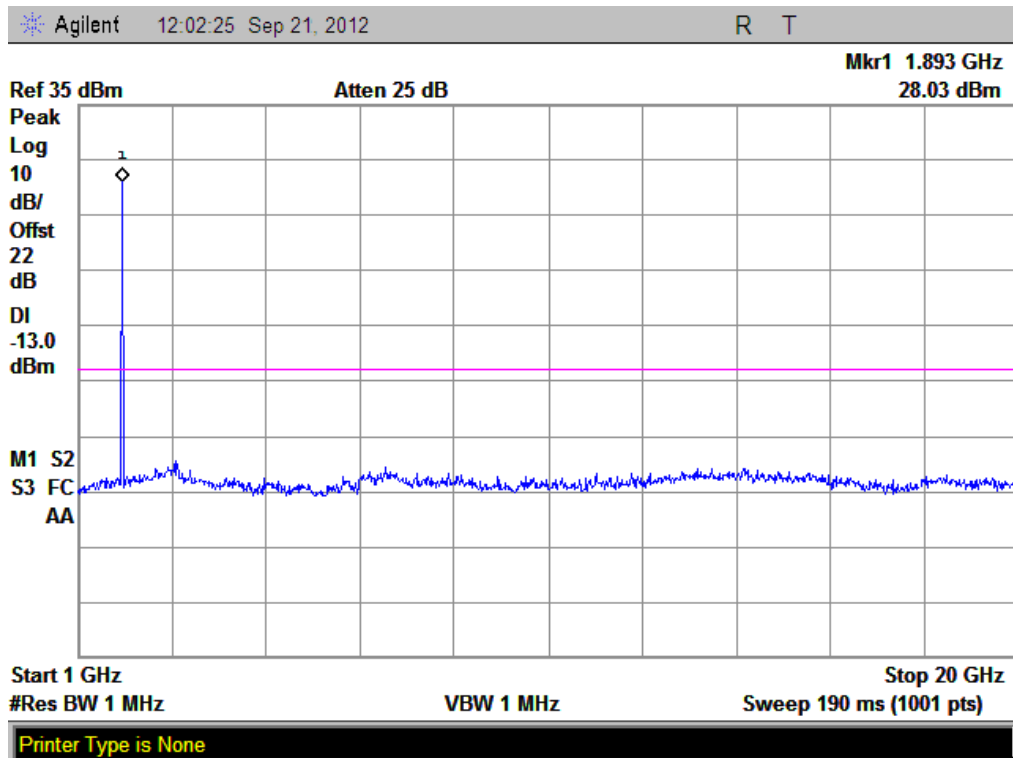
(Plot B1: GSM 1900MHz Channel = 512, 30MHz to 1GHz)



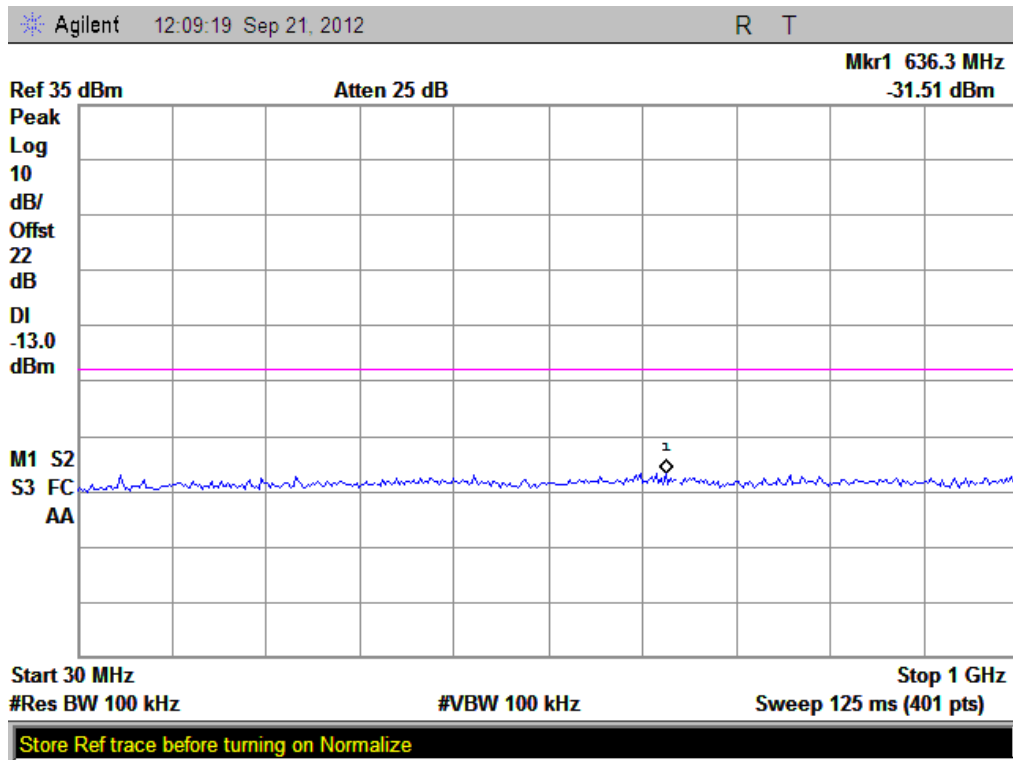
(Plot B1.1: GSM 1900MHz Channel = 512, 1GHz to 20GHz)



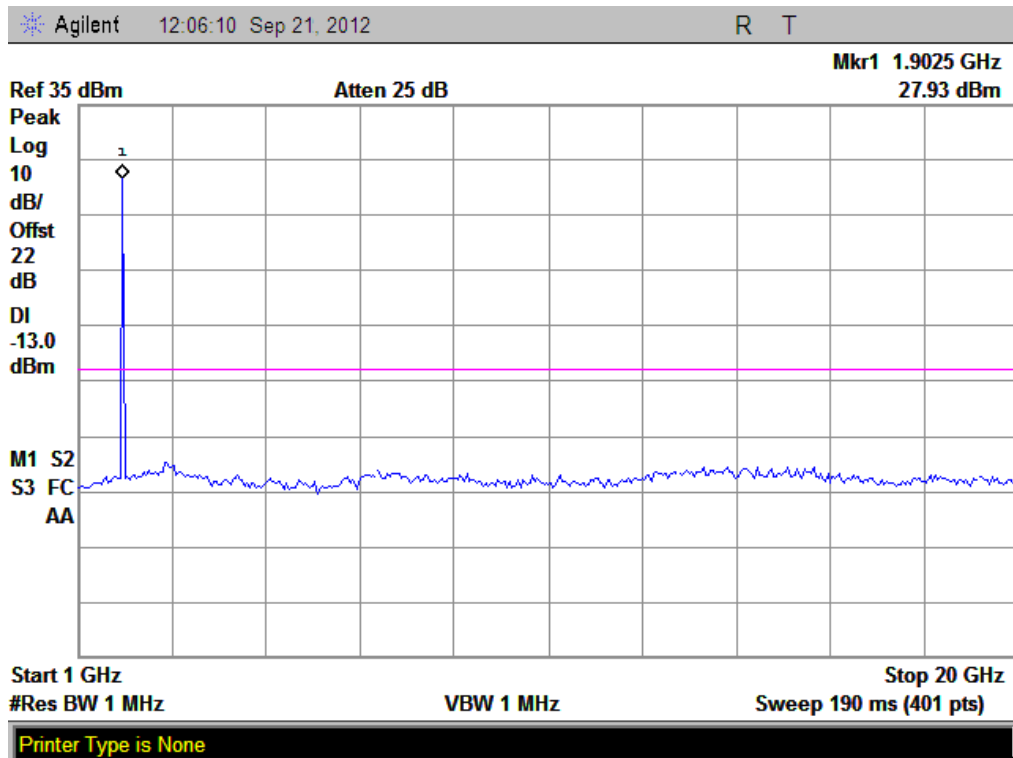
(Plot B2: GSM 1900MHz Channel = 661, 30MHz to 1GHz)



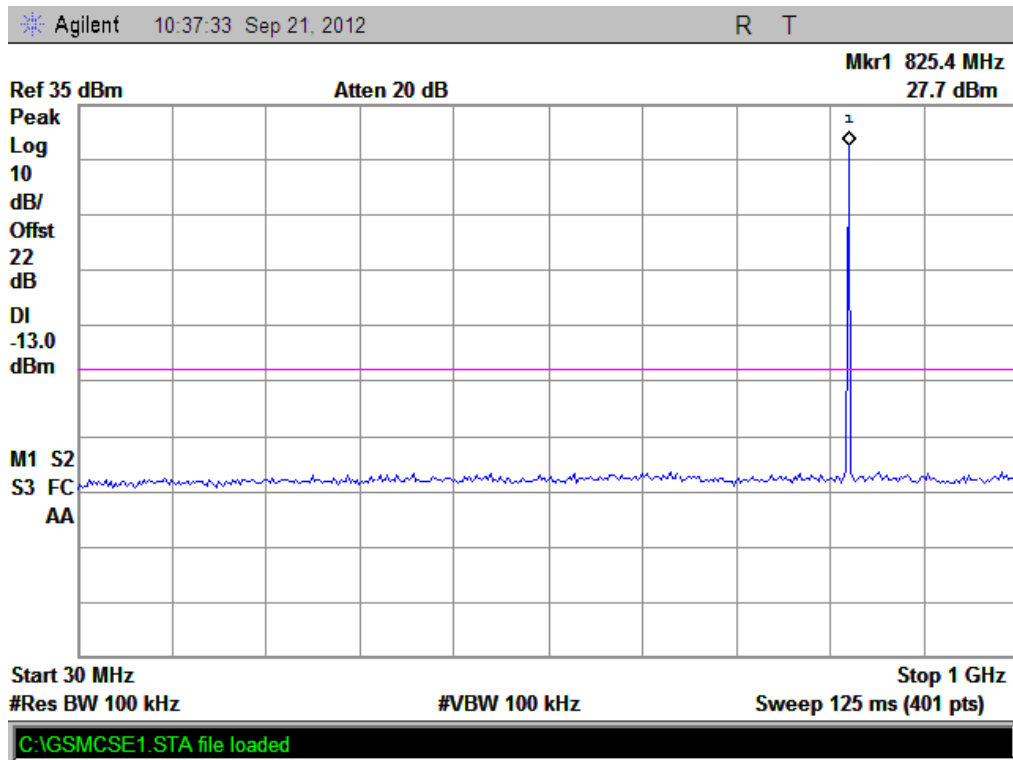
(Plot B2.1: GSM 1900MHz Channel = 661, 1GHz to 20GHz)



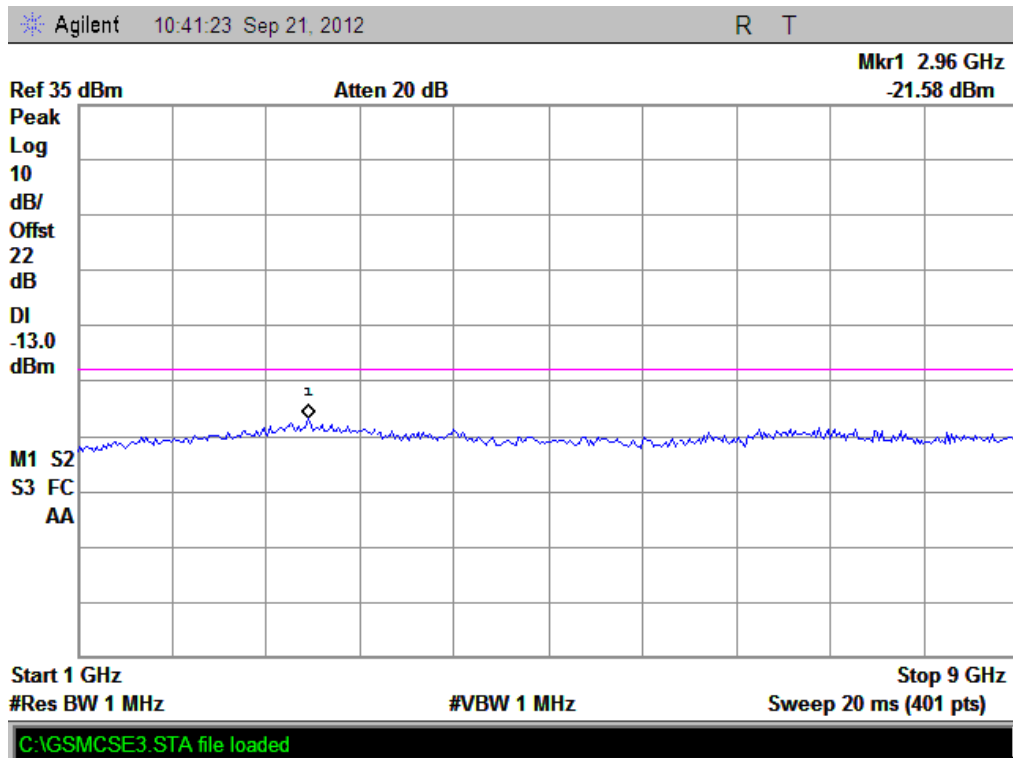
(Plot B3: GSM 1900MHz Channel = 810, 30MHz to 1GHz)



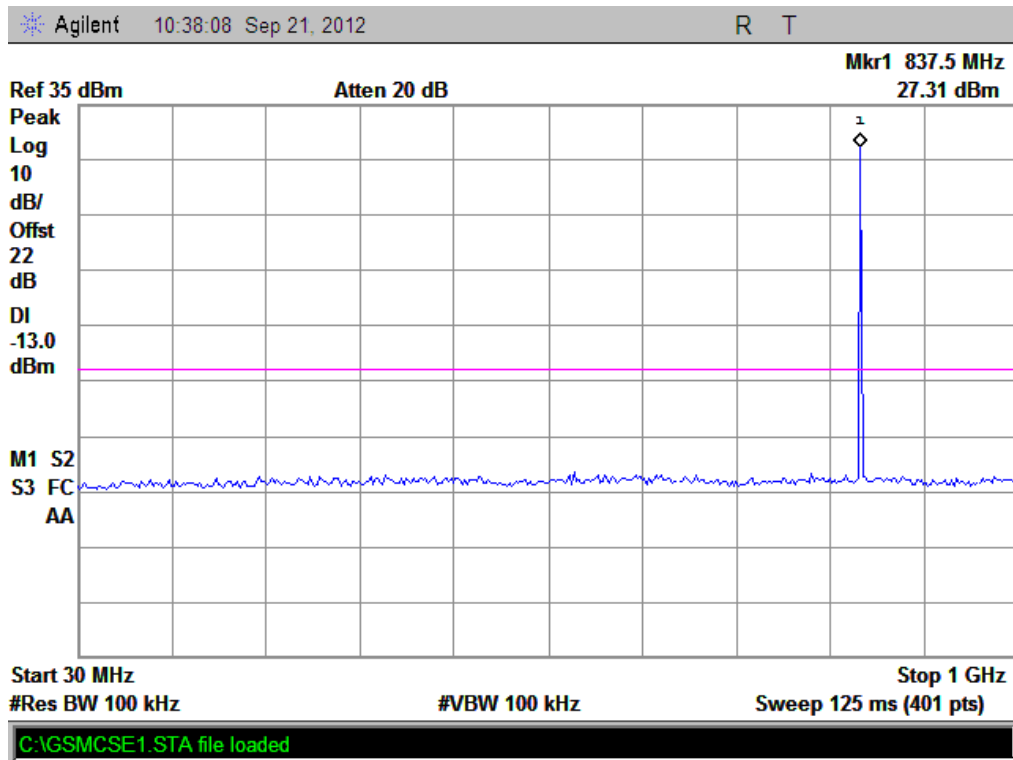
(Plot B3.1: GSM 1900MHz Channel = 810, 1GHz to 20GHz)



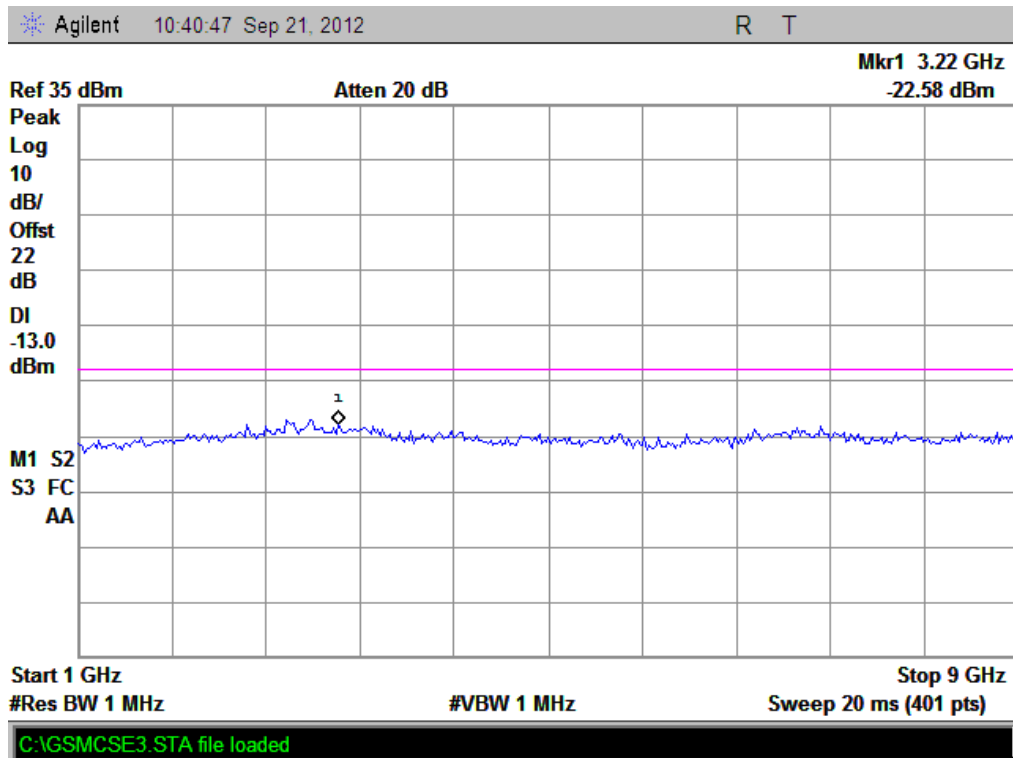
(Plot C1: EDGE 850MHz Channel = 128, 30MHz to 1GHz)



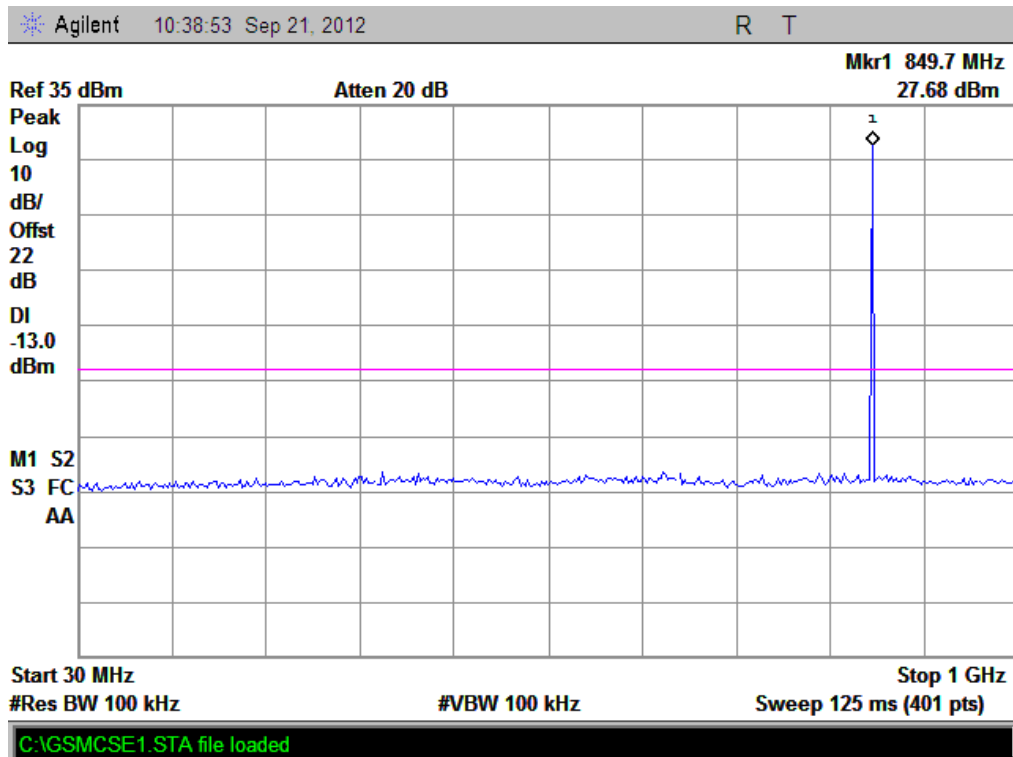
(Plot C1.1: EDGE 850MHz Channel = 128, 1GHz to 9GHz)



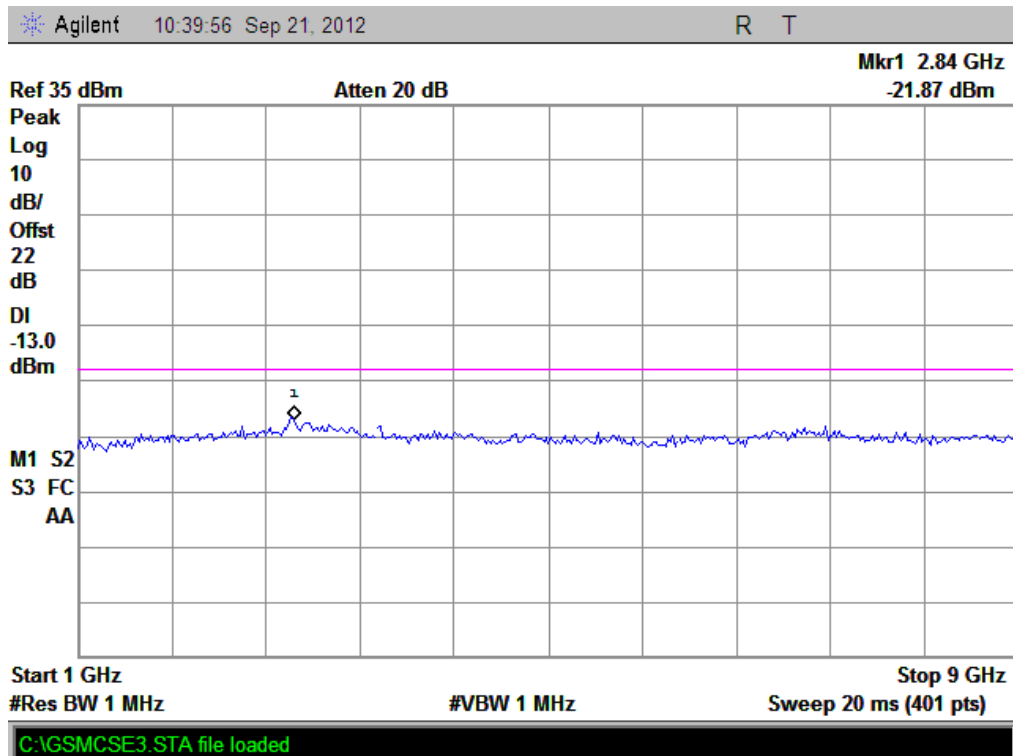
(Plot C2: EDGE 850MHz Channel = 190, 30MHz to 1GHz)



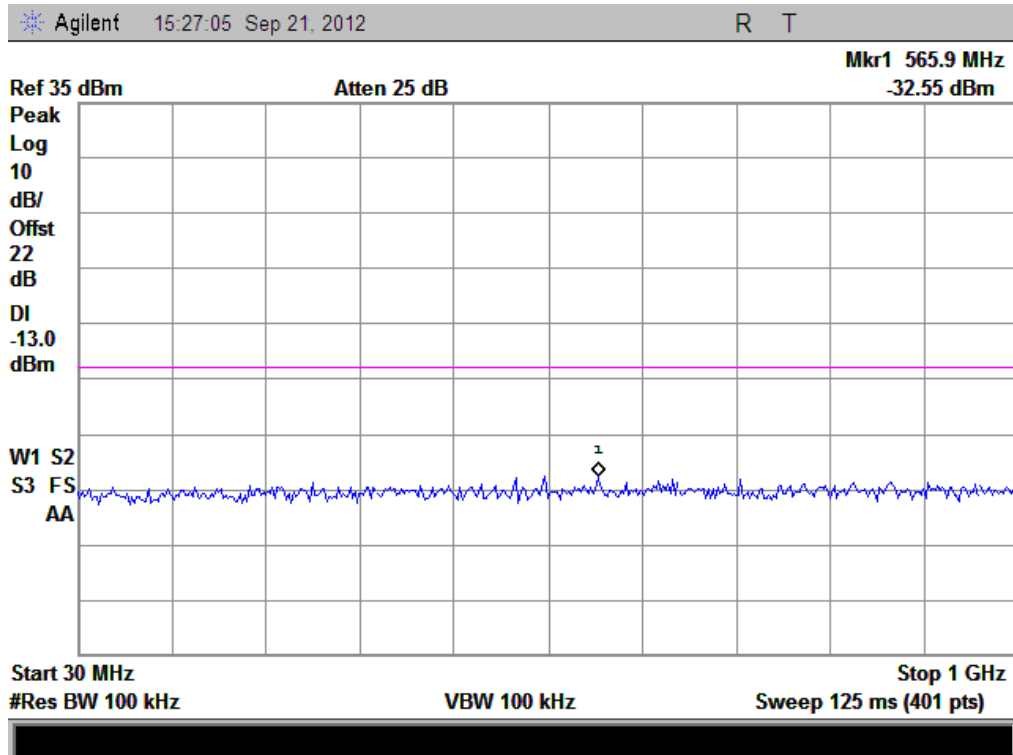
(Plot C2.1: EDGE 850MHz Channel = 190, 1GHz to 9GHz)



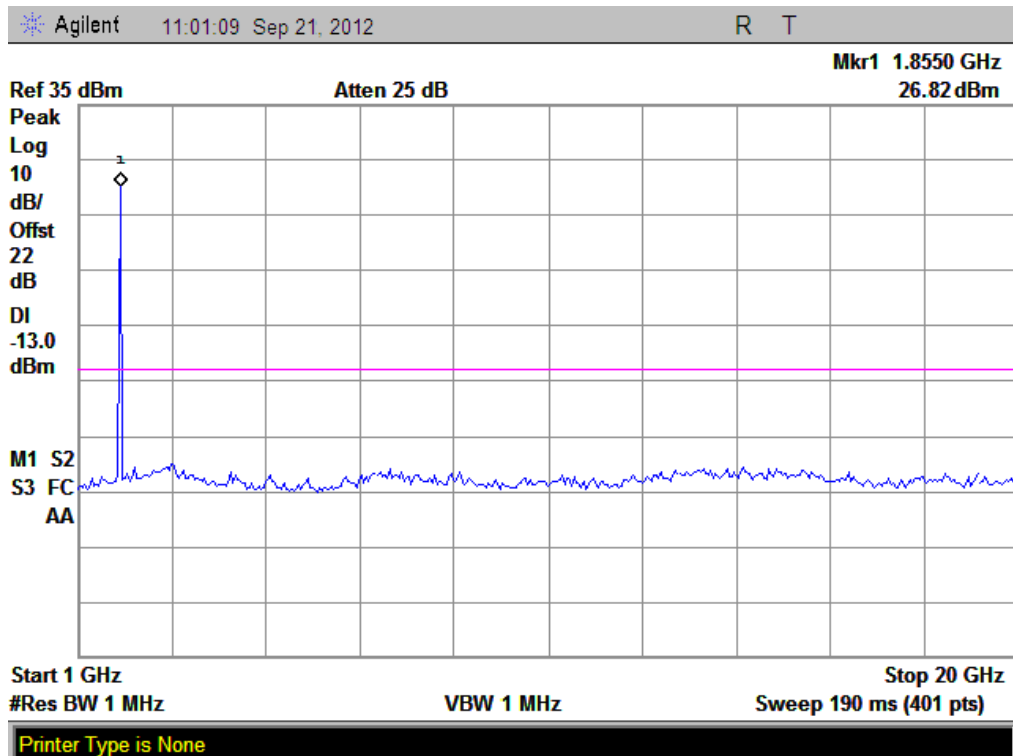
(Plot C3: EDGE 850MHz Channel = 251, 30MHz to 1GHz)



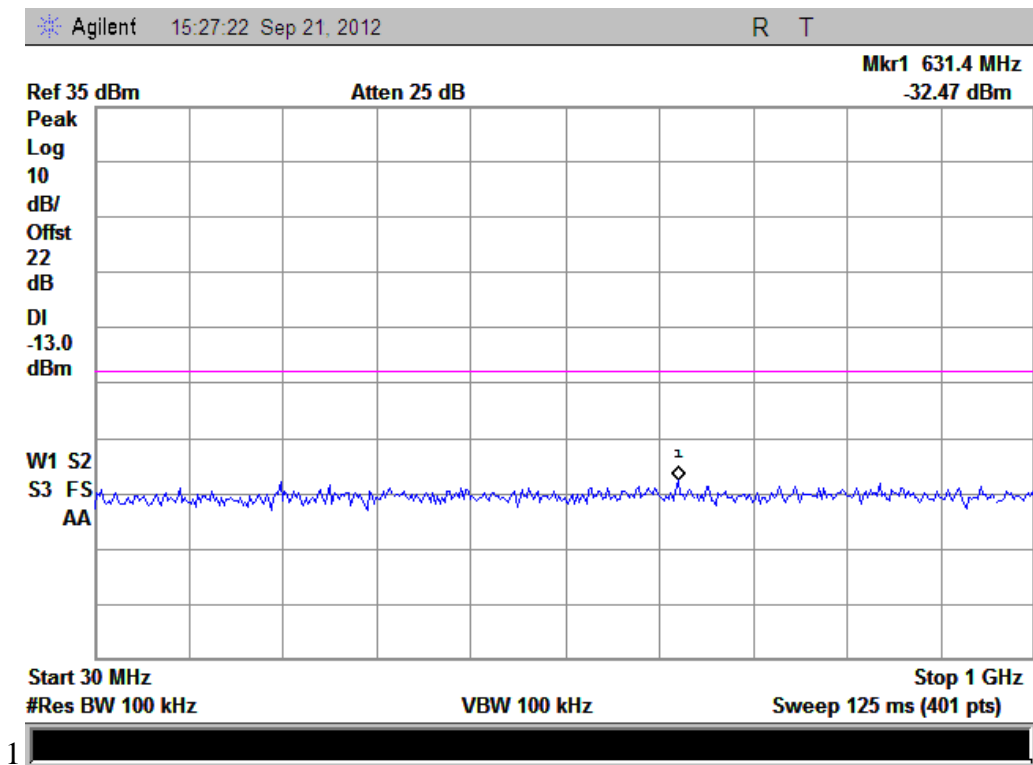
(Plot C3.1: EDGE 850MHz Channel = 251, 1GHz to 9GHz)



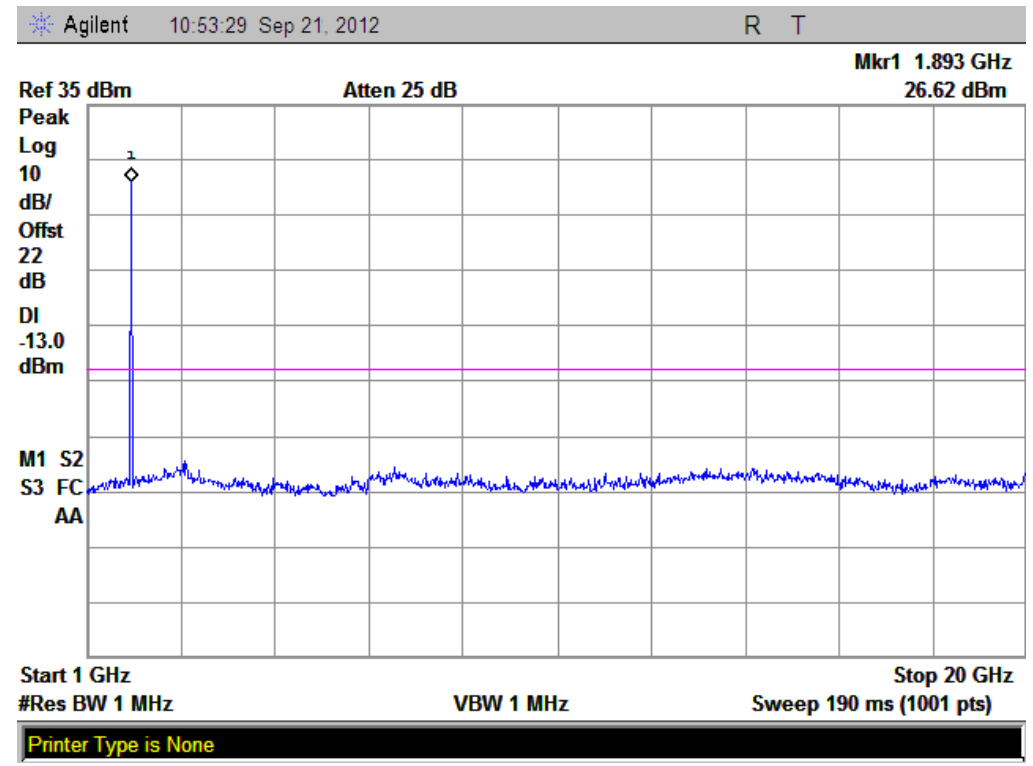
(Plot D1: EDGE 1900MHz Channel = 512, 30MHz to 1GHz)



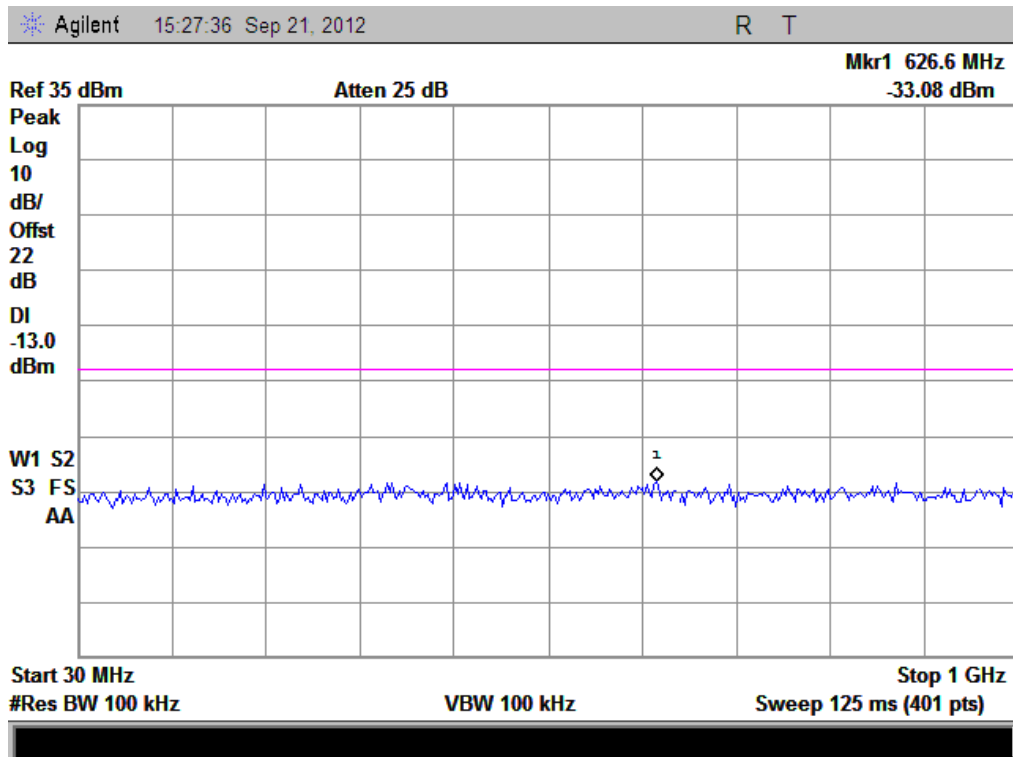
(Plot D1.1: EDGE 1900MHz Channel = 512, 1GHz to 20GHz)



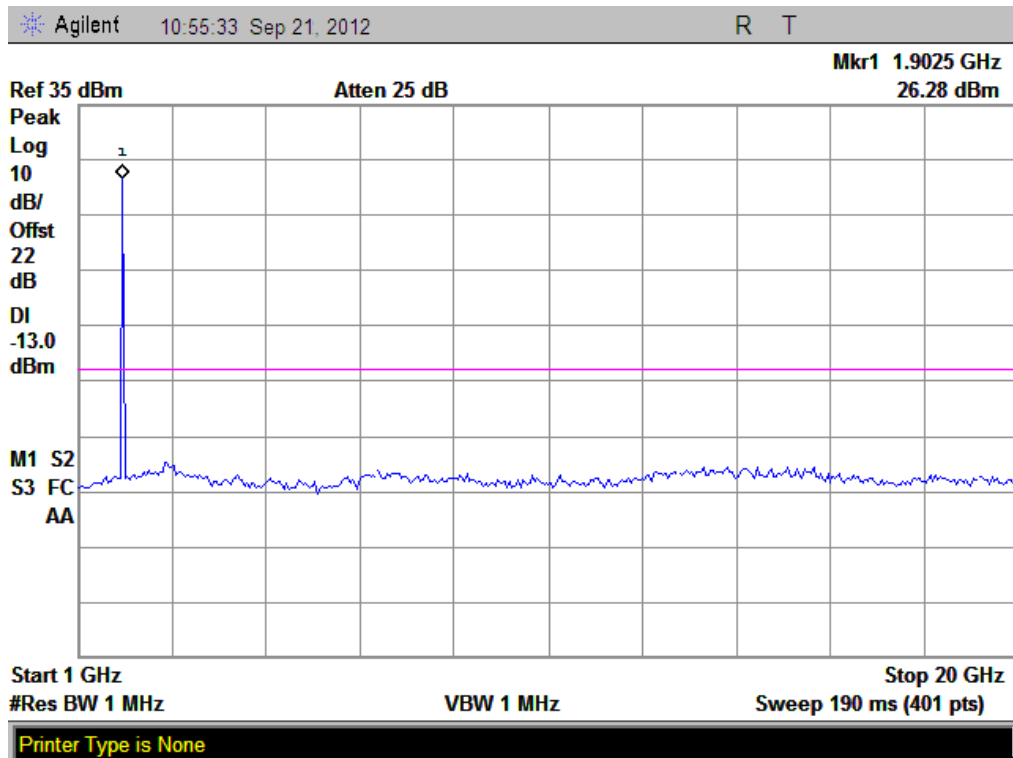
(Plot D2: EDGE 1900MHz Channel = 661, 30MHz to 1GHz)



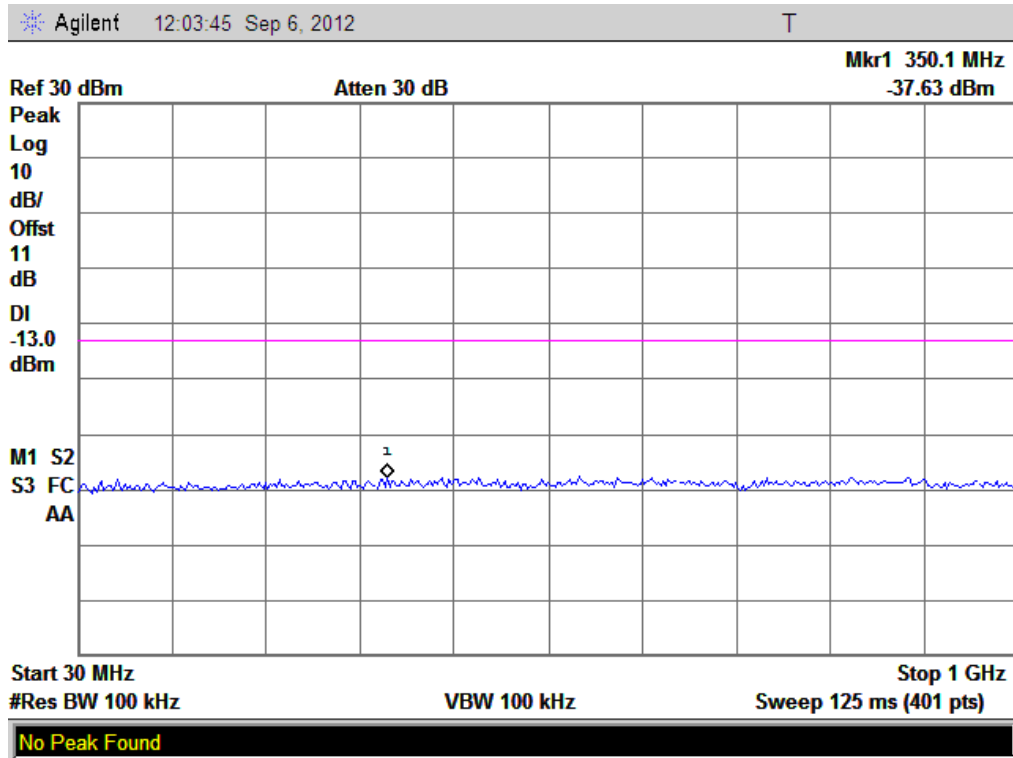
(Plot D2.1: EDGE 1900MHz Channel = 661, 1GHz to 20GHz)



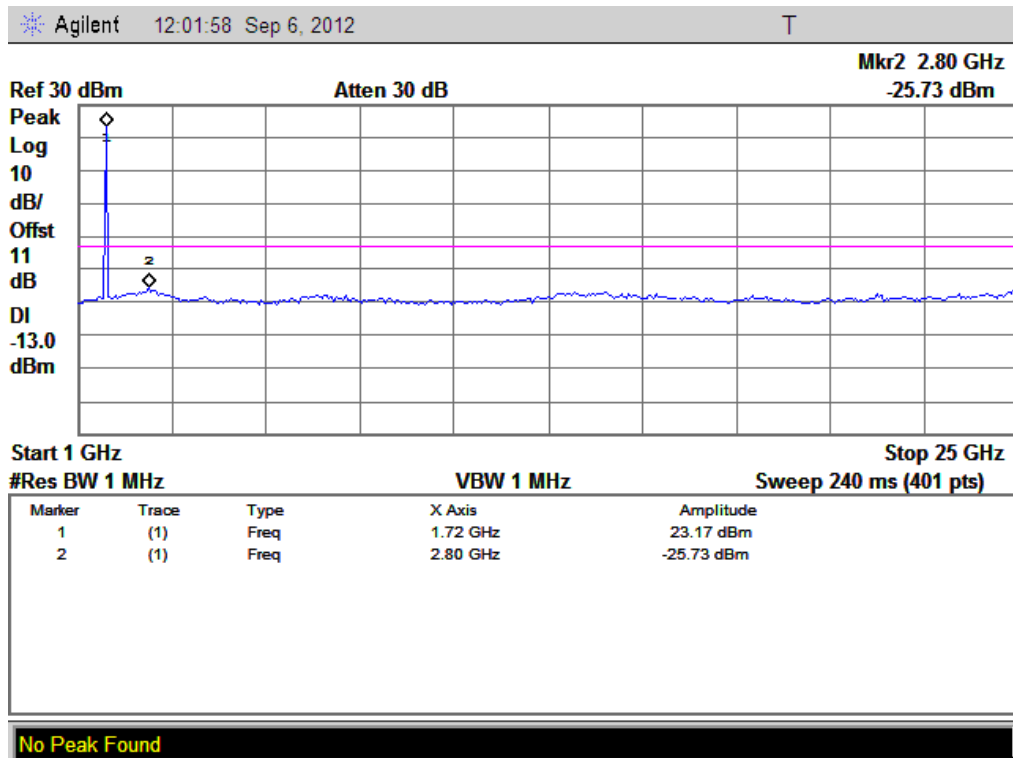
(Plot D3: EDGE 1900MHz Channel = 810, 30MHz to 1GHz)



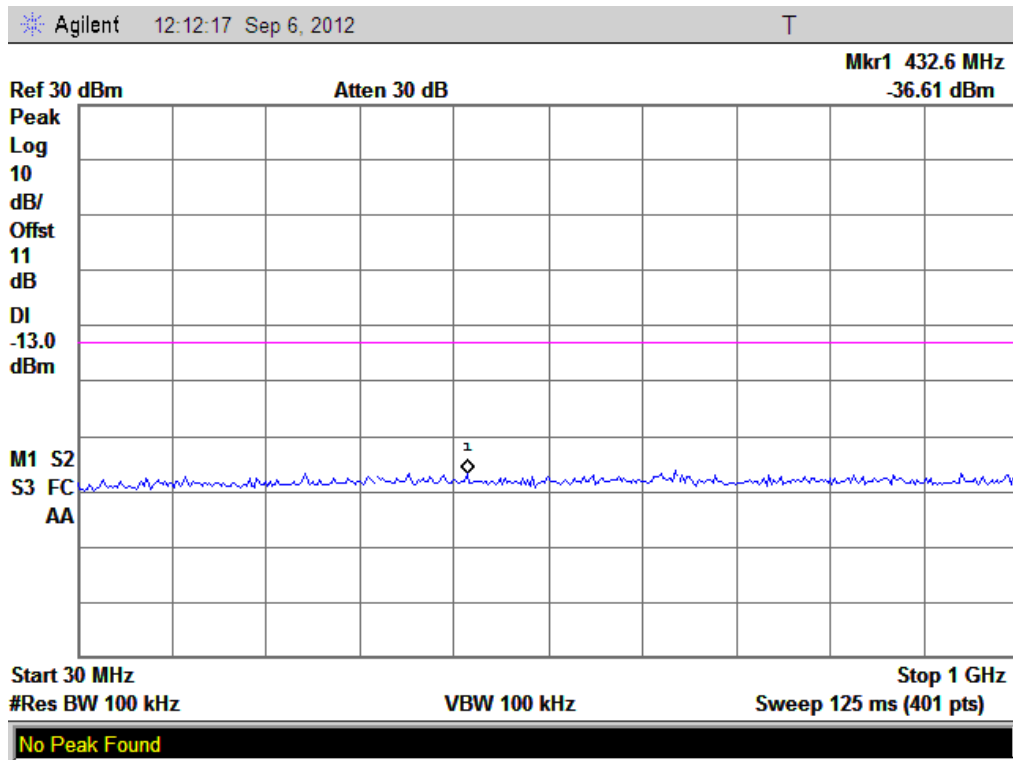
(Plot D3.1: EDGE 1900MHz Channel = 810, 1GHz to 20GHz)



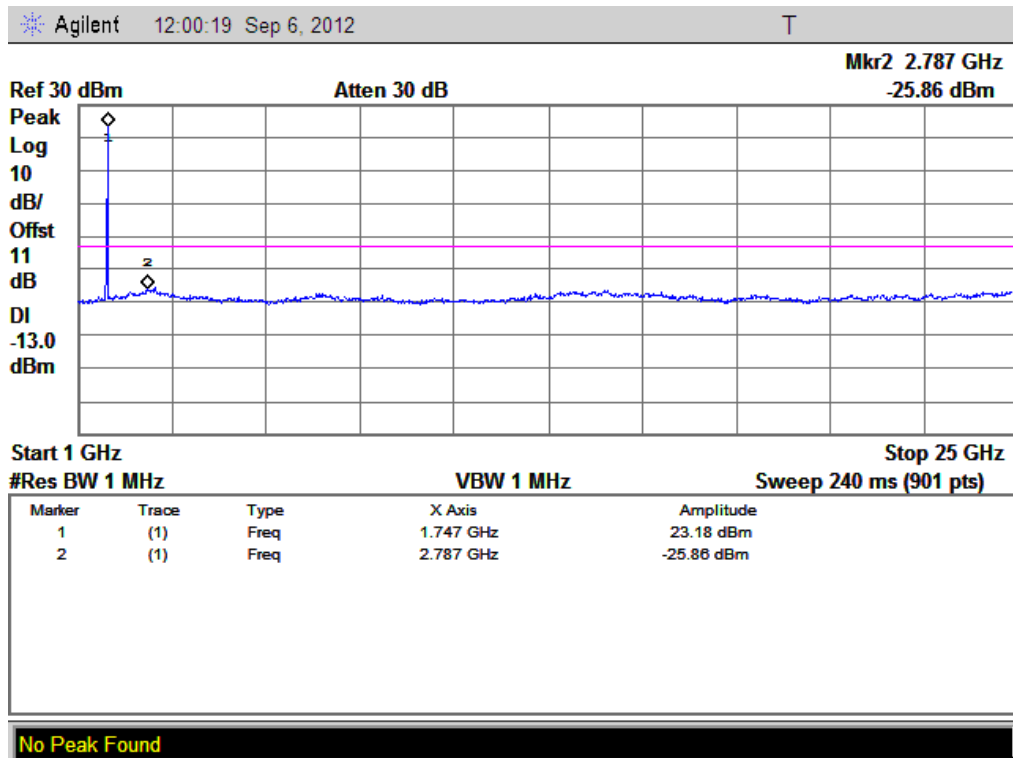
(Plot E1: WCDMA1700MHz Channel = 1312, 30MHz to 1GHz)



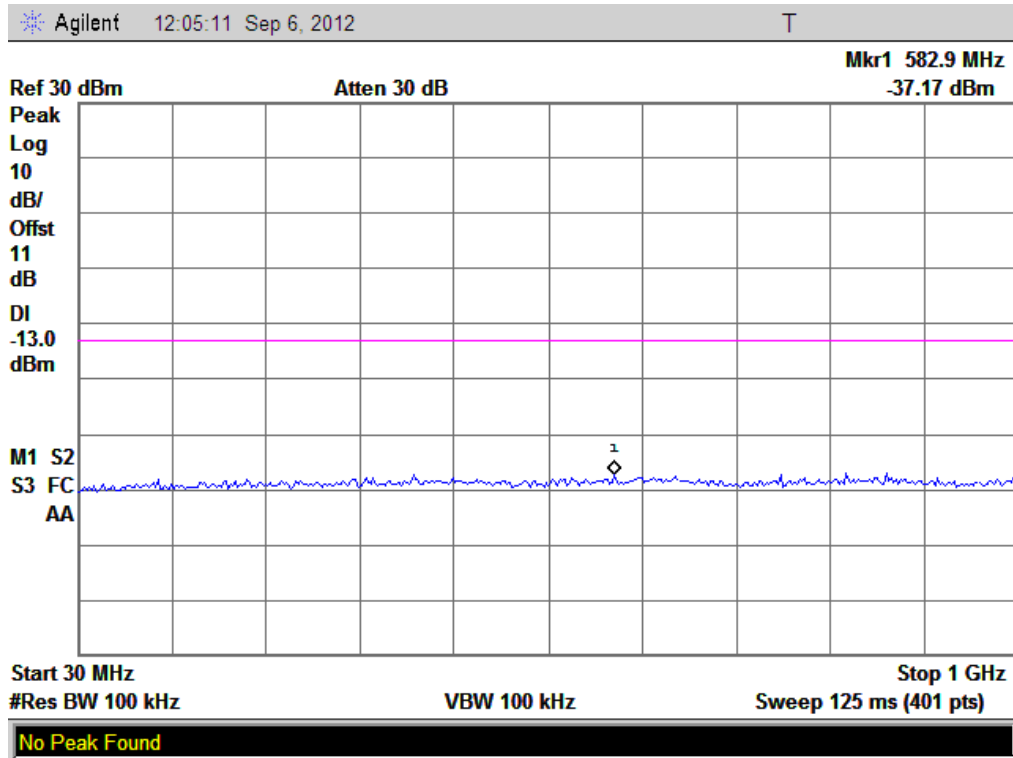
(Plot E1.1: WCDMA1700MHz Channel = 1312, 1GHz to 20GHz)



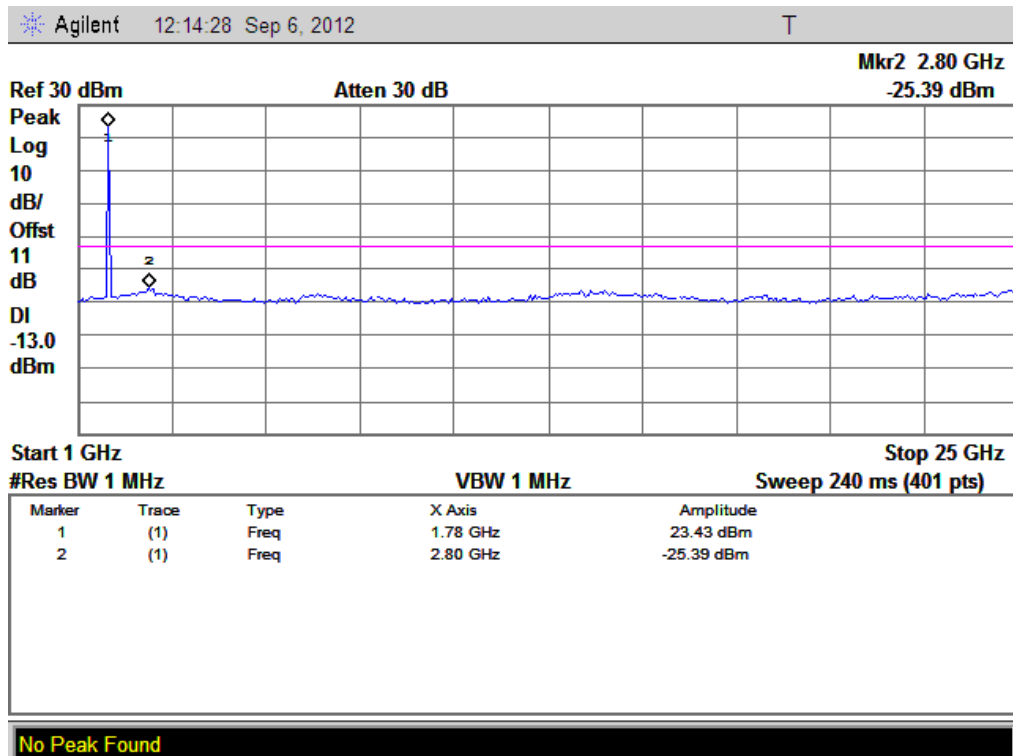
(Plot E2: WCDMA1700MHz Channel = 1412, 30MHz to 1GHz)



(Plot E2.1: WCDMA1700MHz Channel = 1412, 1GHz to 20GHz)



(Plot E3: WCDMA1700MHz Channel = 1513, 30MHz to 1GHz)



(Plot E3.1: WCDMA1700MHz Channel = 1513, 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.

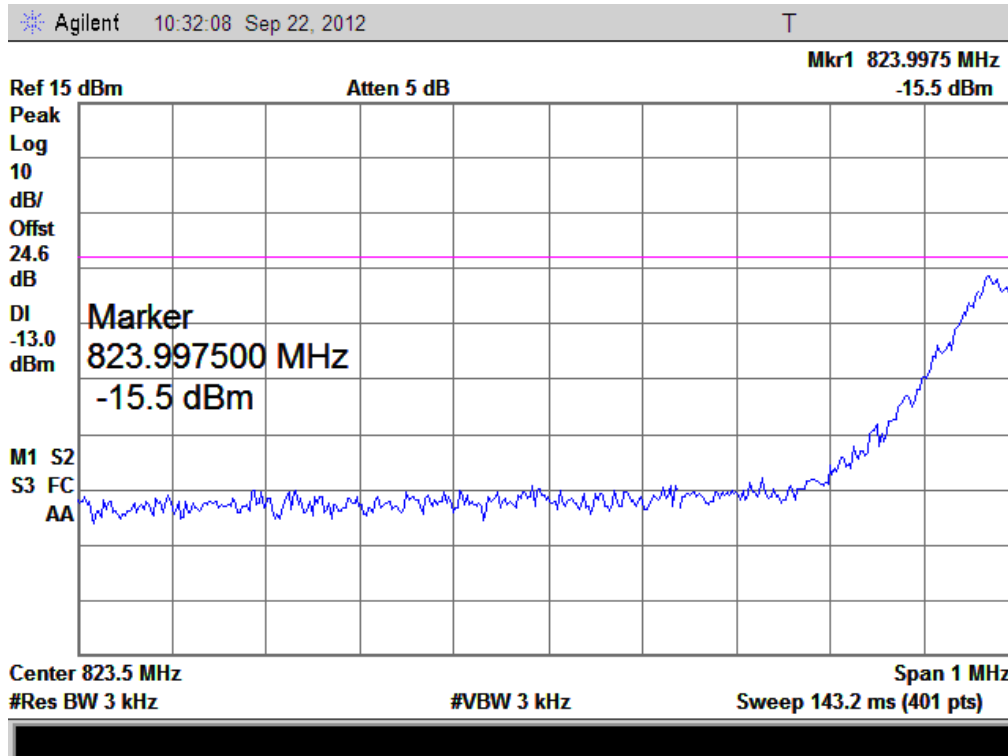
2.5.3 Test Result

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

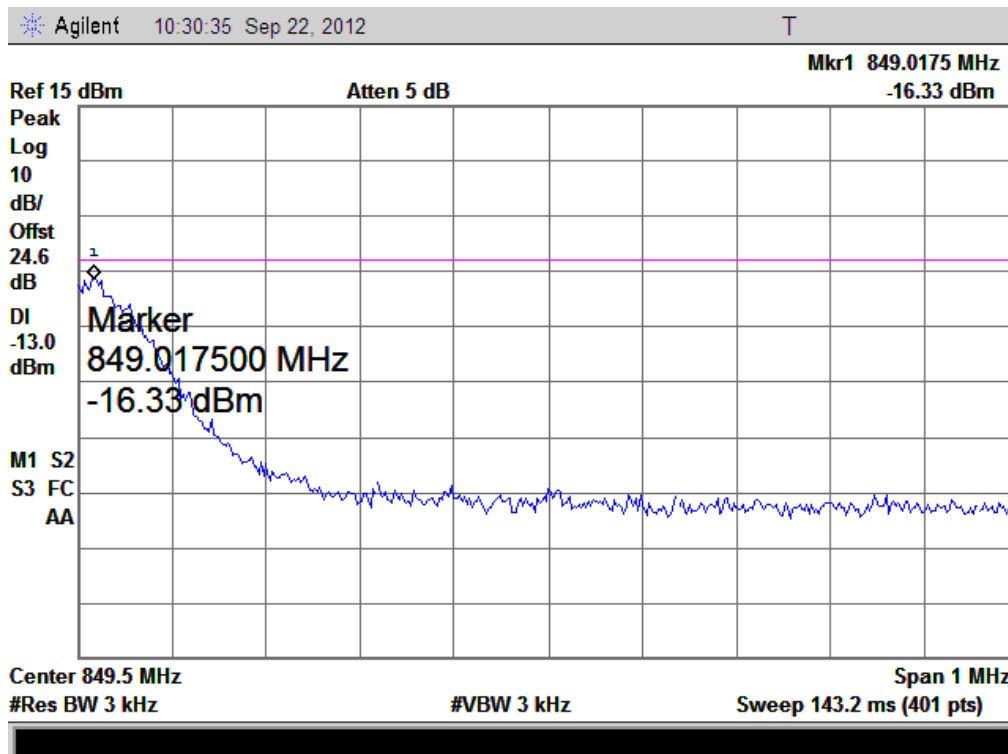
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-15.5	Plat A	-13	PASS
	251	848.8	-16.33	Plot B		PASS
GSM 1900MHz	512	1850.2	-17.08	Plat C	-13	PASS
	810	1909.8	-18.79	Plot D		PASS
EDGE 850MHz	128	824.2	-13.65	Plat E	-13	PASS
	251	848.8	-13.44	Plot F		PASS
EDGE 1900MHz	512	1850.2	-17.46	Plat G	-13	PASS
	810	1909.8	-19.18	Plot H		PASS
WCDMA 1700MHz	1312	1712.4	-20.4	Plat I	-13	PASS
	1513	1752.6	-21.16	Plot J		PASS

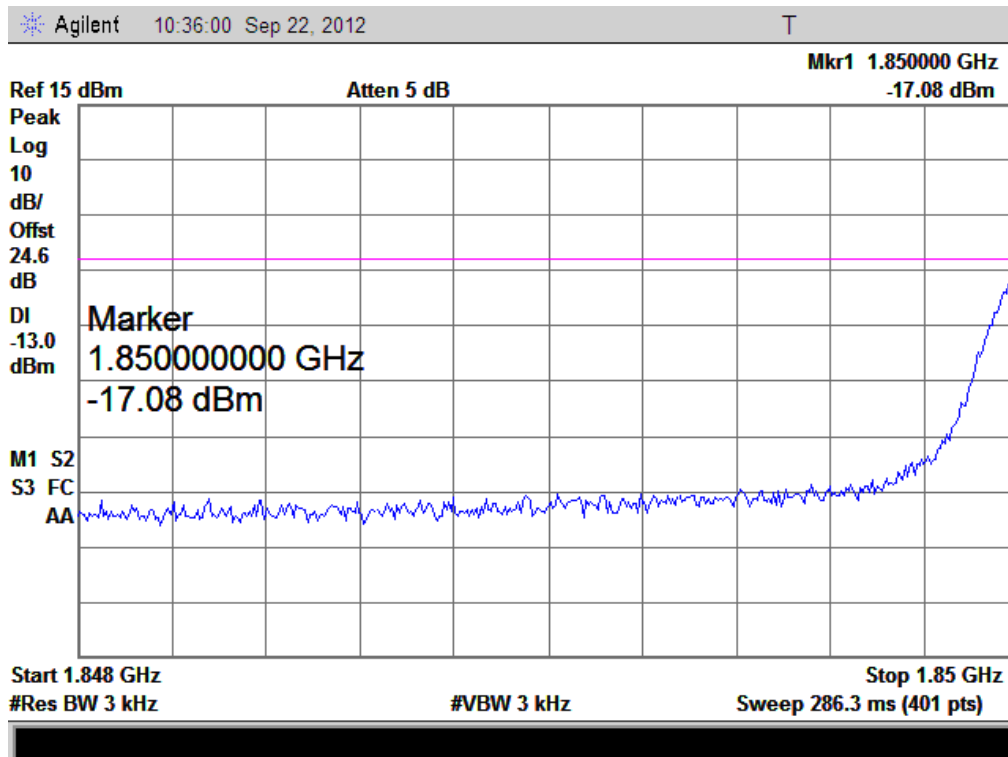
2. Test Plots:



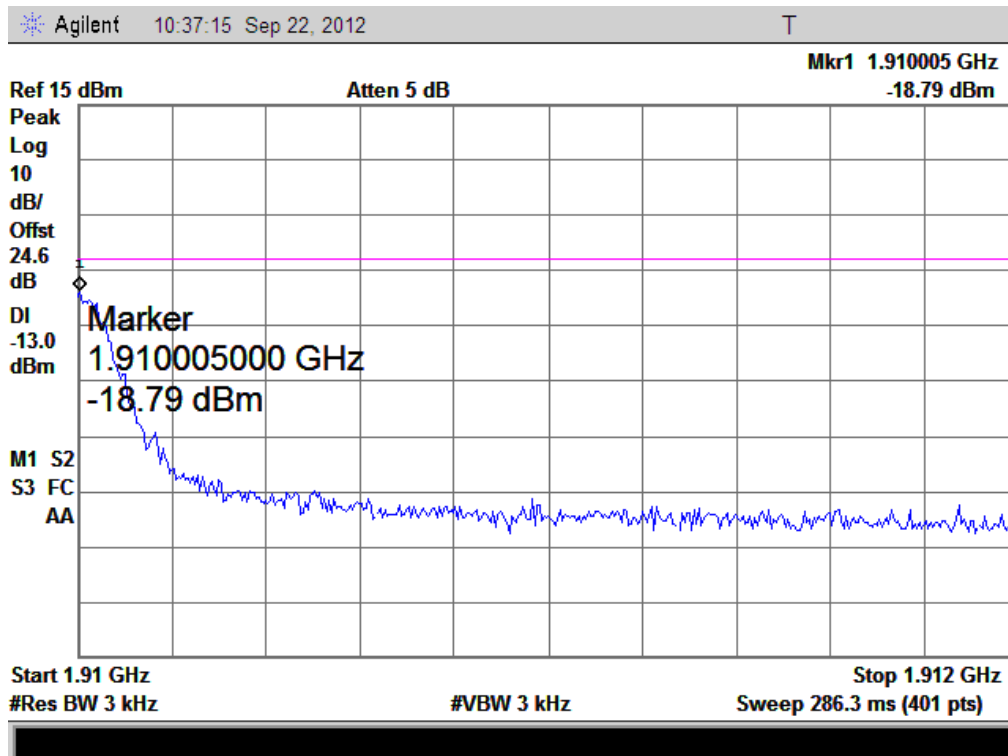
(Plot A: GSM 850 Channel = 128)



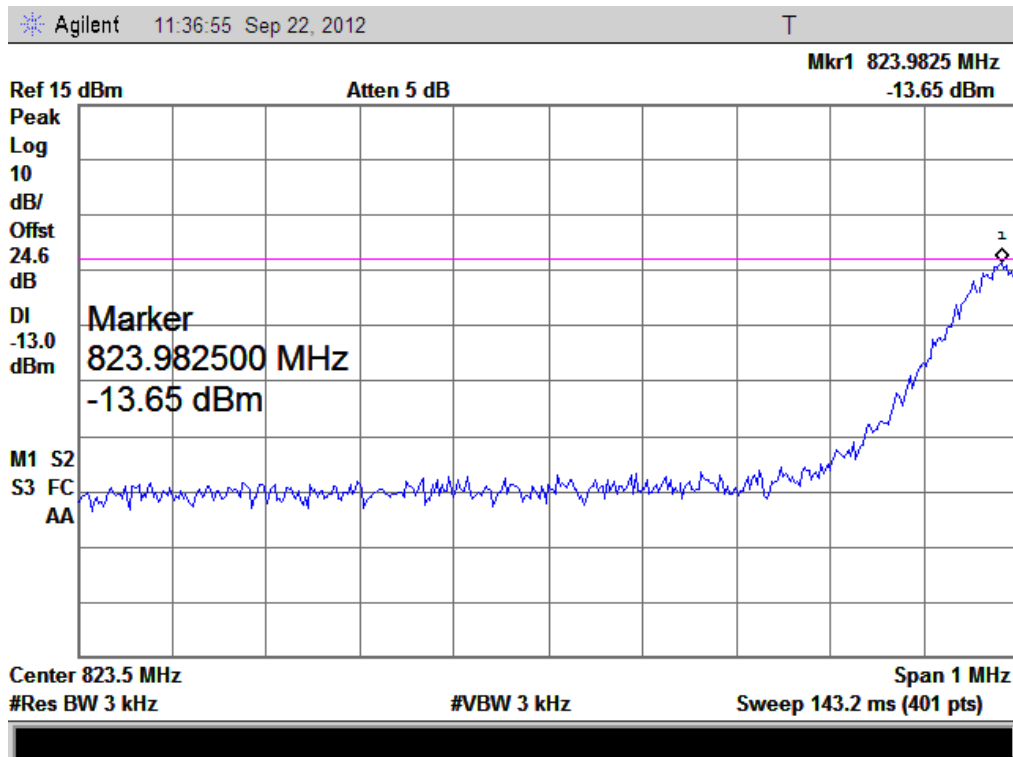
(Plot B: GSM 850 Channel = 251)



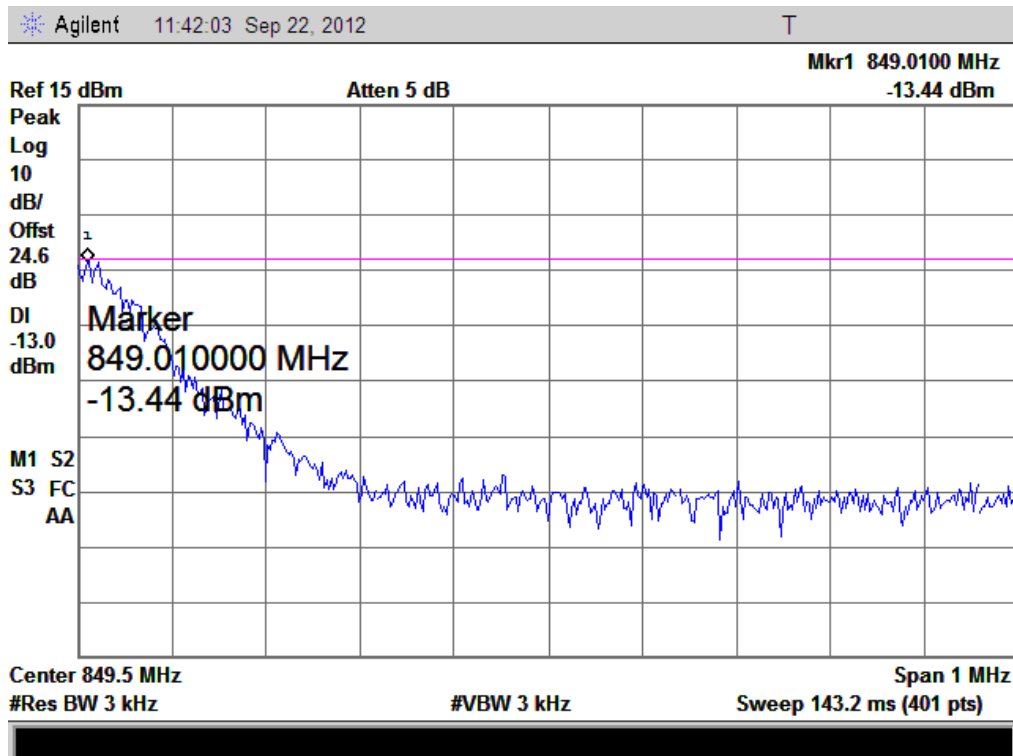
(Plot C: GSM 1900 Channel = 512)



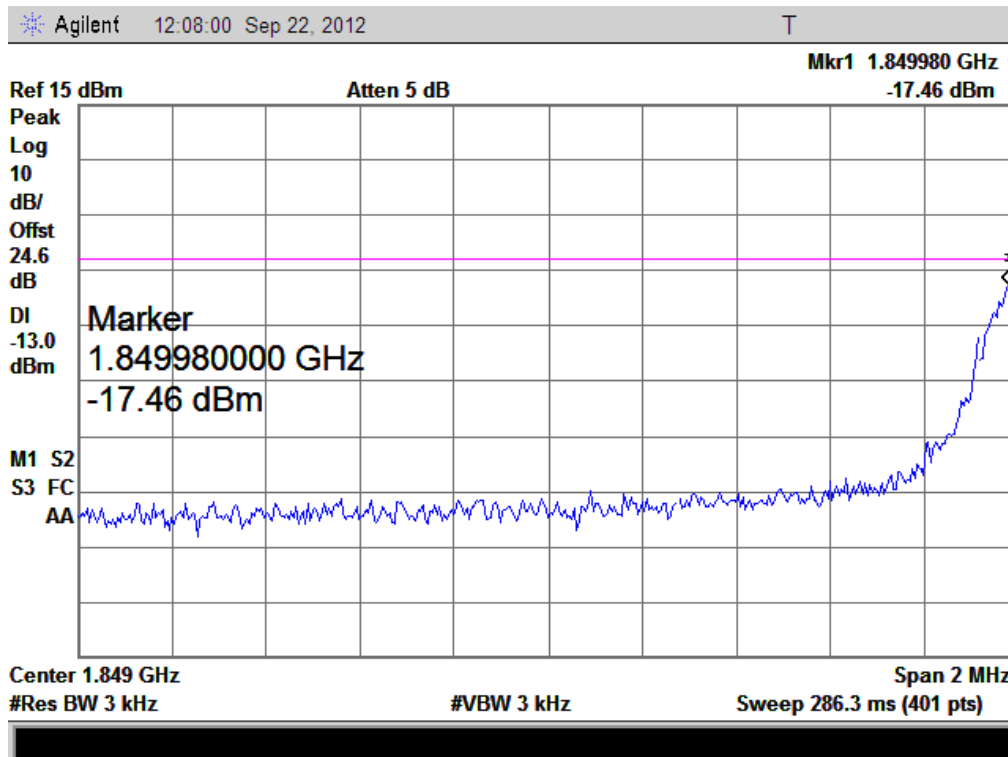
(Plot D: GSM 1900 Channel = 810)



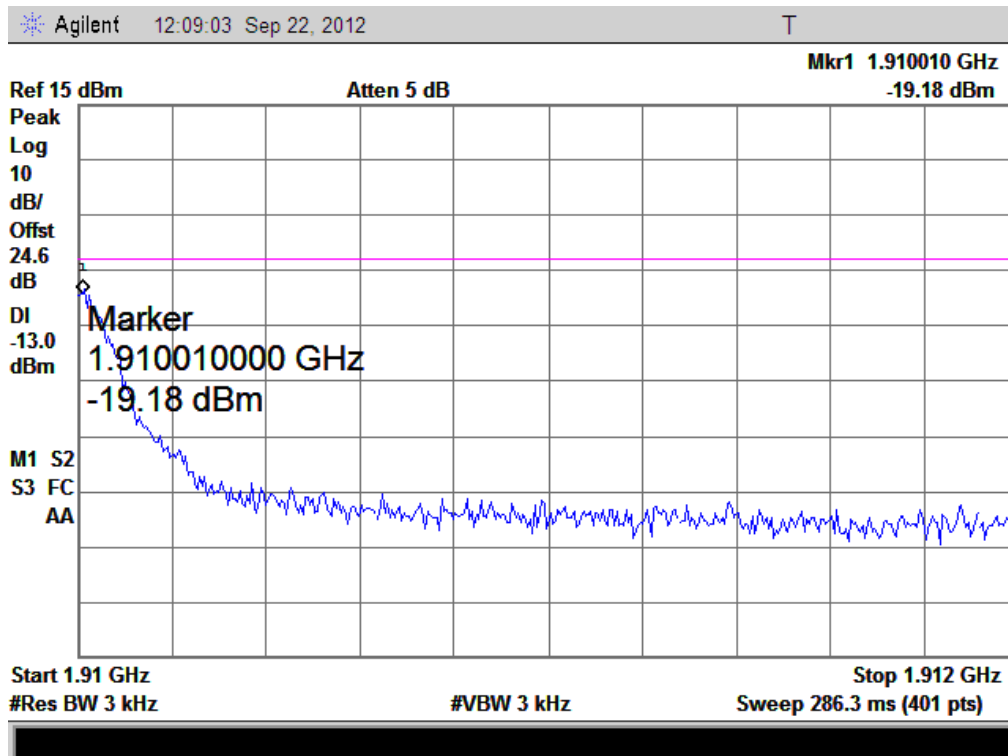
(Plot E: EDGE 850 Channel = 128)



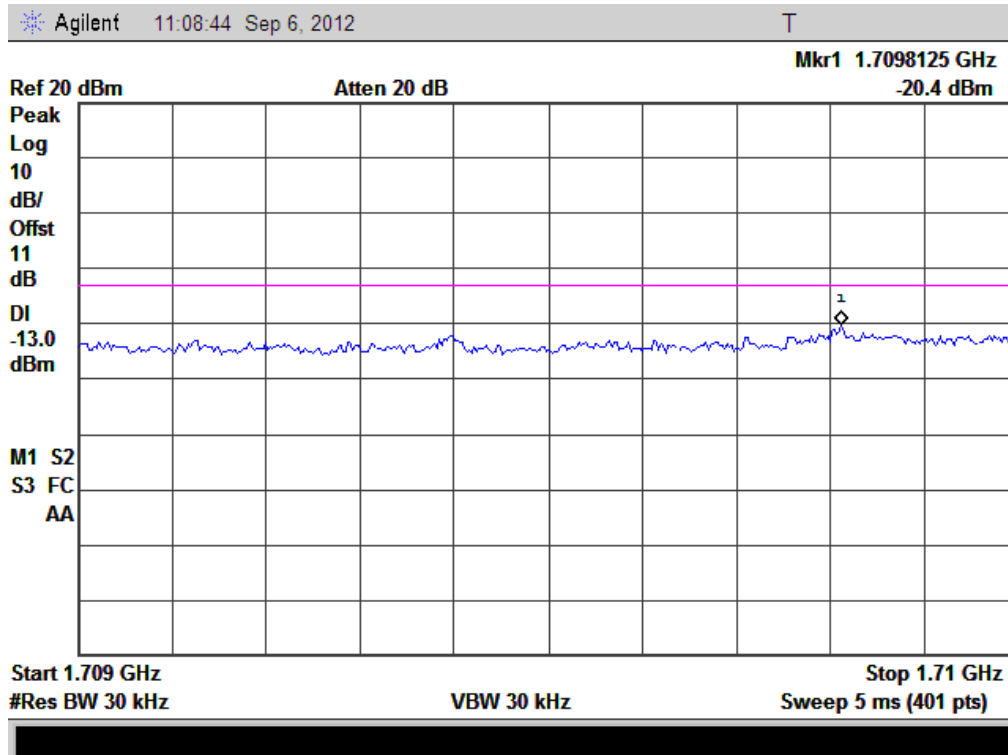
(Plot F: EDGE 850 Channel = 251)



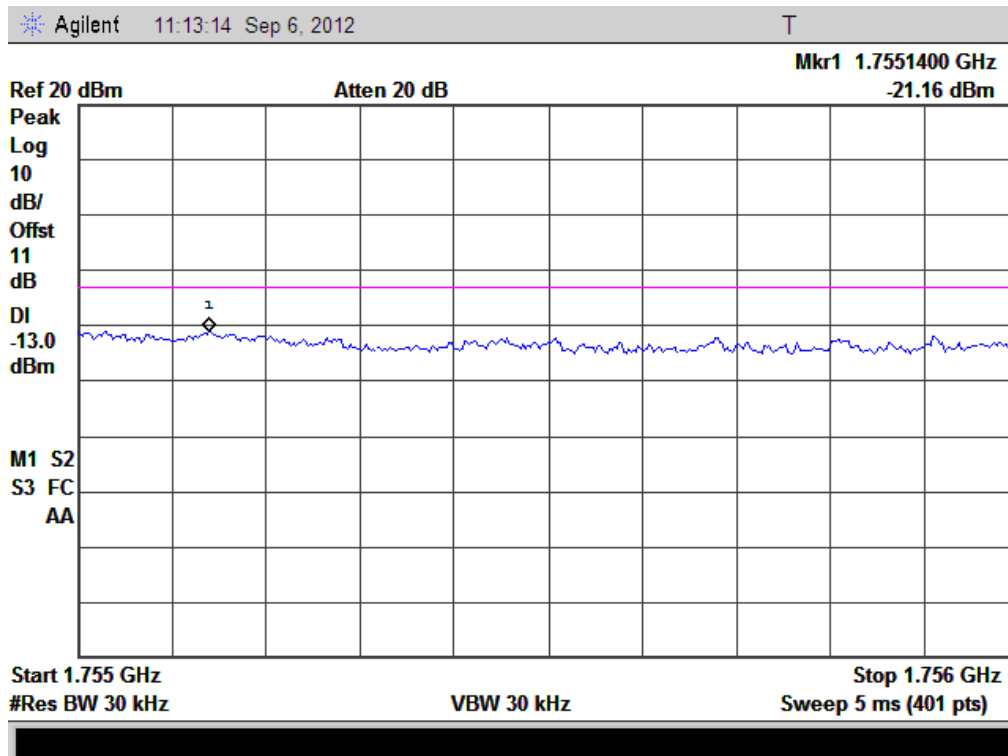
(Plot G: EDGE 1900 Channel = 512)



(Plot H: EDGE 1900 Channel = 810)



(Plot I: WCDMA 1700 Channel = 1312)



(Plot J: WCDMA 1700 Channel = 1513)

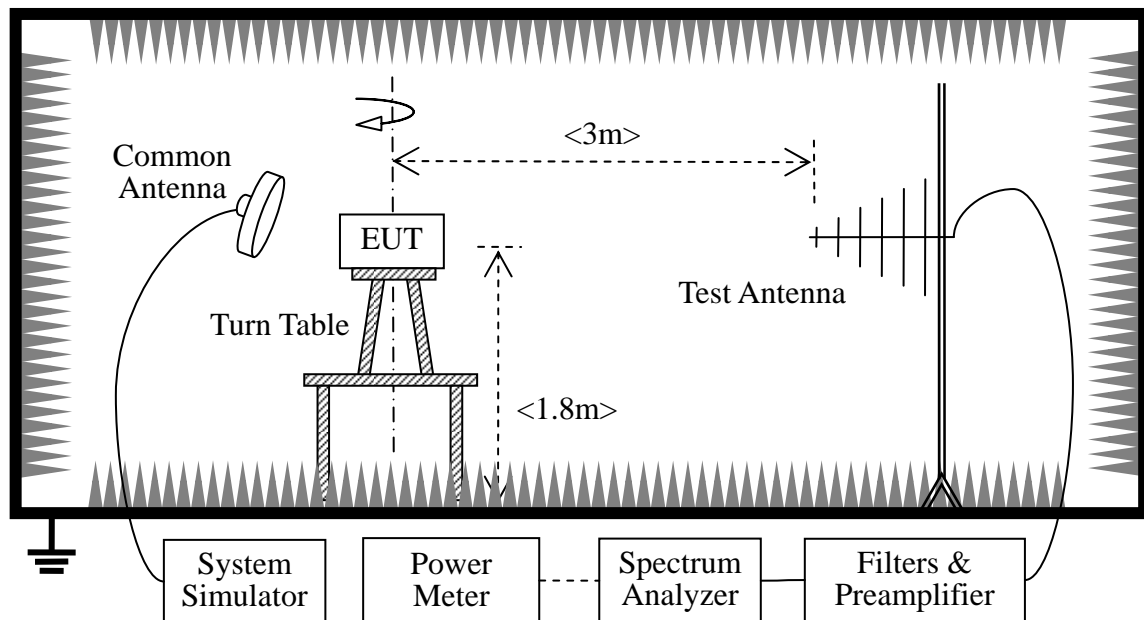
2.6 Transmitter Radiated Power (EIRP/ERP)

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	29.57	0.906	Plot A	38.5	7	PASS
	190	836.60	5	30.1	1.023				PASS
	251	848.80	5	29.2	0.832				PASS
GPRS 850MHz	128	824.20	5	26.57	0.454	Plot B ^{Note 1}	38.5	7	PASS
	190	836.60	5	27.28	0.535				PASS
	251	848.80	5	27.09	0.512				PASS
EGPRS 850MHz	128	824.20	5	32.09	1.618	Plot C ^{Note 1}	38.5	7	PASS
	190	836.60	5	31.15	1.303				PASS
	251	848.80	5	29.89	0.975				PASS

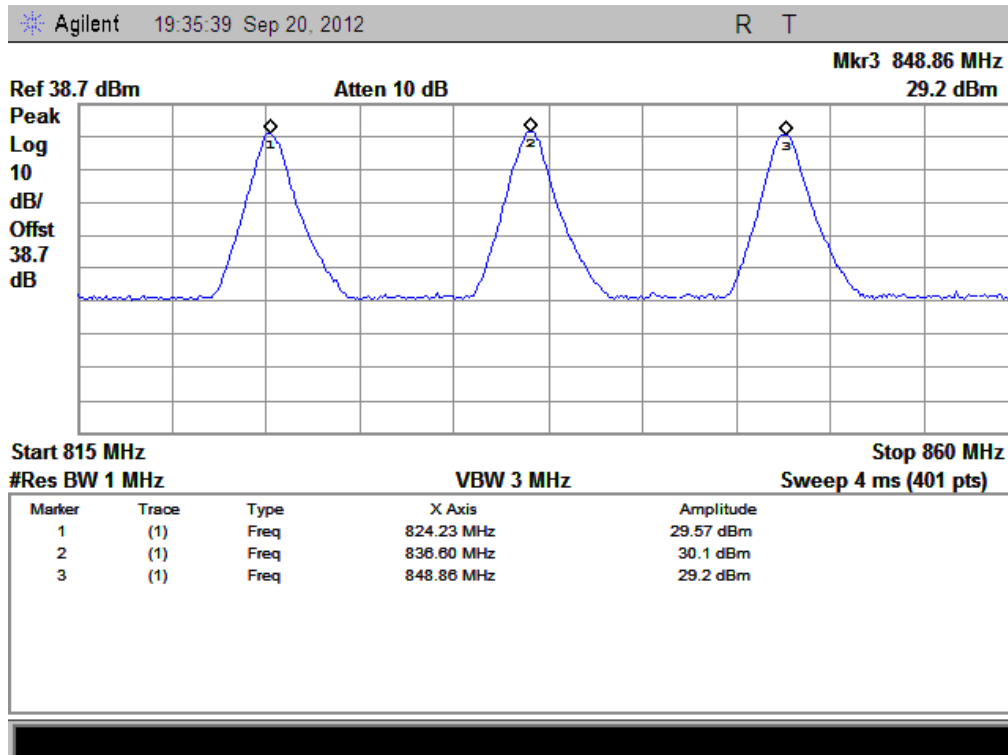
Band	Channel	Frequency (MHz)	PCL	Measured EIRP			Limit		Verdict
				dBm	W	Refer to Plot	dBm	W	
GSM 1900MHz	512	1850.2	0	28.1	0.646	Plot D	33	2	PASS
	661	1880.0	0	27.69	0.587				PASS
	810	1909.8	0	27.2	0.525				PASS
GPRS 1900MHz	512	1850.2	0	27.19	0.524	Plot E ^{Note 1}	33	2	PASS
	661	1880.0	0	27.41	0.551				PASS
	810	1909.8	0	27.06	0.508				PASS
EGPRS 1900MHz	512	1850.2	0	29.89	0.975	Plot F ^{Note 1}	33	2	PASS
	661	1880.0	0	27.9	0.617				PASS
	810	1909.8	0	29.88	0.973				PASS

2. WCDMA Model Test Verdict:

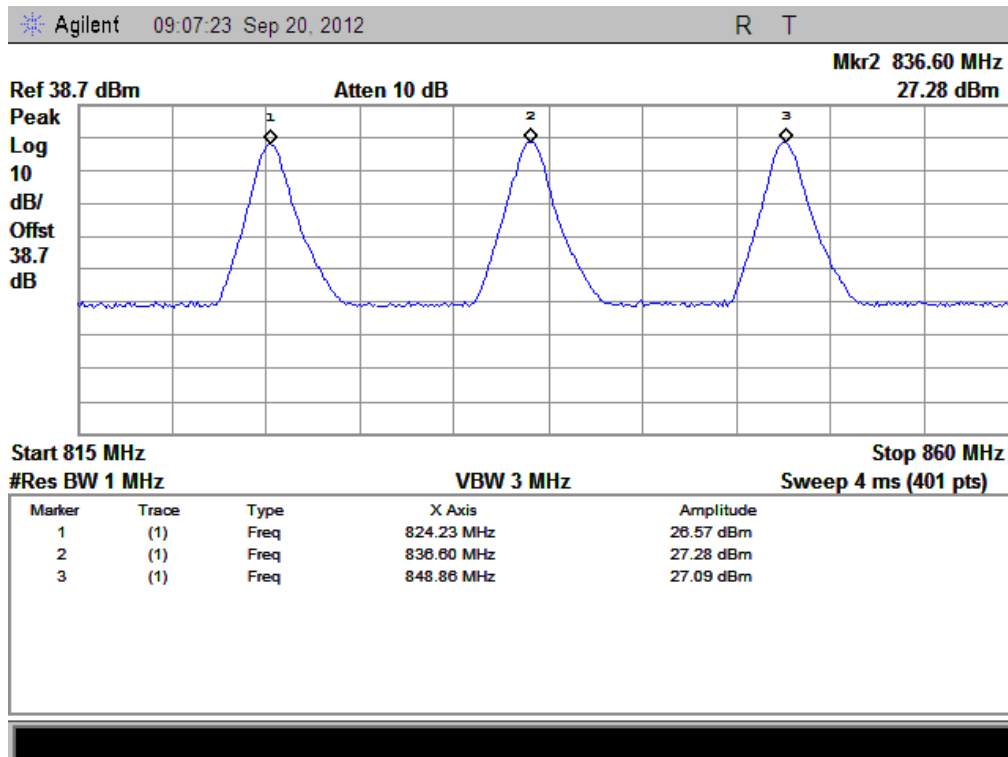
Band	Channel	Frequency (MHz)	Measured EIRP		Limit		Verdict
			dBm	W	dBm	W	
WCDMA 1700MHz	1213	1712.4	21.37	0.137088	33	2	PASS
	1412	1732.4	21.29	0.134586			PASS
	1513	1752.6	21.35	0.136458			PASS
HSDPA 1700MHz	1213	1712.4	21.22	0.132434	33	2	PASS
	1412	1732.4	21.19	0.131522			PASS
	1513	1752.6	21.27	0.133968			PASS

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

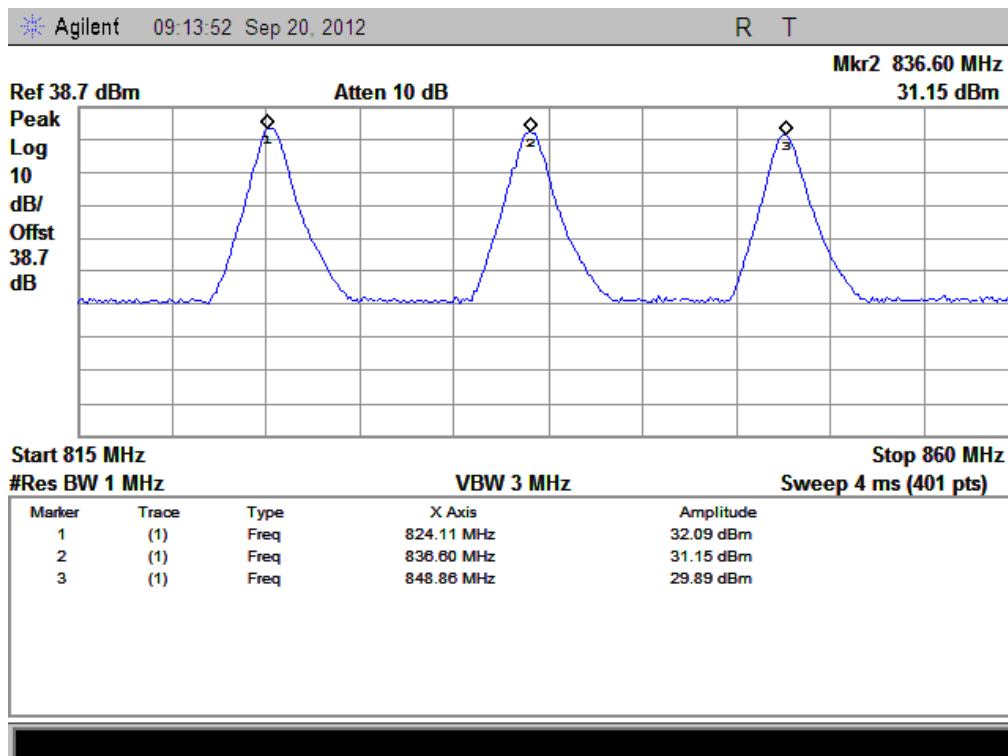
3. Test Plots:



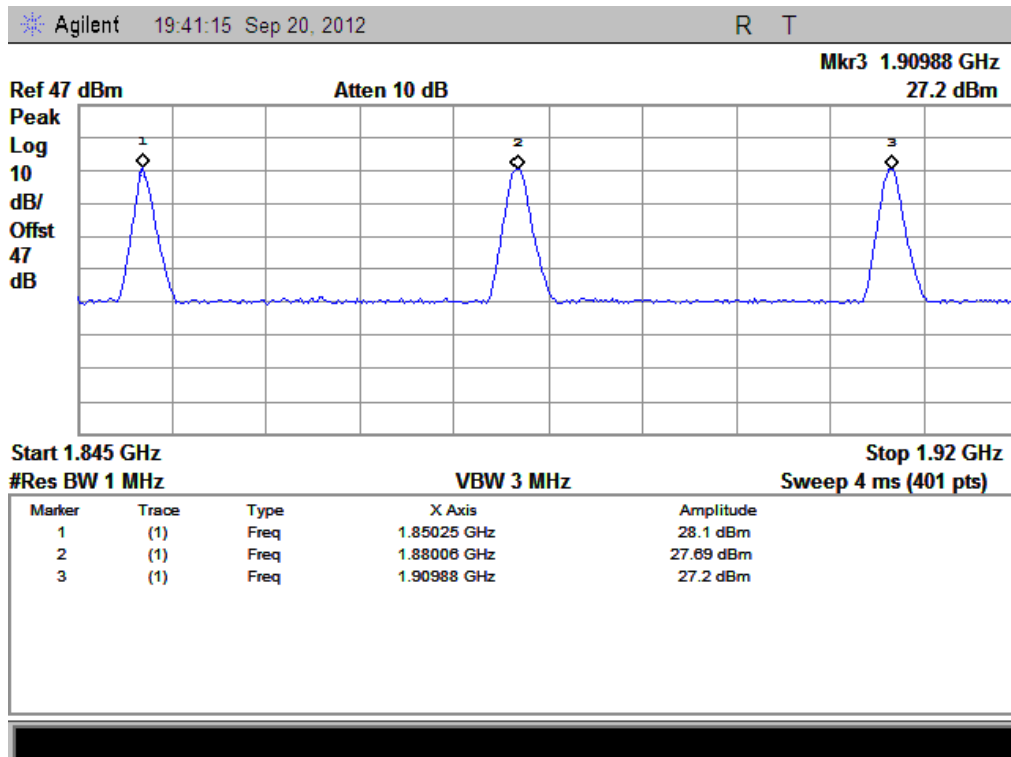
(Plot A: GSM 850MHz Channel = 128, 190, 251)



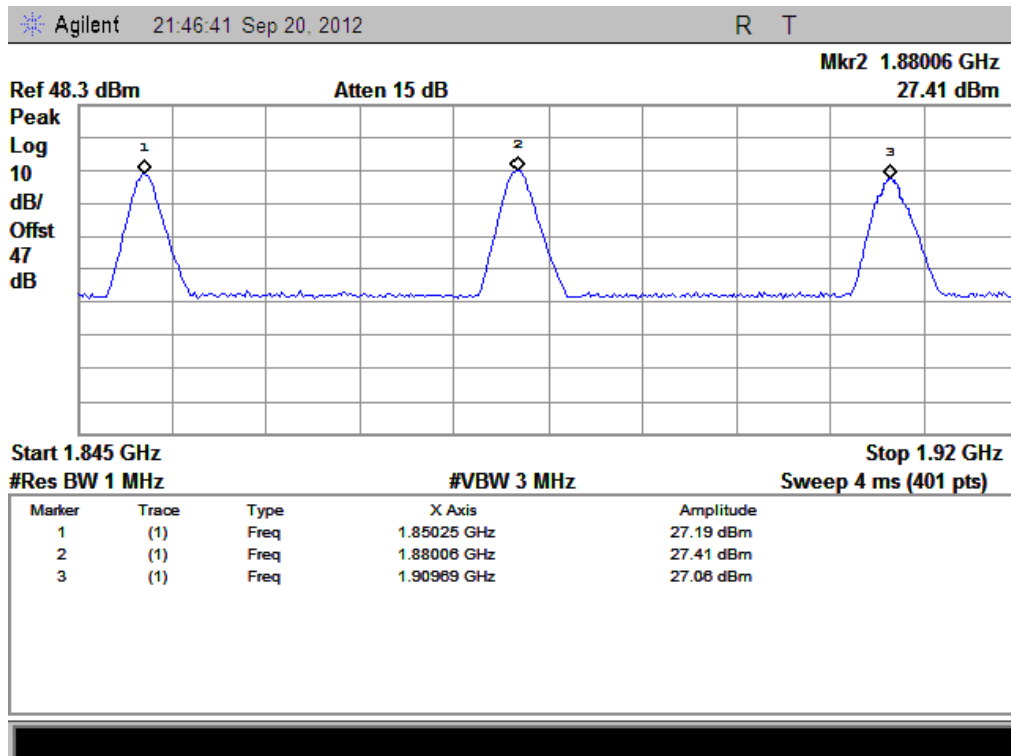
(Plot B: GPRS 850MHz Channel = 128, 190, 251)



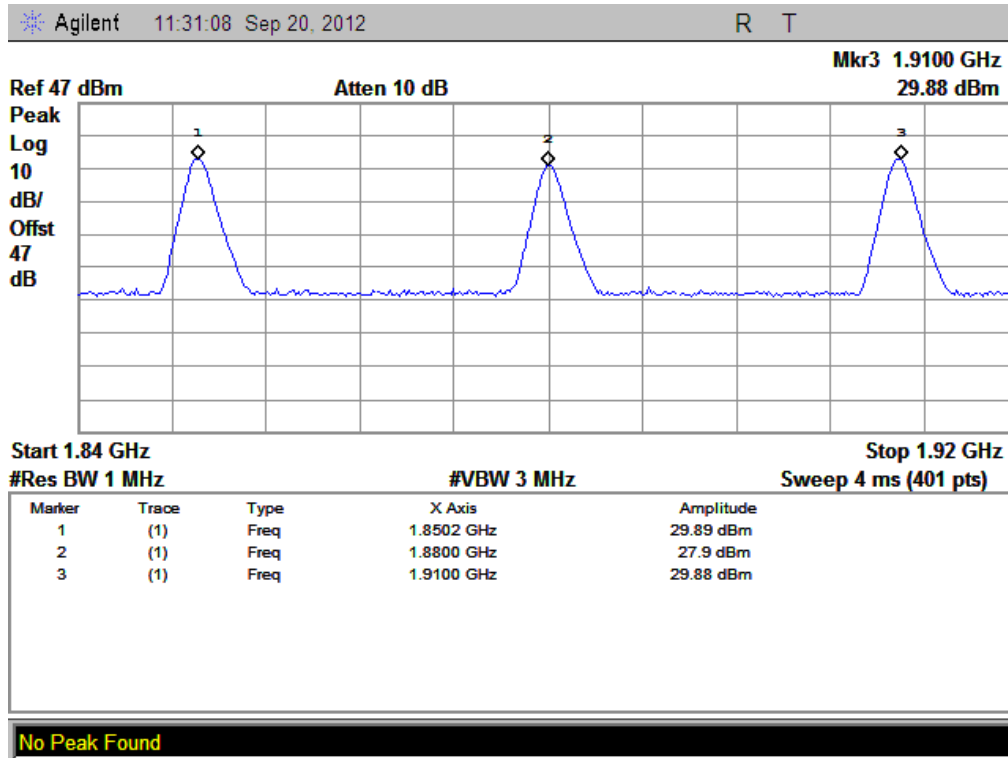
(Plot C: EDGE 850MHz Channel = 128, 190, 251)



(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.

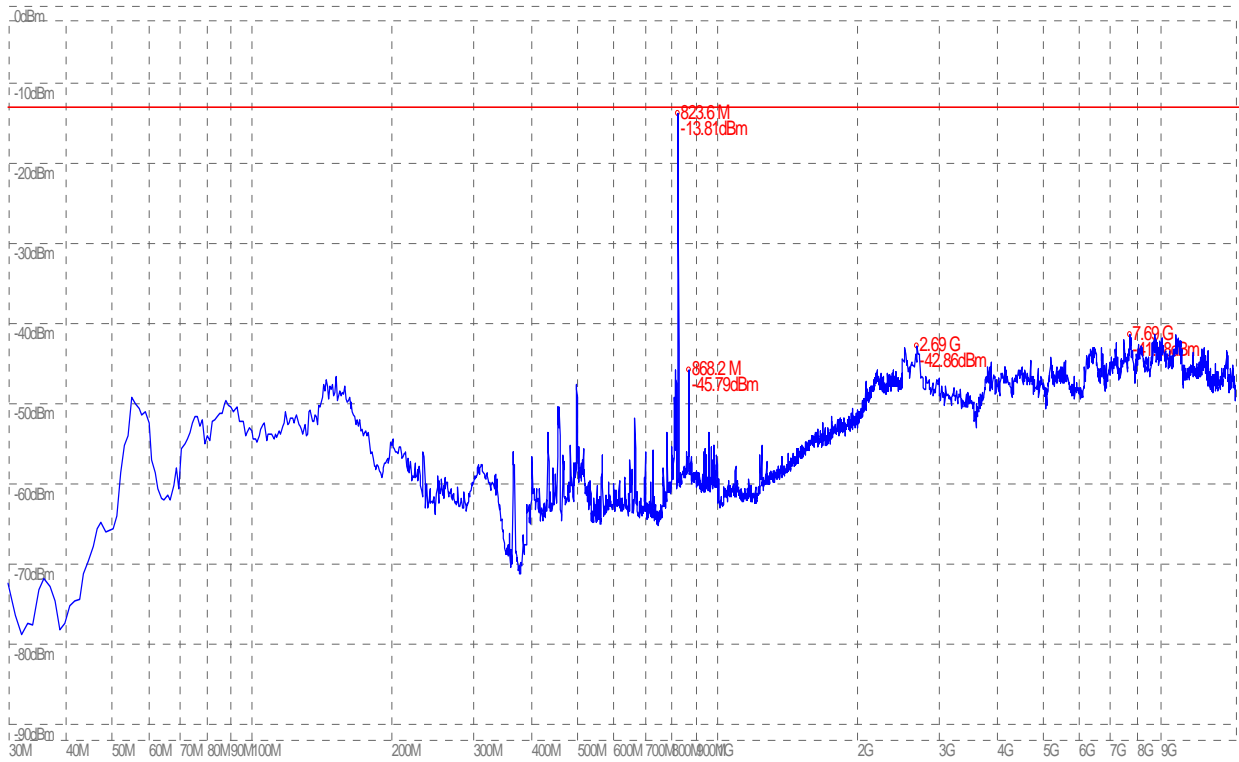
1. Test Verdict:

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 1700MHz	1213	1712.4	< -25	< -25	Plot E.1/E.2	-13	PASS
	1412	1732.4	< -25	< -25	Plot E.3/E.4		PASS
	1513	1752.6	< -25	< -25	Plot E.5/E.6		PASS

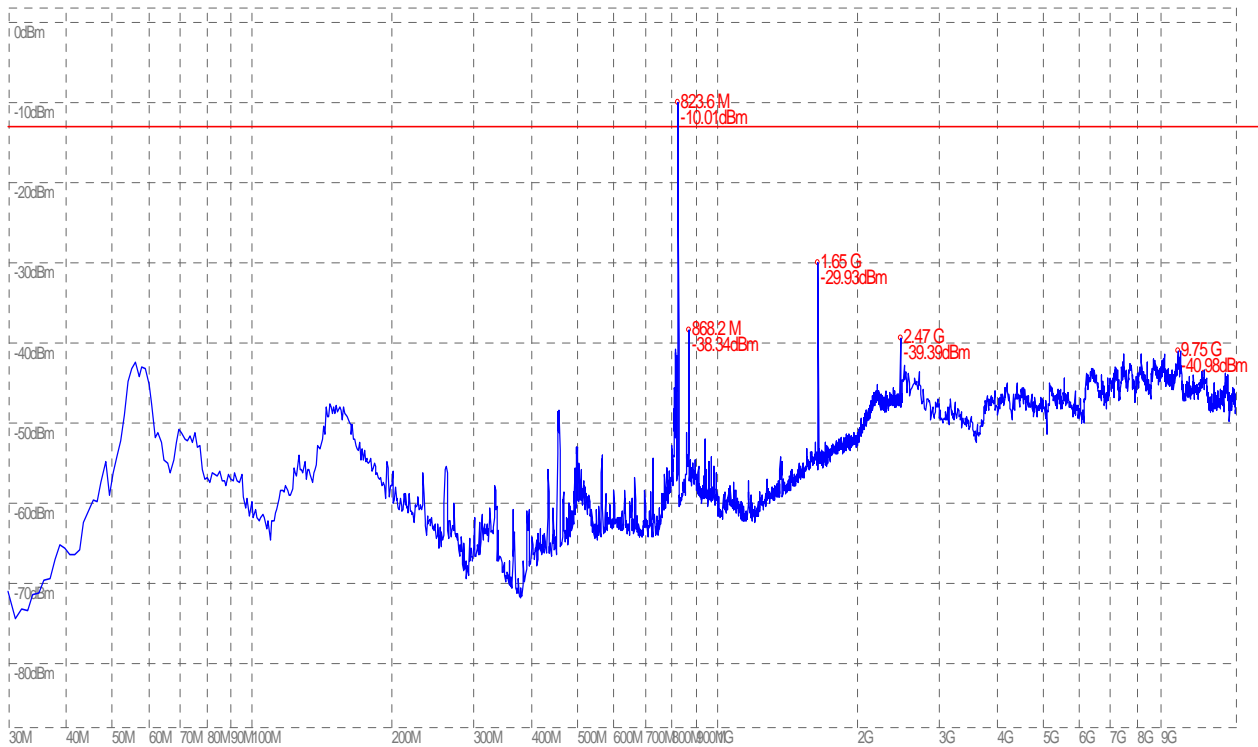
2. Test Plots for the Whole Measurement Frequency Range:

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

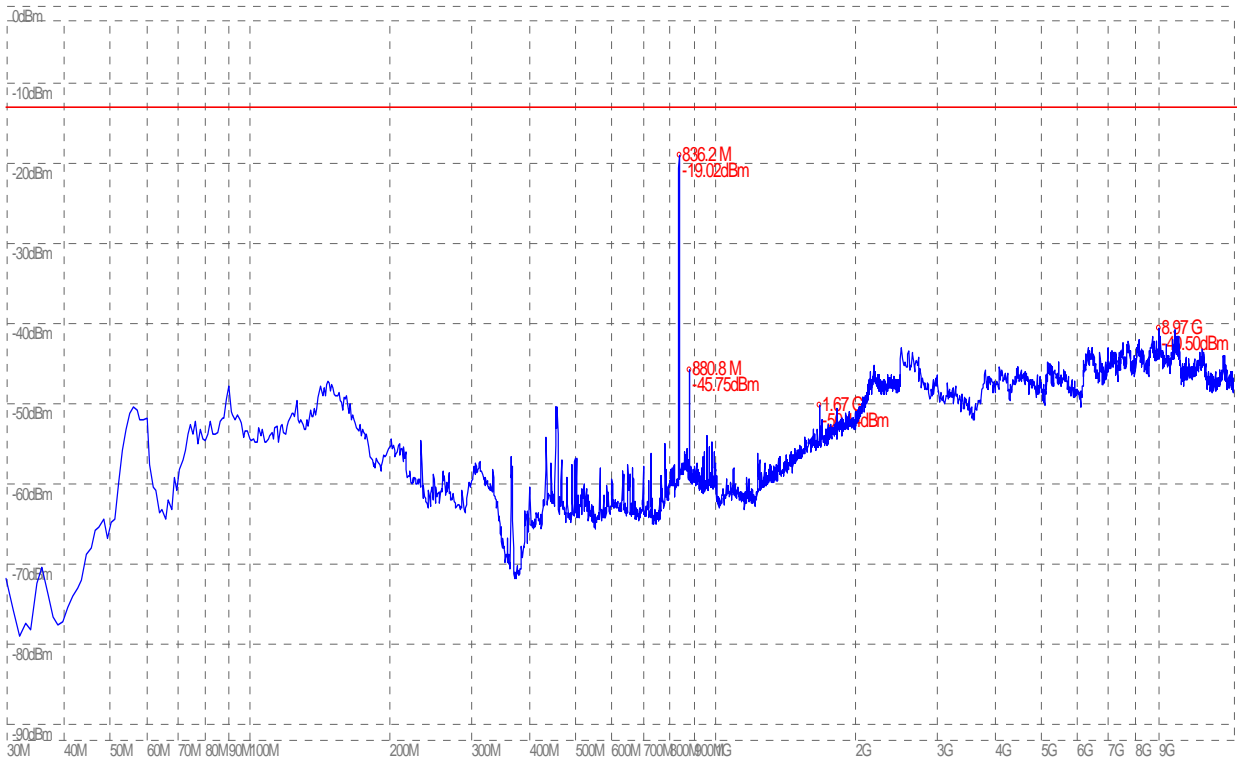
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.



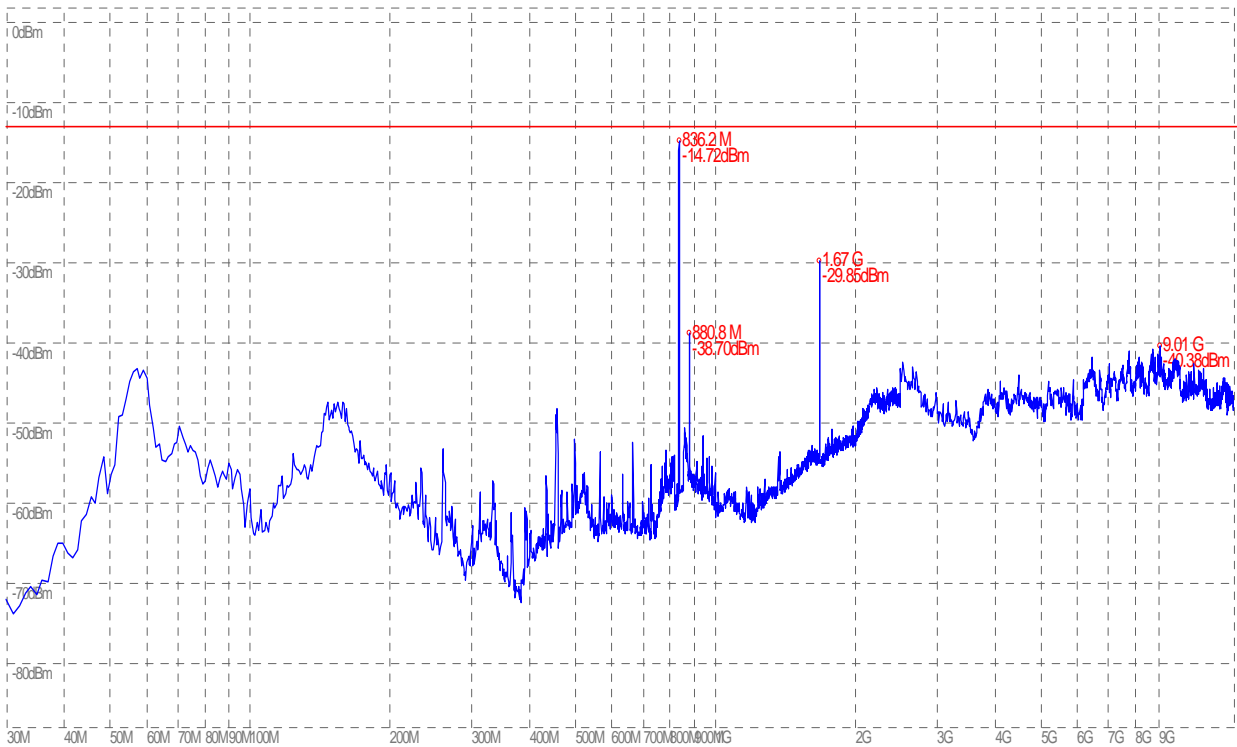
(Plot A.1: GSM 850MHz Channel = 128, Test Antenna Horizontal)



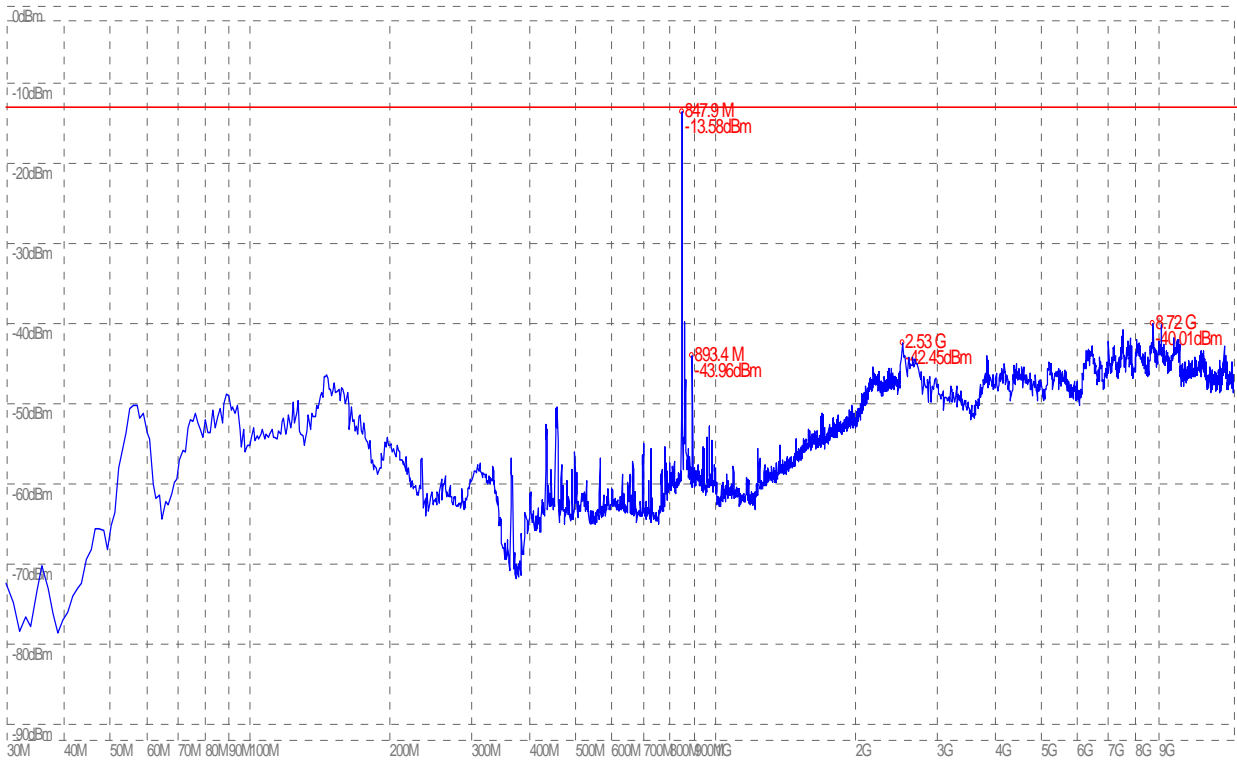
(Plot A.2: GSM 850MHz Channel = 128, Test Antenna Vertical)



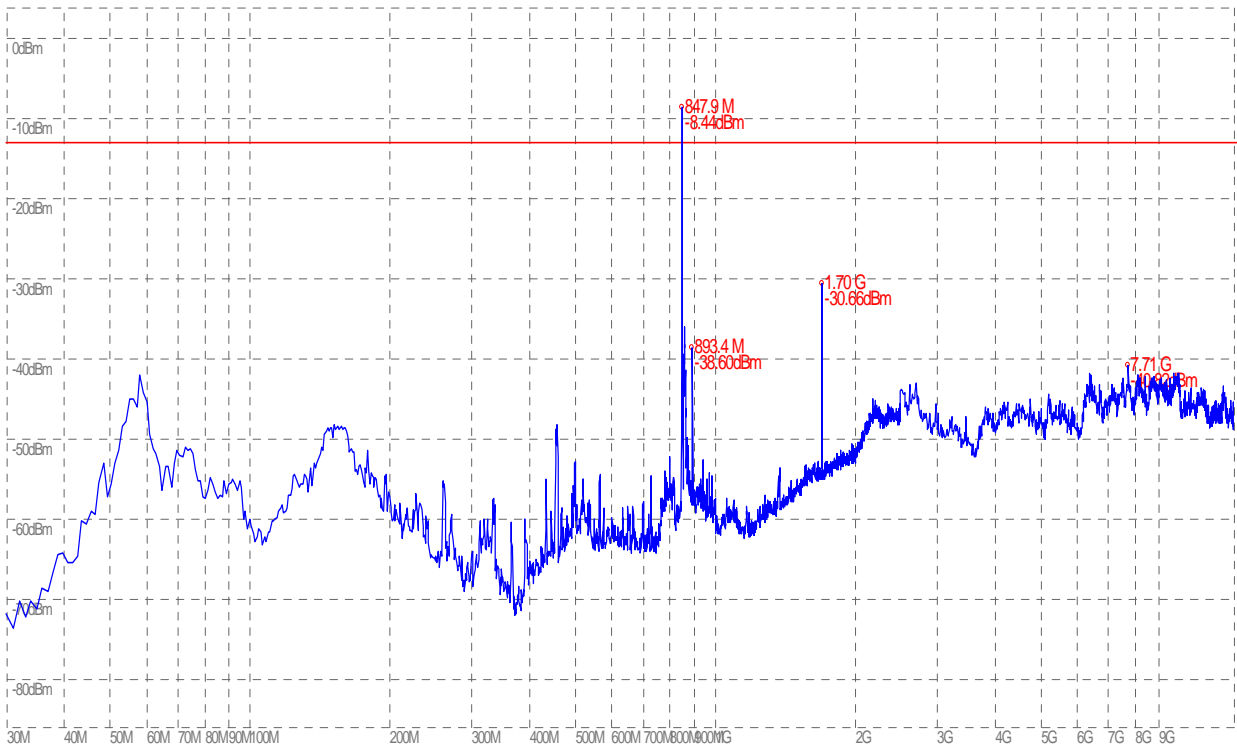
(Plot A.3: GSM 850MHz Channel = 190, Test Antenna Horizontal)



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



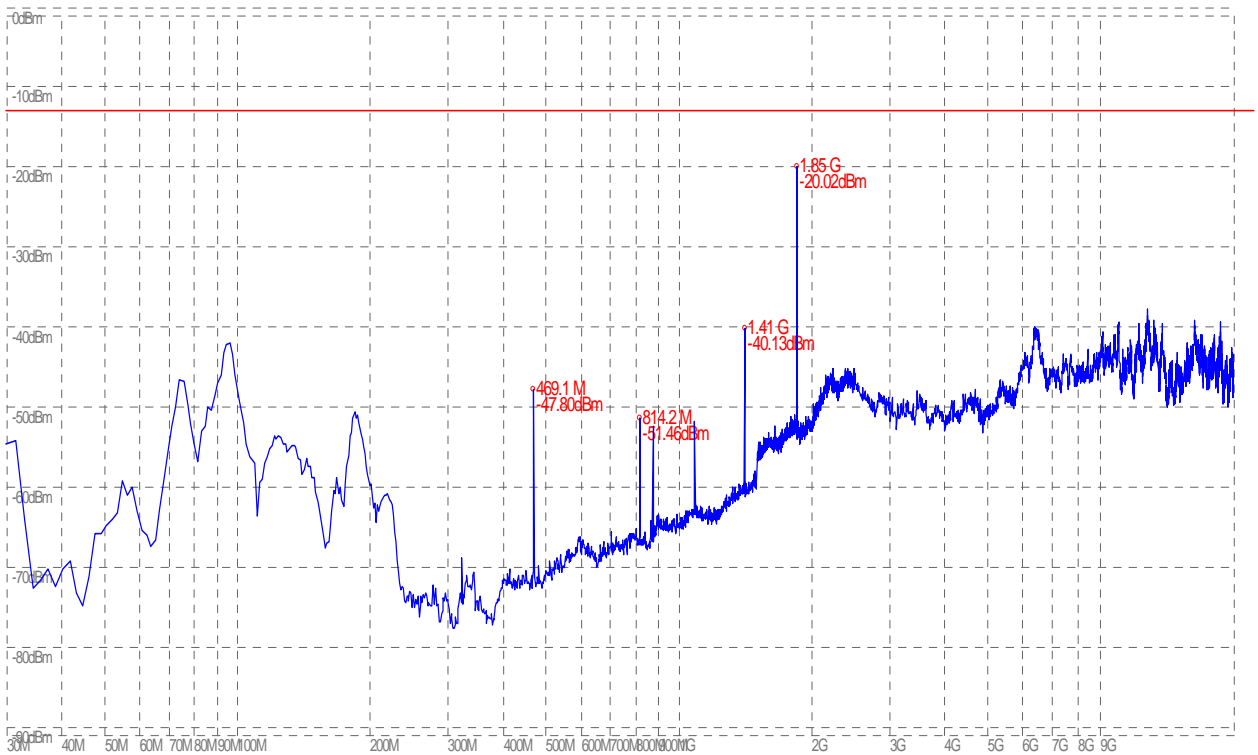
(Plot A.5: GSM 850MHz Channel = 251, Test Antenna Horizontal)



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



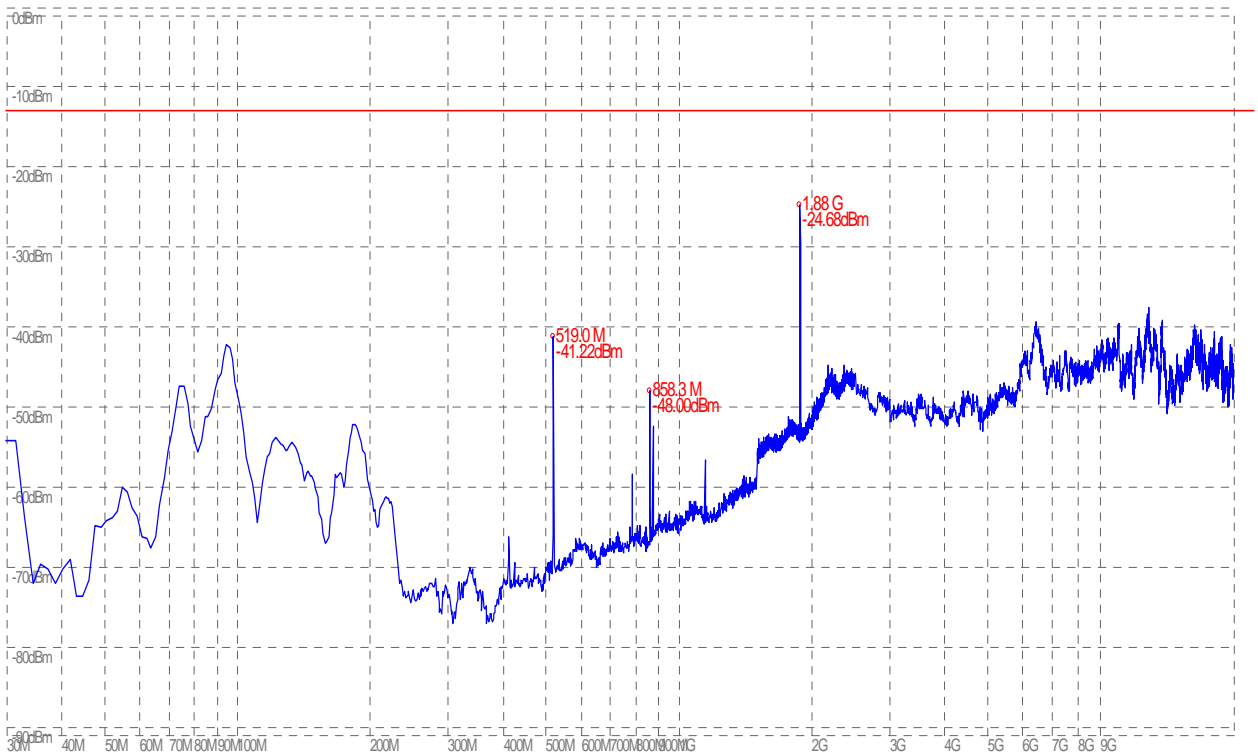
(Plot B.1: GSM 1900MHz Channel = 512, Test Antenna Horizontal)



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



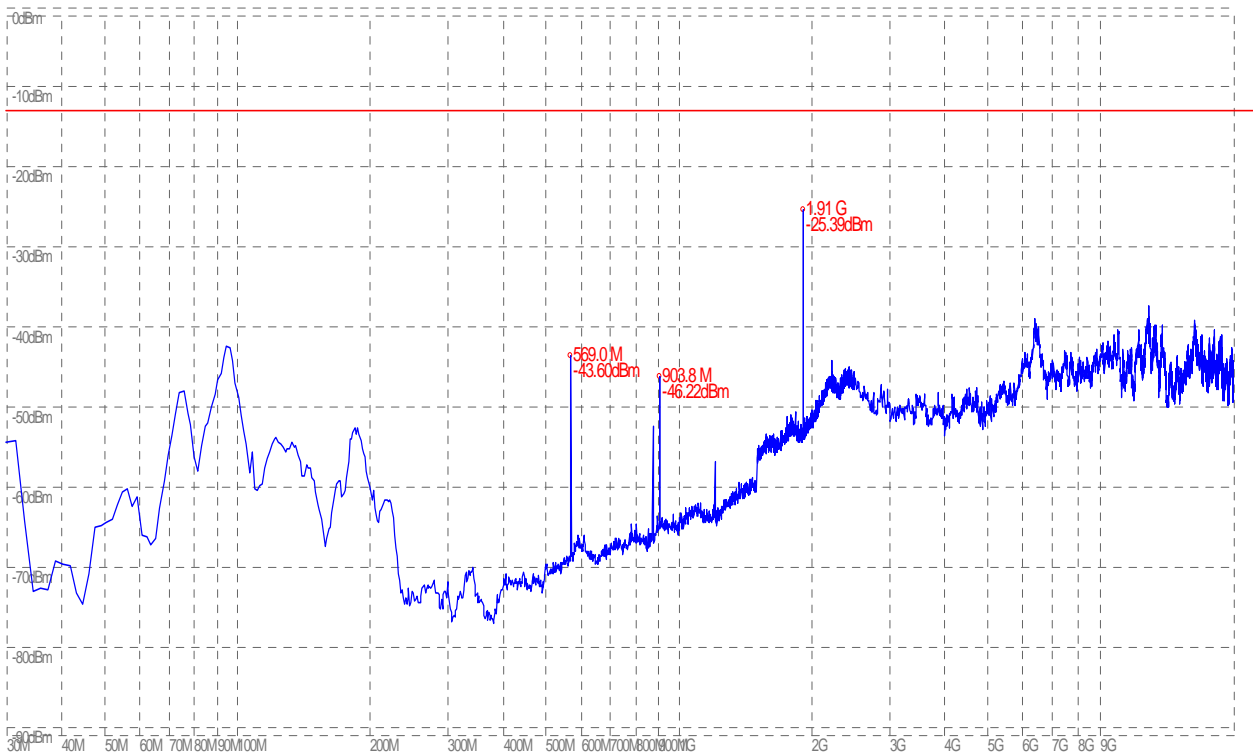
(Plot B.3: GSM 1900MHz Channel = 661, Test Antenna Horizontal)



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



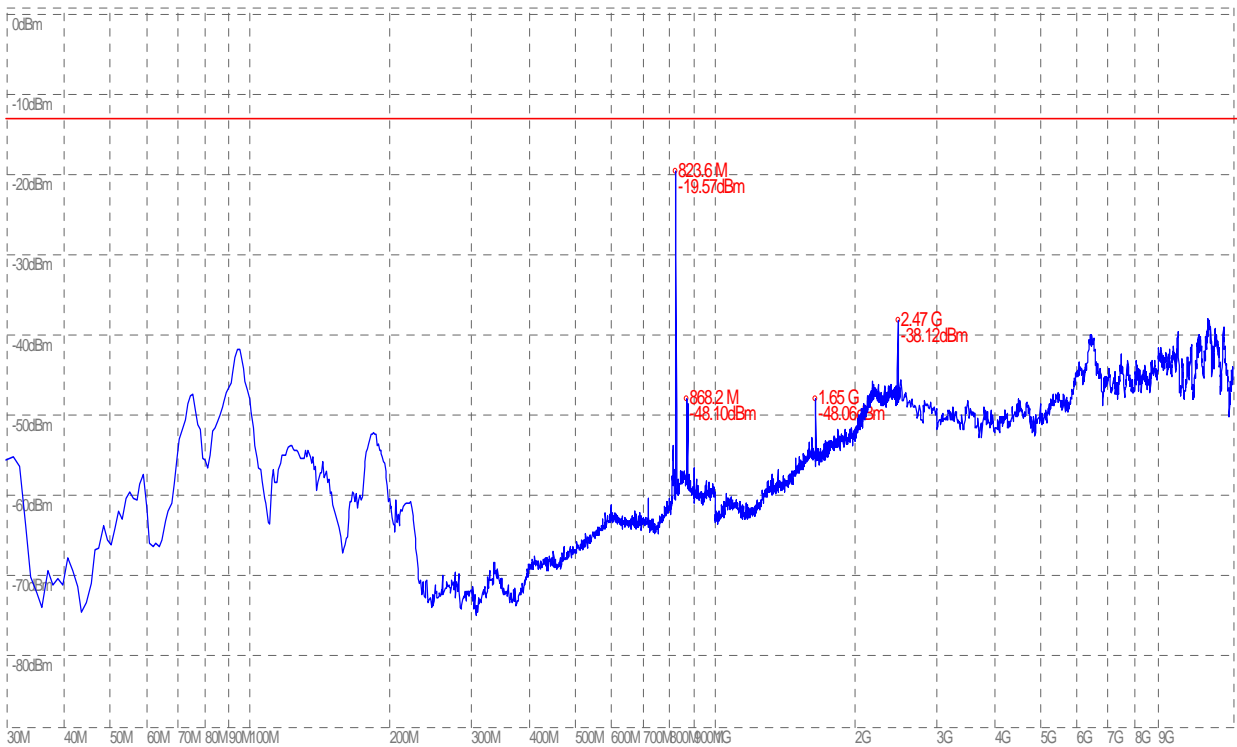
(Plot B.5: GSM 1900MHz Channel = 810, Test Antenna Horizontal)



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



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



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



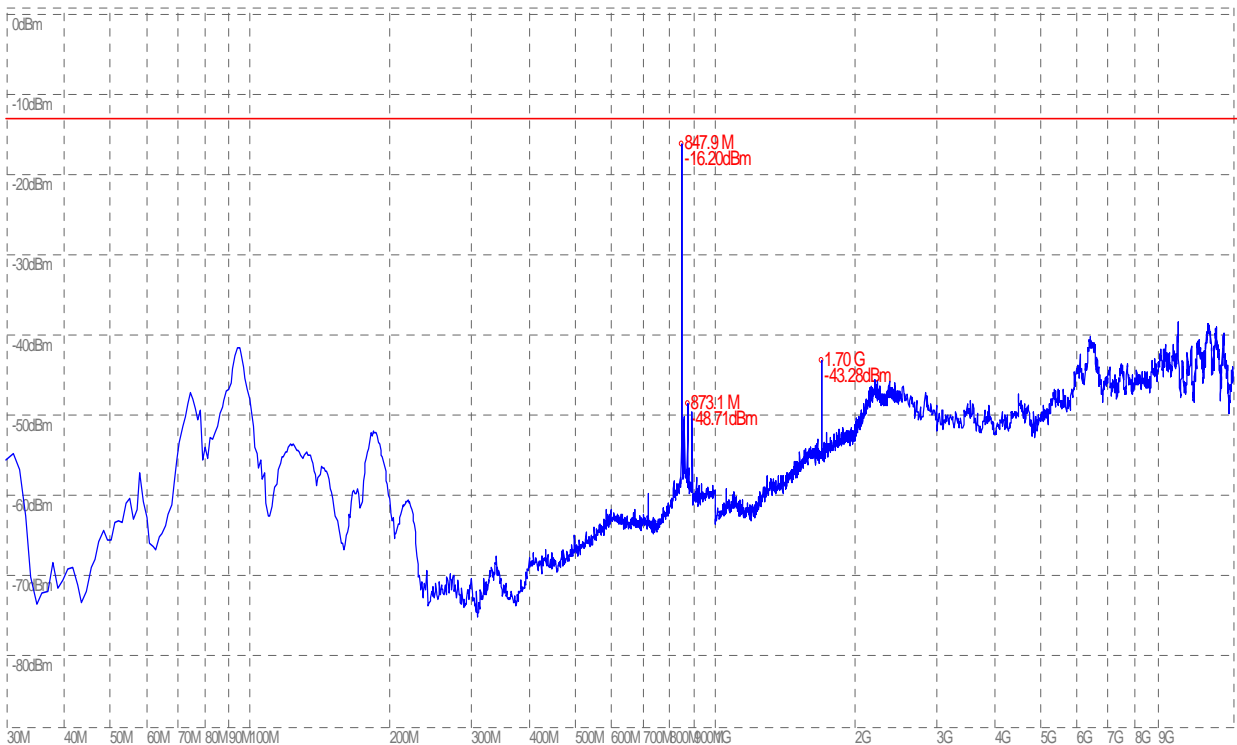
(Plot C.3: EGPRS 850MHz Channel = 190, Test Antenna Horizontal)



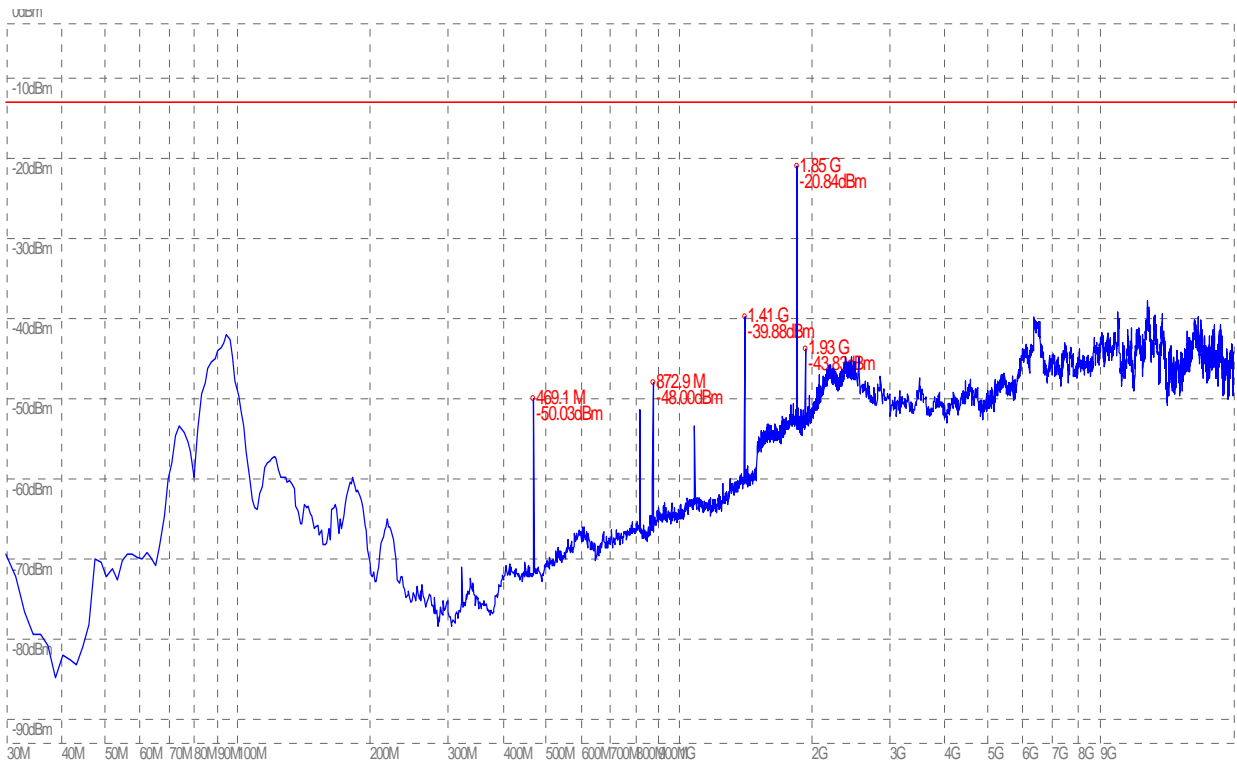
(Plot C.4: EGPRS 850MHz Channel = 190, Test Antenna Vertical)



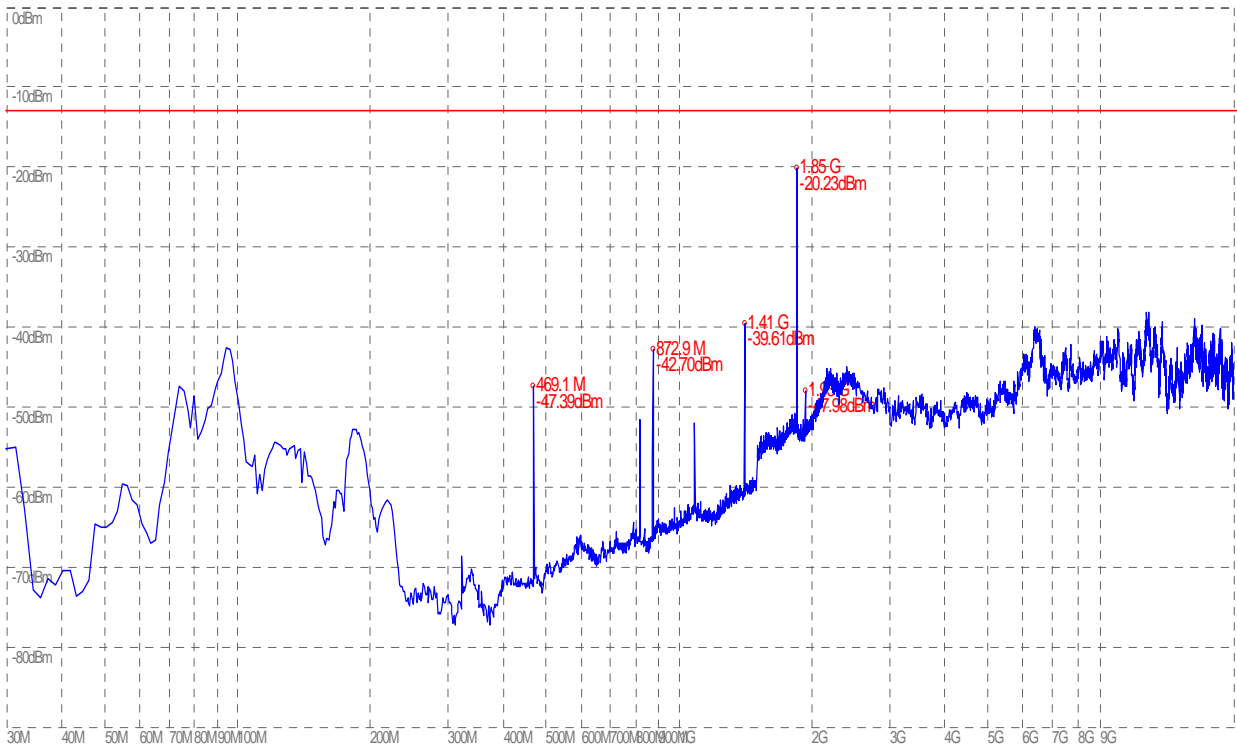
(Plot C.5: EGPRS 850MHz Channel = 251, Test Antenna Horizontal)



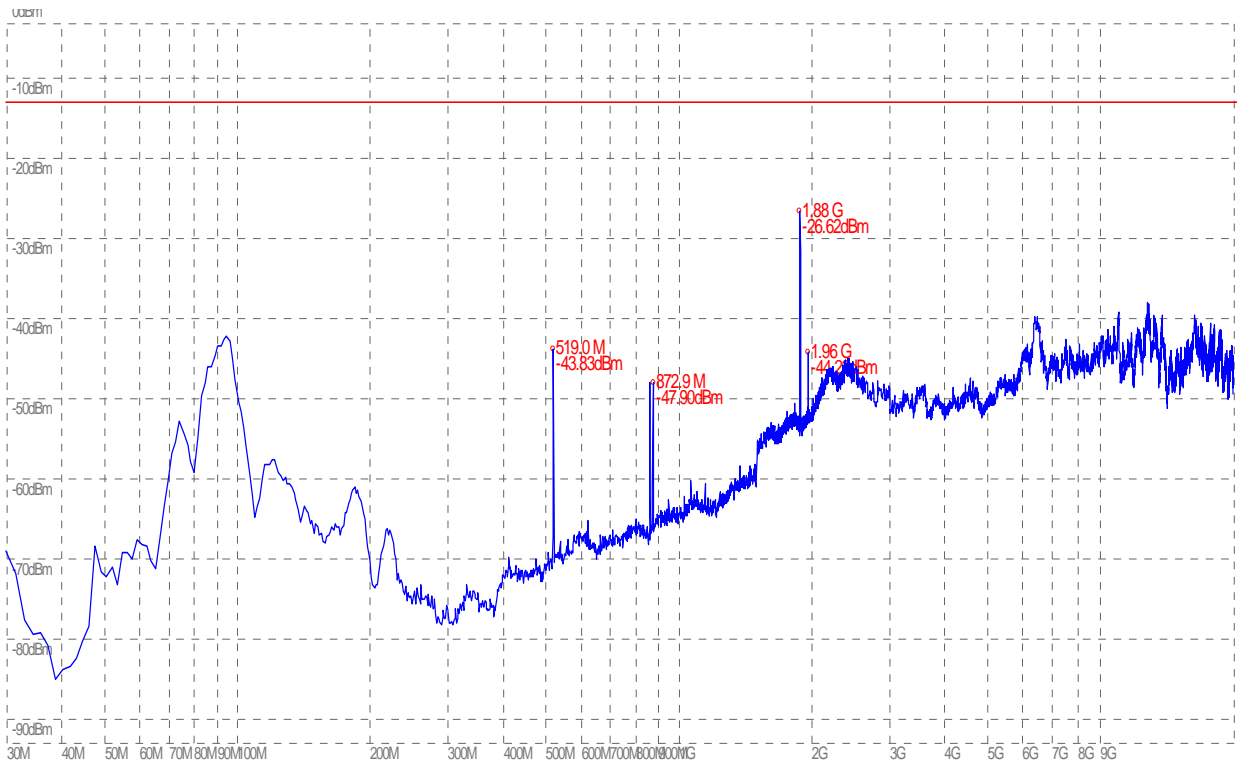
(Plot C.6: EGPRS 850MHz Channel = 251, Test Antenna Vertical)



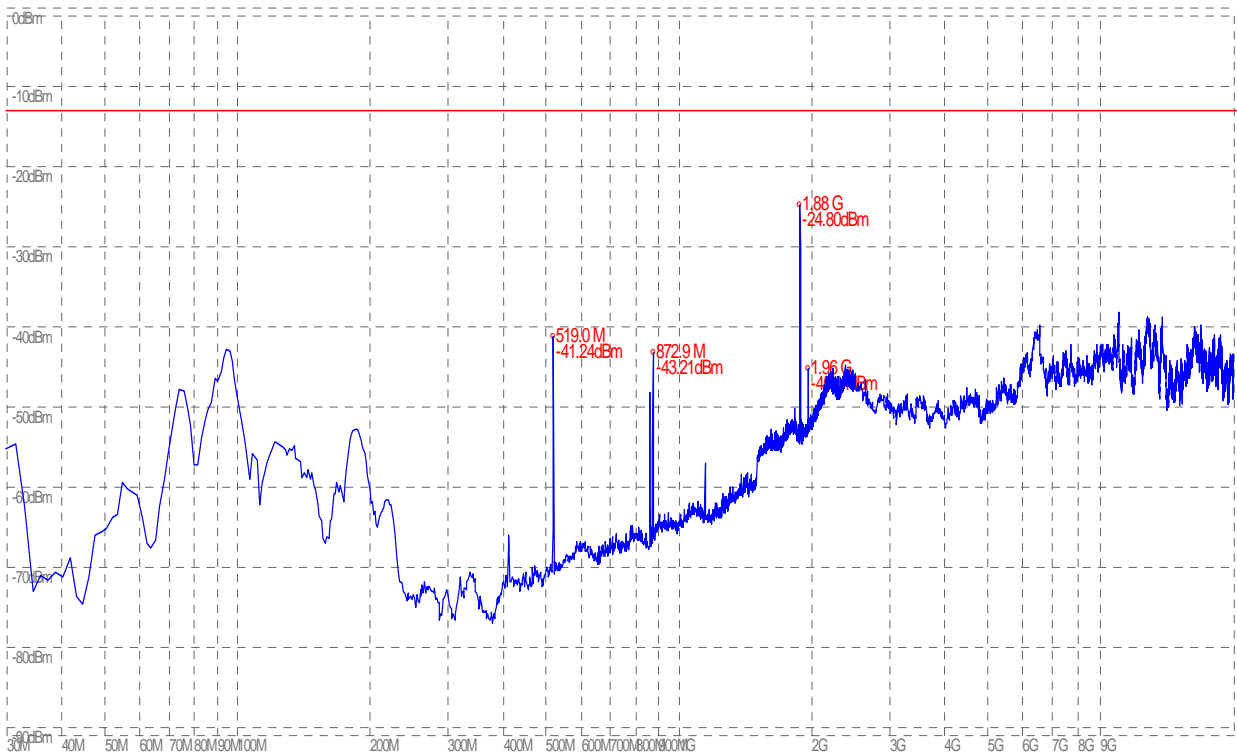
(Plot D.1: EGPRS 1900MHz Channel = 512, Test Antenna Horizontal)



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



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



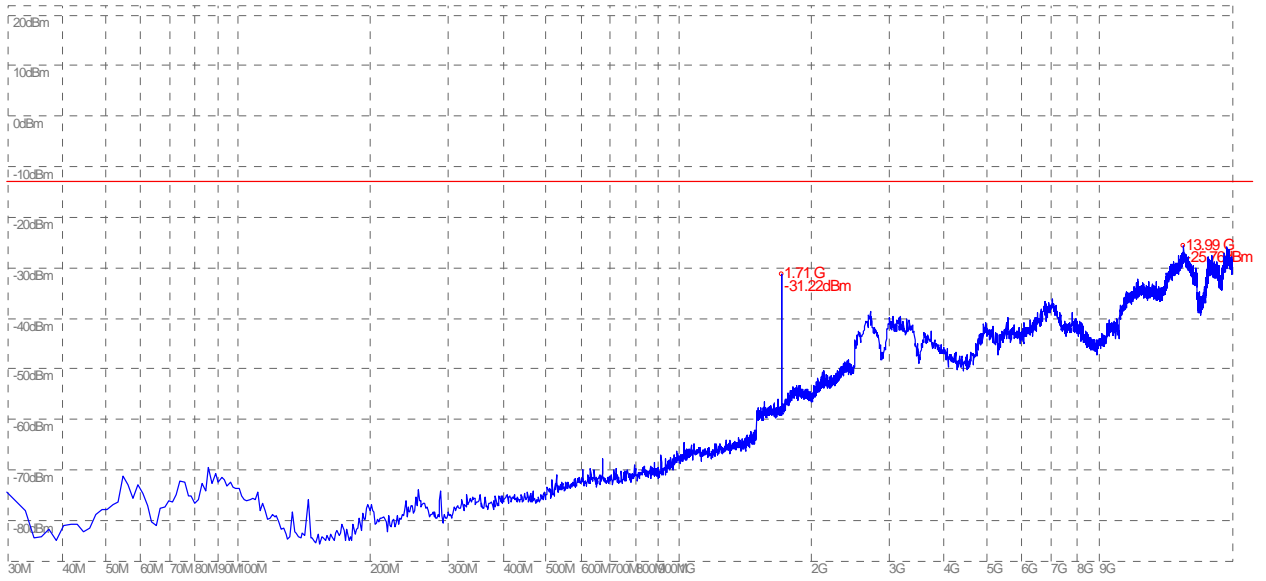
(Plot D.4: EGPRS 1900MHz Channel = 661, Test Antenna Vertical)



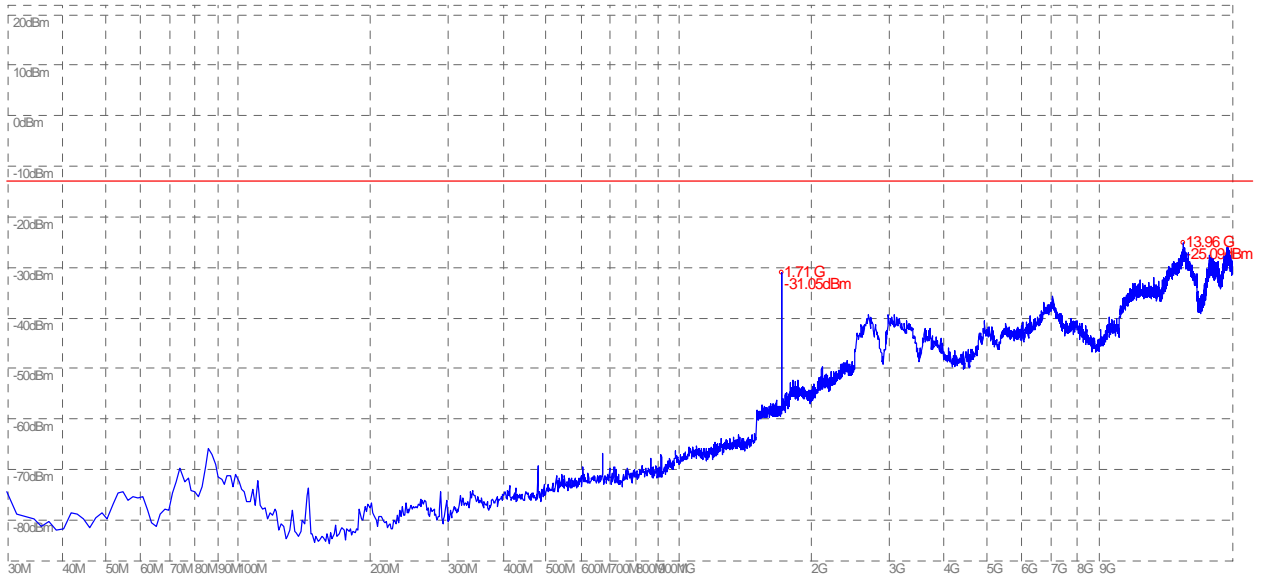
(Plot D.5: EGPRS 1900MHz Channel = 810, Test Antenna Horizontal)



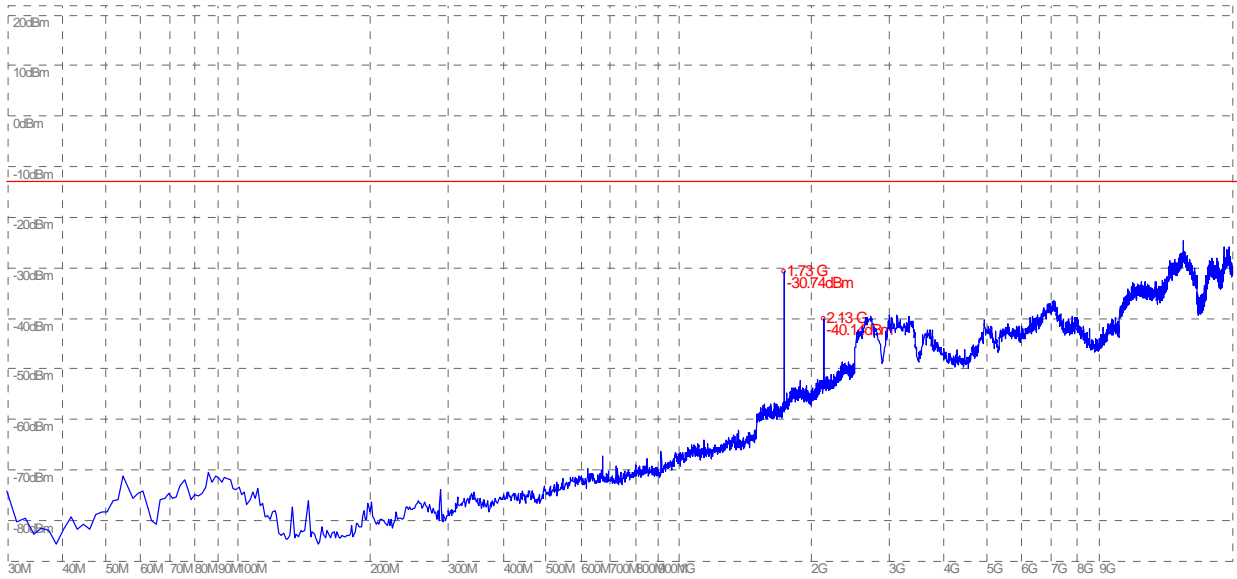
(Plot D.6: EGPRS 1900MHz Channel = 810, Test Antenna Vertical)



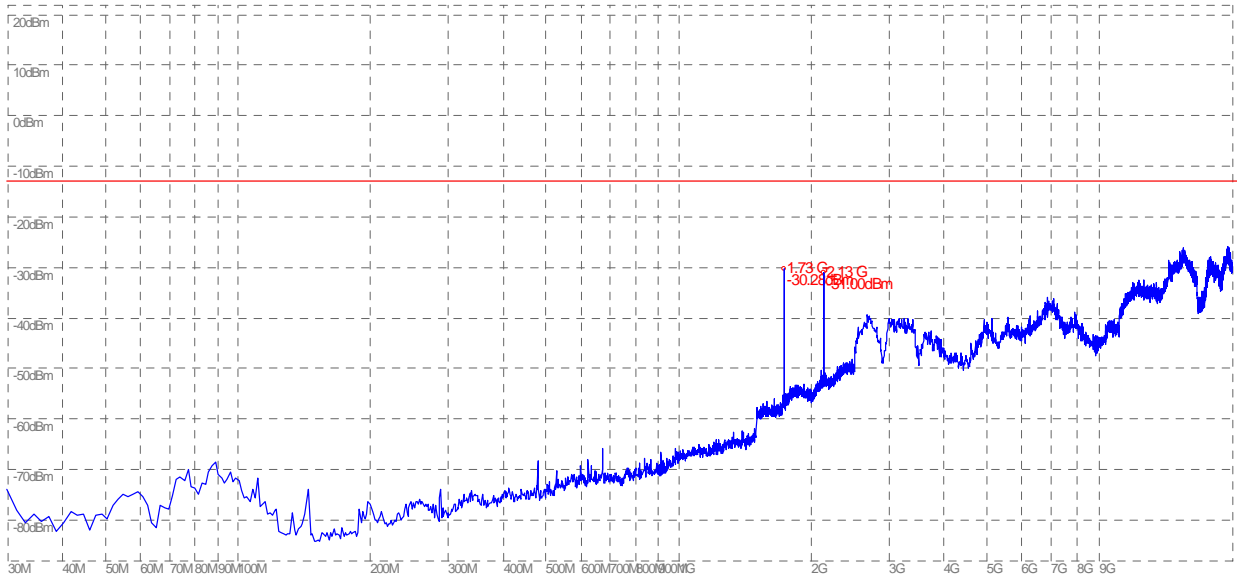
(Plot E.1: WCDMA 1700MHz Channel = 1312, Test Antenna Horizontal)



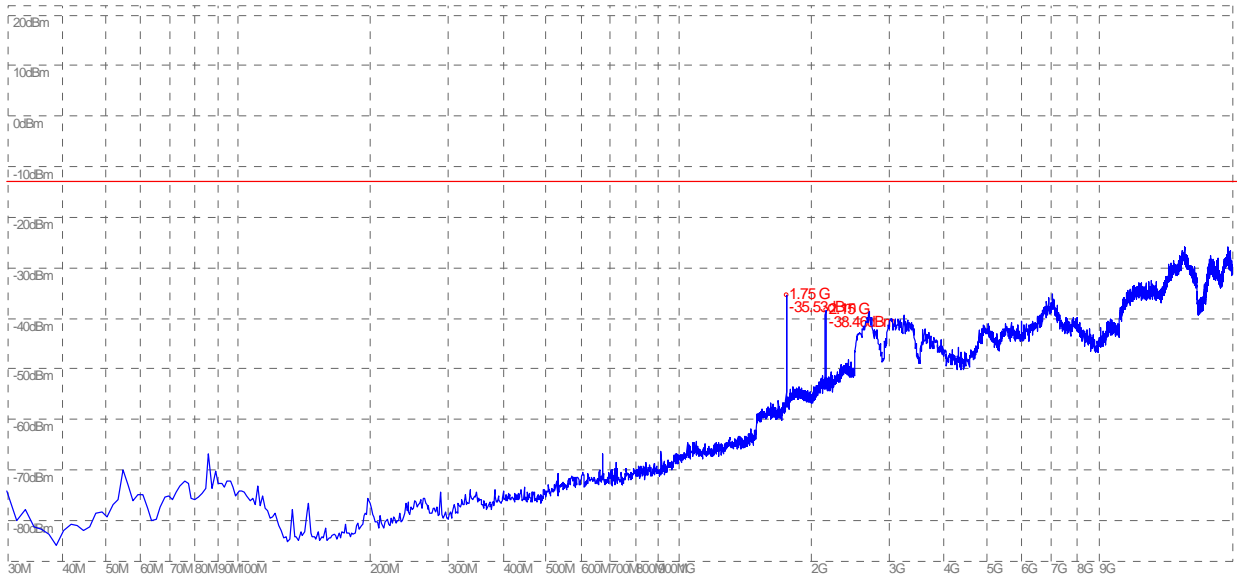
(Plot E.2: WCDMA 1700MHz Channel = 1312, Test Antenna Vertical)



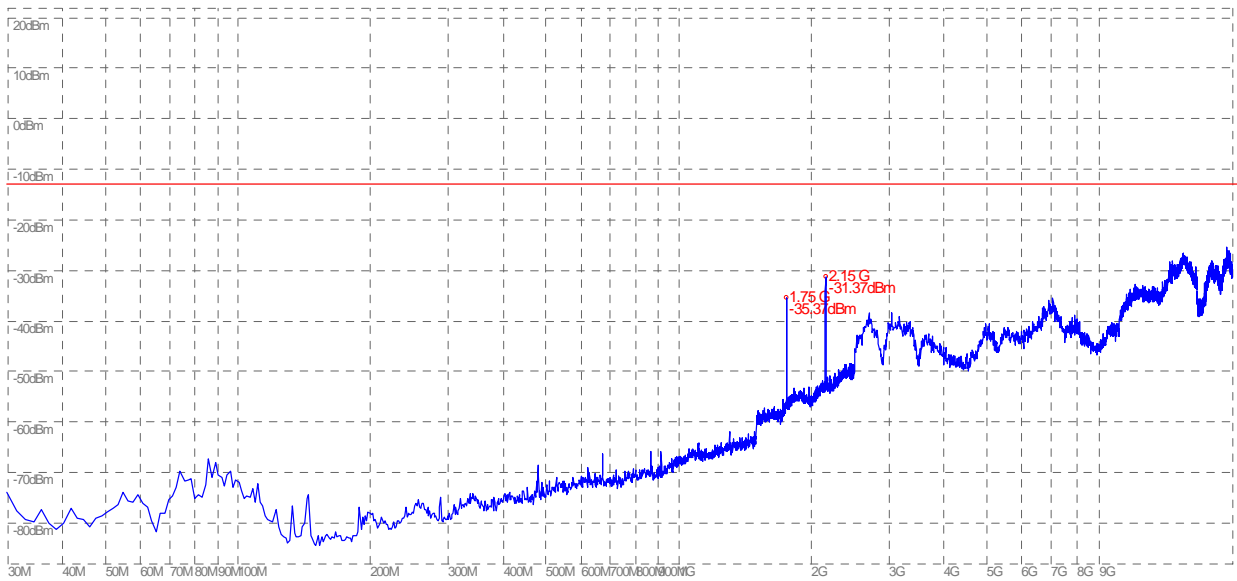
(Plot E.3: WCDMA 1700MHz Channel = 1412, Test Antenna Horizontal)



(Plot E.4: WCDMA 1700MHz Channel = 1412, Test Antenna Vertical)



(Plot E.5: WCDMA 1700MHz Channel = 1513, Test Antenna Horizontal)



(Plot E.6: WCDMA 1700MHz Channel = 1513, Test Antenna Vertical)

** END OF REPORT **