



47 CFR PART 22 SUBPART H & 24 SUBPART E

TEST REPORT

of

EDGE Quadband with full QWERTY Keypad Mobile Phone/i720

Model Name: I720
Brand Name: Verykool
Report No.: SH09080017R01
FCC ID: WAI720

prepared for

Verykool USA Inc.
4350 Executive Dr #100, San Diego, CA 92121, USA



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Bluetooth®

CTIA

Authorized Test Lab

LAB CODE 20081223-00

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1. TEST CERTIFICATION

Equipment under Test: EDGE Quadband with full QWERTY Keypad Mobile Phone/i720

Brand Name: Verykool

Model Name: I720

FCC ID: WAI720

Applicant: Verykool USA Inc.

4350 Executive Dr. #100, San Diego, CA 92121, USA

Manufacturer: Verykool USA Inc.

4350 Executive Dr. #100, San Diego, CA 92121, USA

Test Standards: 47 CFR Part 2

47 CFR Part 22 Subpart H

47 CFR Part 24 Subpart E

Test Date(s): Nov 20, 2009 – Nov 24, 2009

Test Result: PASS

* We Hereby Certify That:

The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: Zhang Wenjie Dated: 2010.2.10
Zhang Wenjie
Reviewed by: Zhang Jun Dated: 2010.2.10
Zhang Jun
Approved by: Su Feng Dated: 2010.2.10
Su Feng



2. GENERAL INFORMATION

2.1 EUT Description

EUT Type: EDGE Quadband with full QWERTY Keypad Mobile Phone/i720
 Model Name: I720
 Serial No.....: (n.a)
 IMEI: 0000000000000000

 Hardware Version: W34ms00b1
 Software Version: T081105
 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)

 Modulation Type.....: GMSK
 Power Supply: Battery
 Brand name: Verykool
 Mode Name.: A0381
 Capacitance: 1030mAh
 Rated voltage: 3.7V
 Charge limited: 4.2V
 Manufacturer: SHENZHEN BAK BATTERY CO.,LTD
 BAK INDUSTRIAL ZONE KUICHONG
 ST LONGGANG DISTRICT
 SHENZHEN GUANGDONG CHINA

 Ancillary Equipments.....: AC Adapter (Charger for Battery)
 Brand name: Verykool
 Mode Name.: P-032B
 Rated Input: AC 100/240V,200mA,50/60Hz
 Rated Output: DC 5V,500mA,Max 2.5W
 Manufacturer: something high electroc(xiamen)co.,ltd
 No. 421, Xiahushe, Houken Area,Huli
 Industrial Park,Xiamen, PRC.

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

2.2 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 (10-1-05 Edition)	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 22 (10-1-05 Edition)	Public Mobile Services
3	47 CFR Part 24 (10-1-05 Edition)	Personal Communications Services

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

No.	Section	Description	Result
1	2.106 22.905 24.229	Frequencies	PASS
2	2.1046	Conducted RF Output Power	PASS
3	2.1049	20dB Occupied Bandwidth	PASS
4	2.1055 22.355 24.235	Frequency Stability	PASS
5	2.1051 2.1057 22.917 24.238	Conducted Out of Band Emissions	PASS
6	2.1051 2.1057 22.917 24.238	Band Edge	PASS
7	22.913 24.232	Transmitter Radiated Power (EIPR/ERP)	PASS
8	2.1053 2.1057 22.917 24.238	Radiated Out of Band Emissions	PASS

2.3 Facilities and Accreditations

2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center Morlab Laboratory is a testing organization accredited by China National Accreditation Board for Laboratories (CNAL) according to ISO/IEC 17025. The accreditation certificate number is L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 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.

2.3.2 Test Environment Conditions

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

Temperature (°C):	20 - 25
Relative Humidity (%):	40 - 60
Atmospheric Pressure (kPa):	96

3. 47 CFR PART 2, PART 22H & 24E REQUIREMENTS

3.1 Frequencies

3.1.1 Requirement

According to FCC section 22.905, the frequency blocks assignment for the cellular radiotelephone service is listed as below:

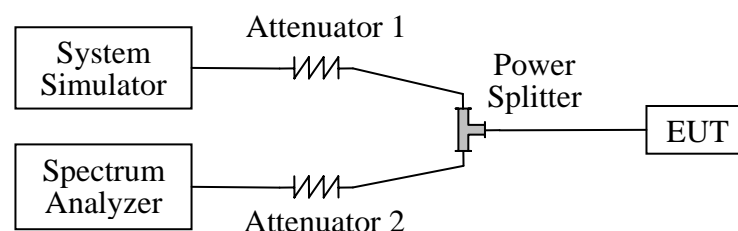
- (a) Channel Block A:
Mobile 824 - 835MHz, Base 869 - 880MHz;
Mobile 845 - 846.5MHz, Base 890 - 891.5MHz
- (b) Channel Block B:
Mobile 835 - 845 MHz, Base 880 - 890MHz;
Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

According to FCC section 24.229, the frequencies available in the Broadband PCS services are listed as below, in accordance with the frequency allocations table of FCC section 2.106.

- (a) The following frequency blocks are available for assignment on an MTA basis:
Block A: 1850 - 1865MHz paired with 1930 - 1945MHz;
Block B: 1870 - 1885MHz paired with 1950 - 1965MHz.
- (b) The following frequency blocks are available for assignment on a BTA basis:
Block C: 1895 - 1910 MHz paired with 1975 - 1990MHz;
Block D: 1865 - 1870 MHz paired with 1945 - 1950MHz;
Block E: 1885 - 1890 MHz paired with 1965 - 1970MHz;
Block F: 1890 - 1895 MHz paired with 1970 - 1975MHz.

3.1.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna

terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the SS.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SS	Agilent	E5515C	GB46040102	2009.10	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2009.10	1year
Power Splitter	HP	11667B	00164	(n.a.)	(n.a.)
Attenuator 1	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)

3.1.3 Test Result

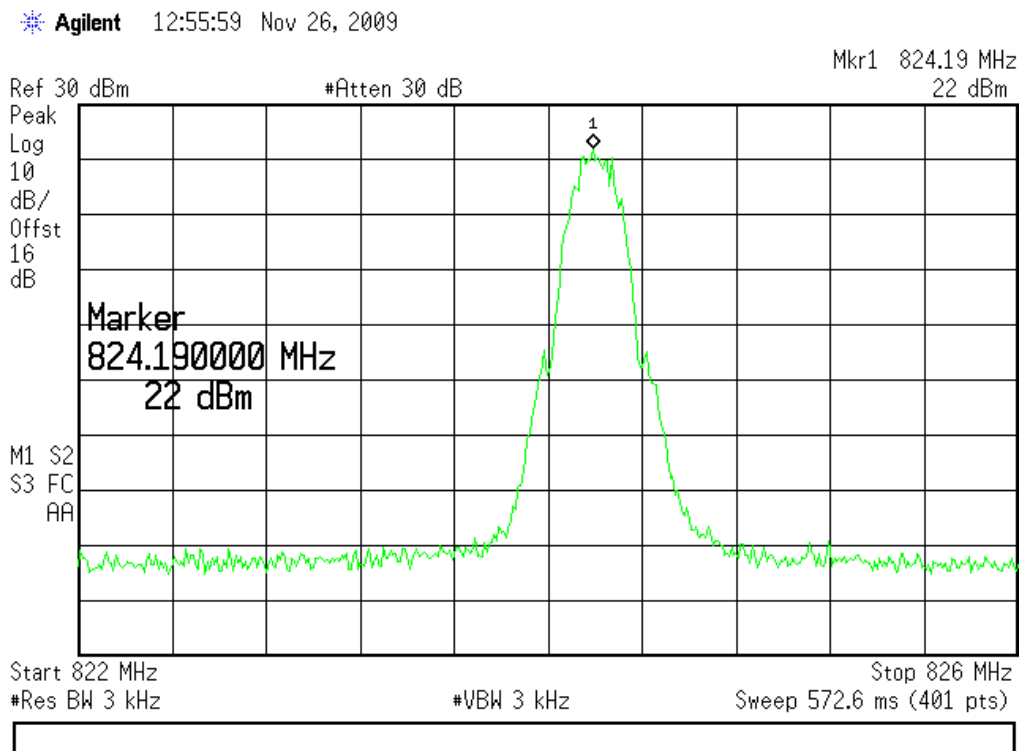
The Tx frequency arrangement of the Cellular 850MHz band employed by the EUT should be from 824.2MHz to 848.8MHz (the corresponding frequency block is from 824MHz to 849MHz), and Tx frequency arrangement of the PCS 1900MHz band employed by the EUT should be from 1850.2MHz to 1909.8MHz (the corresponding frequency block is from 1850MHz to 1910MHz). Here the lowest and highest channels are tested to verify the EUT's using the frequency block required.

1. Test Verdict:

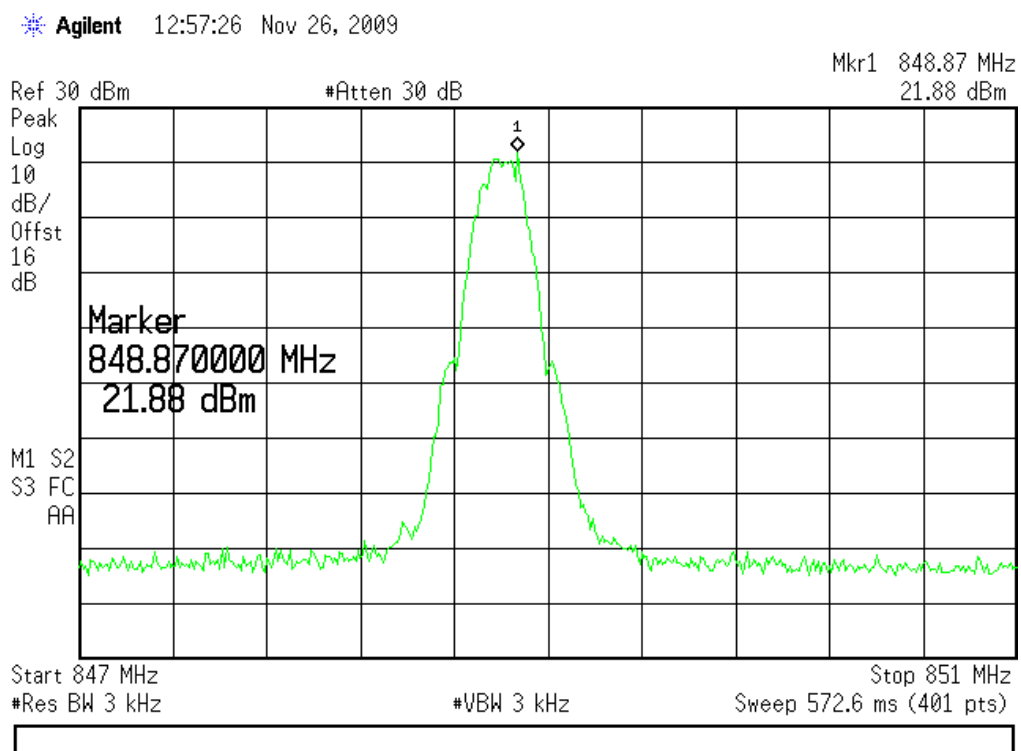
The required frequency block is employed legally, the verdict is PASS.

Band	Channel	Frequency (MHz)	Measured Carrier (dBm)	Refer to Plot
GSM 850MHz	128	824.19	22.00	Plot A1
	251	848.87	21.88	Plot B1
GSM 1900MHz	512	1850.20	18.28	Plot C1
	810	1909.79	17.96	Plot D1
GPRS 850MHz	128	824.20	21.32	Plot E1
	251	848.82	22.16	Plot F1
GPRS 1900MHz	512	1850.20	20.08	Plot G1
	810	1909.79	18.58	Plot H1
EDGE 850MHz	128	824.25	20.92	Plot I1
	251	848.82	21.03	Plot J1
EDGE 1900MHz	512	1850.20	19.21	Plot K1
	810	1909.81	18.51	Plot L1

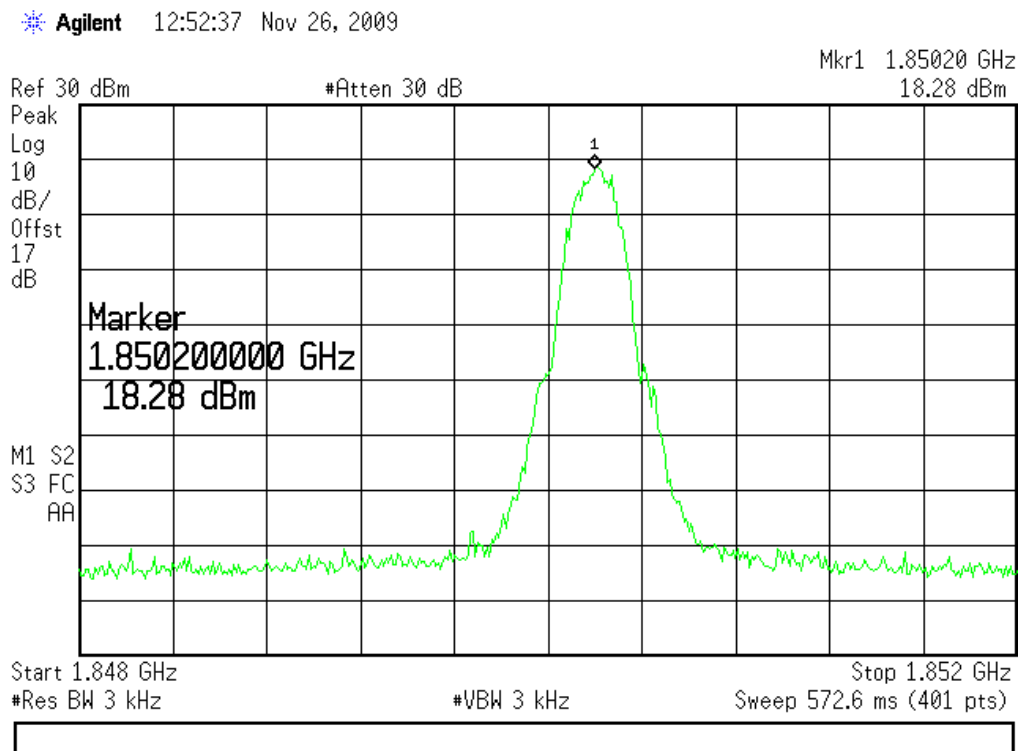
2. Test Plot:



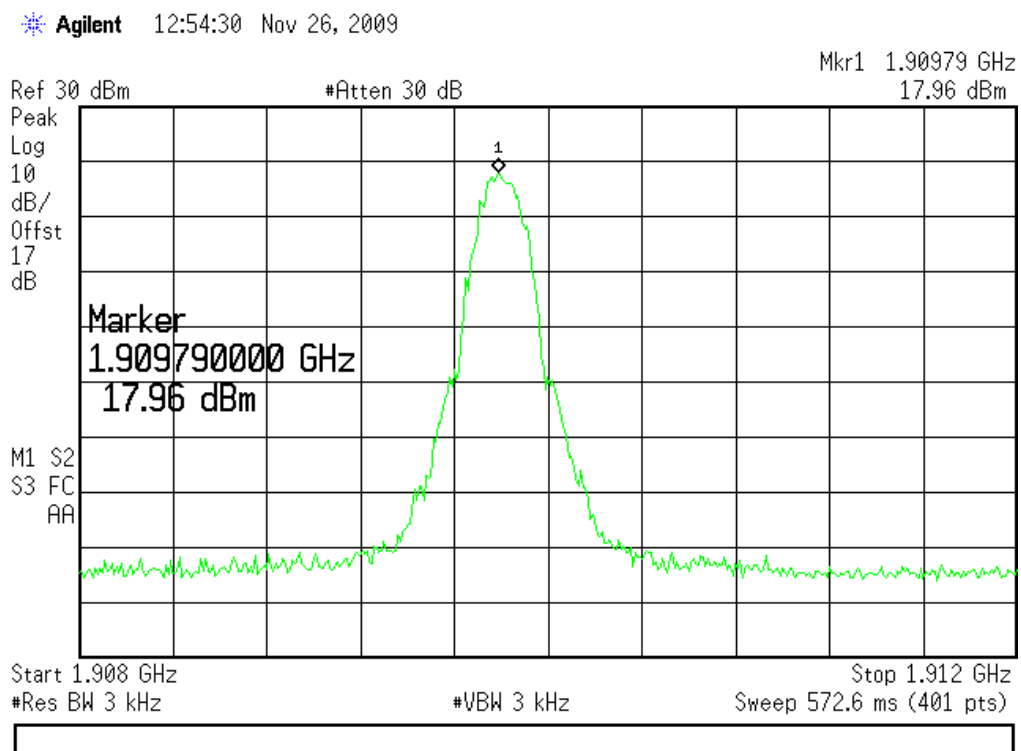
(Plot A1: GSM 850MHz Channel = 128)



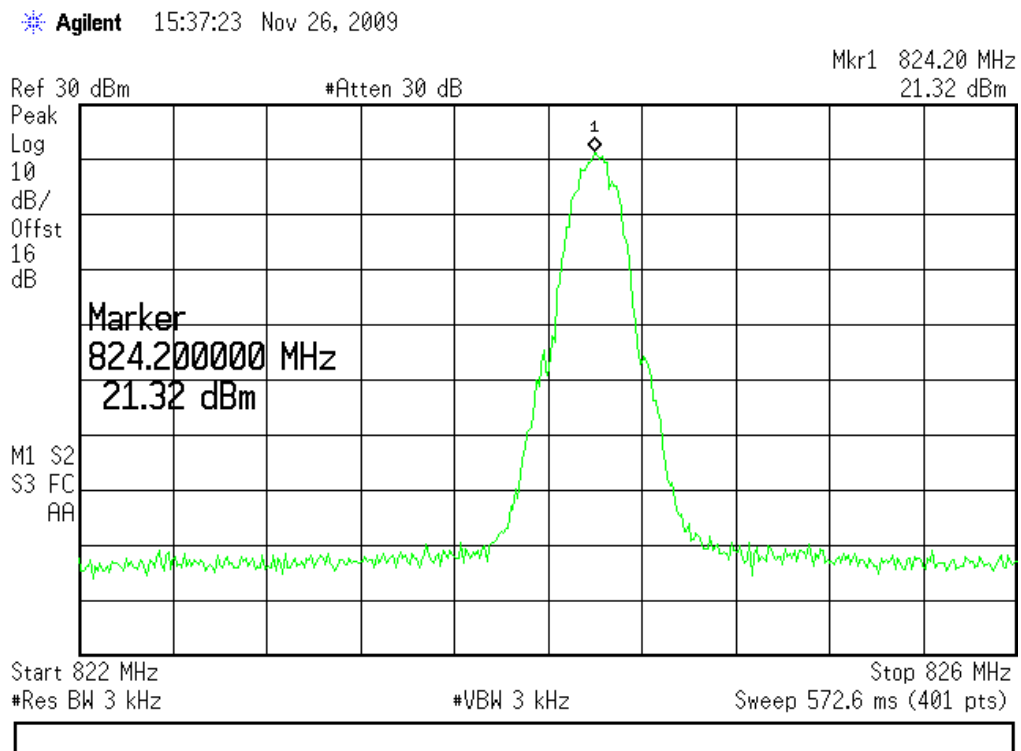
(Plot B1: GSM 850MHz Channel = 251)



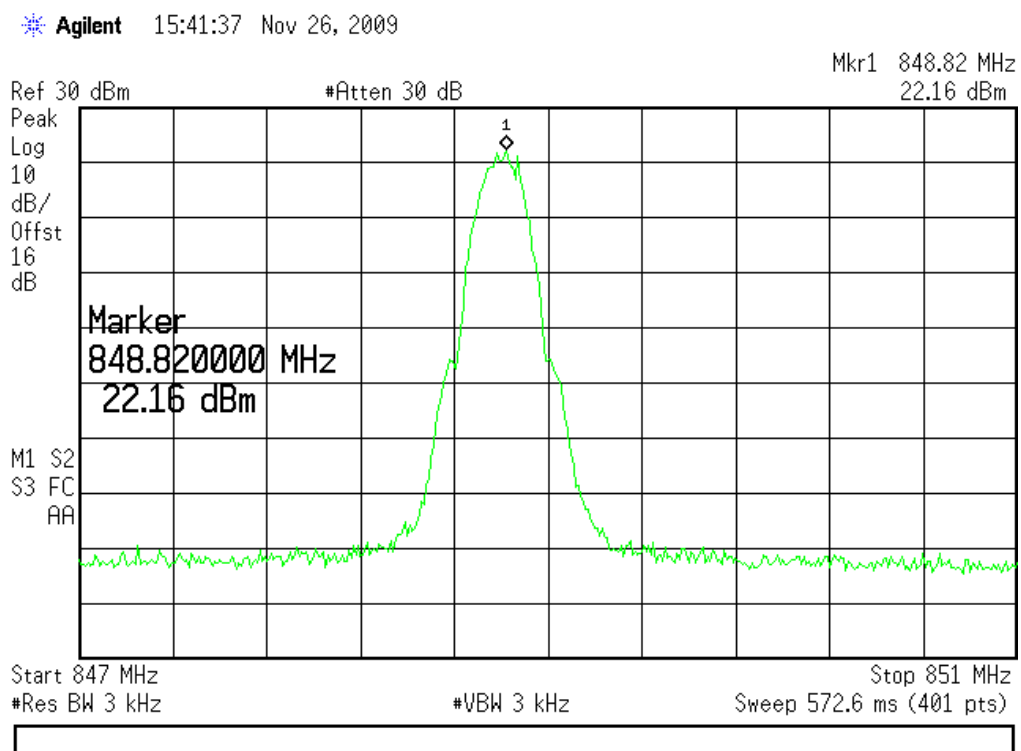
(Plot C1: GSM 1900MHz Channel = 512)



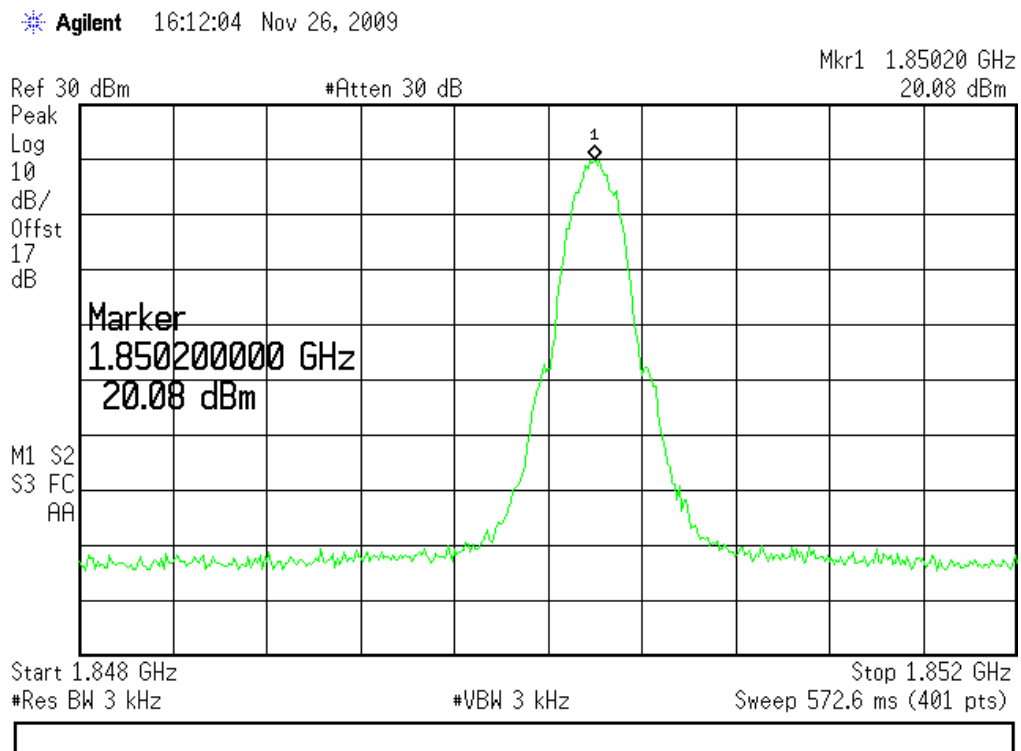
(Plot D1: GSM 1900MHz Channel = 810)



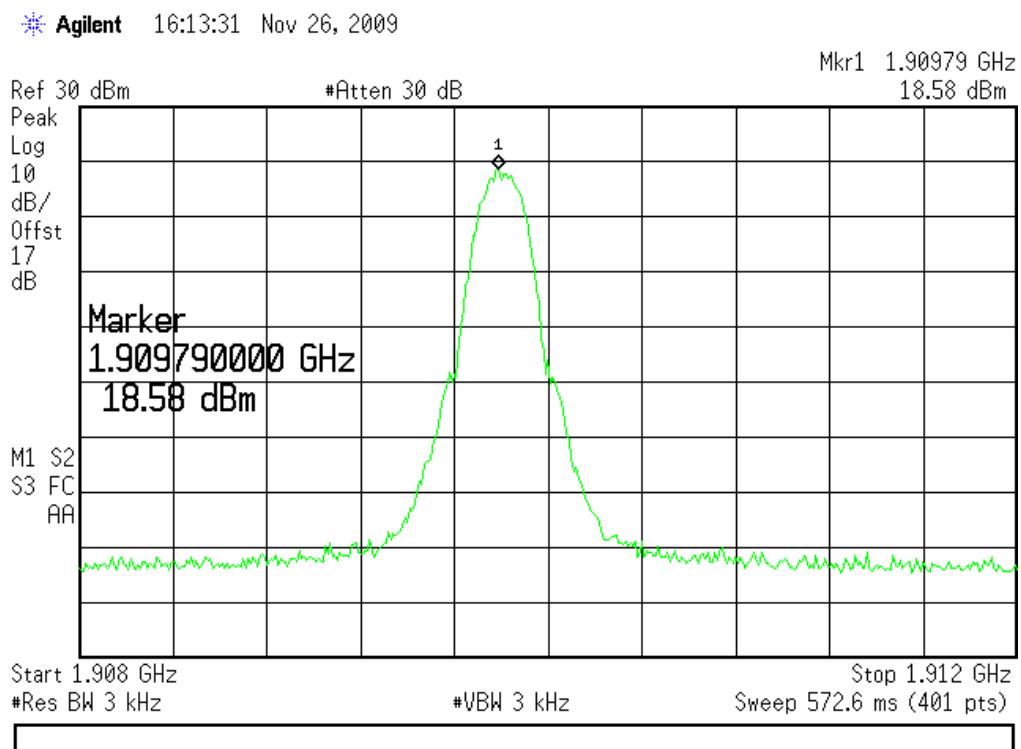
(Plot E1: GPRS 850MHz Channel = 128)



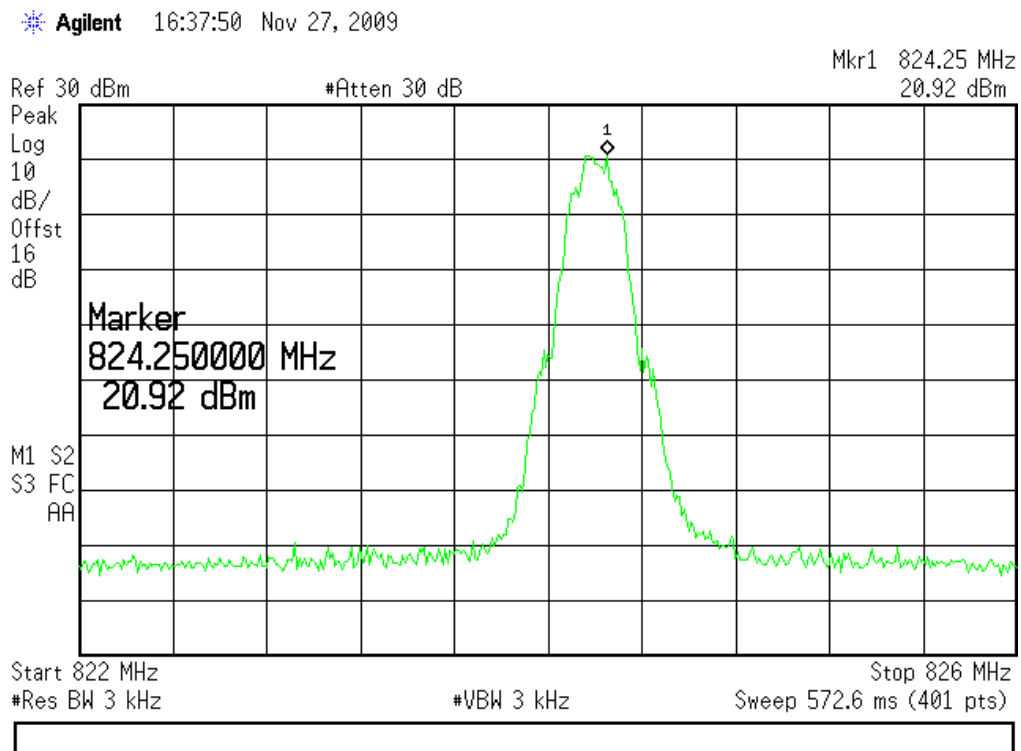
(Plot F1: GPRS 850MHz Channel = 251)



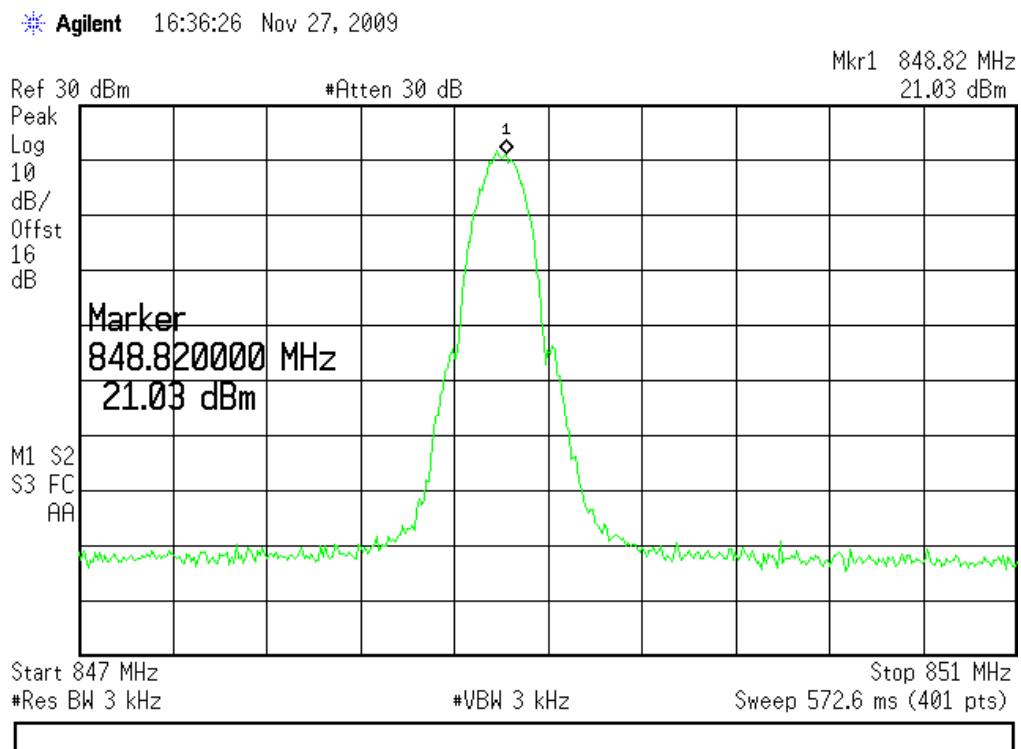
(Plot G1: GPRS 1900MHz Channel = 512)



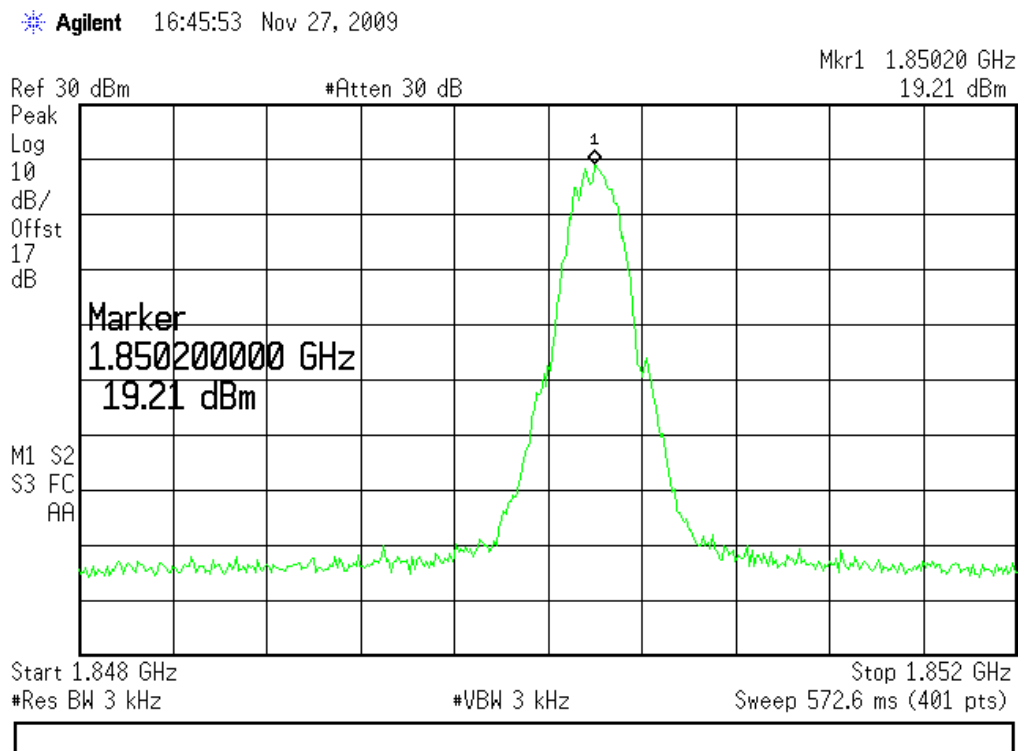
(Plot H1: GPRS 1900MHz Channel = 810)



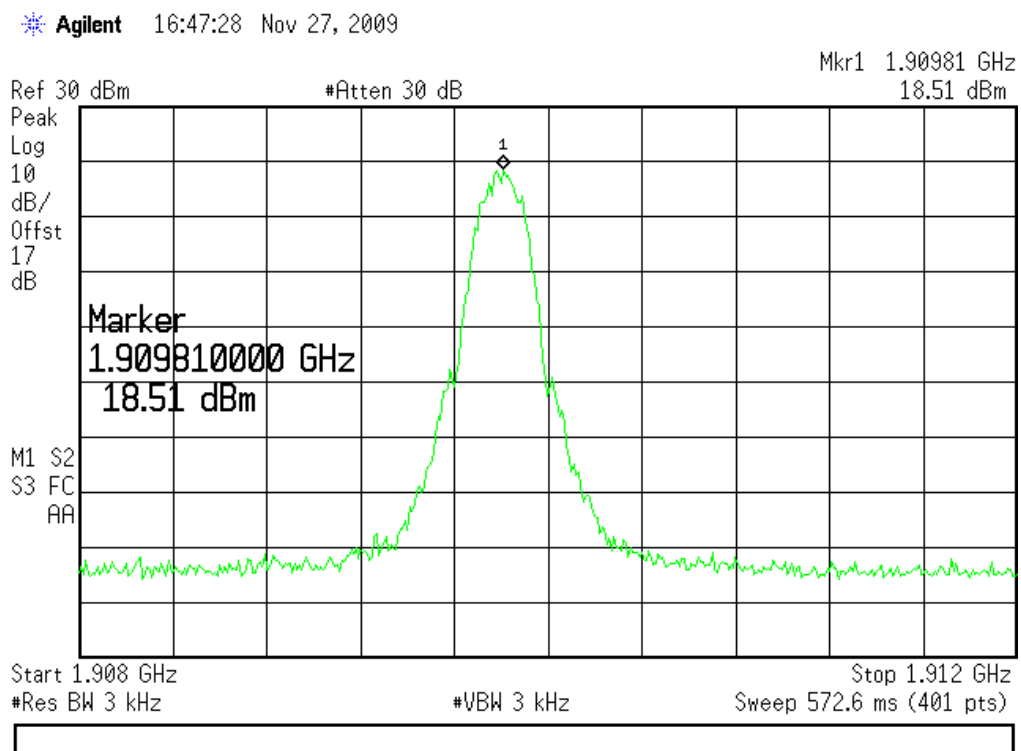
(Plot I1: EDGE 850MHz Channel = 128)



(Plot J1: EDGE 850MHz Channel = 251)



(Plot K1: EDGE 1900MHz Channel = 512)



(Plot L1: EDGE 1900MHz Channel = 810)

3.2 Conducted RF Output Power

3.2.1 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).

3.2.2 Test Description

See section 3.1.2 of this report.

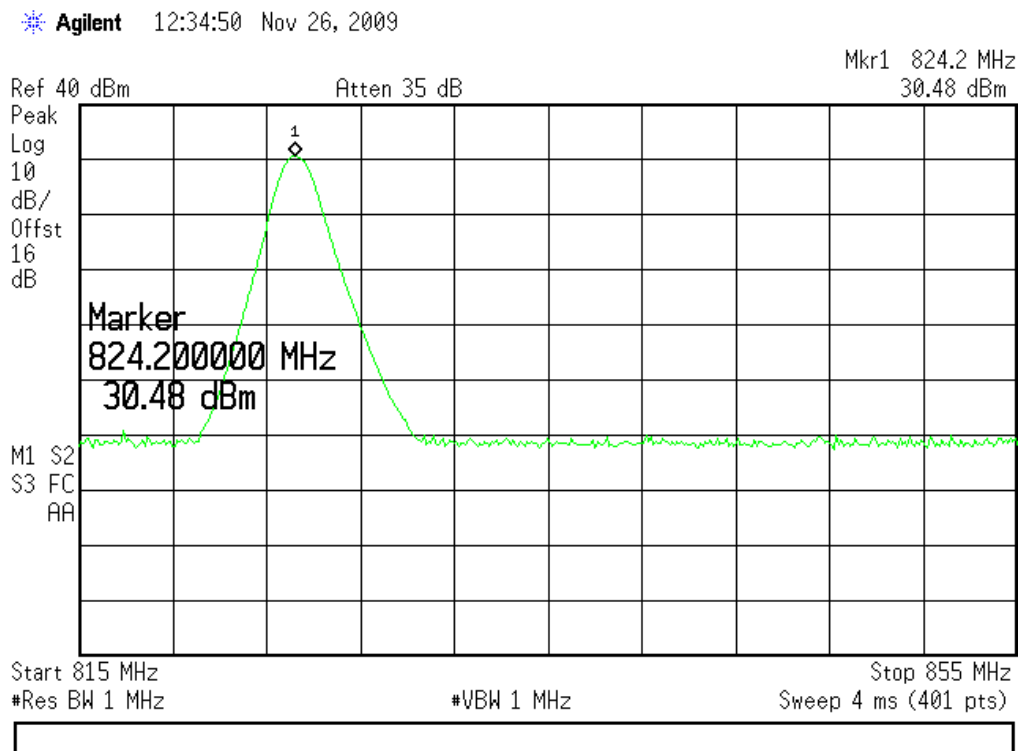
3.2.3 Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT. For the GSM 850MHz operates at PCL=5 (where Power Class is 4), the rated conducted RF output power is 33dBm within the tolerance of ± 3 dB, and For the GSM 1900MHz operates at PCL=0 (where Power Class is 1), the rated conducted RF output power is 30dBm within the tolerance of ± 3 dB.

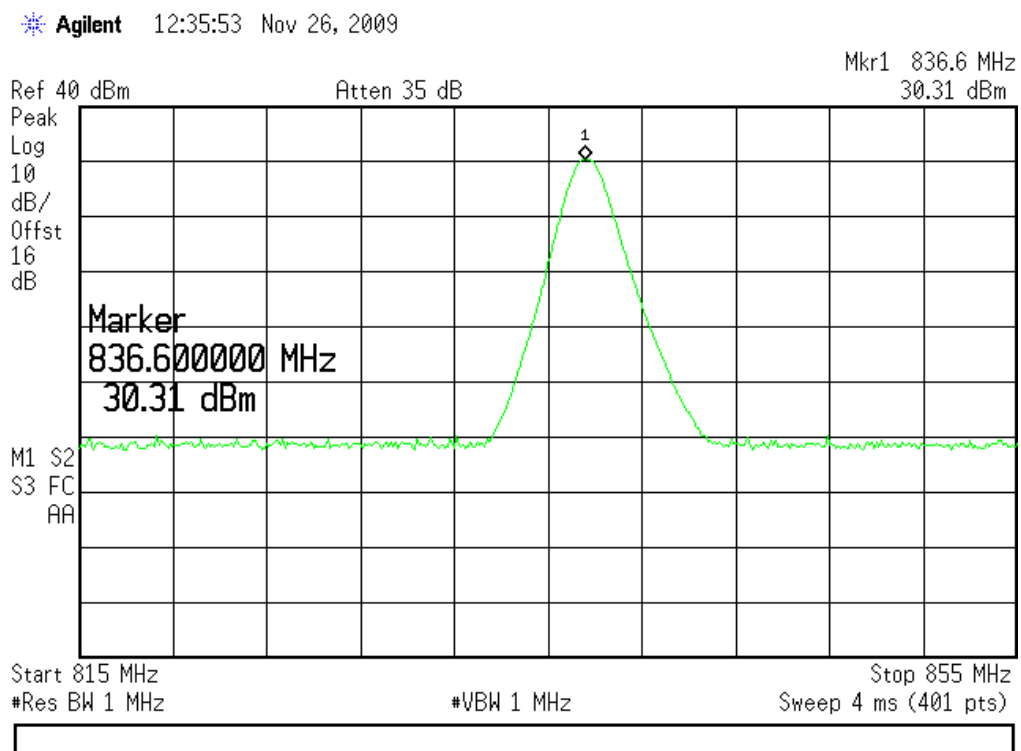
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GSM 850MHz	128	824.20	30.48	Plot A2	33	± 3	PASS
	190	836.60	30.31	Plot B2			PASS
	251	848.80	30.34	Plot C2			PASS
GSM 1900MHz	512	1850.20	27.98	Plot D2	30	± 3	PASS
	661	1880.00	27.87	Plot E2			PASS
	810	1909.80	27.18	Plot F2			PASS
GPRS 850MHz	128	824.30	30.43	Plot G2	33	± 3	PASS
	190	836.60	30.21	Plot H2			PASS
	251	848.80	30.27	Plot I2			PASS
GPRS 1900MHz	512	1850.40	27.74	Plot J2	30	± 3	PASS
	661	1880.00	27.57	Plot K2			PASS
	810	1909.80	27.06	Plot L2			PASS
EDGE 850MHz	128	824.20	30.43	Plot M2	33	± 3	PASS
	190	836.60	30.30	Plot N2			PASS
	251	848.80	30.38	Plot O2			PASS
EDGE1900MHz	512	1850.20	28.13	Plot P2	30	± 3	PASS
	661	1880.00	27.87	Plot Q2			PASS
	810	1909.80	27.40	Plot R2			PASS

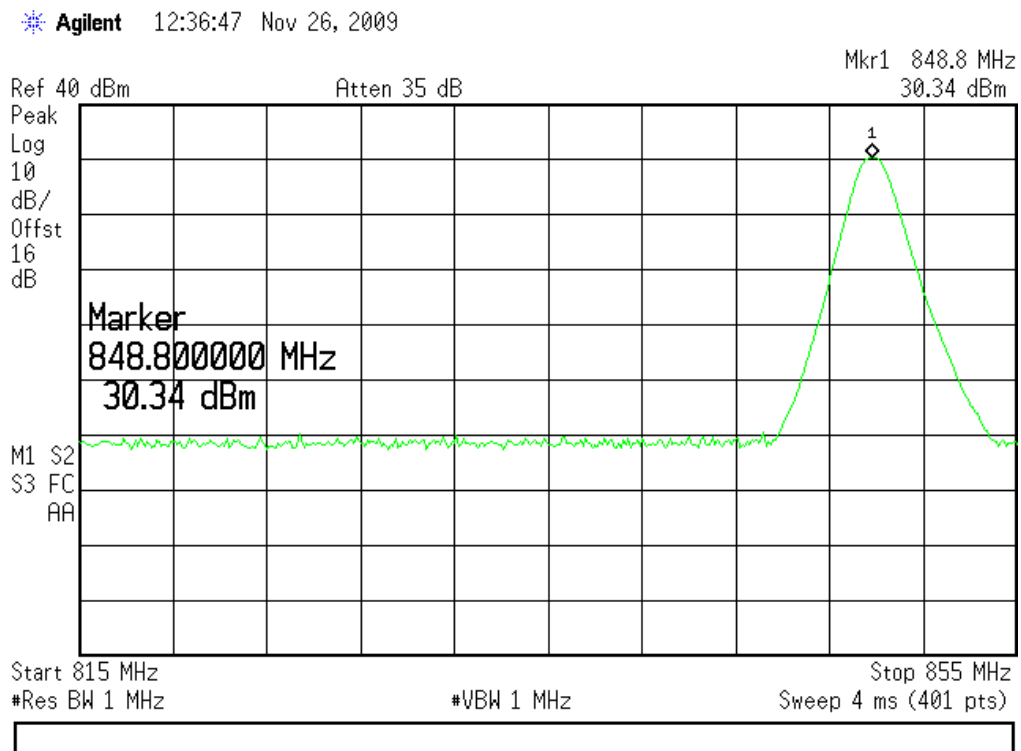
2. Test Plot:



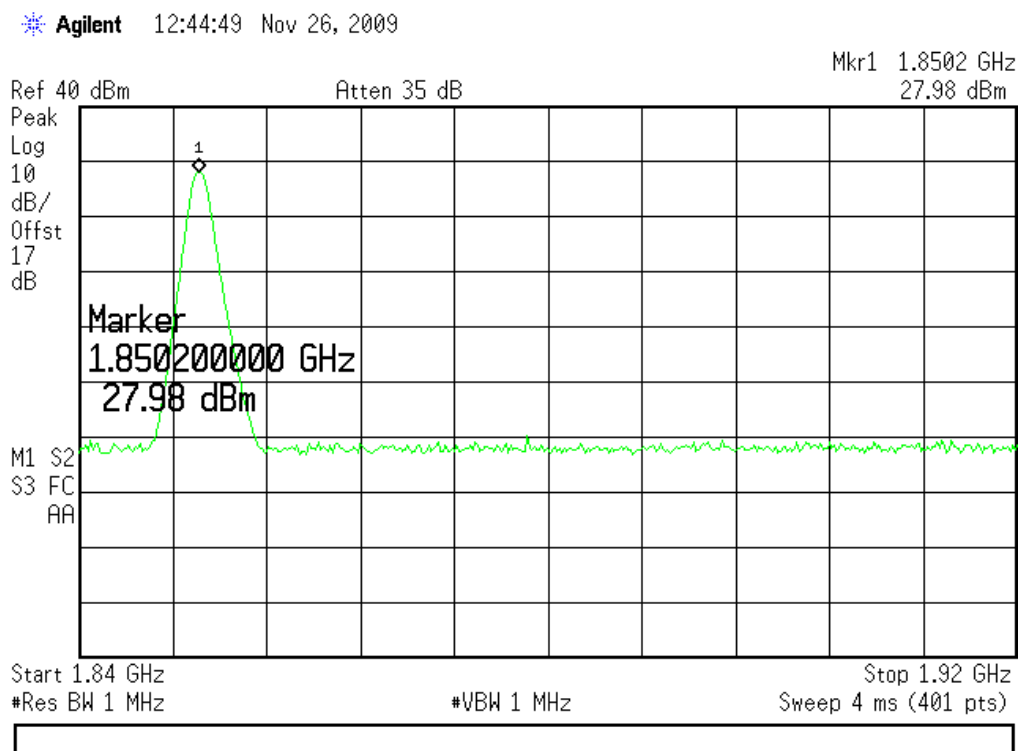
(Plot A2: GSM 850MHz Channel = 128)



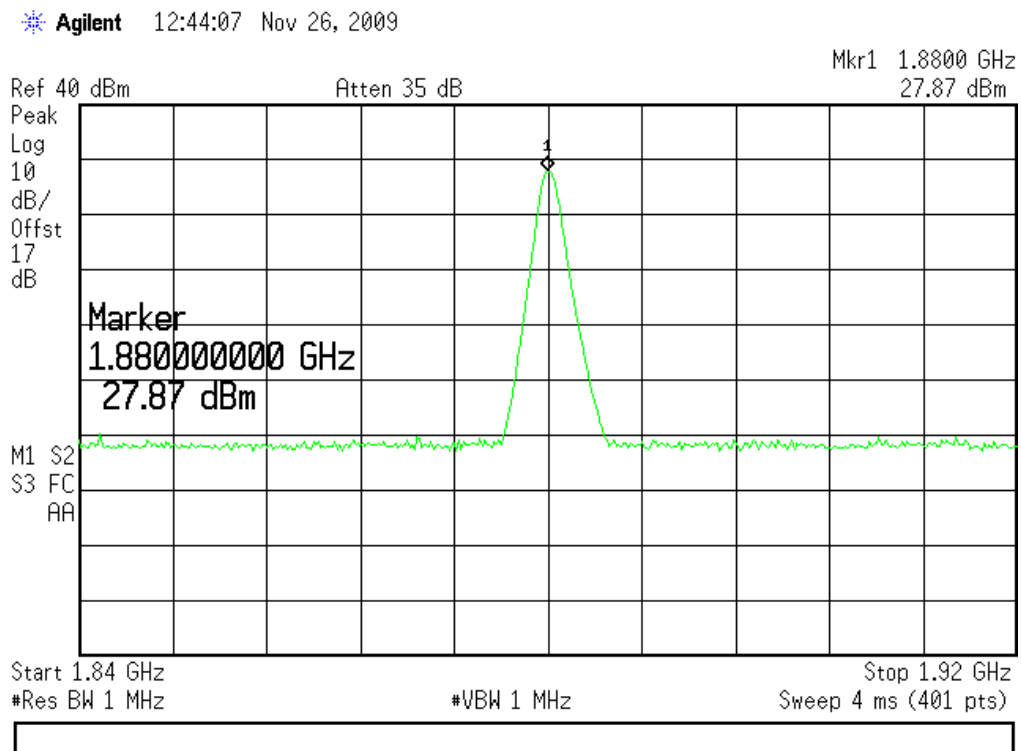
(Plot B2: GSM 850MHz Channel = 190)



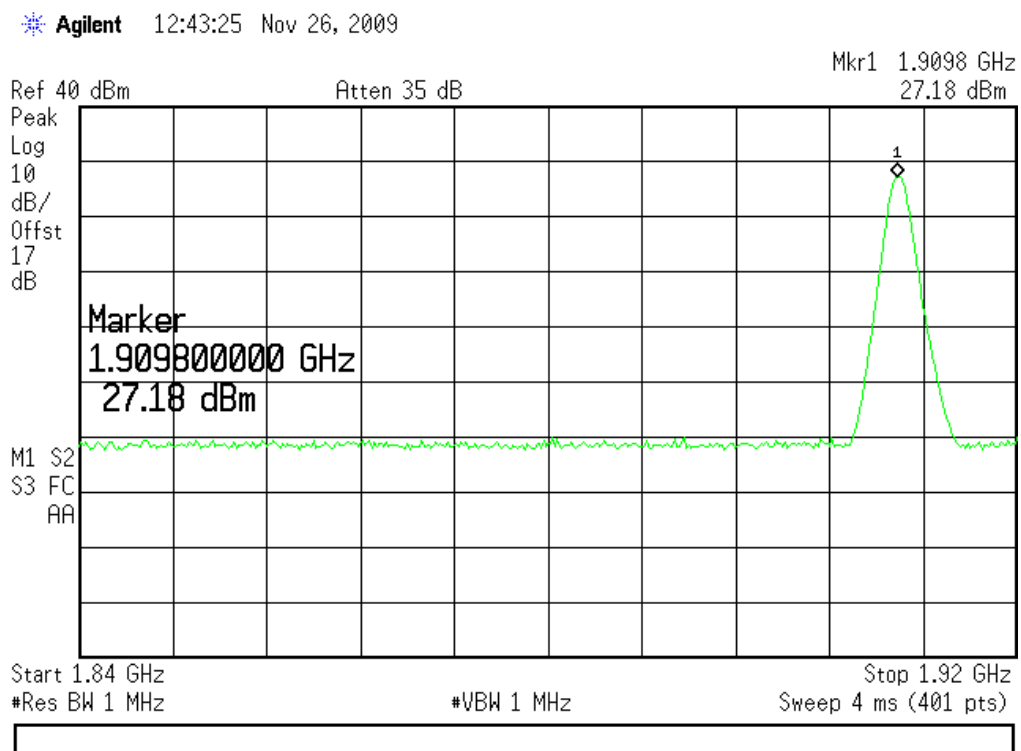
(Plot C2: GSM 850MHz Channel = 251)



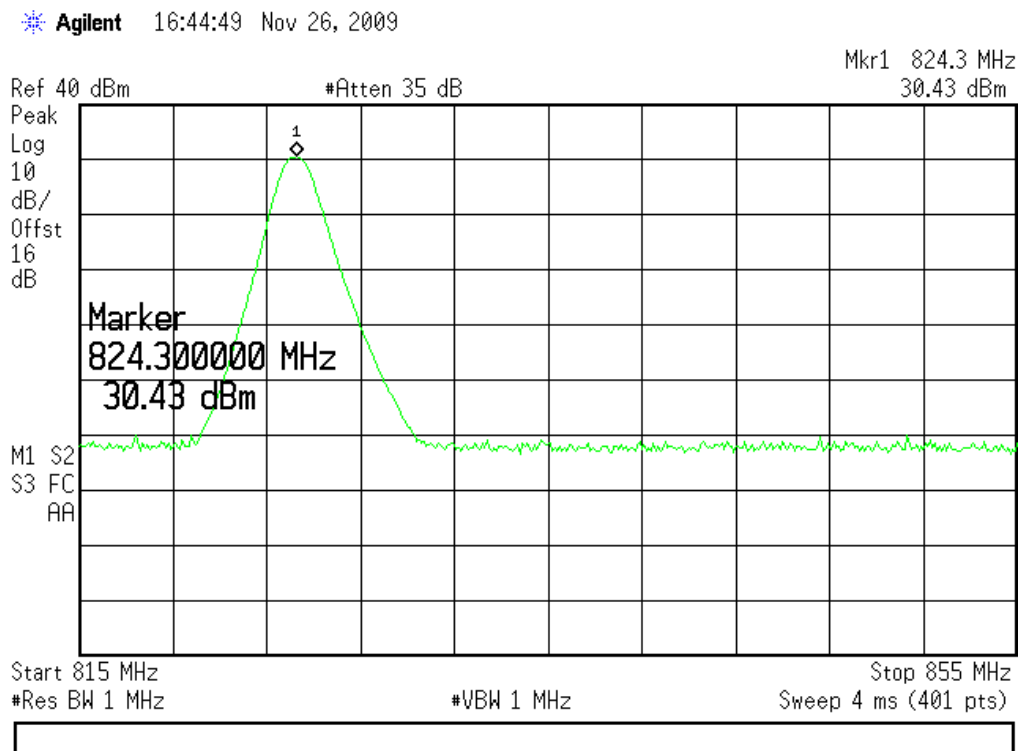
(Plot D2: GSM 1900MHz Channel = 512)



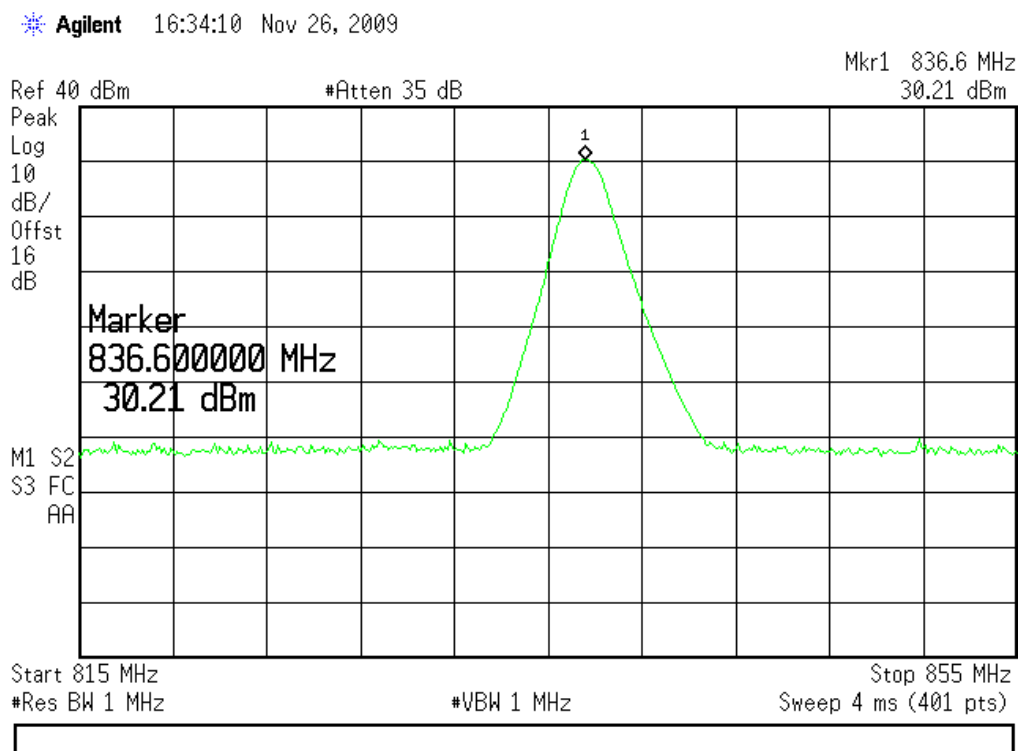
(Plot E2: GSM 1900MHz Channel = 661)



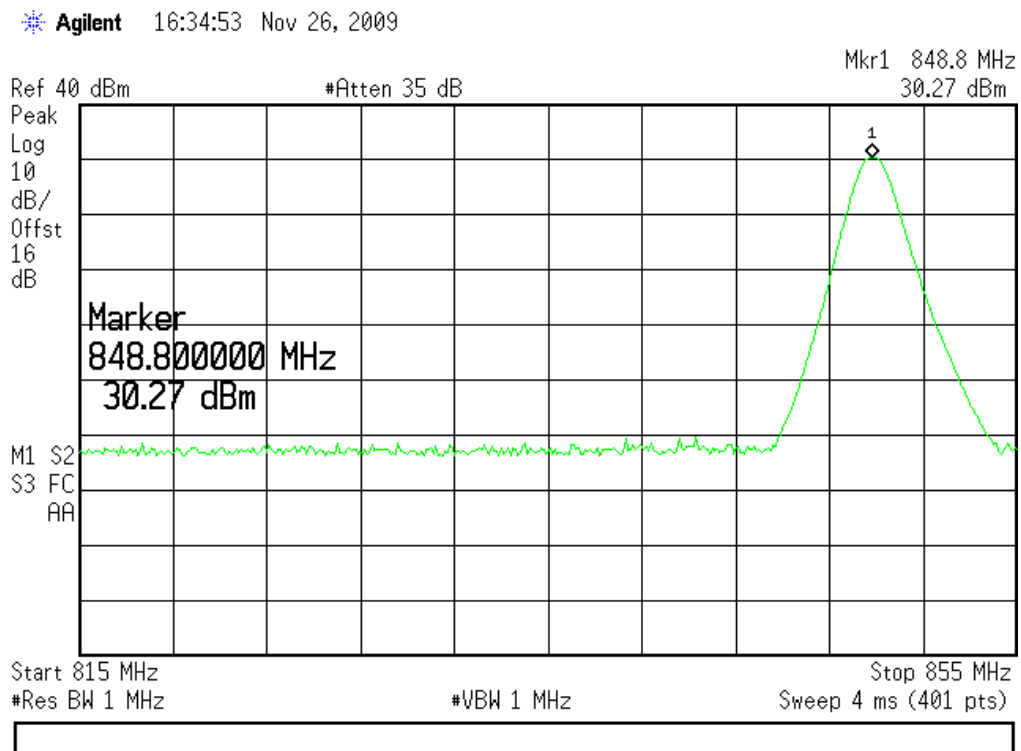
(Plot F2: GSM 1900MHz Channel = 810)



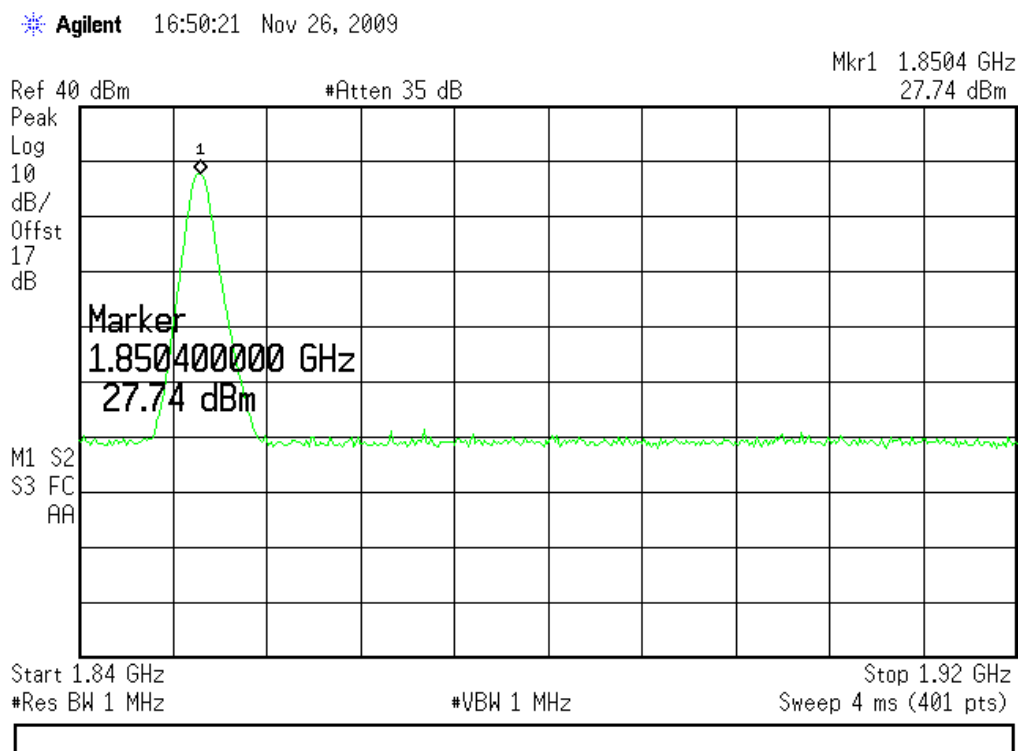
(Plot G2:GPRS 850MHz Channel = 128)



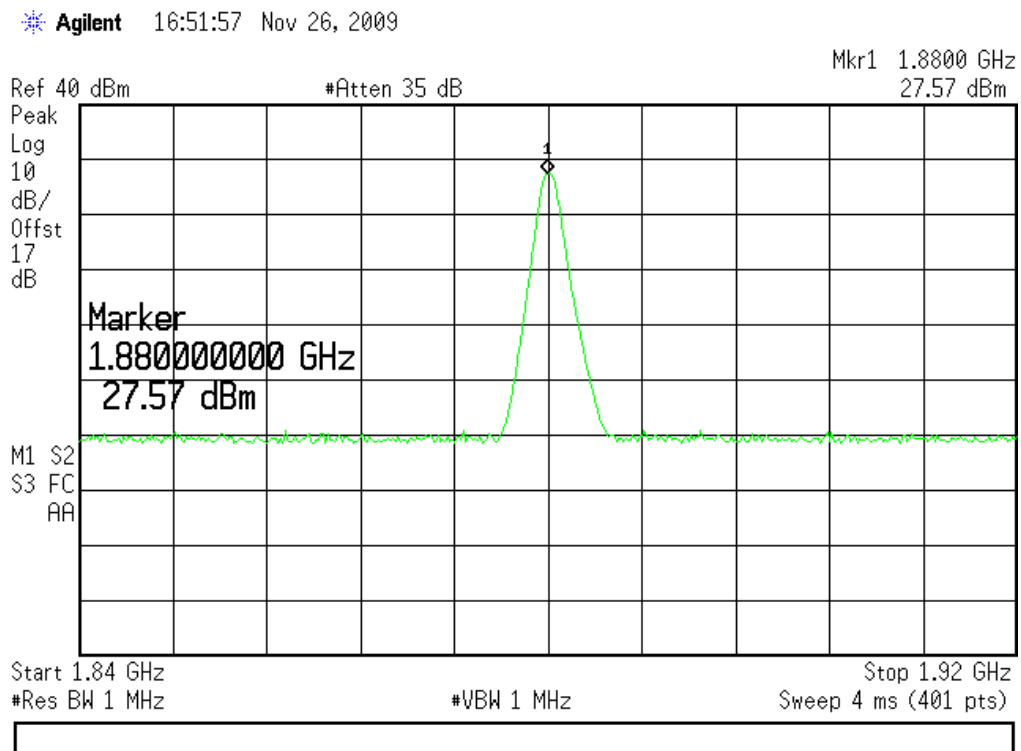
(Plot H2: GPRS 850MHz Channel = 190)



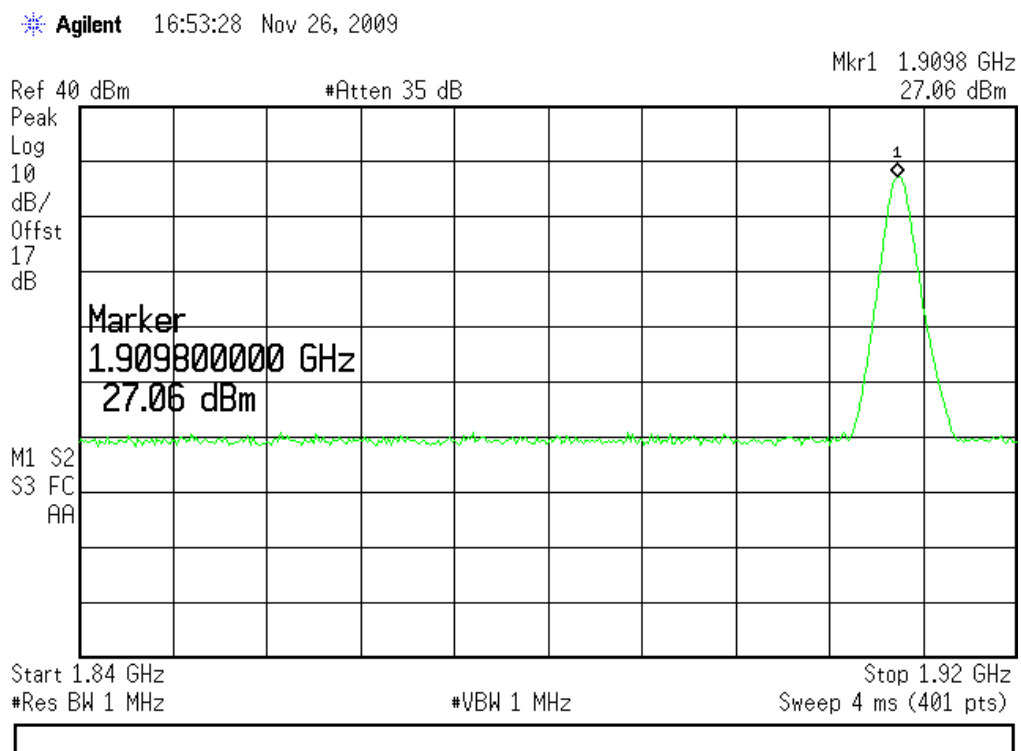
(Plot I2: GPRS 850MHz Channel = 251)



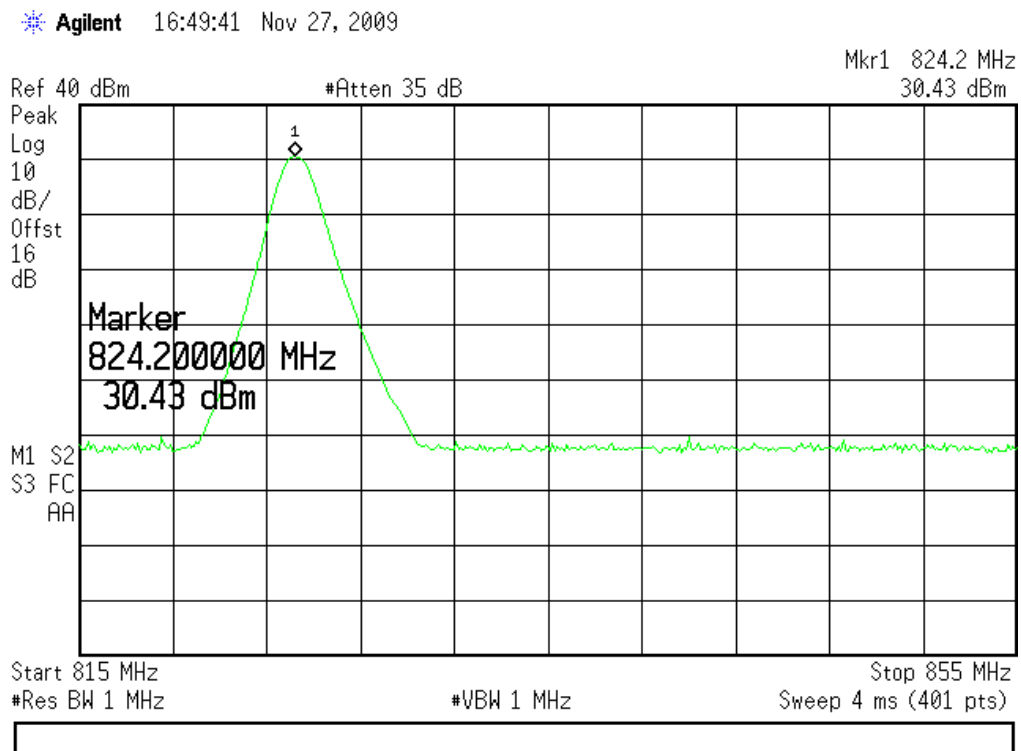
(Plot J2: GPRS 1900MHz Channel = 512)



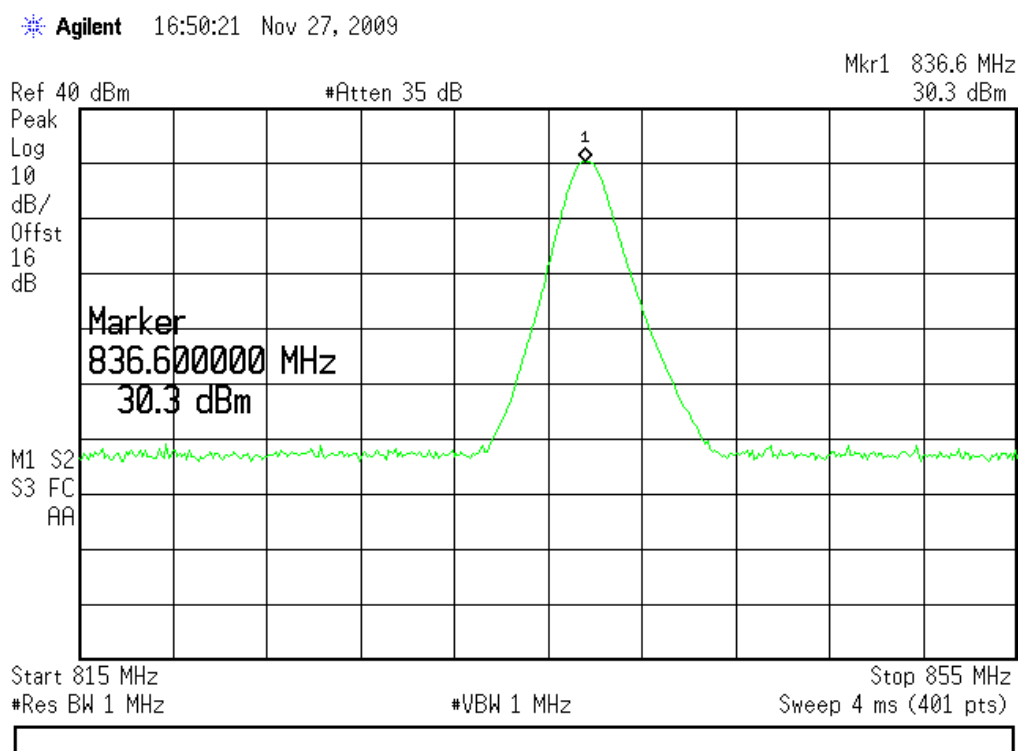
(Plot K2: GPRS 1900MHz Channel = 661)



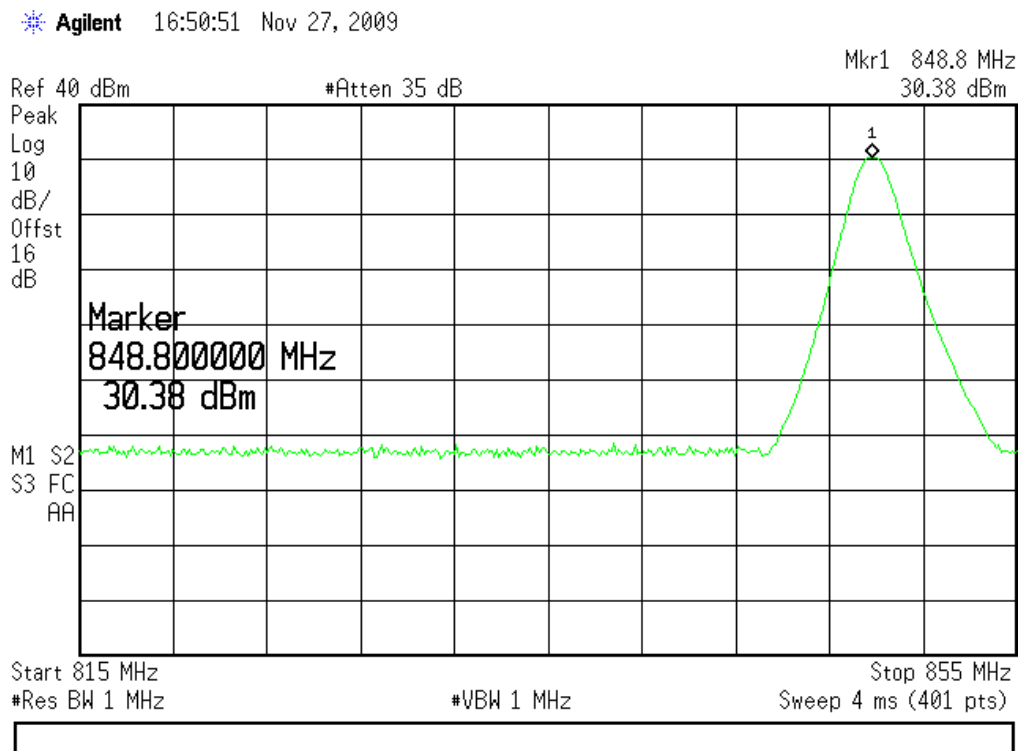
(Plot L2: GPRS 1900MHz Channel = 810)



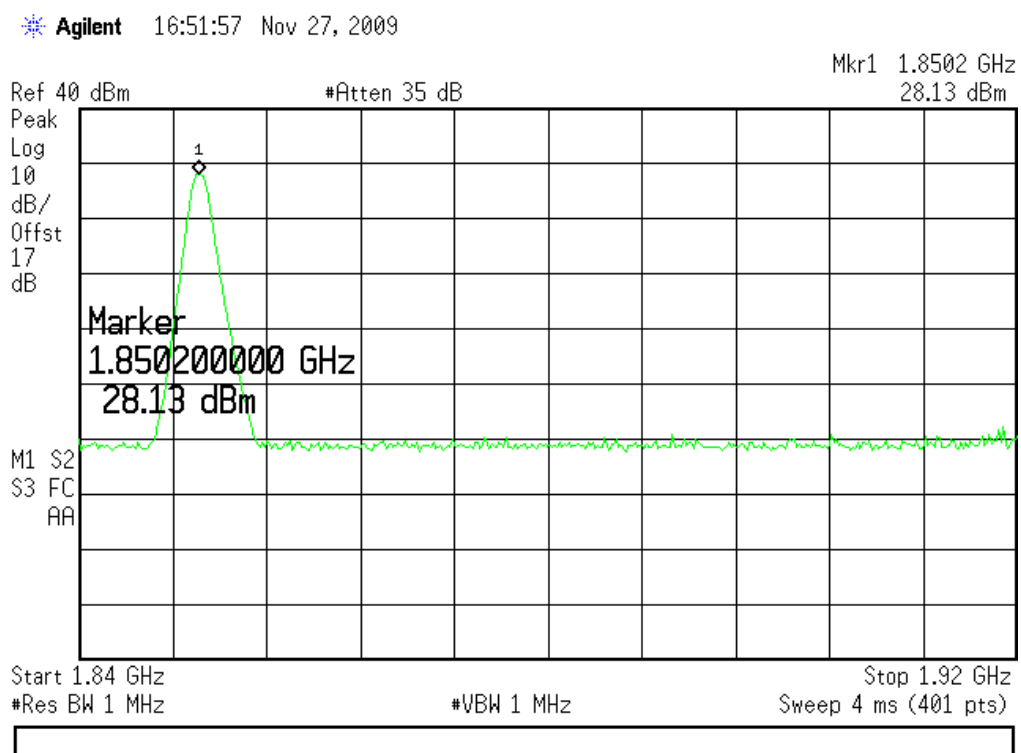
(Plot M2:EDGE 850MHz Channel = 128)



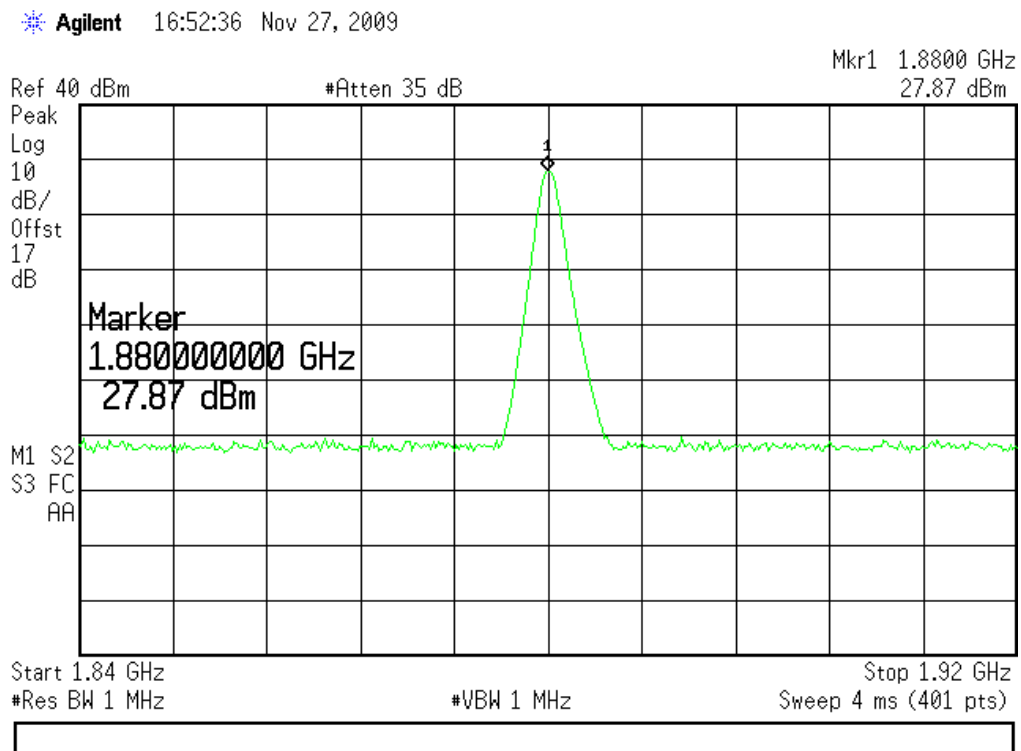
(Plot N2: EDGE 850MHz Channel = 190)



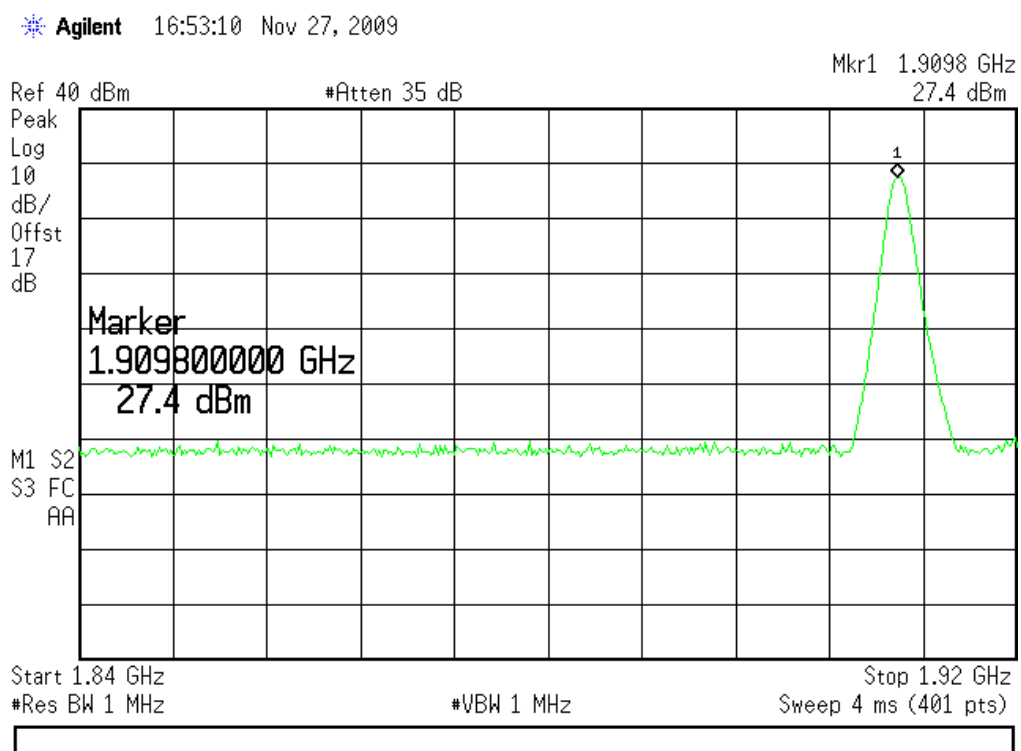
(Plot O2: EDGE 850MHz Channel = 251)



(Plot P2: EDGE 1900MHz Channel = 512)



(Plot Q2: EDGE 1900MHz Channel = 661)



(Plot R2: EDGE 1900MHz Channel = 810)

3.3 20dB Occupied Bandwidth

3.3.1 Definition

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

Occupied bandwidth is also known as the 99% emission bandwidth, or 20dB bandwidth ($10 \cdot \log 1\% = 20\text{dB}$) taking the total RF output power as reference.

3.3.2 Test Description

See section 3.1.2 of this report.

3.3.3 Test Verdict

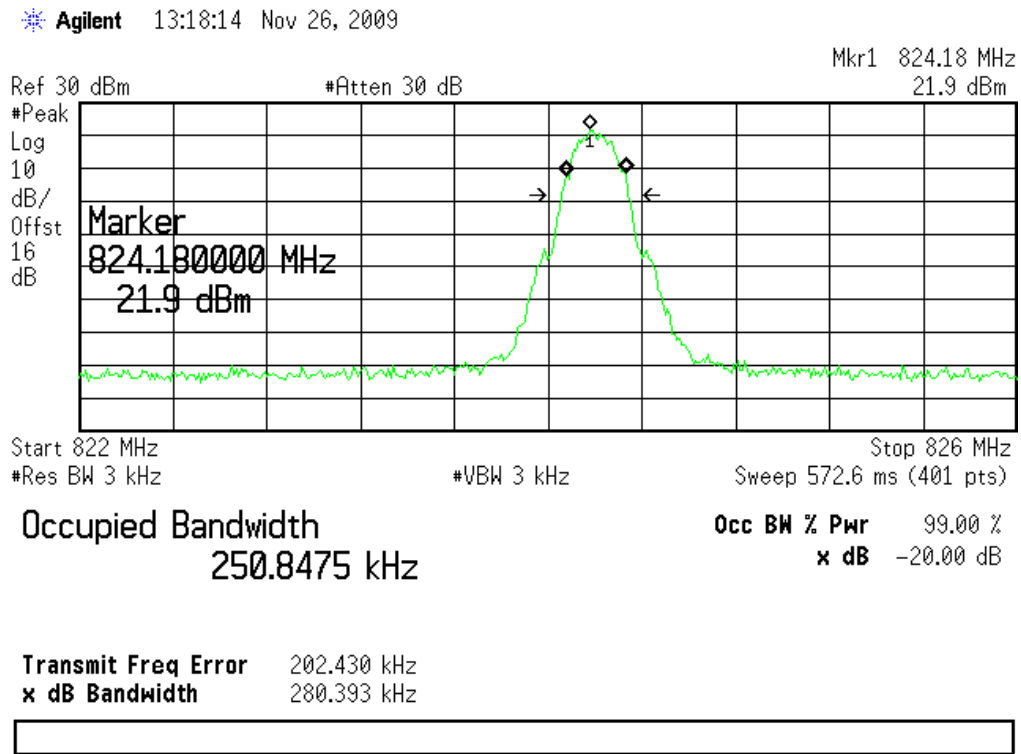
Here the lowest, middle and highest channels are tested to record the 20dB occupied bandwidth, it's about 300kHz.

1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured 20dB Occupied Bandwidth (kHz)	Refer to Plot
GSM 850MHz	128	824.18	250.8475	Plot A3
	190	836.58	245.3485	Plot B3
	251	848.79	245.4843	Plot C3
GSM 1900MHz	512	1850.20	246.3927	Plot D3
	661	1880.00	246.7555	Plot E3
	810	1909.82	245.9913	Plot F3
GPRS 850MHz	128	824.19	246.9316	Plot G3
	190	836.61	248.4156	Plot H3
	251	848.79	246.0383	Plot I3
GPRS 1900MHz	512	1850.21	251.2261	Plot J3
	661	1880.03	248.9023	Plot K3
	810	1909.82	247.8275	Plot L3
EDGE 850MHz	128	824.19	252.9158	Plot M3
	190	836.62	248.8925	Plot N3
	251	848.78	248.3698	Plot O3
EDGE 1900MHz	512	1850.18	251.1203	Plot P3
	661	1880.01	248.1468	Plot Q3

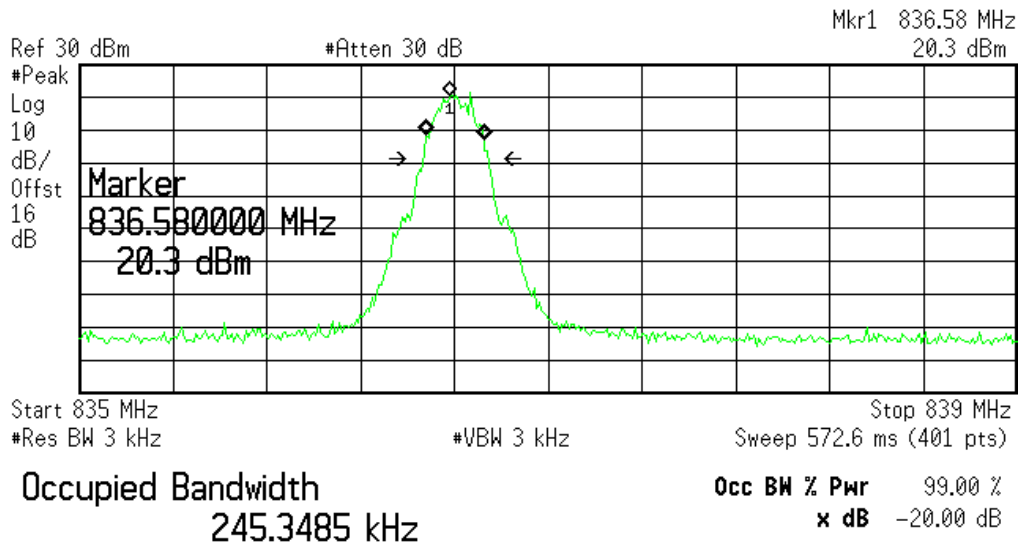
Band	Channel	Frequency (MHz)	Measured 20dB Occupied Bandwidth (kHz)	Refer to Plot
	810	1909.78	248.8512	Plot R3

2. Test Plot:



(Plot A3: GSM 850MHz Channel = 128)

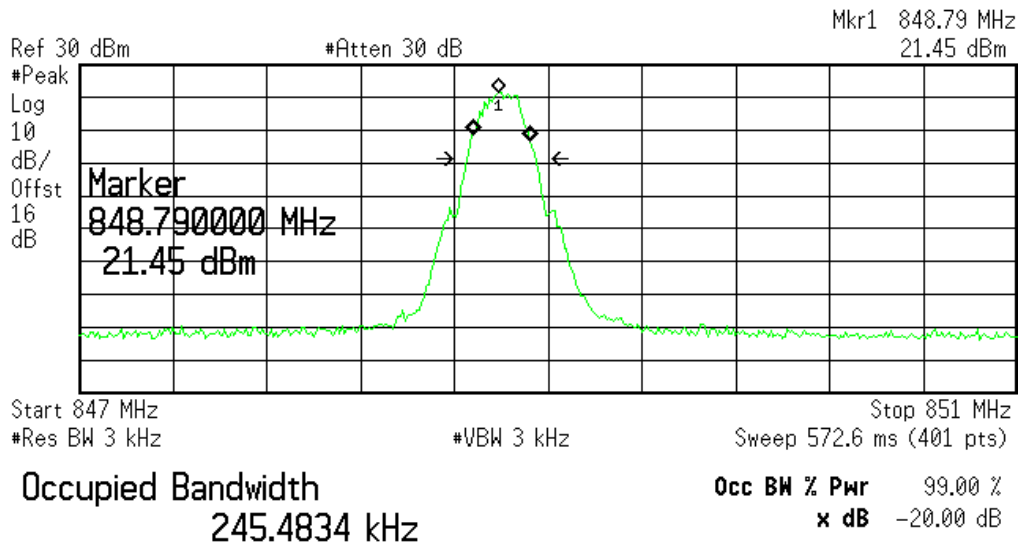
Agilent 13:16:46 Nov 26, 2009



Transmit Freq Error -397.297 kHz
x dB Bandwidth 281.936 kHz

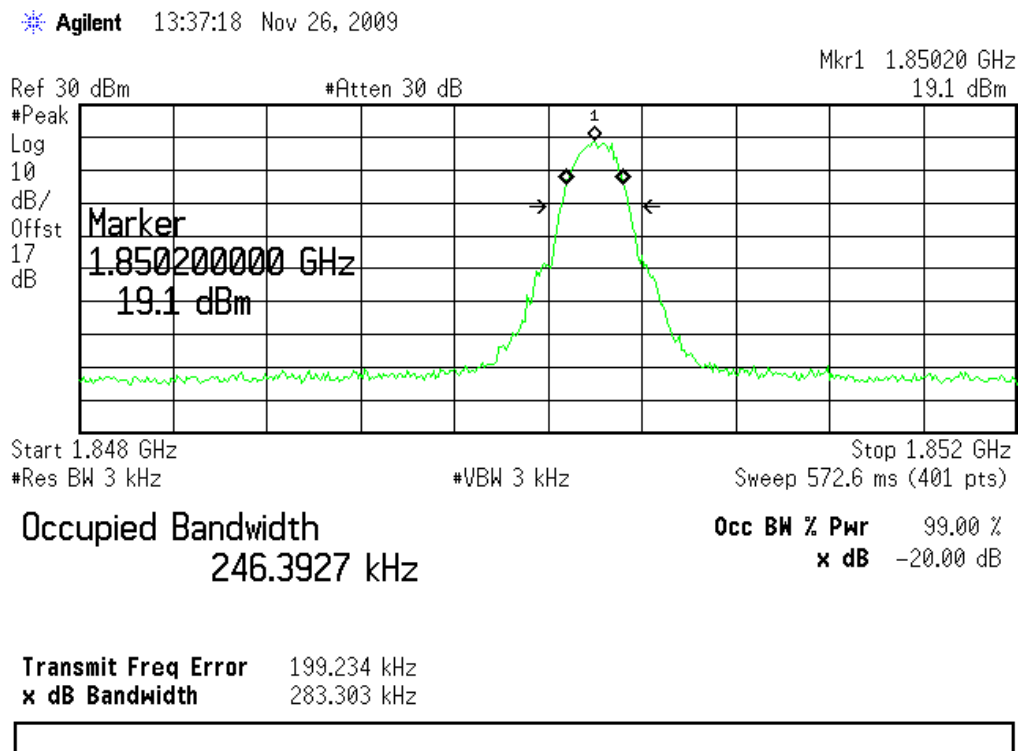
(Plot B3: GSM 850MHz Channel = 190)

Agilent 13:15:20 Nov 26, 2009

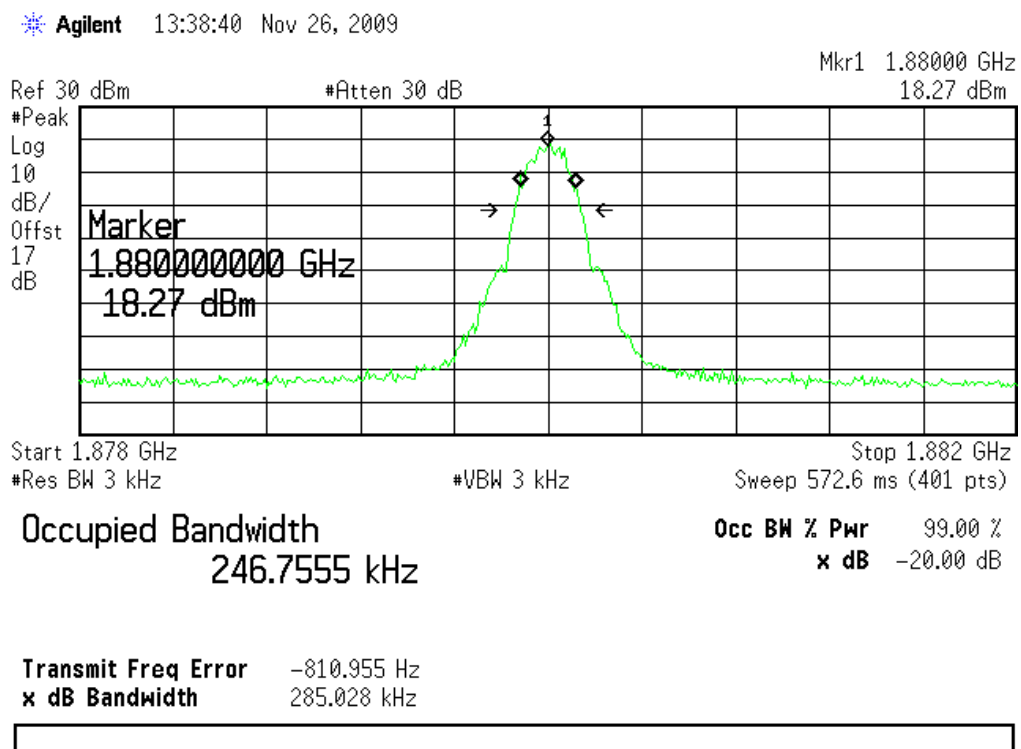


Transmit Freq Error -200.855 kHz
x dB Bandwidth 290.917 kHz

(Plot C3: GSM 850MHz Channel = 251)

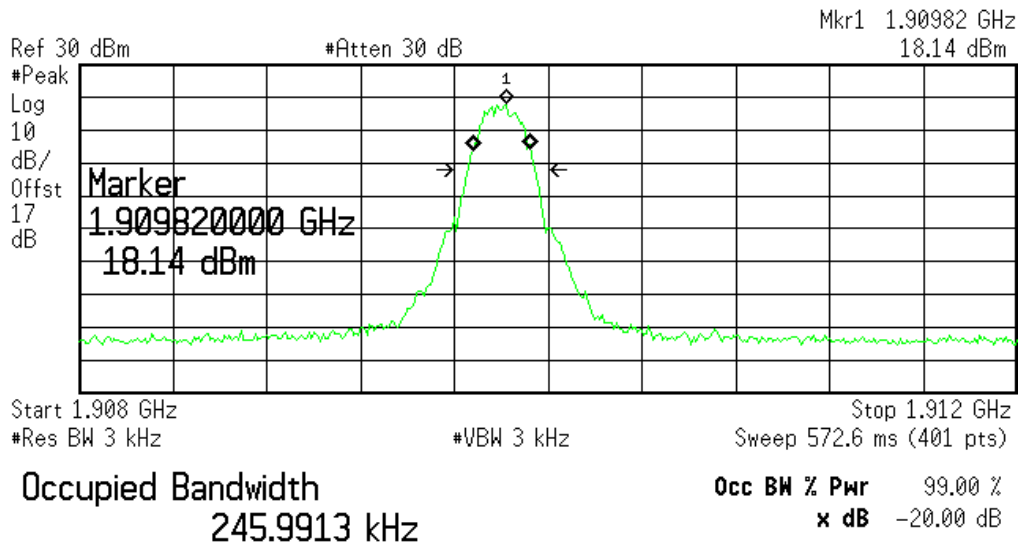


(Plot D3: GSM 1900MHz Channel = 512)



(Plot E3: GSM 1900MHz Channel = 661)

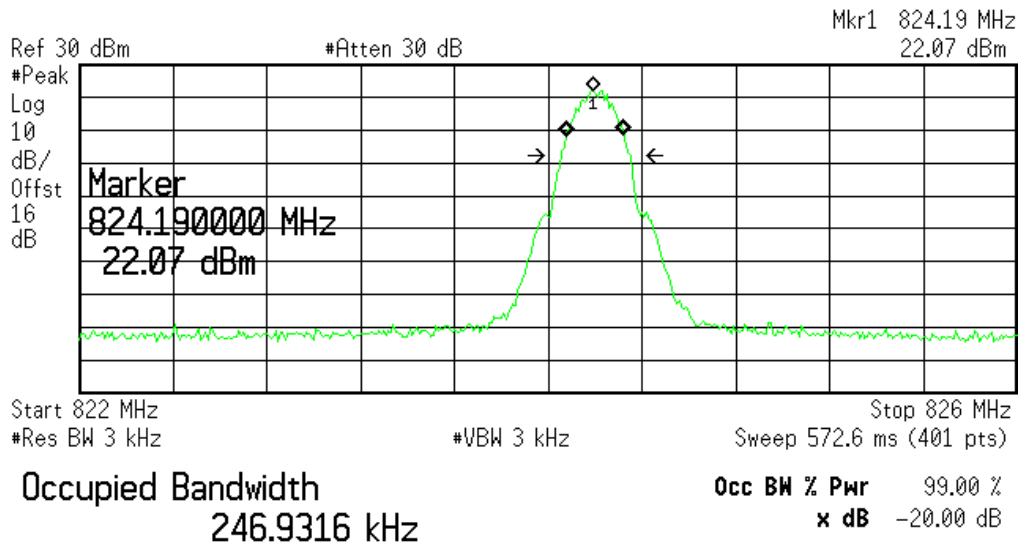
Agilent 13:40:25 Nov 26, 2009



Transmit Freq Error -199.209 kHz
x dB Bandwidth 285.761 kHz

(Plot F3: GSM 1900MHz Channel = 810)

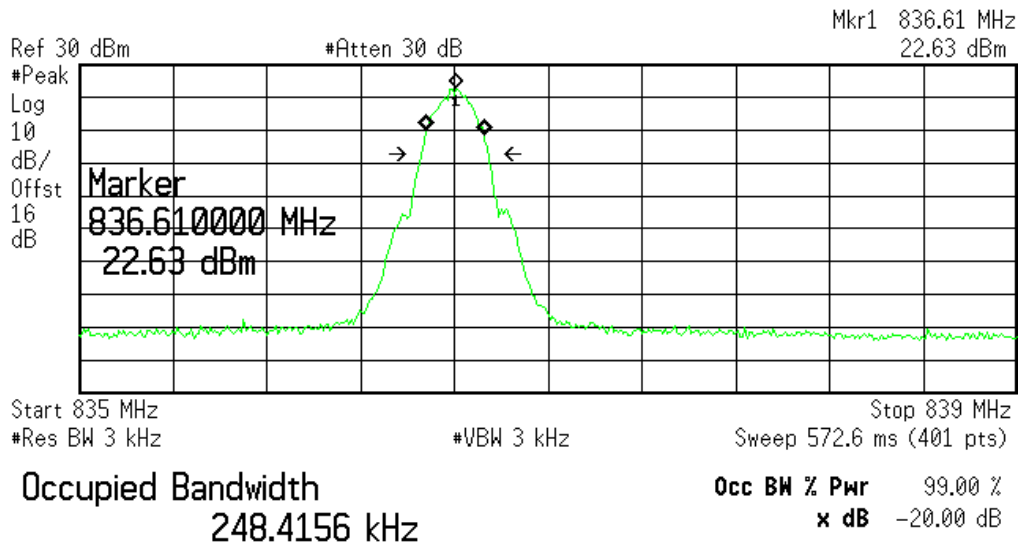
Agilent 17:00:21 Nov 26, 2009



Transmit Freq Error 200.041 kHz
x dB Bandwidth 295.145 kHz

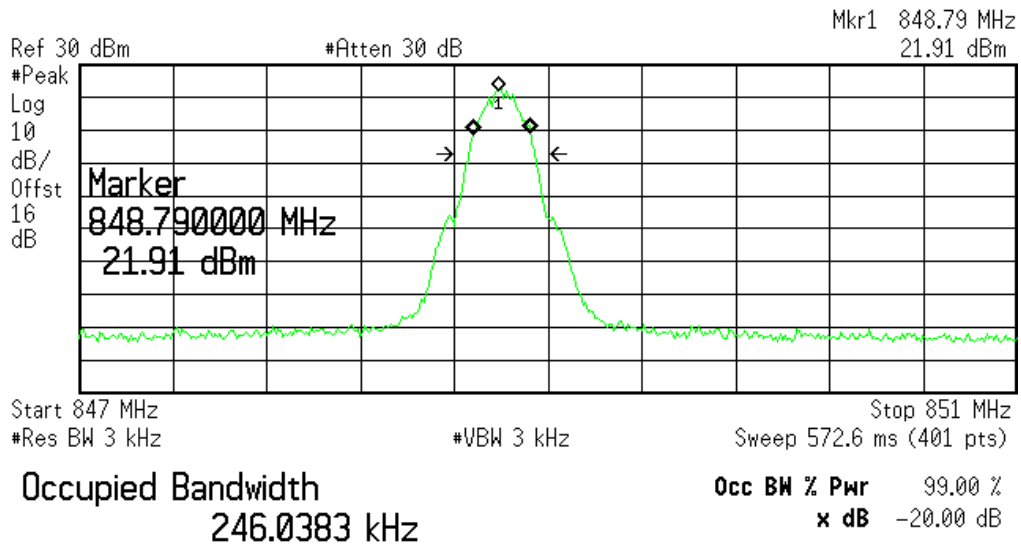
(Plot G3:GPRS 850MHz Channel = 128)

Agilent 17:20:31 Nov 26, 2009



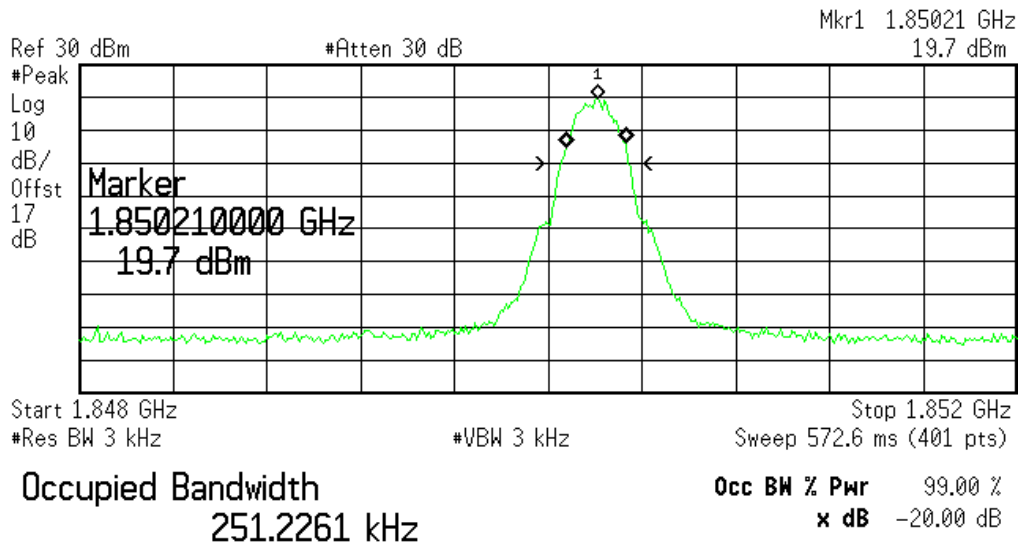
(Plot H3: GPRS 850MHz Channel = 190)

Agilent 17:23:09 Nov 26, 2009



(Plot I3: GPRS 850MHz Channel = 251)

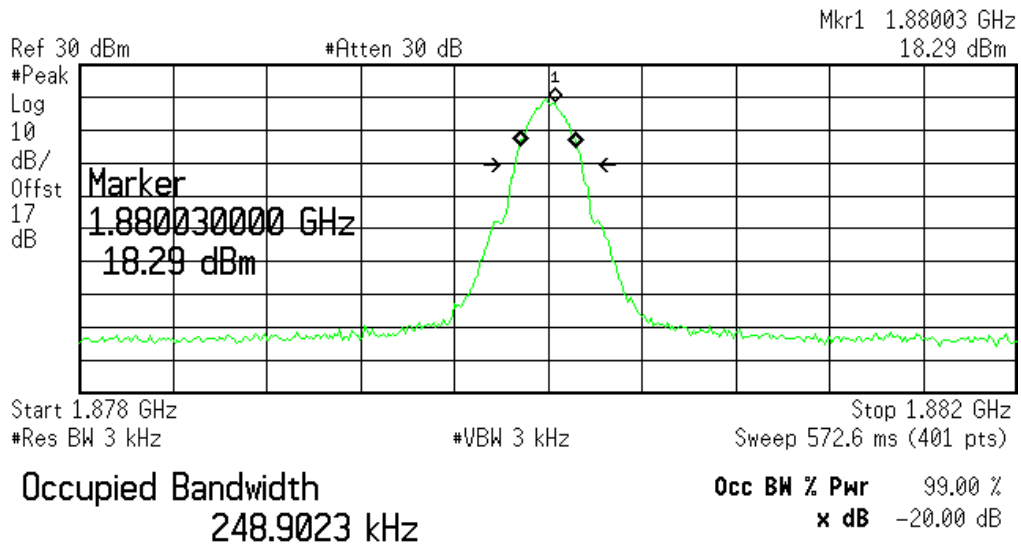
Agilent 17:27:36 Nov 26, 2009



Transmit Freq Error 202.193 kHz
x dB Bandwidth 288.166 kHz

(Plot J3: GPRS 1900MHz Channel = 512)

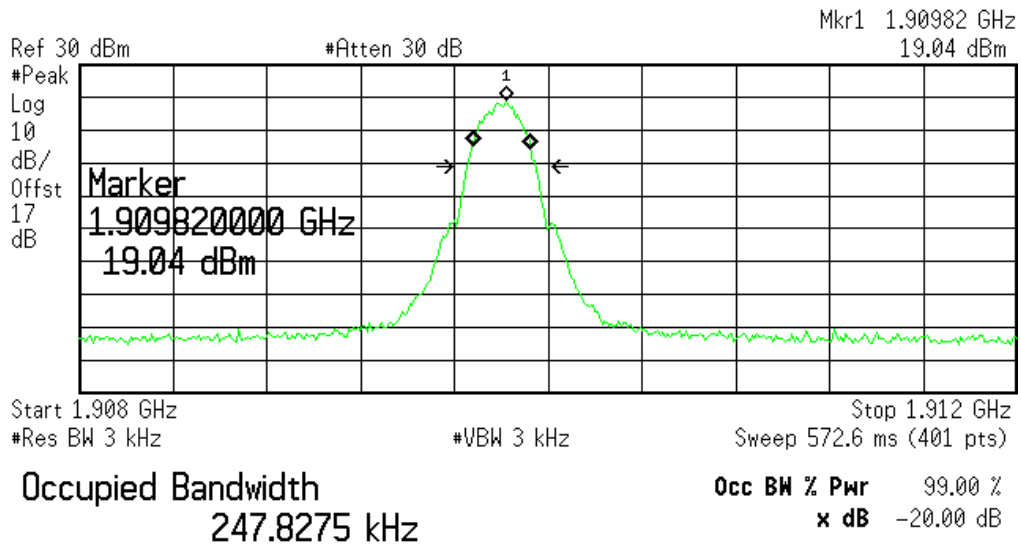
Agilent 17:28:53 Nov 26, 2009



Transmit Freq Error 367.085 Hz
x dB Bandwidth 290.790 kHz

(Plot K3: GPRS 1900MHz Channel = 661)

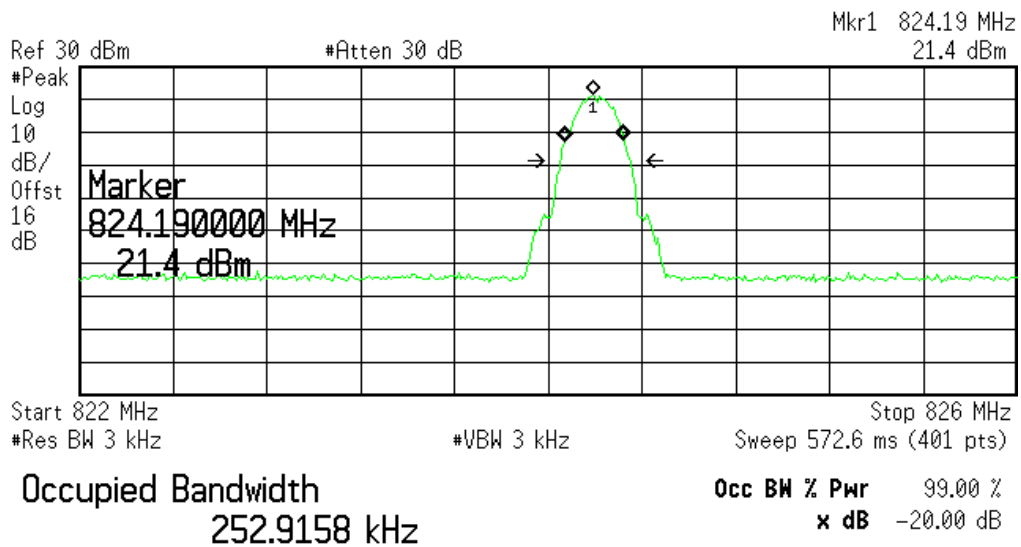
Agilent 17:30:04 Nov 26, 2009



Transmit Freq Error -199.729 kHz
x dB Bandwidth 291.056 kHz

(Plot L3: GPRS 1900MHz Channel = 810)

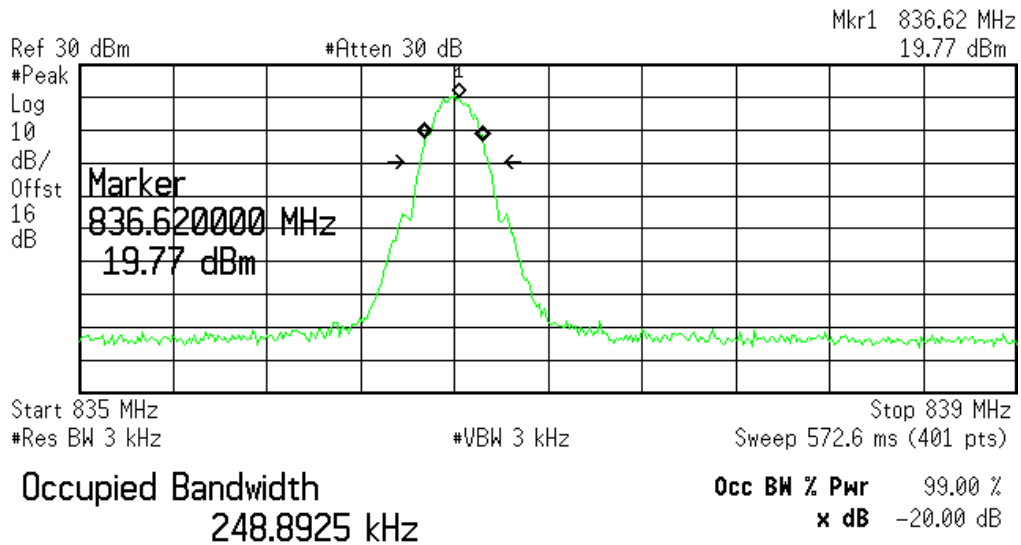
Agilent 16:56:42 Nov 27, 2009



Transmit Freq Error 196.714 kHz
x dB Bandwidth 295.020 kHz

(Plot M3:EDGE 850MHz Channel = 128)

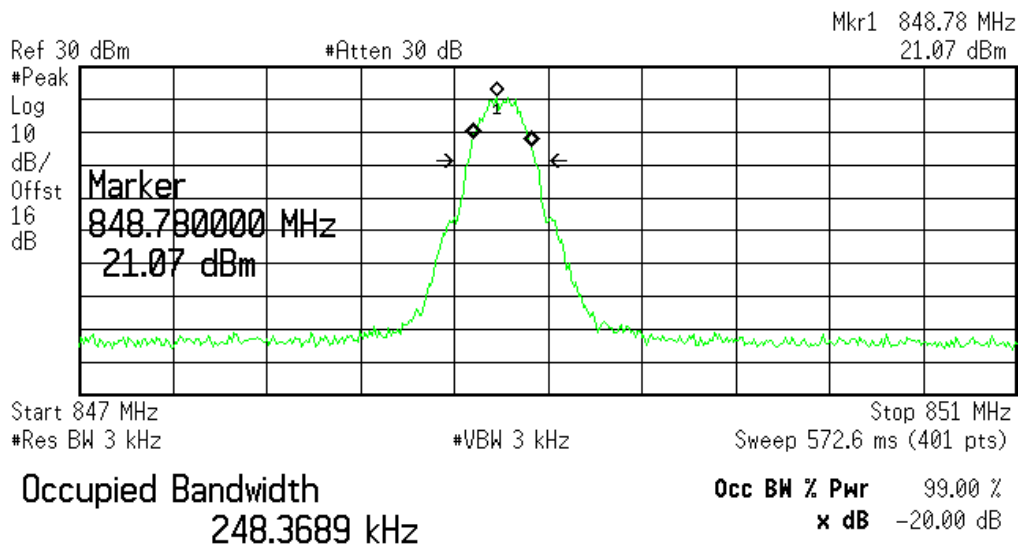
Agilent 16:58:20 Nov 27, 2009



Transmit Freq Error -400.630 kHz
x dB Bandwidth 293.070 kHz

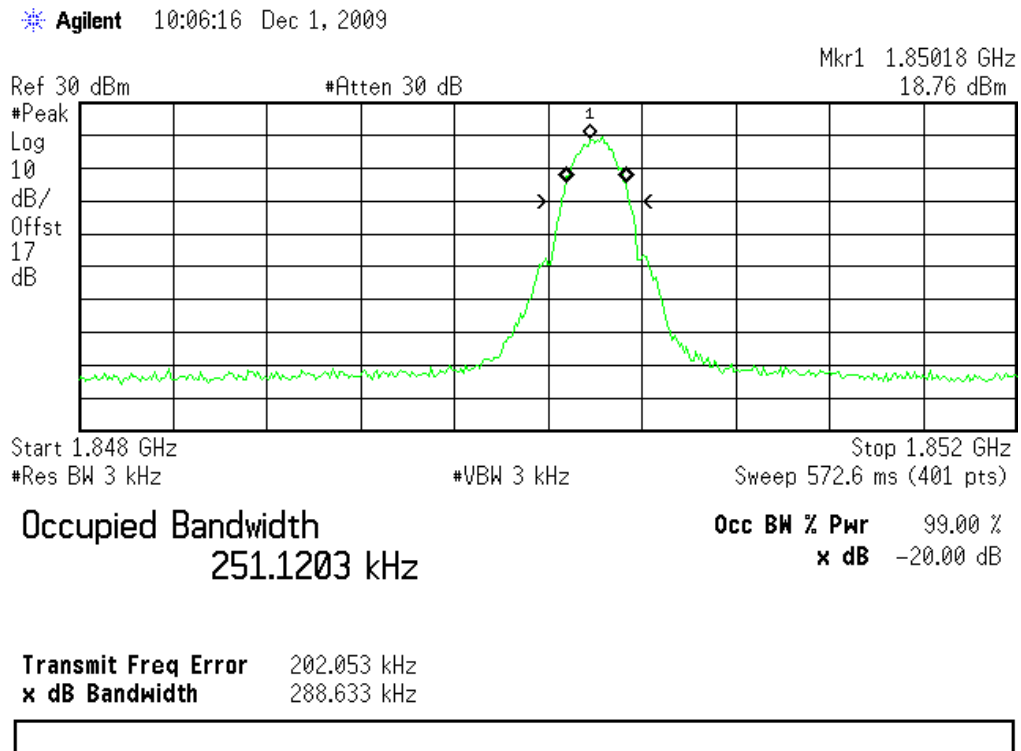
(Plot N3: EDGE 850MHz Channel = 190)

Agilent 16:59:24 Nov 27, 2009

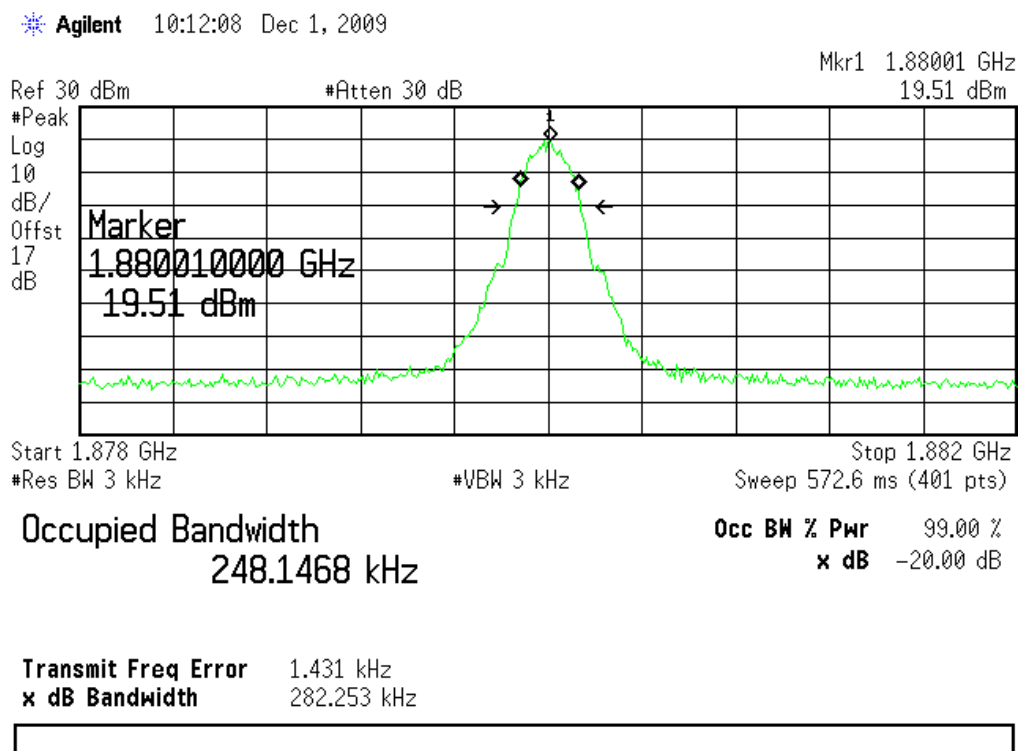


Transmit Freq Error -198.085 kHz
x dB Bandwidth 282.271 kHz

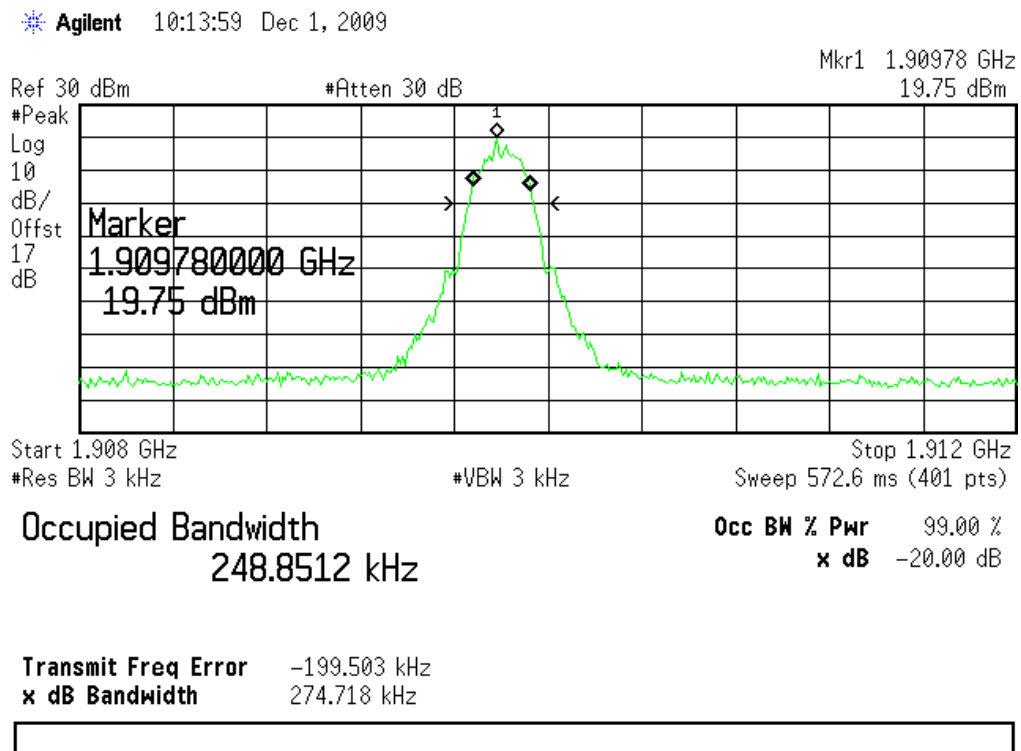
(Plot O3: EDGE 850MHz Channel = 251)



(Plot P3: EDGE 1900MHz Channel = 512)



(Plot Q3: EDGE 1900MHz Channel = 661)



(Plot R3: EDGE 1900MHz Channel = 810)

3.4 Frequency Stability

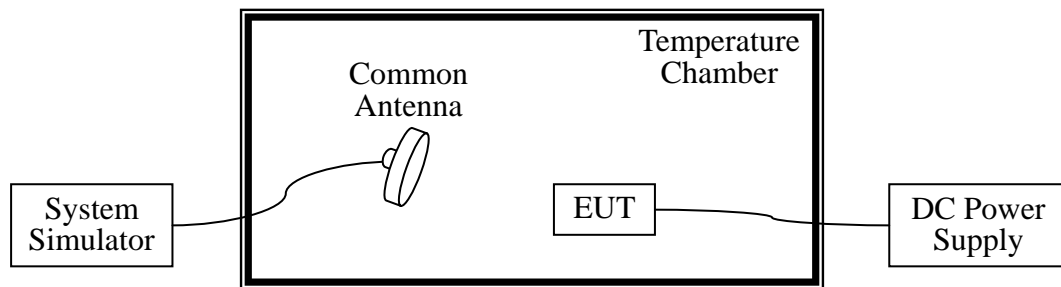
3.4.1 Requirement

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

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

3.4.2 Test Description

1. Test Setup:



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

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
CMU200	Rohde&Schwarz	FSP30	101020	2009.10	1year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2009.10	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2009.10	1year

3.4.3 Test Verdict

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

deviation limit is ± 2.5 ppm.

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)/ Channel = 512 (1850.2MHz)		Channel = 190 (836.6MHz)/ Channel = 661 (1880.0MHz)		Channel = 251 (848.8MHz)/ Channel = 810 (1909.8MHz)		
			Hz	Limit	Hz	Limit	Hz	Limit	
GSM 850MHz	3.7	-30	-15.17	± 2060.5	14.52	± 2091.5	-16.45	± 2122.0	PASS
		-20	13.10		-13.37		-10.17		
		-10	14.22		9.27		16.67		
		0	-14.13		11.49		16.12		
		+10	-19.11		12.26		10.22		
		+20	-12.53		-12.50		15.20		
		+30	11.27		10.21		13.78		
		+40	-11.32		-13.69		13.24		
		+50	-13.18		-20.28		12.27		
	4.2	+25	-10.09		-13.24		13.92		
	3.6	+25	-14.33		-18.88		12.14		
GSM 1900MHz	3.7	-30	24.42	± 4625.5	-32.79	± 4700.0	24.54	± 4774.5	PASS
		-20	16.54		15.46		12.14		
		-10	-13.24		9.21		-12.19		
		0	13.86		10.77		-16.16		
		+10	10.54		8.16		15.45		
		+20	17.58		26.56		-20.12		
		+30	-11.23		-12.87		-10.12		
		+40	-15.54		13.14		14.79		
		+50	13.38		21.08		-12.17		
	4.2	+25	-12.21		-9.18		-15.83		
	3.6	+25	-8.73		-19.18		15.50		
GPRS 850MHz	3.7	-30	-15.17	± 2060.5	14.52	± 2091.5	-16.45	± 2122.0	PASS
		-20	13.10		-13.37		-10.17		
		-10	14.22		9.27		16.67		
		0	-14.13		11.49		16.12		
		+10	-19.11		12.26		10.22		
		+20	-12.53		-12.50		15.20		
		+30	11.27		10.21		13.78		
		+40	-11.32		-13.69		13.24		
		+50	-13.18		-20.28		12.27		
	4.2	+25	-10.09		-13.24		13.92		
	3.6	+25	-14.33		-18.88		12.14		

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)/ Channel = 512 (1850.2MHz)		Channel = 190 (836.6MHz)/ Channel = 661 (1880.0MHz)		Channel = 251 (848.8MHz)/ Channel = 810 (1909.8MHz)		
			Hz	Limit	Hz	Limit	Hz	Limit	
GPRS 1900MHz	3.7	-30	24.42	±4625.5	-32.79	±4700.0	24.54	±4774.5	PASS
		-20	16.54		15.46		12.14		
		-10	-13.24		9.21		-12.19		
		0	13.86		10.77		-16.16		
		+10	10.54		8.16		15.45		
		+20	17.58		26.56		-20.12		
		+30	-11.23		-12.87		-10.12		
		+40	-15.54		13.14		14.79		
		+50	13.38		21.08		-12.17		
	4.2	+25	-12.21	-9.18	-15.83				
	3.6	+25	-8.73	-19.18	15.50				
EDGE 850MHz	3.7	-30	-15.17	±2060.5	14.52	±2091.5	-16.45	±2122.0	PASS
		-20	13.10		-13.37		-10.17		
		-10	14.22		9.27		16.67		
		0	-14.13		11.49		16.12		
		+10	-19.11		12.26		10.22		
		+20	-12.53		-12.50		15.20		
		+30	11.27		10.21		13.78		
		+40	-11.32		-13.69		13.24		
		+50	-13.18		-20.28		12.27		
	4.2	+25	-10.09	-13.24	13.92				
	3.6	+25	-14.33	-18.88	12.14				
EDGE 1900MHz	3.7	-30	24.42	±4625.5	-32.79	±4700.0	24.54	±4774.5	PASS
		-20	16.54		15.46		12.14		
		-10	-13.24		9.21		-12.19		
		0	13.86		10.77		-16.16		
		+10	10.54		8.16		15.45		
		+20	17.58		26.56		-20.12		
		+30	-11.23		-12.87		-10.12		
		+40	-15.54		13.14		14.79		
		+50	13.38		21.08		-12.17		
	4.2	+25	-12.21	-9.18	-15.83				
	3.6	+25	-8.73	-19.18	15.50				

3.5 Conducted Out of Band Emissions

3.6 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.

3.6.1 Test Description

See section 3.1.2 of this report.

3.6.2 Test Result

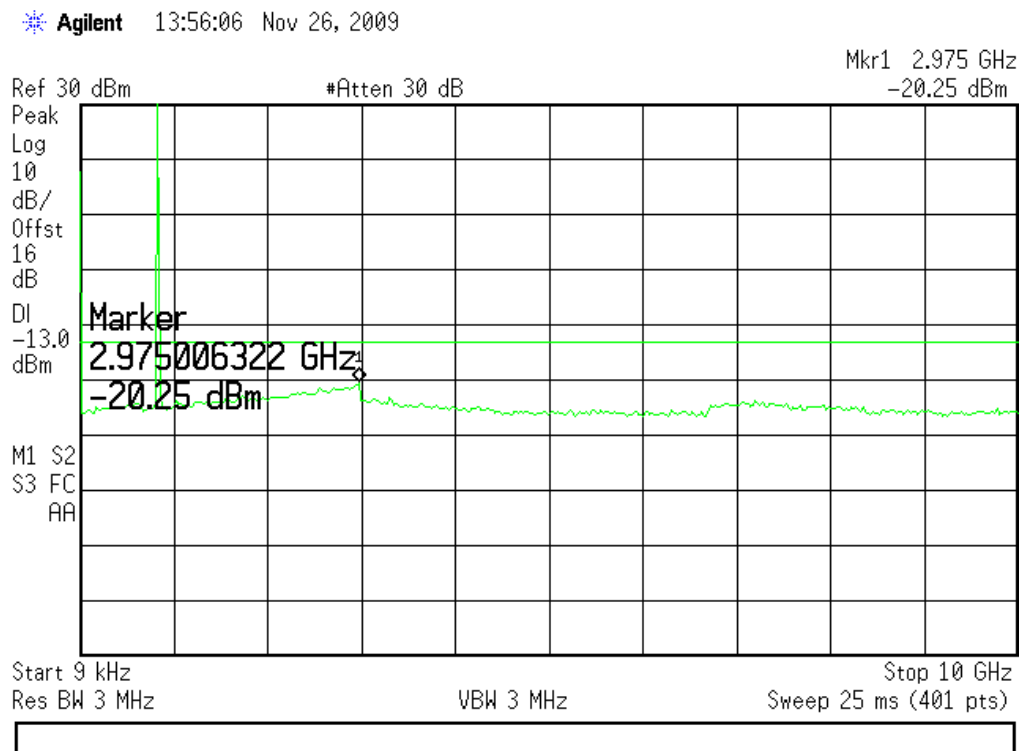
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

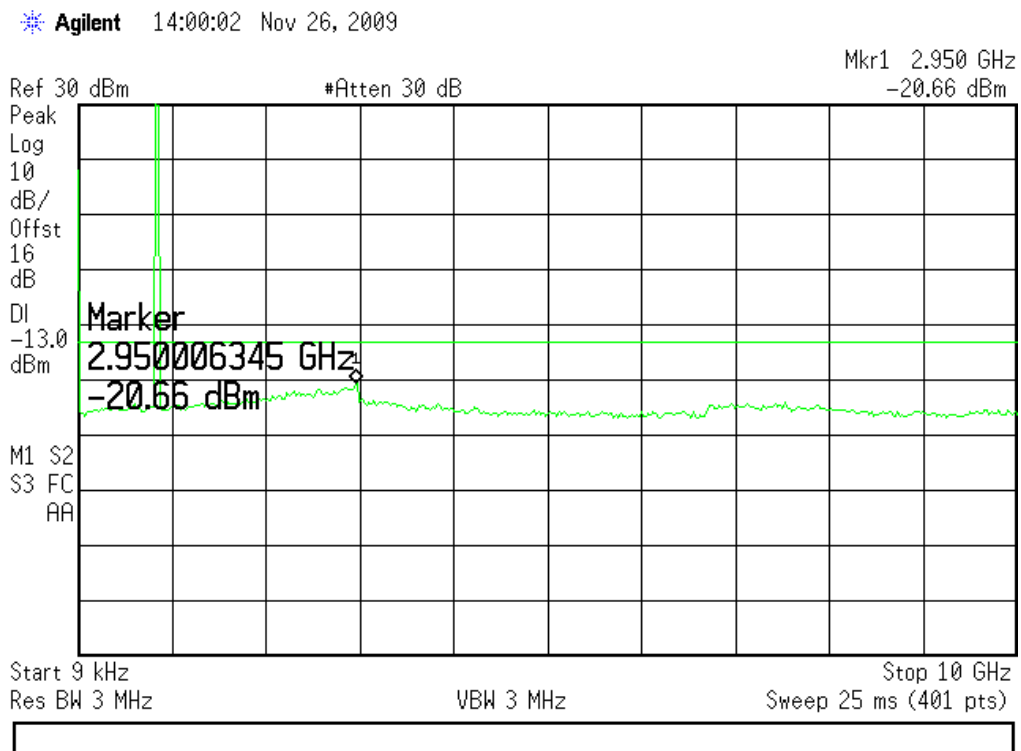
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	2975.0	-20.25	Plot A4	-13	PASS
	190	2950.0	-20.66	Plot B4		PASS
	251	2975.0	-20.42	Plot C4		PASS
GSM 1900MHz	512	2950.0	-19.90	Plot D4	-13	PASS
	661	2950.0	-19.92	Plot E4		PASS
	810	2950.0	-19.70	Plot F4		PASS
GPRS 850MHz	128	2975.0	-19.70	Plot G4	-13	PASS
	190	2975.0	-19.91	Plot H4		PASS
	251	2975.0	-19.50	Plot I4		PASS
GPRS 1900MHz	512	2950.0	-18.91	Plot J4	-13	PASS
	661	2950.0	-19.50	Plot K4		PASS
	810	2950.0	-19.02	Plot L		PASS
EDGE 850MHz	128	2975.0	-20.19	Plot M4	-13	PASS
	190	2975.0	-20.73	Plot N4		PASS
	251	2975.0	-20.48	Plot O4		PASS
EDGE 1900MHz	512	2950.0	-19.85	Plot P4	-13	PASS
	661	2950.0	-19.93	Plot Q4		PASS
	810	2950.0	-19.52	Plot R4		PASS

2. Test Plot for the Whole Measurement Frequency Range:

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



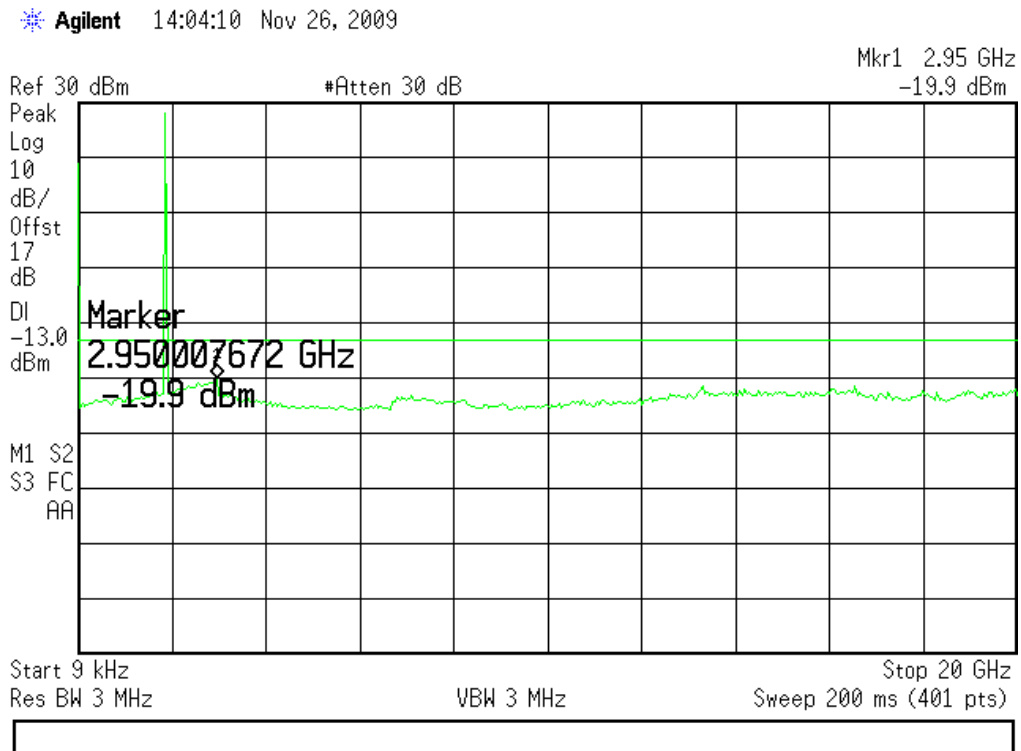
(Plot A4.:GSM 850MHz Channel = 128, 9KHz to 10GHz)



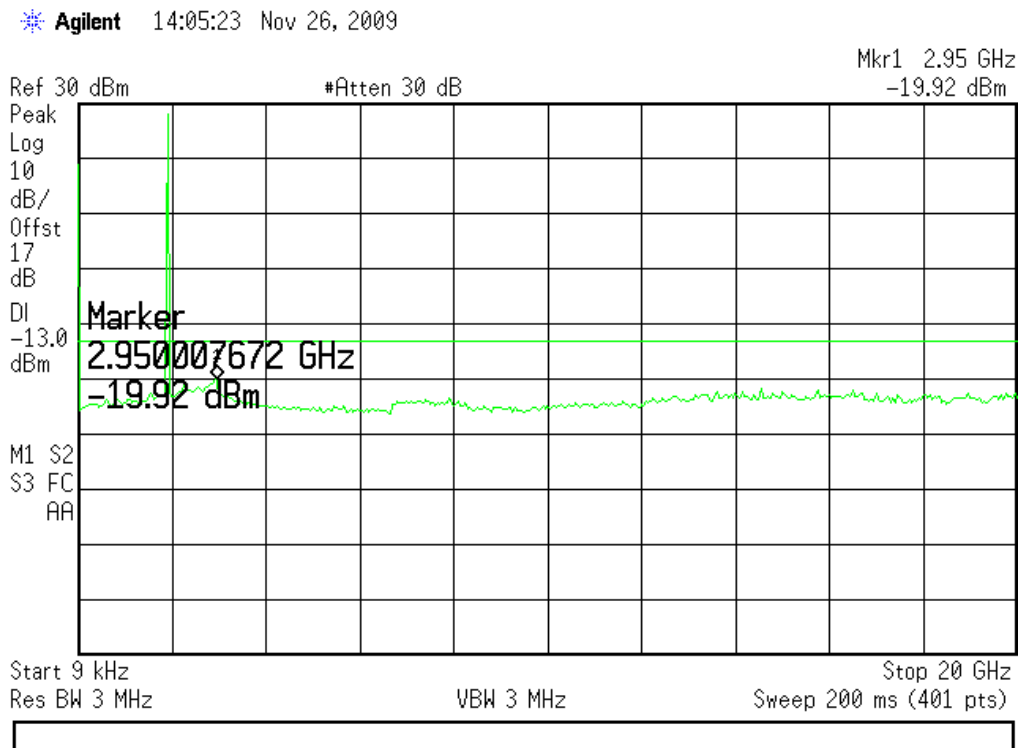
(Plot B4.:GSM 850MHz Channel = 190, 9KHz to 10GHz)



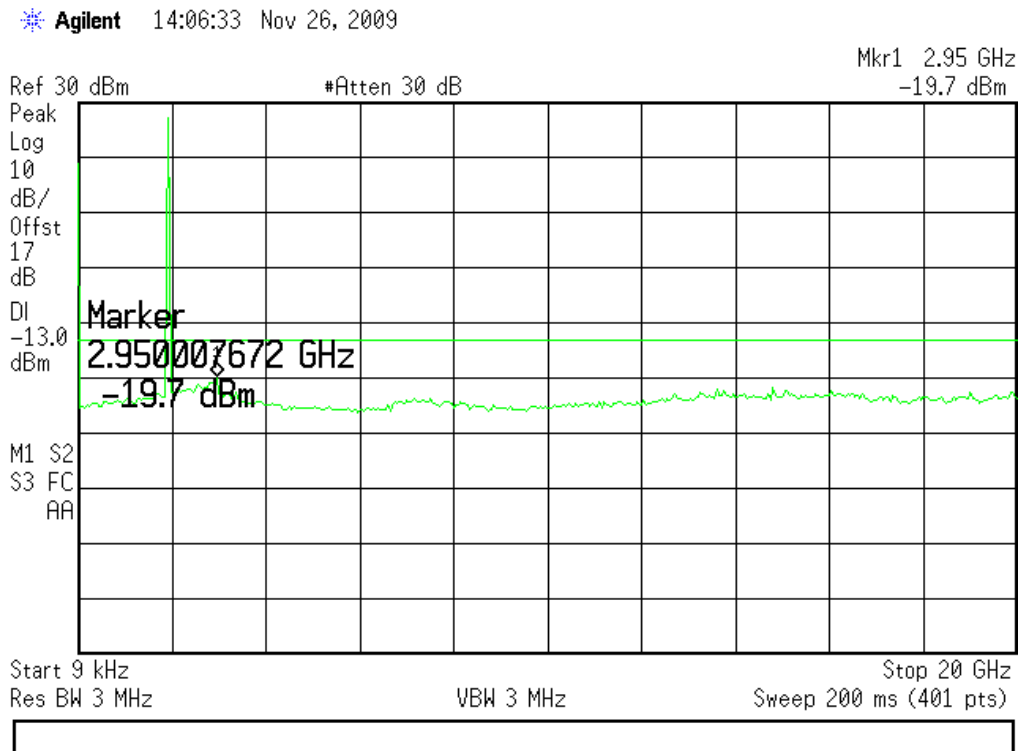
(Plot C4.:GSM 850MHz Channel = 251, 9KHz to 10GHz)



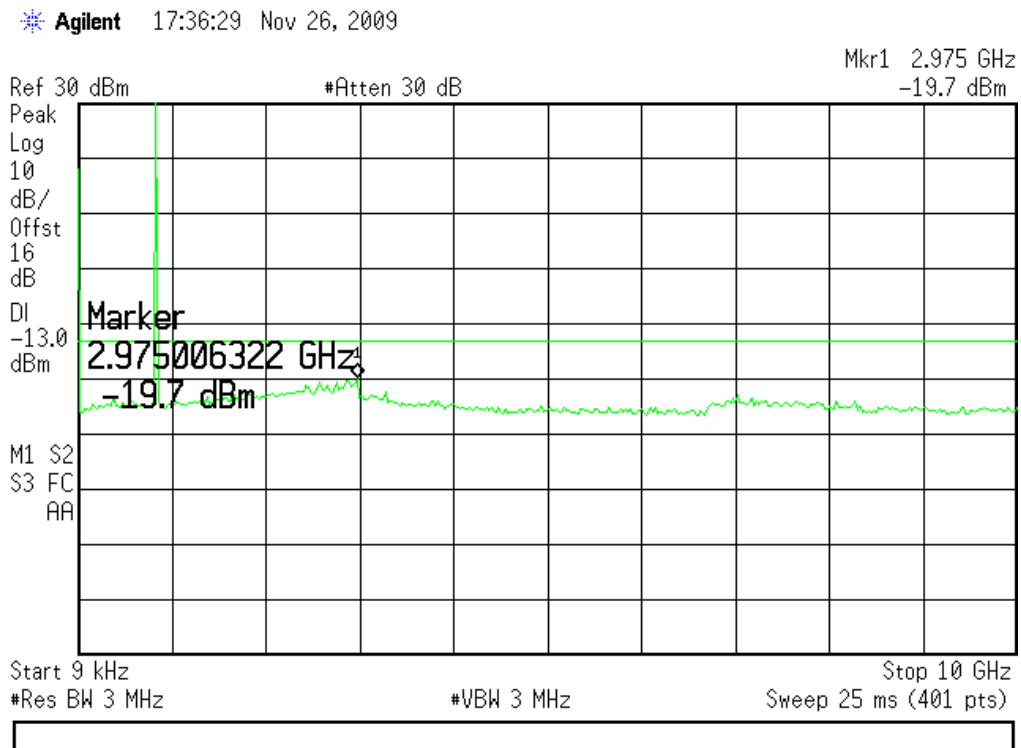
(Plot D4.:GSM 1900MHz Channel = 512, 9KHz to 20GHz)



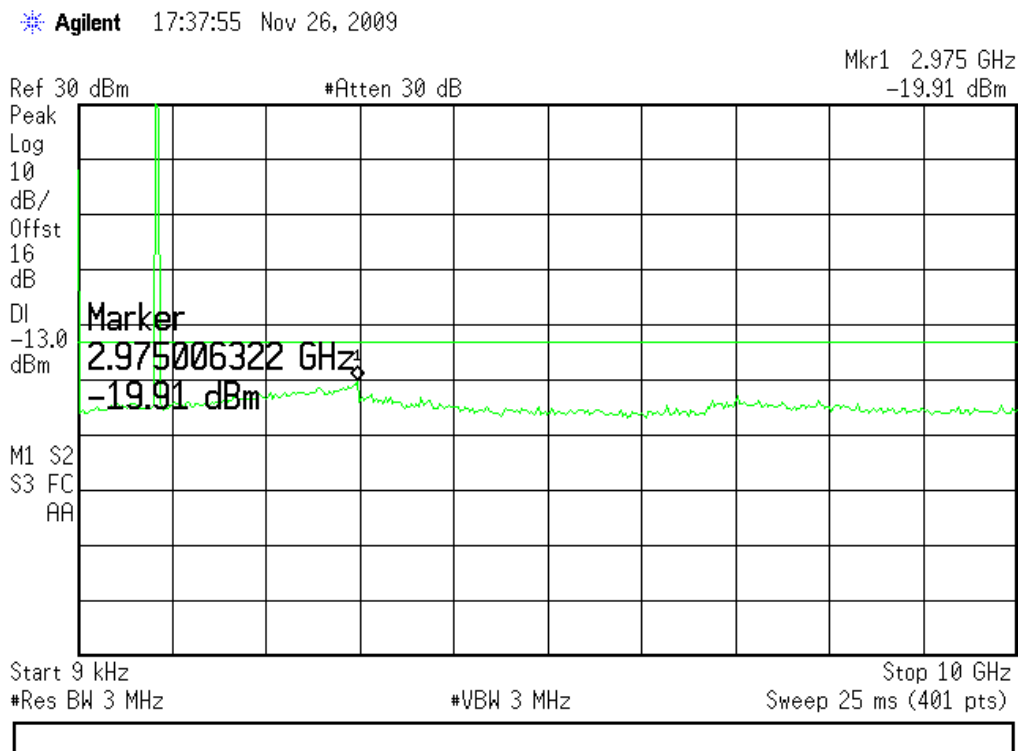
(Plot E4.: GSM 1900MHz Channel = 661, 9KHz to 20GHz)



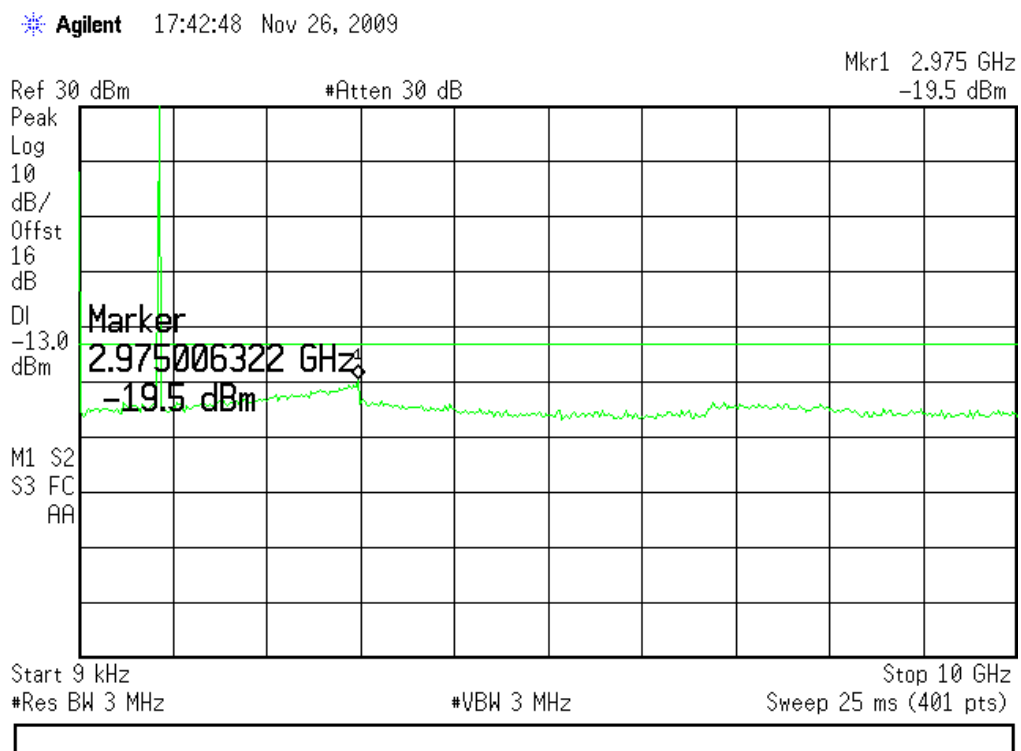
(Plot F4.: GSM 1900MHz Channel = 810, 9KHz to 20GHz)



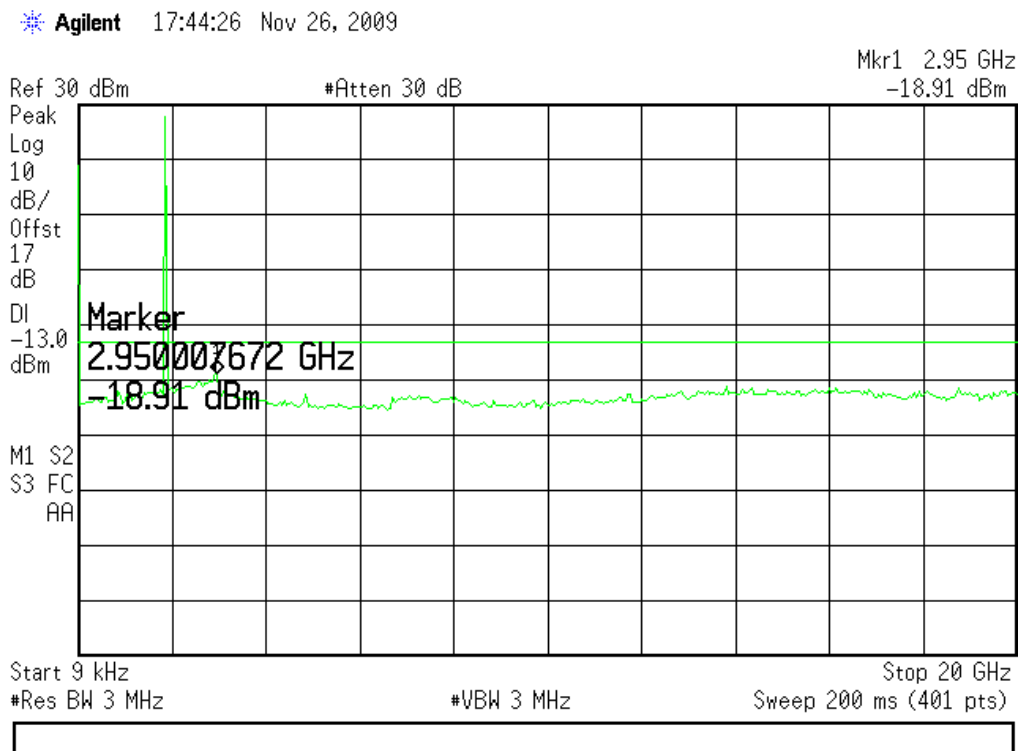
(Plot G4.:GPRS 850MHz Channel = 128, 9KHz to 10GHz)



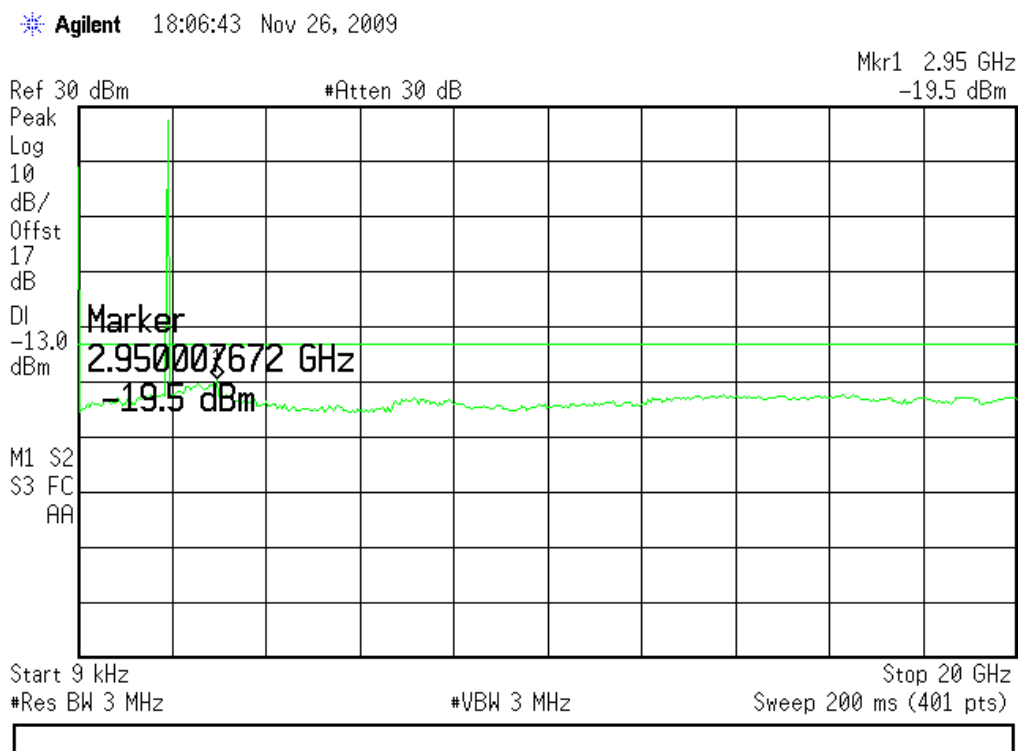
(Plot H4.: GPRS 850MHz Channel = 190, 9KHz to 10GHz)



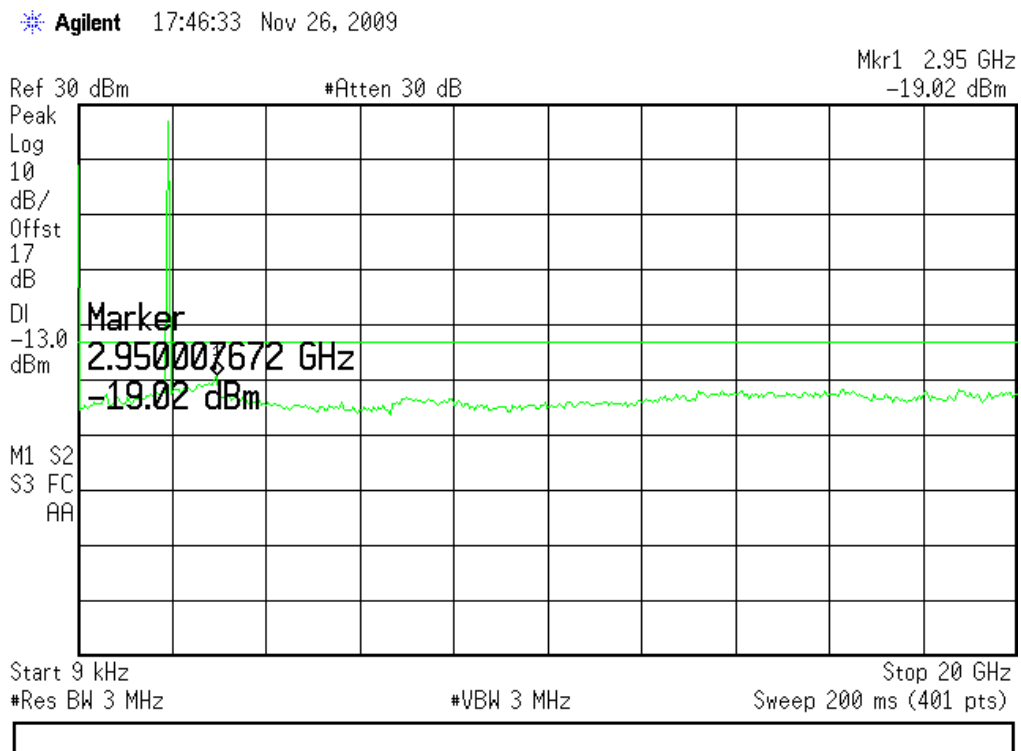
(Plot I4.: GPRS 850MHz Channel = 251, 9KHz to 10GHz)



(Plot J4.: GPRS 1900MHz Channel = 512, 9KHz to 20GHz)



(Plot K4.: GPRS 1900MHz Channel = 661, 9KHz to 20GHz)



(Plot L4.: GPRS 1900MHz Channel = 810, 9KHz to 20GHz)



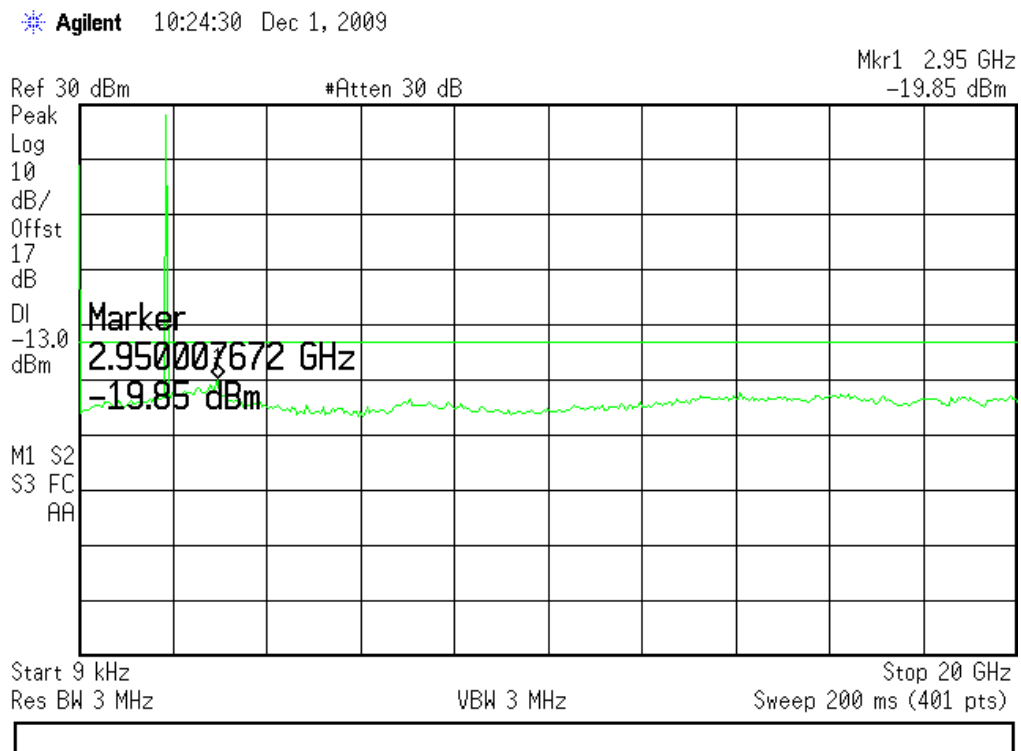
(Plot M4.:EDGE 850MHz Channel = 128, 9KHz to 10GHz)



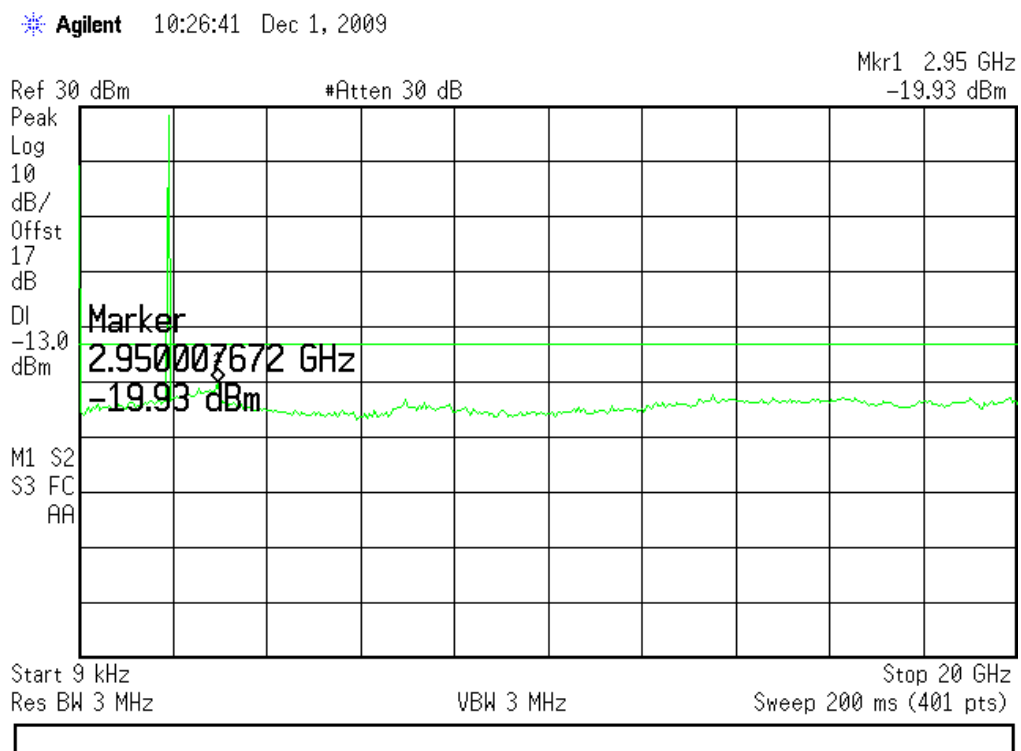
(Plot N4.: EDGE 850MHz Channel = 190, 9KHz to 10GHz)



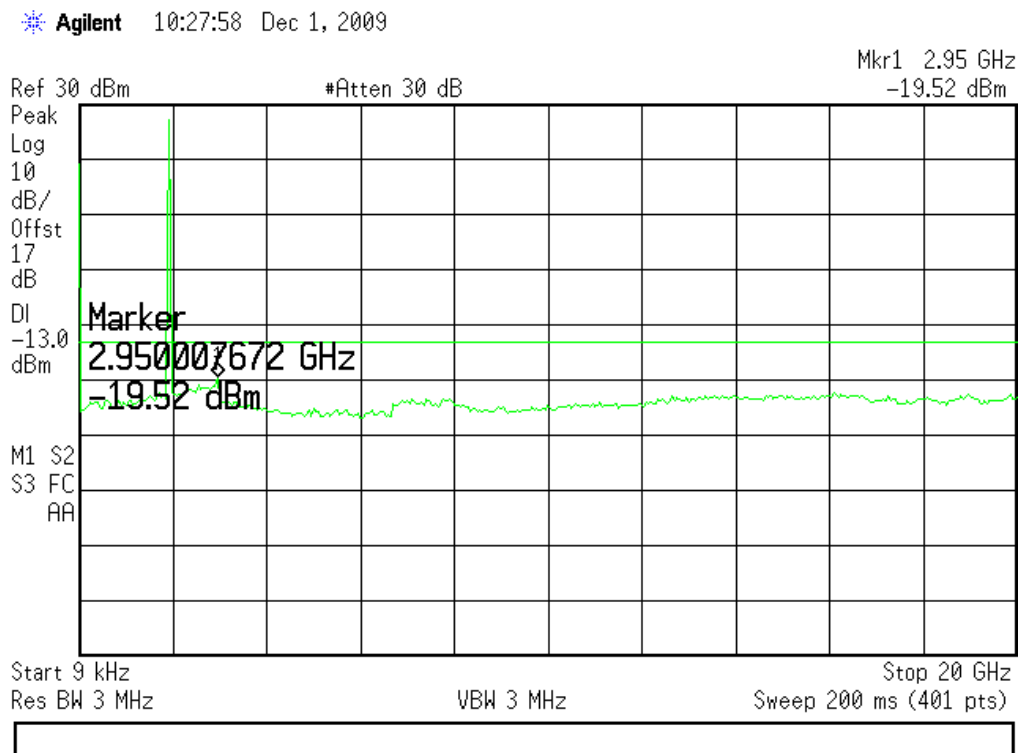
(Plot O4.: EDGE 850MHz Channel = 251, 9KHz to 10GHz)



(Plot P4.: EDGE 1900MHz Channel = 512, 9KHz to 20GHz)



(Plot Q4.: EDGE 1900MHz Channel = 661, 9KHz to 20GHz)



(Plot R4.: EDGE 1900MHz Channel = 810, 9KHz to 20GHz)

3.6 Band Edge

3.6.1 Requirement

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

3.6.2 Test Description

See section 3.1.2 of this report.

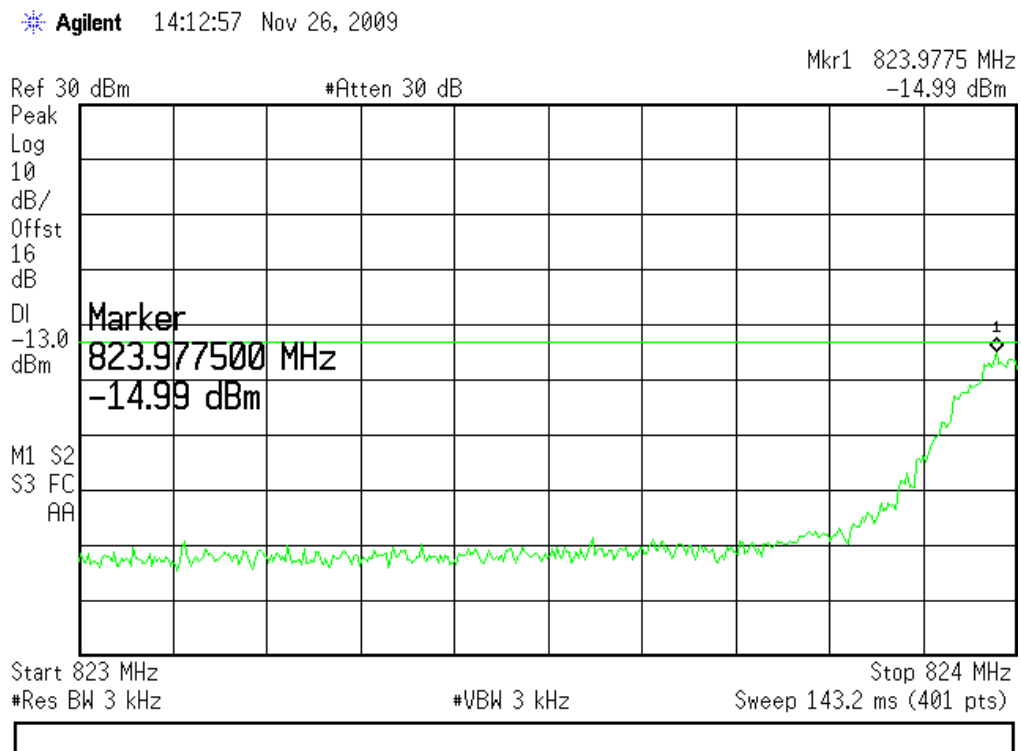
3.6.3 Test Result

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

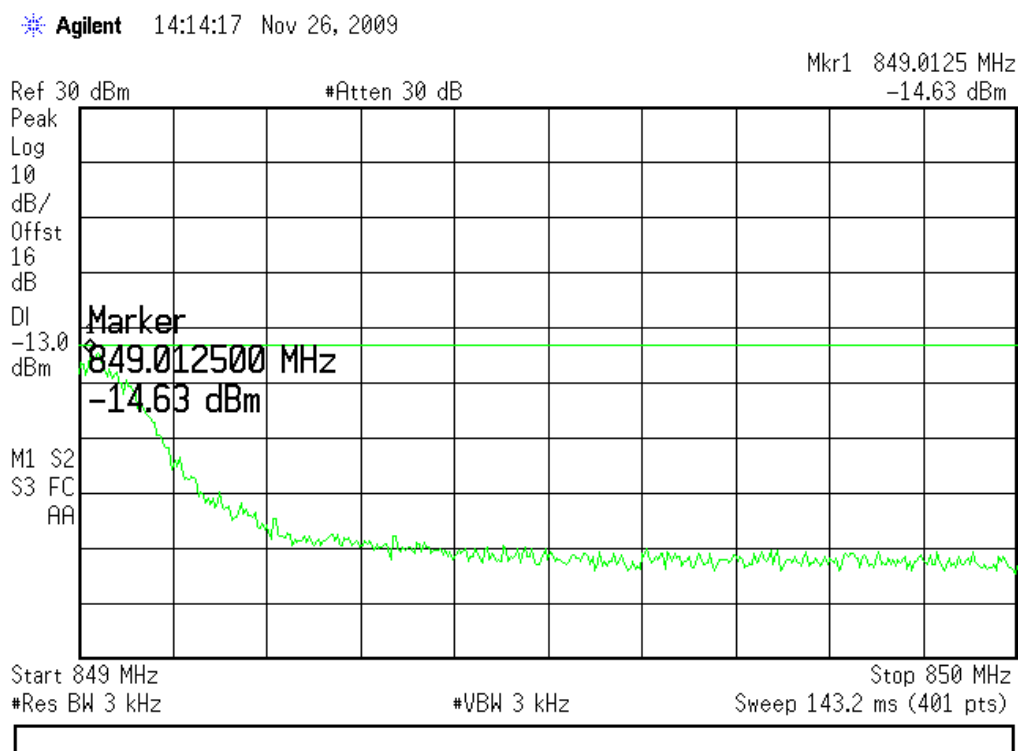
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	823.97	-14.99	Plat A5	-13	PASS
	251	849.01	-14.63	Plot B5		PASS
GSM 1900MHz	512	1849.98	-18.33	Plat C5	-13	PASS
	810	1910.00	-18.64	Plot D5		PASS
GPRS 850MHz	128	823.98	-13.66	Plat E5	-13	PASS
	251	849.00	-15.72	Plot F5		PASS
GPRS 1900MHz	512	1849.97	-17.52	Plat G5	-13	PASS
	810	1910.00	-17.07	Plot H5		PASS
EDGE 850MHz	128	823.99	-14.13	Plat I5	-13	PASS
	251	849.01	-15.25	Plot J5		PASS
EDGE 1900MHz	512	1849.98	-16.86	Plat K5	-13	PASS
	810	1910.00	-19.05	Plot L5		PASS

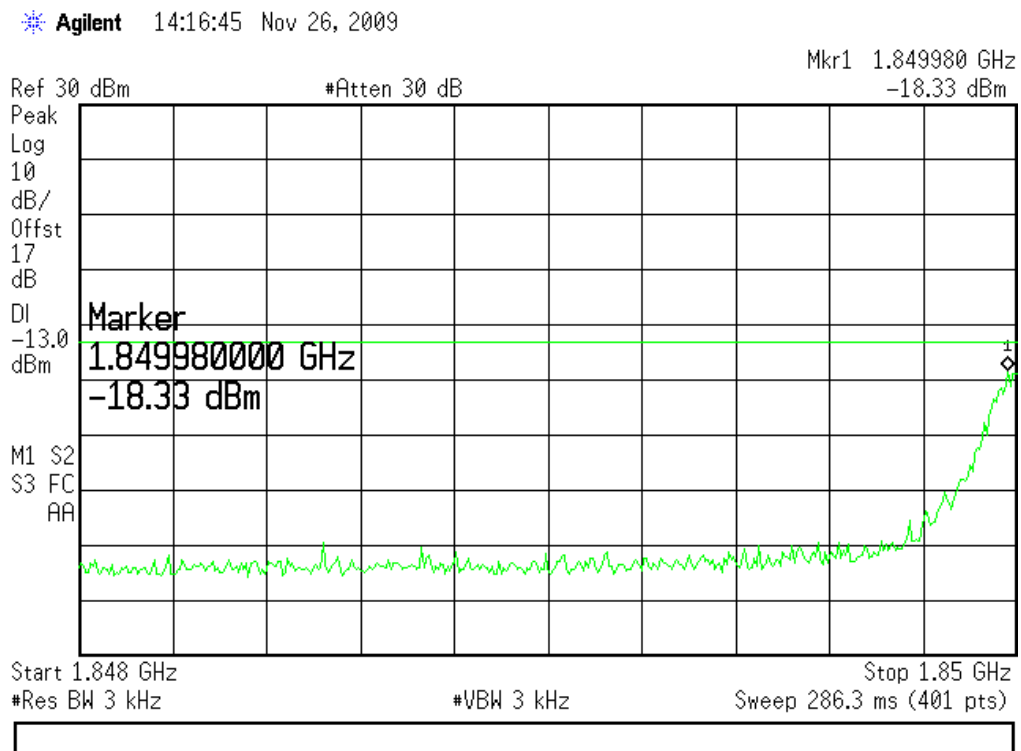
2. Test Plot:



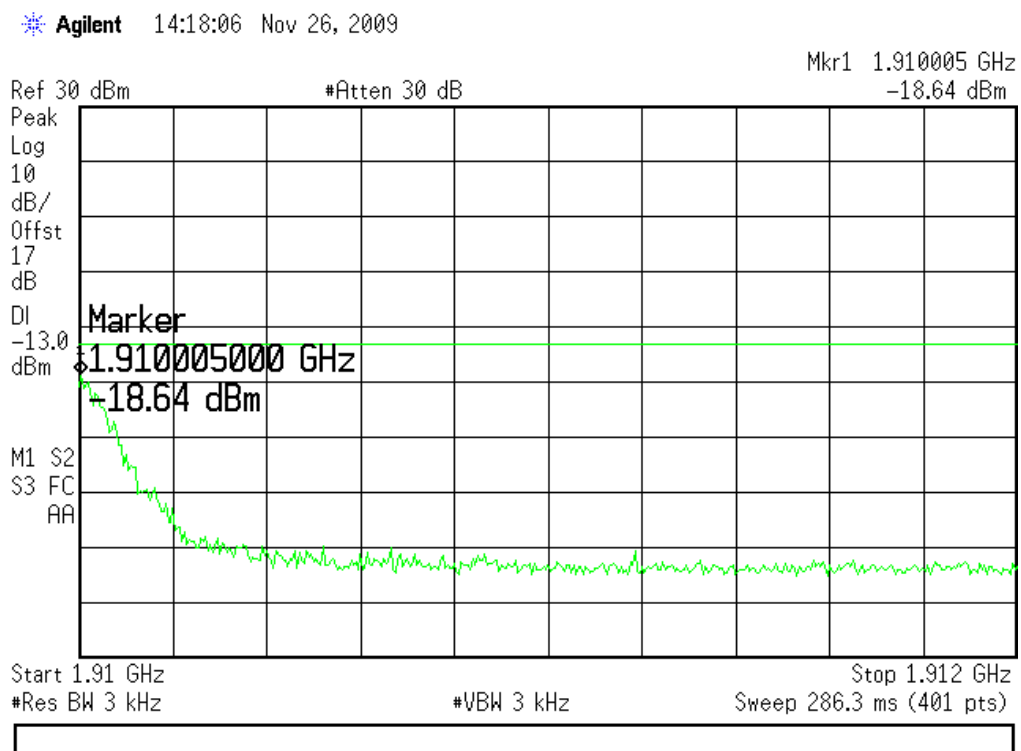
(Plot A5: GSM 850MHz Channel = 128)



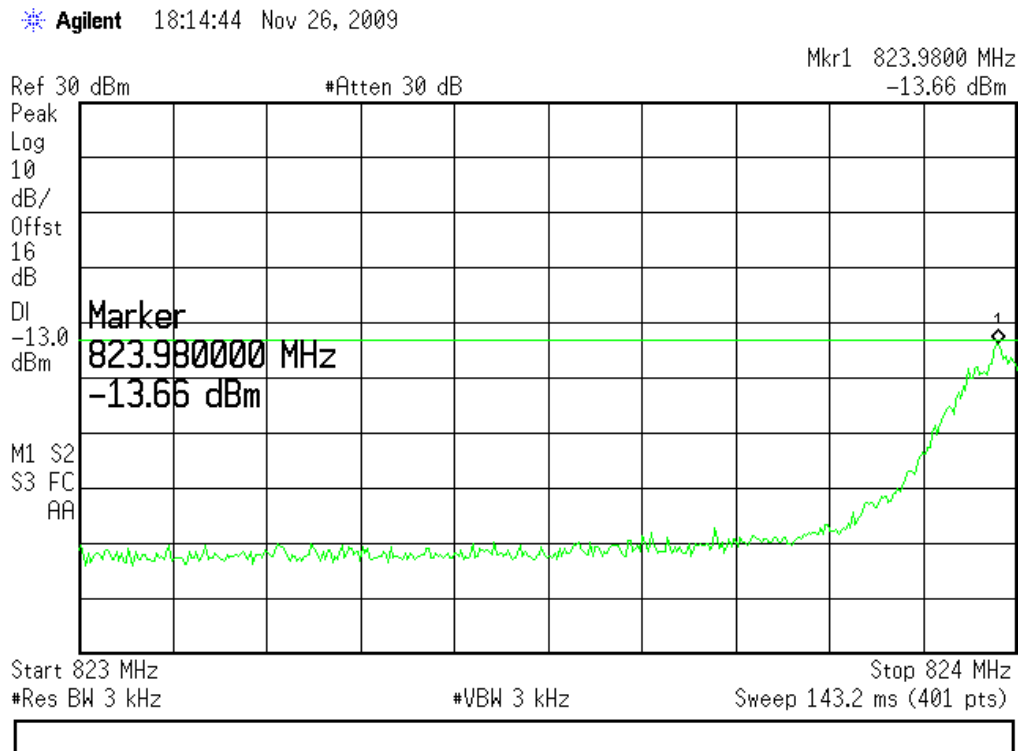
(Plot B5: GSM 850MHz Channel = 251)



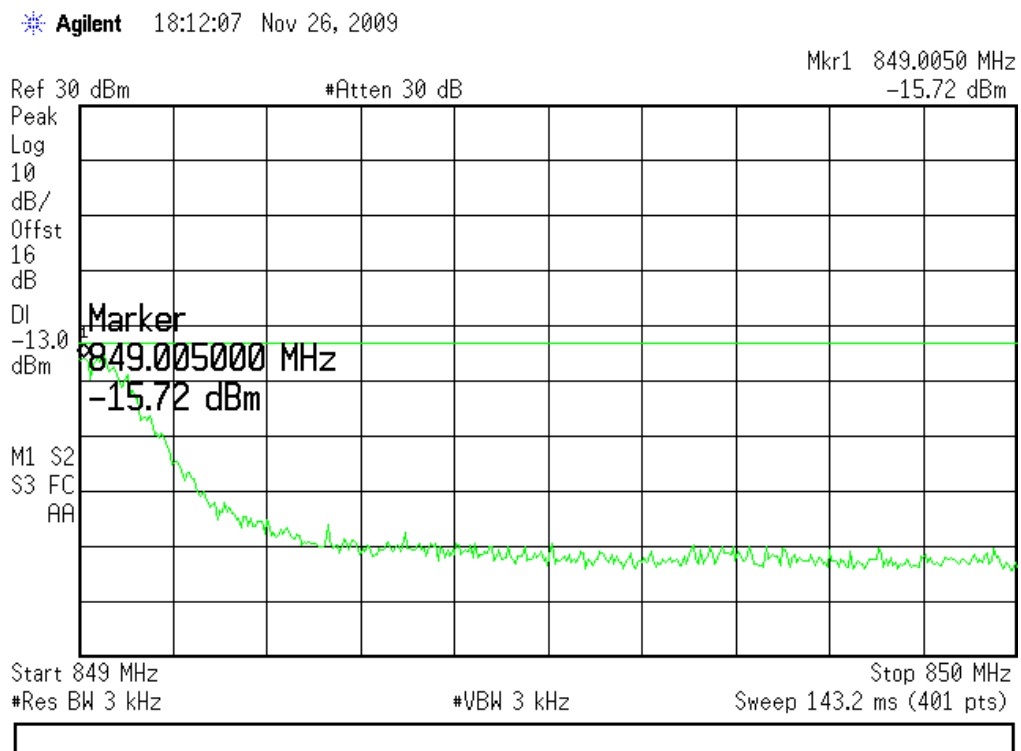
(Plot C5: GSM 1900MHz Channel = 512)



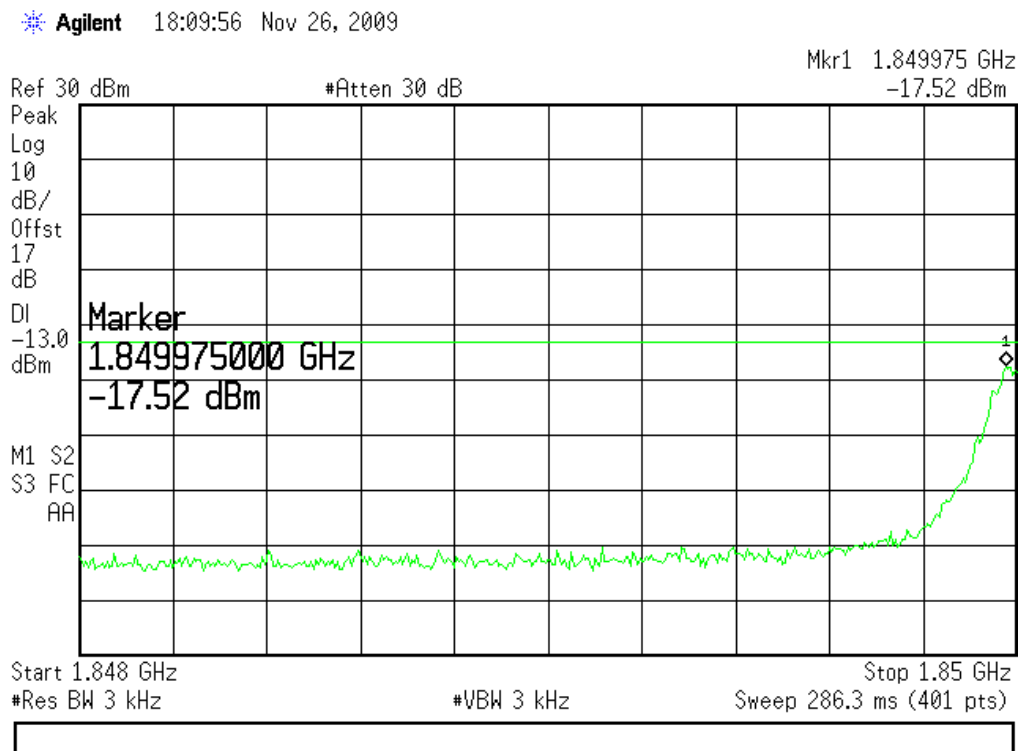
(Plot D5: GSM 1900MHz Channel = 810)



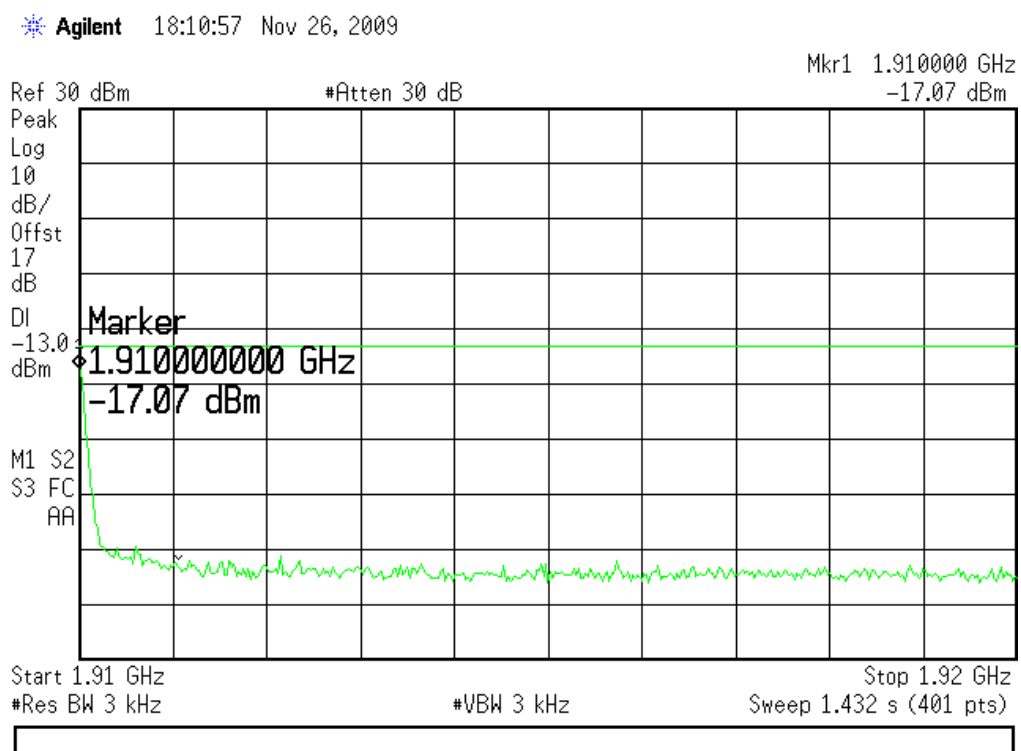
(Plot E5: GPRS 850MHz Channel = 128)



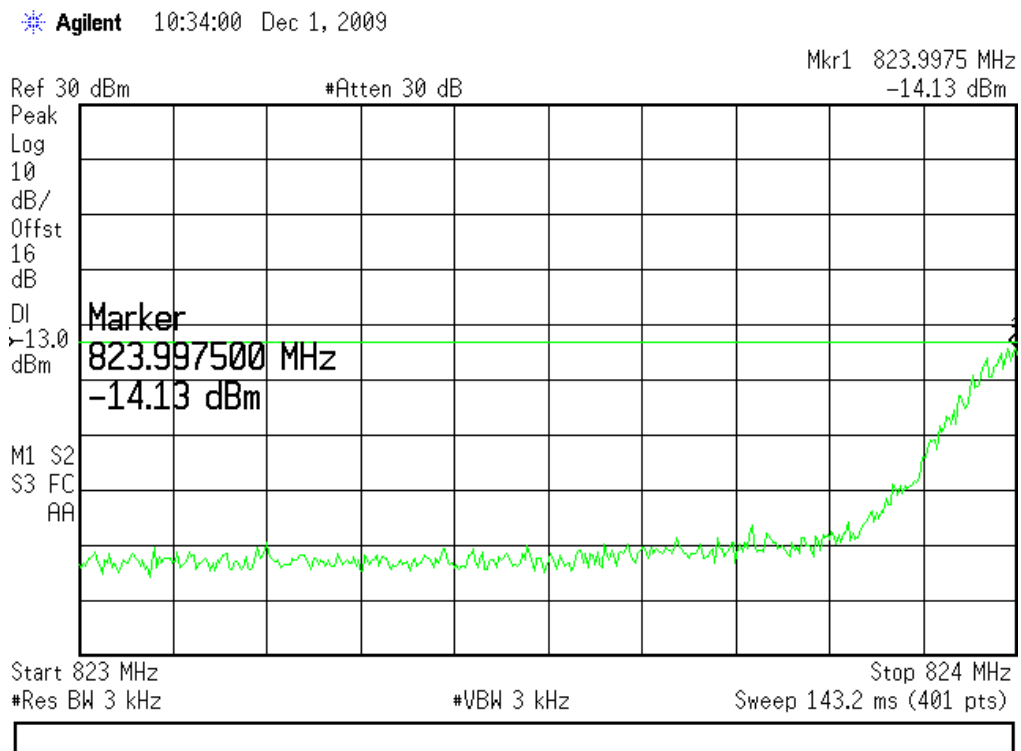
(Plot F5: GPRS 850MHz Channel = 251)



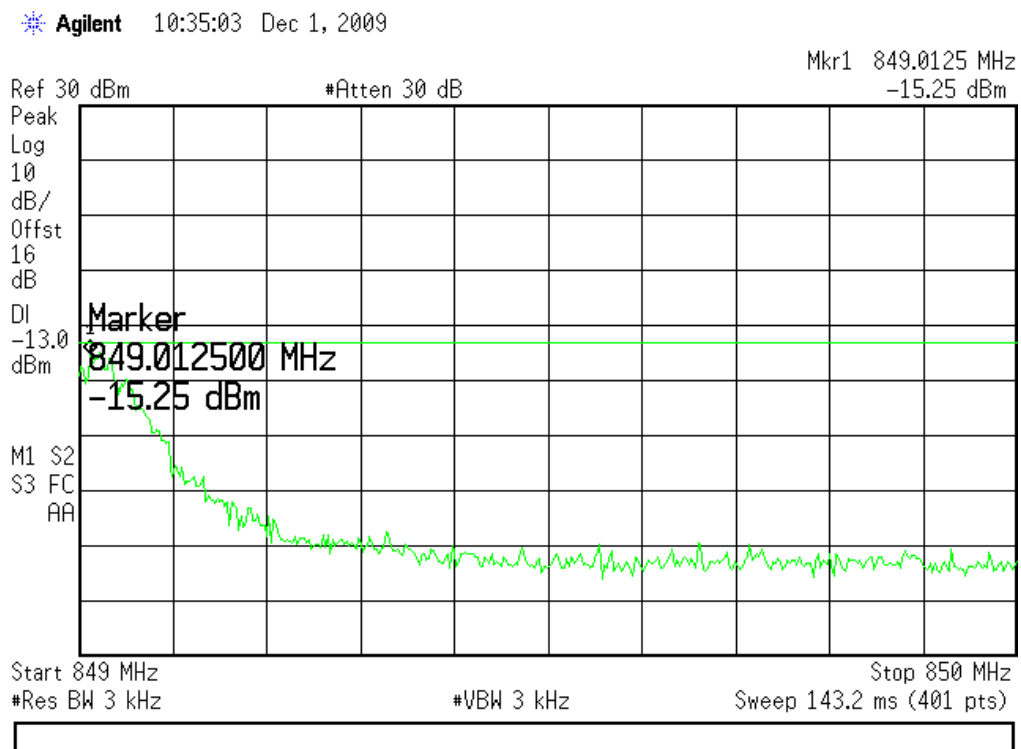
(Plot G5: GPRS 1900MHz Channel = 512)



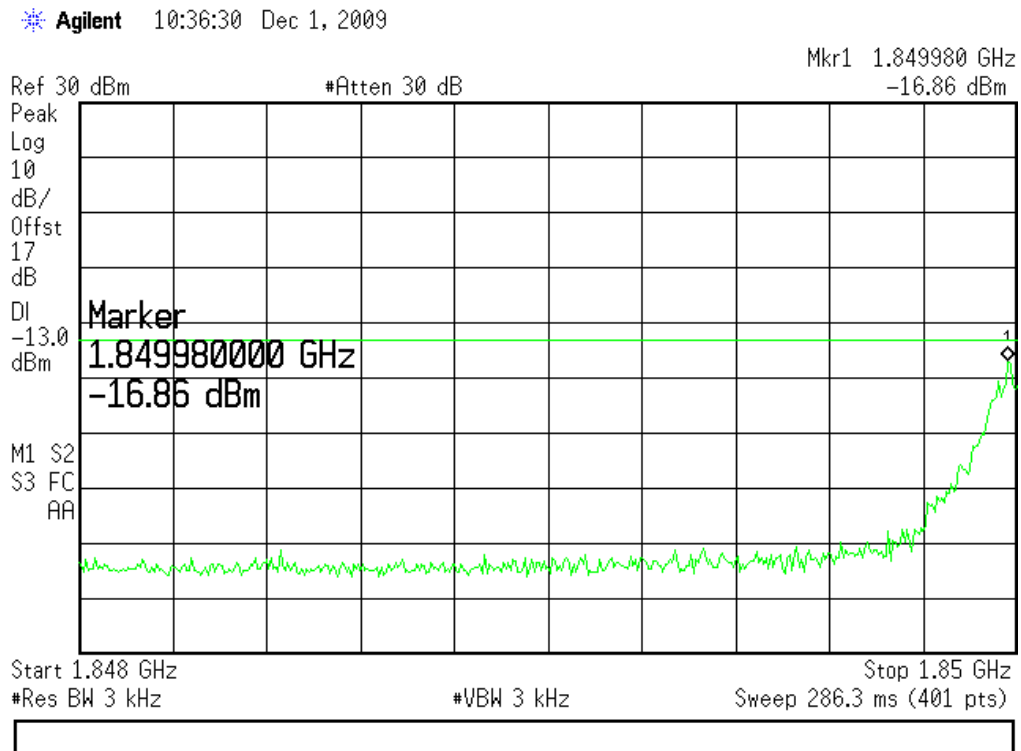
(Plot H5: GPRS 1900MHz Channel = 810)



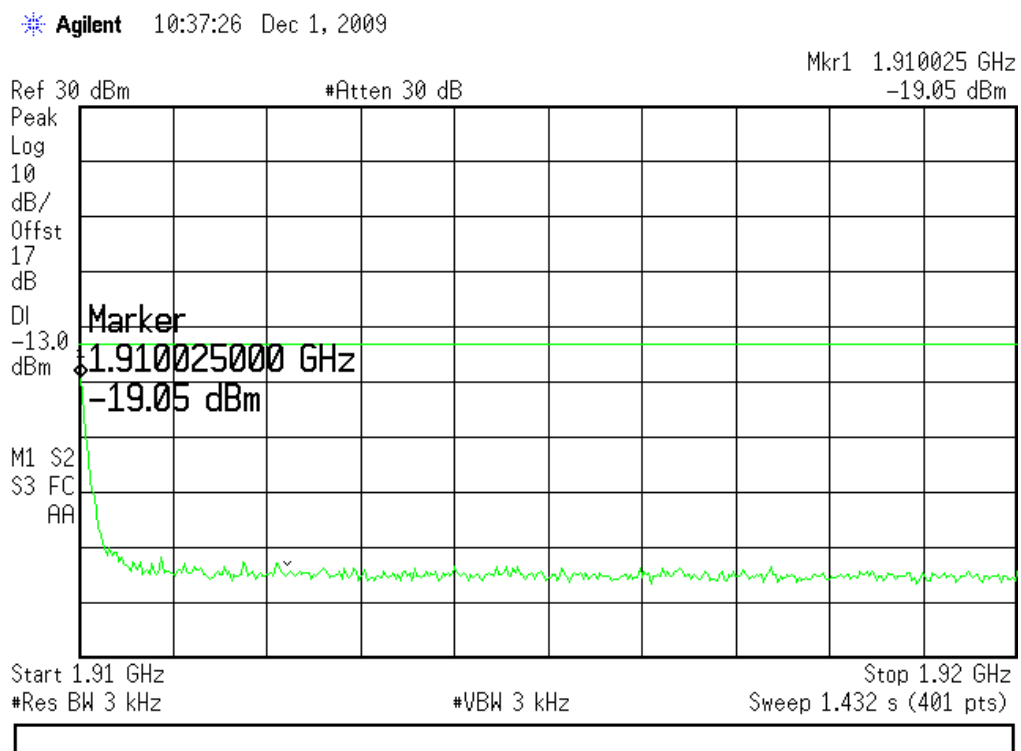
(Plot I5: EDGE 850MHz Channel = 128)



(Plot J5: EDGE 850MHz Channel = 251)



(Plot K5: EDGE 1900MHz Channel = 512)



(Plot L5: EDGE 1900MHz Channel = 810)

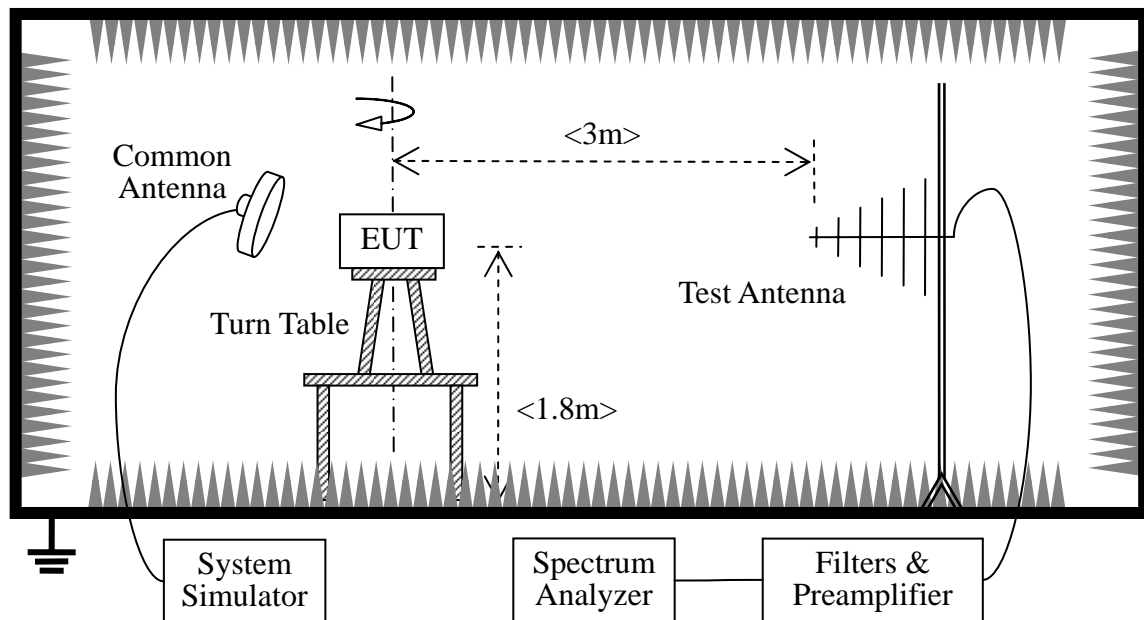
3.7 Transmitter Radiated Power (EIRP/ERP)

3.7.1 Requirement

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

3.7.2 Test Description

1. Test Setup:



The EUT, which is powered by the Battery charged with the AC Adapter, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power i.e. GSM850MHz band Power Control Level (PCL) = 5 and Power Class = 4 and GSM1900MHz band Power Control Level (PCL) = 0 and Power Class = 1. A call is established between the EUT and the SS via a Common Antenna.

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
CMU200	Rohde&Schw	FSP30	101020	2009.10	1year

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
	arz				
Spectrum Analyzer	Rohde&Schwarz	FSP30	101020	2009.10	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2009.10	2year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2009.10	1year
Test Antenna - Horn	Rohde&Schwarz	HF906	100565	2009.10	1year

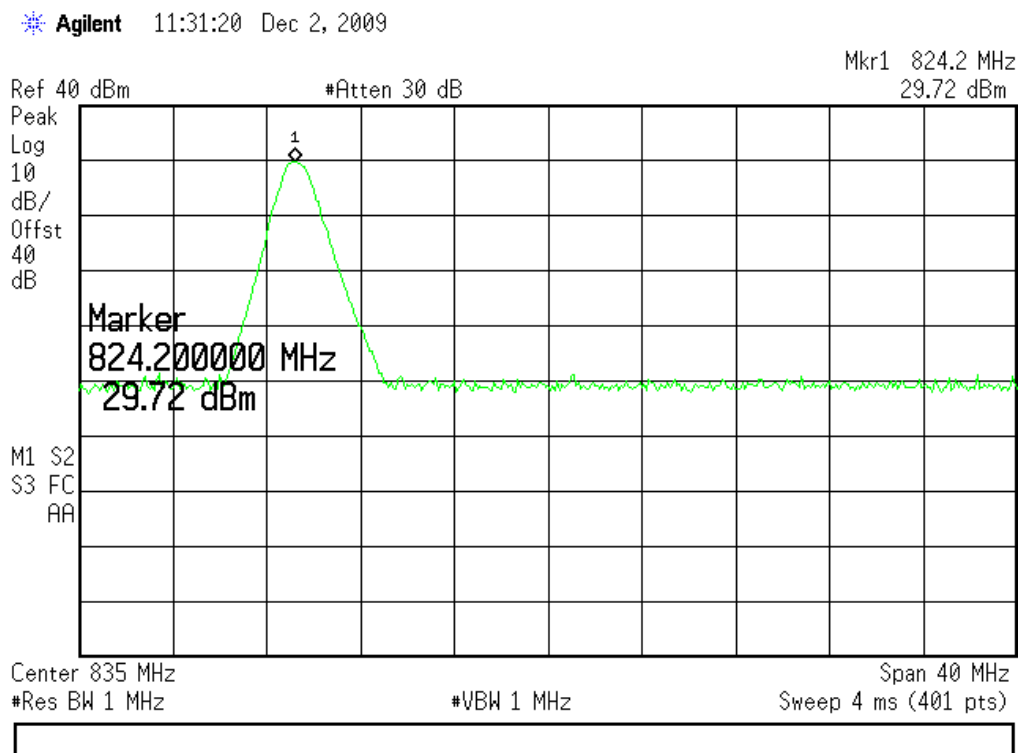
3.7.3 Test Result

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

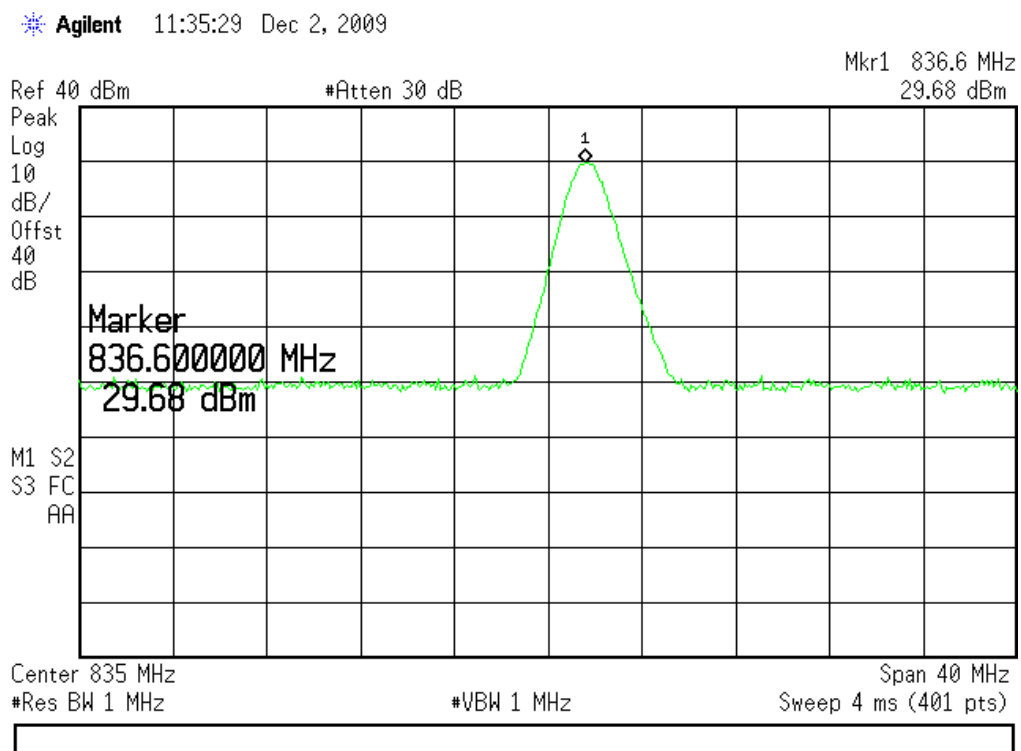
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured ERP			Limit		Verdict
			dBm	W	Refer to Plot	dBm	W	
GSM 850MHz	128	824.2	29.72	0.937	Plot A6	<38.5	<7	PASS
	190	836.6	29.68	0.928	Plot B6			PASS
	251	848.8	29.22	0.835	Plot C6			PASS
GSM 1900MHz	512	1850.2	27.11	0.514	Plot D6	<33.0	<2	PASS
	661	1880.0	27.71	0.590	Plot E6			PASS
	810	1909.8	27.44	0.554	Plot F6			PASS
GPRS 850MHz	128	824.2	29.31	0.853	Plot G6	<38.5	<7	PASS
	190	836.6	29.06	0.805	Plot H6			PASS
	251	848.8	28.36	0.685	Plot I6			PASS
GPRS 1900MHz	512	1850.2	26.98	0.498	Plot J6	<33.0	<2	PASS
	661	1880.0	26.71	0.468	Plot K6			PASS
	810	1909.8	27.03	0.504	Plot L6			PASS
EDGE 850MHz	128	824.3	29.33	0.857	Plot M6	<38.5	<7	PASS
	190	836.7	29.44	0.879	Plot N6			PASS
	251	848.8	28.77	0.753	Plot O6			PASS
EDGE 1900MHz	512	1850.2	26.09	0.406	Plot P6	<33.0	<2	PASS
	661	1880.0	26.98	0.498	Plot Q6			PASS
	810	1909.9	27.17	0.521	Plot R6			PASS

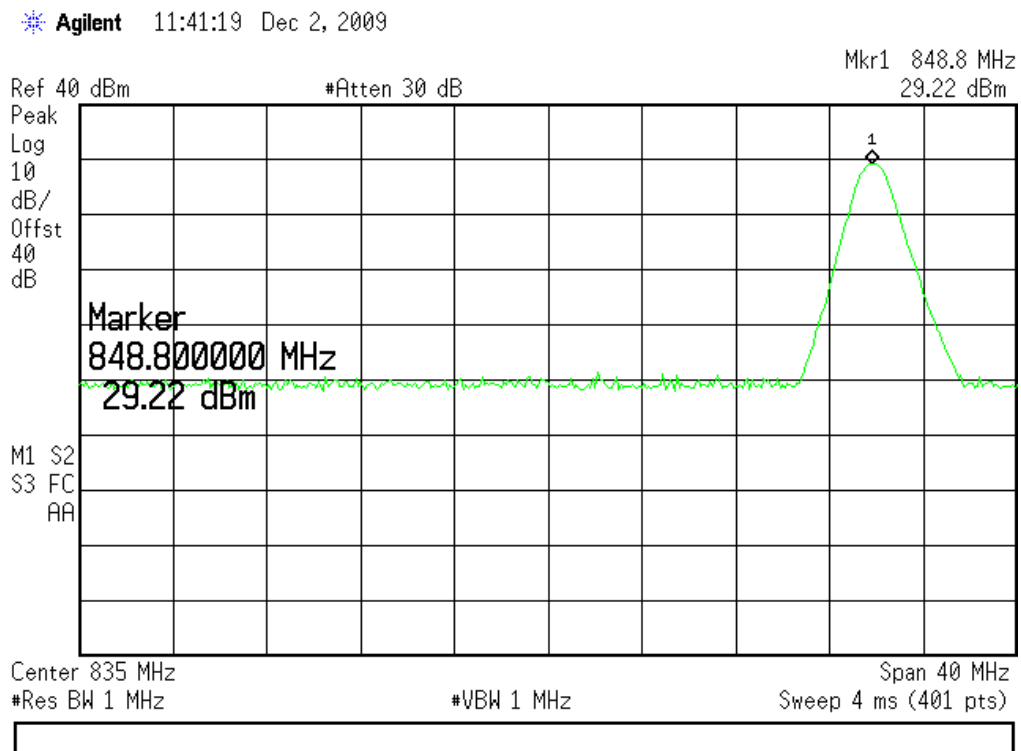
2. Test Plot



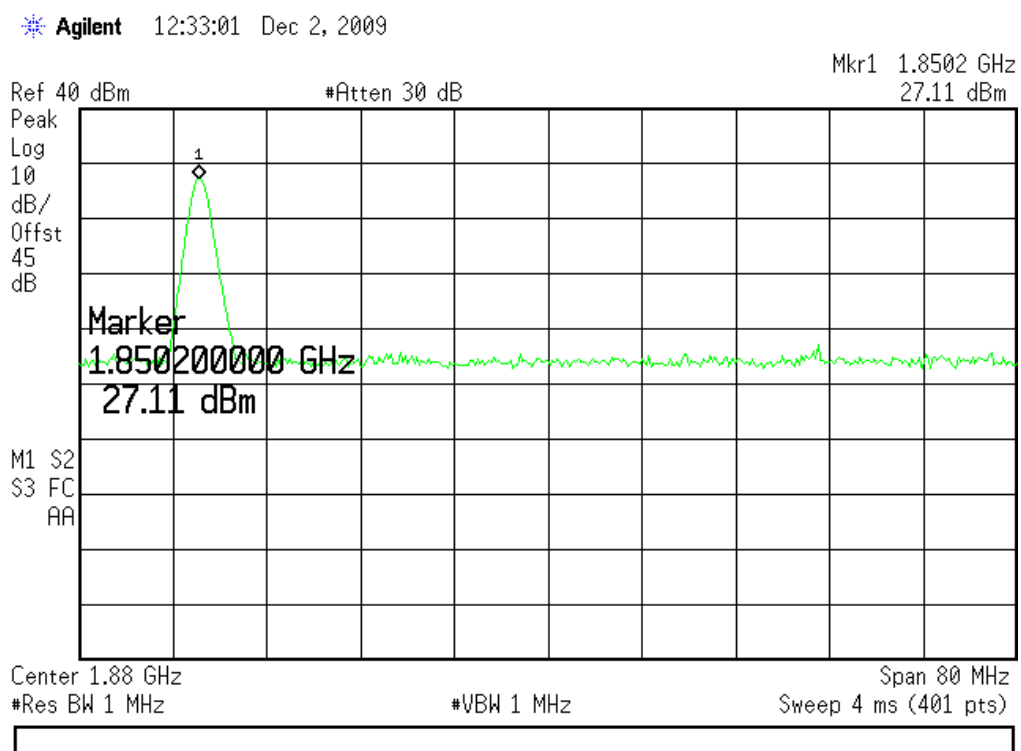
(Plot A6:GSM 850MHz Channel = 128)



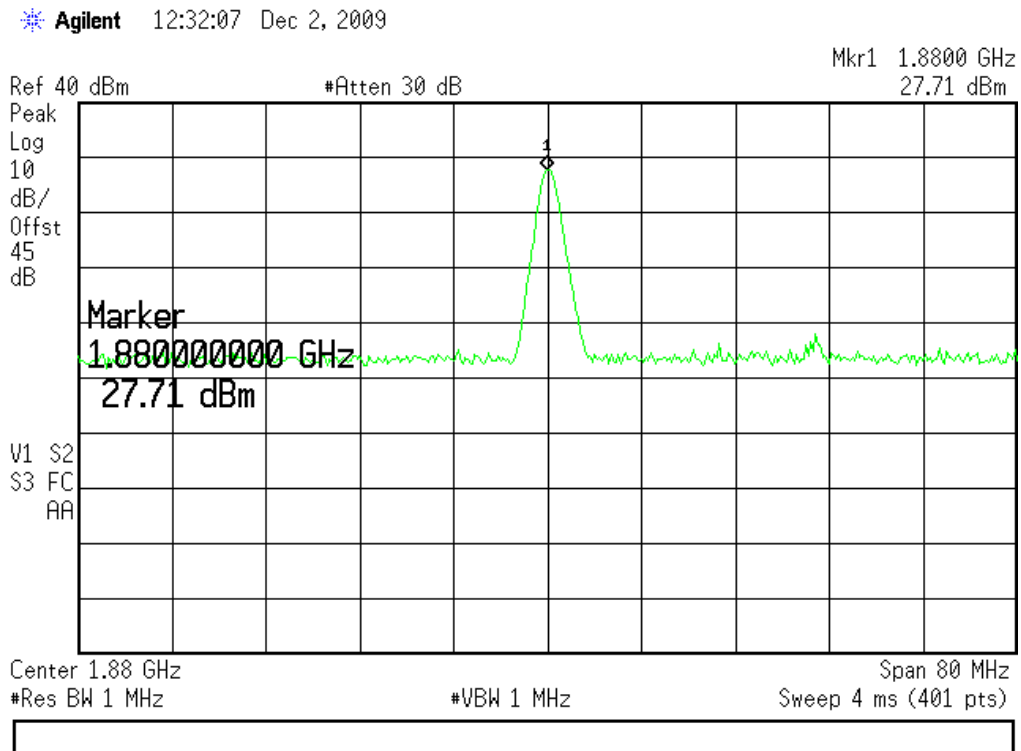
(Plot B6:GSM 850MHz Channel = 190)



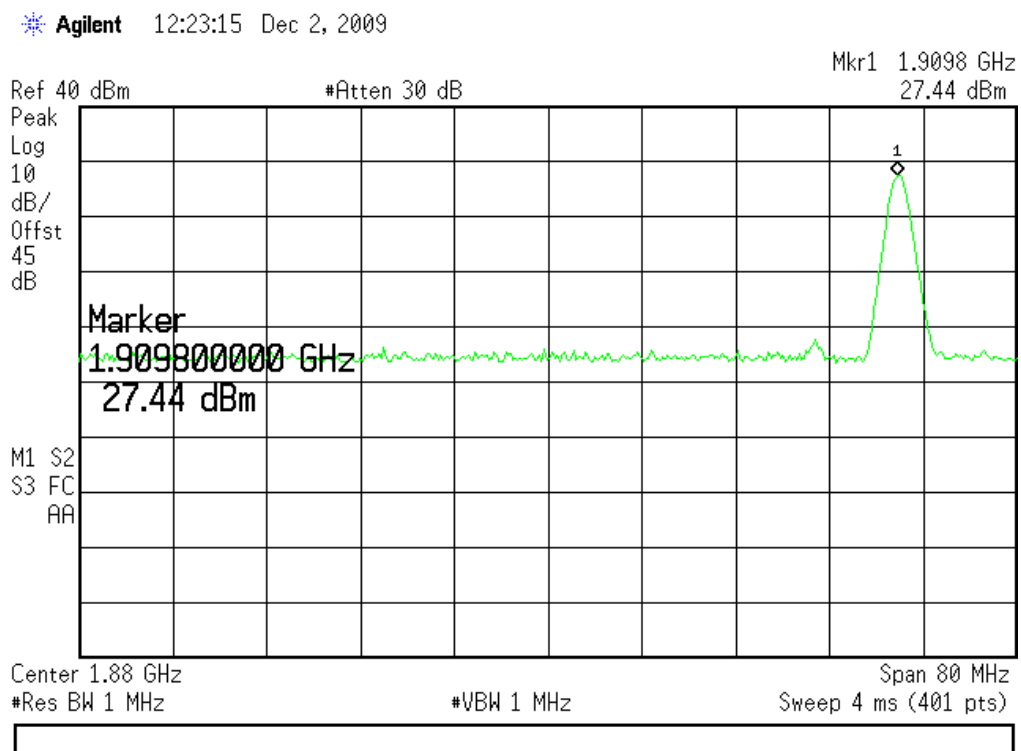
(Plot C6:GSM 850MHz Channel = 251)



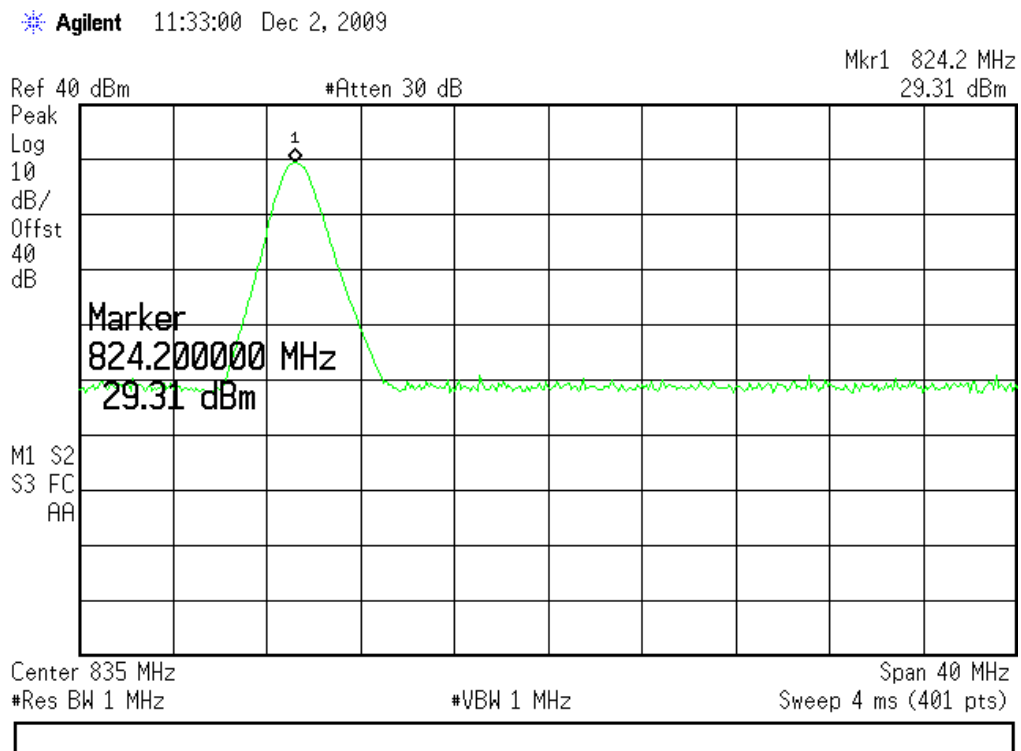
(Plot D6:GSM 1900MHz Channel = 512)



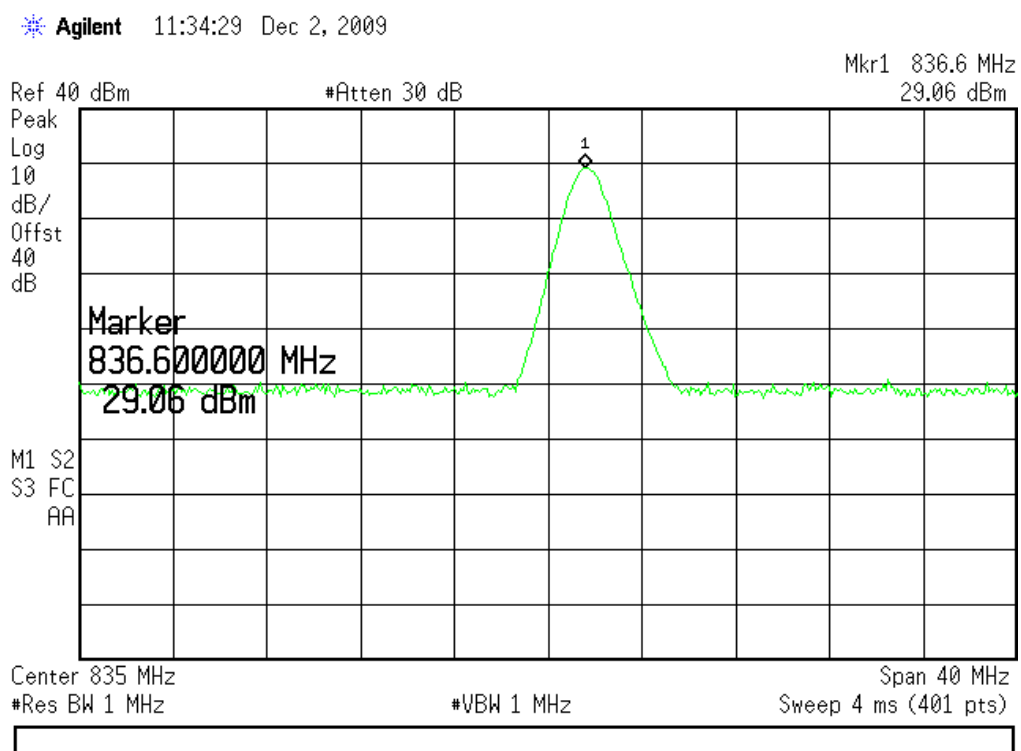
(Plot E6:GSM 1900MHz Channel = 661)



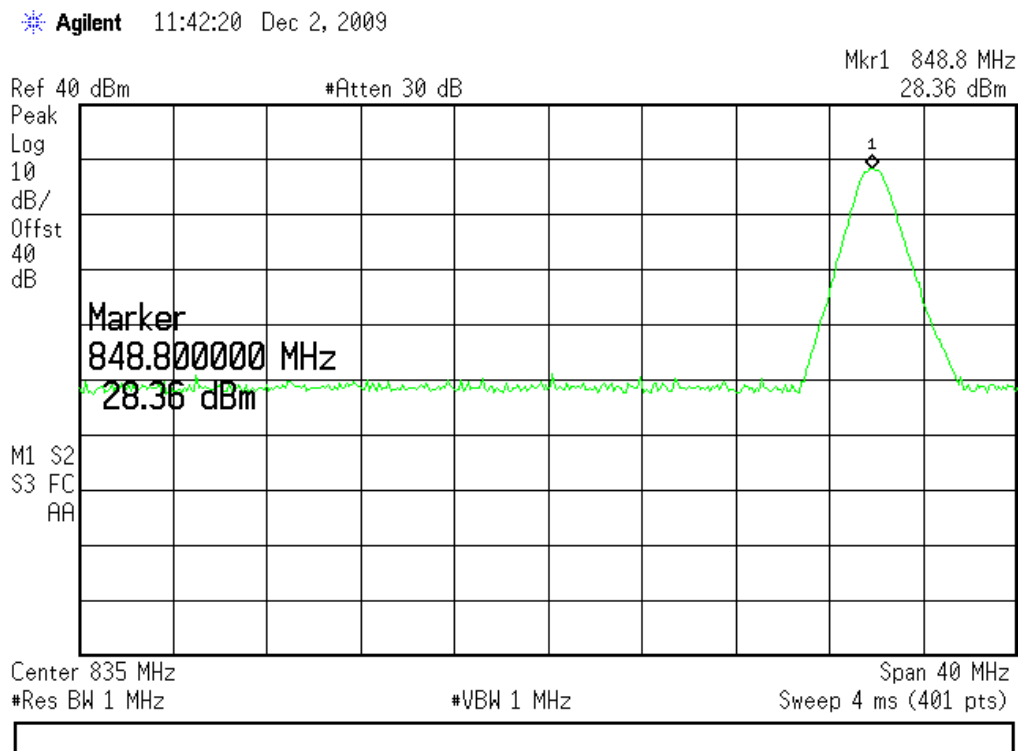
(Plot F6:GSM 1900MHz Channel = 810)



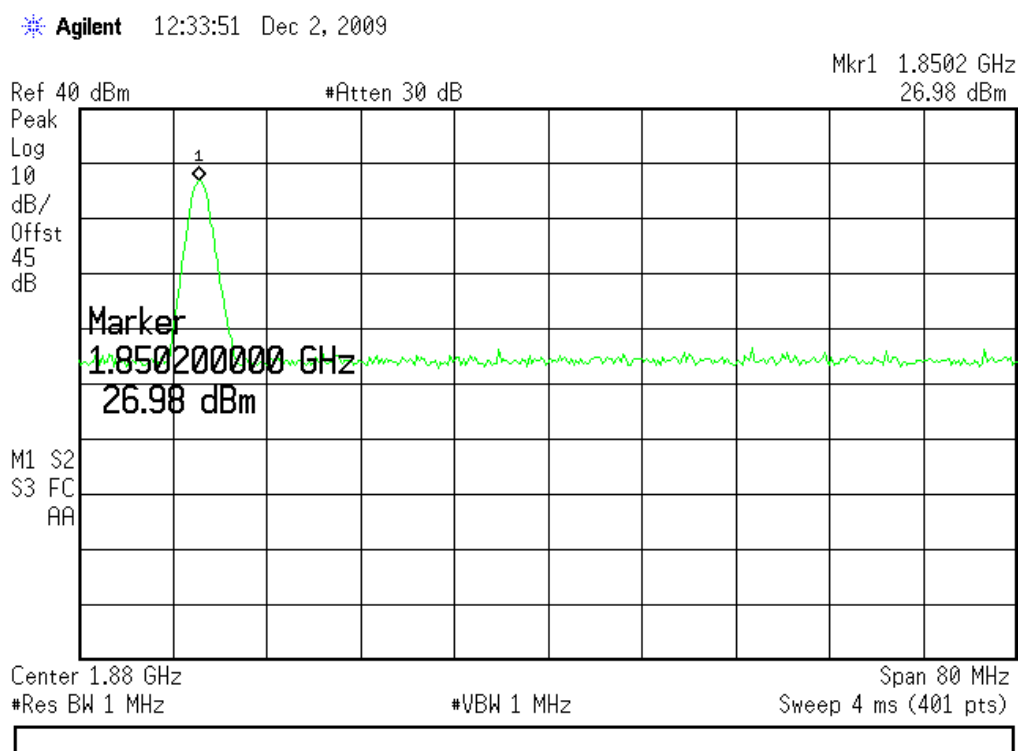
(Plot G6:GPRS 850MHz Channel = 128)



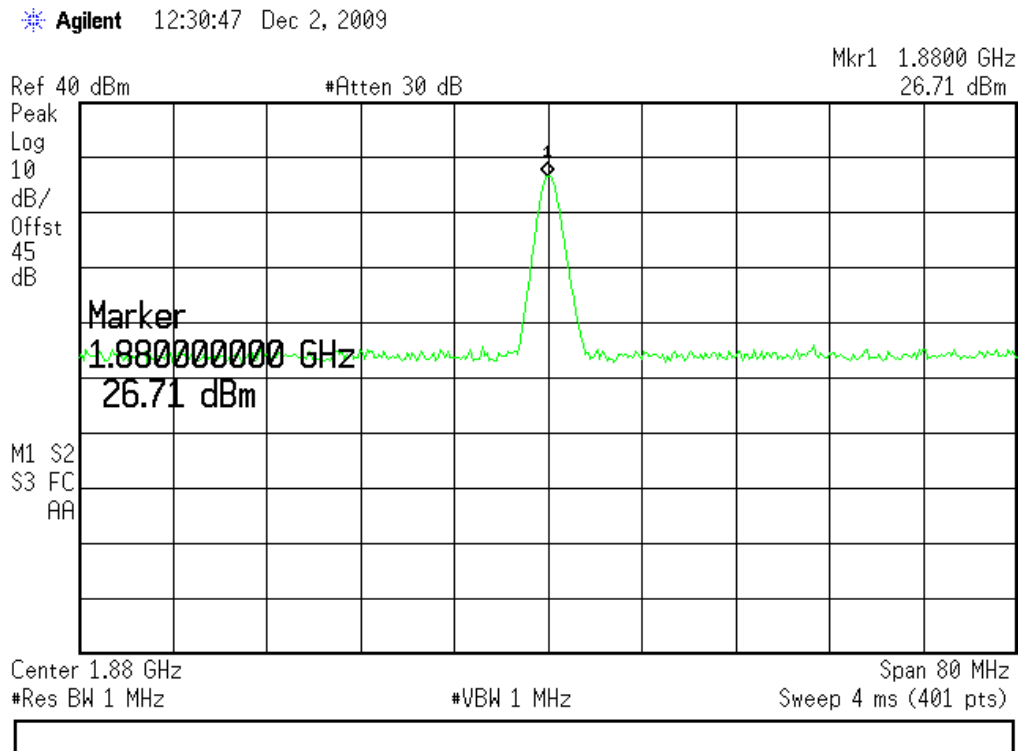
(Plot H6: GPRS 850MHz Channel = 190)



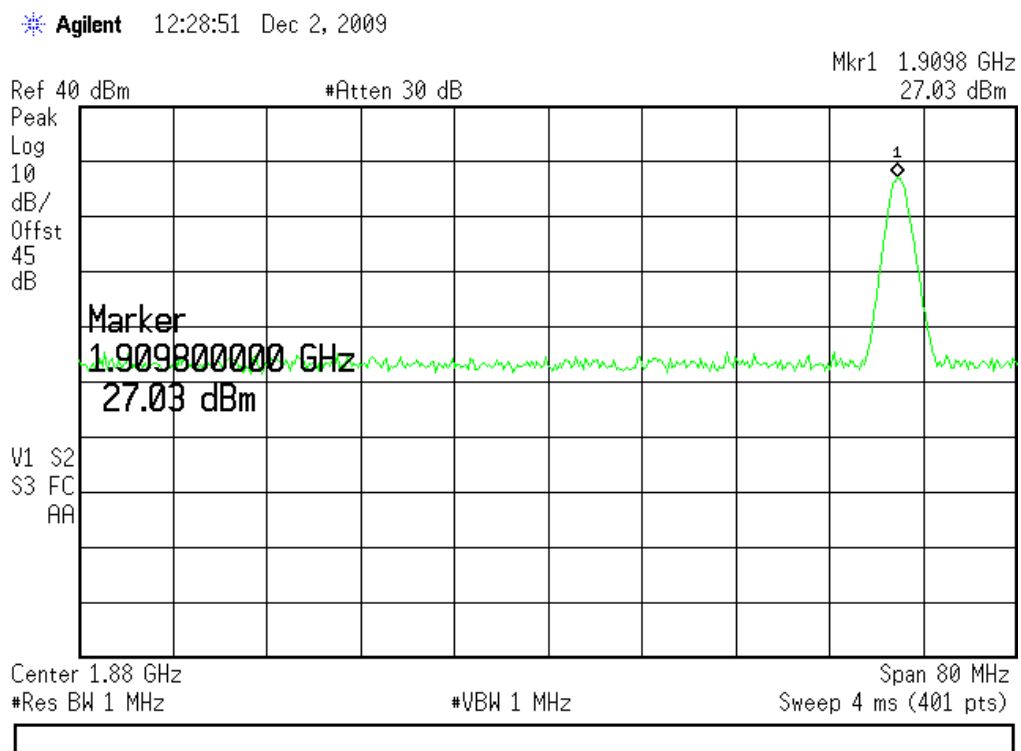
(Plot I6: GPRS 850MHz Channel = 251)



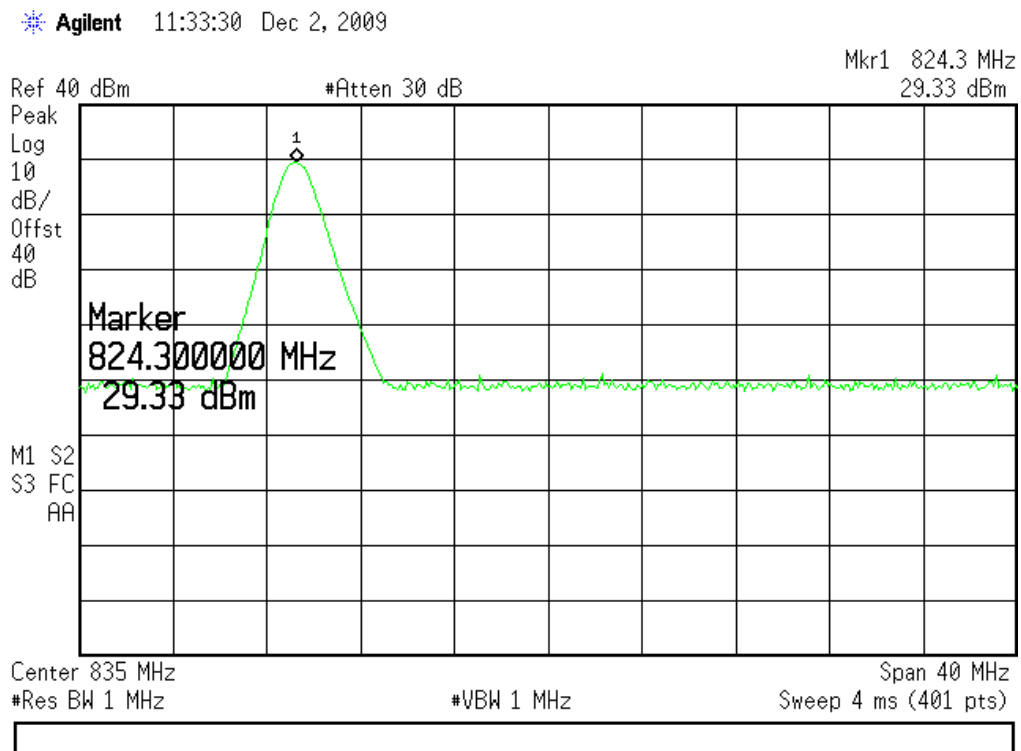
(Plot J6: GPRS 1900MHz Channel = 512)



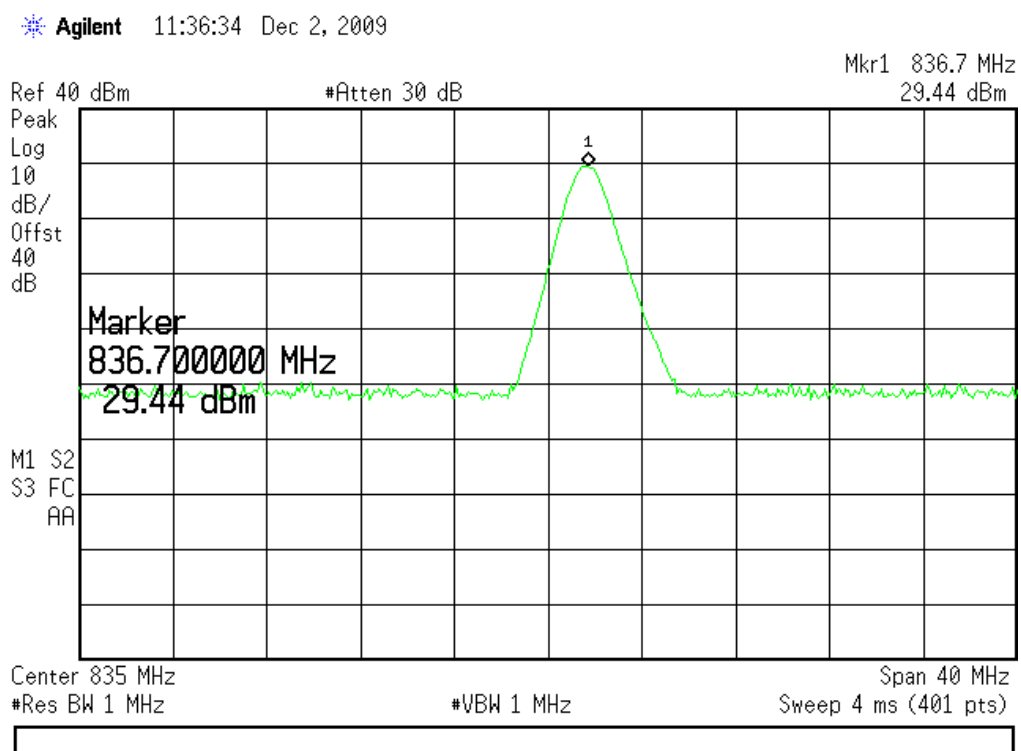
(Plot K6: GPRS 1900MHz Channel = 661)



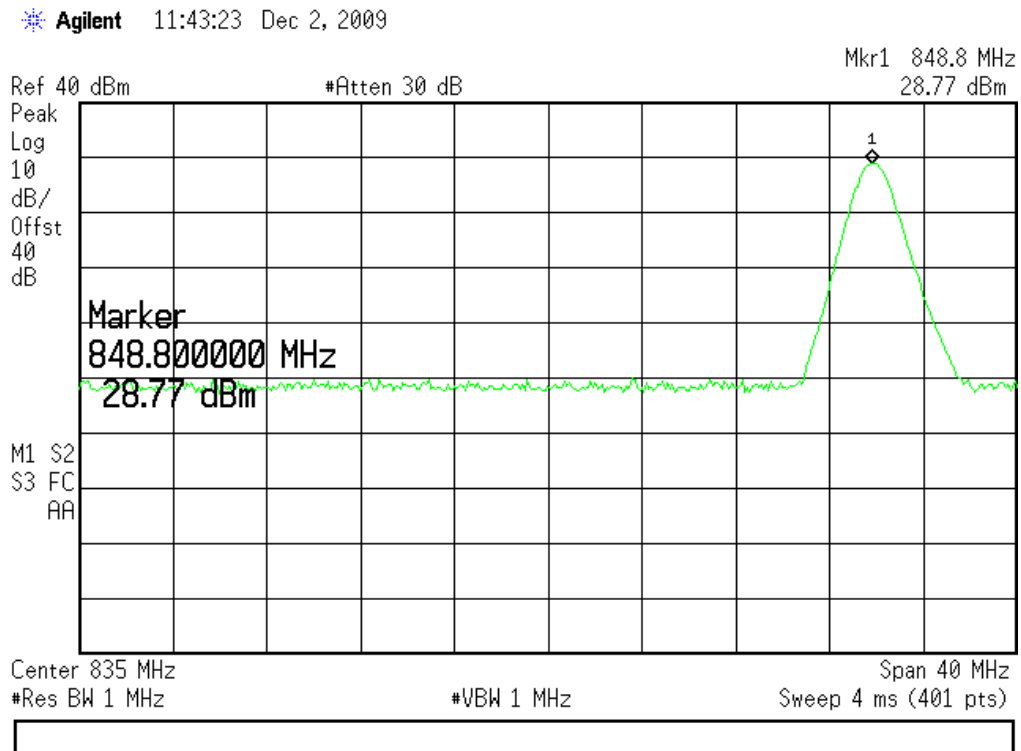
(Plot L6:GPRS 1900MHz Channel = 810)



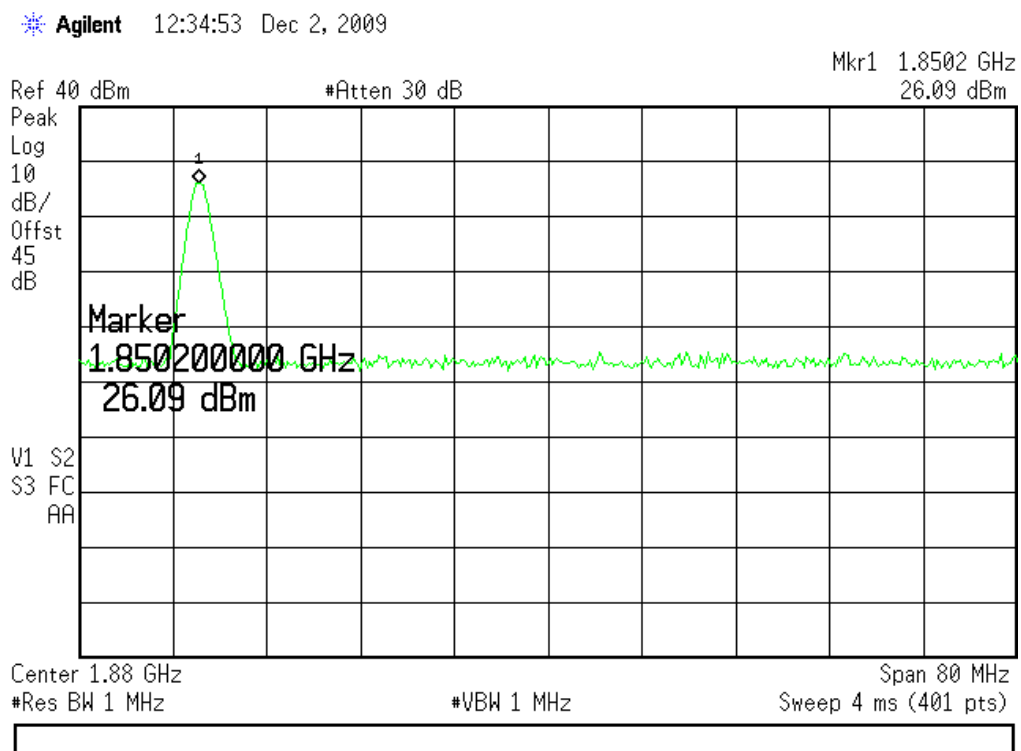
(Plot M6: EDGE 850MHz Channel = 128)



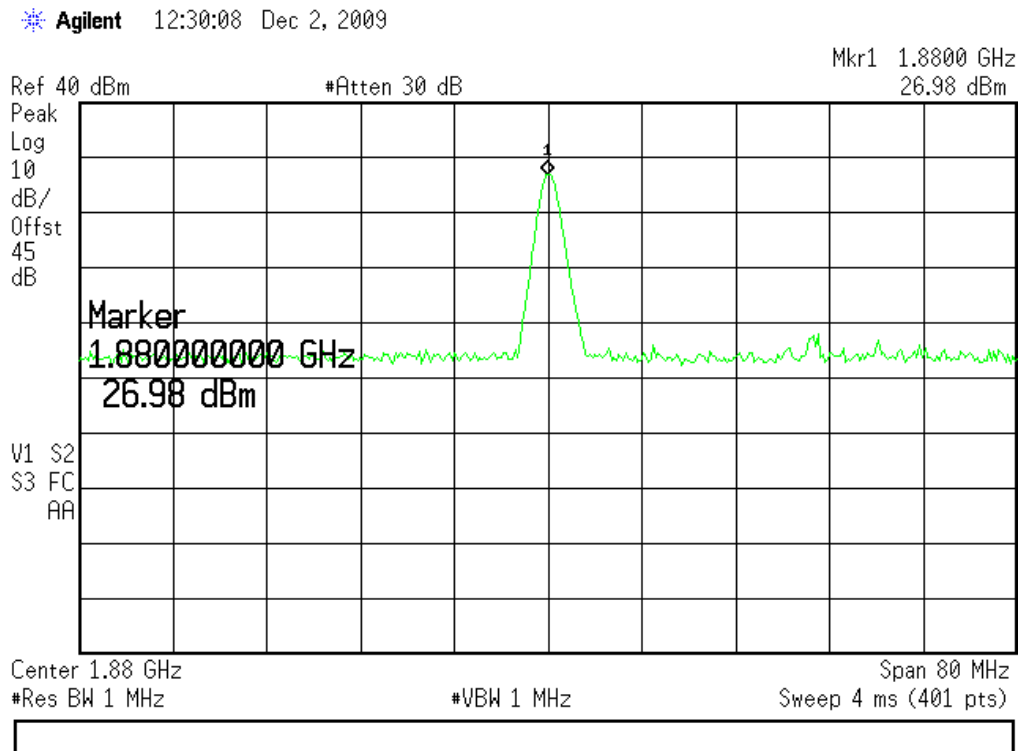
(Plot N6: EDGE 850MHz Channel = 190)



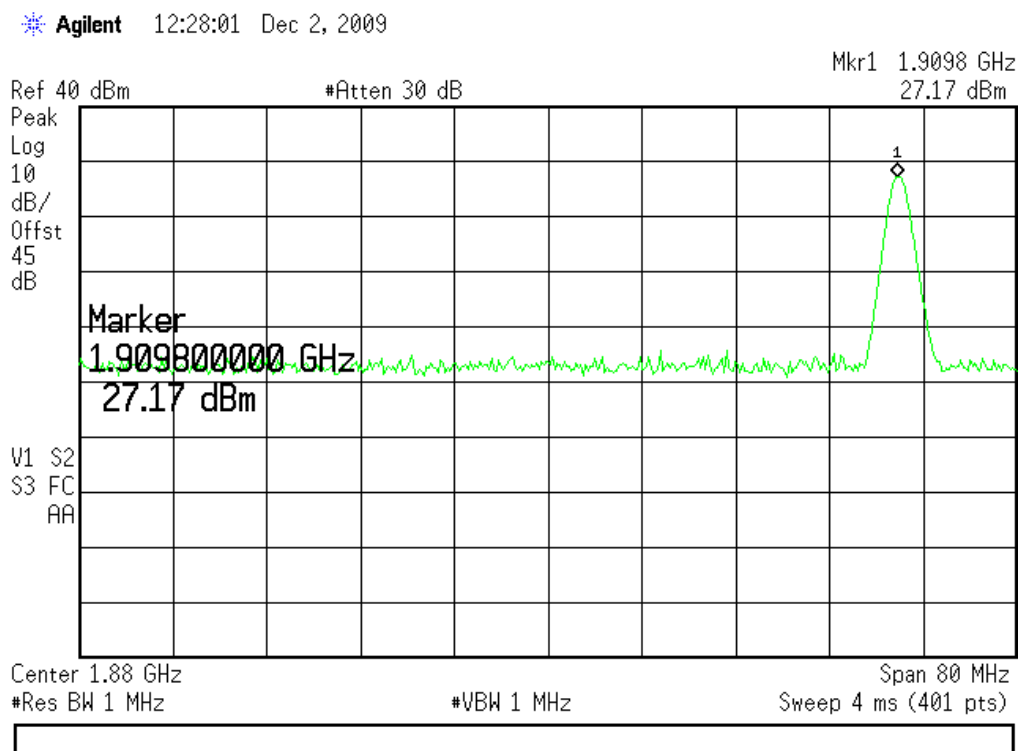
(Plot O6: EDGE 850MHz Channel = 251)



(Plot P6: EDGE 1900MHz Channel = 512)



(Plot Q6: EDGE 1900MHz Channel = 661)



(Plot R6:EDGE 1900MHz Channel = 810)

3.8 Radiated Out of Band Emissions

3.8.1 Requirement

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

3.8.2 Test Description

See section 3.7.2 of this report.

3.8.3 Test Procedure

1. Perform test system setup as section 2.4.2
2. Make a limit line whose value is -13dBm on the Spectrum Analyzer, and set the RBW of the Spectrum Analyzer to 1MHz.
3. The lowest and the highest channel were selected to perform tests respectively. Channel No.1013(lowest) 384(middle)and 777(highest) for cellular band.
4. Employ the bi-log Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 30MHz to 3GHz.
5. The measurement is performed with the Test Antenna at both horizontal and vertical polarization respectively. Set the polarization of the Test Antenna to be horizontal.
6. Actuate the Turn Table to turn from 0 degrees to 360 degrees to find the maximum reading via the Spectrum Analyzer, mark the fundamental frequency and the harmonics thereof, after then record the harmonics and the plot.
7. Set the polarization of the Test Antenna to be vertical, then repeat step 6.
8. Employ the horn Test Antenna as the test system receiving antenna and set the frequency range of the Spectrum Analyzer from 3GHz to 10th harmonic of the fundamental frequency (here used 10GHz), then repeat step 5 to 7.
9. Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak and mark it; finally record the peak and the plot.

3.8.4 Test Result

3.8.4.1 Table for the Harmonics

NOTE: “---” in the table following means that the emission power was too small to be measured and was at least 12dB below the limit.

I GSM 850MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 1013 (825.27MHz)				
1	1655.54	-41.25	-42.13	-13
2	2476.81	---	---	-13
3	3310.08	---	---	-13
4	4124.35	---	---	-13
5	4912.62	---	---	-13
6	5786.89	---	---	-13
7	6658.16	---	---	-13
8	7426.43	---	---	-13
9	8263.70	---	---	-13
TCH number set to 384 (836.52MHz)				
10	1686.04	-40.85	-40.74	-13
11	2513.56	---	---	-13
12	2529.56	---	---	-13
13	3352.08	---	---	-13
14	4186.6	---	---	-13
15	5865.4	---	---	-13
16	6698.16	---	---	-13
17	7538.68	---	---	-13
18	8389.20	---	---	-13
TCH number set to 777 (847.74MHz)				
19	1696.48	-40.81	-41.07	-13
20	2545.22	---	---	-13
21	3395.96	---	---	-13
22	4256.70	---	---	-13
23	5088.44	---	---	-13
24	5936.18	---	---	-13
25	6786.92	---	---	-13
26	76232.66	---	---	-13
27	8478.40	---	---	-13

II GSM 1900MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 25 (1851.25MHz)				
1	3721.50	-41.52	-42.05	-13
2	5545.75	---	---	-13
3	7406.00	---	---	-13
4	9258.25	---	---	-13
5	11108.50	---	---	-13
6	12956.75	---	---	-13
7	14810.00	---	---	-13
8	16661.25	---	---	-13
9	18515.50	---	---	-13
TCH number set to 600 (1880.00MHz)				
10	3763.00	-39.15	-37.56	-13
11	5635.00	---	---	-13
12	7524.00	---	---	-13
13	9423.00	---	---	-13
14	11286.00	---	---	-13
15	13168.00	---	---	-13
16	15048.00	---	---	-13
17	16926.00	---	---	-13
18	18800.00	---	---	-13
TCH number set to 1175 (1908.75MHz)				
19	3826.50	-41.51	-41.28	-13
20	5729.25	---	---	-13
21	7633.00	---	---	-13
22	9545.75	---	---	-13
23	11452.50	---	---	-13
24	13362.25	---	---	-13
25	15272.00	---	---	-13
26	17175.75	---	---	-13
27	19088.50	---	---	-13

III GPRS 850MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 25 (1851.25MHz)				
1	3721.50	-41.52	-42.05	-13
2	5545.75	---	---	-13
3	7406.00	---	---	-13
4	9258.25	---	---	-13
5	11108.50	---	---	-13
6	12956.75	---	---	-13
7	14810.00	---	---	-13
8	16661.25	---	---	-13
9	18515.50	---	---	-13
TCH number set to 600 (1880.00MHz)				
10	3763.00	-39.15	-37.56	-13
11	5635.00	---	---	-13
12	7524.00	---	---	-13
13	9423.00	---	---	-13
14	11286.00	---	---	-13
15	13168.00	---	---	-13
16	15048.00	---	---	-13
17	16926.00	---	---	-13
18	18800.00	---	---	-13
TCH number set to 1175 (1908.75MHz)				
19	3826.50	-41.51	-41.28	-13
20	5729.25	---	---	-13
21	7633.00	---	---	-13
22	9545.75	---	---	-13
23	11452.50	---	---	-13
24	13362.25	---	---	-13
25	15272.00	---	---	-13
26	17175.75	---	---	-13
27	19088.50	---	---	-13

IV GPRS 1900MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 25 (1851.25MHz)				
1	3721.50	-41.52	-42.05	-13
2	5545.75	---	---	-13
3	7406.00	---	---	-13
4	9258.25	---	---	-13
5	11108.50	---	---	-13
6	12956.75	---	---	-13
7	14810.00	---	---	-13
8	16661.25	---	---	-13
9	18515.50	---	---	-13
TCH number set to 600 (1880.00MHz)				
10	3763.00	-39.15	-37.56	-13
11	5635.00	---	---	-13
12	7524.00	---	---	-13
13	9423.00	---	---	-13
14	11286.00	---	---	-13
15	13168.00	---	---	-13
16	15048.00	---	---	-13
17	16926.00	---	---	-13
18	18800.00	---	---	-13
TCH number set to 1175 (1908.75MHz)				
19	3826.50	-41.51	-41.28	-13
20	5729.25	---	---	-13
21	7633.00	---	---	-13
22	9545.75	---	---	-13
23	11452.50	---	---	-13
24	13362.25	---	---	-13
25	15272.00	---	---	-13
26	17175.75	---	---	-13
27	19088.50	---	---	-13

V EDGE 850MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 25 (1851.25MHz)				
1	3721.50	-41.52	-42.05	-13
2	5545.75	---	---	-13
3	7406.00	---	---	-13
4	9258.25	---	---	-13
5	11108.50	---	---	-13
6	12956.75	---	---	-13
7	14810.00	---	---	-13
8	16661.25	---	---	-13
9	18515.50	---	---	-13
TCH number set to 600 (1880.00MHz)				
10	3763.00	-39.15	-37.56	-13
11	5635.00	---	---	-13
12	7524.00	---	---	-13
13	9423.00	---	---	-13
14	11286.00	---	---	-13
15	13168.00	---	---	-13
16	15048.00	---	---	-13
17	16926.00	---	---	-13
18	18800.00	---	---	-13
TCH number set to 1175 (1908.75MHz)				
19	3826.50	-41.51	-41.28	-13
20	5729.25	---	---	-13
21	7633.00	---	---	-13
22	9545.75	---	---	-13
23	11452.50	---	---	-13
24	13362.25	---	---	-13
25	15272.00	---	---	-13
26	17175.75	---	---	-13
27	19088.50	---	---	-13

VI EDGE 1900MHz

No.	Frequency (MHz)	Emission Power (dBm)		Limit (dBm)
		Test Antenna Vertical	Test Antenna Horizontal	
TCH number set to 25 (1851.25MHz)				
1	3721.50	-41.52	-42.05	-13
2	5545.75	---	---	-13
3	7406.00	---	---	-13
4	9258.25	---	---	-13
5	11108.50	---	---	-13
6	12956.75	---	---	-13
7	14810.00	---	---	-13
8	16661.25	---	---	-13
9	18515.50	---	---	-13
TCH number set to 600 (1880.00MHz)				
10	3763.00	-39.15	-37.56	-13
11	5635.00	---	---	-13
12	7524.00	---	---	-13
13	9423.00	---	---	-13
14	11286.00	---	---	-13
15	13168.00	---	---	-13
16	15048.00	---	---	-13
17	16926.00	---	---	-13
18	18800.00	---	---	-13
TCH number set to 1175 (1908.75MHz)				
19	3826.50	-41.51	-41.28	-13
20	5729.25	---	---	-13
21	7633.00	---	---	-13
22	9545.75	---	---	-13
23	11452.50	---	---	-13
24	13362.25	---	---	-13
25	15272.00	---	---	-13
26	17175.75	---	---	-13
27	19088.50	---	---	-13

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

** END OF REPORT **