47 CFR PART 22 SUBPART H & 24 SUBPART E

TEST REPORT

of

GSM Mobile

Trade Name:	AEG
Brand Name:	AEG
Model Name:	Q60
Report No:	SH11090014R01
FCC ID:	XM8AEGQ2011Q60

prepared for

AEG Portuguesa de Telecomunicações, SA
Rua João Saraiva, 4-6 1700-249 Lisboa Portugal

prepared by

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CTIA Authorized Test Lab
LAB CODE 20081223-00

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1. TEST CERTIFICATION

Equipment under Test:	GSM Mobile
Brand Name:	AEG
Model Name:	Q60
FCC ID:	XM8AEGQ2011Q60
Applicant:	AEG Portuguesa de Telecomunicações, SA Rua João Saraiva, 4-6 1700-249 Lisboa Portugal
Manufacturer:	Pro Joy Technology Limited 12F,Building N.82,No1198 Noth QinZhou Rd,Shanghai,China
Test Standards:	47 CFR Part 2 47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
Test Date(s):	Sep. 22 ,2011 –Sep. 28 , 2011
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: Shi Feng Dated: 2011.10.10
Shi Feng

Reviewed by: Zhang Jun Dated: 2011.10.10
Zhang Jun

Approved by: Wei Bei Dated: 2011.10.10
Wei Bei

2. GENERAL INFORMATION

2.1 EUT Description

EUT Type.....:	GSM Mobile	
Model Name .....:	Q60	
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,8-PSK	
Power Supply.....:	Battery	
	Mode Name.:	BL—6P
	Capacitance:	700mAh
	Rated voltage:	3.7V
	Charge limited:	4.2V
	Manufacturer:	Chi Hang Technology Co. Longhua Big Wave Science and Technology Industrial Park
Ancillary Equipments.....:	AC Adapter (Charger for Battery)	
	Mode Name.:	5PIN
	Rated Input:	AC100~220 V, 200mA, Max 4.5 W, 50/60 Hz
	Rated Output:	DC 5 V, 500 mA
	Manufacturer:	Accessible Xing Technology Co., Ltd. Dalang Street, Longhua, Shenzhen Xing Hua West Road East Technology Park five

Note 1: The transmitter (Tx) frequency arrangement of the GSM 850MHz band used by the EUT can be represented with the formula F(n)=824.2+0.2*(n-128), 128<=n<=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<=n<=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
4	ANSI/TIA/EIA-603-C (2004)	Land Mobile FM or PM - Communications Equipment - Measurement and Performance Standards
5	ANSI C63.4-2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

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

No.	FCC rules	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 Service for Conformity Assessment (CNAS) 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 (℃):	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:

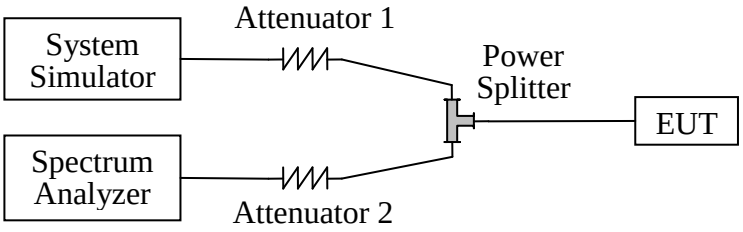
(a) Channel Block A:
Mobile 824 - 835MHz, Base 869 - 880MHz;
Mobile 845 - 846.5MHz, Base 890 - 891.5MHz
(b) Channel Block B:
Mobile 835 - 845 MHz, Base 880 - 890MHz;
Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

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	2011.9	1year
Spectrum Analyzer	R&S	FSP30	101020	2011.9	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2011.9	1year
Spectrum Analyzer	Rohde Schwarz	FSU26	200880	2011.9	1year
Power Splitter	HP	11667B	00164	(n.a.)	(n.a.)
Power Splitter	Mini-Circuits	ZFRSC-183-S+	765001016	(n.a.)	(n.a.)
Attenuator 1	Mini-Circuits	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)
Attenuator 2	Resnet	10dB	(n.a.)	(n.a.)	(n.a.)

3.1.3 Test Result

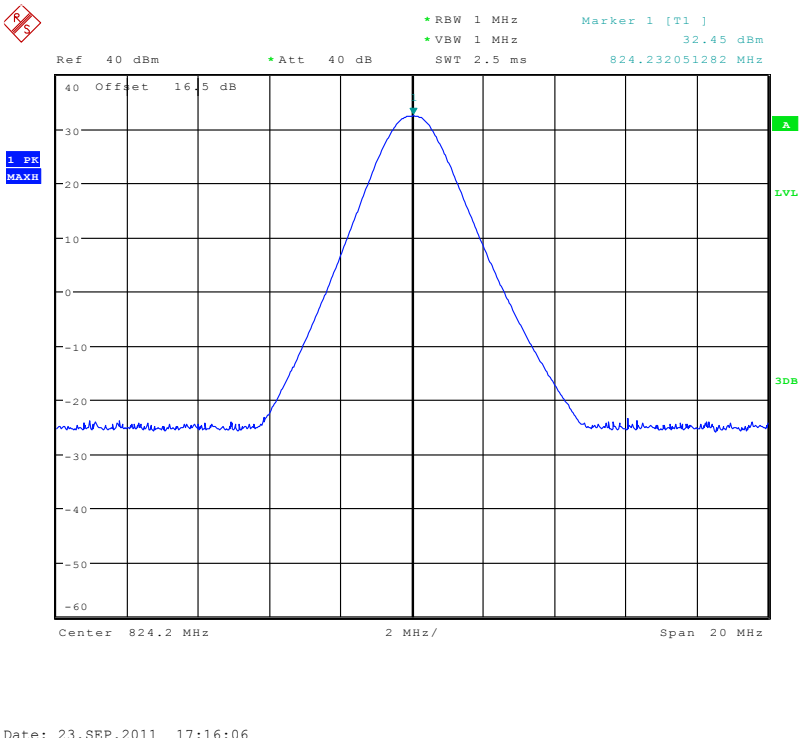
The Tx frequency arrangement of the GSM 850MHz band employed by the EUT should be from 824.2MHz to 848.8MHz (the corresponding frequency block is from 824MHz to 849MHz), and Tx frequency arrangement of the PCS 1900MHz band employed by the EUT should be from 1850.2MHz to 1909.8MHz (the corresponding frequency 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:

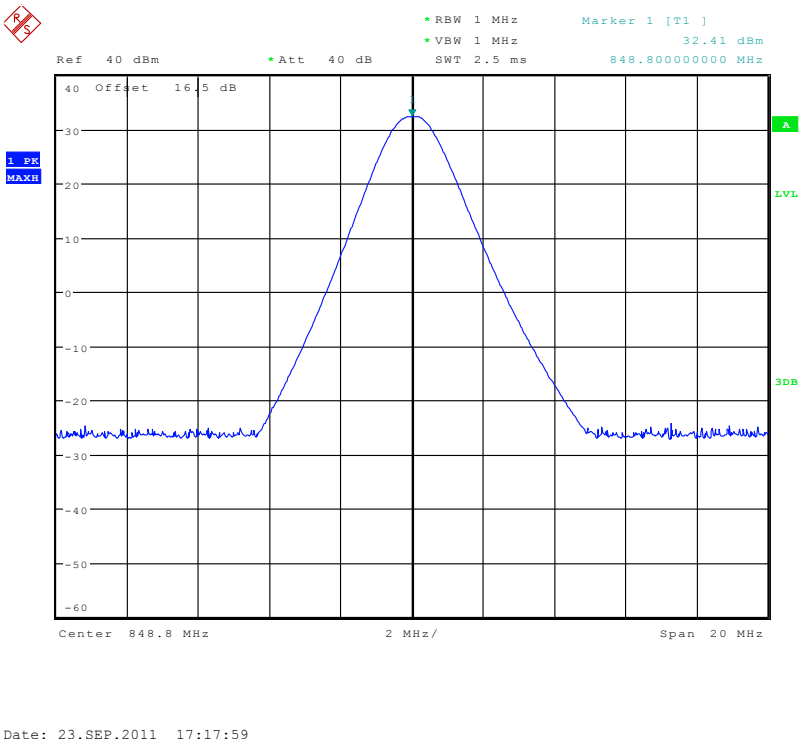
The required frequency block is employed legally, the verdict is PASS.

Band	Channel	Frequency (MHz)	Measured Carrier (MHz)	Refer to Plot
GSM 850MHz	128	824.2	824.23	Plot A1
	251	848.8	848.80	Plot B1
GSM 1900MHz	512	1850.2	1850.26	Plot C1
	810	1909.8	1909.77	Plot D1
GPRS 850MHz	128	824.2	824.14	Plot E1
	251	848.8	848.86	Plot F1
GPRS 1900MHz	512	1850.2	1850.23	Plot G1
	810	1909.8	1909.86	Plot H1

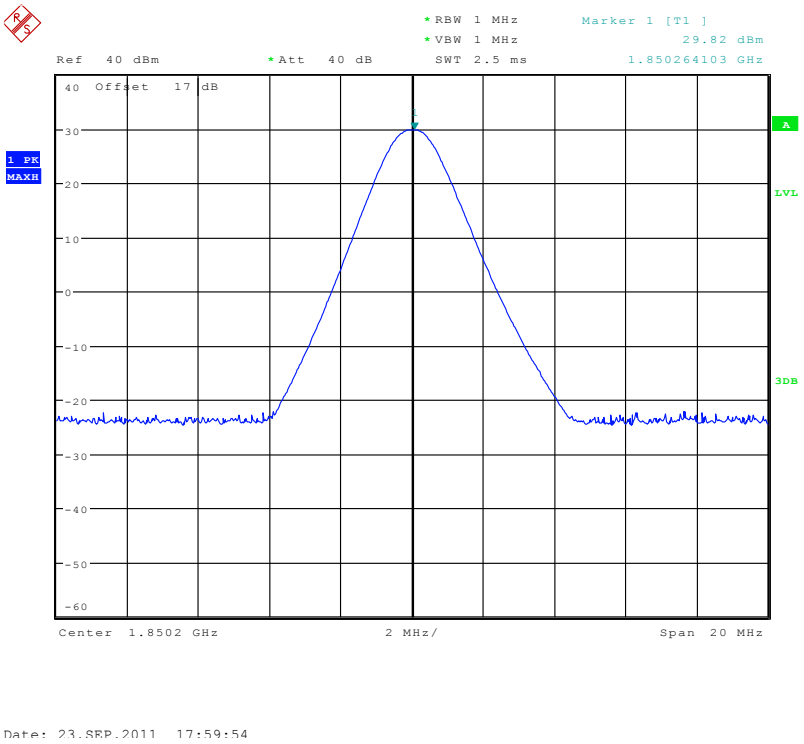
2. Test Plot:



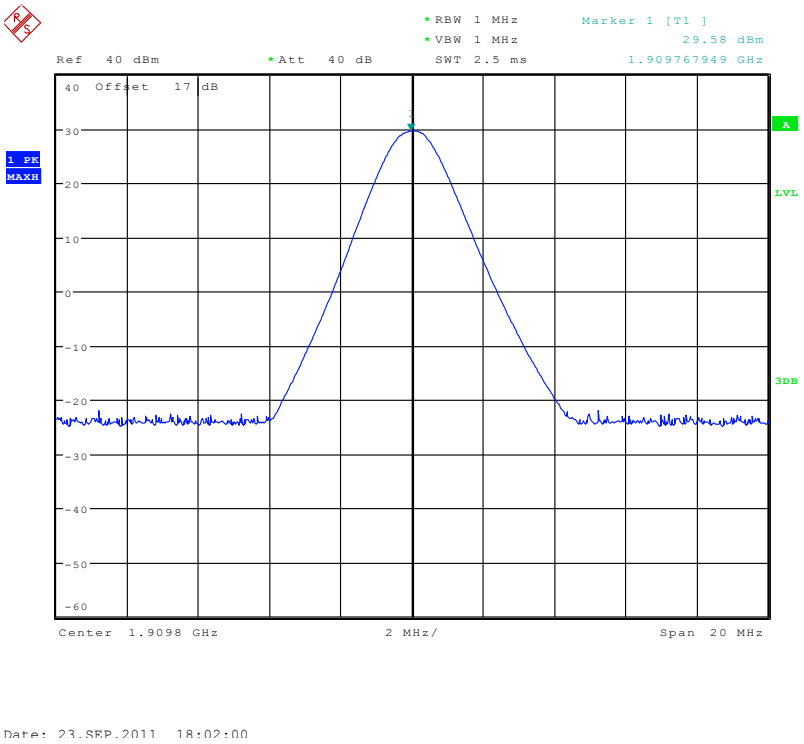
(Plot A1: GSM 850MHz Channel = 128)



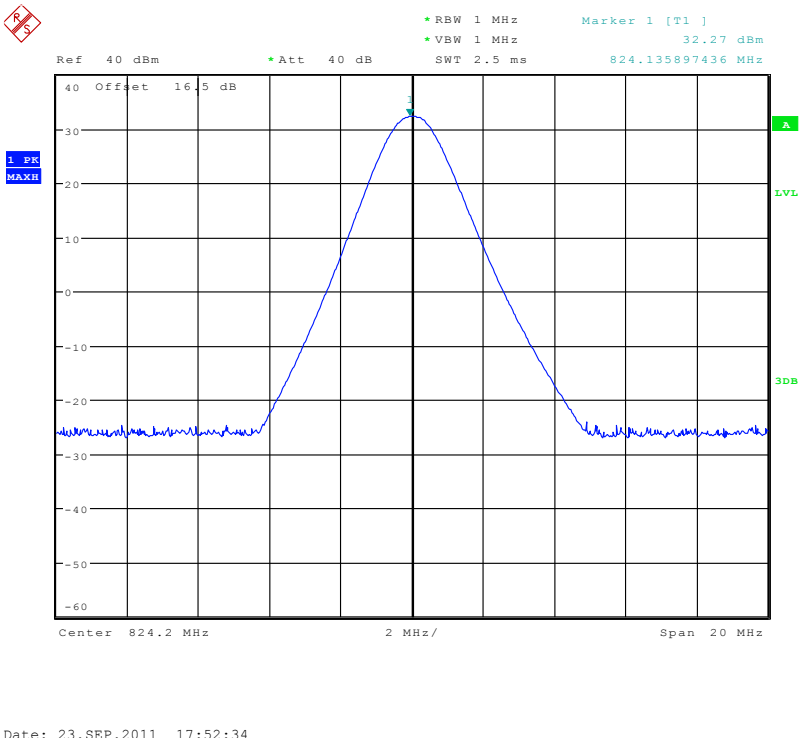
(Plot B1: GSM 850MHz Channel = 251)



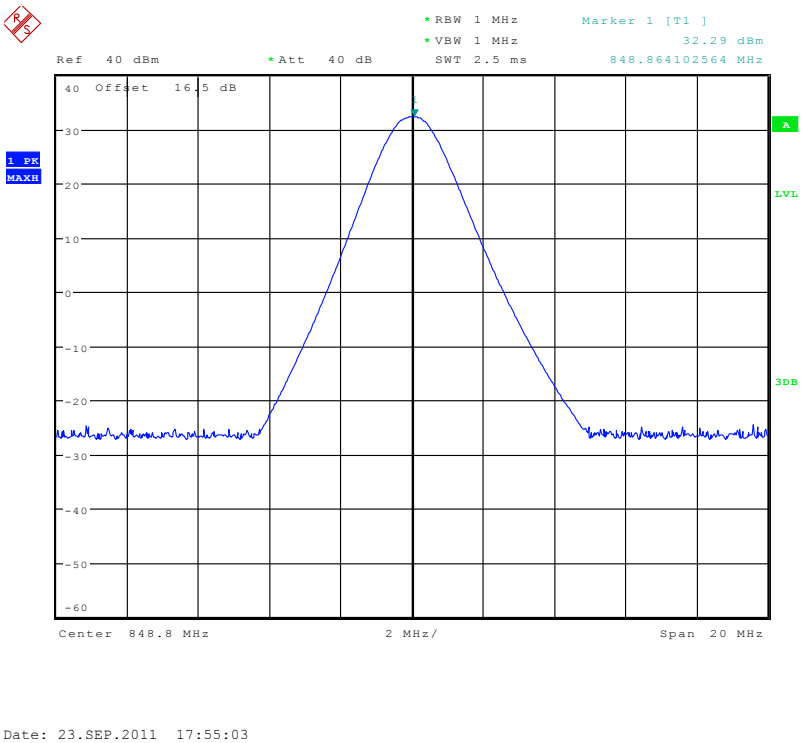
(Plot C1: GSM 1900MHz Channel = 512)



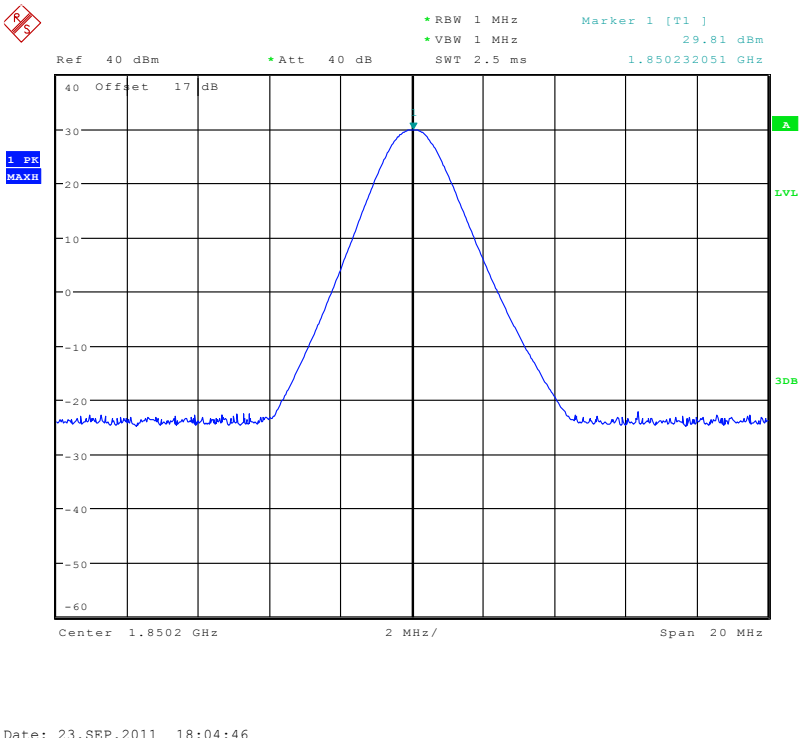
(Plot D1: GSM 1900MHz Channel = 810)



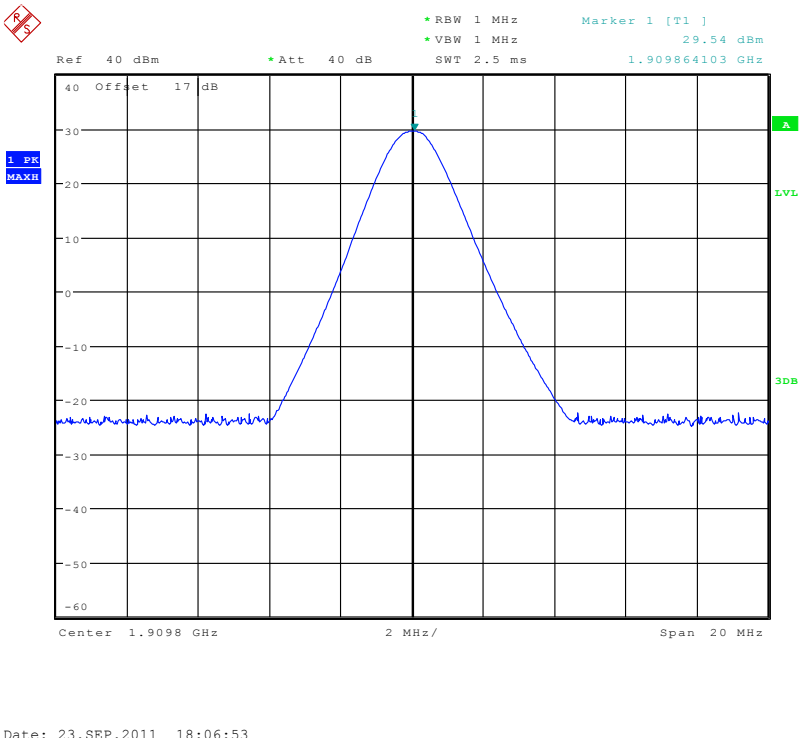
(Plot E1: GPRS 850MHz Channel = 128)



(Plot F1: GPRS 850MHz Channel = 251)



(Plot G1: GPRS 1900MHz Channel = 512)



(Plot H1: GPRS 1900MHz Channel = 810)

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.

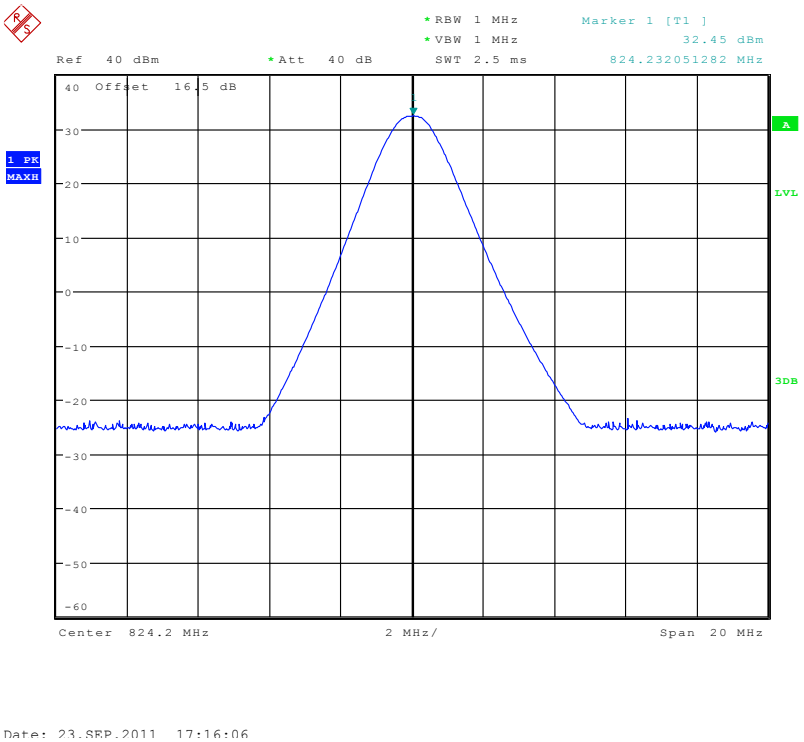
3.2.3 Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

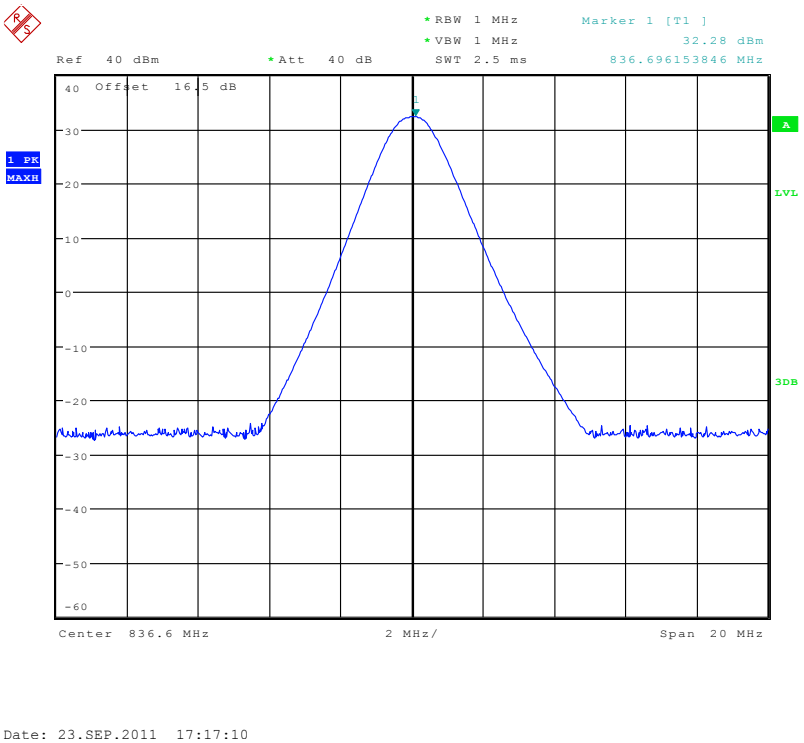
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GSM 850MHz	128	824.23	32.45	Plot A2	32.3	±0.4	PASS
	190	836.70	32.28	Plot B2			PASS
	251	848.80	32.41	Plot C2			PASS
GSM 1900MHz	512	1850.26	29.82	Plot D2	29.6	±0.4	PASS
	661	1880.06	29.87	Plot E2			PASS
	810	1909.77	29.58	Plot F2			PASS
GPRS 850MHz	128	824.14	32.27	Plot G2	32.3	±0.4	PASS
	190	836.63	32.17	Plot H2			PASS
	251	848.86	32.29	Plot I2			PASS
GPRS 1900MHz	512	1850.23	29.81	Plot J2	29.6	±0.4	PASS
	661	1880.06	29.86	Plot K2			PASS
	810	1909.86	29.54	Plot L2			PASS

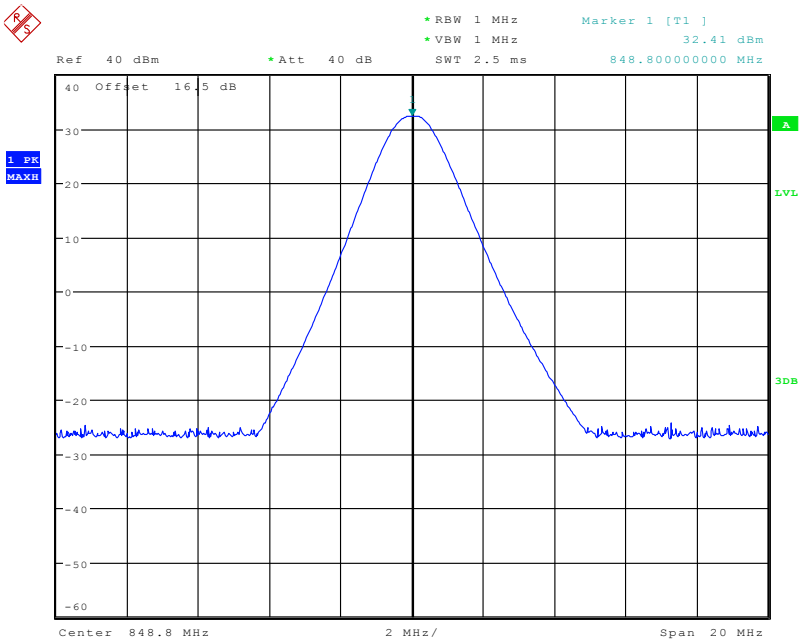
2. Test Plot:



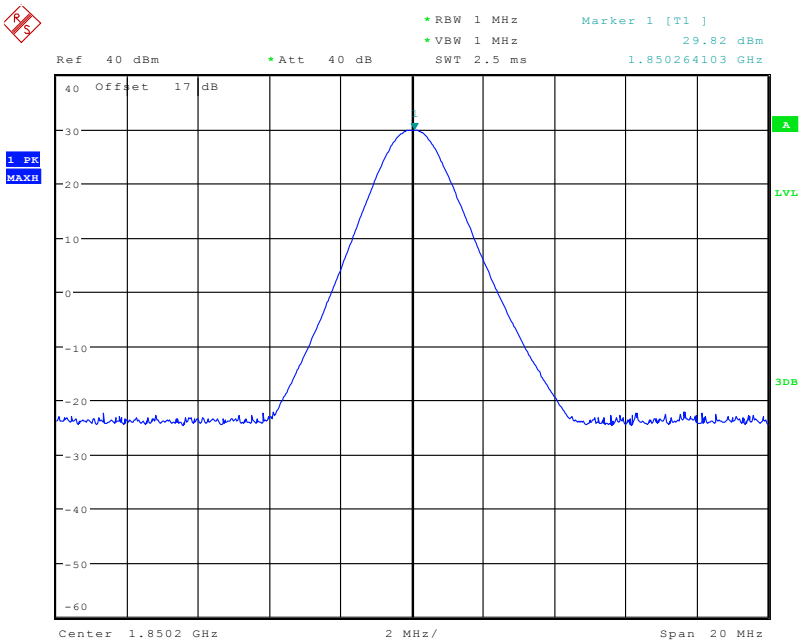
(Plot A2: GSM 850MHz Channel = 128)



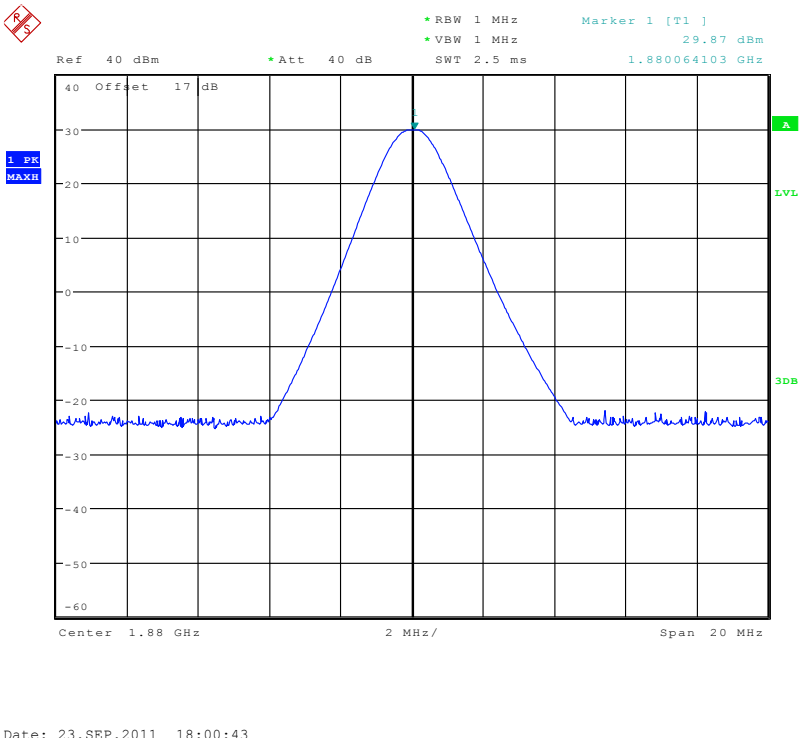
(Plot B2: GSM 850MHz Channel = 190)



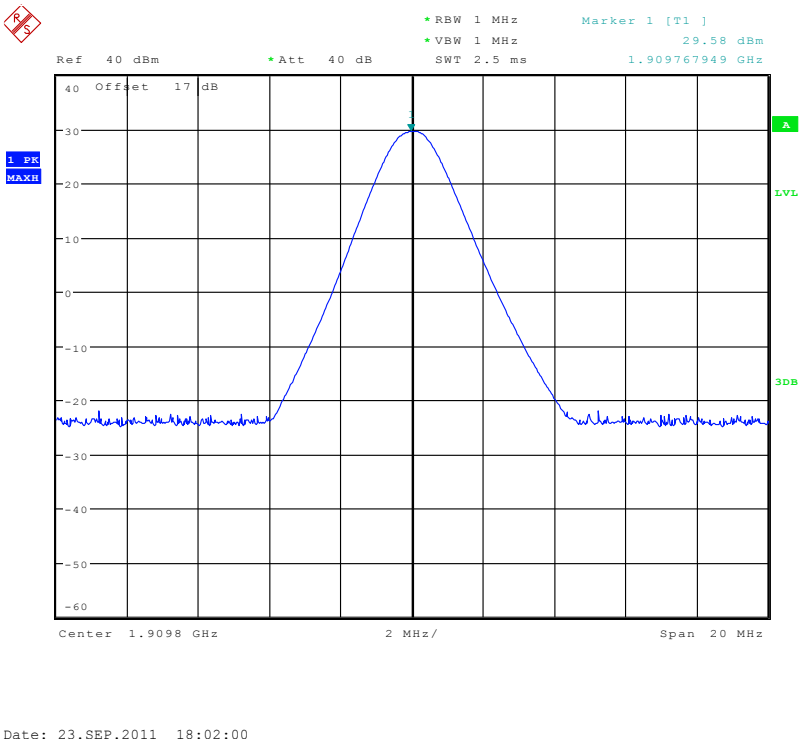
(Plot C2: GSM 850MHz Channel = 251)



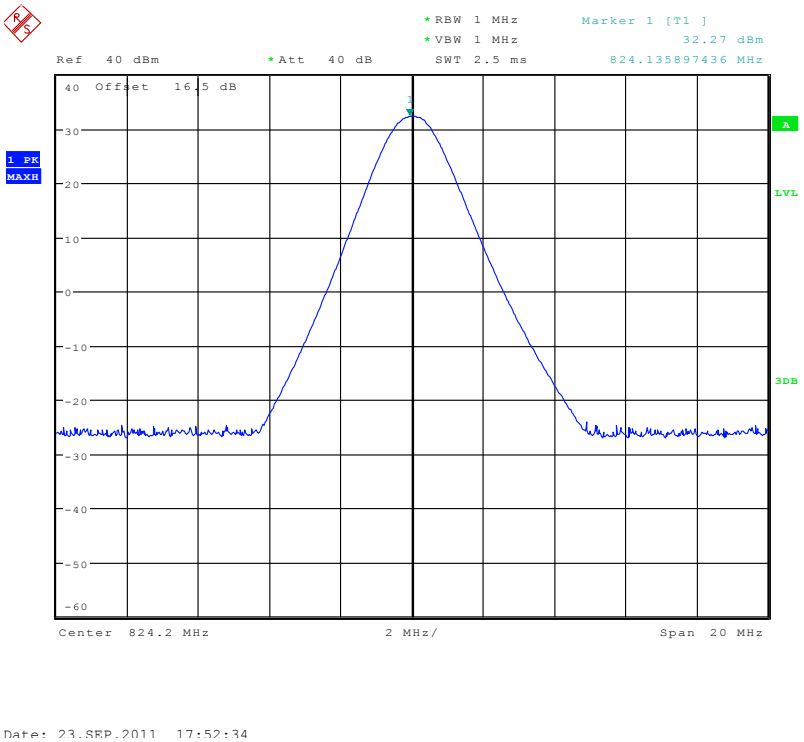
(Plot D2: GSM 1900MHz Channel = 512)



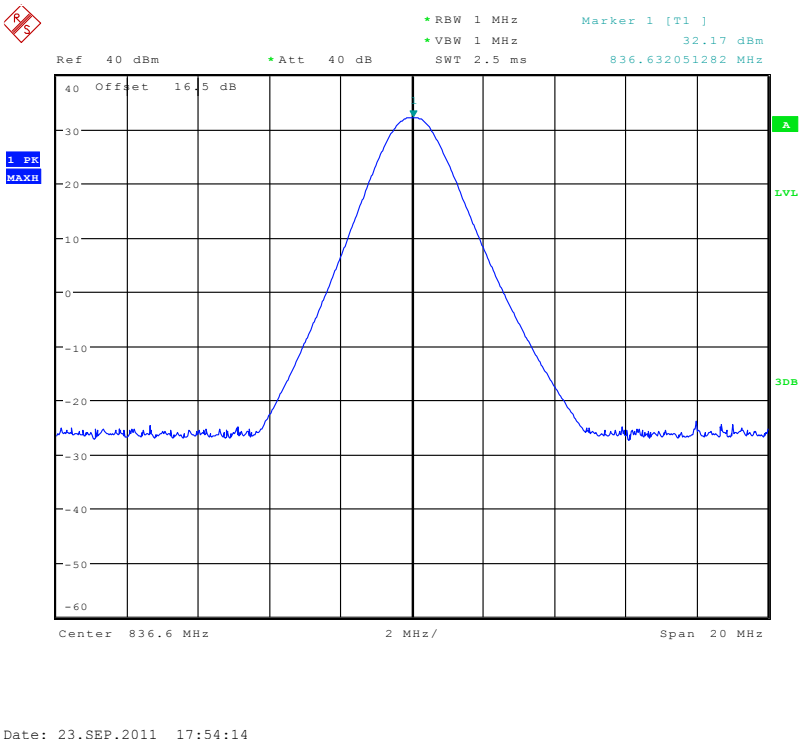
(Plot E2: GSM 1900MHz Channel = 661)



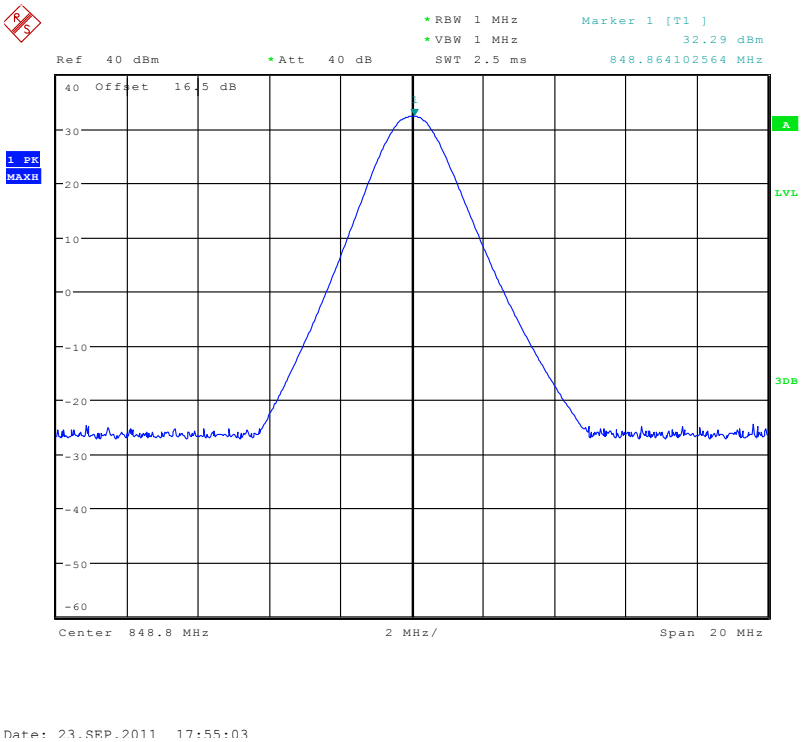
(Plot F2: GSM 1900MHz Channel = 810)



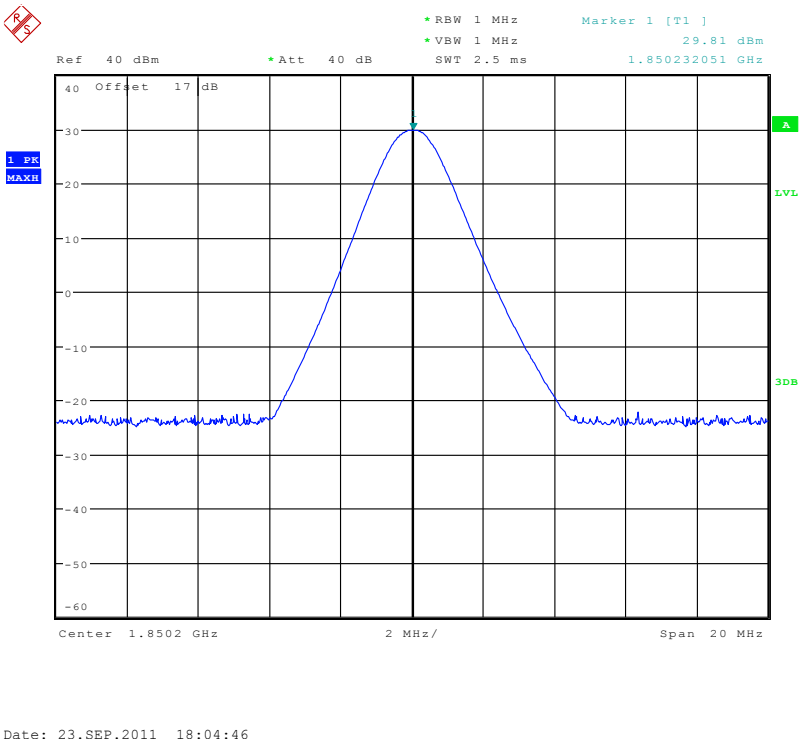
(Plot G2:GPRS 850MHz Channel = 128)



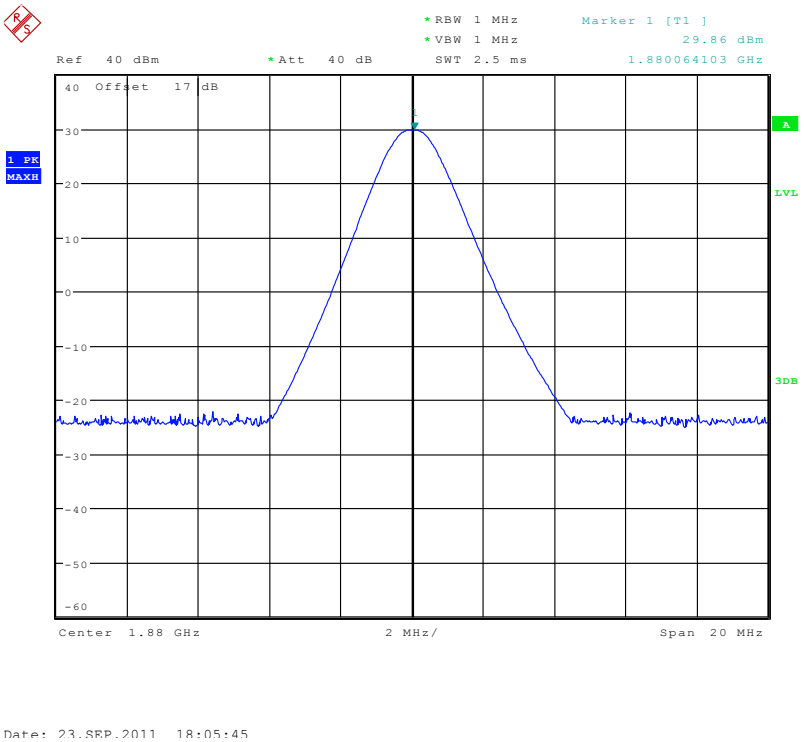
(Plot H2: GPRS 850MHz Channel = 190)



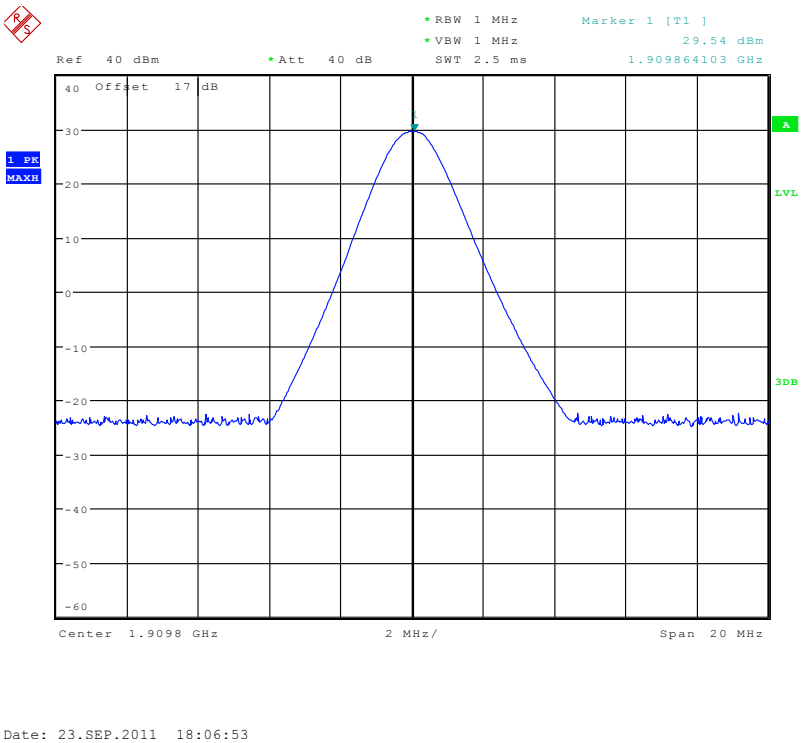
(Plot I2: GPRS 850MHz Channel = 251)



(Plot J2: GPRS 1900MHz Channel = 512)



(Plot K2: GPRS 1900MHz Channel = 661)



(Plot L2: GPRS 1900MHz Channel = 810)

3.3 26dB 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 26dB bandwidth (10*log1% = 26dB) taking the total RF output power as reference.

3.3.2 Test Description

See section 3.1.2 of this report.

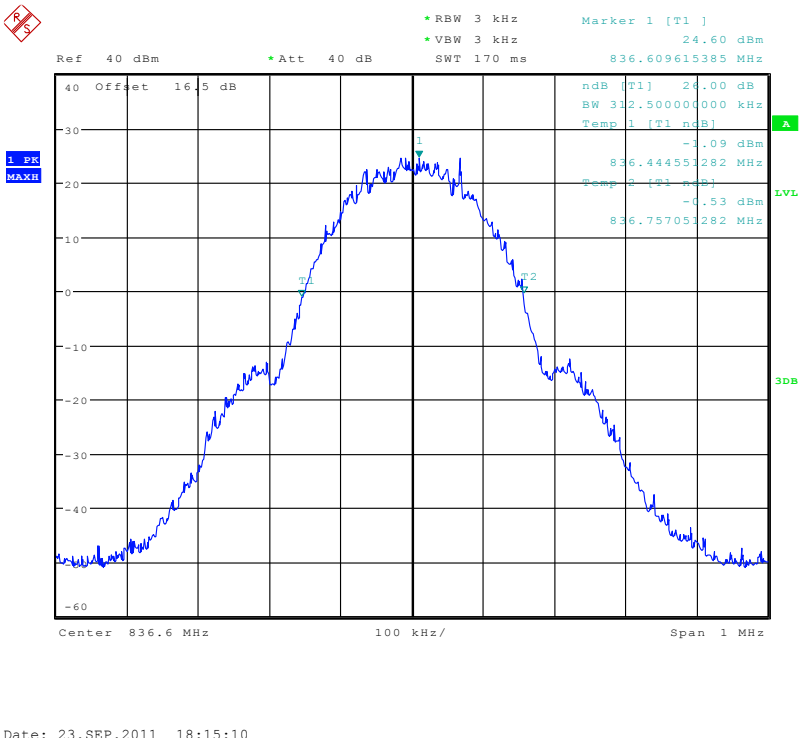
3.3.3 Test Verdict

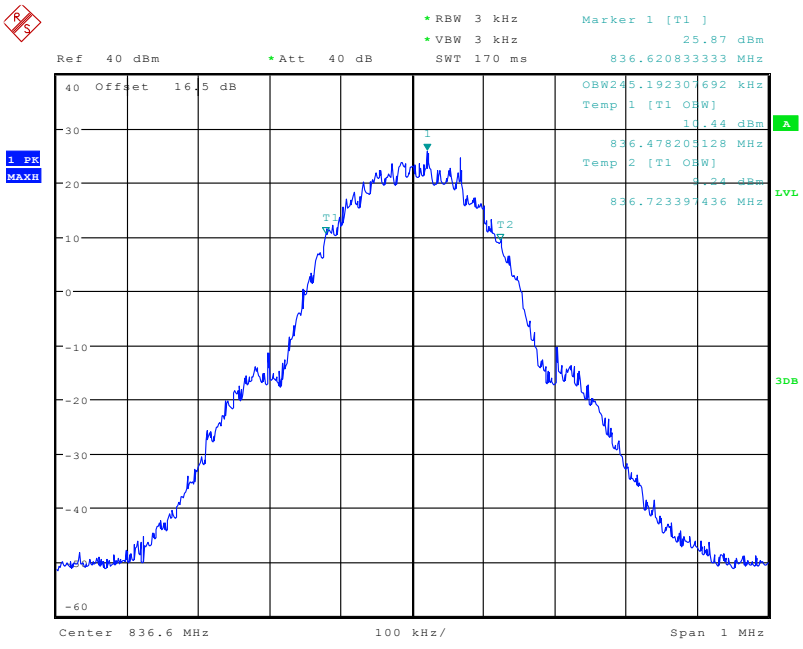
Here the lowest, middle and highest channels are tested to record the 26dB occupied bandwidth and 99% Occupied Bandwidth, it's about 300kHz.

1. Test Verdict:

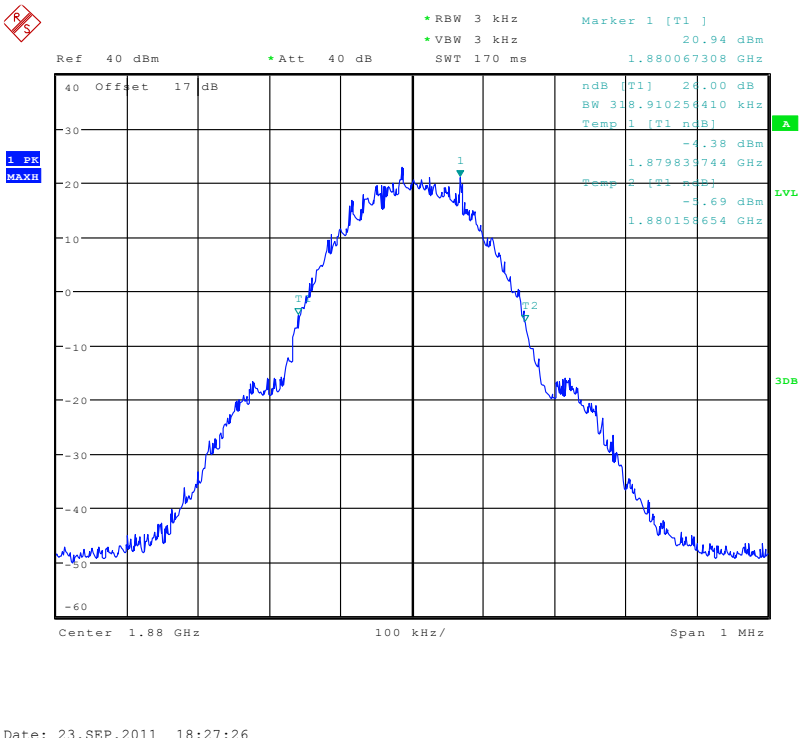
Band	Channel	Measured 26dB Occupied Bandwidth (kHz)	Measured 99% Occupied Bandwidth (kHz)	Refer to Plot
GSM 850MHz	190	312.50	245.19	Plot A3
GSM 1900MHz	661	318.91	243.59	Plot B3
GPRS 850MHz	190	310.90	246.79	Plot C3
GPRS 1900MHz	661	315.71	241.99	Plot D3

2. Test Plot:

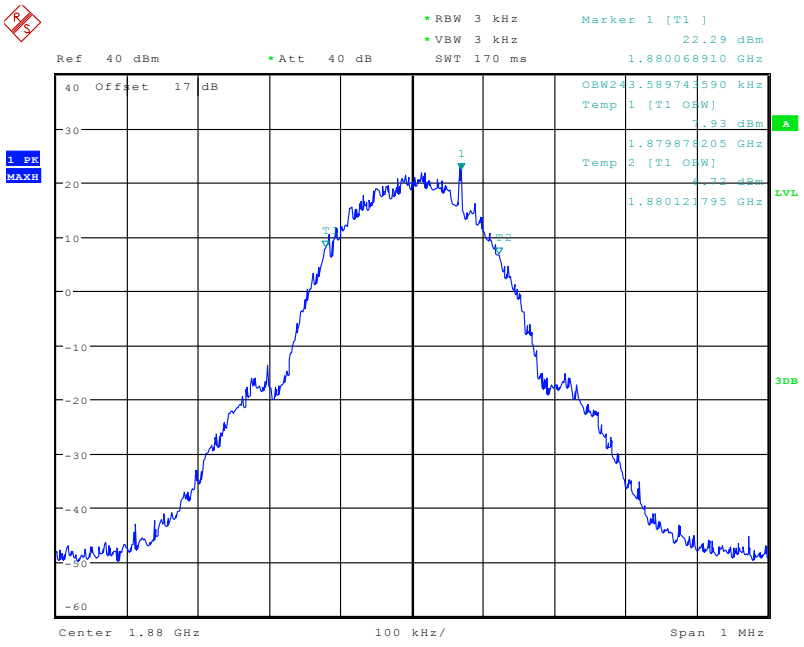




(Plot A3: GSM 850MHz Channel = 190)



Date: 23.SEP.2011 18:27:26



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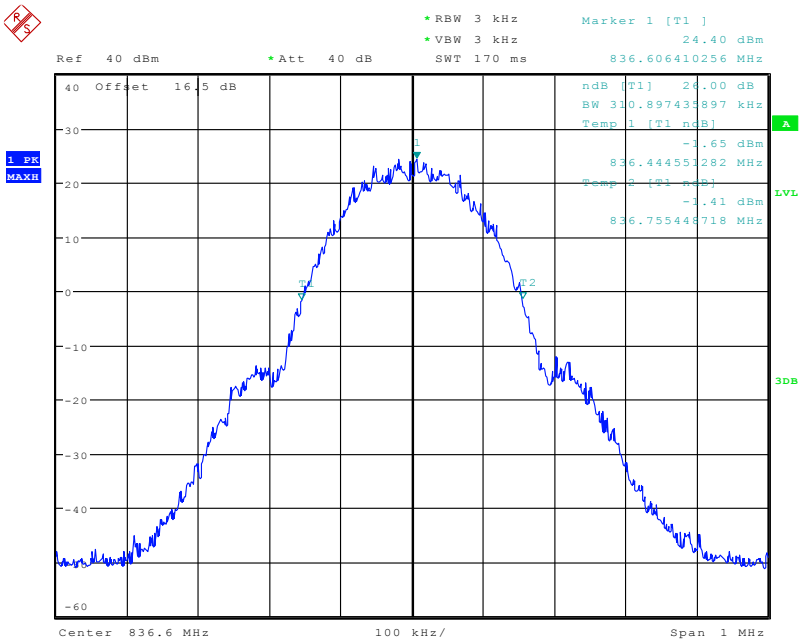
(Plot B3: GSM 1900MHz Channel = 661)



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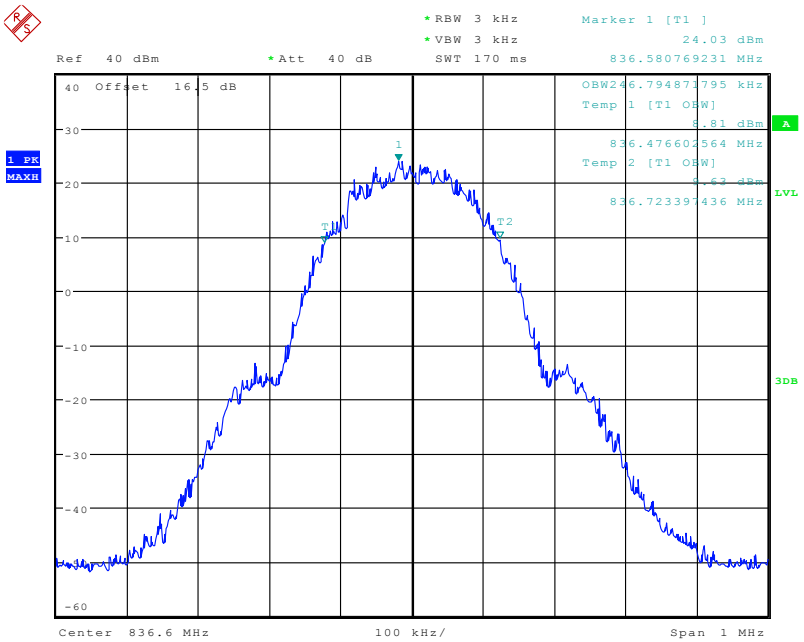

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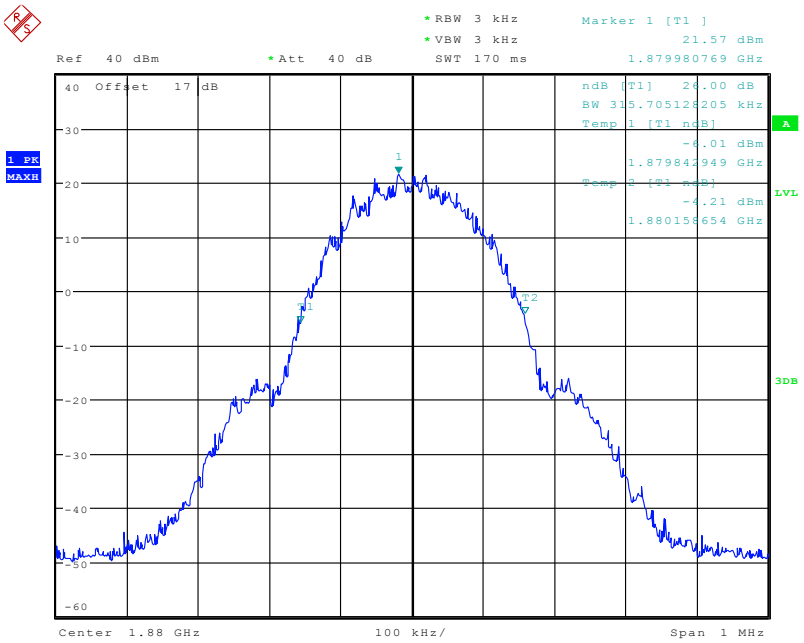
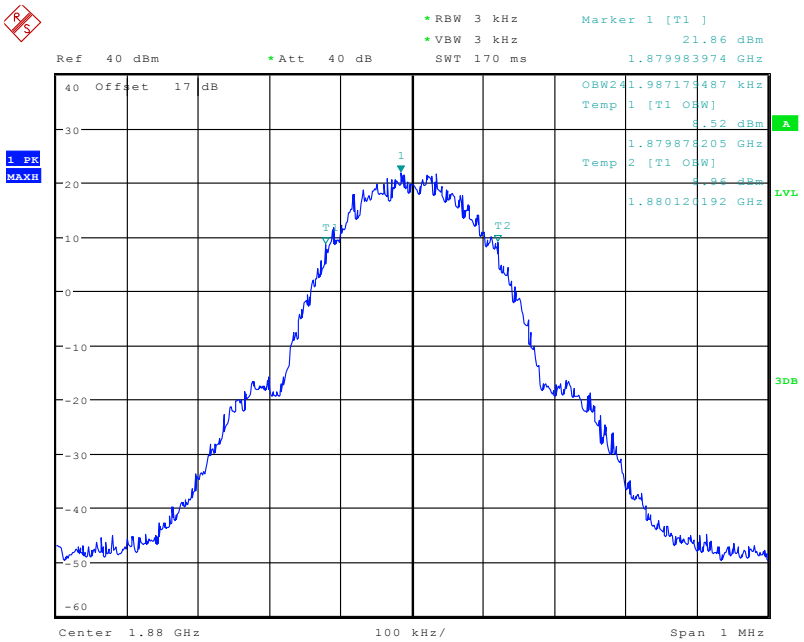
(Plot C3: GPRS 850MHz Channel = 190)



Date: 23.SEP.2011 18:23:29



Date: 23.SEP.2011 18:33:24

(Plot D3: GPRS 1900MHz Channel = 661)

3.4 Frequency Stability

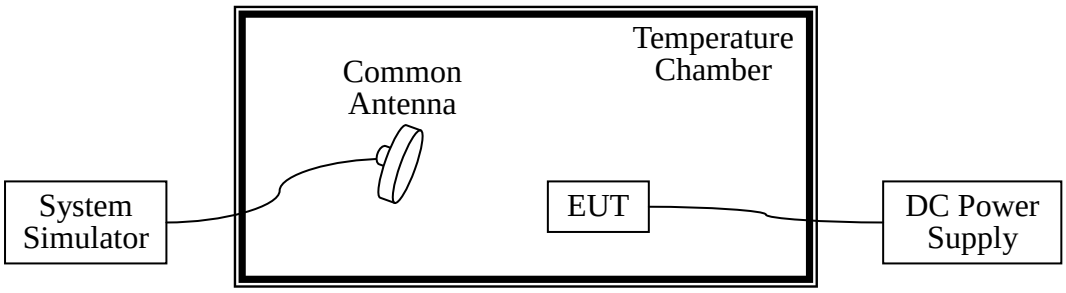
3.4.1 Requirement

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:

(a) The temperature is varied from -30 ℃ to +50 ℃ at intervals of not more than 10 ℃.
(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.

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
System Simulator	Rohde&Schwarz	CMU200	105571	2011.9	1year
System Simulator	Agilent	E5515C	GB46040102	2011.9	1year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2011.9	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2011.9	1year

3.4.3 Test Verdict

For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating

end point which shall be specified by the manufacturer; the normal temperature here used is 25℃. The frequency deviation limit is ±2.5ppm.

Band	Test Conditions		Frequency Deviation						Verdict
			Low Channel		Middle Channel		High Channel		
	Power (VDC)	Temperature (℃)	Dev. Freq. Hz	Deviation (ppm)	Dev. Freq. Hz	Deviation (ppm)	Dev. Freq. Hz	Deviation (ppm)	Limit ±2.5ppm (ppm)
GSM 850MHz	3.7	-30	--	--	--	--	--	--	PASS
		-20	-6	-0.007	9	0.011	-3	-0.004	
		-10	-3	-0.004	5	0.006	-6	-0.007	
		0	7	0.008	-3	-0.004	-3	-0.004	
		+10	5	0.006	-5	-0.006	4	0.005	
		+20	-6	-0.007	4	0.005	5	0.006	
		+30	9	0.011	-5	-0.006	-8	-0.009	
		+40	4	0.005	7	0.008	6	0.007	
		+50	-5	-0.006	5	0.006	9	0.011	
	4.2	+25	-7	-0.008	-7	-0.008	-5	-0.006	
	BEP	+25	-2	-0.002	-4	-0.005	4	0.005	
GSM 1900MHz	3.7	-30	--	--	--	--	--	--	PASS
		-20	-2	-0.001	-5	-0.003	4	0.002	
		-10	-8	-0.004	-2	-0.001	1	0.001	
		0	7	0.004	-4	-0.002	-6	-0.003	
		+10	-4	-0.002	-4	-0.002	4	0.002	
		+20	6	0.003	3	0.002	2	0.001	
		+30	3	0.002	5	0.003	-4	-0.002	
		+40	-5	-0.003	-7	-0.004	-5	-0.003	
		+50	5	0.003	4	0.002	-2	-0.001	
	4.2	+25	4	0.002	6	0.003	8	0.004	
	BEP	+25	-6	-0.003	-4	-0.002	-7	-0.004	
GPRS 850MHz	3.7	-30	--	--	--	--	--	--	PASS
		-20	4	0.005	2	0.002	-5	-0.006	
		-10	-4	-0.005	-5	-0.006	-1	-0.001	
		0	-5	-0.006	8	0.009	-3	-0.004	
		+10	5	0.006	4	0.005	9	0.011	
		+20	-9	-0.011	4	0.005	8	0.009	
		+30	4	0.005	-7	-0.008	-8	-0.009	
		+40	-5	-0.006	7	0.008	2	0.002	
		+50	-7	-0.008	-8	-0.009	-5	-0.006	
	4.2	+25	-7	-0.008	-7	-0.008	-5	-0.006	
	BEP	+25	-2	-0.002	-4	-0.005	4	0.005	

GPRS 1900MHz	3.7	-30	--	--	--	--	--	--	PASS
		-20	-6	-0.003	2	0.001	4	0.002	
		-10	-7	-0.004	-5	-0.003	-6	-0.003	
		0	7	0.004	-4	-0.002	-5	-0.003	
		+10	-4	-0.002	-7	-0.004	4	0.002	
		+20	6	0.003	3	0.002	2	0.001	
		+30	3	0.002	5	0.003	-4	-0.002	
		+40	-5	-0.003	-7	-0.004	-5	-0.003	
		+50	-6	-0.003	8	0.004	-5	-0.003	
	4.2	+25	4	0.002	6	0.003	8	0.004	
	BEP	+25	-6	-0.003	-4	-0.002	-7	-0.004	

Note:

1. The EUT stops transmitting at temperatures -30 ℃.

2. The manufacturer declared that the EUT could work properly between temperatures -20 ℃~50 ℃.

3. Normal Voltage = 3.7 V; Fully Charged Battery = 4.2 V; Battery End Point (BEP) =3.6 V.

3.5 Conducted Out of Band Emissions

3.5.1 Requirement

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

3.5.2 Test Description

See section 3.1.2 of this report.

3.5.3 Test Result

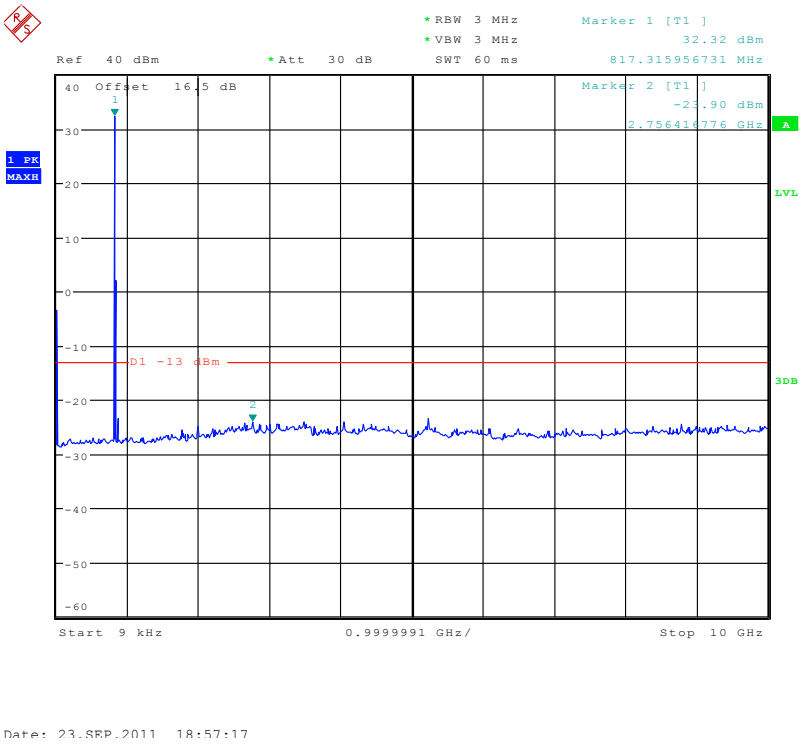
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

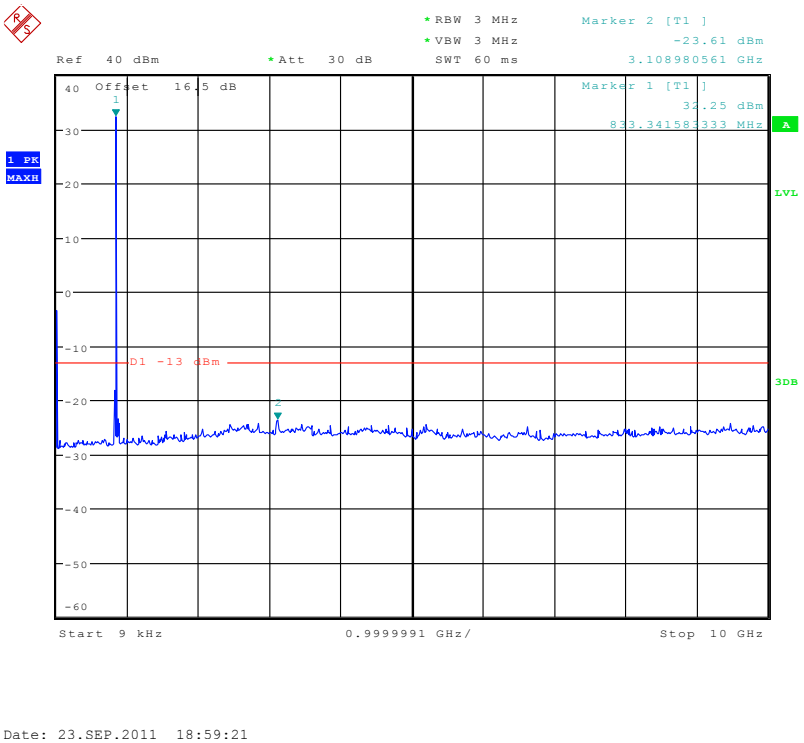
Band	Channel	Frequency (GHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	2.756	-23.90	Plot A4	-13	PASS
	190	3.109	-23.61	Plot B4		PASS
	251	3.125	-23.72	Plot C4		PASS
GSM 1900MHz	512	17.468	-22.48	Plot D4	-13	PASS
	661	3.109	-22.57	Plot E4		PASS
	810	17.500	-23.18	Plot F4		PASS
GPRS 850MHz	128	9.375	-23.48	Plot G4	-13	PASS
	190	3.349	-23.75	Plot H4		PASS
	251	8.542	-24.21	Plot I4		PASS
GPRS 1900MHz	512	17.340	-23.26	Plot J4	-13	PASS
	661	16.282	-23.49	Plot K4		PASS
	810	16.859	-23.23	Plot L4		PASS

2. Test Plot for the Whole Measurement Frequency Range:

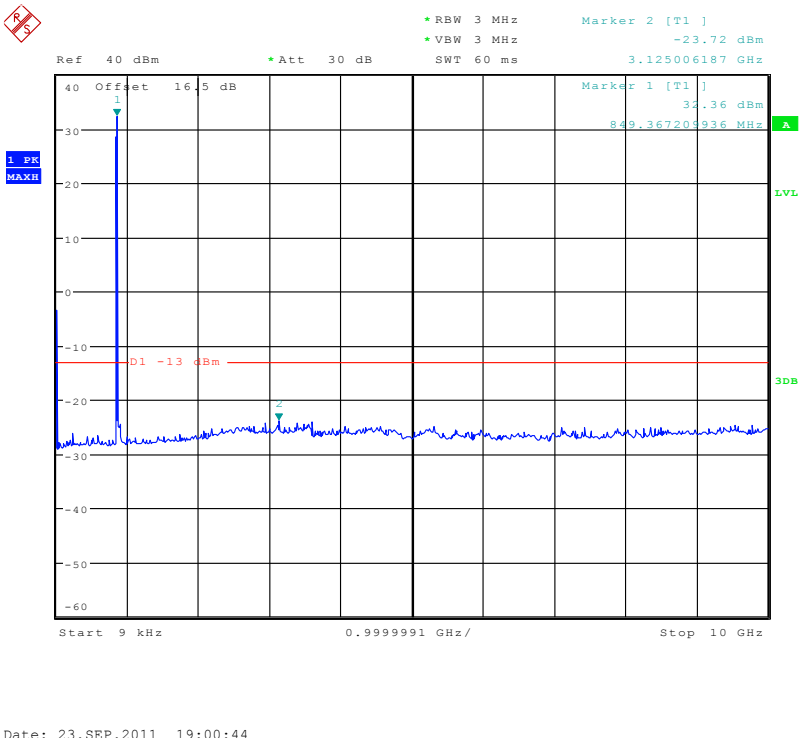
Note: the power of the EUT transmitting frequency should be ignored.



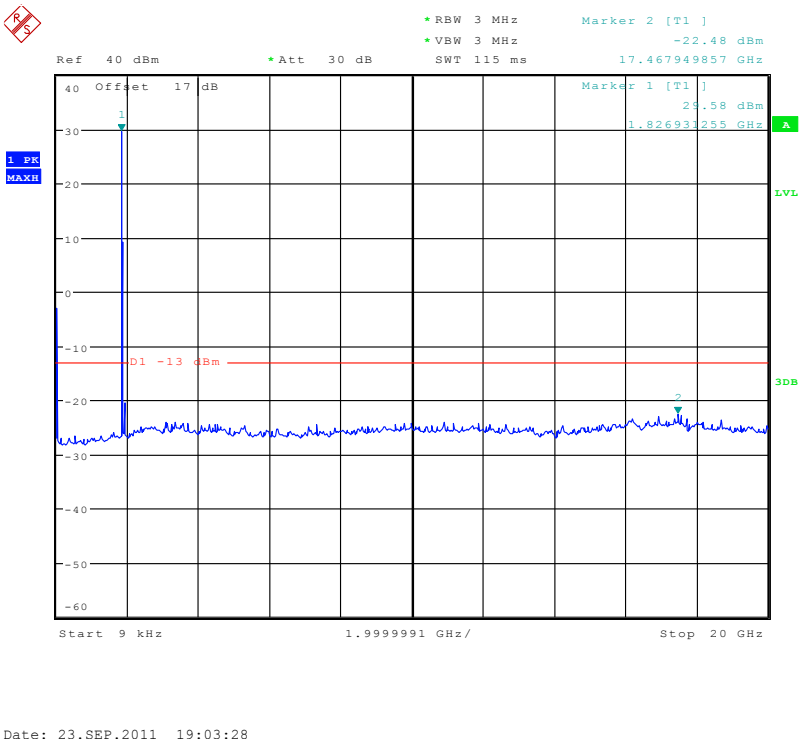
(Plot A4.:GSM 850MHz Channel = 128, 9KHz to 10GHz)



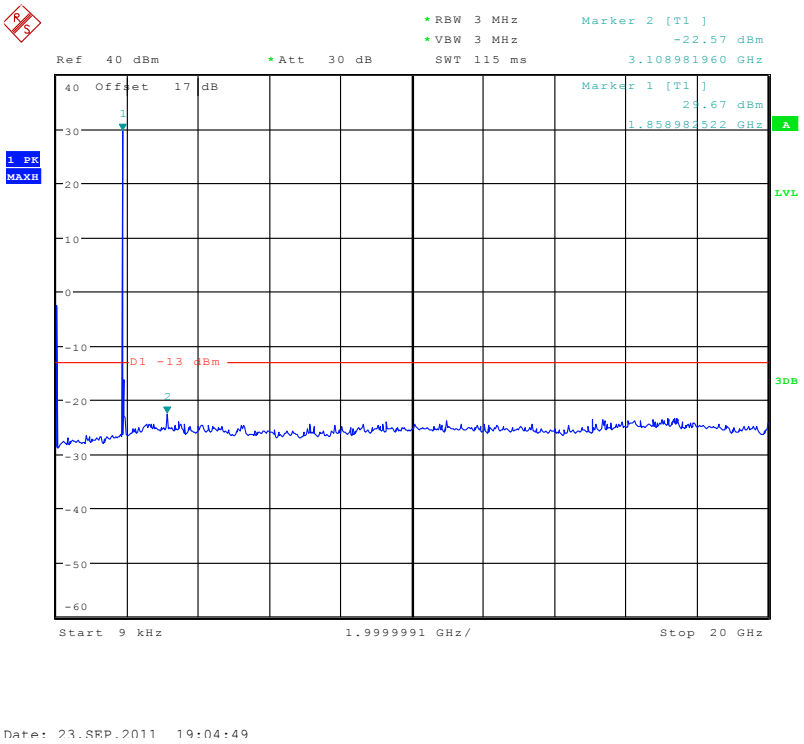
(Plot B4.:GSM 850MHz Channel = 190, 9KHz to 10GHz)



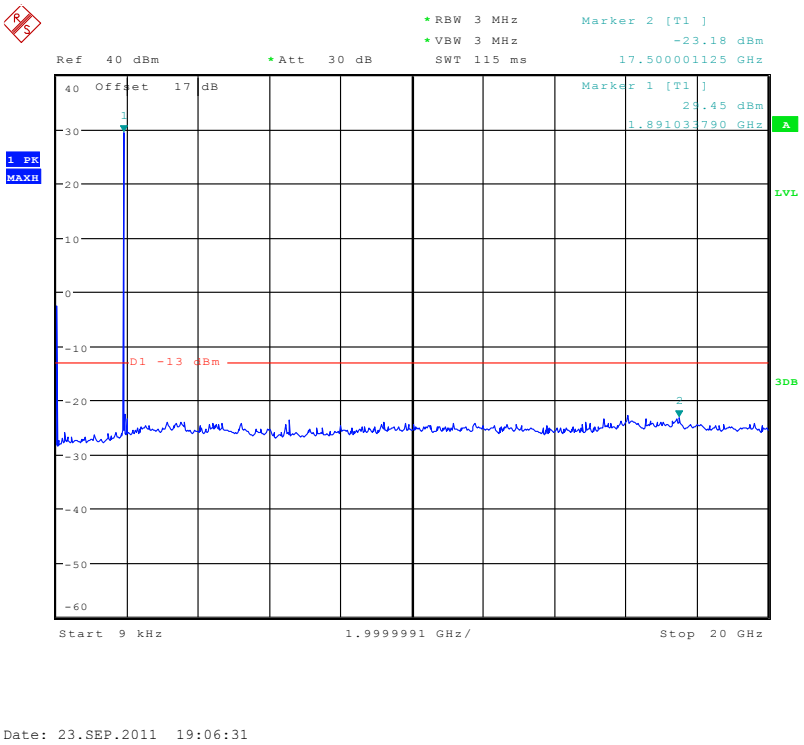
(Plot C4.:GSM 850MHz Channel = 251, 9KHz to 10GHz)



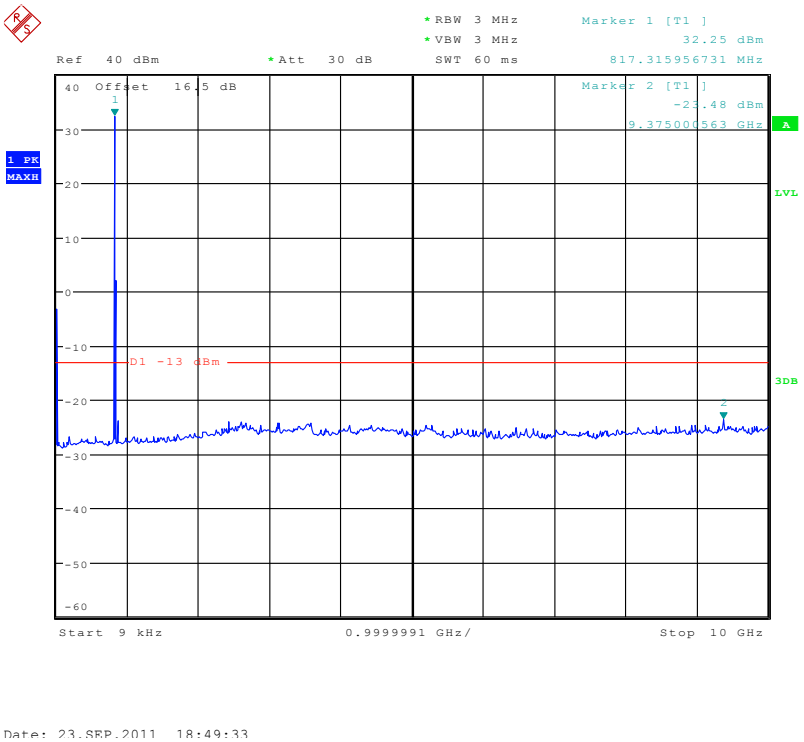
(Plot D4.:GSM 1900MHz Channel = 512, 9KHz to 20GHz)



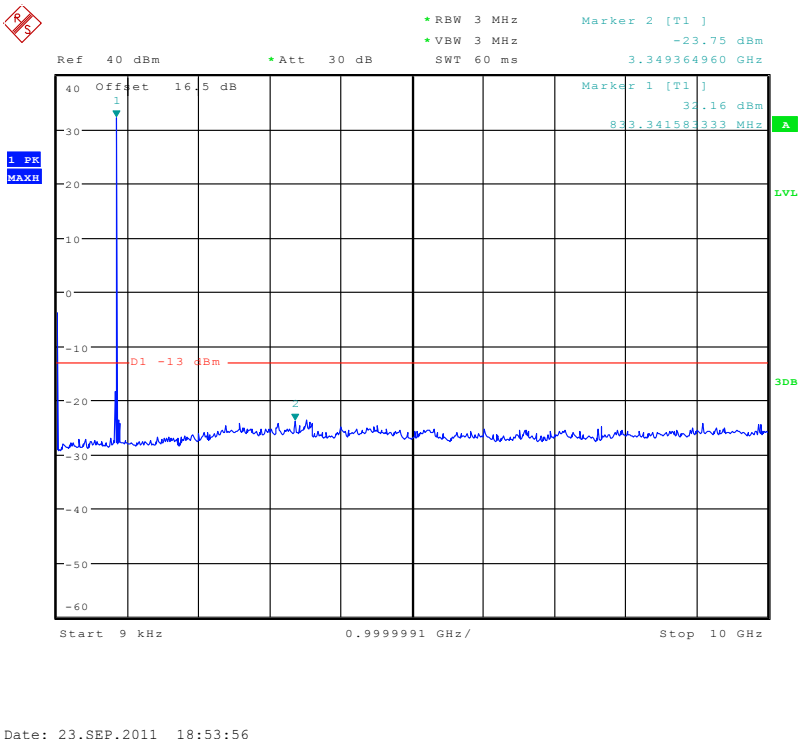
(Plot E4.: GSM 1900MHz Channel = 661, 9KHz to 20GHz)



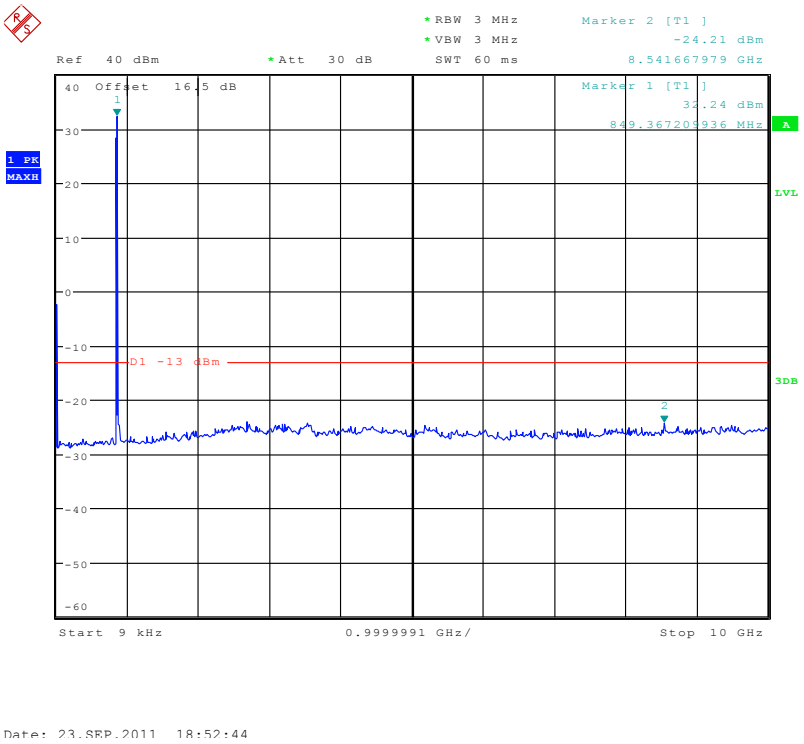
(Plot F4.: GSM 1900MHz Channel = 810, 9KHz to 20GHz)



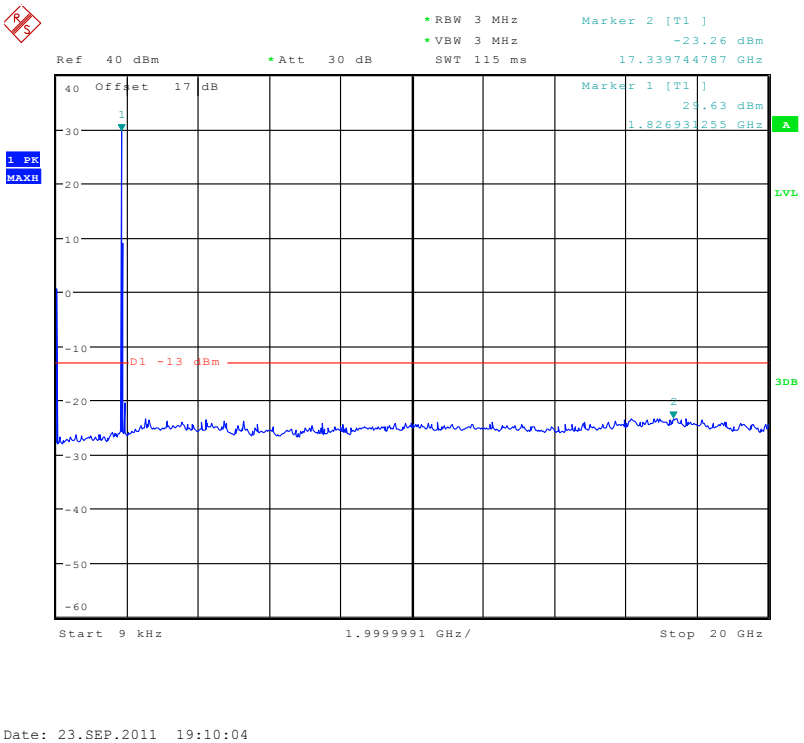
(Plot G4.:GPRS 850MHz Channel = 128, 9KHz to 10GHz)



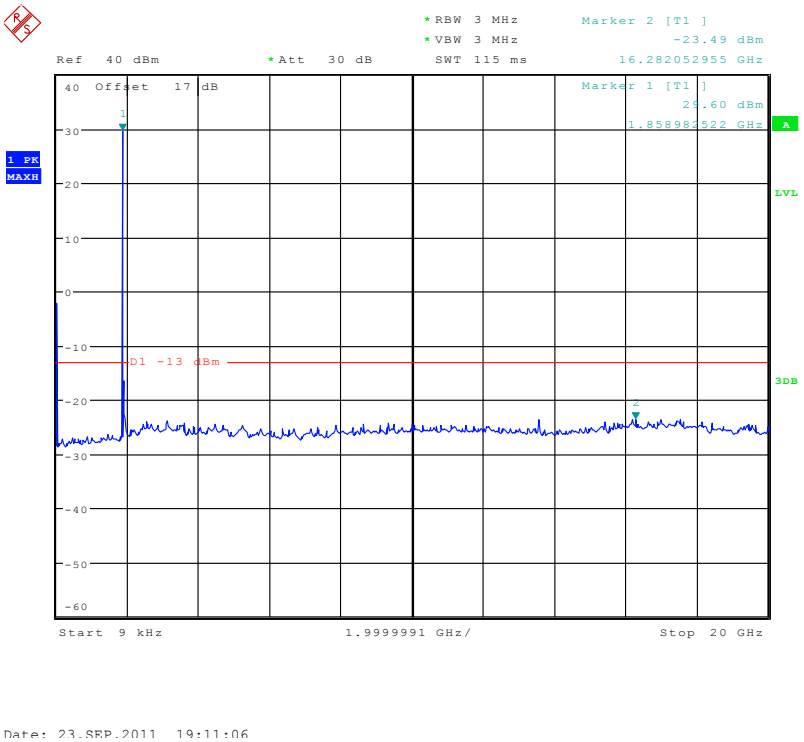
(Plot H4.: GPRS 850MHz Channel = 190, 9KHz to 10GHz)



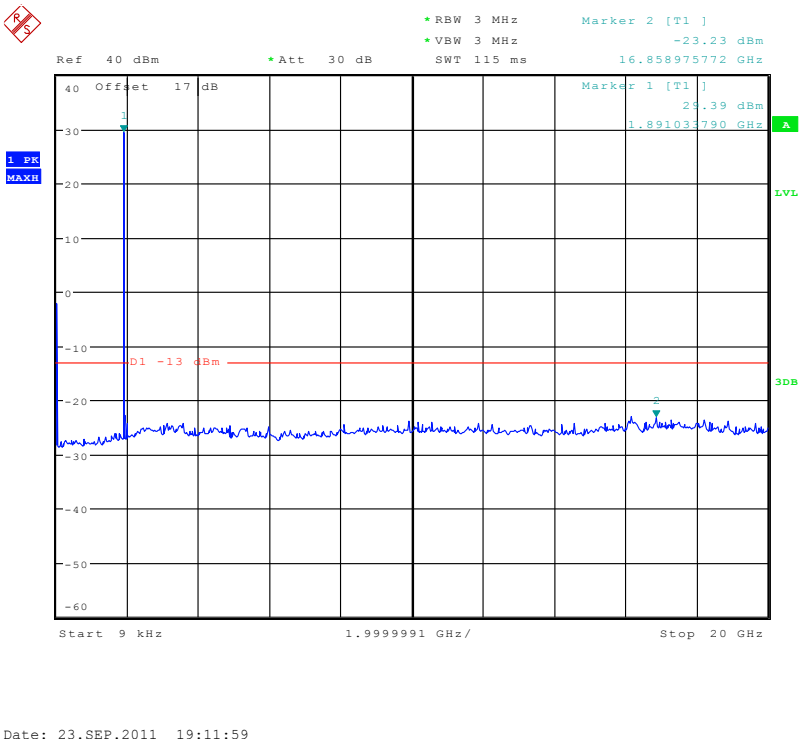
(Plot I4.: GPRS 850MHz Channel = 251, 9KHz to 10GHz)



(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)

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.

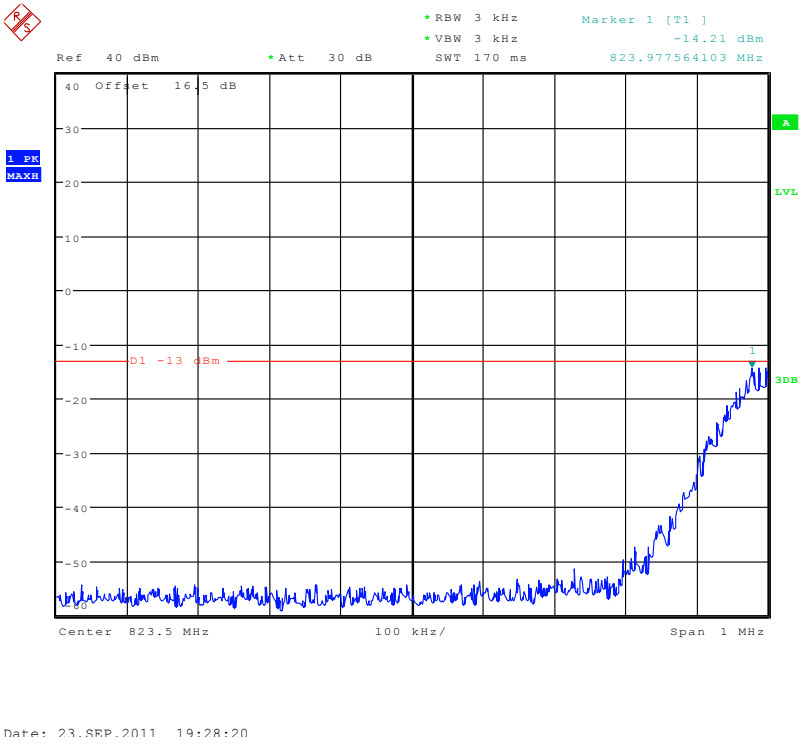
3.6.3 Test Result

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

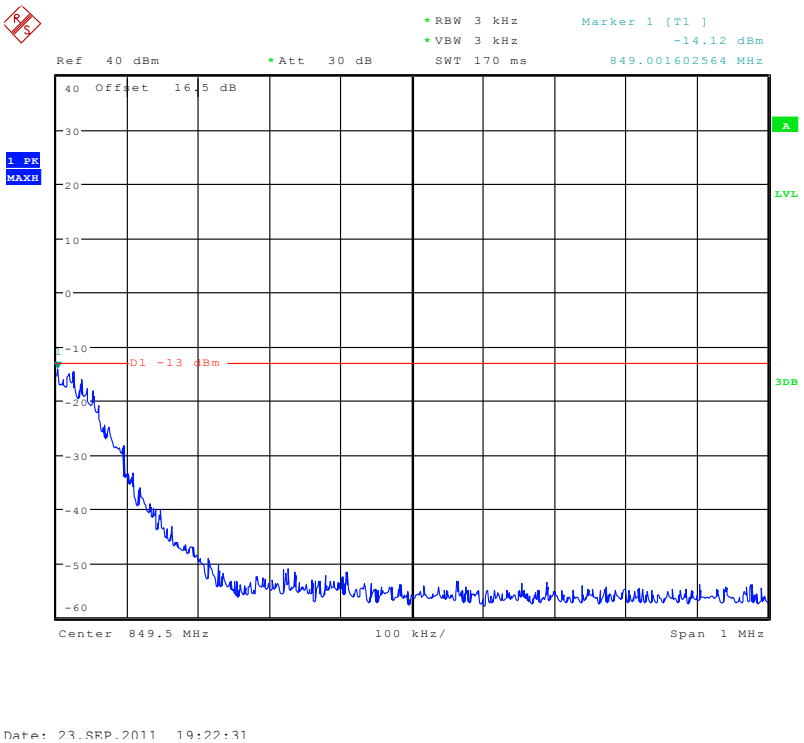
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	823.978	-14.21	Plat A5	-13	PASS
	251	849.002	-14.12	Plot B5		PASS
GSM 1900MHz	512	1849.98	-16.75	Plat C5		PASS
	810	1910.02	-15.26	Plot D5		PASS
GPRS 850MHz	128	823.98	-15.16	Plat E5		PASS
	251	849.02	-14.16	Plot F5		PASS
GPRS 1900MHz	512	1849.98	-16.18	Plat G5		PASS
	810	1910.02	-16.80	Plot H5		PASS

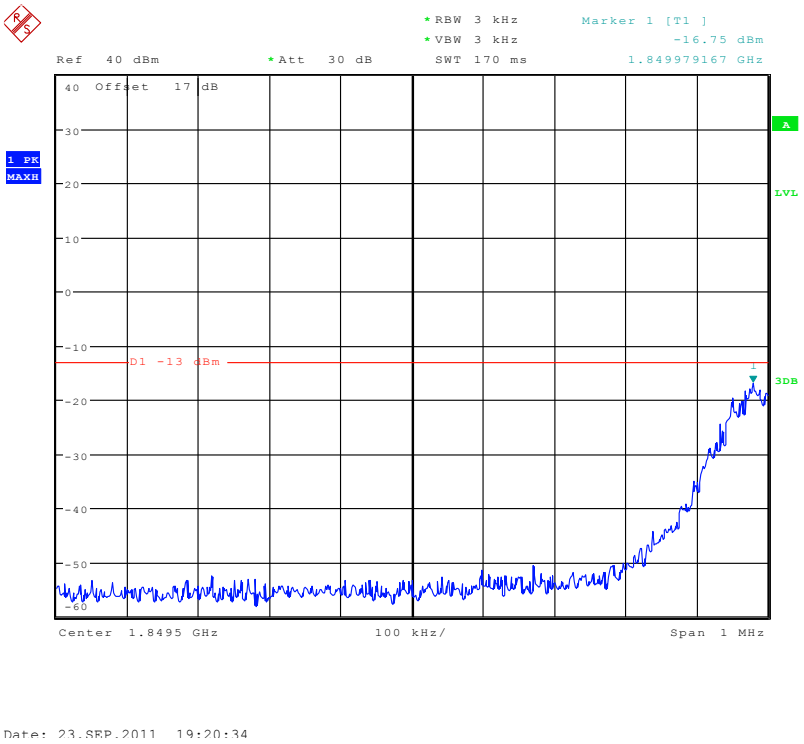
2. Test Plot:



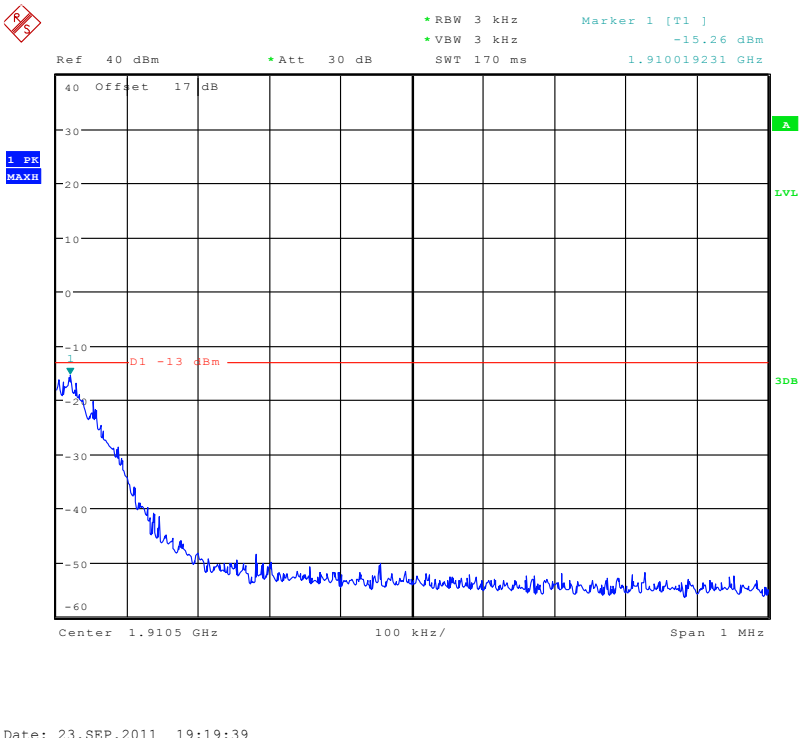
(Plot A5: GSM 850MHz Channel = 128)



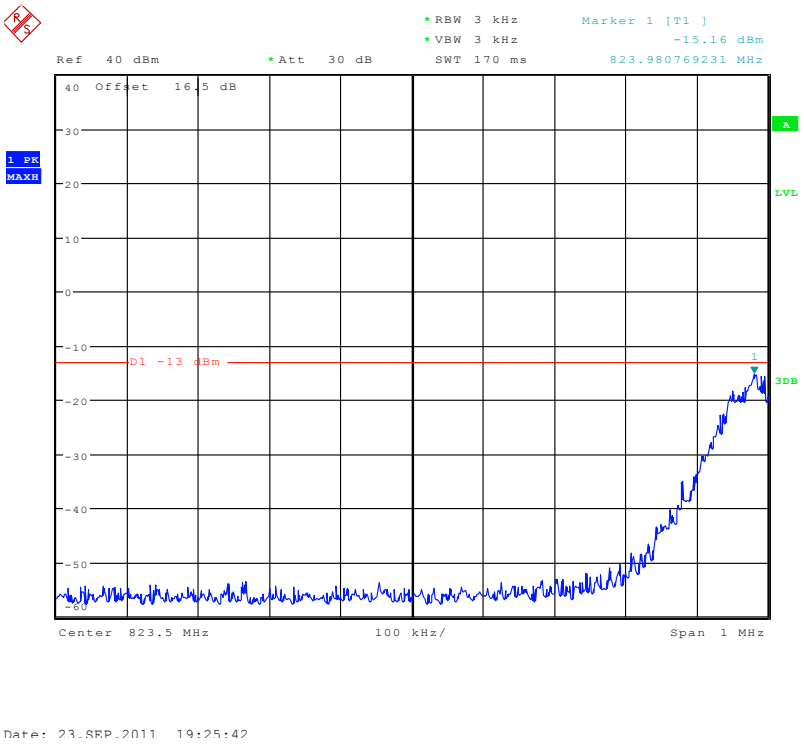
(Plot B5: GSM 850MHz Channel = 251)



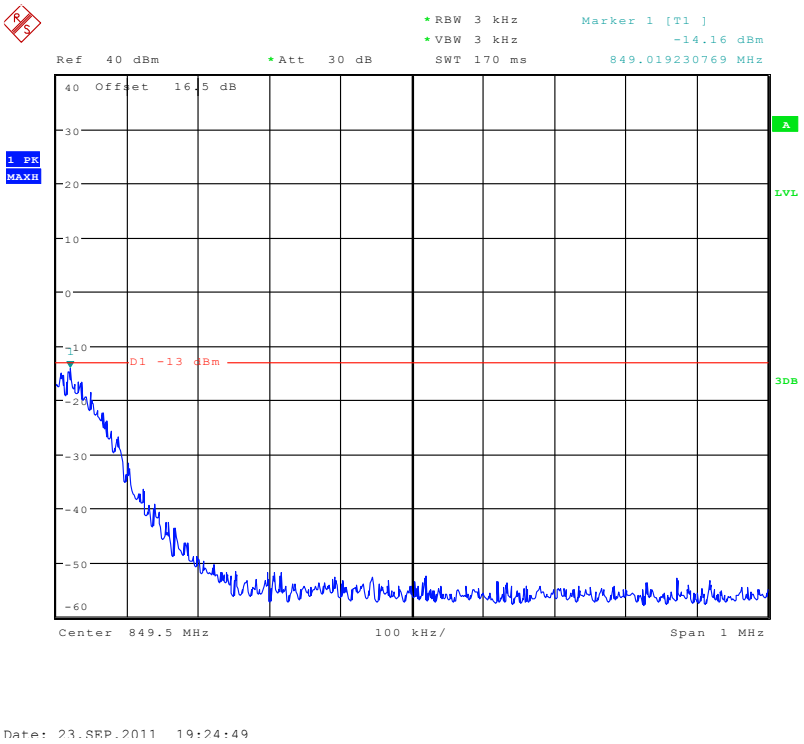
(Plot C5: GSM 1900MHz Channel = 512)



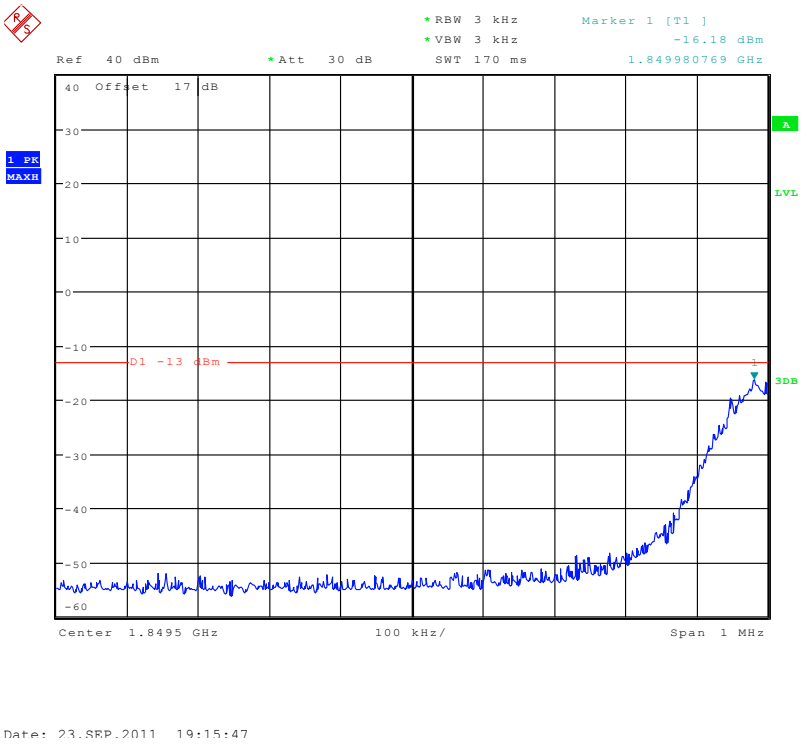
(Plot D5: GSM 1900MHz Channel = 810)



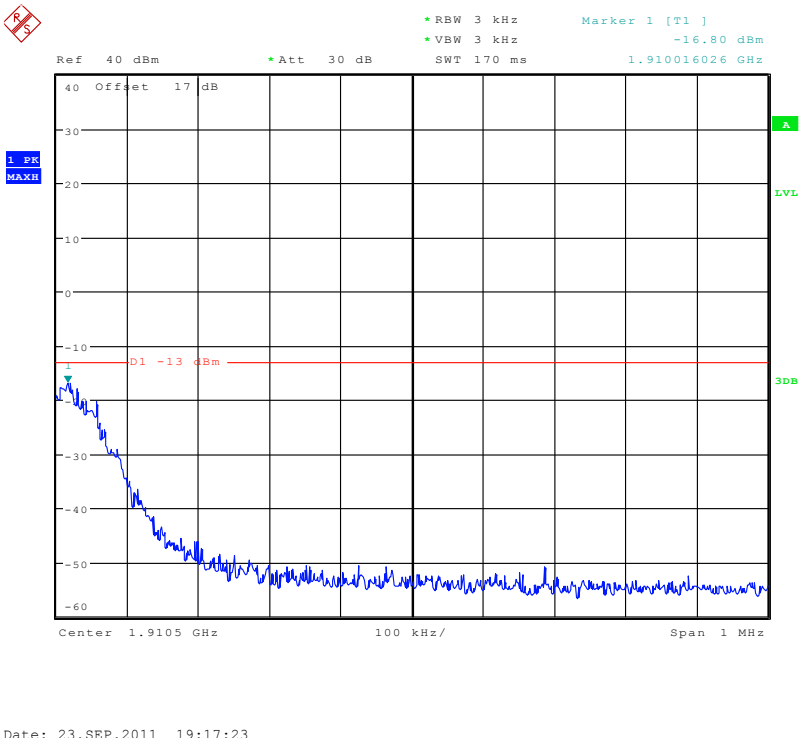
(Plot E5: GPRS 850MHz Channel = 128)



(Plot F5: GPRS 850MHz Channel = 251)



(Plot G5: GPRS 1900MHz Channel = 512)



(Plot H5: GPRS 1900MHz Channel = 810)

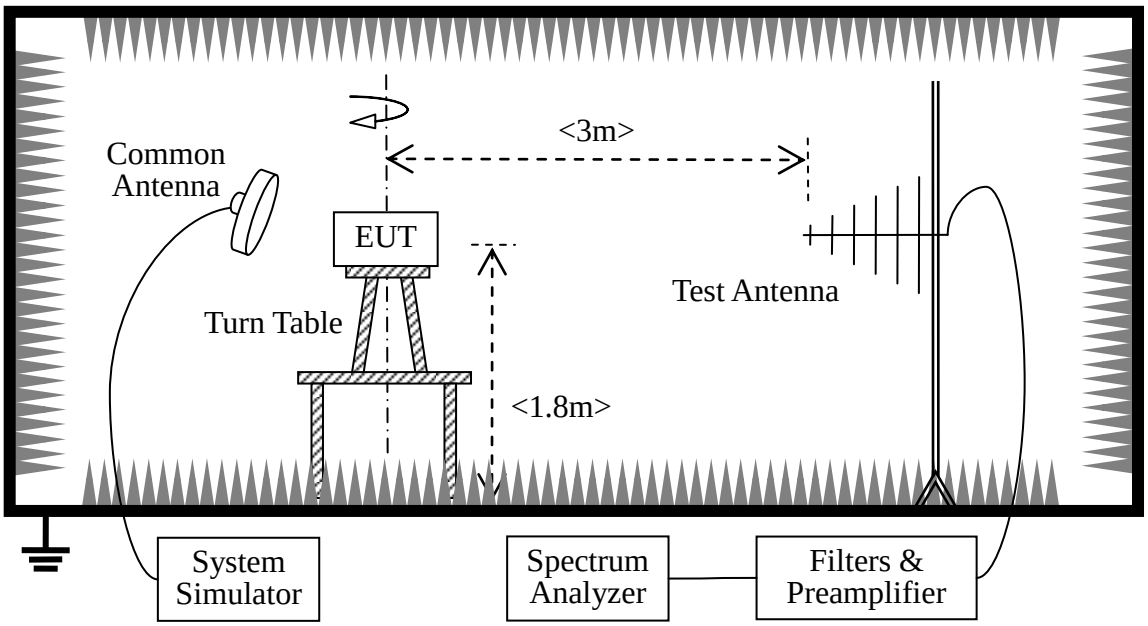
3.7 Transmitter Radiated Power (EIRP/ERP)

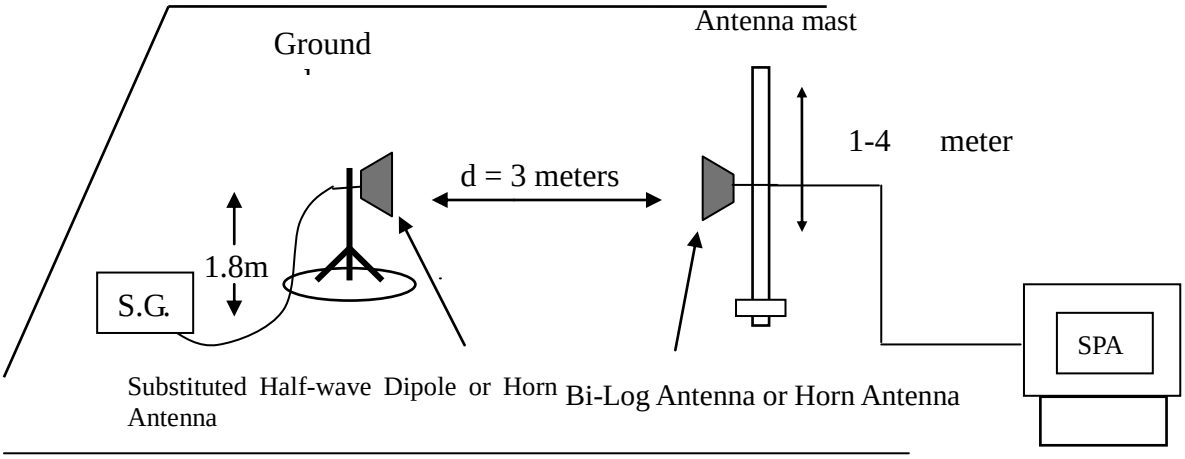
3.7.1 Requirement

According to FCC section 22.913(a), the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts.
According to FCC section 24.232(b), the broadband PCS mobile station is limited to 2Watts e.i.r.p. peak power, and FCC section 24.232(c), peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

3.7.2 Test Procedure

1. Test Setup:





The measurements procedures in TIA-603C-2004 are used.

1. EUT was placed on a 1.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.8m. Detected emissions were maximized at each frequency by rotating the EUT through 360 °and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (P_r).
3. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. The cable loss (P_{cl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (Ga) should be recorded after test. The measurement results are obtained as described below:
   Power(EIRP)= $P_{Mea} + P_{cl} + G_a$
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SS	Agilent	E5515C	GB46040102	2011.9	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2011.9	1year
Spectrum Analyzer	R&S	FSP30	101020	2011.9	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2011.9	2year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2011.9	1year
Test Antenna - Horn	Rohde&Schwarz	HF906	100565	2011.9	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. All modes are tested, including (GSM850 GPRS850 and PCS1900 GPRS1900).

Limits:

	Burst Peak ERP (dBm)
GSM850	≤38.5dBm (7W)
GPRS850	≤38.5dBm (7W)

Measurement result

GSM850

Channel	Peak ERP (dBm)	P_{cl} Cable Loss (dB)	G_a Antenna Gain(dB)	Correction (dBm)	P_{Mea} (dBm)	Polarization
128	29.65	10.01	5.05	2.15	16.74	Horizontal
190	29.33	10.03	5.07	2.15	16.38	Horizontal
251	29.42	10.05	5.11	2.15	16.41	Horizontal
128	28.73	10.01	5.05	2.15	15.82	Vertical
190	28.57	10.03	5.07	2.15	15.62	Vertical
251	28.60	10.05	5.11	2.15	15.59	Vertical

GPRS850

Channel	Peak ERP (dBm)	P_{cl} Cable Loss (dB)	G_a Antenna Gain(dB)	Correction (dBm)	P_{Mea} (dBm)	Polarization
128	28.98	10.01	5.05	2.15	16.07	Horizontal
190	28.70	10.03	5.07	2.15	15.75	Horizontal
251	28.51	10.05	5.11	2.15	15.50	Horizontal
128	27.77	10.01	5.05	2.15	14.86	Vertical
190	27.63	10.03	5.07	2.15	14.68	Vertical
251	27.75	10.05	5.11	2.15	14.74	Vertical

Remark:

ERP(dBm)= P_{Mea}+ P_{cl}+G_a-2.15

Limits:

	Burst Peak EIRP (dBm)
GSM1900	≤33dBm (2W)
GPRS1900	≤33dBm (2W)

Measurement result

GSM1900

Channel	Peak EIRP (dBm)	P_{cl} Cable Loss (dB)	G_a Antenna Gain(dB)	P_{Mea}(dBm)	Polarization
512	26.61	12.05	5.52	9.04	Horizontal
661	26.58	12.08	5.64	8.86	Horizontal
810	26.33	12.11	5.61	8.61	Horizontal
512	25.82	12.05	5.52	8.25	Vertical
661	25.77	12.08	5.64	8.05	Vertical
810	25.64	12.11	5.61	7.92	Vertical

GPRS1900

Channel	Peak EIRP (dBm)	P_{cl} Cable Loss (dB)	G_a Antenna Gain(dB)	P_{Mea}(dBm)	Polarization
512	26.43	12.05	5.52	8.86	Horizontal
661	26.45	12.08	5.64	8.73	Horizontal
810	26.19	12.11	5.61	8.47	Horizontal
512	25.59	12.05	5.52	8.02	Vertical
661	25.52	12.08	5.64	7.8	Vertical
810	25.38	12.11	5.61	7.66	Vertical

Remark:

EIRP(dBm)= P_{Mea}+ P_{cl}+G_a

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.

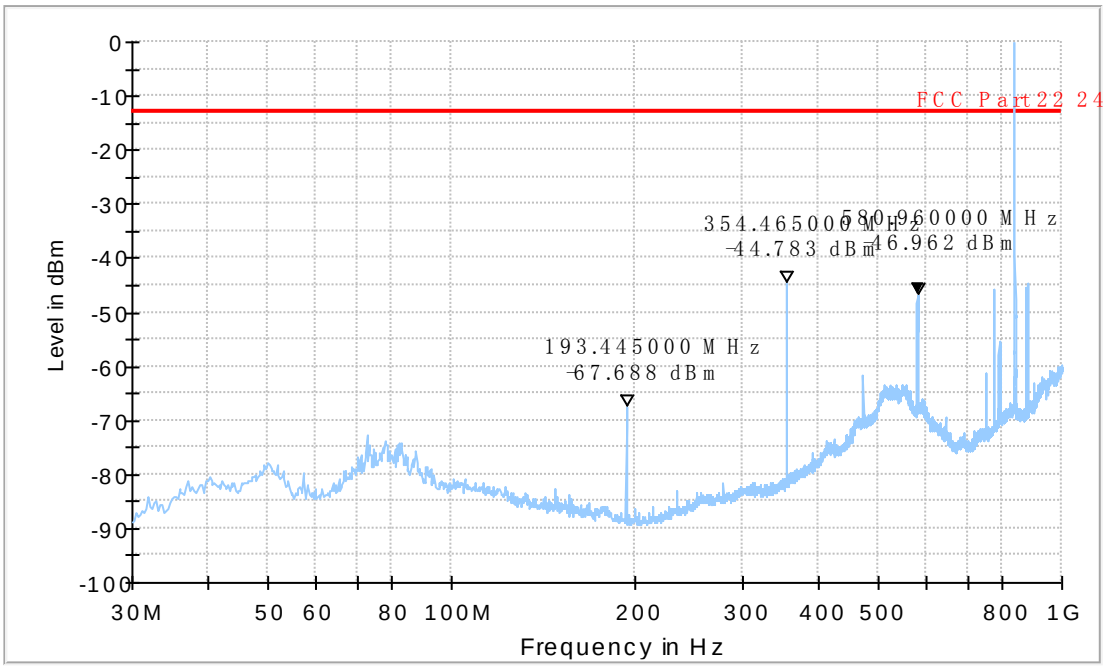
3.8.3 Test Procedure

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.
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 10^{th} 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.

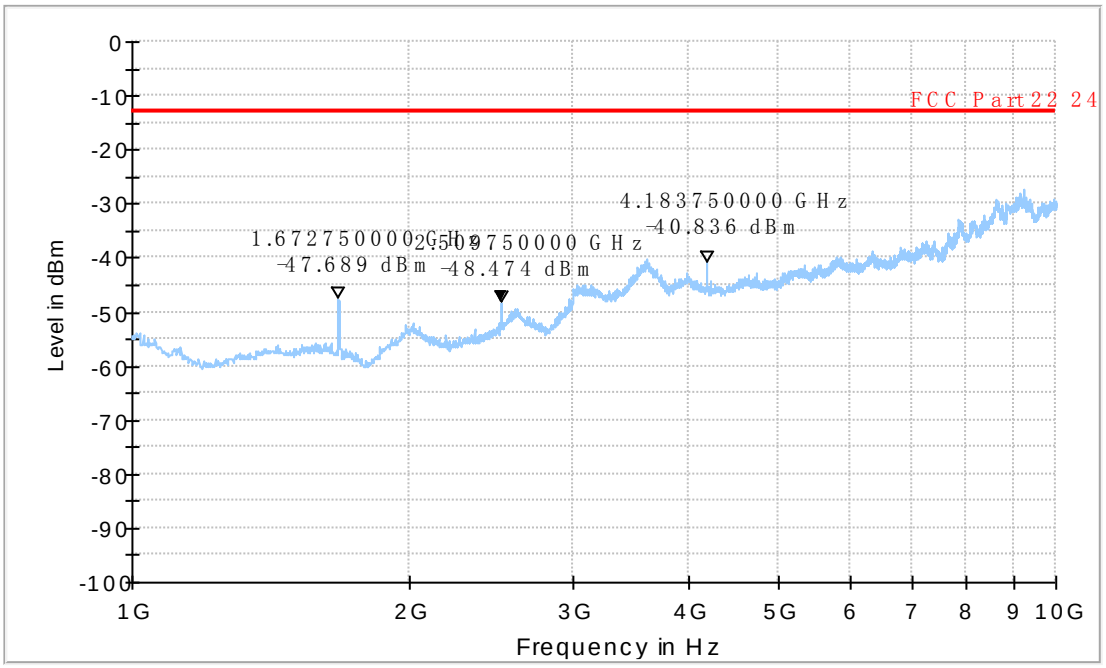
3.8.4 Test Result

All modes are tested, including GSM850,GPRS850 and PCS1900,GPRS1900. We chosen the worst case mode as a representative.

FCC 22H 24E 30M~1G

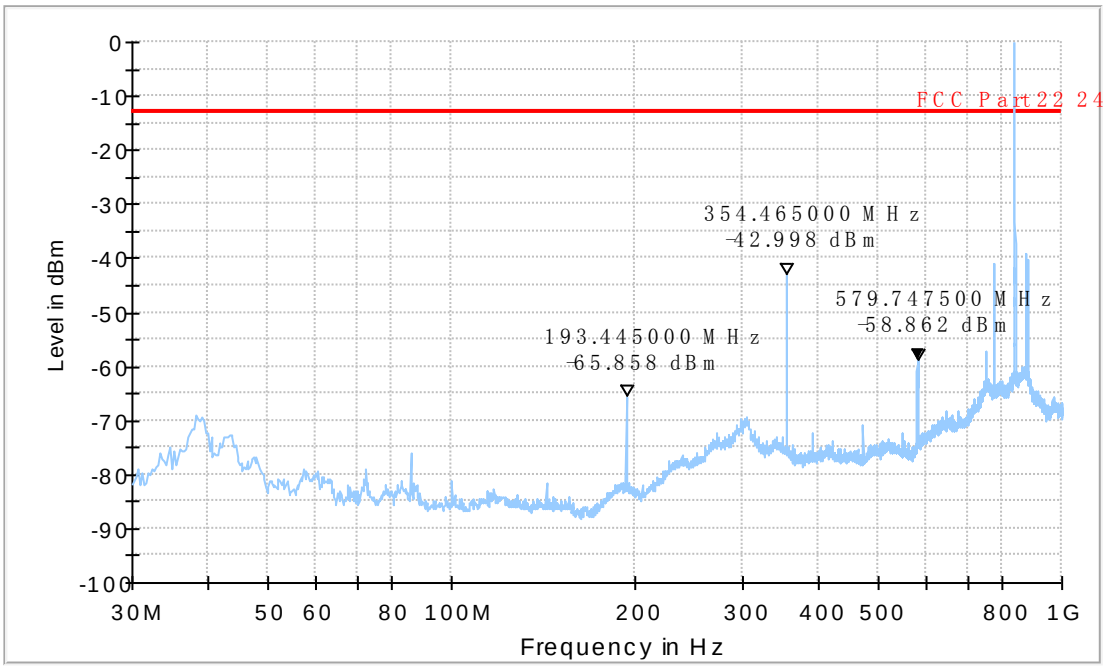


FCC Part 22H 24E 1-18G

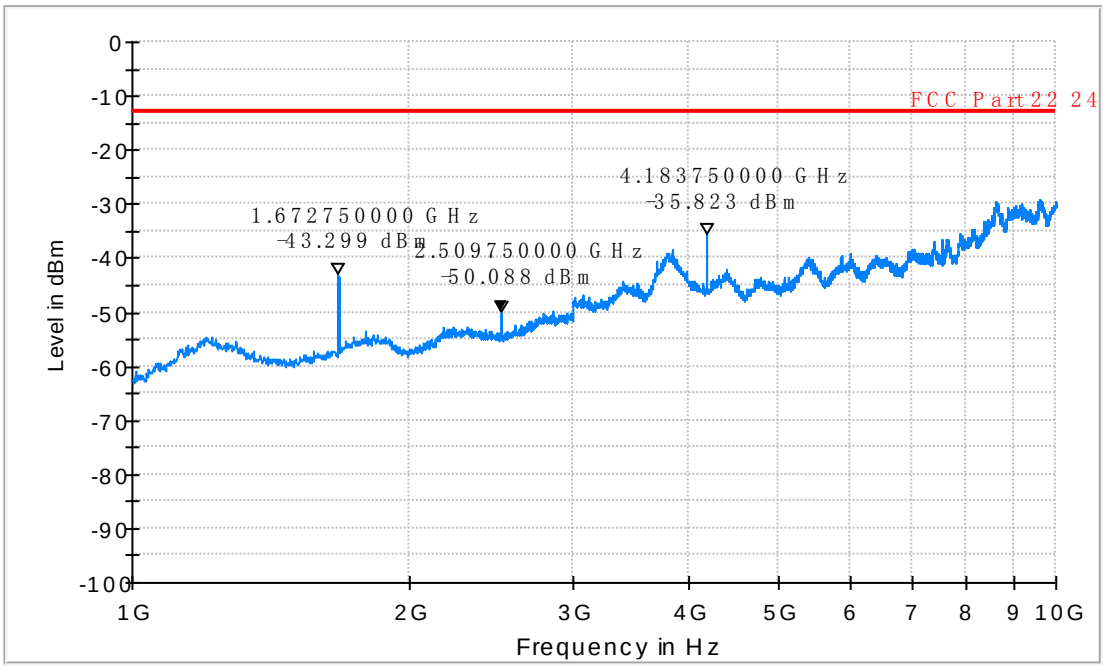


GSM850 CH190-H 30MHz-10GHz

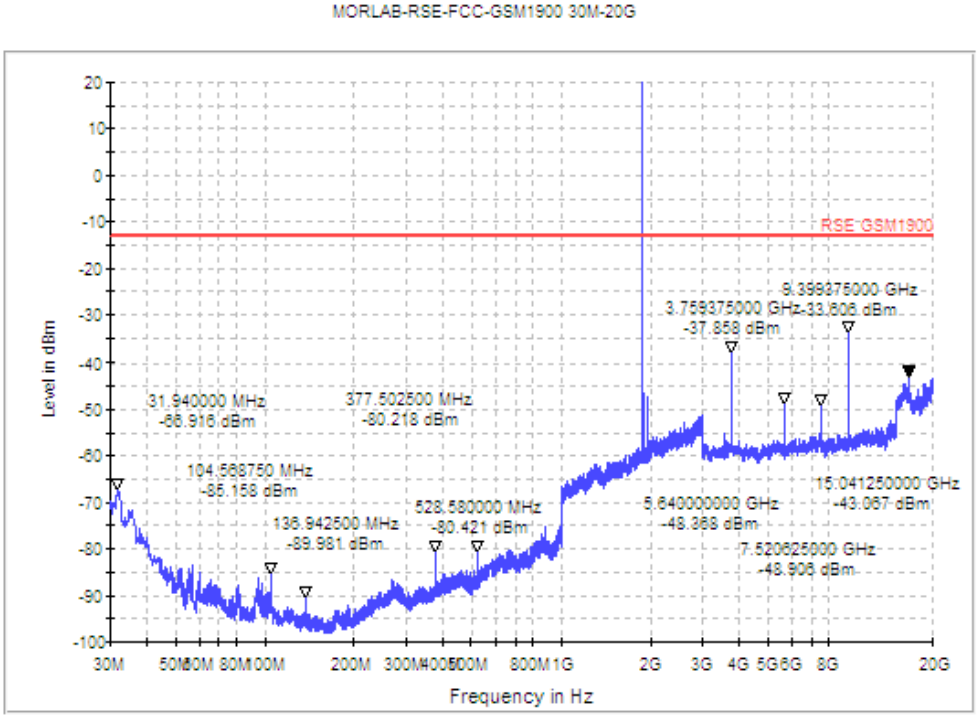
FCC 22H 24E 30M~1G



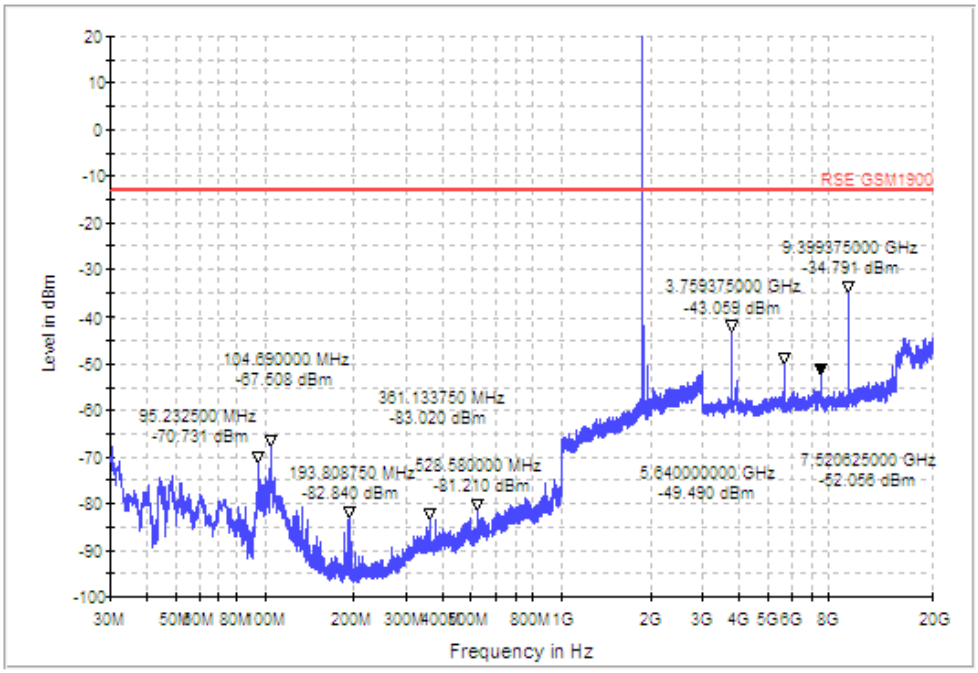
FCC Part 22H 24E 1-18G



GSM850 CH190-V 30MHz-10GHz



GSM1900 CH661-H 30MHz-20GHz



GSM1900 CH661-V 30MHz-20GHz

** END OF REPORT **