



47 CFR PART 22 SUBPART H & 24 SUBPART E

TEST REPORT

of

GSM Module

Model Name: ES101
Brand Name: eSky
Report No.: SH10090004R02
FCC ID: YR8ES101

prepared for

eSky wireless Inc.
Room A311, #258 Road Ren'ai, Suzhou, China



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CTIA Authorized Test Lab

LAB CODE 20081223-00

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1. TEST CERTIFICATION

Equipment under Test: GSM Module
 Brand Name: eSky
 Model Name: ES101
 FCC ID: YR8ES101
 Applicant: eSky wireless Inc.
 Room A311, #258 Road Ren'ai, Suzhou, China
 Manufacturer: eSky wireless Inc.
 Room A311, #258 Road Ren'ai, Suzhou, China
 Test Standards: 47 CFR Part 2
 47 CFR Part 22 Subpart H
 47 CFR Part 24 Subpart E
 Test Date(s): Sep 11 ,2010 –Oct 26 , 2010
 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: *Huang Yunlong* Dated: *2010.10.26*
 Huang Yunlong

Reviewed by: *Zhang Jun* Dated: *2010.10.26*
 Zhang Jun

Approved by: *Wei Bei* Dated: *2010.10.26*
 Wei Bei





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.	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 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 (°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:

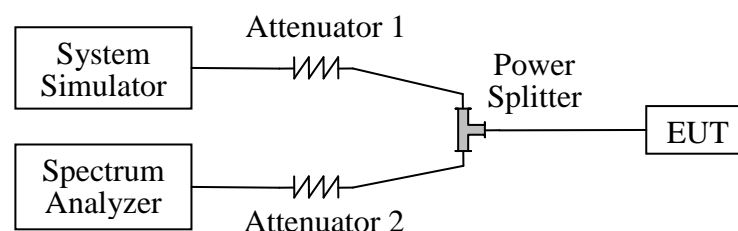
- (a) Channel Block A:
 Mobile 824 - 835MHz, Base 869 - 880MHz;
 Mobile 845 - 846.5MHz, Base 890 - 891.5MHz
- (b) Channel Block B:
 Mobile 835 - 845 MHz, Base 880 - 890MHz;
 Mobile 846.5 - 849 MHz, Base 891.5 - 894MHz

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	2010.9	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2010.9	1year
Spectrum Analyzer	Rohde Schwarz	FSP30	101020	2010.9	1year
Spectrum Analyzer	Rohde Schwarz	FSP13	M-030176	2010.9	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

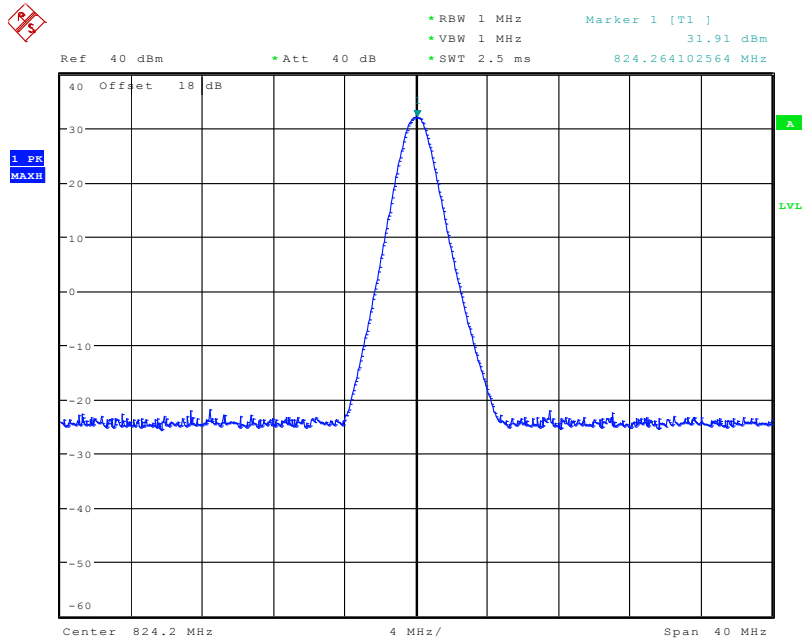
The Tx frequency arrangement of the GSM 850MHz band employed by the EUT should be from 824.2MHz to 848.8MHz (the corresponding frequency block is from 824MHz to 849MHz), and Tx frequency arrangement of the PCS 1900MHz band employed by the EUT should be from 1850.2MHz to 1909.8MHz (the corresponding frequency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

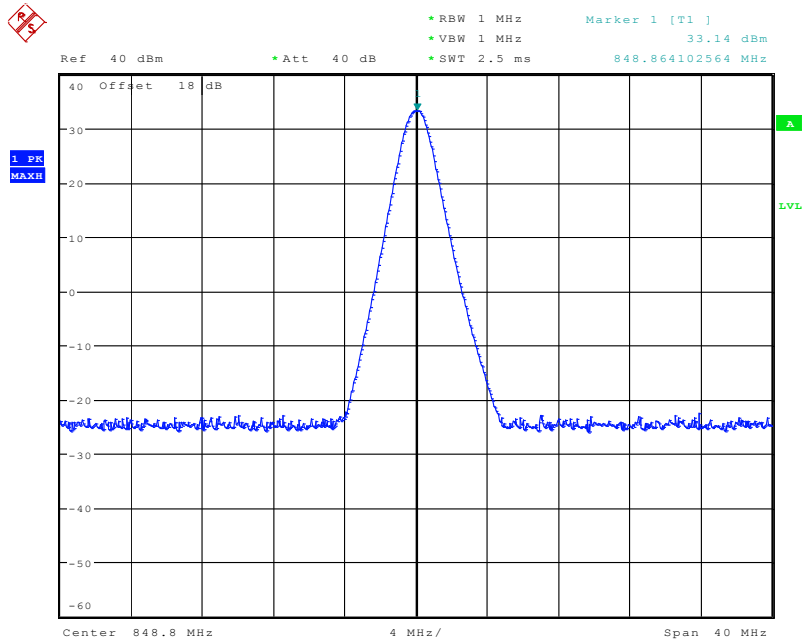
Band	Channel	Frequency (MHz)	Measured Carrier (dBm)	Refer to Plot
GPRS 850MHz	128	824.26	31.91	Plot A1
	251	848.86	33.14	Plot B1
GPRS 1900MHz	512	1850.14	30.75	Plot C1
	810	1909.86	30.14	Plot D1

2. Test Plot:



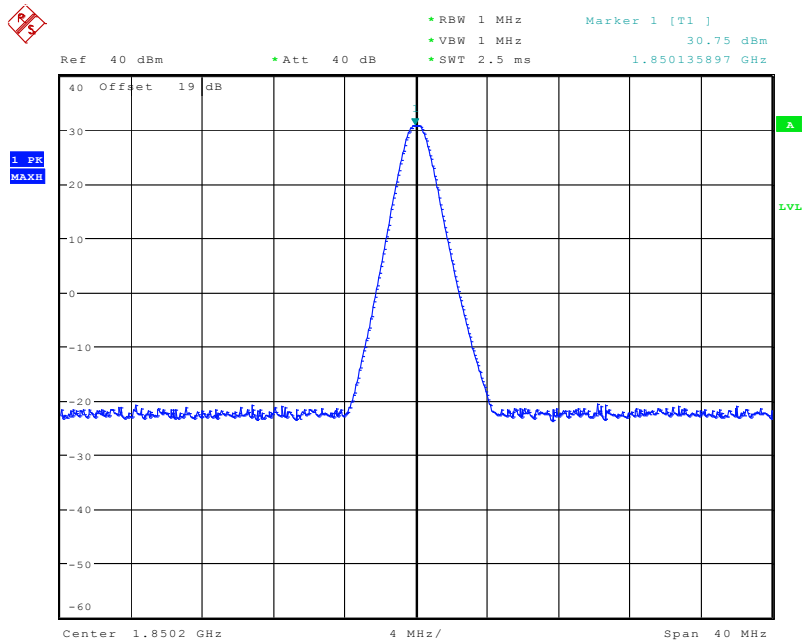
Date: 13.SEP.2010 10:04:58

(Plot A1: GSM 850MHz Channel = 128)



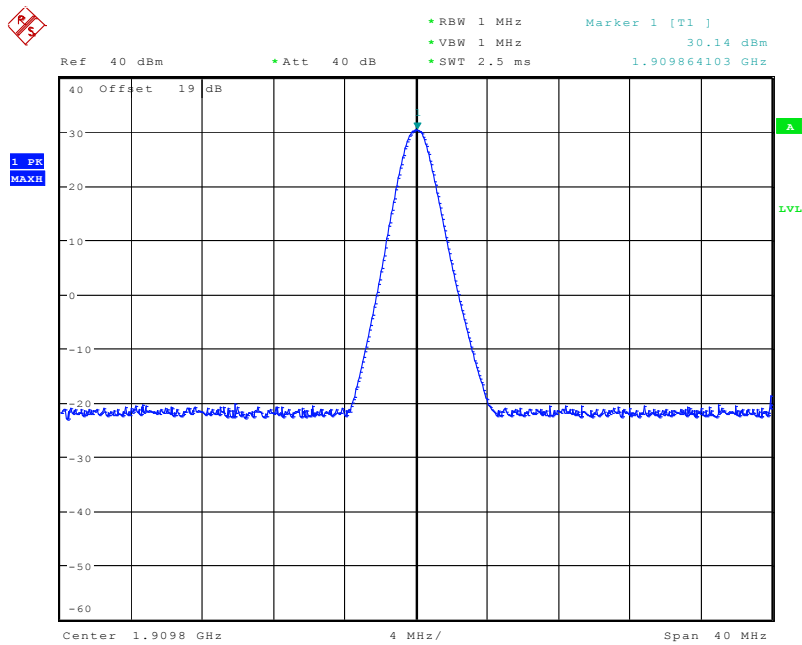
Date: 13.SEP.2010 10:06:10

(Plot B1: GSM 850MHz Channel = 251)



Date: 13.SEP.2010 10:12:28

(Plot C1: GSM 1900MHz Channel = 512)



Date: 13.SEP.2010 10:13:31

(Plot D1: GSM 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.

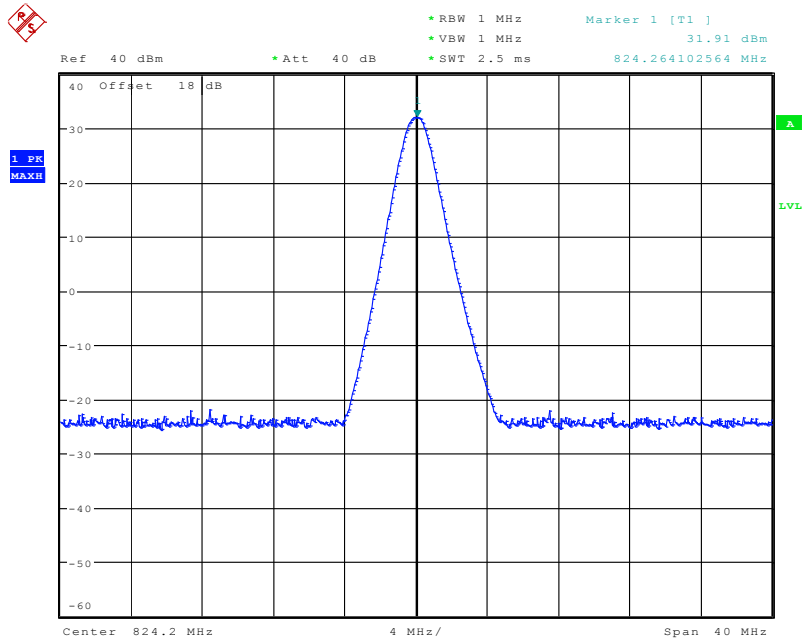
3.2.3 Test Result

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:

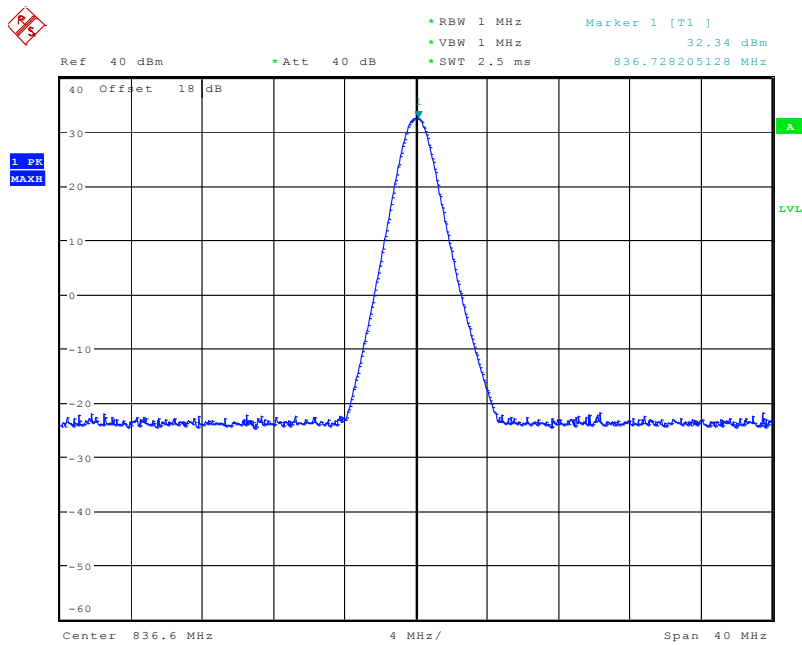
Band	Channel	Frequency (MHz)	Measured Output Power		Rated Output Power		Verdict
			dBm	Refer to Plot	dBm	Tolerance (dB)	
GPRS850MHz	128	824.26	31.91	Plot A2	33	± 3	PASS
	190	836.73	32.34	Plot B2			PASS
	251	848.86	33.14	Plot C2			PASS
GPRS1900MHz	512	1850.14	30.75	Plot D2	30	± 3	PASS
	661	1879.94	30.63	Plot E2			PASS
	810	1909.86	30.14	Plot F2			PASS

2. Test Plot:



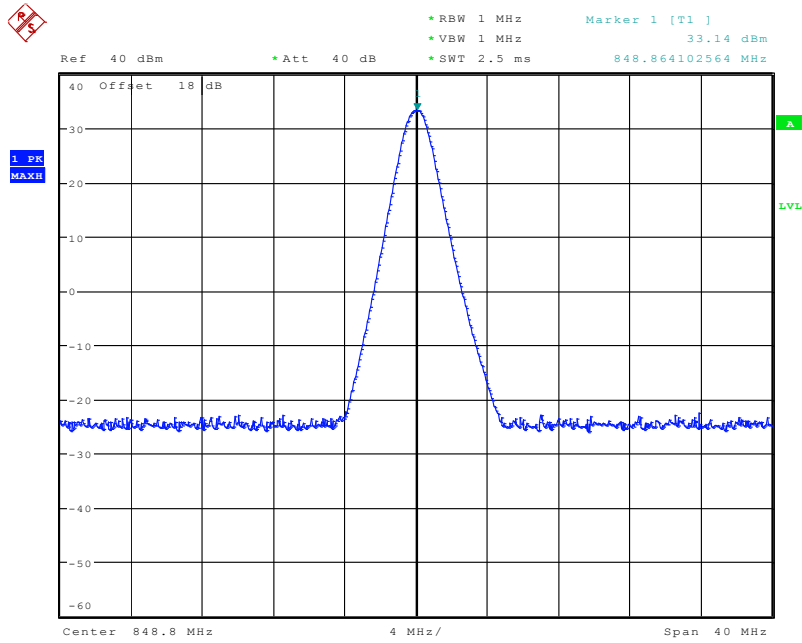
Date: 13.SEP.2010 10:04:58

(Plot A2: GPRS 850MHz Channel = 128)



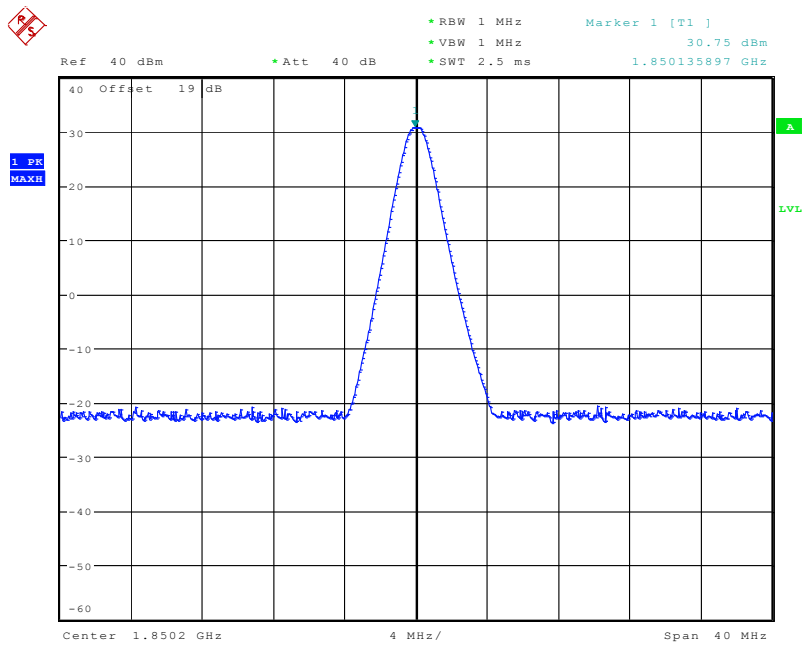
Date: 13.SEP.2010 10:04:00

(Plot B2: GPRS 850MHz Channel = 190)



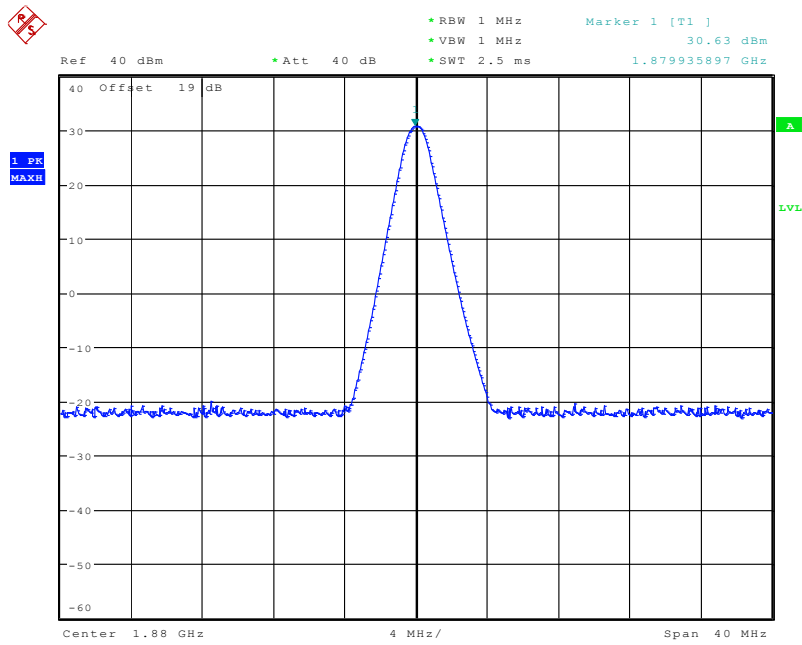
Date: 13.SEP.2010 10:06:10

(Plot C2: GPRS 850MHz Channel = 251)



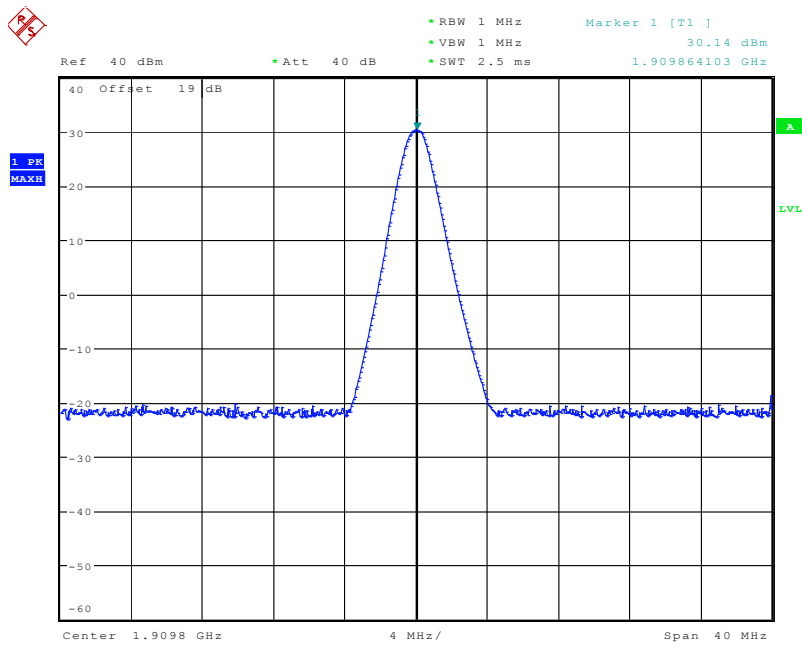
Date: 13.SEP.2010 10:12:28

(Plot D2: GPRS 1900MHz Channel = 512)



Date: 13.SEP.2010 10:12:06

(Plot E2: GPRS 1900MHz Channel = 661)



Date: 13.SEP.2010 10:13:31

(Plot F2: GPRS 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 ($10 \cdot \log_{10} 1\% = 20\text{dB}$) taking the total RF output power as reference.

3.3.2 Test Description

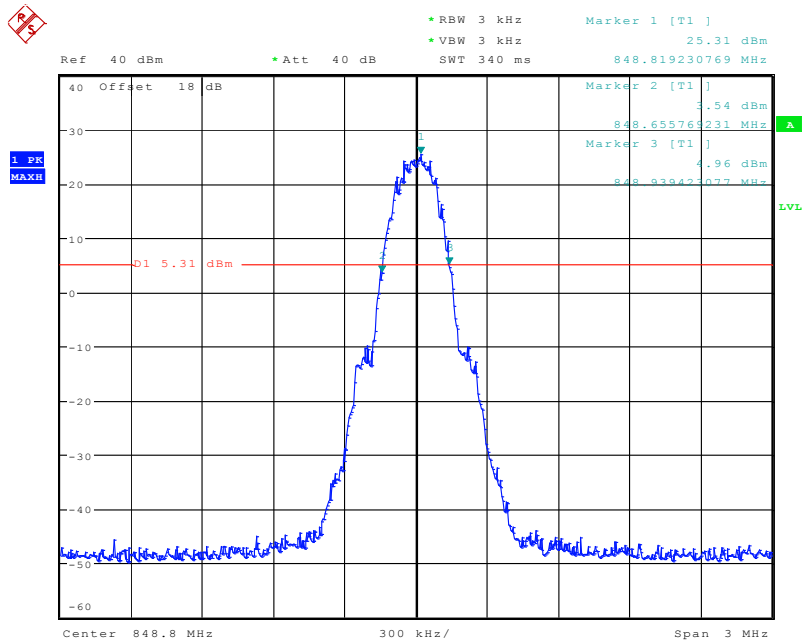
See section 3.1.2 of this report.

3.3.3 Test Verdict

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

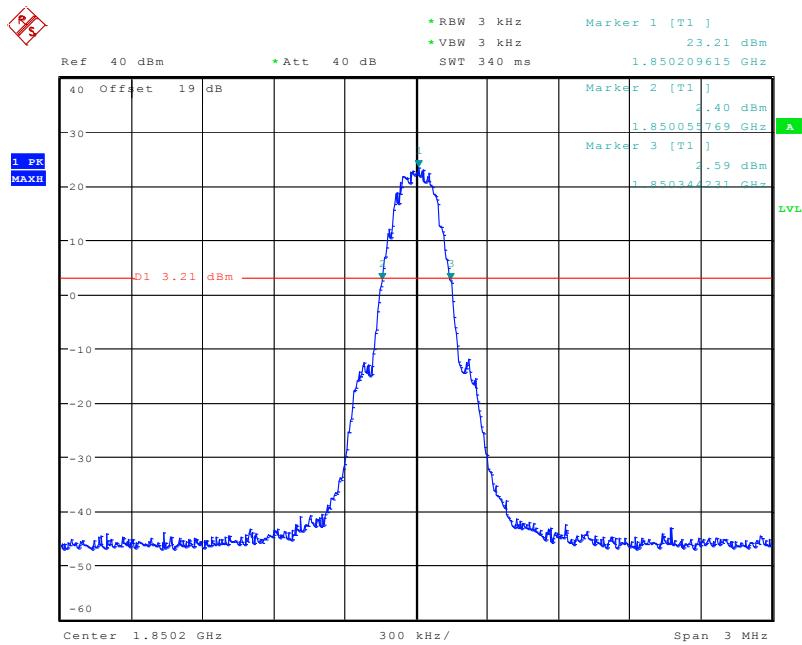
1. Test Verdict:

Band	Channel	Measured 20dB Occupied Bandwidth (kHz)	Refer to Plot
GPRS 850MHz	128	278.85	Plot A3
	190	288.47	Plot B3
	251	283.47	Plot C3
GPRS 1900MHz	512	288.46	Plot D3
	661	288.46	Plot E3
	810	288.46	Plot F3



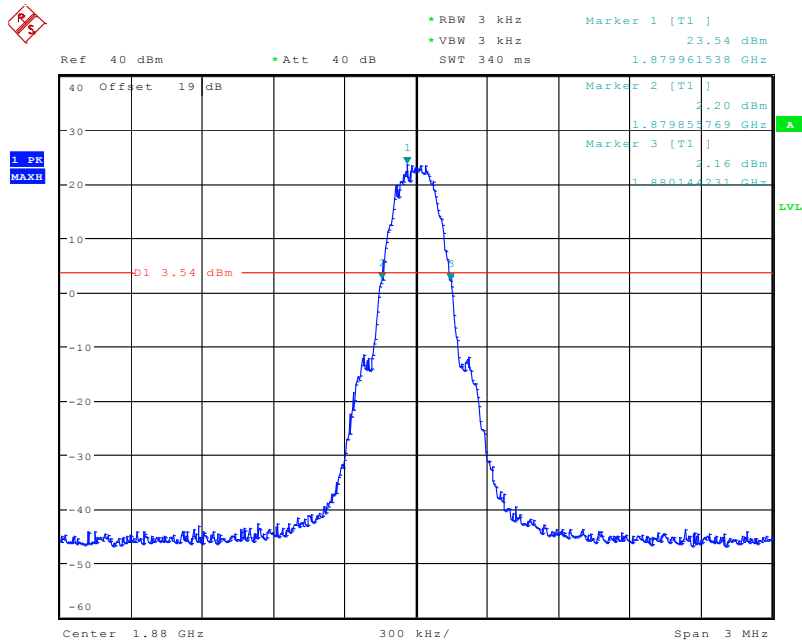
Date: 13.SEP.2010 10:46:16

(Plot C3: GPRS 850MHz Channel = 251)



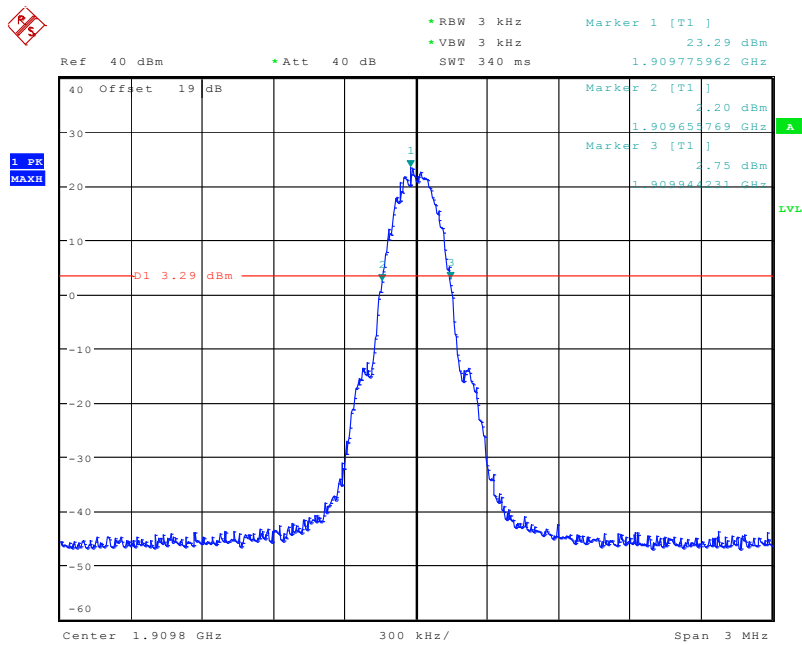
Date: 13.SEP.2010 10:41:14

(Plot D3: GPRS 1900MHz Channel = 512)



Date: 13.SEP.2010 10:36:12

(Plot E3: GPRS 1900MHz Channel = 661)



Date: 13.SEP.2010 10:28:08

(Plot F3: GPRS 1900MHz Channel = 810)

3.4 Frequency Stability

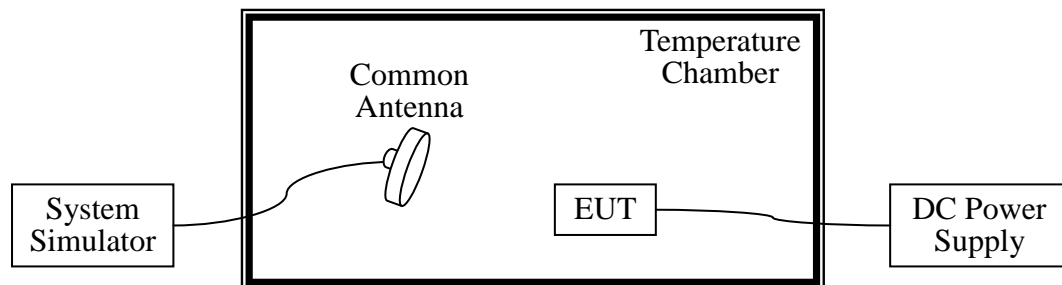
3.4.1 Requirement

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:

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

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
SS	Agilent	E5515C	GB46040102	2010.9	1year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2010.9	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2010.9	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 $25\text{ }^{\circ}\text{C}$. The frequency

deviation limit is ± 2.5 ppm.

Band	Test Conditions		Frequency Deviation						Verdict
	Power (V DC)	Temperature (°C)	Low Channel		Middle Channel		High Channel		Limit ± 2.5 ppm (ppm)
			Dev. Freq. Hz	Deviation (ppm)	Dev. Freq. Hz	Deviation (ppm)	Dev. Freq. Hz	Deviation (ppm)	
GPRS 850MHz	3.7	-30	1	0	3	0	-6	0	PASS
		-20	3	0	-4	0	-2	0	
		-10	-3	0	9	0	3	0	
		0	-5	0	-3	0	4	0	
		+10	4	0	-4	0	-6	0	
		+20	-7	0	-7	0	5	0	
		+30	-2	0	7	0	-3	0	
		+40	-8	0	-1	0	6	0	
		+50	-7	0	3	0	-1	0	
	4.2	+25	4	0	-3	0	-1	0	
3.6	+25	9	0	-9	0	-4	0		
GPRS 1900MHz	3.7	-30	-3	0	-2	0	-5	0	PASS
		-20	-8	0	5	0	1	0	
		-10	8	0	9	0	-7	0	
		0	-3	0	4	0	-5	0	
		+10	1	0	8	0	-7	0	
		+20	4	0	2	0	-7	0	
		+30	-1	0	-2	0	5	0	
		+40	-6	0	3	0	6	0	
		+50	-3	0	1	0	-3	0	
	4.2	+25	8	0	-9	0	-1	0	
	3.6	+25	-7	0	-9	0	4	0	
		+50	3	0	-3	0	4	0	
	4.2	+25	7	0	-3	0	5	0	
3.6	+25	-1	0	-8	0	-2	0		

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.

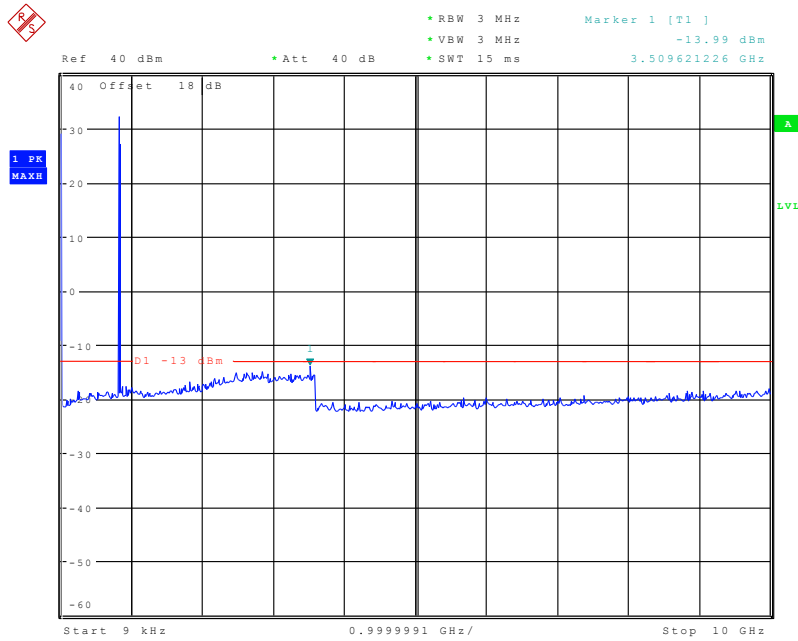
3.5.3 Test Result

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:

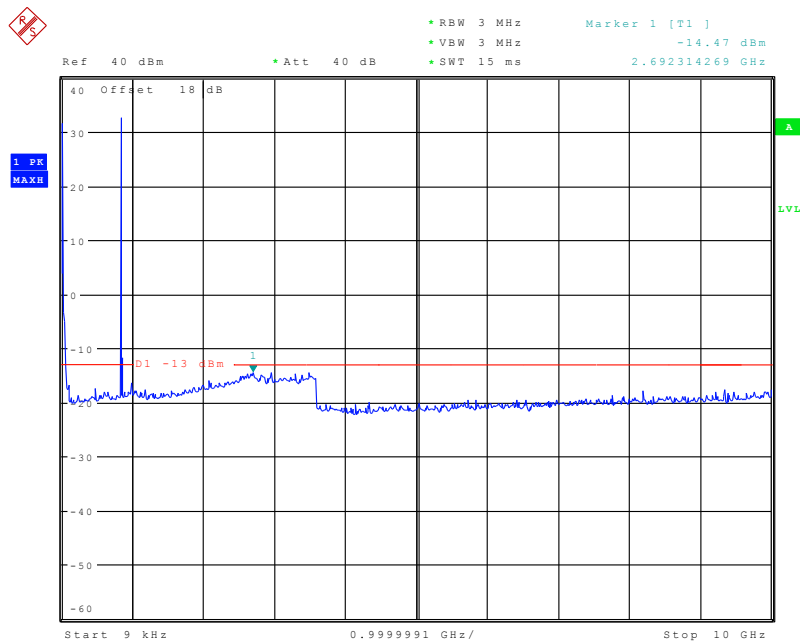
Band	Channel	Frequency (GHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GPRS 850MHz	128	3.510	-13.99	Plot A4	-13	PASS
	190	2.692	-14.47	Plot B4		PASS
	251	2.580	-14.69	Plot C4		PASS
GPRS 1900MHz	512	2.981	-13.46	Plot D4	-13	PASS
	661	3.397	-14.16	Plot E4		PASS
	810	2.692	-13.68	Plot F4		PASS

2. Test Plot for the Whole Measurement Frequency Range:



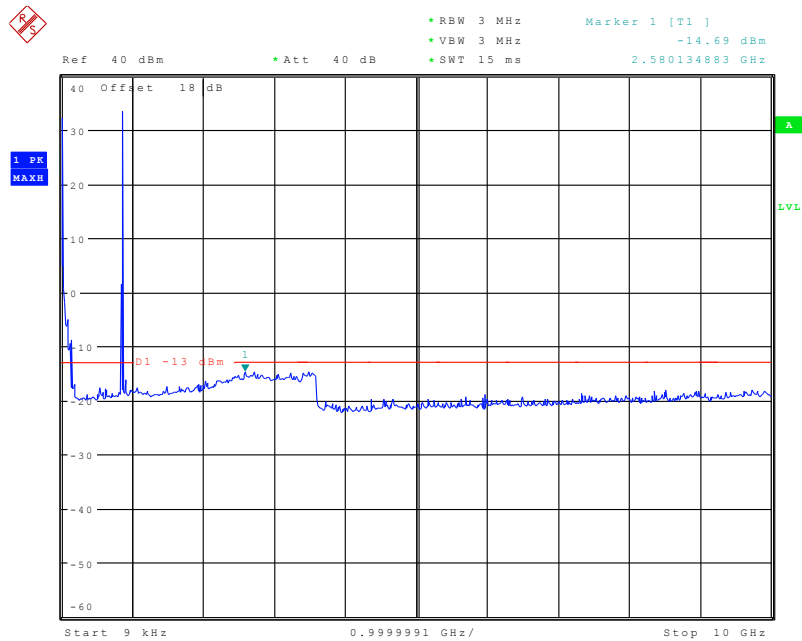
Date: 13.SEP.2010 10:59:51

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



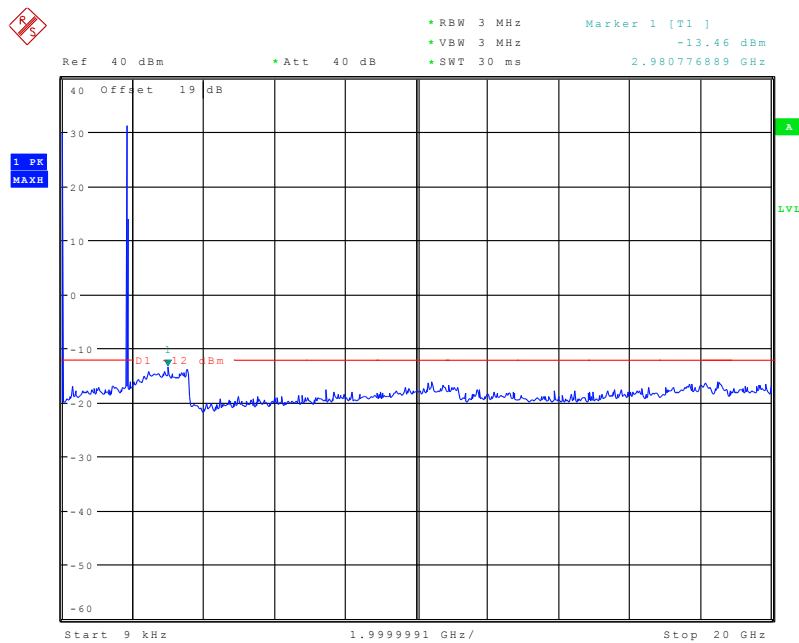
Date: 13.SEP.2010 10:58:09

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



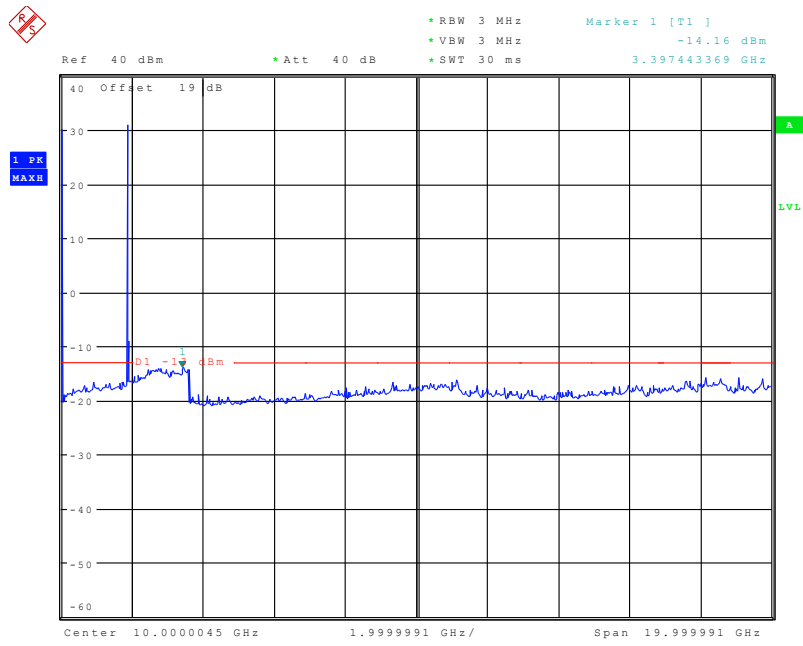
Date: 13.SEP.2010 10:56:13

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



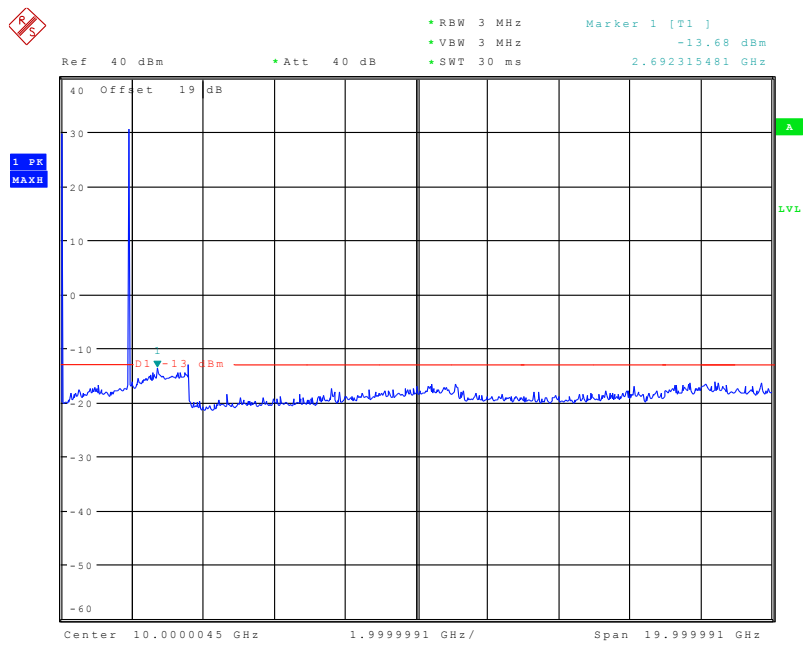
Date: 13.SEP.2010 11:02:05

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



Date: 13.SEP.2010 11:14:07

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



Date: 13.SEP.2010 11:14:40

(Plot F4.: 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.

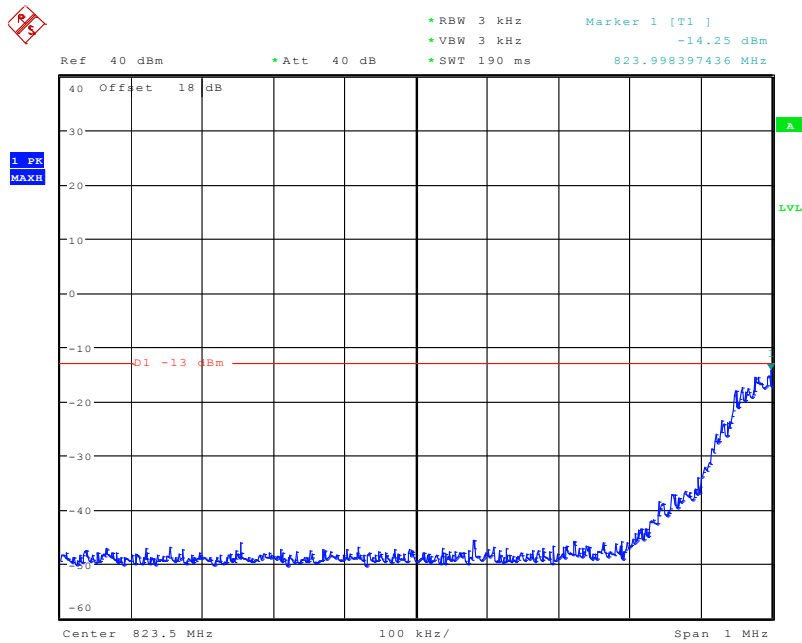
3.6.3 Test Result

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

1. Test Verdict:

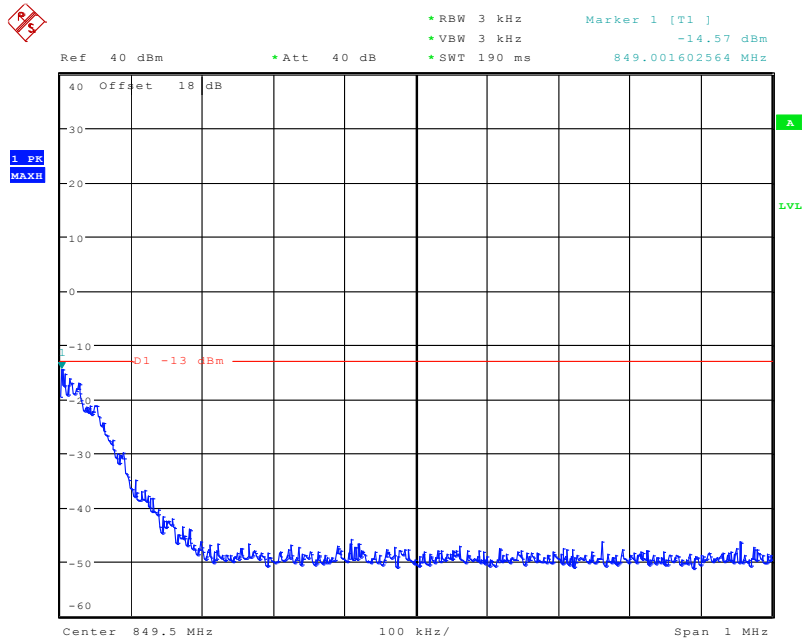
Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GPRS	128	824	-14.25	Plot A5	-13	PASS
850MHz	251	849	-14.57	Plot B5		PASS
GPRS	512	1850	-15.43	Plot C5		PASS
1900MHz	810	1910	-13.93	Plot D5		PASS

2. Test Plot:



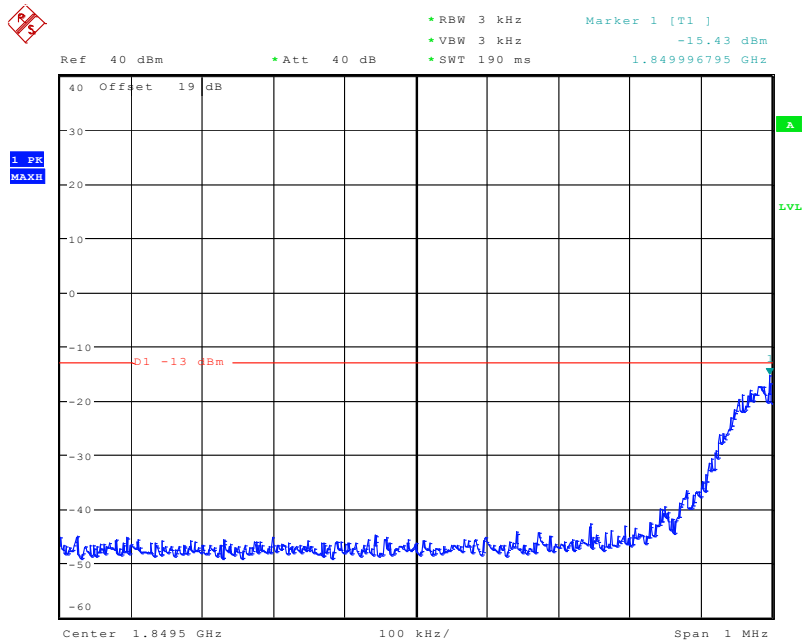
Date: 13.SEP.2010 11:22:59

(Plot A5: GPRS 850MHz Channel = 128)



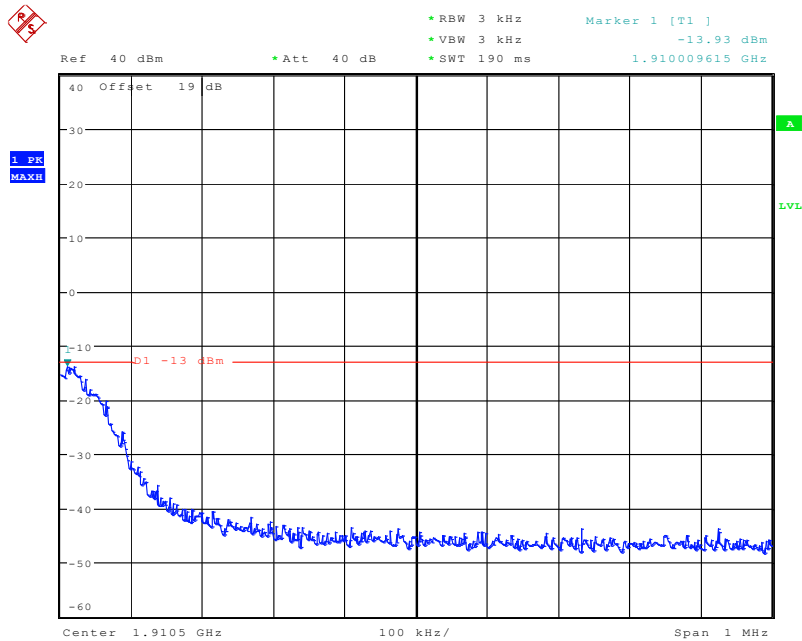
Date: 13.SEP.2010 11:25:06

(Plot B5: GPRS 850MHz Channel = 251)



Date: 13.SEP.2010 11:20:20

(Plot C5: GPRS 1900MHz Channel = 512)



Date: 13.SEP.2010 11:17:24

(Plot D5: GPRS 1900MHz Channel = 810)

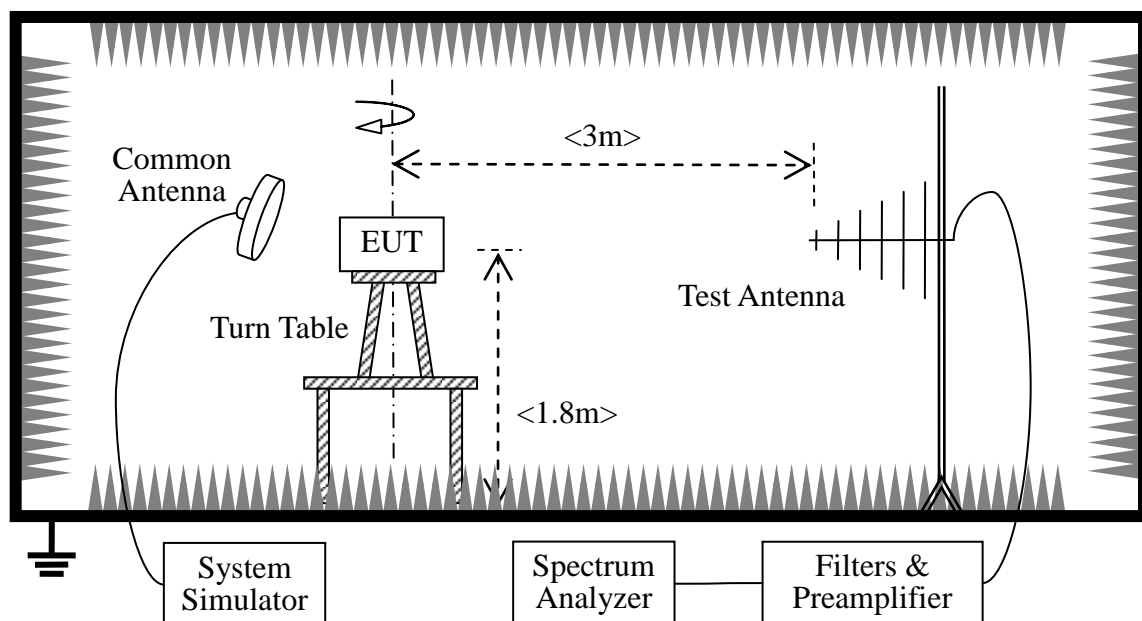
3.7 Transmitter Radiated Power (EIRP/ERP)

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.

According to FCC §22.913, the ERP of Cellular mobile transmitters must not exceed 7 Watts (38.5dBm).

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

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
2. The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as $A_{Rpl} = P_{in} - P_r$. The A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the cable loss and the air loss.

The measurement results are obtained as described below:

$$\text{Power(EIRP)} = P_{Mea} + A_{Rpl}$$

3. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.
5. The EUT is then put into continuously transmitting mode at its maximum power level.
6. Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step 1 is added to this result.
7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (P_{in})
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$.
9. The test system should be checked before test by a standard comb signal source. The signal source put on the position, instead of the EUT. The test result should be compared with the test result before. If the test result is similar with the initial one, then the test system can work stably.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SS	Agilent	E5515C	GB46040102	2010.9	1year
Spectrum Analyzer	Agilent	E4440A	MY46187763	2010.9	1year
Spectrum Analyzer	Rohde Schwarz	FSP30	101020	2010.9	1year
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2010.9	2year
Test Antenna - Bi-Log	Rohde&Schwarz	HL562	100385	2010.9	1year
Test Antenna - Horn	Rohde&Schwarz	HF906	100565	2010.9	1year

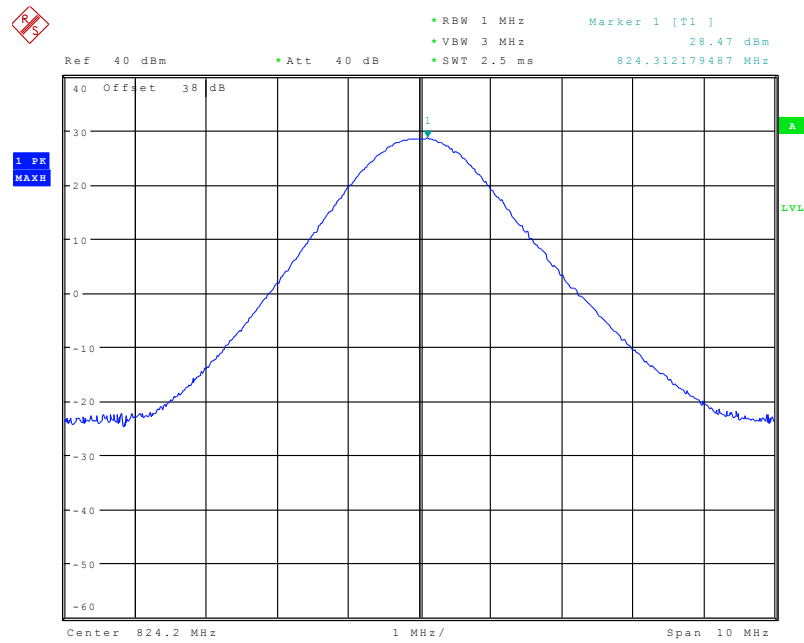
3.7.3 Test Result

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

1. Test Verdict:

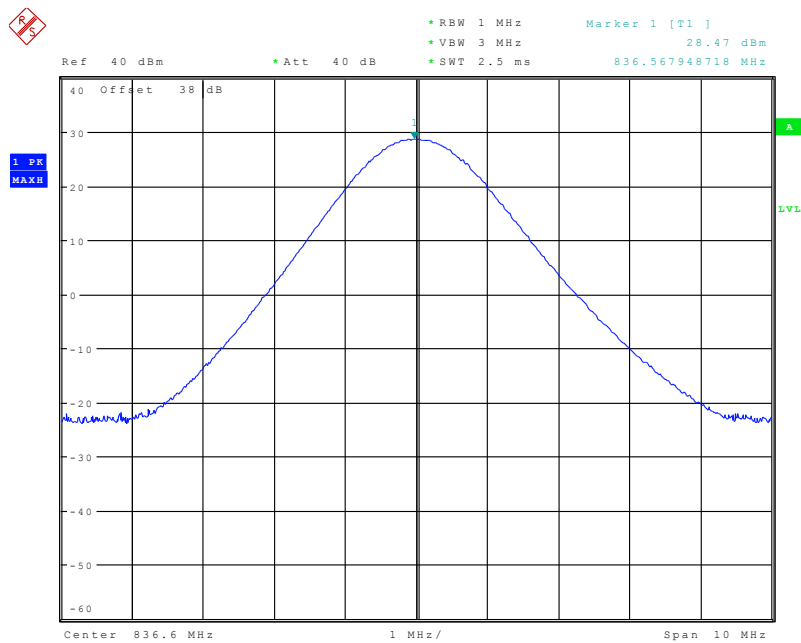
Band	Channel	Measured ERP			Limit		Verdict
		dBm	W	Refer to Plot	dBm	W	
GPRS 850MHz	128	26.32	0.43	Plot A6	<38.5	<7	PASS
	190	26.32	0.43	Plot B6			PASS
	251	25.87	0.37	Plot C6			PASS
Band	Channel	Measured EIRP			Limit		Verdict
GPRS 1900MHz	512	27.27	0.53	Plot D6	<33.0	<2	PASS
	661	25.97	0.40	Plot E6			PASS
	810	26.05	0.40	Plot F6			PASS

2. Test Plot



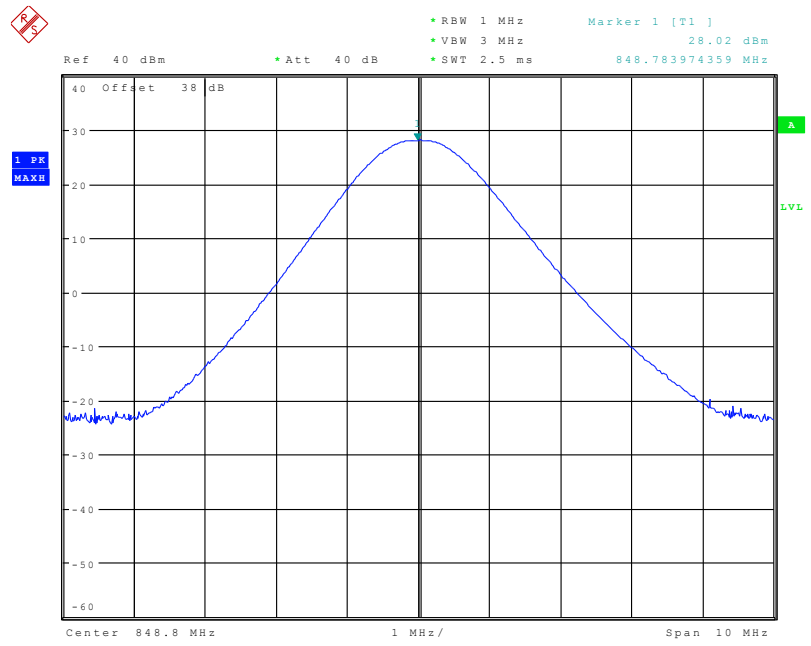
Date: 13.SEP.2010 11:30:33

(Plot A6: GPRS 850MHz Channel = 128)



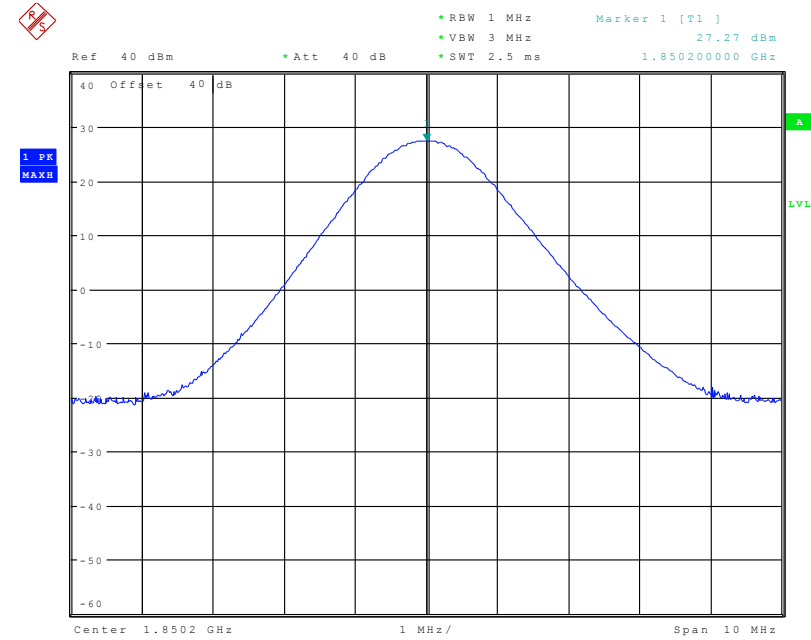
Date: 13.SEP.2010 11:31:14

(Plot B6: GPRS 850MHz Channel = 190)



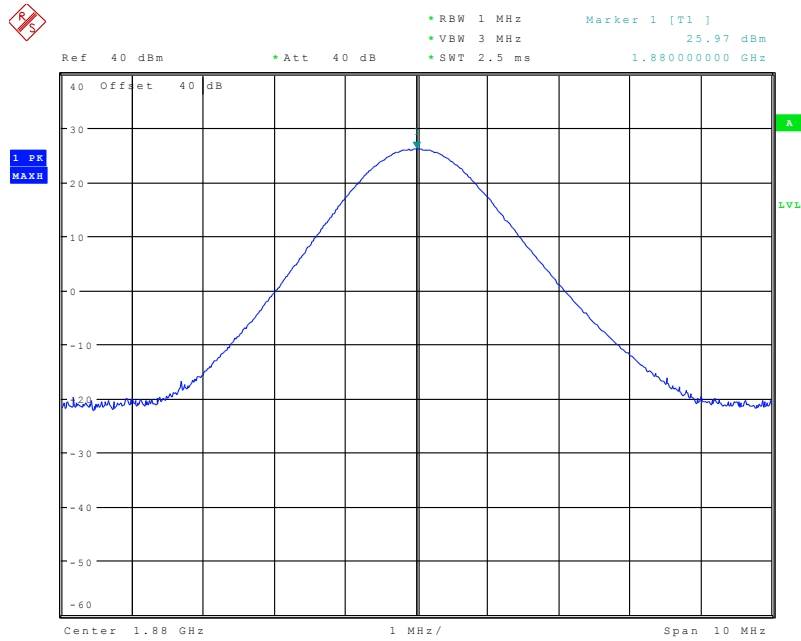
Date: 13.SEP.2010 11:31:48

(Plot C6: GPRS 850MHz Channel = 251)



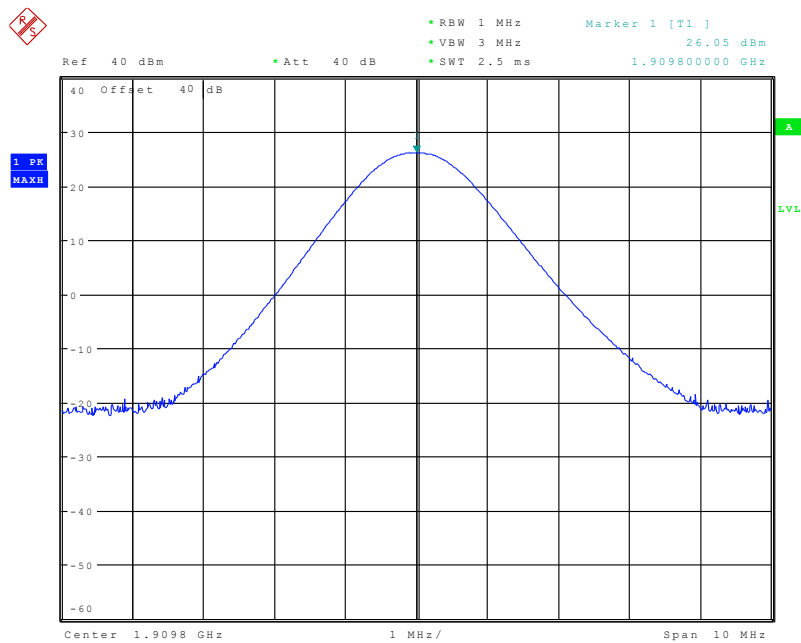
Date: 13.SEP.2010 11:42:26

(Plot D6:GSM 1900MHz Channel = 512)



Date: 13.SEP.2010 11:38:20

(Plot E6: GPRS 1900MHz Channel = 661)



Date: 13.SEP.2010 11:38:52

(Plot F6: GPRS 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.
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

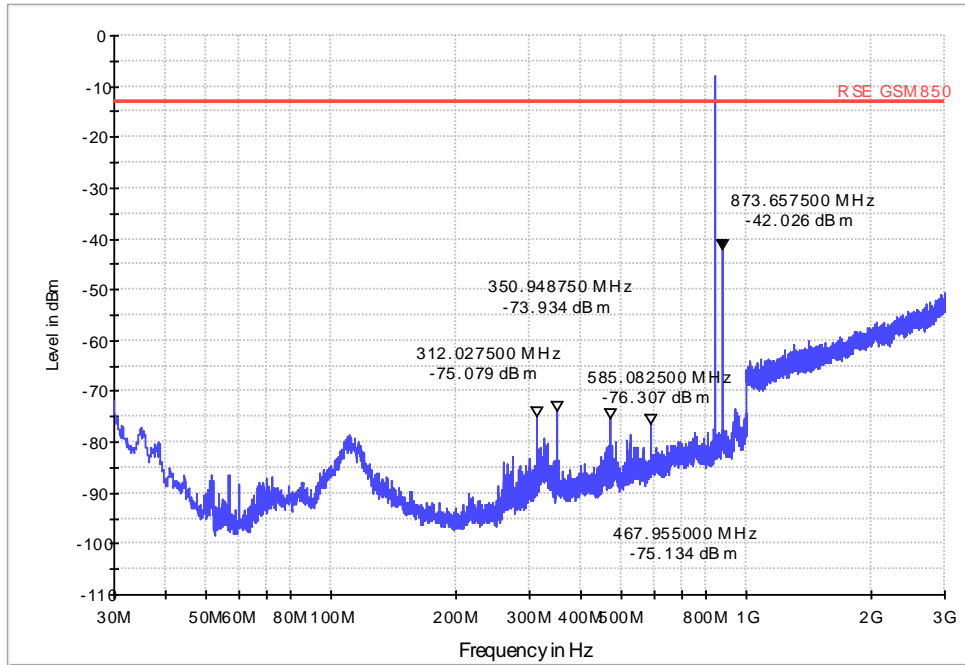
Table for the Harmonics

NOTE: “---” in the table following means that the emission power was too small to be measured and was at least 12dB below the limit. All modes are tested, only the worse case is recorded in this report.

GPRS 850					
Test Mode	Channel	Max Spurious Emission (dBm)		Limit (dBm)	Result
		Horizontal	Vertical		
GPRS 850	CH128	<-13	<-13	-13	Pass
	CH190	<-13	<-13	-13	Pass
	CH251	<-13	<-13	-13	Pass
GPRS 1900					
Test Mode	Channel	Max Spurious Emission (dBm)		Limit (dBm)	Result
		Horizontal	Vertical		
GPRS 1900	CH512	<-13	<-13	-13	Pass
	CH661	<-13	<-13	-13	Pass
	CH810	<-13	<-13	-13	Pass

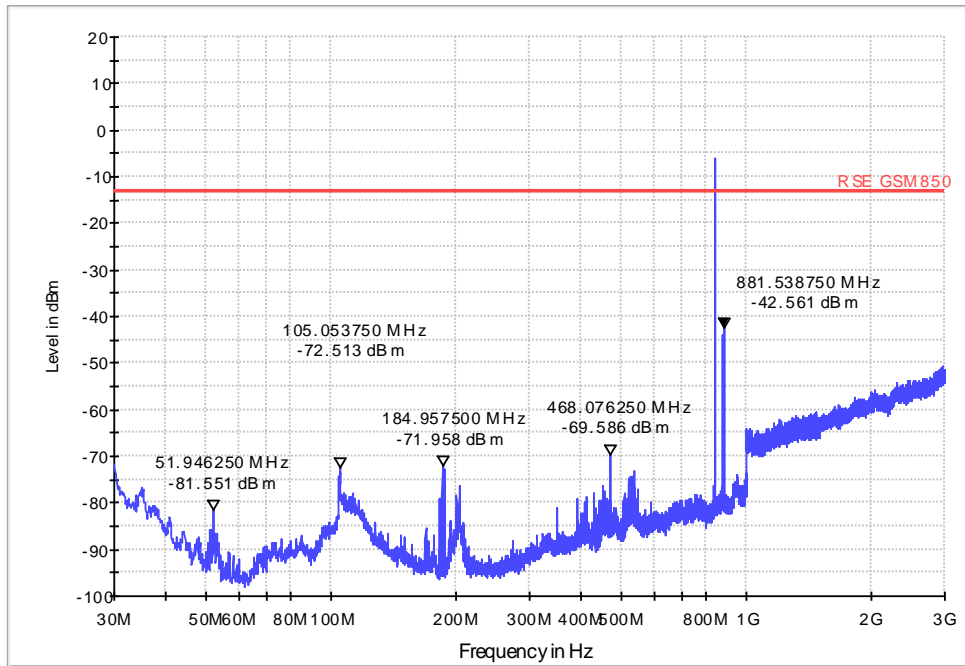
Test Plot

MORLAB-RSE -FCC-GSM 850 30M -3G



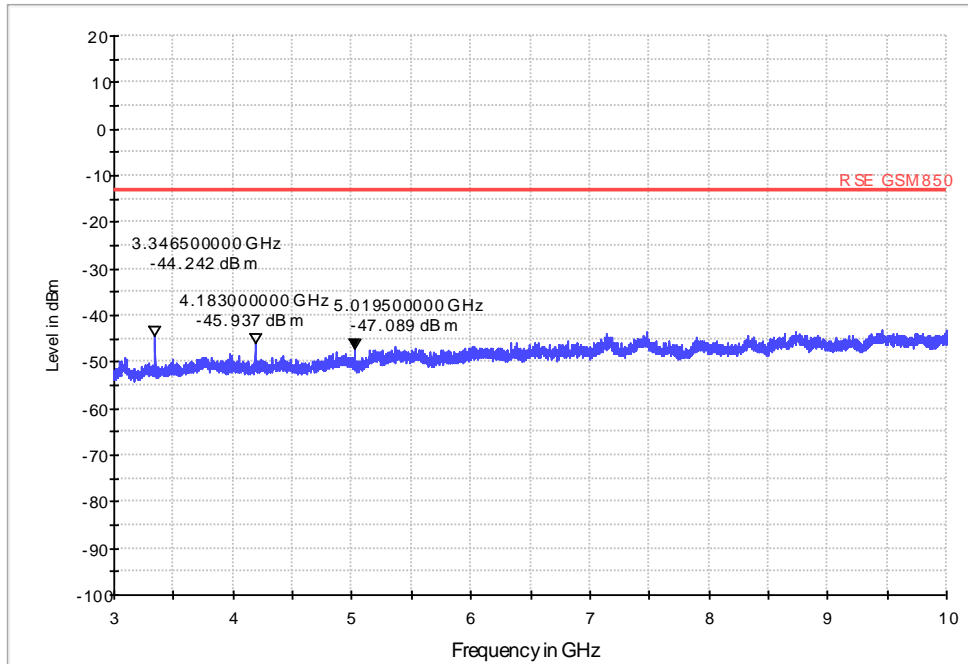
GSM850 CH190-H 30M-3G

MORLAB-RSE -FCC-GSM 850 30M -3G



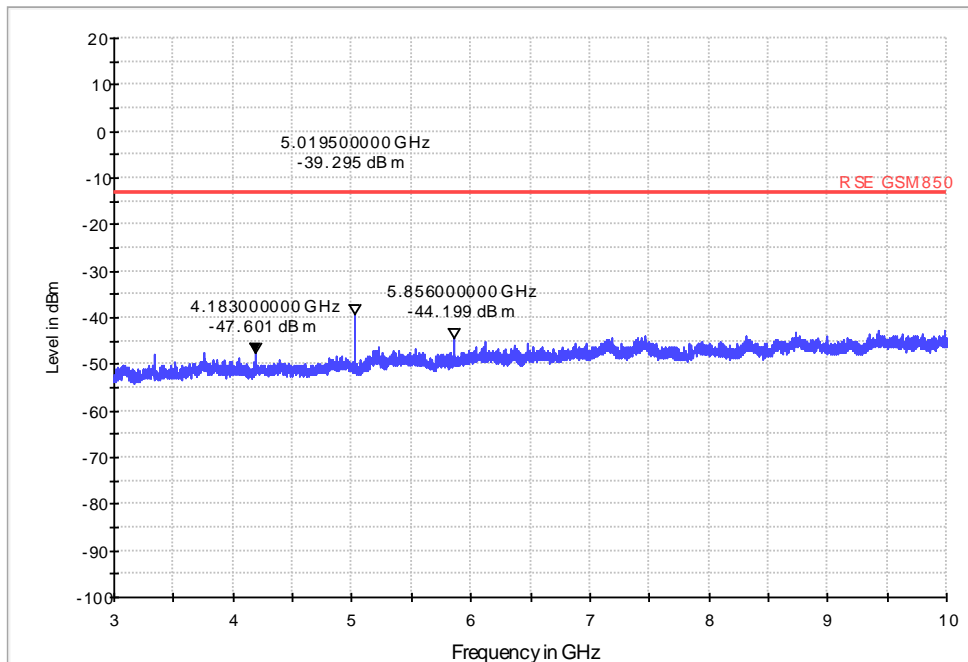
GSM850 CH190-V 30M-3G

MORLAB-RSE-FCC-GSM 850 3G-10G



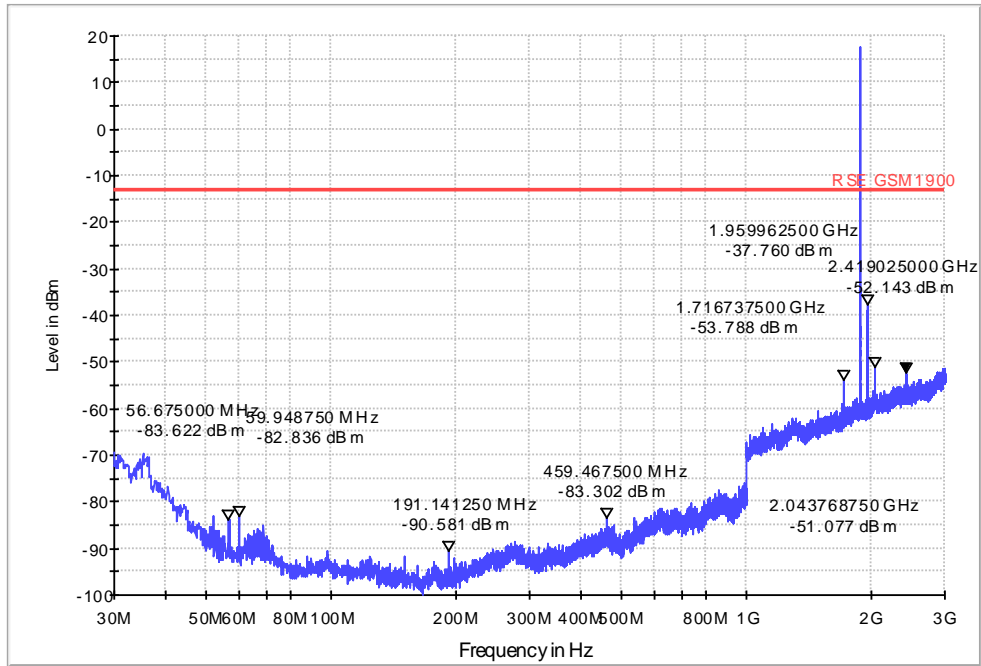
GSM850 CH190-H 3G-10G

MORLAB-RSE-FCC-GSM 850 3G-10G



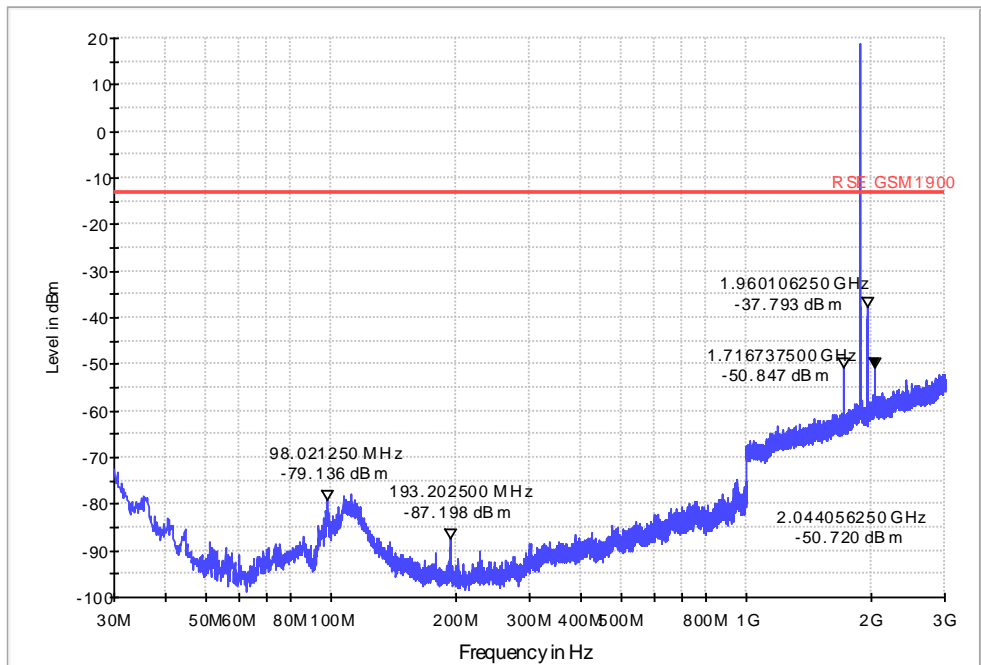
GSM850 CH190-H 3G-10G

MORLAB-RSE -FCC-GSM 1900 30M-3G



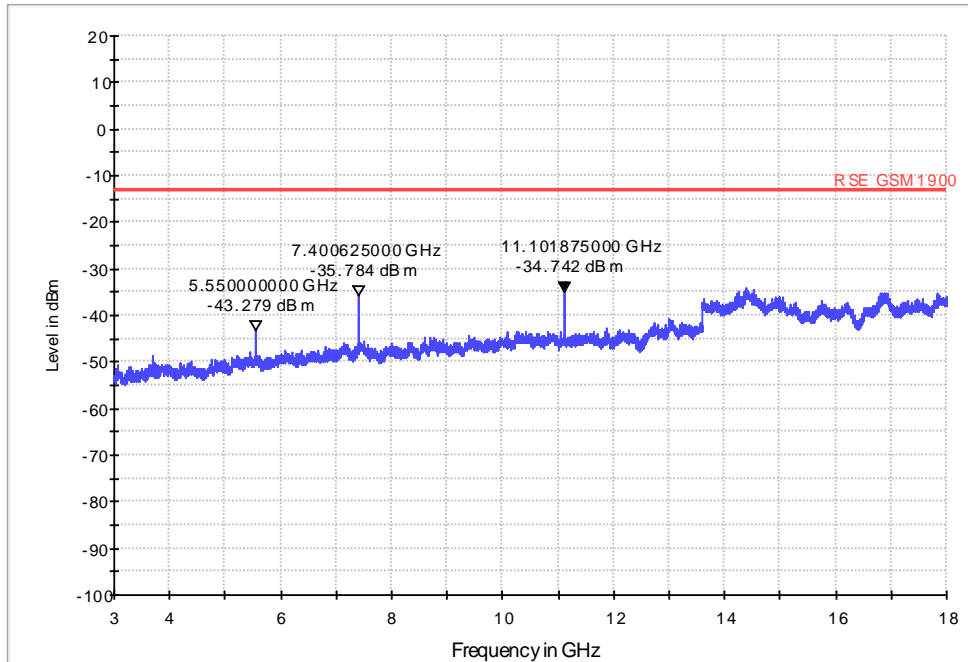
GSM1900 CH661-H 30M-3G

MORLAB-RSE -FCC-GSM 1900 30M-3G



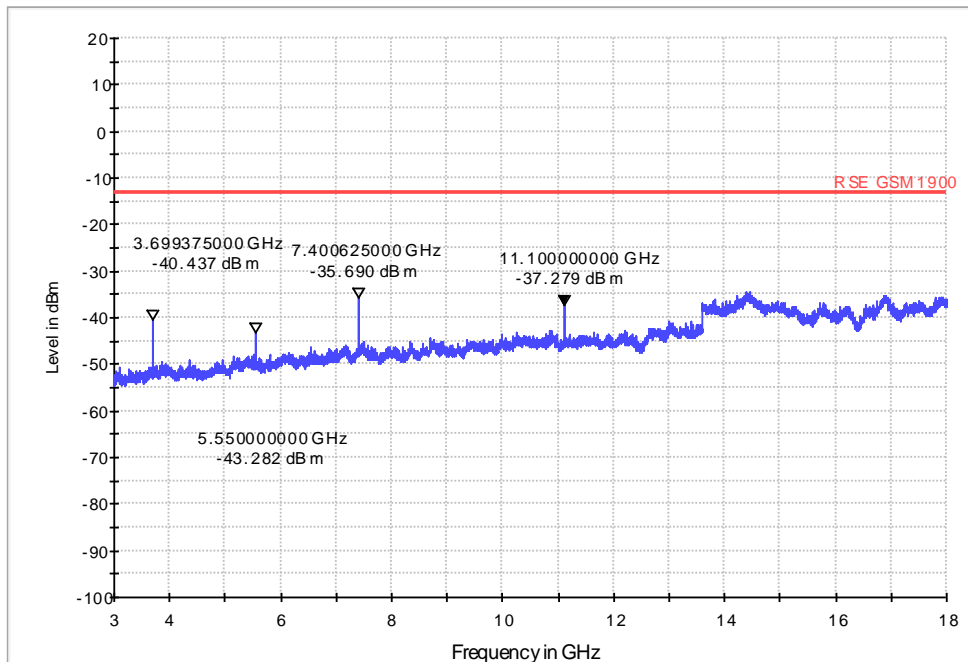
GSM1900 CH661V 30M-3G

MORLAB-RSE-FCC-GSM 1900 3G-20G



GSM1900 CH661-H 3G-18G

MORLAB-RSE-FCC-GSM 1900 3G-20G



GSM1900 CH661-H 3G-18G

** END OF REPORT **