



Report No.:SZ11030203E02

FCC TEST REPORT

Issued to

ZTE Corporation

For

GSM Dual Band GPRS wireless data terminal

Model Name	MG2636
Trade Name	ZTE 中兴
Brand Name	ZTE 中兴
FCC ID	Q78-MG2636
Standard	47 CFR Part 2 47 CFR Part 22 Subpart H 47 CFR Part 24 Subpart E
Test date	April 13, 2011 – April 19, 2011
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Shenzhen Morlab Communications Technology Co., Ltd.

Tested by

Tu Lang
Tu Lang

Date

2011.4.26

Approved by

Shu Luan
Shu Luan

Date

2011.4.26

Review by

Huang Pulong
Huang Pulong

Date

2011.4.26

CTIA Authorized Test Lab
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OFTA
電訊管理局



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FCC
Reg. No.
741109

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TABLE OF CONTENTS

1.	GENERAL INFORMATION	3
1.1	EUT Description	3
1.2	Test Standards and Results	4
1.3	Facilities and Accreditations	5
2.	47 CFR PART 2, PART 22H & 24E REQUIREMENTS	6
2.1	Conducted RF Output Power	6
2.2	99% Occupied Bandwidth	10
2.3	Frequency Stability	14
2.4	Conducted Out of Band Emissions	16
2.5	Band Edge	20

Change History		
Issue	Date	Reason for change
1.0	April 26, 2011	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: GSM Dual Band GPRS wireless data terminal
Serial No.....: (n.a, marked #1 by test site)
Hardware Version: MG2636MB_A
Software Version: MG2636_GB_B02F006
Manufacturer: ZTE Corporation
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan
District, Shenzhen, Guangdong, P. R. China
Frequency Range.....: GSM 850MHz:
Tx: 824.20 - 848.80MHz (at intervals of 200kHz);
Rx: 869.20 - 893.80MHz (at intervals of 200kHz)
GSM 1900MHz:
Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);
Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)
Modulation Type.....: GMSK
Emission Designators: 300KGXW

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

Note 2: The transmitter (Tx) frequency arrangement of the PCS 1900MHz band used by the EUT can be represented with the formula $F(n)=1850.2+0.2*(n-512)$, $512 \leq n \leq 810$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 512 (1850.2MHz), 661 (1880.0MHz) and 810 (1909.8MHz).

Note 3: The GPRS was tested under 4 uplink time slots mode.

Note 4: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

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

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

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

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

NOTE1: Because the sample has not the antenna.

NOTE2: Measurement method according to TIA/EIA 603.C-2004.

1.3 Facilities and Accreditations

1.3.1 Facilities

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

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

1.3.2 Test Environment Conditions

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

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

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

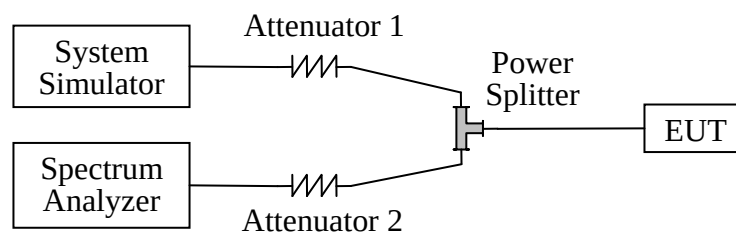
2.1 Conducted RF Output Power

2.1.1 Requirement

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

2.1.2 Test Description

1. Test Setup:



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

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
System Simulator	Agilent	E5515C	GB43130131	2010.09
Spectrum Analyzer	Agilent	E7405A	US44210471	2010.09
Power Splitter	Weinschel	1506A	NW521	(n.a.)
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)
Attenuator 2	Resnet	3dB	(n.a.)	(n.a.)

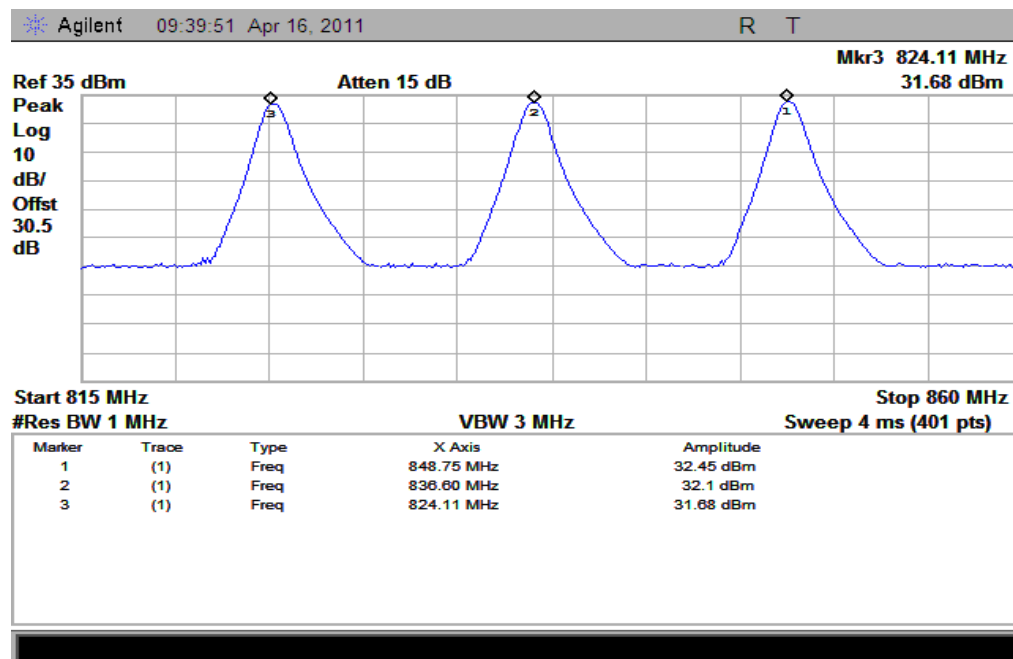
2.1.3 Test Result

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, and For the GSM 1900MHz operates at PCL=0 (where Power Class is 1), the rated conducted RF output power is 30dBm.

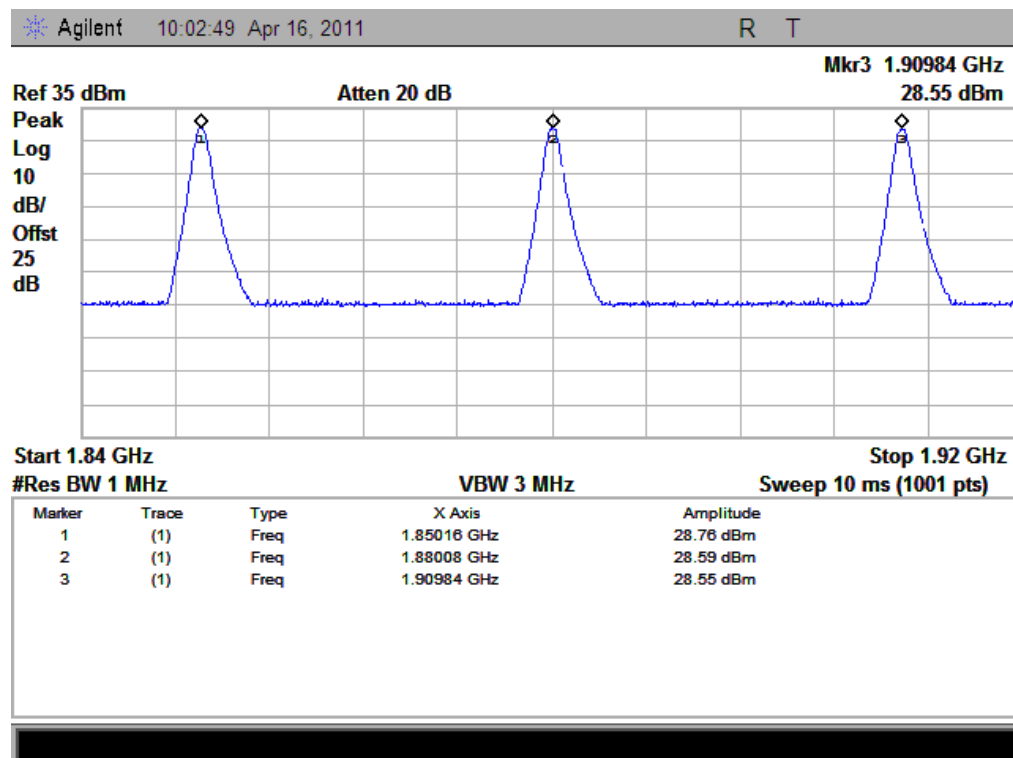
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Limit dBm	Verdict
			dBm	Refer to Plot		
GSM 850MHz	128	824.2	32.45	Plot A	35	PASS
	190	836.6	32.1			PASS
	251	848.8	31.68			PASS
GSM 1900MHz	512	1850.2	28.76	Plot B	32	PASS
	661	1880.0	28.59			PASS
	810	1909.8	28.55			PASS
GPRS 850MHz	128	824.2	31.62	Plot C	35	PASS
	190	836.6	32.06			PASS
	251	848.8	32.37			PASS
GPRS 1900MHz	512	1850.2	28.79	Plot D	32	PASS
	661	1880.0	28.59			PASS
	810	1909.8	28.51			PASS

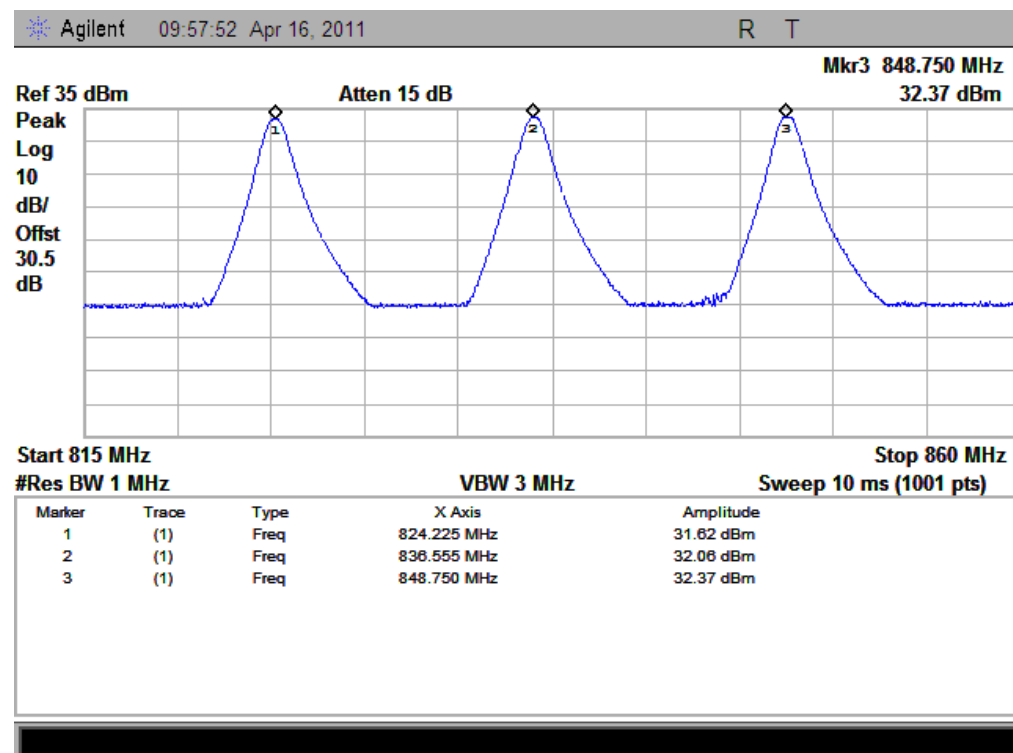
2. Test Plots:



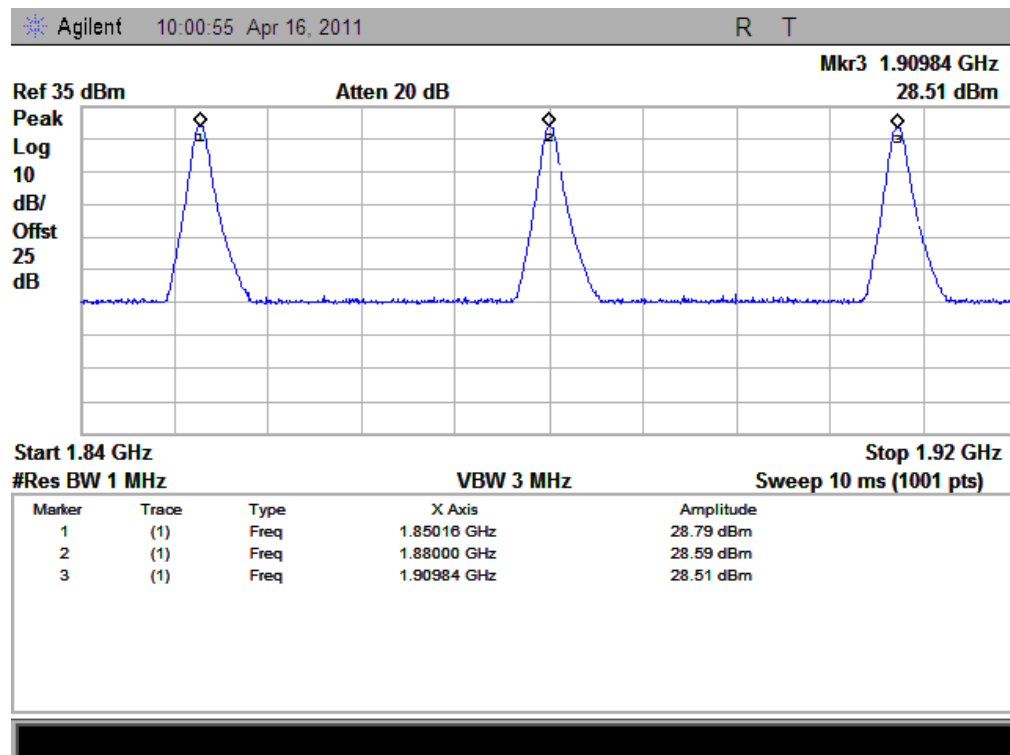
(Plot A: GSM 850MHz Channel = 128, 190, 251)



(Plot B: GSM 1900MHz Channel = 512, 661, 810)



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



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

2.2 99% Occupied Bandwidth

2.2.1 Definition

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

Occupied bandwidth is also known as the 99% emission bandwidth,.

2.2.2 Test Description

See section 2.1.2 of this report.

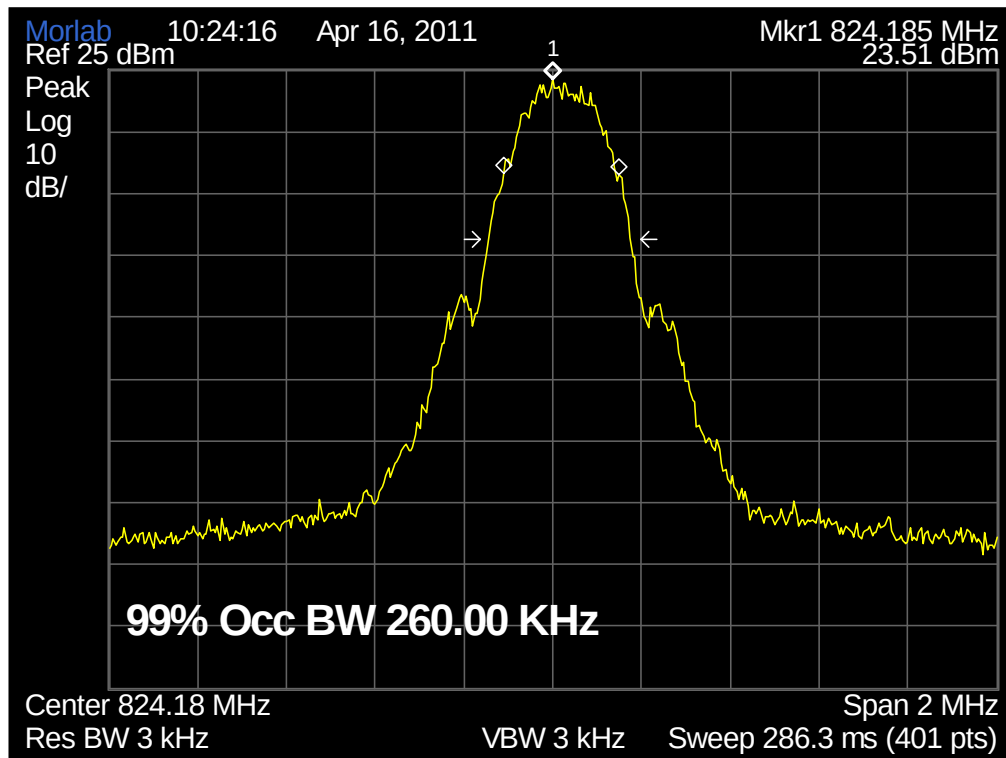
2.2.3 Test Verdict

Here the lowest, middle and highest channels are tested to record the 99% occupied bandwidth, it's about 255kHz.

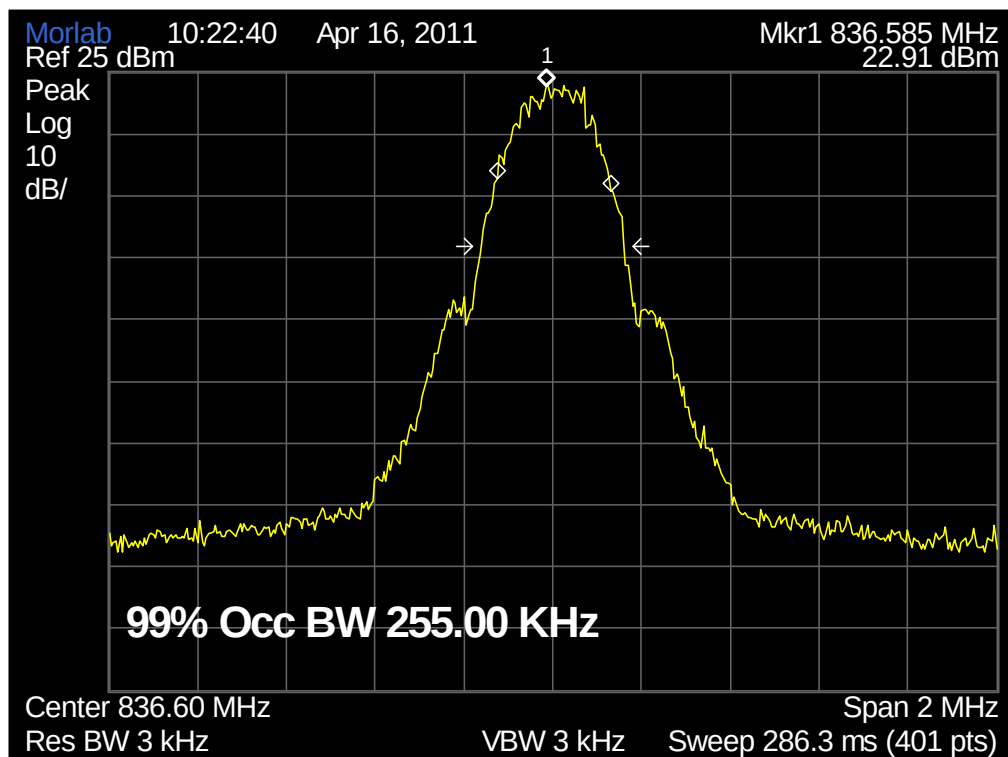
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured 99% Occupied Bandwidth (kHz)	Refer to Plot
GSM 850MHz	128	824.2	260.00	Plot A
	190	836.6	255.00	Plot B
	251	848.8	260.00	Plot C
GSM 1900MHz	512	1850.2	252.00	Plot D
	661	1880.0	252.00	Plot E
	810	1909.8	250.00	Plot F

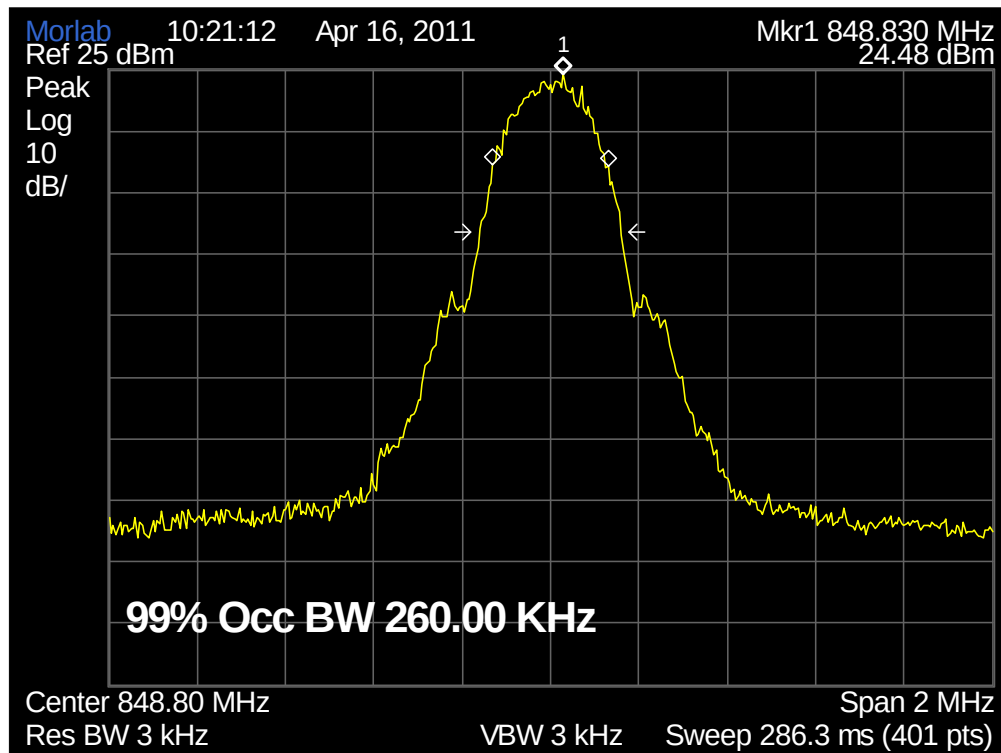
2. Test Plots:



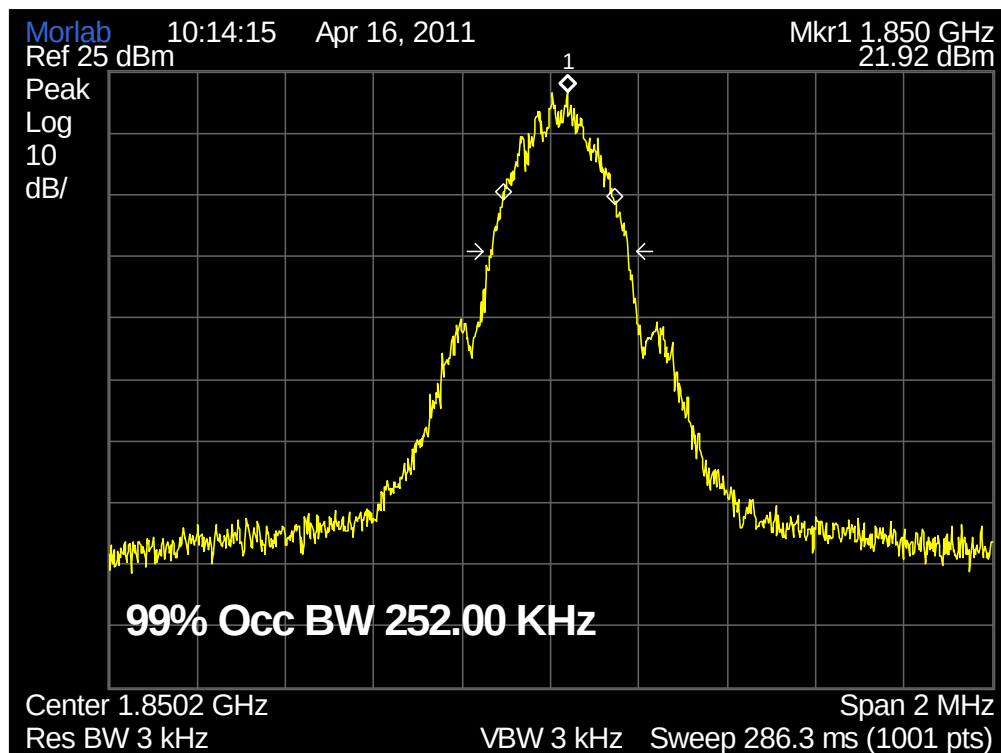
(Plot A: GSM 850MHz Channel = 128)



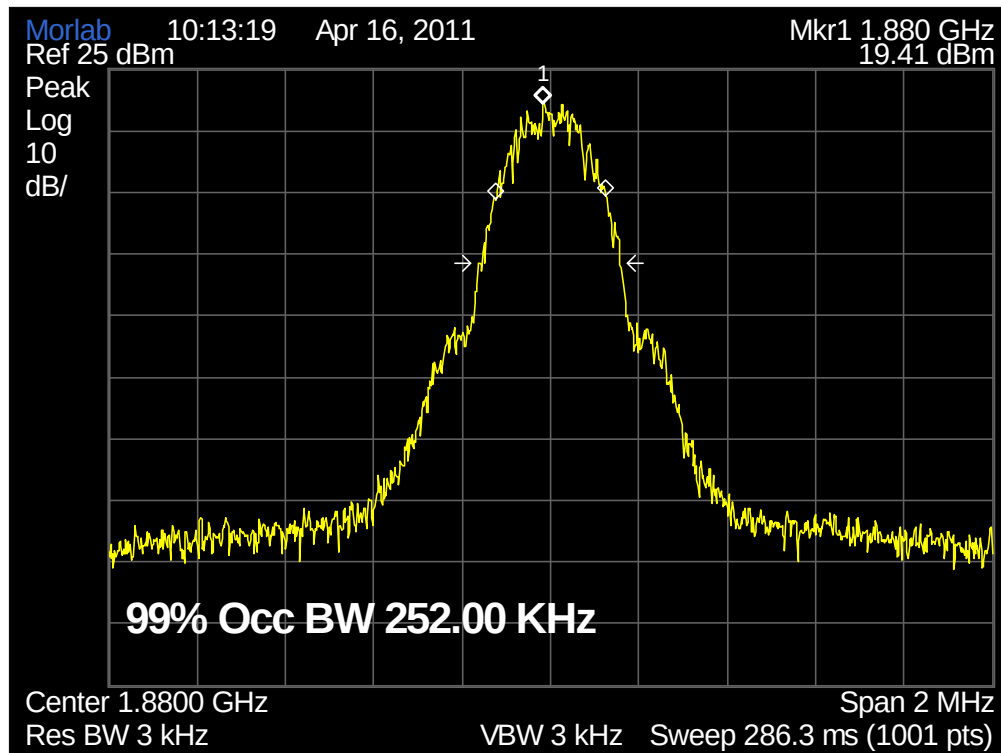
(Plot B: GSM 850MHz Channel = 190)



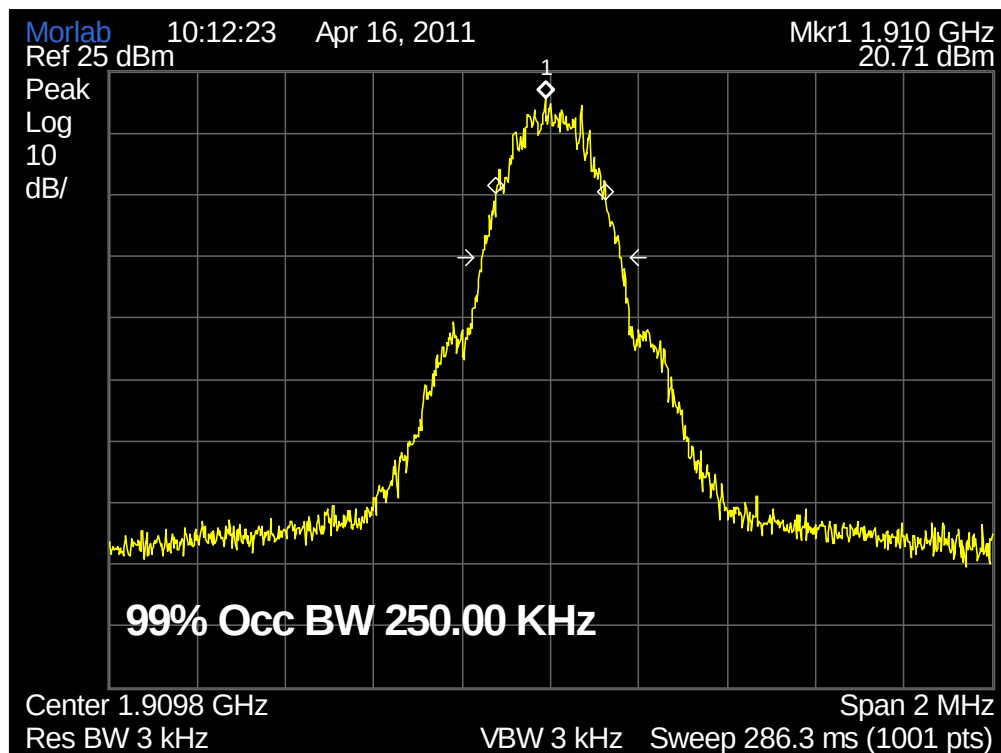
(Plot C: GSM 850MHz Channel = 251)



(Plot D: GSM 1900MHz Channel = 512)



(Plot E: GSM 1900MHz Channel = 661)



(Plot F: GSM 1900MHz Channel = 810)

2.3 Frequency Stability

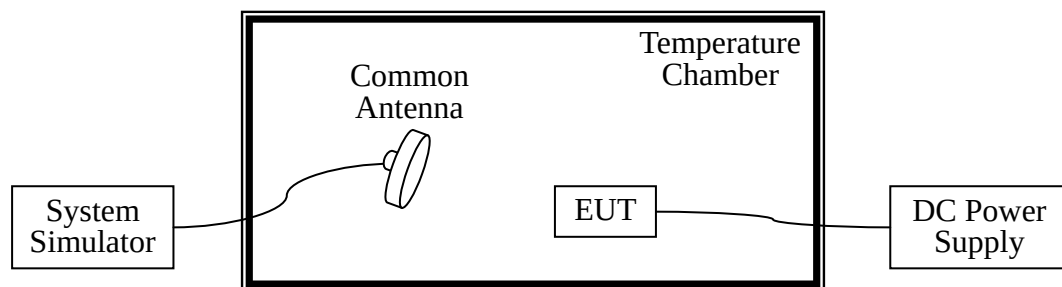
2.3.1 Requirement

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

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

2.3.2 Test Description

1. Test Setup:



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

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Agilent	E5515C	GB43130131	2010.09	2year
DC Power Supply	Good Will	GPS-3030DD	EF920938	2010.09	2year
Temperature Chamber	YinHe Experimental Equip.	HL4003T	(n.a.)	2010.09	2year

2.3.3 Test Verdict

The nominal, highest and lowest extreme voltages are separately 3.7VDC, 4.2VDC and 3.3VDC, which are specified by the applicant; the normal temperature here used is 25°C . The frequency

deviation limit of GSM 850MHz band is $\pm 2.5\text{ppm}$, and GSM 1900MHz is $\pm 1\text{ppm}$

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperat ure (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 850MHz	3.7	-30	5.78	±2060.5	-5.66	±2091.5	5.05	±2122	PASS
		-20	-10.17		9.70		7.49		
		-10	23.28		-10.06		0.19		
		0	-3.03		21.06		34.30		
		+10	-3.03		13.07		45.99		
		+20	-10.39		-12.76		-16.51		
		+30	17.75		-2.05		19.46		
		+40	5.31		-3.77		-6.80		
		+50	-12.19		5.39		7.58		
	4.2	+25	20.74	9.65	3.11				
	3.3	+25	23.29	-0.70	-4.93				
Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperat ure (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 1900MHz	3.7	-30	2.93	±1850.2	16.62	±1880.0	4.21	±1909.8	PASS
		-20	6.08		-4.70		-6.77		
		-10	1.27		5.59		7.35		
		0	-8.13		11.51		-11.20		
		+10	16.06		-9.42		8.74		
		+20	-1.70		-13.86		10.75		
		+30	-13.17		29.87		-9.44		
		+40	-11.06		11.59		17.64		
		+50	3.57		5.90		-12.24		
	4.2	+25	-3.25	-0.49	7.54				
	3.3	+25	-10.53	-3.07	17.84				

2.4 Conducted Out of Band Emissions

2.4.1 Requirement

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

2.4.2 Test Description

See section 2.1.2 of this report.

2.4.3 Test Result

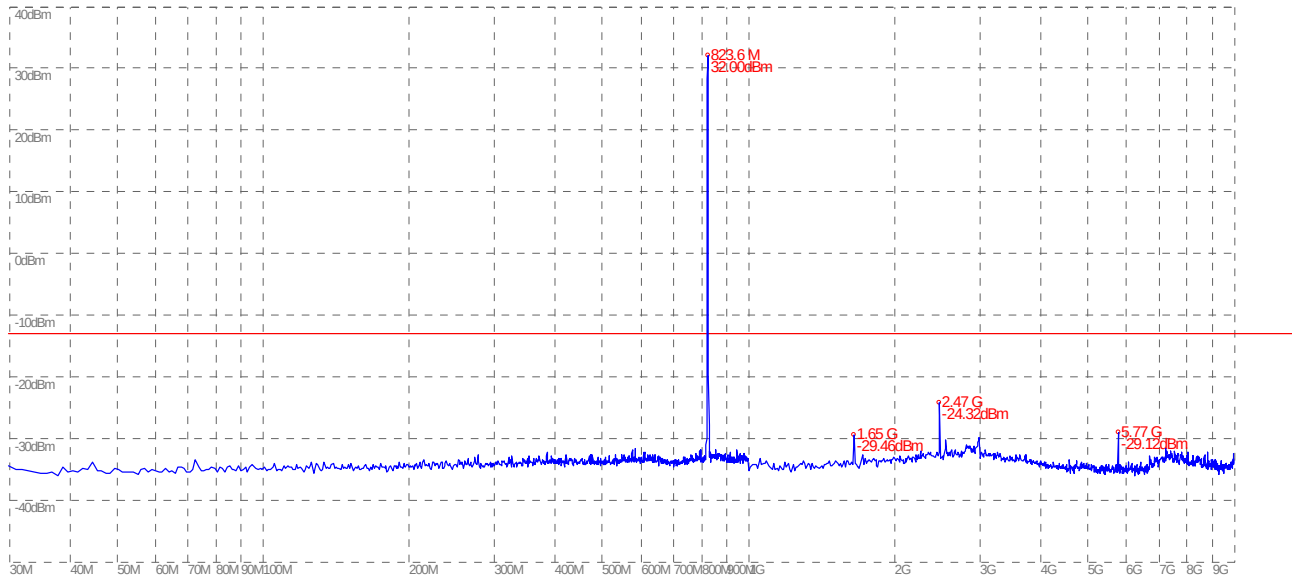
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

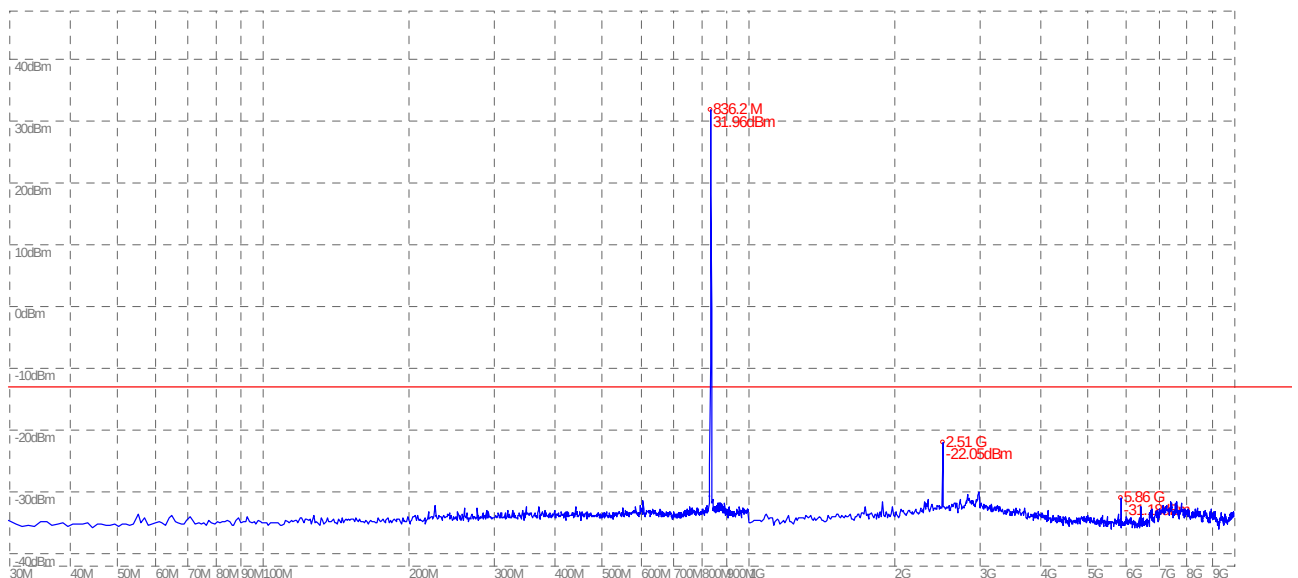
Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-24.32	Plot A	-13	PASS
	190	836.6	-22.05	Plot B		PASS
	251	848.8	-20.66	Plot C		PASS
GSM 1900MHz	512	1850.2	-34.78	Plot D	-13	PASS
	661	1880.0	-34.83	Plot E		PASS
	810	1909.8	<-30	Plot F		PASS

2. Test Plots for the Whole Measurement Frequency Range:

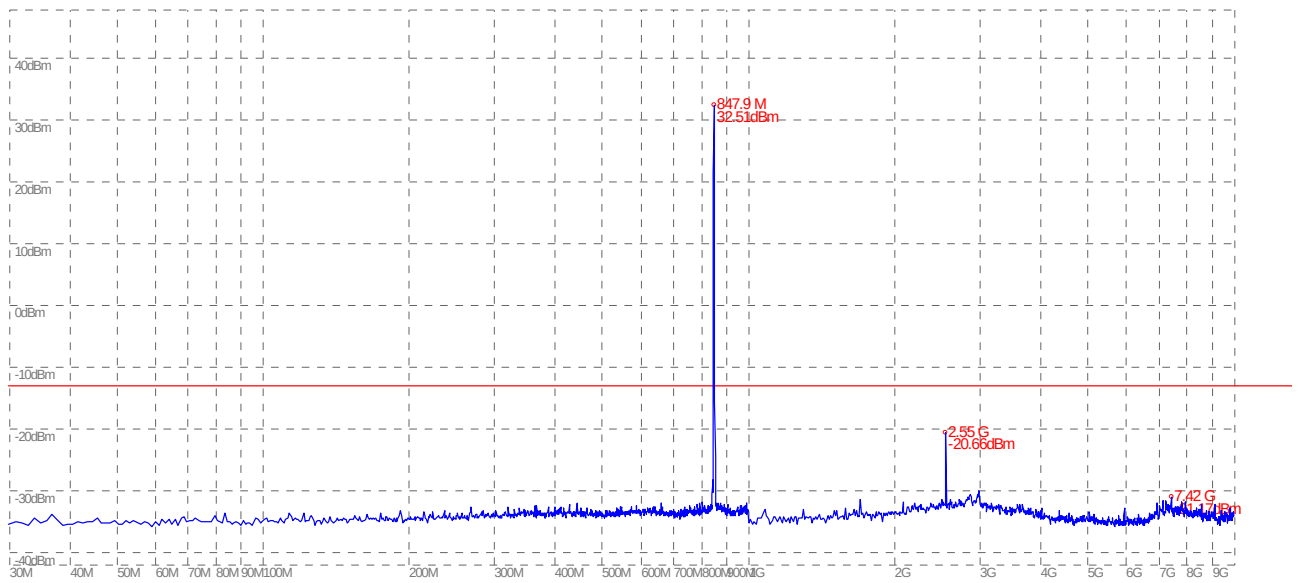
Note: the power of the EUT transmitting frequency should be ignored.



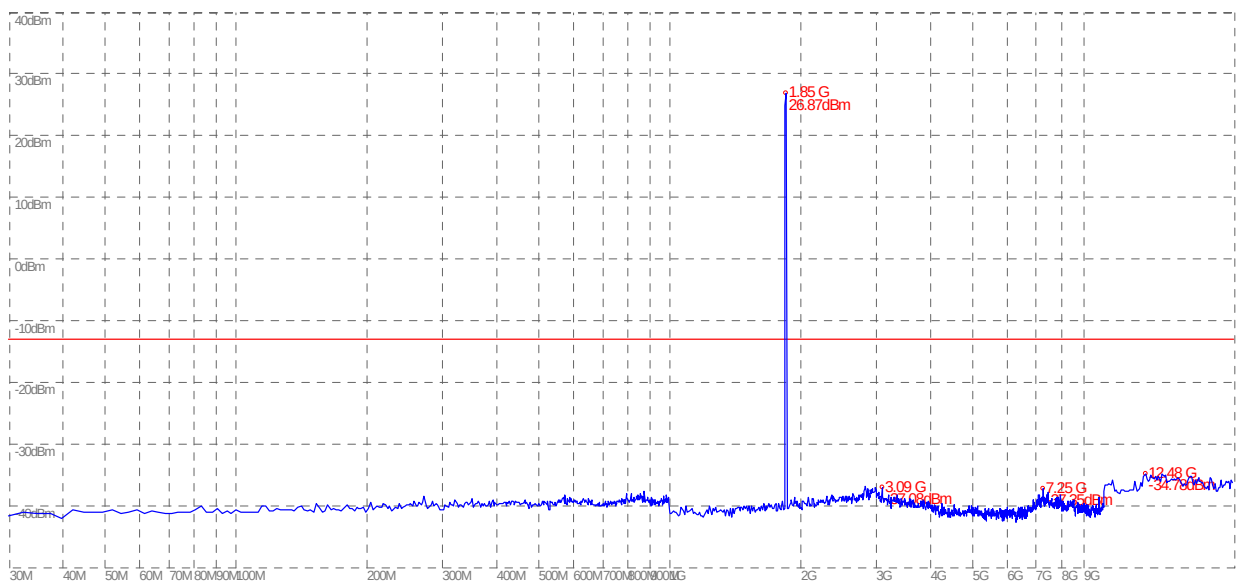
(Plot A: GSM 850MHz Channel = 128, 30MHz to 10GHz)



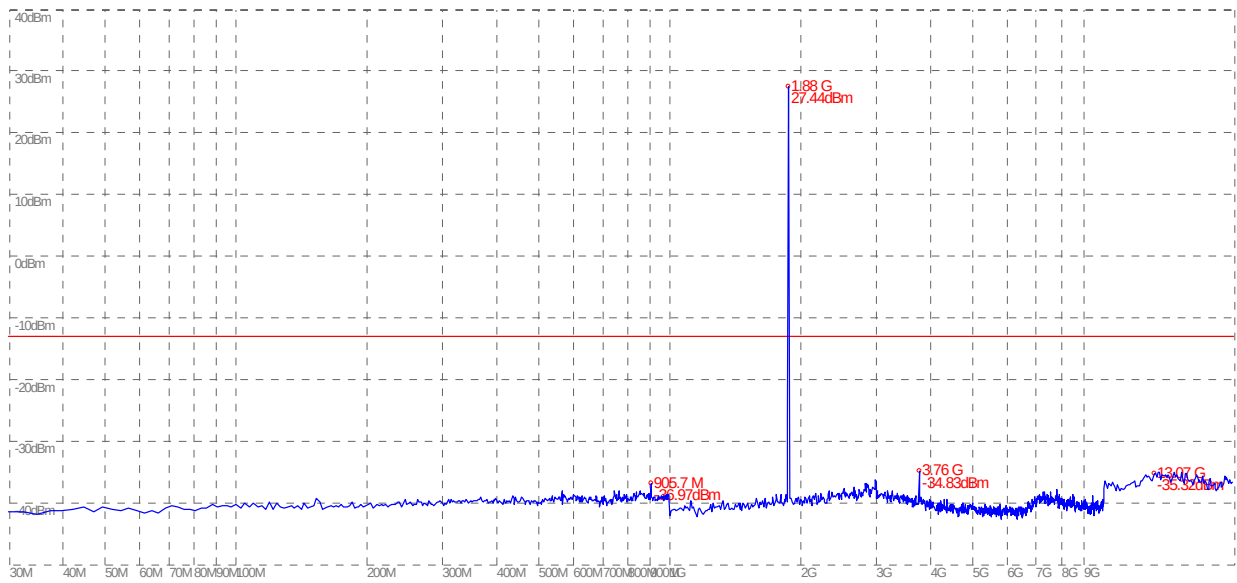
(Plot B: GSM 850MHz Channel = 190, 30MHz to 10GHz)



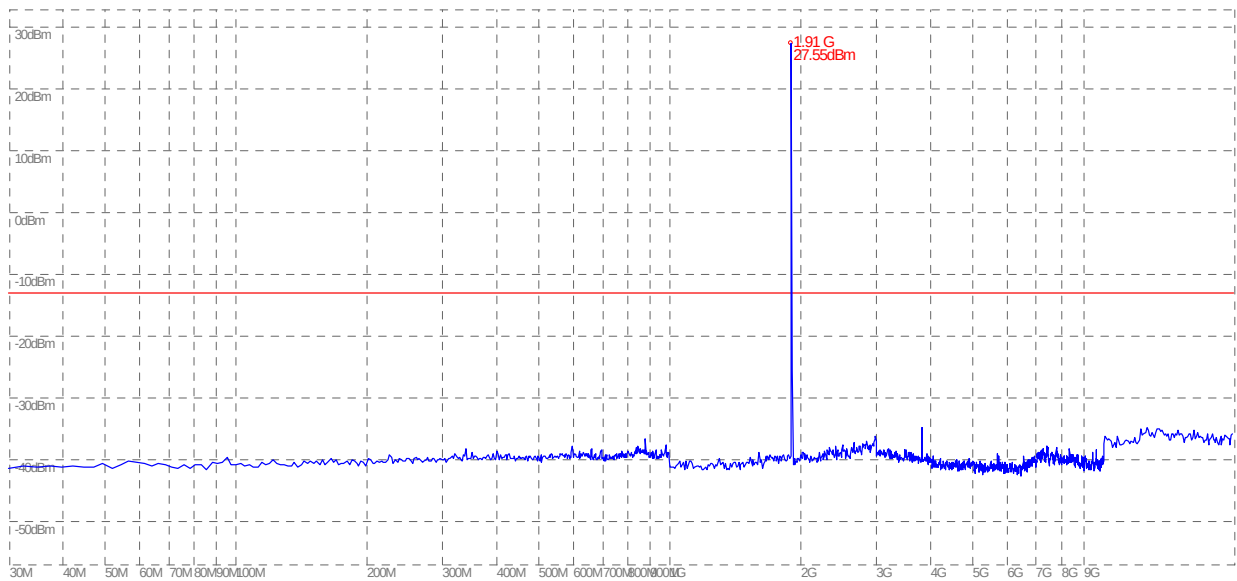
(Plot C: GSM 850MHz Channel = 251, 30MHz to 10GHz)



(Plot D: GSM 1900MHz Channel = 512, 30MHz to 20GHz)



(Plot E: GSM 1900MHz Channel = 661, 30MHz to 20GHz)



(Plot F: GSM 1900MHz Channel = 810, 30MHz to 20GHz)

2.5 Band Edge

2.5.1 Requirement

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

2.5.2 Test Description

See section 2.1.2 of this report.

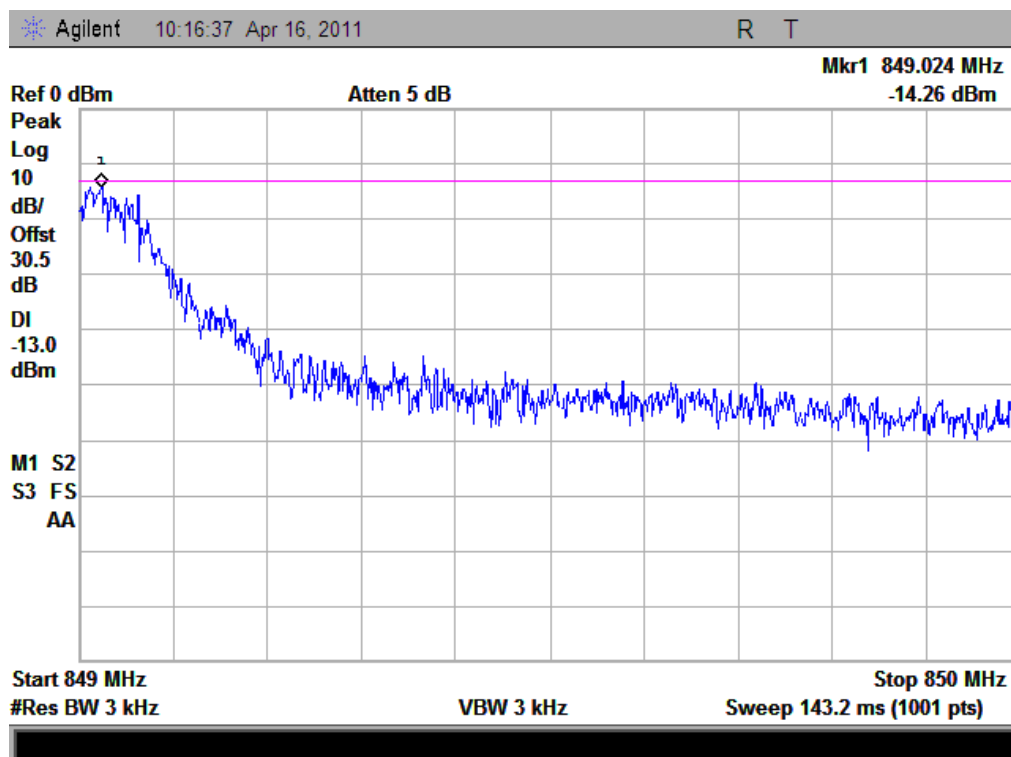
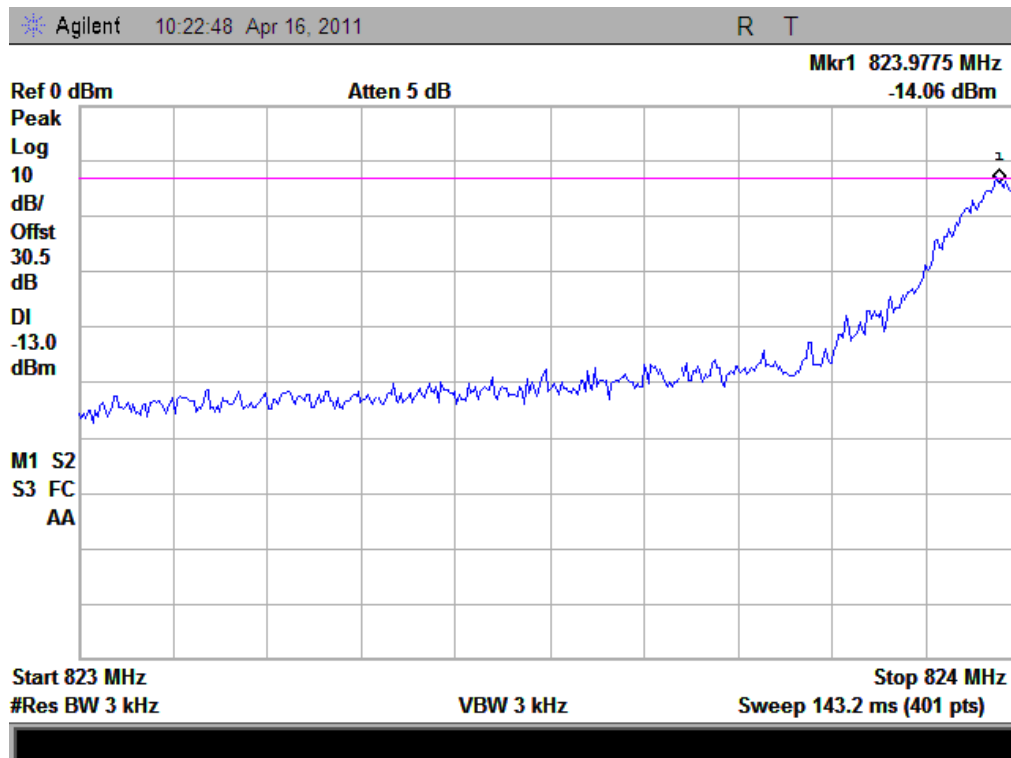
2.5.3 Test Result

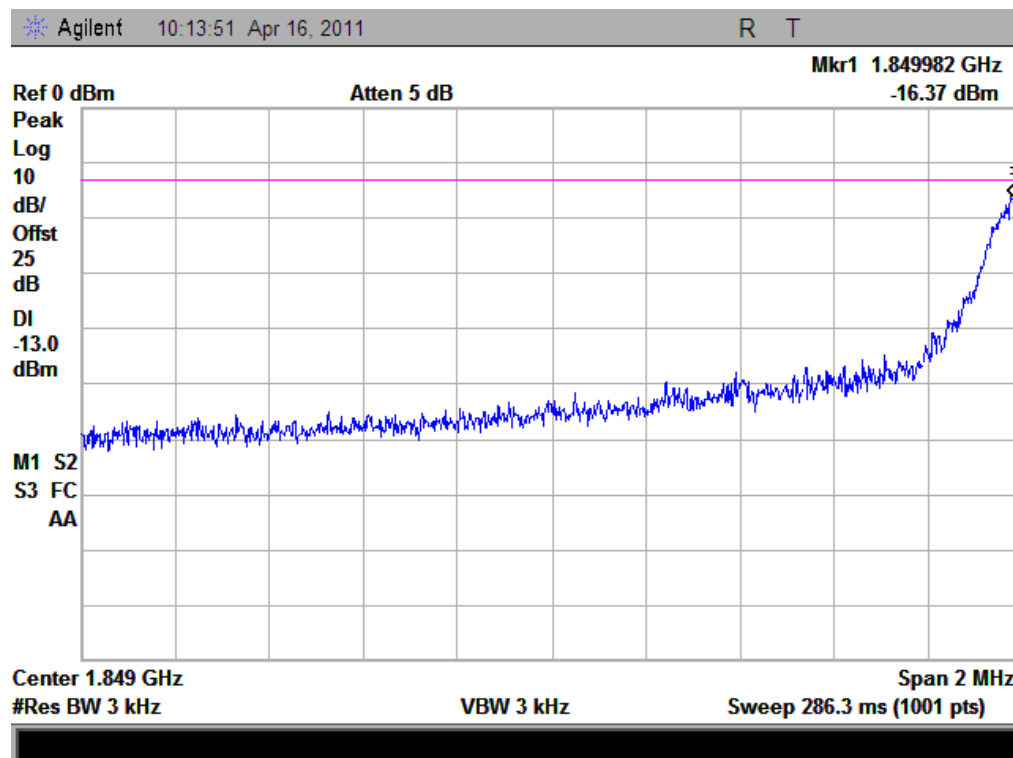
The lowest and highest channels are tested to verify the band edge emissions.

1. Test Verdict:

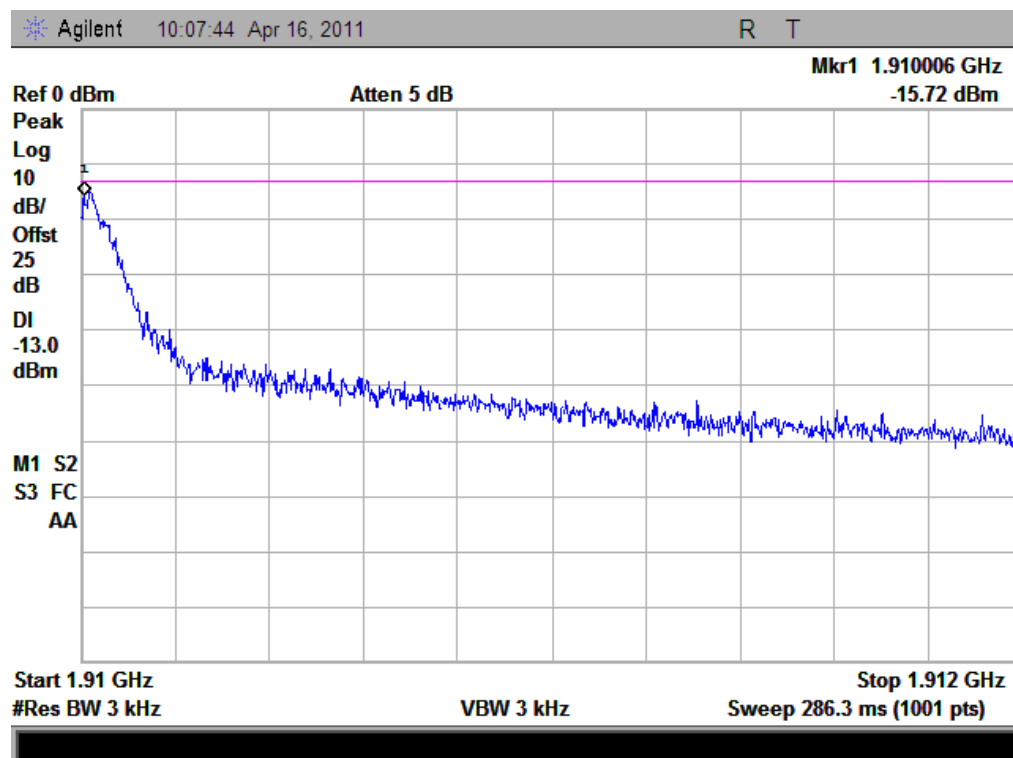
Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-14.06	Plot A	-13	PASS
	251	848.8	-14.26	Plot B		PASS
GSM 1900MHz	512	1850.2	-16.37	Plot C	-13	PASS
	810	1909.8	-15.72	Plot D		PASS

2. Test Plots:





(Plot C: Channel = 512)



(Plot D: Channel = 810)

** END OF REPORT **