



Report No.: SZ11030017E02
CNAS L3572

47 CFR PART 22H & 24E

TEST REPORT

Issued to

ZTE Corporation
ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,
Nanshan District, Shenzhen, Guangdong, P.R.China

For

WCDMA wireless data terminal

Model Name: AD3812_V2
Trade Name: ZTE
Brand Name: ZTE
FCC ID: Q78-AD3812
Test Rule: 47 CFR Part 2
47 CFR Part 22 Subpart H
47 CFR Part 24 Subpart E
Test date: March 16, 2011 – March 25, 2011

Shenzhen Morlab Communications Technology Co., Ltd.



Tested by Wang Guoqiang
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Date 2011.03.25

Approved by Zeng Dexin
Zeng Dexin
Date 2011.03.25

Review by Huang Pulong
Huang Pulong

Date 2011.03.25

CTIA Authorized Test Lab
LAB CODE 20081223-00
IEEE 1725

OFTA
OTA
電訊管理局



TAF
Testing Laboratory
2030

GCF
Official Observer of
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Bluetooth
BQTF

FCC
Reg. No.
741109

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Change History		
Issue	Date	Reason for change
1.0	March 25, 2011	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type: WCDMA wireless data terminal
Serial No.....: (n.a, marked #1 by test site)
Hardware Version: AD3812V2IB_E
Software Version: AD3812_V2_OMBC6250
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)
WCDMA 850MHz
Tx: 826.4- 846.6MHz (at intervals of 200kHz);
Rx: 871.4 – 891.6MHz (at intervals of 200kHz)
WCDMA 1900MHz
Tx: 1852.4 – 1907.6MHz (at intervals of 200kHz);
Rx: 1932.4 – 1987.6MHz (at intervals of 200kHz)
Modulation Type.....: GPRS/GSM Mode with GMSK Modulation
WCDMA Mode with QPSK Modulation
Emission Designators: GSM:265KGXW, WCDMA:4M18F9W
Power supply Powered by a DC power
Rated Voltage: 3.7V

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: The transmitter (Tx) frequency arrangement of the WCDMA 850MHz band used by the EUT can be represented with the formula $F(n)=826.4+0.2*(n-4132)$, $4132 \leq n \leq 4233$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately

4132 (826.4MHz), 4175 (835MHz) and 4233 (846.6MHz).

Note 5: The transmitter (Tx) frequency arrangement of the WCDMA 1900MHz band used by the EUT can be represented with the formula $F(n)=1852.4+0.2*(n-9262)$, $9262 \leq n \leq 9538$; the lowest, middle and highest channel numbers (ARFCHs) used and tested in this report are separately 9262 (1852.4MHz), 9400 (1880MHz) and 9538 (1907.6MHz).

Note 6: 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 have not the antenna.

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

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

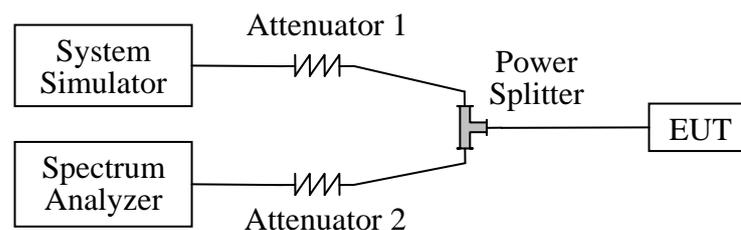
2.1 Conducted RF Output Power

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.

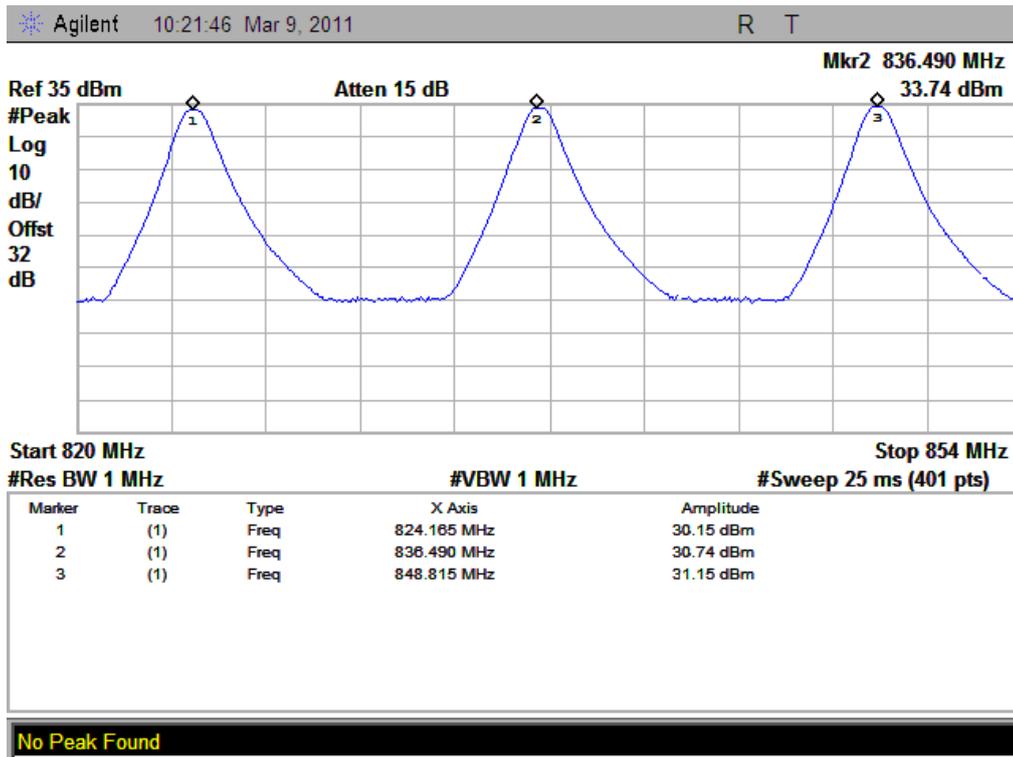
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Output Power		Limit dBm	Verdict
			dBm	Refer to Plot		
GSM 850MHz	128	824.2	30.15	Plot A	35	PASS
	190	836.6	30.74			PASS
	251	848.8	31.15			PASS
GSM 1900MHz	512	1850.2	28.67	Plot B	32	PASS
	661	1880.0	28.49			PASS
	810	1909.8	28.52			PASS
GPRS 850MHz	128	824.2	30.99	Plot C	35	PASS
	190	836.6	30.93			PASS
	251	848.8	31.12			PASS
GPRS 1900MHz	512	1850.2	28.17	Plot D	32	PASS
	661	1880.0	28.78			PASS
	810	1909.8	29.59			PASS

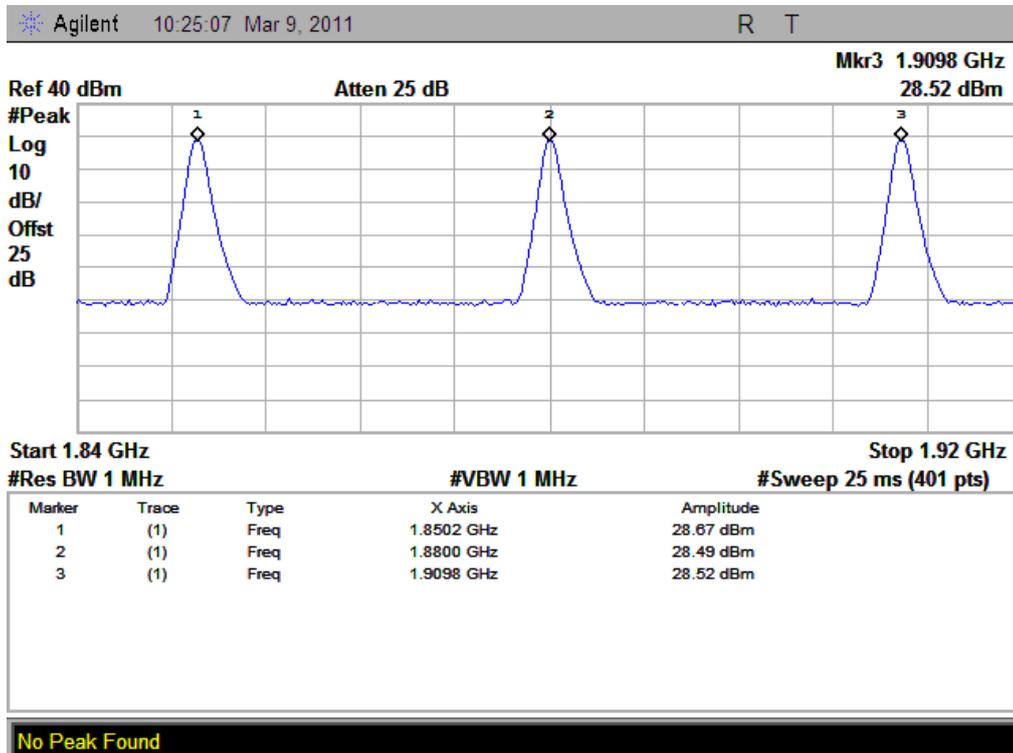
Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	21.96	22.98	22.62	23.36	23.01	23.09

Note: The measured output power was calculated by the reading of the Power Meter and calibration.

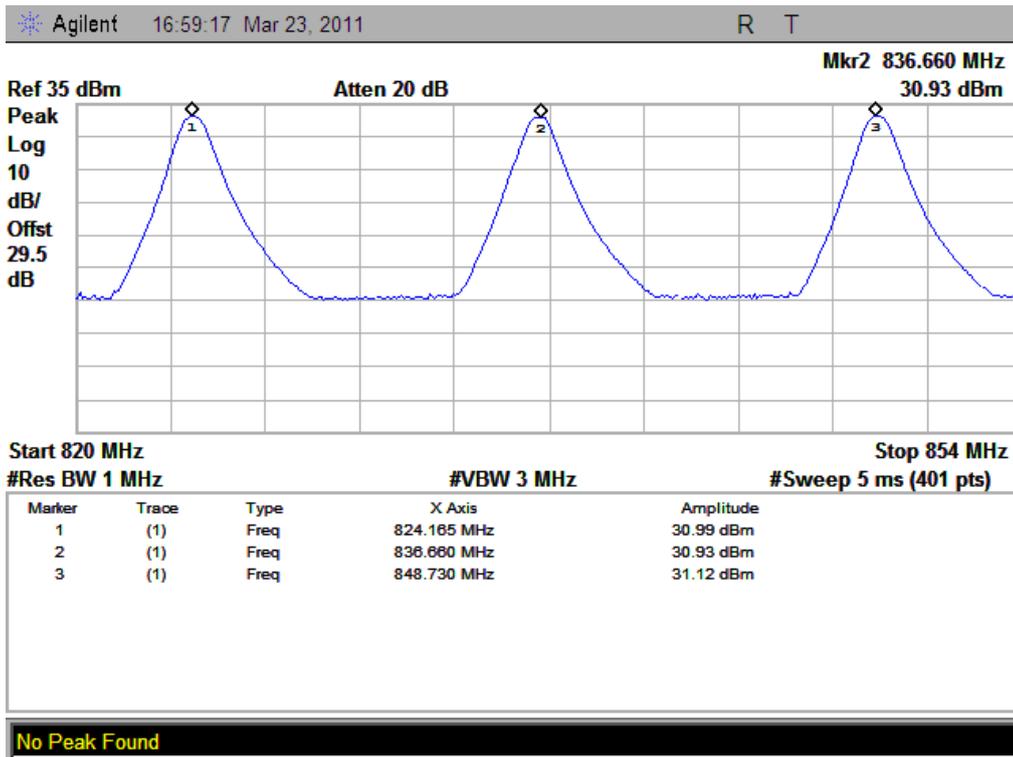
2. Test Plots:



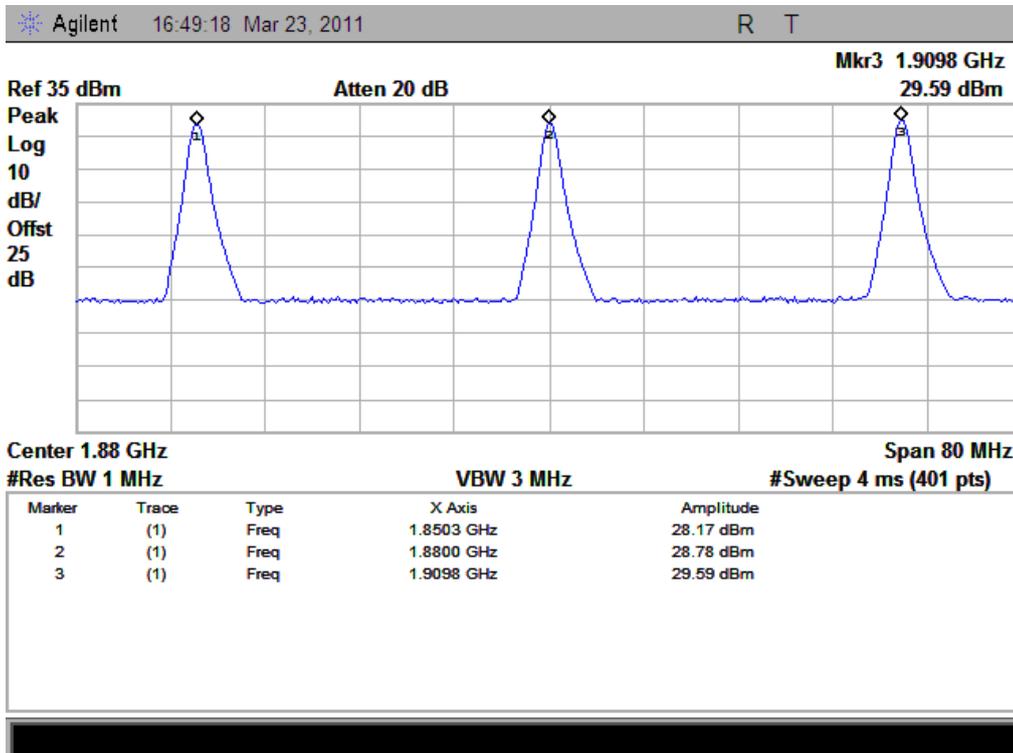
(Plot A: GSM 850MHz Channel = 128,190,251)



(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.

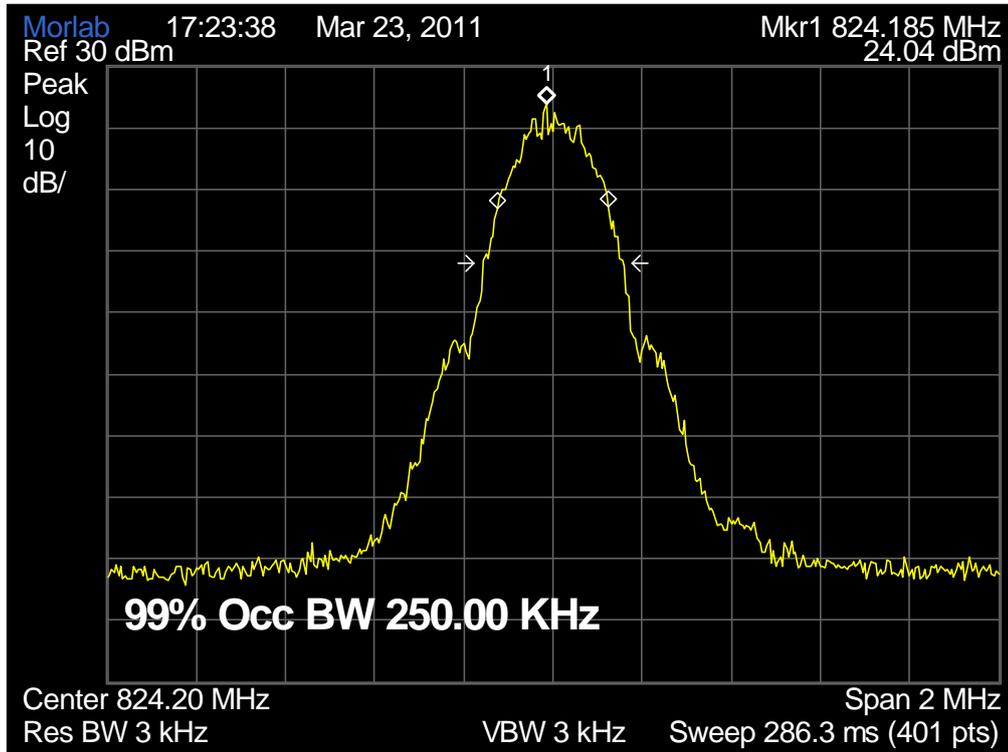
2.2.3 Test Verdict

Here the lowest, middle and highest channels are tested to record the 99% occupied bandwidth.

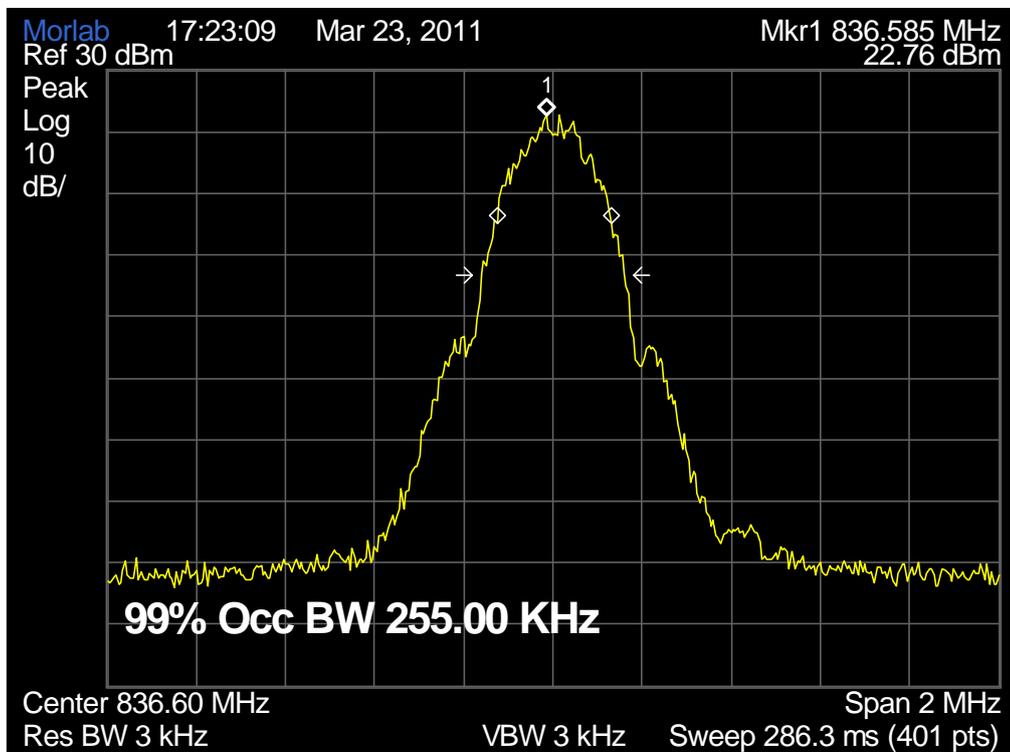
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured 99% Occupied Bandwidth (kHz)	Refer to Plot
GSM 850MHz	128	824.2	250.0	Plot A
	190	836.6	255.0	Plot B
	251	848.8	255.0	Plot C
GSM 1900MHz	512	1850.2	255.0	Plot D
	661	1880.0	255.0	Plot E
	810	1909.8	255.0	Plot F
WCDMA 850MHz	4175	835	4.20 M	Plot G
WCDMA 1900MHz	9400	1880	4.24 M	Plot H

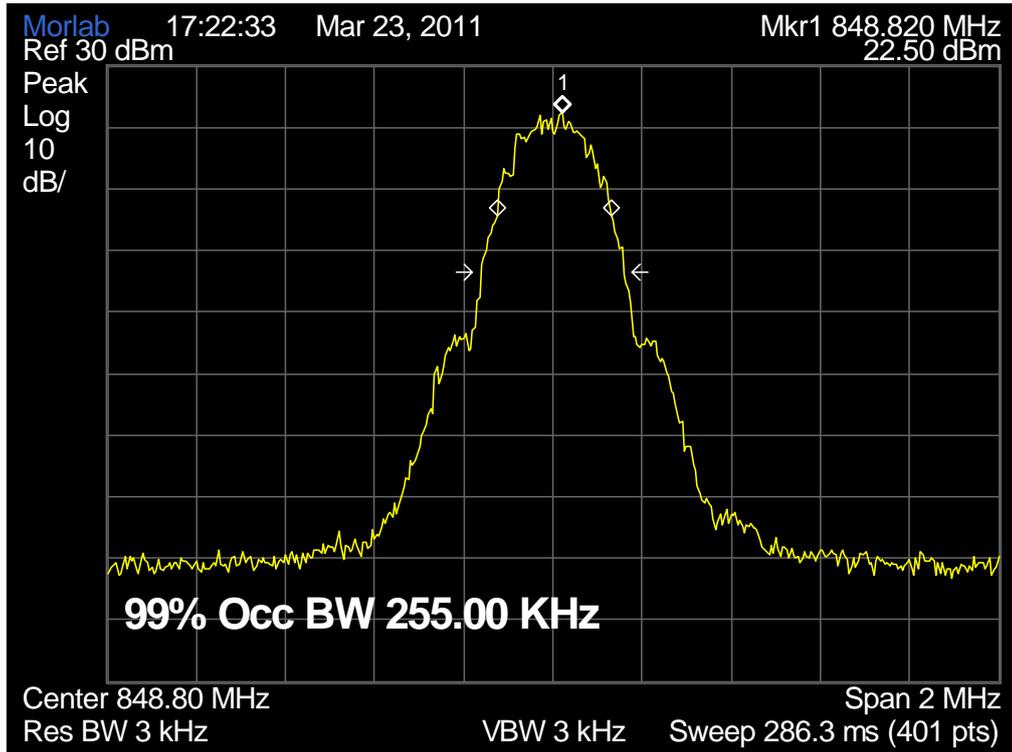
2. Test Plots:



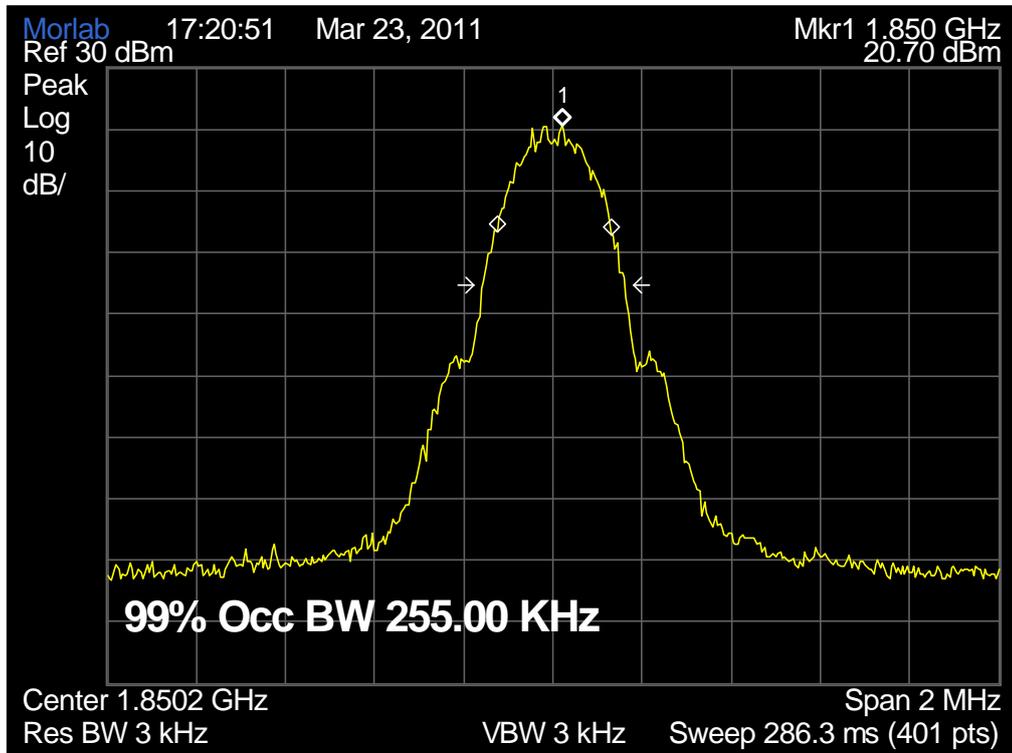
(Plot A: GSM 850MHz Channel = 128)



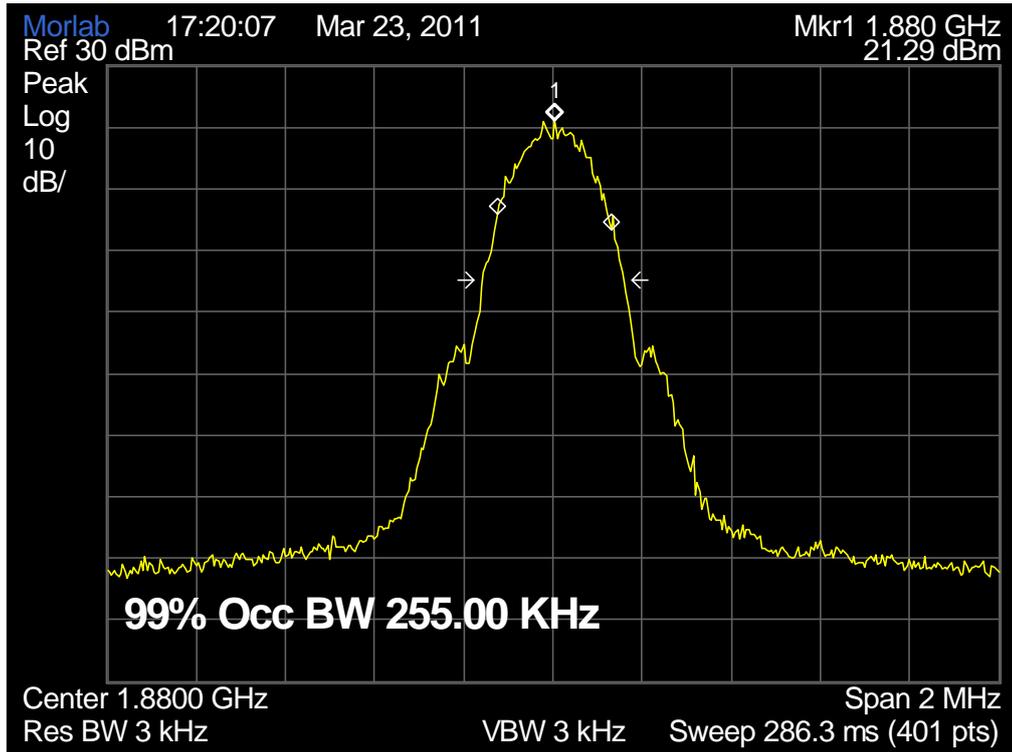
(Plot B: GSM 850MHz Channel = 190)



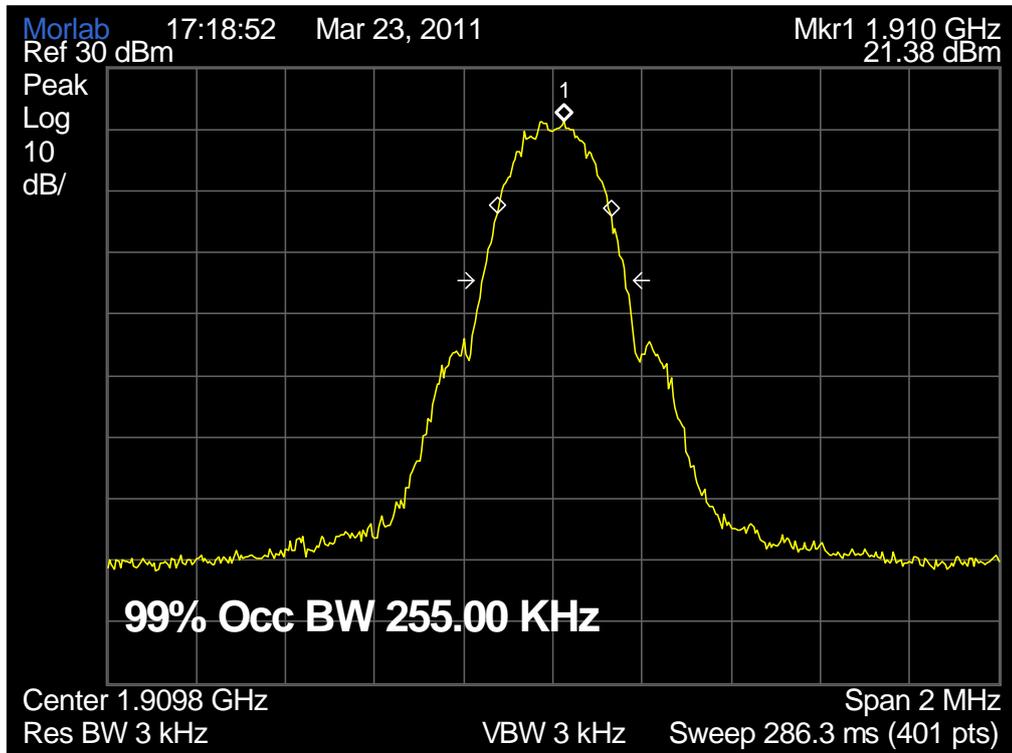
(Plot C: GSM 850MHz Channel = 251)



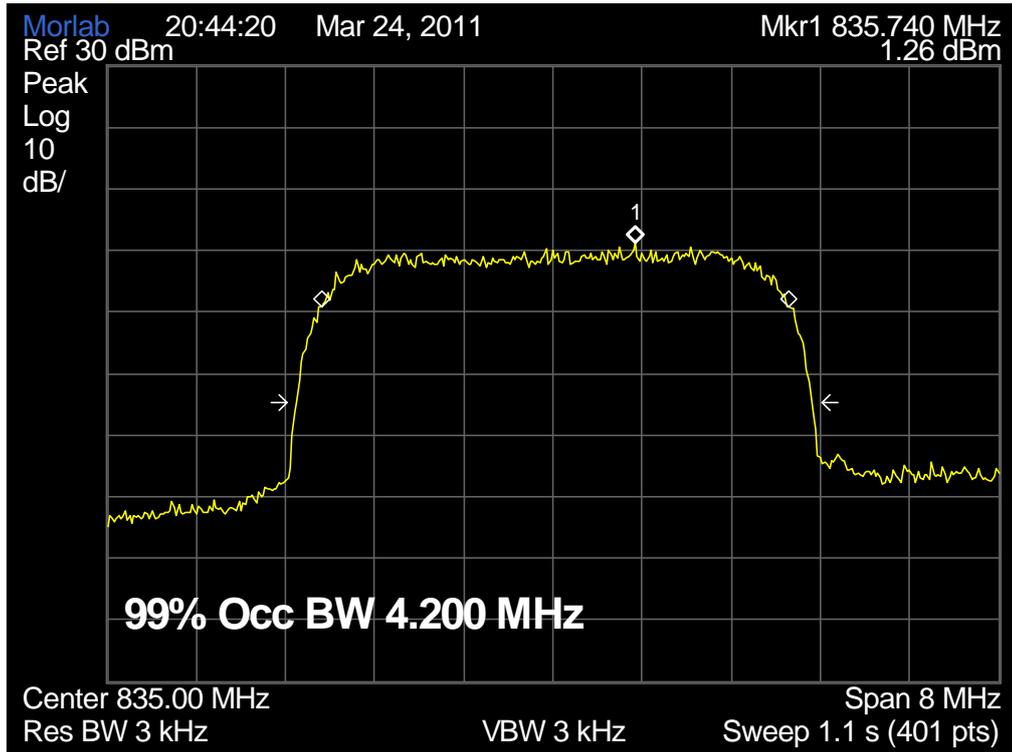
(Plot D: GSM 1900MHz Channel = 512)



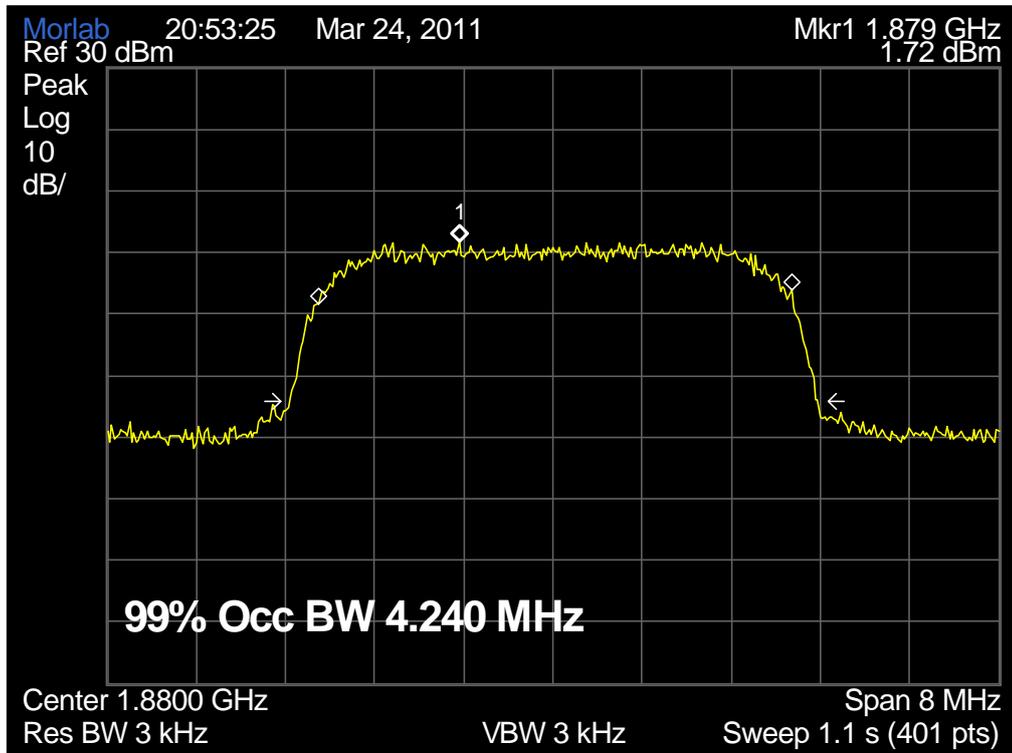
(Plot E: GSM 1900MHz Channel = 661)



(Plot F: GSM 1900MHz Channel = 810)



(Plot G: WCDMA 850MHz Channel = 4175)



(Plot H: WCDMA 1900MHz Channel = 9400)

2.3 Frequency Stability

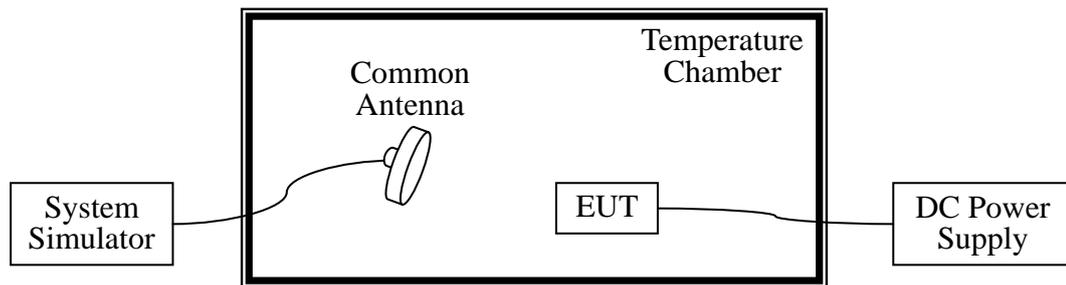
2.3.1 Requirement

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°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 ± 2.5 ppm, and GSM 1900MHz is ± 1 ppm

Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 128 (824.2MHz)		Channel = 190 (836.6MHz)		Channel = 251 (848.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 850MHz	3.7	-30	25.06	± 2060.5	13.46	± 2091.5	11.46	± 2122	
		-20	-25.06		10.67		08.67		
		-10	24.03		-1.03		-11.03		
		0	-23.11		-23.57		-13.57		
		+10	-9.85		26.49		16.49		
		+20	27.01		-29.46		-19.46		
		+30	26.09		24.07		14.07		
		+40	-8.15		11.34		21.34		
		+50	27.13		9.21		19.21		
	4.2	+25	-24.37	-24.03	-4.03				
3.6	+25	24.26	11.08	11.08					
Band	Test Conditions		Frequency Deviation						Verdict
	Power (VDC)	Temperature (°C)	Channel = 512 (1850.2MHz)		Channel = 661 (1880.0MHz)		Channel = 810 (1909.8MHz)		
			Hz	Limits	Hz	Limits	Hz	Limits	
GSM 1900MHz	3.7	-30	-26.11	± 1850.2	-16.29	± 1880.0	3.46	± 1909.8	
		-20	19.35		29.37		-0.67		
		-10	-25.21		-11.06		31.03		
		0	22.01		35.04		-23.57		
		+10	-19.31		-12.26		26.49		
		+20	16.52		25.09		29.46		
		+30	-8.99		26.75		-24.07		
		+40	17.92		-11.08		-21.34		
		+50	-20.25		21.44		21.21		
	4.2	+25	6.98	-7.85	-24.03				
3.6	+25	17.39	25.32	11.08					

WCDMA 850MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4132 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
3.7	-30	19.43	± 826.4	19.62	± 835	23.79	± 846.6	PASS

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 4132 (826.4MHz)		Channel = 4175 (835MHz)		Channel = 4233 (846.6MHz)		
		Hz	Limit	Hz	Limit	Hz	Limit	
	-20	-25.46		-24.90		-25.36		
	-10	9.39		12.37		4.84		
	0	8.06		6.43		6.99		
	+10	-14.63		-14.57		-18.56		
	+20	-20.71		-22.04		-24.03		
	+30	-14.25		-13.19		-9.91		
	+40	25.08		21.80		21.29		
	+50	1.28		0.37		-0.29		
4.2	+25	-16.32		-13.29		-18.37		
3.4	+25	-7.80		-6.31		-3.66		

WCDMA 1900MHz Band

Test Conditions		Frequency Deviation						Verdict
Power (VDC)	Temperature (°C)	Channel = 9262 (1852.4MHz)		Channel = 9400 (1880.0MHz)		Channel = 9538 (1907.6MHz)		
		Hz	Limits	Hz	Limits	Hz	Limits	
3.7	-30	6.82	±1852.4	3.17	±1880.0	4.22	±1907.6	
	-20	-10.68		-13.99		-7.26		
	-10	-0.09		3.13		-2.12		
	0	-25.07		-24.44		-23.88		
	+10	24.99		27.99		20.59		
	+20	-28.27		-25.40		-26.57		
	+30	-5.94		-4.63		-9.71		
	+40	-16.32		-13.10		-13.72		
	+50	-28.71	-29.22	-29.83				
4.2	+25	-14.06		-12.51		-13.94		
3.4	+25	-11.09		-7.25		-7.55		

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

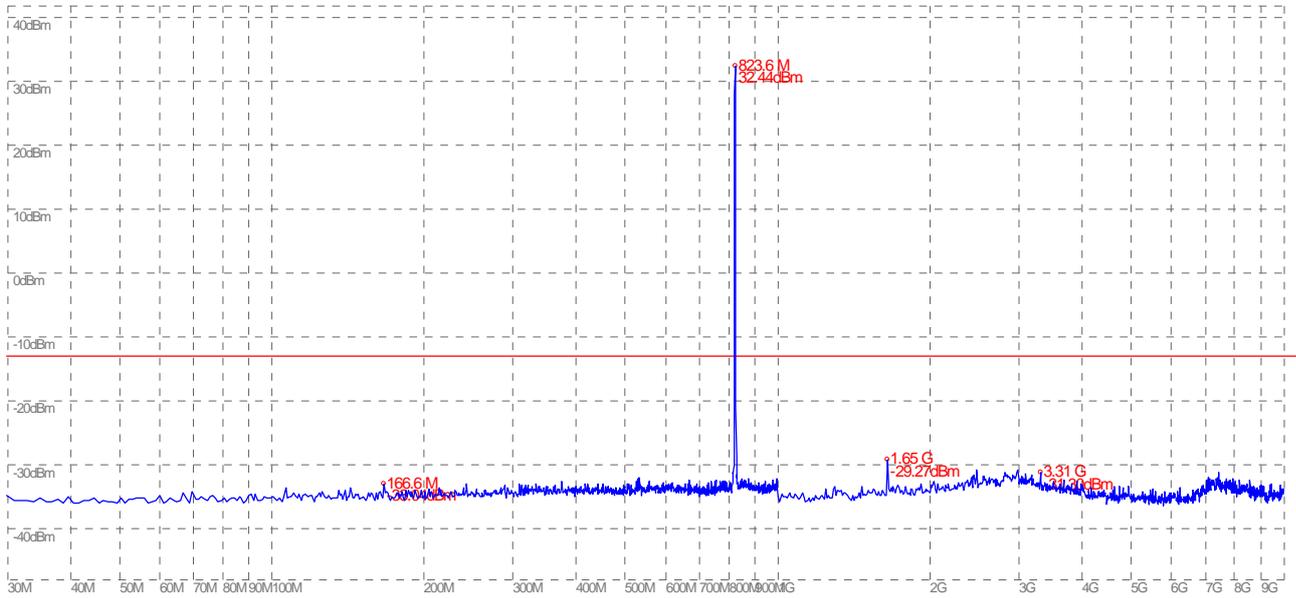
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Spurious Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-29.27	Plot A	-13	PASS
	190	836.6	-29.95	Plot B		PASS
	251	848.8	-29.51	Plot C		PASS
GSM 1900MHz	512	1850.2	-29.99	Plot D	-13	PASS
	661	1880.0	-35.90	Plot E		PASS
	810	1909.8	-35.83	Plot F		PASS
WCDMA 850MHz	4132	826.4	-30.23	Plot G	-13	PASS
	4175	835	-30.07	Plot H		PASS
	4233	846.6	-29.01	Plot I		PASS
WCDMA 1900MHz	9262	1852.4	-35.24	Plot J	-13	PASS
	9400	1880	-36.10	Plot K		PASS
	9538	1907.6	-35.34	Plot L		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)



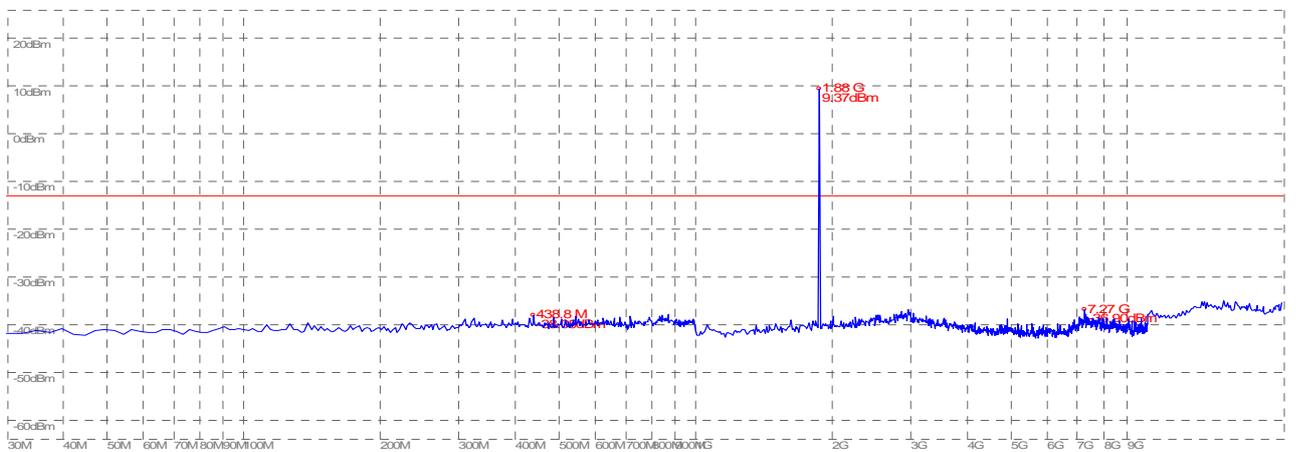
(Plot B: GSM 850MHz Channel = 190, 30MHz to 10GHz)



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



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



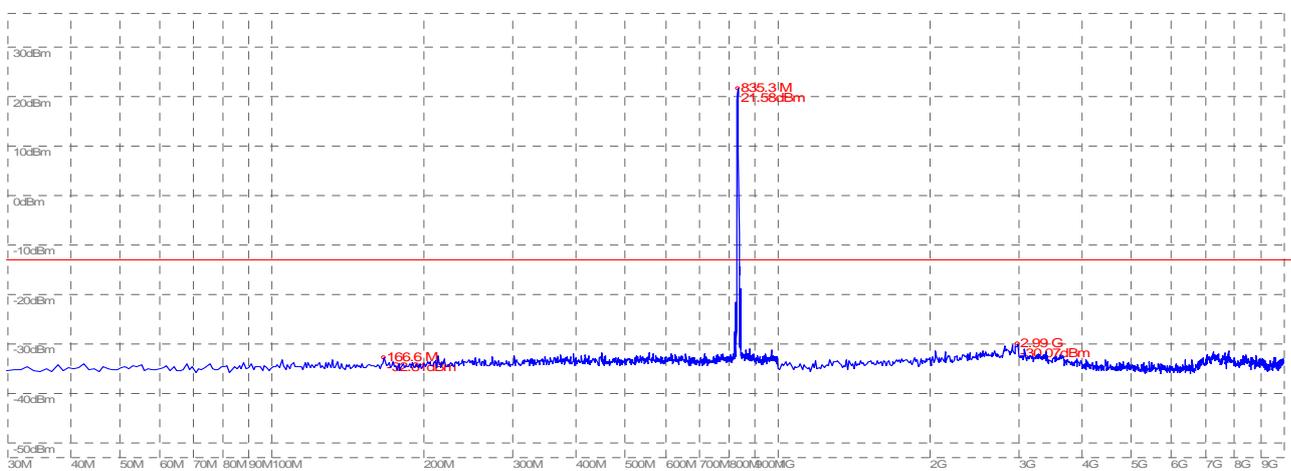
(Plot E: GSM 1900MHz Channel = 661, 30MHz to 20GHz)



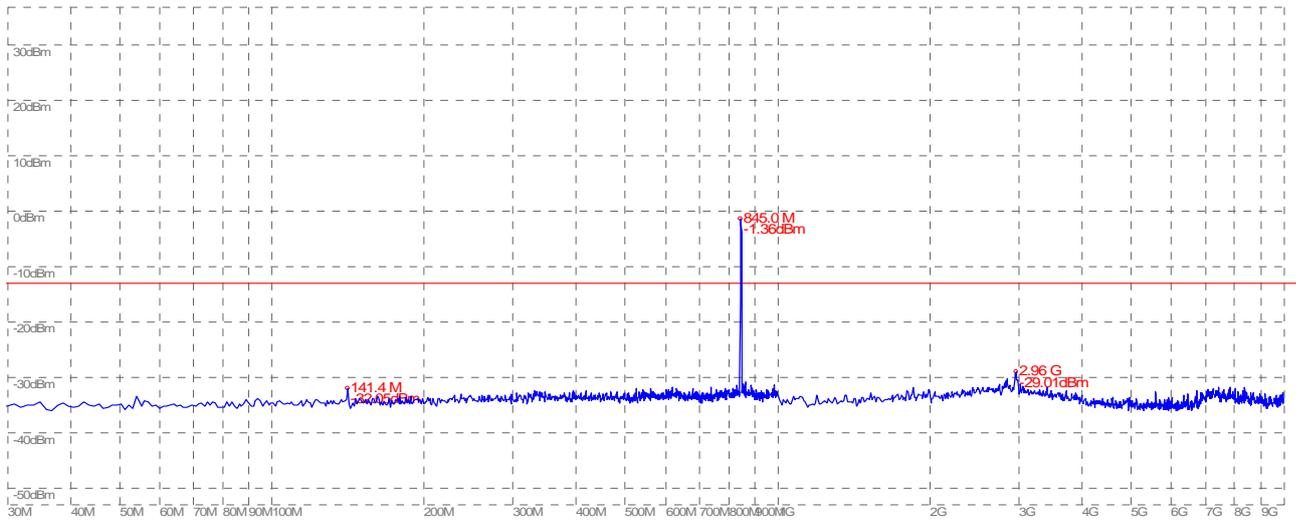
(Plot F: GSM 1900MHz Channel = 810, 30MHz to 20GHz)



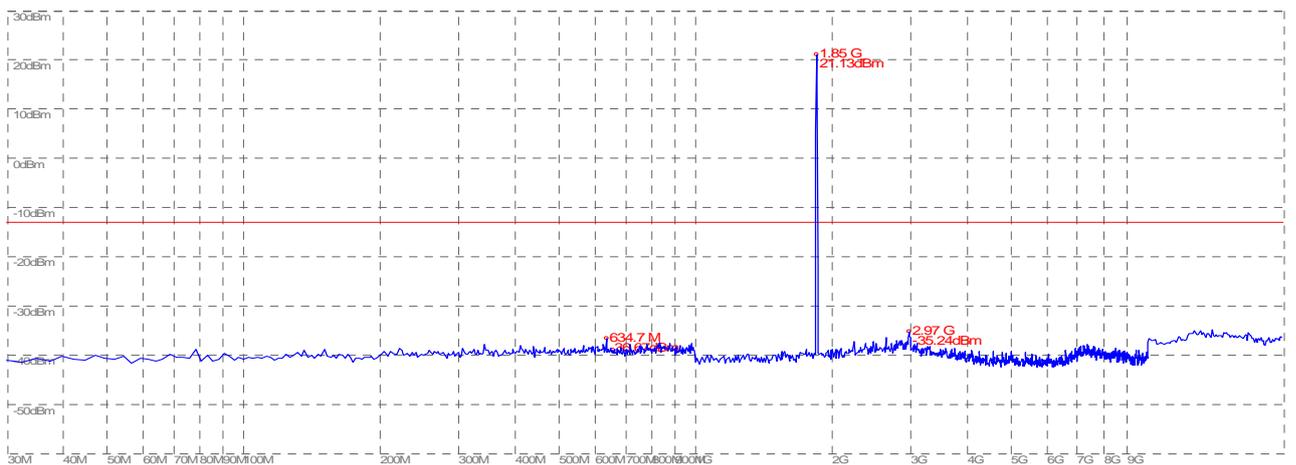
(Plot G: WCDMA 850MHz Channel = 810, 30MHz to 20GHz)



(Plot H: WCDMA 850MHz Channel = 810, 30MHz to 20GHz)



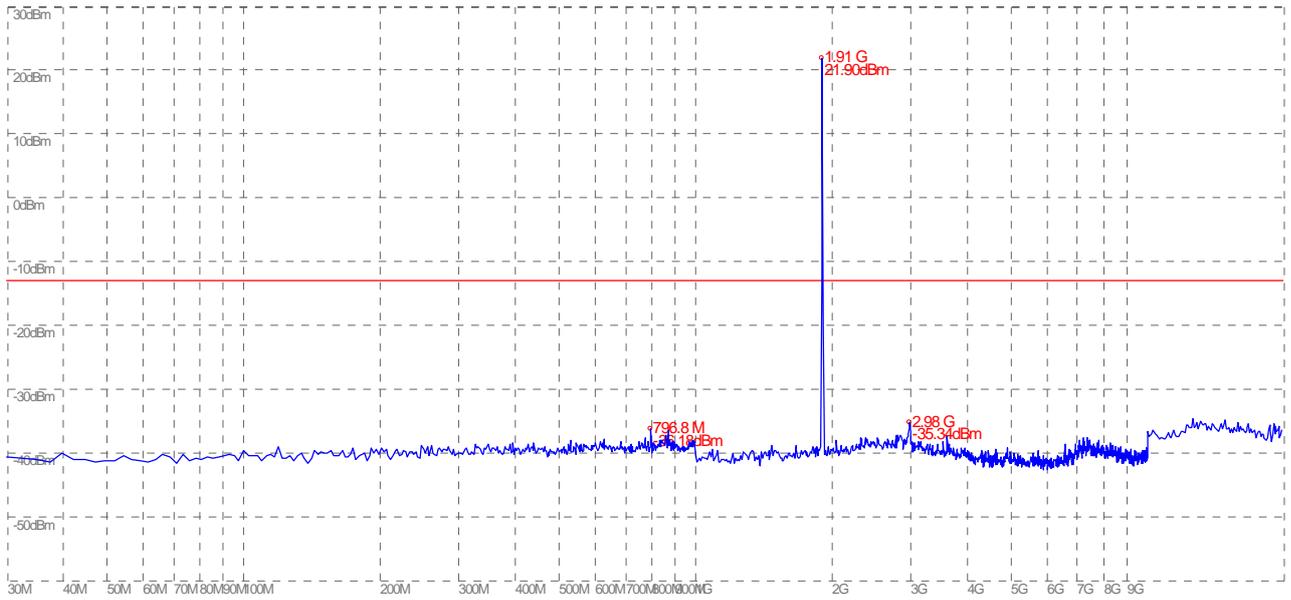
(Plot I: WCDMA 850MHz Channel = 810, 30MHz to 20GHz)



(Plot J: WCDMA 1900MHz Channel = 810, 30MHz to 20GHz)



(Plot K: WCDMA 1900MHz Channel = 810, 30MHz to 20GHz)



(Plot L: WCDMA 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.

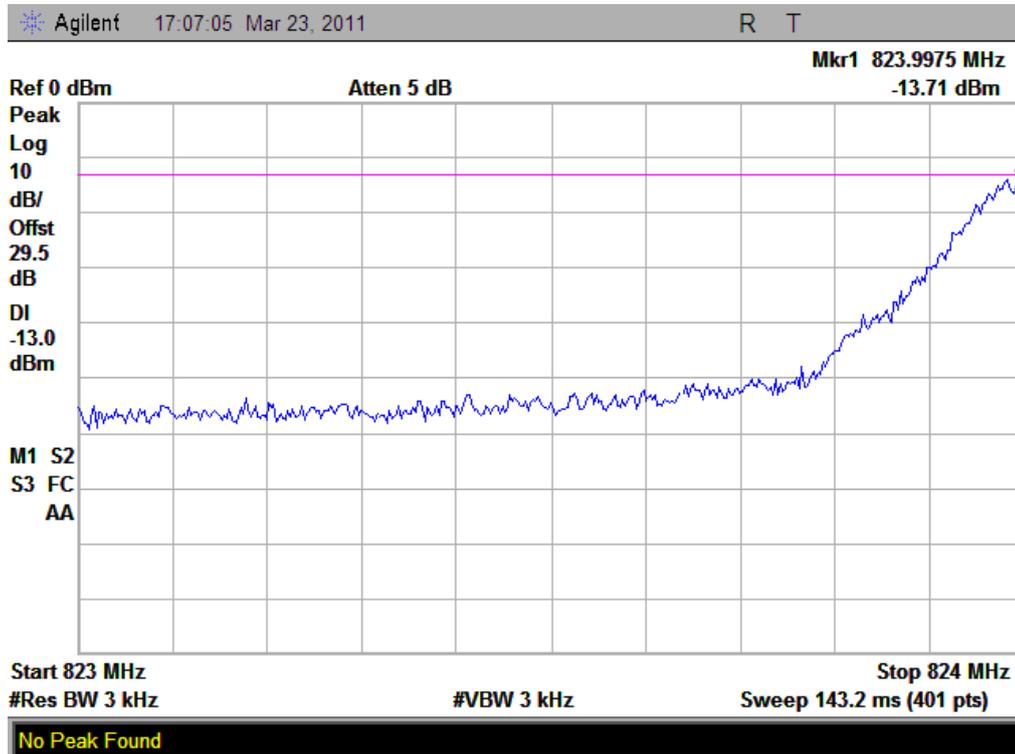
2.5.3 Test Result

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

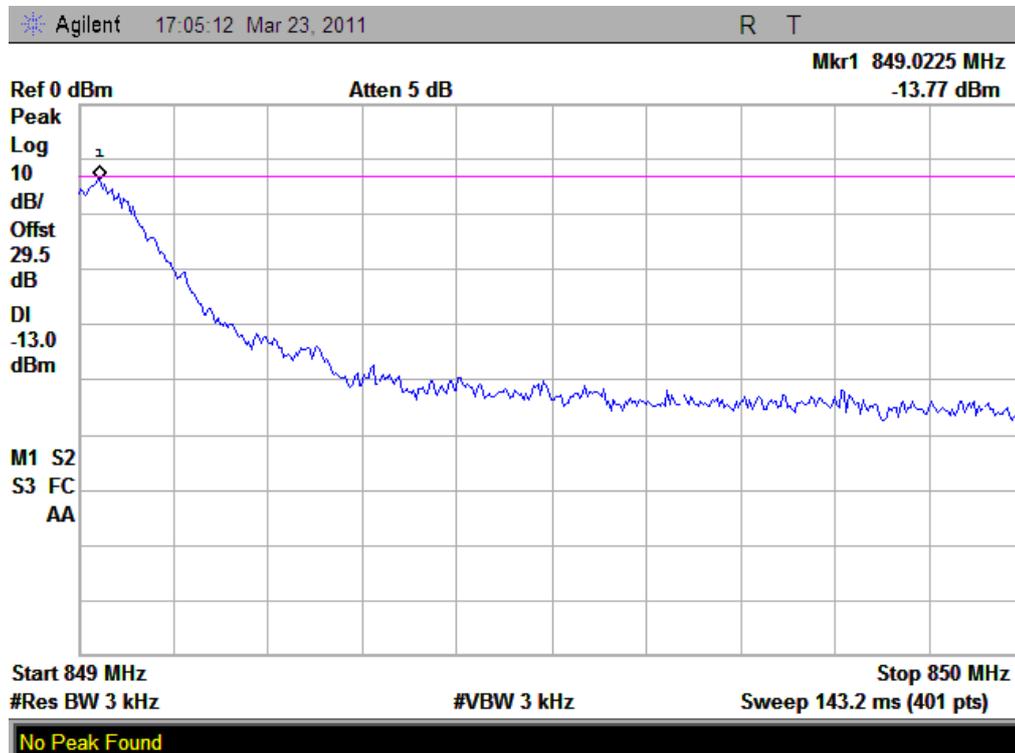
1. Test Verdict:

Band	Channel	Frequency (MHz)	Measured Max. Band Edge Emission (dBm)	Refer to Plot	Limit (dBm)	Verdict
GSM 850MHz	128	824.2	-13.71	Plat A	-13	PASS
	251	848.8	-13.77	Plot B		PASS
GSM 1900MHz	512	1850.2	-24.02	Plat C	-13	PASS
	810	1909.8	-23.77	Plot D		PASS
WCDMA 850MHz	4132	823.98	-39.00	Plat E	-13	PASS
	4233	849.04	-22.98	Plot F		PASS
WCDMA 1900MHz	9262	1849.98	-26.89	Plat G	-13	PASS
	9538	1910.00	-21.44	Plot H		PASS

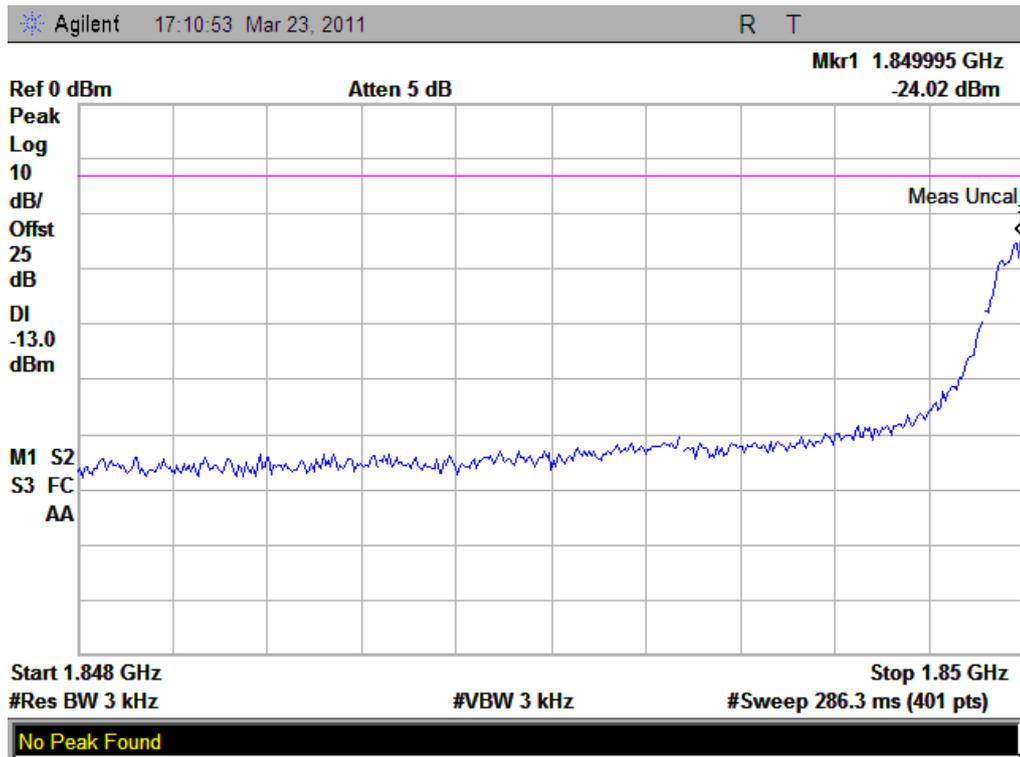
2. Test Plots:



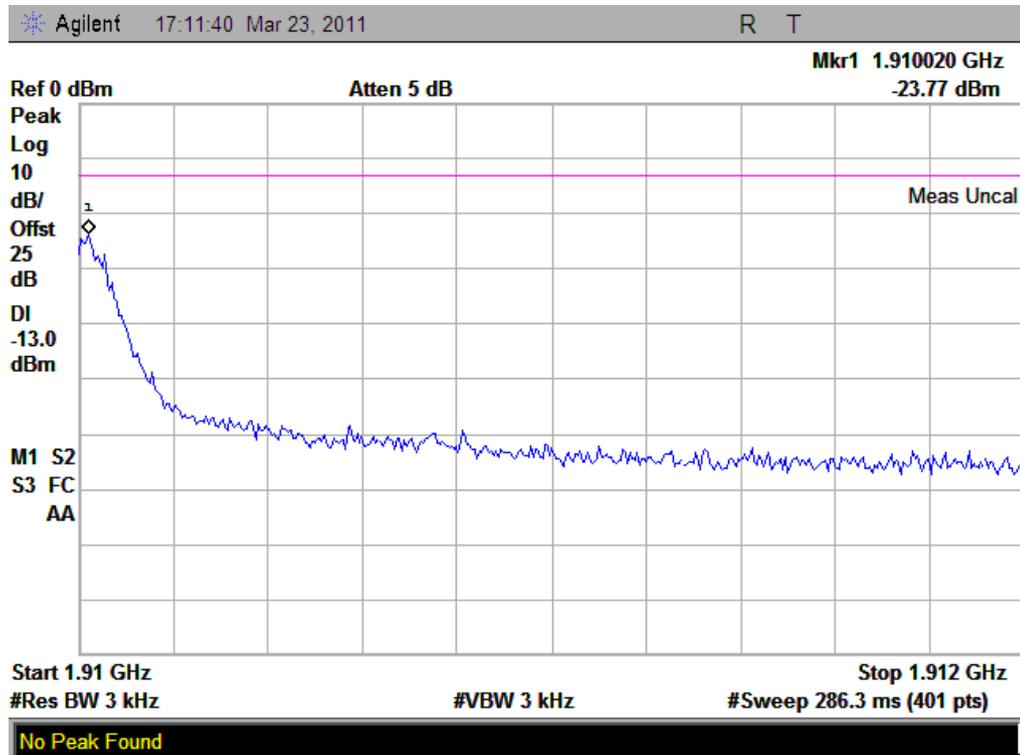
(Plot A: Channel = 128)



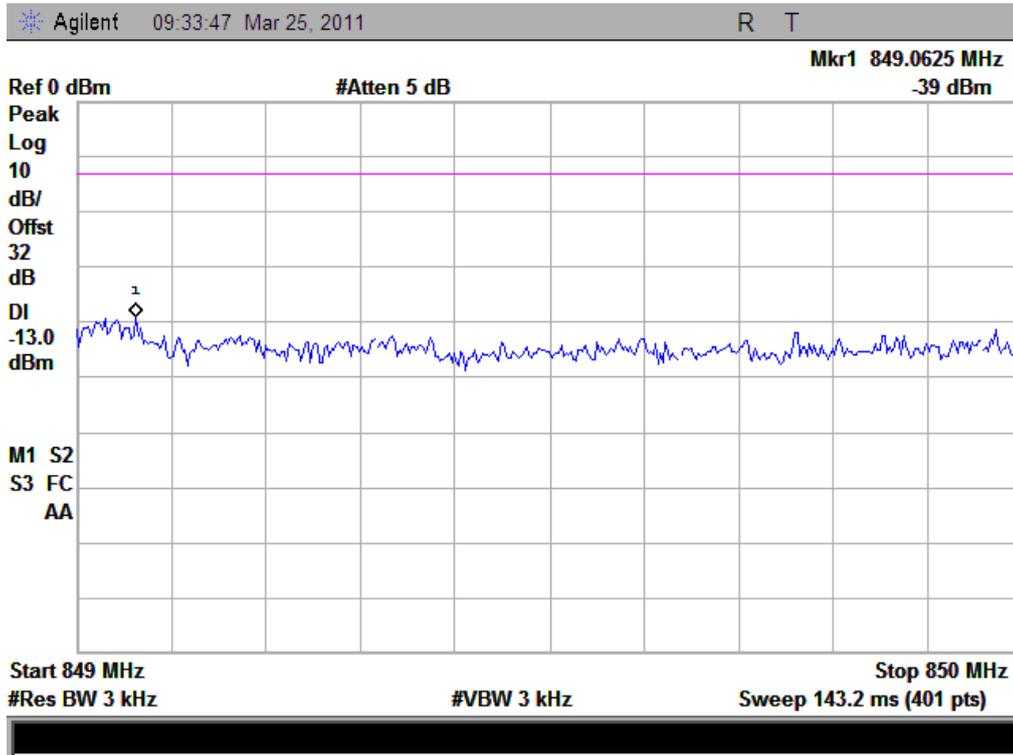
(Plot B: Channel = 251)



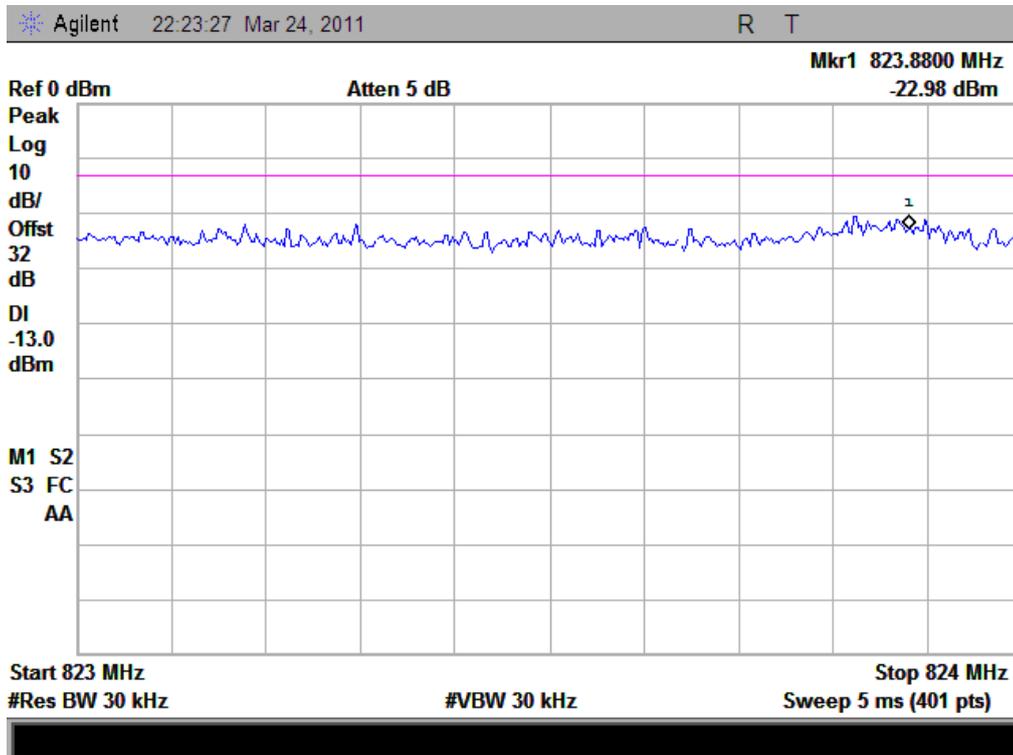
(Plot C: Channel = 512)



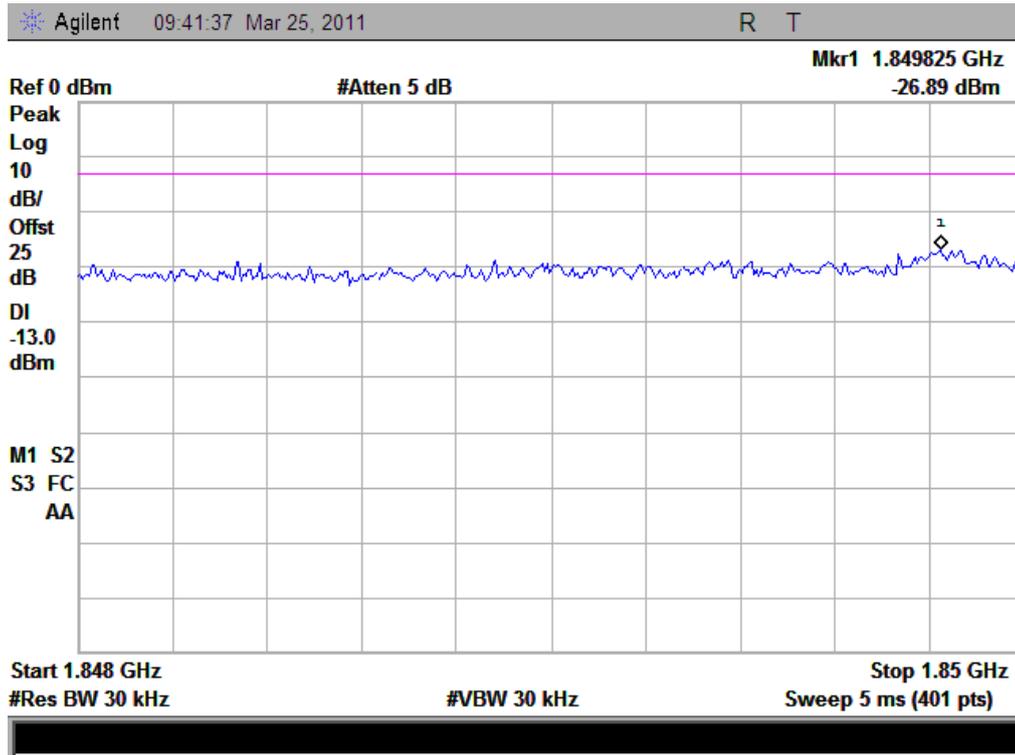
(Plot D: Channel = 810)



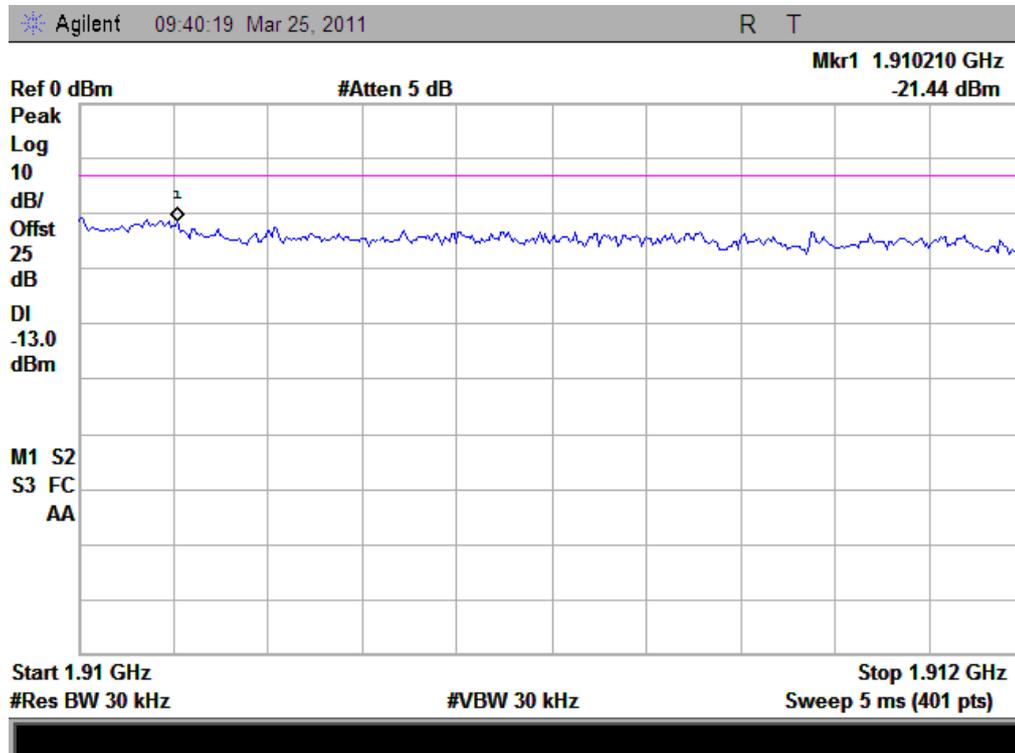
(Plot E: Channel = 128)



(Plot F: Channel = 251)



(Plot G: Channel = 512)



(Plot H: Channel = 810)

** END OF REPORT **