Global Trade Inn,corp.

GSM Mobile Phone

Model: E33

16 September, 2011
Report No.: 11070061-FCC-RF-BT
(This report supersedes NONE)

Modifications made to the product : None

This Test Report is Issued Under the Authority of:	
Andy. wang	Spring zhou
Andy Wang Compliance Engineer	Spring Zhou Technical Manager

This test report may be reproduced in full only.
All Test Data Presented in this report is only applicable to presented Test sample.

RF Test Report
TO: FCC Part 15.247: 2010
SIEMIC, INC.
Accessing global markets

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management through out a project. Our extensive experience with China, Asia Pacific, North America, European, and international compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive

This page has been left blank intentionally.

CONTENTS

1 Executive Summary & EUT information

The purpose of this test programme was to demonstrate compliance of the Global Trade Inn,corp., GSM Mobile Phone , and model: E33 against the current Stipulated Standards. The GSM Mobile Phone has demonstrated compliance with the FCC 15.247:2010.

EUT Information

EUT Description	:	GSM Mobile Phone
Model No	:	E33
Serial No	:	N/A
Input Power	:	DC5.0V 500mA
Classification Per Stipulated Test Standard	:	Spread Spectrum System/Device

2 TECHNICAL DETAILS

Purpose	Compliance testing of GSM Mobile Phone model E33 with stipulated standard
Applicant / Client	Global Trade Inn,corp. Urbanizacion Paitilla Calle 57, Casa 2. Panama city, Panama
Manufacturer	SHENZHEN PHONE-TALK TECHNOLOGY CO.,LTD Tower A 1805, TIAN AN HIGH-TECH PLAZA PHASE I, FUTIAN, SHENZHEN, P.R. CHINA
Laboratory performing the tests	SIEMIC Nanjing (China) Laboratories NO.2-1,Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email:info@siemic.com
Test report reference number	11070061-FCC-RF-BT
Date EUT received	9 September, 2011
Standard applied	FCC 15.247:2010
Dates of test (from – to)	13 September, 2011
No of Units :	#1
Equipment Category :	Spread Spectrum System/Device
Trade Name :	HC5 Live your phone
Model :	E33
RF Operating Frequency (ies)	Bluetooth: 2402MHz-2480MHz GSM850 TX : 824 ~ 849 MHz RX :869 ~ 894 MHz PCS1900 TX : 1850 ~ 1910 MHz RX :1930 ~ 1990 MHz
Number of Channels :	Bluetooth: 79 300 (PCS1900) and 125 (PCS850)
Modulation :	Bluetooth: GFSK, π/4 DPSK, 8DPSK GSM / GPRS/EGPRS: GMSK
FCC ID :	ZWOHC5E33

3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Spread Spectrum System/Device

Test Results Summary

Test Standard 47 CFR Part 15.247:2010	Description	Pass / Fail
15.203	Antenna Requirement	Pass
15.205	Restricted Band of Operation	Pass
15.207(a)	Conducted Emissions Voltage	Pass
15.247(a)(1)	Channel Separation	Pass
15.247(a)(1)	Occupied Bandwidth	Pass
15.247(a)(2)	Bandwidth	Pass
15.247(a)(1)(iii)	Number of Hopping Channels	Pass
15.247(a)(1)(iii)	Time of Occupancy	Pass
15.247(b)(2)	Output Power	Pass
15.247(c)	Antenna Gain > 6 dBi	N/A
15.247(d)	Conducted Spurious Emissions	Pass
15.209;15.247(d)	Radiated Spurious Emissions	Pass
15.247(e)	Power Spectral Density	N/A
15.247(f)	Hybrid System Requirement	N/A
15.247(g)	Hopping Capability	Pass
15.247(h)	Hopping Coordination Requirement	Pass
15.247(i)	RF Exposure requirement	Pass
15.247(d)	100KHz Bandwidth of Frequency Band Edge	Pass
ANSI C63.4: 2009 PS: All measurement uncertainties are not taken into consideration for all presented test result.		

5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 Antenna Requirement

Requirement(s): 47 CFR §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna requirement must meet at least one of the following:

a) Antenna must be permanently attached to the device.

b) Antenna must use a unique type of connector to attach to the device.

c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device.

The antenna is integral antenna, Antenna Type: PCB LAYOUT ANTENNA, antenna gain is 0dBi.

5.2 Conducted Emissions Voltage

Requirement:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

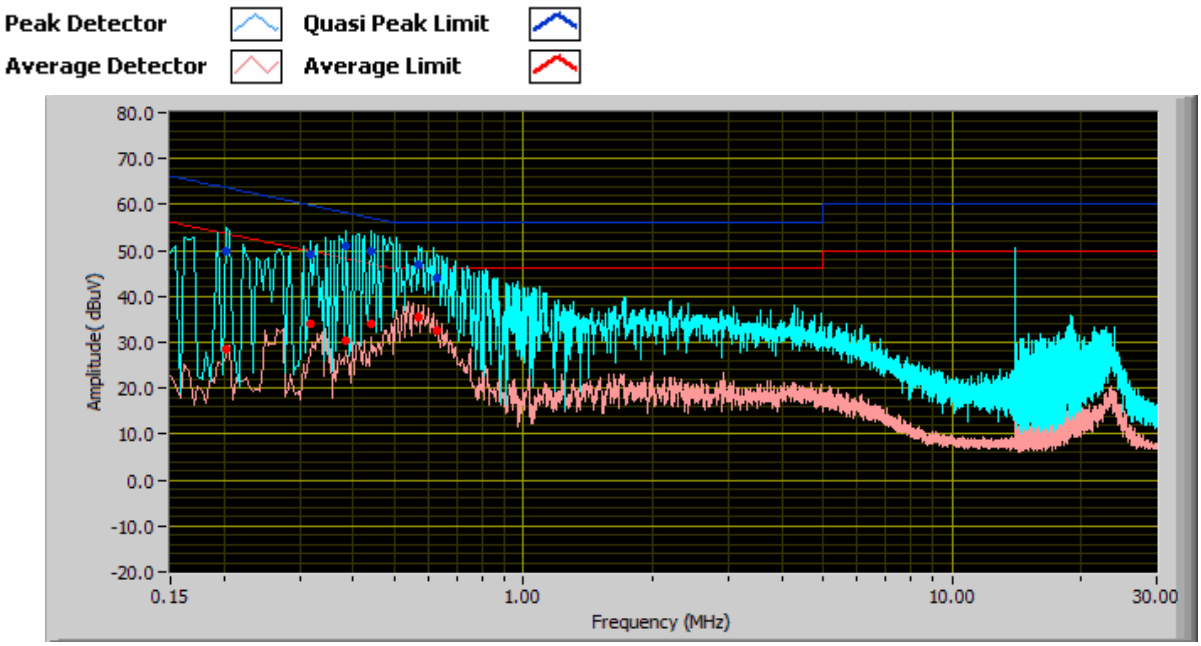
*Decreases with the logarithm of the frequency.

Procedures:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.5dB.
4. Environmental Conditions

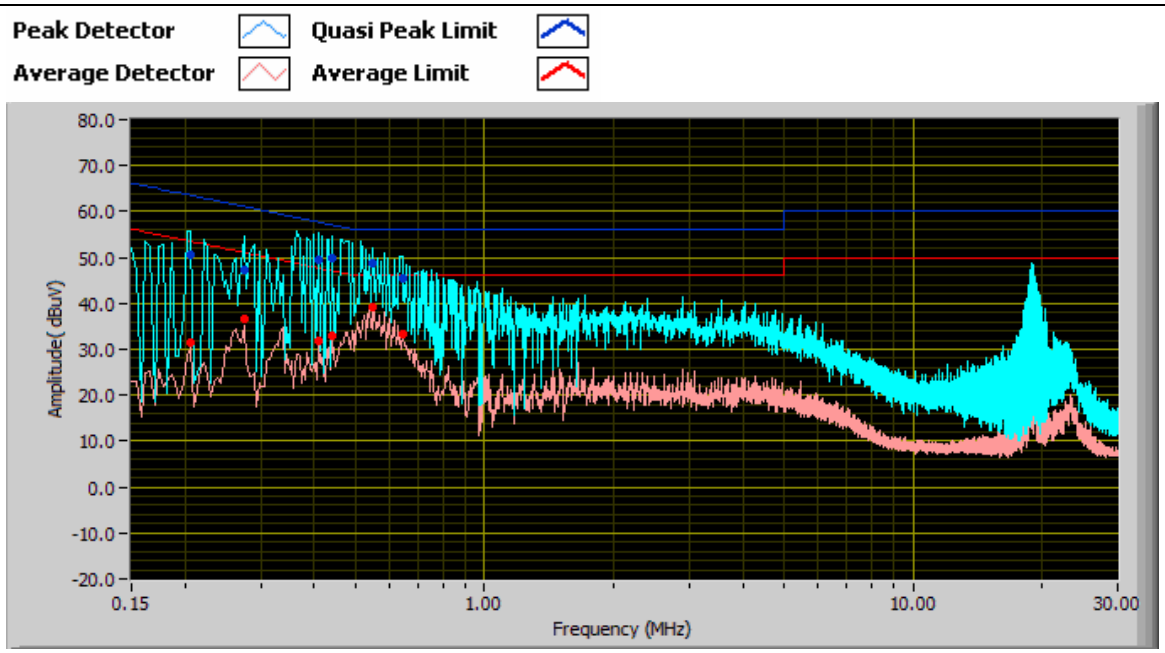
Temperature	23°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

5. Test date :13 September, 2011
   Tested By : Andy Wang



Phase Line Plot at 230Vac, 50Hz

Frequency (MHz)	Quasi Peak (dBuV)	Limit (dBuV)	Margin (dB)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Factors (dB)
0.44	49.95	57.04	-7.09	33.89	47.04	-13.15	10.17
0.39	51.09	58.19	-7.09	30.49	48.19	-17.69	10.17
0.57	46.81	56.00	-9.19	35.49	46.00	-10.51	10.15
0.63	44.06	56.00	-11.94	32.60	46.00	-13.40	10.14
0.32	49.04	59.83	-10.79	33.91	49.83	-15.92	10.19
0.20	49.71	63.67	-13.96	28.64	53.67	-25.03	10.29



Phase Neutral Plot at 230Vac, 50Hz

Frequency (MHz)	Quasi Peak (dBuV)	Limit (dBuV)	Margin (dB)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Factors (dB)
0.41	49.47	57.68	-8.21	31.88	47.68	-15.80	10.17
0.44	49.77	57.04	-7.27	32.80	47.04	-14.24	10.17
0.55	48.66	56.00	-7.34	39.15	46.00	-6.85	10.16
0.64	45.40	56.00	-10.60	33.49	46.00	-12.51	10.14
0.27	47.44	61.09	-13.65	36.75	51.09	-14.34	10.22
0.21	50.51	63.50	-12.99	31.32	53.50	-22.18	10.28

5.3 Channel Separation

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions — Temperature 22°C; Relative Humidity 50%; Atmospheric Pressure 1019mbar
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test date : 13 September, 2011
   Tested By : Andy Wang

Requirement(s): According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Procedures:

1. Place the EUT on the table and set it in hopping function transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set center frequency of spectrum analyzer = middle of hopping channel.

4. Set the spectrum analyzer as Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span, Video (or Average) Bandwidth (VBW) ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

5. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

Configuration: Bluetooth Mode, Basic Rate

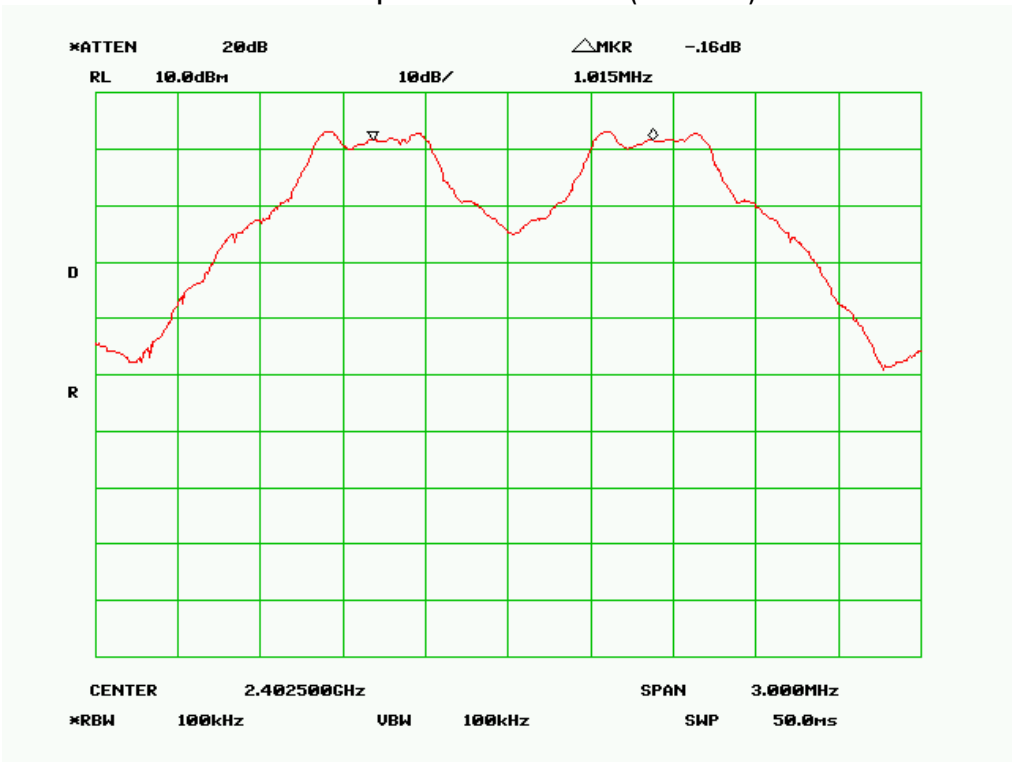
Channel	Channel Frequency (MHz)	Channel Separation (MHz)	2/3 20dB Bandwidth (MHz)
Low	2402	1.015	0.737
Mid	2441	1.015	0.733
High	2480	1.000	0.737

Configuration: Bluetooth Mode, EDR 3Mbps

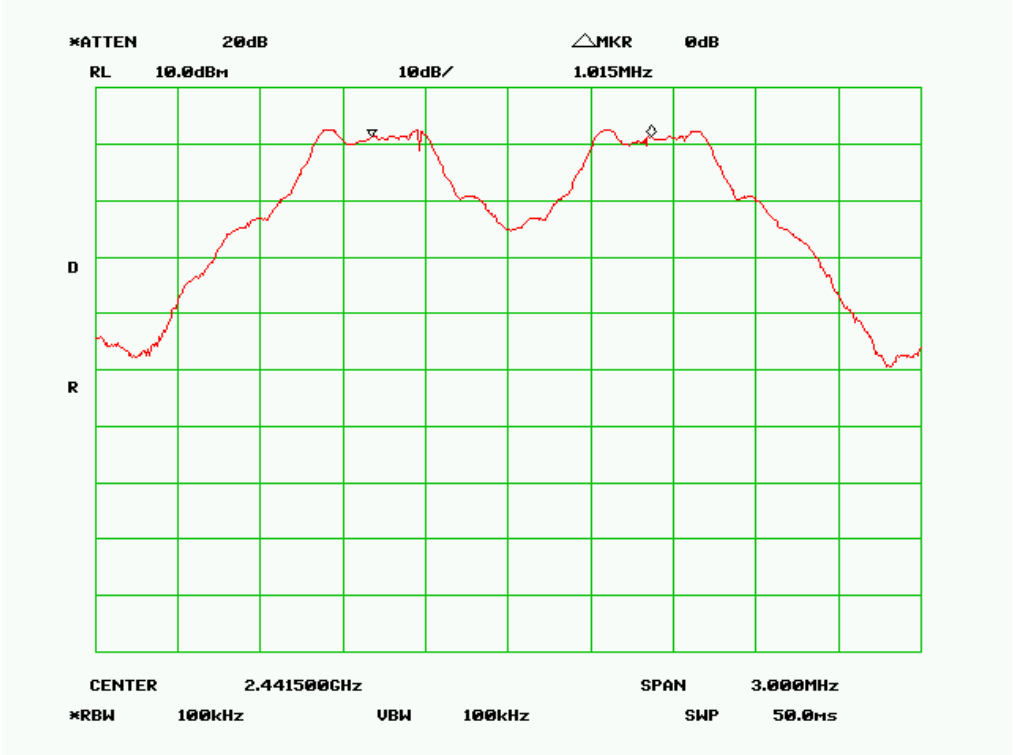
Channel	Channel Frequency (MHz)	Channel Separation (MHz)	2/3 20dB Bandwidth (MHz)
Low	2402	1.015	0.956
Mid	2441	1.010	0.945
High	2480	1.025	0.987

Refer to the attached plots.

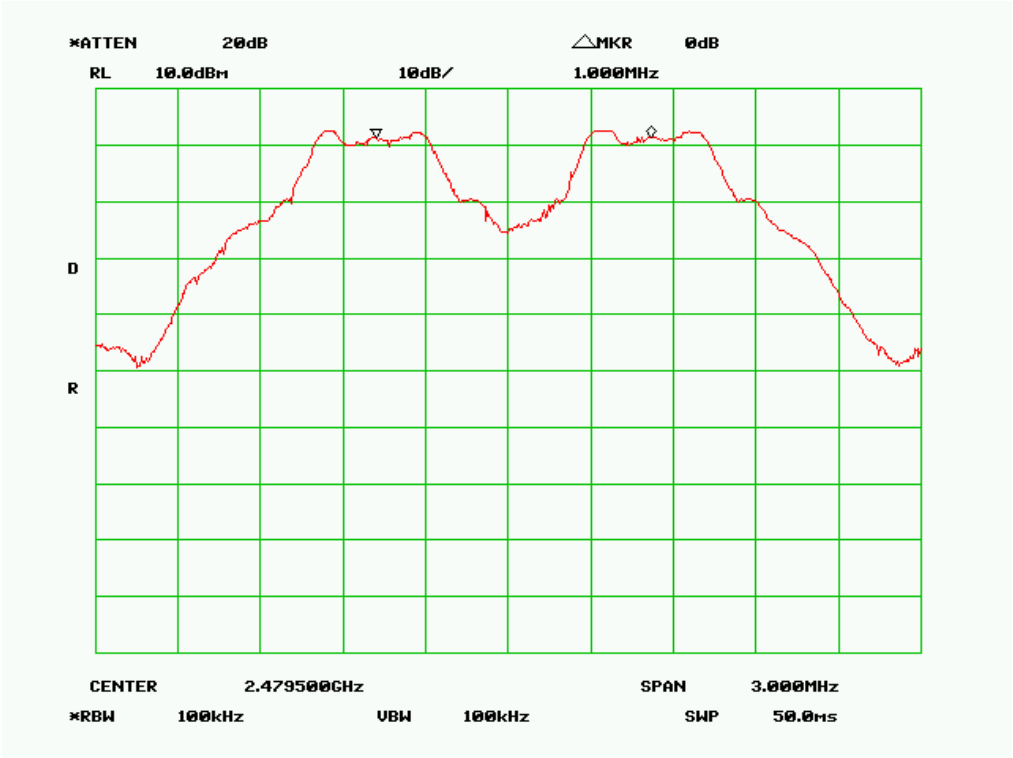
Channel Separation – Low Channel (Basic Rate)



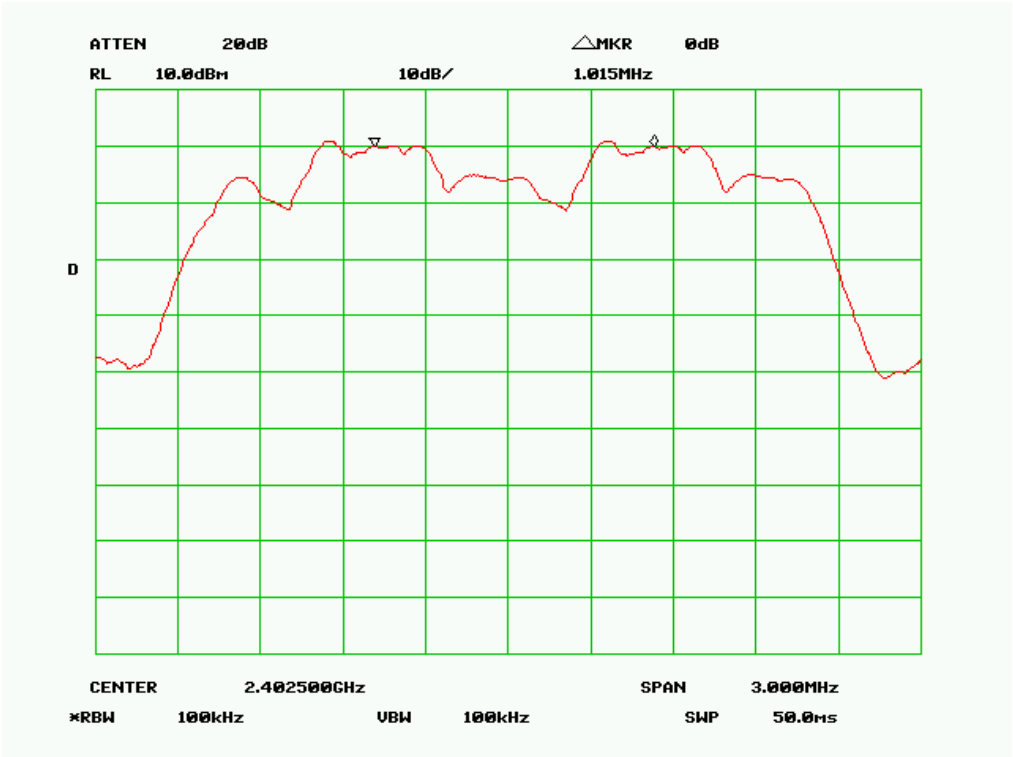
Channel Separation – Mid Channel (Basic Rate)



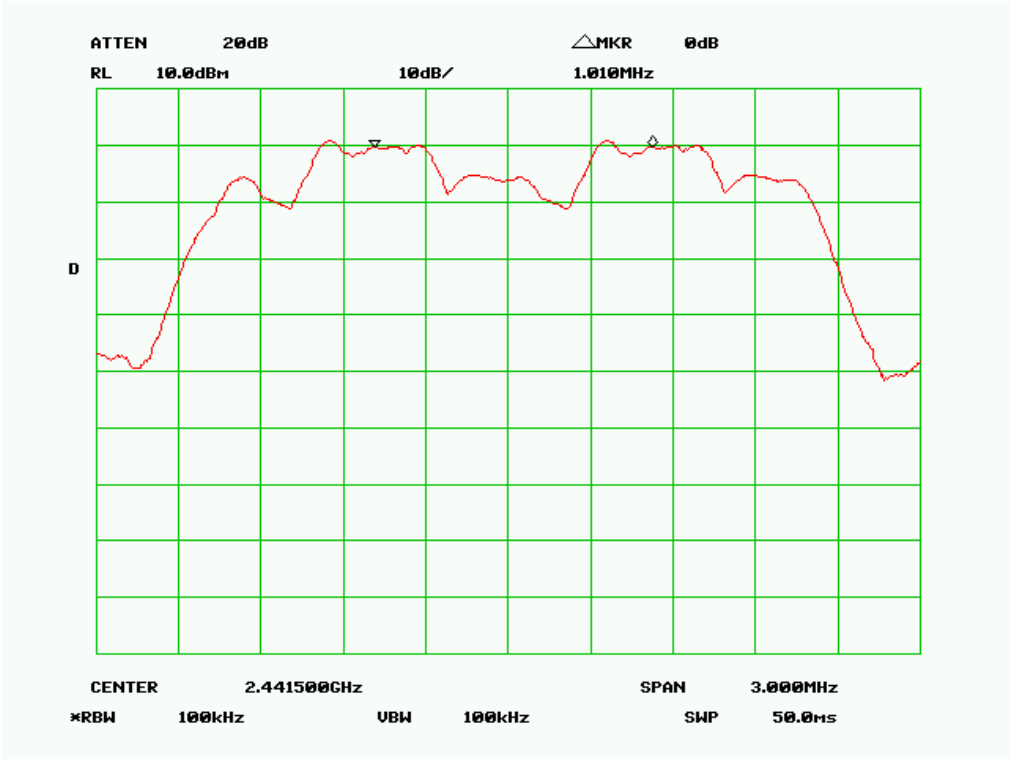
Channel Separation – High Channel (Basic Rate)



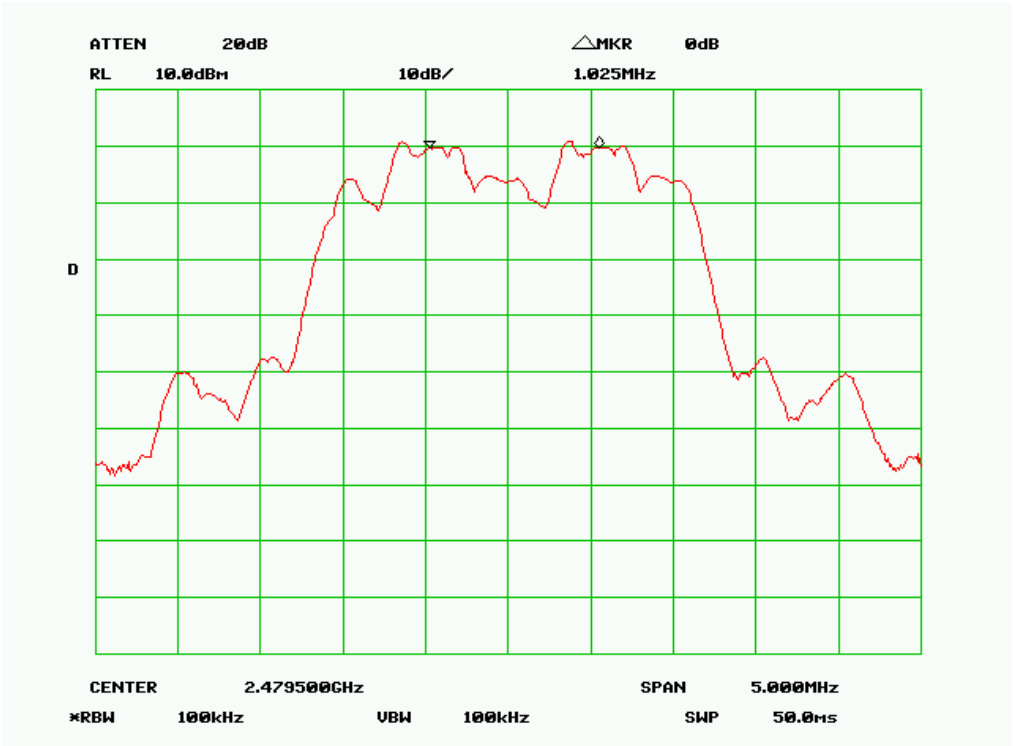
Channel Separation – Low Channel (EDR 3Mbps)



Channel Separation – Mid Channel (EDR 3Mbps)



Channel Separation – High Channel (EDR 3Mbps)



5.4 20dB Occupied Bandwidth

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Environmental Conditions — Temperature 22°C; Relative Humidity 50%; Atmospheric Pressure 1019mbar
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
4. Test date : 13 September, 2011
   Tested By : Andy Wang

Requirement(s): According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Procedures:

1. Place the EUT on the table and set it in transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3.

4. Set the spectrum analyzer as Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel, RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

5. Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.

Configuration: Bluetooth Mode, Basic Rate

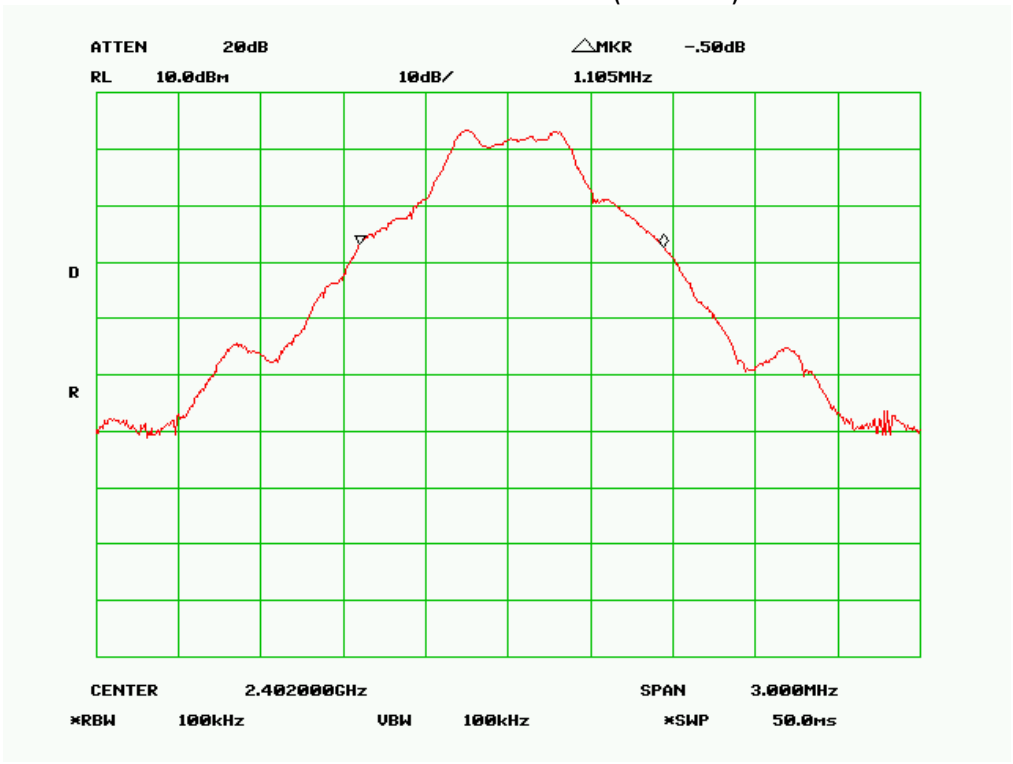
Channel	Channel Frequency (MHz)	20 dB Channel Bandwidth (MHz)	Result
Low	2402	1.105	Pass
Mid	2441	1.100	Pass
High	2480	1.105	Pass

Configuration: Bluetooth Mode, EDR 3Mbps

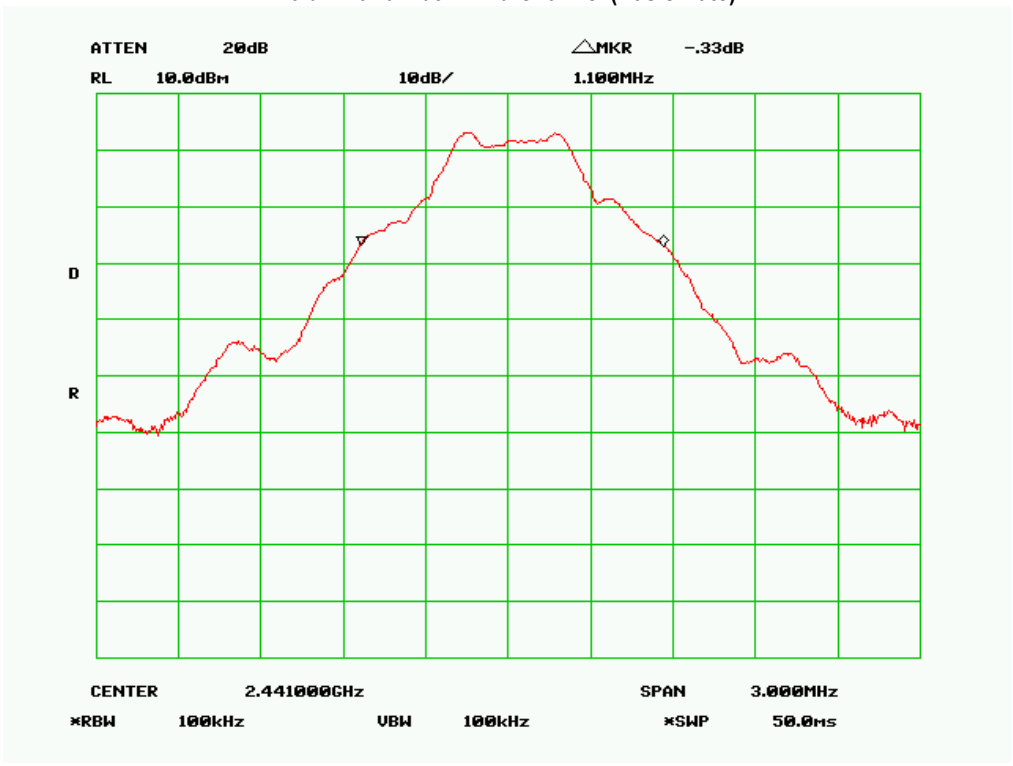
Channel	Channel Frequency (MHz)	20 dB Channel Bandwidth (MHz)	Result
Low	2402	1.433	Pass
Mid	2441	1.417	Pass
High	2480	1.481	Pass

Refer to the attached plots.

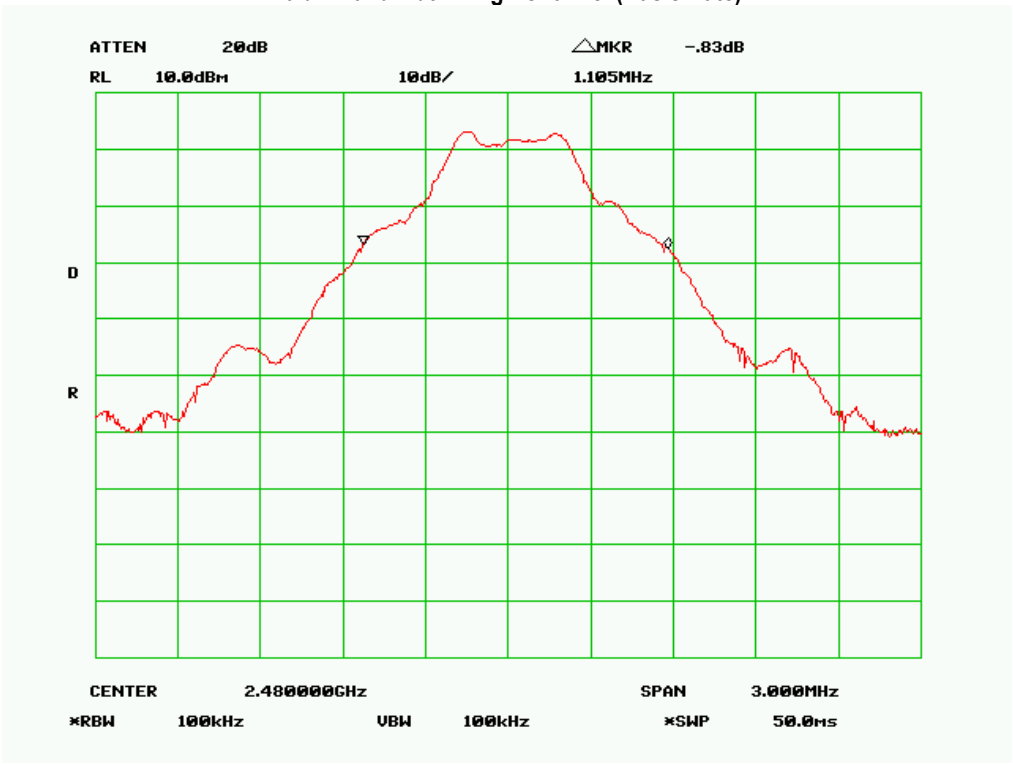
20 dB Bandwidth - Low Channel (Basic Rate)



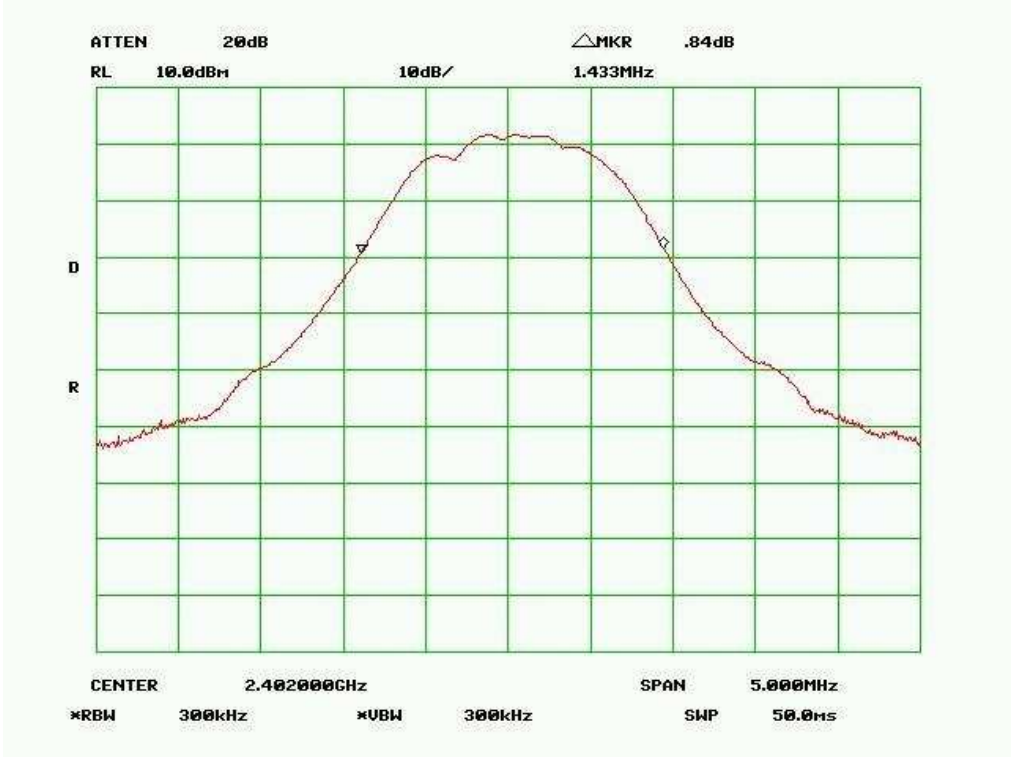
20 dB Bandwidth - Mid Channel (Basic Rate)



20 dB Bandwidth - High Channel (Basic Rate)

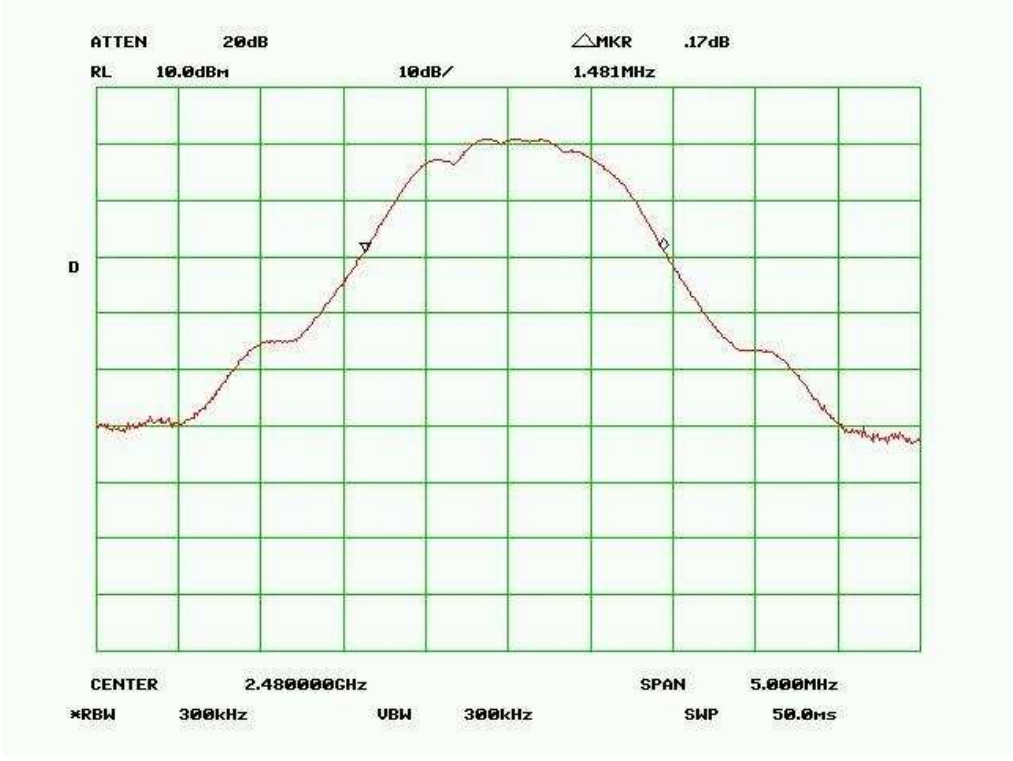


20 dB Bandwidth - Low Channel (EDR 3Mbps)



20 dB Bandwidth - Mid Channel (EDR 3Mbps)

20 dB Bandwidth - High Channel (EDR 3Mbps)



5.5 Number of Hopping Channel

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

4. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement:

According to §15.247(a)(1)(iii), Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

Procedures:

1. Place the EUT on the table and set it in hopping function transmitting mode.

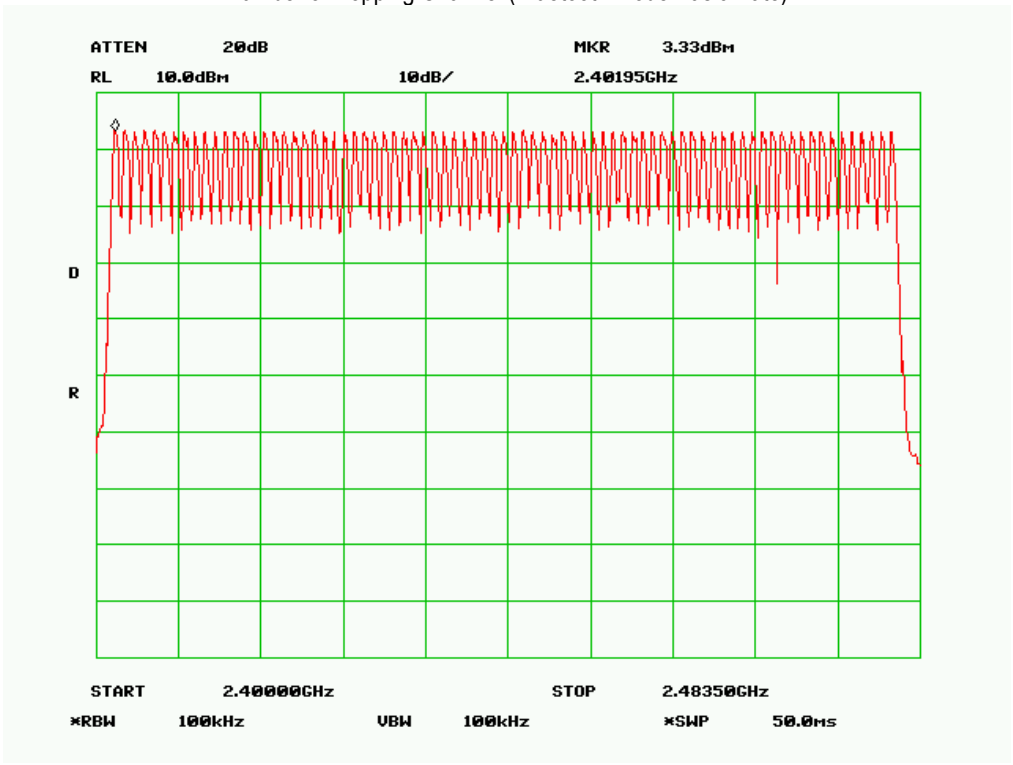
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as Start=2400MHz, Stop = 2483.5MHz, Span = the frequency band of operation, RBW ≥1% of the span, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

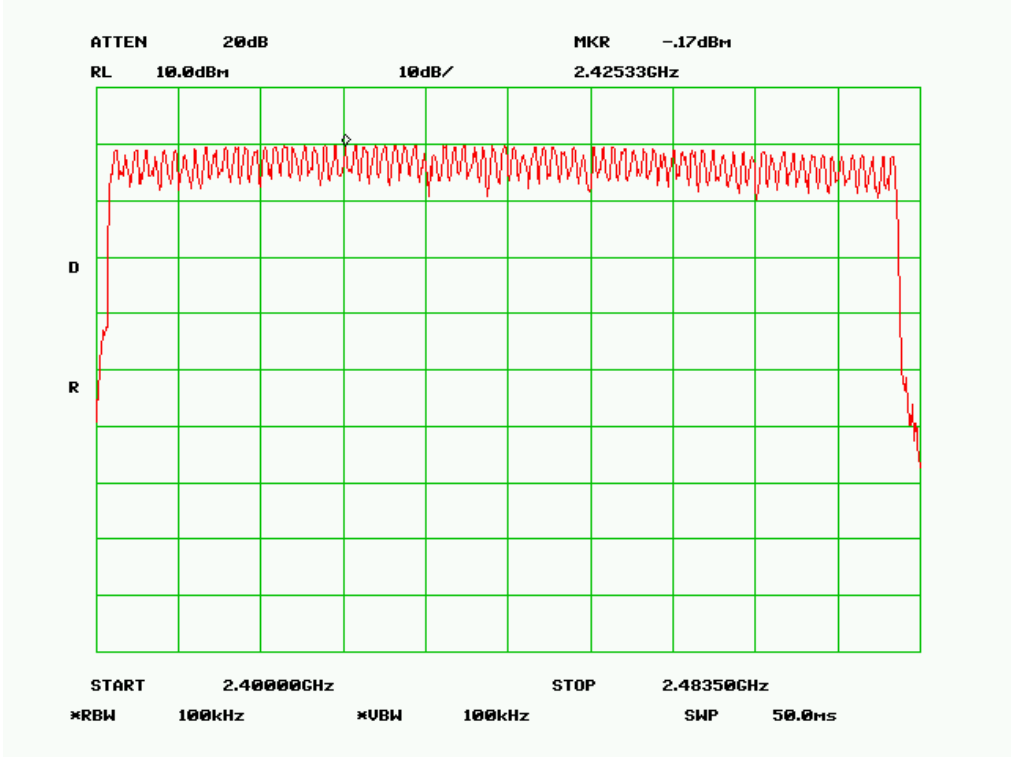
4. Count the quantity of peaks to get the number of hopping channels.

Test Result:
Total Channel: 79 Channels

Number of Hopping Channel (Bluetooth Mode Basic Rate)



Number of Hopping Channel (Bluetooth Mode EDR 3Mbps)



5.6 Time of Occupancy

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

4. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement:

According to §15.247(a)(1)(iii), The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used

Procedures:

1. Place the EUT on the table and set it in transmitting mode and switch on frequency hopping function.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as Span = zero span, centered on a hopping channel,
RBW=1MHz, VBW ≥ RBW, Sweep = as necessary to capture the entire dwell time per hopping channel, Detector function = peak, Trace = max hold.
4. Calculate the time of occupancy in a period with time occupancy of a burst and quantity of bursts.

Test Result: Pass

Configuration: Bluetooth Mode, Basic Rate

DH1: 0.50 * (1600/2)/79 * 31.6 =160.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	0.50	31.60	160.00	400	PASS

Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

DH3: 1.80 * (1600/4)/79 * 31.6 = 288.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	1.80	31.60	288.00	400	PASS

Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

DH5: 0.90* (1600/6)/79 * 31.6 = 96.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	0.90	31.60	96.00	400	PASS

Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

Configuration: Bluetooth Mode EDR 3Mbps

DH1: 0.60* (1600/2)/79 * 31.6 = 192.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	0.60	31.60	192.00	400	PASS

Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

DH3: 1.70 * (1600/4)/79 * 31.6 = 272.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	1.70	31.60	272.00	400	PASS

Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

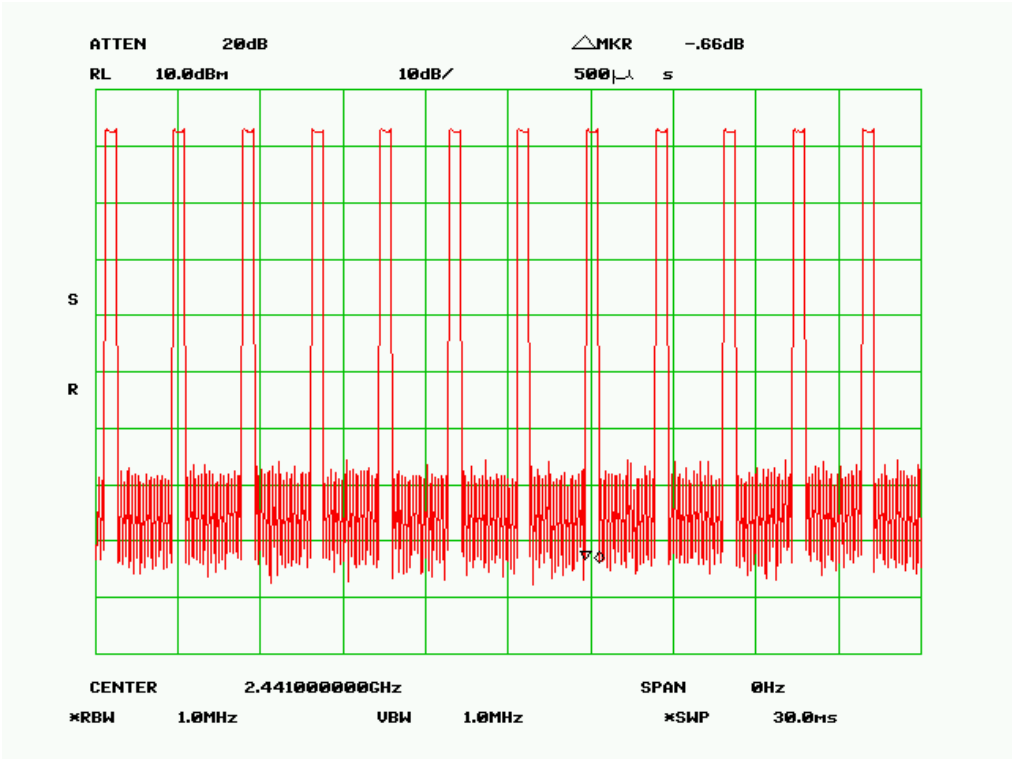
DH5: 3.00 * (1600/6)/79 * 31.6 = 320.00 (ms)

Channel	Channel Frequency (MHz)	Pulse Time (ms)	Period Time (s)	Total of Dwell (ms)	Limit (ms)	Result
Mid	2441	3.00	31.60	320.00	400	PASS

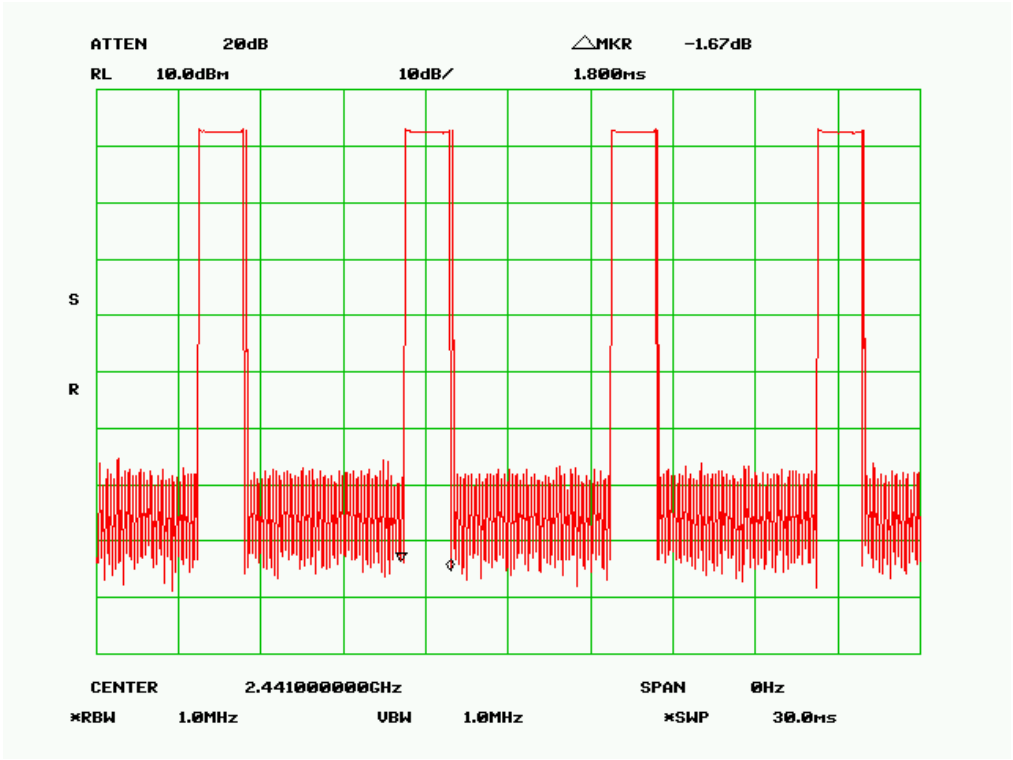
Note: *Dwell Time* = On-time * number of times the specific channel on during 31.6sec sweep.

Test Plot

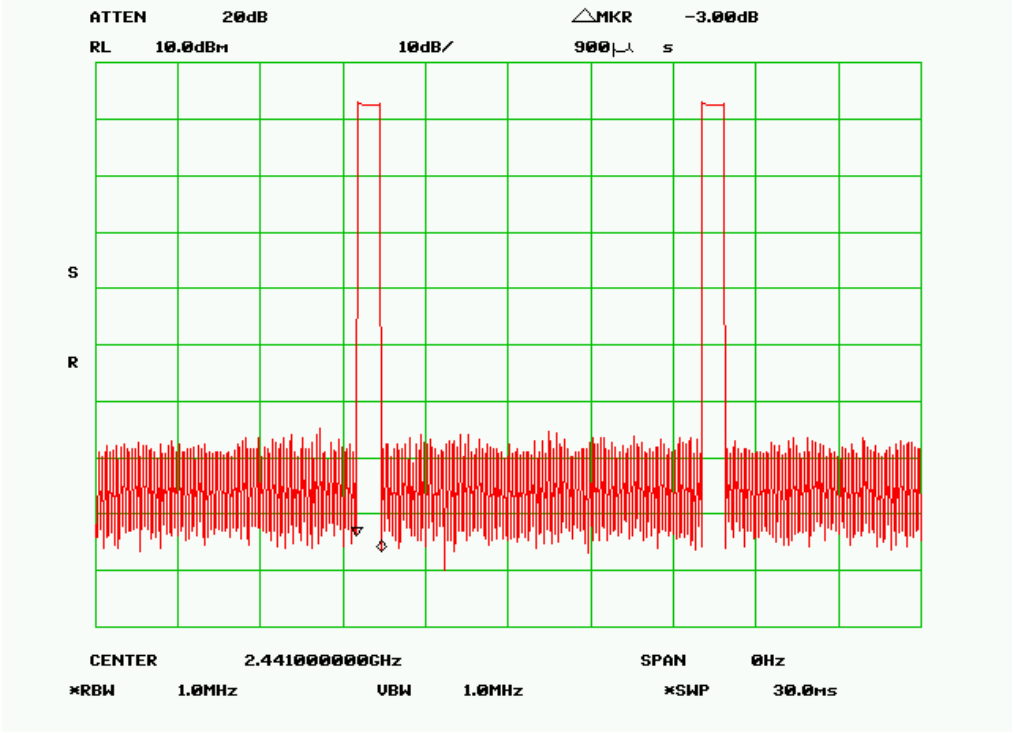
Bluetooth Mode, Basic Rate DH 1



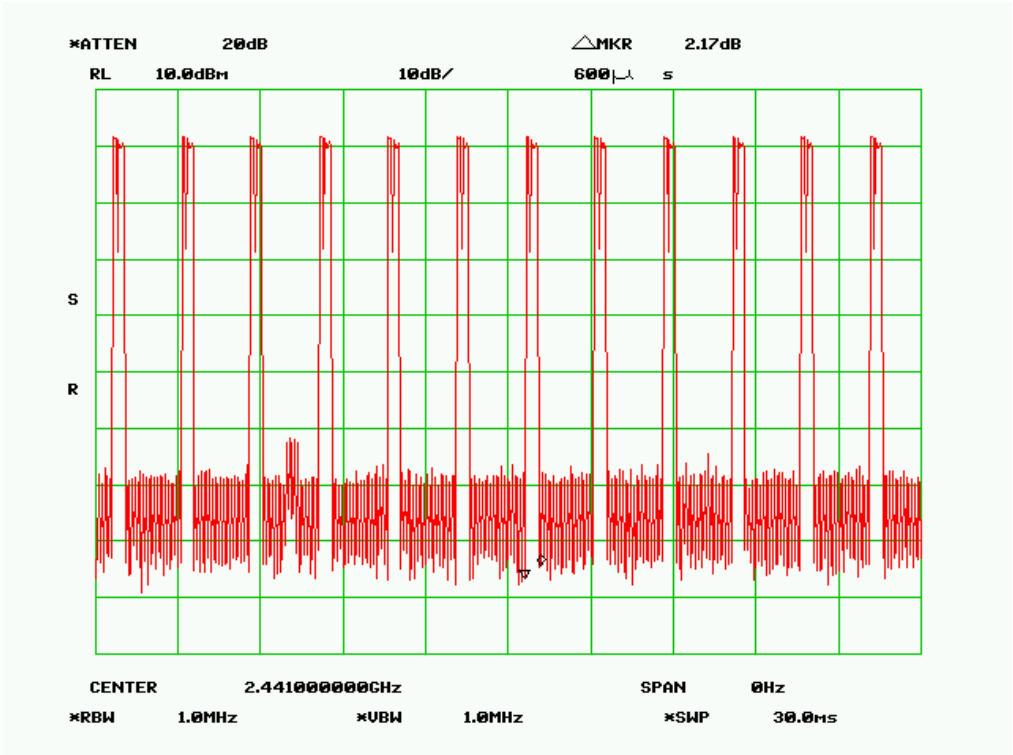
Bluetooth Mode, Basic Rate DH 3



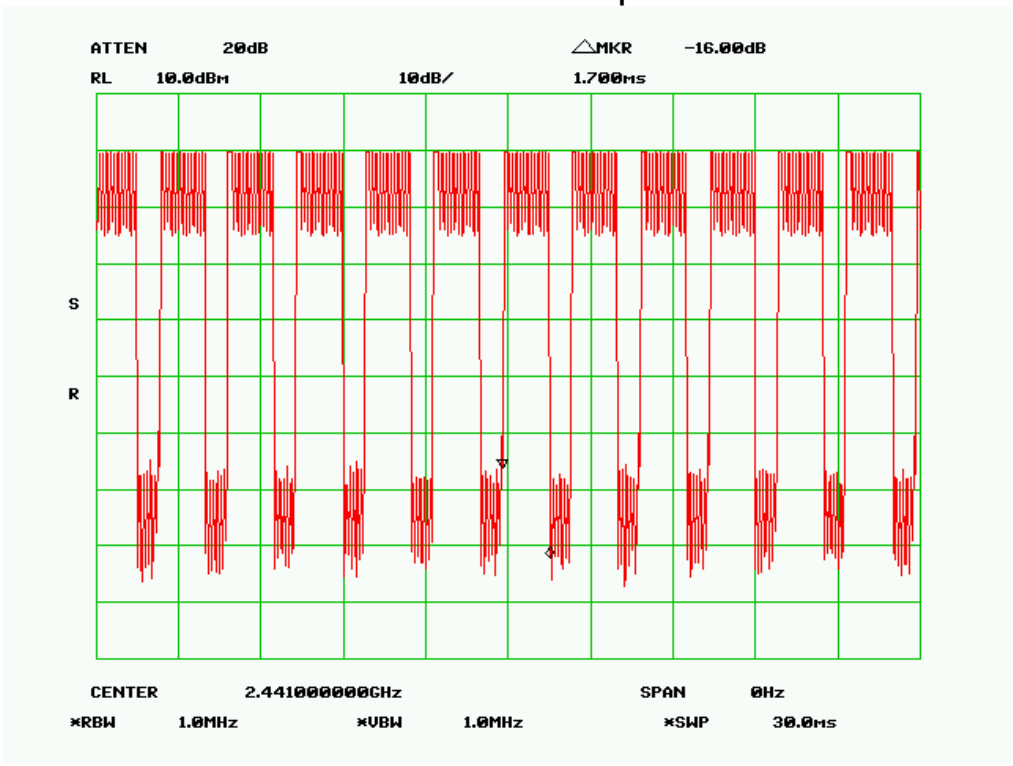
Bluetooth Mode, Basic Rate DH 5



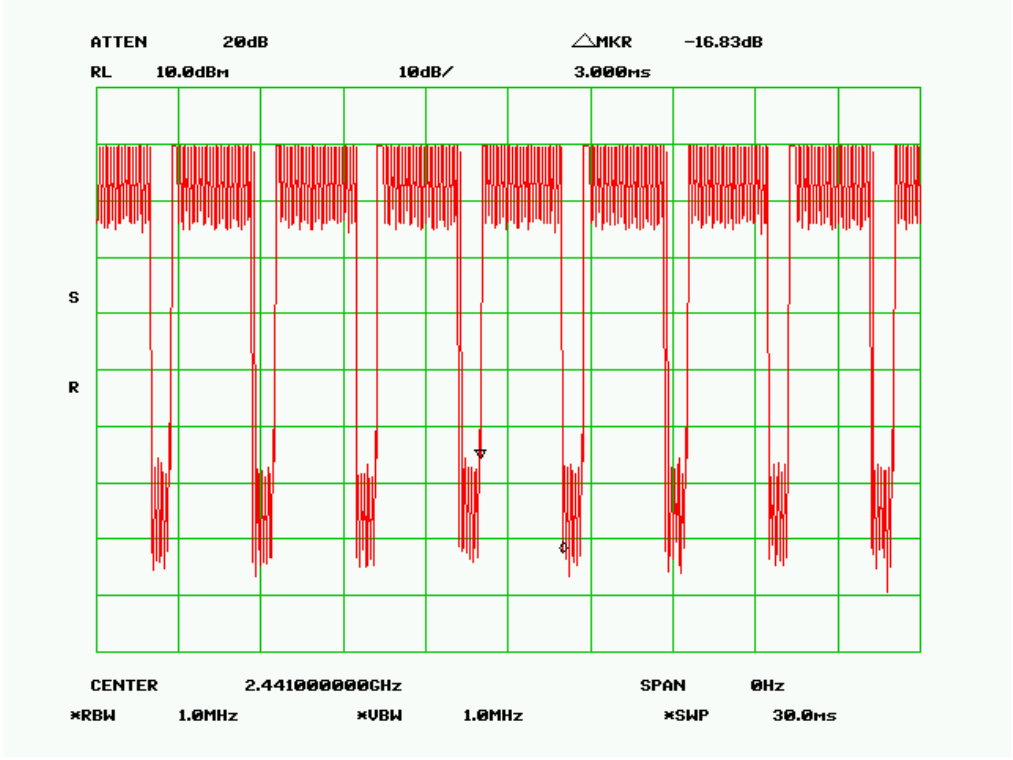
Bluetooth Mode EDR 3Mbps DH 1



Bluetooth Mode EDR 3Mbps DH 3



Bluetooth Mode EDR 3Mbps DH 5



5.7 Peak Output Power

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

4. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement:

According to §15.247(b)(2), For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5MHz band: 0.125watts.

Procedures:

1. Place the EUT on the table and set it in transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel, RBW > the 20 dB bandwidth of the emission being measured, VBW ≥ RBW, Sweep=auto, Detector function=peak, Trace = max hold.

4. Then set the EUT to transmit at low, middle and high channel and measure the conducted output power separately.

Test Result: Pass

Configuration: Bluetooth Mode Basic Rate

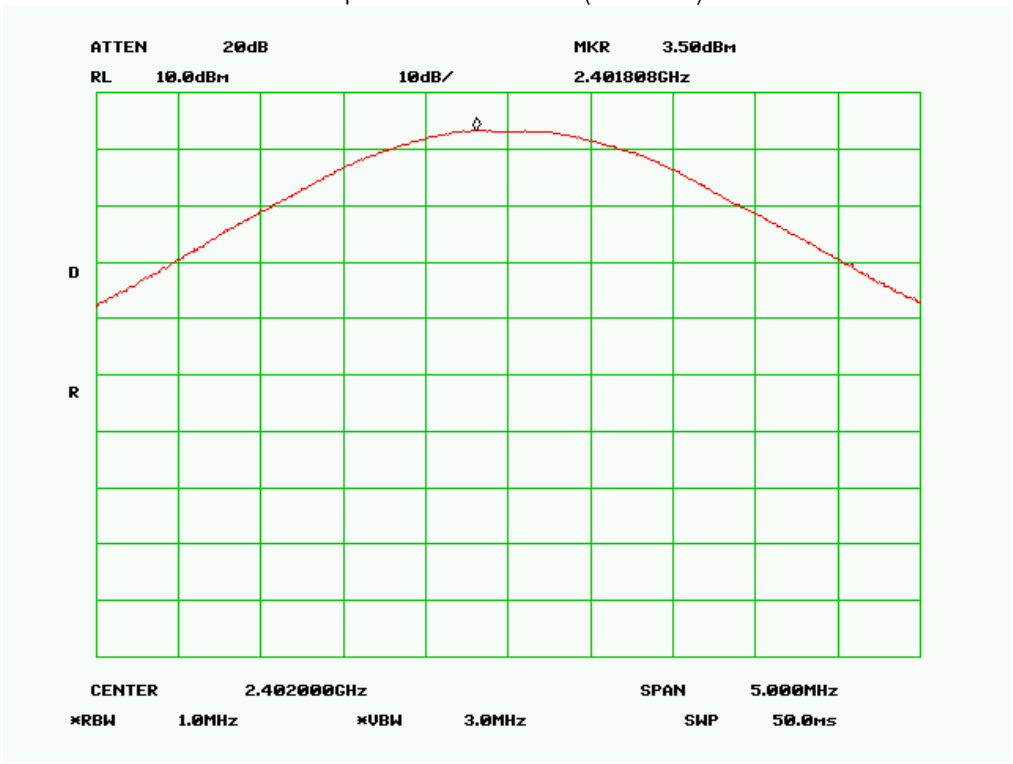
Channel	Channel Frequency (MHz)	Measured Output Power (dBm)	Peak Output Power Limit (dBm)
Low	2402	3.50	20.97
Mid	2441	3.33	20.97
High	2480	3.17	20.97

Configuration: Bluetooth Mode EDR 3Mbps

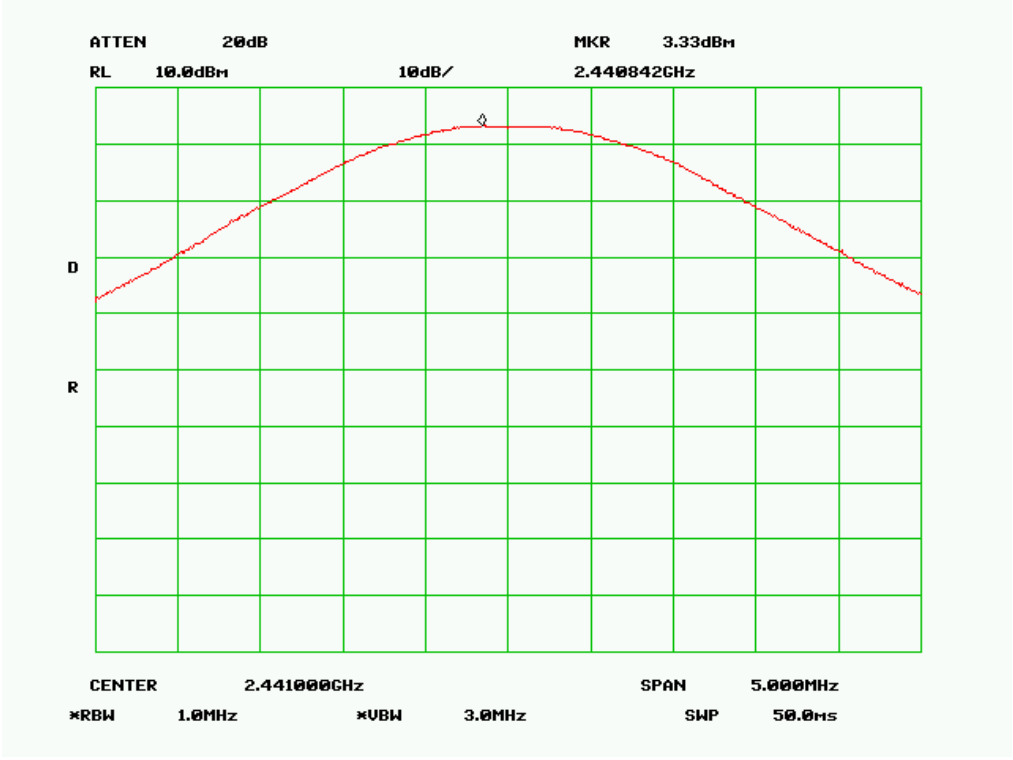
Channel	Channel Frequency (MHz)	Measured Output Power (dBm)	Peak Output Power Limit (dBm)
Low	2402	2.33	20.97
Mid	2441	2.00	20.97
High	2480	2.17	20.97

Refer to the attached plots.

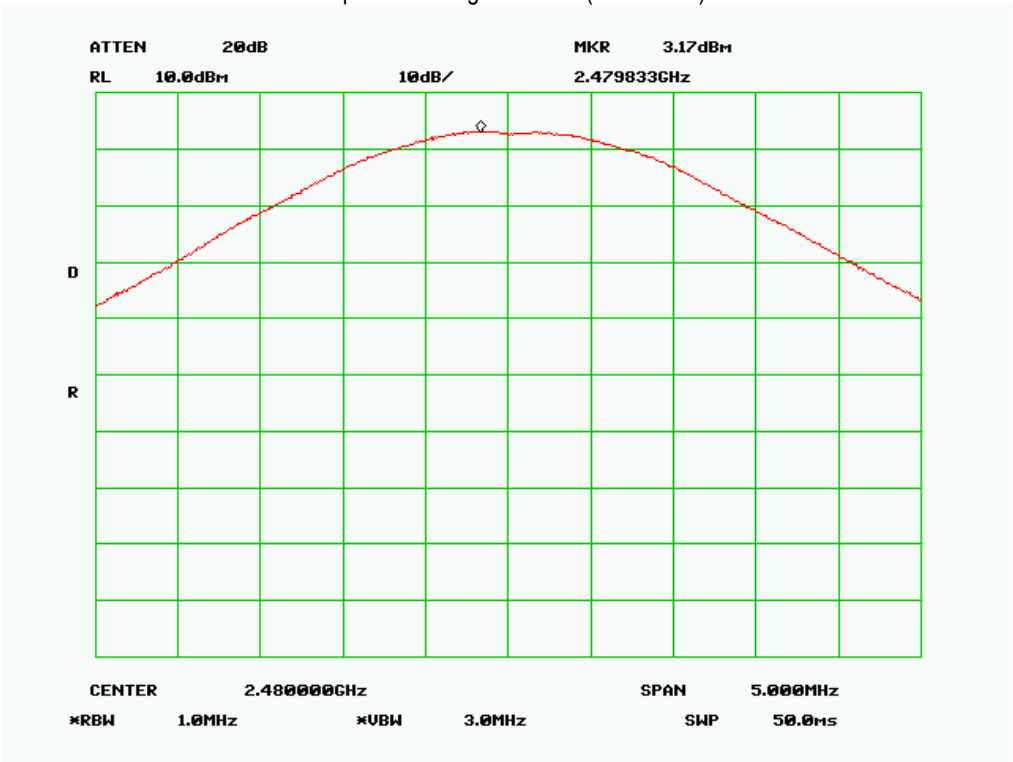
Output Power Low Channel (Basic Rate)



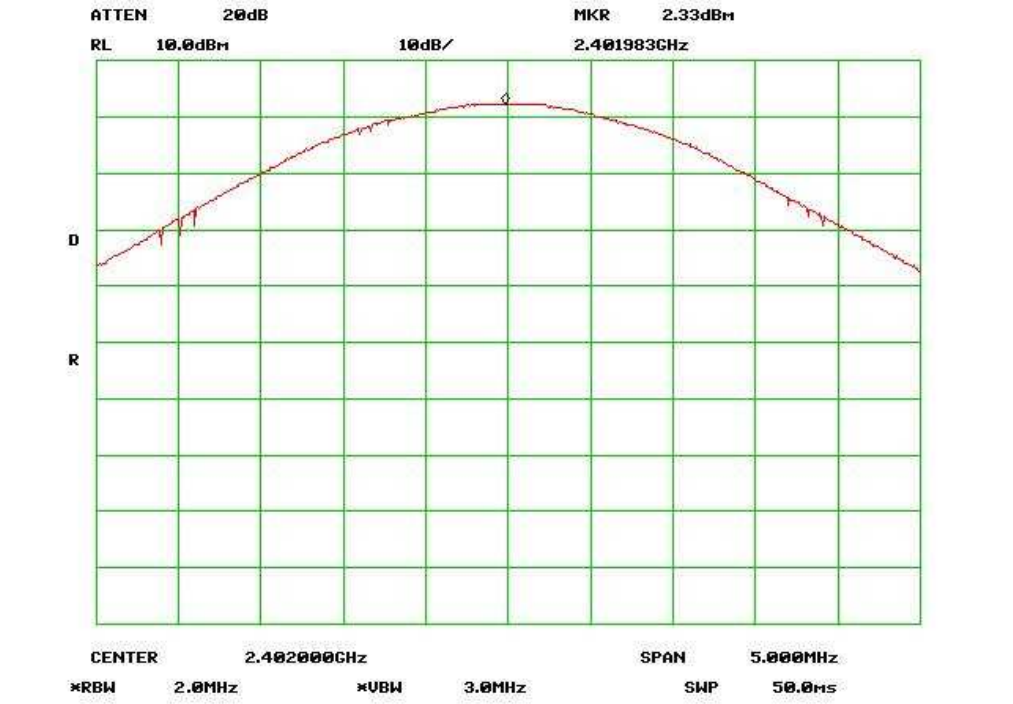
Output Power Mid Channel (Basic Rate)



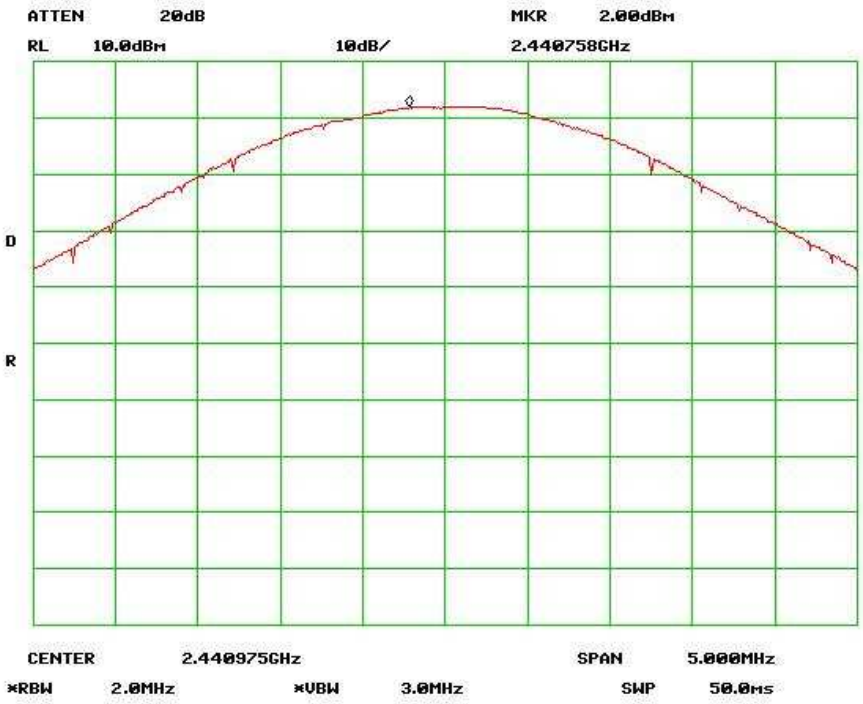
Output Power High Channel (Basic Rate)



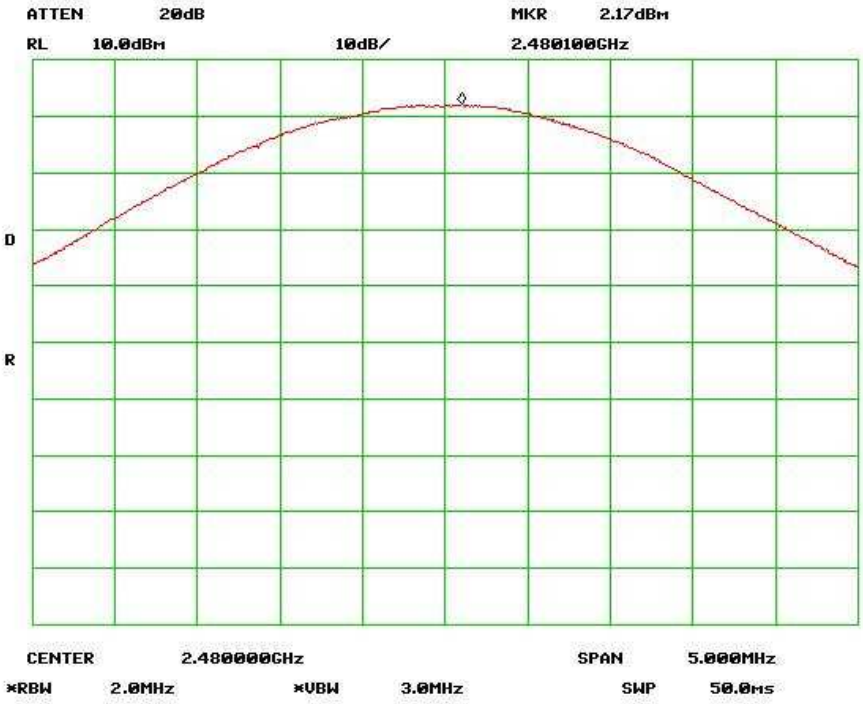
Output Power Low Channel (EDR 3Mbps)



Output Power Mid Channel (EDR 3Mbps)



Output Power High Channel (EDR 3Mbps)



5.8 Antenna Port Emission

1. Conducted Measurement
   EUT was set for low, mid, high channel with modulated mode and highest RF output power.
   The spectrum analyzer was connected to the antenna terminal.
2. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 40GHz is ±1.5dB.
3. Environmental Conditions

Temperature	22°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

4. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement:

According to §15.247(d), Radiated emission limits: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

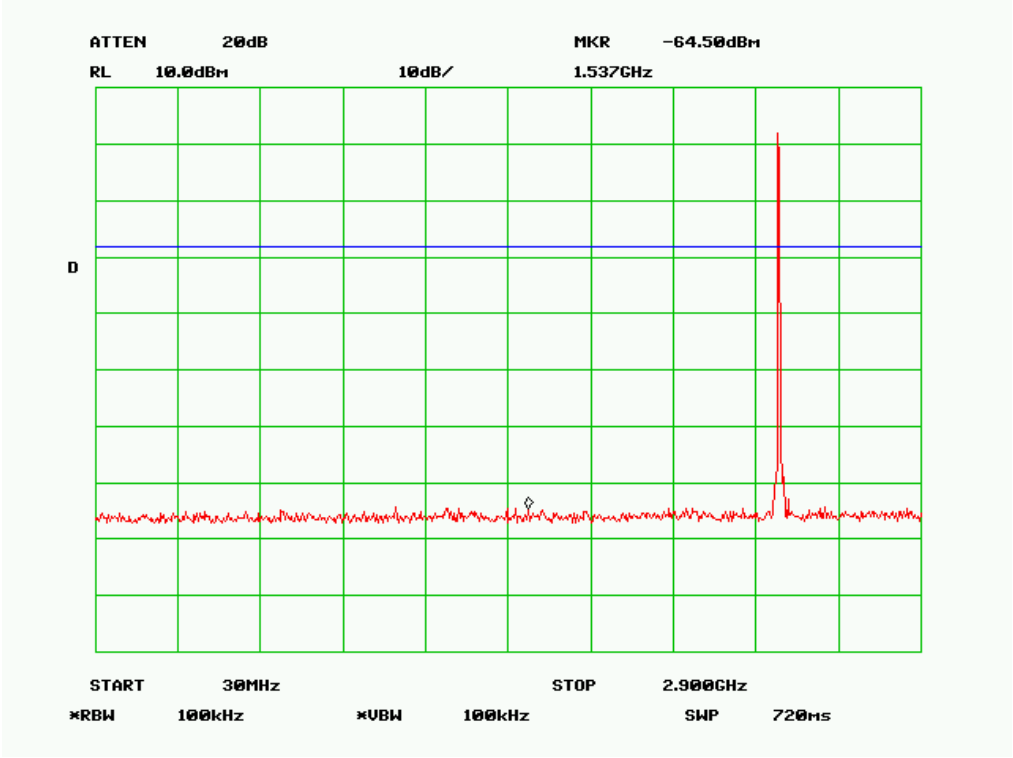
Procedures:

1. Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.
2. The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 100 KHz.
3. Measurements are made over the 30MHz to 26GHz range with the transmitter set to the low, middle, and high channels.

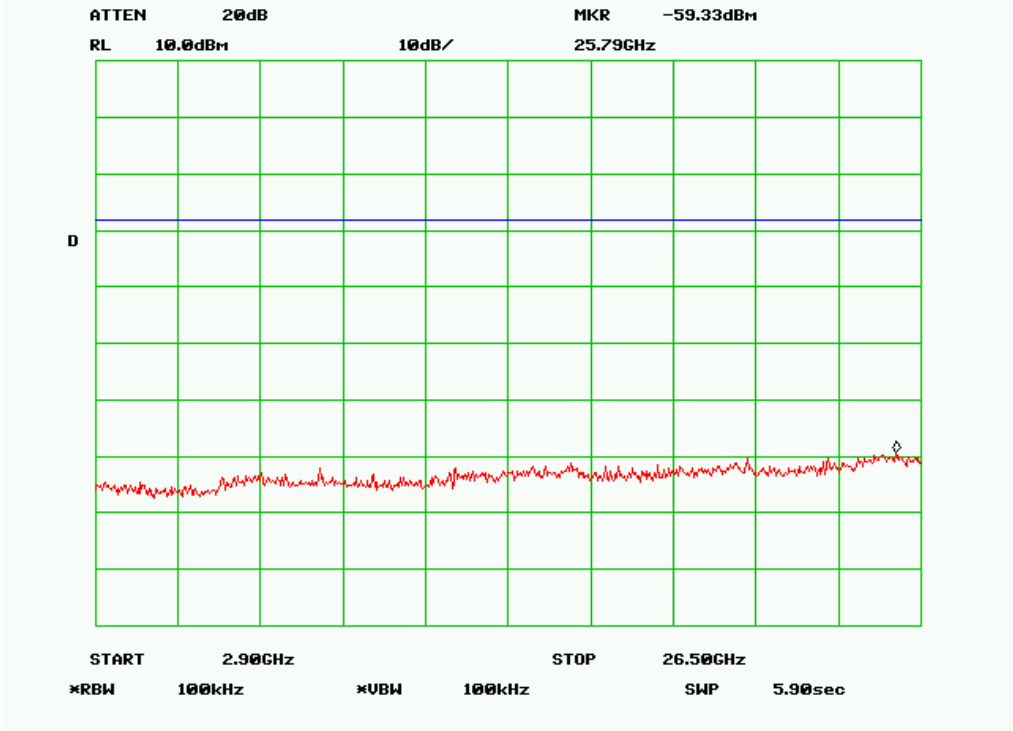
Test Result: Pass

Refer to the attached plots.

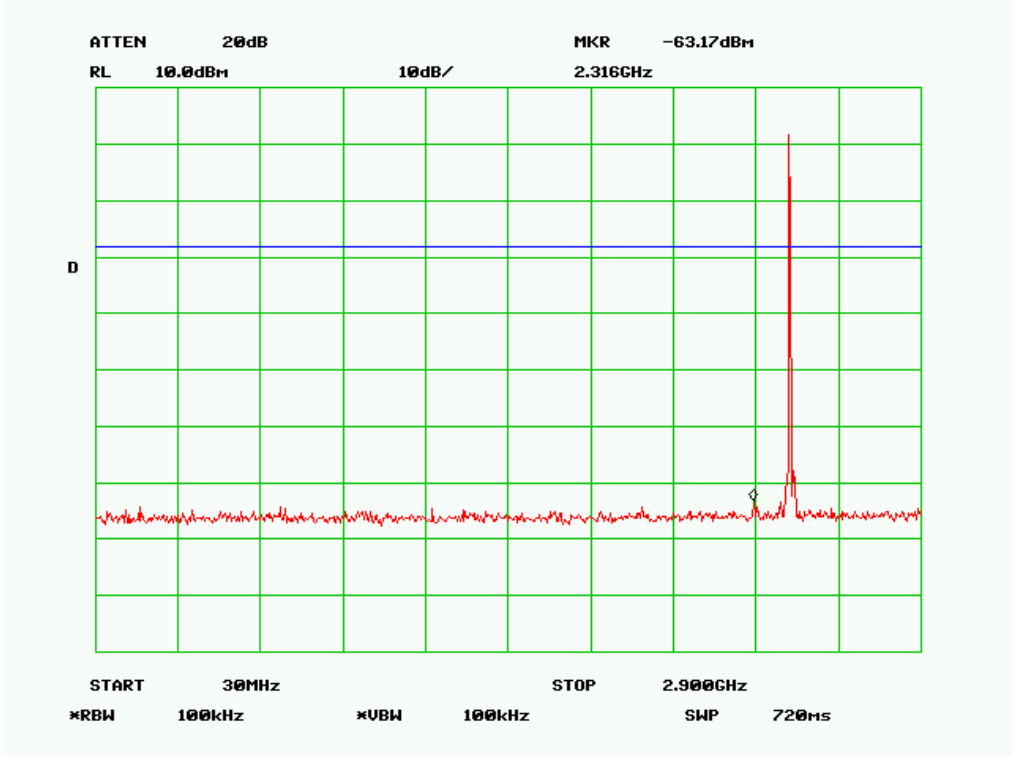
Bluetooth Mode Basic Rate



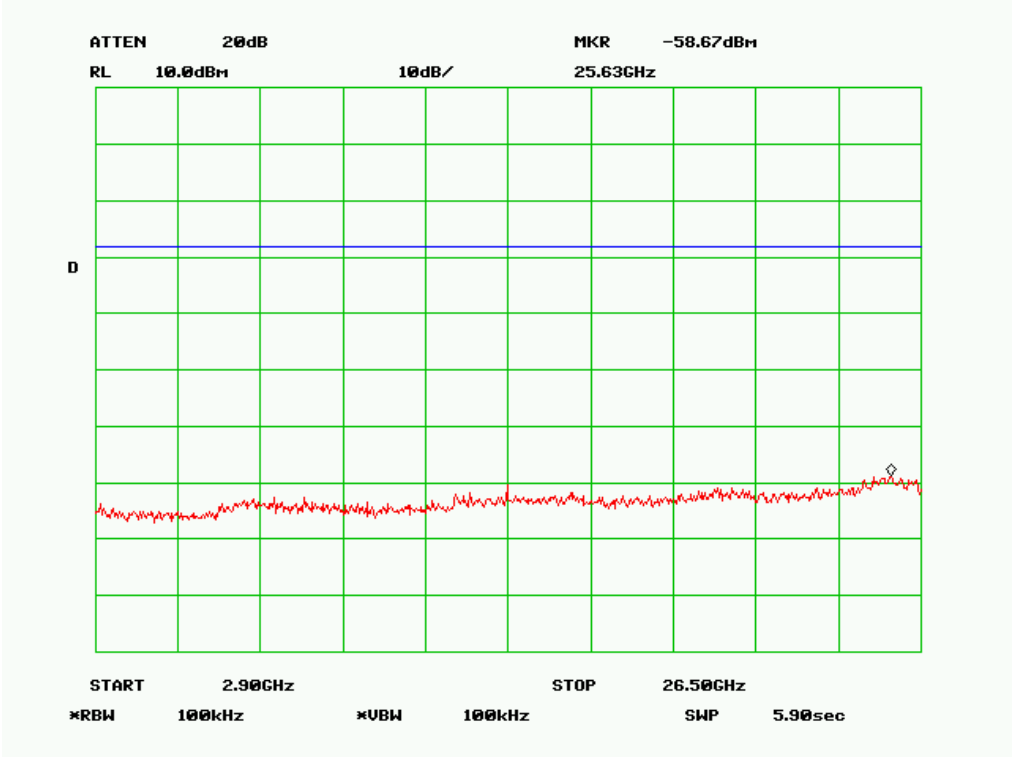
Antenna Port Emission Low-1



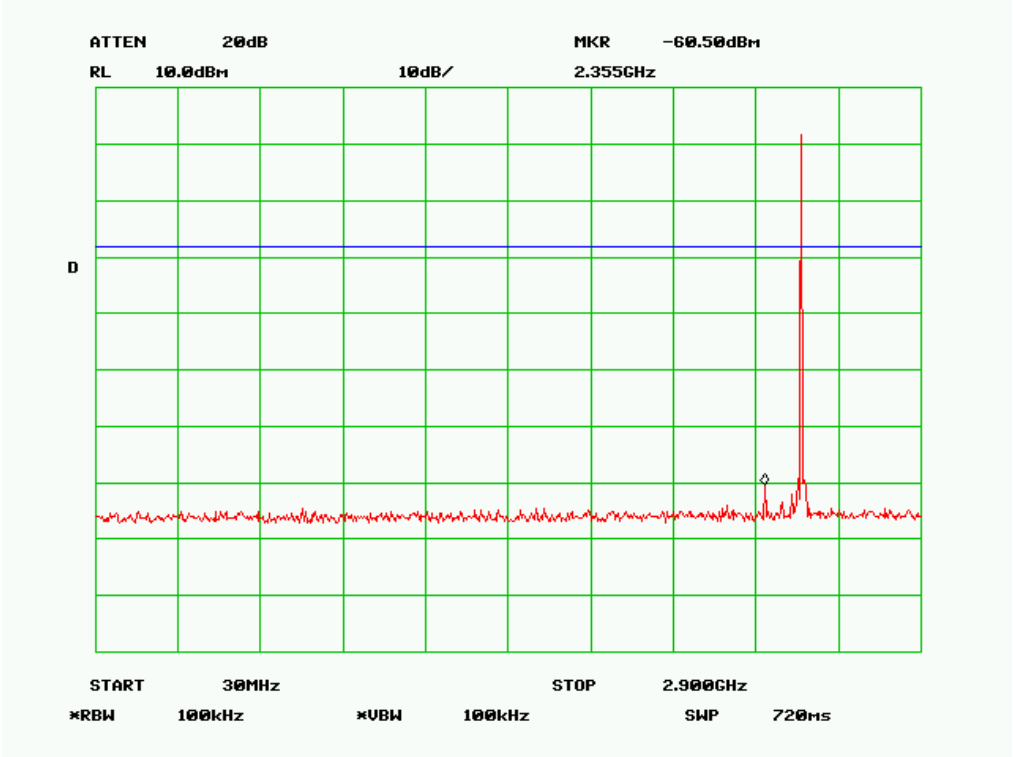
Antenna Port Emission Low-2



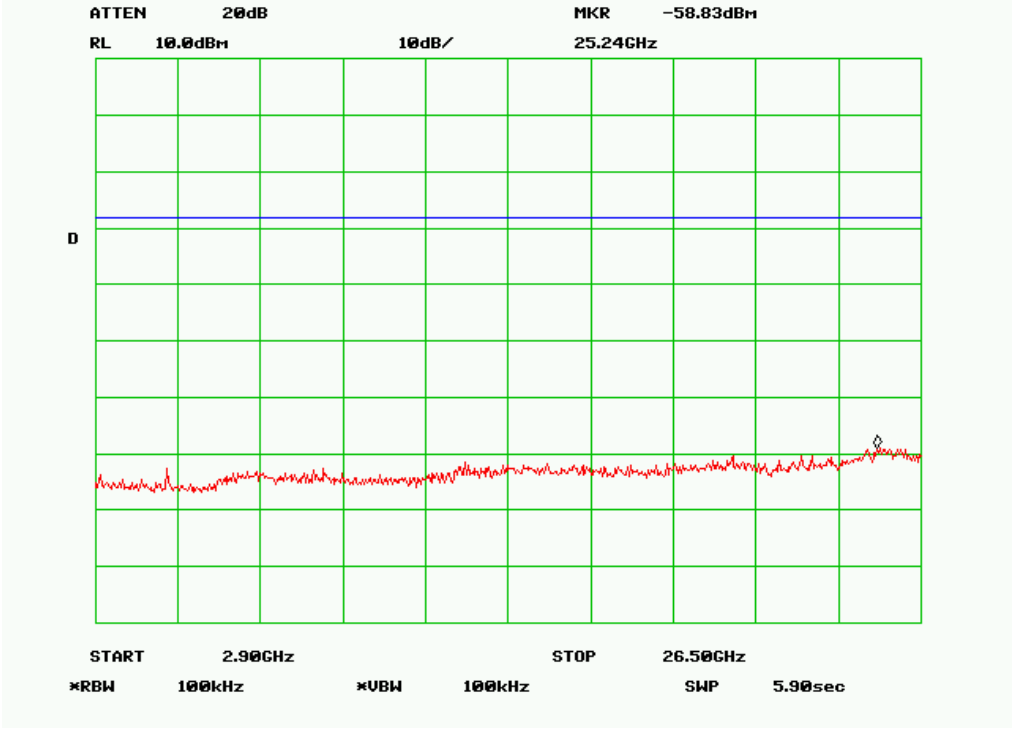
Antenna Port Emission middle -1



Antenna Port Emission middle -2

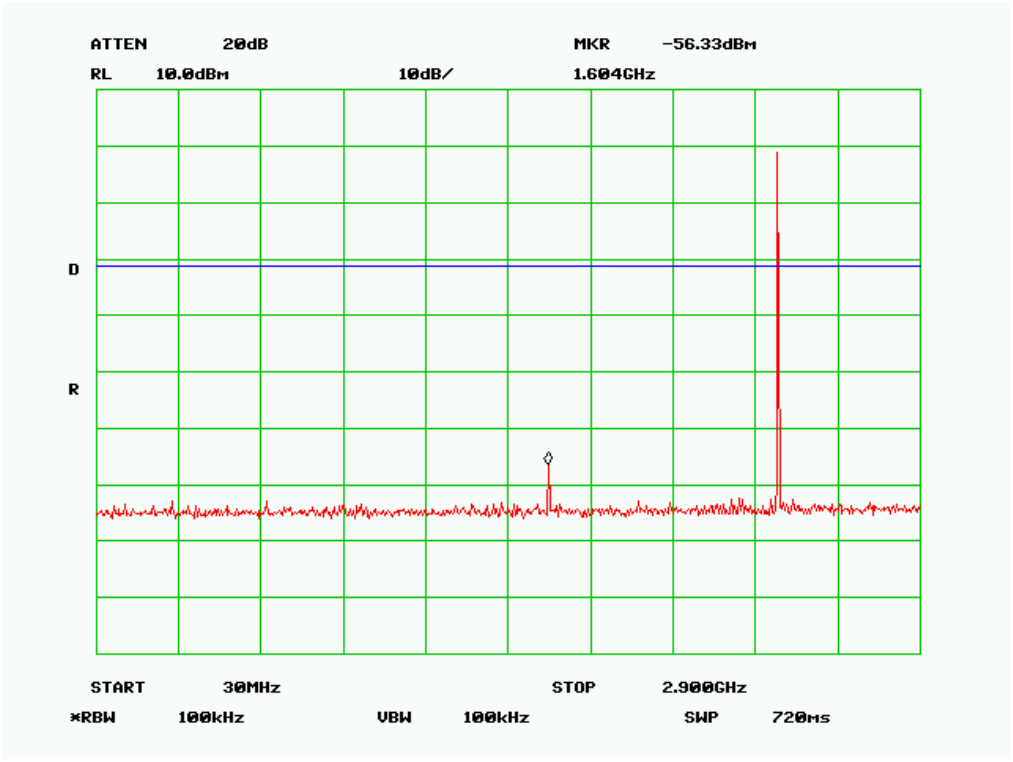


Antenna Port Emission High-1

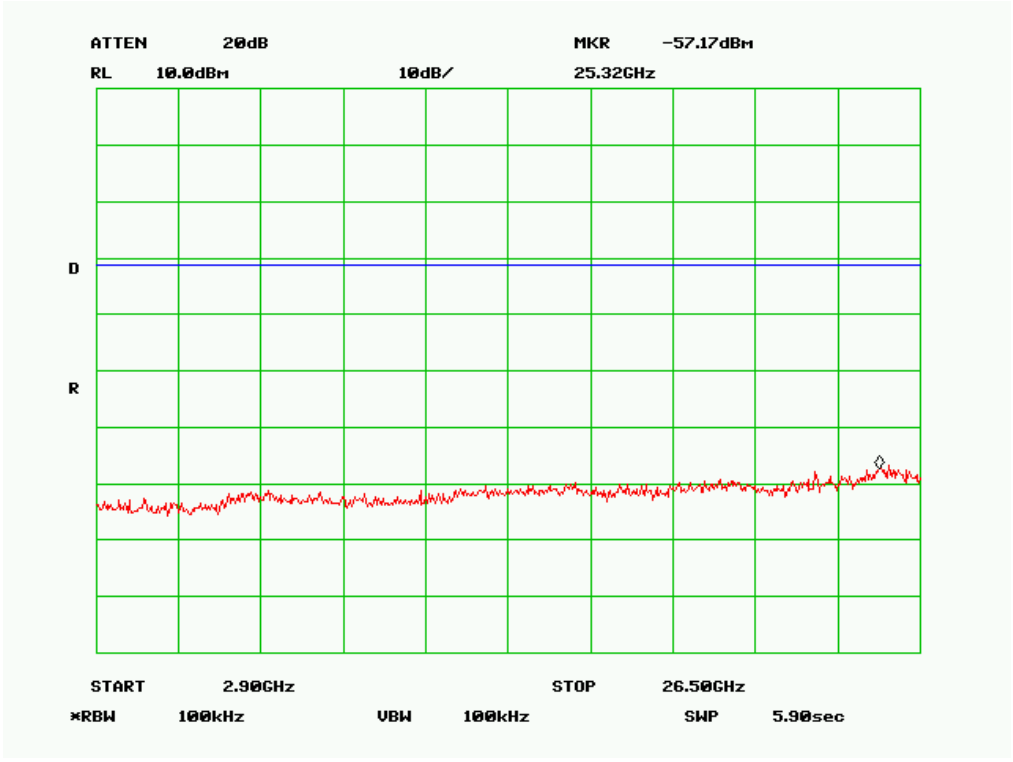


Antenna Port Emission High-2

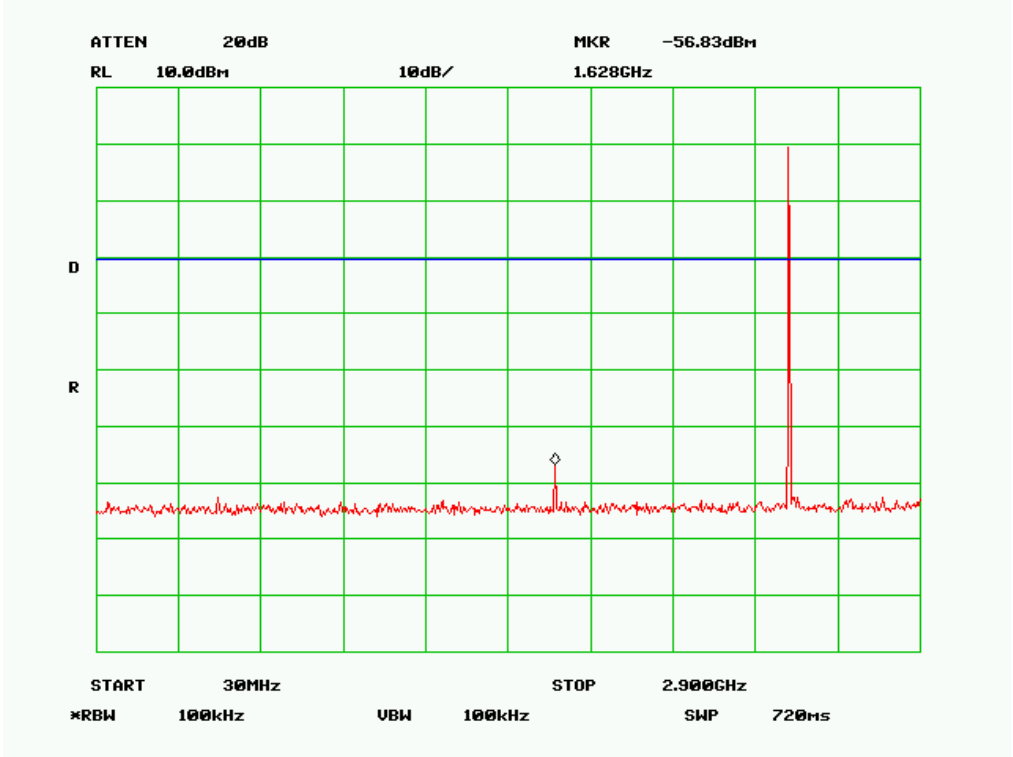
Bluetooth Mode EDR 3Mbps



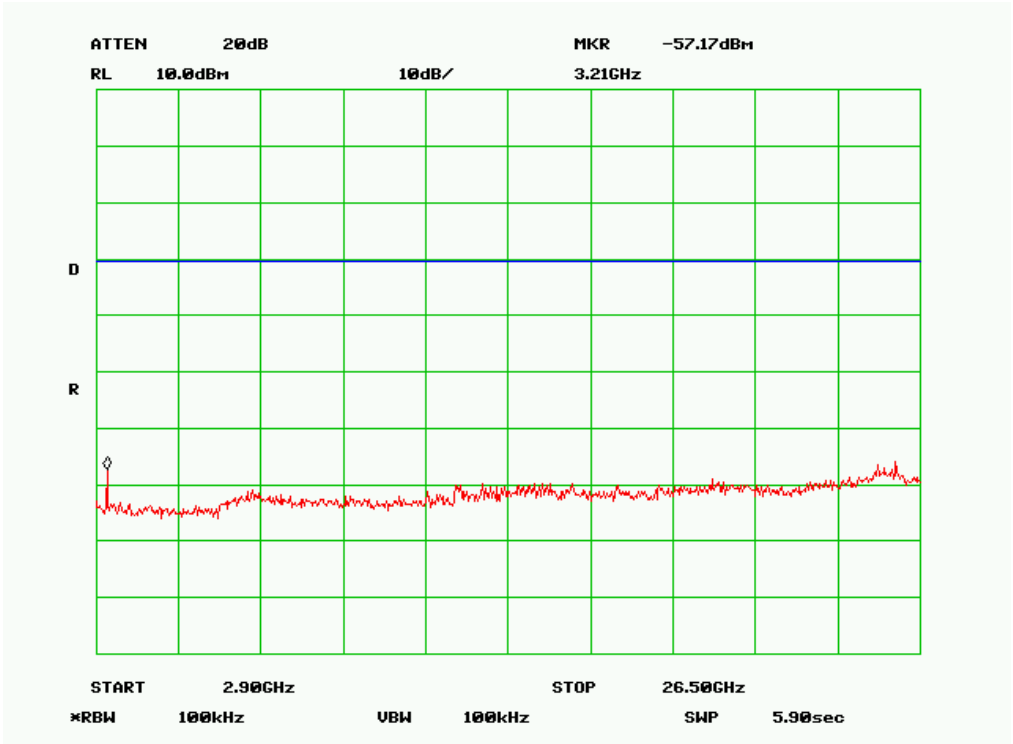
Antenna Port Emission Low-1



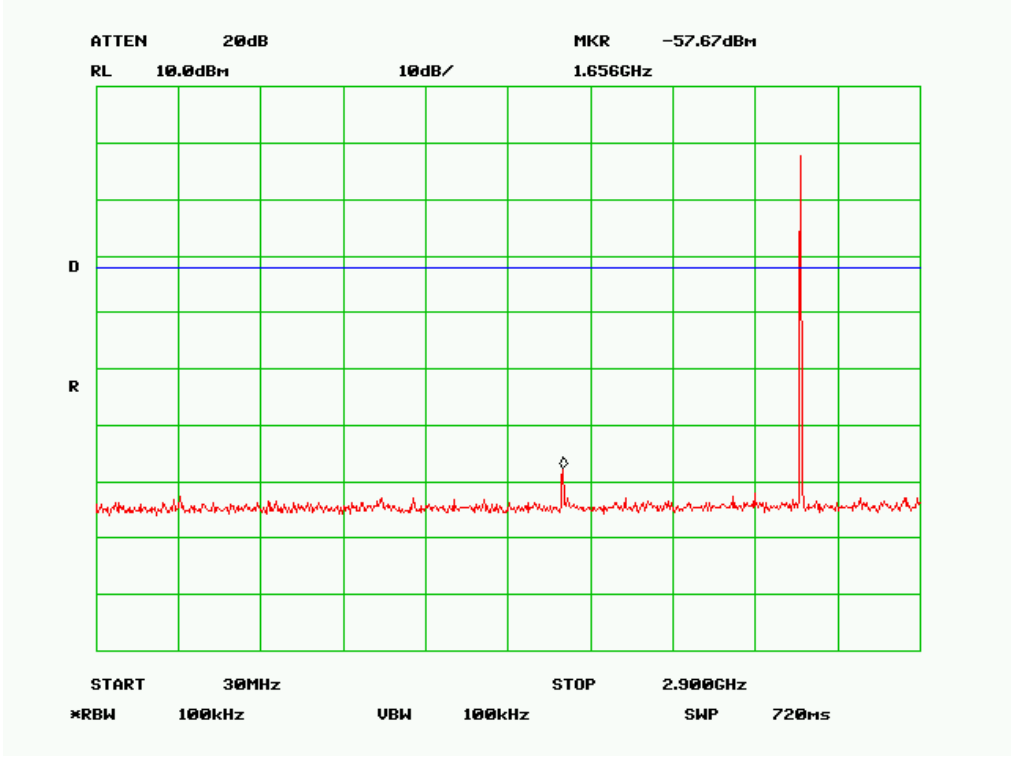
Antenna Port Emission Low-2



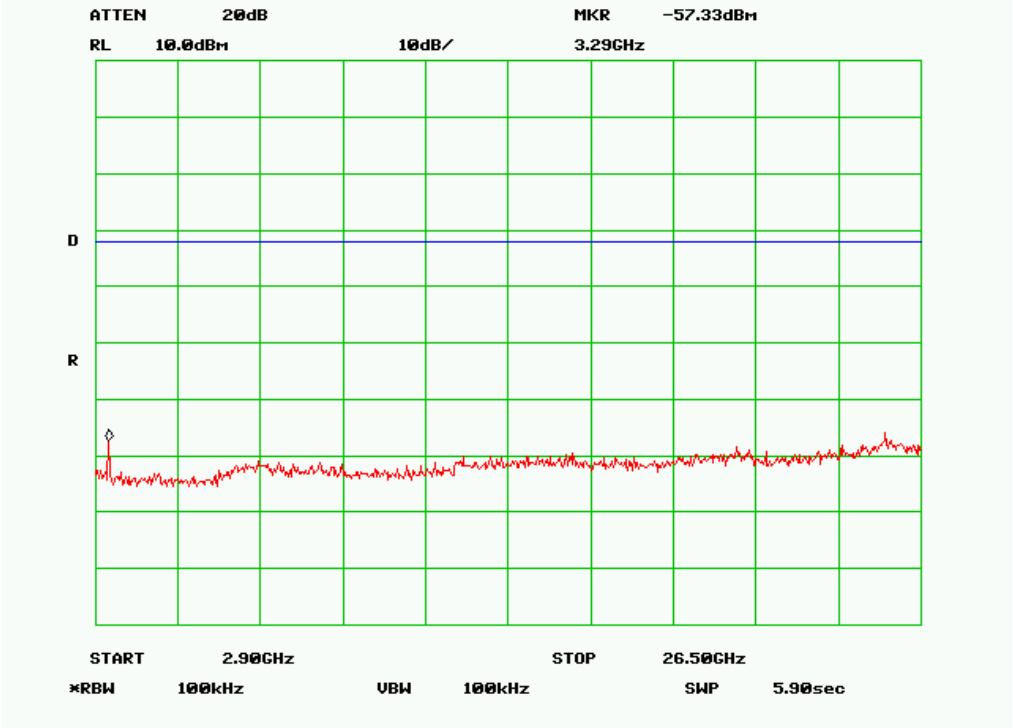
Antenna Port Emission middle -1



Antenna Port Emission middle -2



Antenna Port Emission High-1



Antenna Port Emission High-2

5.9 Radiated Spurious Emission < 1GHz

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above (3m & 10m) is +5.6/-4.5dB.
4. Environmental Conditions

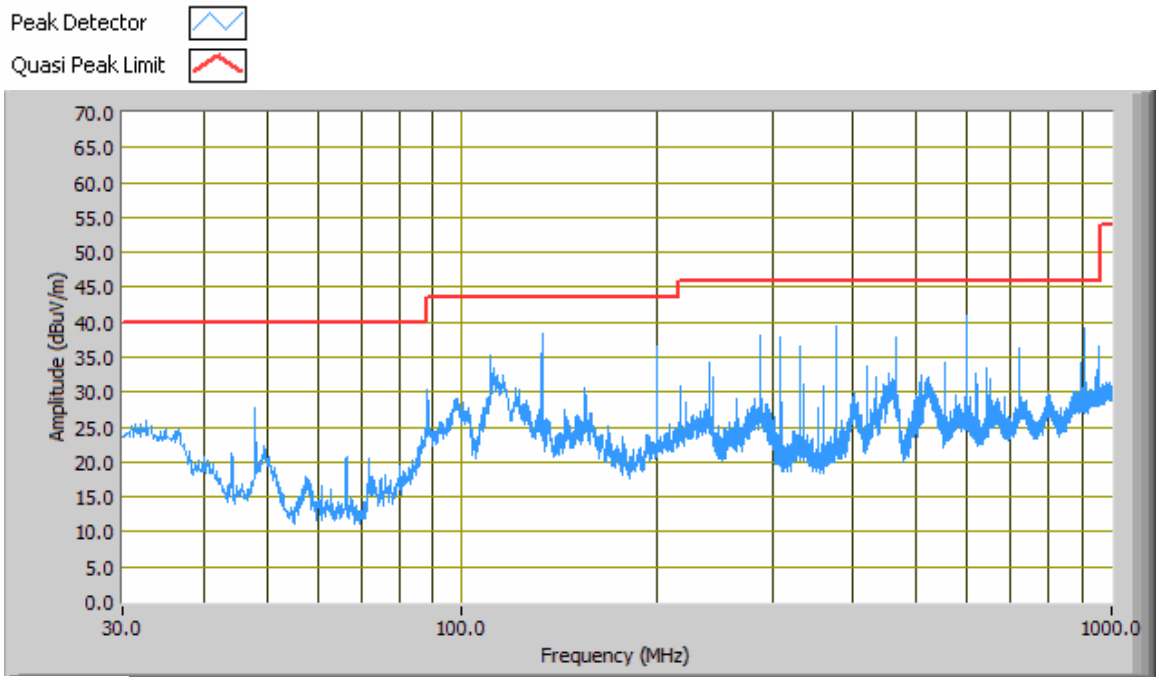
Temperature	23°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

5. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement: The emissions from the Low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges.

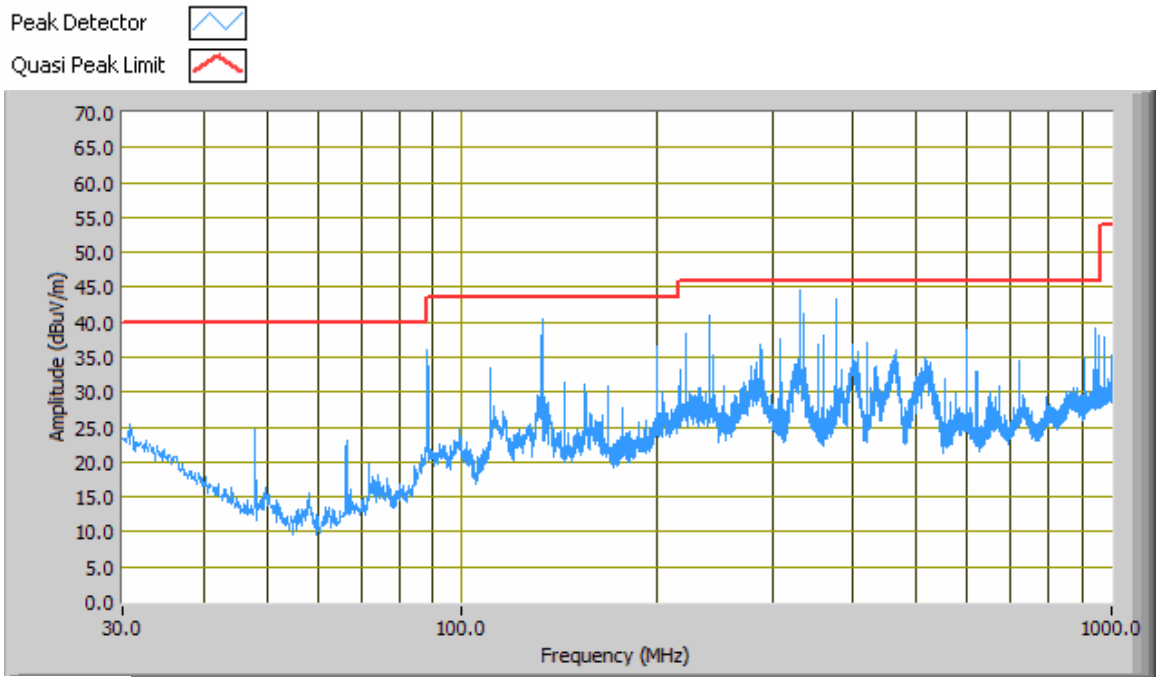
Test Result: Pass

Normal link Mode



Test Data

Frequency (MHz)	Quasi Peak (dBuV/m)	Azimuth	Polarity(H/V)	Height (cm)	Factors (dB)	Limit (dBuV/m)	Margin (dB)
597.33	*41.03*	*175.30*	*V*	*100.00*	*-23.43*	*46.00*	*-4.97*
132.70	*38.43*	*89.10*	*V*	*100.00*	*-31.22*	*43.50*	*-5.07*
376.05	*39.38*	*132.40*	*V*	*100.00*	*-29.62*	*46.00*	*-6.62*
910.03	*39.28*	*164.50*	*V*	*200.00*	*-17.64*	*46.00*	*-6.72*
199.02	*36.43*	*349.90*	*V*	*200.00*	*-31.34*	*43.50*	*-7.07*
287.54	*38.23*	*153.00*	*V*	*200.00*	*-29.50*	*46.00*	*-7.77*



Test Data

Frequency (MHz)	Quasi Peak (dBuV/m)	Azimuth	Polarity(H/V)	Height (cm)	Factors (dB)	Limit (dBuV/m)	Margin (dB)
331.79	*44.48*	*139.50*	*H*	*100.00*	*-27.66*	*46.00*	*-1.52*
376.05	*43.33*	*252.80*	*H*	*100.00*	*-27.27*	*46.00*	*-2.67*
132.70	*40.46*	*145.20*	*H*	*300.00*	*-30.65*	*43.50*	*-3.04*
240.00	*40.92*	*203.20*	*H*	*100.00*	*-30.72*	*46.00*	*-5.08*
945.20	*39.10*	*231.40*	*H*	*100.00*	*-18.33*	*46.00*	*-6.90*
199.02	*36.57*	*262.60*	*H*	*100.00*	*-30.43*	*43.50*	*-6.93*

5.10 Radiated Spurious Emissions > 1GHz & Band Edge

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above (3m & 10m) is +5.6/-4.5dB.
4. Environmental Conditions

Temperature	23°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar

5. Test date : 13 September, 2011
   Tested By : Andy Wang

Standard Requirement: The emissions from the Low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges.

Test Result: Pass

Note: Other Bluetooth modes were verified, only the result of worst case basic rate mode was presented.

Transmit Mode

@ 2402MHz @ 3 Meter

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.247/15.209	15.247/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.804	23	1.02	v	5.15	55.00	59.0	74.00	-15.0	Peak
4.804	140	1.10	h	5.15	55.00	57.0	74.00	-17.0	Peak
4.804	160	1.02	v	5.15	55.00	49.0	54.00	-5.0	Ave
4.804	121	1.10	h	5.15	55.00	48.0	54.00	-6.0	Ave

Emission was scanned up to 25GHz.

@ 2441MHz @ 3Meter

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.247/15.209	15.247/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.882	15	1.10	v	5.16	55.00	62.0	74.00	-12.0	Peak
4.882	230	1.24	h	5.16	55.00	60.0	74.00	-14.0	Peak
4.882	35	1.10	v	5.16	55.00	51.0	54.00	-3.0	Ave
4.882	230	1.24	h	5.16	55.00	49.0	54.00	-6.0	Ave

Emission was scanned up to 25GHz.

@ 2480MHz @ 3Meter

Frequency	Direction	Height	Polar	Cable loss	Amplifier	Corrected Reading	15.247/15.209	15.247/15.209	
GHz	Degree	Meter	H / V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	Margin	Comments
4.960	126	1.11	v	5.17	55.00	57.0	74.00	-17.0	Peak
4.960	27	1.42	h	5.17	55.00	51.0	74.00	-23.0	Peak
4.960	126	1.11	v	5.17	55.00	46.0	54.00	-8.0	Ave
4.960	247	1.42	h	5.17	55.00	42.0	54.00	-12.0	Ave

Emission was scanned up to 25GHz.

No emissions were found when EUT was under receiver mode above 1GHz.

Band Edge

Channel	Polarity	Detector	Frequency	Result	Limit	Margin
Low Channel	V	Peak	2400	36.76	74	-37.24
Low Channel	H	Peak	2400	32.22	74	-41.78
Low Channel	V	Avg	2400	26.33	54	-27.67
Low Channel	H	Avg	2400	24.54	54	-29.46

Channel	Polarity	Detector	Frequency	Result	Limit	Margin
High Channel	V	Peak	2483.5	33.22	74	-40.78
High Channel	H	Peak	2483.5	35.45	74	-38.55
High Channel	V	Avg	2483.5	24.37	54	-29.63
High Channel	H	Avg	2483.5	26.64	54	-27.36

Annex A. TEST INSTRUMENT & METHOD

Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

Instrument	Manufacturer	Model	CAL Due Date
Spectrum Analyzer	HP	8563 E	2012.01.10
EMI Receiver	Rohde & Schwarz	ESPI 3	2012.05.25
Antenna (30MHz~2GHz)	Sunol Sciences	JB1	2011.10.04
Horn Antenna (1~18GHz)	A-INFOMW	JXTXLB-10180	2011.10.04
Horn Antenna (1~18GHz)	N/A	N/A	2011.10.04
Pre-Amplifier(0.01 ~ 1.3GHz)	HP	8447F	2012.05.25
Pre-Amplifier(0.1 ~ 18GHz)	MITEQ	AMF-7D-00101800-30-10P	2012.05.25
Horn Antenna (18~40GHz)	Com Power	AH-840	2012.05.25
Microwave Pre-Amp (18~40GHz)	Com Power	PA-840	2012.05.25

Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

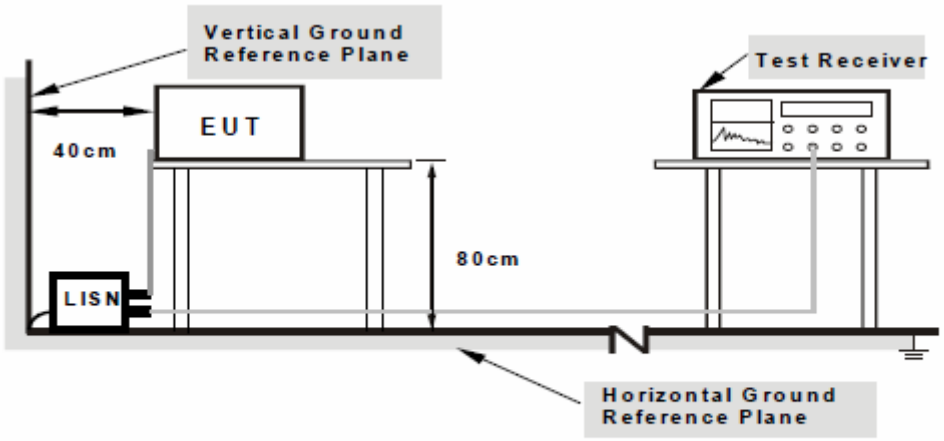
Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.

2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

4. All other supporting equipments were powered separately from another main supply.



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1.

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.

3. High peaks, relative to the limit line, were then selected.

4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.

5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.

Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. **7.96 dB below limit**

Annex A. iii. RADIATED EMISSIONS TEST DESCRIPTION

Limit

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the above emission table, the tighter limit applies at the band edges.

Frequency (Hz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10th Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

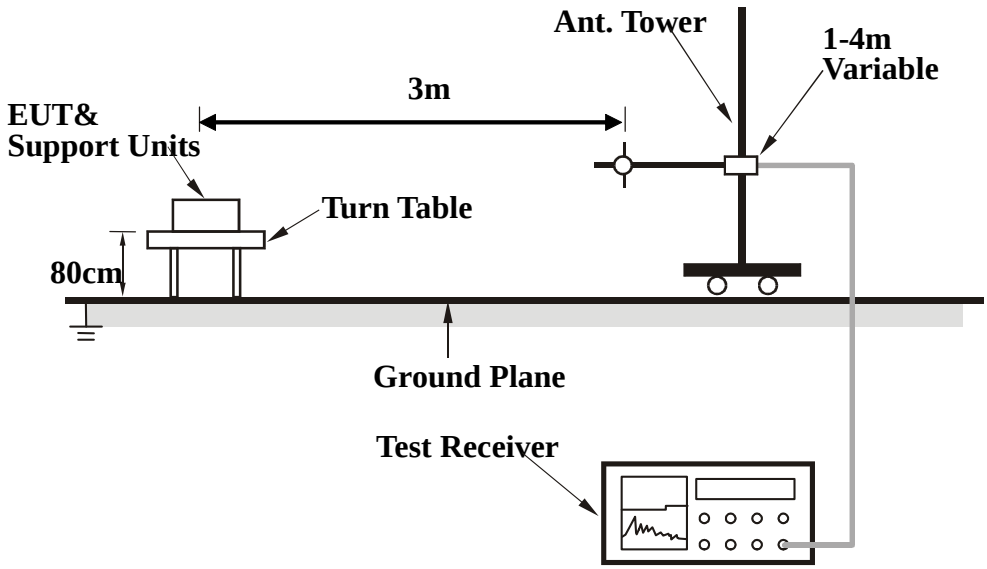
The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.

2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



Test Method

The following procedure was performed to determine the maximum emission axis of EUT:
1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement
1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ◦ to 360 ◦ with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.

5. Repeat step 4 until all frequencies need to be measured were complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Description of Radiated Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the scan on four different antenna heights, 2 antenna polarity, and 360 degrees table rotation. For example, the program was set to run 30 MHz to 1 GHz scan; the program will first start from a meter antenna height and divide the 30 MHz to 1 GHz into 10 separate parts of maximum hold sweeps. Each parts of maximum hold sweep, the program will collect the data from 0 degree to 360 degrees table rotation. After the program complete the 1m scan, the antenna continues to rise to 2m and continue the scan. The step will repeated for all specified antenna height and polarity. This program will perform the Quasi Peak measurement after the signal maximization process and pre-scan routine. The final measurement will be base on the pre-scan data reduction result.

Sample Calculation Example

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

where

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

And the average value is

Average = Peak Value + Duty Factor or

Set RBW = 1MHz, VBW = 10Hz.

Note :

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

Annex B. EUT AND TEST SETUP PHOTOGRAPHS

Please see attachment

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

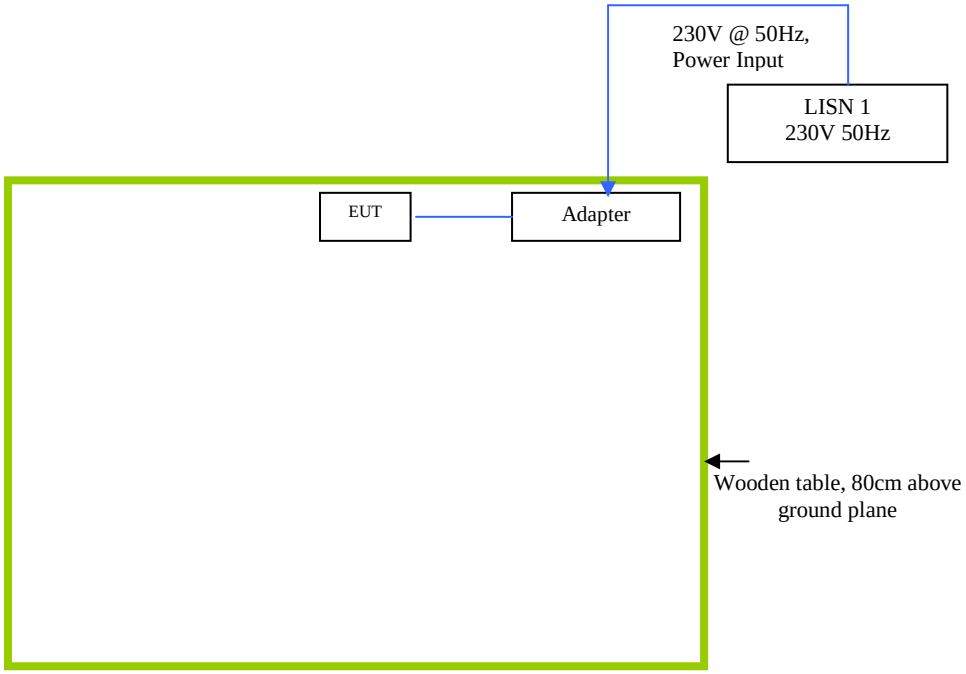
EUT TEST CONDITIONS

Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

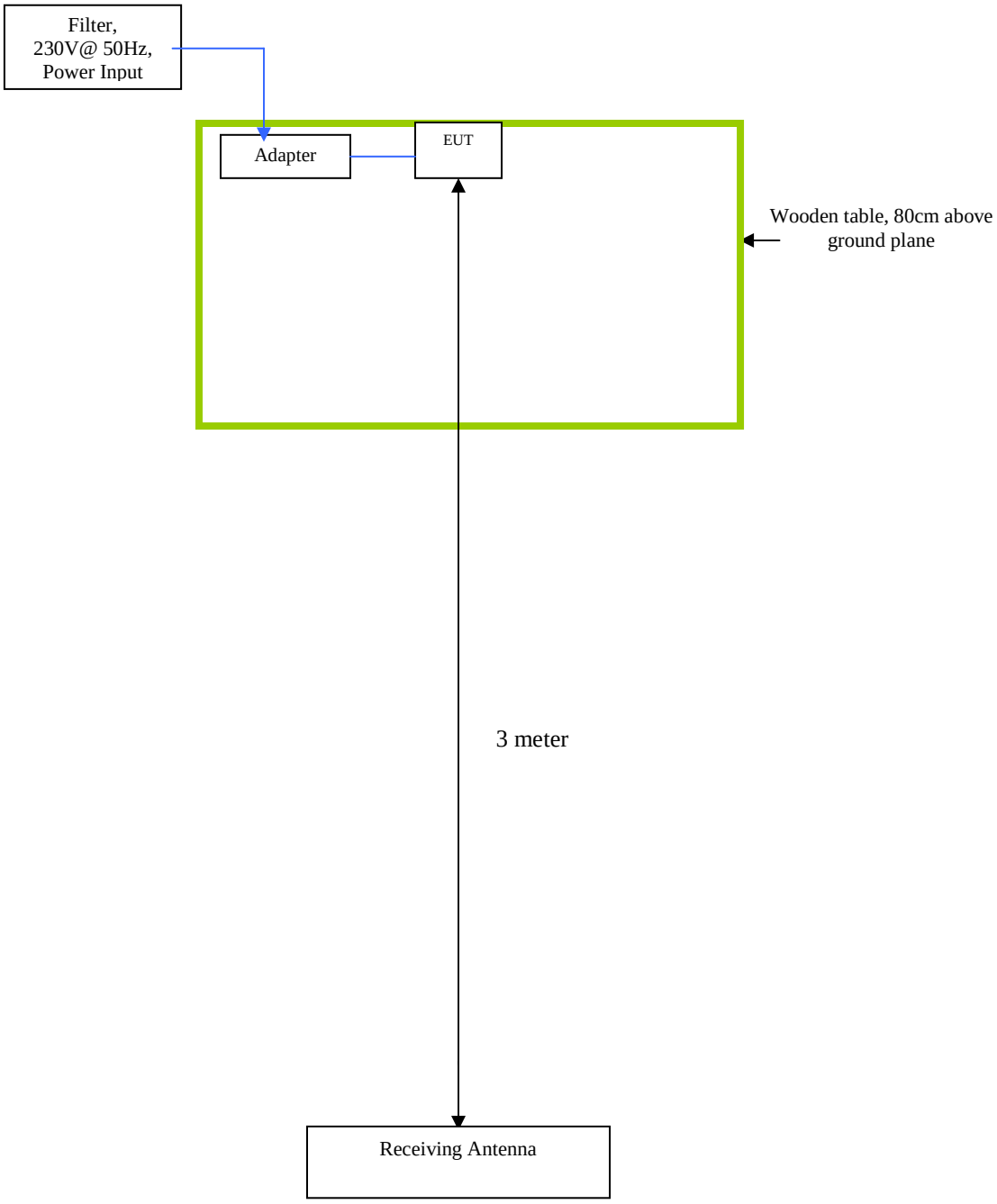
The following is a description of supporting equipment and details of cables used with the EUT.

Equipment Description (Including Brand Name)	Model & Serial Number	Cable Description (List Length, Type & Purpose)
N/A	N/A	N/A

Block Configuration Diagram for Conducted Emissions



Block Configuration Diagram for Radiated Emissions



Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

Test	Description Of Operation
Emissions Testing	The EUT was continuously transmitting to stimulate the worst case.

Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST

Please see attachment

Annex E. SIEMIC ACCREDITATION CERTIFICATES

SIEMIC ACREDITATION DETAILS: FCC Test Site Registration No. 986914

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

April 19, 2011

Registration Number: 986914

SIEMIC Nanjing (China) Laboratories
2-1 Longcang Avenue,
Yuhua Economic and Technology Development Park,
Nanjing, 210039
China

Attention: Leslie Bai,

Re: Measurement facility located at 2-1 Longcang Avenue, Nanjing, China
Anechoic chamber (3 meters) and 3&10 meter OATS
Date of Renewal: April 19, 2011

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

Phyllis Parrish
Industry Analyst

SIEMIC ACREDITATION DETAILS: Industry of Canada Test Site Registration No. 4842B

Industry Canada Industrie Canada

January 25, 2011

OUR FILE: 46405-4842
Submission No: 145222

Siemic Nanjing (China) Laboratories
2-1 Longcang Avenue
Yuhua Economic & Technology Dev. Park, Nanjing
China

Attention: Leslie Bai

Dear Sir/Madame:

The Bureau has received your application for the registration of a 3/10m OATS. Be advised that the information received was satisfactory to Industry Canada. The following number(s) is now associated to the site(s) for which registration / renewal was sought (Site# 4842B-2). Please reference the appropriate site number in the body of test reports containing measurements performed on the site. In addition, please keep for your records the following information:

- The company address code associated to the site(s) located at the above address is: 4842B

Furthermore, to obtain or renew a unique site number, the applicant shall demonstrate that the site has been accredited to ANSI C63.4-2003 or later. A scope of accreditation indicating the accreditation by a recognized accreditation body to ANSI C63.4-2003 or later shall be accepted. Please indicate in a letter the previous assigned site number if applicable and the type of site (example: 3 metre OATS or 3 metre chamber). If the test facility is not accredited to ANSI C63.4-2003 or later, the test facility shall submit test data demonstrating full compliance with the ANSI standard. The Bureau will evaluate the filing to determine if recognition shall be granted.

The frequency for re-validation of the test site and the information that is required to be filed or retained by the testing party shall comply with the requirements established by the accrediting organization. However, in all cases, test site re-validation shall occur on an interval not to exceed three years. There is no fee or form associated with an OATS filing. OATS submissions are encouraged to be submitted electronically to the Bureau using the following URL;
http://strategis.ic.gc.ca/epic/internet/inceb-bbat.nsf/en/h_gr00012e.html.

If you have any questions, you may contact the Bureau by e-mail at certification.bureau@ic.gc.ca Please reference our file and submission number above for all correspondence.

Yours sincerely,

Dalwinder Gill
For: Wireless Laboratory Manager
Certification and Engineering Bureau
3701 Carling Ave., Building 94
P.O. Box 11490, Station "H"
Ottawa, Ontario K2H 8S2
Email: dalwinder.gill@ic.gc.ca
Tel. No. (613) 998-8363
Fax. No. (613) 990-4752