



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless Mouse

Model Number: M0903AP III

Trade Name: BTC / EMPREX

Issued to

Behavior Tech Computer Corporation
20F-B, No. 98, Sec. 1, Sintai 5th Rd., Sijhih City,
Taipei County 22102, Taiwan(R.O.C.)

Issued by



Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)
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Issued Date: May 4, 2011



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Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		May 4, 2011		Initial Issue	ALL	Angel Cheng



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1. TEST RESULT CERTIFICATION

Applicant: Behavior Tech Computer Corporation
20F-B, No. 98, Sec. 1, Sintai 5th Rd., Sijhih City,
Taipei County 22102, Taiwan(R.O.C.)

Equipment Under Test: Wireless Mouse

Trade Name: BTC / EMPREX

Model Number: M0903AP III

Date of Test: March 31 ~ April 20, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2003** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements emission limits of FCC Rules Part 15.207, 15.209 and 15.249.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.



2. EUT DESCRIPTION

Product	Wireless Mouse					
Trade Name	BTC / EMPREX					
Model Number	M0903AP III					
Model Discrepancy	N/A					
Received Date	March 22, 2011					
Power Supply	Power by 2 x AAA Rechargeable Batteries (3V)					
Frequency Spacing	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	1	2405	26	2430	51	2455
	2	2406	27	2431	52	2456
	3	2407	28	2432	53	2457
	4	2408	29	2433	54	2458
	5	2409	30	2434	55	2459
	6	2410	31	2435	56	2460
	7	2411	32	2436	57	2461
	8	2412	33	2437	58	2462
	9	2413	34	2438	59	2463
	10	2414	35	2439	60	2464
	11	2415	36	2440	61	2465
	12	2416	37	2441	62	2466
	13	2417	38	2442	63	2467
	14	2418	39	2443	64	2468
	15	2419	40	2444	65	2469
	16	2420	41	2445	66	2470
	17	2421	42	2446	67	2471
	18	2422	43	2447	68	2472
	19	2423	44	2448	69	2473
	20	2424	45	2449	70	2474
	21	2425	46	2450		
	22	2426	47	2451		
	23	2427	48	2452		
	24	2428	49	2453		
	25	2429	50	2454		
Frequency Number	70Channels					
Modulation Technique	GFSK					
Antenna Gain	-4.59dBi					
Antenna Designation	Printed Antenna					

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **E5XMSM0903AP3** filing to comply with Section 15.107, 15.109, 15.207, 15.209, 15.249 (FCC Part 15, Subpart C Rules.)
3. The EUT is marketed with Wireless USB Dongle. FCC ID is E5XRXNANO.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47 Part 15.207, 15.209 and 15.249.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209, 15.249 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



3.5 DESCRIPTION OF TEST MODES

The EUT (model: M0903AP III) had been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

Channel Low(2405MHz), Channel Mid(2440MHz) and Channel High(2474MHz) were chosen for the final testing.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/02/2012

Wugu 966 Chamber A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	11/03/2011
EMI Test Receiver	R&S	ESCI	100064	02/03/2012
Pre-Amplifier	Mini-Circuits	ZFL-1000LN	SF350700823	01/12/2012
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/19/2011
Bilog Antenna	Sunol Sciences	JB3	A030105	10/06/2011
Horn Antenna	EMCO	3117	00055165	01/12/2012
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/26/2011
Test S/W	EZ-EMC (CCS-3A1RE)			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	N/A
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0606
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9979
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5790
3M Semi Anechoic Chamber / 8G~18G	+/- 2.5928
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7212
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9520

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No. 199, Chunghsen Road, Hsintien City, Auerbach / Opf GERMANY

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.




Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	 Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
	N/A						

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



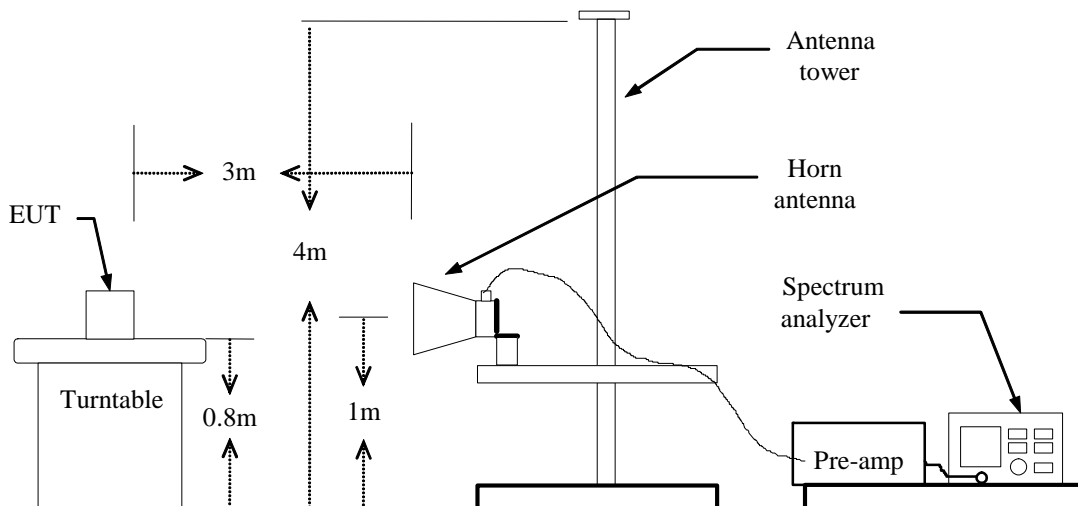
7. FCC PART 15.249 REQUIREMENTS

7.1 20 DB BANDWIDTH

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the 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 RBW=22kHz, VBW = 68kHz, Span = 200kHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

Test Data

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2405	2.150
Mid	2440	2.10
High	2474	1.40

**Test Plot****CH Low**

* Agilent 15:32:10 Apr 20, 2011

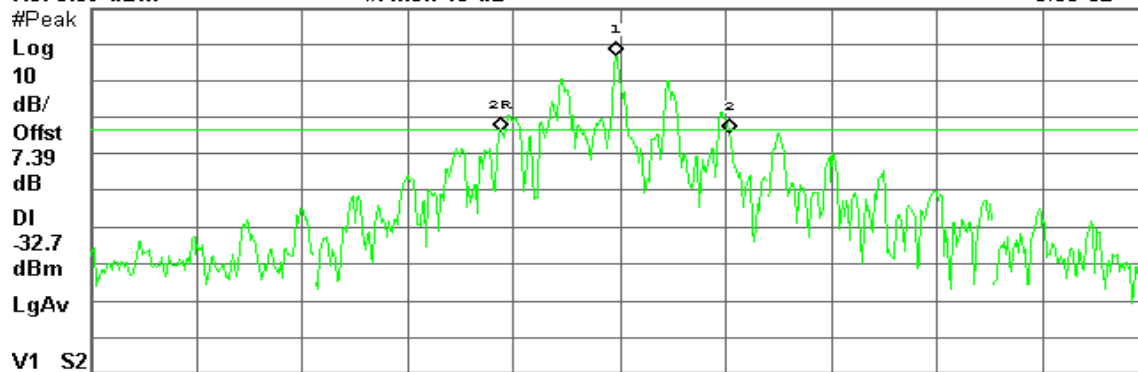
R T

 Δ Mkr2 2.150 MHz

Ref 0.39 dBm

#Atten 10 dB

-0.63 dB



Center 2.405 000 GHz

Span 10 MHz

#Res BW 22 kHz

#VBW 68 kHz

Sweep 19.72 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.404 950 GHz	-12.74 dBm
2R	(1)	Freq	2.403 883 GHz	-33.25 dBm
2Δ	(1)	Freq	2.150 MHz	-0.63 dB

CH Mid

* Agilent 17:19:24 Apr 20, 2011

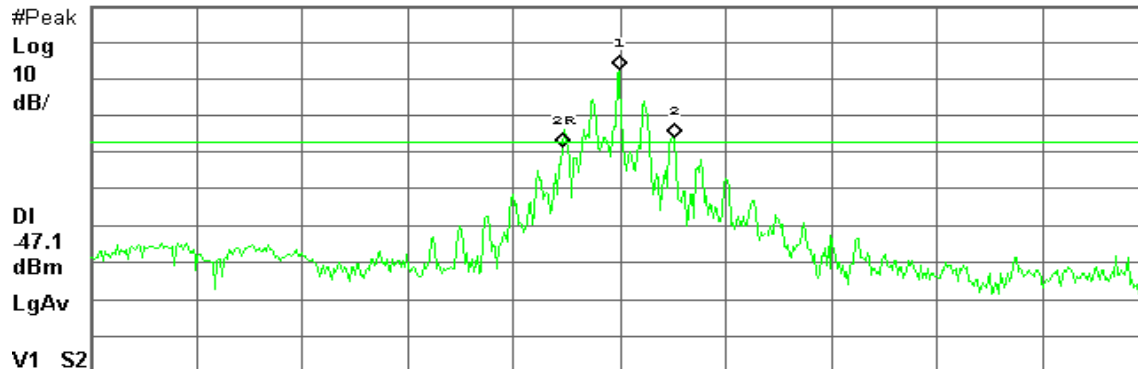
R T

 Δ Mkr2 2.10 MHz

Ref -10 dBm

#Atten 10 dB

2.72 dB



Center 2.440 00 GHz

Span 20 MHz

#Res BW 22 kHz

#VBW 68 kHz

Sweep 39.44 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.439 97 GHz	-27.11 dBm
2R	(1)	Freq	2.438 93 GHz	-48.75 dBm
2Δ	(1)	Freq	2.10 MHz	2.72 dB



CH High

Agilent 17:21:45 Apr 20, 2011

R T

Δ Mkr2 1.40 MHz

Ref -10 dBm

#Atten 10 dB

-1.32 dB

#Peak

Log

10

dB/

DI

-50.4

dBm

LgAv

V1 S2

Center 2.474 00 GHz

Span 10 MHz

#Res BW 22 kHz

#VBW 68 kHz

Sweep 19.72 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.473 95 GHz	-30.39 dBm
2R	(1)	Freq	2.473 22 GHz	-48.61 dBm
2Δ	(1)	Freq	1.40 MHz	-1.32 dB



7.2 BAND EDGES MEASUREMENT

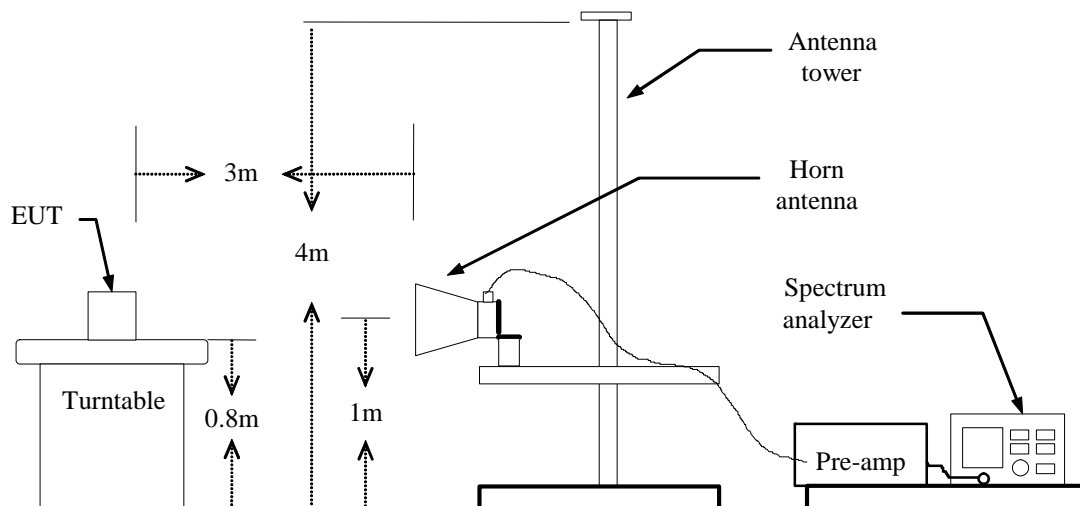
LIMIT

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

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3-meter)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

2. As shown in Section 15.35(b), for frequencies above 1000 MHz, the above field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

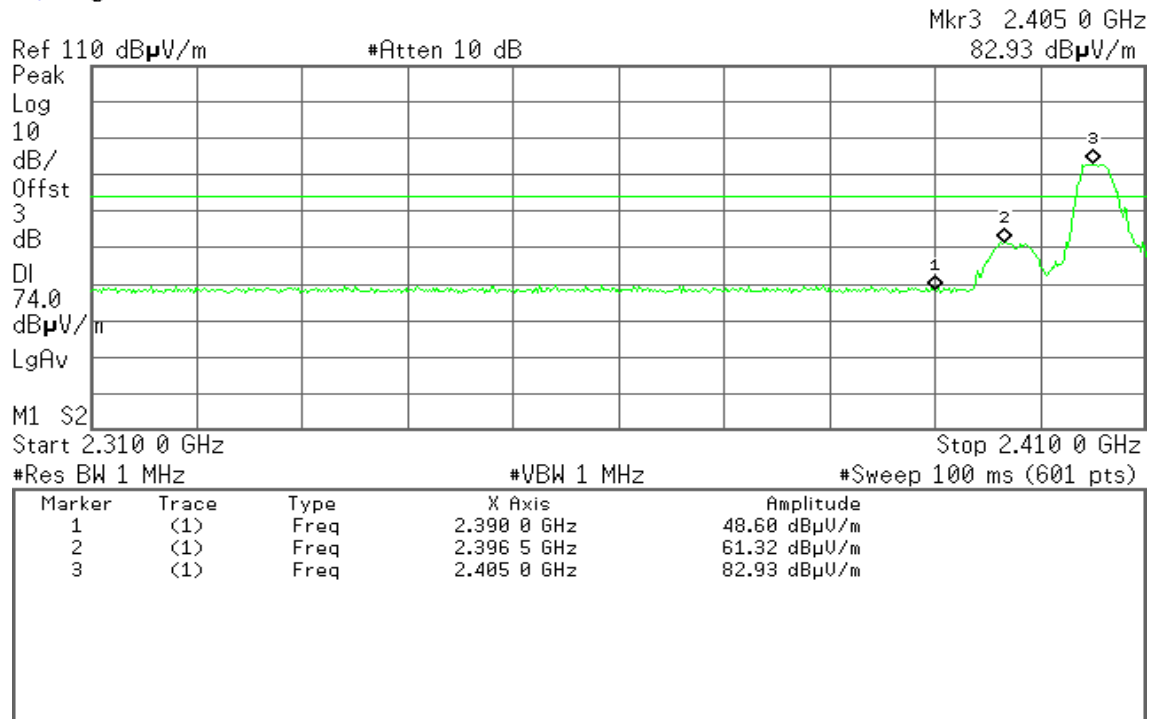
TEST RESULTS

Refer to attach spectrum analyzer data chart.

**Band Edges (CH Low)****Detector mode: Peak****Polarity: Vertical**

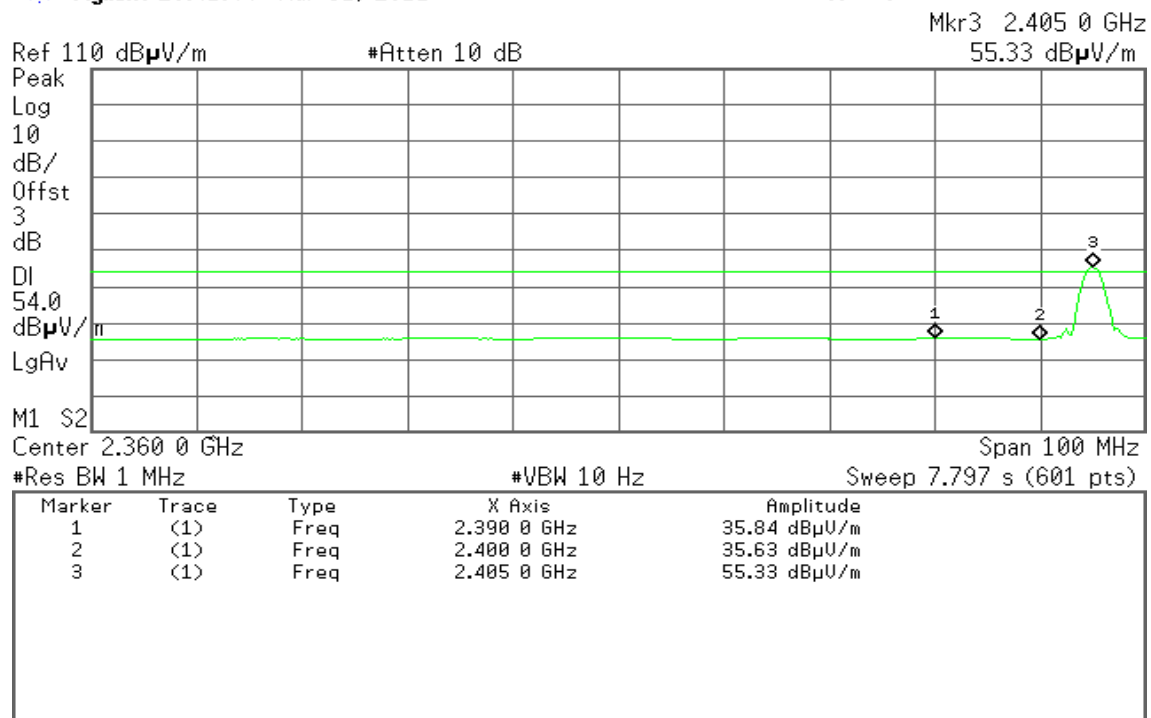
* Agilent 20:39:59 Mar 31, 2011

R T

**Detector mode: Average****Polarity: Vertical**

* Agilent 20:41:44 Mar 31, 2011

R T





Detector mode: Peak

Polarity: Horizontal

* Agilent 20:29:58 Mar 31, 2011

R T

Mkr1 2.390 0 GHz

Ref 110 dB μ V/m

#Atten 10 dB

52.44 dB μ V/m

#Peak

Log

10

dB/

Offst

3

dB

DI

74.0

dB μ V/m

LgAv

M1 S2

Start 2.310 0 GHz

Stop 2.410 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	52.44 dB μ V/m
2	(1)	Freq	2.396 3 GHz	72.37 dB μ V/m
3	(1)	Freq	2.405 0 GHz	92.48 dB μ V/m

Detector mode: Average

Polarity: Horizontal

* Agilent 20:31:46 Mar 31, 2011

R T

Mkr2 2.400 0 GHz

Ref 110 dB μ V/m

#Atten 10 dB

36.05 dB μ V/m

#Peak

Log

10

dB/

Offst

3

dB

DI

54.0

dB μ V/m

LgAv

M1 S2

Start 2.310 0 GHz

Stop 2.410 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 7.797 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	35.91 dB μ V/m
2	(1)	Freq	2.400 0 GHz	36.05 dB μ V/m
3	(1)	Freq	2.405 0 GHz	59.19 dB μ V/m

**Band Edges (CH High)****Detector mode: Peak****Polarity: Vertical**

* Agilent 20:56:15 Mar 31, 2011

R T

Mkr1 2.483 50 GHz

48.53 dB μ V/mRef 110 dB μ V/m

#Atten 10 dB

Peak

Log

10

dB/

Offst

3

dB

DI

74.0

dB μ V/m

LgAv

M1 S2

S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp

Start 2.472 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Vertical**

* Agilent 20:58:43 Mar 31, 2011

R T

Mkr1 2.483 50 GHz

36.01 dB μ V/mRef 110 dB μ V/m

#Atten 10 dB

Peak

Log

10

dB/

Offst

3

dB

DI

54.0

dB μ V/m

LgAv

M1 S2

S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp

Start 2.472 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 2.183 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

* Agilent 21:05:43 Mar 31, 2011

R T

Mkr1 2.483 50 GHz

50.09 dB μ V/mRef 110 dB μ V/m

#Atten 10 dB

Peak

Log

10

dB/

Offst

3

dB

DI

74.0

dB μ V/m

LgAv

M1 S2

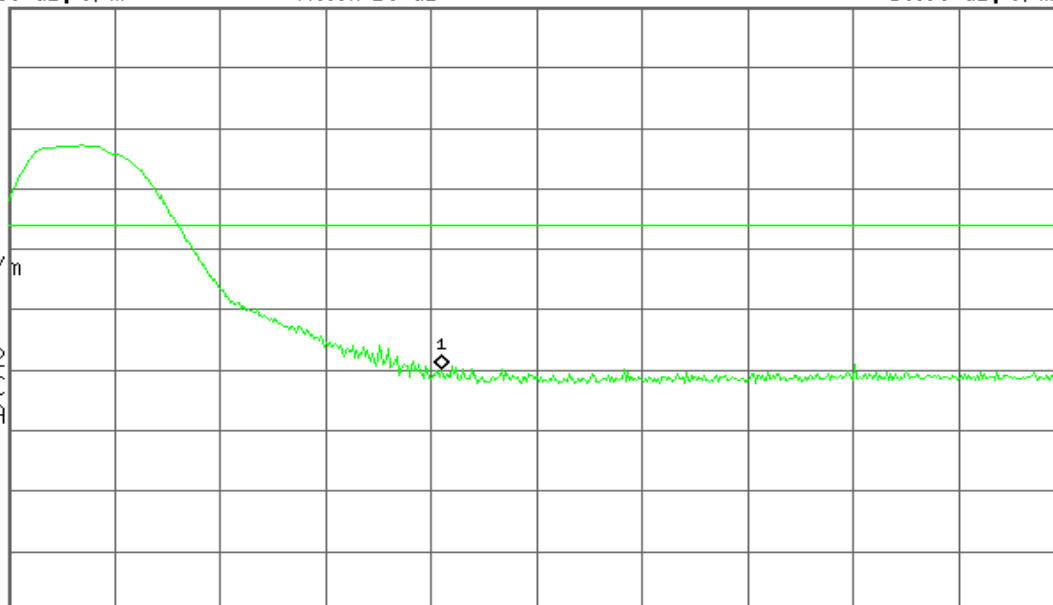
S3 FC

A AA

E(f):

FTun

Swp



Start 2.472 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

* Agilent 21:06:34 Mar 31, 2011

R T

Mkr1 2.483 50 GHz

36.01 dB μ V/mRef 110 dB μ V/m

#Atten 10 dB

Peak

Log

10

dB/

Offst

3

dB

DI

54.0

dB μ V/m

LgAv

M1 S2

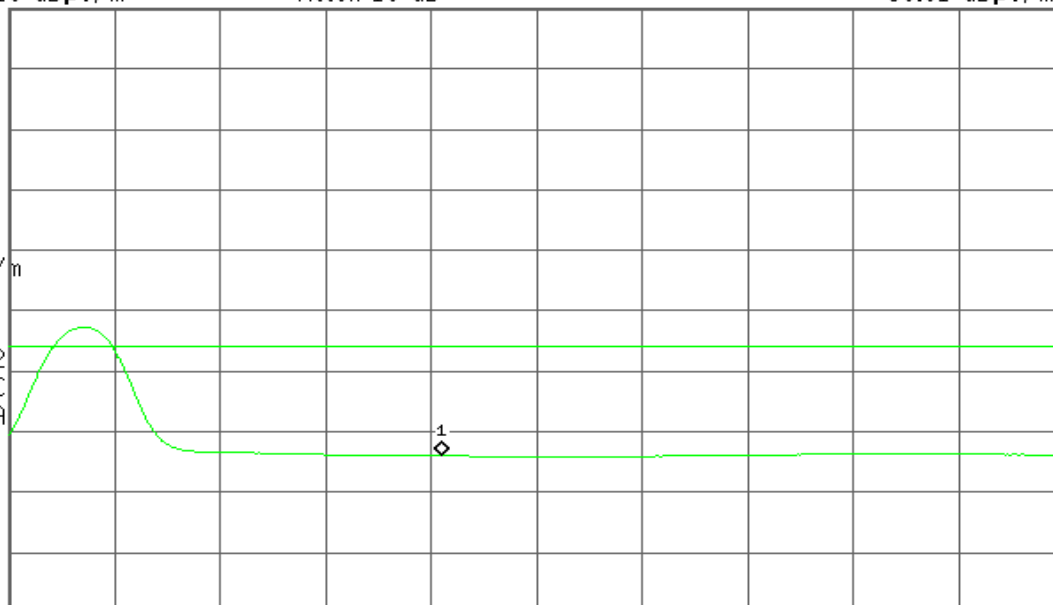
S3 FC

A AA

E(f):

FTun

Swp



Start 2.472 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 2.183 s (601 pts)



7.3 SPURIOUS EMISSION

LIMIT

1. In the section 15.249(a):

Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Field Strength (mV/m)	Field Strength of Harmonics (μV/m)
902-928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

2. 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 (μV/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.

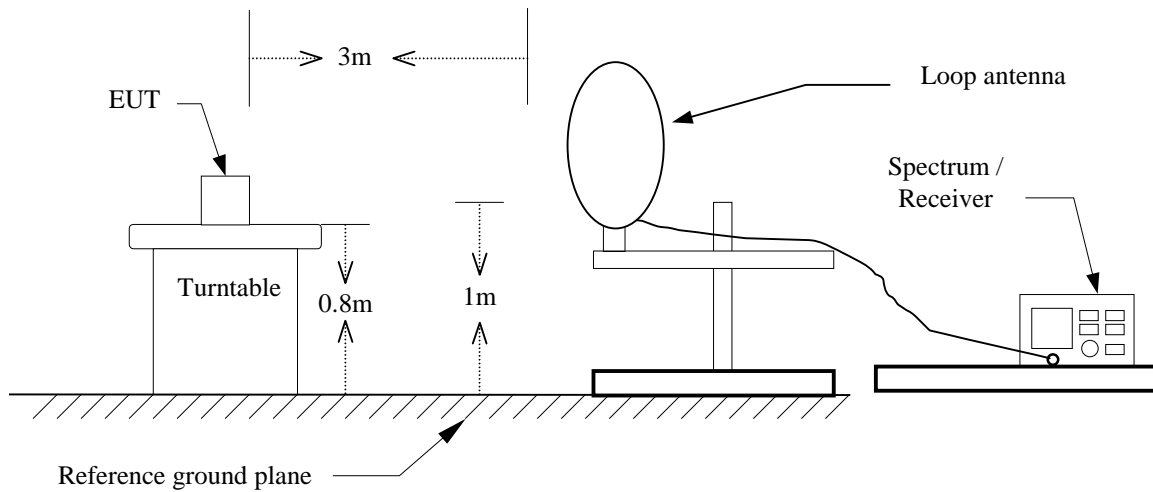
3. In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	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

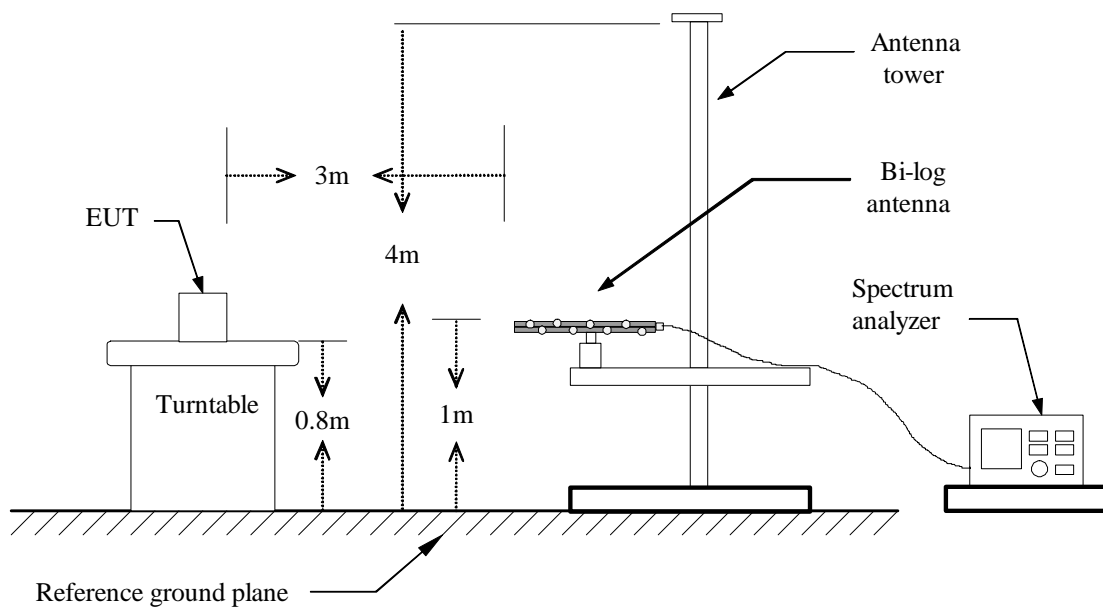


Test Configuration

9kHz ~ 30MHz

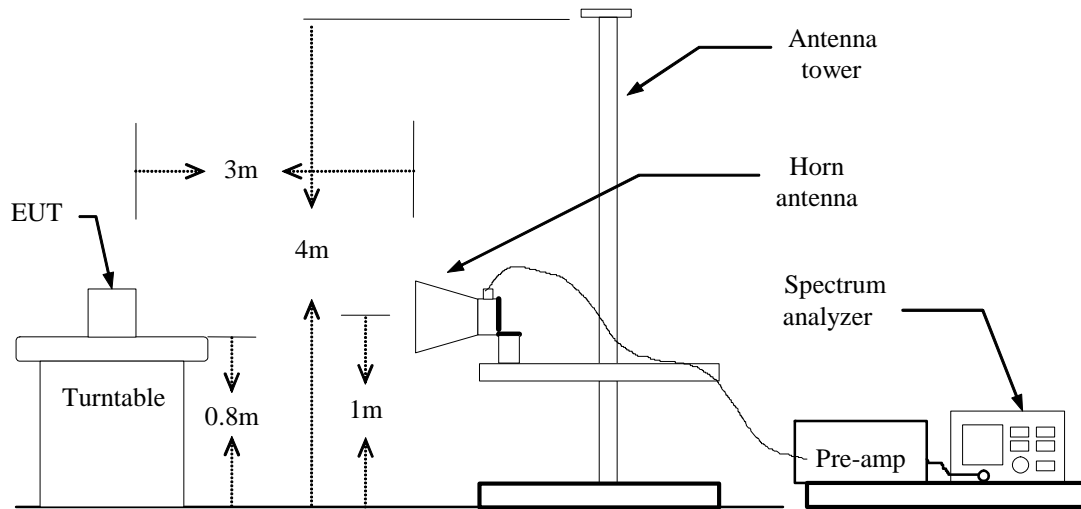


30MHz ~ 1GHz





Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

**Below 1 GHz****Operation Mode:** Normal Link**Test Date:** 2011/4/18**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 48% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Detector Mode (PK/QP)	Ant.Pol. (H/V)
30.00	22.98	-1.86	21.12	40.00	-18.88	Peak	V
135.08	30.03	-9.82	20.22	43.50	-23.28	Peak	V
159.33	27.03	-10.53	16.50	43.50	-27.00	Peak	V
448.72	29.71	-5.89	23.82	46.00	-22.18	Peak	V
477.82	26.16	-5.47	20.69	46.00	-25.31	Peak	V
686.37	24.57	-2.64	21.93	46.00	-24.07	Peak	V
30.00	20.65	-1.86	18.79	40.00	-21.21	Peak	H
135.08	23.25	-9.82	13.43	43.50	-30.07	Peak	H
403.45	23.26	-7.01	16.26	46.00	-29.74	Peak	H
531.17	23.63	-4.73	18.91	46.00	-27.09	Peak	H
686.37	23.91	-2.64	21.28	46.00	-24.72	Peak	H
776.90	23.13	-1.56	21.56	46.00	-24.44	Peak	H

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. $\text{Margin (dB)} = \text{Remark result (dBuV/m)} - \text{Quasi-peak limit (dBuV/m)}$.

**Above 1 GHz****Operation Mode:** Tx / CH Low**Test Date:** 2011/4/18**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 48% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol H/V
				Peak (dBuV/m)	AV (dBuV/m)					
2405.00	86.92	59.44	-4.25	82.67	55.19	114.00	94.00	-38.81	AVG	V
1736.67	54.05	---	-8.15	45.91	---	74.00	54.00	-8.09	Peak	V
4808.33	60.54	47.27	2.58	63.11	49.85	74.00	54.00	-4.15	AVG	V
7216.67	51.28	43.78	7.27	58.55	51.05	74.00	54.00	-2.95	AVG	V
N/A										
2405.00	96.38	63.42	-4.27	92.11	59.15	114.00	94.00	-34.85	AVG	H
1703.33	54.05	---	-8.48	45.57	---	74.00	54.00	-8.43	Peak	H
4808.33	54.29	46.63	2.58	56.87	49.21	74.00	54.00	-4.79	AVG	H
7216.67	54.86	44.30	7.27	62.13	51.57	74.00	54.00	-2.43	AVG	H
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.

**Operation Mode:** Tx / CH Mid**Test Date:** 2011/4/18**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 48% RH**Polarity:** Ver. / Hor.

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol H/V
				Peak (dBuV/m)	AV (dBuV/m)					
2440.00	82.83	57.47	-4.12	78.71	53.35	114.00	94.00	-40.65	AVG	V
1326.67	56.66	---	-10.73	45.93	---	74.00	54.00	-8.07	Peak	V
1580.00	58.21	---	-9.74	48.48	---	74.00	54.00	-5.52	Peak	V
2806.67	53.35	---	-2.83	50.52	---	74.00	54.00	-3.48	Peak	V
4883.33	58.57	47.51	2.73	61.29	50.24	74.00	54.00	-3.76	AVG	V
7316.67	48.54	42.74	7.23	55.77	49.97	74.00	54.00	-4.03	AVG	V
N/A										
2440.00	94.63	62.57	-4.12	90.51	58.45	114.00	94.00	-35.55	AVG	H
1323.33	54.95	---	-10.73	44.22	---	74.00	54.00	-9.78	Peak	H
4883.33	56.24	45.90	2.73	58.96	48.63	74.00	54.00	-5.37	AVG	H
7316.67	54.83	43.45	7.23	62.06	50.68	74.00	54.00	-3.32	AVG	H
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.



Operation Mode: Tx / CH High

Test Date: 2011/4/18

Temperature: 25°C

Tested by: Ali Shu

Humidity: 48% RH

Polarity: Ver. / Hor.

Freq. (MHz)	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Result		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol H/V
				Peak (dBuV/m)	AV (dBuV/m)					
2474.00	81.62	57.08	-3.98	77.64	53.10	114.00	94.00	-40.9	AVG	V
1406.67	54.03	---	-10.65	43.38	---	74.00	54.00	-10.62	Peak	V
4950.00	59.57	49.25	2.86	62.43	52.11	74.00	54.00	-1.89	AVG	V
7425.00	50.29	43.98	7.19	57.48	51.17	74.00	54.00	-2.83	AVG	V
N/A										
2474.00	90.53	60.97	-3.98	86.55	56.99	114.00	94.00	-37.01	AVG	H
1500.00	54.57	---	-10.55	44.02	---	74.00	54.00	-9.98	Peak	H
4950.00	57.71	44.45	2.86	60.57	47.31	74.00	54.00	-6.69	AVG	H
7425.00	57.32	42.05	7.19	64.51	49.24	74.00	54.00	-4.76	AVG	H
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.



7.4 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

Not applicable, because EUT not connect to AC Main Source direct.