FCC 47 CFR PART 15 SUBPART C

TEST REPORT

FOR

Product Name: Mouse

Model : GM-100006/M

Trade Name: Genius

Issued to
KYE SYSTEMS CORP.
No.492, Sec. 5, Chongxin Rd. Sanchong Dist., New Taipei City 24160 Taiwan (R.O.C.)

Issued by

Global Certification Corp.

EMC Test Site	Sijhih office and Lab	No. 146. Sec.2. Siangjhang Rd. Sijhih City. Taipei County 221, Taiwan(R.O.C.)

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1. GENERAL INFORMATION

Applicant	**:**	**KYE SYSTEMS CORP.**
Address	**:**	**No.492, Sec. 5, Chongxin Rd. Sanchong Dist., New Taipei City 24160 Taiwan (R.O.C.)**
Manufacturer	**:**	**KYE SYSTEMS CORP.**
Address	**:**	**No.492, Sec. 5, Chongxin Rd. Sanchong Dist., New Taipei City 24160 Taiwan (R.O.C.)**
EUT	**:**	**Mouse**
Model Name	**:**	**GM-100006/M**
Model Differences	**:**	**N/A**

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2003. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

FCC part 15 subpart C

Receipt Date : 12/29/2010 Final Test Date : 01/20/2011

Taipei, Taiwan Jan. 20, 2011 ***Alex Chou / Manager***

(Place) (Date) (Signature) Designation Number: TW1030

1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT Name	:	Mouse
Model Number	:	GM-100006/M
FCC ID	:	FSUGMZJI
Input Voltage	:	1.5Vdc
Power From		☑Inside ☐Outside
		☐Adaptor ☑BATTERY ☐AC Power Source ☐DC Power Source ☐Support Unit PC
Operate Frequency	:	197kHz
Modulation Technique	:	N/A
Number of Channels	:	1(197kHz)
Antenna Type	:	☑integral antenna: Component antenna (197kHz)

2. TEST METHODOLOGY

All testing as described bellowed were performed in accordance with ANSI C63.4:2003 and FCC CFR 47 Part 15 Subpart C.

2.1 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

2.2 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
10.495 - 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 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

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.

2.3 DESCRIPTION OF TEST MODES

The EUT was tested under following modes:

Modes:

1. **Continuous transmitting**
2. **Normal mode**

Channels:

1. **197kHz**

2.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

Setup Diagram

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/ BSMI ID	Trade name	Data Cable	Power Cord
	N/A						

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.

3. TEST AND MEASUREMENT EQUIPMENT

3.1 CALIBRATION

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

3.2 EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

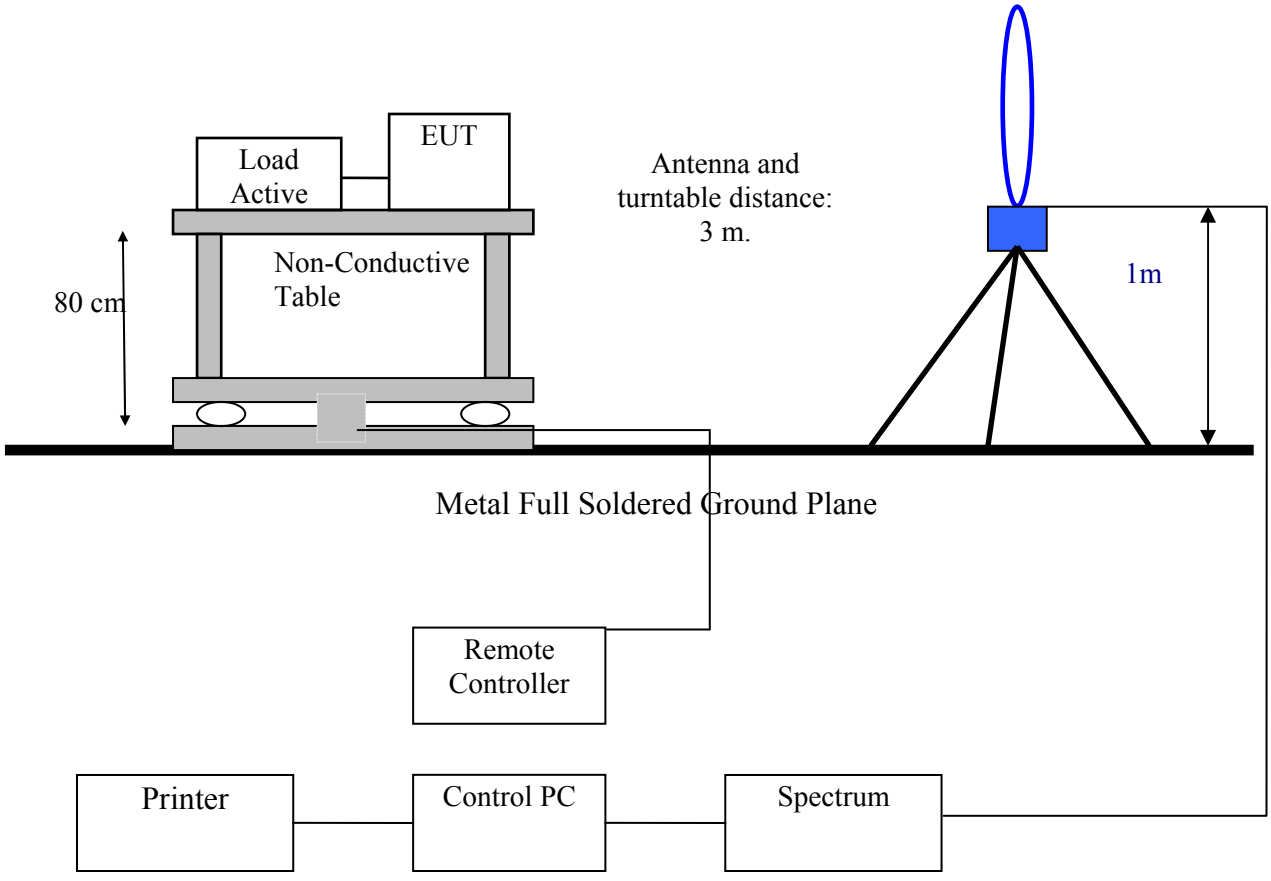
TABLE 1 LIST OF TEST AND MEASUREMENT EQUIPMENT

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date	Note
EMC Test Receiver	R&S	ESCI	100438	Jun 29, 2010	Jun 29, 2011	
Bilog Antenna	SUNOL	JB1	A052204	Nov 06, 2009	Nov 06, 2011	
Turn table	EMCO	2080	9508-1805	N/A	N/A	
Controller	EMCO	2090	9804-1328	N/A	N/A	
Amplifier	G.W	GAP-801	EF150001	Jul.18, 2010	Jul.18, 2011	
Amplifier	Schwarzbeck	BBV 9718	9718-008	May 11 2010	May 11 2011	
Spectrum Analyzer	NEX1	Ns-265	5044006	May 11 2010	May 11 2011	
RF Cable	BELDEN	RG-8/U	28M-002	Nov 02, 2009	Nov 10, 2011	
RF Cable	Huber Suhner	SUCOFLEX 104	293864/4	Nov. 13, 2009	Nov. 13, 2011	
Thermo-Hygro meter	WISEWIND	4-IN-1	050100378	Apr 08, 2010	Dec 01, 2011	
Loop Antenna	TESEO	HLA6120	26349	Sep.11, 2010	Sep.11, 2011	
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-491	Aug. 05, 2010	Aug. 05, 2011	

※ Calibration interval of instruments listed above is one year

4. SECTION 15.209 REQUIREMENTS FOR 197kHZ (FUNDAMENTAL/ HARMONICS)

4.1 TEST SETUP



4.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**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.*

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

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m at 3-meter)
0.009-0.490	2400/F(kHz)	128.52-93.80
0.490-1.705	24000/F(kHz)	73.80-62.97
1.705-30	30	69.54
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54

Below the 30MHz test distance limit transfer to 3m limit calculation:
0.009MHz-0.0490MHz 3m limit= 20log(2400/F(kHz))+40log(300/3) =20log (2400/F(kHz)) +80dB
0.490MHz-1.705MHz 3m limit= 20log(24000/F(kHz))+40log(30/3)=20log(24000/F+40dB
1.705MHz-30MHz 3m limit= 20log30+40log(30/3)=29.54+40=69.54dB

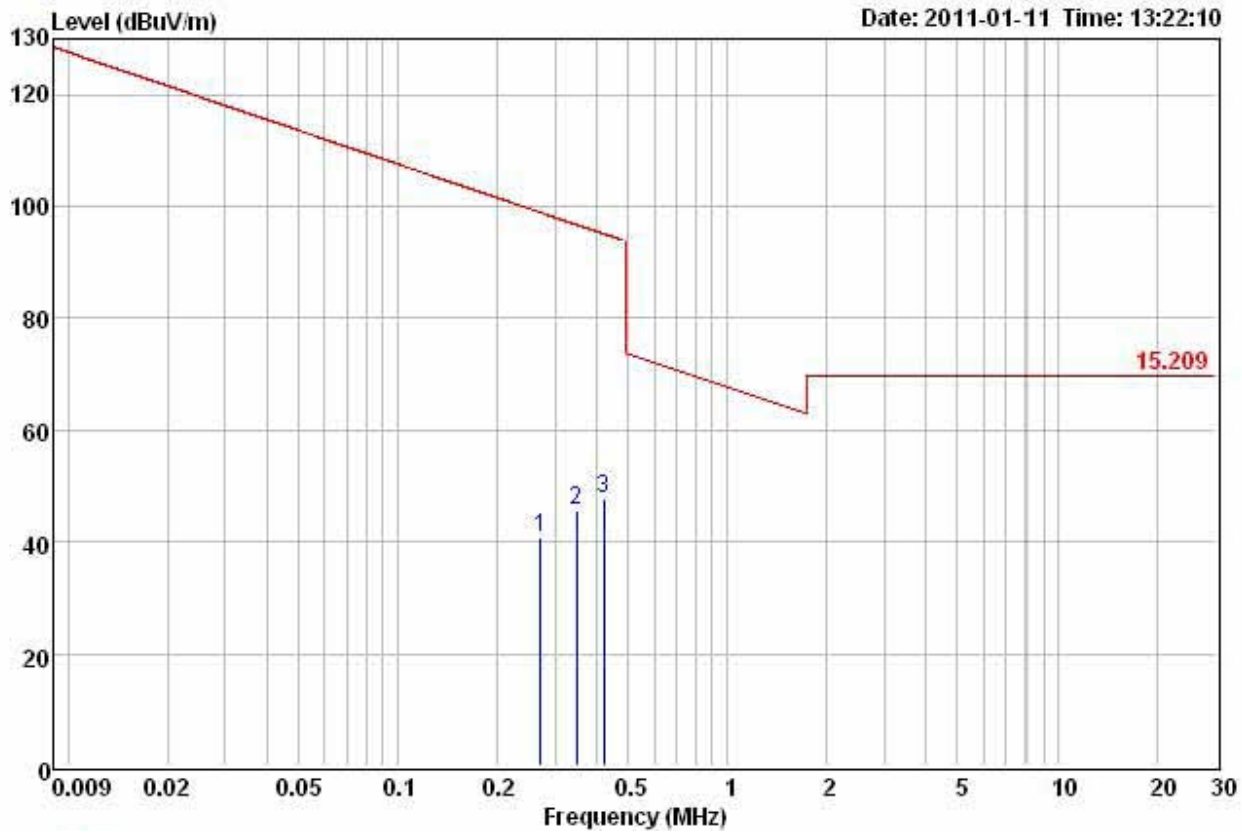
4.3 TEST PROCEDURE

1. The EUT was placed on a turntable, which was 0.8m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna 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 maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

4.4 RESULT: PASSED

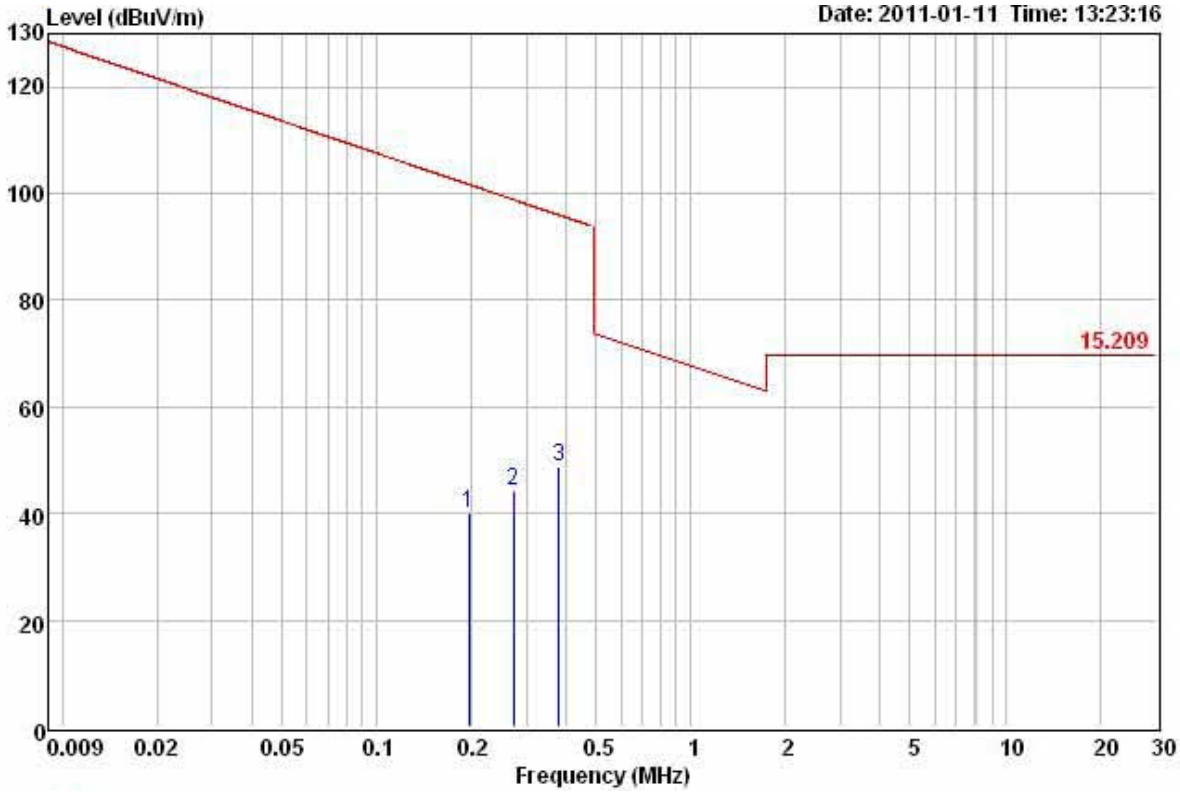
4.5 TEST DATA:

The EUT place to the X axis (Horizontal)



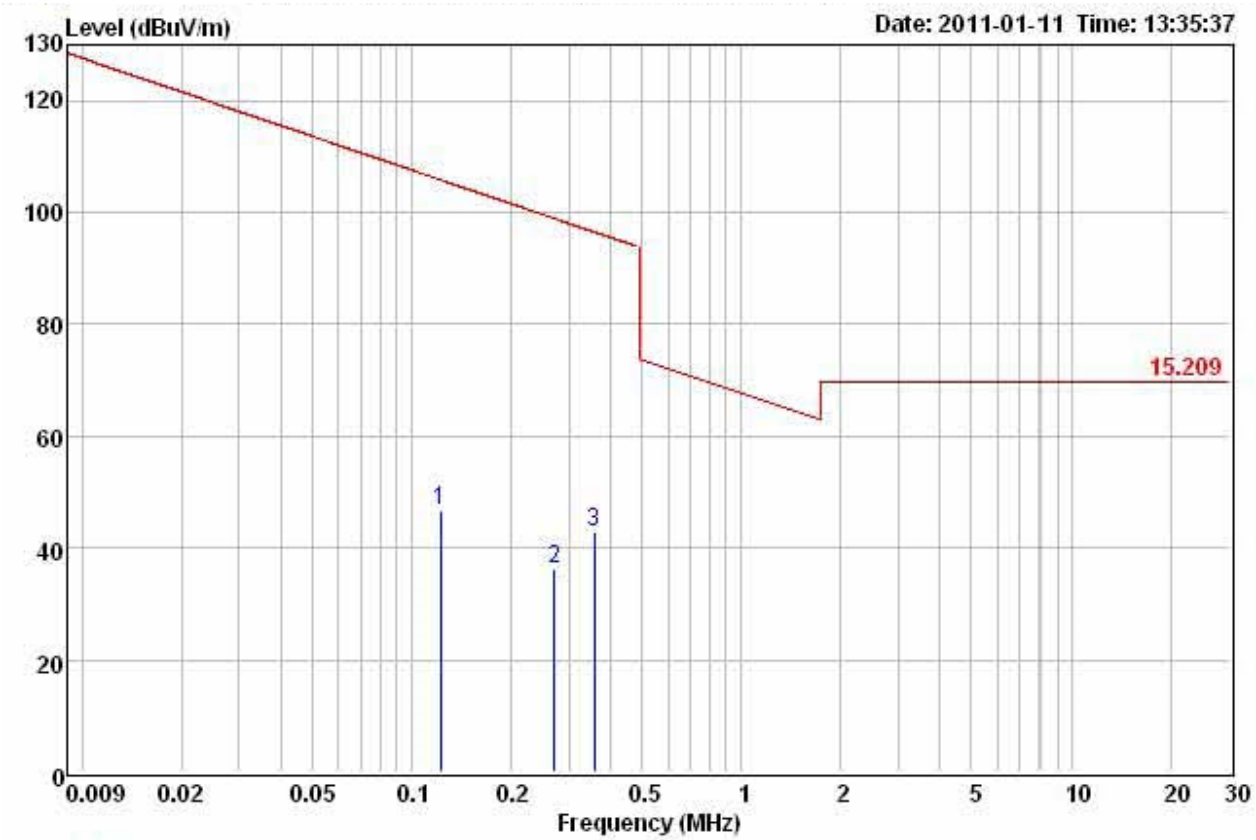
	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.27	40.63	20.41	20.22	-58.31	98.94	Peak
2	0.35	45.76	25.59	20.17	-50.96	96.72	Peak
3	0.42	47.90	27.77	20.13	-47.22	95.12	Peak

The EUT place to the X axis (Vertical)



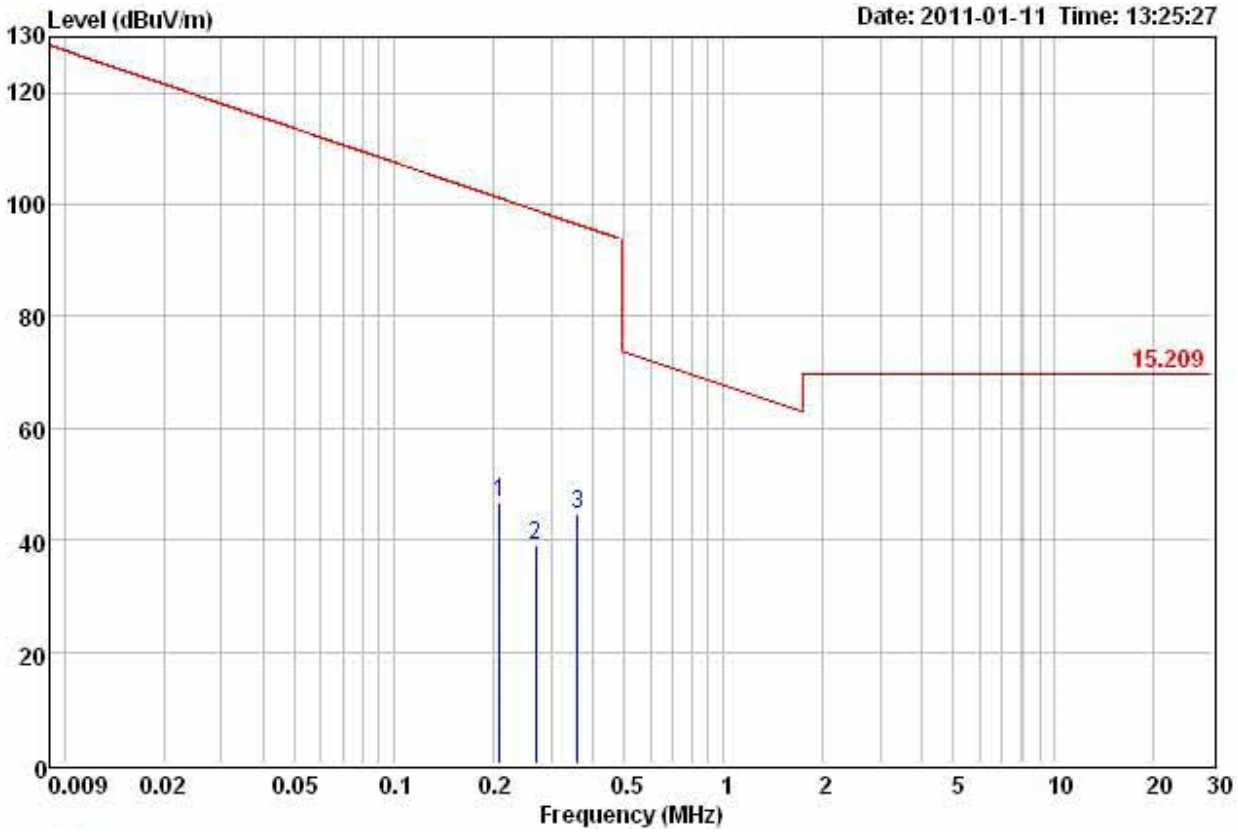
	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.20	40.09	20.17	19.92	-61.59	101.68	Peak
2	0.27	44.12	23.91	20.21	-54.77	98.89	Peak
3	0.38	48.69	28.54	20.15	-47.27	95.96	Peak

The EUT place to the Y axis (Horizontal)



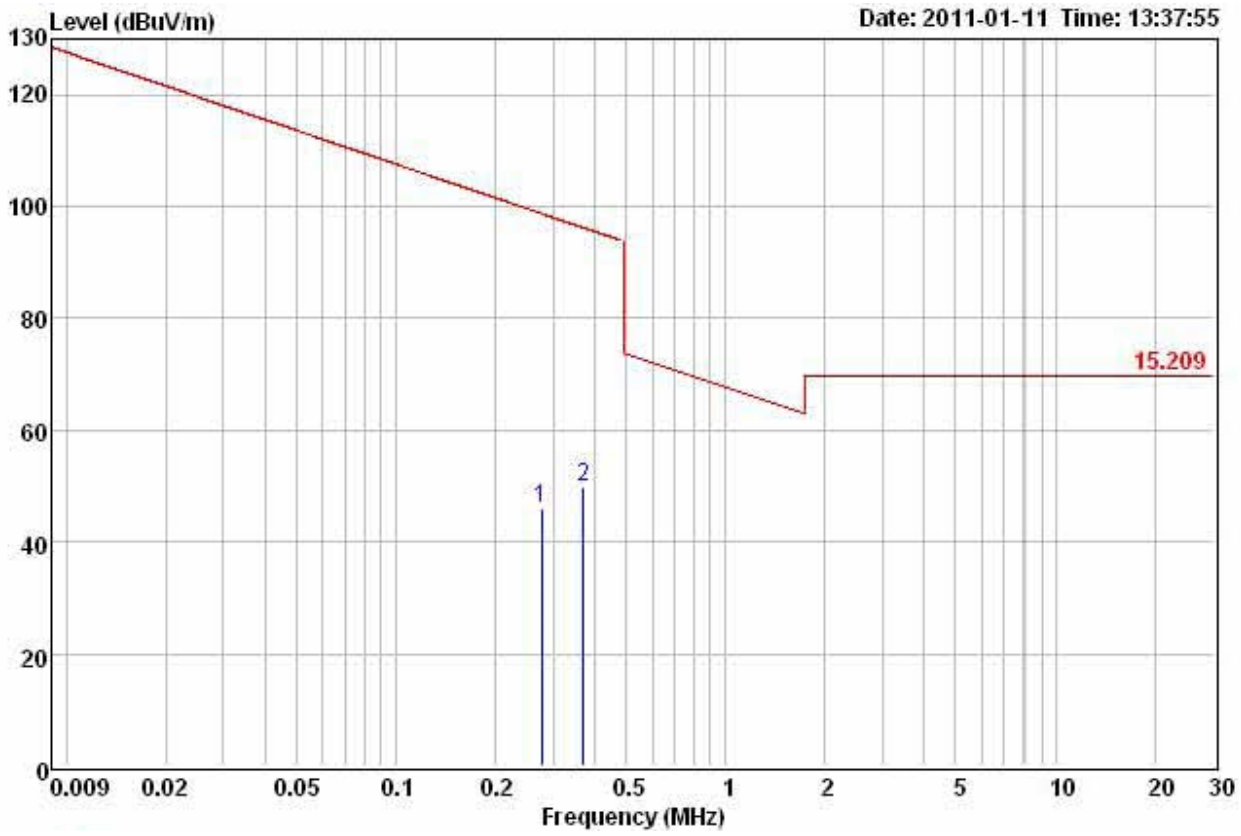
	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.12	46.66	26.58	20.08	-59.22	105.88	Peak
2	0.27	36.10	15.88	20.22	-62.84	98.94	Peak
3	0.36	42.88	22.72	20.16	-53.62	96.50	Peak

The EUT place to the Y axis (Vertical)



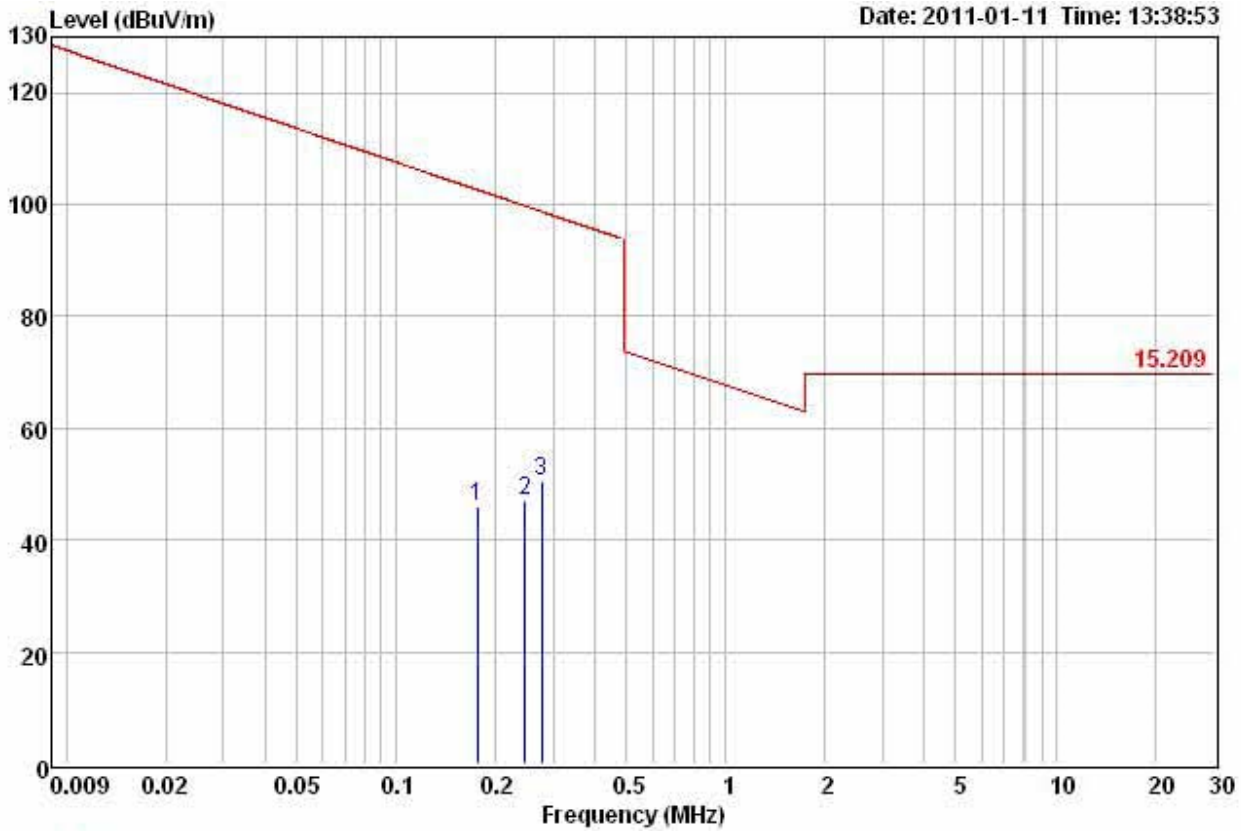
	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.21	46.55	26.57	19.98	-54.61	101.16	Peak
2	0.27	39.11	18.89	20.22	-59.87	98.98	Peak
3	0.36	44.68	24.52	20.16	-51.75	96.43	Peak

The EUT place to the Z axis (Horizontal)



	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.28	46.13	25.91	20.22	-52.65	98.78	Peak
2	0.37	49.72	29.57	20.15	-46.50	96.22	Peak

The EUT place to the Z axis (Vertical)



	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	0.18	46.08	26.11	19.97	-56.57	102.65	Peak
2	0.25	47.20	26.98	20.22	-52.55	99.75	Peak
3	0.28	50.39	30.18	20.21	-48.35	98.74	Peak

Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Peak detector measurement data will represent the worst case results.
5. "---" denotes the data which is not available.
6. Testing was done up to the 4# harmonics because there is no any signal after 4# harmonics.

5. 20dB BANKWIDTH

5.1 TEST SETUP

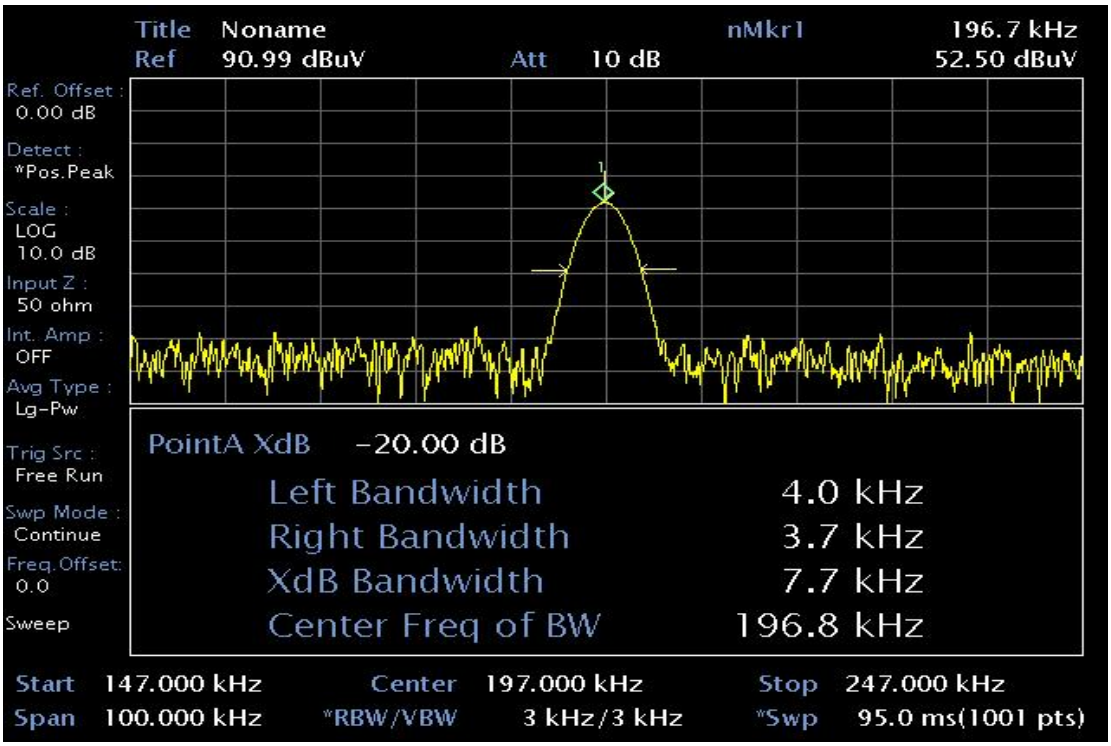
Refer to paragraph 4.1and 7.1.

5.2 TEST PROCEDURE

The spectrum analyzer span was set to 2 to 3 times the estimated 20 dB bandwidth of the emission. The RBW was to ≥ 1% of the estimated 20 dB bandwidth. The trace was set to max hold with a peak detector active. The measurement function of the analyzer was utilized to determine the 20 dB and 99% occupied bandwidths.

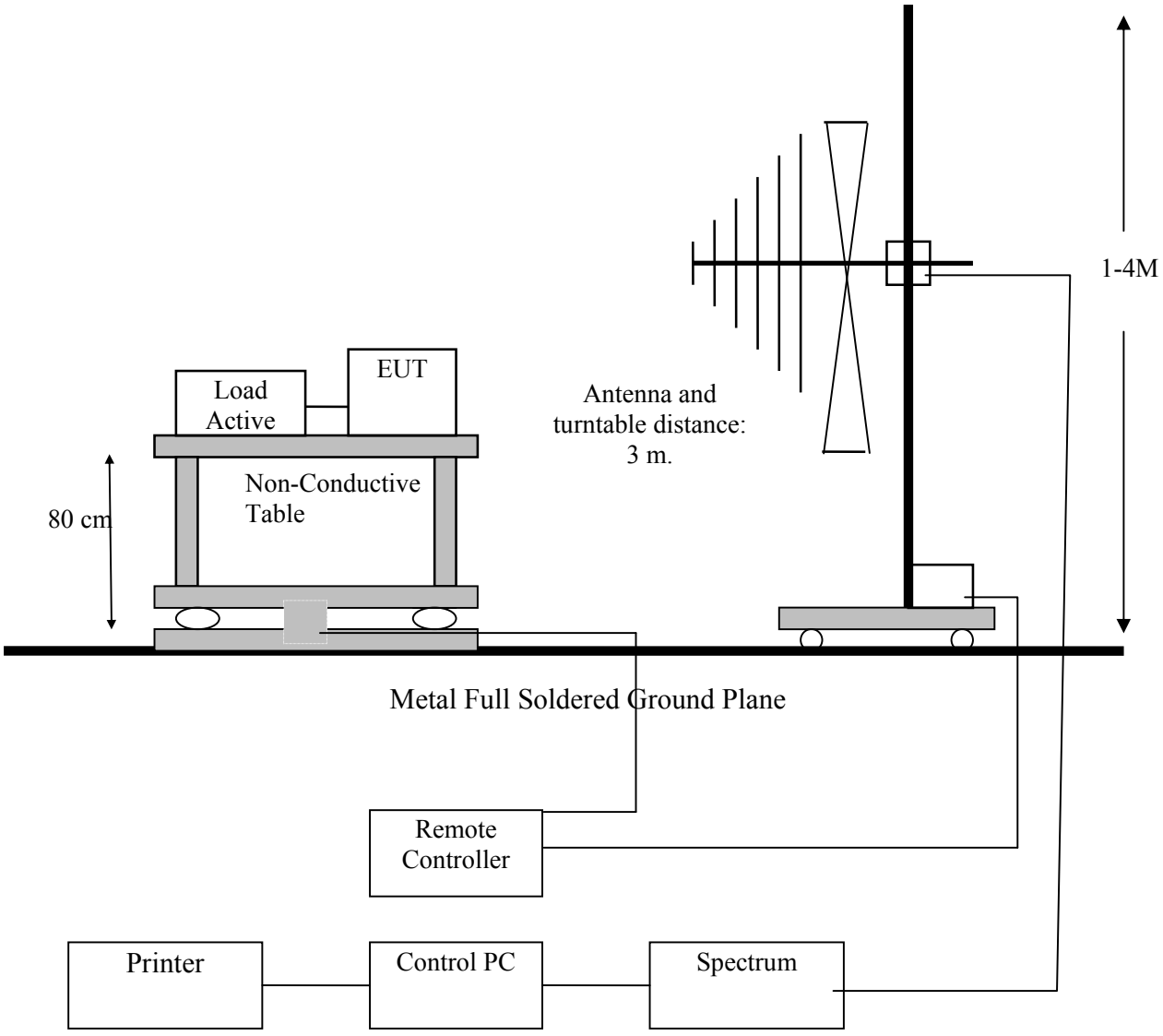
5.3 TEST DATA:

Frequency (kHz)	20dB band width (kHz)
196.7	7.7



6. SECTION 15.209 REQUIREMENTS (GENERAL RADIATED EMISSION)

6.1 TEST SETUP



6.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

**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.*

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

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m at 3-meter)
0.009-0.490	2400/F(kHz)	128.52-93.80
0.490-1.705	24000/F(kHz)	73.80-62.97
1.705-30	30	69.54
30-88	100	40
88-216	150	43
216-960	200	46
Above 960	500	54

Below the 30MHz test distance limit transfer to 3m limit calculation:
0.009MHz-0.0490MHz 3m limit= 20log(2400/F(kHz))+40log(300/3) =20log (2400/F(kHz)) +80dB
0.490MHz-1.705MHz 3m limit= 20log(24000/F(kHz))+40log(30/3)=20log(24000/F+40dB
1.705MHz-30MHz 3m limit= 20log30+40log(30/3)=29.54+40=69.54dB

6.3 TEST PROCEDURE

1. The EUT was placed on a turntable, which was 0.8m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna, which was 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 maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

6.4 TEST SPECIFICATION

ANSI C63.4 – 2003 Section 5.2, 7.1, 7.2

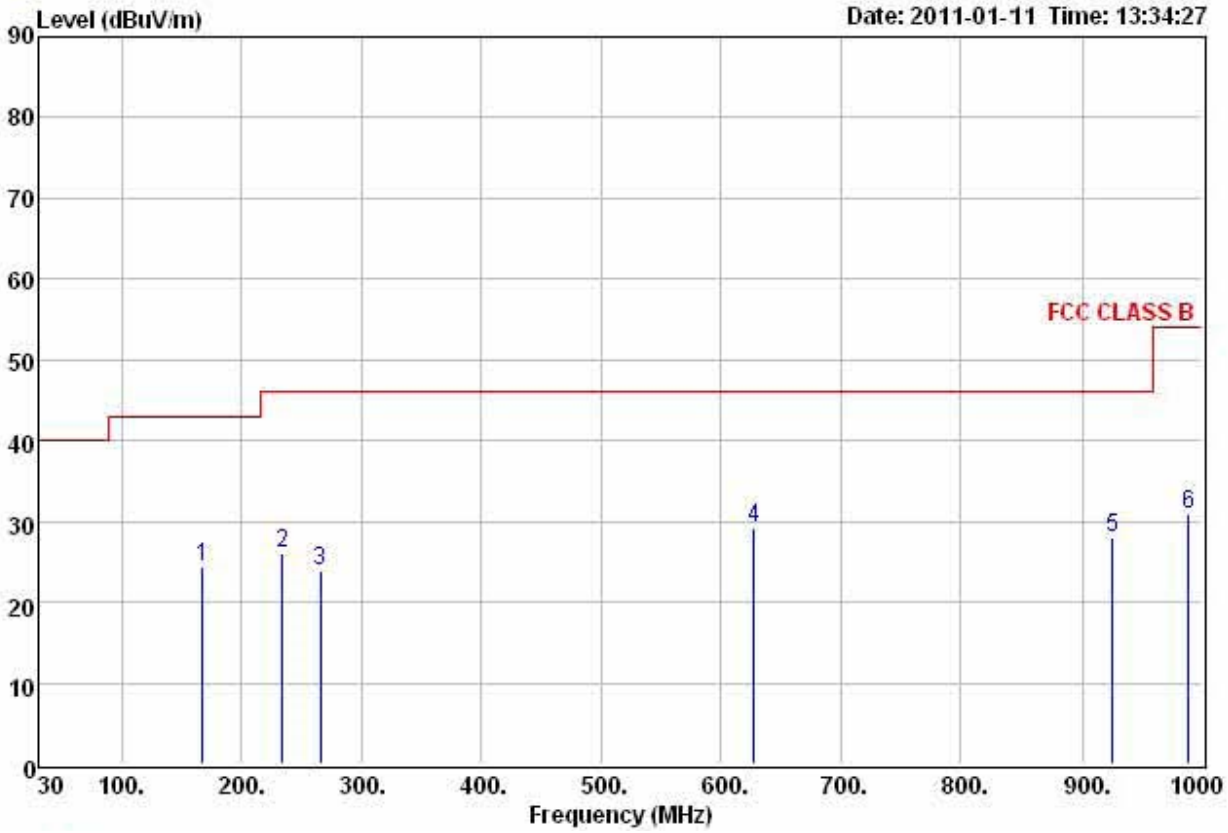
6.5 RESULT: PASSED

6.6 TEST DATA:

All frequencies not described in this test report and within the range of the general radiated emission limits are not detectable significantly. The table as below is representing worst emissions found.

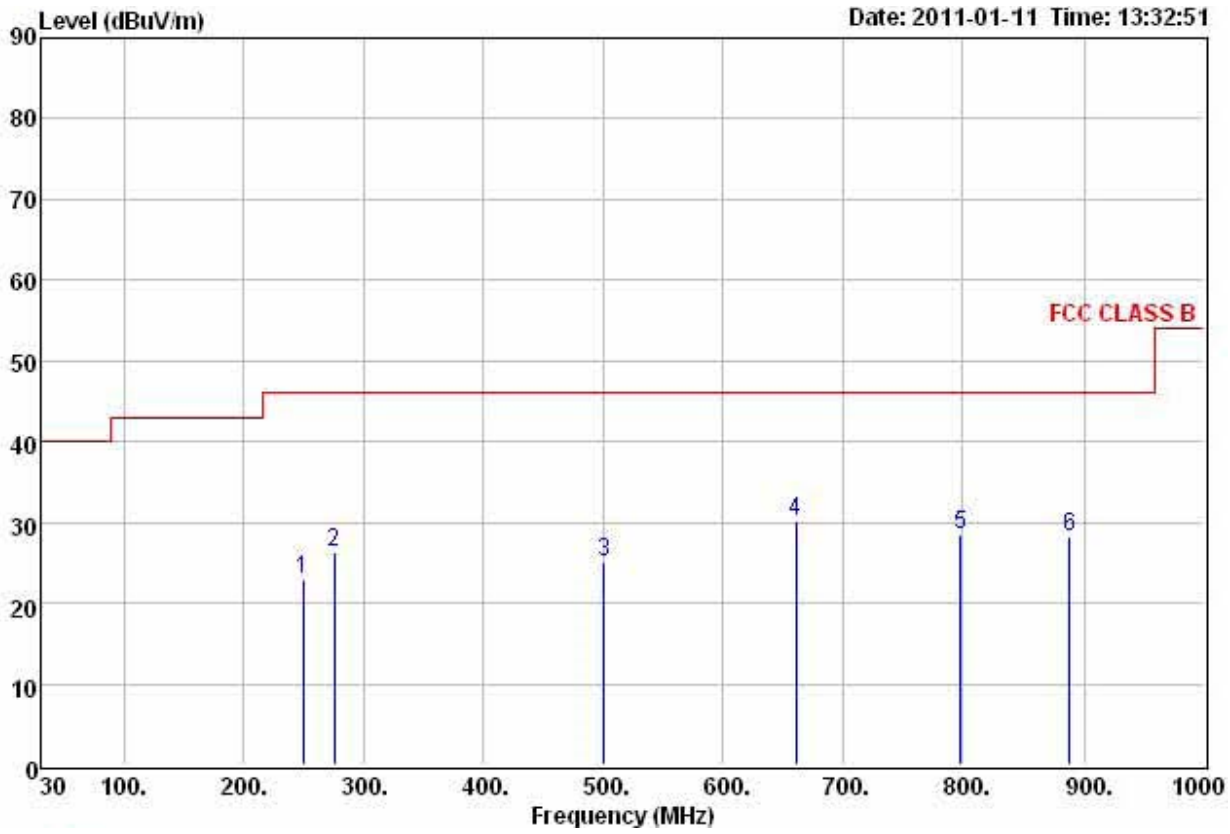
Normal mode

30MHz-1GHz (Horizontal)



	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	166.77	24.32	37.53	-13.21	-18.68	43.00	Peak
2	233.70	26.07	39.08	-13.01	-19.93	46.00	Peak
3	265.71	23.98	35.24	-11.26	-22.02	46.00	Peak
4	627.52	29.25	31.18	-1.93	-16.75	46.00	Peak
5	925.31	27.88	23.45	4.43	-18.12	46.00	Peak
6	989.33	30.99	24.95	6.04	-23.01	54.00	Peak

30MHz-1GHz (Vertical)



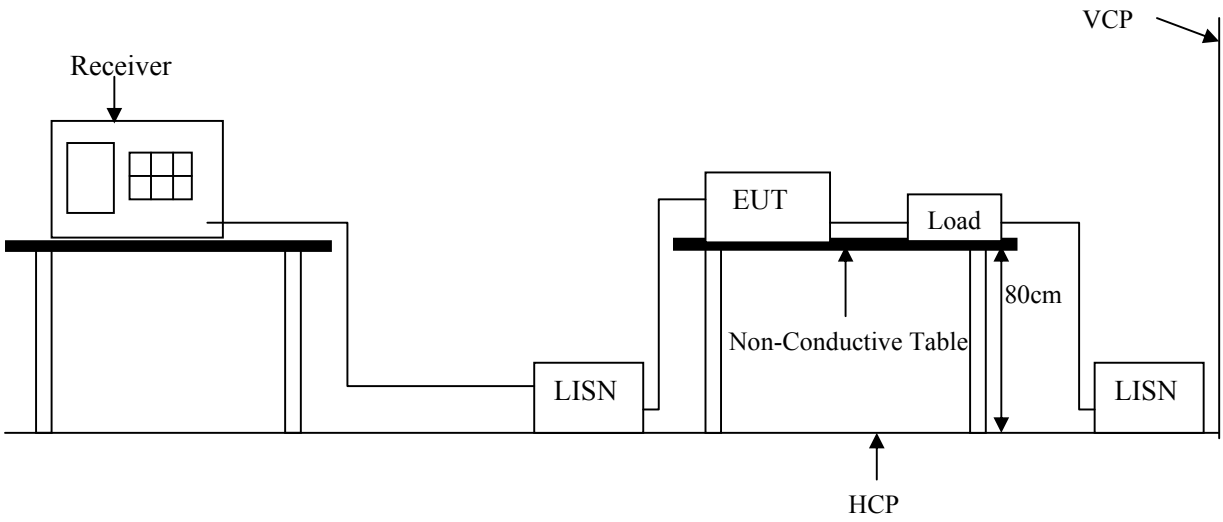
	Freq	Level	Read Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV/m	dBuV	dB/m	dB	dBuV/m	
1	249.22	22.83	35.44	-12.61	-23.17	46.00	Peak
2	275.41	26.37	37.09	-10.72	-19.63	46.00	Peak
3	500.45	25.00	29.83	-4.83	-21.00	46.00	Peak
4	661.47	30.14	31.44	-1.30	-15.86	46.00	Peak
5	798.24	28.44	27.17	1.27	-17.56	46.00	Peak
6	888.45	28.31	24.92	3.39	-17.69	46.00	Peak

Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, PreAmp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements from 9 kHz to 150 kHz, Peak detector setting: 100 Hz RBW
5. Measurements from 150 kHz to 30MHz, Peak detector setting: 10 kHz RBW
6. Measurements from 30 MHz to 1000 MHz, Peak detector setting: 100 kHz RBW
7. Measurements from 9 kHz to 150 kHz, CISPR Quasi-Peak detector: 200 Hz RBW
8. Measurements from 150 kHz to 30MHz, CISPR Quasi-Peak detector: 9 kHz RBW
9. Measurements from 30 MHz to 1000 MHz, CISPR Quasi-Peak detector: 120 kHz RBW
10. Peak detector measurement data will represent the worst case results.

7. SECTION 15.207 REQUIREMENTS (POWERLINE CONDUCTED EMISSIONS)

7.1 TEST SETUP



7.2 TEST SETUP

7.3 LIMIT

Frequency range (MHz)	CLASS A		CLASS B	
	QP dB(uV)	Average dB(uV)	QP dB(uV)	Average dB(uV)
0.15-0.5	79 dBuV	66 dBuV	66 - 56 dBuV	56 - 46 dBuV
0.5-5.0	73 dBuV	60 dBuV	56 dBuV	46 dBuV
5.0-30.0	73 dBuV	60 dBuV	60 dBuV	50 dBuV

Remark: In the above table, the tighter limit applies at the band edges.

7.4 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50 μH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50 μH coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to EN 55022 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter is set at 9 KHz.

7.5 TEST SPECIFICATION

According to PART15.207

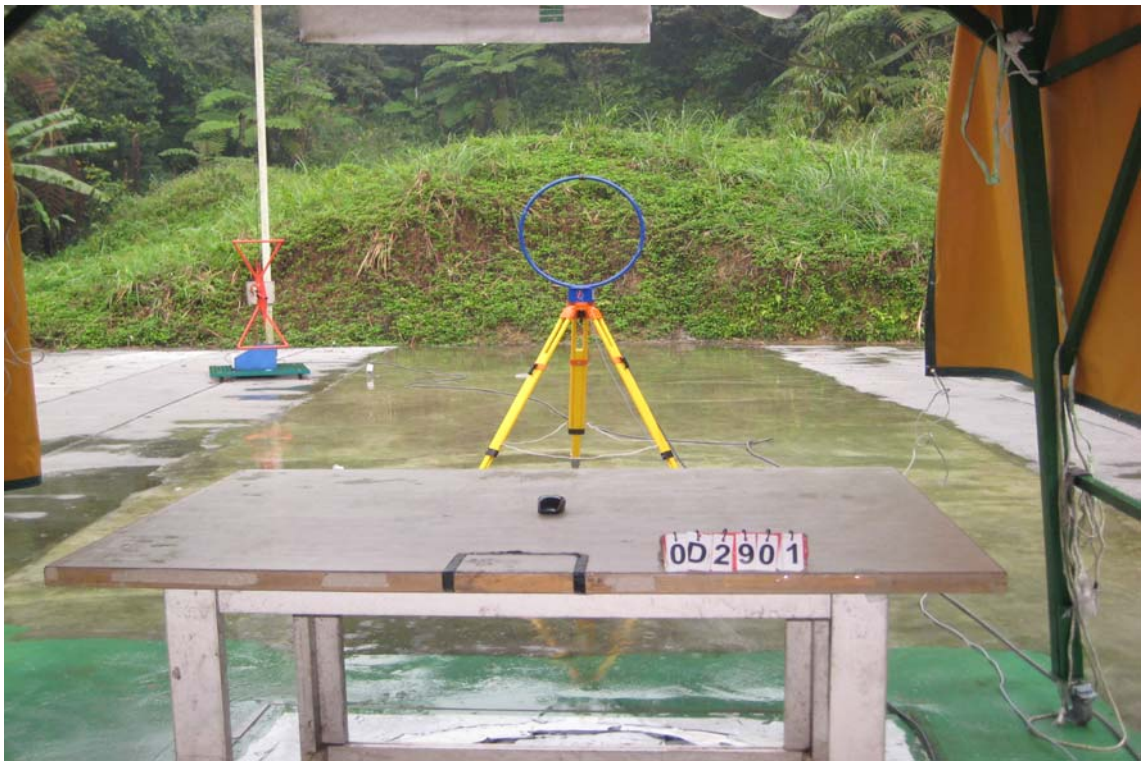
7.6 RESULT: NOT AVAILABLE, BECAUSE THE EUT IS POWERED BY THE BATTERY.

7.7 TEST DATA: N/A

Appendix 1

PHOTOS OF TEST CONFIGURATION

Horizontal Polarization and the EUT (9kHz~30MHz)



Horizontal Polarization and the EUT(30MHz~1GHz)