SGS-CSTC Standards Technical Services Ltd.

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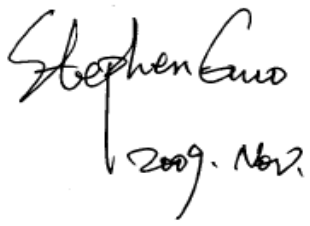
Email: sgs_internet_operations@sgs.com
FEDERAL COMMUNICATIONS COMMISSION
Registration number: 282399

TEST REPORT

Application No.:	GLEMO090802589RF
Applicant:	National Electronics & Watch Co., Ltd.
Address of Applicant:	15/F, Shing Dao Ind. Bldg., 232, Aberdeen Main Road., Aberdeen, HongKong
Equipment under Test (EUT)	
Name:	Bike Computer(RX)
Model No.:	M08-257, M08-258♣
♣	Please refer to section 3 of this report which indicates which item was actually tested and which were **electrically** identical.
FCC ID:	UH5M08-257-258
Function:	Wireless Receiver
Standards:	FCC PART 15:2008, SUBPART B
Date of test:	03 November to 06 November 2009
Date of Issue:	06 November 2009
Test Result :	**PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Stephen Guo
Manager

2 Version

Version No.	Date	Description
01	06 November 2009	Orginal

Prepared By: ***Celia Xiang*** ***Date*** ***2009-11-06***

Project Engineer

Checked By: ***Strong Yao*** ***Date*** ***2009-11-06***

Reviewer

3 Test Summary

The customer requested FCC tests for a Wireless Receiver.

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150 kHz to 30 MHz)	FCC PART 15 SUBPART B:2008	ANSI C63.4:2003	Class B	PASS
Radiated Emission	FCC PART 15 SUBPART B:2008	ANSI C63.4:2003	Class B	PASS

Remark:

♣Item No.: M08-257, M08-258

Only the item M08-257 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for above two models, only the software is different and carries out different function:

M08-257: bike function & heart rate

M08-258: bike function

4 Contents

5 General Information

5.1 Client Information

5.2 General Description of E.U.T.

EUT Name: Bike Computer(RX)
Model: M08-257, M08-258
Power supply: DC 3V (button cell “CR2430”)

5.3 Details of E.U.T.

The EUT can receive the signal from transmitter and download the data through computer.

Description	Manufacturer	Model No.	SN/Certificate NO
Test PC 1			
Personal Computer	DELL	WORKSTATION 690	3R5592X
Monitor	SAMSUNG	225MS	CR22HVMP900646W
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8115	CN-ODJ331-71616-7B1-109J
Test PC 2			
Personal Computer	DELL	OPTIPLEX 755	D6JF82X
Monitor	DELL	MOR-SP2208WFPt(B)	CN-OPK573-71618-831-119U
Mouse	DELL	M-WDEL1	OT0943
Keyboard	DELL	SK-8115	CN-ODJ331-71616-7B1-109J
Test PC 3			
Personal Computer	DELL	OPTIPLEX 330	7JZ382X
Monitor	DELL	E228WFPc	CN-OPN380-64180-7CJ-1DXL
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	CHERRY	RS 6000M	G 00005662 Q242 III
Test PC 4			
Personal Computer	HP	DX7208	CNG62707HF
Monitor	HP	D8904	L0204H094
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8135	N/A
Notebook			

NoteBook	IBM	T40	99-FBAF9 03/09
NoteBook	Lenovo	R400	L3-ABB9E
Printer			
Printer	DELL	4470-AD1 (926B)	CN-OGH204-48734-69Q-7K78
Printer	HP	C5884A	SG78D1H18F
Other Peripheral			
DV	SONY	DCR-HC28	375383
Portable Hard disk	MSI	2.5" USB2.0 MOBILE HDD(250GB)	HKC08-J/L8022438329
Portable Hard disk	SAMSUNG	HM320JI(320GB)	S16LJD0Q543275
ROM Programmer	DASI Electronics	EMP-100A	N/A
GROUP PHONE SYSTEM	HB	WS824(1)	241342207120130
Fast Ethernet Switch	TP-Link	TL-SF1005D	07126101589
Fast Ethernet Switch	TP-Link	TL-SF1008D	07126001251
MIC	VoiceAO	N/A	N/A
MIC	VoiceAO	N/A	N/A
Flash Disk	Kingston	DTI/2GB	CH 092908
Flash Disk	Kingston	DTI/1GB	CH 042007
SD Memory Card	SanDisk	128MB	AK0531802339D
MiniSD Memory Card	SanDisk	1024MB	BB063010TE
MMCmobile	Richlight	1GB	MM8GH01GRMCA-9A
Headphone	COBY	CV-230	N/A
Headphone	Philips	N/A	N/A
Ipod Nano	Apple	MB147CH	JQ74121YMV
Xbox 360 Console	Microsoft	Xbox 360 Console	00328731122665682907
Xbox Video Game System	Microsoft	F23-00064	111100623241005

5.4 Description of Support Units

None.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

- **ACMA**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

  Date of Registration: February 18, 2009.Valid until February 18, 2011.

- **VCCI (Registration No.: R-2460 and C-2584)**

  The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460 and C-2584 respectively.

- **CBTL (Lab Code: TL129)**

  SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

  This certificate was issued Aug.6.2009 and valid until May.19.2012.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

6 Equipments Used during Test

	Conducted Emission					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m^3	N/A	N/A	N/A
EMC0102	LISN	Schaffner Chase	MNZ050D/1	1421	24-11-2009	24-11-2010
EMC0118	Two-line v-netwok	Rohde & Schwarz	ENV216	3560.6550.02	18-08-2009	18-08-2010
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	14-12-2008	14-12-2009
EMC0107	Coaxial Cable	SGS	2m	N/A	26-11-2009	26-11-2010
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A	N/A
EMC0120	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	21-02-2009	21-02-2010
EMC0121	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	21-02-2009	21-02-2010
EMC0122	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	21-02-2009	21-02-2010

	RE in Chamber					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	N/A	N/A
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100249	28-01-2009	28-01-2010
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	10036	14-07-2009	14-07-2010
N/A	EMI Test Software	Audix	E3	N/A	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	04-12-2009	04-12-2010
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	08-10-2009	08-10-2010
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	08-10-2009	08-10-2010
EMC0517	Horn Antenna	Rohde & Schwarz	HF906	100095	09-09-2009	09-09-2010
EMC0040	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	05-12-2009	05-12-2010
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	11-03-2009	11-03-2010
EMC0075	310N Amplifier	Sonama	310N	272683	26-10-2009	26-10-2010
EMC0523	Active Loop Antenna	EMCO	6502	00042963	08-10-2009	08-10-2010
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	02-06-2009	02-06-2010

	General used equipment					
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
EMC0006	DMM	Fluke	73	70681569	23-12-2008	23-12-2009
EMC0007	DMM	Fluke	73	70671122	23-12-2008	23-12-2009

7 Emission Test Results

7.1 Conducted Emissions Mains Terminals, 150 kHz to 30 MHz

Test Requirement:	FCC Part15 B
Test Method:	ANSI C63.4
Test Date:	03 November 2009
Frequency Range:	150 kHz to 30 MHz
Class / Severity:	Class B
Detector:	Peak for pre-scan (9 kHz Resolution Bandwidth)
	Quasi-Peak if maximised peak within 6 dB of Quasi-Peak limit

7.1.1 E.U.T. Operation

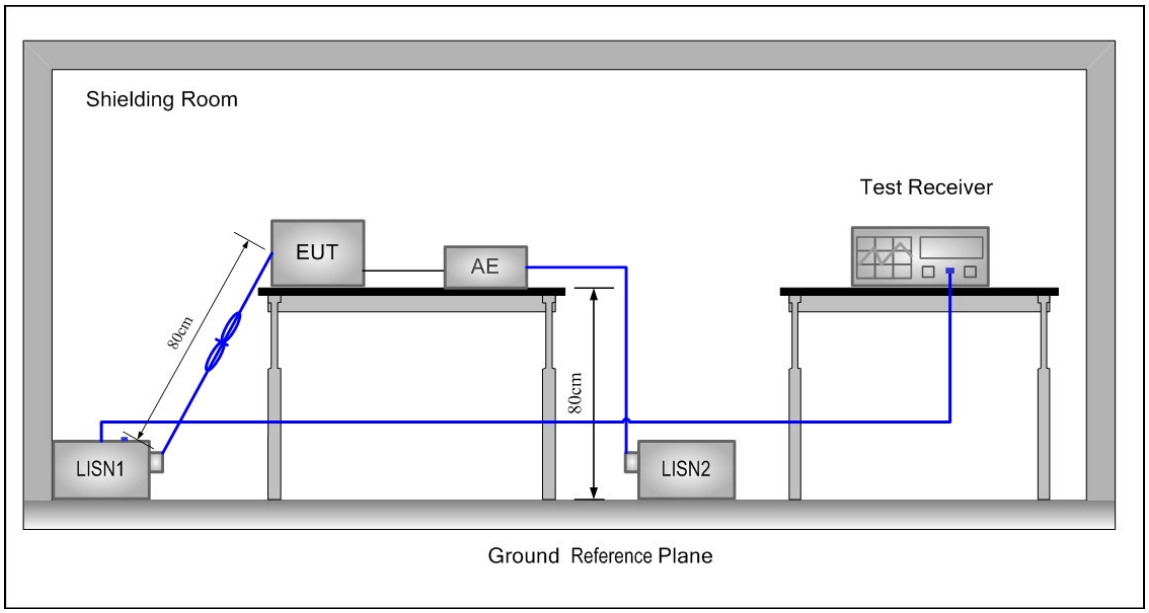
Operating Environment:

Temperature: 21.0 °C Humidity: 50 % RH Atmospheric Pressure: 1008 mbar

EUT Operation: Test the EUT in PC connection mode with downloading data.

7.1.2 Plan View of Test Setup

Test Configuration:



Test procedure:

1. The mains terminal disturbance voltage test was conducted in a shielded room.

2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

7.1.3 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

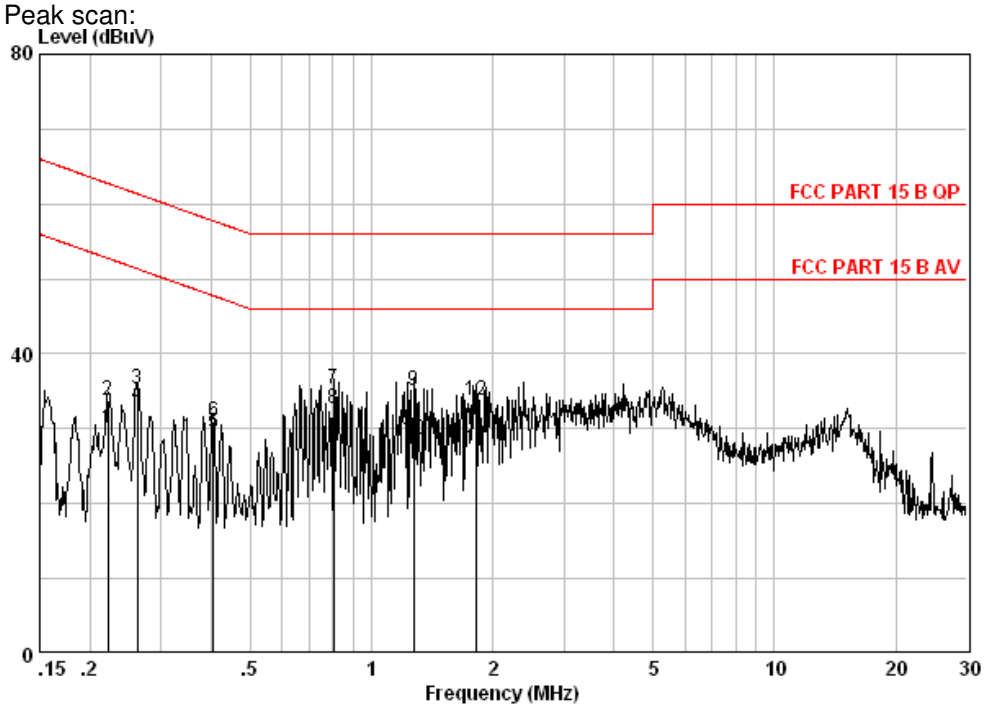
The following Quasi-Peak and Average measurements were performed on the EUT:

7.1.3.1 Measurement Record:

150KHz to 30MHz emissions

Live line:

Peak scan:



Quasi-peak and Average measurement

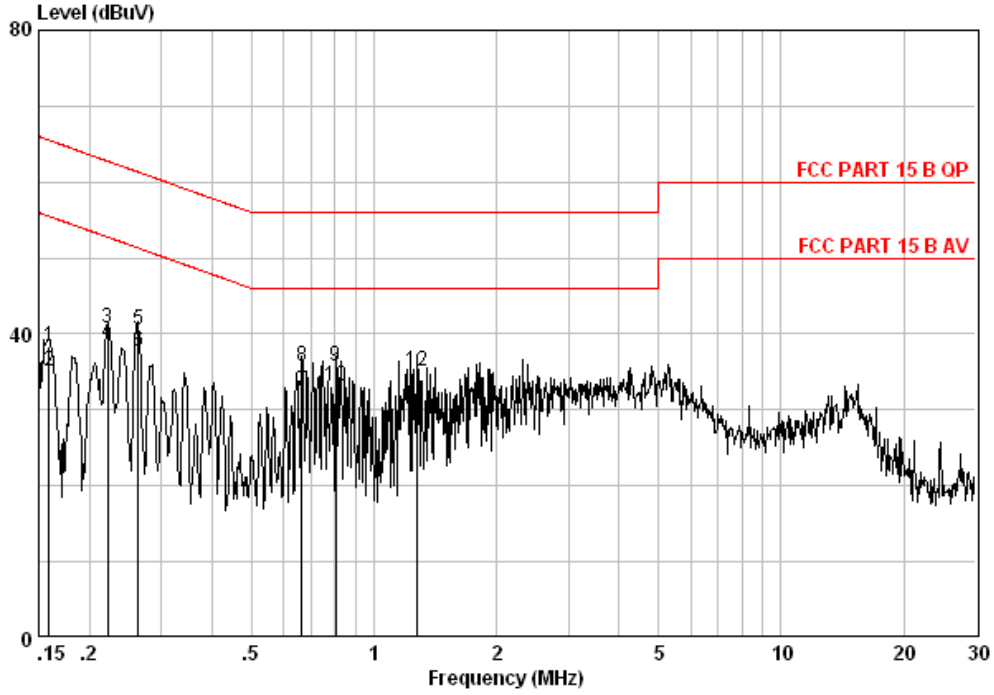
Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.222	20.41	0.14	9.59	30.14	52.74	-22.60	AVERAGE
0.222	24.02	0.14	9.59	33.75	62.74	-28.99	QP
0.262	25.66	0.16	9.59	35.41	61.38	-25.97	QP
0.262	23.30	0.16	9.59	33.05	51.38	-18.33	AVERAGE
0.404	19.63	0.20	9.59	29.42	47.77	-18.35	AVERAGE
0.404	21.14	0.20	9.59	30.93	57.77	-26.84	QP
0.804	25.38	0.28	9.58	35.24	56.00	-20.76	QP
0.804	22.83	0.28	9.58	32.69	46.00	-13.31	AVERAGE
1.269	25.22	0.27	9.59	35.08	56.00	-20.92	QP
1.269	18.76	0.27	9.59	28.62	46.00	-17.38	AVERAGE
1.819	17.43	0.22	9.60	27.25	46.00	-18.75	AVERAGE
1.819	24.06	0.22	9.60	33.88	56.00	-22.12	QP

Remark:
Level = Read level + (LISN 1)Factor + Cable Loss

150KHz to 30MHz emissions

Neutral line:

Peak scan:



Quasi-peak and Average measurement

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.159	28.76	0.11	9.56	38.43	65.52	-27.09	QP
0.159	25.41	0.11	9.56	35.08	55.52	-20.44	AVERAGE
0.222	30.98	0.14	9.58	40.70	62.74	-22.04	QP
0.222	29.01	0.14	9.58	38.73	52.74	-14.01	AVERAGE
0.263	30.78	0.16	9.58	40.52	61.34	-20.81	QP
0.263	28.00	0.16	9.58	37.74	51.34	-13.59	AVERAGE
0.665	22.66	0.26	9.58	32.50	46.00	-13.50	AVERAGE
0.665	25.88	0.26	9.58	35.72	56.00	-20.28	QP
0.804	25.80	0.28	9.58	35.66	56.00	-20.34	QP
0.804	23.30	0.28	9.58	33.16	46.00	-12.84	AVERAGE
1.269	18.89	0.27	9.60	28.76	46.00	-17.24	AVERAGE
1.269	25.26	0.27	9.60	35.13	56.00	-20.87	QP

Remark:
Level = Read level + (LISN 1)Factor + Cable Loss

7.2 Radiated Emissions

Test Requirement:	FCC Part15 B
Test Method:	ANSI C63.4
Test Date:	06 november 2009
Frequency Range:	30 MHz to 12.5 GHz
Measurement Distance:	3 m
Class:	Class B
Limit:	40.0 dBμV/m between 30 MHz & 88 MHz
	43.5 dBμV/m between 88 MHz & 216 MHz
	46.0 dBμV/m between 216 MHz & 960 MHz
	54.0 dBμV/m above 960 MHz
Detector:	Peak for pre-scan (120 kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6 dB of limit

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 50 % RH Atmospheric Pressure: 1024 mbar

EUT Operation: Pre-Test the EUT in receiving mode and PC connection mode with downloading data. Found the worst case is in PC connection mode with downloading data and report it.

7.2.2 Test Setup

Test Procedure:

1)30MHz to 1GHz emissions:

For testing perfomed with the bi-log type antenna, testing was perfomed in accordance to ANSI C63.4:2003. The measurement is performed with the EUT rotated 360º, the antenna height scaned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

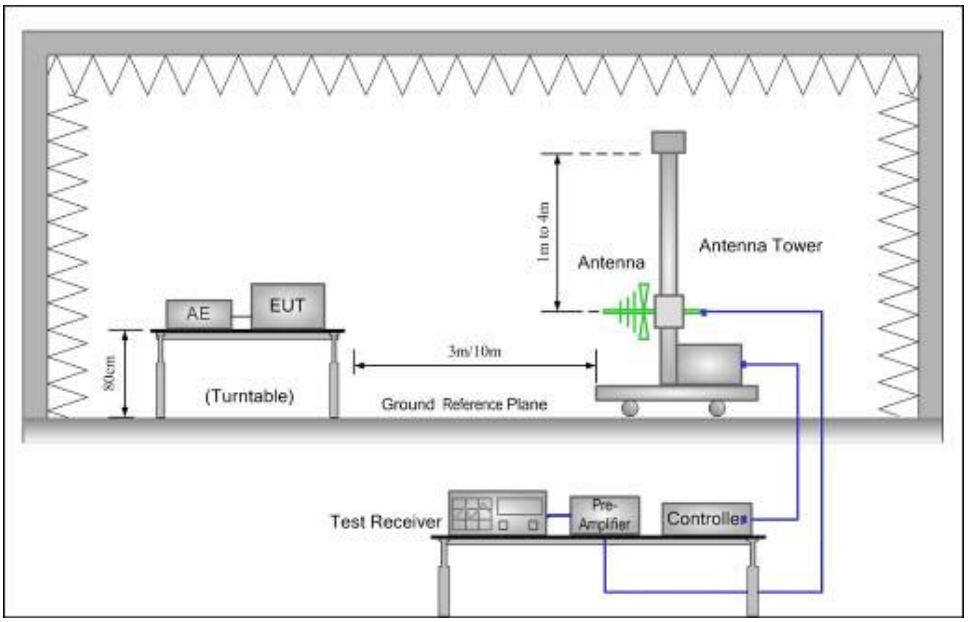
2)1GHz to 40GHz emissions:

For testing perfomed with the horn antenna, testing was perfomed in accordance to ANSI C63.4:2003. The measurement is performed with the EUT rotated 360º, the antenna height scaned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

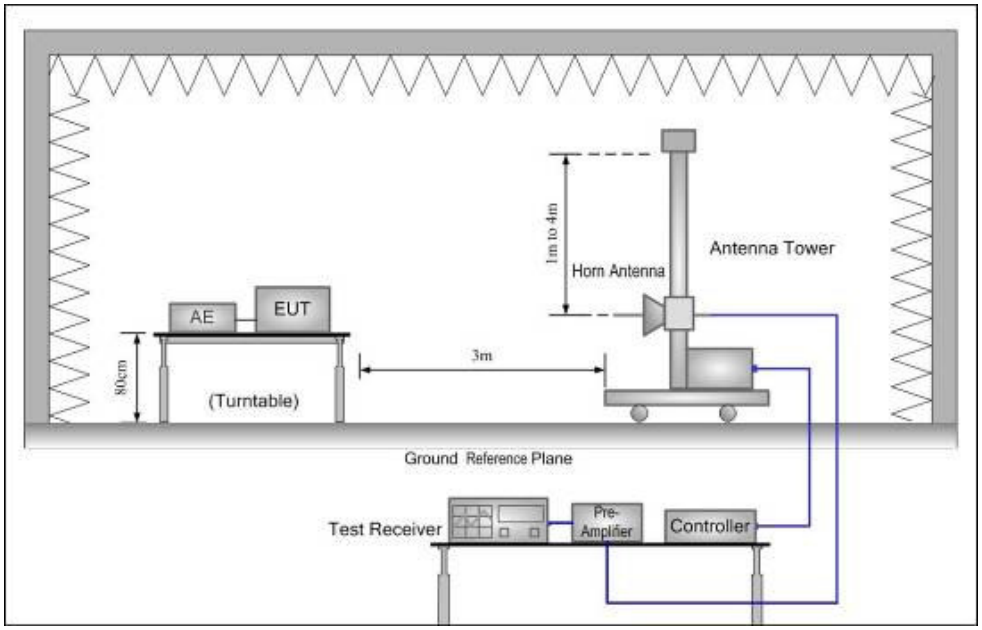
The procedure uesd was ANSI Standard C63.4-2003. The receive was scanned from 30MHz to 25GHz.When an emission was found,the table was roated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment,the equipment tests shall be performed using a new battery Pretest the equipment on 3 axis ,the worst case emissions were reported.

Test Configuration:

1) 30MHz to 1GHz emissions:



2) 1GHz to 40GHz emissions:



7.2.3 Measurement Data

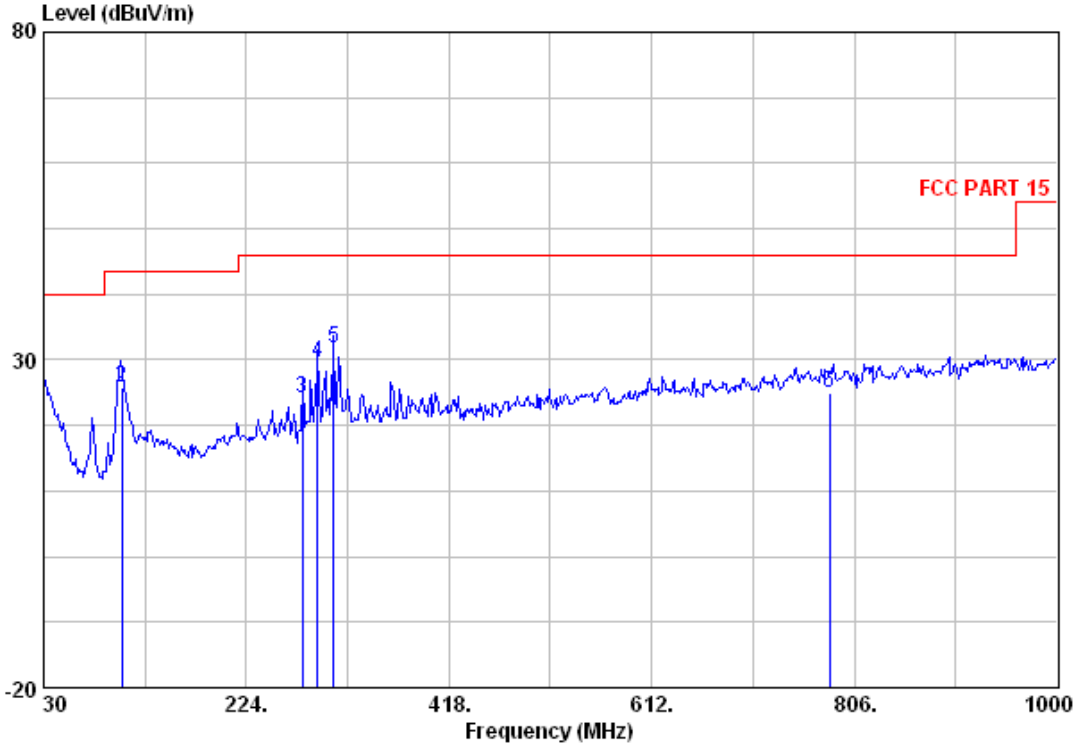
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The following quasi-peak measurements were performed on the EUT:

Emissions below 1GHz:

Vertical:

Peak scan

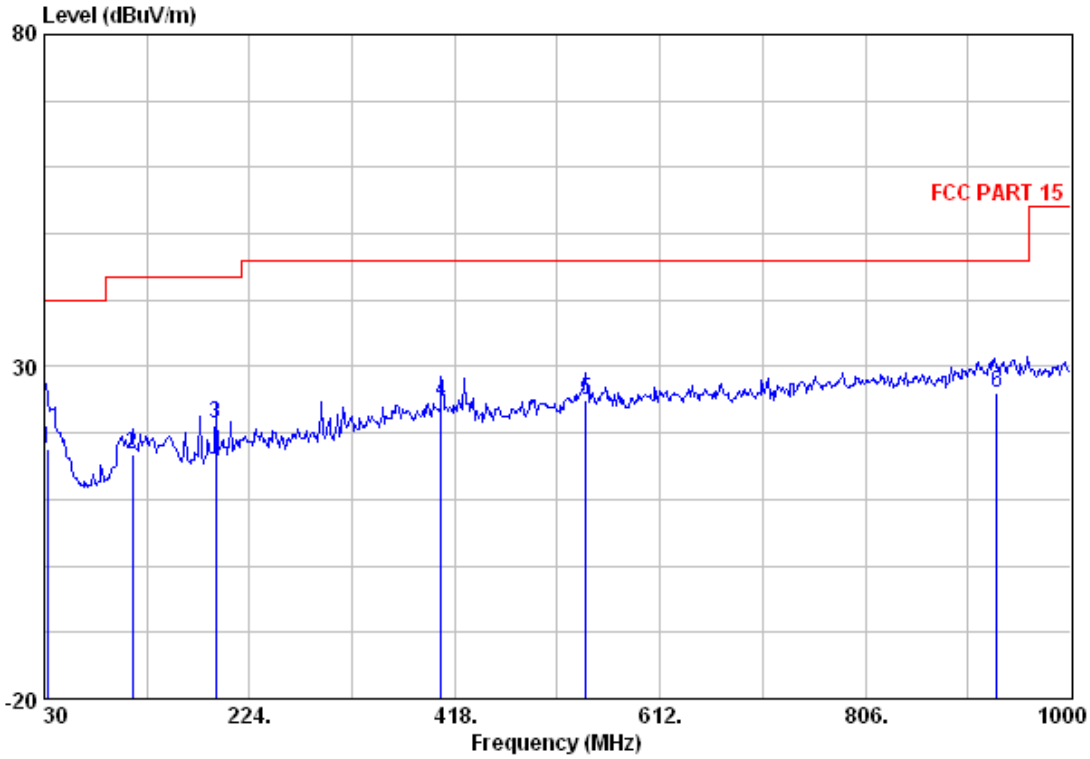


Quasi-peak measurement

Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.000	20.58	22.60	0.50	24.60	19.08	40.00	-20.92	QP
104.690	38.03	11.30	0.90	24.50	25.73	43.50	-17.77	QP
277.350	34.37	12.34	1.50	24.00	24.21	46.00	-21.79	QP
291.900	39.74	12.30	1.60	24.02	29.62	46.00	-16.38	QP
307.420	40.62	13.69	1.60	24.17	31.74	46.00	-14.26	QP
782.720	27.96	19.73	2.50	25.30	24.89	46.00	-21.11	QP

Horizontal:

Peak scan



Quasi-peak measurement

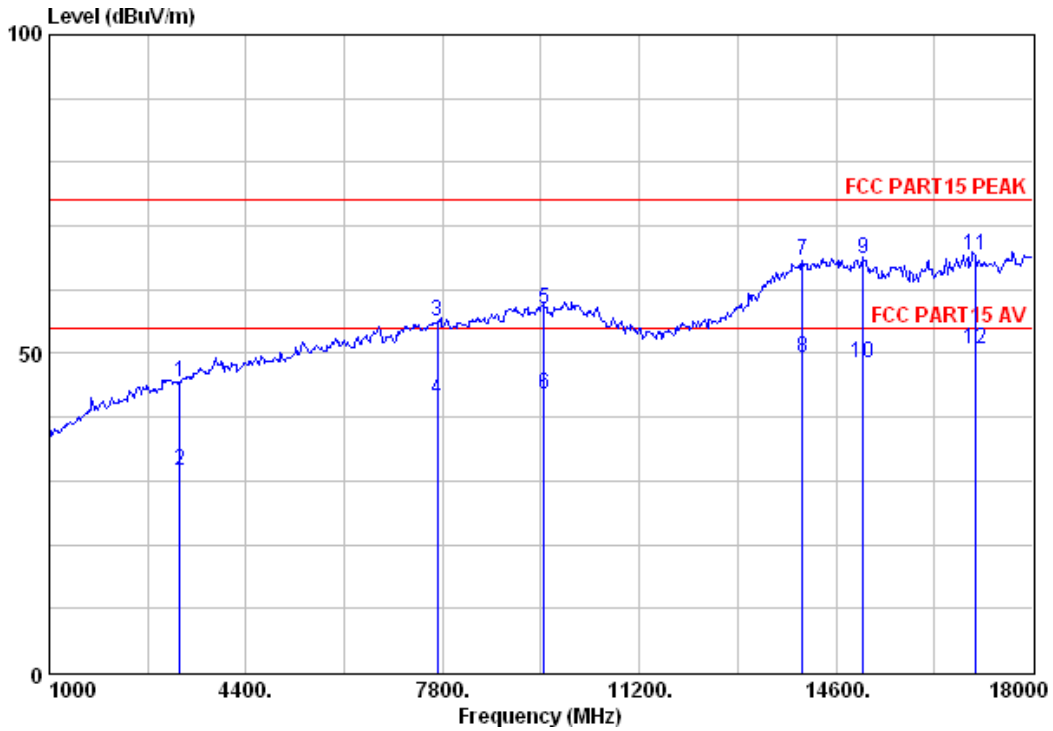
Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
32.910	20.41	21.15	0.50	24.54	17.52	40.00	-22.48	QP
113.420	28.12	12.17	0.90	24.50	16.69	43.50	-26.81	QP
191.990	34.37	10.20	1.20	24.30	21.47	43.50	-22.03	QP
405.390	31.48	16.36	1.80	25.05	24.59	46.00	-21.41	QP
542.160	30.48	17.74	2.10	25.40	24.92	46.00	-21.08	QP
930.160	27.53	20.60	2.70	24.90	25.93	46.00	-20.07	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

Emissions above 1GHz:

Vertical:

Peak scan

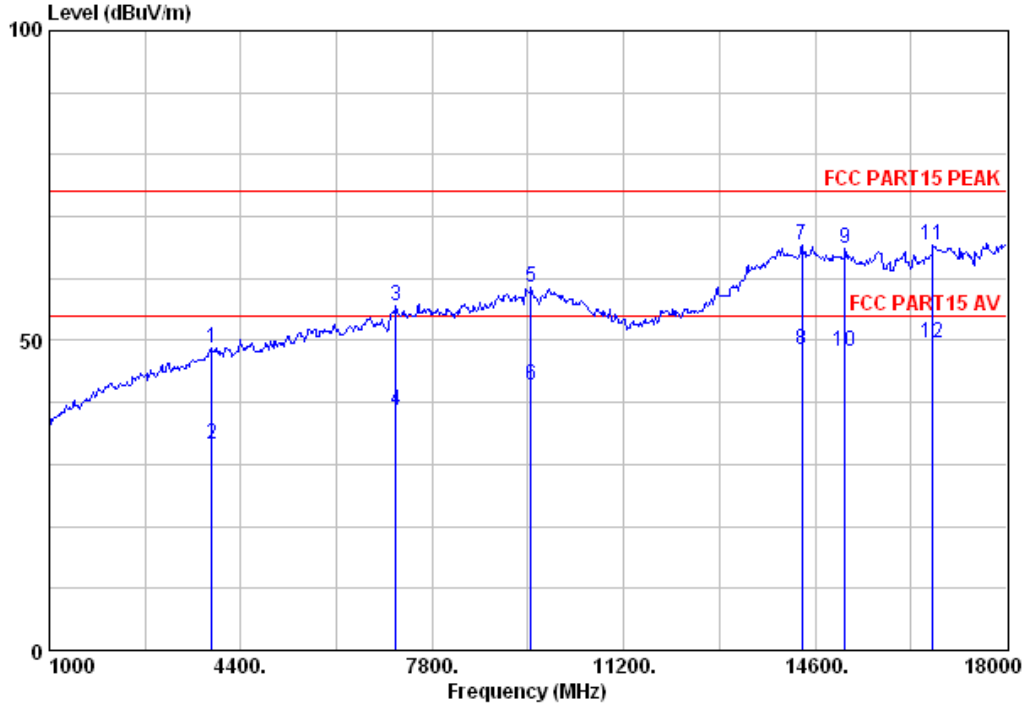


Peak & Average measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
3261.000	46.82	30.74	5.10	37.13	45.53	74.00	-28.47	Peak
3261.000	32.94	30.74	5.10	37.13	31.65	54.00	-22.35	Average
7715.000	47.18	36.47	7.18	35.87	54.96	74.00	-19.04	Peak
7715.000	35.11	36.47	7.18	35.87	42.89	54.00	-11.11	Average
9551.000	47.03	37.42	8.53	35.90	57.08	74.00	-16.92	Peak
9551.000	33.49	37.42	8.53	35.90	43.54	54.00	-10.46	Average
14022.000	45.81	40.80	10.81	32.91	64.51	74.00	-9.49	Peak
14022.000	30.65	40.80	10.81	32.91	49.35	54.00	-4.65	Average
15076.000	47.36	40.58	10.90	34.01	64.83	74.00	-9.17	Peak
15076.000	31.05	40.58	10.90	34.01	48.52	54.00	-5.48	Average
16997.000	45.45	42.35	11.00	33.30	65.50	74.00	-8.50	Peak
16997.000	30.67	42.35	11.00	33.30	50.72	54.00	-3.28	Average

Horizontal:

Peak scan



Peak & Average measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
3890.000	46.61	32.08	6.50	36.30	48.90	74.00	-25.10	Peak
3890.000	31.05	32.08	6.50	36.30	33.33	54.00	-20.67	Average
7154.000	48.30	36.02	7.30	36.10	55.52	74.00	-18.48	Peak
7154.000	31.49	36.02	7.30	36.10	38.71	54.00	-15.29	Average
9551.000	48.53	37.42	8.53	35.90	58.58	74.00	-15.42	Peak
9551.000	32.64	37.42	8.53	35.90	42.69	54.00	-11.31	Average
14362.000	46.93	40.73	10.95	33.12	65.49	74.00	-8.51	Peak
14362.000	30.06	40.73	10.95	33.12	48.62	54.00	-5.38	Average
15127.000	47.55	40.57	10.90	34.09	64.93	74.00	-9.07	Peak
15127.000	30.94	40.57	10.90	34.09	48.32	54.00	-5.68	Average
16691.000	45.85	41.76	11.06	33.36	65.30	74.00	-8.70	Peak
16691.000	30.04	41.76	11.06	33.36	49.50	54.00	-4.50	Average

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

End of Report