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FEDERAL COMMUNICATIONS COMMISSION

Registration number: 282399

Report No.: GZEM110100005701

Page: 1 of 19

FCC ID: Y7THRM

TEST REPORT

Application No.:	GZEM1101000057IT
Applicant:	Respilix
FCC ID:	Y7THRM
Product Name:	Heart rate monitor
Product Description:	Personal computers peripherals(USB device)
Model No:	HRM 2801
Trade Mark:	Respilix
Standards:	FCC PART 15 SUBPART B:2009
Date of Receipt:	2011-01-07
Date of Test:	2011-01-13
Date of Issue:	2011-04-01
Test Result :	Pass*

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

Authorized Signature:



2011 Apr.

Richard Li
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2011-04-01		Original

Authorized for issue by:			
Tested By	 (Crystal Wang) /Project Engineer	2011-01-13 Date	
Prepared By	 (Millie Li) /Clerk	2011-04-01 Date	
Checked By	 (Kobe Jian) /Reviewer	2011-04-01 Date	



3 Test Summary

Electromagnetic Interference (EMI)				
Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission (150 KHz to 30 MHz)	FCC PART 15 SUBPART B:2009	ANSI C63.4:2009	Class B	PASS
Radiated Emission (30 MHz to 1 GHz)	FCC PART 15 SUBPART B:2009	ANSI C63.4:2009	Class B	PASS
Radiated Emission above 1 GHz	FCC PART 15 SUBPART B:2009	N/A	Class B	N/A
Remark : EUT: In this whole report EUT means Equipment Under Test. N/A: Not applicable, please refer to section 7.3 of this report for details.				



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5 General Information

5.1 Client Information

Applicant: Respilex
Address of Applicant: Graskade 17, 2924 BD Krimpen aan den IJssel, Zuid-Holland,
Netherlands

5.2 General Description of E.U.T.

Product Name: Heart rate monitor
Product Description: Personal computers peripherals(USB device)
Model No: HRM 2801
Trade Mark: Respilex

5.3 Details of E.U.T.

Power Supply: DC 5V (Supply by PC USB port)
USB Cord: 0.7m unscreened cable
Signal Cord: 1.2m unscreened cable



5.4 Description of Support Units

The EUT has been tested with associated equipment as a typical PC system.

Description	Manufacturer	Model No.	SN/Certificate NO
Test PC 1			
Personal Computer	DELL	WORKSTATION 690	3R5592X
Monitor	SAMSUNG	225MS	CR22HVMPP900646W
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8115	CN-ODJ331-71616-7B1-109J
Test PC 2			
Personal Computer	DELL	OPTIPLEX 755	D6JF82X
Monitor	DELL	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	DELL	OPTIPLEX 980	GXVZV2X
Monitor	DELL	P2210f	FGL-00000714011207500 -09BO02490-A
Mouse	DELL	M-WDEL1	OT0943
Keyboard	DELL	SK-8135	N/A
Test PC 5			
Personal Computer	HP	DX7208	CNG62707HF
Monitor	HP	D8904	L0204H094
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8135	N/A



Description	Manufacturer	Model No.	SN/Certificate NO
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
Faxmodem	3Com U.S. Robotics	56K Faxmodem	715630-01
HP Colorado T1000e External Parallel Tape Backup System	Hewlett Packard	T1000e	US035980
GROUP PHONE SYSTEM	HB	WS824(1)	241342207120130
Fast Ethernet Switch	TP-Link	TL-SF1005D	7126101589
Fast Ethernet Switch	TP-Link	TL-SF1008D	7126001251
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 classic	Apple	MB147CH	JQ74121YMV
Ipod classic	Apple	A1137	JQ63803RV9M
Ipod classic	Apple	A1137	5Z50163JXUY
Ipod shuffle	Apple	A1137	YM601DN0SZB
Ipod touch	Apple	A1288	1B9070RW203
Iphone	Apple	A1203	87810HJBWH8
Iphone 3GS	Apple	A1303	579C-A1303A
Projector	Sony	VPL-CX61	5004355
Wii console	Nintendo	RVL-001(JPN)	N/A
Xbox 360 Console	Microsoft	Xbox 360 Console	328731122665682000
Xbox Video Game System	Microsoft	F23-00064	111100623241005



5.5 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.

- **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.



5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.



6 Equipment Used during Test

Conducted Emission					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m ³	N/A	N/A
EMC0118	Two-line v-netwok	R&S	ENV216	100359	2011-09-25
EMC0102	LISN	SCHAFFNER CHASE	MN2050D/1	1421	2011-11-23
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	2011-11-24
EMC0107	Coaxial Cable	SGS	2m	N/A	2011-07-18
EMC0106	Voltage Probe	SGS	N/A	N/A	N/A
EMC0120	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	20550	2012-01-17
EMC0121	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	20549	2012-01-17
EMC0122	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	20548	2012-01-17

RE in Chamber					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2011-09-06
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2011-01-25
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	10036	2011-06-02
N/A	EMI Test Software	Audix	E3	N/A	N/A
EMC0514	Coaxial cable	SGS	N/A	N/A	2011-12-08
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2011-12-20
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2011-12-20
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2011-09-11
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2011-01-25
EMC0049	Amplifier	Agilent	8447D	2944A10862	2011-04-21
EMC0075	310N Amplifier	Sonama	310N	272683	2011-10-25
EMC0523	Active Loop Antenna	EMCO	6502	42963	2011-11-17
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	2011-05-17

General used equipment					
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Due date
					(YYYY-MM-DD)
EMC0006	DMM	Fluke	73	70681569	2011-12-16
EMC0007	DMM	Fluke	73	70671122	2011-12-16



7 Emission Test Results

7.1 Conducted Emissions Mains Terminals, 150 KHz to 30MHz

Test Requirement: FCC Part15 B
Test Method: ANSI C63.4
Test Voltage: 120V AC, 60Hz
Test Date: 2011-01-13
Frequency Range: 150KHz to 30MHz
Detector: Peak for pre-scan
Quasi-Peak and Average at frequency with maximum peak
(9 kHz resolution bandwidth)
Class / Limit: Class B

Frequency range MHz	Class B Limits dB (μV)	
	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
NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		
NOTE 2: The lower limit is applicable at the transition frequency.		

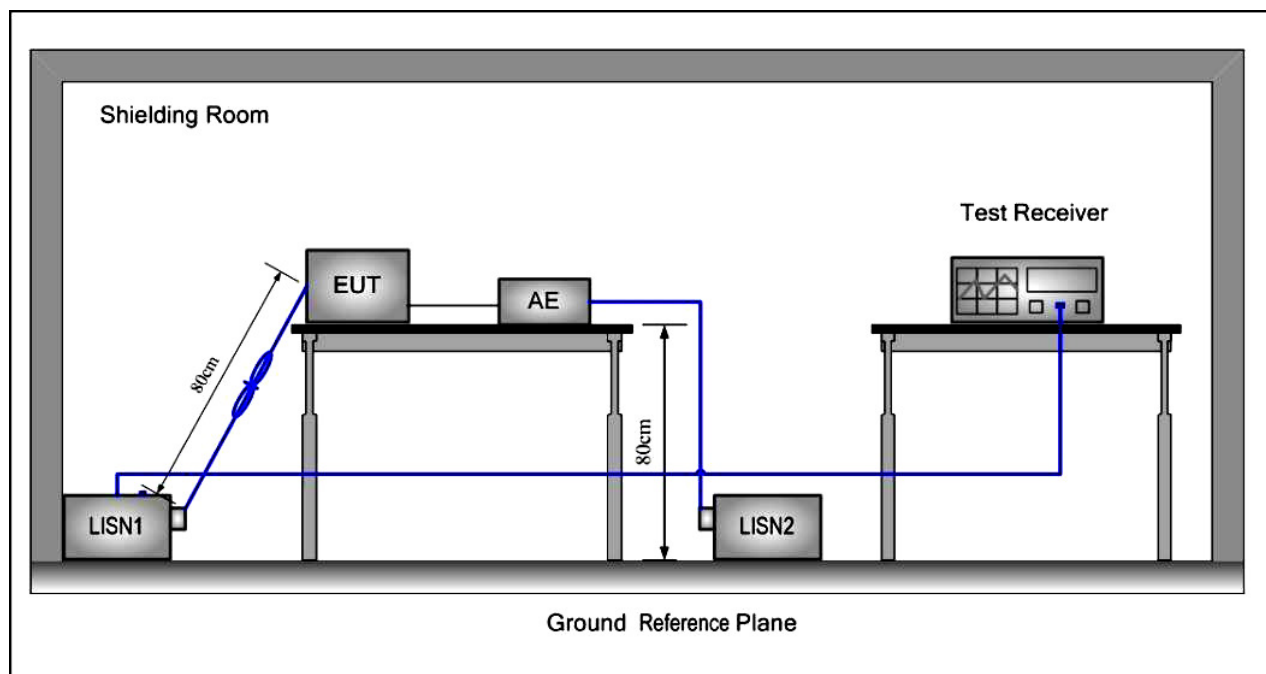
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 52 %RH Atmospheric Pressure: 1003 mbar

EUT Operation: Test the EUT in PC connection mode, running the software provided by applicant.

7.1.2 Test Setup and Procedure



1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ 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

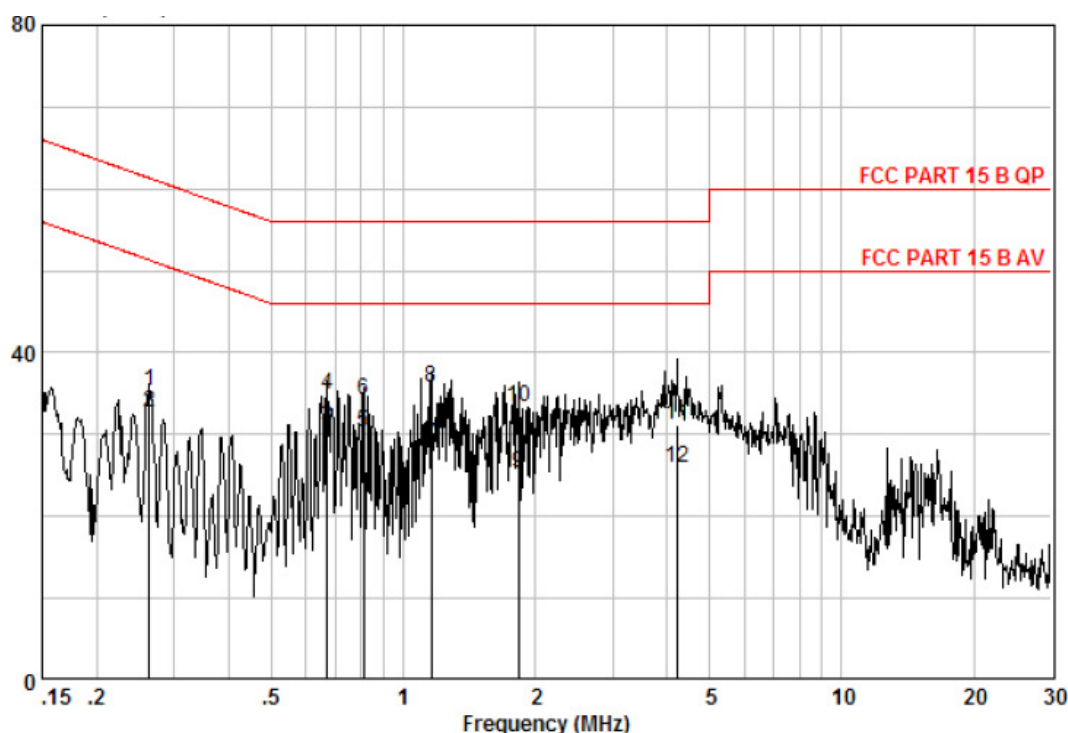
Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected.

Please see the attached Quasi-peak and Average test results.

Live Line:

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBμV	dB	dB	dBμV	dBμV	dB	
0.263	25.58	0.10	9.62	35.29	61.34	-26.04	QP
0.263	22.91	0.10	9.62	32.62	51.34	-18.71	AVERAGE
0.672	21.33	0.04	9.62	30.99	46.00	-15.01	AVERAGE
0.672	25.20	0.04	9.62	34.86	56.00	-21.14	QP
0.813	20.62	0.05	9.62	30.29	46.00	-15.71	AVERAGE
0.813	24.50	0.05	9.62	34.17	56.00	-21.83	QP
1.160	19.17	0.02	9.62	28.81	46.00	-17.19	AVERAGE
1.160	26.14	0.02	9.62	35.78	56.00	-20.22	QP
1.829	15.53	0.02	9.64	25.19	46.00	-20.81	AVERAGE
1.829	23.64	0.02	9.64	33.30	56.00	-22.70	QP
4.202	21.32	0.15	9.64	31.11	56.00	-24.89	QP
4.202	16.10	0.15	9.64	25.89	46.00	-20.11	AVERAGE

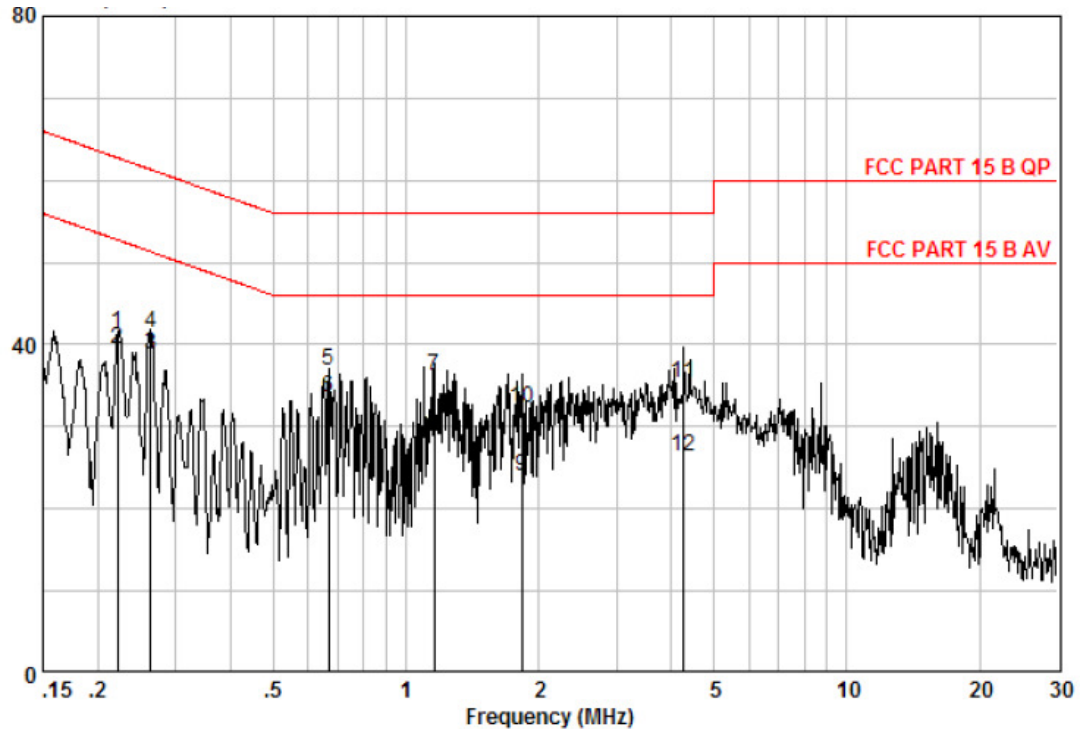
Level = Read Level + LISN Factor + Cable Loss.



Neutral Line:

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBμV	dB	dB	dBμV	dBμV	dB	
0.222	31.64	0.12	9.62	41.38	62.74	-21.37	QP
0.222	29.70	0.12	9.62	39.44	52.74	-13.31	AVERAGE
0.263	29.09	0.10	9.62	38.81	51.34	-12.53	AVERAGE
0.263	31.74	0.10	9.62	41.46	61.34	-19.88	QP
0.668	27.20	0.04	9.61	36.86	56.00	-19.14	QP
0.668	23.82	0.04	9.61	33.48	46.00	-12.52	AVERAGE
1.160	26.44	0.02	9.64	36.10	56.00	-19.90	QP
1.160	19.01	0.02	9.64	28.67	46.00	-17.33	AVERAGE
1.829	14.38	0.02	9.66	24.06	46.00	-21.94	AVERAGE
1.829	22.60	0.02	9.66	32.28	56.00	-23.72	QP
4.269	25.44	0.15	9.69	35.28	56.00	-20.72	QP
4.269	16.48	0.15	9.69	26.32	46.00	-19.68	AVERAGE

Level = Read Level + LISN Factor + Cable Loss.



7.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement: FCC Part15 B
Test Method: ANSI C63.4
Test Voltage: 120V AC, 60Hz
Test Date: 2011-01-13
Frequency Range: 30MHz to 1GHz
Measurement Distance: 10 m
Detector: Peak for pre-scan
Quasi-Peak if maximised peak within 6dB of limit
(120 kHz resolution bandwidth)
Class / Limit: Class B

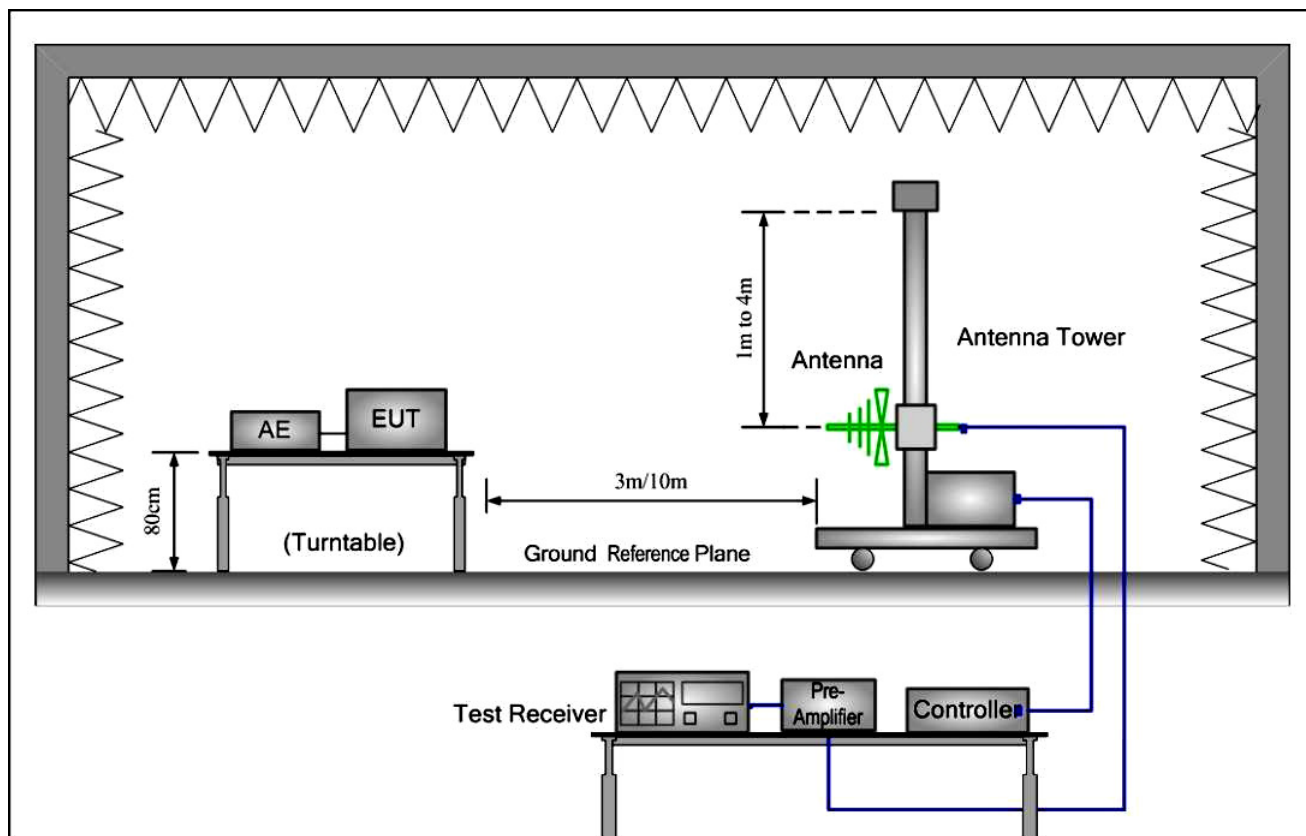
Frequency range MHz	Quasi-peak limits dB (µV/m)
30 to 88	29.5
88 to 216	33.1
216 to 960	35.6
Above 960	43.5

NOTE 1: At transitional frequencies the lower limit applies.
NOTE 2: The limit had been calculate according to FCC Part 15 Subpart A Section 15.31(f) (1) using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 24.0 °C Humidity: 53 %RH Atmospheric Pressure: 1005 mbar
EUT Operation: Test the EUT in PC connection mode, running the software provided by applicant.

7.2.2 Test Setup and Procedure



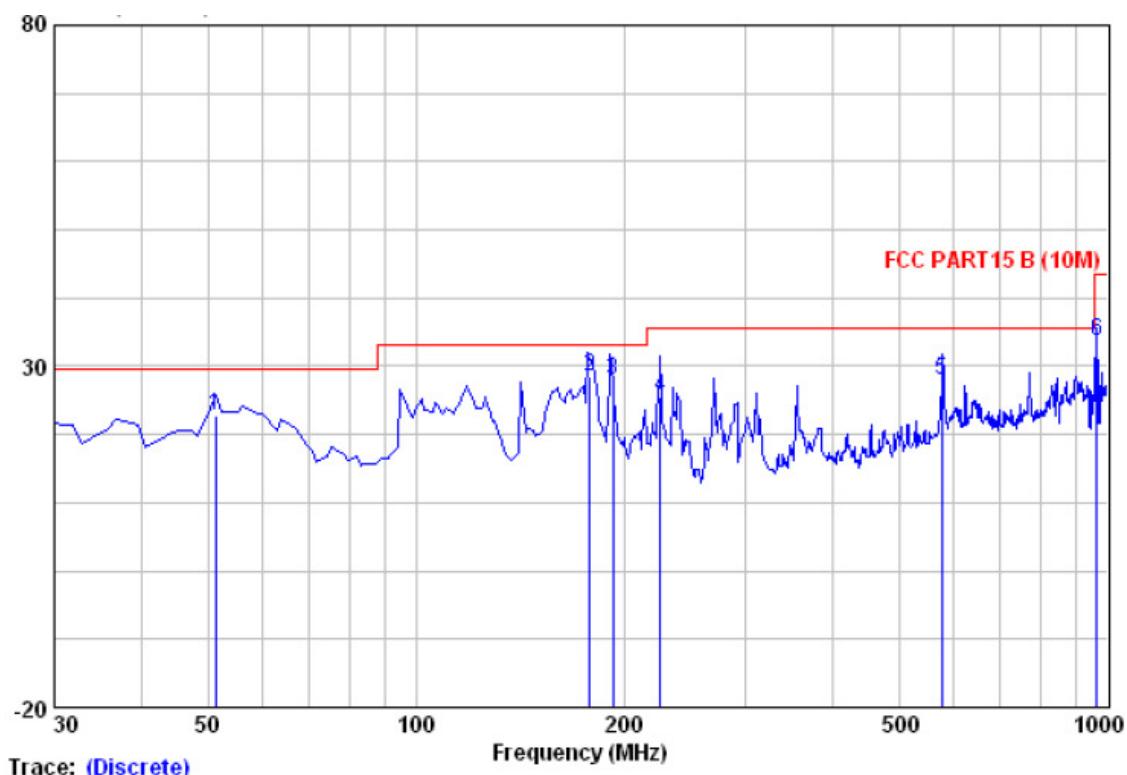
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. 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. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

7.2.3 Measurement Data

Vertical:

Peak scan

Level (dBμV/m)



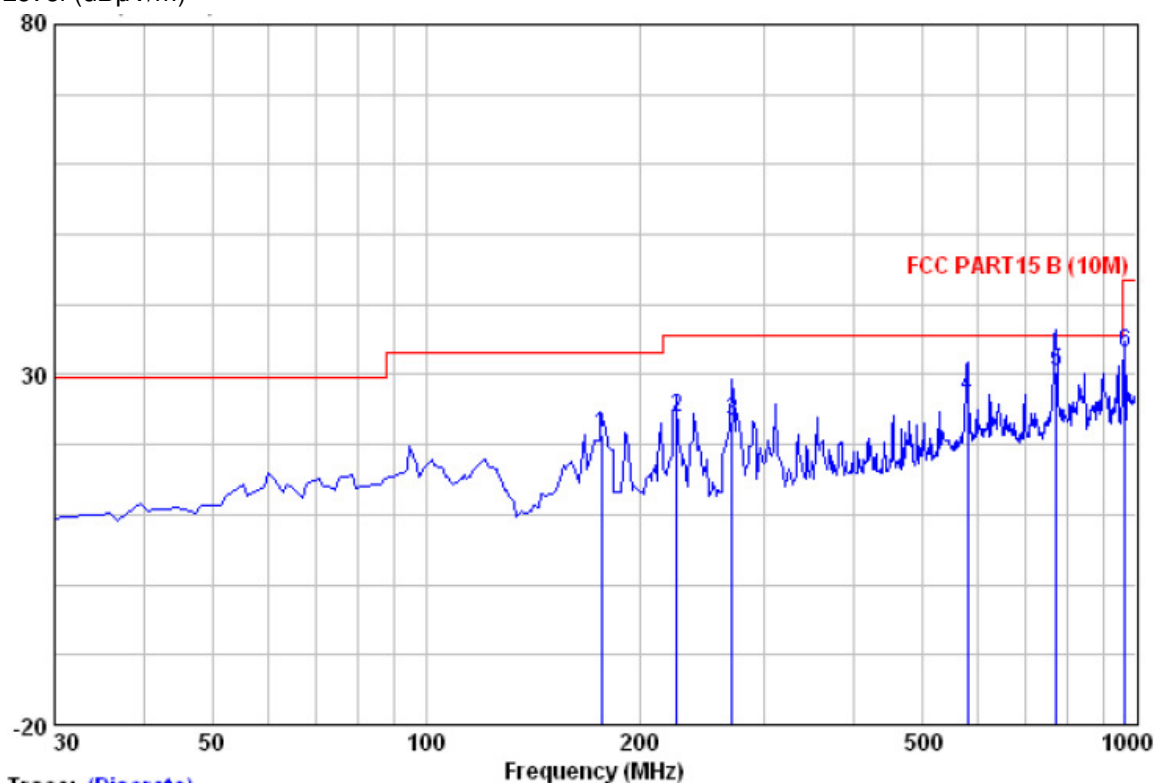
Quasi-peak measurement

Freq	Read	Antenna	Cable	Preamp	Limit	Level	Over	Remark
MHz	Level	Factor	Loss	Factor	Line	dBμV/m	Limit	
	dBμV	dB/m	dB	dB	dBμV/m	dBμV/m	dB	
51.340	39.21	12.33	0.70	29.51	29.50	22.73	-6.77	QP
178.270	47.54	9.24	1.20	29.58	33.10	28.40	-4.70	QP
192.950	46.05	10.34	1.20	29.52	33.10	28.07	-5.03	QP
225.940	42.38	11.41	1.30	29.53	35.60	25.56	-10.04	QP
576.110	36.48	18.62	2.20	29.42	35.60	27.88	-7.72	QP
964.040	36.28	22.30	2.90	27.77	43.50	33.71	-9.79	QP

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

**Horizontal:**

Peak scan

Level (dB μ V/m)

Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Line	Level	Over Limit	Remark
MHz	dB μ V	dB/m	dB	dB	dB μ V/m	dB μ V/m	dB	
176.470	40.71	9.10	1.20	29.59	33.10	21.42	-11.68	QP
225.940	40.60	11.41	1.30	29.53	35.60	23.78	-11.82	QP
269.590	38.88	12.49	1.50	29.57	35.60	23.30	-12.30	QP
579.020	35.24	18.68	2.25	29.42	35.60	26.75	-8.85	QP
772.230	36.57	20.43	2.60	29.23	35.60	30.38	-5.22	QP
964.830	35.69	22.30	2.90	27.77	43.50	33.13	-10.37	QP

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



7.3 Radiated Emissions above 1 GHz

Test Requirement: FCC Part15 B
Frequency Range: 1GHz to 40GHz
Measurement Distance: 3 m
Class / Limit: Class B
Test Date: N/A: See Remark Below

Remark:

There is no need for Radiated Emissions (above 1G) test to be performed on this product in accordance with FCC Part 15: 2009 because the highest internal source is less than 108 MHz.

For further details, please refer to Subject B section 15.33 (b) (1) of FCC Part 15 which states:

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

--End of Report--