

Report No: CCIS12020001101

FCC REPORT

Applicant: NATIONAL ELECTRONICS & WATCH CO. LTD

Address of Applicant: 15/F., SHING DAO IND. BLDG., 232 ABERDEEN MAIN ROAD, ABERDEEN, HONG KONG.

Equipment Under Test (EUT)

Product Name: GPS Watch with 2.4G HRM

Model No.: M11-870D; M11-1776D; M11-1501-D; M11-1145D

FCC ID: UH5M11-870GPS

Applicable standards: FCC CFR Title 47 Part 15 Subpart B: 2010

Date of sample receipt: Feb. 16, 2012

Date of Test: Feb. 17, 2012

Date of report issued: Feb. 17, 2012

Test Result : Pass *

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

Authorized Signature:



Stephen Guo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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. Any mention of GTS International Electrical Approvals or testing done by GTS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by GTS International Electrical Approvals in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only."

2 Version

Version No.	Date	Description
00	Feb. 17, 2012	<i>Original</i>

Prepared by:

Collin. He

Date:

Feb. 17, 2012

Project Engineer

Reviewed by:

Hans. Hu

Date:

Feb. 17, 2012

Reviewer

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF E.U.T.	5
5.3 OPERATING MODES	5
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 DEVIATION FROM STANDARDS.....	6
5.6 ABNORMALITIES FROM STANDARD CONDITIONS.....	6
5.7 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
5.8 TEST FACILITY.....	6
5.9 TEST LOCATION	6
6 TEST INSTRUMENTS LIST	7
7 TEST RESULTS AND MEASUREMENT DATA	8
7.1 CONDUCTED EMISSIONS.....	8
7.2 RADIATED EMISSION	11
8 TEST SETUP PHOTO	15
9 EUT CONSTRUCTIONAL DETAILS	16-24

4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	Pass
Readiated Emissions	Part15.109	Pass

Remark:

Pass: The EUT complies with the essential requirements in the standard.

EUT: In this whole report EUT means Equipment Under Test.

* Remark: Model No.: M11-870D; M11-1776D; M11-1501-D; M11-1145D

According to the confirmation from the applicant, the internal circuit design, PCB layout and internal wiring for above 4 models are identical. The only differences are the model name, software function and appearance color for commercial purpos. Here are relevant software functions for above models:

- M11-870D RUN+2.4G HRM with Pressure Sensor (display Pressure, Altitude, Temperature)
- M11-1776D RUN+2.4G HRM +Timer +GPS Altitude (no pressure sensor)
- M11-1501D RUN+2.4G HRM +Timer
- M11-1145D RUN+2.4G HRM

Since the internal circuit design, PCB layout and internal wiring for above 4 models are identical, **Model M11-870D** has an additional function with Pressure Sensor which will display Pressure, Altitude, Temperature. therefore only one model **M11-870D** was tested in this report.

*Remark: Test mode

This report only showed the test date for PC link mode for data download function.

Other modes, please refer the test report: CCIS12020001102.

5 General Information

5.1 Client Information

Applicant:	NATIONAL ELECTRONICS & WATCH CO. LTD.
Address of Applicant:	15/F., SHING DAO IND. BLDG., 232 ABERDEEN MAIN ROAD, ABERDEEN, HONG KONG.

5.2 General Description of E.U.T.

Product Name:	GPS Watch with 2.4G HRM
Model No.:	M11-870D; M11-1776D; M11-1501-D; M11-1145D
Power Supply:	Li-ion 3.7VDC 300mAh (Internal rechargeable battery) for single unit; Charging mode is supplied by USB port.
Other accessories	Charging cable (model no.: M10-635S): 2 lines, 0.5m length; Charging & PC link cable (model no.: M09-381): 4 lines, 0.5m length.

5.3 Operating Modes

Operating mode	Detail description
PC Link mode	Keep the EUT in PC link mode which is connected PC the cable (model no.: M09-381).

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	SL510	N/A
HP	Printer	CB495A	05257893

5.5 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna.
Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

5.6 Abnormalities from Standard Conditions

None.

5.7 Other Information Requested by the Customer

None.

5.8 Test Facility

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

- **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 600491, July 20, 2010.

- **Industry Canada (IC)**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-1.

5.9 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2011	Mar. 29 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 04 2011	Jul. 03 2012
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2011	Feb. 25 2012
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2011	June 29 2012
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Coaxial Cable	GTS	N/A	GTS213	Apr. 01 2011	Mar. 31 2012
8	Coaxial Cable	GTS	N/A	GTS211	Apr. 01 2011	Mar. 31 2012
9	Coaxial cable	GTS	N/A	GTS210	Apr. 01 2011	Mar. 31 2012
9	Coaxial Cable	GTS	N/A	GTS212	Apr. 01 2011	Mar. 31 2012
10	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2011	Jul. 03 2012
11	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2011	Jul. 03 2012
12	Band filter	Amindeon	82346	GTS219	Apr. 01 2011	Mar. 31 2012
13	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	GTS248	May 11 2011	May 10 2012

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS252	Jul. 04 2011	Jul. 03 2012
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 04 2011	Jul. 03 2012
3	10dB Pulse Limit	Rohde & Schwarz	N/A	GTS224	Jul. 04 2011	Jul. 03 2012
4	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 04 2011	Jul. 03 2012
5	LISN	ETS-LINDGREN	3816/2	GTS232	Jul. 04 2011	Jul. 03 2012
6	Coaxial Cable	GTS	N/A	GTS227	Apr. 01 2011	Mar. 31 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

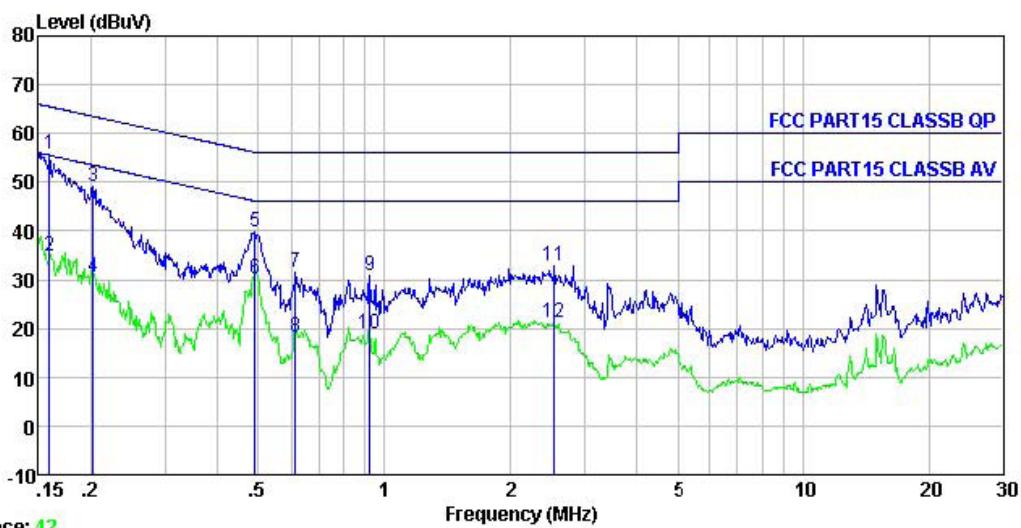
7 Test results and Measurement Data

7.1 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107																
Test Method:	ANSI C63.4:2003																
Test Frequency Range:	150kHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9kHz, VBW=30kHz																
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBμV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>0.5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>			Frequency range (MHz)	Limit (dB μ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dB μ V)																
	Quasi-peak	Average															
0.15-0.5	66 to 56*	56 to 46*															
0.5-5	56	46															
0.5-30	60	50															
Test setup:	<p>Reference Plane</p> <p>LISN</p> <p>40cm</p> <p>80cm</p> <p>AUX Equipment</p> <p>E.U.T</p> <p>Test table/Insulation plane</p> <p>EMI Receiver</p> <p>Filter</p> <p>AC power</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>																
Test procedure	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). They provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement. 																
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar											
Measurement Record:	Uncertainty: ± 3.45 dB																
Test Instruments:	Refer to section 6 for details																
Test mode:	Keep the EUT in PC link mode which is connected to the PC via the cable (model no.: M09-381).																
Test results:	Pass																

Measurement data:

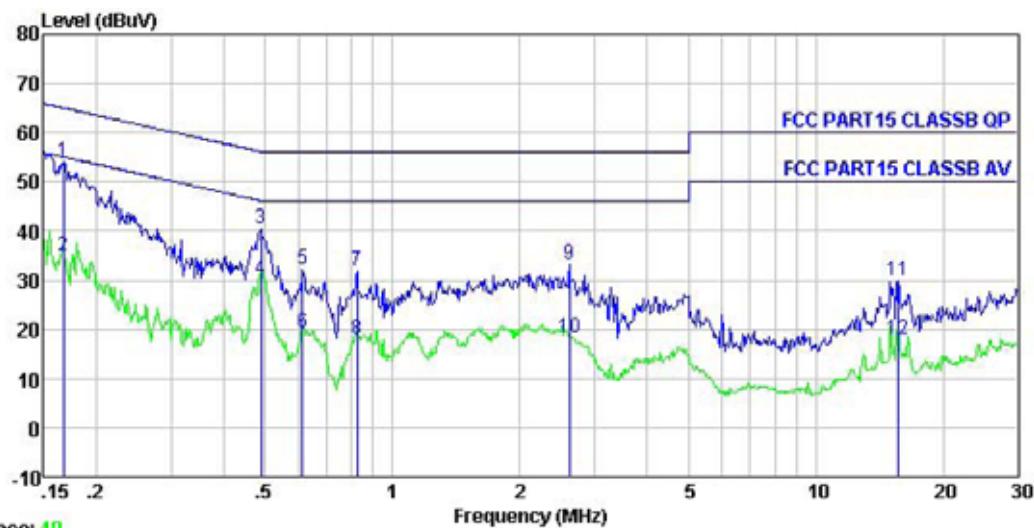
Line:



Condition : FCC PART15 CLASSB QP LISN(2011) LINE
 Job No. : 011RF
 Test Mode : PC Download mode
 Test Engineer: Gavin
 Remark : M09-381

Freq	Read	LISN	Cable	Limit	Over	Remark	
	MHz	Level	Factor				
1	0.159	55.04	0.68	0.10	55.82	65.52	-9.70 QP
2	0.159	34.21	0.68	0.10	34.99	55.52	-20.53 Average
3	0.202	48.37	0.66	0.10	49.13	63.54	-14.41 QP
4	0.202	29.87	0.66	0.10	30.63	53.54	-22.91 Average
5	0.491	39.10	0.56	0.10	39.76	56.14	-16.38 QP
6	0.491	29.65	0.56	0.10	30.31	46.14	-15.83 Average
7	0.614	30.91	0.53	0.10	31.54	56.00	-24.46 QP
8	0.614	17.65	0.53	0.10	18.28	46.00	-27.72 Average
9	0.923	30.25	0.49	0.10	30.84	56.00	-25.16 QP
10	0.923	18.35	0.49	0.10	18.94	46.00	-27.06 Average
11	2.540	32.39	0.37	0.10	32.86	56.00	-23.14 QP
12	2.540	20.65	0.37	0.10	21.12	46.00	-24.88 Average

Neutral:



Trace: 40 Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL

Job No. : 011RF

Test Mode : PC Download mode

Test Engineer: Gavin

Remark : M09-381

Freq	Read	LISN	Cable	Limit	Over	Over	
	Level	Factor	Loss				Remark
1	0.167	53.23	0.68	0.10	54.01	65.12	-11.11 QP
2	0.167	34.21	0.68	0.10	34.99	55.12	-20.13 Average
3	0.489	39.86	0.56	0.10	40.52	56.19	-15.67 QP
4	0.489	29.66	0.56	0.10	30.32	46.19	-15.87 Average
5	0.614	31.59	0.53	0.10	32.22	56.00	-23.78 QP
6	0.614	18.68	0.53	0.10	19.31	46.00	-26.69 Average
7	0.826	31.18	0.50	0.10	31.78	56.00	-24.22 QP
8	0.826	17.35	0.50	0.10	17.95	46.00	-28.05 Average
9	2.622	32.76	0.37	0.10	33.23	56.00	-22.77 QP
10	2.622	17.65	0.37	0.10	18.12	46.00	-27.88 Average
11	15.635	29.48	0.17	0.20	29.85	60.00	-30.15 QP
12	15.635	17.65	0.17	0.20	18.02	50.00	-31.98 Average

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

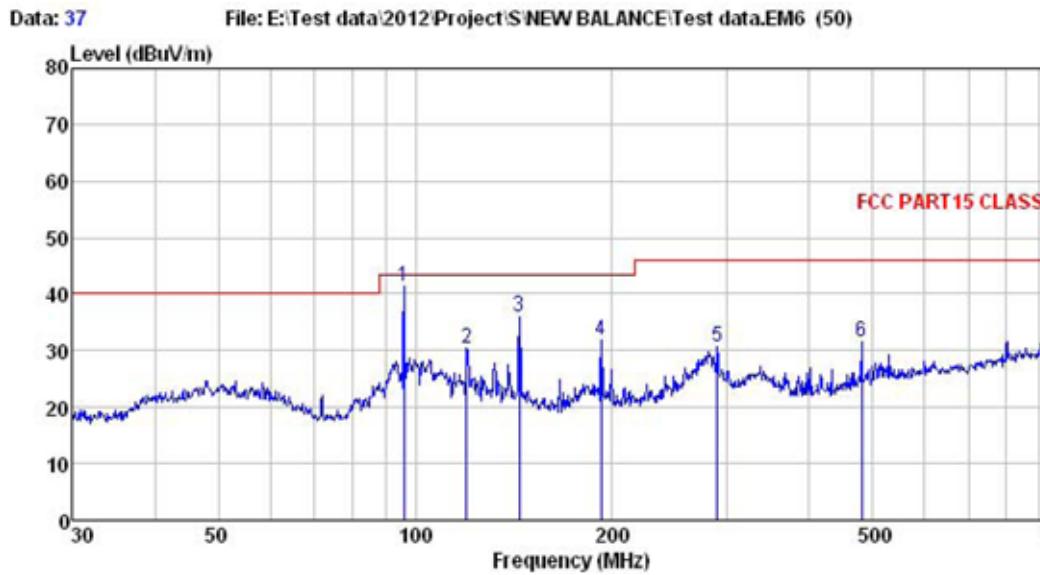
7.2 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109							
Test Method:	ANSI C63.4:2003							
Test Frequency Range:	30MHz to 1000MHz							
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)							
Receiver setup:	Frequency	Detector	RBW	VBW	Remark			
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value			
Limit:	Frequency	Limit (dBuV/m @3m)	Remark					
	30MHz-88MHz	40.0	Quasi-peak Value					
	88MHz-216MHz	43.5	Quasi-peak Value					
	216MHz-960MHz	46.0	Quasi-peak Value					
	960MHz-1GHz	54.0	Quasi-peak Value					
Test setup:	Below 1GHz							
	Above 1GHz							

Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Measurement Record:	Uncertainty: ± 4.5dB
Test Instruments:	Refer to section 6 for details
Test mode:	Keep the EUT in PC link mode which is connected PC the cable (model no.: M09-381).
Test results:	Passed

Measurement Data

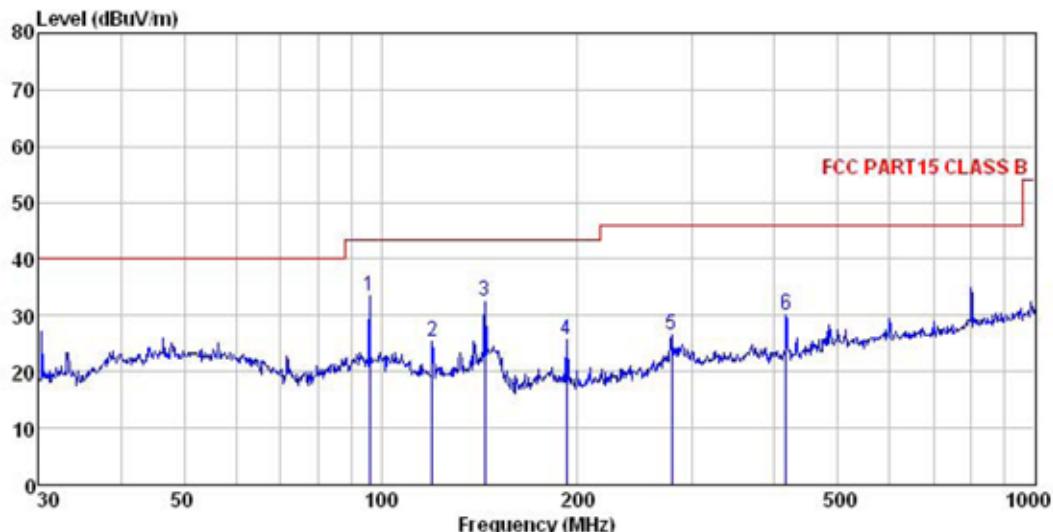
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 (2011-11) HORIZONTAL
 Job NO. : 011RF
 Test Mode : PC Download mode
 Test Engineer: Joe

Freq	Read	Antenna	Cable	Preamp	Limit Level	Limit Line	Over Limit	Remark
	dBuV	dB/m	dB	dB		dBuV/m	dBuV/m	
1 96.0986	59.39	13.29	0.47	31.71	41.44	43.50	-2.06	QP
2 119.8556	51.15	10.49	0.54	31.81	30.37	43.50	-13.13	QP
3 144.3348	59.04	8.25	0.60	31.95	35.94	43.50	-7.56	QP
4 192.4186	53.05	10.46	0.69	32.22	31.98	43.50	-11.52	QP
5 289.0020	49.02	12.84	1.05	32.30	30.61	46.00	-15.39	QP
6 480.5276	45.83	16.08	1.42	31.75	31.58	46.00	-14.42	QP

Vertical:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163 (2011-11) VERTICAL
 Job NO. : 011RF

Test Mode : PC Download mode

Test Engineer: Joe

Freq MHz	Read	Antenna Level dBuV	Cable Loss dB	Preamp Factor	Limit Level dBuV/m	Over Line dBuV/m	Over Limit dB	Remark
	Antenna Level dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 96.0986	51.44	13.29	0.47	31.71	33.49	43.50	-10.01	QP
2 119.8556	46.18	10.49	0.54	31.81	25.40	43.50	-18.10	QP
3 144.3348	55.62	8.25	0.60	31.95	32.52	43.50	-10.98	QP
4 192.4186	46.82	10.46	0.69	32.22	25.75	43.50	-17.75	QP
5 278.0669	45.19	12.58	1.01	32.29	26.49	46.00	-19.51	QP
6 416.1791	45.51	15.39	1.28	32.19	29.99	46.00	-16.01	QP

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor