

FCC REPORT

Applicant: Shenzhen Fortuneship Technology Co., LTD

Address of Applicant: Room 501, the 5th Floor, Block B, Digital Building, Garden City, No. 1079 Nanhai Road, Nanshan District, Shenzhen Guangdong, P.R. China

Equipment Under Test (EUT)

Product Name: Polar V650

Model No.: 0U

FCC ID: 2ABXI-0U

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 17 Jan., 2014

Date of Test: 18 Jan., to 14 Feb., 2014

Date of report issued: 18 Feb., 2014

Test Result: Pass *

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

Authorized Signature:



Bruce Zhang
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 CCIS 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.

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2 Version

Version No.	Date	Description
00	18 Feb., 2014	Original

Prepared by:

Shirley Li

Date:

18 Feb., 2014

Report Clerk

Reviewed by:

Galen Liu

Date:

18 Feb., 2014

Project Engineer

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 TEST MODE.....	5
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 LABORATORY FACILITY	6
5.6 LABORATORY LOCATION	6
5.7 TEST INSTRUMENTS LIST.....	7
6 TEST RESULTS AND MEASUREMENT DATA	8
6.1 CONDUCTED EMISSION.....	8
6.2 RADIATED EMISSION	11
7 TEST SETUP PHOTO.....	17
8 EUT CONSTRUCTIONAL DETAILS.....	18

4 Test Summary

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

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

5 General Information

5.1 Client Information

Applicant:	Shenzhen Fortuneship Technology Co., LTD
Address of Applicant:	Room 501, the 5th Floor, Block B, Digital Building, Garden City, No. 1079 Nanhai Road, Nanshan District, Shenzhenm Guangdong, P.R. China
Manufacturer/Factory:	Shenzhen Fortuneship Technology Co., LTD
Address of Manufacturer/ Factory:	Room 501, the 5th Floor, Block B, Digital Building, Garden City, No. 1079 Nanhai Road, Nanshan District, Shenzhenm Guangdong, P.R. China

5.2 General Description of E.U.T.

Product Name:	Polar V650
Model No.:	0U
Power supply:	Rechargeable Li-ion Battery DC3.8V

5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
HP	Printer	CB495A	05257893	DoC

5.5 Laboratory Facility

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

● **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing 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 out files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: 0755-23118282
Fax: 0755-23116366

5.7 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	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	June 09 2013	June 08 2014
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	May 25 2013	May 24 2014
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 25 2013	May 24 2014
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2013	Mar. 31 2014
6	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2013	Mar. 31 2014
7	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2013	Mar. 31 2014
8	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2013	Mar. 31 2014
9	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2013	Mar. 31 2014
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2013	Mar. 31 2014
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2013	June 08 2014
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2013	Mar. 31 2014
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2013	Mar. 29 2014
14	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
15	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
16	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 25 2013	May. 24 2014
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	Apr 01 2013	Mar. 31 2014
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2013	Aug. 11 2014
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	May. 25 2013	May. 24 2014
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May. 25 2013	May. 24 2014

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	June 09 2013	June 08 2014
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May. 24 2014
3	LISN	CHASE	MN2050D	CCIS0074	Apr. 01 2013	Mar. 31 2014
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2013	Mar. 31 2014

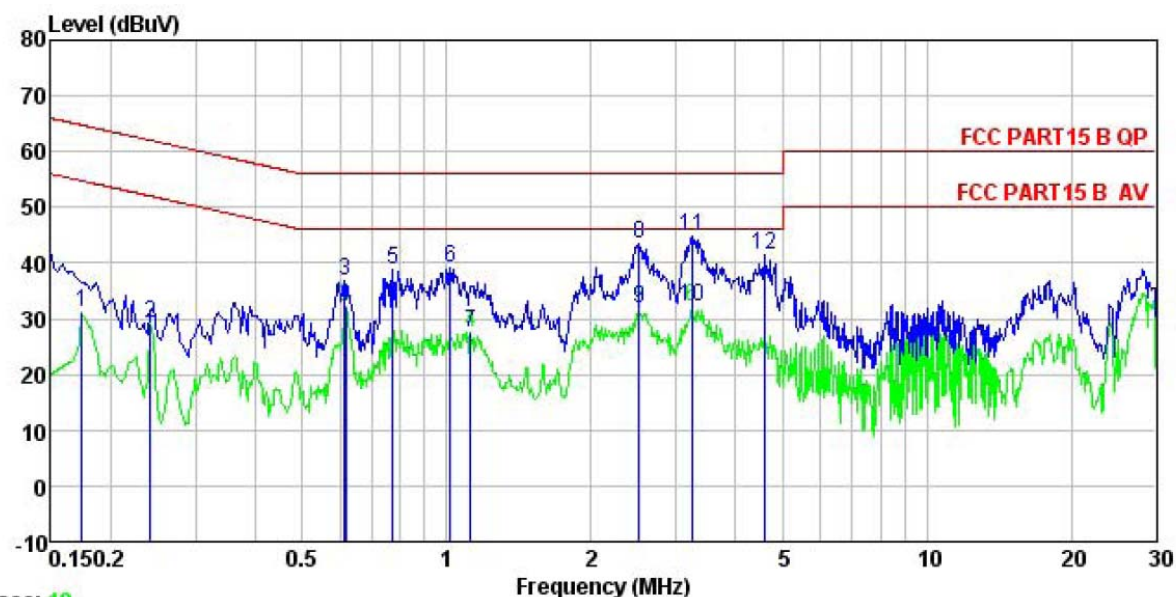
6 Test results and Measurement Data

6.1 Conducted Emission

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><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><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></table>			Frequency range (MHz)	Limit (dBμV)		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 (dBμV)																
	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:	Reference Plane 40cm 80cm LISN LISN Filter AC power AUX Equipment E.U.T EMI Receiver Test table/Insulation plane <i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i>																
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The 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 refers 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.: 23 °C	Humid.: 56%	Press.: 1 01kPa														
Measurement Record:	Uncertainty: 3.28dB																
Test Instruments:	Refer to section 5.7 for details																
Test mode:	Refer to section 5.3 for details																
Test results:	Pass																

Measurement data:

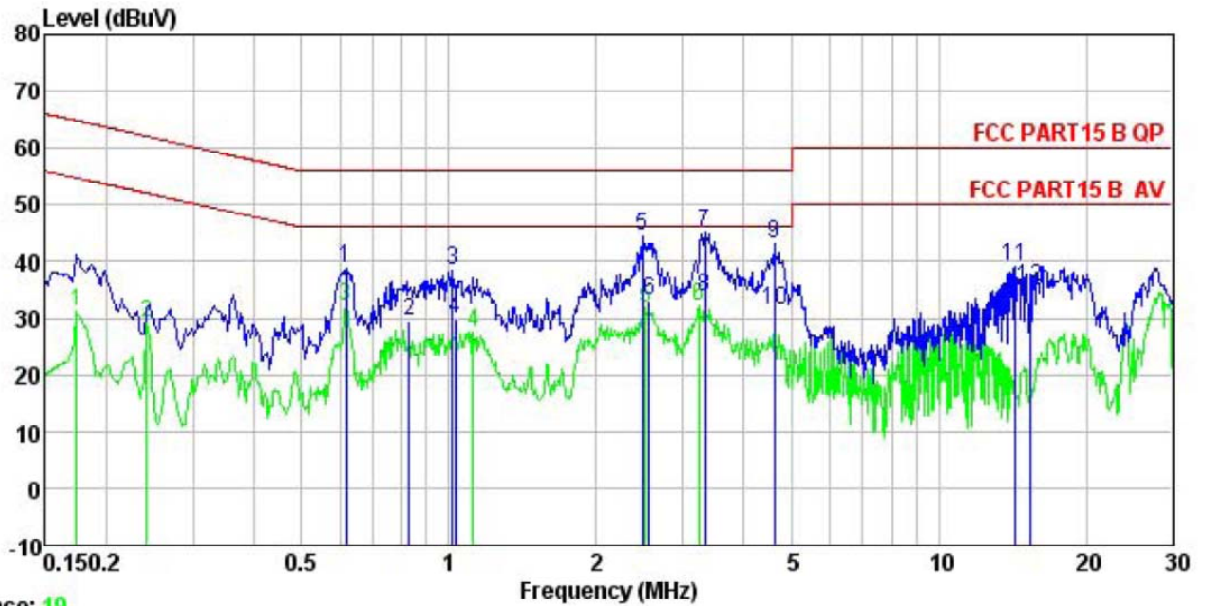
Line:



Site : CCIS Conducted Test Site
 Condition : FCC PART15 B QP LISN LINE
 Test Mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.174	19.99	0.27	10.77	31.03	54.77	-23.74	Average
2	0.242	18.01	0.27	10.75	29.03	52.04	-23.01	Average
3	0.614	25.96	0.25	10.77	36.98	56.00	-19.02	QP
4	0.617	21.18	0.25	10.77	32.20	46.00	-13.80	Average
5	0.771	27.71	0.23	10.80	38.74	56.00	-17.26	QP
6	1.016	27.95	0.25	10.87	39.07	56.00	-16.93	QP
7	1.123	16.33	0.25	10.88	27.46	46.00	-18.54	Average
8	2.513	32.20	0.27	10.94	43.41	56.00	-12.59	QP
9	2.513	20.58	0.27	10.94	31.79	46.00	-14.21	Average
10	3.241	21.02	0.27	10.91	32.20	46.00	-13.80	Average
11	3.258	33.52	0.27	10.91	44.70	56.00	-11.30	QP
12	4.574	30.25	0.29	10.87	41.41	56.00	-14.59	QP

Neutral:



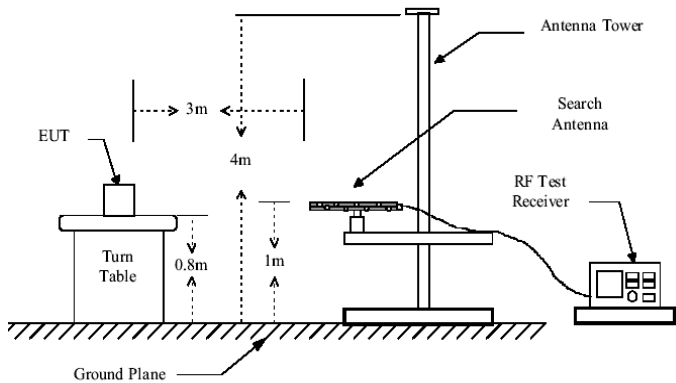
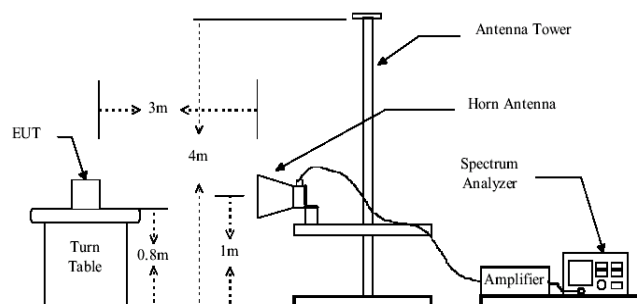
Site : CCIS Conducted Test Site
 Condition : FCC PART15 B QP LISN NEUTRAL
 Test Mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Garen
 Remark :

	Freq	Read	LISN	Cable	Limit	Over	
	MHz	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.617	27.74	0.22	10.77	38.73	56.00	-17.27 QP
2	0.830	18.40	0.20	10.82	29.42	46.00	-16.58 Average
3	1.016	27.26	0.22	10.87	38.35	56.00	-17.65 QP
4	1.032	18.68	0.22	10.87	29.77	46.00	-16.23 Average
5	2.487	33.16	0.29	10.94	44.39	56.00	-11.61 QP
6	2.567	21.86	0.29	10.94	33.09	46.00	-12.91 Average
7	3.328	33.91	0.29	10.91	45.11	56.00	-10.89 QP
8	3.328	22.64	0.29	10.91	33.84	46.00	-12.16 Average
9	4.622	31.99	0.28	10.86	43.13	56.00	-12.87 QP
10	4.622	20.25	0.28	10.86	31.39	46.00	-14.61 Average
11	14.288	27.86	0.25	10.91	39.02	60.00	-20.98 QP
12	15.388	24.43	0.25	10.90	35.58	50.00	-14.42 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.

6.2 Radiated Emission

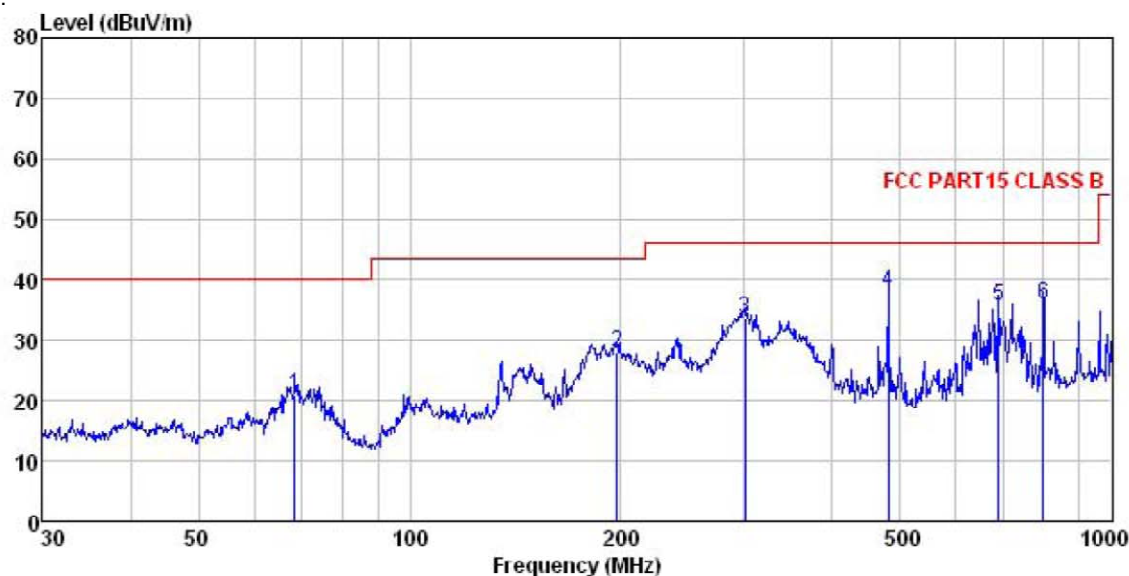
Test Requirement:	FCC Part15 B Section 15.109				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average 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
	Above 1GHz		54.0		Average Value
			74.0		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.:	55%	Press.:	1 01kPa
Measurement Record:	Uncertainty: 4.88dB					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

Measurement Data

Below 1GHz

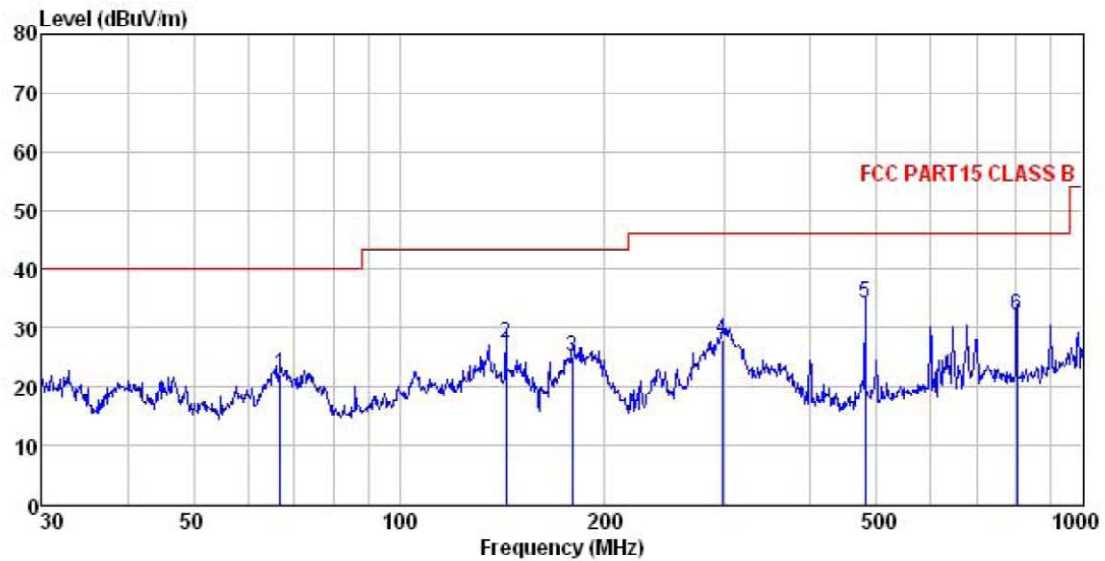
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 Test mode : PC MODE
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	68.631	40.30	9.20	1.49	30.02	20.97	40.00	-19.03	QP
2	197.200	44.33	10.57	2.85	29.82	27.93	43.50	-15.57	QP
3	300.367	47.00	13.06	2.94	29.44	33.56	46.00	-12.44	QP
4	480.528	48.98	16.07	3.46	30.52	37.99	46.00	-8.01	QP
5	689.565	43.28	18.78	4.11	30.60	35.57	46.00	-10.43	QP
6	798.980	42.08	20.06	4.35	30.41	36.08	46.00	-9.92	QP

Vertical:

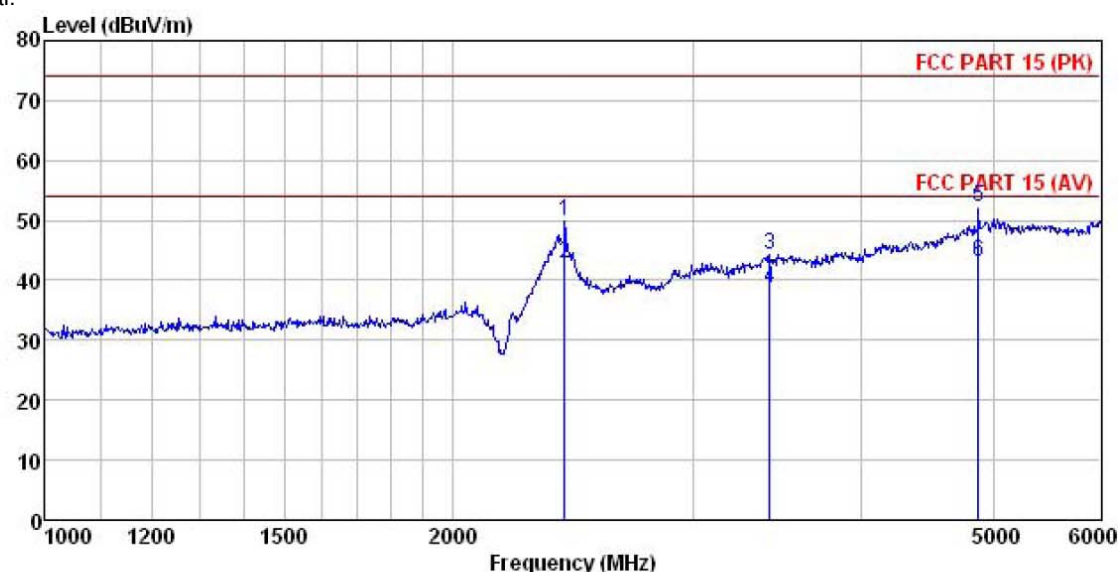


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 Test mode : PC MODE
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: Garen
 REMARK :

		ReadAntenna	Cable Preamp		Limit	Over	
Freq	Level	Factor	Loss Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	66.967	40.70	9.89	1.44	29.88	22.15	40.00 -17.85 QP
2	143.326	46.27	8.22	2.44	29.33	27.60	43.50 -15.90 QP
3	179.386	39.36	9.62	2.73	26.66	25.05	43.50 -18.45 QP
4	297.224	41.42	13.00	2.93	29.44	27.91	46.00 -18.09 QP
5	480.528	45.30	16.07	3.46	30.52	34.31	46.00 -11.69 QP
6	801.786	38.08	20.06	4.34	30.40	32.08	46.00 -13.92 QP

Above 1GHz

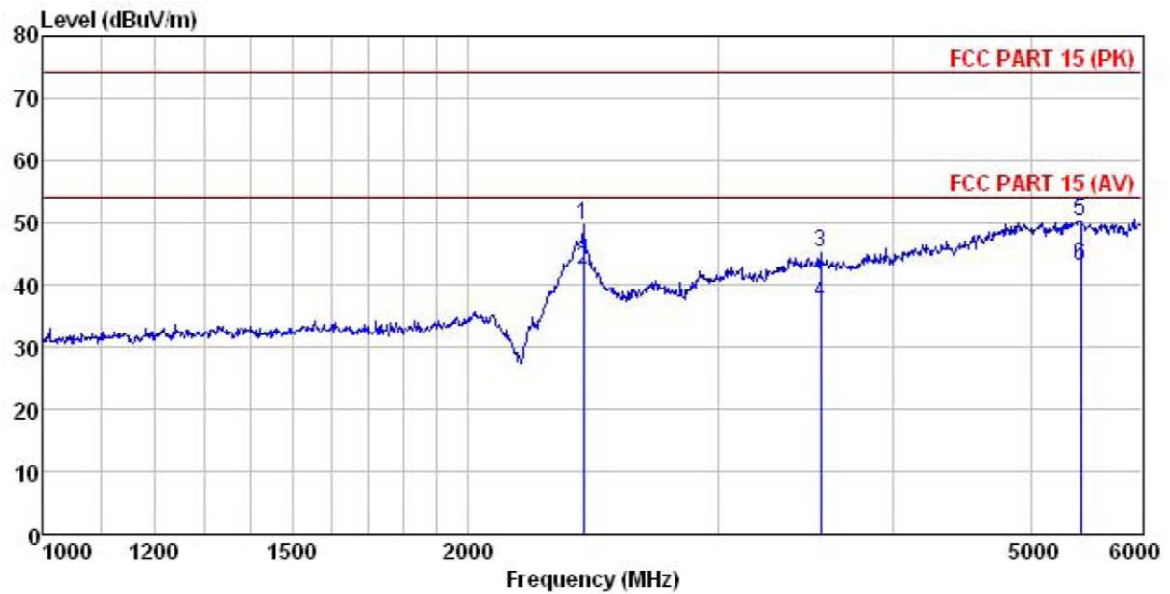
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Test mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2414.629	49.28	27.54	5.68	32.53	49.97	74.00	-24.03 Peak
2	2414.629	42.23	27.54	5.68	32.53	42.92	54.00	-11.08 Average
3	3418.313	48.42	28.53	6.41	38.96	44.40	74.00	-29.60 Peak
4	3418.313	42.80	28.53	6.41	38.96	38.78	54.00	-15.22 Average
5	4874.002	51.84	31.57	8.98	40.15	52.24	74.00	-21.76 Peak
6	4874.002	42.56	31.57	8.98	40.15	42.96	54.00	-11.04 Average

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Test mode : PC mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Garen
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2410.306	48.96	27.54	5.68	32.53	49.65	74.00	-24.35 Peak
2	2410.306	41.78	27.54	5.68	32.53	42.47	54.00	-11.53 Average
3	3549.384	49.79	29.08	6.18	39.96	45.09	74.00	-28.91 Peak
4	3549.384	41.76	29.08	6.18	39.96	37.06	54.00	-16.94 Average
5	5427.187	49.45	31.91	9.15	40.21	50.30	74.00	-23.70 Peak
6	5427.187	42.33	31.91	9.15	40.21	43.18	54.00	-10.82 Average