

FCC REPORT

Applicant: AIKUN(CHINA) ELECTRONICS COMPANY LIMITED

Address of Applicant: A2 BUILDING, LIANHE INDUSTRIAL PARK, FENG TANG ROAD, FUYONG TOWN, SHENZHEN, CHINA

Equipment Under Test (EUT)

Product Name: MID

Model No.: VAX114, VaxHub, AT114

Trade mark: VaxCare

FCC ID: RWC VAX114

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 06 Jan., 2015

Date of Test: 06 Jan., to 02 Feb., 2015

Date of report issued: 03 Feb., 2015

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	03 Feb., 2015	Original

Prepared by:

Yoyo Luo

Date:

03 Feb., 2015

Report Clerk

Reviewed by:

Wimer Zhang

Date:

03 Feb., 2015

Project Engineer

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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:	AIKUN(CHINA) ELECTRONICS COMPANY LIMITED
Address of Applicant:	A2 BUILDING, LIANHE INDUSTRIAL PARK, FENG TANG ROAD, FUYONG TOWN, SHENZHEN, CHINA
Manufacturer/Factory:	AIKUN(CHINA) ELECTRONICS COMPANY LIMITED
Address of Manufacturer/ Factory:	A2 BUILDING, LIANHE INDUSTRIAL PARK, FENG TANG ROAD, FUYONG TOWN, SHENZHEN, CHINA

5.2 General Description of E.U.T.

Product Name:	MID
Model No.:	VAX114 ,VaxHub, AT114
Power supply:	Rechargeable Li-ion Battery DC3.7V-5400mAh
AC adapter :	Model: SAPA05013US Input: 100-240V AC, 50/60Hz, 0.6A Output: 5V DC, 2500mA
Remark:	Model No.: VAX114, VaxHub, AT114 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being the color.

5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging+recording mode	Keep the EUT in Charging+recording mode
Charging+Playing mode	Keep the EUT in Charging+Playing mode
Charging+GPS mode	Keep the EUT in GPS receiver mode
Charging+FM mode	Keep the EUT in FM receiver mode

The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

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
MERCURY	Wireless router	MW150R	12922104015	FCC ID

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: +86-755-23118282
Fax: +86-755-23116366

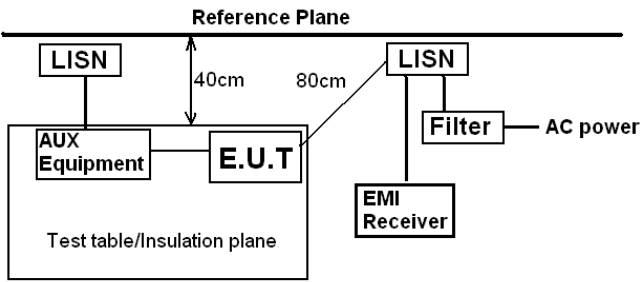
5.7 Test Instruments list

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	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	04-19-2014	04-19-2015
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	04-19-2014	04-19-2015
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Coaxial Cable	CCIS	N/A	CCIS0016	04-01-2014	03-31-2015
6	Coaxial Cable	CCIS	N/A	CCIS0017	04-01-2014	03-31-2015
7	Coaxial cable	CCIS	N/A	CCIS0018	04-01-2014	03-31-2015
8	Coaxial Cable	CCIS	N/A	CCIS0019	04-01-2014	03-31-2015
9	Coaxial Cable	CCIS	N/A	CCIS0087	04-01-2014	03-31-2015
10	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2014	03-31-2015
11	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	06-09-2014	06-08-2015
12	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2014	03-31-2015
13	Horn Antenna	ETS-LINDGREN	3160	GTS217	03-31-2014	03-29-2015
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	04-19-2014	04-19-2015
17	EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	04-01-2014	03-31-2015
18	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-014	03-31-2015
19	Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	05-29-2014	05-28-2015
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-19-2014	04-19-2015

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	06-09-2014	06-08-2015
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	04-19-2014	04-19-2015
3	LISN	CHASE	MN2050D	CCIS0074	01-10-2014	04-09-2015
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2014	03-31-2015

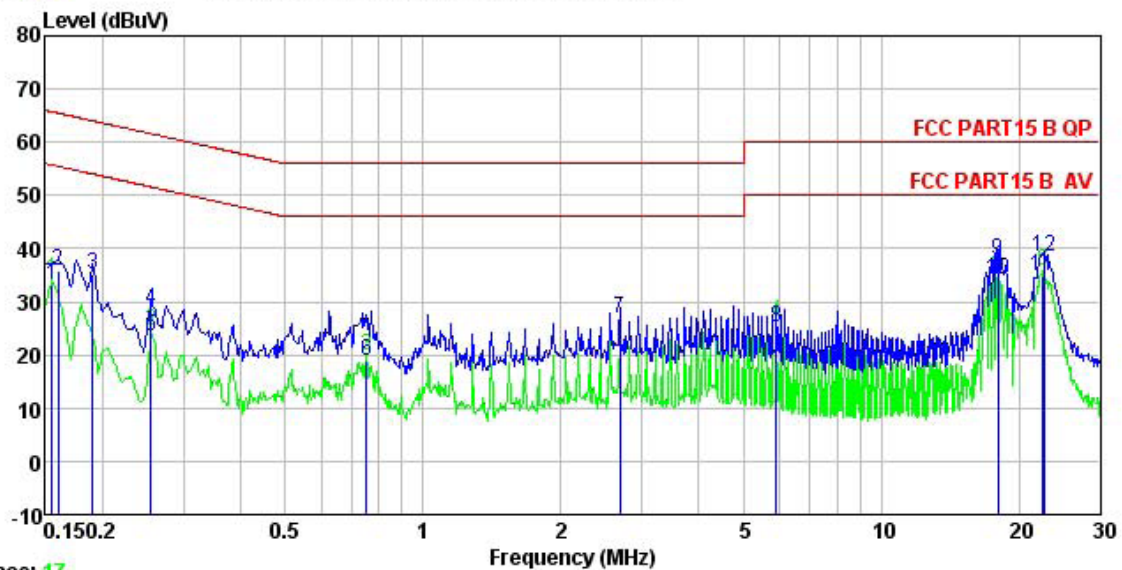
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 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:	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
* Decreases with the logarithm of the frequency.			
Test setup:	 Remark: E.U.T.: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
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:

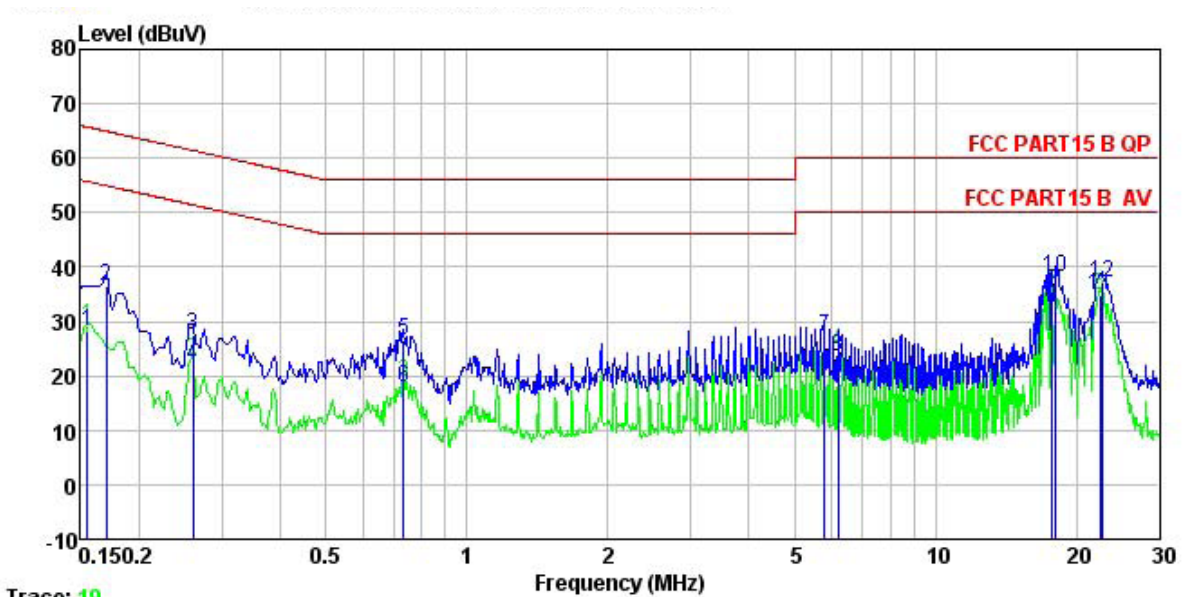


Trace: 17

Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : MID
 Model : VAX114
 Test Mode : PC mode
 Power Rating : AC120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark :

	Read	LISN	Cable	Limit	Over	
Freq	Level	Factor	Loss	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dB	dBuV	dB	
1	0.155	22.00	0.27	10.78	33.05	55.74 -22.69 Average
2	0.160	24.80	0.27	10.78	35.85	65.47 -29.62 QP
3	0.190	23.97	0.28	10.76	35.01	64.02 -29.01 QP
4	0.255	17.66	0.27	10.75	28.68	61.60 -32.92 QP
5	0.255	12.57	0.27	10.75	23.59	51.60 -28.01 Average
6	0.751	7.88	0.23	10.79	18.90	46.00 -27.10 Average
7	2.692	15.79	0.27	10.93	26.99	56.00 -29.01 QP
8	5.898	14.02	0.31	10.82	25.15	50.00 -24.85 Average
9	17.944	26.57	0.33	10.90	37.80	60.00 -22.20 QP
10	17.944	22.78	0.33	10.90	34.01	50.00 -15.99 Average
11	22.535	23.49	0.44	10.89	34.82	50.00 -15.18 Average
12	22.655	27.06	0.44	10.89	38.39	60.00 -21.61 QP

Neutral:



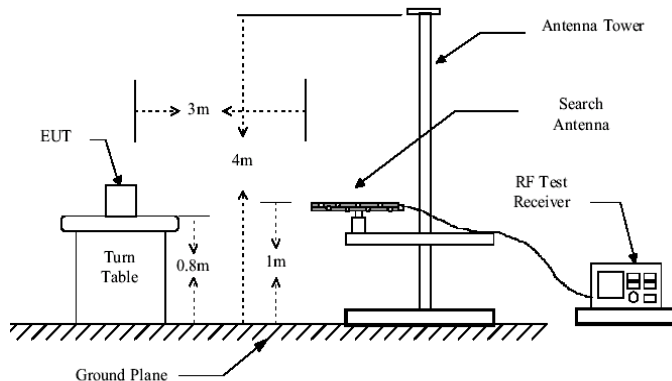
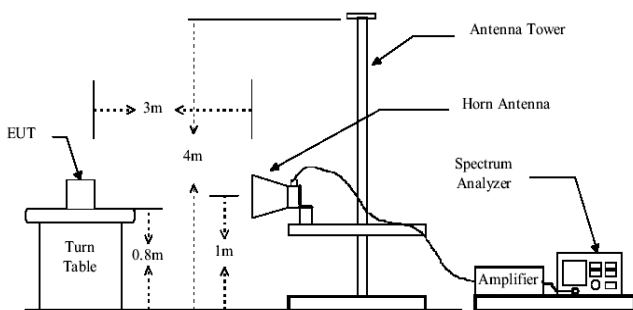
Trace: 19
 Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : MID
 Model : VAX114
 Test Mode : PC mode
 Power Rating : AC120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark :

	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	Level	Factor	Loss	dBuV	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.155	17.24	0.25	10.78	28.27	55.74	-27.47	Average
2	0.170	25.47	0.25	10.77	36.49	64.94	-28.45	QP
3	0.260	16.62	0.26	10.75	27.63	61.42	-33.79	QP
4	0.260	10.83	0.26	10.75	21.84	51.42	-29.58	Average
5	0.731	15.47	0.18	10.78	26.43	56.00	-29.57	QP
6	0.731	6.86	0.18	10.78	17.82	46.00	-28.18	Average
7	5.805	15.97	0.27	10.83	27.07	60.00	-32.93	QP
8	6.186	12.52	0.27	10.82	23.61	50.00	-26.39	Average
9	17.755	24.24	0.26	10.90	35.40	50.00	-14.60	Average
10	18.039	27.03	0.26	10.90	38.19	60.00	-21.81	QP
11	22.416	23.50	0.37	10.90	34.77	50.00	-15.23	Average
12	22.655	25.81	0.38	10.89	37.08	60.00	-22.92	QP

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

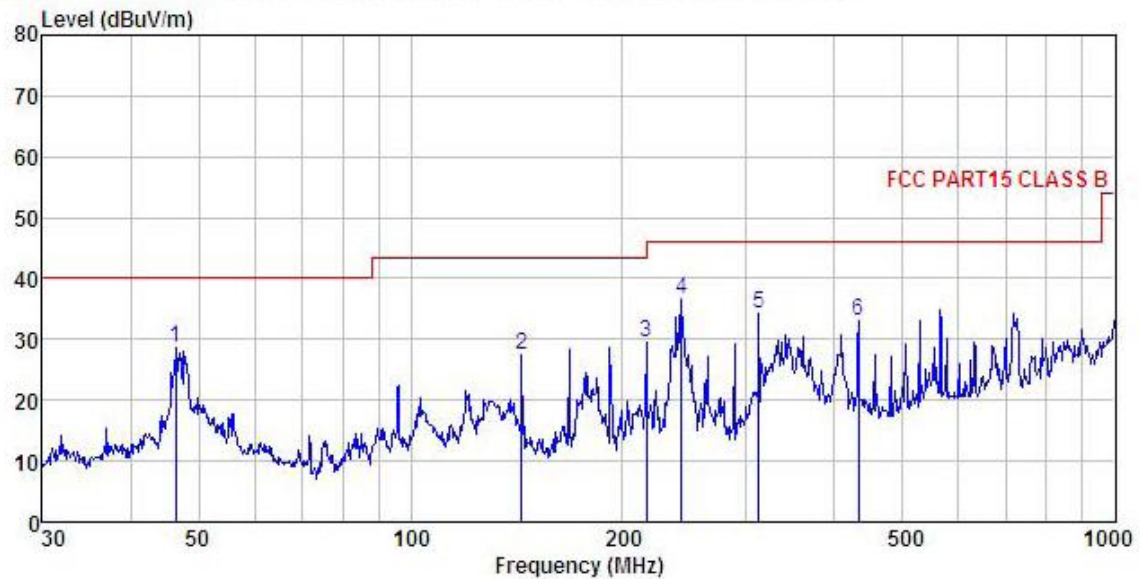
Test Requirement:	FCC Part 15 B Section 15.109				
Test Method:	ANSI C63.4:2003				
Test Frequency Range:	30MHz to 6000MHz				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 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				
					
Test setup:	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

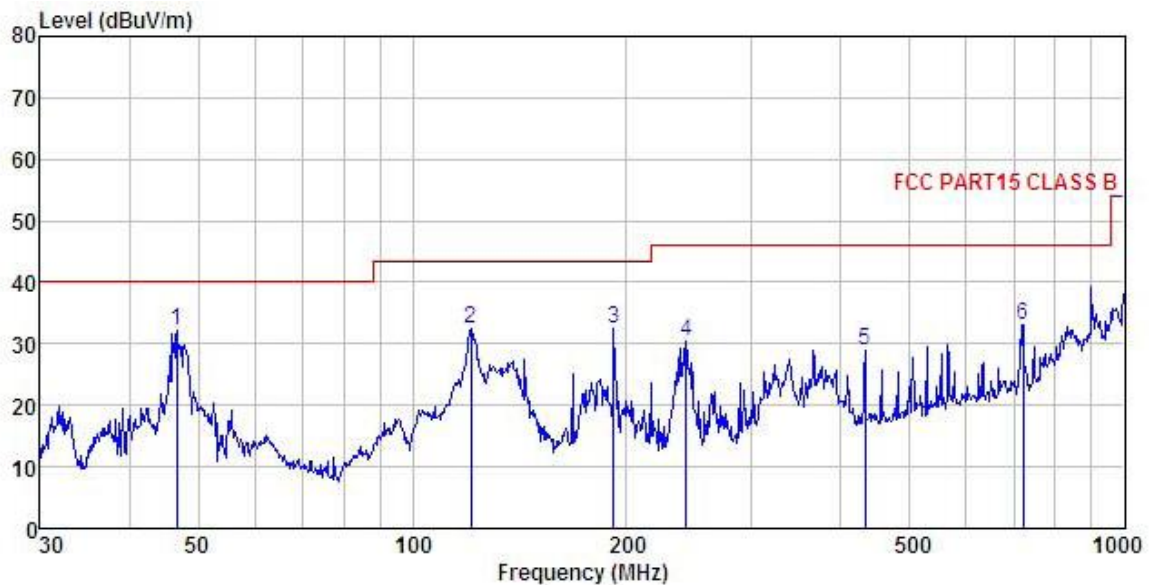
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
 EUT : MID
 Model : VAX114
 Test mode : PC Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK :

	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	
1	46.340	44.34	13.46	0.57	29.85	28.52	40.00	-11.48	QP
2	143.830	47.30	8.22	1.28	29.25	27.55	43.50	-15.95	QP
3	216.024	45.74	11.07	1.46	28.73	29.54	46.00	-16.46	QP
4	242.525	51.45	12.08	1.59	28.58	36.54	46.00	-9.46	QP
5	312.179	47.74	13.22	1.81	28.48	34.29	46.00	-11.71	QP
6	432.546	44.21	15.53	2.21	28.84	33.11	46.00	-12.89	QP

Vertical:

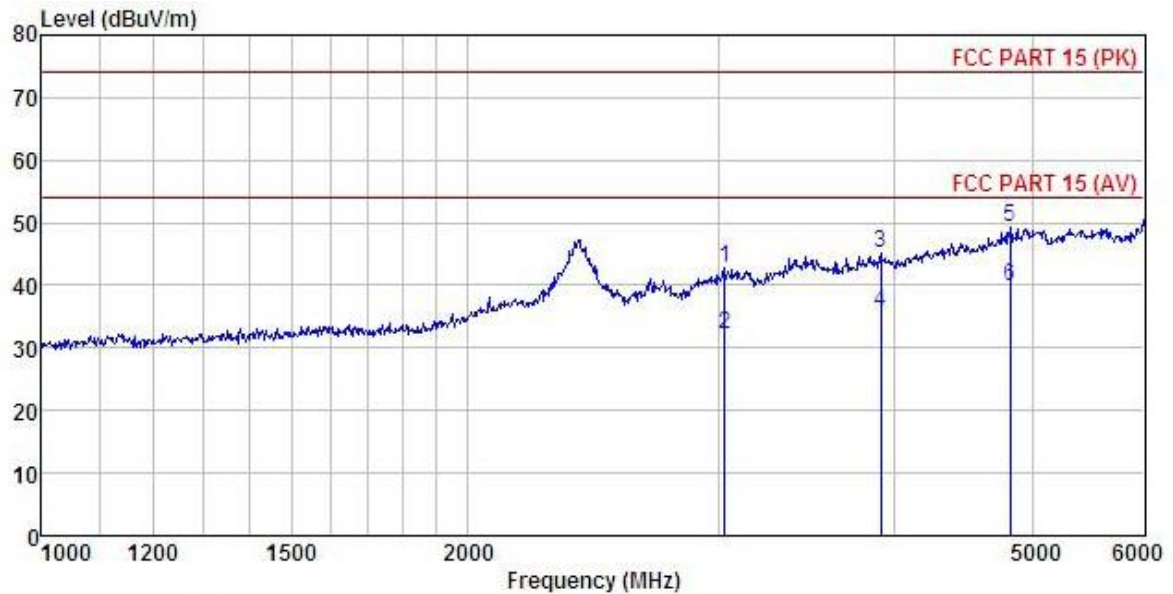


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 EUT : MID
 Model : VAX114
 Test mode : PC Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK :

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	46.666	48.12	13.45	0.58	29.85	32.30	40.00 -7.70 QP
2	120.699	50.36	10.38	1.13	29.39	32.48	43.50 -11.02 QP
3	191.745	49.52	10.56	1.37	28.89	32.56	43.50 -10.94 QP
4	242.525	45.42	12.08	1.59	28.58	30.51	46.00 -15.49 QP
5	432.546	40.17	15.53	2.21	28.84	29.07	46.00 -16.93 QP
6	721.726	39.67	19.10	2.97	28.58	33.16	46.00 -12.84 QP

Above 1GHz

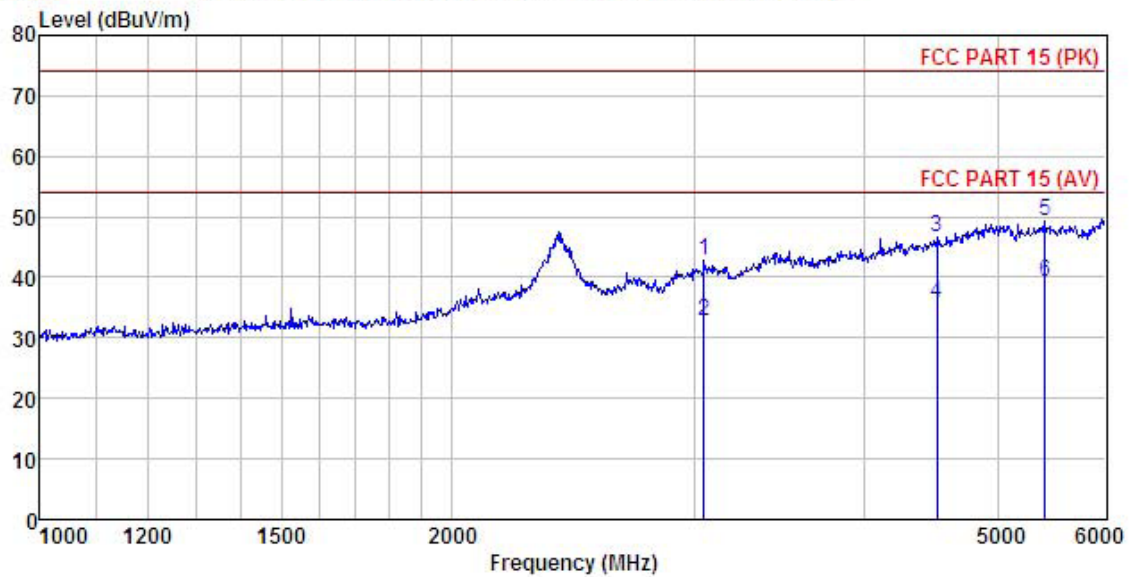
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 EUT : MID
 Model : VAX114
 Test mode : PC Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK :

	Read	Antenna	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	3031.626	48.63	28.59	6.00	40.55	42.67	74.00	-31.33 Peak
2	3031.626	38.17	28.59	6.00	40.55	32.21	54.00	-21.79 Average
3	3909.967	48.60	29.77	7.58	40.89	45.06	74.00	-28.94 Peak
4	3909.967	39.16	29.77	7.58	40.89	35.62	54.00	-18.38 Average
5	4821.884	49.11	31.54	8.92	40.22	49.35	74.00	-24.65 Peak
6	4821.884	39.64	31.54	8.92	40.22	39.88	54.00	-14.12 Average

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 EUT : MID
 Model : VAX114
 Test mode : PC Mode
 Power Rating : AC120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK :

	Freq	ReadAntenna	Cable Preamp	Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	3053.432	48.85	28.65	5.99	40.57	42.92	74.00	-31.08 Peak
2	3053.432	38.67	28.65	5.99	40.57	32.74	54.00	-21.26 Average
3	4512.583	47.88	30.77	8.56	40.65	46.56	74.00	-27.44 Peak
4	4512.583	37.11	30.77	8.56	40.65	35.79	54.00	-18.21 Average
5	5417.471	48.49	31.91	9.15	40.21	49.34	74.00	-24.66 Peak
6	5417.471	38.45	31.91	9.15	40.21	39.30	54.00	-14.70 Average