Shenzhen EBO Technology Co., Ltd.

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Telephone: +86-755-29451282,
Fax: +86-755-22639141

TEST REPORT

Applicant:	i-TRINETECH Co.,Ltd.
Address of Applicant:	F4, M-8 East, Sparrow Ridge Industrial Zone, Science & Technology Park, Nanshan, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	LR948
Model No.:	mw948D_2C0032
FCC ID:	2ACZVLR948XX-XXX
Applicable standards:	FCC CFR Title 47 Part 15 Subpart B:2013
Date of sample receipt:	August 11, 2014
Date of Test:	August 11- August 20, 2014
Date of report issued:	August 26, 2014
Test Result :	PASS *

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

Authorized Signature:

Kevin Yu
Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 26, 2014*	*Original*

Prepared by: Edward.Pan **Date:** *August 26, 2014*

Project Engineer

Reviewed by: Hank.Yan **Date:** *August 26, 2014*

Reviewer

3 Contents

4 Test Summary

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

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

5 General Information

5.1 Client Information

Applicant:	i-TRINETECH Co.,Ltd.
Address of Applicant:	F4, M-8 East, Sparrow Ridge Industrial Zone, Science & Technology Park, Nanshan, Shenzhen, China
Manufacturer:	i-TRINETECH Co.,Ltd.
Address of Manufacturer:	F4, M-8 East, Sparrow Ridge Industrial Zone, Science & Technology Park, Nanshan, Shenzhen, China

5.2 General Description of EUT

Product Name:	LR948
Model No.:	mw948D_2C0032
Power supply:	Input: DC 5.0V 1000mA Or DC 3.7V 1500mAh Li-ion Battery

5.3 Test mode and voltage

Test mode:	
LAN mode	Connect the EUT to internet via LAN port and ping an IP address.
Rocording mode	Keep the EUT in recording mode and storage in the SD card
Rocording mode	Keep the EUT in recording mode and storage in the USB
PC mode	Keep the EUT in communication with PC mode.
Test voltage:	AC 120V/60Hz

5.4 Test Facility

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

● **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. to ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testingand Calibration Laboratories) for the competence in the field of testing.

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance

letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

● **Industry Canada (IC) —Registration No.: 9079A-2**

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-2, June 26, 2013.

5.5 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

5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC Approval
HP	Printer	CB495A	05257893	FCC DoC
DELL	PC Host	OPTIPLEX745	GTS312	FCC DoC
AOC	LCD TV	TFT24660AG	T49A5JA0006600 B9	FCC DoC
PHILIPS	LCD TV	19PFL3120/T3	AU1A1212002906	FCC DoC
DELL	KEYBOARD	SK-8115	N/A	FCC DoC
DELL	MOUSE	MOC5UO	N/A	FCC DoC

5.7 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.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

6 Test Instruments list

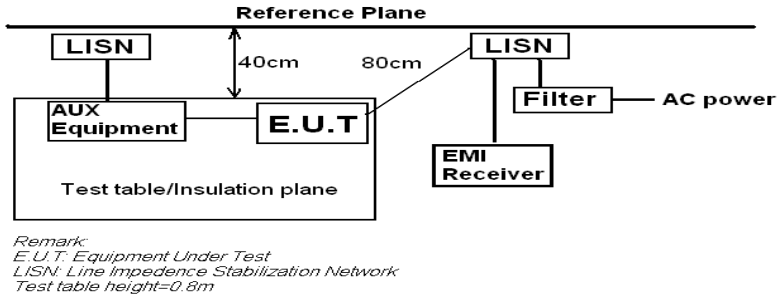
Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	Mar. 29 2014	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Feb. 23 2014	Feb. 22 2015
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Feb. 23 2014	Feb. 22 2015
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	Jun. 27 2014	Jun. 26 2015
6	RF Amplifier	HP	8347A	GTS204	Jul. 01 2014	Jun. 30, 2015
7	Preamplifier	HP	8349B	GTS206	Jul. 01 2014	Jun. 30, 2015
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Mar. 29 2014	Mar. 28 2015
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 29 2014	Mar. 28 2015
11	Thermo meter	N/A	N/A	GTS256	Mar. 29 2014	Mar. 28 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	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	Jul. 01 2014	Jun. 30, 2015
2	EMI Test Receiver	R&S	ESCS30	GTS223	Jul. 01 2014	Jun. 30, 2015
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	Jul. 01 2014	Jun. 30, 2015
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 01 2014	Jun. 30, 2015
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	Jul. 01 2014	Jun. 30, 2015
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 01 2014	Jun. 30, 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	Jul. 01 2014	Jun. 30, 2015

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	Barometer	ChangChun	DYM3	GTS257	Jul. 01 2014	Jun. 30, 2015

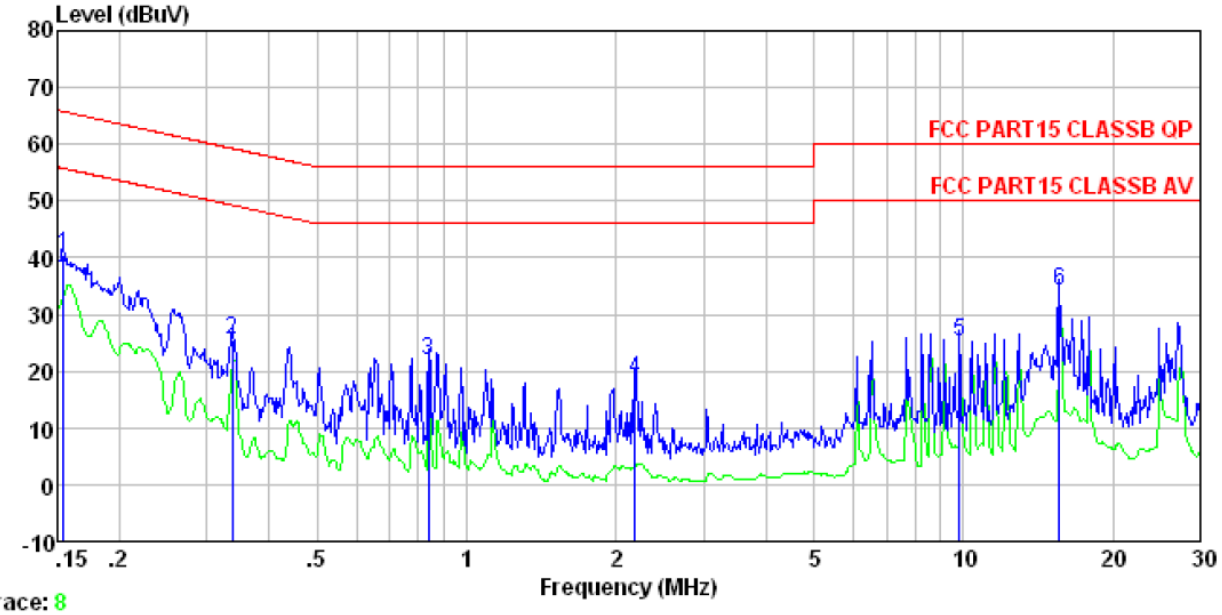
7 Test Results and Measurement Data

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:	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 procedure	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. 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). 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 setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1 012mbar
Measurement Record:	Uncertainty: ± 3.45dB
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details. Only the data of worst case was reported.
Test results:	Pass

Measurement Data

Line:

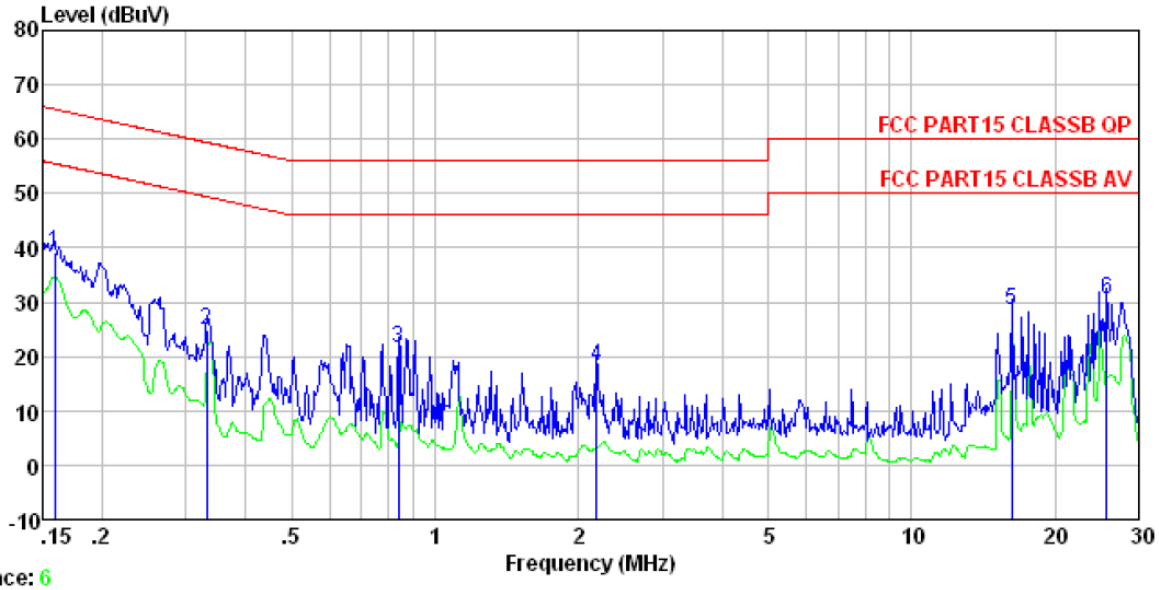


Trace: 8

Condition : FCC PART15 CLASSB QP LISN-2013 LINE
Job No. : 1271RF
Test mode : PC mode
Test Engineer: Mike

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	40.13	0.15	0.12	40.40	65.78	-25.38	QP
2	0.337	25.19	0.11	0.10	25.40	59.27	-33.87	QP
3	0.839	21.63	0.14	0.13	21.90	56.00	-34.10	QP
4	2.178	18.33	0.12	0.15	18.60	56.00	-37.40	QP
5	9.809	24.65	0.29	0.19	25.13	60.00	-34.87	QP
6	15.635	33.74	0.31	0.22	34.27	60.00	-25.73	QP

Neutral:



Trace: 6

Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
Job No. : 1271RF
Test mode : PC mode
Test Engineer: Mike

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.159	38.87	0.07	0.12	39.06	65.52	-26.46	QP
2	0.332	24.76	0.06	0.10	24.92	59.40	-34.48	QP
3	0.839	21.47	0.07	0.13	21.67	56.00	-34.33	QP
4	2.178	17.97	0.09	0.15	18.21	56.00	-37.79	QP
5	16.226	27.92	0.36	0.22	28.50	60.00	-31.50	QP
6	25.727	29.16	1.01	0.23	30.40	60.00	-29.60	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.
3. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.2 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109
Test Method:	ANSI C63.4:2003
Test Frequency Range:	30MHz to 6GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Receiver setup:	

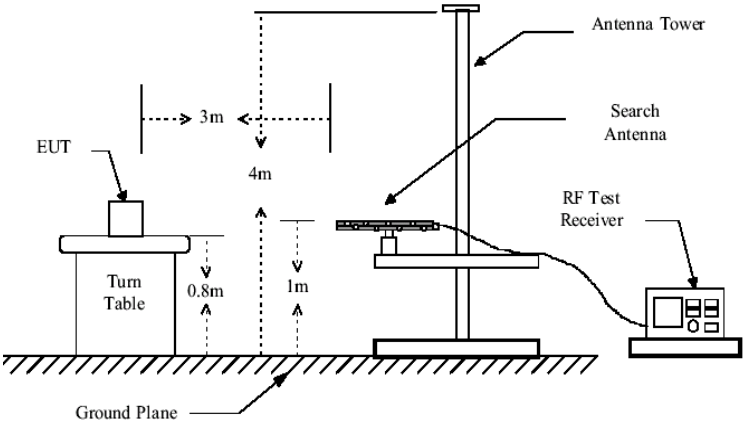
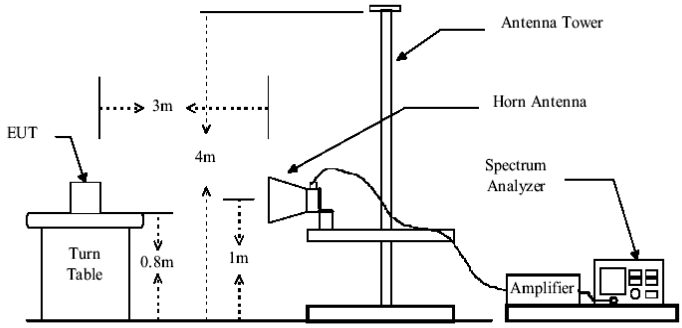
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	Peak	1MHz	10Hz	Average Value

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 Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. 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 rota 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 setup:	Below 1GHz  Above 1GHz 
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:	Refer to section 5.3 for details. Only the data of worst case was reported.
Test results:	Pass

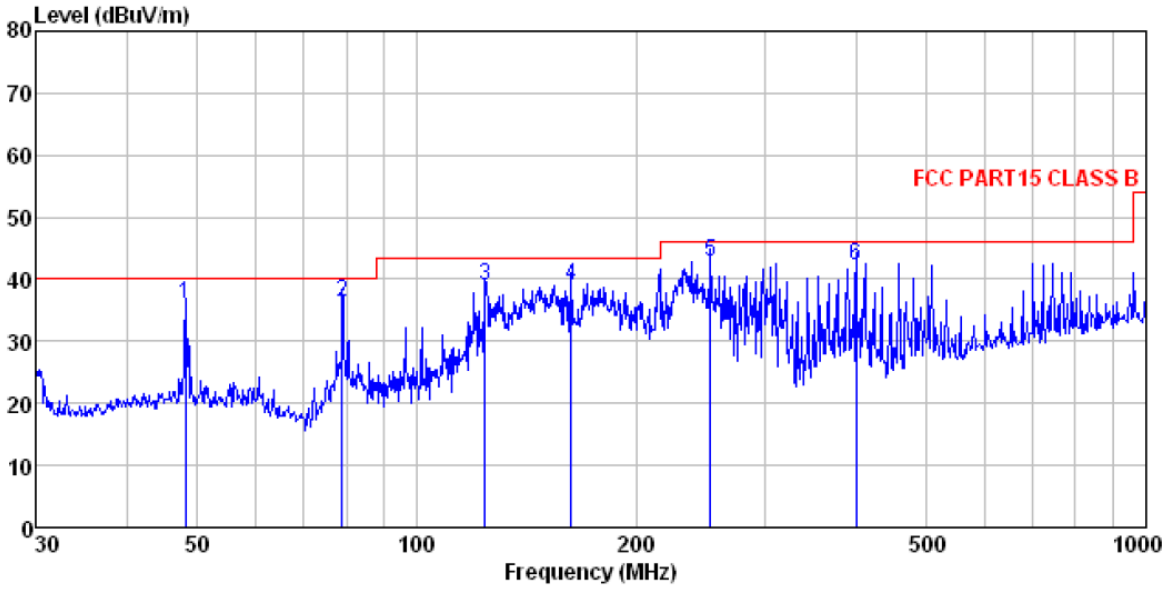
Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

Measurement Data

Below 1GHz

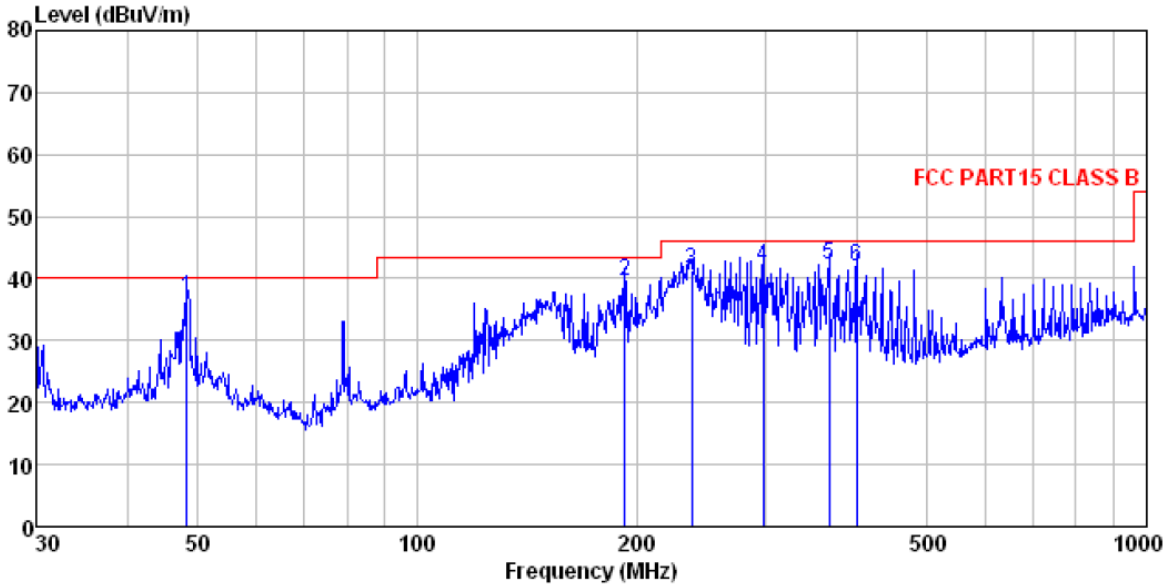
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL
Job No. : 1271RF
Test Mode : PC mode
Test Engineer: Qing

	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	48.163	51.80	15.36	0.75	31.98	35.93	40.00	-4.07	QP
2	78.965	56.68	10.43	1.02	31.77	36.36	40.00	-3.64	QP
3	124.133	57.74	11.80	1.39	31.88	39.05	43.50	-4.45	QP
4	162.611	58.65	10.74	1.65	32.03	39.01	43.50	-4.49	QP
5	252.948	58.86	14.06	2.14	32.16	42.90	46.00	-3.10	QP
6	400.432	54.10	17.10	2.85	31.89	42.16	46.00	-3.84	QP

Vertical:

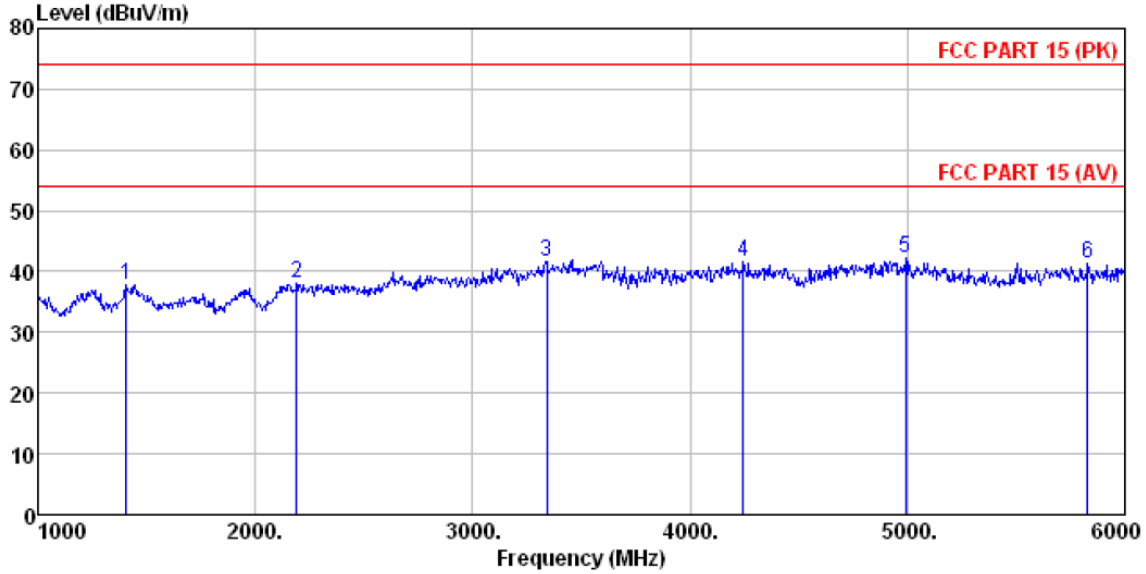


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL
Job No. : 1271RF
Test Mode : PC mode
Test Engineer: Qing

	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	48.332	52.78	15.35	0.75	31.98	36.90	40.00	-3.10	QP
2	192.419	57.27	12.56	1.80	32.12	39.51	43.50	-3.99	QP
3	237.476	57.34	13.99	2.06	32.16	41.23	46.00	-4.77	QP
4	298.268	56.77	15.00	2.35	32.18	41.94	46.00	-4.06	QP
5	366.823	54.90	16.48	2.70	31.98	42.10	46.00	-3.90	QP
6	400.432	53.99	17.10	2.85	31.89	42.05	46.00	-3.95	QP

Above 1GHz

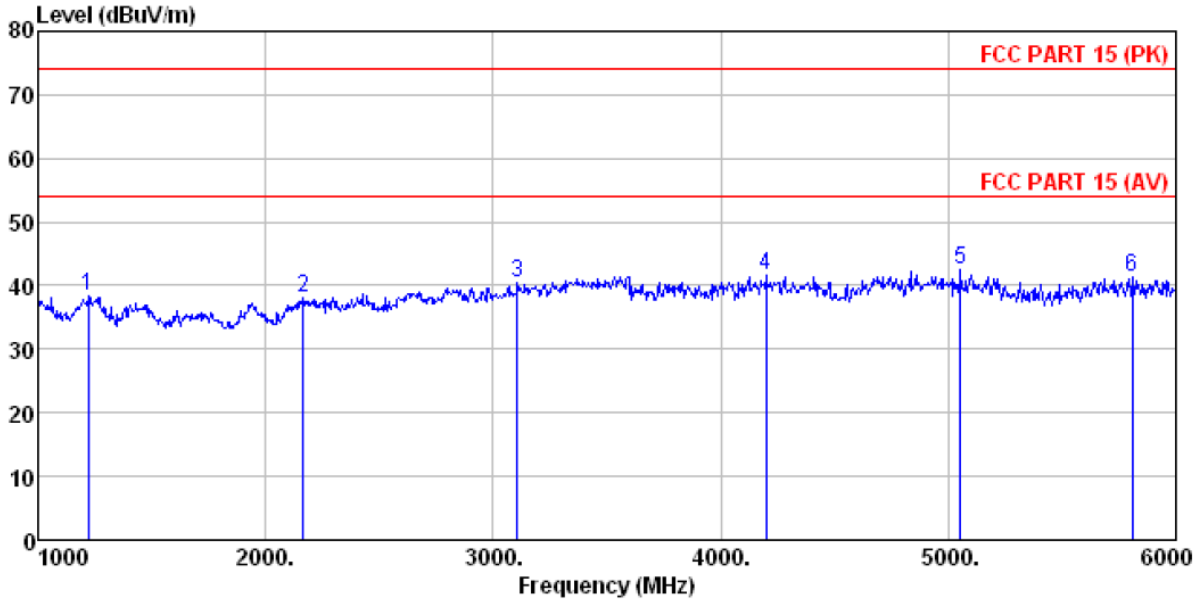
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
Job No. : 1271RF
Test Mode : PC mode
Test Engineer: Qing

	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	1405.000	41.17	25.55	4.62	33.45	37.89	74.00	-36.11	Peak
2	2190.000	39.16	27.90	5.17	34.25	37.98	74.00	-36.02	Peak
3	3340.000	39.58	28.43	6.64	32.93	41.72	74.00	-32.28	Peak
4	4245.000	35.18	30.38	8.10	31.90	41.76	74.00	-32.24	Peak
5	4990.000	33.59	31.95	8.75	32.18	42.11	74.00	-31.89	Peak
6	5830.000	30.91	32.68	9.97	32.23	41.33	74.00	-32.67	Peak

Vertical:

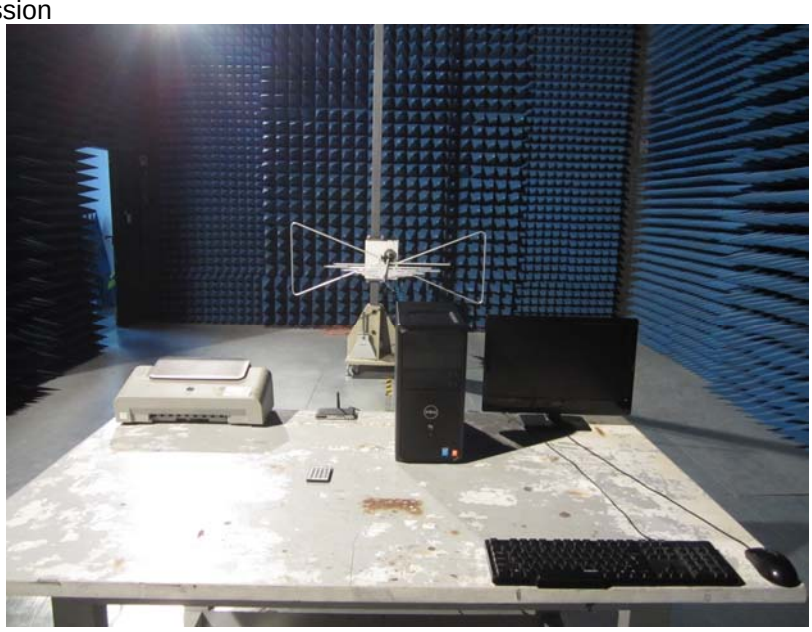


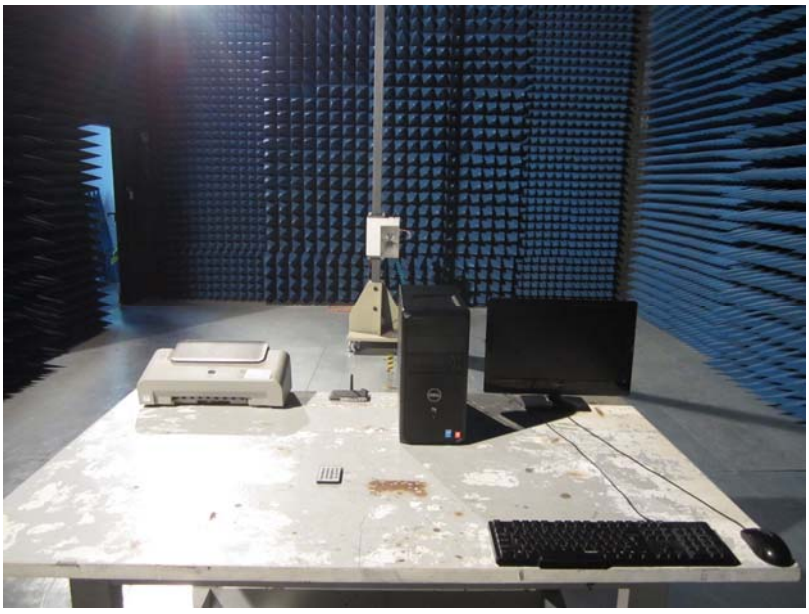
Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
Job No. : 1271RF
Test Mode : PC mode
Test Engineer: Qing

	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	1220.000	41.67	25.43	4.48	33.13	38.45	74.00	-35.55	Peak
2	2165.000	39.42	27.67	5.15	34.27	37.97	74.00	-36.03	Peak
3	3105.000	38.90	28.70	6.15	33.20	40.55	74.00	-33.45	Peak
4	4200.000	35.22	30.22	8.07	31.96	41.55	74.00	-32.45	Peak
5	5055.000	33.81	32.00	8.85	32.21	42.45	74.00	-31.55	Peak
6	5810.000	30.83	32.66	9.95	32.24	41.20	74.00	-32.80	Peak

8 Test Setup Photo

Radiated Emission





Conducted Emission

9 EUT Constructional Details

Reference to the test report No. : FCC14-RTE082601

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