

FCC Report

Applicant: XTREAMER LIMITED

Address of Applicant: Flat A, 15F Hiller Commercial Building 65-67 Bonham Strand
East, Sheung Wan, Hongkong

Equipment Under Test (EUT)

Product Name: Mini PC

Model No.: xtreamer winkey

Trade Mark: Xtreamer

FCC ID: ZYAXTREAMERWINKEY

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2014

Date of sample receipt: September 08, 2015

Date of Test: September 09-14, 2015

Date of report issue: September 14, 2015

Test Result : PASS *

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

Authorized Signature:



Robinson Lo

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.

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2 Version

Version No.	Date	Description
00	September 14, 2015	Original

Prepared By:

Sam. Gao

Date:

September 14, 2015

Project Engineer

Check By:

hank. yan

Date:

September 14, 2015

Reviewer

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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.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of $k=2$ and a level of confidence of 95%.

5 General Information

5.1 Client Information

Applicant:	XTREAMER LIMITED
Address of Applicant:	Flat A, 15F Hiller Commercial Building 65-67 Bonham Strand East, Sheung Wan, Hongkong
Manufacturer/ Factory:	XTREAMER LIMITED
Address of Manufacture/ Factory:	Flat A, 15F Hiller Commercial Building 65-67 Bonham Strand East, Sheung Wan, Hongkong

5.2 General Description of EUT

Product Name:	Mini PC
Model No.:	xtreamer winkey
Power supply:	Adapter: Model No.: S12B22-050A200-04 Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5.0V, 2A

5.3 Test mode

Test mode:	
SC Card Playing mode	Keep the EUT in SC Card Playing mode.
USB Playing mode	Keep the EUT in USB Playing mode.
PC test mode	Keep the EUT in Burning test mode.

5.4 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, 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: Room 301-309, 3th Floor, Block A, Huafeng Jinyuan Business Building, No. 300 Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
PHILIPS	LCD TV	19PFL3120/T3	AU1A1212002906	DOC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	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. 27 2015	Mar. 26 2016
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	June 30 2015	June 29 2016
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June 30 2015	June 29 2016
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	June 26 2015	June 29 2016
6	RF Amplifier	HP	8347A	GTS204	June 30 2015	June 29 2016
7	Preamplifier	HP	8349B	GTS206	June 30 2015	June 29 2016
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Mar. 28 2015	Mar. 27 2016
10	Coaxial Cable	GTS	N/A	GTS211	Mar. 28 2015	Mar. 27 2016

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)	GTS264	Sep. 07 2013	Sep. 06 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jun 30 2015	Jun 29 2016
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jun 30 2015	Jun 29 2016
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jun 30 2015	Jun 29 2016
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jun 30 2015	Jun 29 2016
6	Coaxial Cable	GTS	N/A	GTS227	Jun 30 2015	Jun 29 2016
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	July 07 2015	July 06 2016

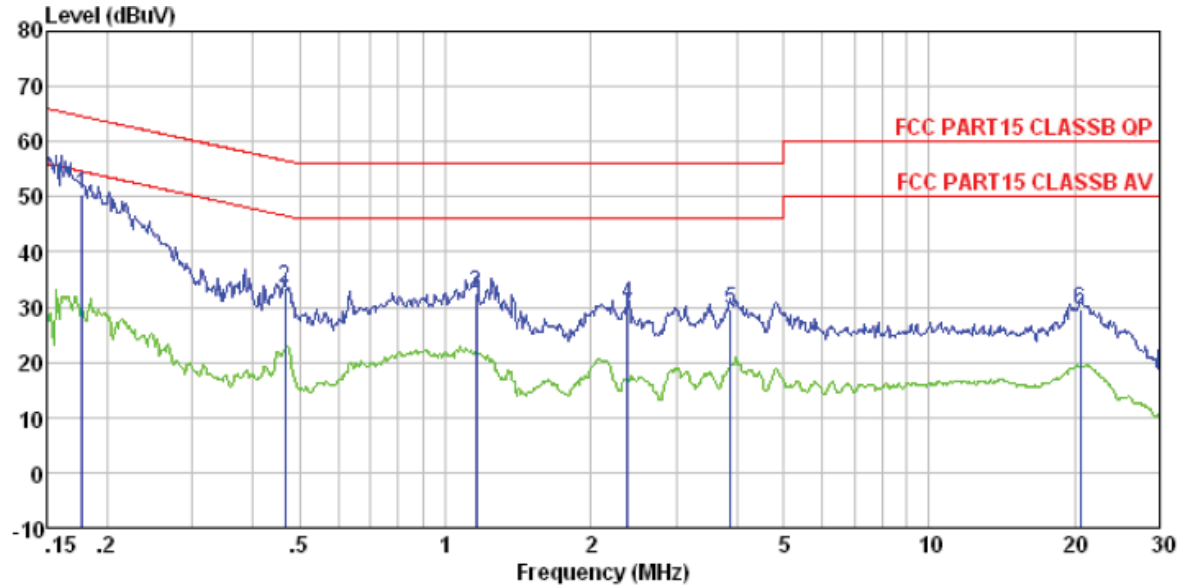
7 Test Results and Measurement Data

7.1 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107		
Test Method:	ANSI C63.4:2014		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	<div><p style="text-align: center;">Reference Plane</p><p>The diagram illustrates the test setup. A horizontal line at the top represents the Reference Plane. Below it, on the left, is a box labeled 'AUX Equipment' connected to a box labeled 'E.U.T'. A vertical double-headed arrow between the Reference Plane and the 'E.U.T' box is labeled '40cm'. To the right of the 'E.U.T' box, a diagonal line connects it to a box labeled 'LISN'. This 'LISN' box is connected to another box labeled 'Filter', which is then connected to 'AC power'. A vertical line connects this 'LISN' box to a box labeled 'EMI Receiver'. A vertical double-headed arrow between the Reference Plane and this 'LISN' box is labeled '80cm'. The 'AUX Equipment' and 'E.U.T' boxes are enclosed in a larger box labeled 'Test table/Insulation plane'.</p><p><i>Remark:</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p></div>		
Test procedure:	<div><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.). This provides 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 C63.4:2014 on conducted measurement.</div>		
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement Data

Line:



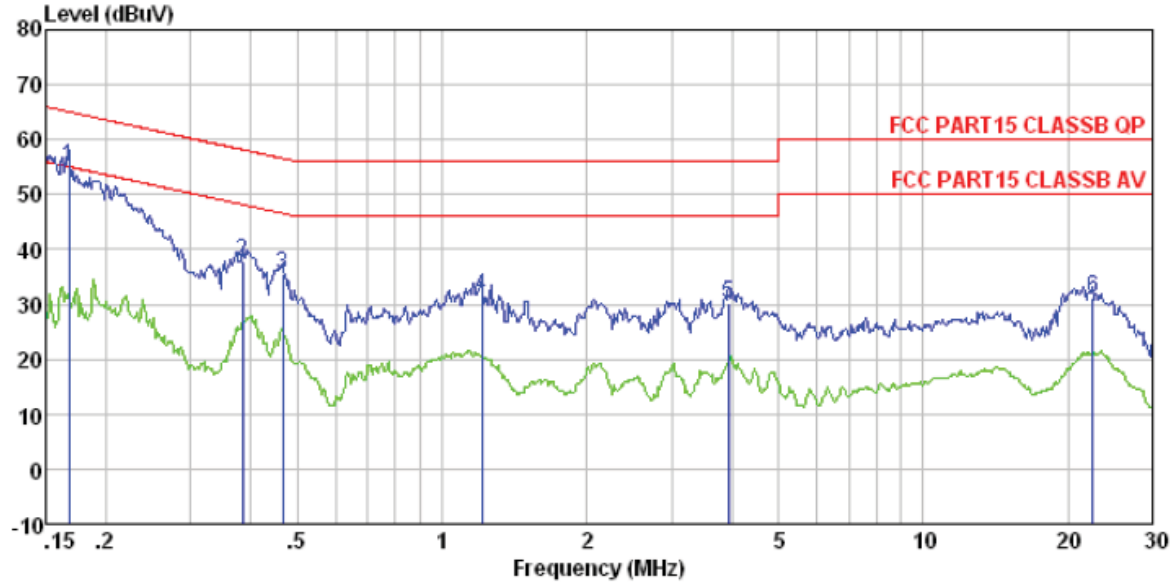
Condition : FCC PART15 CLASSB QP LISN-2013 LINE

Test mode : Burning mode

Test Engineer: Song

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.178	50.11	0.14	0.13	50.38	64.59	-14.21	QP
2	0.466	33.34	0.12	0.11	33.57	56.58	-23.01	QP
3	1.160	32.16	0.13	0.13	32.42	56.00	-23.58	QP
4	2.384	30.36	0.13	0.15	30.64	56.00	-25.36	QP
5	3.881	29.23	0.20	0.15	29.58	56.00	-26.42	QP
6	20.594	28.65	0.66	0.22	29.53	60.00	-30.47	QP

Neutral:



Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL

Test mode : Burning mode

Test Engineer: Song

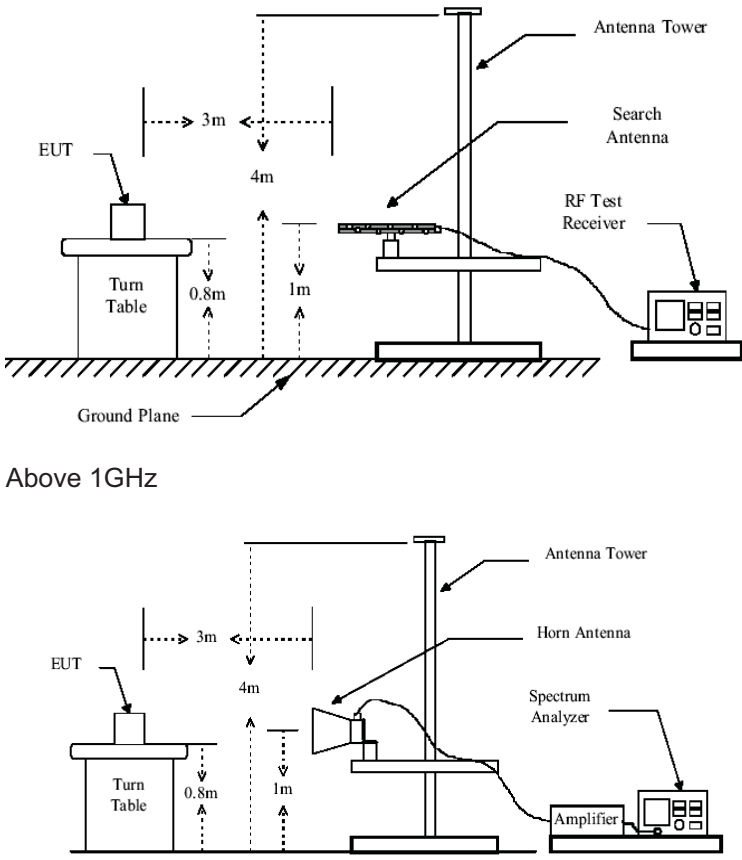
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.168	54.81	0.07	0.12	55.00	65.08	-10.08	QP
2	0.385	37.66	0.06	0.10	37.82	58.17	-20.35	QP
3	0.466	35.35	0.06	0.11	35.52	56.58	-21.06	QP
4	1.210	31.22	0.08	0.13	31.43	56.00	-24.57	QP
5	3.943	30.01	0.14	0.15	30.30	56.00	-25.70	QP
6	22.535	30.16	0.82	0.23	31.21	60.00	-28.79	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. 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 C63.4:2014																								
Test Frequency Range:	30MHz to 10GHz																								
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																								
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr></table>					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	
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:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.00</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.50</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.00</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.00</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr><tr><td>74.00</td><td>Peak Value</td></tr></table>					Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.00	Quasi-peak Value	88MHz-216MHz	43.50	Quasi-peak Value	216MHz-960MHz	46.00	Quasi-peak Value	960MHz-1GHz	54.00	Quasi-peak Value	Above 1GHz	54.00	Average Value	74.00	Peak Value
Frequency	Limit (dBuV/m @3m)	Remark																							
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960MHz-1GHz	54.00	Quasi-peak Value																							
Above 1GHz	54.00	Average Value																							
	74.00	Peak Value																							
Test Procedure:	<div>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.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>																								
Test setup:	Below 1GHz																								

	 <p>Above 1GHz</p>
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
Test results:	Pass

Note:

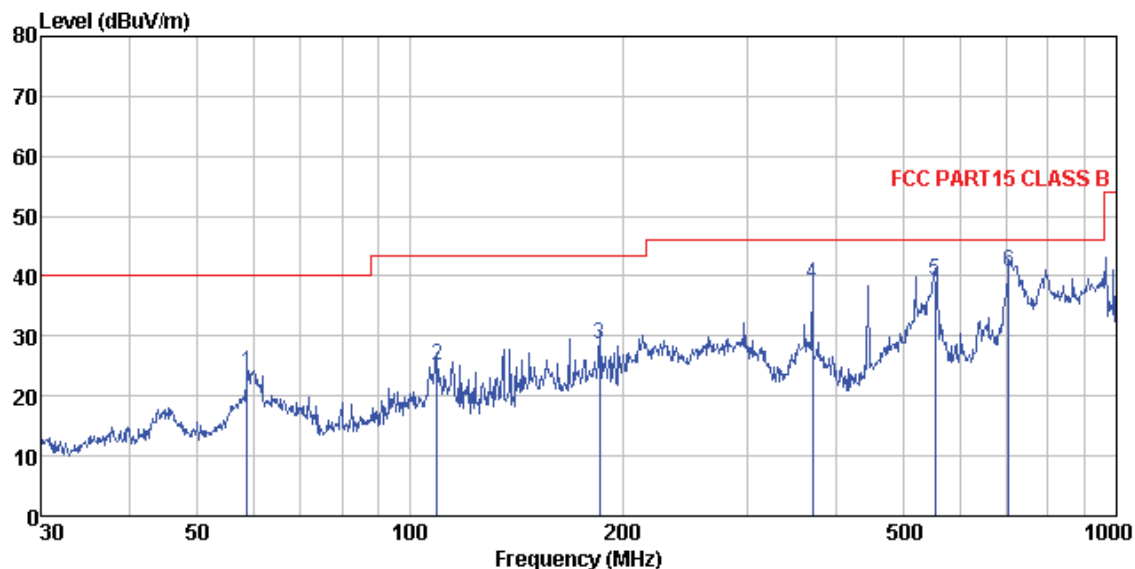
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

Measurement Data

Below 1GHz

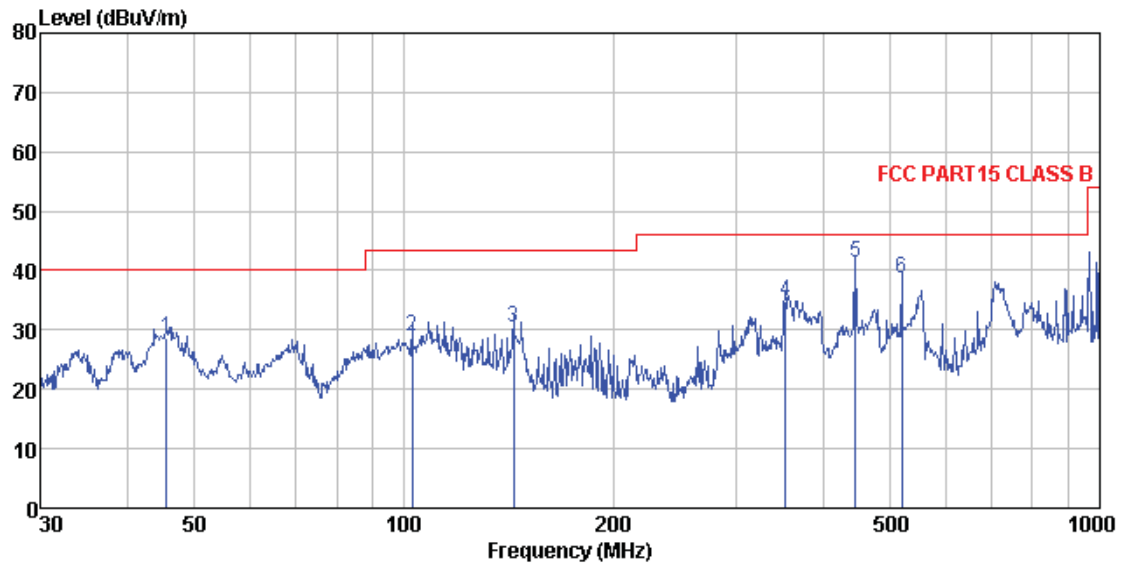
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL
 Test mode : Burning test mode
 Test Engineer: Rong

	Read	Cable	Preamp	Antenna		Limit	Over	
Freq	Level	Loss	Factor	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dB	dB/m	dBuV/m	dBuV/m	dB	
1	58.819	38.14	0.85	29.93	14.76	23.82	40.00	-16.18 QP
2	109.029	39.15	1.27	29.64	14.35	25.13	43.50	-18.37 QP
3	185.138	43.95	1.77	29.25	12.16	28.63	43.50	-14.87 QP
4	370.702	48.95	2.72	29.64	16.51	38.54	46.00	-7.46 QP
5	552.883	45.55	3.53	29.30	19.62	39.40	46.00	-6.60 QP
6	704.226	45.06	4.10	29.20	20.86	40.82	46.00	-5.18 QP

Vertical:

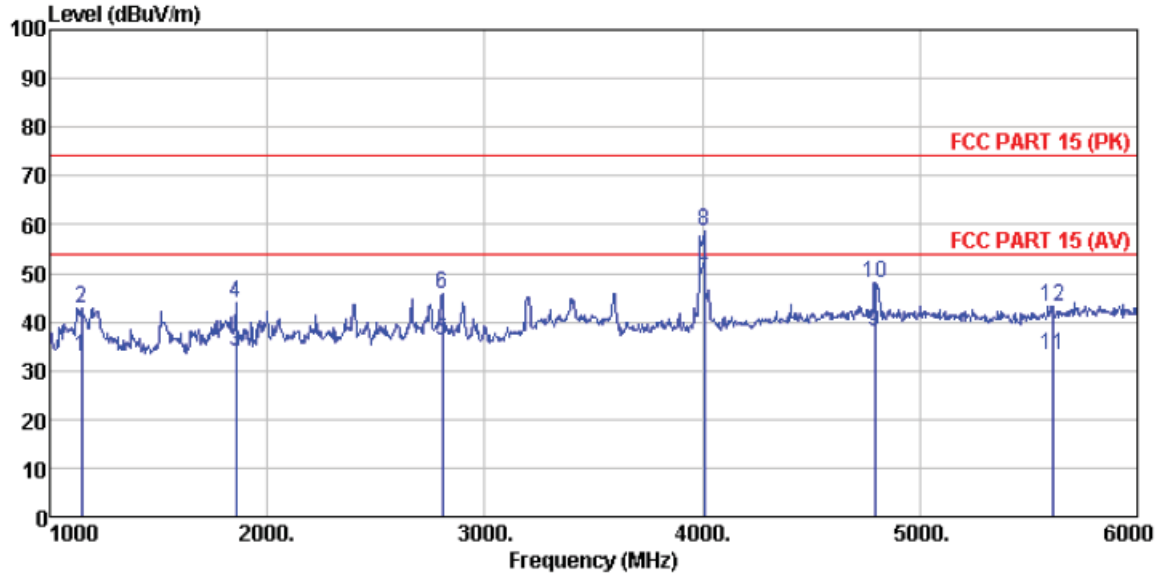


Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL
 Test mode : Burnning test mode
 Test Engineer: Rong

	Read	Cable	Preamp	Antenna		Limit	Over	
Freq	Level	Loss	Factor	Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB		dB	dB/m	dBuV/m	dBuV/m	dB
1	45.535	42.50	0.72	30.02	15.52	28.72	40.00	-11.28 QP
2	102.719	42.49	1.22	29.68	14.92	28.95	43.50	-14.55 QP
3	143.830	48.09	1.53	29.44	10.22	30.40	43.50	-13.10 QP
4	352.943	45.44	2.64	29.72	16.33	34.69	46.00	-11.31 QP
5	444.851	50.00	3.07	29.41	17.57	41.23	46.00	-4.77 QP
6	519.065	45.68	3.39	29.30	19.00	38.77	46.00	-7.23 QP

Above 1GHz

Horizontal:

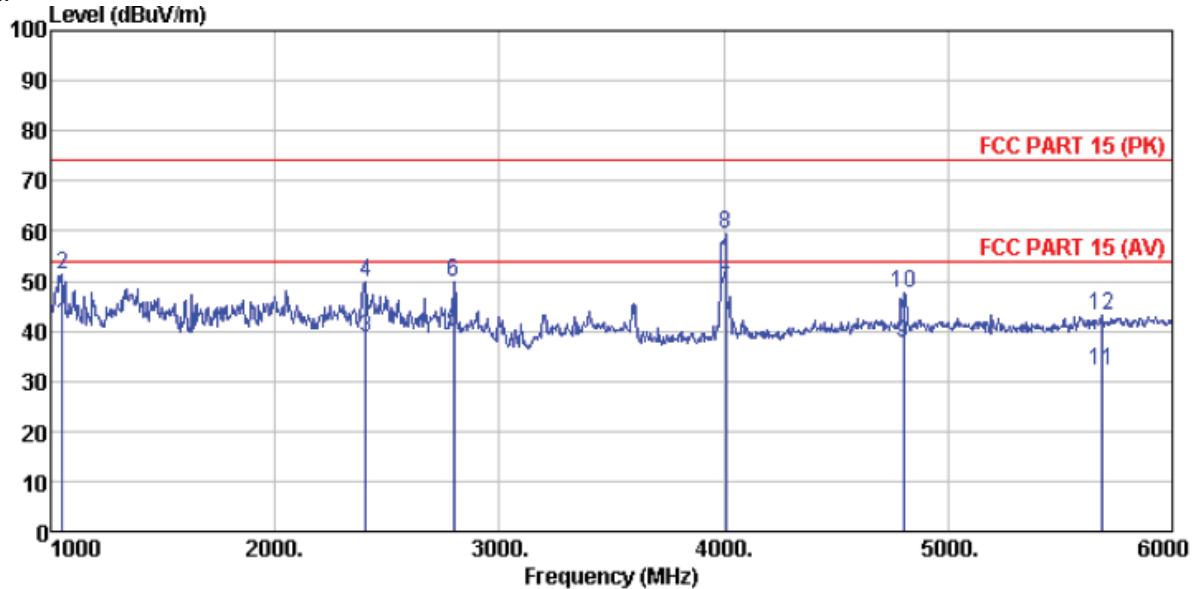


Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL
 Test mode : Burning test mode
 Test Engineer: Rong

	Read	Cable	Preamplifier	Antenna	Limit	Over	
Freq	Level	Loss	Factor	Factor	Level	Line	Limit Remark
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dB	dB/m	dBuV/m	dBuV/m	dB
1	1145.000	36.53	4.42	33.01	24.96	32.90	54.00 -21.10 Average
2	1145.000	46.59	4.42	33.01	24.96	42.96	74.00 -31.04 Peak
3	1855.000	37.54	4.89	34.20	25.54	33.77	54.00 -20.23 Average
4	1855.000	47.53	4.89	34.20	25.54	43.76	74.00 -30.24 Peak
5	2805.000	35.54	5.76	33.55	28.42	36.17	54.00 -17.83 Average
6	2805.000	45.10	5.76	33.55	28.42	45.73	74.00 -28.27 Peak
7	4010.000	43.31	7.87	32.17	29.71	48.72	54.00 -5.28 Average
8	4010.000	53.08	7.87	32.17	29.71	58.49	74.00 -15.51 Peak
9	4795.000	29.84	8.59	32.08	31.76	38.11	54.00 -15.89 Average
10	4795.000	39.69	8.59	32.08	31.76	47.96	74.00 -26.04 Peak
11	5610.000	23.46	9.67	32.37	32.27	33.03	54.00 -20.97 Average
12	5610.000	33.78	9.67	32.37	32.27	43.35	74.00 -30.65 Peak

Remark: From 6GHz to 10GHz , no emission found ,only floor noise , so only report worse case from 1GHz to 6GHz

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL
 Test mode : Burning test mode
 Test Engineer: Rong

	Read	Cable	Preamp	Antenna		Limit	Over	
Freq	Level	Loss	Factor	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB		dB/m	dBuV/m	dBuV/m	dB	
1	1050.000	45.03	4.34	32.84	24.62	41.15	54.00	-12.85 Average
2	1050.000	55.08	4.34	32.84	24.62	51.20	74.00	-22.80 Peak
3	2405.000	39.87	5.40	33.99	27.57	38.85	54.00	-15.15 Average
4	2405.000	50.81	5.40	33.99	27.57	49.79	74.00	-24.21 Peak
5	2795.000	39.12	5.76	33.55	28.40	39.73	54.00	-14.27 Average
6	2795.000	49.02	5.76	33.55	28.40	49.63	74.00	-24.37 Peak
7	4010.000	43.02	7.87	32.17	29.71	48.43	54.00	-5.57 Average
8	4010.000	53.95	7.87	32.17	29.71	59.36	74.00	-14.64 Peak
9	4800.000	29.45	8.60	32.09	31.78	37.74	54.00	-16.26 Average
10	4800.000	39.16	8.60	32.09	31.78	47.45	74.00	-26.55 Peak
11	5690.000	22.01	9.79	32.31	32.47	31.96	54.00	-22.04 Average
12	5690.000	33.17	9.79	32.31	32.47	43.12	74.00	-30.88 Peak

Remark: From 6GHz to 10GHz , no emission found ,only floor noise , so only report worse case from 1GHz to 6GHz

8 Test Setup Photo

Radiated Emission



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. GTSE15090174401

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