

FCC Report

Applicant: Pendo Technology China Corporation

Address of Applicant: Room 520, Building No.5, No.84, Sanlin Road, Pudong New District, Shanghai, China

Equipment Under Test (EUT)

Product Name: Digit-Note

Model No.: PH-1410-H, PH-1410-EDU, PH-1410-J, PH-1410-SIG,
PH-1410-D, PH-1410-E, PH-1410-F, PH-1410-G, PH-1410-K,
PH-1410-L

FCC ID: 2A17G-PH1410

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2015

Date of sample receipt: August 25, 2016

Date of Test: August 25-30, 2016

Date of report issue: August 30, 2016

Test Result : PASS *

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

Authorized Signature:

A circular blue ink stamp from GTS Global United Technology Services Co., Ltd. is visible. The stamp contains the text "GTS", "GLOBAL UNITED TECHNOLOGY SERVICES CO., LTD.", and "EST. 2010". Overlaid on the stamp is a handwritten signature in black ink, which appears to read "Robinson Lo".

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.

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 or testing done by GTS in connection with, distribution or use of the product described in this report must be approved by GTS 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	August 30, 2016	Original

Prepared By:

Yang. Liu

Date:

August 30, 2016

Project Engineer

Check By:

Andy. Wu

Date:

August 30, 2016

Reviewer

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
4.1 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION.....	5
5.2 GENERAL DESCRIPTION OF EUT	5
5.3 TEST MODE	5
5.4 TEST FACILITY	6
5.5 TEST LOCATION.....	6
5.6 DESCRIPTION OF SUPPORT UNITS	6
5.7 DEVIATION FROM STANDARDS	6
5.8 ABNORMALITIES FROM STANDARD CONDITIONS.....	6
5.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER	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	17
9 EUT CONSTRUCTIONAL DETAILS	18

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.

Remark: Test according to ANSI C63.4: 2014.

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:	Pendo Technology China Corporation
Address of Applicant:	Room 520, Building No.5, No.84, Sanlin Road, Pudong New District, Shanghai, China
Manufacturer:	Pendo Technology China Corporation
Address of Manufacturer:	Room 520, Building No.5, No.84, Sanlin Road, Pudong New District, Shanghai, China

5.2 General Description of EUT

Product Name:	Digit-Note
Model No.:	PH-1410-H, PH-1410-EDU, PH-1410-J, PH-1410-SIG, PH-1410-D, PH-1410-E, PH-1410-F, PH-1410-G, PH-1410-K, PH-1410-L
Test Model No. :	PH-1410-H
<i>Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is the model name for commercial purpose.</i>	
Power Supply:	DC 5V, 1A Or DC 3.7V 2500mAh, 9.25Wh Lithium Battery

5.3 Test mode

Test mode:	
USB mode	Keep the EUT in data transmitting via USB line mode with PC.

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 22, 2016.

● **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, August 15, 2016.

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone,
Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

5.6 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
Apple	PC	A1278	C1MN99ERDTY3	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	July. 03 2015	July. 02 2020
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 29 2016	June 28 2017
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	June 29 2016	June 28 2017
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	June 29 2016	June 28 2017
6	RF Amplifier	HP	8347A	GTS204	June 29 2016	June 28 2017
7	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	June 29 2016	June 28 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	June 29 2016	June 28 2017
10	Coaxial Cable	GTS	N/A	GTS211	June 29 2016	June 28 2017
11	Thermo meter	N/A	N/A	GTS256	June 29 2016	June 28 2017

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	May 16 2014	May 15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June 29 2016	June 28 2017
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	June 29 2016	June 28 2017
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 29 2016	June 28 2017
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June 29 2016	June 28 2017
6	Coaxial Cable	GTS	N/A	GTS227	June 29 2016	June 28 2017
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	June 29 2016	June 28 2017

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	June 29 2016	June 28 2017

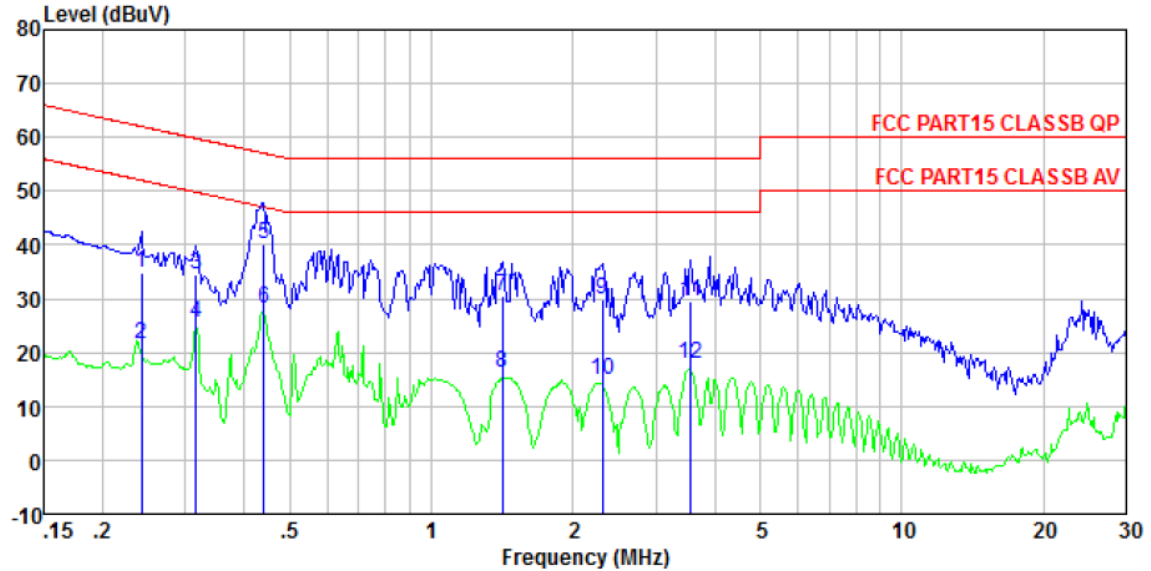
7 Test Results and Measurement Data

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:	Reference Plane 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.). 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.		
Test Instruments:	Refer to section 6 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement Data

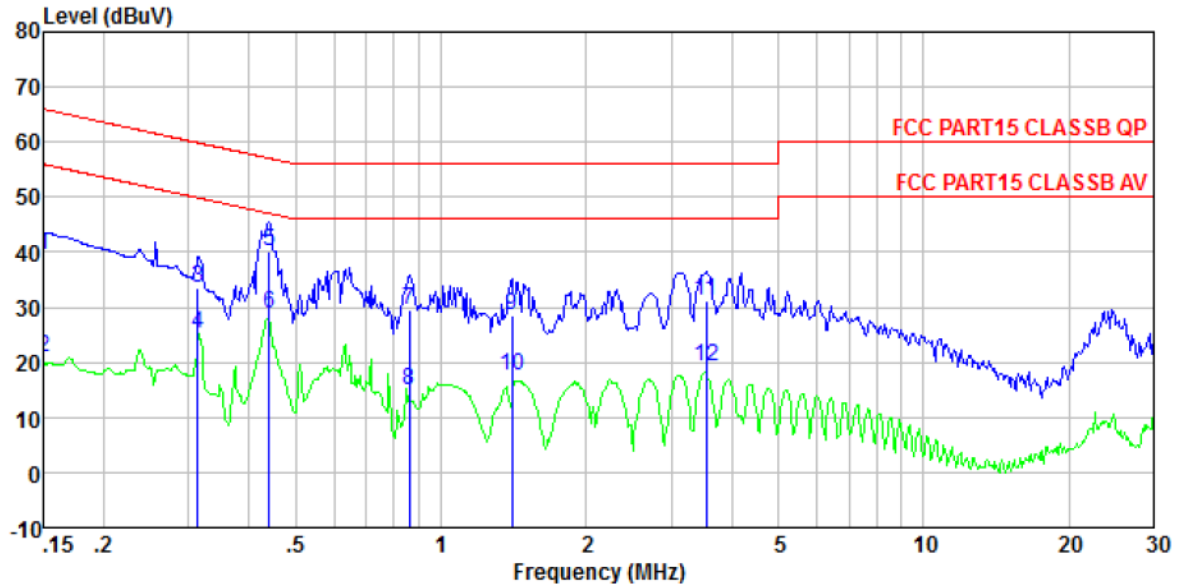
Line:



Site : Shielded room
 Condition : FCC PART15 CLASSB QP LISN-2013 LINE
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Boy

	Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.242	34.59	34.83	0.12	0.12	62.04	-27.21	QP
2	0.242	21.29	21.53	0.12	0.12	52.04	-30.51	Average
3	0.317	34.36	34.57	0.11	0.10	59.80	-25.23	QP
4	0.317	25.23	25.44	0.11	0.10	49.80	-24.36	Average
5	0.440	39.93	40.16	0.12	0.11	57.07	-16.91	QP
6	0.440	28.10	28.33	0.12	0.11	47.07	-18.74	Average
7	1.418	30.13	30.38	0.12	0.13	56.00	-25.62	QP
8	1.418	15.93	16.18	0.12	0.13	46.00	-29.82	Average
9	2.309	29.59	29.87	0.13	0.15	56.00	-26.13	QP
10	2.309	14.73	15.01	0.13	0.15	46.00	-30.99	Average
11	3.565	29.19	29.53	0.19	0.15	56.00	-26.47	QP
12	3.565	17.68	18.02	0.19	0.15	46.00	-27.98	Average

Neutral:



Site : Shielded room
 Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Boy

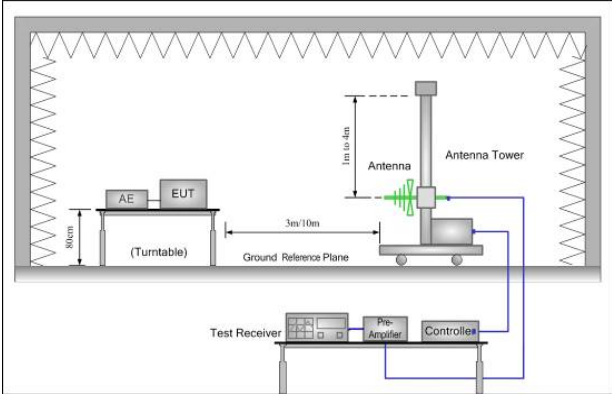
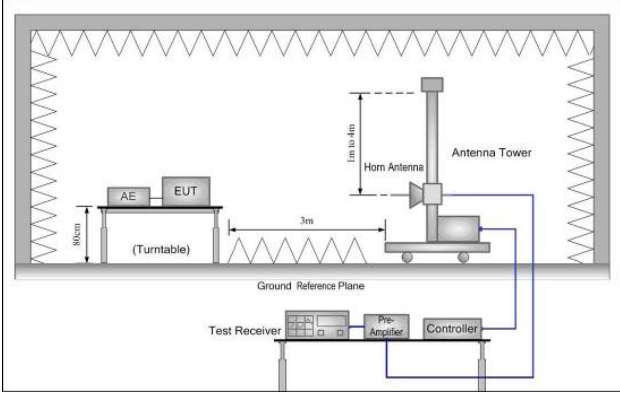
	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.150	39.20	39.39	0.07	0.12	66.00	-26.61	QP
2	0.150	20.84	21.03	0.07	0.12	56.00	-34.97	Average
3	0.313	33.30	33.46	0.06	0.10	59.88	-26.42	QP
4	0.313	25.20	25.36	0.06	0.10	49.88	-24.52	Average
5	0.440	39.92	40.09	0.06	0.11	57.07	-16.98	QP
6	0.440	28.62	28.79	0.06	0.11	47.07	-18.28	Average
7	0.862	29.26	29.46	0.07	0.13	56.00	-26.54	QP
8	0.862	14.54	14.74	0.07	0.13	46.00	-31.26	Average
9	1.403	28.43	28.65	0.09	0.13	56.00	-27.35	QP
10	1.403	17.37	17.59	0.09	0.13	46.00	-28.41	Average
11	3.547	31.00	31.28	0.13	0.15	56.00	-24.72	QP
12	3.547	18.95	19.23	0.13	0.15	46.00	-26.77	Average

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

7.2 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109																								
Test Method:	ANSI C63.4:2014																								
Test Frequency Range:	30MHz to 25GHz																								
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																							
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																							
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
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:

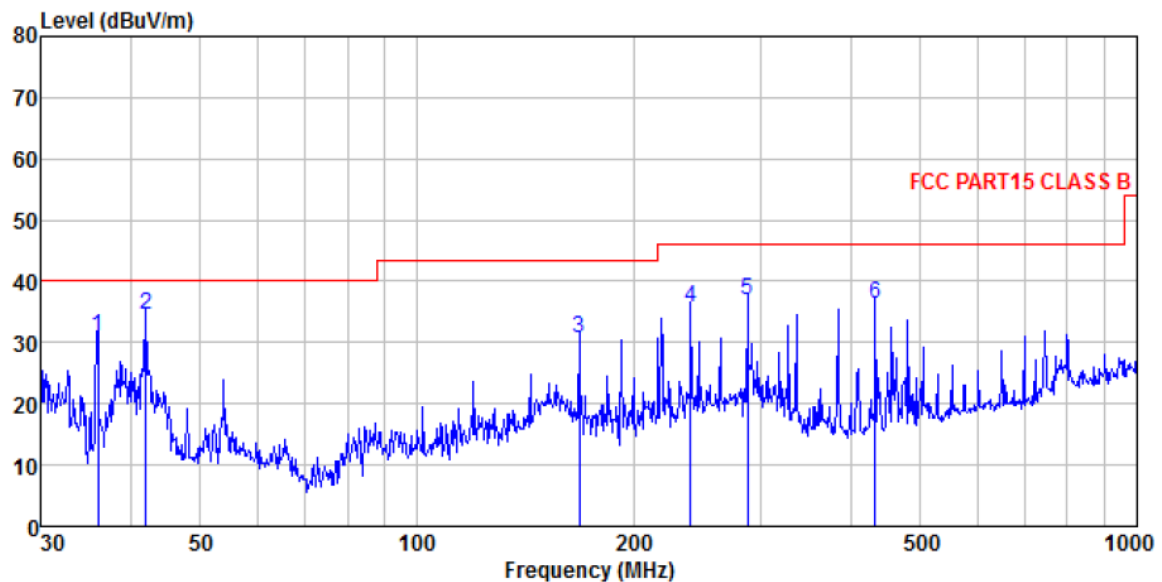
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

From 6GHz to 25GHz , no emission found , so only report worse case .

Measurement Data

Below 1G

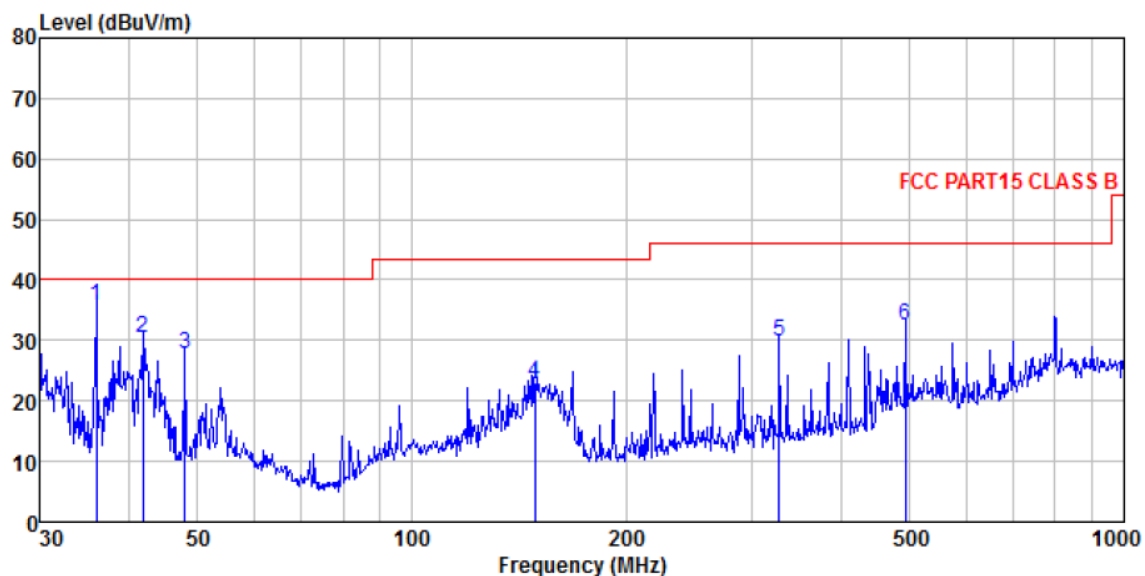
Horizontal:



Site : 3m chamber
 Condition : FCC PART15 CLASS B VULB9163-2013M HORIZONTAL
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Sky

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Level	Line	Limit Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	36.001	45.87	14.58	0.62	30.06	31.01	40.00 -8.99 QP
2	42.007	48.36	15.57	0.69	30.03	34.59	40.00 -5.41 QP
3	167.824	47.58	10.90	1.67	29.33	30.82	43.50 -12.68 QP
4	239.987	48.98	14.09	2.07	29.56	35.58	46.00 -10.42 QP
5	287.990	49.64	14.84	2.31	29.92	36.87	46.00 -9.13 QP
6	432.546	45.13	17.53	3.01	29.43	36.24	46.00 -9.76 QP

Vertical:

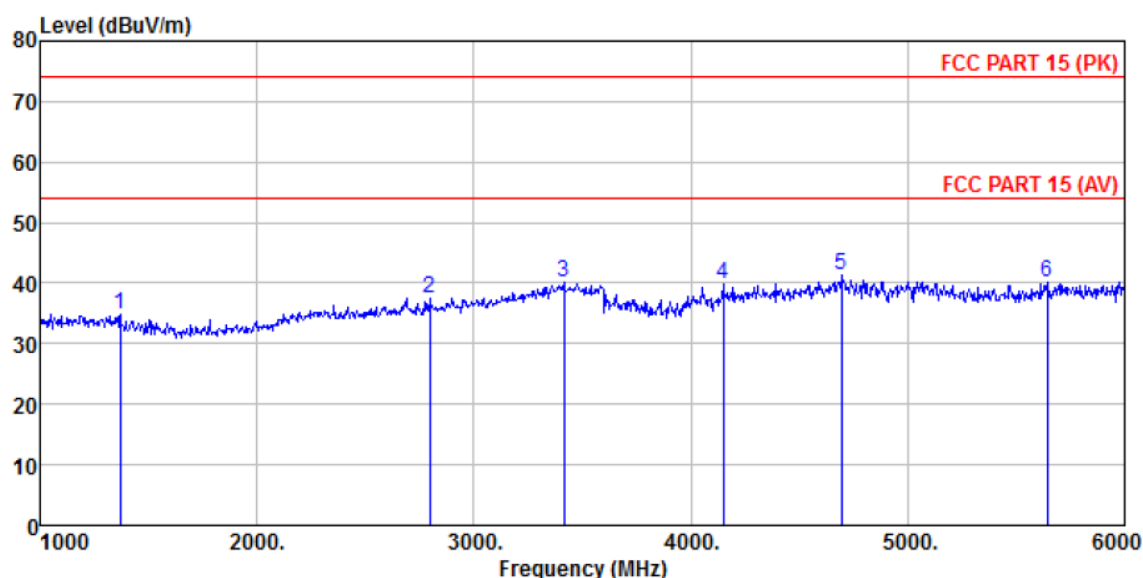


Site : 3m chamber
 Condition : FCC PART15 CLASS B VULB9163-2013M VERTICAL
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Sky

Test Engineer: Sky		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	36.001	50.50	14.58	0.62	30.06	35.64	40.00	-4.36	QP
2	41.860	44.27	15.57	0.68	30.03	30.49	40.00	-9.51	QP
3	47.994	41.69	15.36	0.75	30.01	27.79	40.00	-12.21	QP
4	148.963	40.49	10.26	1.56	29.41	22.90	43.50	-20.60	QP
5	327.887	41.61	15.66	2.51	29.84	29.94	46.00	-16.06	QP
6	492.469	40.23	18.39	3.27	29.32	32.57	46.00	-13.43	QP

Above 1G

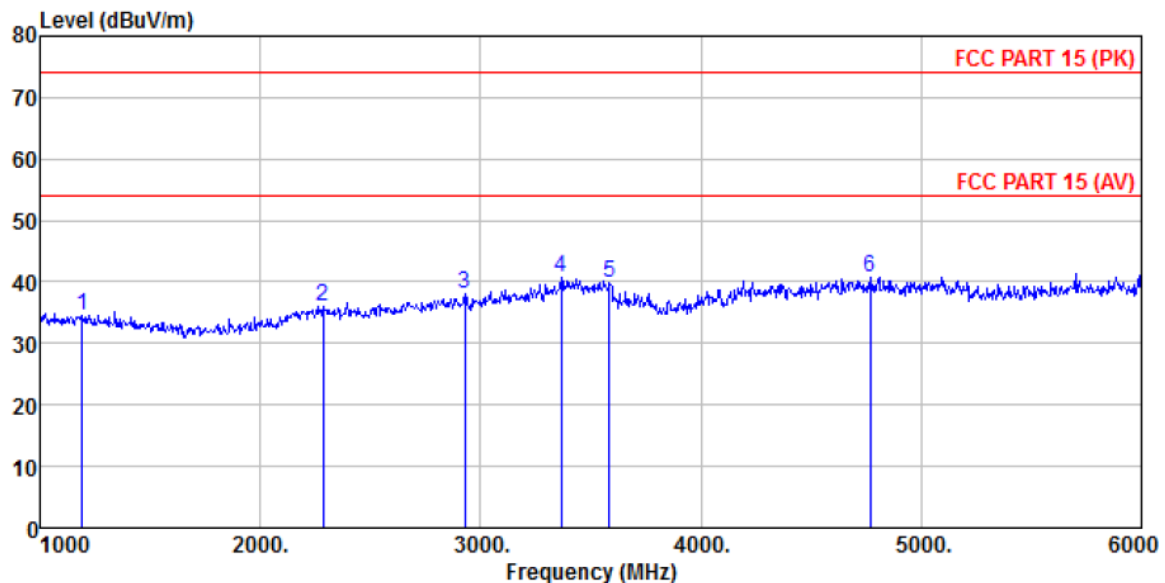
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15 (PK) BBHA9120D ANT(>1GHZ) HORIZONTAL
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Sky

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
		Level	Loss	Factor		Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	1370.000	37.88	25.66	4.59	33.39	34.74	74.00	-39.26 Peak
2	2795.000	36.96	28.40	5.76	33.55	37.57	74.00	-36.43 Peak
3	3415.000	37.44	28.67	6.80	32.85	40.06	74.00	-33.94 Peak
4	4150.000	33.67	30.06	8.01	32.01	39.73	74.00	-34.27 Peak
5	4695.000	33.19	31.65	8.51	32.03	41.32	74.00	-32.68 Peak
6	5645.000	30.52	32.36	9.72	32.35	40.25	74.00	-33.75 Peak

Vertical:



Site : 3m chamber
 Condition : FCC PART 15 (PK) BBHA9120D ANT(>1GHZ) VERTICAL
 Job No. : 0243
 Test Mode : USB mode
 Test Engineer: Sky

	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	1190.000	37.89	25.31	4.46	33.07	34.59	74.00	-39.41 Peak
2	2285.000	36.96	27.99	5.28	34.13	36.10	74.00	-37.90 Peak
3	2930.000	37.18	28.44	5.87	33.39	38.10	74.00	-35.90 Peak
4	3365.000	38.31	28.51	6.70	32.91	40.61	74.00	-33.39 Peak
5	3585.000	36.35	29.12	7.13	32.66	39.94	74.00	-34.06 Peak
6	4770.000	32.56	31.73	8.58	32.07	40.80	74.00	-33.20 Peak

Note:

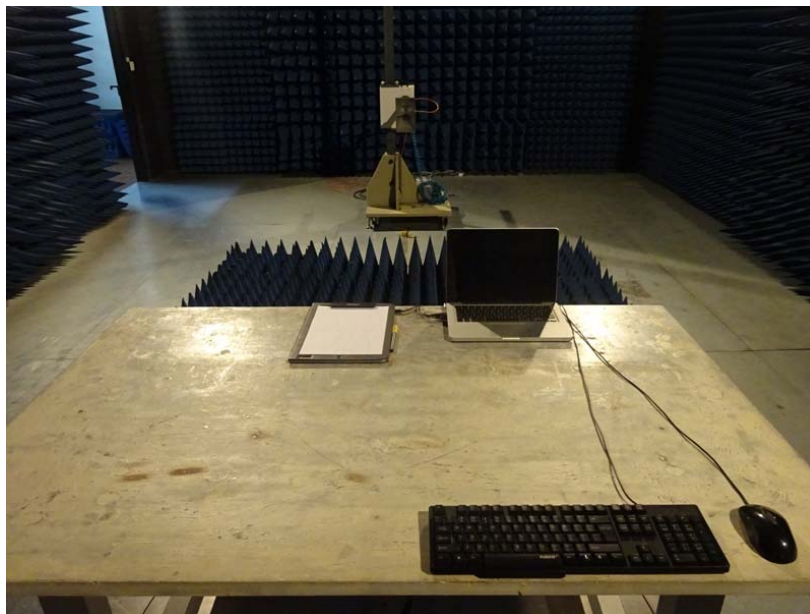
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

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

From 6GHz to 25GHz , no emission found , so only report worse case .

8 Test Setup Photo

Radiated Emission



Conducted Emission



9 EUT Constructional Details

Reference to the test report No. : GTS201607000243E01

----- End -----