Report No.: ET-24050600E01

TEST REPORT

Applicant:	DONGGUAN YI RUI ELECTRONIC TECHNOLOGY CO.,LTD
Address of Applicant:	ROOM NO. 202, BUILDING 2, NO. 11, NIULING ROAD, CHANGPING TOWN, DONGGUAN CITY, China
Manufacturer/Factory:	DONGGUAN YI RUI ELECTRONIC TECHNOLOGY CO.,LTD
Address of Manufacturer/Factory:	ROOM NO. 202, BUILDING 2, NO. 11, NIULING ROAD, CHANGPING TOWN, DONGGUAN CITY, China
Product Name:	Pen holder
Model No.:	EAC-AX24, BTWXC
Trade Mark:	N/A
FCC ID:	2A6HU-EACAX24
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C
Date of Test:	May.23, 2024-May.31, 2024
Date of report issued:	Jun.17, 2024

Remark:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by:	Reviewed by:	Approved by:
Project Engineer	Project Manager	Authorized Signature

Report Revision History		
Report No.	Description	Issue Date
ET-24050600E01	Original	Jun.17, 2024

Contents

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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203	Pass	/
AC Power Line Conducted Emission	15.207	Pass	Yao zhou
Radiated Emission	15.209	Pass	Yao zhou
20dB Occupied Bandwidth	2.1049&15.215	Pass	Yvan Fan

Remarks:

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

2. Test according to ANSI C63.10:2013

3. Note: Compliance determination rules

1).The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacturer. If measurement uncertainty is taken into account, the applicant/manufacturer will bear all possible risks of non-compliance.

2).The measurement uncertainty please refer to each test result in the "Measurement Uncertainty

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-1000MHz	±4.32 dB	(1)
Radiated Emission	1GHz-18GHz	±4.656 dB	(1)
Radiated Emission	18GHz-40GHz	±4.59 dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 2.64 dB	(1)
Occupied Channel Bandwidth	/	±0.55%	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

2 General Information

2.1 General Description of EUT

Product Name:	Pen holder
Model(s) No.:	EAC-AX24, BTWXC
Model(s) of difference:	All the model are the same circuit and module, except the model names.
Test model:	EAC-AX24
Sample(s) Status:	Engineer sample
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	115~205KHz
Modulation type:	ASK
Antenna Type:	Induction coil Antenna
Power supply:	Input: DC 5V from adapter, Output: 5W

Operation channel list

Channel	Frequency
00	118.1KHz
/	/
/	/

Test channel

Channel	Frequency
00	118.1 KHz
/	/
/	/

2.2 Test mode

Pretest mode	Description
Mode 1	Adapter+empty load
Mode 2	Adapter+half load
Mode 3	Adapter+full load
For conducted emission	
Final test mode	Adapter+full load
For Radiated emission	
Final test mode	Adapter+full load

2.3 Description of Support Units

Equipment	Model	S/N	Manufacturer
Adapter	MDY-11-EM	/	Xiaomi
Load	5W/7.5W/10W/15W Load	/	/

2.4 Test Facility

Test laboratory:	Shenzhen ETR Standard Technology Co., Ltd.
CNAS Registration Number:	L11864
A2LA Certificate Number:	6640.01
FCC Designation Number:	CN1326
FCC Test Firm Registration:	183064
Laboratory location:	No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	+86 755 85259392

2.5 Additional Instructions

Test Software	/
Power level setup	Default

3 Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESCI7	100605	2024.3.12	2025.3.11
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2024.3.12	2025.3.11
3	Loop Antenna	schwarabeck	FMZB 1519 B	FMZB 1519 B	2024.3.19	2026.3.18
4	Broadband antenna	schwarabeck	VULB9168	1064	2024.3.19	2026.3.18
5	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2024.3.19	2026.3.18
6	amplifier	EMtrace	RP01A	50117	2024.3.12	2025.3.11
7	Artificial power network	schwarabeck	NSLK8127	8127483	2024.3.12	2025.3.11
8	Artificial power network	ETS	3186/2NM	1132	2024.3.12	2025.3.11
9	10dB attenuator	HUBER+SUHNER	10dB	/	2024.3.12	2025.3.11
10	amplifier	Space-Dtronics	EWLAN0118G-P40	19113001	2024.3.12	2025.3.11
11	Filter	Xingbo	XBLBQ-GTA19	210410-3-1	2024.3.12	2025.3.11
12	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2024.3.12	2025.3.11
13	Power detector box	MWRFtest	MW100-PSB	MW201020JYT	2024.3.12	2025.3.11

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

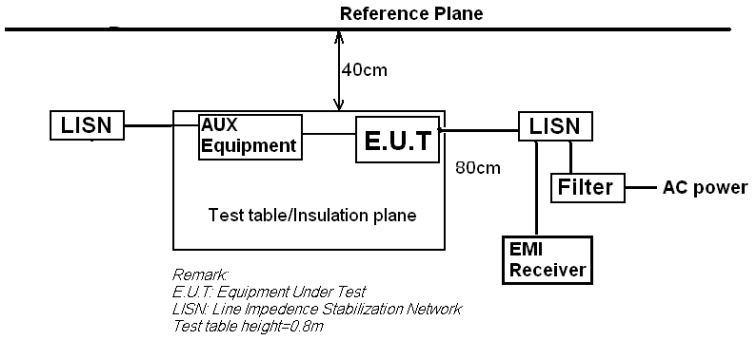
Software Name	Manufacturer	Model	Version
Conducted test software	EZ-EMC	Farad	Ver.EMC-CON 3A1.1
Radiated test software	EZ-EMC	Farad	Ver.FA-03A2 RE

4 Test results and Measurement Data

4.1 Antenna requirement

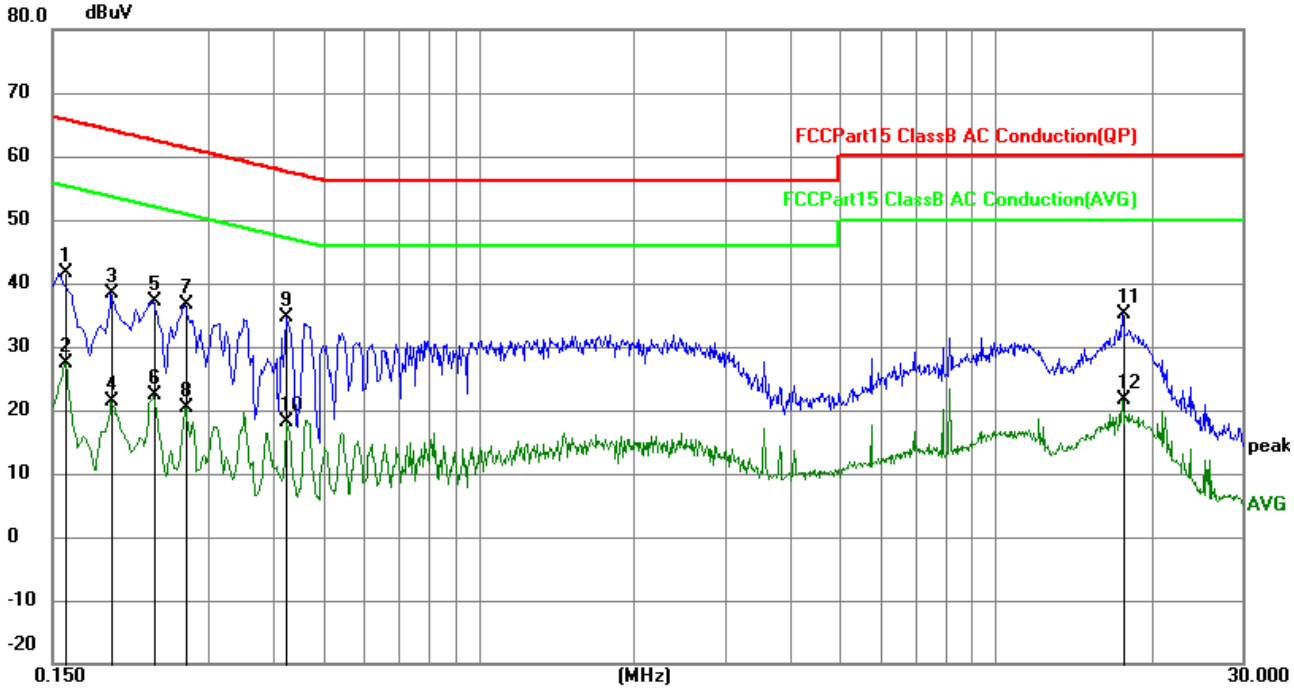
Standard requirement:
FCC part 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
EUT Antenna:
The EUT antenna is Coil Antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

4.2 Conducted Emissions

<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part15 C Section 15.207,</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">150KHz to 30MHz</td></tr>
<tr><td>Receiver setup:</td><td colspan="5">RBW=9KHz, VBW=30KHz, Sweep time=auto</td></tr>
<tr><td>Limit:</td><td colspan="5">
<table>
<tr><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></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>5-30</td><td>60</td><td>50</td></tr>
</table>
* Decreases with the logarithm of the frequency.
</td></tr>
<tr><td>Test setup:</td><td colspan="5"> 
</td></tr>
<tr><td>Test procedure:</td><td colspan="5">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 C63.10:2013 on conducted measurement.</td></tr>
<tr><td>Test Instruments:</td><td colspan="5">Refer to section 3.0 for details</td></tr>
<tr><td>Test mode:</td><td colspan="5">Refer to section 2.2 for details</td></tr>
<tr><td>Test environment:</td><td>Temp.:</td><td>25.4 °C</td><td>Humid.:</td><td>57%</td><td>Press.:</td><td>1012mbar</td></tr>
<tr><td>Test voltage:</td><td colspan="5">AC 120V/60Hz</td></tr>
</table>

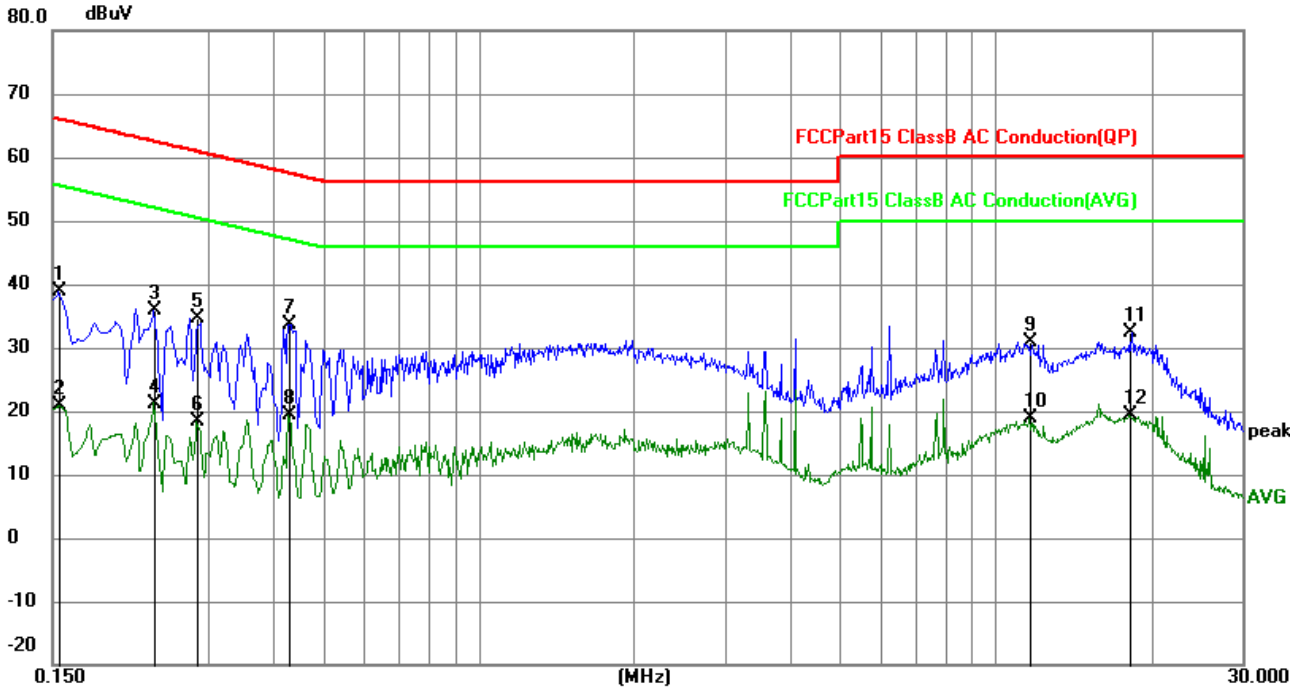
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	31.73	9.80	41.53	65.52	-23.99	QP
2	0.1590	17.57	9.80	27.37	55.52	-28.15	AVG
3	0.1949	28.50	9.81	38.31	63.83	-25.52	QP
4	0.1949	11.61	9.81	21.42	53.83	-32.41	AVG
5	0.2355	27.24	9.82	37.06	62.25	-25.19	QP
6	0.2355	12.44	9.82	22.26	52.25	-29.99	AVG
7	0.2714	26.82	9.83	36.65	61.07	-24.42	QP
8	0.2714	10.60	9.83	20.43	51.07	-30.64	AVG
9	0.4245	24.78	9.90	34.68	57.36	-22.68	QP
10	0.4245	8.18	9.90	18.08	47.36	-29.28	AVG
11	17.6145	25.30	9.71	35.01	60.00	-24.99	QP
12	17.6145	11.95	9.71	21.66	50.00	-28.34	AVG

Neutral:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1545	28.96	9.80	38.76	65.75	-26.99	QP
2	0.1545	11.16	9.80	20.96	55.75	-34.79	AVG
3	0.2355	26.13	9.82	35.95	62.25	-26.30	QP
4	0.2355	11.43	9.82	21.25	52.25	-31.00	AVG
5	0.2850	24.76	9.84	34.60	60.67	-26.07	QP
6	0.2850	8.45	9.84	18.29	50.67	-32.38	AVG
7	0.4290	23.68	9.91	33.59	57.27	-23.68	QP
8	0.4290	9.40	9.91	19.31	47.27	-27.96	AVG
9	11.6655	21.11	9.82	30.93	60.00	-29.07	QP
10	11.6655	9.17	9.82	18.99	50.00	-31.01	AVG
11	18.2220	22.72	9.70	32.42	60.00	-27.58	QP
12	18.2220	9.56	9.70	19.26	50.00	-30.74	AVG

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.*

4.3 Radiated Emission measurement

Test Requirement:	FCC Part15 C Section 15.209 & 15.249 (a) &(d).
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	9kHz to 30MHz
Test site:	Measurement Distance: 3m

Receiver setup:

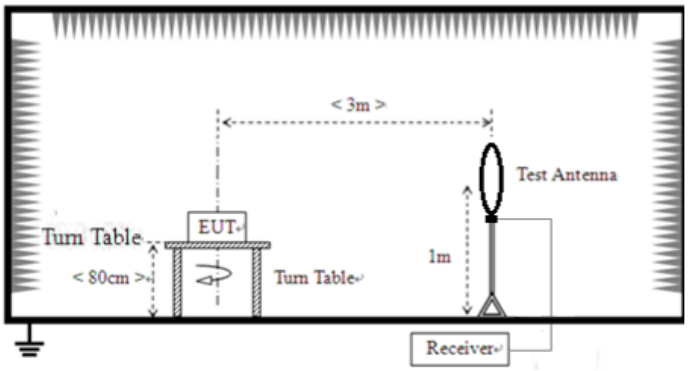
Frequency	Detector	RBW	VBW	Remark
9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value

Limit:

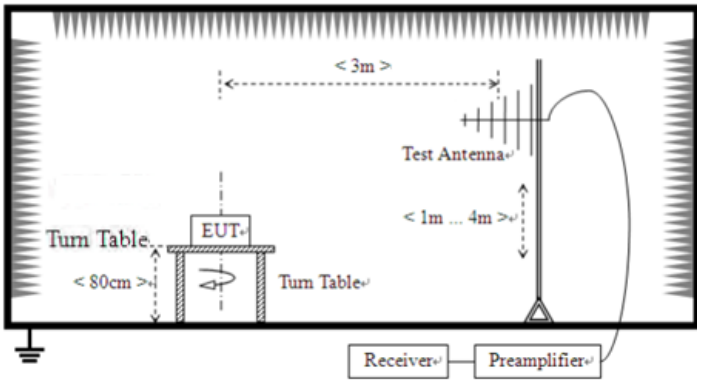
Frequency	Limit (uV/m)	Remark
0.009MHz-0.490MHz	2400/F(kHz) @300m	Quasi-peak Value
0.490MHz-1.705MHz	24000/F(kHz) @30m	Quasi-peak Value
1.705MHz-30.0MHz	30 @30m	Quasi-peak Value
30MHz-88MHz	100 @3m	Quasi-peak Value
88MHz-216MHz	150 @3m	Quasi-peak Value
216MHz-960MHz	200 @3m	Quasi-peak Value
960MHz-1GHz	500 @3m	Quasi-peak Value

Test setup:

For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8m 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

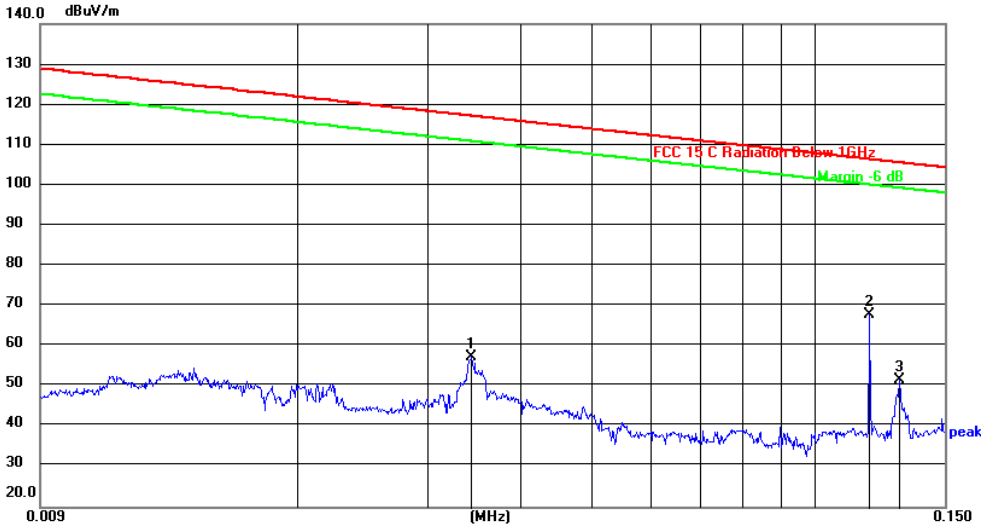
	antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. 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 Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	23.3 °C	Humid.:	54%	Press.:	1012mbar
Test voltage:	DC 5V					
Test results:	Pass					

■ **Measurement data:**

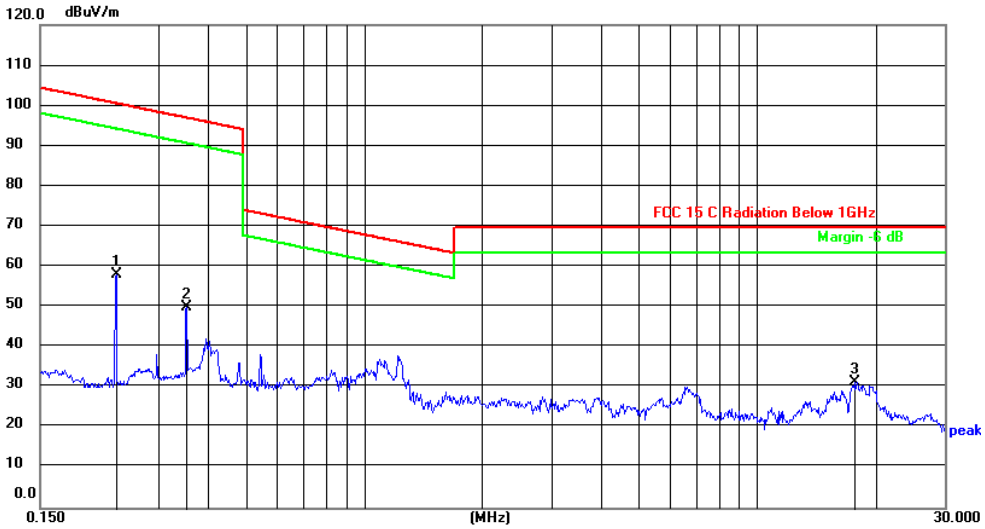
Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

Below 30MHz



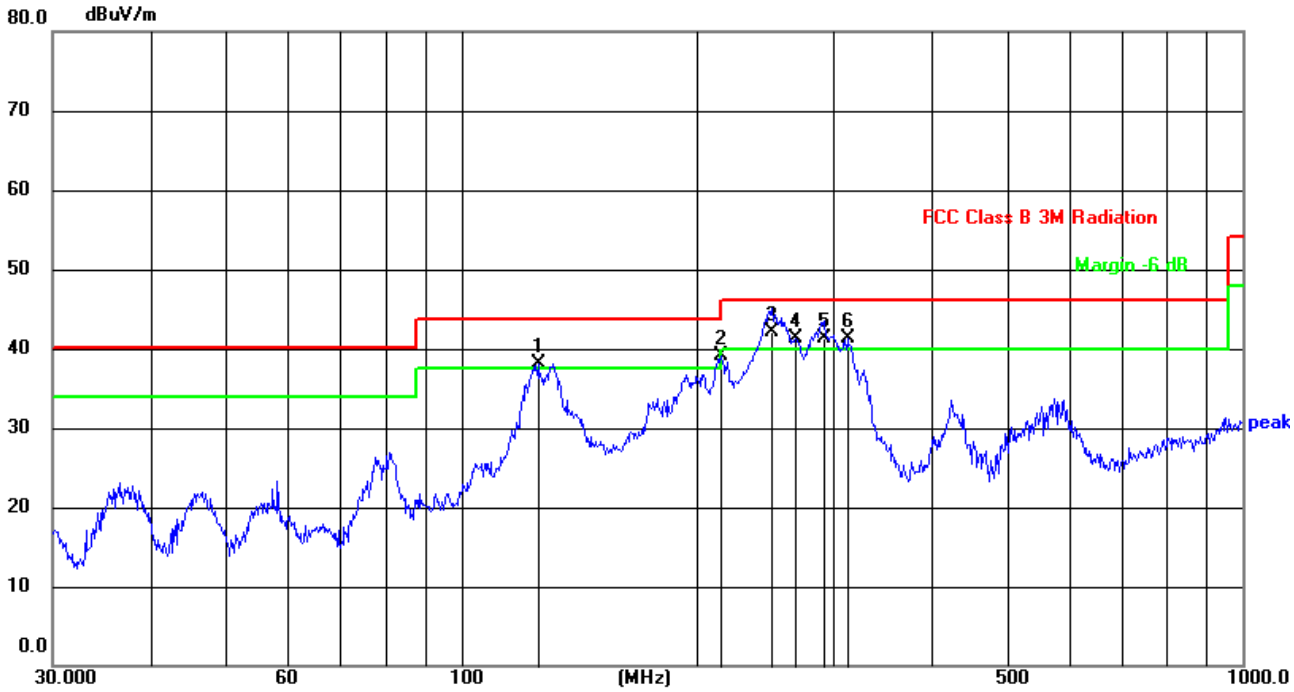
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0343	83.21	-25.88	57.33	116.90	-59.57	peak
2	0.1184	93.80	-25.89	67.91	106.14	-38.23	peak
3	0.1302	77.64	-25.91	51.73	105.31	-53.58	peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.2340	38.35	19.81	58.16	100.22	-42.06	peak
2	0.3537	30.09	19.77	49.86	96.63	-46.77	peak
3	17.7545	10.69	20.61	31.30	69.50	-38.20	peak

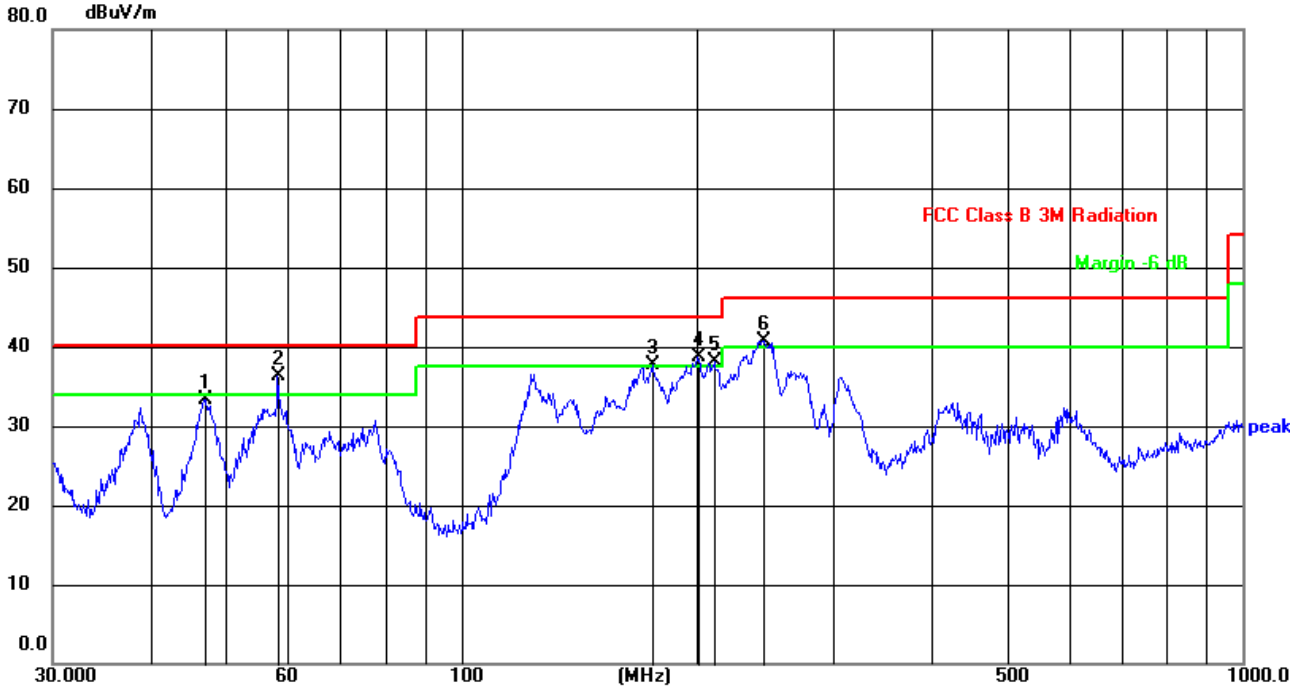
Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	125.4457	60.96	-22.84	38.12	43.50	-5.38	QP
2	215.2678	62.66	-23.52	39.14	43.50	-4.36	QP
3	249.4250	64.48	-22.28	42.20	46.00	-3.80	QP
4	267.5455	63.13	-21.80	41.33	46.00	-4.67	QP
5	291.0360	62.14	-20.74	41.40	46.00	-4.60	QP
6	312.1794	61.03	-19.78	41.25	46.00	-4.75	QP

Vertical:

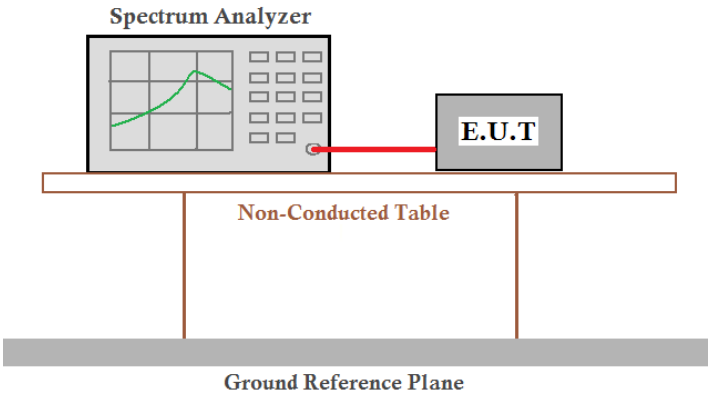


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	46.8303	54.74	-21.42	33.32	40.00	-6.68	QP
2	58.2030	58.79	-22.42	36.37	40.00	-3.63	QP
3	175.6516	59.50	-21.84	37.66	43.50	-5.84	QP
4	200.6881	62.19	-23.39	38.80	43.50	-4.70	QP
5	210.7860	61.64	-23.48	38.16	43.50	-5.34	QP
6	243.3772	63.15	-22.39	40.76	46.00	-5.24	QP

Remark:

1. *Final Level =Receiver Read level +Correction Factor(Antenna Factor + Cable Loss – Preamplifier Factor)*
2. *The emission levels of other frequencies are more than 20 dB below the limit and not show in test report.*
3. *"*", means this data is the too weak instrument of signal is unable to test.*

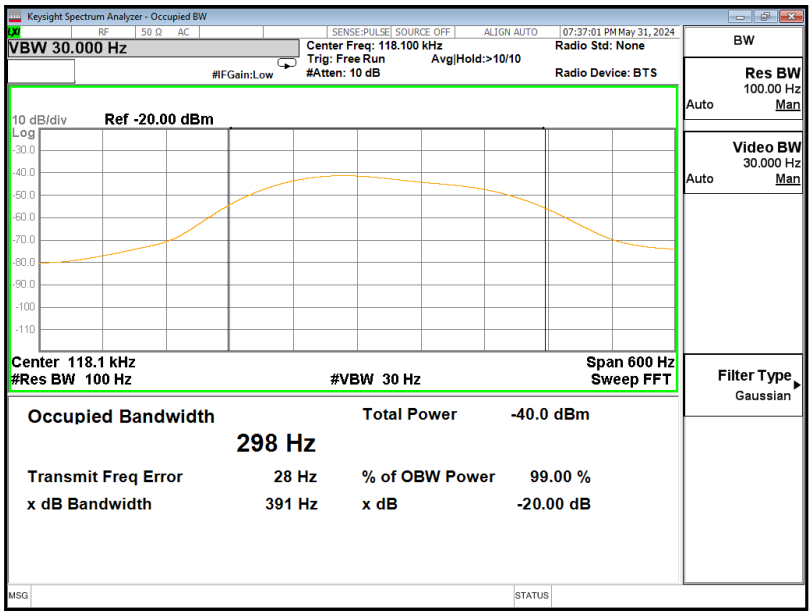
4.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215					
Test Method:	ANSI C63.10:2013					
Limit:	Only appliance report					
Test setup:						
Test Instruments:	Refer to section 3.0 for details					
Test mode:	Refer to section 2.2 for details					
Test environment:	Temp.:	25.6 °C	Humid.:	55%	Press.:	1012mbar
Test voltage:	DC5V					
Test Mode:	TX					

Measurement Data

Test frequency (KHz)	20dB Bandwidth (KHz)
118.1	0.391

Test plot as follows:



5 Test Setup Photo

Reference to the **appendix I** for details.

6 EUT Constructional Details

Reference to the **appendix II** for details.

------End------