



TEST REPORT

Applicant: Zhongshan Juyang Pump Co., Ltd.
Address of Applicant: Fifth floor, Building 1, No. 16, Minxing Road, Dongsheng Town, Zhongshan city
Manufacturer/Factory: Zhongshan Juyang Pump Co., Ltd.
Address of Manufacturer/Factory: Fifth floor, Building 1, No. 16, Minxing Road, Dongsheng Town, Zhongshan city
Product Name: Wireless DC water pump
Model No.: JY-820T, JY-850T, JY-860T, JY-870T, JY-880T
Trade Mark: N/A
FCC ID: 2A7UU-JY-820T
Applicable standards: FCC CFR Title 47 Part 15 Subpart C
Date of Test: Jul.01,2022- Jul.08,2022
Date of report issued: Jul.09,2022
Test Result : PASS

Remark:

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

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

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Report Revision History		
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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	Qiao Li
Radiated Emission	15.209	Pass	Qiao Li
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

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz-30MHz	±3.98 dB	(1)
Radiated Emission	30MHz-1000MHz	±4.30 dB	(1)
Radiated Emission	1GHz-18GHz	±4.35 dB	(1)
Radiated Emission	18GHz-40GHz	±4.59 dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.02 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:	Wireless DC water pump
Model No.:	JY-820T, JY-850T, JY-860T, JY-870T, JY-880T
Model of difference:	Only the product names and appearance color is different, others are the same
Test model:	JY-820T
Sample(s) Status:	Engineer sample
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	115~205KHz
Modulation type:	ASK
Antenna Type:	Induction coil Antenna
Power supply:	Input: DC 5V from adapter Output: wireless DC 5V/2W

Operation channel list

Channel	Frequency
00	164.50KHz
/	/
/	/

Test channel

Channel	Frequency
00	164.50KHz
/	/
/	/

2.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.		
	Test mode	Description	
	Mode 1	Wireless charging(2W)	

2.3 Description of Support Units

Equipment	Model	S/N	Manufacturer
Adapter	HW-050200CH0	/	HUAWEI
Water pump	JY-820T	/	Zhongshan Juyang Pump Co., Ltd.

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 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

2.7 Test Location

All tests were performed at:	
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
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2.8 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	ESPI7	100605	2022.3.09	2023.3.08
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2022.3.09	2023.3.08
3	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
4	amplifier	EMtrace	RP01A	50117	2022.3.09	2023.3.08
5	Artificial power network	schwarabeck	NSLK8127	8127483	2022.3.09	2023.3.08
6	Artificial power network	ETS	3186/2NM	1132	2022.3.09	2023.3.08
7	10dB attenuator	HUBER+SUHNER	10dB	/	2022.3.09	2023.3.08
8	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2022.3.09	2023.3.08
9	loop antenna	schwarabeck	FMZB 1519 B	FMZB 1519 B	2022.3.11	2024.3.10

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

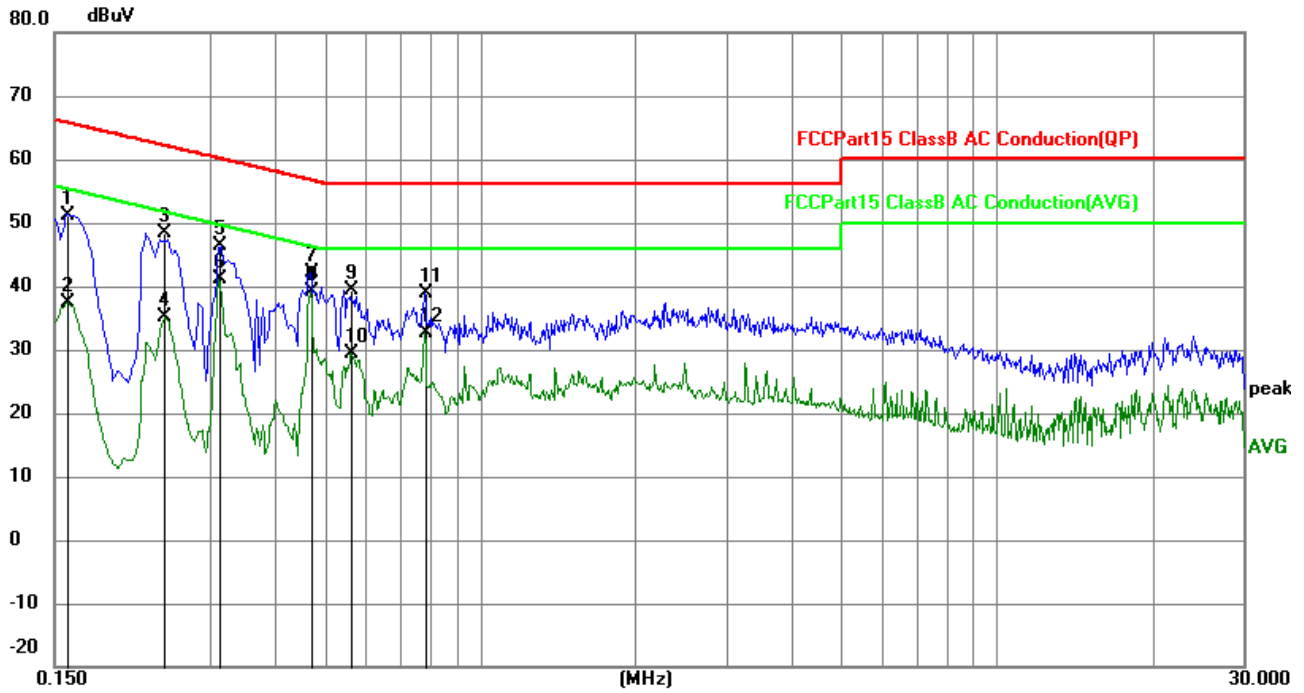
Standard requirement:
FCC part 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional 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.
RSS-Gen 6.8: The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list. For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).
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

Test Requirement:	FCC Part15 C Section 15.207,						
Test Method:	ANSI C63.10:2013						
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 LISN AUX Equipment E.U.T 40cm 80cm LISN Filter EMI Receiver AC power Test table/Insulation plane 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.). 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.						
Test Instruments:	Refer to section 3.0 for details						
Test mode:	Refer to section 2.2 for details						
Test environment:	Temp.:	23.6°C	Humid.:	57%	Press.:	1012mbar	
Test voltage:	AC 120V/60Hz						

Measurement data

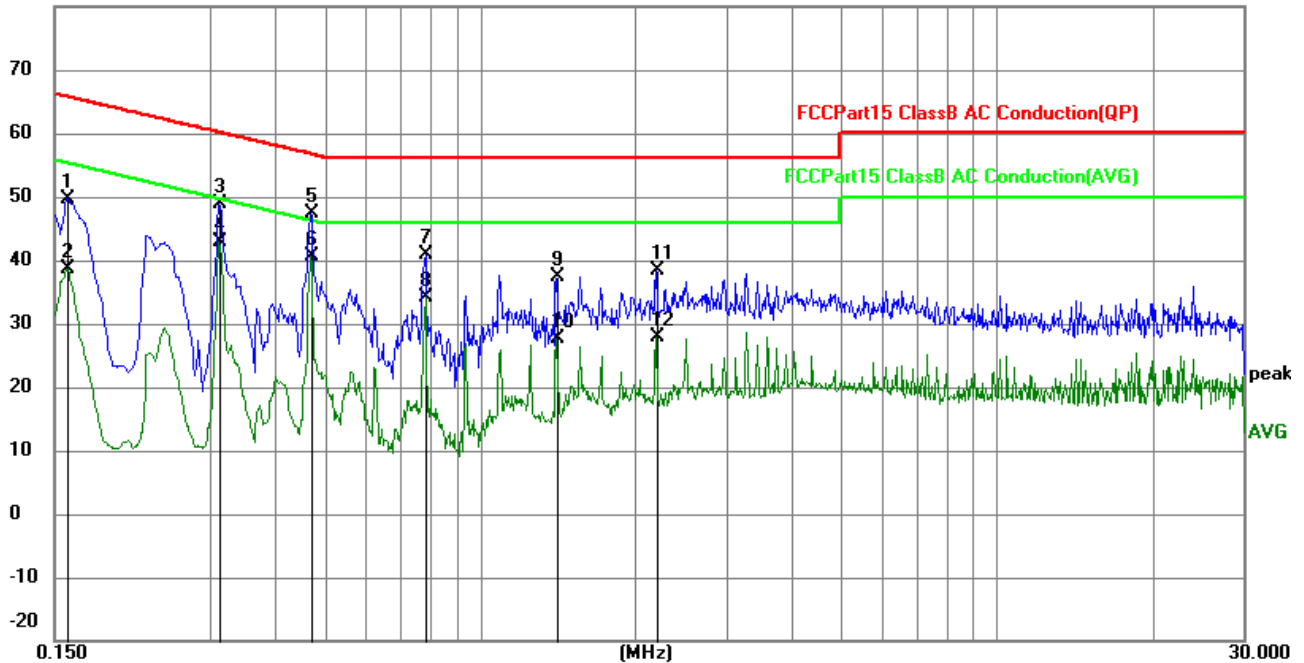
Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	40.73	10.48	51.21	65.52	-14.31	QP
2	0.1590	26.85	10.48	37.33	55.52	-18.19	AVG
3	0.2445	37.93	10.43	48.36	61.94	-13.58	QP
4	0.2445	24.81	10.43	35.24	51.94	-16.70	AVG
5	0.3120	35.89	10.39	46.28	59.92	-13.64	QP
6	0.3120	30.79	10.39	41.18	49.92	-8.74	AVG
7	0.4695	31.87	10.37	42.24	56.52	-14.28	QP
8	0.4695	28.71	10.37	39.08	46.52	-7.44	AVG
9	0.5639	29.13	10.35	39.48	56.00	-16.52	QP
10	0.5639	19.10	10.35	29.45	46.00	-16.55	AVG
11	0.7799	28.47	10.32	38.79	56.00	-17.21	QP
12	0.7799	22.32	10.32	32.64	46.00	-13.36	AVG

Neutral:

80.0 dBuV



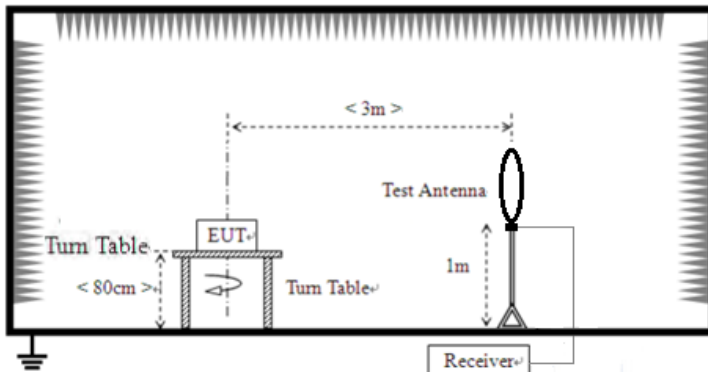
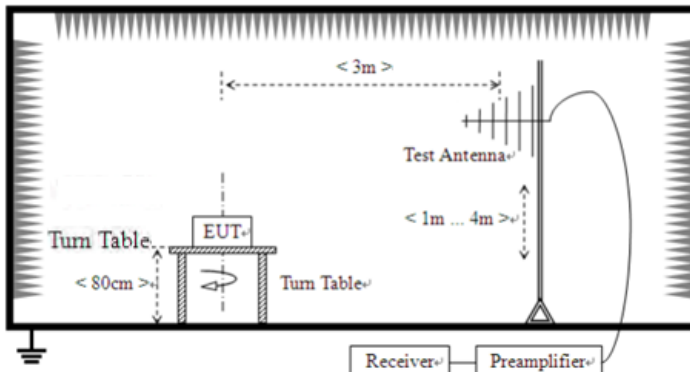
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	39.27	10.48	49.75	65.52	-15.77	QP
2	0.1590	28.15	10.48	38.63	55.52	-16.89	AVG
3	0.3120	38.59	10.39	48.98	59.92	-10.94	QP
4	0.3120	32.46	10.39	42.85	49.92	-7.07	AVG
5	0.4695	37.04	10.37	47.41	56.52	-9.11	QP
6	0.4695	30.33	10.37	40.70	46.52	-5.82	AVG
7	0.7845	30.64	10.32	40.96	56.00	-15.04	QP
8	0.7845	23.84	10.32	34.16	46.00	-11.84	AVG
9	1.4100	26.99	10.29	37.28	56.00	-18.72	QP
10	1.4100	17.45	10.29	27.74	46.00	-18.26	AVG
11	2.1929	28.04	10.30	38.34	56.00	-17.66	QP
12	2.1929	17.53	10.30	27.83	46.00	-18.17	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). RSS-210 B10(a)& RSS-210 B10(b)& RSS-Gen Clause 8.9&8.10				
Test Method:	ANSI C63.10: 2013 & RSS-Gen				
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 to 1GHz 				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m above the				

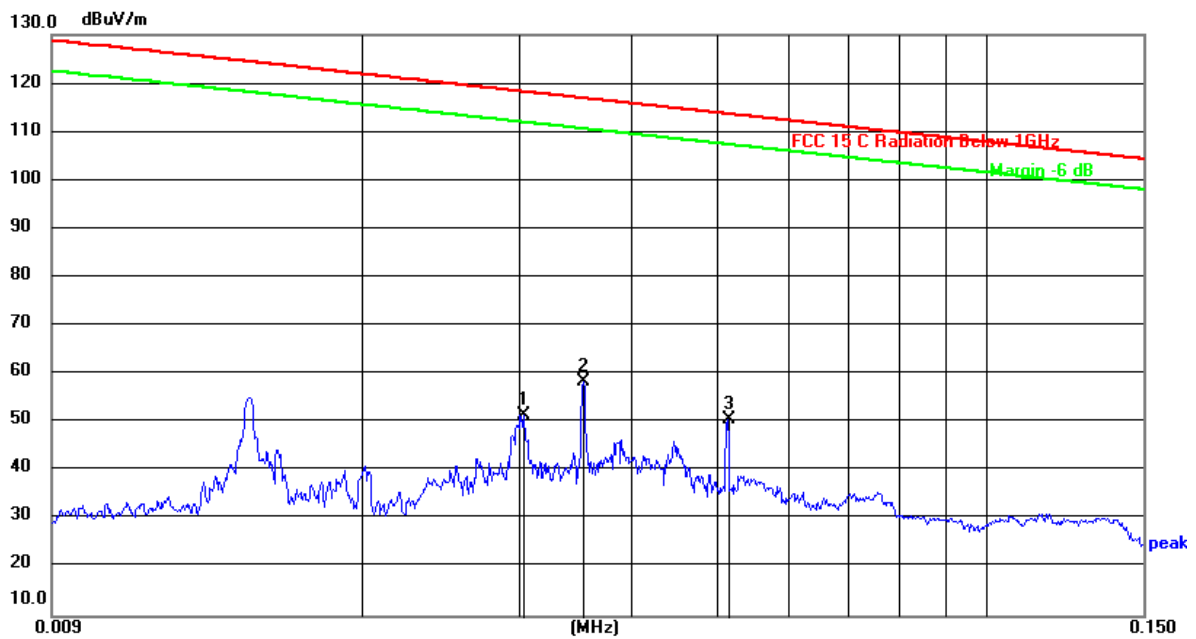
	ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to 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.:	25.3 °C	Humid.:	57%	Press.:	1012mbar
Test voltage:	DC 5V					
Test results:	Pass					

■ Measurement data:

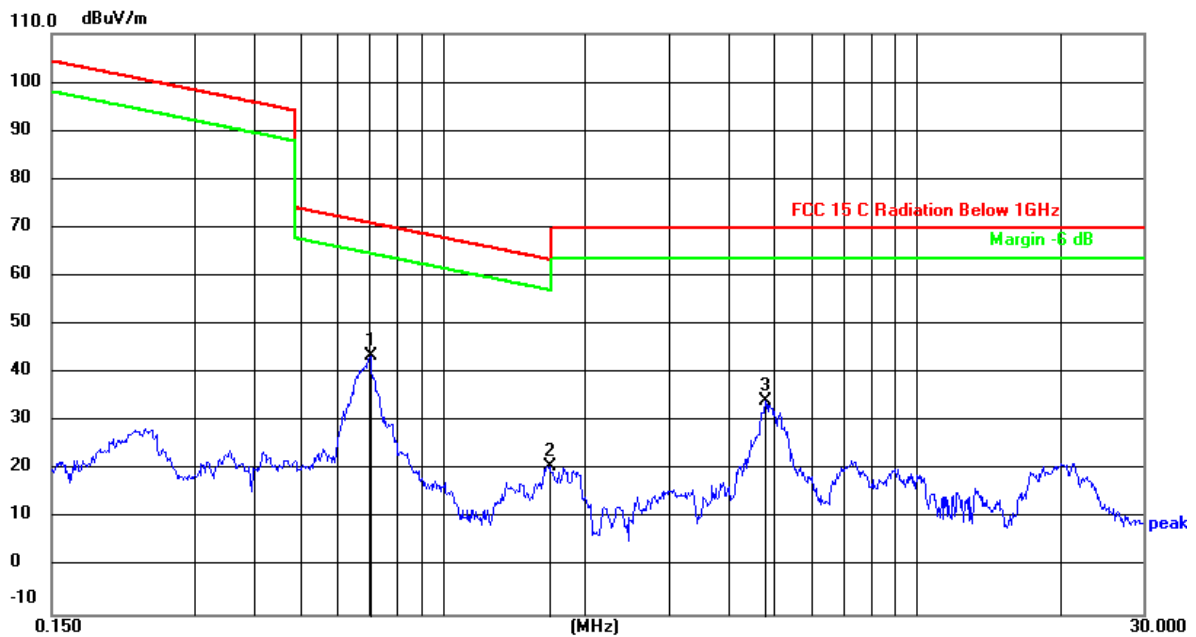
Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

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

Below 30MHz



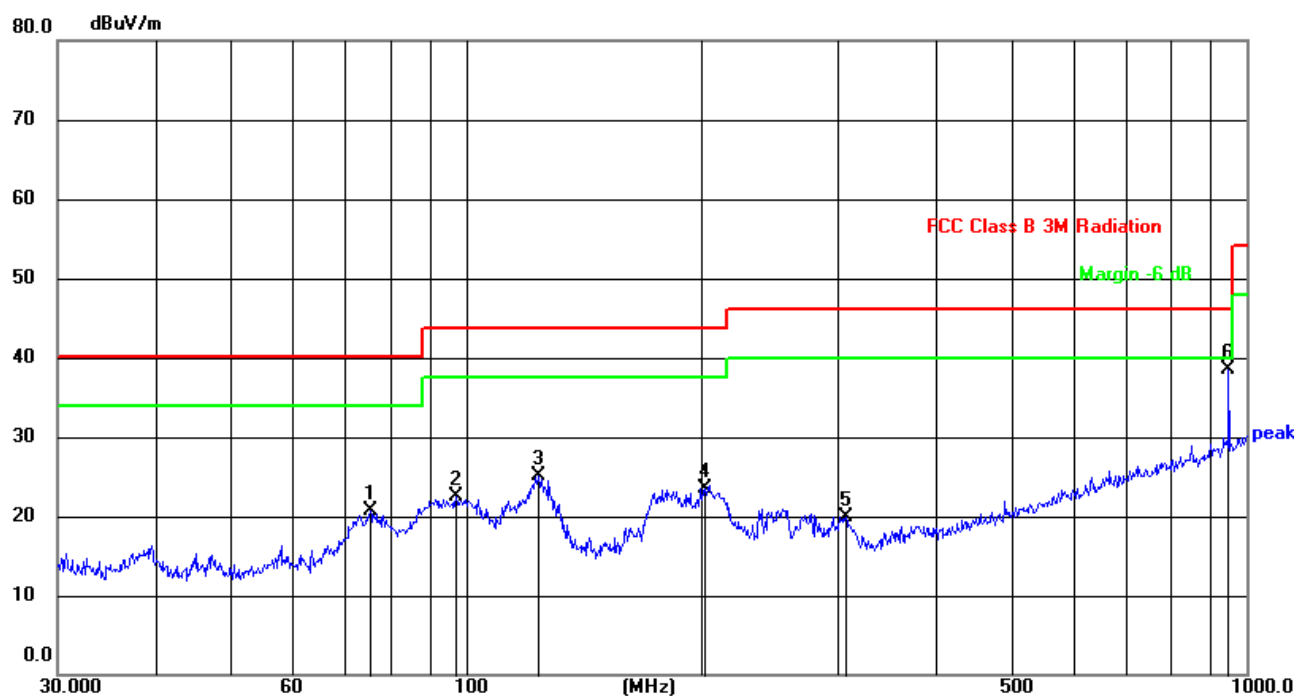
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.0303	74.60	-22.98	51.62	117.98	-66.36	peak
2	0.0354	81.71	-23.36	58.35	116.62	-58.27	peak
3	0.0514	75.25	-24.55	50.70	113.39	-62.69	peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.7046	75.45	-31.96	43.49	70.65	-27.16	peak
2	1.6800	52.76	-31.94	20.82	63.13	-42.31	peak
3	4.7968	65.99	-31.88	34.11	69.50	-35.39	peak

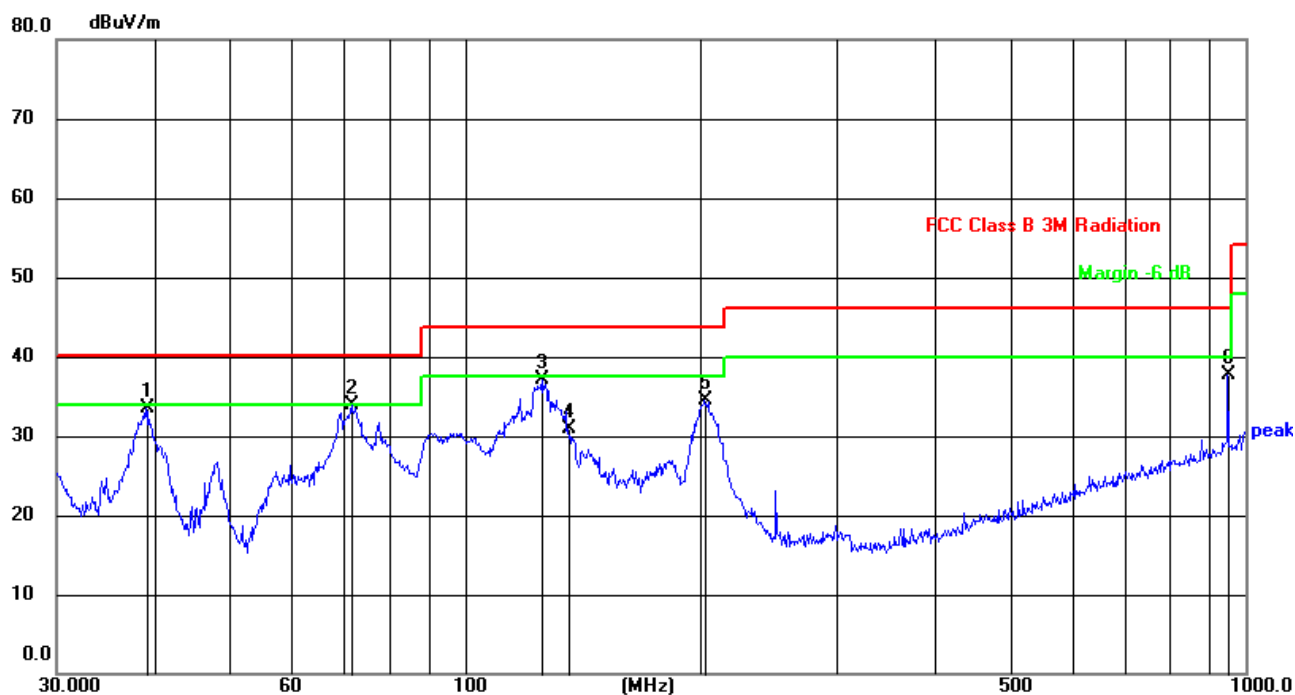
Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	75.4462	41.17	-20.55	20.62	40.00	-19.38	QP
2	97.1148	42.54	-20.11	22.43	43.50	-21.07	QP
3	123.6984	44.20	-19.16	25.04	43.50	-18.46	QP
4	202.8103	42.12	-18.55	23.57	43.50	-19.93	QP
5	306.7536	38.36	-18.38	19.98	46.00	-26.02	QP
6	948.7608	44.45	-5.98	38.47	46.00	-7.53	QP

Vertical:

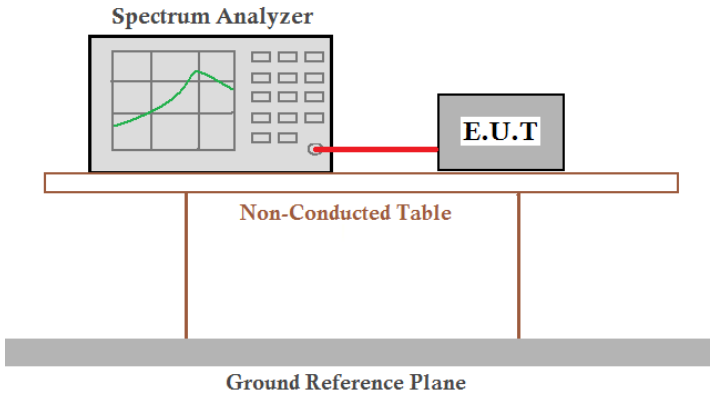


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	39.0245	54.24	-20.72	33.52	40.00	-6.48	QP
2	71.5806	54.37	-20.50	33.87	40.00	-6.13	QP
3	125.4457	56.07	-19.02	37.05	43.50	-6.45	QP
4	135.5062	49.82	-18.96	30.86	43.50	-12.64	QP
5	202.8104	53.26	-18.81	34.45	43.50	-9.05	QP
6	948.7610	42.78	-4.99	37.79	46.00	-8.21	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.

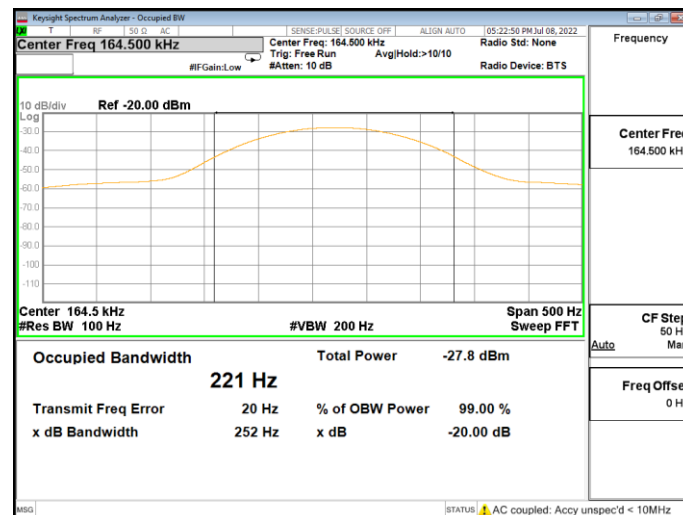
4.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 RSS-Gen Section 6.7					
Test Method:	ANSI C63.10:2013 and RSS-Gen					
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.:	25.3°C	Humid.:	57%	Press.:	1012mbar
Test voltage:	DC 5V					
Test Mode:	TX					

Measurement Data

Test frequency (KHz)	20dB Bandwidth (KHz)
164.50	0.252
/	/
/	/

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-----