TEST REPORT

Reference No.	:	WTF22F05103698E
Applicant	:	Quair Company Limited
Address	:	7B, Mai Hong Industrial Building, 160 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong
Manufacturer	:	Foshan City Shunde Poly-Products Electrical Limited.
Address	:	No.1 Shi Long Road, Xintang Village, Shi Long Industrial Park, Xintang Village Committee, Lun Jiao Street Office, Shunde District, Foshan City,Guangdong Province, P.R. China
Product Name	:	Portable Purifier
Model No.	:	PG-0221
Test specification	:	47 CFR PART 15 SUBPART B (Oct.,2020)
Date of Receipt sample	:	2022-05-27
Date of Test	:	2022-05-27 to 2022-06-06
Date of Issue	:	2022-06-28
Test Report Form No.	:	WEO-FCC15A-01B
Test Result	:	**Pass**

Remarks:
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 approver.

Prepared By:
Waltek Testing Group (Foshan) Co., Ltd.
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Tested by: Leo Feng

Leo Feng

Approved by: Danny Zhou

Danny Zhou

1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Conducted Emission	47 CFR PART 15 SUBPART B (Oct.,2020)	Class B	ANSI C63.4: 2014	Pass
Radiated Emission	47 CFR PART 15 SUBPART B (Oct.,2020)	Class B	ANSI C63.4: 2014	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object

2 Contents

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Portable Purifier
Model No.	:	PG-0221
Remark.....	:	---

3.2 Details of E.U.T.

Technical Data	:	DC 5V, 2A; Battery 3.7V

3.3 Description of Support Units

The EUT has been tested as an independent unit. PG-0221 is the test sample. Both tests were performed in the condition of AC 120V/60Hz input powered by an adapter specified by laboroatory. And the RE test was performed in the additional condition of battery 3.7V.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

47 CFR PART 15 SUBPART B (Oct.,2020) Radio frequency devices

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science an Economic Development Canada(ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number:21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) Co., Ltd. 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 our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items: --

Lab information: --

3.7 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

☒Mains Terminal Disturbance Voltage (Conducted Emission) 1#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR3	102423	Valid
2.	LISN	R&S	ENV216	101343	Valid
3.	Cable	HUBER+SUHNER	CBL2-NN-6M	223NN624	Valid
4.	Switch	CD	RSU-A4 18G	RSUA4008	Valid
☐Mains Terminal Disturbance Voltage (Conducted Emission) 2#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESCI	101178	Valid
2.	LISN	R&S	ENV216	101215	Valid
3.	Cable	HUBER+SUHNER	CBL2-NN-6M	6102701	Valid
4.	Switch	ESE	RSU/M2	---	Valid
☐Mains Terminal Disturbance Voltage (Conducted Emission) 3#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	EMI Test Receiver	R&S	ESR3	102842	Valid
2.	LISN	R&S	ENV216	101542	Valid
3.	Cable	YIHENG	LMR195UF-NMNM-2.5	---	Valid
4.	Manual RF Switch	YIHENG	SW-2	RSU0402	Valid
☒Radiated Emission (30MHz to 1GHz) 1#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	3m Semi-anechoic Chamber	CHANGCHUANG	9m×6m×6m	-	Valid
2.	EMI Test Receiver	R&S	ESR7	101566	Valid
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB 9162	9162-117	Valid
4.	Coaxial Cable (below 1GHz)	H+S	CBL3-NN-12+3 m	214NN320	Valid
☐Radiated Emission (30MHz to 1GHz) 2#					
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Status**
1.	3m Semi-anechoic Chamber	YIHENG	10m×5.3m×3.5m	YH2021071804	Valid
2.	EMI Test Receiver	R&S	ESR7	102454	Valid
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB 9163	01418	Valid
4.	Coaxial Cable (below 1GHz)	Times-Microwave Systems	LMR240UF-NMSM-7.5	-	Valid

☐: ***Not Used***

☒: ***Used***

4.1 Software List

Description	Manufacturer	Model	Version
EMI Test Software (Conducted Emission 1#)	FARATRONIC	EZ-EMC	EMEC-3A1
EMI Test Software (Conducted Emission 2#)	FARATRONIC	EZ-EMC	CON-03A1
EMI Test Software (Conducted Emission 3#)	FARATRONIC	EZ-EMC	COM 3A1.1
EMI Test Software (Radiated Emission 1#)	FARATRONIC	EZ-EMC	RA-03A1-1
EMI Test Software (Radiated Emission 2#)	FARATRONIC	EZ-EMC	RA-03A1-1

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emission	150kHz~30MHz	±3.2dB	(1)
Radiated Emission	30MHz~1GHz	±4.1dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.3 Special Accessories and Auxiliary Equipment

Item	Equipment	Technical Data	Manufacturer	Model No.	Serial No.
1.	Adaptor	Input:100-240V~50/60Hz, 0.5A; Output: 5VDC, 2A; 9VDC, 2A	HUAWEI	HW-059200CHQ	---

4.4 Decision Rule

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{LAB} is less than or equal to U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

-Non-compliance is deemed to occur is any measured disturbance level exceeds the disturbance limt.

If U_{LAB} is greater than U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level, increased by(U_{LAB}-U_{cispr}) , exceeds the disturbance limit;

-Non-compliance is deemed to occur if any measured disturbance level, increased by(ULAB-Ucispr) , exceeds the disturbance limit.

5 Emission Test Results

5.1 Conducted Emission

Test Requirement..... : 47 CFR PART 15, SUBPART B

Test Method..... : ANSI C63.4

Test Result..... : Pass

Test Limit..... : 47 CFR PART 15, SUBPART B Section 15.107

Frequency Range..... : 150kHz to 30MHz

Class..... : Class B

5.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 24.8°C

Humidity..... : 49.3%RH

Atmospheric Pressure..... : 101.2 kPa

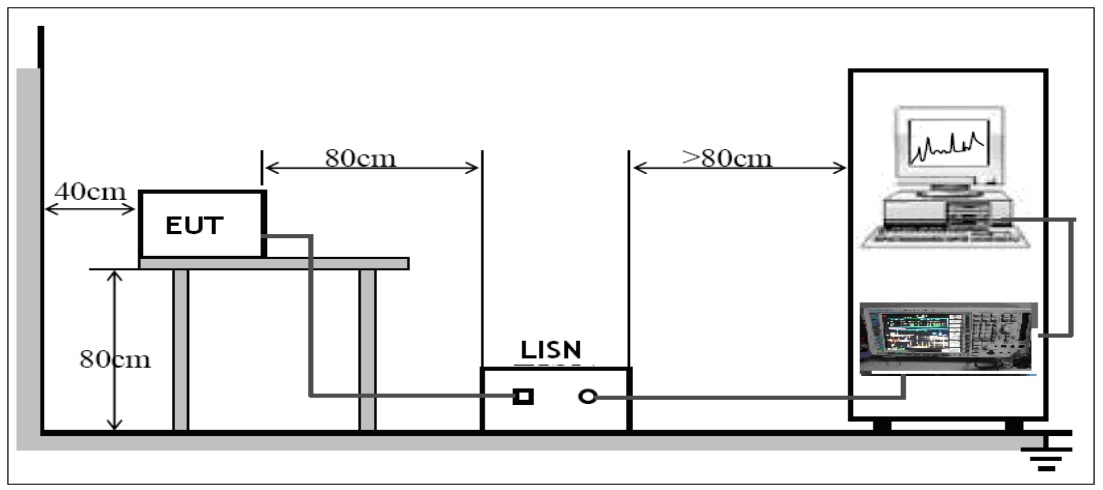
EUT Operation:

Input Voltage ..... : AC 120V/60Hz

Operating Mode..... : Charging + working mode

5.1.2 Block Diagram of Test Setup

The Conducted Emission tests were performed in accordance with the ANSI C63.4.



5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.1.4 Corrected Amplitude & Margin Calculation

The Corrected factor is calculated by adding LISN VDF(Voltage Division Facotr), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Measurement=Reading Level+Correct Factor

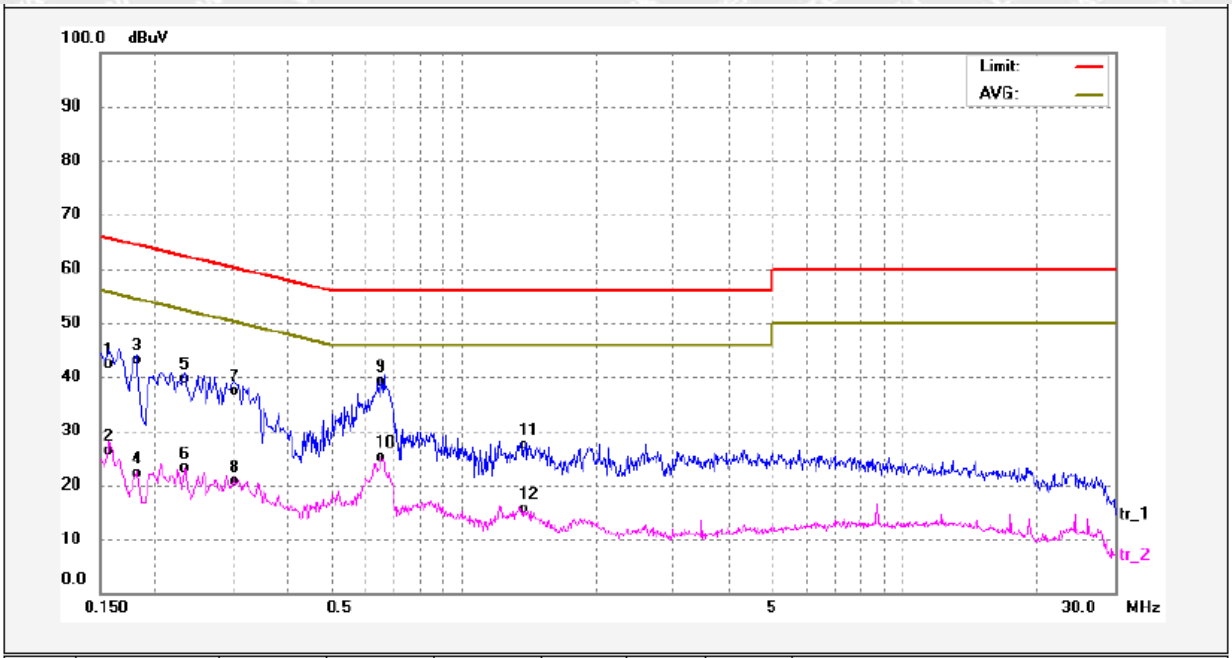
Correct Facotor=LISN VDF+Cable Loss

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin=Limit-Measurement

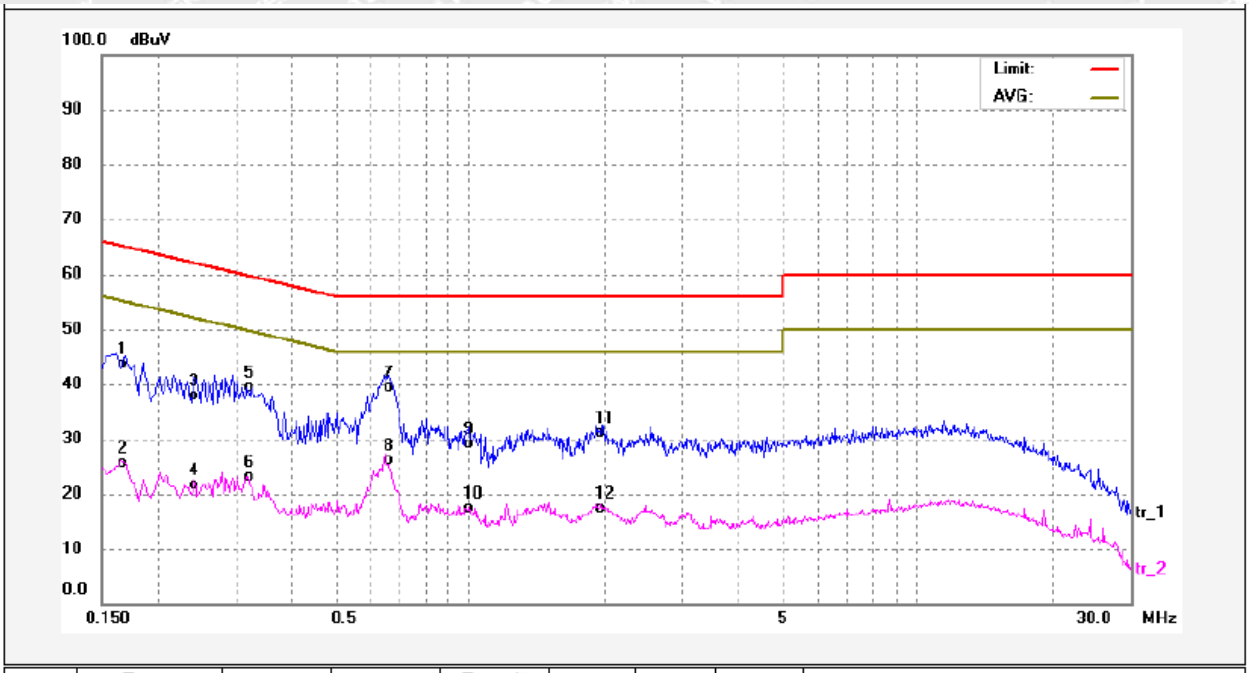
5.1.5 Conducted Emission Test Data

Live Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1580	31.62	9.65	41.27	65.56	-24.29	QP	
2	0.1580	15.71	9.65	25.36	55.56	-30.20	AVG	
3	0.1819	32.49	9.66	42.15	64.39	-22.24	QP	
4	0.1819	11.59	9.66	21.25	54.39	-33.14	AVG	
5	0.2316	28.86	9.67	38.53	62.39	-23.86	QP	
6	0.2316	12.35	9.67	22.02	52.39	-30.37	AVG	
7	0.3020	26.71	9.67	36.38	60.19	-23.81	QP	
8	0.3020	9.95	9.67	19.62	50.19	-30.57	AVG	
9	0.6540	28.45	9.70	38.15	56.00	-17.85	QP	
10	0.6540	14.35	9.70	24.05	46.00	-21.95	AVG	
11	1.3740	16.63	9.72	26.35	56.00	-29.65	QP	
12	1.3740	4.94	9.72	14.66	46.00	-31.34	AVG	

Neutral Line



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1677	32.98	9.65	42.63	65.07	-22.44	QP	
2	0.1677	14.93	9.65	24.58	55.07	-30.49	AVG	
3	0.2420	27.30	9.66	36.96	62.02	-25.06	QP	
4	0.2420	10.86	9.66	20.52	52.02	-31.50	AVG	
5	0.3260	28.78	9.67	38.45	59.55	-21.10	QP	
6	0.3260	12.36	9.67	22.03	49.55	-27.52	AVG	
7	0.6580	28.75	9.70	38.45	56.00	-17.55	QP	
8	0.6580	15.54	9.70	25.24	46.00	-20.76	AVG	
9	0.9980	18.45	9.70	28.15	56.00	-27.85	QP	
10	0.9980	6.65	9.70	16.35	46.00	-29.65	AVG	
11	1.9700	20.27	9.75	30.02	56.00	-25.98	QP	
12	1.9700	6.68	9.75	16.43	46.00	-29.57	AVG	

5.2 Radiated Emission

Test Requirement..... : 47 CFR PART 15, SUBPART B

Test Method..... : ANSI C63.4

Test Limit..... : 47 CFR PART 15, SUBPART B Section 15.109

Test Result..... : Pass

Frequency Range..... : 30MHz to 1000MHz

Class...... : Class B

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 21.2°C

Humidity..... : 54.2%RH

Atmospheric Pressure..... : 101.1 kPa

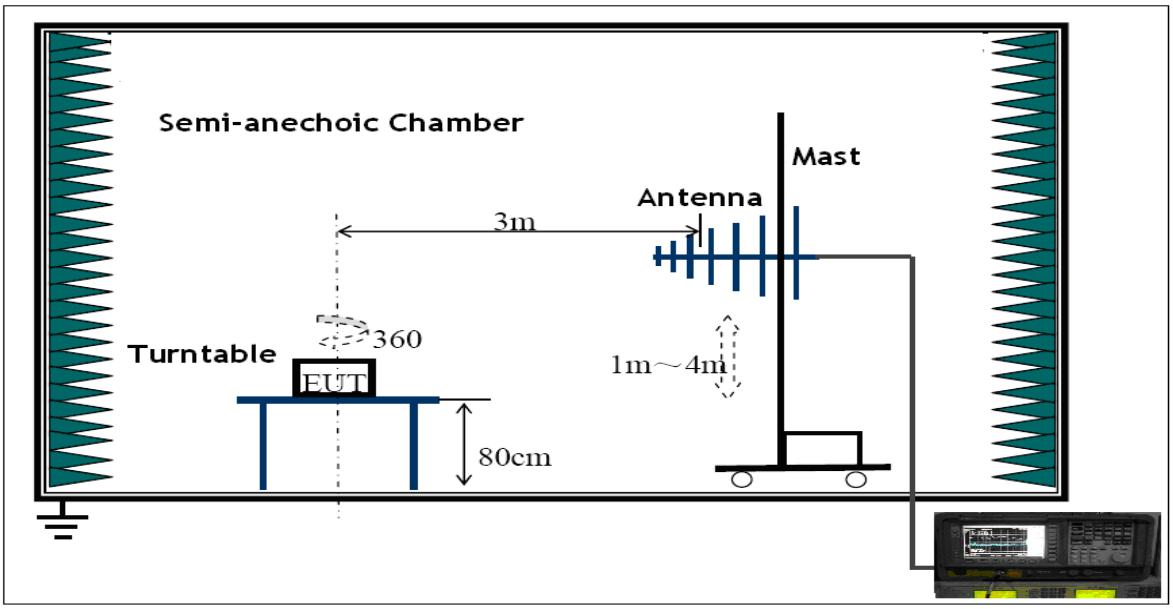
EUT Operation:

Input Voltage ..... : AC 120V/60Hz; Battery 3.7V

Operating Mode..... : Charging + working mode; Working mode

5.2.2 Block Diagram of Test Setup

The Radiated Emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.



5.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.2.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Corr. Factor

Corr.Factor=Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

5.2.5 Radiated Emission Test Data

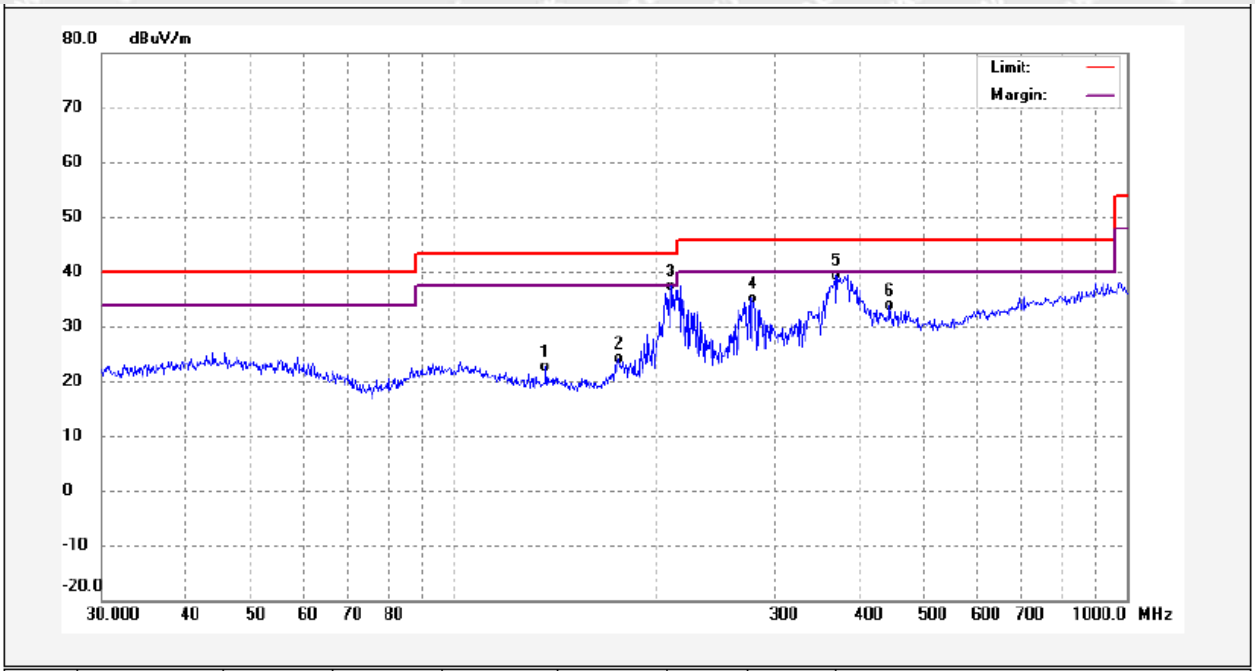
Test Mode: Charging + working mode **Input Voltage: AC 120V/60Hz**

Vertical Polarization

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	156.8422	14.20	10.21	24.41	43.50	-19.09	QP	
2	212.1207	25.49	12.27	37.76	43.50	-5.74	QP	
3	293.8045	17.16	14.61	31.77	46.00	-14.23	QP	
4	335.6818	19.53	15.54	35.07	46.00	-10.93	QP	
5	382.4538	25.59	16.37	41.96	46.00	-4.04	QP	
6	500.8277	17.69	18.92	36.61	46.00	-9.39	QP	

Test Mode: Charging + working mode Input Voltage: AC 120V/60Hz

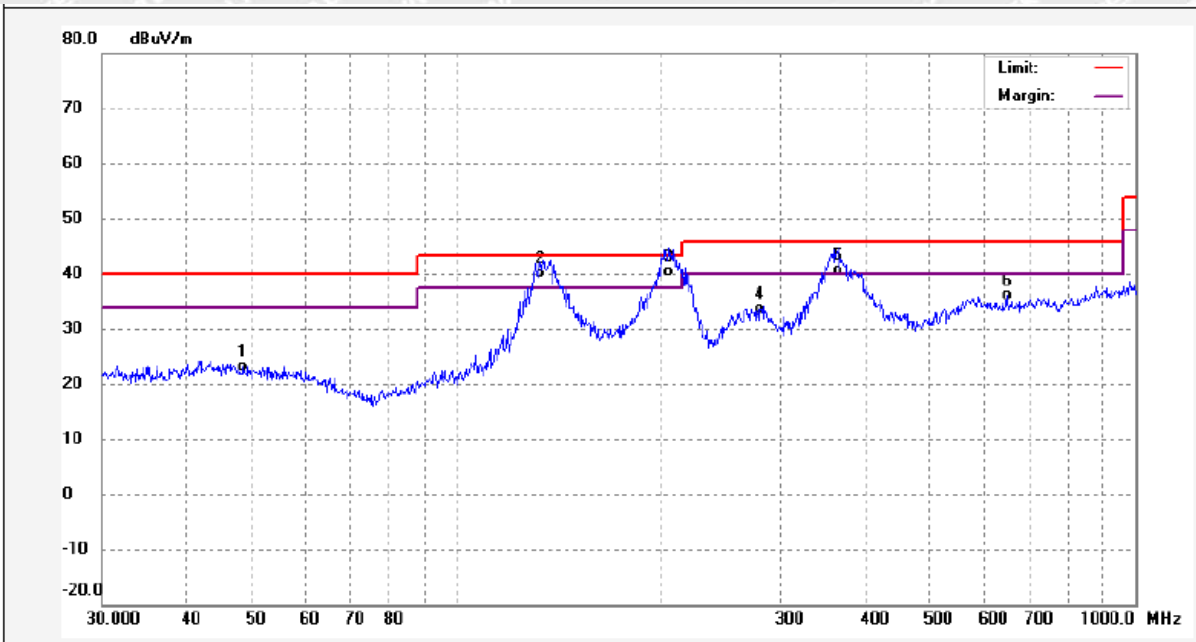
Horizontal Polarization



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	136.9871	12.72	9.99	22.71	43.50	-20.79	QP	
2	176.0833	13.61	10.58	24.19	43.50	-19.31	QP	
3	210.4168	25.10	12.35	37.45	43.50	-6.05	QP	
4	278.2620	20.90	14.26	35.16	46.00	-10.84	QP	
5	370.4423	22.76	16.58	39.34	46.00	-6.66	QP	
6	445.1635	15.87	17.92	33.79	46.00	-12.21	QP	

Test Mode: Working mode **Input Voltage: Battery 3.7V**

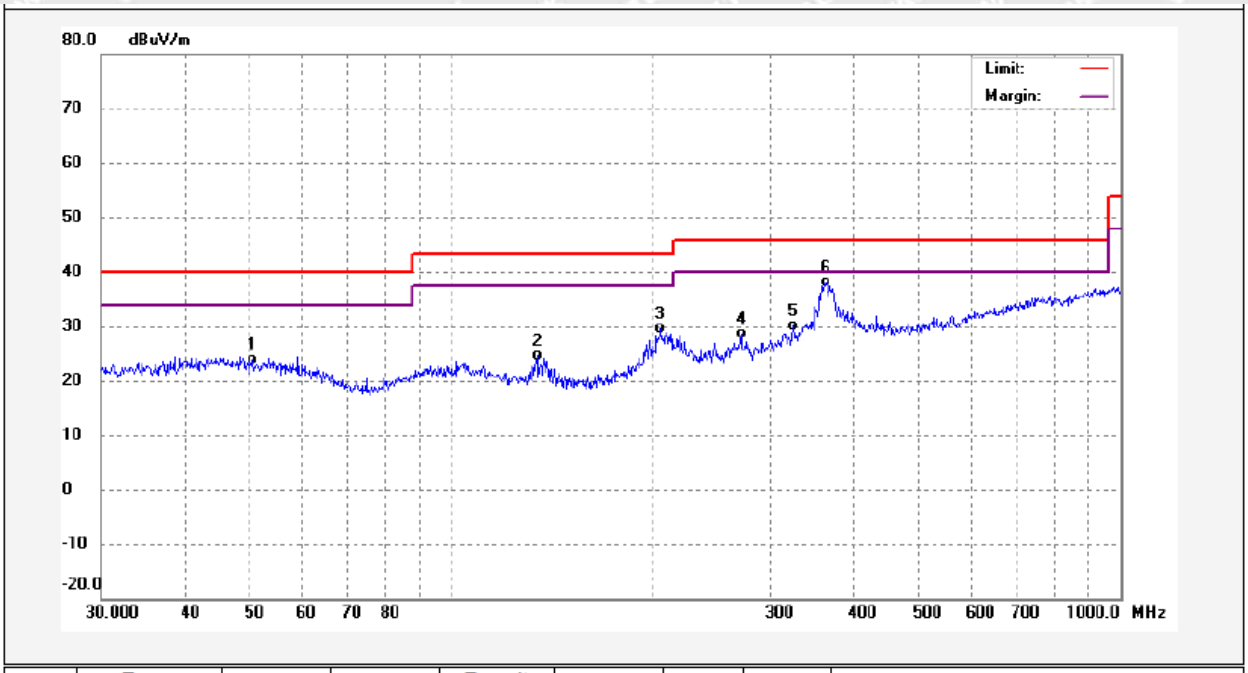
Vertical Polarization



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	48.5185	9.74	13.44	23.18	40.00	-16.82	QP	
2	132.7315	31.51	8.56	40.07	43.50	-3.43	QP	
3	206.3976	28.25	12.12	40.37	43.50	-3.13	QP	
4	280.8105	19.46	14.23	33.69	46.00	-12.31	QP	
5	366.8231	24.34	16.27	40.61	46.00	-5.39	QP	
6	648.7491	14.63	21.41	36.04	46.00	-9.96	QP	

Test Mode: Working mode **Input Voltage: Battery 3.7V**

Horizontal Polarization

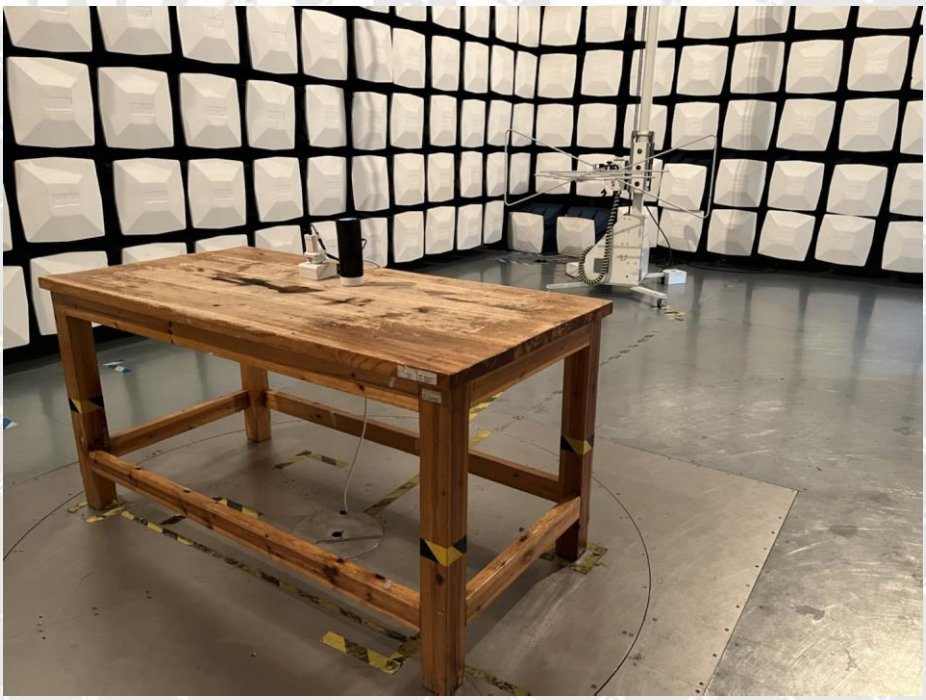


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	50.4443	9.73	14.19	23.92	40.00	-16.08	QP	
2	134.7953	14.52	10.05	24.57	43.50	-18.93	QP	
3	206.1806	17.47	12.24	29.71	43.50	-13.79	QP	
4	271.7054	14.64	14.10	28.74	46.00	-17.26	QP	
5	325.1394	14.18	15.85	30.03	46.00	-15.97	QP	
6	363.3665	21.44	16.77	38.21	46.00	-7.79	QP	

6 Photographs – Test Setup

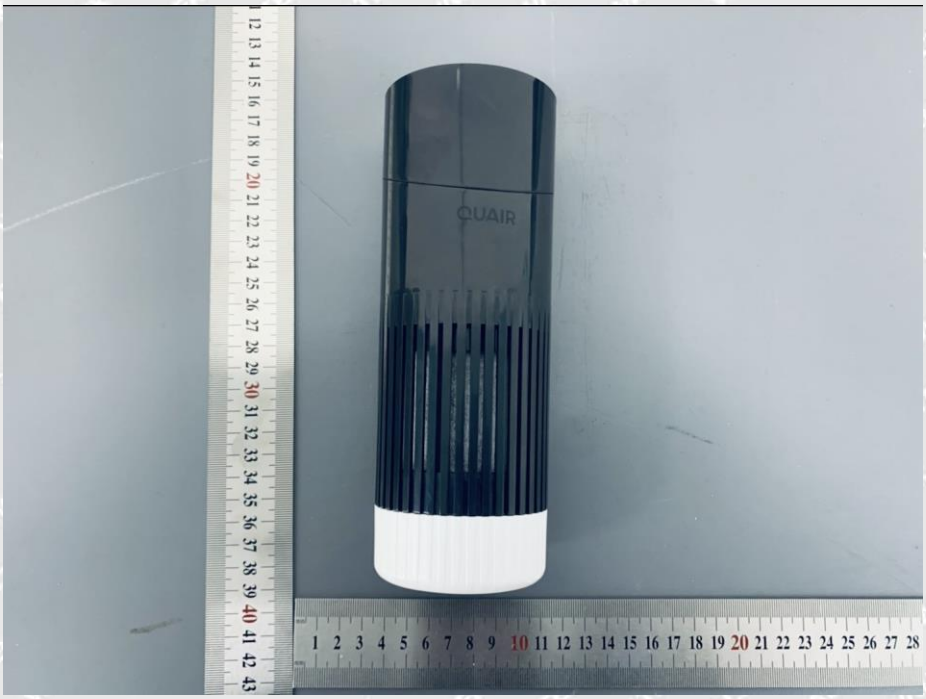
6.1 Photograph – Conducted Emission Test Setup

6.2 Photograph – Radiated Emission Test Setup



7 Photographs – Constructional Details

7.1 EUT – External View



====== End of Report ======