



FCC PART 15 SUBPART B:2023 MEASUREMENT AND TEST REPORT FOR

Guangzhou Huakai Electronic Technology CO., Ltd.

4th Floor, Building 8, Bigang industry zone, No.39 Bigang Road, Huangpu district, Guangzhou

FCC ID: 2BOVE-HK-712

Model: HK-712, HK-712A, HK-712B, HK-712C, HK-712D, HK-712E

April 21, 2025

This Report Concerns:

☒ Original Report

Equipment Type:

Foot massager

Test Engineer:

LBi Li / *LBi Li*

Report Number:

QCT25DR-1445E-01

Test Date:

April 17 ~ 19, 2025

Test Result:

Pass

Reviewed By:

Vincent Yang / *Vincent Yang*

Approved By:

Kendy Wang / *Kendy Wang*



Prepared By:

Shenzhen QC Testing Laboratory Co., Ltd.

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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Guangzhou Huakai Electronic Technology CO., Ltd.
Address of applicant: 4th Floor, Building 8, Bigang industry zone, No.39 Bigang Road, Huangpu district, Guangzhou
Manufacturer: Guangzhou Huakai Electronic Technology CO., Ltd.
Address of manufacturer: 4th Floor, Building 8, Bigang industry zone, No.39 Bigang Road, Huangpu district, Guangzhou

General Description of E.U.T

Product Description: Foot massager
Trade Mark: N/A
Model No.: HK-712, HK-712A, HK-712B, HK-712C, HK-712D, HK-712E
Model Difference: All models in each series have similar construction with the same diagram circuit and PCB layout, but difference is the model name. All tests were conducted on the models HK-712) and the test result was passed.
Test Model No.: HK-712
Rated Supply: DC 12V(Powered by adapter)
Highest internal frequency: 22.1184MHz(Provided by the applicant)
Adapter Information: Model: KS65DU-1200400
Input: 100-240V~, 50/60Hz, 2.0A
Output: 12V $\overline{\text{---}}$ 4.0A
Sample No.: Y25D1445E01WC



Independent Operation Modes

The basic operation modes are:

- A. Massage
- B. Off

General Description of Test Auxiliary

AUX Description:	Manufacturer	Model No.	Remark
/	/	/	/
/	/	/	/

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with FCC Rules and Regulations Part 15 Subpart B

The objective of the manufacturer is to demonstrate compliance with the described above standards.

1.3 Test Summary

For the EUT described above. The standards used were FCC Part 15 Subpart B for Emissions

Table 1: Tests Carried Out Under FCC Part 15 Subpart B

Standard	Test Items	Status
FCC Part 15.107	Conduction Emission (0.15MHz to 30MHz)	Pass
FCC Part 15.109	Radiation Emission (30MHz to 1GHz)	Pass
FCC Part 15.109	Radiation Emission (Above 1GHz)	N/A

Note: 1. "N/A" means "not applicable"

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

3. All indications of Pass/Fail in this report are opinions expressed by Shenzhen QC Testing Laboratory Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.



1.4 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1, radio disturbance and immunity measuring apparatus, and CISPR 16-2-3, Method of measurement of disturbances and immunity.

All measurement required was performed at **Shenzhen QC Testing Laboratory Co., Ltd.** at East of 1/F., Building E, Xinghong Science Park, No.111, Shuike Road, Fenghuanggang, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China.

1.5 Test Facility

Test Firm: Shenzhen QC Testing Laboratory Co., Ltd.

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS – Registration No.: L8464

The EMC Laboratory has been accredited by CNAS, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

A2LA Certificate Number: 6759.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 561109

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 29628

CAB identifier: CN0141

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.



1.6 Measurement Uncertainty

Parameter	Uncertainty
Disturbance Voltage (9kHz-0.15MHz)	$\pm 2.25\text{dB}$
Disturbance Voltage (150kHz-30MHz)	$\pm 1.80\text{dB}$
Radiated electromagnetic disturbance (9kHz-30MHz)	$\pm 2.66\text{dB}$
Radiated electromagnetic disturbance (30MHz-1000MHz)	$\pm 4.04\text{dB}$
Radiated electromagnetic disturbance (1000MHz-18000MHz)	$\pm 4.70\text{ dB}$
Radiated electromagnetic disturbance (18GHz-40GHz)	$\pm 4.80\text{dB}$
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.	

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as only used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacturer, can let the EUT being A Mode.

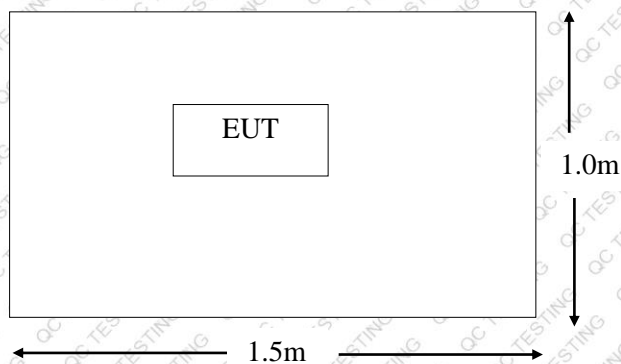
2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **Guangzhou Huakai Electronic Technology CO., Ltd.** and its respective support equipment manufacturers.

2.4 Equipment Modifications

The EUT tested was not modified by QCT.

2.5 Configuration of Test System



3 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

3.1 Limit of Disturbance Voltage at the Mains Terminals

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-Peak	Average
0.150~0.500	66~56*	56~46*
0.500~5.000	56	46
5.000~30.00	60	50

Note:

1. The tighter limit applies at the band edges.
2. The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

3.2 EUT Setup

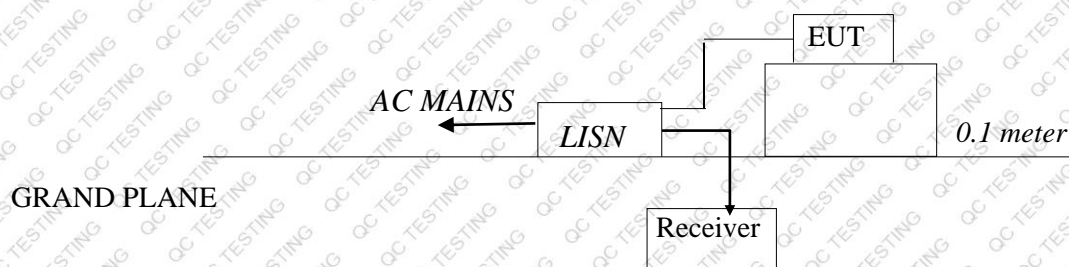
The setup of EUT is according with ANSI C63.4-2014 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.



3.3 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 kHz to 30 MHz
 Detector.....Peak & Quasi-Peak & Average
 Sweep Speed.....Auto
 IF Band Width.....9 kHz



3.4 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

3.5 Test Equipment List and Details

No.	Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	Rohde&Schwarz	ESIB 7	2277573376	2025.03.17	2026.03.16
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	101820	2024.08.06	2025.08.05
3	Artificial Mains Network	SCHWARZBECK	NSLK8126	8126200	2024.08.06	2025.08.05
4	PULSE LIMITER	Rohde&Schwarz	ESH3-Z2	100058	2025.03.18	2026.03.17
5	ISN	SCHWARZBECK	NTFM 8158	#248	2024.08.06	2025.08.05
6	LISN	DAZHE	ZN3770A	13003	2025.03.18	2026.03.17
7	LISN	SCHWARZBECK	NNLK 8121 RC	06045	2025.03.18	2026.03.17
8	Current Probe	Rohde&Schwarz	EZ-17	8016.2063.02	2025.03.17	2026.03.16
9	Test Software	Tonscend	TS+ JS32-CE Ver 5.0.0	N/A	N/A	N/A

3.6 Disturbance Voltage Test Data

Temperature (°C)	24
Humidity (%RH)	52
Barometric Pressure (kpa)	101
EUT	Foot massager
M/N	HK-712
Operating Mode	A

Test data see following pages

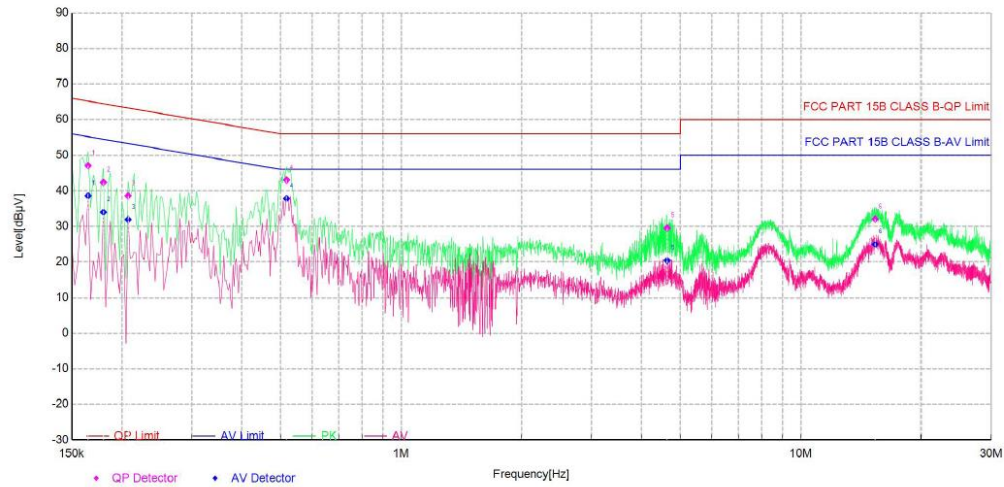
Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured.

3.7 Test Result

PASS

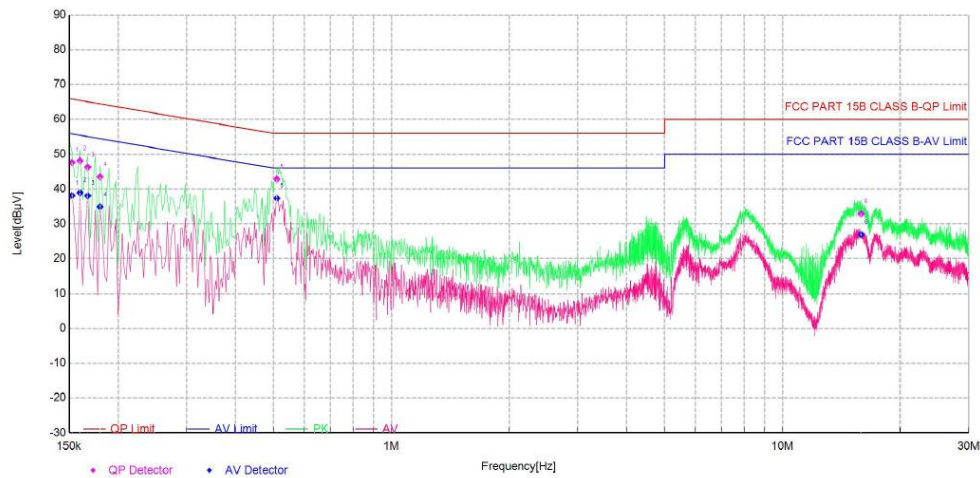


Test Voltage: AC 120V/60Hz



Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.165	10.60	47.08	65.21	18.13	38.62	55.21	16.59	L	PASS
2	0.18	10.63	42.38	64.49	22.11	33.99	54.49	20.50	L	PASS
3	0.2075	10.67	38.62	63.30	24.68	31.95	53.30	21.35	L	PASS
4	0.5175	10.73	43.05	56.00	12.95	37.84	46.00	8.16	L	PASS
5	4.637	10.73	29.57	56.00	26.43	20.43	46.00	25.57	L	PASS
6	15.347	11.00	32.08	60.00	27.92	25.00	50.00	25.00	L	PASS

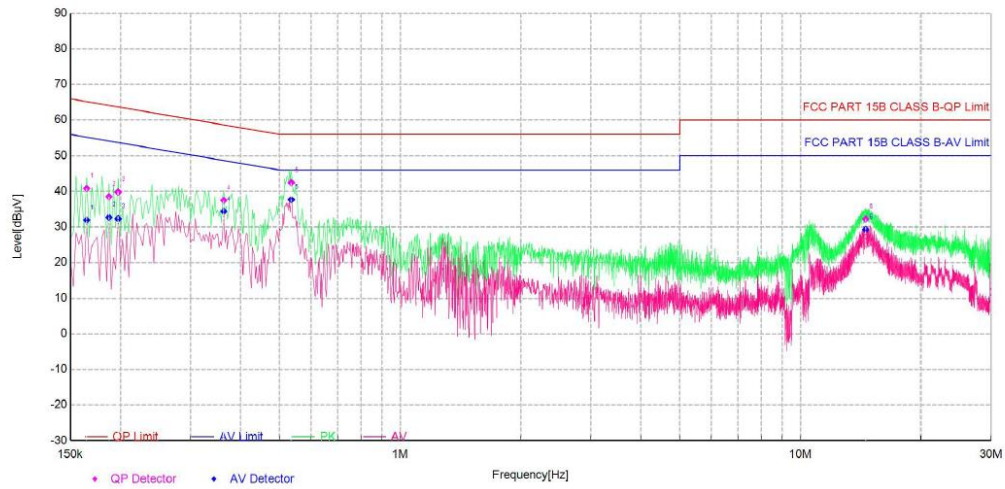


Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.1525	10.48	47.62	65.86	18.24	38.18	55.86	17.68	N	PASS
2	0.16	10.48	48.16	65.46	17.30	38.95	55.46	16.51	N	PASS
3	0.1675	10.48	46.27	65.08	18.81	38.12	55.08	16.96	N	PASS
4	0.18	10.48	43.51	64.49	20.98	34.93	54.49	19.56	N	PASS
5	0.51	10.60	42.89	56.00	13.11	37.37	46.00	8.63	N	PASS
6	15.896	10.97	32.93	60.00	27.07	26.94	50.00	23.06	N	PASS

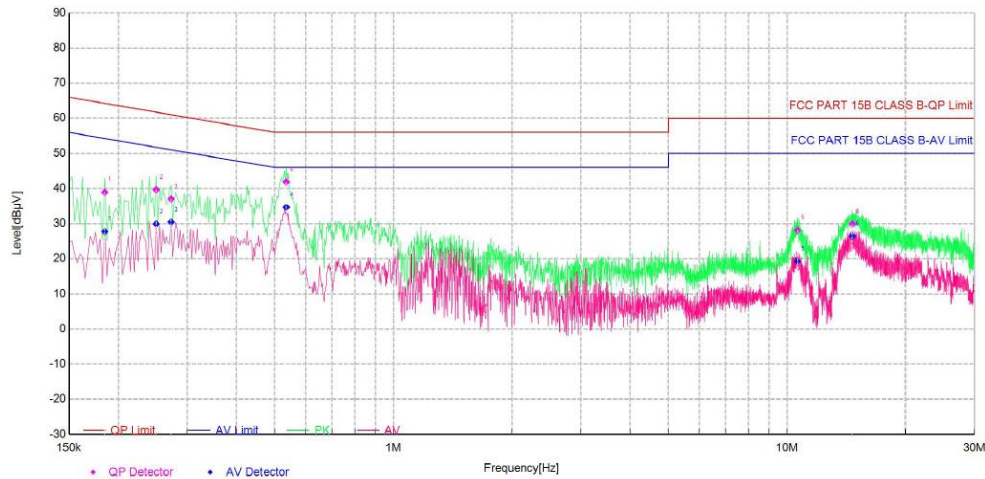


Test Voltage: AC 240V/60Hz



Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.165	10.60	40.82	65.21	24.39	31.95	55.21	23.26	L	PASS
2	0.1875	10.65	38.52	64.15	25.63	32.71	54.15	21.44	L	PASS
3	0.1975	10.67	39.80	63.72	23.92	32.30	53.72	21.42	L	PASS
4	0.3625	10.74	37.47	58.67	21.20	34.36	48.67	14.31	L	PASS
5	0.535	10.74	42.46	56.00	13.54	37.68	46.00	8.32	L	PASS
6	14.5775	10.99	32.23	60.00	27.77	29.29	50.00	20.71	L	PASS



Final Data List

NO.	Freq. [MHz]	Factor[dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Phase	Verdict
1	0.185	10.49	38.93	64.26	25.33	27.76	54.26	26.50	N	PASS
2	0.25	10.67	39.65	61.76	22.11	29.93	51.76	21.83	N	PASS
3	0.2725	10.75	37.03	61.04	24.01	30.47	51.04	20.57	N	PASS
4	0.535	10.62	41.88	56.00	14.12	34.70	46.00	11.30	N	PASS
5	10.6445	10.80	28.11	60.00	31.89	19.31	50.00	30.69	N	PASS
6	14.6765	10.98	29.93	60.00	30.07	26.46	50.00	23.54	N	PASS

4 - RADIATED DISTURBANCES

4.1 Limit of Radiated Disturbances

Frequency (MHz)	Distance (Meters)	Field Strengths Limits ($\mu\text{V/m}$)	Field Strengths Limits ($\text{dB}\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88~216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

Notes:

1. The tighter limit applies at the band edges.
2. Emission level ($\text{dB}\mu\text{V/m}$) = $20\log$ Emission level ($\mu\text{V/m}$).

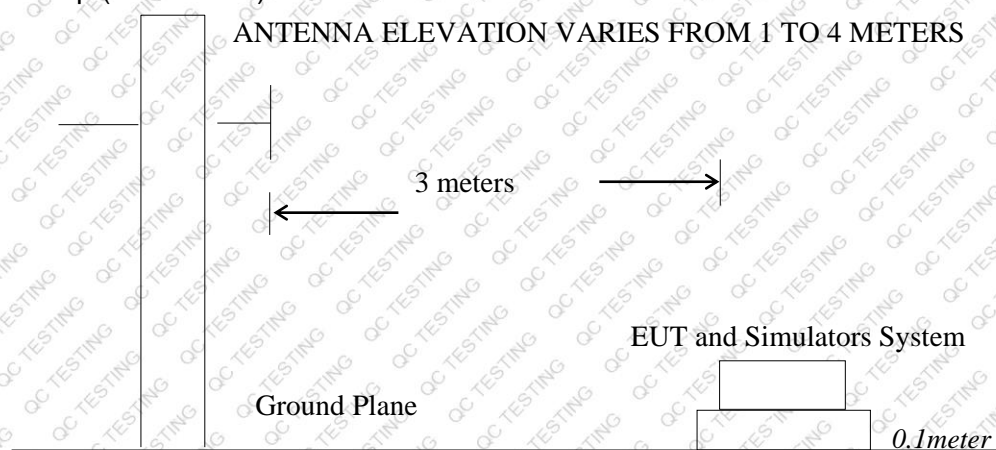
4.2 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

Block diagram of test setup (In chamber)



4.3 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 26000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector..... Peak & Quasi-Peak & Average
 IF Band Width..... 120kHz/1MHz
 Frequency Range..... 30MHz to 1000MHz/Above 1GHz
 Turntable Rotated..... 0 to 360 degrees
 Antenna Position:

Height..... 1m to 4m
 Polarity..... Horizontal and Vertical



4.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dB μ V of specification limits), and are distinguished with a "QP" in the data table.

4.5 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

4.6 Test Equipment List and Details

No.	Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	R&S	ESIB 7	2277573376	2025.03.17	2026.03.16
2	EMI Test Receiver	ESPI 3	ESPI 3	101131	2025.03.17	2026.03.16
3	Spectrum Analyzer	Rohde&Schwarz	FSV 40	101458	2025.03.18	2026.03.17
4	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9168	VULB9168-588	2025.03.22	2026.03.21
5	Loop Antenna	EMCO	6502	2133	2025.03.19	2026.03.18
6	horn antenna	SCHWARZBECK	BBHA9120D	2069	2024.08.10	2025.08.09
7	Horn Antenna	COM-MW	ZLB7-18-40G-950	12221225	2024.08.10	2025.08.09
8	Pre-amplifier	MITEQ	TTA0001-18	2063645	2025.03.17	2026.03.16
9	Pre-amplifier	MITEQ	TTA1800-30-HG	2063644	2025.03.17	2026.03.16
10	Pre-amplifier	COM-MW	DLAN-18000-40000-02	10229104	2025.03.22	2026.03.21
11	966 Camber	ZhongYU	9*6*6	/	2023.05.08	2026.05.07
12	Test Software	Farad	EZ-EMC Ver QCT03A2 RE+	N/A	N/A	N/A

4.7 Radiated Emissions Test Result

Temperature (°C)	25
Humidity (%RH)	49
Barometric Pressure (kpa)	101
EUT	Foot massager
M/N	HK-712
Operating Mode	A

4.8 Test Result

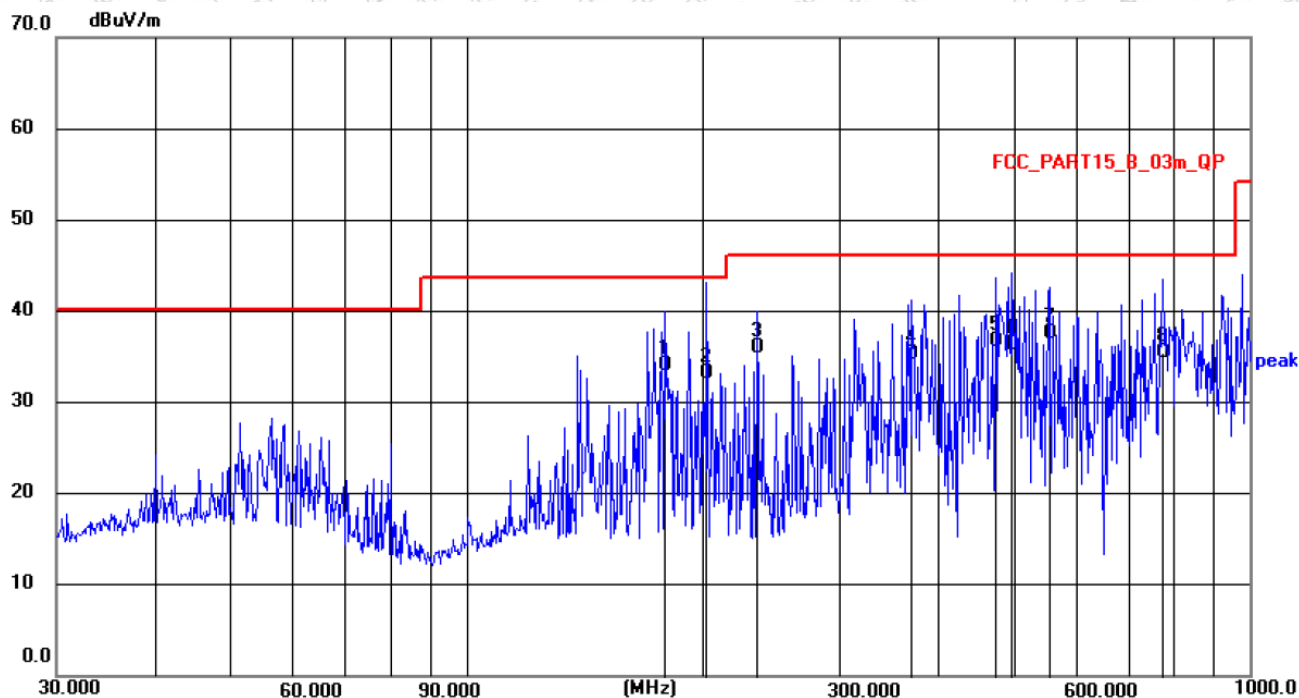
PASS



Radiated Emission Test Data of Below 1GHz

AC 120V/60Hz

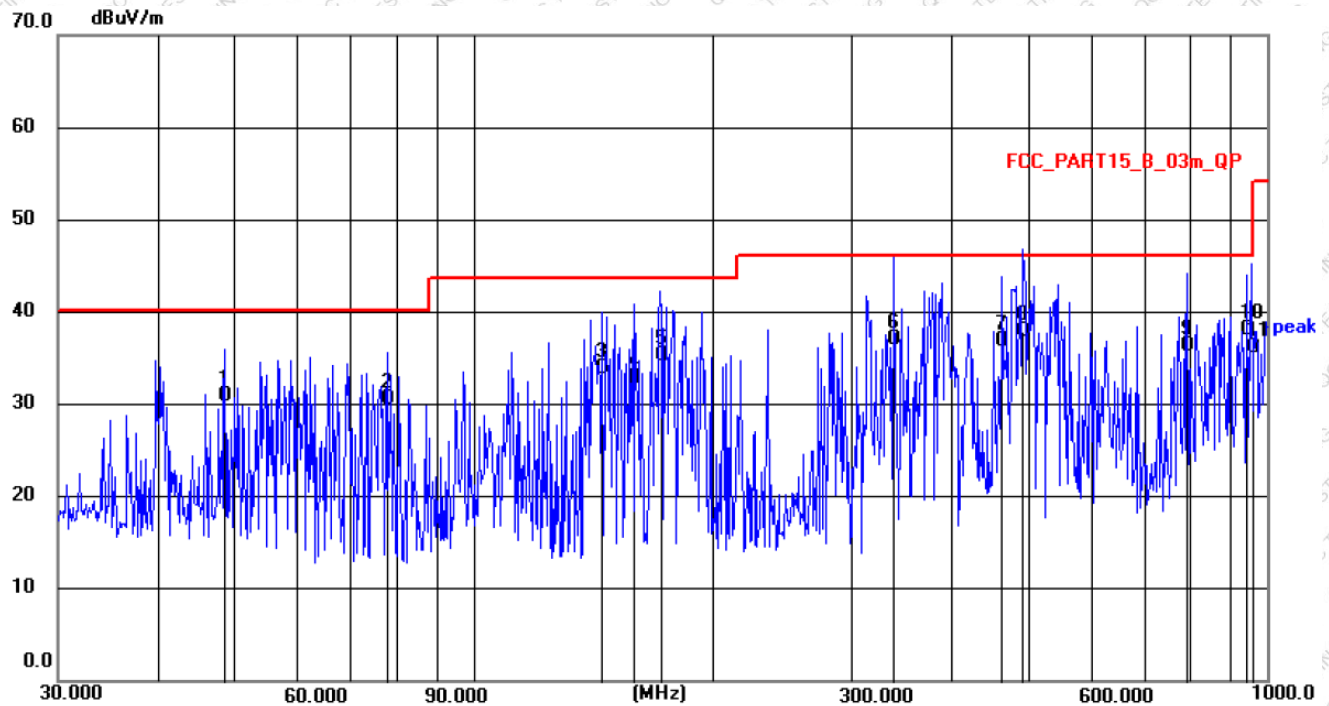
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	179.3863	21.51	12.49	34.00	43.50	9.50	QP
2	202.8103	21.65	11.47	33.12	43.50	10.38	QP
3	234.9909	23.04	13.01	36.05	46.00	9.95	QP
4	370.7022	18.36	16.85	35.21	46.00	10.79	QP
5	473.8346	17.28	19.46	36.74	46.00	9.26	QP
6	497.6764	16.23	20.00	36.23	46.00	9.77	QP
7 *	554.8253	16.87	20.69	37.56	46.00	8.44	QP
8	774.1584	11.38	24.08	35.46	46.00	10.54	QP



Vertical



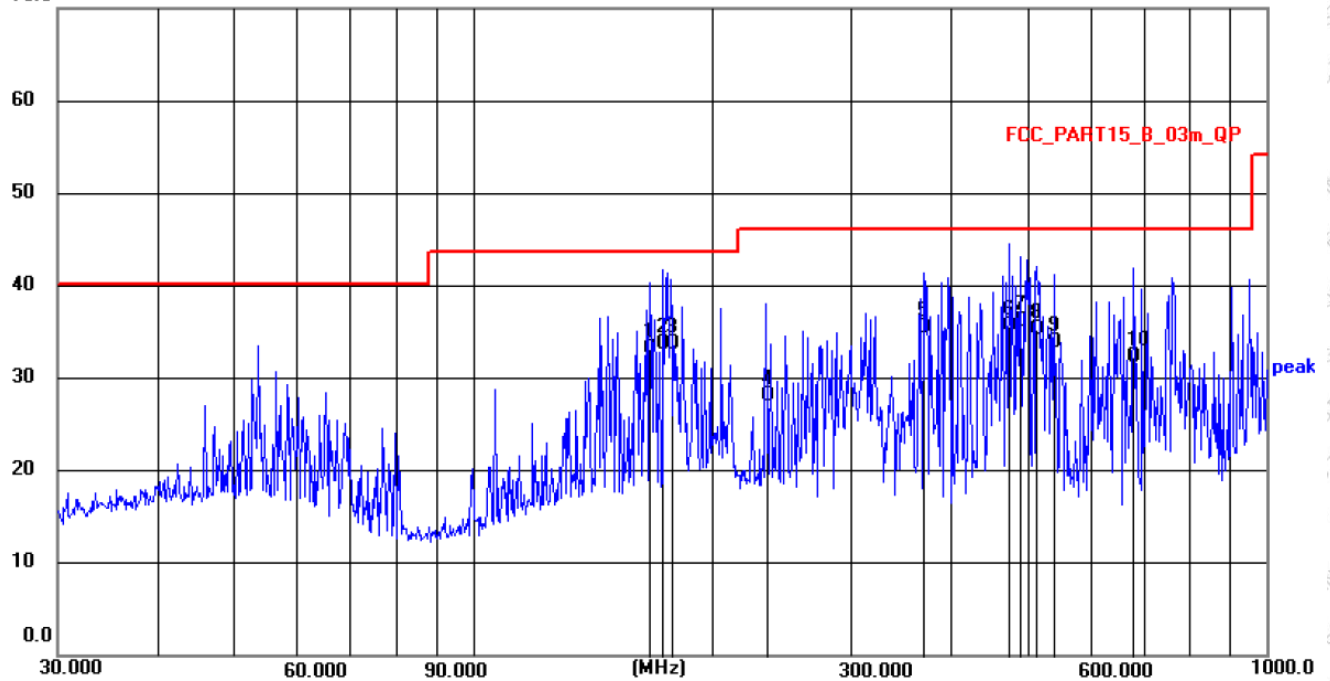
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	48.6719	16.50	14.46	30.96	40.00	9.04	QP
2	77.8653	20.29	10.31	30.60	40.00	9.40	QP
3	145.3505	19.57	14.34	33.91	43.50	9.59	QP
4	159.7844	18.38	14.42	32.80	43.50	10.70	QP
5	171.9945	22.15	13.04	35.19	43.50	8.31	QP
6	338.4000	21.43	15.55	36.98	46.00	9.02	QP
7	463.9696	17.92	18.85	36.77	46.00	9.23	QP
8	492.4685	18.45	19.41	37.86	46.00	8.14	QP
9	793.3958	11.62	24.63	36.25	46.00	9.75	QP
10 *	942.1304	11.50	26.49	37.99	46.00	8.01	QP
11	955.4380	9.55	26.61	36.16	46.00	9.84	QP



AC 240V/60Hz

Horizontal

70.0 dBuV/m

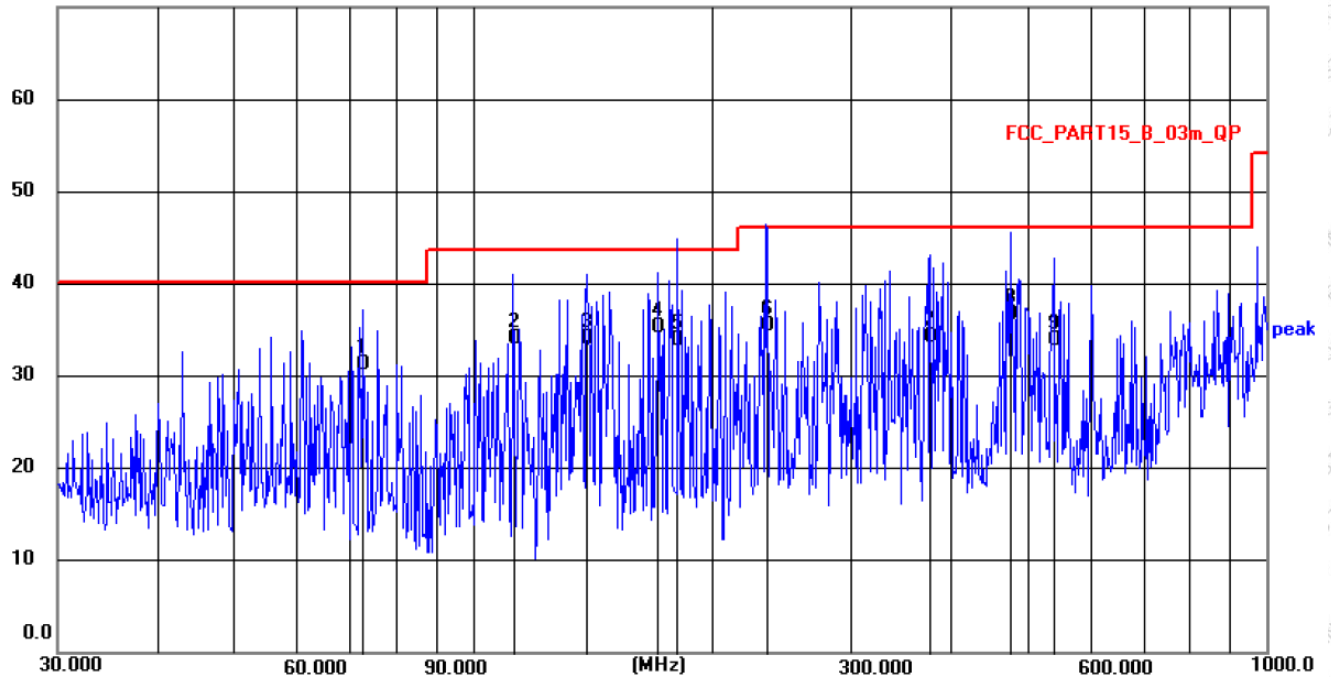


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	167.2366	19.36	13.89	33.25	43.50	10.25	QP
2 *	173.8135	20.61	13.13	33.74	43.50	9.76	QP
3	177.5091	20.99	12.71	33.70	43.50	9.80	QP
4	234.1683	15.17	12.98	28.15	46.00	17.85	QP
5	369.4047	18.64	16.81	35.45	46.00	10.55	QP
6	473.8346	16.12	19.46	35.58	46.00	10.42	QP
7	489.0268	16.26	19.80	36.06	46.00	9.94	QP
8	513.6331	15.07	20.21	35.28	46.00	10.72	QP
9	539.4775	13.34	20.51	33.85	46.00	12.15	QP
10	679.9600	9.63	22.64	32.27	46.00	13.73	QP



Vertical

70.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	72.5916	19.90	11.34	31.24	40.00	8.76	QP
2	112.5243	21.64	12.43	34.07	43.50	9.43	QP
3	139.3611	19.79	14.27	34.06	43.50	9.44	QP
4 *	171.3925	22.11	13.11	35.22	43.50	8.28	QP
5	181.2834	21.79	12.05	33.84	43.50	9.66	QP
6	234.1683	22.42	13.06	35.48	46.00	10.52	QP
7	377.2590	17.32	16.84	34.16	46.00	11.84	QP
8	475.4991	17.51	19.07	36.58	46.00	9.42	QP
9	539.4775	13.57	20.25	33.82	46.00	12.18	QP

End of Test Report