TEST REPORT

Report Reference No.....:	**ZKT-250917L22861E-1**
Date of Test.....:	Sept. 10, 2025 to Sept. 18, 2025
Date of issue.....:	Sept. 18, 2025
Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address..... :	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name.....:	**ZHEJIANG RUICHENG MECHANICAL POWER CO.,LTD.**
Address..... :	SHENTANG INDUSTRIAL ZONE,WUYI CITY,ZHEJIANG,CHINA
Manufacturer..... :	**ZHEJIANG RUICHENG MECHANICAL POWER CO.,LTD.**
Address..... :	SHENTANG INDUSTRIAL ZONE,WUYI CITY,ZHEJIANG,CHINA
Test Report Form No..... :	--
Test Standards..... :	ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.3.1 (2024-09) EN IEC 61000-3-2:2019 + A1:2021 + A2:2024 EN 61000-3-3:2013 + A1:2019 + A2:2021
Test Report Form(s) Originator.....:	ZKT Testing
Master TRF.....:	Dated: 2017-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the 2014/53/EU RED Directive Art.3.1(b) requirements. And it is applicable only to the tested sample identified in the report.

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Test item description.....:	**VIBRATION PLATE**
Trade Mark.....:	/
Model/Type reference..... :	RC-CFM-V98 RC-CFM-V16, RC-CFM-V71B, RC-CFM-V63, RC-CFM-V66, RC-CFM-V68, RC-CFM-V70, RC-CFM-V71, RC-CFM-V73, RC-CFM-V76, RC-CFM-V77, RC-CFM-V79, RC-CFM-V81, RC-CFM-V67, RC-CFM-V69, S8HF-VPO2, S8HF-VPO1, V16A, V16B.V16C, V16D, V39A, V63AV66A, V66B, V66C, V66S, V67A, V67B, V68A, V69A, V70A, V70B, V70C, V71A, V71B, V71CV71D, V71G, V72A, V72-S, V73A, V73B, V76A, V76B, V76CV76S, V77A, V77S, V77-SHV79A, V79B, V79C, V81A.V81B, V86A, V86B, V96A V97A, V98A, V99A, V98, V86, V97, V66

Model Difference.....:	RC-CFM-V98 is the test model, while other models are derivative models. These models are the same on the circuit, only with different model names. Therefore, the test data of RC-CFM-V98 can represent the remaining models.

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Jim Liu
Reviewer (name + signature).....:	Jackson Fang
Approved (name + signature).....:	Lake Xie

Table of Contents

1. Revision History

Report No.	Issue Date	Description	Approved
ZKT-250917L22861E-1	Sept. 18, 2025	Original	Valid

2. Test Summary

Test Procedures According To The Technical Standards:

ETSI EN 301 489-1 V2.2.3 (2019-11)

ETSI EN 301489-17 V3.3.1 (2024-09)

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55032:2015 + A11:2020 + A1:2020	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	
EN IEC 61000-3-2:2019 + A1:2021 + A2:2024	Harmonic Current Emission	Class A or D NOTE (2)	PASS	
EN 61000-3-3:2013 + A1:2019 + A2:2021	Voltage Fluctuations & Flicker	------	PASS	
EMC Immunity				
Section	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2:2009	Electrostatic Discharge	B	PASS	
EN IEC 61000-4-3: 2020	RF electromagnetic field	A	PASS	
EN 61000-4-4:2012	Fast transients	B	PASS	
EN 61000-4-5:2014 + A1:2017	Surges	B	PASS	
EN IEC 61000-4-6: 2023	Injected Current	A	PASS	
EN 61000-4-8:2010	Power Frequency Magnetic Field	A	N/A(1)	
EN IEC 61000-4-11:2020	Volt. Interruptions Volt. Dips	B / C / C **NOTE (3)**	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) The power consumption of EUT is less than 75W and no Limits apply.

(3) Voltage dip: 100% reduction – Performance Criteria **B**

Voltage dip: 30% reduction – Performance Criteria **C**

Voltage Interruption: 100% Interruption – Performance Criteria **C**

(4) For client's request and manual description, the test will not be executed.

3. Product Information And Test Setup

3.1. Product Information

Product Name:	VIBRATION PLATE
Test Model(s):	RC-CFM-V98
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	BLE: 2402MHz-2480MHz, 40 Channels
Type of Modulation:	BLE: GFSK
Antenna installation:	PCB Antenna
Antenna Gain:	0dBi
Ratings:	Input: AC 230 V/50Hz, 0.8A

3.2. Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

3.3. Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer’s requirements and conditions for the intended use.

3.4. Test Mode

Test item	Test Mode	Test Voltage
Conducted emissions from the AC mains power ports (150KHz-30MHz) Class B	BLE mode	AC 230 V / 50 Hz
Radiated emissions(30MHz-1GHz) Class B	BLE mode	AC 230 V / 50 Hz
Radiated emissions(1GHz-6GHz) Class B	BLE mode	AC 230 V / 50 Hz
Harmonic current emission(H) Class A	BLE mode	AC 230 V / 50 Hz
Voltage fluctuations & flicker(F)	BLE mode	AC 230 V / 50 Hz
Electrostatic discharge (ESD) ☒ Air Discharge: ±2,4,8kV ☒ Contact Discharge: ±2,4kV ☒ HCP & VCP: ±2,4kV	BLE mode	AC 230 V / 50 Hz
Continuous RF electromagnetic field disturbances(RS) ☒ 80MHz-6000MHz , 3V/m,80%	BLE mode	AC 230 V / 50 Hz
Electrical fast transients/burst (EFT/B) ☒ 1kV AC(Input) ☐ 0.5kV DC(Input) ☐ 0.5kV signal,Telec,control	BLE mode	AC 230 V / 50 Hz
Surges ☒ 1kV Line-Line, ☐ 2kV Line-PE, N-PE ☐ 0.5kVDC(Input) ☐ 1KV,☐ 4KV signal,Telec, control Line-Line:90°+1kV,270°-1kV Line-PE:90°+2kV,270°-2kV N-PE:90°-2kV,270°+2kV	BLE mode	AC 230 V / 50 Hz
Continuous induced RF disturbances (CS) 0.15MHz to 10MHz 3V,10MHz-30MHz 3 to 1V,30MHz-80MHz 1V ☒ AC(Input) ☐ DC(Input) ☐ signal,control	BLE mode	AC 230 V / 50 Hz
Voltage dips and interruptions (DIPS) ☒ Less 5% 0.5P ☒ 70% 500ms Voltage Interruptions ☒ less5% 5000ms	BLE mode	AC 230 V / 50 Hz
All test mode were tested and passed, only radiated emissions shows (*)s the worst case mode which were recorded in this report.		

4. Test Facility And Test Instrument Used

Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Sept. 30, 2024	Sept. 29, 2025
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Sept. 30, 2024	Sept. 29, 2025
3	Test Cable	N/A	C-01	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
4	Test Cable	N/A	C-02	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
5	Test Cable	N/A	C-03	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Sept. 29, 2024	Sept. 28, 2025
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Sept. 29, 2024	Sept. 28, 2025
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Oct. 10, 2024	Oct. 09, 2025
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\

Radiated emissions Test

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Sept. 29, 2024	Sept. 28, 2025
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sept. 30, 2024	Sept. 29, 2025
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Sept. 29, 2024	Sept. 28, 2025
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sept. 30, 2024	Sept. 29, 2025
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sept. 30, 2024	Sept. 29, 2025
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Oct. 11, 2024	Oct. 10, 2025

8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sept. 29, 2024	Sept. 28, 2025
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sept. 29, 2024	Sept. 28, 2025
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Sept. 30, 2024	Sept. 29, 2025
11	Test Cable	N/A	R-01	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
12	Test Cable	N/A	R-02	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
13	Test Cable	N/A	R-03	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
14	Test Cable	N/A	RF-01	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
15	Test Cable	N/A	RF-02	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
16	Test Cable	N/A	RF-03	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Sept. 29, 2024	Sept. 28, 2025
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Sept. 29, 2024	Sept. 28, 2025
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Sept. 29, 2024	Sept. 28, 2025
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Sept. 30, 2024	Sept. 29, 2025
21	MWRF Power Meter Test system	MW	MW100-RFCB	N/A	N/A	Sept. 30, 2024	Sept. 29, 2025
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\

Harmonic / Flicker Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Harmonic & Flicker	HTEC Instruments	AC2000A	548549	1.21	Sept. 29, 2024	Sept. 28, 2025
2	AC Power Source	/	HPHF4010	JN1022090795	DAL40	Sept. 29, 2024	Sept. 28, 2025

Electrostatic discharge Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	ESD TEST GENERATOR	HTEC	HESD16	N/A	004307	Sept. 28, 2024	Sept. 27, 2025

EFT and Surge and Voltage dips and interruptions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Surge Generator	HTEC	HCOMPACT5	N/A	V1.3.4	Sept. 29, 2024	Sept. 28, 2025
2	DIPS Generator	HTEC	HV1P16T	202101	V1.3.4	Sept. 29, 2024	Sept. 28, 2025
3	EFT/B Generator	HTEC	HCOMPACT5	N/A	V1.3.4	Sept. 29, 2024	Sept. 28, 2025
4	EFT/B Clamp	HTEC	H3C	N/A	N/A	Sept. 29, 2024	Sept. 28, 2025

For Magnetic Field Immunity Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Generator	HTEC	HFMG 100	202602	V2.1-182802	Sept. 29, 2024	Sept. 28, 2025

Radio-frequency fields Immunity Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Signal Generator	TESEQ	NSG4070-75	31477	V1.30	Sept. 29, 2024	Sept. 28, 2025
2	CDN	SCHWARZBECK	CDN M2/M3PE 16A	00128	N/A	Sept. 29, 2024	Sept. 28, 2025
3	Attenuator	GuoRenTong Xin	SGR-SJQ-6dB-DC-3	N/A	N/A	Sept. 29, 2024	Sept. 28, 2025

Radio-frequency electromagnetic fields Test(Site2)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Signal generator	DARE	CTR1009B/RGN6000B	Oct. 14, 2024	Oct. 13, 2025
Power meter	DARE	RPR2006C	Oct. 14, 2024	Oct. 13, 2025
Power meter	DARE	RPR2006C	Oct. 14, 2024	Oct. 13, 2025
Power amplifier	Bonn	BLWA0820-200/100	Oct. 14, 2024	Oct. 13, 2025
Integral Antenna	DARE	RFS2006B	Oct. 14, 2024	Oct. 13, 2025
Integral Antenna	Schwarzbeck	STLP 9128D	Oct. 14, 2024	Oct. 13, 2025

4.1. Testing software

Project	Software name	Edition
Conducted Emission	EZ-EMC	EMC-CON 3A1.1+
Radiated electromagnetic disturbances	EZ-EMC	EMC-CON 3A1.1+
Disturbance Power Emission	EZ-EMC	EMC-CON 3A1.1+
Radiated Emission	EZ-EMC	FA-03A2 RE+
Conducted Susceptibility	IEC/EN 61000-4-6	1.4.1
Voltage changes, voltage fluctuations and flicker	Harmonic	121
RF Test	MTS 8310	2.0.0.0

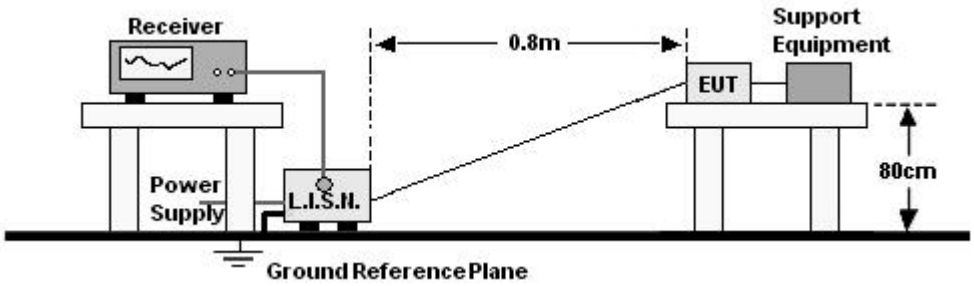
4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	2.60
Radiated Emission(30MHz~1GHz)	5.89
Radiated Emission(1GHz~6GHz)	4.48

5. Conducted Emissions

5.1. Block Diagram Of Test Setup



5.2. Limit

Limits for Conducted emissions at the mains ports of Class B MME

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

5.3. Test procedure

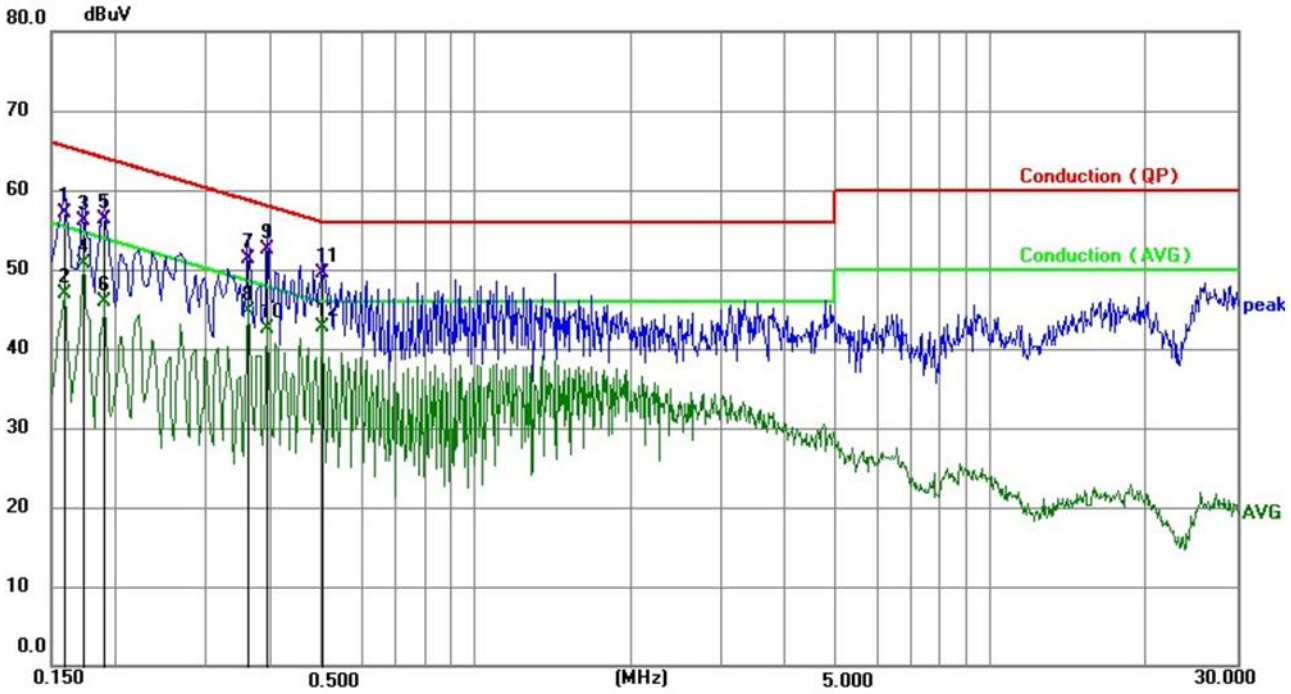
a. The Product was placed on a nonconductive table 0.8m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).

b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

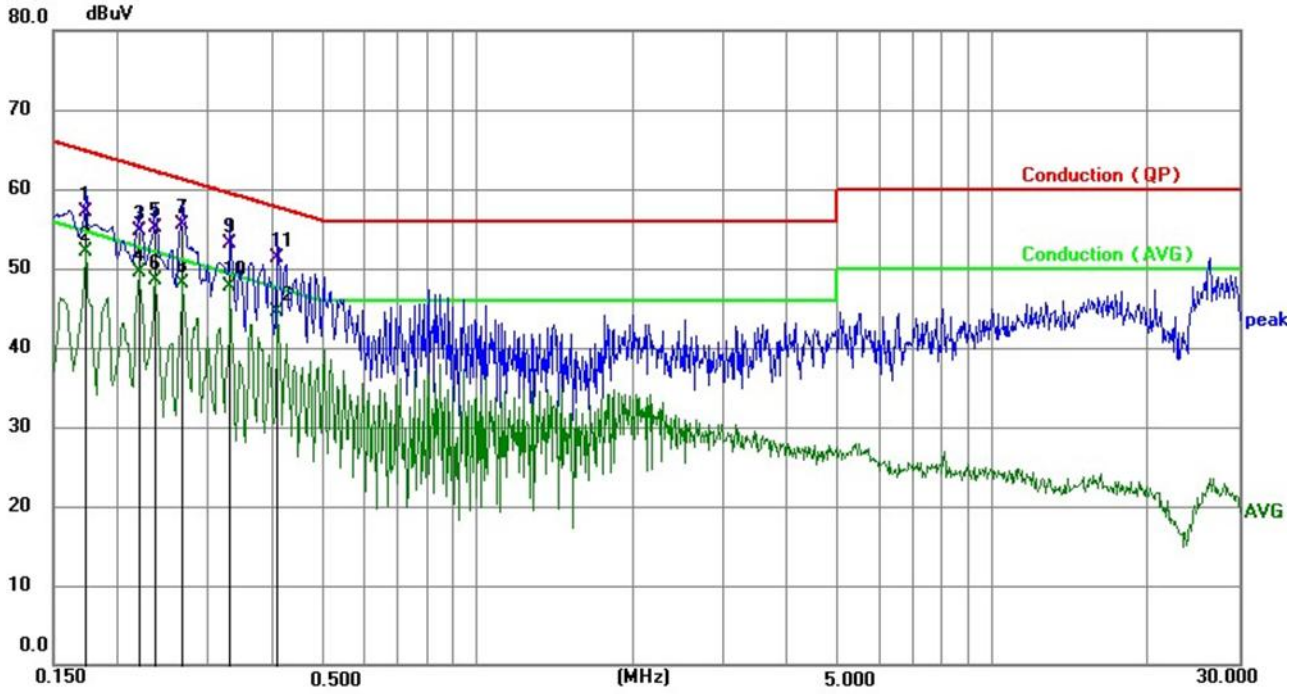
5.4. Test Result

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101.4kPa	Phase :	Live
Test Mode	BLE mode	Remark:	N/A



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	47.25	9.89	57.14	65.52	-8.38	QP	P	
2	0.1590	37.00	9.89	46.89	55.52	-8.63	AVG	P	
3	0.1723	46.27	9.90	56.17	64.85	-8.68	QP	P	
4	0.1723	40.79	9.90	50.69	54.85	-4.16	AVG	P	
5	0.1901	46.33	9.91	56.24	64.03	-7.79	QP	P	
6	0.1901	35.91	9.91	45.82	54.03	-8.21	AVG	P	
7	0.3613	41.37	9.97	51.34	58.70	-7.36	QP	P	
8	0.3613	34.67	9.97	44.64	48.70	-4.06	AVG	P	
9	0.3930	42.44	9.99	52.43	58.00	-5.57	QP	P	
10	0.3930	32.43	9.99	42.42	48.00	-5.58	AVG	P	
11	0.5053	39.47	10.02	49.49	56.00	-6.51	QP	P	
12 *	0.5053	32.69	10.02	42.71	46.00	-3.29	AVG	P	

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101.4kPa	Phase :	Neutral
Test Mode	BLE mode	Remark:	N/A



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1724	47.11	9.90	57.01	64.84	-7.83	QP	P	
2	0.1724	42.22	9.90	52.12	54.84	-2.72	AVG	P	
3	0.2196	44.85	9.92	54.77	62.83	-8.06	QP	P	
4	0.2196	39.52	9.92	49.44	52.83	-3.39	AVG	P	
5	0.2354	45.15	9.92	55.07	62.26	-7.19	QP	P	
6	0.2354	38.64	9.92	48.56	52.26	-3.70	AVG	P	
7	0.2670	45.57	9.94	55.51	61.21	-5.70	QP	P	
8	0.2670	38.23	9.94	48.17	51.21	-3.04	AVG	P	
9	0.3300	43.07	9.97	53.04	59.45	-6.41	QP	P	
10 *	0.3300	37.75	9.97	47.72	49.45	-1.73	AVG	P	
11	0.4063	41.32	9.98	51.30	57.72	-6.42	QP	P	
12	0.4063	34.56	9.98	44.54	47.72	-3.18	AVG	P	

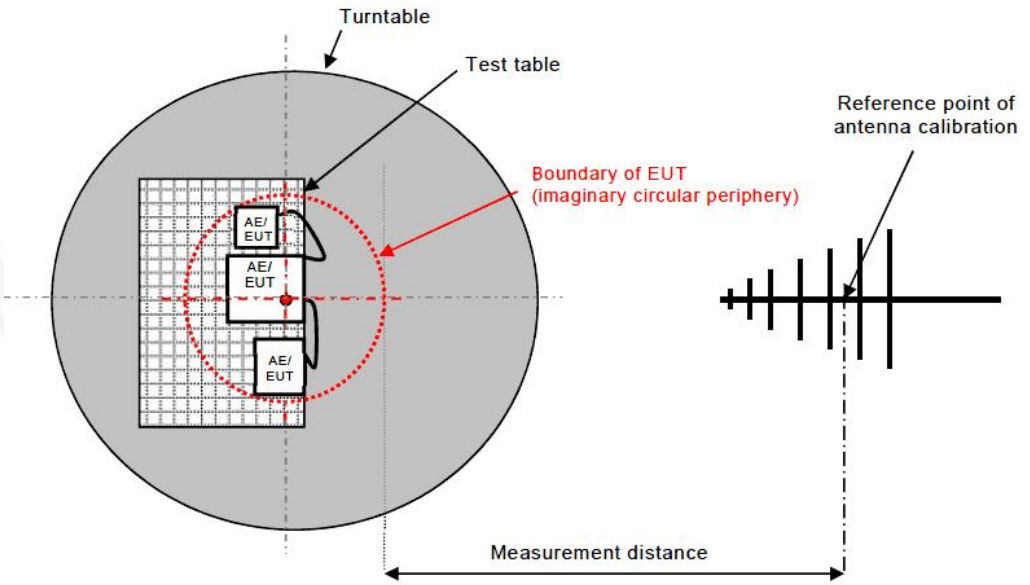
Remark: Level=Reading +Factor

Margin=Level -Limit

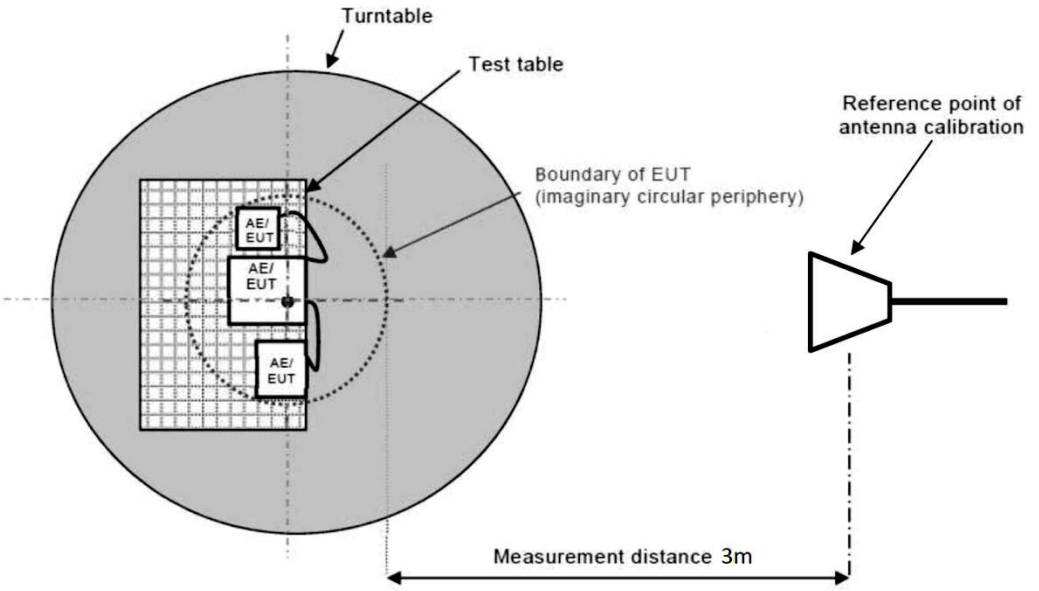
6. Radiated Emissions Test

6.1. Block Diagram Of Test Setup

30MHz ~ 1GHz:



Above 1GHz:



6.2. Limits

Limits for radiated disturbance of Class B MME

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

Frequency (GHz)	limit above 1G at 3m dB(μV/m)	
	Average	peak
1-3	50	70
3-6	54	74

Note: The lower limit shall apply at the transition frequencies.

6.3. Test Procedure

30MHz ~ 1GHz:

a. The Product was placed on the nonconductive turntable 0.8m above the ground in a semi anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

a. The Product was placed on the non-conductive turntable 0.8m above the ground in a full anechoic chamber..

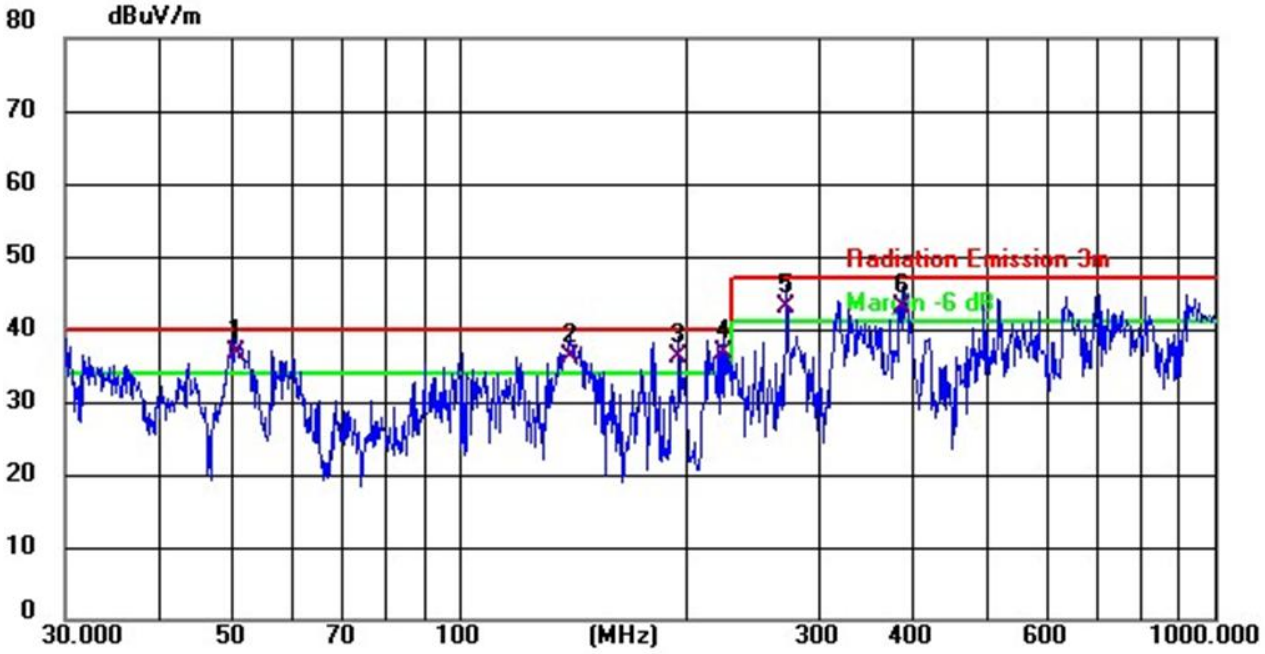
b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

6.4. Test Results

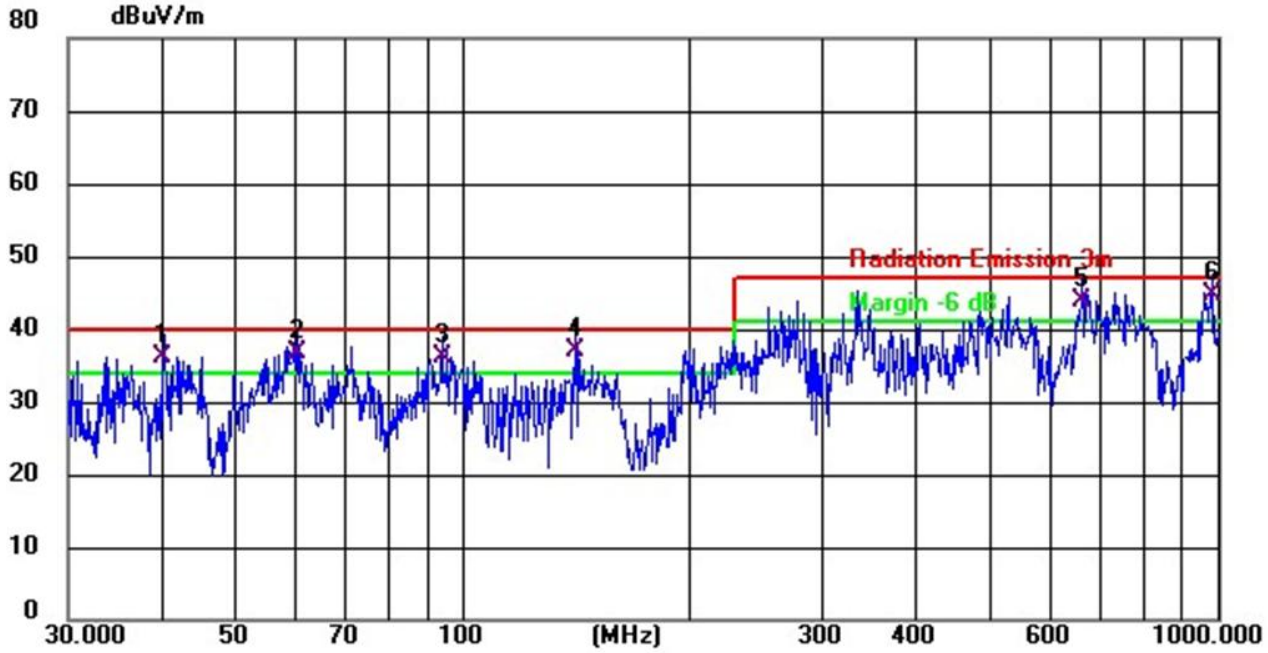
30MHz-1GHz

Temperature:	24.5 ℃	Relative Humidity:	56.4%
Pressure:	101.4kPa	Polarization :	Horizontal
Test Mode	BLE mode	Remark:	N/A



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	50.5860	45.72	-8.93	36.79	40.00	-3.21	QP
2 !	140.3420	49.67	-13.45	36.22	40.00	-3.78	QP
3 !	195.1363	47.31	-11.18	36.13	40.00	-3.87	QP
4 *	223.7333	46.77	-9.95	36.82	40.00	-3.18	QP
5 !	271.3245	51.66	-8.53	43.13	47.00	-3.87	QP
6 !	386.6338	48.83	-5.96	42.87	47.00	-4.13	QP

Temperature:	24.5 ℃	Relative Humidity:	56.4%
Pressure:	101.4kPa	Polarization :	Vertical
Test Mode	BLE mode	Remark:	N/A

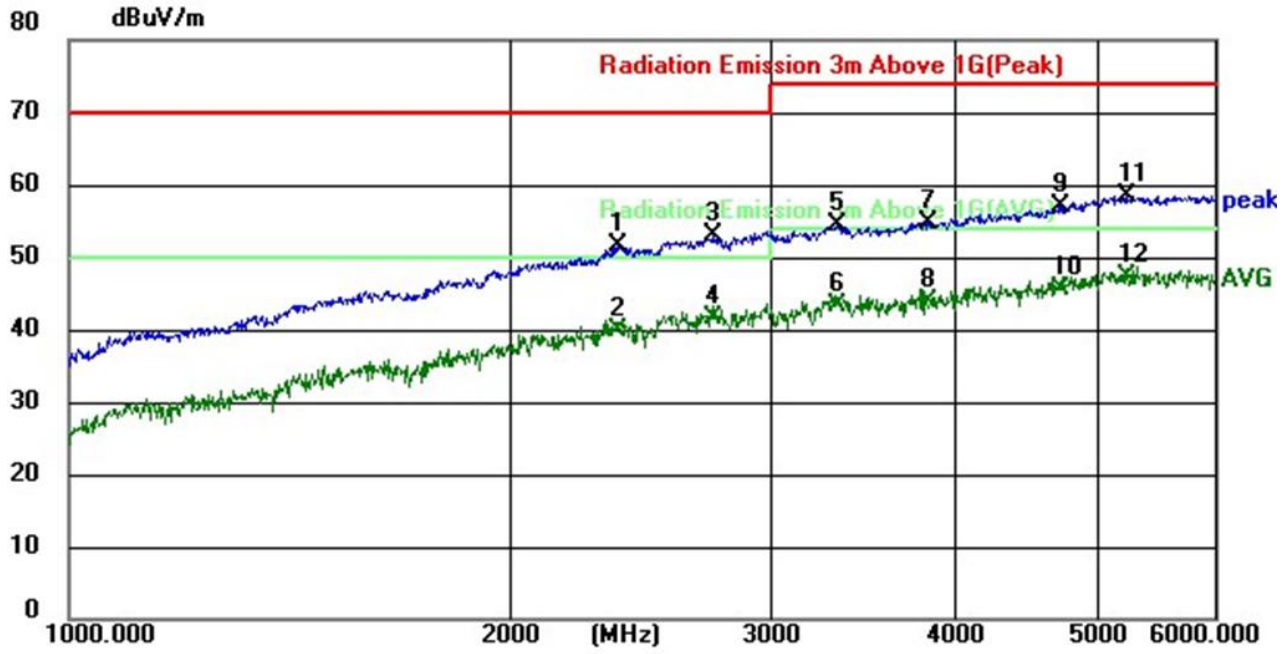


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	40.2754	46.03	-9.82	36.21	40.00	-3.79	QP
2 !	60.2800	46.86	-10.19	36.67	40.00	-3.33	QP
3 !	93.7682	48.01	-11.88	36.13	40.00	-3.87	QP
4 !	141.3296	50.53	-13.49	37.04	40.00	-2.96	QP
5 !	661.1503	44.74	-0.88	43.86	47.00	-3.14	QP
6 *	982.6200	41.11	3.47	44.58	47.00	-2.42	QP

Remark: Level=Reading +Factor
Margin=Level -Limit

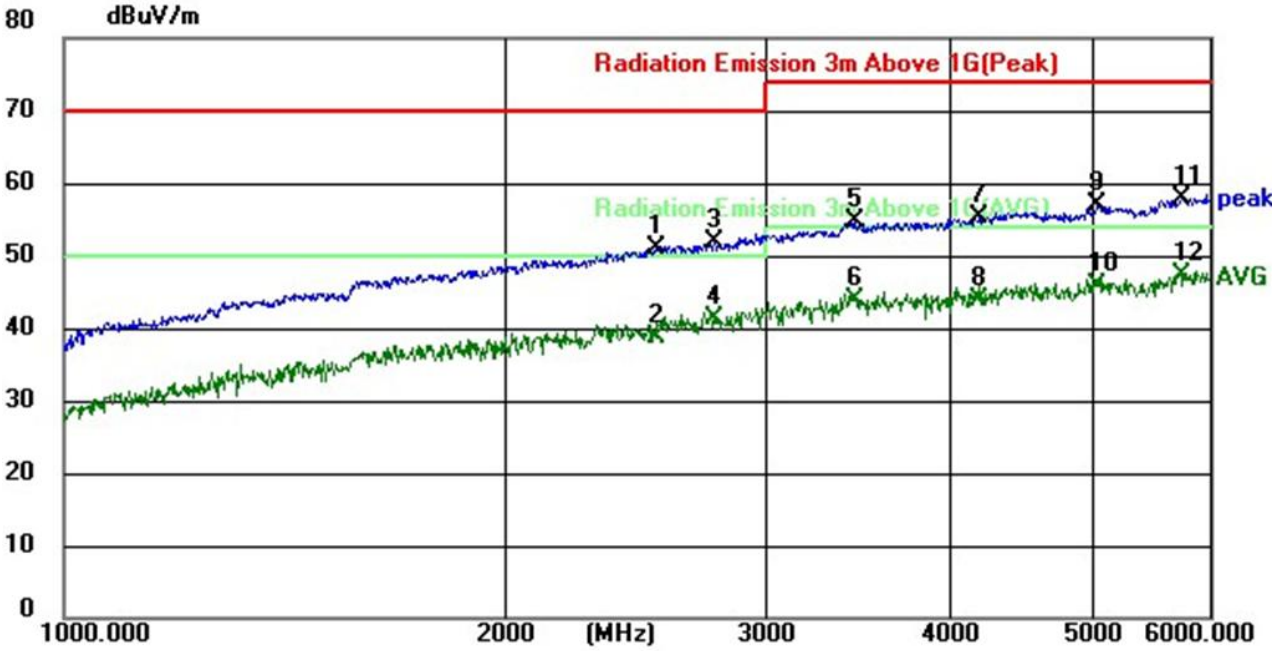
Above 1G

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101.4kPa	Polarization :	Horizontal
Test Mode	BLE mode	Remark:	N/A



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2359.0353	39.39	12.09	51.48	70.00	-18.52	peak
2	2359.0353	27.71	12.09	39.80	50.00	-10.20	AVG
3	2742.2001	38.79	14.16	52.95	70.00	-17.05	peak
4	2742.2001	27.39	14.16	41.55	50.00	-8.45	AVG
5	3321.7071	37.38	16.99	54.37	74.00	-19.63	peak
6	3321.7071	26.25	16.99	43.24	54.00	-10.76	AVG
7	3833.6586	35.90	18.95	54.85	74.00	-19.15	peak
8	3833.6586	24.99	18.95	43.94	54.00	-10.06	AVG
9	4719.3150	35.30	21.70	57.00	74.00	-17.00	peak
10	4719.3150	23.74	21.70	45.44	54.00	-8.56	AVG
11	5226.7725	35.36	22.97	58.33	74.00	-15.67	peak
12 *	5226.7725	24.18	22.97	47.15	54.00	-6.85	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101.4kPa	Polarization :	Vertical
Test Mode	BLE mode	Remark:	N/A

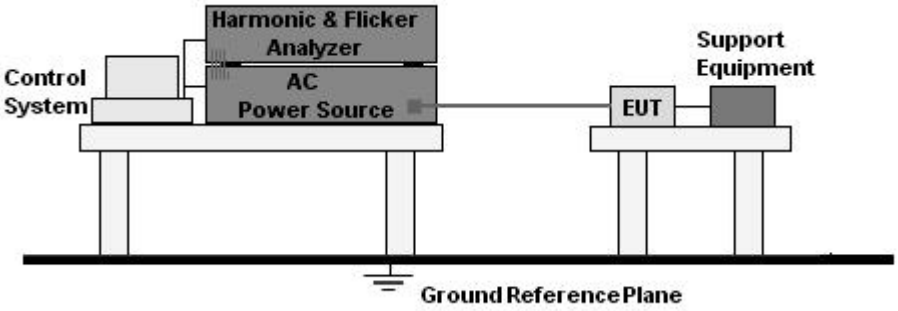


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2529.7775	38.04	13.08	51.12	70.00	-18.88	peak
2	2529.7775	25.61	13.08	38.69	50.00	-11.31	AVG
3	2766.8773	37.43	14.30	51.73	70.00	-18.27	peak
4	2766.8773	26.99	14.30	41.29	50.00	-8.71	AVG
5	3442.8996	37.12	17.54	54.66	74.00	-19.34	peak
6	3442.8996	26.19	17.54	43.73	54.00	-10.27	AVG
7	4185.4566	35.17	20.19	55.36	74.00	-18.64	peak
8	4185.4566	23.62	20.19	43.81	54.00	-10.19	AVG
9	5033.7591	34.64	22.31	56.95	74.00	-17.05	peak
10	5033.7591	23.65	22.31	45.96	54.00	-8.04	AVG
11	5737.1665	33.54	24.40	57.94	74.00	-16.06	peak
12 *	5737.1665	22.83	24.40	47.23	54.00	-6.77	AVG

Remark: Level=Reading +Factor
Margin=Level -Limit

7. Harmonic Current Emission(H)

7.1. Block Diagram of Test Setup



7.2. Limit

EN IEC 61000-3-2:2019 + A1:2021+ A2:2024.

7.3. Test Procedure

a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

b. The correspondent test program of test instrument to measure the current harmonics emanated from Product was chosen. The measure time shall be not less than the time necessary for the Product to be exercised.

7.4. Test Results

PASS

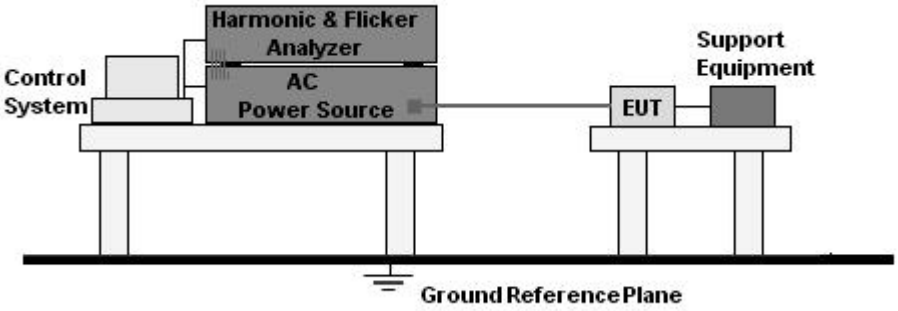
Parameter values during test:

V_RMS (Volts): 230.0 Frequency(Hz): 50.0
I_RMS(A): 0.8 Crest Factor: 3.731
Power (Watts): 96.9 Power Factor: 0.492

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	459.500						
2	56.100	1080.000	55.900	5.176	57.100	3.525	Pass
3	428.500	2300.000	425.800	18.513	439.800	12.748	Pass
4	56.200	430.000	55.100	12.814	56.800	8.806	Pass
5	369.000	1140.000	367.200	32.211	375.400	21.953	Pass
6	56.400	300.000	54.400	18.133	57.700	12.822	Pass
7	294.700	770.000	294.100	38.195	296.300	25.654	Pass
8	56.600	230.000	53.900	23.435	58.800	17.043	Pass
9	220.400	400.000	220.500	55.125	222.800	37.133	Pass
10	56.800	184.000	53.700	29.185	59.700	21.630	Pass
11	158.900	330.000	159.200	48.242	161.800	32.687	Pass
12	56.800	153.300	53.400	34.834	60.000	26.093	Pass
13	118.100	210.000	117.700	56.048	118.600	37.651	Pass
14	56.100	131.400	52.700	40.107	59.500	30.188	Pass
15	93.800	150.000	93.100	62.067	94.200	41.867	Pass
16	55.000	115.000	51.100	44.435	58.000	33.623	Pass
17	76.600	132.400	76.000	57.402	76.900	38.721	Pass
18	52.600	102.200	48.600	47.554	55.300	36.073	Pass
19	60.400	118.400	60.400	51.014	62.000	34.910	Pass
20	49.200	92.000	45.500	49.457	51.600	37.391	Pass
21	47.200	107.100	47.500	44.351	49.600	30.875	Pass
22	45.300	83.600	41.900	50.120	46.900	37.400	Pass
23	40.400	97.800	40.600	41.513	42.400	28.903	Pass
24	40.600	76.700	37.900	49.413	41.700	36.245	Pass
25	38.100	90.000	37.900	42.111	39.500	29.259	Pass
26	35.900	70.800	33.800	47.740	36.500	34.369	Pass
27	35.000	83.300	34.800	41.777	36.300	29.052	Pass
28	31.200	65.700	29.700	45.205	31.400	31.862	Pass
29	29.100	77.600	29.200	37.629	30.900	26.546	Pass
30	26.900	61.300	25.800	42.088	26.900	29.255	Pass
31	22.100	72.600	22.400	30.854	23.900	21.947	Pass
32	23.000	57.500	22.400	38.957	23.300	27.014	Pass
33	17.000	68.200	17.200	25.220	18.500	18.084	Pass
34	19.200	54.100	19.200	35.490	20.800	25.632	Pass
35	15.400	64.300	15.200	23.639	16.900	17.522	Pass
36	16.100	51.100	16.500	32.290	18.300	23.875	Pass
37	15.200	60.800	15.000	24.671	16.000	17.544	Pass
38	13.400	48.400	14.100	29.132	16.000	22.039	Pass
39	14.900	57.700	14.500	25.130	14.900	17.215	Pass
40	11.500	46.000	12.000	26.087	13.800	20.000	Pass

8. Voltage Fluctuations & Flicker(F)

8.1. Block Diagram of Test Setup



8.2. Limit

EN 61000-3-3: 2013 + A1:2019 + A2: 2021.

8.3. Test Procedure

a. The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

b. During the flick test, the measure time shall include that part of whole operation cycle in which the Product produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

8.4. Test Results

Pass

Remark: Through technical analysis and evaluation, EUT power is very small, and it is unlikely to cause significant voltage fluctuation or flicker. Therefore, the requirements can be met without testing.

9. Immunity Test Of General The Performance Criteria

Product Standard	ETSI EN 301 489-1
The performance criteria are used to take a decision on whether a radio equipment passes or fails immunity tests. For the purpose of the present document two categories of performance criteria apply: • Performance criteria for continuous phenomena. • Performance criteria for transient phenomena. NOTE: Normally, the performance criteria depends upon the type of radio equipment and/or its intended application. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment.	
Performance criteria for continuous phenomena	During the test, the equipment shall: • continue to operate as intended; • not unintentionally transmit; • not unintentionally change its operating state; • not unintentionally change critical stored data.
Performance criteria for transient phenomena	For all ports and transient phenomena with the exception described below, the following applies: • The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data. • After application of the transient phenomena, the equipment shall operate as intended. For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies: • For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost. • For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

According To EN 301489 -17 standard, The General Performance Criteria As Following:

General performance criteria

The performance criteria are:

• performance criteria A for immunity tests with phenomena of a continuous nature;

• performance criteria B for immunity tests with phenomena of a transient nature;

• performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Table 1: Performance criteria

Criteria	During the test	After test (i.e. as a result of the application of the test)
A	Shall operate as intended. (see note). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of critical stored data.
B	May be loss of function.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no loss of critical stored data.
C	May be loss of function.	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance.
NOTE: Operate as intended during the test allows a level of degradation in accordance with clause 6.2.2.		

Minimum performance level

For equipment that supports a PER or FER, the minimum performance level shall be a PER or FER less than or equal to 10 %.

For equipment that does not support a PER or a FER, the minimum performance level shall be no loss of the wireless transmission function needed for the intended use of the equipment.

Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission

resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Receivers (TR)

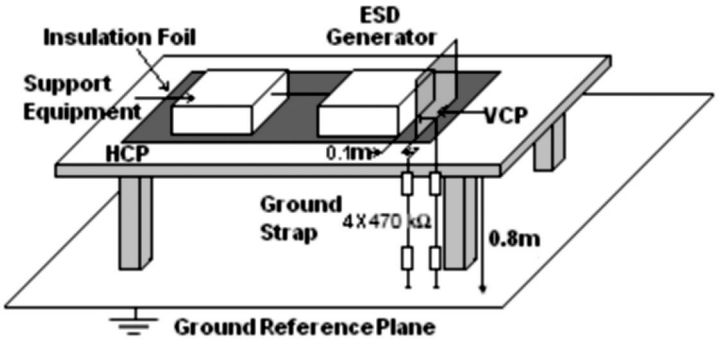
The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.
Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

10. Electrostatic Discharge (ESD)

10.1. Test Specification

Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

10.2. Block Diagram of Test Setup



10.3. Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.

e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

10.4. Test Results

Temperature：	24.1℃	Relative Humidity：	54.2%
Pressure：	101.4kPa	Test Mode：	BLE mode

Mode	Air Discharge								Contact Discharge								Obser vation	Criterion	Result
Test level (kV)	4		8		10		15		2		4		6		8				
Test Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-			
HCP									A	A	A	A					TT,TR	B	PASS
VCP									A	A	A	A							PASS
Non-metal part	A	A	A	A															PASS
Metal part									A	A	A	A							PASS

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) Test condition:
Direct / Indirect (HCP/VCP) discharges: Minimum 50 times (Positive/Negative) at each point. Air discharges: Minimum 10 times (Positive/Negative) at each point.
3) N/A - denotes test is not applicable in this test report
4)There was not any unintentional transmission in standby mode

11. Continuous RF Electromagnetic Field Disturbances(RS)

11.1. Test Specification

Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

11.2. Block Diagram of Test Setup

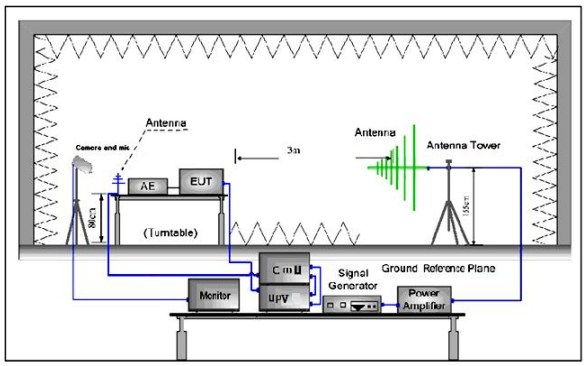


Figure 1. 80MHz to 1GHz

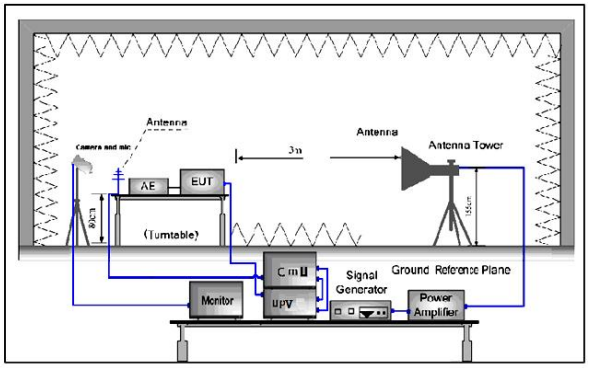


Figure 2. 1GHz to 6GHz

11.3. Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.

b. The frequency range is swept from 80MHz to 6000MHz,with the signal 80% amplitude modulated with a 1 kHz sine wave,and the step size was 1%.

c. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond, but should not exceed 5 s at each of the frequencies during the scan.

d. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

e. For Broadcast reception function:Group 2 not apply in this test.

11.4. Test Results

Temperature：	24.0℃	Relative Humidity：	52.3%
Pressure：	101.4kPa	Test Mode：	BLE mode

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Observation	Perform. Criteria	Results	Judgment
80~6000	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	CT,CR	A	A	PASS
			Rear				
			Left				
			Right				

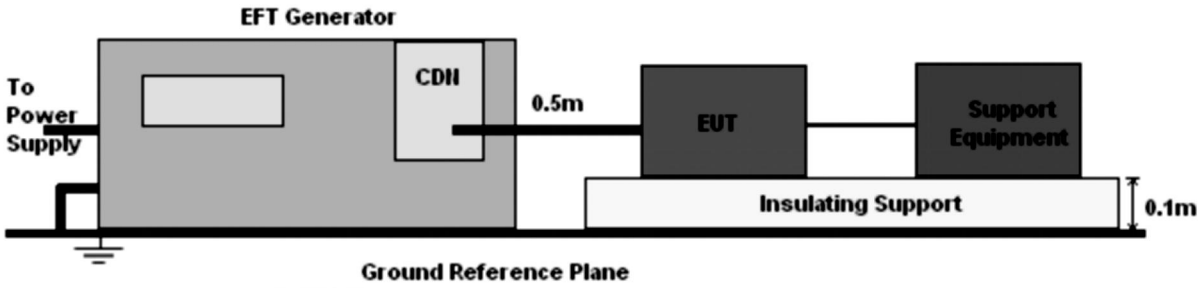
12. Electrical Fast Transients/Burst (EFT/B)

12.1. Test Specification

Test Port	:	input a.c. power port
Impulse Frequency	:	5 kHz
Impulse Wave-shape	:	5/50 ns
Burst Duration	:	15 ms
Burst Period	:	300 ms
Test Duration	:	2 minutes per polarity

12.2. Block Diagram of EUT Test Setup

For input a.c. power port:



12.3. Test Procedure

a. The Product and support units were located on a non-conductive table above ground reference plane.

b. A 0.5m-long power cord was attached to Product during the test.

12.4. Test Results

Temperature :	24.0℃	Relative Humidity :	54.2%
Pressure :	101.4kPa	Test Mode :	BLE mode

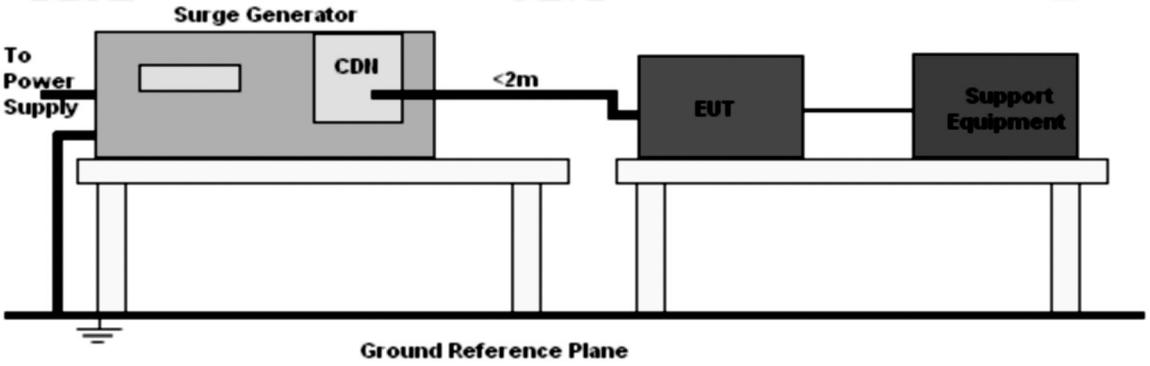
Coupling	Voltage (kV)	Polarity	Performance Criterion
AC MainsL-N	1.0	±	A
AC MainsL-PE	2.0	±	N/A
AC MainsN-PE	2.0	±	N/A
Signal Line	0.5	±	N/A
Telec Ports	0.5	±	N/A
DC Ports	0.5	±	N/A
Note: A: No performance degradation during test. B: During the test, the EUT shut down, after the test, it reset by itself. C: During the test, the EUT shut down, after the test, it reset by user.			

13. Surges Immunity Test

13.1. Test Specification

Test Port	:	input a.c. power port
Wave-Shape	:	Open Circuit Voltage - 1.2 / 50 us
		Short Circuit Current - 8 / 20 us
Pulse Repetition Rate	:	1 pulse / min.
Phase Angle	:	0° / 90° / 180° / 270°
Test Events	:	5 pulses (positive & negative) for each polarity

13.2. Block Diagram of EUT Test Setup



13.3. Test Procedure

a. The surge is to be applied to the Product power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave.

b. The power cord between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter). Interconnection line between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter).

13.4. Test Result

Temperature：	24.0℃	Relative Humidity：	54.2%
Pressure：	101.4kPa	Test Mode：	BLE mode

Coupling Line	Voltage (kV)	Polarity	Performance Criterion
L - N	1	±	A
L - PE	2	±	N/A
N - PE	2	±	N/A
LAN Ports	±1	/	N/A
Note: A: No performance degradation during test. B: During the test, the EUT shut down, after the test, it reset by itself. C: During the test, the EUT shut down, after the test, it reset by user.			

Remark: No test shall be required where normal functioning cannot be achieved because of the impact of the CDN on the Product.

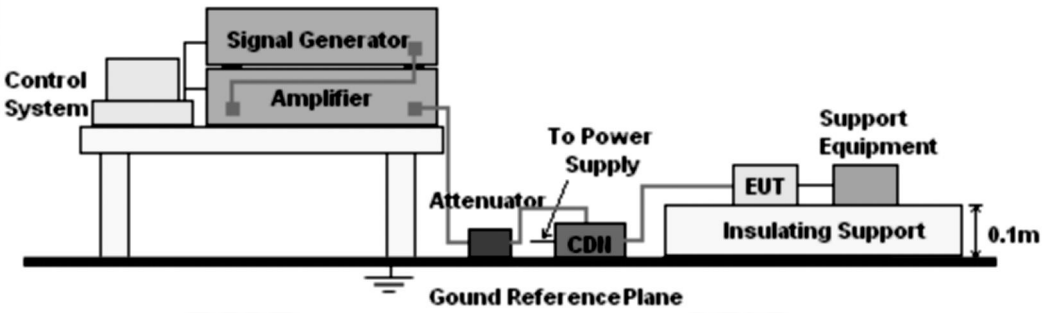
14. Continuous Induced RF Disturbances (CS)

14.1. Test Specification

Test Port	:	input a.c. power port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second

14.2. Block Diagram of EUT Test Setup

For input a.c. power port:



14.3. Test Procedure

For input a.c. power port:

a. The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.

b. The frequency range is swept from 150 kHz to 10MHz, 10MHz to 30MHz, 30MHz to 80MHz with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1% of fundamental.

c. The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond.

14.4. Test Result

Temperature：	24.0℃	Relative Humidity：	54.2%
Pressure：	101.4kPa	Test Mode：	BLE mode

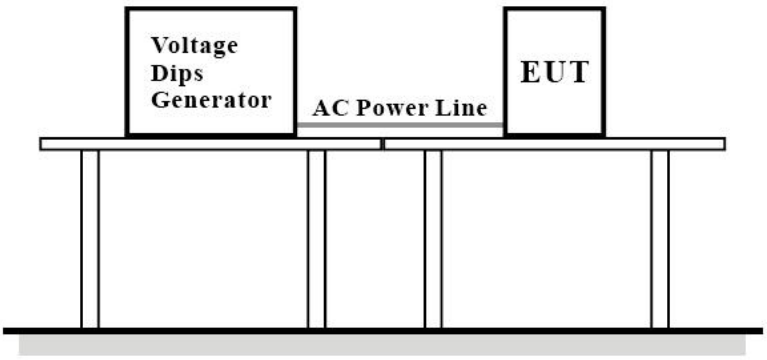
Inject Line	Frequency (MHz)	Voltage Level (V r.m.s.)	Performance Criterion
AC Port	0.15 - 80	3	A
Signal Line	0.15 - 80	3	N/A
Telec Ports	0.15 - 80	3	N/A
DC Ports	0.15 - 80	3	N/A
Note: A: No performance degradation during test.			

15. Voltage Dips And Interruptions (DIPS)

15.1. Test Specification

Test Port	:	input a.c. power port
Phase Angle	:	0°, 180°
Test cycle	:	3 times

15.2. Block Diagram of EUT Test Setup



15.3. Test Procedure

a. The Product and support units were located on a non-conductive table above ground floor.

b. Set the parameter of tests and then perform the test software of test simulator.

c. Conditions changes to occur at 0 degree crossover point of the voltage waveform.

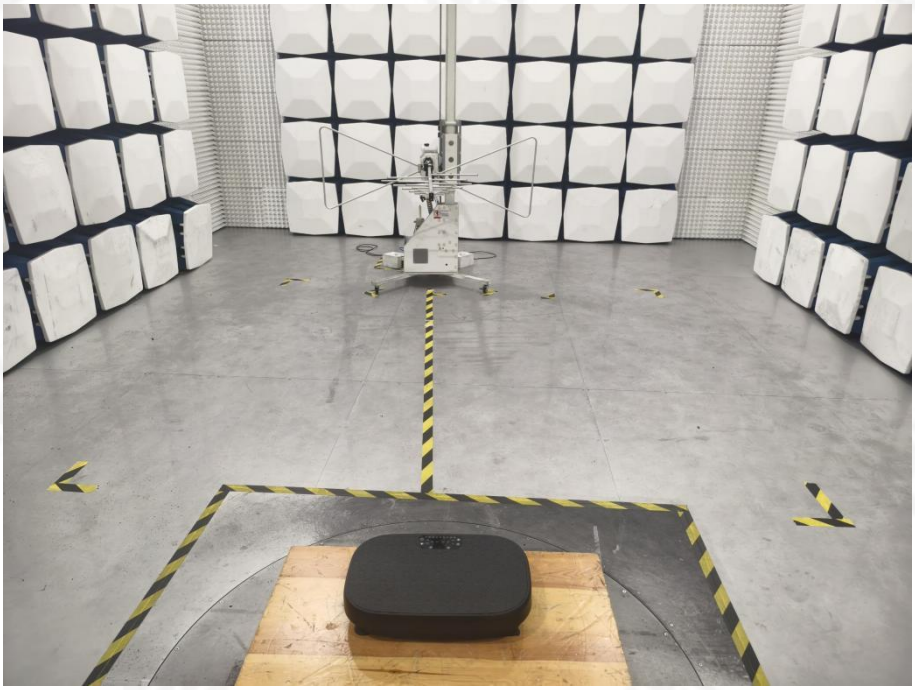
15.4. Test Result

Temperature：	24.0℃	Relative Humidity：	54.2%
Pressure：	101.4kPa	Test Mode：	BLE mode

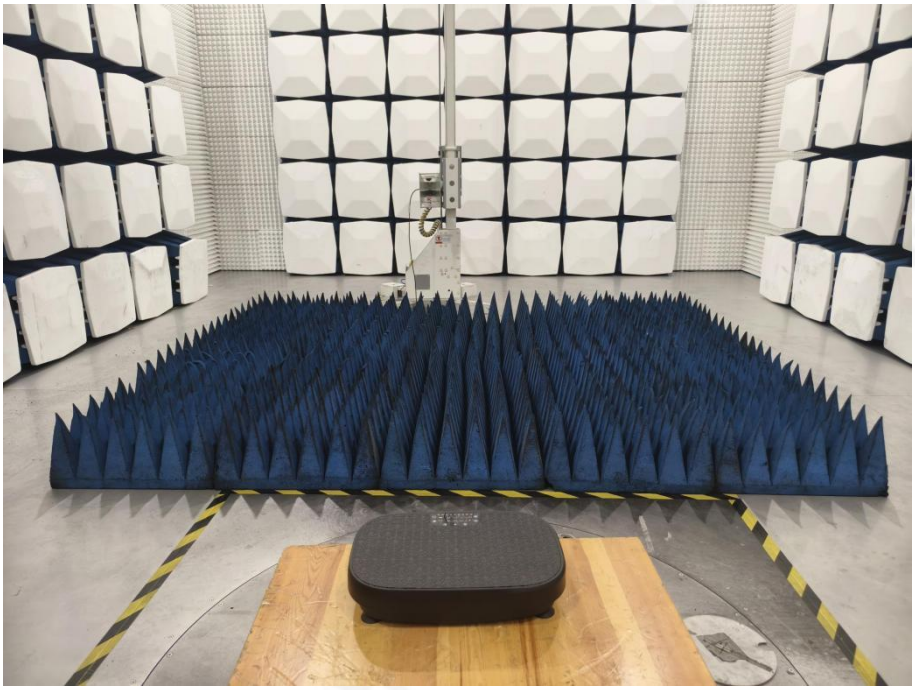
Voltage Dips:			
Test Level % U_T	**Voltage dips in % U_T**	**Duration (ms)**	**Performance Criterion**
0	100	10	A
0	100	20	A
70	30	500	A
Voltage Interruptions:			
0	100	5000	C
Note: A: No performance degradation during test. B: During the test, the EUT shut down, after the test, it reset by itself. C: During the test, the EUT shut down, after the test, it reset by user.			

16. Photos Of Test Setup

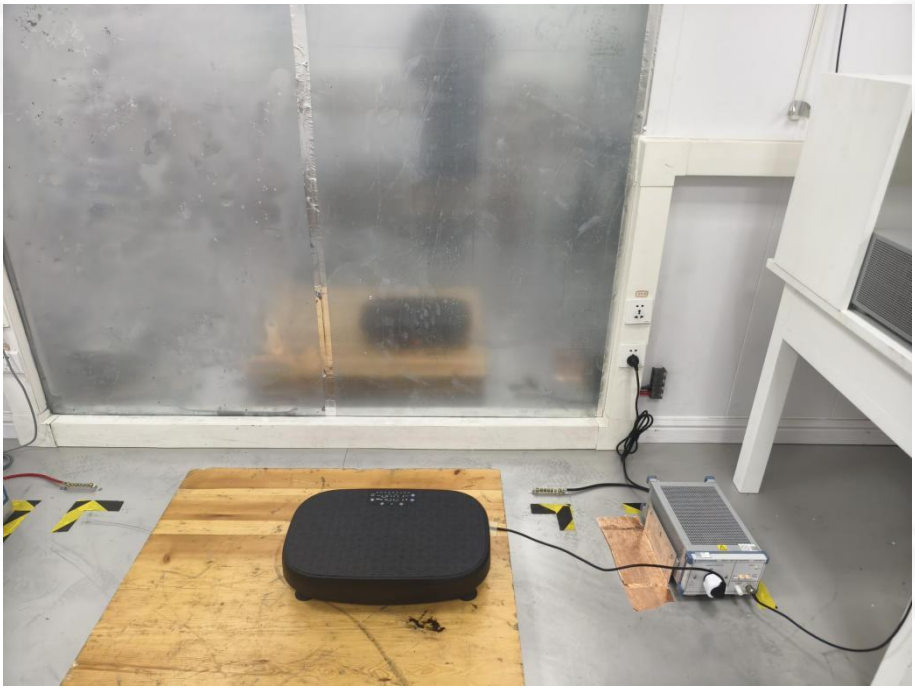
RE



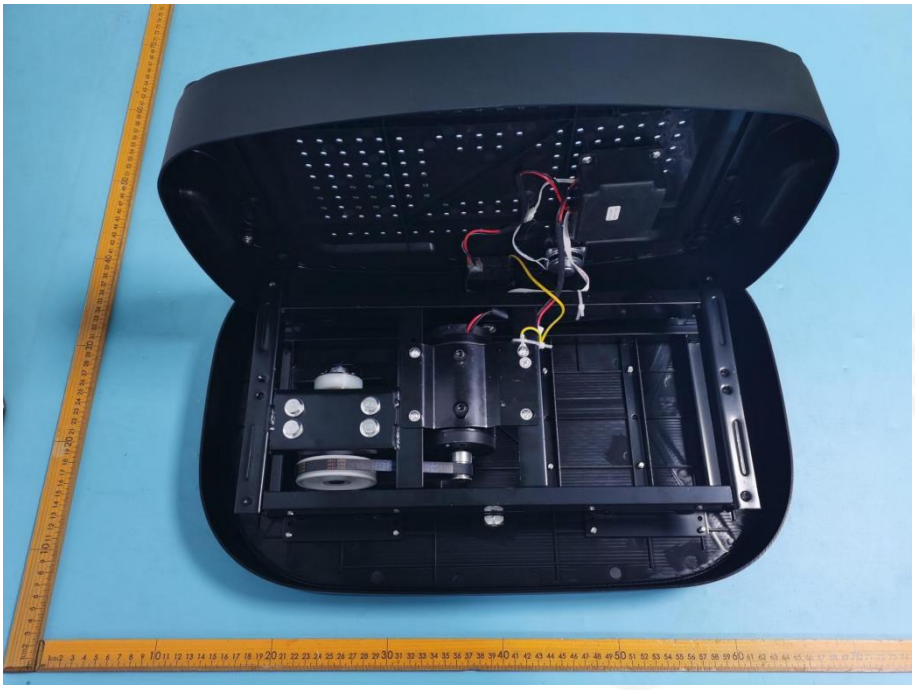
RE(Above 1GHz)

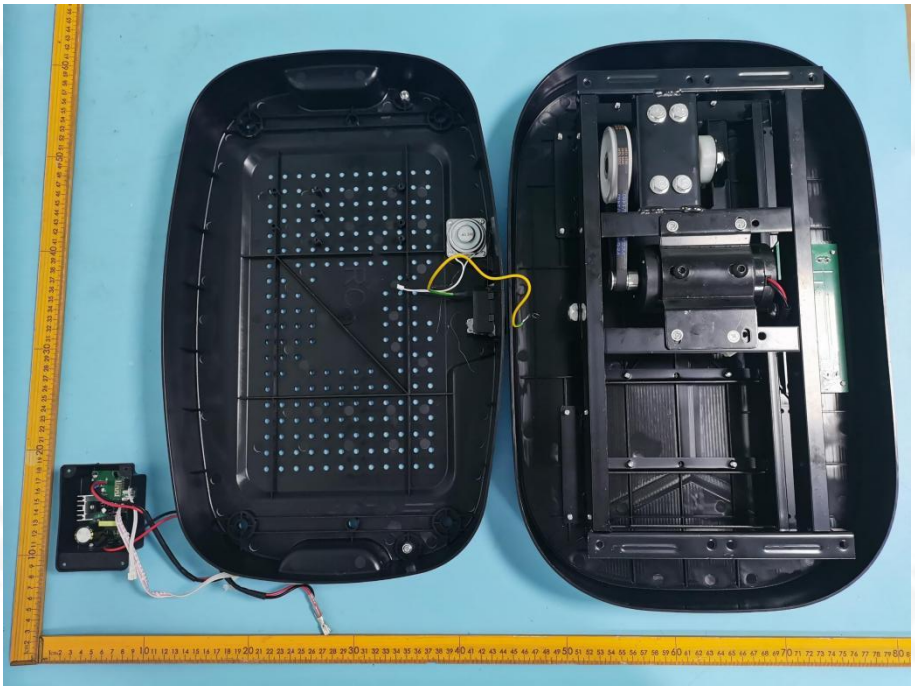


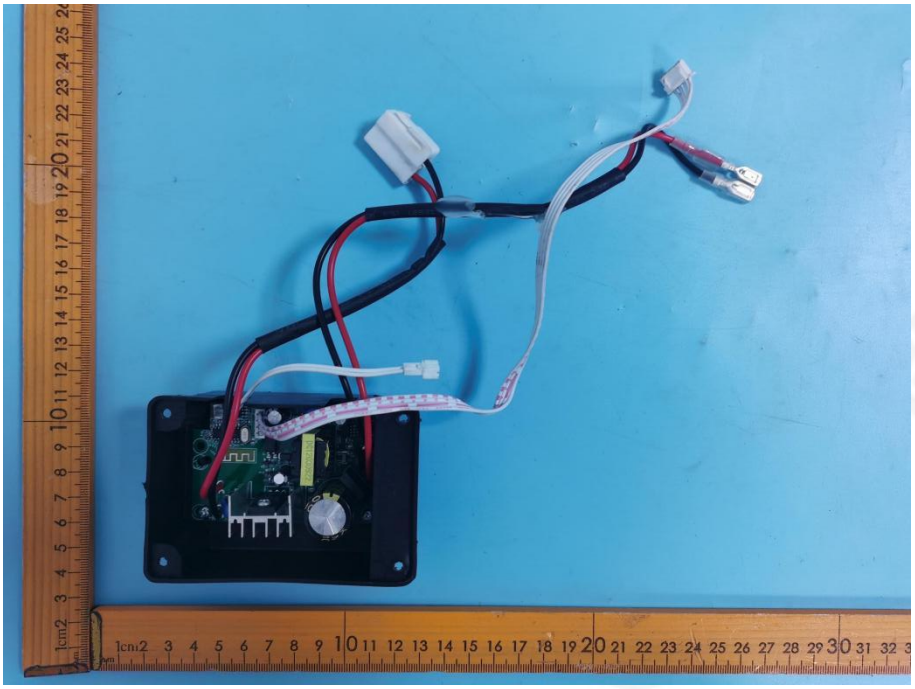
CE

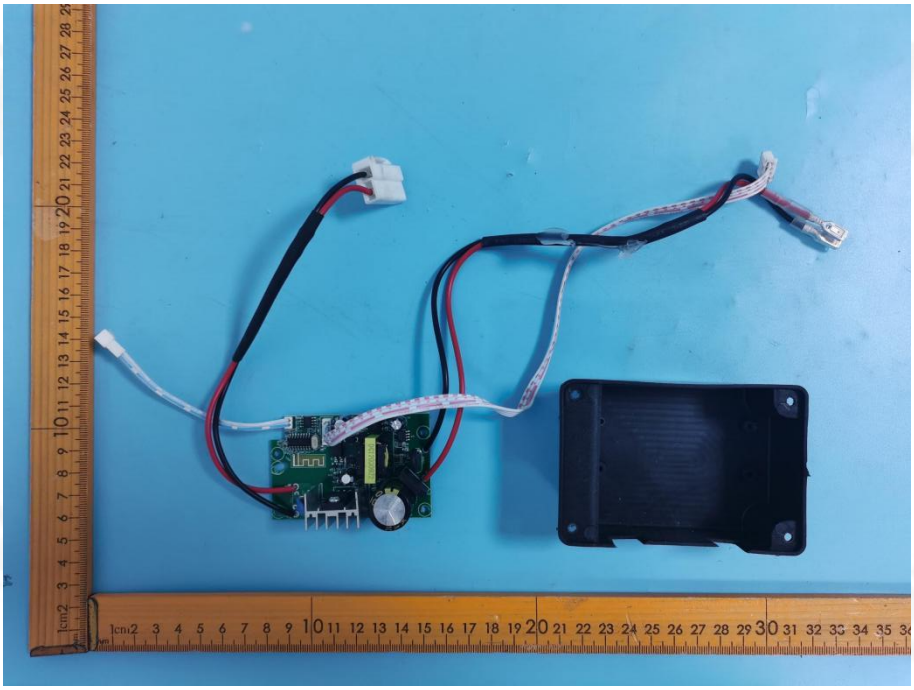


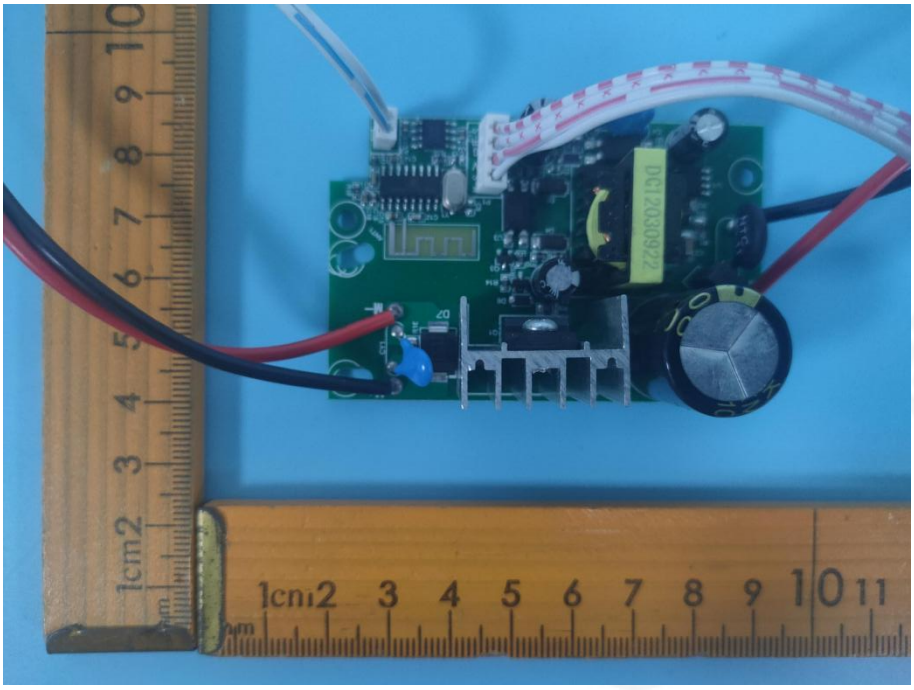
17. EUT Photographs

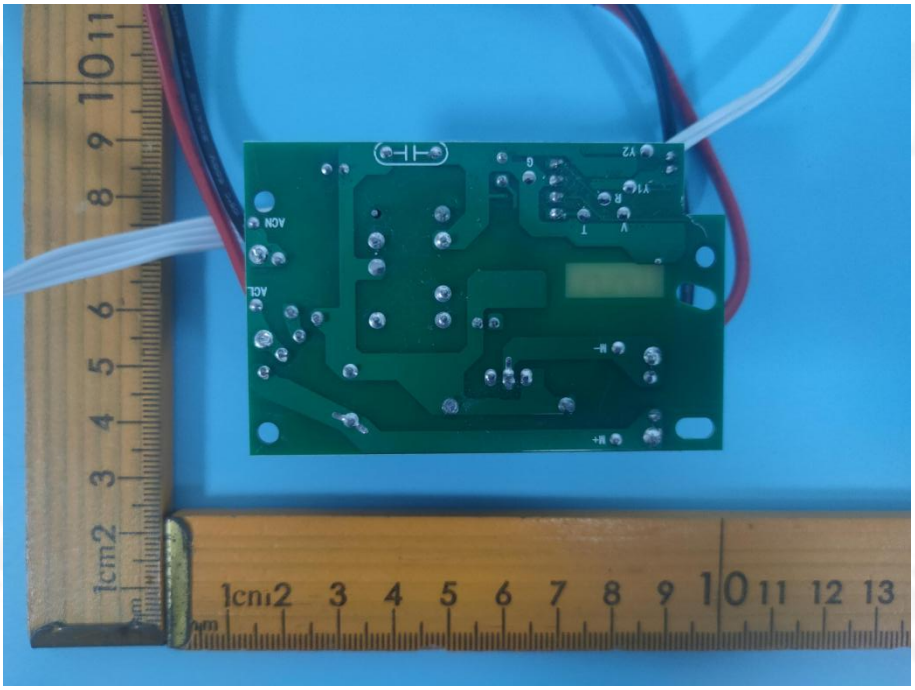


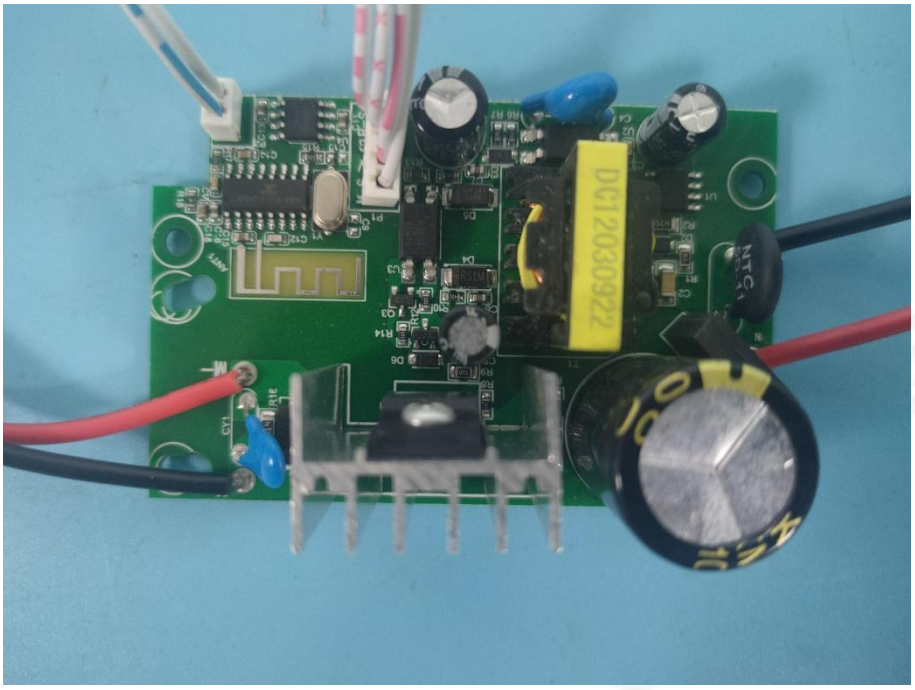


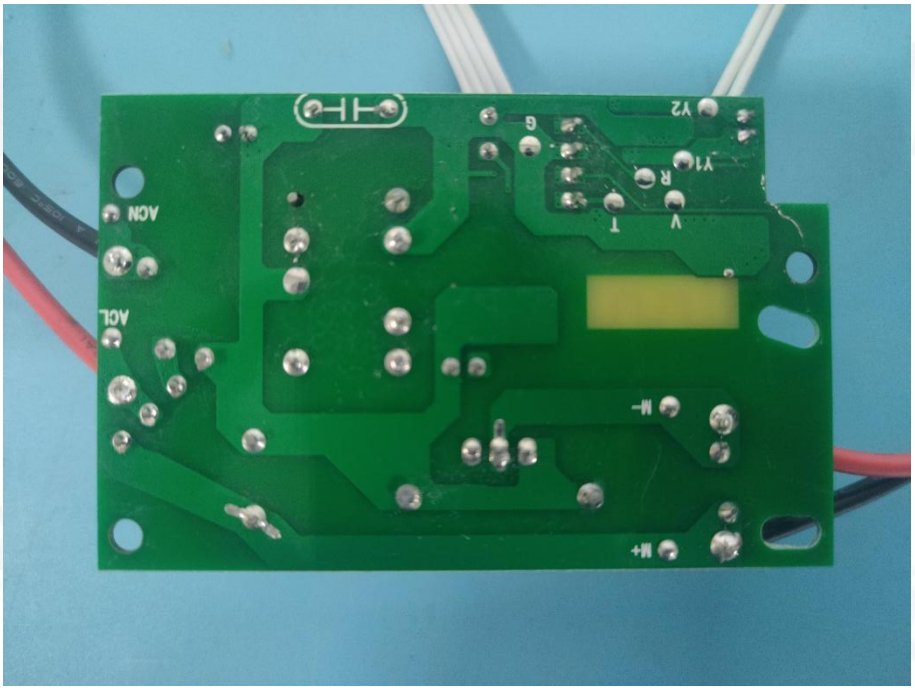


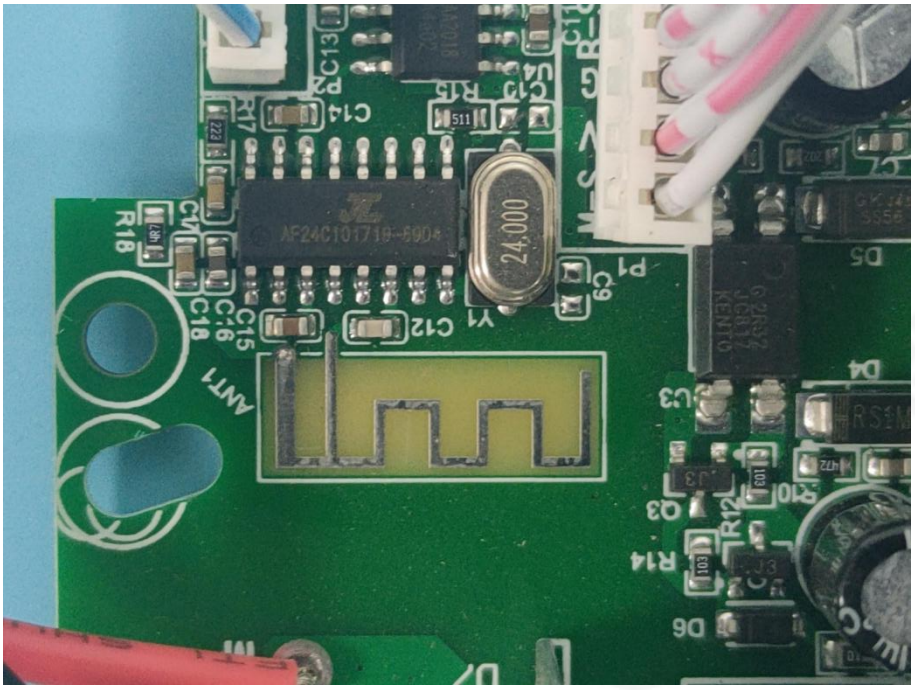












End of report