
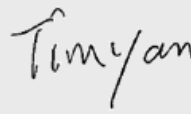


Test report No: 4907809.50

## TEST REPORT

### FCC Rules&Regulations 47 CFR Chapter I - Part 15

Identification of item tested	Refrigerator
Trademark	BLUETTI
Model and /or type reference	F045D
Features	Adaptor input: 100-240VAC 50/60Hz, Refrigerator input: 12/24VDC, Rated power(Fridge): 65W, Rated power(Making ice): 140W
Applicant's name / address	SHENZHEN POWEROAK NEWENER CO., LTD F19, BLD No.1, Kaidaer Tongsha Rd No.168, Xili Street, Nanshan Shenzhen China
Test method requested, standard	FCC Rules and Regulations 47 CFR Chapter I Part 15 Subpart B: 2024; ANSI C63.4: 2014
Verdict Summary	COMPLIANCE
Tested by (name & signature)	Kenny Liang 
Approved by (name & signature)	Tim Yan 
Date of issue	2024-11-13
Report template No	TRF_EMCC 2017-06-FCC_Part15B

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## GENERAL CONDITIONS

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
5. This report will not be used for social proof function in China market.

## UNCERTAINTY

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For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%. Refer to the Annex 1 for further information.

## ENVIRONMENTAL CONDITIONS

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The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

## POSSIBLE TEST CASE VERDICTS

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Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

## DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

<input checked="" type="checkbox"/> Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.			
<input type="checkbox"/> Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.			
Decimal separator used in this report	<input type="checkbox"/>	Comma (,)	<input checked="" type="checkbox"/> Point (.)

## ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
DUT	: Device Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
$U_N$	: Nominal voltage
Tx	: Transmitter
Rx	: Receiver
N/A	: Not Applicable
N/M	: Not Measured
RGP	: Reference Ground Plane

## DOCUMENT HISTORY

Report nr.	Date	Description
4907809.50	2024-11-13	First release.

## REMARKS AND COMMENTS

The Equipment Under Test (EUT) / Device Under Test (DUT) as described in this report complies with the stated requirements.

## 1 GENERAL INFORMATION

### 1.1 General Description of the Item(s)

Description of the item .....	Refrigerator
Trademark .....	BLUETTI
Model / Type number .....	F045D
Ratings .....	Adaptor input: 100-240VAC 50/60Hz, Refrigerator input: 12/24VDC, Rated power(Fridge): 65W, Rated power(Making ice): 140W
Highest internal frequency.....	Less than 108 MHz
Manufacturer.....	Same as applicant
Factory .....	Same as applicant

Rated power supply .....	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	<input checked="" type="checkbox"/>	AC: 100–240 V, 50/60 Hz for adaptor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 12/24 V					
	<input type="checkbox"/>	Battery:					
Mounting position.....	<input checked="" type="checkbox"/>	Table top equipment					
	<input type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test is refrigerator which intended for residential use, the product contains electronic control circuitry. Hence, model F045D was chosen for full test.

Copy of marking plate:
No provide.

## 1.2 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

<input checked="" type="checkbox"/>	Residential (domestic) environment.
<input checked="" type="checkbox"/>	Commercial and light-industrial environment.
<input type="checkbox"/>	Industrial environment.

## 1.3 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China FCC Designation Number: CN1324; ISED CAB identifier: CN0130
Date of receipt of test item	2024-04-11
Date (s) of performance of tests	2024-04-11 to 2024-08-23

## 1.4 Classification

The device under test (DUT) is classified as:

<input type="checkbox"/>	Class A	A digital device that is marketed for use in a commercial, industrial or business environment, exclusive of a device which is marketed for use by the general public or is intended to be used in the home.
<input checked="" type="checkbox"/>	Class B	A digital device that is marketed for use in a residential environment notwithstanding use in commercial, business and industrial environments. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public.

## 1.5 Product labelling

According to section FCC Part 15.19 the following label shall be permanently fixed to devices:

<p>"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:</p> <p>(1) This device may not cause harmful interference and</p> <p>(2) This device must accept any interference received, including interference that may cause undesired operation".</p>
---

## 1.6 User information for Part 15B devices

The information to the user mentioned in the user manual for Part 15 devices shall include:

- For a Class B digital device the text mentioned in section 15.105(b) shall be mentioned in the user manual:

*“This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- *Reorient or relocate the receiving antenna,*
- *Increase the separation between the equipment and the receiver,*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected,*
- *Consult the dealer or an experienced radio/TV technician for help.*

## 2 DESCRIPTION OF TEST SETUP

### 2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Description of the operating mode	Used for testing
1	Fridge mode with USB Maxiumu output @AC power supply	<input checked="" type="checkbox"/>
2	Making ice mode with USB Maxiumu output @ AC power supply	<input checked="" type="checkbox"/>
3	Fridge mode with USB Maxiumu output @DC power supply	<input checked="" type="checkbox"/>
4	Making ice mode with USB Maxiumu output @ DC power supply	<input checked="" type="checkbox"/>
5	Fridge mode with USB Maxiumu output @ powered by internal rechargeable battery	<input checked="" type="checkbox"/>
6	Making ice mode with USB Maxiumu output @ powered by internal rechargeable battery	<input checked="" type="checkbox"/>
7	Internal rechargeable battery charging mode	<input checked="" type="checkbox"/>
Supplemental information: ---		

### 2.2 Port(s) of the EUT

Port name and description	Connected to / Termination	Cable		
		Length used during test [m]	Attached during test	Shielded
AC mains	AC network	1.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
Supplemental information: ---				

### 2.3 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
Supplemental information: ---			

### 2.4 Test Configuration / Block diagram used for tests

Refer to Annex 3.



### 3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

#### 3.1 Standards

Standard	Year	Description
FCC Part15B	2024	Federal Communications Commission (FCC) – Radio Frequency Devices
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

#### 3.2 Overview of results

FCC Rules and Regulations 47 CFR Chapter I - Part 15 Subpart B				
Section	Requirement – Test case	Basic standard	Verdict	Remark
15.107	Conducted emissions	ANSI C63.4:2014	PASS	---
15.109	Radiated emissions (30-1000 MHz)	ANSI C63.4:2014	PASS	---
15.109	Radiated emissions (above 1 GHz)	ANSI C63.4:2014	N/A	See 1)
<b>Supplementary information:</b>				
1) The highest internal frequency of the DUT is less than 108 MHz.				
2) This device is powered by battery and could not connected to the mains.				

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

## 4 TEST RESULTS

4.1	Conducted emissions	VERDICT: PASS
-----	---------------------	---------------

Standard	FCC Rules & Regulations 47 CFR Chapter I - Part 15 Subpart B Clause 15.107
Basic standard	ANSI C63.4

### Limits

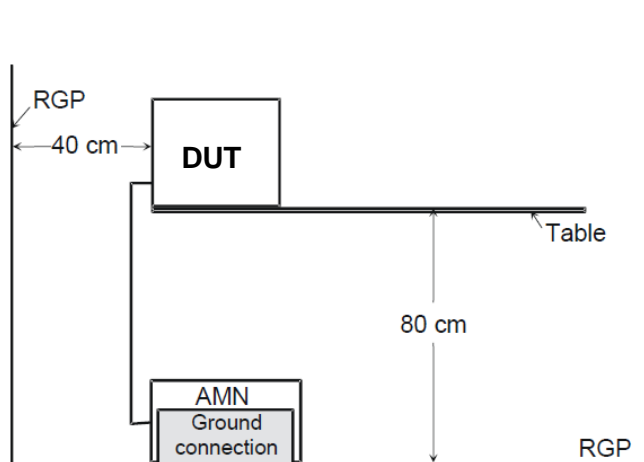
47 CFR Chapter I - Part 15 Subpart B Clause 15.107(a) / Class B				
Frequency range [MHz]	Limit: QP [dB(μV) <sup>1)</sup>	Limit: AV [dB(μV) <sup>1)</sup>	IF BW	Detector(s)
0.15 - 0.50	66 - 56 <sup>2)</sup>	56 - 46 <sup>2)</sup>	9 KHz	QP, AV
0.50 - 5.0	56	46	9 KHz	QP, AV
5.0 - 30	60	50	9 KHz	QP, AV
<sup>1)</sup> At the transition frequency, the lower limit applies.				
<sup>2)</sup> The limit decreases linearly with the logarithm of the frequency.				

## Measurement procedure

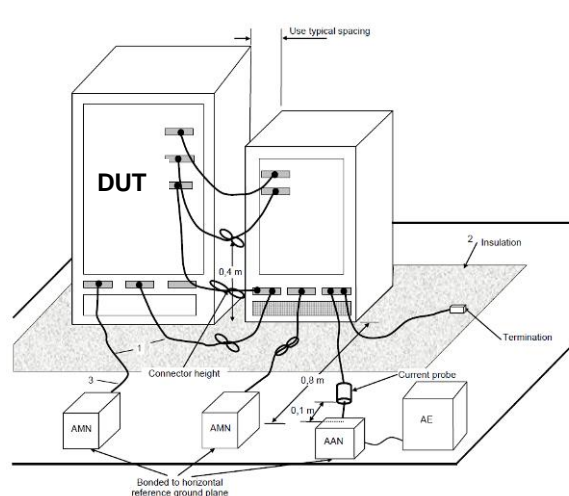
In accordance with section 15.107 the conducted radio frequency disturbance voltages between each of the power lines (live and neutral) and the ground terminal have been determined over the frequency range from 150 kHz to 30 MHz using test configuration described at chapter 2. The test set-up was in accordance with the requirements of ANSI C63.4:2014.

The initial step in collecting conducted data was a peak scan measurement over the frequency range of interest. The significant peaks were marked and these peaks were re-measured using a quasi peak and average detectors.

This procedure was implemented by using EMI test receiver and control software (see used equipment section).



Test setup for "Table-top" DUT.



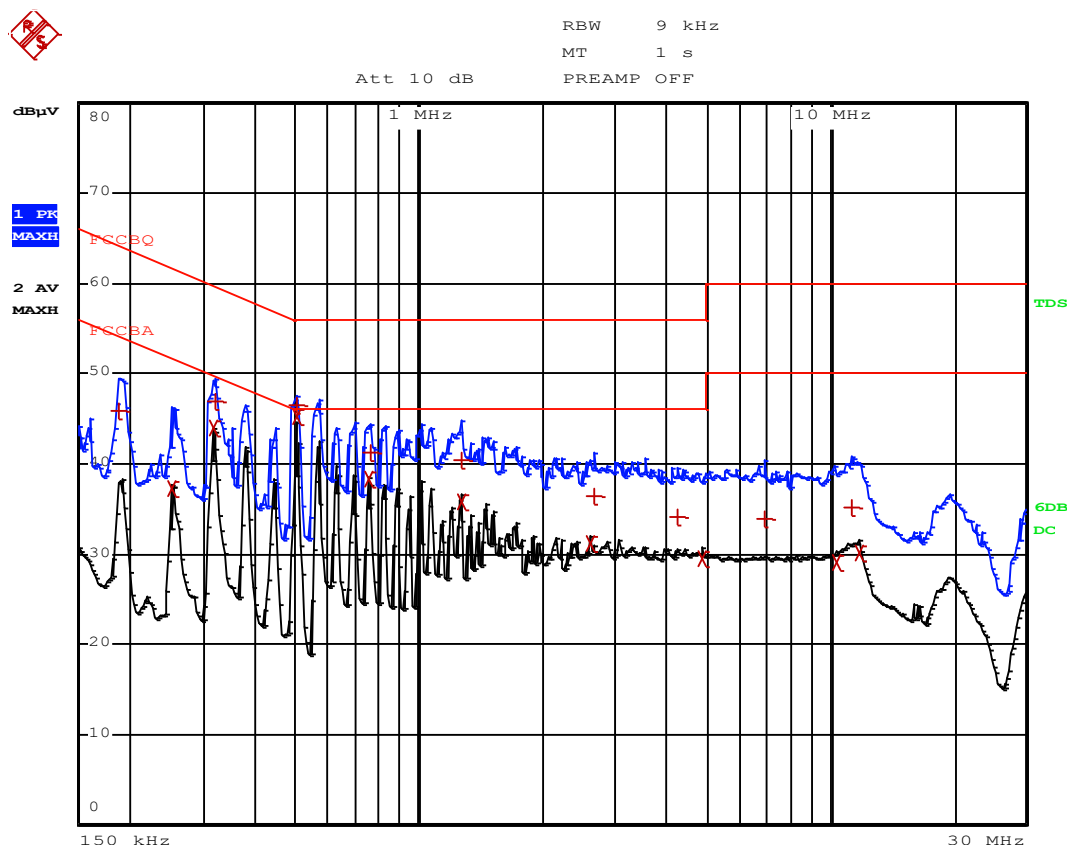
Test setup for "Floor-standing" DUT.

Port under test		Terminal							
<input checked="" type="checkbox"/>	AC mains input power	<input checked="" type="checkbox"/>	N	<input checked="" type="checkbox"/>	L1	<input type="checkbox"/>	L2	<input type="checkbox"/>	L3
<input type="checkbox"/>	DC input power	<input type="checkbox"/>	Positive (+)			<input type="checkbox"/>	Negative (-)		
Test method applied		<input checked="" type="checkbox"/>	Artificial mains network						
		<input type="checkbox"/>	Voltage probe						
Test setup		<input checked="" type="checkbox"/>	Table top	<input type="checkbox"/>	Artificial hand applied				
		<input type="checkbox"/>	Floor standing	<input type="checkbox"/>	Other:				
		Refer to the Annex 2 for test setup photo(s).							
Operating mode(s) used		Mode 1, 2, 7							
Envirment condition (temperature; humidity)		23.0 °C; 45.0 %							
Remark		---							

Model	F045D
Operation Mode	Mode 2 (the worst case)
Test voltage	120 Vac, 60 Hz

## Results

Live



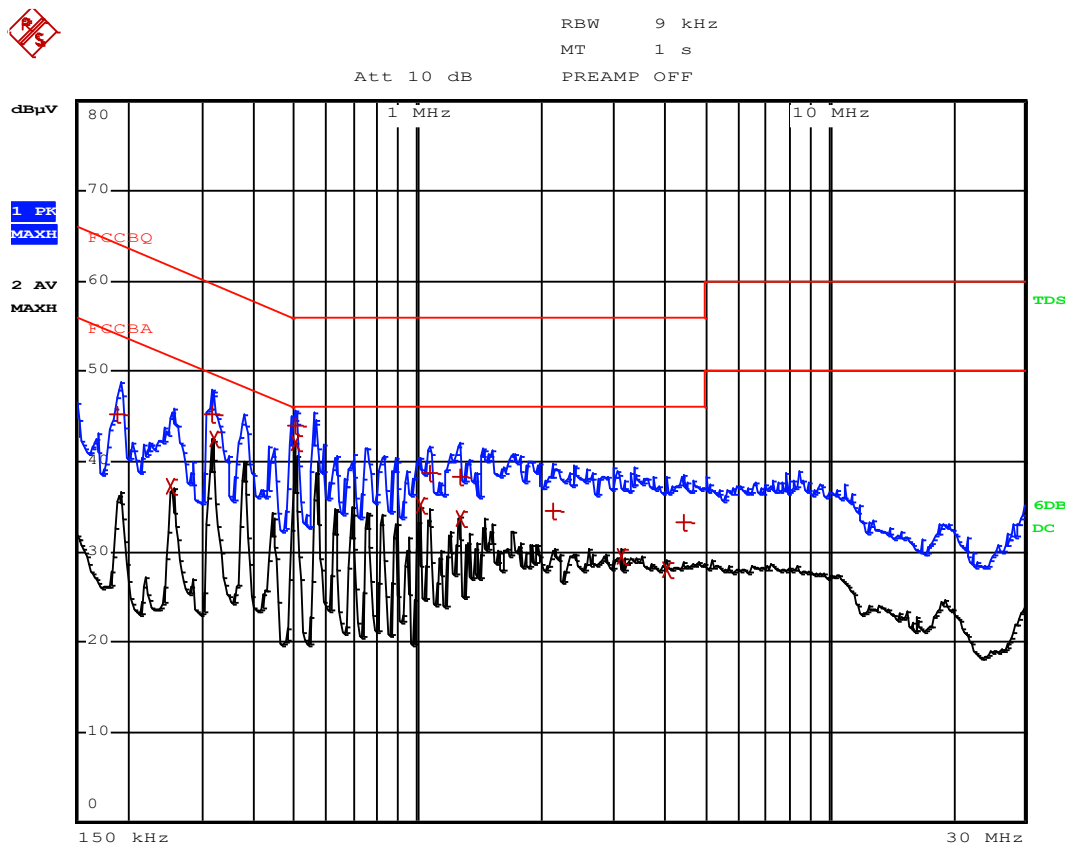
EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCCBQ		
Trace2:	FCCBA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	506 kHz	45.24	-0.75
2 Average	314 kHz	44.04	-5.81
2 Average	758 kHz	38.38	-7.61
1 Quasi Peak	506 kHz	46.49	-9.50
2 Average	1.274 MHz	35.81	-10.18
1 Quasi Peak	318 kHz	46.82	-12.93
2 Average	250 kHz	37.17	-14.58
1 Quasi Peak	766 kHz	41.23	-14.77
2 Average	2.618 MHz	31.19	-14.80
1 Quasi Peak	1.274 MHz	40.44	-15.55
2 Average	4.914 MHz	29.51	-16.48
1 Quasi Peak	190 kHz	45.88	-18.15
1 Quasi Peak	2.682 MHz	36.42	-19.57
2 Average	11.842 MHz	30.21	-19.78

Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

## Neutral



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCCBQ		
Trace2:	FCCBA		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	506 kHz	42.04	-3.95
2 Average	318 kHz	42.59	-7.16
2 Average	1.014 MHz	35.15	-10.84
1 Quasi Peak	506 kHz	43.92	-12.07
2 Average	1.274 MHz	33.65	-12.34
2 Average	254 kHz	37.31	-14.30
1 Quasi Peak	314 kHz	45.24	-14.61
2 Average	3.122 MHz	29.46	-16.53
1 Quasi Peak	1.078 MHz	38.75	-17.24
1 Quasi Peak	1.27 MHz	38.29	-17.70
2 Average	4.026 MHz	27.95	-18.04
1 Quasi Peak	190 kHz	45.25	-18.78
1 Quasi Peak	2.15 MHz	34.59	-21.40
1 Quasi Peak	4.462 MHz	33.26	-22.73

### Remarks:

- 1) Level (final measurement) = received value + transducer (Lisn+cable)
- 2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

<b>4.2 Radiated emissions</b>	<b>VERDICT: PASS</b>
-------------------------------	----------------------

Standard	FCC Rules & Regulations 47 CFR Chapter I - Part 15 Subpart B Clause 15.109
Basic standard(s)	ANSI C63.4
Test method	Antenna method according to ANSI C63.4 standard.

#### Field strength limits

47 CFR Chapter I - Part 15 Subpart B Clause 15.109(a) / Class B				
Frequency [MHz]	Limit: QP@3m.[dB(μV/m) <sup>1)</sup>	Limit: QP@3m.[(μV/m) <sup>1)</sup>	IF BW	Detector
30 - 88	40.0	100	120 KHz	QP
88 - 216	43.5	150	120 KHz	QP
216 - 960	46.0	200	120 KHz	QP
960 - 1000	54.0	500	120 KHz	QP
Frequency [GHz]	PK@3m.[dB(μV/m) <sup>2)</sup>	AV@3m.[dB(μV/m)]	IF BW	Detector
above 1 GHz	74	54 (500 μV/m)	1 MHz	PK. CAV
<sup>1)</sup> At the transition frequency. the lower limit applies. <sup>2)</sup> Above 1 GHz. the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test (section 15.35.b).				

## Measurement procedure

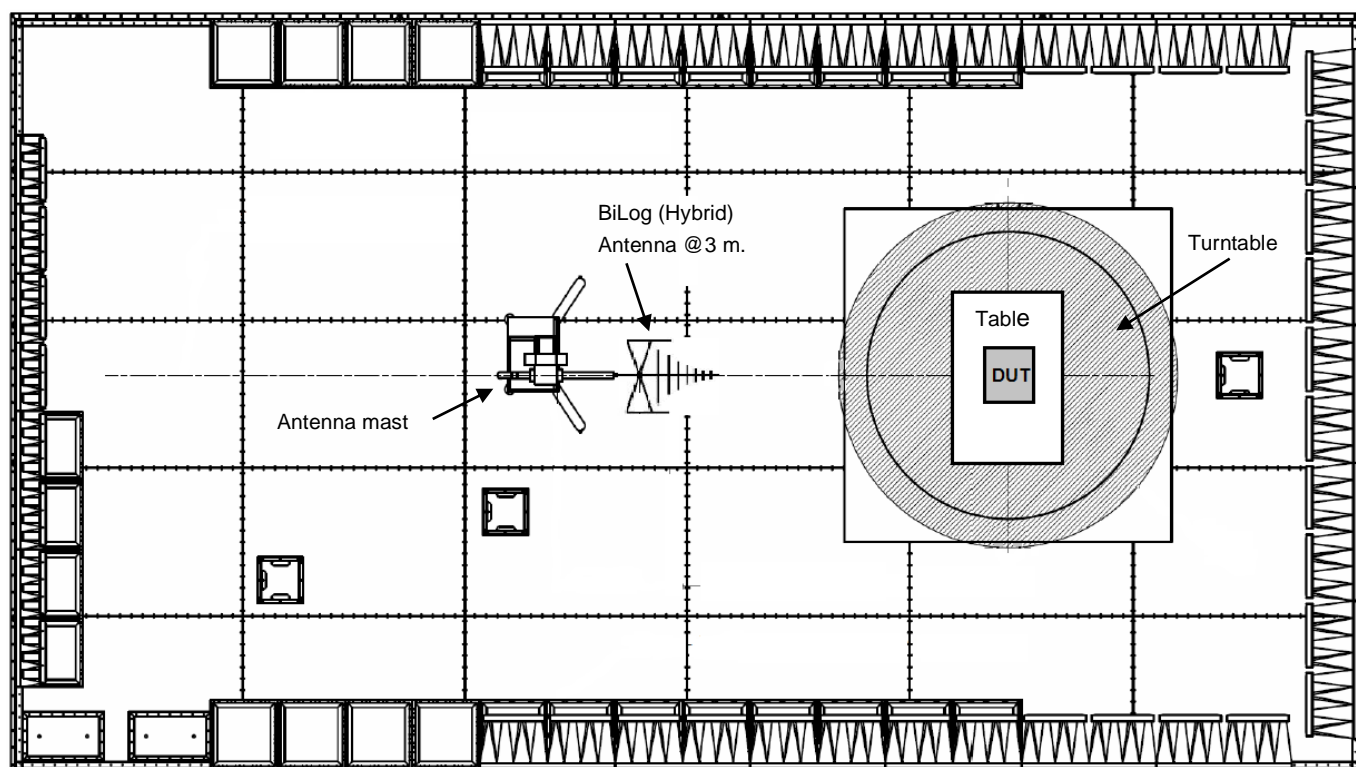
The field strength level of radiated emissions from Class B digital device has been determined according to the section 15.109 (a) of 47 CFR.

Measurements have been performed in a semi anechoic chamber at 3 meter measurement distance using the test setup described at chapter 2. The resulting field strength was calculated using the correction factors for cable loss and antenna.

The measurements have been conducted in accordance with the methodology as described in ANSI C63.4:2014, as required by sections 15.31 and 15.33 of 47CFR.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1000
108 to 500	2000
500 to 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz. whichever is lower.

Test setup for “Radiated emission” measurements at frequency range 30-1000 MHz is shown below.



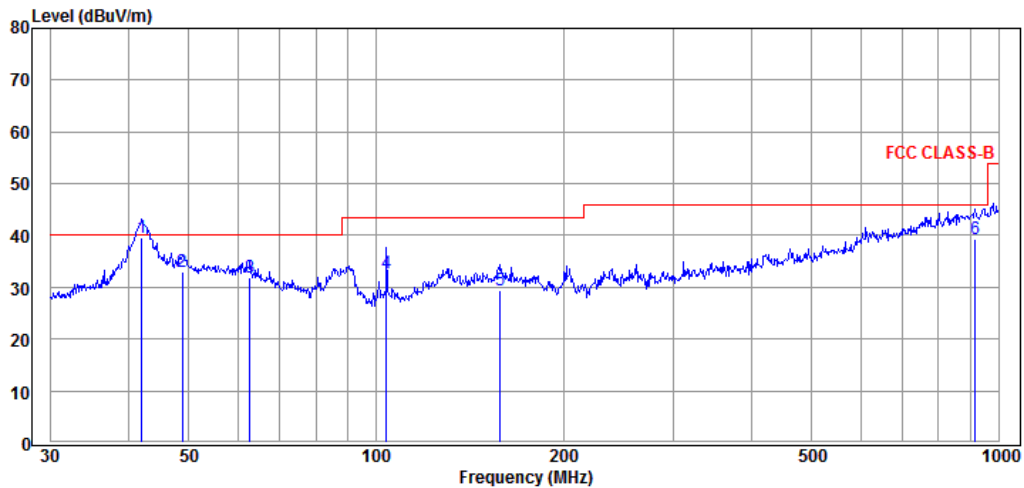
Port under test	Enclosure	
Test method applied (below 1 GHz)	<input checked="" type="checkbox"/>	OATS or SAC with measurement distance [m]: 3 m.
	<input type="checkbox"/>	OATS or SAC with measurement distance [m]: 5 m.
	<input type="checkbox"/>	OATS or SAC with measurement distance [m]: 10 m.
Test method applied (above 1 GHz)	<input checked="" type="checkbox"/>	Absorber-lined OATS or SAC with measurement distance [m]: 3 m.
	<input type="checkbox"/>	Absorber-lined OATS or SAC with measurement distance [m]: 1 m.
Test setup	<input checked="" type="checkbox"/>	Equipment on a table of 80 cm height
	<input type="checkbox"/>	Equipment on the floor (insulated from ground plane)
	<input type="checkbox"/>	Other:
	Refer to the Annex 2 for test setup photo(s).	
Operating mode(s) used	Mode 1, 2, 3, 4, 5, 6, 7	
Envirment condition (temperature; humidiry)	23,0 °C; 45,0 %	
Remark	---	



Model	F045D
Operation Mode	Mode 2 (the worst case)
Test voltage	120 Vac, 60 HZ

## Results

### Horizontal



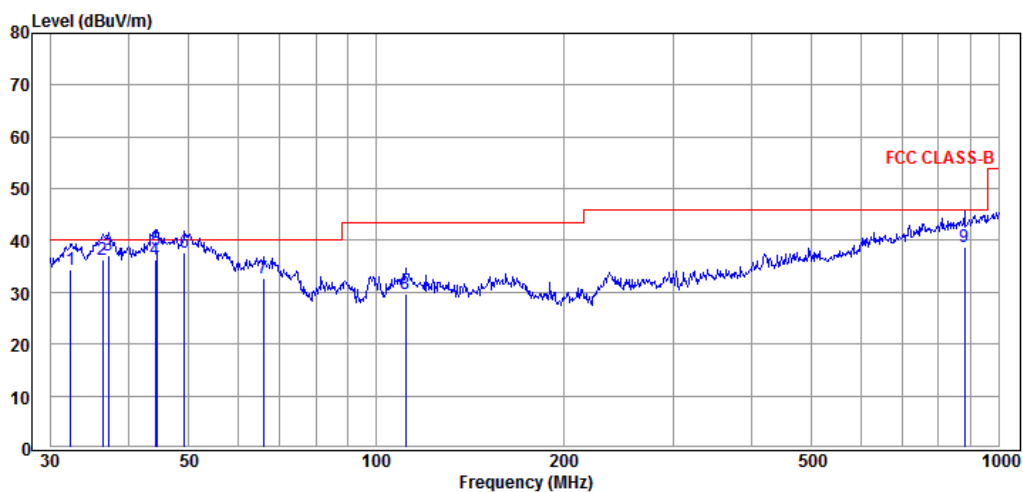
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
42.01	19.60	20.12	39.72	40.00	0.28
48.84	12.54	20.52	33.06	40.00	6.94
62.65	12.20	19.69	31.89	40.00	8.11
103.81	16.03	16.67	32.70	43.50	10.80
158.11	8.23	21.15	29.38	43.50	14.12
916.07	5.42	33.77	39.19	46.00	6.81

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

## Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
32.29	15.39	18.88	34.27	40.00	5.73
36.38	16.79	19.48	36.27	40.00	3.73
37.16	17.59	19.58	37.17	40.00	2.83
44.12	15.98	20.32	36.30	40.00	3.70
44.43	17.79	20.34	38.13	40.00	1.87
49.19	17.19	20.55	37.74	40.00	2.26
65.80	13.55	19.17	32.72	40.00	7.28
111.35	12.11	17.65	29.76	43.50	13.74
881.41	5.25	33.46	38.71	46.00	7.29

Remarks:

- 1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
- 2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

## 5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Refer to documents 4907809\_ External photo and 4907809\_Internal photo.

## ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurement uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement	Uncertainty
Mains disturbance voltage (150 kHz – 30MHz)	2.82 dB
Radiated EM field emission (30 MHz– 300 MHz)	4.72 dB
Radiated EM field emission (300 MHz– 1000 MHz)	4.88 dB

## ANNEX 2 – USED EQUIPMENT

### Radiated EM Field emission (30 – 1000 MHz)

Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
3m Chamber	ETS	FACT3-2.0	CT000344-1100	G/L856	2025/03/25
EMI receiver	R&S	ESCI	101205	G/L858	2025/06/23
Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9163	506	G/L864	2025/06/11
Test software	AUDIX	e3	Version 6.130520	---	---

### Continuous disturbances conducted (150 kHz to 30 MHz)

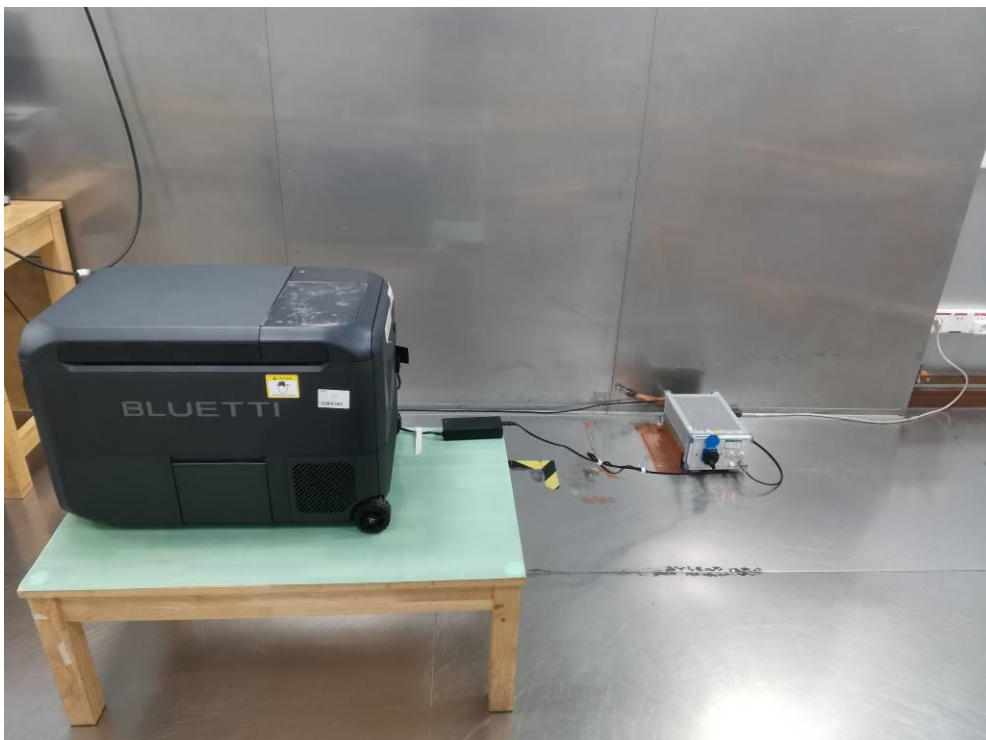
Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
Shielding Room	Changzhou Feite	/	/	G/L861	2027/03/24
EMI Receiver	R&S	ESCI	101206	G/L857	2025/06/23
LISN	R&S	ENV216	101337	G/L859	2025/06/23

## ANNEX 3 - TEST PHOTOS

### Radiated emissions (30 - 1000 MHz)



### Conducted emissions



--- END ---