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Test report No: 4909377.51

TEST REPORT
Radio Spectrum Matters (RF)

Identification of item tested	Remote controller
Trademark	MEDIACOUS
Model and /or type reference	ME-FL01
FCC ID	2BDTY-MEFL01231129
Features	3Vdc
Applicant´s name / address	Foshan Yunlu Lighting Factory No. 1, Jiebei Road, Nanhai National Eco-industrial Zone, Danzao Town, Nanhai District, Foshan City, Guangdong Province, P. R. China
Test method requested, standard	FCC CFR Title 47 Part15 Subpart C Section 15.231
Verdict Summary	COMPLIANCE
Tested by (name & signature)	Johnny Bo 
Approved by (name & signature)	Tim Yan 
Date of issue	2023-12-19
Report template No	TRF_EMC 2017-06- FCC_Part15C_247

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GENERAL CONDITIONS

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

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%.

ENVIRONMENTAL CONDITIONS

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	-40 °C – 105 °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

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 tested	N/T

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☒	Comma (,)	☐	Point (.)

ABBREVIATIONS

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

EUT	:	Equipment 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
AM	:	Amplitude Modulation
PM	:	Pulse Modulation
HCP	:	Horizontal Coupling Plane
VCP	:	Vertical Coupling Plane
U_N	:	Nominal voltage
*T*x	:	Transmitter
*R*x	:	Receiver
N/A	:	Not Applicable
N/M	:	Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
4909377.51	2023-12-19	First release.

REMARKS AND COMMENTS

The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item .....:	Remote controller
Trademark.....:	MEDIACOUS
Model / Type number.....:	ME-FL01
FCC ID.....:	2BDTY-MEFL01231129
Ratings.....:	3Vdc
Manufacturer.....:	Same as applicant
Factory.....:	Same as applicant

The product contains wireless RF module and the characteristics of wireless module:

Operating frequency range(s).....:	433.92 MHz
Type of Modulation .....:	ASK
Antenna type.....:	Integral Antenna
Operating Temperature Range.....:	-40 – 85 ℃
Antenna gain.....:	3 dBi

			Reference poles				
Rated power supply .....:	Voltage and Frequency		L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☐	AC:	☐	☐	☐	☐	☐
	☐	DC:					
	☐	Battery: 3 Vdc					
Mounting position.....:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☒	Hand-held equipment					
	☐	Other: built-in					

Intended use of the Equipment Under Test (EUT)
The apparatus as supplied for the test is Remote controller luminaire intended for Commercial and light-industrial environment use and the product contains electronic control circuitry. Model ME-FL01 was chosen for full test.

Copy of marking plate:
No provide.

1.2 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;
Date of receipt of test item	2023-10-09
Date (s) of performance of tests	2023-10-09 to 2023-11-17
Test sample	Normal sample: ME-FL01 (lab on.4909377-1)

1.3 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):

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

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	Operating mode description	Used for methos	
		Conducted	Radiated
1	Continuous transmitting	☐	☒
2			
3			
4			
Supplemental information: ---			

2.2 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: ---			

2.3 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 CFR Title 47 Part 15 Subpart C Section 15.231	2023	Periodic operation in the band 40.66–40.70 MHz and above 70 MHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

3.3 Overview of results

FCC measurement			
Requirement – Test case	**Basic standard(s)**	**Verdict**	**Remark**
AC Power Line Conducted Emission	FCC 15.207	N/A	See 1)
Radiated Emissions	FCC 15.209	PASS	---
Dwell Time	FCC 15.231 (a)	PASS	---
20dB Bandwifth	FCC 15.231 (c)	PASS	---
Field Strength of the Fundamental Signal	FCC 15.231 (b)	PASS	---
Supplementary information: 1) The EUT is batter power supply.			

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 TRANSMITTER TEST RESULTS

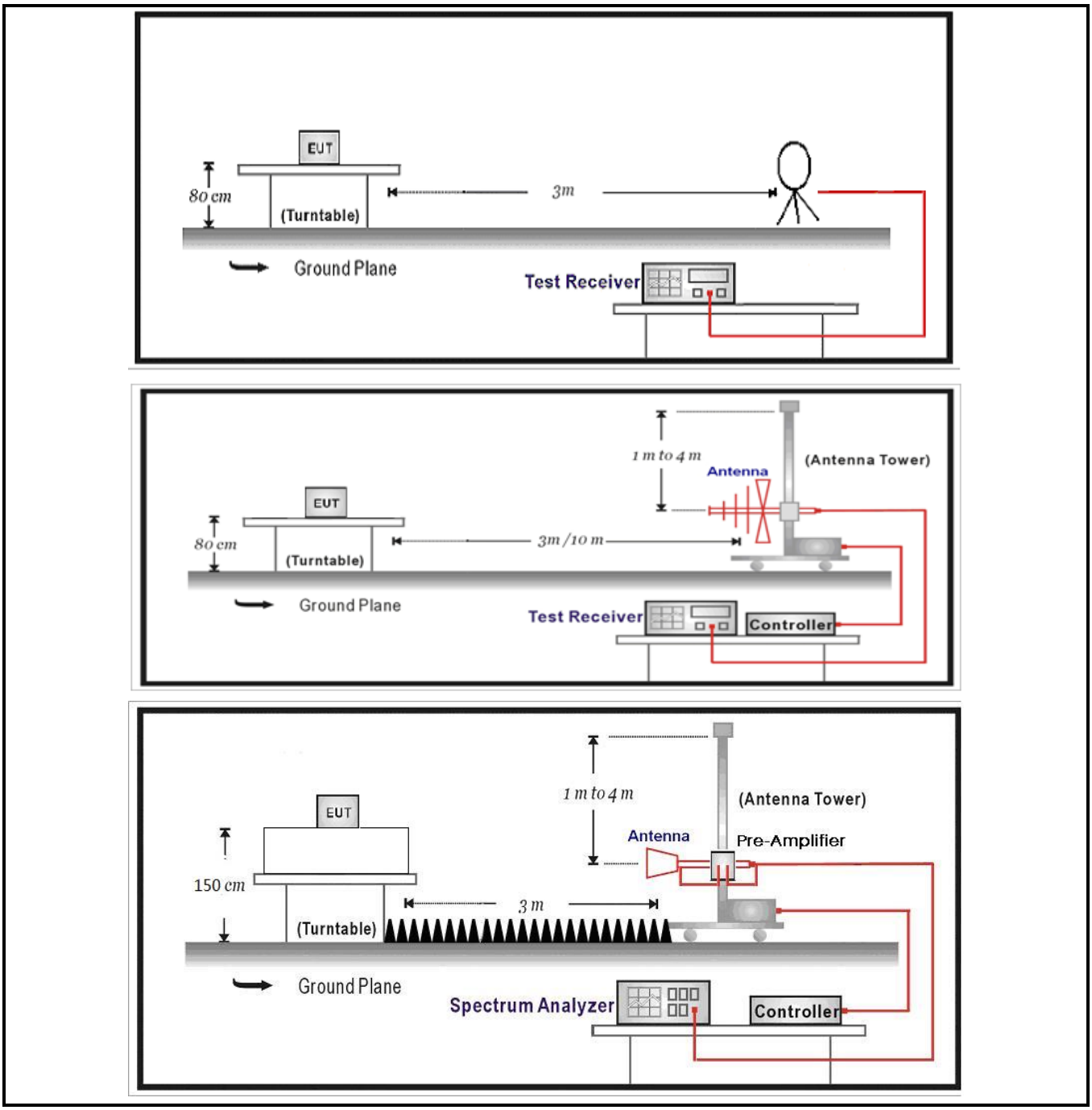
4.1 Radiated Emissions	VERDICT: PASS

Emissions Limit 15.209(a)			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 - 88	100	40	3(Note 2)
88 - 216	150	43.5	3(Note 2)
216 - 960	200	46	3(Note 2)
Above 960	500	54	3(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

Test Configuration



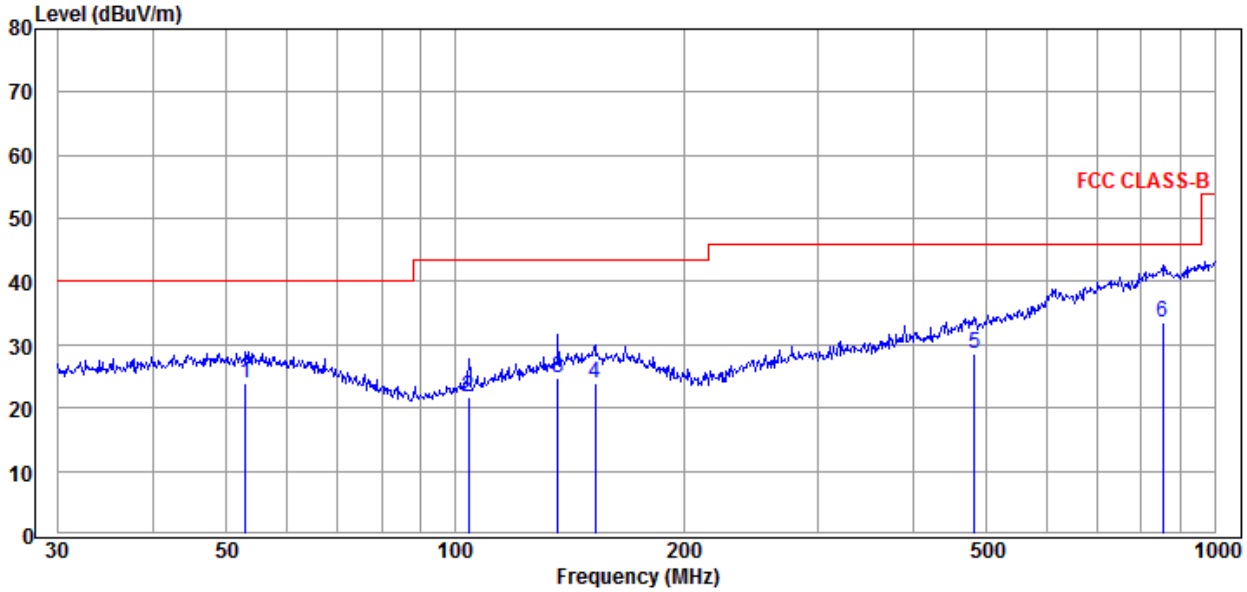
Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	1)The test frequency range, 9kHz~30MHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report. 2)The EUT are tested in three orientations. The record is the worst orientation which refer to the Annex 3 for test setup photo(s).	

Results of 30 – 1000 MHz

Operation Mode	Mode 1
Test voltage	120 Vac, 60Hz
BW	RBW= 120KHz, VBW=300KHz

Results
Horizontal



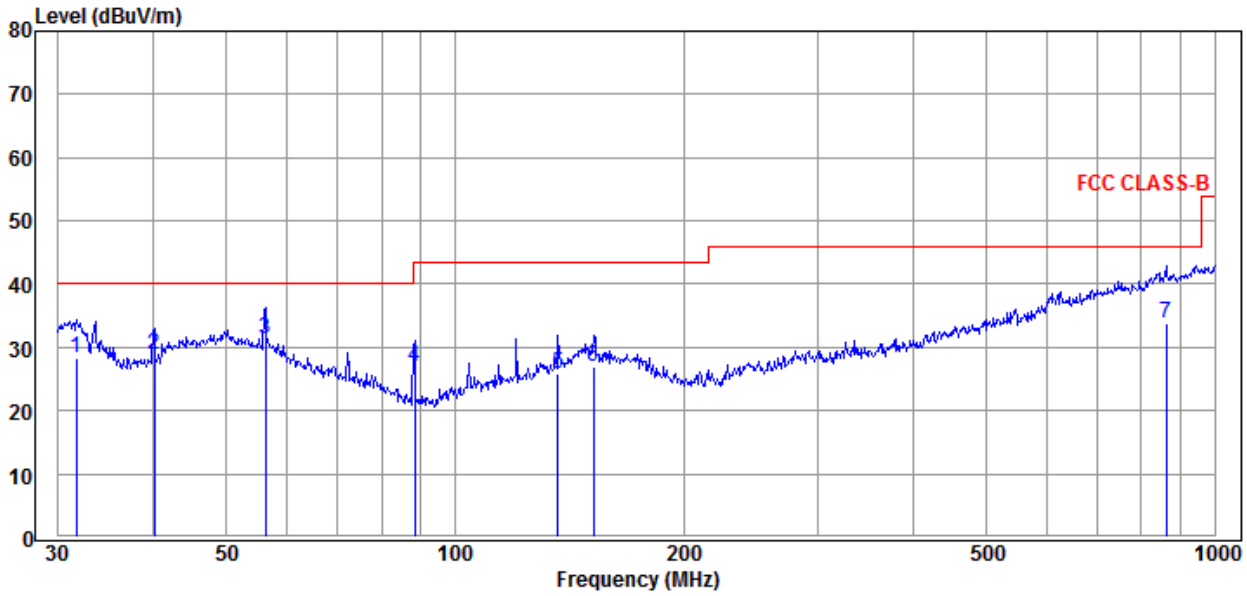
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
52.95	9.40	14.46	23.86	40.00	16.14
104.17	11.03	10.70	21.73	43.50	21.77
136.46	10.79	13.84	24.63	43.50	18.87
152.66	9.12	14.75	23.87	43.50	19.63
482.22	8.29	20.19	28.48	46.00	17.52
854.03	6.53	27.02	33.55	46.00	12.45

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)
31.73	15.28	13.04	28.32	40.00	11.68
40.14	15.00	13.96	28.96	40.00	11.04
56.20	16.92	14.32	31.24	40.00	8.76
88.34	18.13	8.92	27.05	43.50	16.45
136.46	11.93	13.84	25.77	43.50	17.73
152.13	12.16	14.71	26.87	43.50	16.63
863.06	6.58	27.28	33.86	46.00	12.14

Remarks:

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

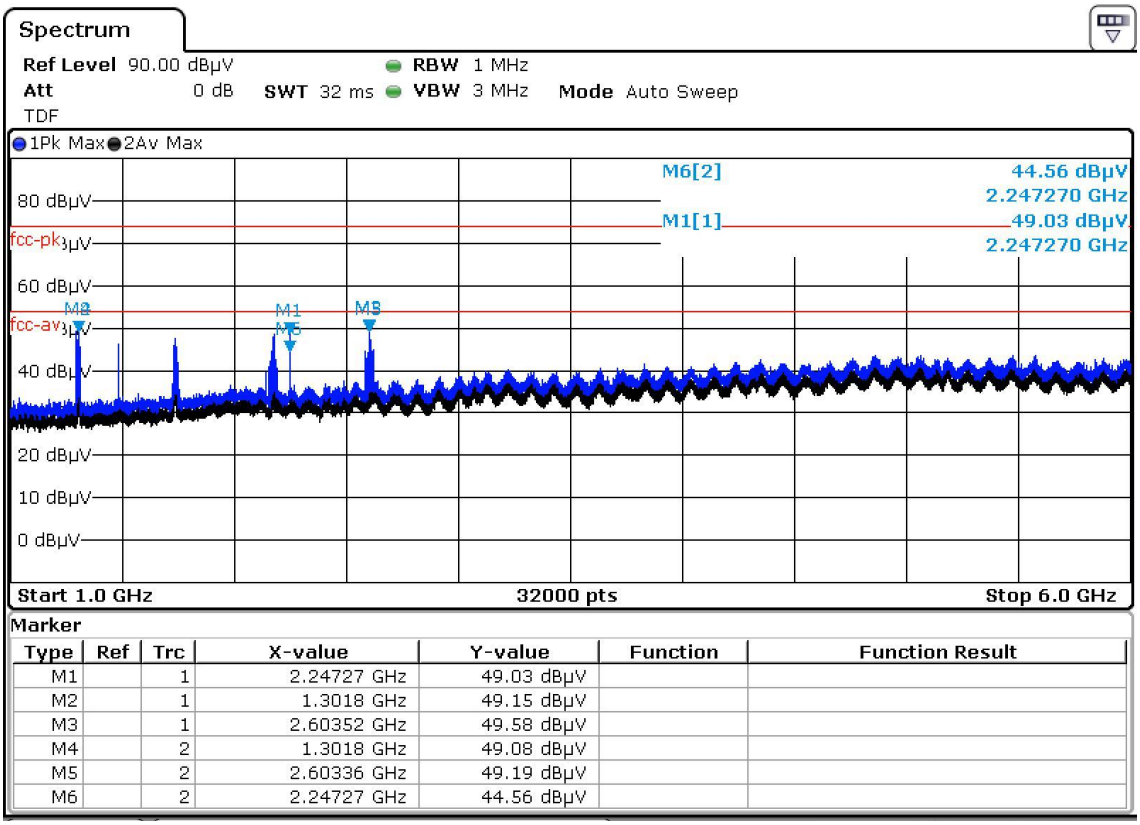
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 1 – 6 GHz

Operation Mode	Mode 1
Test voltage	120 Vac, 60Hz
BW	RBW= 1MHz, VBW=3MHz

Results

Horizontal



Marker

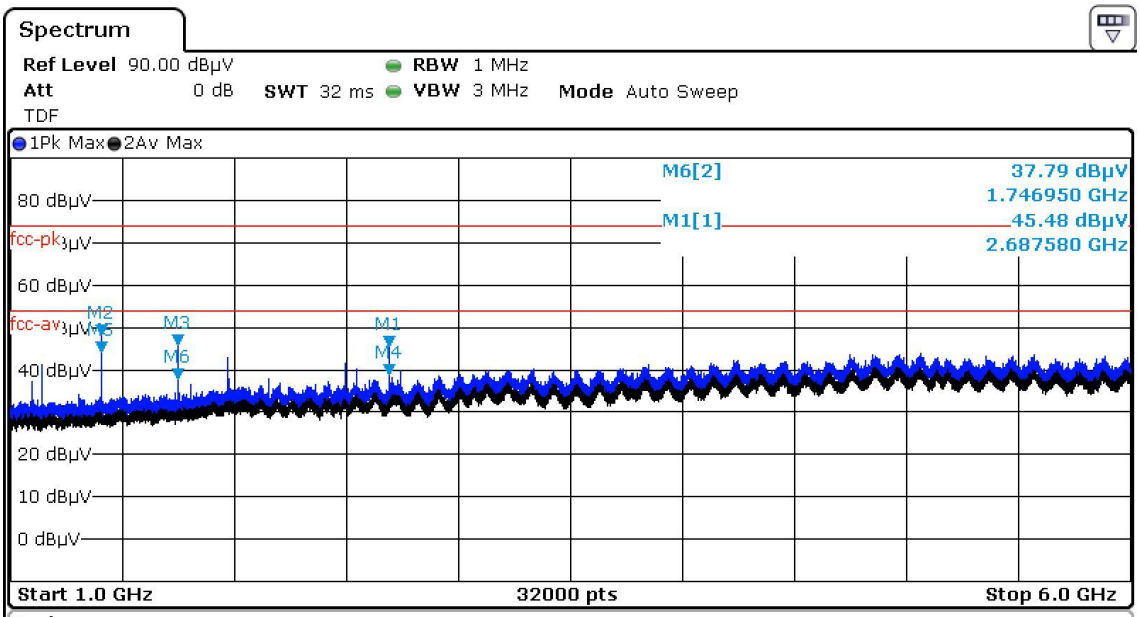
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.24727 GHz	49.03 dBµV		
M2		1	1.3018 GHz	49.15 dBµV		
M3		1	2.60352 GHz	49.58 dBµV		
M4		2	1.3018 GHz	49.08 dBµV		
M5		2	2.60336 GHz	49.19 dBµV		
M6		2	2.24727 GHz	44.56 dBµV		

Remarks:

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

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

Vertical



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.68758 GHz	45.48 dBµV		
M2		1	1.40445 GHz	48.33 dBµV		
M3		1	1.74695 GHz	45.94 dBµV		
M4		2	2.68758 GHz	38.81 dBµV		
M5		2	1.40445 GHz	44.03 dBµV		
M6		2	1.74695 GHz	37.79 dBµV		

Remarks:

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

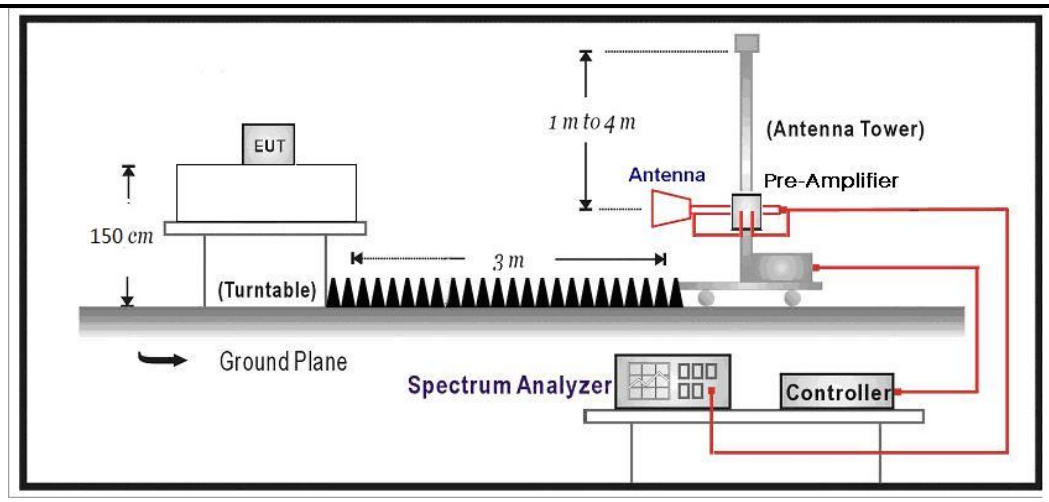
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

4.2 Dwell Time	VERDICT: PASS

Test Requirement 47 CFR Part 15, Subpart C 15.231(a)
Test Method: ANSI C63.10 (2013) Section 7.5
Limit:

Device type	Limit
Manually operated transmitter	The switch automatically deactivate the transmitter within not more than 5 seconds of being released
Automatically actived transmitter	Cease transmission within 5 seconds after activation
Periodic transmissions to determine system integrity of transmitters used in security or safety applications	The total transmission time does not exceed 2 seconds per hour

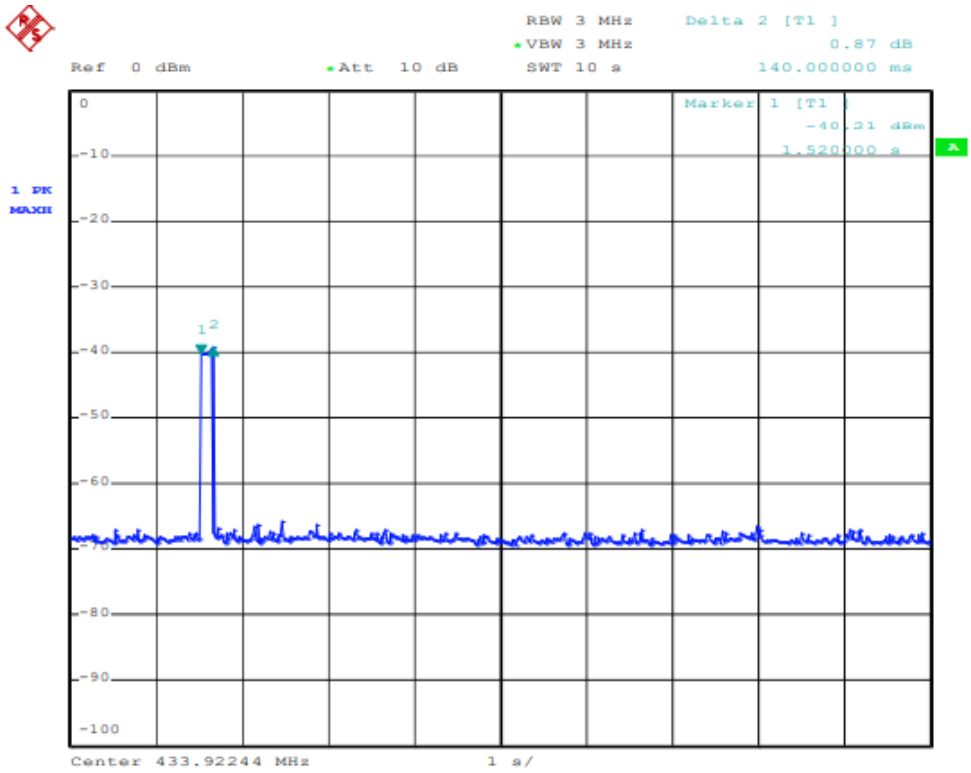
Test Configuration



Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

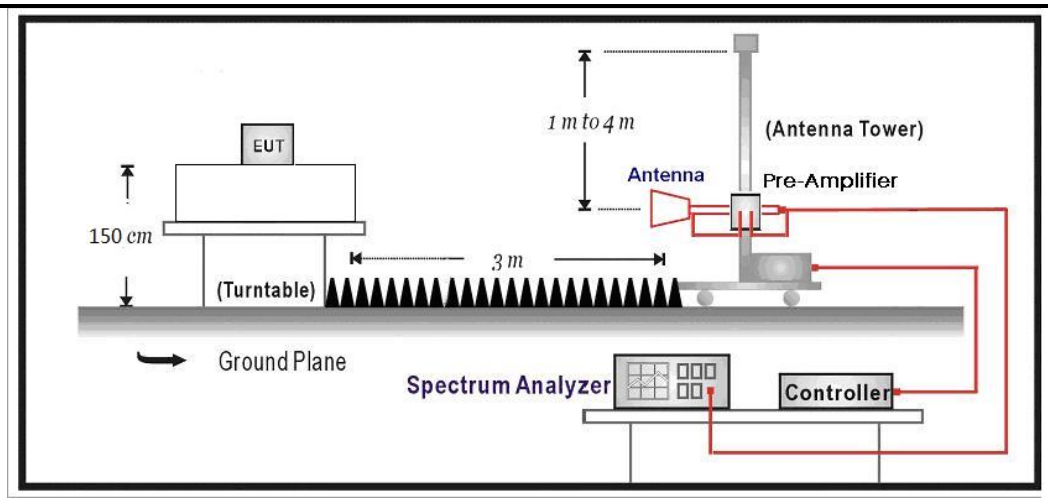
Test item	Limit (s)	Results
Transmission Duration	≤5s	Pass



4.3 20dB Bandwidth	VERDICT: PASS

Standard	FCC Part 15 Subpart C Paragraph 15.231(c)

Test Configuration

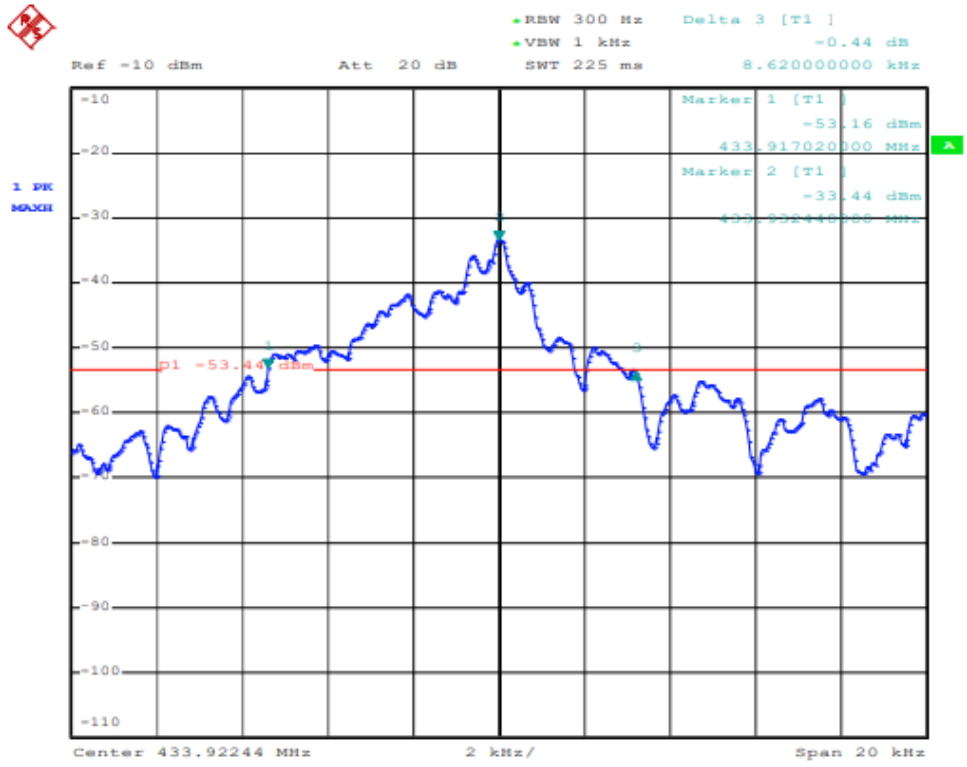


Performed measurements

Port under test	Antenna port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Note: Limit=433.92MHz*0.25%=1.0848MHz=1084.8kHz

Frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Result
433.92	8.62	1084.8	PASS


RBW 300 Hz
VBW 1 kHz
SWT 225 ms
Delta 3 [T1]
-0.44 dB
8.620000000 kHz
Ref -10 dBm
Att 20 dB
Marker 1 [T1]
-53.16 dBm
433.917020000 MHz
Marker 2 [T1]
-33.44 dBm
1 PK
MAXH
-10
-20
-30
-40
-50
-60
-80
-90
-100
-110
D1 -53.44 dBm
Center 433.92244 MHz
2 kHz/
Span 20 kHz

4.4 Field Strength of the Fundamental Signal	VERDICT: PASS

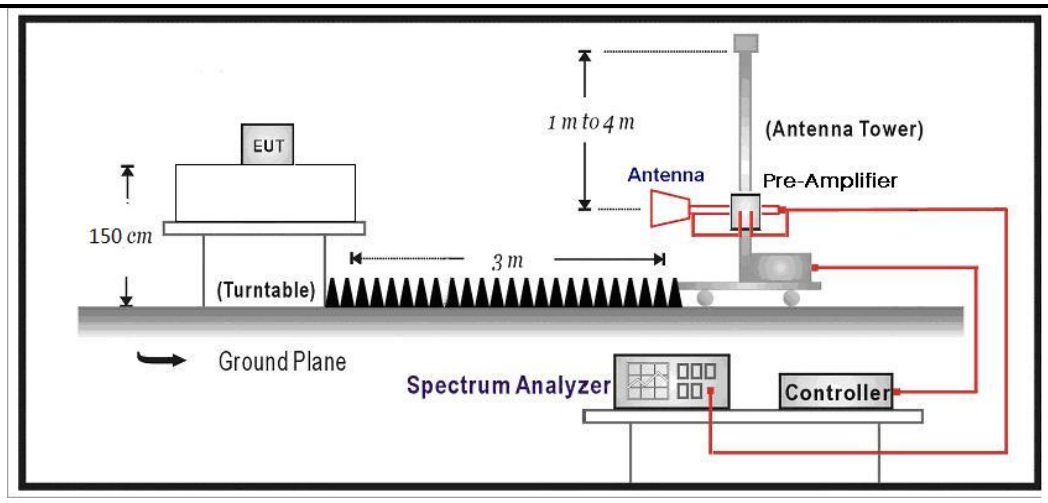
Standard	FCC Part 15 Subpart C Paragraph 15.231 (b)

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)
Test Method: ANSI C63.10 (2013) Section 6.5

Limit:

Fundamental frequency(MHz)	Field strength of fundamental(microvolts/meter)	Field strength of spurious emissions(microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750	125 to 375
174-260	3750	375
260-470	3750 to 12500	375 to 1250
Above 470	12500	1250
Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		

Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

Emission styles	Frequency (MHz)	Reading level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Direction (H/V)
Fundamental	433.92	76.94	102	25.06	PK	H
Fundamental	433.92	69.40	82	12.60	AV	H
Harmonics	867.84	54.04	82	27.96	PK	H
Harmonics	867.84	46.50	62	15.50	AV	H
Harmonics	1735.68	31.88	82	50.12	PK	H
Harmonics	1735.68	24.34	62	37.66	AV	H
Fundamental	433.92	72.85	102	29.15	PK	V
Fundamental	433.92	65.31	82	16.69	AV	V
Harmonics	867.84	64.01	82	17.99	PK	V
Harmonics	867.84	56.47	62	5.53	AV	V
Harmonics	1735.68	34.93	82	47.07	PK	V
Harmonics	1735.68	27.39	62	34.61	AV	V

5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Refer to documents External photo and Internal photo.

ANNEX 1 – MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Occupied Channel Bandwidth	±0,7%
RF Output power, conducted	±0,6dB
Power Spectral Density, Conducted	±0,6dB
Unwanted Emissions, Conducted	±0.7dB
Spurious (30-1000MHz)	±4,4dB
Spurious (1-18GHz)	±4,4dB

ANNEX 2 - USED EQUIPMENT

Item	Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
1	EMI receiver	R&S	ESCI	101205	G/L857	2024/07/02
2	Antenna (30MHz-3GHz)	SCHWARZBECK	VULB9168	01229	GZ2018	2024/03/12
3	Chamber	ETS	/	/	G/L856	2024/06/04
4	Antenna (1GHz-18GHz)	R&S	HF907	102306	G/L1236	2024/04/10
5	Horn antenna preamplifier	Schwarzbeek	SCU-18	102234	G/L1236-1	2024/02/21
6	Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2024/01/09
7	HF antenna (18 – 26.5 GHz)	ETS	3160-09	00164643	G/L1237	2024/01/09
8	High frequency antenna preamplifier (18 – 26.5 GHz)	Schwarzbeck	SCU-26	1879064	G/L1237-1	2024/01/08
9	Broadband horn antenna (15 – 40 GHz)	Schwarzbeck	BBHA9170	00908	GZ1901	2024/05/07
10	High frequency antenna preamplifier (18 – 26.5 GHz)	Schwarzbeck	SCU-26	1879064	G/L1237-1	2024/01/08
11	Annular magnetic field antenna	TESEQ	HLA6121	540045	GZ1905	2024/05/12
12	Test software	AUDIX	e3	Version 6.130520	---	---
13	Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2024/01/09
14	Chamber	ETS	/	/	G/L856	2024/06/10
15	OSP	R&S	OSP 150	101907	GZ1894	2024/02/23
16	Test software	R&S	WMS32	Version 11.40.00	---	---

ANNEX 3 - TEST PHOTOS

Refer to document Test setup.

--- END ---