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TEST REPORT

47 CFR FCC Part 15 Subpart C 15.231

Report Reference No.: CTL2512081021-WF

Compiled by:
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Product Name: Remote Control for Laser Level

Model/Type reference: MAESTRO-4D

List Model(s): MAESTRO-3D

Trade Mark: N/A

FCC ID: 2BVRIMAESTRO

Applicant's name: KAPRO TOOLS LIMITED

Address of applicant: NO.35 SHANLONGHE ROAD, CHINA (SHANDONG) PILOT
FREE TRADE ZONE QINGDAO AREA, QINGDAO,
SHANDONG, P.R.CHINA

Test specification:

Standard: 47 CFR FCC Part 15 Subpart C 15.231

TRF Originator: Shenzhen CTL Testing Technology Co., Ltd.

Master TRF: Dated 2011-01

Date of receipt of test item: February 2, 2026

Date of Test Date: February 2, 2026-April 21, 2026

Date of Issue: April 22, 2026

Result: Pass

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TEST REPORT

Test Report No. :	CTL2512081021-WF	April 22, 2026 Date of issue
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Equipment under Test : Remote Control for Laser Level

Sample No. : CTL251208102001, CTL251208102003

Model /Type : MAESTRO-4D

Listed Models : MAESTRO-3D

Applicant : **KAPRO TOOLS LIMITED**

Address : NO.35 SHANLONGHE ROAD, CHINA (SHANDONG)
PILOT FREE TRADE ZONE QINGDAO AREA, QINGDAO,
SHANDONG, P.R.CHINA

Manufacturer : **KAPRO TOOLS LIMITED**

Address : NO.35 SHANLONGHE ROAD, CHINA (SHANDONG)
PILOT FREE TRADE ZONE QINGDAO AREA, QINGDAO,
SHANDONG, P.R.CHINA

Test result	Pass *
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* In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

The device (Product Name: Remote Control for Laser Level) Models Name: MAESTRO-4D, MAESTRO-3D have same electrical, PCB and BOM, only the colour and model' s names are different for marketing requirements.

** Modified History **

[illegible]

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1. SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.231:](#) Periodic operation in the band 40.66-40.70 MHz and above 70 MHz.

[ANSI C63.10-2020+Cor.2023:](#) American National Standard for Testing Unlicensed Wireless Devices

1.2. Test Description

FCC and IC Requirements		
FCC Part 15.207	Conducted Emission	N/A
FCC Part 15.231(a)(1)	Automatically Deactivate	PASS
FCC Part 15.231(b)	Electric Field Strength of Fundamental Emission	PASS
FCC Part 15.205 & 15.209 & 15.231(b)	Electric Field Strength of Spurious Emission	PASS
FCC Part 15.215	-20dB bandwidth	PASS
FCC Part 15.203	Antenna requirement.	PASS

Remark: The measurement uncertainty is not included in the test result.

1.3. Test Facility

1.3.1 Test laboratory

Company Name:	Shenzhen CTL Testing Technology Co., Ltd.
Address 1:	Zone A.1/F..Warehouse 2.Baisha Technology Park, No.3011,Shahexi Road, Nanshan District,Shenzhen.518055,P.R.C.
Address 2:	Fl.A1, Bldg.A3, No.2533 GuanGuang Road, Fenghuang Community Fenghuang Street, Guangming District, Shenzhen, Guangdong, PR.C

1.3.2 Test location

All tests were performed at:

Company Name:	Shenzhen CTL Testing Technology Co., Ltd.
☐ Main location	Zone A.1/F..Warehouse 2.Baisha Technology Park, No.3011,Shahexi Road, Nanshan District,Shenzhen.518055,P.R.C.
☒ Satellite location	Fl.A1, Bldg.A3, No.2533 GuanGuang Road, Fenghuang Community Fenghuang Street, Guangming District, Shenzhen, Guangdong, PR.C

1.3.3 Laboratory accreditation

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

CNAS-Lab Code: L7497

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 4343.01

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

IC CAB identifier: CN0041

Main Company Number :9618B

Satellite Company Number:35187

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Main Company Number:9618B and Satellite Company Number:35187.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation No.: CN1216. Test Firm Registration 399832.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of

devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power Radiated	± 2.20 dB	(1)
Radiated Emission 9KHz~30MHz	± 3.66 dB	(1)
Radiated Emission 30~1000MHz	± 4.08 dB	(1)
Radiated Emission Above 1GHz	± 4.32 dB	(1)
20dB Bandwidth	$\pm 1.9\%$	(1)
Maximum Conducted Output Power	± 1.18 dB	(1)
Maximum Power Spectral Density Level	± 0.98 dB	(1)
Band-edge	± 1.21 dB	(1)
Unwanted Emissions In Non-restricted Freq Bands	9kHz-7GHz: ± 1.09 dB 7GHz-26.5GHz: ± 3.27 dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.
- (2) Decision rule for Statement of Conformity: The measurement uncertainty is not taken into account but only measured result.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	18°C-28°C
Relative Humidity:	30%-60%
Air Pressure:	965Pa-1030Pa

2.2. General Description of EUT

Product Name:	Remote Control for Laser Level
Model/Type reference:	MAESTRO-4D
EUT Rated Voltage:	DC 12V for battery
Test Voltage:	DC 12V for battery
Wireless technology	
Operating frequency:	433.92MHz
Modulation type:	ASK
Antenna type:	PCB On-board Antenna
Antenna Gain:	1.5dBi provided by ☒ Applicant ☐ Manufacturer

Note: For more details, please refer to the user's manual of the EUT.

Note2:The model MAESTRO-4D is selected as representative model for full tests

2.3. Description of Test Modes and Test Frequency

The EUT was tested under typical operating condition. The applicant provides drivers to make it work in general use, and software can obtain data from it to see if it works intended during testing.

RF Cable List and Details

RF Cable	RF Cable loss	RF Cable loss provided by
RF1.13	0.5dB	☒ Applicant ☐ Manufacturer ☐ Testing Laboratory(CTL)

2.4. Equipments Used during the Test

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Serial No.	Last calibration	Calibration Due
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2026/01/05	2027/01/04
LISN	ROHDE & SCHWARZ	ESH2-Z5	860014/010	2026/01/05	2027/01/04
Limitator	ROHDE & SCHWARZ	ESH3-Z2	100408	2026/01/05	2027/01/04
Software:					
Name of Software:			Version:		
ES-K1			V1.71		

Radiated Emission					
Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
Active Loop Antenna	Da Ze	ZN30900A	/	2025/07/02	2026/07/01
ULTRA-BROADBAND ANTENNA	Sunol Sciences Corp.	JB1 Antenna	A061713	2025/07/02	2026/07/01
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2026/01/05	2027/01/04
Horn Antenna	Ocean Microwave	OBH100400	26999002	2025/07/03	2026/07/02
Amplifier	Brief&Smart	LNA-4018	2104197	2025/07/03	2026/07/02
EMI Test Receiver	ROHDE & SCHWARZ	ESPI	100434	2025/07/02	2026/07/01
Spectrum Analyzer	RS	FSP	1164.4391.38	2025/07/03	2026/07/02
Software:					
Name of Software:			Version:		
EZ_EMG(Below 1GHz)			V1.1.4.2		
EZ_EMG(Above 1GHz)			V1.1.4.2		

RF Conducted					
Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
Spectrum Analyzer	Keysight	N9020A	MY53420874	2025/07/03	2026/07/02
Temperature/Humidity Meter	Ji Yu	MC501	/	2025/07/03	2026/07/02
Software:					
Name of Software:			Version:		
TST-PASS			V2.0.2		

2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Radiated Emission

Limit

For intentional device, according to 15.209(a) the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

In addition to the provisions of 15.231(b) and RSS 210-A1.1.2, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

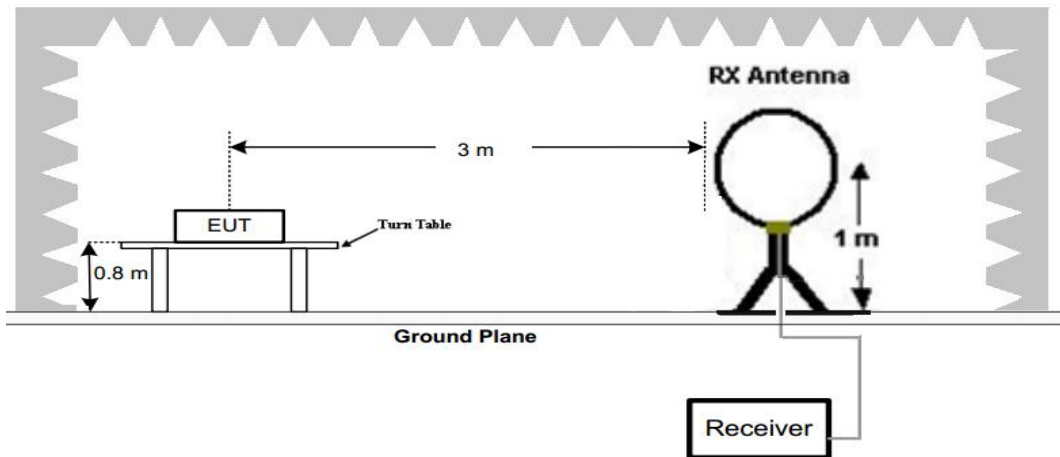
Funda- mental fre- quency (MHz)	Field strength of funda- mental (microvolts/ meter)	Field strength of spurious emissions (microvolts/meter)
40.66– 40.70.	2,250	225
70–130	1,250	125
130–174	¹ 1,250 to 3,750	¹ 125 to 375
174–260	3,750	375
260–470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

¹ Linear interpolations.

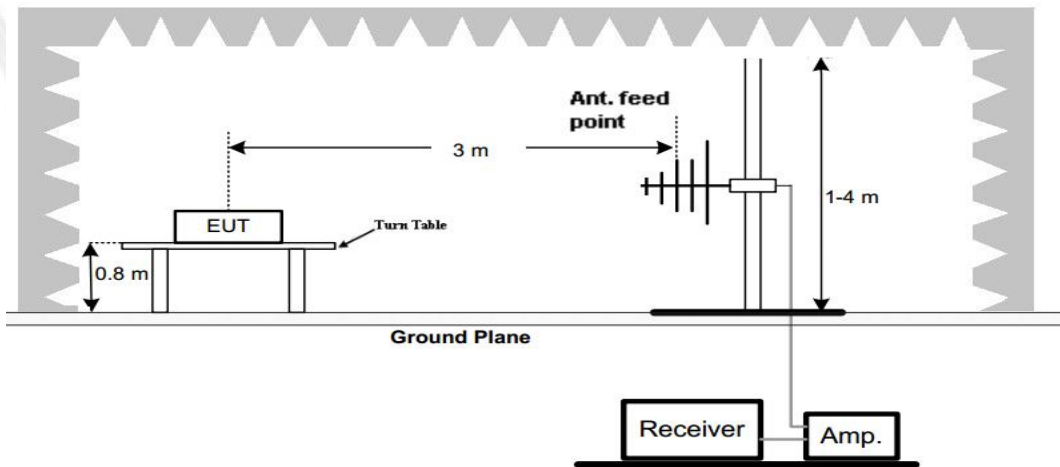
[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 260-470 MHz, $\mu\text{V/m}$ at 3 meters $= 41.6667(F) - 7083.3333$. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

TEST CONFIGURATION

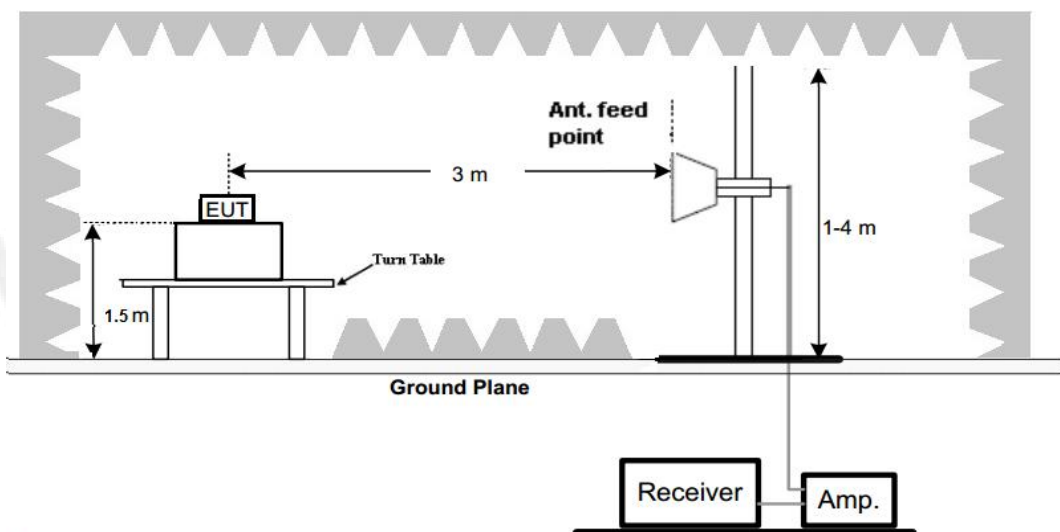
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz

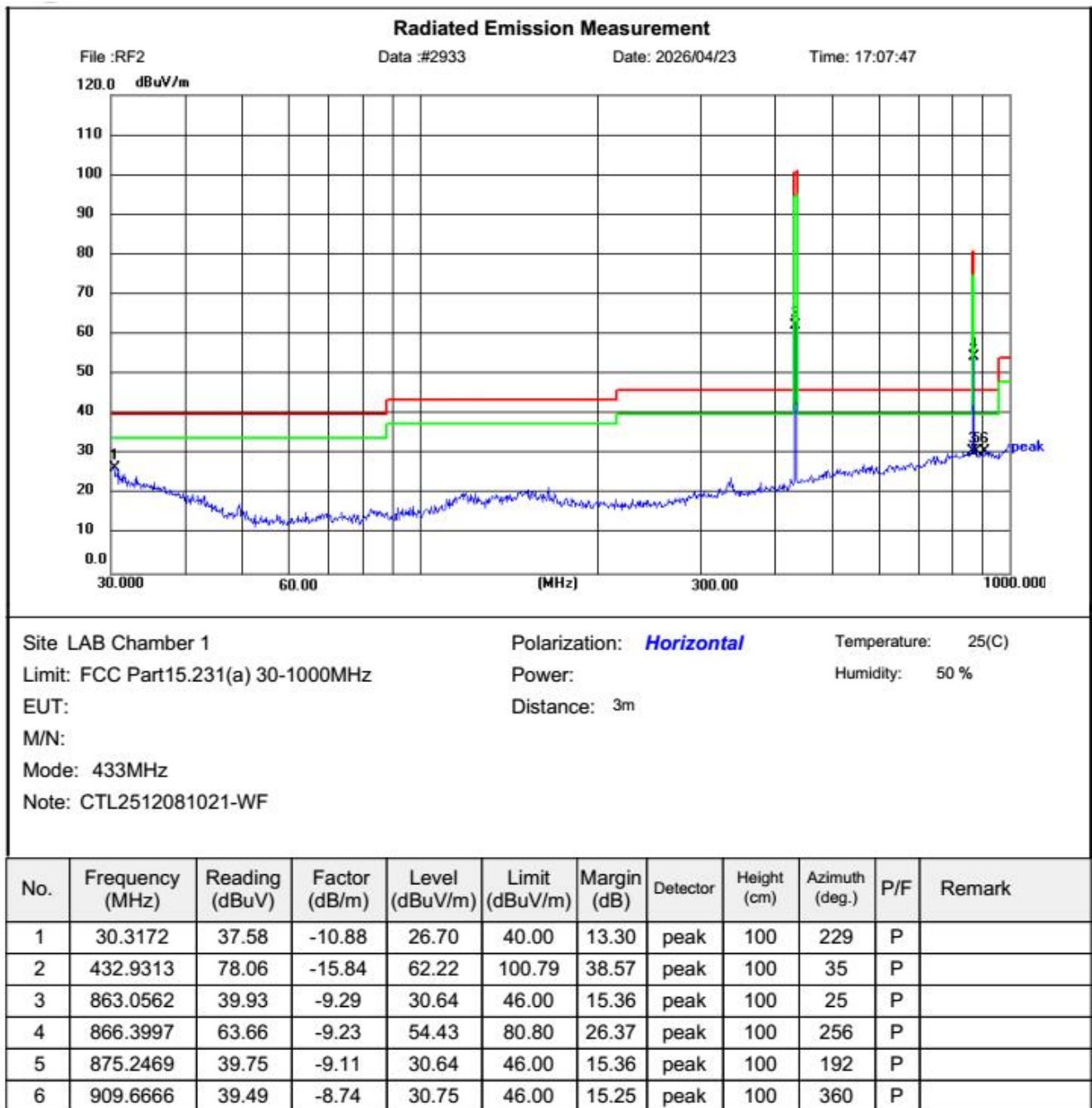


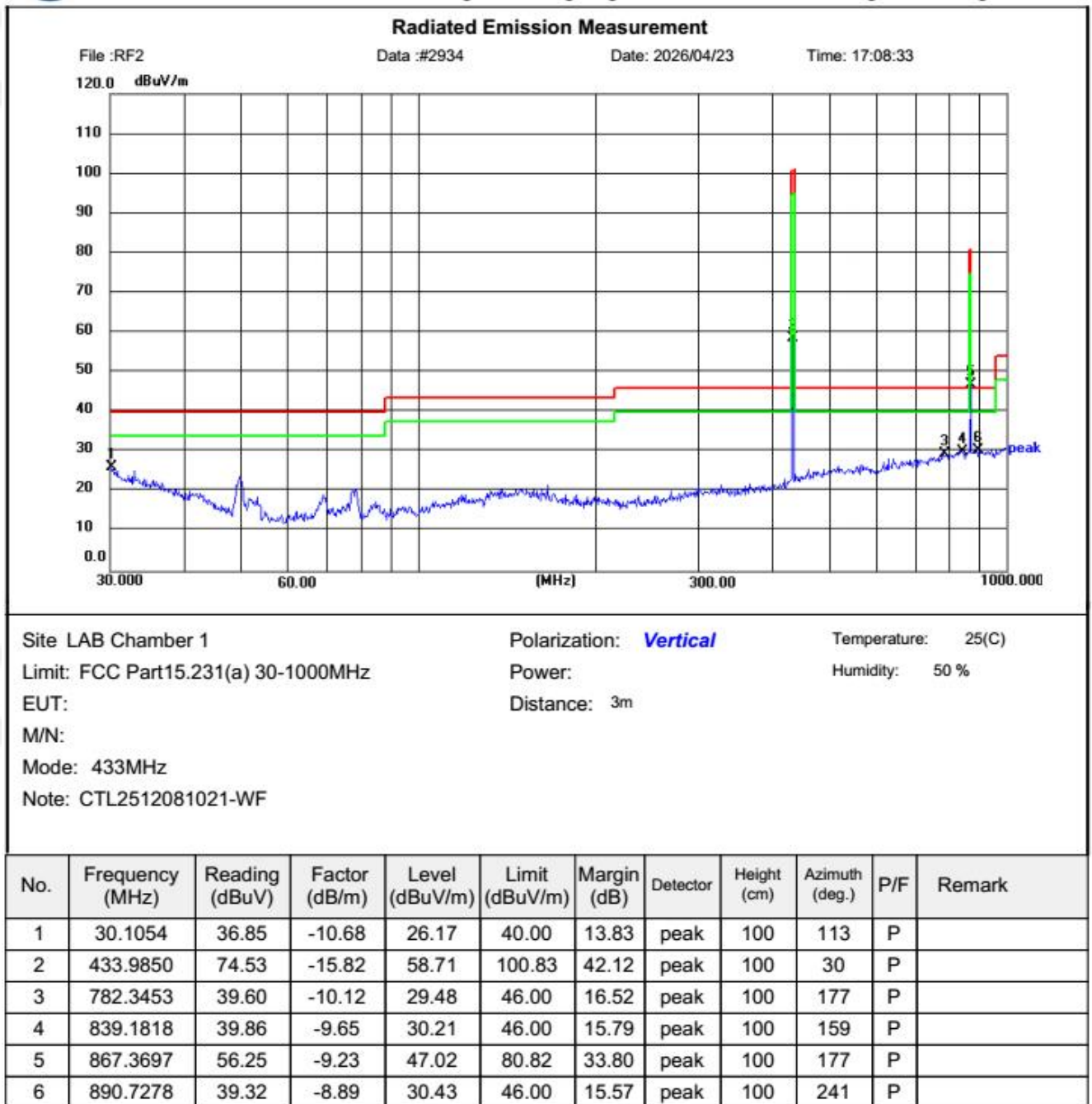
Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

TEST RESULTS

The emissions from 30MHz to 5GHz are measured with PEAK detector; and average level calculated with Duty cycle correction according 15.35(c), detailed test data please see below. Besides, we tested 3 directions and recorded the worst data





Note : 1GHz-6GHz not recorded for no spurious point have a margin of less than 20 dB with respect to the limits.

Emission Styles	Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Direction (H/V)
Fundamental	432.9313	62.22	100.83	38.61	PK	H
Harmonics	866.3997	54.43	80.83	26.40	PK	H
Harmonics	1302.1950	50.27	80.83	30.56	PK	H
Harmonics	1736.2600	48.91	80.83	31.92	PK	H
--	--	--	--	--	--	--
Fundamental	433.9850	58.71	100.83	42.12	PK	V
Harmonics	867.3697	47.02	80.83	33.81	PK	V
Harmonics	1302.1950	61.63	80.83	19.20	PK	V
Harmonics	1736.2600	48.95	80.83	31.88	PK	V
--	--	--	--	--	--	--

Emission Styles	Frequency (MHz)	PK Level (dBuV/m)	AV Factor (dB/m)	AV Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Direction (H/V)
Fundamental	432.9313	62.22	-7.74	54.48	80.83	26.35	H
Harmonics	866.3997	54.43	-7.74	46.69	60.83	14.14	H
Harmonics	1302.1950	50.27	-7.74	42.53	60.83	18.30	H
Harmonics	1736.2600	48.91	-7.74	41.17	60.83	19.66	H
--	--	--	--	--	--	--	--
Fundamental	433.9850	58.71	-7.74	50.97	80.83	29.86	V
Harmonics	867.3697	47.02	-7.74	39.28	60.83	21.55	V
Harmonics	1302.1950	61.63	-7.74	53.89	60.83	6.94	V
Harmonics	1736.2600	48.95	-7.74	41.21	60.83	19.62	V
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Note 1:

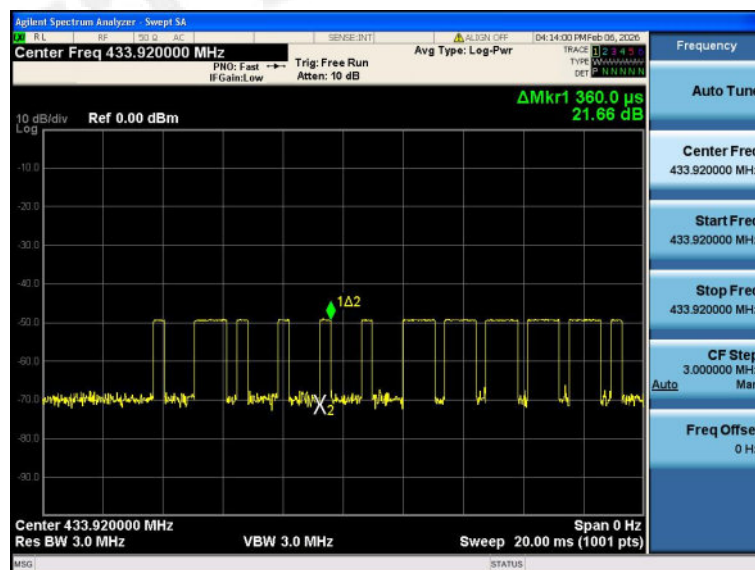
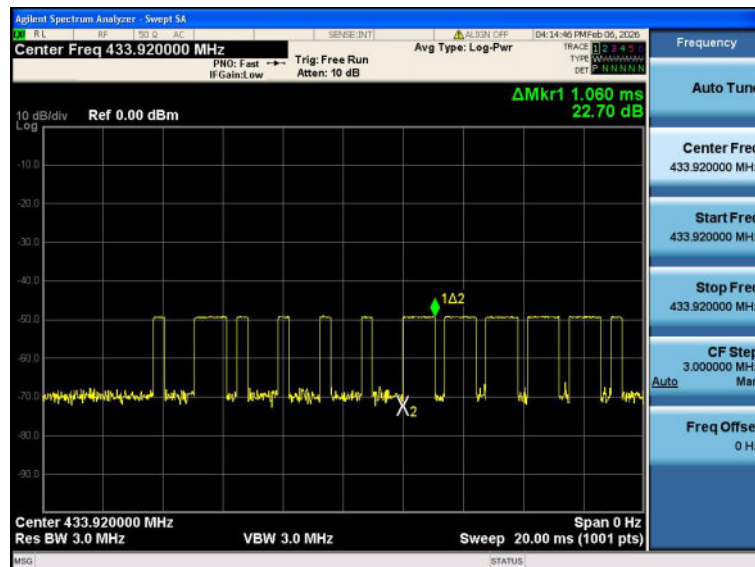
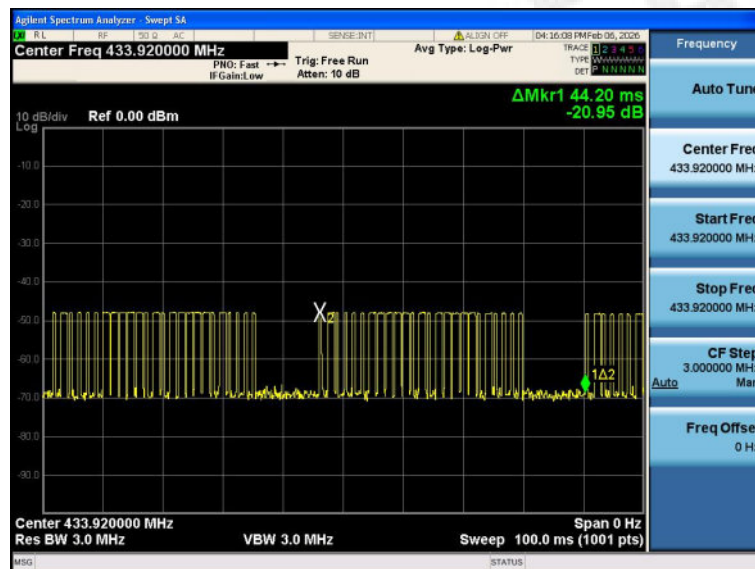
1. AV Level (dBuV/m)= PK Level (dBuV/m)+ AV Factor(dB)
2. Duty Cycle= $(1.06 \times 13 + 0.36 \times 12) / 44.2 = 0.41$

$$\text{AV Factor} = 20 \times \log(\text{Duty Cycle}) = -7.74$$

(Note: According to C63.10, if the transmit cycle period longer than 100ms, then 100ms is used calculation.)

$$\text{AV Factor} = 20 \times \log(\text{Duty Cycle}) = -7.74$$

(The plot of Duty Cycle See the follow page)

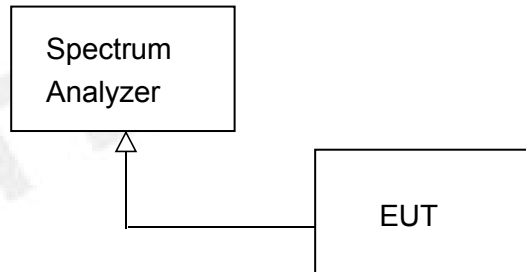


3.2. 20dB Bandwidth

Limit

According to 47 CFR 15.215 The bandwidth of the emission shall be no wider than 0.25% of the centre frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

Test Configuration



Test Procedure

The 20dB bandwidth and 99% bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

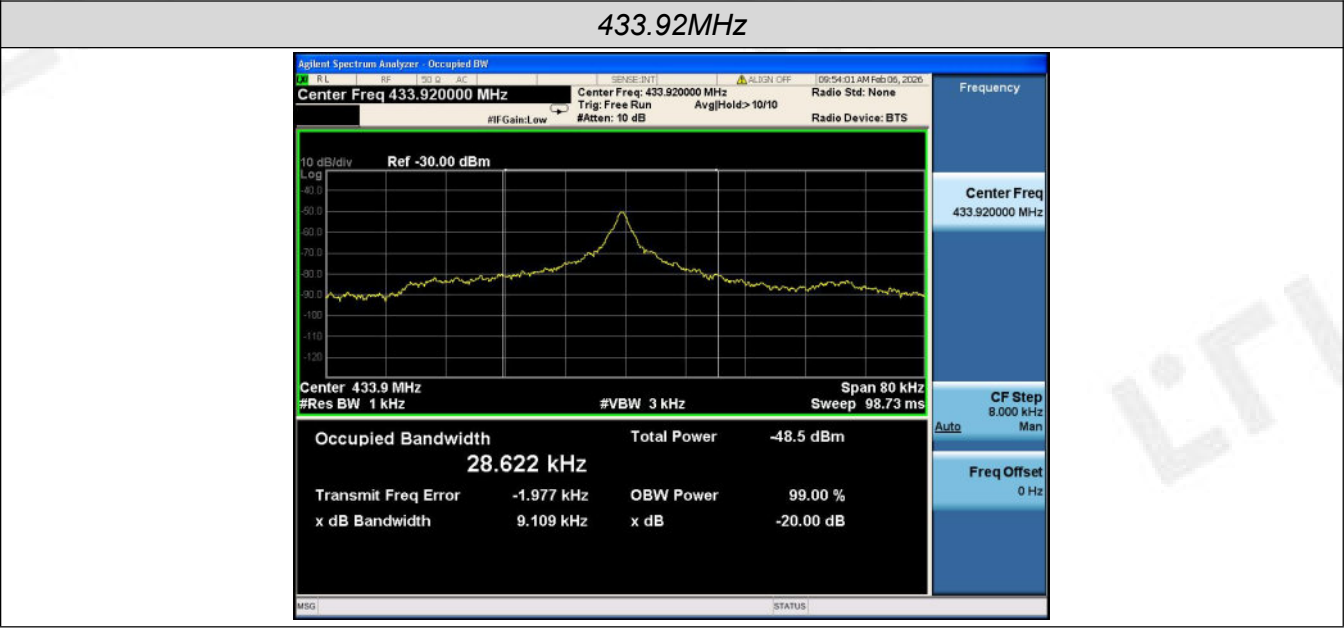
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Test Results

Modulation	Channel Frequency (MHz)	99% OBW (kHz)	20dB bandwidth (kHz)	Limit (kHz)	Result
ASK	433.92	28.622	9.109	$0.25\% \times 433920 = 1084.8$	Pass

Test plot as follows:

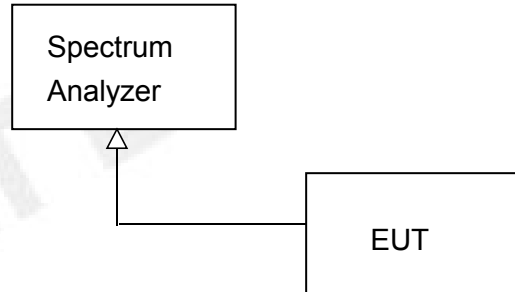


3.3. Dwell Time

Limit

According to FCC §15.231(a)(1), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Test Configuration



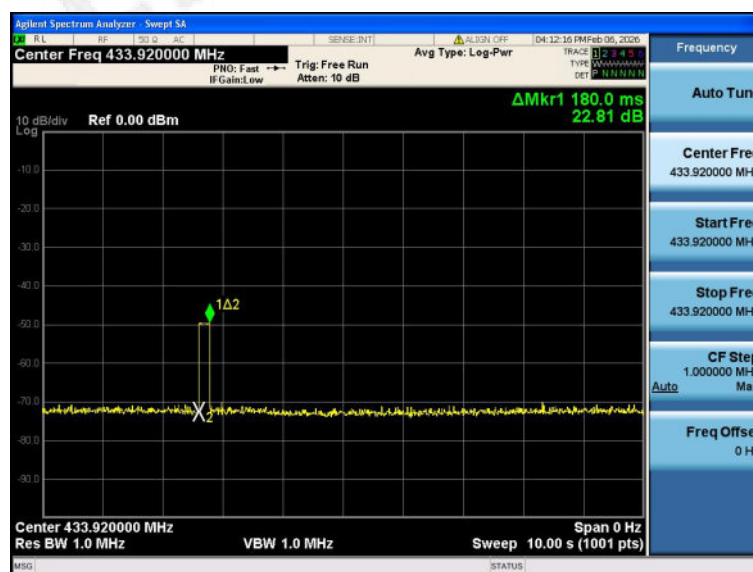
Test Procedure

1. The EUT was placed on a wooded table which is 0.8m height and close to receiver antenna of spectrum analyzer.
2. The spectrum analyzer resolution bandwidth was set to 1 MHz and video bandwidth was set to 1 MHz to encompass all significant spectral components during the test. The spectrum analyzer was operated in linear scale and zero span mode after tuning to the transmitter carrier frequency.

TEST RESULTS

Note : Multiple groups of channels are tested, only the poor frequencies are recorded, other frequencies meet the requirements.

Frequency (MHz)	One transmission time (S)	Limit(S)	Result
433.92	0.18	5	Pass



3.4. Antenna Requirement

Standard Applicable

According to FCC Part 15C 15.203

- a) An intentional radiator shall be de-signed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
- b) The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

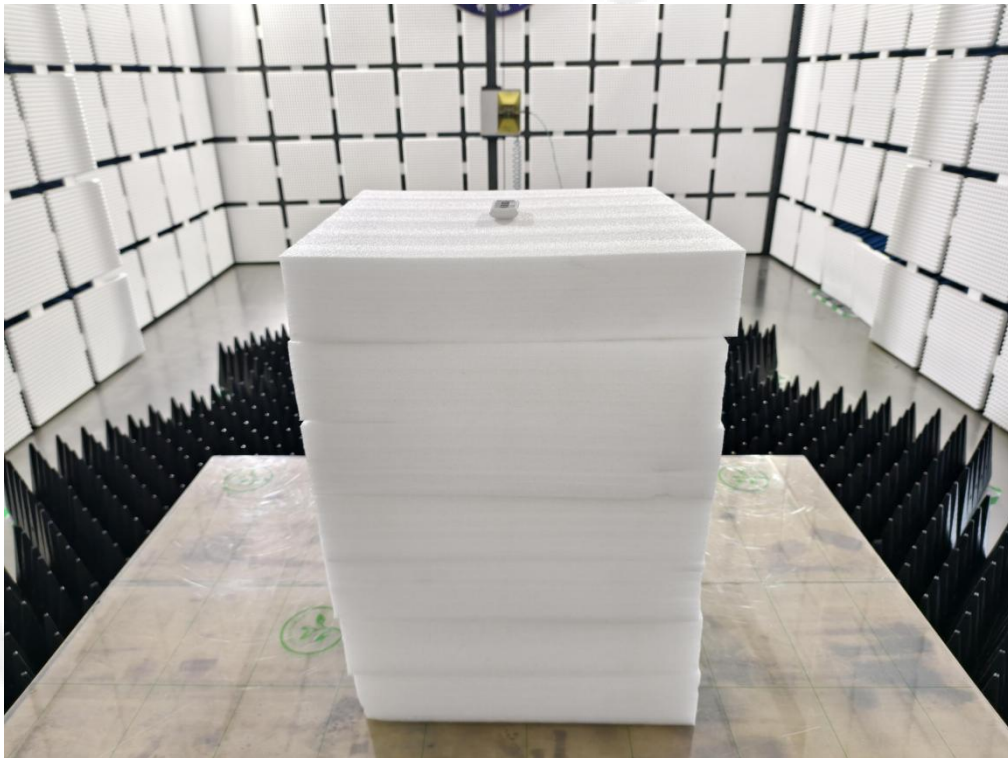
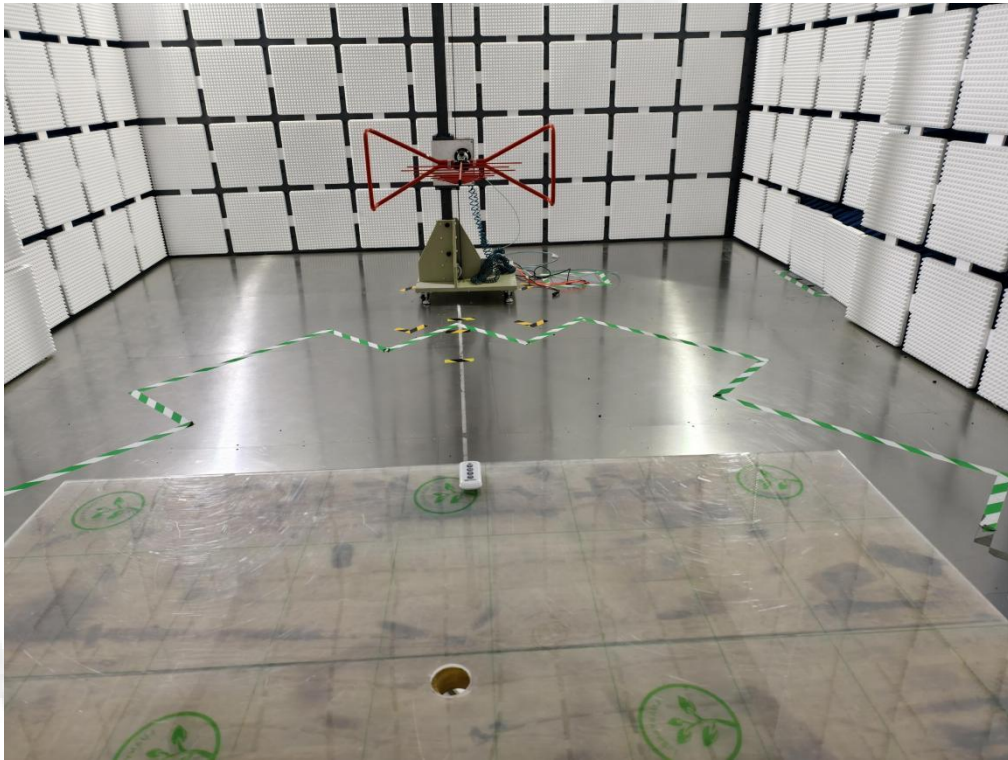
Refer to statement below for compliance.

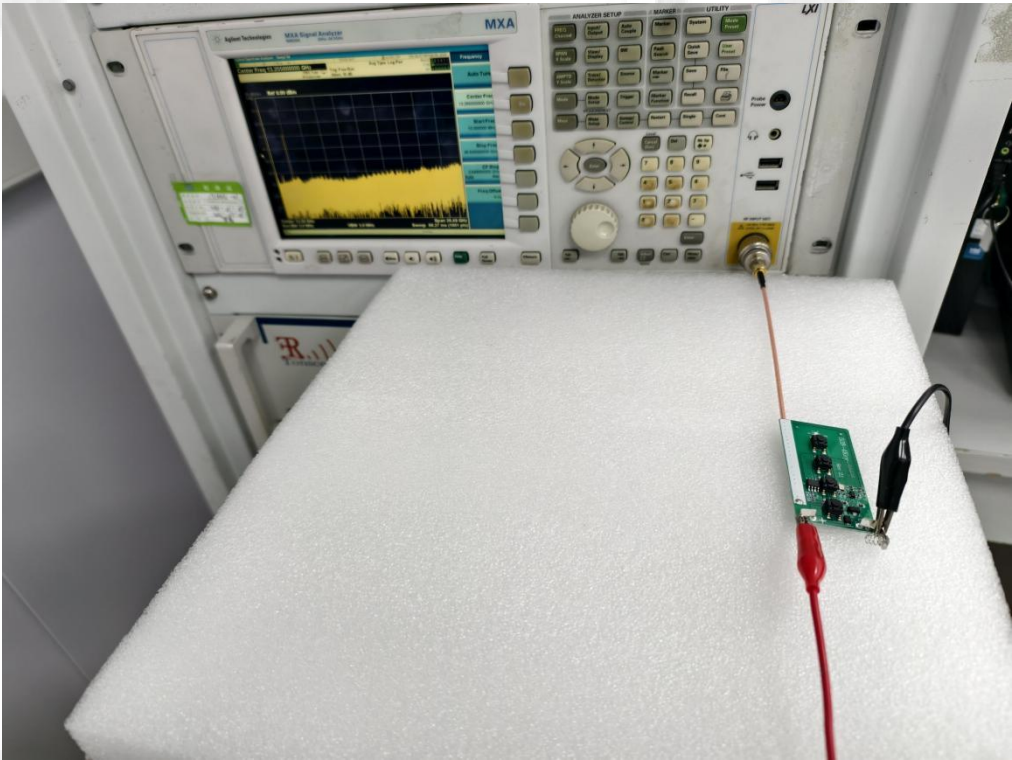
The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an PCB On-board Antenna, The directional gains of antenna used for transmitting is -2.8dBi.

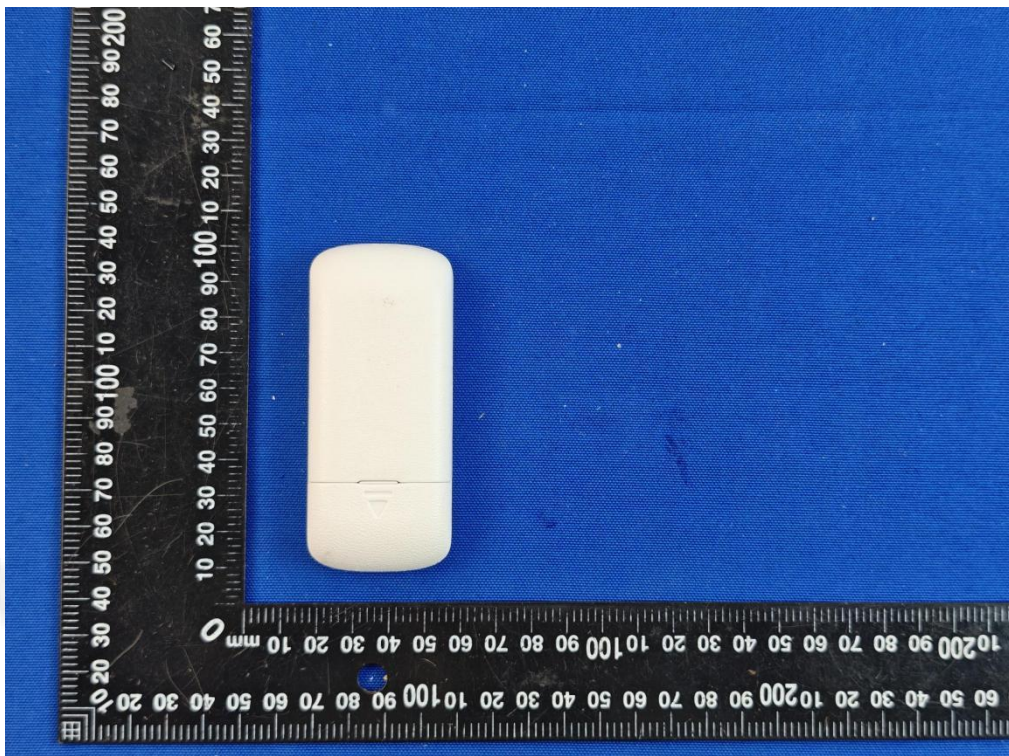
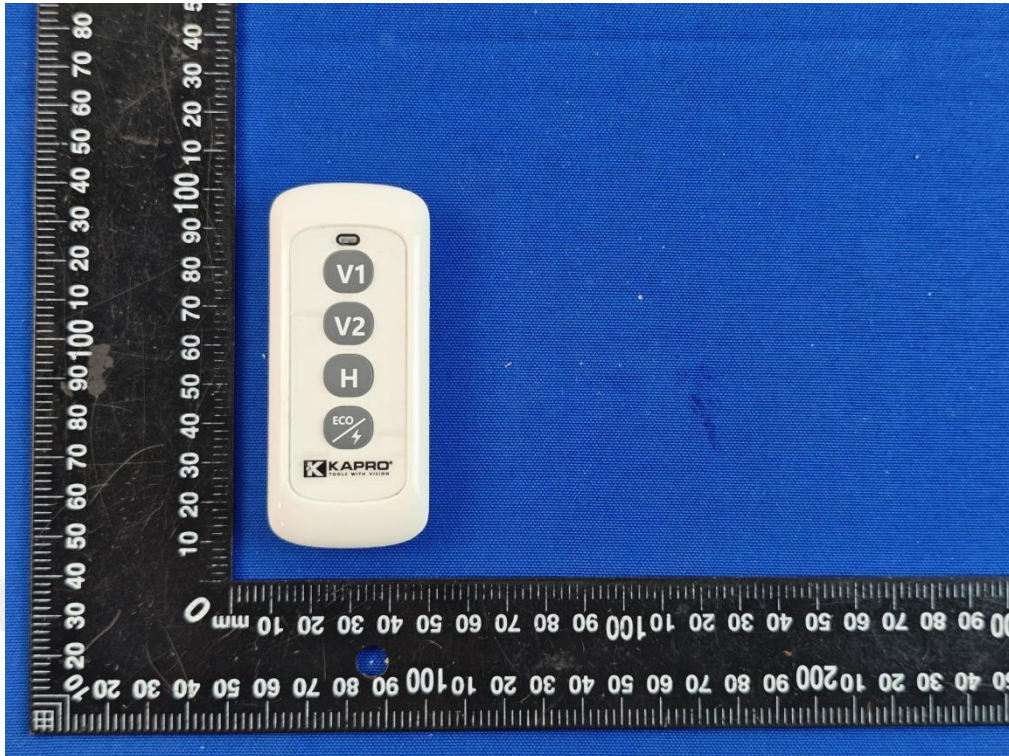
4. Test Setup Photos of the EUT

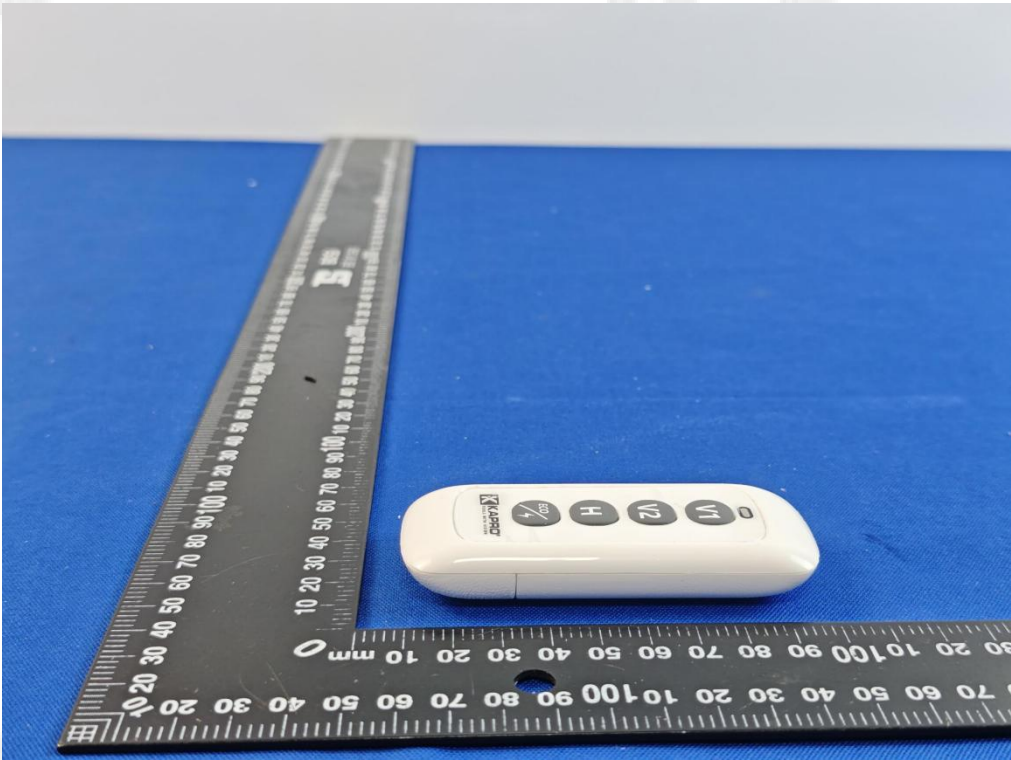
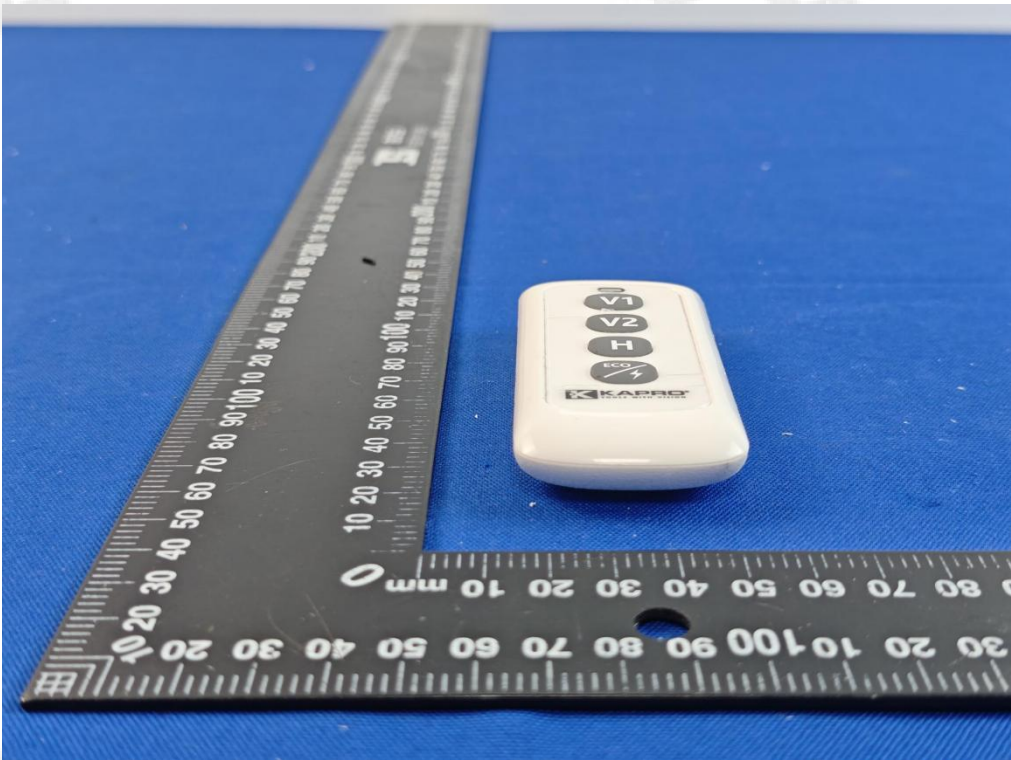


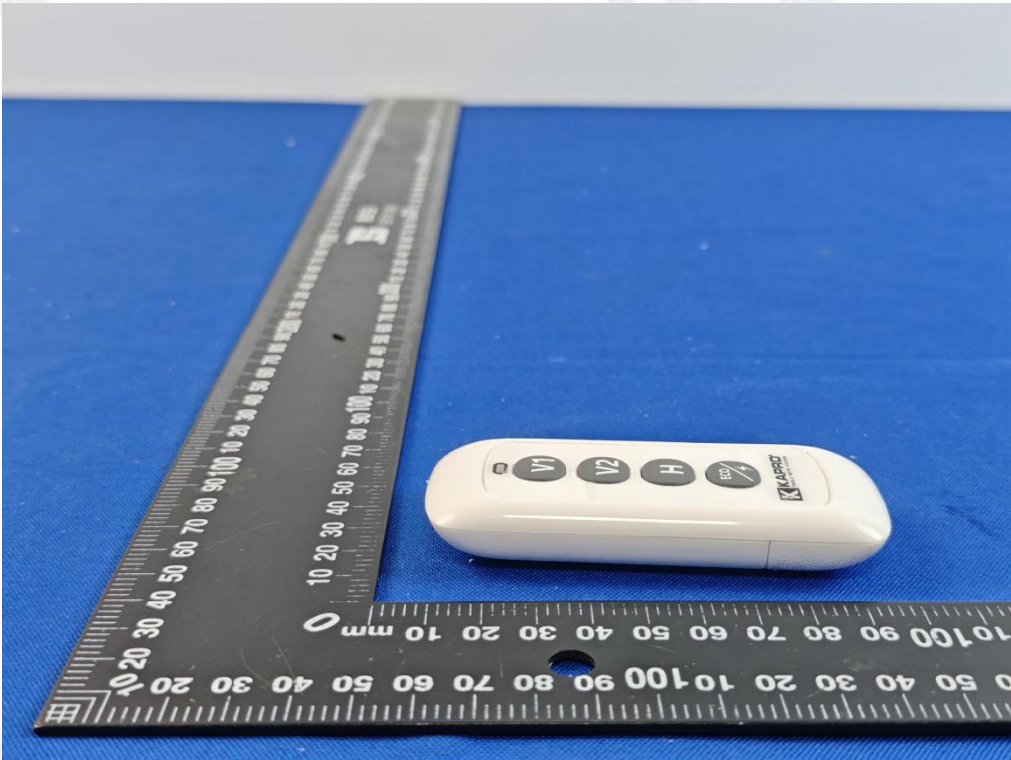
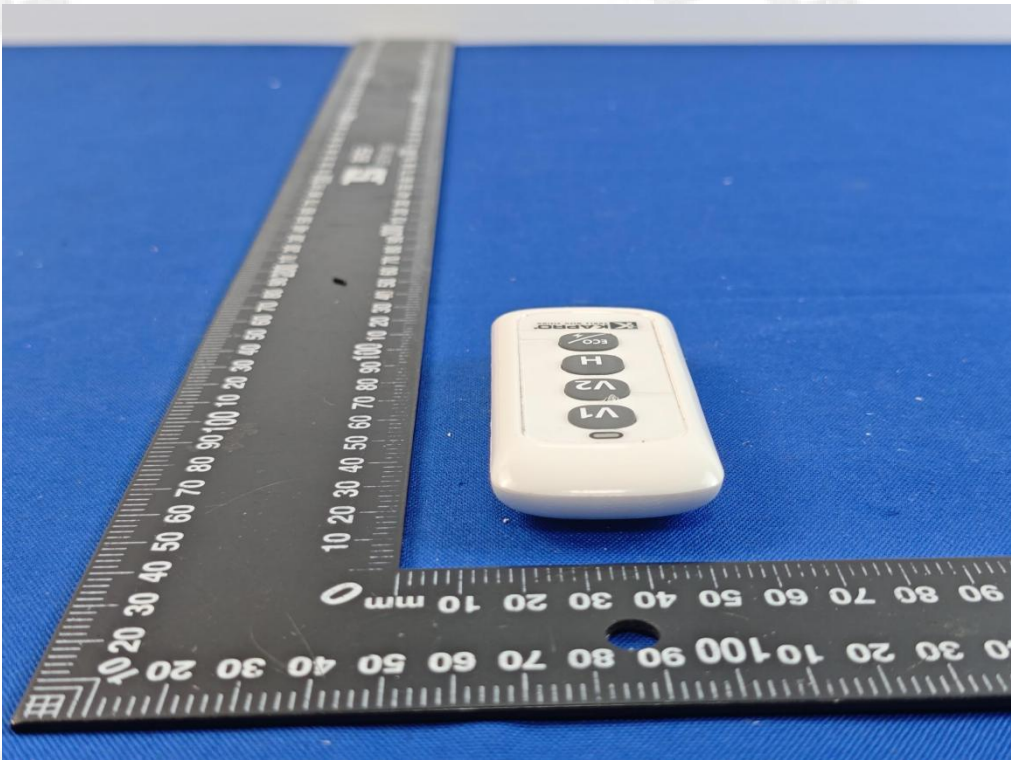


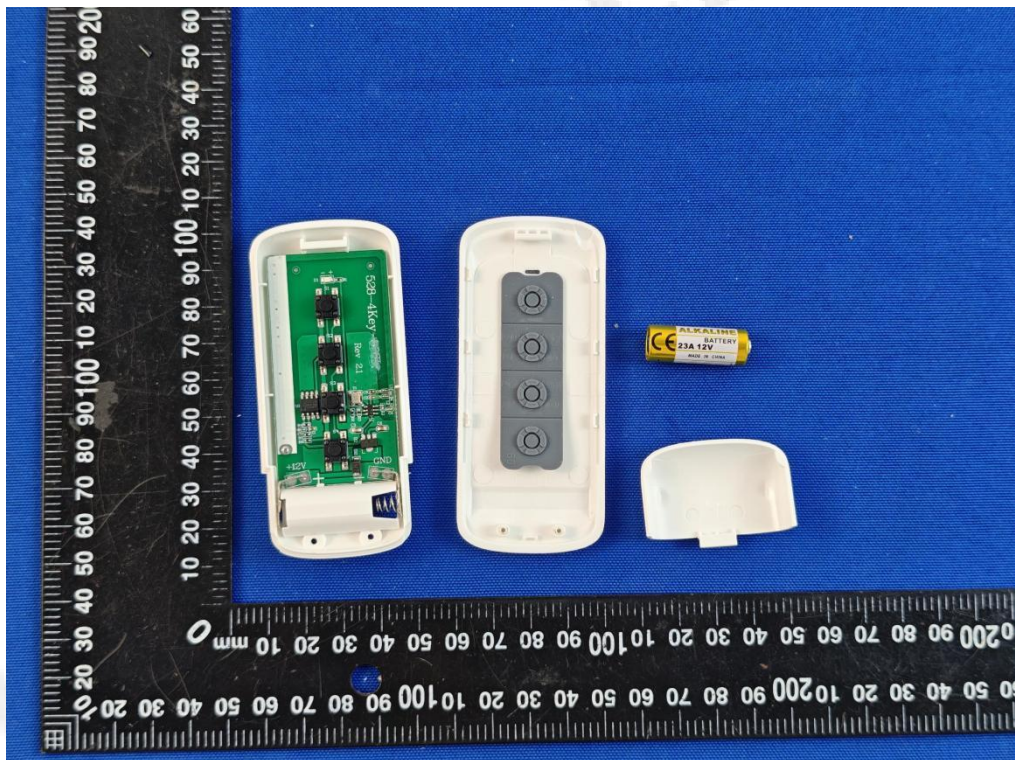
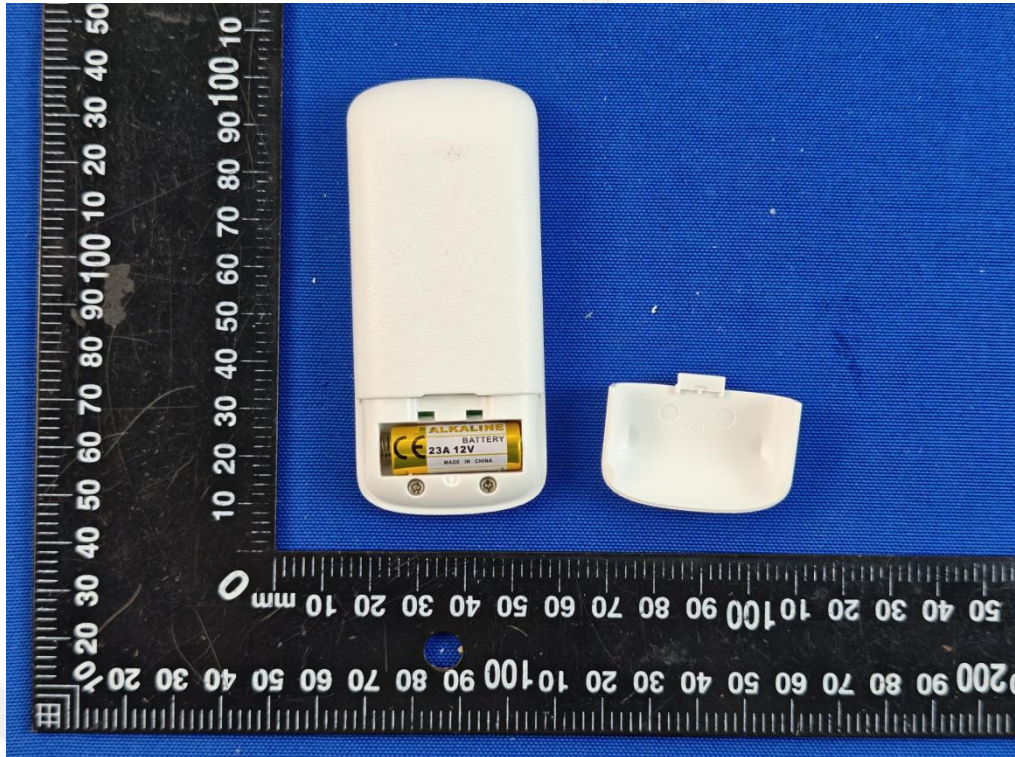
5. External and Internal Photos of the EUT

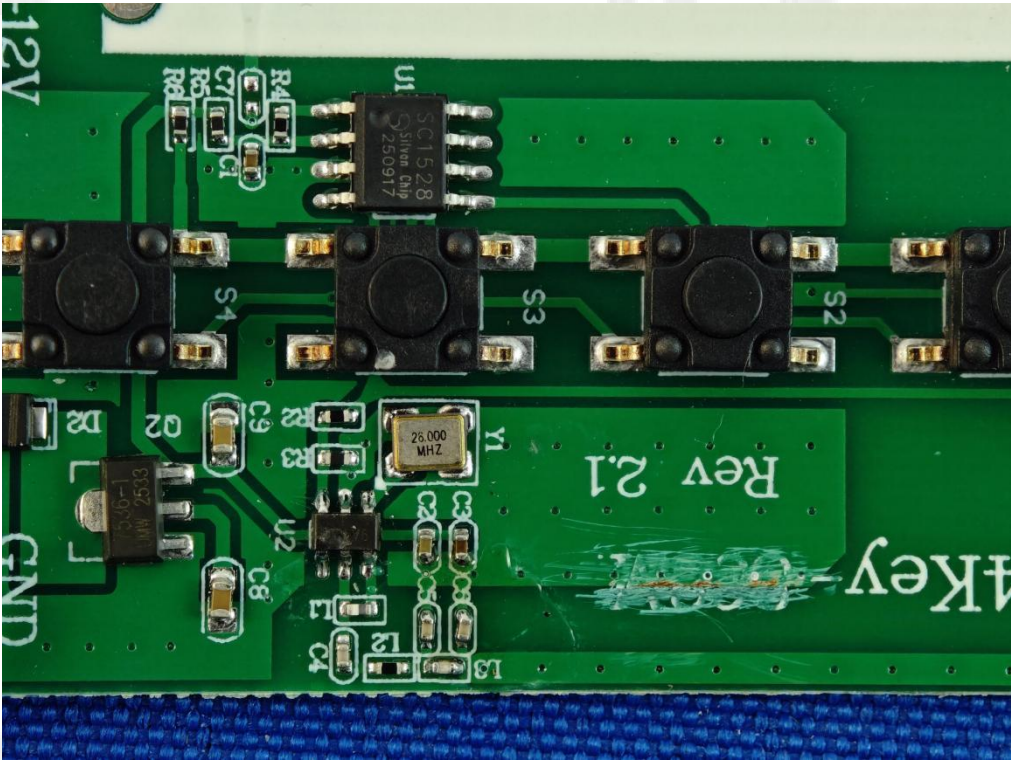
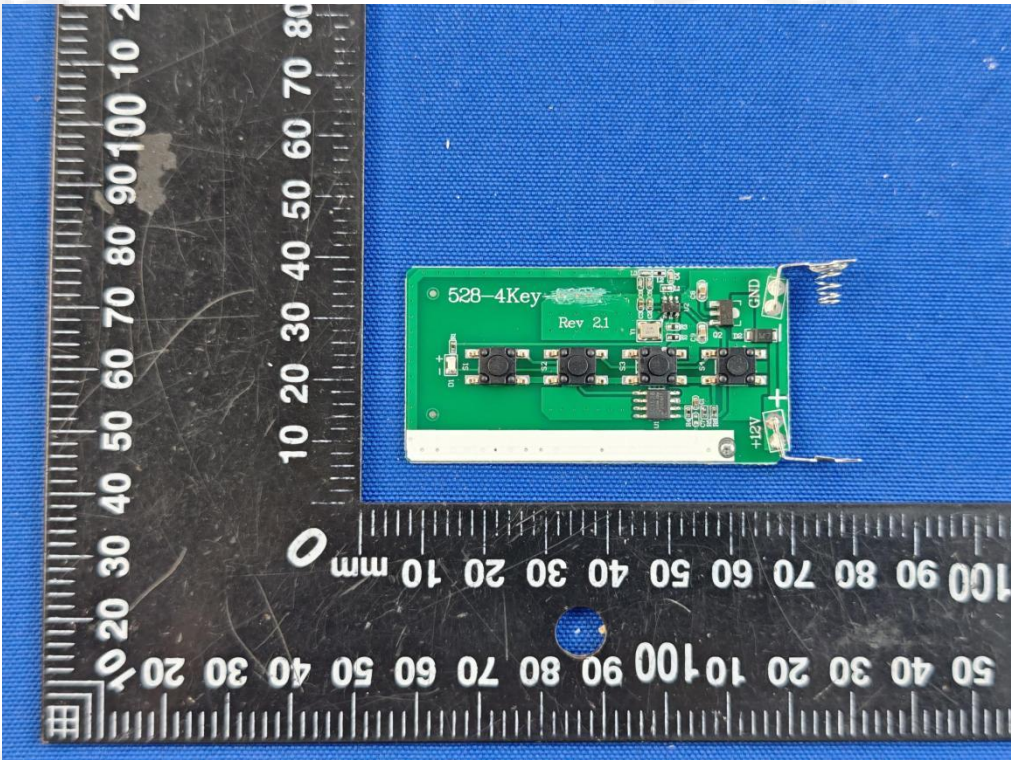
External Photos of EUT

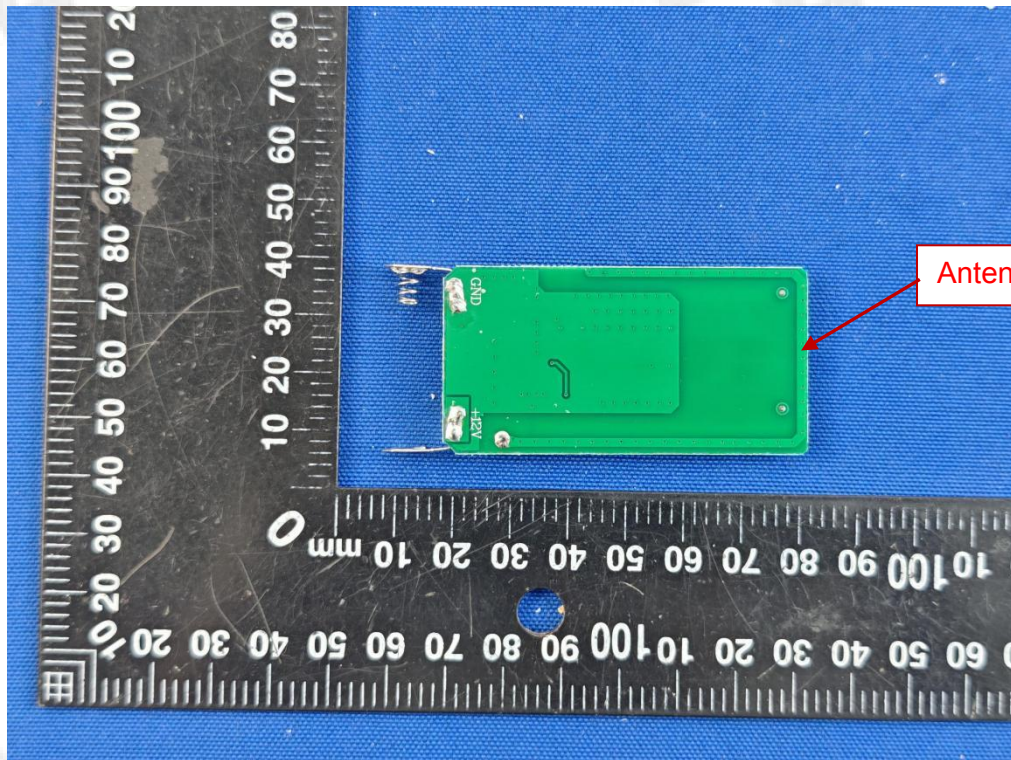






Internal Photos of EUT





***** End of Report *****