TEST REPORT

ETSI EN 300 440 V2.2.1 (2018-07)

Report Reference No.....:	**HK2307193131-2ER**
Compiled by (position+printed name+signature)..:	Testing engineer Bella Huang
Supervised by (position+printed name+signature)..:	Technique principal Sliver Wan
Approved by (position+printed name+signature)..:	Manager Jason Zhou
Date of issue.....:	2023/07/26
Representative Laboratory Name ....:	Shenzhen HUAK Testing Technology Co., Ltd.
Address.....:	1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Applicant's name.....:	Shenzhen Deepsea Innovation Technology Co., Ltd.
Address.....:	Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, China
Test specification:	
Standard .....:	**ETSI EN 300 440 V2.2.1 (2018-07)**
TRF Originator.....:	Shenzhen HUAK Testing Technology Co., Ltd.
Master TRF.....:	Dated 2019-07

Test item description.....:	Drone
Trade Mark .....:	N/A
Model/Type reference.....:	A24
Listed Models .....:	DSDR01B, DSDR01C, DSDR03A, DSDR04A, DSDR04E, DSDR05A, DSDR05B, DSDR05C, DSDR05D, DSDR06A, DSDR07A, DSRC01A, DSRC01B, DSRC01C, DSRC03A, DSRC03B, DSRC04A, DSRC05A, DSRC06A, DSRC07A, DSRC08A, DSRC09A, A20, A20W, A30, A30W, A15, A15W, A21, A22, A23, A25, A26, A31, A31W, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, D18, D20, D25, D28, D30, D35, D40, D50, D58, D60, D65, D68, D80, D85, D88, D90, D95, T25
Hardware Version .....:	V2.0
Software Version .....:	V2.0
Rating .....:	TX: DC 4.5V From Battery RX: DC 5V From DC Power or DC 3.7V From Battery
Result.....:	**PASS**

TEST REPORT

Test Report No. :	HK2307193131-2ER	2023/07/26 Date of issue

Equipment under Test	:	Drone
Model /Type	:	A24
Listed Models	:	DSDR01B, DSDR01C, DSDR03A, DSDR04A, DSDR04E, DSDR05A, DSDR05B, DSDR05C, DSDR05D, DSDR06A, DSDR07A, DSRC01A, DSRC01B, DSRC01C, DSRC03A, DSRC03B, DSRC04A, DSRC05A, DSRC06A, DSRC07A, DSRC08A, DSRC09A, A20, A20W, A30, A30W, A15, A15W, A21, A22, A23, A25, A26, A31, A31W, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, D18, D20, D25, D28, D30, D35, D40, D50, D58, D60, D65, D68, D80, D85, D88, D90, D95, T25
Applicant	:	Shenzhen Deepsea Innovation Technology Co., Ltd.
Address	:	Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, China
Manufacturer	:	Shenzhen Deepsea Excellence Technology Co,. Ltd.
Address	:	5th Floor, Building 7, Hongfa High-tech Park, Keji 4th Road, Shiyan Street, Baoan District, Shenzhe, China

Test Result according to the standards on page 5:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	2023/07/26	Jason Zhou

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Table of Contents **Page**

Table of Contents **Page**

1. GENERAL INFORMATION

1.1 General Remarks

Date of receipt of test sample	:	2023/07/19
Testing commenced on	:	2023/07/19
Testing concluded on	:	2023/07/26

1.2Product Description

Items	Description
Equipment Under Test:	Drone
Test Model:	A24
Supplementary Model:	DSDR01B, DSDR01C, DSDR03A, DSDR04A, DSDR04E, DSDR05A, DSDR05B, DSDR05C, DSDR05D, DSDR06A, DSDR07A, DSRC01A, DSRC01B, DSRC01C, DSRC03A, DSRC03B, DSRC04A, DSRC05A, DSRC06A, DSRC07A, DSRC08A, DSRC09A, A20, A20W, A30, A30W, A15, A15W, A21, A22, A23, A25, A26, A31, A31W, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, D18, D20, D25, D28, D30, D35, D40, D50, D58, D60, D65, D68, D80, D85, D88, D90, D95, T25
Model Diff:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: A24.
Frequency Range:	2460-2483MHz
Channel Spacing:	1MHz
Modulation:	GFSK
Antenna Type:	Internal Antenna
Antenna Gain	0dBi
Rated Voltage:	TX: DC 4.5V From Battery RX: DC 5V From DC Power or DC 3.7V From Battery

1.3 Channel list

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2460	**11**	2470	**21**	2480
2	2461	**12**	2471	**22**	2481
3	2462	**13**	2472	**23**	2482
4	2463	**14**	2473	**24**	2483
5	2464	**15**	2474		
6	2645	**16**	2475		
7	2466	**17**	2476		
8	2467	**18**	2477		
9	2468	**19**	2478		
10	2469	**20**	2479		

1.4 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with ETSI EN 300 440 V2.2.1 (2018-07)

The objective of the manufacturer is to demonstrate compliance with the described standards above. In this report, all the test method used was reference to the standard of ETSI EN 300 440 V2.2.1 (2018-05).

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

1.5 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1:2006, radio disturbance and immunity measuring apparatus, and CISPR16-2-3:2010, Method of measurement of disturbances and immunity.

All measurement required was performed at **Shenzhen HUAK Testing Technology Co., Ltd.** at **1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China**

1.6 Test Facility

Shenzhen HUAK Testing Technology Co., Ltd.
Address: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：
A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

1.7 Block diagram of EUT configuration for test

The EUT has been tested under operating condition. Manual control the EUT for staying in continuous transmitting mode. Channel Low(2460MHz),Channel Middle(2472MHz) and Channel High(2483MHz) are chosen for the final testing.

1.8 Test Equipment List and Details

RF output power & PSD & OOB & OBW & Hoping & Duty Cycle, Tx-sequence, Tx-gap & Adaptively&Blocking						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	Spectrum analyzer	Agilent	N9020A	HKE-048	2023/02/17	2024/02/16
2	Signal generator	Agilent	83630A	HKE-028	2023/02/17	2024/02/16
3	Signal generator	Agilent	N5182A	HKE-029	2023/02/17	2024/02/16
4	RF automatic control unit	Tonscend	JS0806-2	HKE-060	2023/02/17	2024/02/16

Transmitter spurious emissions & Receiver spurious emissions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	2023/02/17	2024/02/16
2	Horn antenna	Schwarzbeck	9120D	HKE-013	2023/02/17	2024/02/16
3	Receiver	R&S	ESR-7	HKE-010	2023/02/17	2024/02/16
4	Position controller	Taiwan MF	MF7802	HKE-011	2023/02/17	2024/02/16
5	Preamplifier	EMCI	EMC0518 45SE	HKE-015	2023/02/17	2024/02/16
6	Preamplifier	Agilent	83051A	HKE-016	2023/02/17	2024/02/16
7	High pass filter unit	Tonscend	JS0806-F	HKE-055	2023/02/17	2024/02/16
8	Spectrum analyzer	Agilent	N9020A	HKE-048	2023/02/17	2024/02/16
9	Temperature and humidity meter	Boyang	HTC-1	HKE-077	2023/02/17	2024/02/16

The calibration interval is 1 year.

2. TEST SUMMARY

HARMONISED EUROPEAN STANDARD ETSI EN 300 440 V2.2.1 (2018-07) Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU					
No	Description	Clause No	U/C	Condition	Results
1	e.i.r.p.	4.2.2	C	Applies to all devices with transmitters	PASS
2	Permitted range of operating frequencies	4.2.3	C	Applies to all devices with transmitters	PASS
3	Unwanted emissions in the spurious domain	4.2.4	C	Applies to all devices with transmitters	PASS
4	Duty Cycle	4.2.5.4	C	Transmitting devices which do not use LBT, DAA, or RFID transmitters operating in the 2 446 to 2 454 MHz band transmitting more than 500 mW e.i.r.p. power level	N/A
5	Additional requirements for FHSS equipment	4.2.6	C	Equipment utilizing FHSS modulation	N/A
6	Adjacent channel selectivity	4.3.3	C	Applies to equipment Category 1 receivers	N/A
7	Blocking or desensitization	4.3.4	C	Applies to category 1 and 2 receivers	PASS
8	Spurious radiation	4.3.5	C	Applies to all receivers, except receivers used in combination with permanently co-located transmitters continuously transmitting	PASS
9	Spectrum access techniques	4.4	C	Equipment which are not using duty cycle restrictions for media access	N/A
10	GBSAR antenna pattern	4.6.4	C	Applies only GBSAR systems	N/A
11	Limits for GBSAR	Annex F	C	Applies only GBSAR systems	N/A

Note
1: N/A is an abbreviation for Not Applicable and means this test item is not applicable for this device according to the technology characteristic of device.
2. Indicates whether the requirement is unconditionally applicable (U) or is conditional upon the manufacturer's claimed functionality of the equipment (C).

3. Equivalent isotropically radiated power (e.i.r.p.)

3.1 Standard Applicable

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.2.1

The e.i.r.p. is defined as the maximum radiated power of the transmitter and its antenna, and is measured and calculated according to the procedure given in the following clause.

3.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.2.4

The transmitter maximum e.i.r.p. under normal and extreme test conditions is provided in table 2.

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

3.3 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.2.3

The measurement arrangement see following figure:

Equipment measured as constant envelope modulation equipment

Step 1:

- using a suitable means, the output of the transmitter shall be coupled to a matched diode detector;
- the output of the diode detector shall be connected to the vertical channel of an oscilloscope;
- the combination of the diode detector and the oscilloscope shall be capable of faithfully reproducing the envelope peaks and the duty cycle of the transmitter output signal;
- the observed duty cycle of the transmitter (Tx on/(Tx on + Tx off)) shall be noted as x, ($0 < x < 1$) and recorded.

Step 2:

- the average output power of the transmitter shall be determined using a wideband, calibrated RF power meter with a matched thermocouple detector or an equivalent thereof and, where applicable, with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);

- the e.i.r.p. shall be calculated from the above measured power output A, the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:
P = A + G + 10 log (1/x); P shall not exceed the value specified in clause 4.2.2.4.1.

3.4 Test Result

Temperature (℃)	22~23
Humidity (%RH)	40~42
Barometric Pressure (mbar)	950~1000
EUT	Drone
M/N	A24
Operating Mode	Continuous Transmitting
Test Result:	Pass

Frequency(MHz)		**Power(dBm e.i.r.p)***
Low	2460	1.58
Middle	2472	2.46
High	2483	2.97
Limit		**limit =10dBm**
Measurement Uncertainty		**+1.5dB**
*** Note：Power(P) = A + G + 10 log (1/x)**		

4. Permitted range of operating frequencies

4.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.3.1

The permitted range of operating frequencies includes all frequencies on which the equipment may operate within an assigned frequency band. The operating frequency range shall be declared by the manufacturer.

The frequency range of the equipment is determined by the lowest and highest frequencies occupied by the power envelope in accordance with clause 4.2.2.4, table 2.

FH is the highest frequency of the power envelope, it is the frequency furthest above the frequency of maximum power where the output power envelope drops below the level of -75 dBm/Hz spectral power density (e.g. -30 dBm if measured in a 30 kHz reference bandwidth) e.i.r.p.

FL is the lowest frequency of the power envelope; it is the frequency furthest below the frequency of maximum power where the output power drops below the level of -75 dBm/Hz spectral power density (e.g. -30 dBm if measured in a 30 kHz reference bandwidth) e.i.r.p

The occupied bandwidths and OCW of the transmitter shall be declared. Where differing modes of emission are available, all modes and their associated bandwidths shall be stated.

4.2 limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.3.5

The width of the power spectrum envelope is fH -fL for a given operating frequency. In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of fL and the highest value of fH resulting from the adjustment of the equipment to the lowest and highest operating frequencies.

The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) of the transmitter shall fall within the assigned frequency band.

For all equipment the frequency range shall lie within the frequency band given by clause 4.2.2.4, table 2. For non-harmonized frequency bands the available frequency range may differ between national administrations.

4.3 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.3.4

These measurements shall be performed under both normal and extreme operating conditions except for the occupied bandwidth assessment for which measurement at normal operating conditions is sufficient.

The measurement procedure shall be as follows:

a) put the spectrum analyser in video averaging mode with a minimum of 50 sweeps selected;

b) select the lowest operating frequency of the equipment under test and activate the transmitter with modulation applied. The RF emission of the equipment shall be displayed on the spectrum analyser;

c) using the marker of the spectrum analyser, find the lowest frequency below the operating frequency at which the spectral power density drops below the level given in clause 4.2.3. This frequency shall be recorded in the test report;

d) select the highest operating frequency of the equipment under test and find the highest frequency at which the spectral power density drops below the value given in clause 4.2.3. This frequency shall be recorded in the test report;

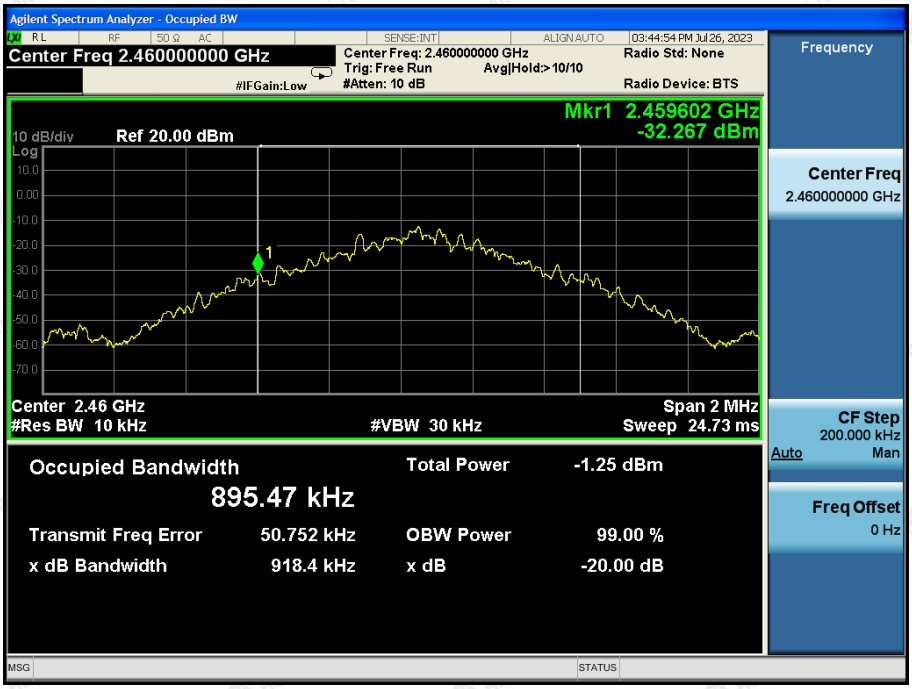
e) the difference between the frequencies measured in steps c) and d) is the operating frequency range. It shall be recorded in the test report.

4.4 Test Result

Temperature (℃)	22~23
Humidity (%RH)	40~42
Barometric Pressure (mbar)	950~1000
EUT	Drone
M/N	A24
Operating Mode	Continuous Transmitting
Result:	Pass

Test Condition:			2460MHz
	Voltage (V)	Temperature (℃)	Transmit frequency(GHz)
Normal	DC 4.5V	25	2.45960
Extreme	DC 4.95V	-10	2.45942
		+40	2.45958
	DC 4.05V	-10	2.45966
		+40	2.45957
Final result			2.45942
Limit			2.4GHz to 2.4835Hz
Conclusion			PASS

Test Condition:			2483MHz
	Voltage (V)	Temperature (℃)	Transmit frequency(GHz)
Normal	DC 4.5V	25	2.48349
Extreme	DC 4.95V	-10	2.48338
		+40	2.48342
	DC 4.05V	-10	2.48348
		+40	2.48329
Final result			2.48349
Limit			2.4GHz to 2.4835Hz
Conclusion			PASS



5. Unwanted emissions in the spurious domain

5.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.4.1&4.2.4.2

the boundary between the out-of-band and spurious domains is ±250 % of the necessary bandwidth from the centre frequency of the emission. Out-of-band and spurious emissions are measured as spectral power density under normal operating conditions.

Unwanted emissions in the spurious domain (spurious emissions) are those at frequencies beyond the limit of 250 % of the occupied bandwidth above and below the centre frequency of the emission. The occupied bandwidth is either measured or declared by the manufacturer.

5.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.4.4

Table 3: Spurious emissions

Frequency ranges State	47 MHz to 74 MHz 87,5 MHz to 108 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤ 1 000 MHz	Frequencies > 1 000 MHz
Operating	4 nW	250 nW	1 µW
Standby	2 nW	2 nW	20 nW

Frequency Range	Limit when Operating	Limit when Standby
30 MHz to 1 GHz	-36 dBm	-57 dBm
Above 1 GHz	-30 dBm	-47 dBm

5.3 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is +4.0 dB.

5.4 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.4.3.1&4.2.4.3.3

5.4.1 Conducted spurious emission

a) The transmitter shall be connected to a measuring receiver through a test load, 50 Ω power attenuator, and if necessary, an appropriate filter to avoid overload of the measuring receiver. The bandwidth of the measuring receiver shall be adjusted until the sensitivity of the measuring receiver is at least 6 dB below the spurious emission limit given in table 3, see clause 4.2.4.4. This bandwidth shall be recorded in the test report.

For the measurement of spurious emissions below the second harmonic of the carrier frequency, the filter used shall be a high "Q" (notch) filter centred on the transmitter carrier frequency, which attenuates this signal by at least 30 dB.

For the measurement of spurious emissions at and above the second harmonic of the carrier frequency the filter used shall be a high pass filter with a stop band rejection exceeding 40 dB. The cut-off frequency of the high pass filter shall be approximately 1,5 times the transmitter carrier frequency.

Precautions may be required to ensure that the test load does not generate or that the high pass filter does not attenuate, the harmonics of the carrier.

b) The transmitter shall be unmodulated and operating at the maximum limit of its specified power range. If modulation cannot be inhibited then the test shall be carried out with modulation (see clause 5.8.1) and this fact shall be recorded in the test report.

c) For carrier frequencies in the range 1 GHz to 20 GHz the frequency of the measuring receiver shall be adjusted over the frequency range 25 MHz to 10 times the carrier frequency, not exceeding 40 GHz. For carrier frequencies above 20 GHz the measuring receiver shall be tuned over the range 25 MHz up to twice the carrier frequency, not exceeding 66 GHz. The frequency and level of every spurious emission found shall be noted. The emissions within the channel occupied by the transmitter carrier and, for channelized systems its adjacent channels, shall not be recorded.

d) If the measuring receiver has not been calibrated in terms of power level at the transmitter output, the level of any detected components shall be determined by replacing the transmitter by the signal generator and adjusting it to reproduce the frequency and level of every spurious emission noted in step c). The absolute power level of each of the emissions shall be noted.

e) The frequency and level of each spurious emission measured and the bandwidth of the measuring receiver shall be recorded in the test report.

f) If a user accessible power adjustment is provided then the tests in steps c) to e) shall be repeated at the lowest power setting available.

g) The measurement in steps c) to f) shall be repeated with the transmitter in the standby condition if this option is available.

5.4.2 radiated spurious emission

a) A test site selected from annex B which fulfils the requirements of the specified frequency range of this measurement shall be used. The test antenna shall be oriented initially for vertical polarization and connected to a measuring receiver, through a suitable filter to avoid overloading of the measuring receiver if required. The bandwidth of the measuring receiver shall be adjusted until the sensitivity of the measuring receiver, after allowing for the coupling loss, is at least 6 dB below the spurious emission limit given in table 3, see clause 4.2.4.4. This bandwidth shall be recorded in the test report.

For the measurement of spurious emissions below the second harmonic of the carrier frequency the optional filter used shall be a high "Q" (notch) filter centred on the transmitter carrier frequency and attenuating this signal by at least 30 dB.

For the measurement of spurious emissions at and above the second harmonic of the carrier frequency the optional filter used shall be a high pass filter with a stop band rejection exceeding 40 dB. The cut-off frequency of the high pass filter shall be approximately 1,5 times the transmitter carrier frequency.

The transmitter under test shall be placed on the support in its standard position and shall be switched on without modulation. If modulation cannot be inhibited then the test shall be carried out with modulation (see clause 6.1) and this fact shall be recorded in the test report.

b) The same method of measurement as steps b) and k) of clause 4.2.4.3.2 shall be used.

Measurements shall be carried out while the equipment is hopping between two frequencies separated by the maximum hop frequency change declared by the manufacturer, one of which is the lowest hop frequency.
The measurements shall be repeated on two frequencies separated by the maximum hop frequency change declared by the manufacturer, one of which is the highest hop frequency.

5.5 Test Result

Temperature (℃)	22~23
Humidity (%RH)	40~42
Barometric Pressure (mbar)	950~1000
EUT	Drone
M/N	A24
Operating Mode	Continuous Transmitting

Test Result: Pass

Low Channel(2460MHz)

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dBm)	
1	104.15	-90.68	16.81	-73.87	-54	-19.87	peak
2	186.75	-91.62	16.63	-74.99	-54	-20.99	peak
3	417.63	-91.85	21.49	-70.36	-36	-34.36	peak
4	514.26	-88.42	23.66	-64.76	-36	-28.76	peak
5	609.97	-89.31	29.96	-59.35	-54	-5.35	peak
6	733.16	-89.37	30.38	-58.99	-54	-4.99	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	116.31	-87.47	16.72	-70.75	-36	-34.75	peak
2	231.42	-90.61	16.53	-74.08	-54	-20.08	peak
3	339.75	-91.85	19.38	-72.47	-54	-18.47	peak
4	404.66	-88.48	22.76	-65.72	-36	-29.72	peak
5	586.54	-87.66	23.68	-63.98	-36	-27.98	peak
6	717.92	-90.22	27.26	-62.96	-54	-8.96	peak

High Channel (2483MHz)

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	109.26	-90.68	16.81	-73.87	-54	-19.87	peak
2	222.35	-91.61	16.63	-74.98	-36	-38.98	peak
3	315.56	-91.83	21.49	-70.34	-36	-34.34	peak
4	427.16	-88.42	23.66	-64.76	-36	-28.76	peak
5	524.52	-89.35	22.96	-66.39	-54	-12.39	peak
6	714.25	-87.37	23.38	-63.99	-54	-9.99	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	113.41	-89.37	16.8	-72.57	-54	-18.57	peak
2	221.17	-90.42	16.65	-73.77	-36	-37.77	peak
3	338.07	-91.82	14.41	-77.41	-36	-41.41	peak
4	383.15	-84.31	23.54	-60.77	-36	-24.77	peak
5	637.86	-89.52	22.15	-67.37	-54	-13.37	peak
6	722.18	-85.72	23.81	-61.91	-54	-7.91	peak

Spurious Emission From Above 1GHz
Low Channel (2460MHz)

Frequency (MHz)	Antenna Polarization	Reading (dBm)	Correction Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)
4920	H	-47.25	9.06	-38.19	-30	-8.19
7380	H	-58.56	15.48	-43.08	-30	-13.08
9840	H	-53.38	18.35	-35.03	-30	-5.03
12300	H	-54.46	18.59	-35.87	-30	-5.87
4920	V	-58.54	9.06	-49.48	-30	-19.48
7380	V	-68.75	15.48	-53.27	-30	-23.27
9840	V	-69.73	18.35	-51.38	-30	-21.38
12300	V	-64.84	18.59	-46.25	-30	-16.25

High Channel (2483MHz)

Frequency (MHz)	Antenna Polarization	Reading (dBm)	Correction Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)
4966	H	-69.29	14.85	-54.44	-30	-24.44
7449	H	-67.12	17.66	-49.46	-30	-19.46
9932	H	-66.37	21.21	-45.16	-30	-15.16
12415	H	-65.83	22.5	-43.33	-30	-13.33
4966	V	-56.55	23.17	-33.38	-30	-3.38
7449	V	-57.58	14.83	-42.75	-30	-12.75
9932	V	-65.38	16.66	-48.72	-30	-18.72
12415	V	-67.54	19.21	-48.33	-30	-18.33

Stand By Mode

Frequency (MHz)	Antenna Polarization	Reading (dBm)	Correction Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)
425.46	H	-67.21	-10.54	-77.75	-57	-20.75
606.28	V	-68.65	-10.54	-79.19	-57	-22.19
5298.69	H	-65.47	9.59	-55.88	-47	-8.88
5346.85	V	-64.92	9.59	-55.33	-47	-8.33

6. DUTY CYCLE

6.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.5.1

Duty Cycle (DC) shall apply to all transmitting equipment except those which utilize Listen Before Talk (LBT) clause 4.4.2, or Detect And Avoid (DAA), clause 4.4.3. RFID transmitters operating in the 2 446 MHz to 2 454 MHz frequency band that transmit at a maximum radiated peak power level of less than 500 mW e.i.r.p. are also excluded.

6.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.5.4

Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in annex D shall apply
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in annex D shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications	Limits shown in annex F shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

6.3 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.2.5.3

An assessment of the overall Duty Cycle shall be made for a representative period of Tobs over the observation bandwidth Fobs. Unless otherwise specified, Tobs is 1 hour and the observation bandwidth Fobs is the operational frequency band.

The representative period shall be the most active one in normal use of the device. As a guide "Normal use" is considered as representing the behaviour of the device during transmission of 99 % of the [emissions] generated during its operational lifetime.

Procedures such setup, commissioning, and maintenance are not considered part of normal operation.

For manual operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmitter remains on until the trigger is released or the device is manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and compare to the limit in table 4.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

6.4 Test Result

Not applicable, this requirement applies to RFID transmitters operating in 2 446 MHz to 2 454 MHz only.

7. Receiver requirements

7.1 Receiver category

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.1

The product family of short range radio devices is divided into three receiver categories, see table 5, each having a set of relevant receiver requirements and minimum performance criteria. The set of receiver requirements depends on the choice of receiver category by the equipment manufacturer.

The manufacturer shall specify the receiver category of his choice and if receiver category 1 or 2 is selected, this shall be declared in the product literature provided to the user. In particular, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands for any SRD which may have inherent safety of human life implications.

The receiver categories are defined in table 5.

Table 5: Receiver categories

Receiver category	Relevant receiver clauses	Risk assessment of receiver performance
1	4.3.3, 4.3.4 and 4.3.5	Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person).
2	4.3.4 and 4.3.5	Medium reliable SRD communication media e.g. causing inconvenience to persons, which cannot simply be overcome by other means.
3	4.3.5	Standard reliable SRD communication media e.g. Inconvenience to persons, which can simply be overcome by other means (e.g. manual).

7.2 Receiver category of EUT

Result: This product is Receiver category 3.

8. Adjacent channel selectivity

8.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.3.1

This requirement applies to Equipment Category 1 receivers, when invoked, as defined in clause 4.3.1.

The adjacent channel selectivity is a measure of the capability of the receiver to operate satisfactorily in the presence of an unwanted signal that differs in frequency from the wanted signal by an amount equal to the adjacent channel separation for which the equipment is intended.

8.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.3.4

Table 6: Limit for adjacent channel selectivity

Receiver category	Limit
1	-30 dBm + k
2	No limit
3	No limit

Note: The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:f is the frequency in GHz; BW is the channel bandwidth in MHz.

The factor k is limited within the following:

0 < k < 40 dB.

8.3 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.3.3

This measurement shall be conducted under normal conditions.
Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, either:

a) via a test fixture or a test antenna to the receiver integrated, dedicated or test antenna;

b) directly to the receiver permanent or temporary antenna connector.

The method of coupling to the receiver shall be stated in the test report.

Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.

Signal generator B shall be unmodulated and shall be adjusted to the adjacent channel centre frequency immediately above that of the wanted signal.

Initially signal generator B shall be switched off and using signal generator A the level that still gives sufficient response shall be established. The output level of generator A shall then be increased by 3dB.

Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

The measurements shall be repeated with signal generator B unmodulated and adjusted to the adjacent channel centre immediately below the wanted signal.

The adjacent channel selectivity shall be recorded for the upper and lower adjacent channels as the level in dBm of the unwanted signal.

For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres. In this case, the adjacent selectivity shall be recorded as the level in dBm of lowest level of the unwanted signal (generator B) resulting in a non-read of the tag.

8.4 Test Procedure

Not applicable, this requirement applies to Equipment Category 1 receivers only.

9. Blocking or desensitization

9.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.4.1

This requirement applies to Equipment Category 1 and Category 2 receivers, when invoked, as defined in clause 4.3.1.

Blocking is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted input signal at any frequencies other than those of the spurious responses or the adjacent channels or bands, see clauses 4.3.3 and 4.3.4.

9.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.4.4

Receiver category	Limit
1	-30 dBm + k
2	-45 dBm + k
3	-60 dBm + k

Note: The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:f is the frequency in GHz; BW is the channel bandwidth in MHz.

The factor k is limited within the following:

0 < k < 40 dB.

9.3 Test Procedure

9.3.1 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.

b. The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

The method of coupling to the receiver shall be stated in the test report.

Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.

Signal generator B shall be unmodulated and shall be adjusted to a test frequency at approximately 10 times, 20 times and 50 times of the receive channel bandwidth above upper band edge of the receive channel.

Initially signal generator B shall be switched off and using signal generator A the level which still gives sufficient response shall be established. The output level of generator A shall then be increased by 3dB.

Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

The measurement shall be repeated with the test frequency for signal generator B at approximately 10 times, 20 times and 50 times of the receive channel bandwidth below the lower band edge of the receive channel.

The blocking or desensitization shall be recorded as the level in dBm of lowest level of the unwanted signal (generator B).

For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres. In this case, the blocking or desensitization shall be recorded as the ratio in dB of lowest level of the unwanted signal (generator B) resulting in a non-read of the tag. to the declared sensitivity of the receiver +3 dB.

9.4 Test Result

Test Channel	BW(MHz)	Blocking Signal Frequency(MHz)	Blocking Signal Power Level (dBm)	Limit (dBm)	Result
Low	1	2450(10 time channel bandwidth frequency offset)	-53.43	-70.61	PASS
		2440(20 time channel bandwidth frequency offset)	-46.19	-70.57	PASS
		2410(50 time channel bandwidth frequency offset)	-48.41	-70.46	PASS
High	1	2493(10 time channel bandwidth frequency offset)	-44.89	-70.91	PASS
		2503(20 time channel bandwidth frequency offset)	-48.52	-70.95	PASS
		2533(50 time channel bandwidth frequency offset)	-47.36	-71.05	PASS

10. Spurious radiations

10.1 Standard Application

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.5.1

This requirement applies to all receivers, except receivers used in combination with permanently collocated transmitters continuously transmitting. Co-located is defined as < 3 m. In these cases the receivers will be tested together with the transmitter in operating mode.

Spurious radiations from the receiver are components at any frequency, radiated by the equipment and antenna. The level of spurious radiations shall be measured by either:

a) their power level in a specified load (conducted spurious emission) and their effective radiated power when radiated by the cabinet and structure of the equipment (cabinet radiation); or

b) their effective radiated power when radiated by the cabinet and the integral or dedicated antenna, in the case of portable equipment fitted with such an antenna and no permanent RF connector.

10.2 Limits

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.5.4

The power of any spurious emission shall not exceed 2 nW in the range 25 MHz to 1 GHz and shall not exceed 20 nW on frequencies above 1 GHz.

10.3 Test Procedure

According to ETSI EN 300 440 V2.2.1 (2018-07) clause 4.3.5.3

10.3.1 Method of measurement conducted spurious components

This method of measurement applies to receivers having a permanent antenna connector.

A test load, 50 Ω power attenuator, may be used to protect the measuring receiver (see clause 6.5) against damage when testing a receiver combined in one unit with a transmitter.

The measuring receiver used shall have sufficient dynamic range and sensitivity to achieve the required measurement accuracy at the specified limit. The bandwidth of the measuring receiver shall be adjusted until the sensitivity of the measuring receiver is at least 6 dB below the spurious emission limit given in clause 4.3.5.4. This bandwidth shall be recorded in the test report:

a) The receiver input terminals shall be connected to a measuring receiver having an input impedance of 50 Ω and the receiver is switched on.

b) For carrier frequencies in the range 1 GHz to 20 GHz the frequency of the measuring receiver shall be adjusted over the frequency range 25 MHz to 10 times the carrier frequency, not exceeding 40GHz. For carrier frequencies above 20 GHz the measuring receiver shall be tuned over the range 25MHz up to twice the carrier frequency not exceeding 66 GHz. The frequency and the absolute power level of each of the spurious components found shall be noted.

c) If the detecting device is not calibrated in terms of power input, the level of any detected components shall be determined by replacing the receiver by the signal generator and adjusting it to reproduce the frequency and level of every spurious component noted in step b). The absolute power level of each spurious component shall be noted.

d) The frequency and level of each spurious emission measured and the bandwidth of the measuring receiver shall be recorded in the test report.

This method of measurement applies to receivers having a permanent antenna connector.

a) A test site selected from annex B which fulfils the requirements of the specified frequency range of this measurement shall be used. The test antenna shall be oriented initially for vertical polarization and connected to a measuring receiver. The bandwidth of the measuring receiver shall be adjusted until the sensitivity of the measuring receiver is at least 6 dB below the spurious emission limit given in clause 4.3.5.4. This bandwidth shall be recorded in the test report. The receiver under test shall be placed on the support in its standard position and connected to an artificial antenna, see clause 5.8.2.

b) For carrier frequencies in the range 1 GHz to 20 GHz the frequency of the measuring receiver shall be adjusted over the frequency range 25 MHz to 10 times the carrier frequency, not exceeding 40GHz. For carrier frequencies above 20 GHz the measuring receiver shall be tuned over the range 25MHz up to twice the carrier frequency not exceeding 66 GHz. The frequency of each spurious component shall be noted. If the test site is disturbed by radiation coming from outside the site, this qualitative search may be performed in a screened room with reduced distance between the transmitter and the test antenna.

c) At each frequency at which a component has been detected, the measuring receiver shall be tuned and the test antenna shall be raised or lowered through the specified height range until the maximum signal level is detected on the measuring receiver.

d) The receiver shall be rotated up to 360° about a vertical axis, to maximize the received signal.

e) The test antenna shall be raised or lowered again through the specified height range until a maximum is obtained. This level shall be noted.

f) The substitution antenna (see clause B.3.2) shall replace the receiver antenna in the same position and in vertical polarization. It shall be connected to the signal generator.

g) At each frequency at which a component has been detected, the signal generator, substitution antenna and measuring receiver shall be tuned. The test antenna shall be raised or lowered through the specified height range until the maximum signal level is detected on the measuring receiver. The level of the signal generator giving the same signal level on the measuring receiver as in step e) shall be noted. This level, after correction due to the gain of the substitution antenna and the cable loss, is the radiated spurious component at this frequency.

h) The frequency and level of each spurious emission measured and the bandwidth of the measuring receiver shall be recorded in the test report.

i) Measurements b) to h) shall be repeated with the test antenna oriented in horizontal polarization.

10.3.2 Method of measurement radiated spurious components

This method of measurement applies to receivers having an integral antenna. a) A test site selected from annex B which fulfils the requirements of the specified frequency range of this measurement shall be used. The test antenna shall be oriented initially for vertical polarization and connected to a measuring receiver. The bandwidth of the measuring receiver shall be adjusted until the sensitivity of the measuring receiver is at least 6 dB below the spurious emission limit given in clause 4.3.5.4. This bandwidth shall be recorded in the test report. The receiver under test shall be placed on the support in its standard position. b) The same method of measurement as items b) to i) of clause 4.3.5.3.2 shall apply.

10.4 Test Procedure

Temperature (℃)	22~23
Humidity (%RH)	40~42
Barometric Pressure (mbar)	950~1000
EUT	Drone
M/N	A24
Operating Mode	Continuous Transmitting
Result:	Pass

Test Result: Pass

Low Channel(2460MHz)

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dBm)	
1	108.91	-91.79	16.81	-74.98	-57	-17.98	peak
2	189.05	-91.48	16.63	-74.85	-57	-17.85	peak
3	422.75	-83.33	21.49	-61.84	-57	-4.84	peak
4	466.64	-86.58	23.66	-62.92	-57	-5.92	peak
5	581.97	-93.77	26.96	-66.81	-57	-9.81	peak
6	702.86	-89.62	20.38	-69.24	-57	-12.24	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	114.73	-90.95	16.72	-74.23	-57	-17.23	peak
2	208.84	-92.68	16.53	-76.15	-57	-19.15	peak
3	316.96	-90.47	19.38	-71.09	-57	-14.09	peak
4	410.32	-89.67	22.76	-66.91	-57	-9.91	peak
5	601.72	-88.29	20.68	-67.61	-57	-10.61	peak
6	721.65	-85.78	21.26	-64.52	-57	-7.52	peak

High Channel (2483MHz)

Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	82.64	-88.63	16.74	-71.89	-57	-14.89	peak
2	186.73	-91.76	16.59	-75.17	-57	-18.17	peak
3	256.98	-85.58	21.73	-63.85	-57	-6.85	peak
4	428.36	-85.49	23.42	-62.07	-57	-5.07	peak
5	484.72	-88.82	22.71	-66.11	-57	-9.11	peak
6	707.02	-84.37	21.05	-63.32	-57	-6.32	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	107.32	-89.58	16.73	-72.85	-57	-15.85	peak
2	226.77	-85.69	16.77	-68.92	-57	-11.92	peak
3	323.98	-90.28	15.16	-75.12	-57	-18.12	peak
4	383.36	-87.78	22.96	-64.82	-57	-7.82	peak
5	639.74	-88.51	21.82	-66.69	-57	-9.69	peak
6	669.01	-87.12	21.57	-65.55	-57	-8.55	peak

Spurious Emission From Above 1GHz Low Channel (2460MHz)

Frequency (MHz)	Antenna Polarization	Reading (dBm)	Correction Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)
2933.99	H	-74.48	9.04	-65.44	-47	-18.44
7352.36	H	-75.36	15.81	-59.55	-47	-12.55
9692.32	H	-76.56	18.73	-57.83	-47	-10.83
12721.53	H	-75.14	18.66	-56.48	-47	-9.48
3265.88	V	-72.45	9.12	-63.33	-47	-16.33
7529.44	V	-79.58	15.51	-64.07	-47	-17.07
10186.02	V	-73.25	18.47	-54.78	-47	-7.78
13269.35	V	-80.86	18.62	-62.24	-47	-15.24

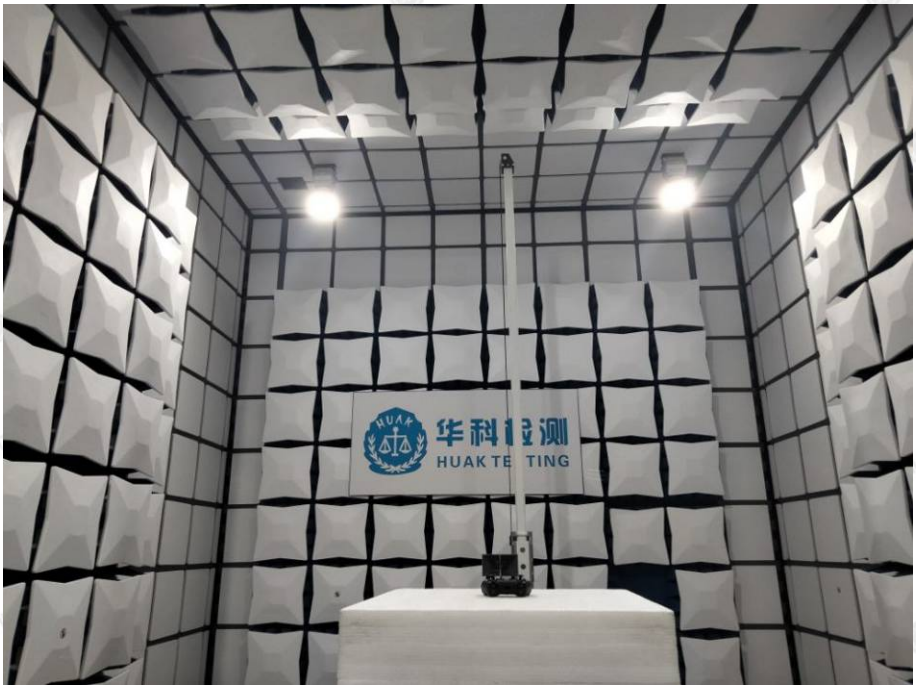
High Channel (2483MHz)

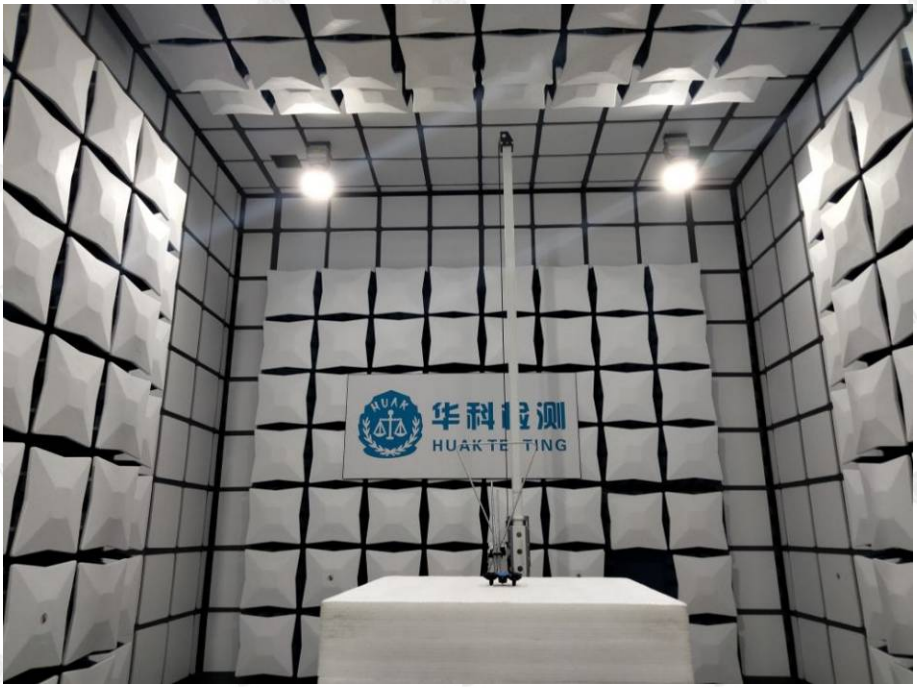
Frequency (MHz)	Antenna Polarization	Reading (dBm)	Correction Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)
2742.39	H	-72.78	9.85	-62.93	-47	-15.93
5607.05	H	-71.56	17.1	-54.46	-47	-7.46
7631.13	H	-72.26	20.64	-51.62	-47	-4.62
10799.94	H	-72.78	21.91	-50.87	-47	-3.87
2641.79	V	-75.45	22.73	-52.72	-47	-5.72
5407.88	V	-70.96	15.67	-55.29	-47	-8.29
7875.57	V	-72.58	16.16	-56.42	-47	-9.42
11135.09	V	-74.66	18.24	-56.42	-47	-9.42

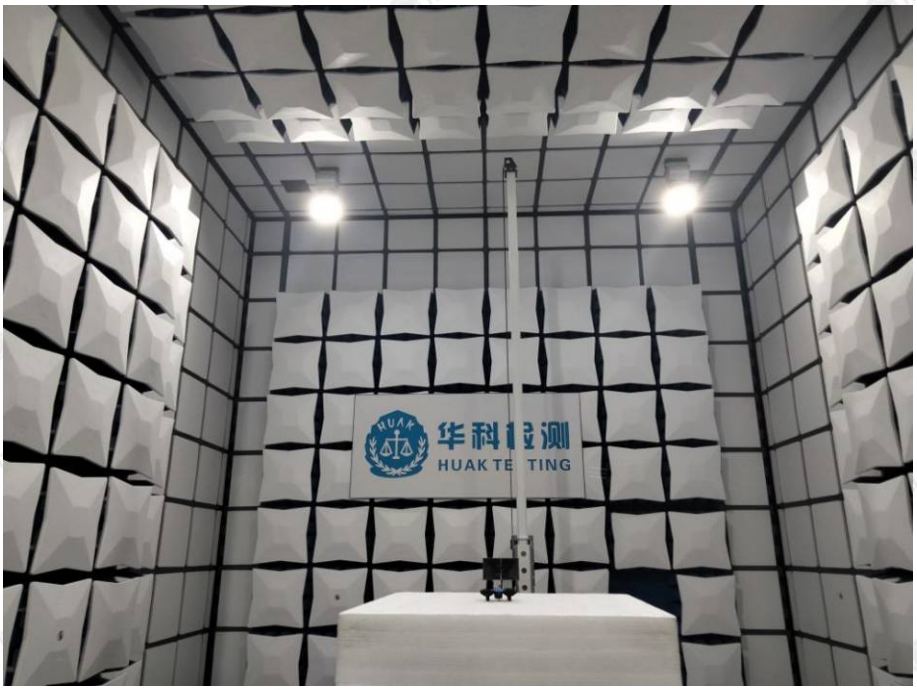
Note:

1. The emission behavior belongs to narrowband spurious emission.
2. Remark"---""means that the emission level is too low to be measured.
3. Calculation of result is: Emission Level (dBm)=Reading level (dBm) + Correction Factor (dB)

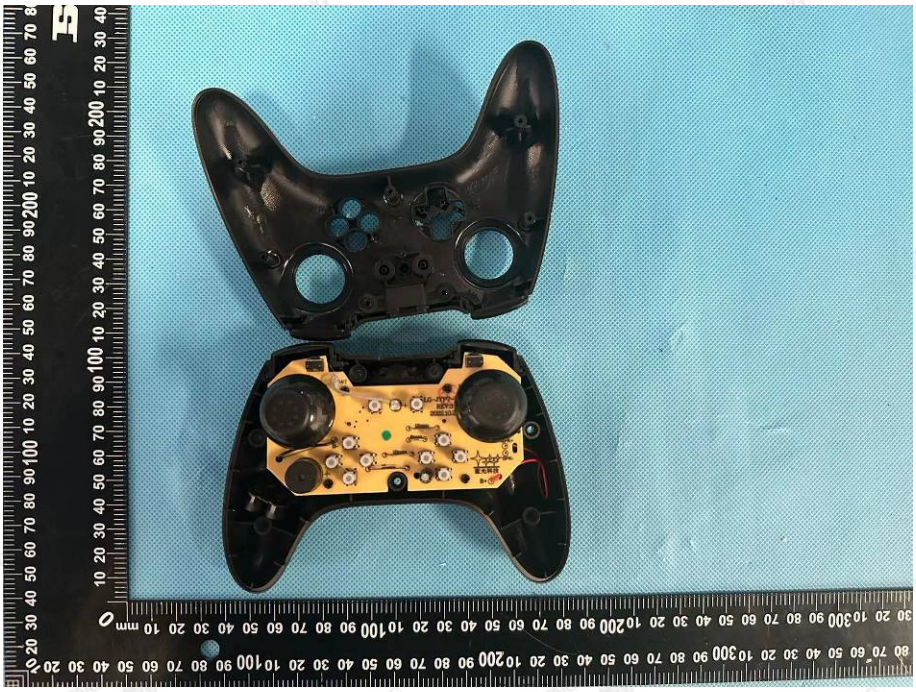
11. EUT TEST PHOTO

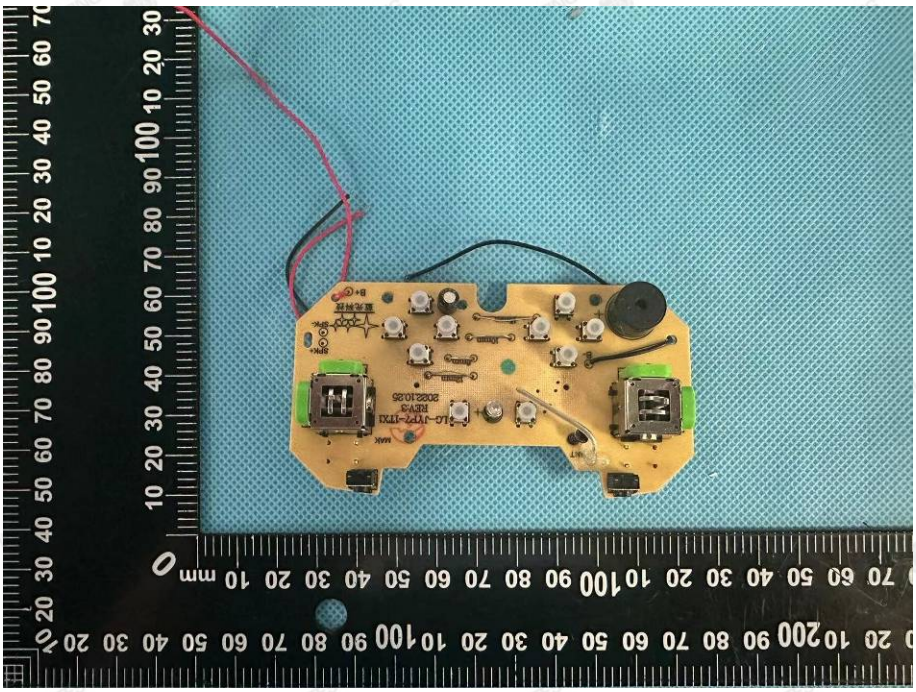


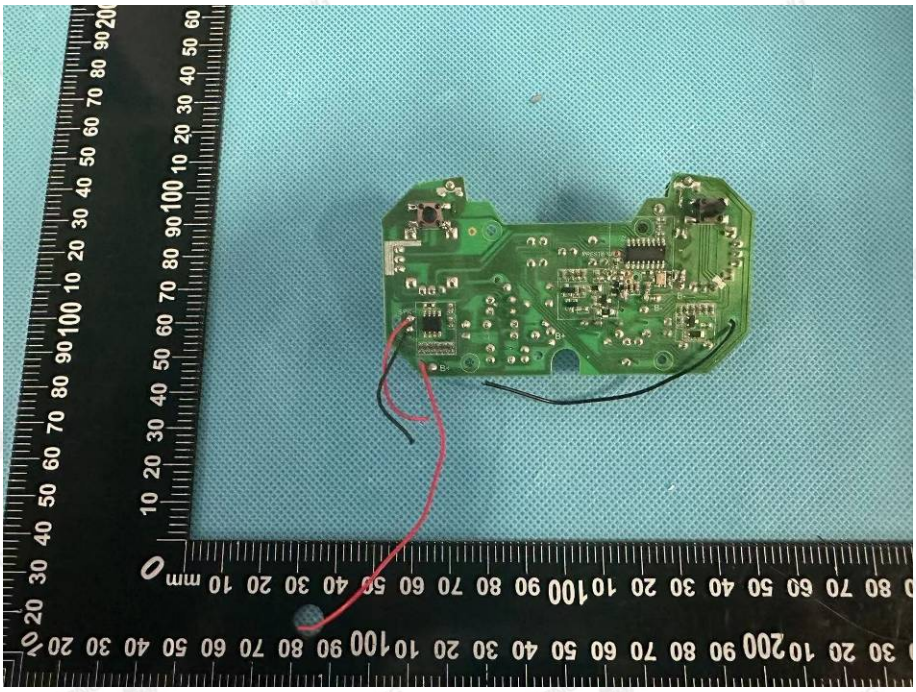




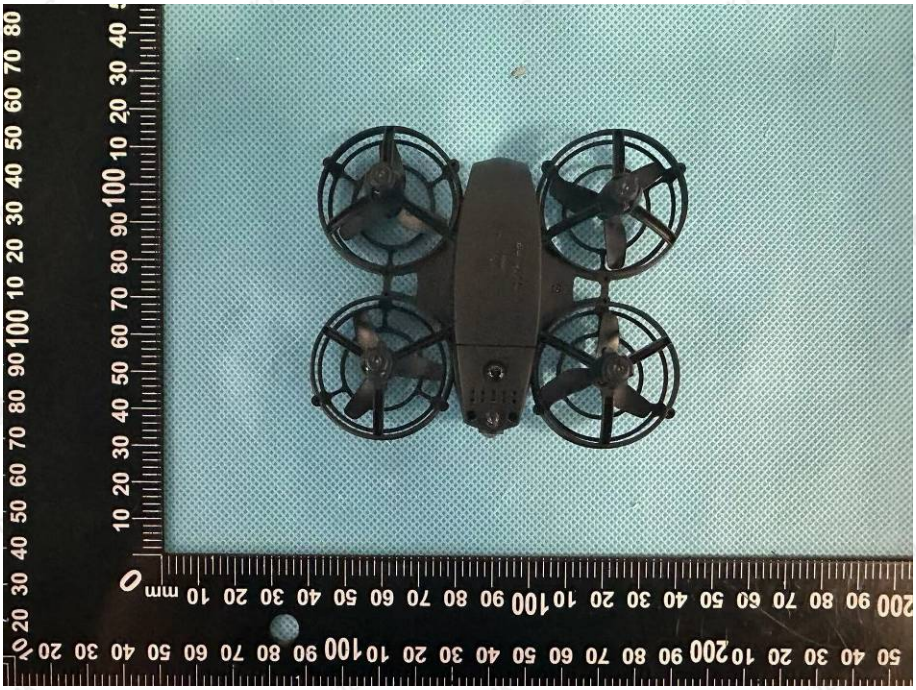
ATTACHMENT PHOTOGRAPHS OF EUT

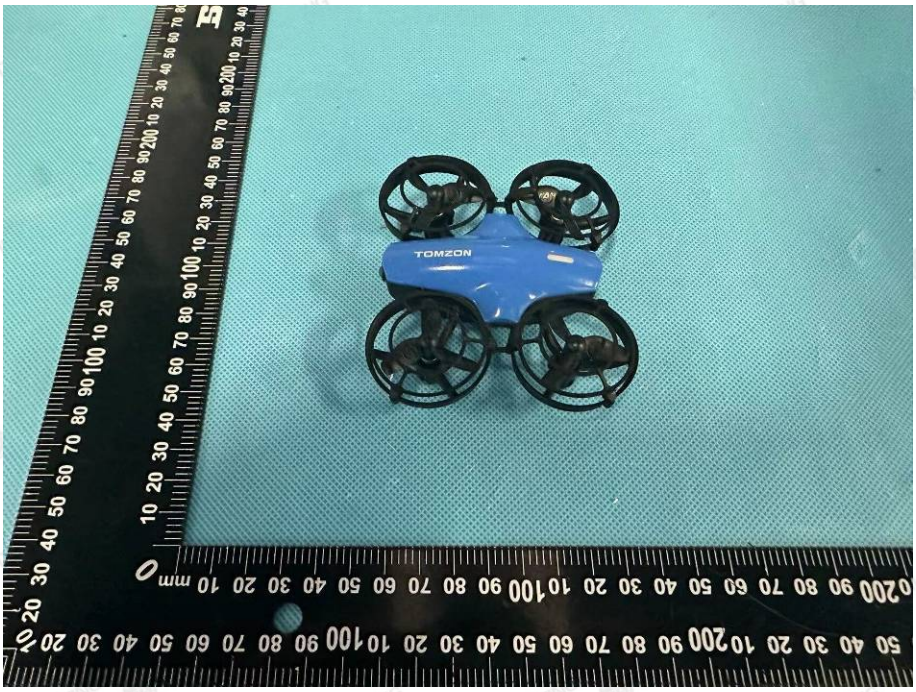


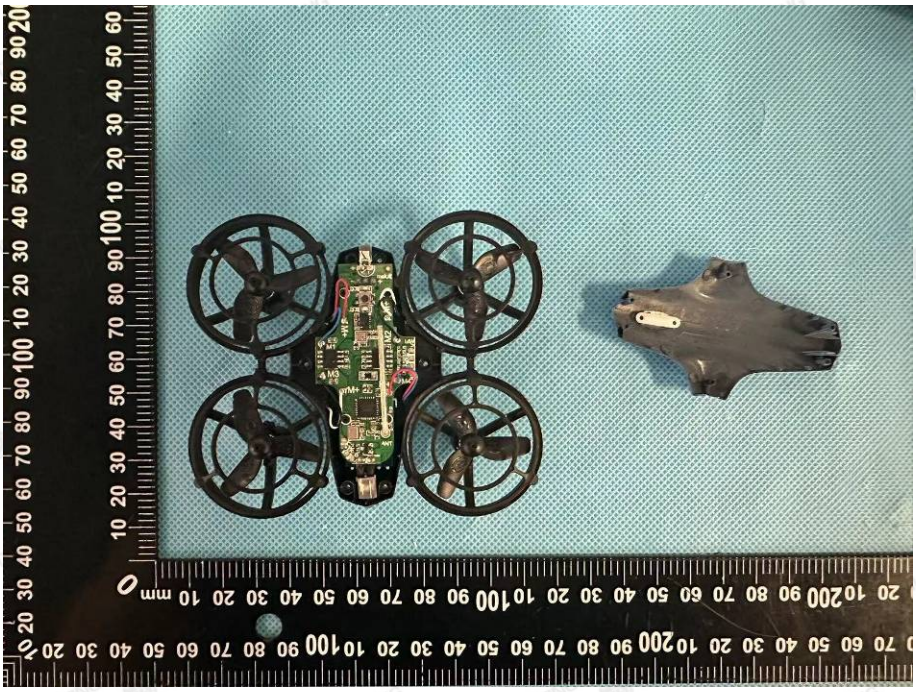


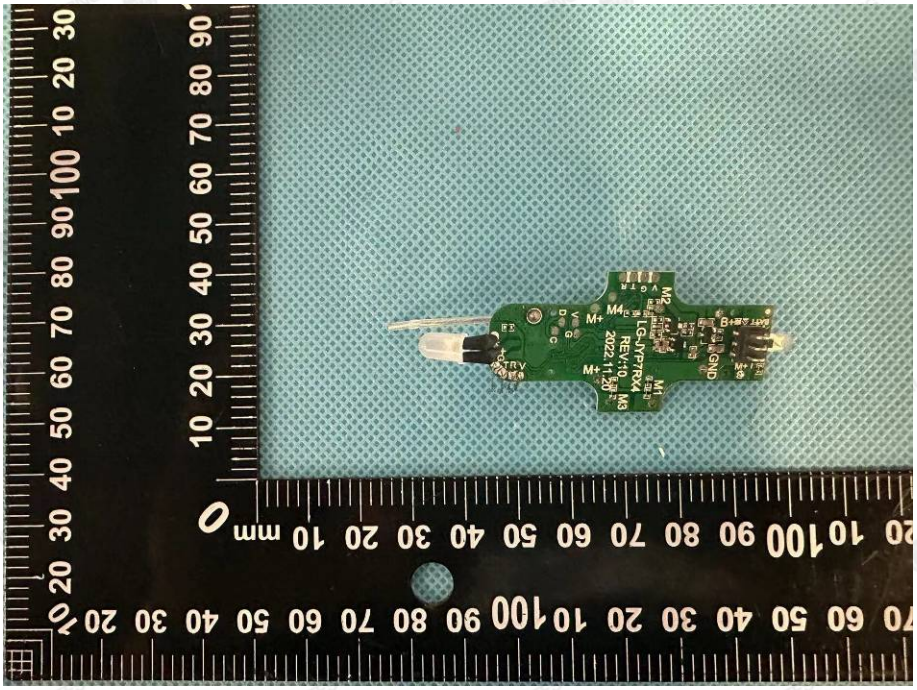


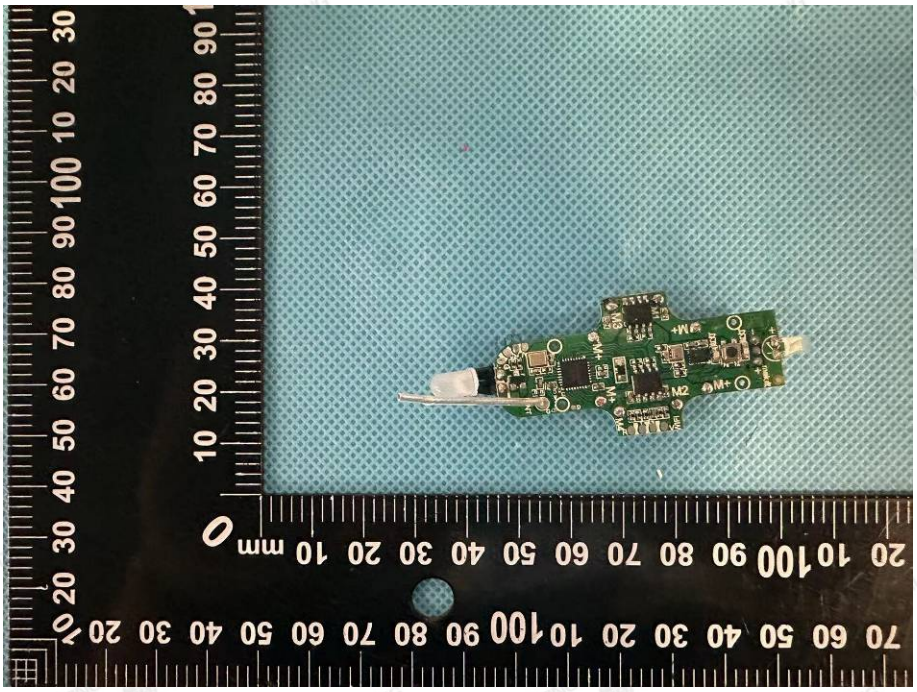
TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



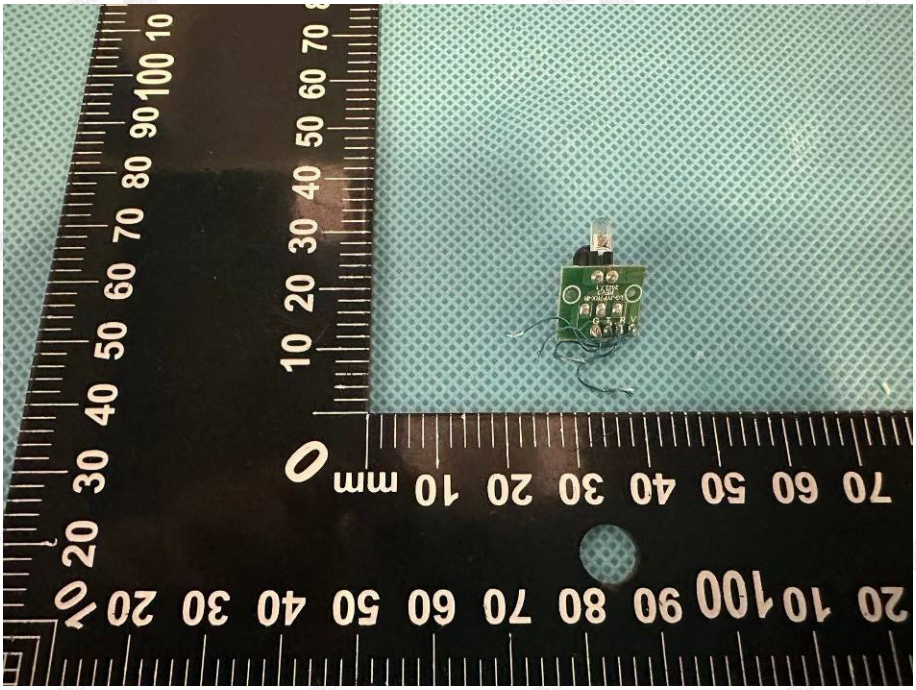


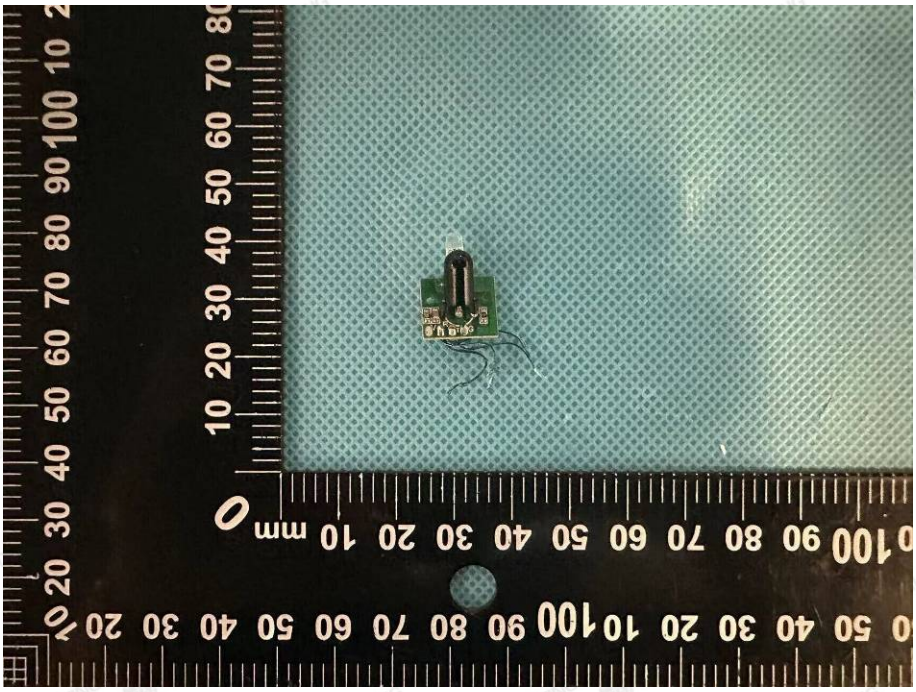






TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China





.....End of Report.....

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China