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TESTING
CNAS L12076

Test Report

Product: Wireless microphone

Trade Mark: maono

Model Number: PD100W

Prepared for

Shenzhen Maono Technology Co., Ltd.

No. 1307, 13th Floor, Building 4, Phase II of Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China

Prepared by

Shenzhen HongBiao Certification& Testing Co., Ltd

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TEST RESULT CERTIFICATION

Applicant's Name	:	Shenzhen Maono Technology Co., Ltd.
Address	:	No. 1307, 13th Floor, Building 4, Phase II of Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China
Manufacturer's Name	:	Shenzhen Maono Technology Co., Ltd.
Address	:	No. 1307, 13th Floor, Building 4, Phase II of Tianan Yungu Industrial Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, China

Product description

Product name	:	Wireless microphone
Model Number	:	PD100W
Standards	:	ETSI EN 300 328 V2.2.2 (2019-07)
Test procedure	:	N/A

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

Date of Test

Date (s) of performance of tests	:	Sept. 15, 2025~Oct. 11, 2025
Test Result	:	**Pass**

Testing Engineer : Zoe Su

(Z o e S u)

Technical Manager : Ming Liu

(M i n g L i u)

Authorized Signatory : Leo

(L e o S)

SHENZHEN HONGBIAO CERTIFICATION&TESTING CO.,LTD HONG BIAO 弘标认证 APPROVAL

Revision History

Revised No.	Date of Issue	Description
01	Oct. 11, 2025	Original

1 General Description

1.1 Description of EUT

Product name:	Wireless microphone
Model name:	PD100W
Series Model:	PD100W S, PD100W T, PD100W Pro, PD100W Neo, PD100W RGB, PD100W RGB S, PD100W Pro S, PD100W Neo S, PD100W Plus, PD100W Pro T, RC-1, RL-1, RA-1
Different of series model:	All the models are the same circuit and module, except the model No..
Operation frequency:	Receiver: 2402-2480MHz Dynamic Microphone: 2402-2480MHz
Modulation type:	GFSK
Bit Rate of transmitter:	1 Mbps
Antenna type:	Receiver: FPC Antenna Dynamic Microphone: Chip Antenna
Antenna gain:	Receiver: 0.03dBi Dynamic Microphone: 2.71dBi
EIRP Max. output power:	Receiver: 1.5dBm Dynamic Microphone: 1.11dBm
Hardware version:	V1.0
Software version:	V1.0
Battery:	Dynamic Microphone: DC 3.7V, 1500mAh, 5.55Wh
Power supply:	For Dynamic Microphone: Powered by internal battery For Dynamic Microphone: Input DC 5V/1A For Receiver: Input DC 5V/12mA Battery for Dynamic Microphone: DC 3.7V, 1500mAh, 5.55Wh
Adapter information:	N/A

1.2 Test Mode

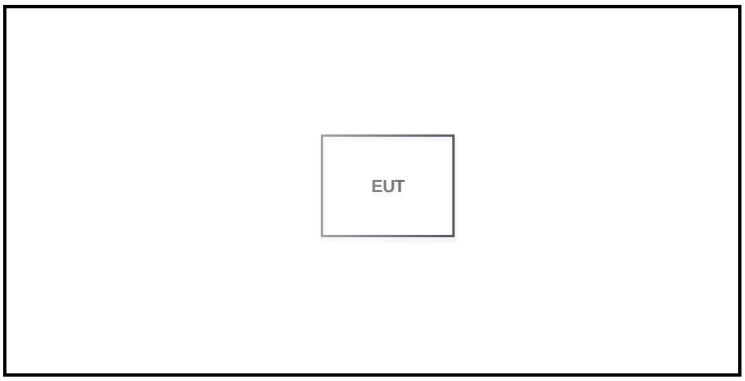
Test Mode	Channel	Frequency (MHz)
1	00	2402
2	39	2441
3	78	2480

1.3 Operation Channel List

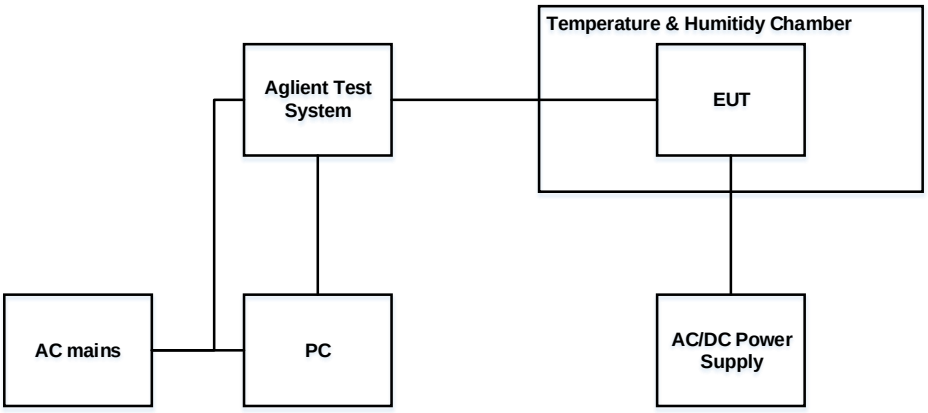
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454	--	--
26	2428	53	2455	--	--

1.4 Test Setup

For RF Radiated test:



For RF Conducted test:



1.5 Ancillary Equipment

No.	Equipment	Model	S/N	Manufacturer
1	Notebook	BDR-WDH	A3RQPM2420002411	Honor Terminal Co., Ltd.
2	Adapter	CD289	35810	Ugreen Group Limited

No.	Shielded Type	Ferrite Core	Length	Note
1	/	/	/	/

2 Summary of Test Result

No.	Standard Section	Test Item	Result	Remark
1	4.3.1.2 or 4.3.2.2	RF Output Power	Pass	
2	4.3.1.4	Accumulated Transmit time, Frequency Occupation & Hopping Sequence	Pass	
3	4.3.1.5	Hopping Frequency Separation	Pass	
4	4.3.1.8 or 4.3.2.7	Occupied Channel Bandwidth	Pass	
5	4.3.1.9 or 4.3.2.8	Transmitter unwanted emissions in the OOB domain	Pass	
6	4.3.1.10 or 4.3.2.9	Transmitter unwanted emissions in the spurious domain	Pass	
7	4.3.1.10 or 4.3.2.9	Receiver spurious emissions	Pass	
8	4.3.1.7 or 4.3.2.6	Adaptivity	N/A	
9	4.3.1.12 or 4.3.2.11	Receiver Blocking	Pass	
10	4.3.1.13 or 4.3.2.12	Geo-location capability	N/A	

Note: “N/A” means the test item not applicable.

3 Test Facilities and Accreditations

3.1 Test Laboratory

Test Site:	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location:	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
CNAS Registration No.:	L12076

3.2 Environmental Conditions

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

Temperature:	15ºC~35ºC
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

Dynamic Microphone			
Test Conditions	Normal	N.V.L.T.	N.V.H.T.
Temperature (℃)	25	-10	40
Power supply (Vdc)	3.7		
Receiver			
Test Conditions	Normal	N.V.L.T.	N.V.H.T.
Temperature (℃)	25	-10	40
Power supply (Vdc)	5		

Note:
1. The extreme temperatures are declared by manufacture.
2. N.V.L.T. is the abbreviation of normal voltage lowest temperature; N.V.H.T. is the abbreviation of normal voltage highest temperature.

3.3 Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2x 10^{-5}	
RF power, conducted	± 0.57 dB	
Conducted emission(150kHz~30MHz)	± 2.5 dB	
Radiated emission(30MHz~1GHz)	± 4.2 dB	
Radiated emission (above 1GHz)	± 4.7 dB	
Occupied Bandwidth	±3%	
Temperature	±1 degree	
Humidity	± 5 %	

3.4 Test Software

Software name	Manufacturer	Model	Version
Radiated Emission test Software	Farad	EZ-EMC	FA-03A2
RF Test System	MWRF	MTS 8310	2.0.0.0

4 List of Test Equipment

Radiation emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E001	Horn Antenna	Schwarzbeck	BBHA 9120D	02592	2024-05-18	2026-05-17
2	HB-E002	Biconical log-periodic composite antenna	Schwarzbeck	VULB 9168	01340	2024-05-18	2026-05-17
3	HB-E003	SHF-EHF Horn	Schwarzbeck	BBHA 9170	01193	2024-05-18	2026-05-17
4	HB-E005	Preamplifier	Noyetec	LAN-0118	NYCM1420102	2025-05-07	2026-05-06
5	HB-E006	Preamplifier	Noyetec	LAN-1840	NYCM1420103	2025-05-07	2026-05-06
6	HB-E007	EMI TEST RECEIVER	R&S	ESR7	102520	2025-05-07	2026-05-06
7	HB-E009	POSITINAL COTROLLER	Noyetec	N/A	N/A	/	/
8	HB-E013	RF switch	Noyetec	NY-RF4	NY0CM1420204	/	/
9	HB-E066	Illuminance Tester	TASI	TA8121	N/A	2025-05-13	2026-05-12
10	HB-E075	Active loop antenna	Schwarzbeck	FMZB 1519B	1519B-245	2024-05-18	2026-05-17
11	HB-E076	Preamplifier	Hewlett Packard	8447D	1937A02278	2025-05-07	2026-05-06

RF							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E041	MXG Anaiog Signal Generator	Agilent	N5181A	MY47070421	2025-05-07	2026-05-06
2	HB-E042	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	132108	2025-05-08	2026-05-07
3	HB-E043	MXG Anaiog Signal Generator	Agilent	N5182A	US46240335	2025-05-08	2026-05-07
4	HB-E044	Signal& spectrum Analyzer	R&S	FSV3044	101264	2025-05-07	2026-05-06
5	HB-E045	RF Control Box	Noyetec	NY100-RFCB	N/A	2025-05-08	2026-05-07
6	HB-E058	Thermometer Clock Humidity Monitor	N/A	HTC-1S	N/A	2025-05-09	2026-05-08

Note: the calibration interval of the above test instruments is 12&24 months and the calibrations are traceable to international system unit (SI).

5 Test Item And Results

5.1 RF Output Power

5.1.1 Definition

The RF output power is defined as the mean equivalent isotropically radiated power (e.i.r.p.) of the equipment during a transmission burst.

5.1.2 Limits

The RF output power for FHSS equipment shall be equal to or less than 20 dBm.

For non-adaptive FHSS equipment, where the manufacturer has declared an RF output power lower than 20 dBm e.i.r.p., the RF output power shall be equal to or less than that declared value. This limit shall apply for any combination of power level and intended antenna assembly.

5.1.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.2 to measure the RF output power at normal and extreme conditions.

5.1.4 Test Result

Receiver

Condition	Mode	Frequency (MHz)	Max Burst RMS Power (dBm)	Burst Number	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	GFSK	hopping	1.45	20	1.48	20	Pass
NVLT	GFSK	hopping	1.47	21	1.5	20	Pass
NVHT	GFSK 1M	hopping	1.45	20	1.48	20	Pass

Dynamic Microphone

Condition	Mode	Frequency (MHz)	Max Burst RMS Power (dBm)	Burst Number	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	GFSK	hopping	-1.64	20	1.07	20	Pass
NVLT	GFSK	hopping	-1.61	21	1.1	20	Pass
NVHT	GFSK	hopping	-1.6	20	1.11	20	Pass

Note: E.I.R.P (dBm) = Max. Conducted power (dBm) + antenna gain (dBi).

5.2 Accumulated Transmit time, Frequency Occupation & Hopping Sequence

5.2.1 Definition

The Accumulated Transmit Time is the total of the transmitter 'on' times, during an observation period, on a particular hopping frequency.

The Frequency Occupation is the number of times that each hopping frequency is occupied within a given period. A hopping frequency is considered to be occupied when the equipment selects that frequency from the hopping sequence. The equipment may be transmitting, receiving or stay idle during the Dwell Time spent on that hopping frequency.

The Hopping Sequence of frequency hopping equipment is the unrepeated pattern of the hopping frequencies used by the equipment.

5.2.2 Limits

Adaptive frequency hopping equipment

Adaptive Frequency Hopping systems shall be capable of operating over a minimum of 70% of the band.

The Accumulated Transmit Time on any hopping frequency shall not be greater than 400ms within any observation period of 400ms multiplied by the minimum number of hopping frequencies (N) that have to be used.

In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

5.2.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.4 to measure the Accumulated Transmit time, Frequency Occupation & Hopping Sequence at normal condition.

5.2.4 Test Result

Accumulated Transmit time:

Receiver

Test Mode	Frequency (MHz)	Pulse Time (ms)	Accumulated Transmit time (ms)	Limit(s)	Result
2	2441	0.372	118.668	<0.4	Pass

Dynamic Microphone

Test Mode	Frequency (MHz)	Pulse Time (ms)	Accumulated Transmit time (ms)	Limit(s)	Result
2	2441	0.372	118.03	<0.4	Pass

Note:

1. A period time = 0.4 (s) * 40 = 16(s)

   DH1 time slot = Pulse Duration * (1600/(2*40) * A period time
   DH3 time slot = Pulse Duration * (1600/(4*40) * A period time
   DH5 time slot = Pulse Duration * (1600/(6*40) * A period time

2. For GFSK : The test period: T= 0.4 Second/Channel x 40 Channel = 16 s.

5.3 Hopping Frequency Separation

5.3.1 Definition

The Hopping Frequency Separation is the frequency separation between two adjacent hopping frequencies

5.3.2 Limits

Adaptive frequency hopping systems:

The minimum Hopping Frequency Separation shall be 100 kHz.

5.3.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.5 to measure the hopping frequency separation at normal condition.

5.3.4 Test Result

Receiver

Test Mode	Hopping frequency separation (MHz)	Limit (MHz)	Result
GFSK	1.007	>=0.1	Pass

Dynamic Microphone

Test Mode	Hopping frequency separation (MHz)	Limit (MHz)	Result
GFSK	1.001	>=0.1	Pass

5.4 Occupied Channel Bandwidth

5.4.1 Definition

The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal hopping frequency.

5.4.2 Limits

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the specified band.

5.4.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.7 to measure the occupied channel bandwidth at normal condition.

5.4.4 Test Result

Receiver

Test Mode	Frequency(MHz)	Occupied Channel Bandwidth(MHz)	Lower Band Edge(MHz)	Upper Band Edge(MHz)	Limit
GFSK	2402	0.827	2401.597	2402.424	Within 2400-2483.5MHz
	2480	0.814	2479.607	2480.421	

Dynamic Microphone

Test Mode	Frequency(MHz)	Occupied Channel Bandwidth(MHz)	Lower Band Edge(MHz)	Upper Band Edge(MHz)	Limit
GFSK	2402	0.838	2401.563	2402.401	Within 2400-2483.5MHz
	2480	0.838	2479.56	2480.398	

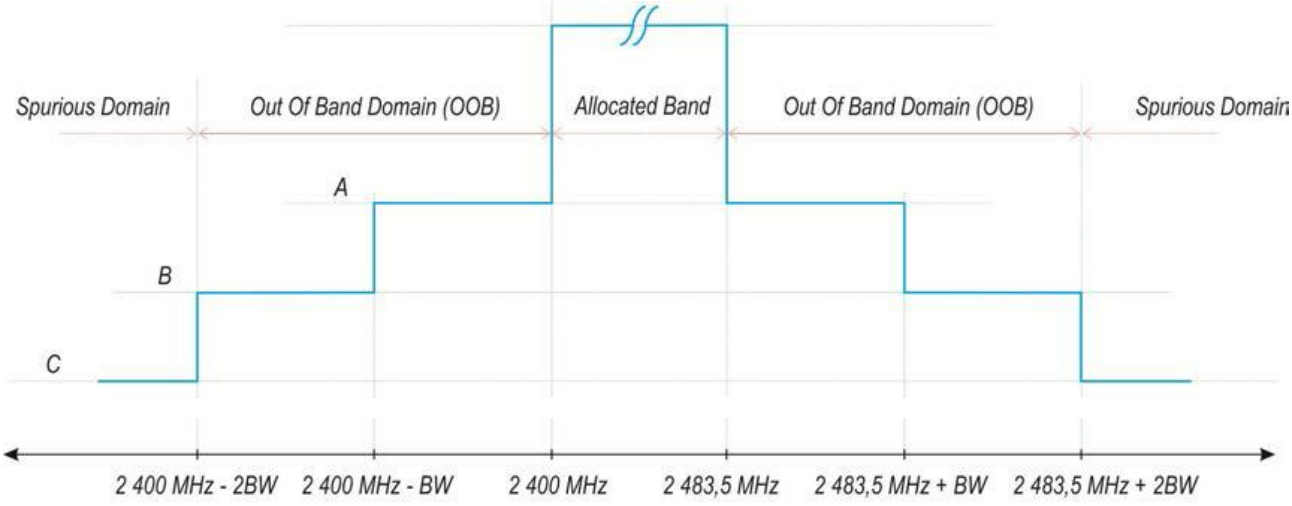
5.5 Transmitter Unwanted Emissions In The out-of-band Domain

5.5.1 Definition

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

5.5.2 Limits

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure below.



A: -10 dBm/MHz e.i.r.p.
B: -20 dBm/MHz e.i.r.p.
C: Spurious Domain limits

BW = Occupied Channel Bandwidth in MHz or 1 MHz whichever is greater

5.5.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.8 to measure the transmitter unwanted emissions in the out-of-band domain at normal condition.

5.5.4 Test Result

Receiver

Test Mode	Transmitter unwanted emissions in the out-of-band domain (dBm/MHz e.i.r.p.)			
	2400MHz-BW	2400MHz-2BW	2483.5MHz+BW	2483.5MHz+2BW
GFSK	-42.87	-45.51	-48.76	-48.27
Limit	-10	-20	-10	-20
Max. Unwanted emission:		-42.87dBm/MHz		
Result		Pass		

Dynamic Microphone

Test Mode	Transmitter unwanted emissions in the out-of-band domain (dBm/MHz e.i.r.p.)			
	2400MHz-BW	2400MHz-2BW	2483.5MHz+BW	2483.5MHz+2BW
GFSK	-42.29	-46.93	-46.06	-46.36
Limit	-10	-20	-10	-20
Max. Unwanted emission:		-42.29dBm/MHz		
Result		Pass		

5.6 Transmitter Unwanted Emissions In The Spurious Domain

5.6.1 Definition

Transmitter unwanted emissions in the spurious domain are emissions outside the allocated band and outside the out-of-band domain as the specified band when the equipment is in Transmit mode.

5.6.2 Limit

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in table below.

Frequency range	Maximum power e.i.p. (≤ 1GHz) e.i.r.p. (＞1GHz)	Bandwidth
30MHz to 47MHz	-36dBm	100kHz
47MHz to 74MHz	-54dBm	100kHz
74MHz to 87.5MHz	-36dBm	100kHz
87.5MHz to 118MHz	-54dBm	100kHz
118MHz to 174MHz	-36dBm	100kHz
174MHz to 230MHz	-54dBm	100kHz
230MHz to 470MHz	-36dBm	100kHz
470MHz to 694MHz	-54dBm	100kHz
694MHz to 1GHz	-36dBm	100kHz
1GHz to 12.75GHz	-30dBm	1MHz

5.6.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.9 to measure the transmitter unwanted emissions in the spurious domain at normal condition.

5.6.4 Test Result

Receiver

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 5V from USB supply
Test Mode:	GFSK(TX 2480MHz)		

30MHz-1GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	31.1719	-80.41	11.41	-69.00	-36	-33.00	peak
V	41.7069	-80.99	10.50	-70.49	-36	-34.49	peak
V	103.1067	-80.73	11.44	-69.29	-54	-15.29	peak
V	122.8262	-80.40	13.40	-67.00	-36	-31.00	peak
V	154.7894	-79.99	13.30	-66.69	-36	-30.69	peak
V	263.9695	-80.60	10.10	-70.50	-36	-34.50	peak
H	33.0459	-80.06	11.36	-68.70	-36	-32.70	peak
H	41.7123	-80.54	10.21	-70.33	-36	-34.33	peak
H	105.4631	-80.55	11.44	-69.11	-54	-15.11	peak
H	127.5370	-79.97	13.26	-66.71	-36	-30.71	peak
H	139.0962	-80.77	13.80	-66.97	-36	-30.97	peak
H	584.3872	-80.41	4.61	-75.80	-54	-21.80	peak

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

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 5V from USB supply
Test Mode:	GFSK(TX 2402/2441/2480MHz)		

1GHz-12.75GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
operation frequency:2402							
V	4804.62	-46.37	8.91	-37.46	-30.00	-7.46	peak
V	7208.08	-50.59	4.57	-46.02	-30.00	-16.02	peak
H	4804.15	-46.63	8.90	-37.73	-30.00	-7.73	peak
H	7207.63	-51.84	4.57	-47.27	-30.00	-17.27	peak
operation frequency:2441							
V	4881.64	-48.58	9.34	-39.24	-30.00	-9.24	peak
V	7320.80	-51.46	4.45	-47.01	-30.00	-17.01	peak
H	4880.26	-48.49	9.32	-39.17	-30.00	-9.17	peak
H	7321.13	-51.76	4.45	-47.31	-30.00	-17.31	peak
operation frequency:2480							
V	4961.10	-50.24	9.77	-40.47	-30.00	-10.47	peak
V	7441.97	-49.57	4.33	-45.24	-30.00	-15.24	peak
H	4962.15	-51.31	9.77	-41.54	-30.00	-11.54	peak
H	7442.27	-52.19	4.33	-47.86	-30.00	-17.86	peak
Remark: Emission Level= Reading Level+ Factor, Margin= Emission Level - Limit							

Note: Worst mode is GFSK, showing only the worst mode.

Dynamic Microphone

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK(TX 2480MHz)		

30MHz-1GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	32.1568	-80.03	11.41	-68.62	-36	-32.62	peak
V	42.1502	-80.65	10.50	-70.15	-36	-34.15	peak
V	103.8657	-80.54	11.44	-69.10	-54	-15.10	peak
V	122.2222	-80.48	13.40	-67.08	-36	-31.08	peak
V	155.2882	-80.28	13.30	-66.98	-36	-30.98	peak
V	263.1480	-80.98	10.10	-70.88	-36	-34.88	peak
H	33.1254	-80.82	11.36	-69.46	-36	-33.46	peak
H	42.3999	-80.11	10.21	-69.90	-36	-33.90	peak
H	105.3779	-80.40	11.44	-68.96	-54	-14.96	peak
H	127.3623	-80.92	13.26	-67.66	-36	-31.66	peak
H	138.9979	-80.23	13.80	-66.43	-36	-30.43	peak
H	583.1749	-80.65	4.61	-76.04	-54	-22.04	peak

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

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK(TX 2402/2441/2480MHz)		

1GHz-12.75GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
operation frequency:2402							
V	4804.64	-47.29	8.91	-38.38	-30.00	-8.38	peak
V	7207.15	-51.45	4.57	-46.88	-30.00	-16.88	peak
H	4804.15	-47.36	8.90	-38.46	-30.00	-8.46	peak
H	7206.28	-52.71	4.57	-48.14	-30.00	-18.14	peak
operation frequency:2441							
V	4881.41	-48.33	9.34	-38.99	-30.00	-8.99	peak
V	7321.92	-51.69	4.45	-47.24	-30.00	-17.24	peak
H	4880.26	-48.45	9.32	-39.13	-30.00	-9.13	peak
H	7320.47	-51.23	4.45	-46.78	-30.00	-16.78	peak
operation frequency:2480							
V	4960.92	-49.41	9.77	-39.64	-30.00	-9.64	peak
V	7441.21	-50.35	4.33	-46.02	-30.00	-16.02	peak
H	4960.96	-49.95	9.77	-40.18	-30.00	-10.18	peak
H	7442.16	-52.53	4.33	-48.20	-30.00	-18.20	peak
Remark: Emission Level= Reading Level+ Factor, Margin= Emission Level - Limit							

Note: Worst mode is GFSK, showing only the worst mode.

5.7 Receiver Spurious Emissions

5.7.1 Definition

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.

5.7.2 Limits

The spurious emissions of the receiver shall not exceed the values given in table below.

Frequency range	Maximum power	Bandwidth
30MHz to 1GHz	-57dBm	100kHz
1GHz to 12.75GHz	-47dBm	1MHz

5.7.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.3.11 to measure the receiver spurious emissions at normal condition.

5.7.4 Test Result

Receiver

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 5V from USB supply
Test Mode:	GFSK(RX 2480MHz)		

30MHz-1GHz

Polar (H/V)	Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	37.1692	-89.14	11.09	-78.05	-57	-21.05	peak
V	126.5123	-91.25	12.90	-78.35	-57	-21.35	peak
V	264.7455	-88.97	9.69	-79.28	-57	-22.28	peak
V	372.2379	-92.27	7.13	-85.14	-57	-28.14	peak
V	615.8206	-93.73	5.16	-88.57	-57	-31.57	peak
V	703.7608	-96.02	4.17	-91.85	-57	-34.85	peak
H	43.8463	-90.56	10.14	-80.42	-57	-23.42	peak
H	175.2928	-91.07	12.06	-79.01	-57	-22.01	peak
H	249.2090	-92.80	10.06	-82.74	-57	-25.74	peak
H	363.3382	-92.27	7.31	-84.96	-57	-27.96	peak
H	469.3713	-93.31	5.54	-87.77	-57	-30.77	peak
H	679.4682	-93.52	4.46	-89.06	-57	-32.06	peak

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

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 5V from USB supply
Test Mode:	GFSK(RX 2480MHz)		

1GHz to 12.75GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	1525.802	-60.11	3.64	-56.47	-47	-9.47	peak
V	2806.224	-63.81	4.32	-59.49	-47	-12.49	peak
V	3428.997	-62.46	5.96	-56.50	-47	-9.50	peak
V	4253.206	-65.03	5.75	-59.28	-47	-12.28	peak
V	6155.154	-67.32	7.05	-60.27	-47	-13.27	peak
V	7526.025	-65.85	4.23	-61.62	-47	-14.62	peak
H	1548.548	-65.25	3.15	-62.10	-47	-15.10	peak
H	3215.525	-65.46	6.11	-59.35	-47	-12.35	peak
H	3578.319	-66.71	4.48	-62.23	-47	-15.23	peak
H	4522.781	-66.32	6.12	-60.20	-47	-13.20	peak
H	5426.771	-68.86	9.23	-59.63	-47	-12.63	peak
H	7251.354	-69.38	4.53	-64.85	-47	-17.85	peak
Remark: Emission Level= Reading Level+ Factor, Margin= Emission Level - Limit							

Note: Worst mode is GFSK, showing only the worst mode.

Dynamic Microphone

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK(RX 2480MHz)		

30MHz-1GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	36.7943	-89.30	11.09	-78.21	-57	-21.21	peak
V	126.5948	-91.34	12.90	-78.44	-57	-21.44	peak
V	264.6122	-88.61	9.69	-78.92	-57	-21.92	peak
V	372.6703	-91.81	7.13	-84.68	-57	-27.68	peak
V	616.4625	-93.11	5.16	-87.95	-57	-30.95	peak
V	702.8157	-96.33	4.17	-92.16	-57	-35.16	peak
H	43.9494	-91.73	10.14	-81.59	-57	-24.59	peak
H	177.2434	-91.18	12.06	-79.12	-57	-22.12	peak
H	248.1004	-92.51	10.06	-82.45	-57	-25.45	peak
H	363.5644	-92.81	7.31	-85.50	-57	-28.50	peak
H	470.1310	-93.52	5.54	-87.98	-57	-30.98	peak
H	678.9478	-94.13	4.46	-89.67	-57	-32.67	peak
Remark: Emission Level= Reading Level+ Factor, Margin= Emission Level - Limit							

EUT:	Wireless microphone	Model Name:	PD100W
Pressure:	1010hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK(RX 2480MHz)		

1GHz to 12.75GHz

Polar	Frequency	Reading Level	Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	1525.855	-59.58	3.64	-55.94	-47	-8.94	peak
V	2805.772	-63.86	4.32	-59.54	-47	-12.54	peak
V	3427.766	-62.56	5.96	-56.60	-47	-9.60	peak
V	4253.840	-65.06	5.75	-59.31	-47	-12.31	peak
V	6155.142	-67.80	7.05	-60.75	-47	-13.75	peak
V	7524.705	-67.36	4.23	-63.13	-47	-16.13	peak
H	1547.617	-64.93	3.15	-61.78	-47	-14.78	peak
H	3216.217	-64.45	6.11	-58.34	-47	-11.34	peak
H	3579.522	-67.82	4.48	-63.34	-47	-16.34	peak
H	4522.060	-67.61	6.12	-61.49	-47	-14.49	peak
H	5427.119	-67.91	9.23	-58.68	-47	-11.68	peak
H	7252.683	-69.60	4.53	-65.07	-47	-18.07	peak
Remark: Emission Level= Reading Level+ Factor, Margin= Emission Level - Limit							

Note: Worst mode is GFSK, showing only the worst mode.

5.8 Adaptivity

5.8.1 Definition

Adaptive mode of LBT based Detect and Avoid is a mechanism by which equipment using wide band modulations other than FHSS, avoids transmissions in a channel in the presence of other transmissions in that channel.

5.8.2 Limits

Minimum set of requirements:

LBT based Detect and Avoid mechanism: Load Based Equipment.

1) Before a transmission or a burst of transmissions, the equipment shall perform a Clear Channel Assessment (CCA) check using energy detect. The equipment shall observe the operating channel for the duration of the CCA observation time which shall be not less than 18μs. The channel shall be considered occupied if the energy level in the channel exceeds the threshold given in step 5) below. If the equipment finds the channel to be clear, it may transmit immediately

2) If the equipment finds the channel occupied, it shall not transmit on this channel (see note 2). The equipment shall perform an Extended CCA check in which the channel is observed for a random duration in the range between 18μs and at least 160μs. If the extended CCA check has determined the channel to be no longer occupied, the equipment may resume transmissions on this channel. If the Extended CCA time has determined the channel still to be occupied, it shall perform new Extended CCA checks until the channel is no longer occupied.

Note 1: The Idle Period in between transmissions is considered to be the CCA or the Extended CCA check as there are no transmissions during this period.

Note 2: The equipment is allowed to switch to a non-adaptive mode and to continue transmissions on this channel providing it complies with the requirements applicable to non-adaptive systems. Alternatively, the equipment is also allowed to continue transmissions on this channel providing it complies with the requirements.

3) The total time that an equipment makes use of a RF channel is defined as the Channel Occupancy Time. This Channel Occupancy Time shall be less than 13ms, after which the device shall perform a new CCA as described in step 1) above.

4) The equipment, upon correct reception of a packet which was intended for this equipment can skip CCA and immediately (see note 3) proceed with the transmission of management and control frames (e.g. ACK and Block ACK frames are allowed but data frames are not allowed). A consecutive sequence of transmissions by the equipment without a new CCA shall not exceed the maximum channel occupancy time as defined in step 3) above.

Note 3: For the purpose of multi-cast, the ACK transmissions (associated with the same data packet) of the individual devices are allowed to take place in a sequence.

5) The energy detection threshold for the CCA shall be proportional to the transmit power of the transmitter: for a 20 dBm e.i.r.p. transmitter the CCA threshold level (TL) shall be equal or less than -70 dBm/MHz at the input to the receiver (assuming a 0 dBi receive antenna). For power levels below 20 dBm e.i.r.p., the CCA threshold level may be relaxed to TL = -70 dBm/MHz + (20 dBm - Pout e.i.r.p.)/1 MHz (Pout in dBm).

Short Control Signalling Transmissions:

If implemented, Short Control Signalling Transmissions of adaptive equipment using wide band modulations other than FHSS shall have a maximum duty cycle of 10% within an observation period of 50ms.

5.8.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.6 to measure the Adaptivity & receiver blocking at normal condition.

5.8.4 Test Result

Note: the test item not applicable.

5.9 Receiver Blocking

5.9.1 Definition

Receiver blocking is a measure of the ability of the equipment to receive a wanted signal on its operating channel without exceeding a given degradation due to the presence of an unwanted input signal (blocking signal) on frequencies other than those of the operating band and spurious responses.

5.9.2 Limits

Table 6: Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × $\log_{10}$(OCBW)) or -68 dBm whichever is less (see note 2)	2 380 2 504	-34	CW
(-139 dBm + 10 × $\log_{10}$(OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		

NOTE 1: OCBW is in Hz.
NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.
NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 20 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.
NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

Table 7: Receiver Blocking parameters receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to P_{min} + 26 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

Table 8: Receiver Blocking parameters receiver Category 3 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × $\log_{10}$(OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW
NOTE 1: OCBW is in Hz. NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative the test may be performed using a wanted signal up to P_{min} + 30 dB where P_{min} is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.			

5.9.3 Test Procedures

Follow the test procedure as described in ETSI EN 300 328 V2.2.2 Clause 5.4.11 to measure the receiver blocking at normal condition.

5.9.4 Test Result

Comply with receiver category 2 equipment.
When required minimum blocking signals injected, communication link between the UUT and the associated companion device remains, and the performance still meet the minimum performance criterion declared by manufacturer.

Receiver Category2:

Frequency (MHz)	Mode	Data rate (Mbps)	Blocking Signal Frequency (MHz)	Wanted Signal(dBm)	Blocking Signal Level At Input Port (dBm)	PER(%)
2402	GFSK	1	2380, 2504	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.82
2402	GFSK	1	2 300 2 584	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.65
2480	GFSK	1	2380, 2504	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.71
2480	GFSK	1	2 300 2 584	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.59

Note: Worst mode is GFSK, showing only the worst mode.

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Category2:

Frequency (MHz)	Mode	Data rate (Mbps)	Blocking Signal Frequency (MHz)	Wanted Signal(dBm)	Blocking Signal Level At Input Port (dBm)	PER(%)
2402	GFSK	1	2380, 2504	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.69
2402	GFSK	1	2 300 2 584	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.61
2480	GFSK	1	2380, 2504	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.78
2480	GFSK	1	2 300 2 584	(-139 dBm + 10 × $\log_{10}$(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less	-34	0.69

Note: Worst mode is GFSK, showing only the worst mode.

5.10 Geo-location Capability

5.10.1 Definition

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.

The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

5.10.2 Limits

The geographical location determined by the equipment as defined in clause 4.3.1.13.2 shall not be accessible to the user.

5.10.3 Test Procedures

The geographical location determined by the equipment as defined in clause 4.3.1.13.2 shall not be accessible to the user.

5.10.4 Test Result

Note: the test item not applicable, the EUT has no geo-location capability.

5.11 Information as required about the EUT

Receiver

a) The type of modulation used by the equipment:

☒ FHSS

☐ Other forms of modulation

b) In case of FHSS modulation:

- In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies:

- In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: 78

The minimum number of Hopping Frequencies: 78

- The Dwell Time: ms
- The Minimum Channel Occupation Time:
- The (average) Dwell Time: ms

c) Adaptive / non-adaptive equipment:

☐ non-adaptive Equipment

☒ adaptive Equipment without the possibility to switch to a non-adaptive mode

☐ adaptive Equipment which can also operate in a non-adaptive mode

d) In case of adaptive equipment:

The Channel Occupancy Time implemented by the equipment:

☒ The equipment has implemented an LBT based DAA mechanism

- In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment

☒ The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment:

☐ The equipment has implemented an non-LBT based DAA mechanism

☐ The equipment can operate in more than one adaptive mode

e) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): 1.52dBm

The maximum (corresponding) Duty Cycle: /%

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

f) The worst case operational mode for each of the following tests:

- RF Output Power: GFSK
- Power Spectral Density: GFSK
- Duty cycle, Tx-Sequence, Tx-gap:
- Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment):
- Hopping Frequency Separation (only for FHSS equipment): GFSK
- Medium Utilisation:
- Receiver Blocking: GFSK
- Occupied Channel Bandwidth: GFSK
- Transmitter unwanted emissions in the OOB domain: GFSK
- Transmitter unwanted emissions in the spurious domain: GFSK
- Receiver spurious emissions: GFSK

g) The different transmit operating modes (tick all that apply):

☒ Operating mode 1: Single Antenna Equipment

☒ Equipment with only 1 antenna

☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time

☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)

☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

h) In case of Smart Antenna Systems:

- The number of Receive chains:
- The number of Transmit chains:

☐ symmetrical power distribution

☐ asymmetrical power distribution

In case of beam forming, the maximum beam forming gain:

NOTE: Beam forming gain does not include the basic gain of a single antenna.

i) Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: 2402MHz to 2480MHz
- Operating Frequency Range 2: MHz to MHz

NOTE: Add more lines if more Frequency Ranges are supported.

j) Occupied Channel Bandwidth(s):

- Occupied Channel Bandwidth 1: 0.836MHz
- Occupied Channel Bandwidth 2: MHz

NOTE: Add more lines if more channel bandwidths are supported.

k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☒ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐ Plug-in radio device (Equipment intended for a variety of host systems)

☐ Other

l) The extreme operating conditions that apply to the equipment:

Operating temperature range: -10° C to 45° C

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

- Antenna Type:

☒ FPC Antenna

Antenna Gain: 0.03dBi

If applicable, additional beamforming gain (excluding basic antenna gain): dB

☐ Temporary RF connector provided

☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)

☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:

Power Level 1: dBm

Power Level 2: dBm

Power Level 3: dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

- For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

Power Level 1: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 2: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 3: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

Supply Voltage ☐ AC mains State AC voltage 230V/50Hz

☒ DC State DC voltage 5V

In case of DC, indicate the type of power source

☐ Internal Power Supply

☒ External Power Supply or AC/DC adapter

☐ Battery

☐ Other:

o) Describe the test modes available which can facilitate testing:

p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):

2.4GHz

q) Geo-location capability supported by the equipment:

☐ Yes

☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.

☒ No

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r) The type of modulation used by the equipment:

☒ FHSS

☐ Other forms of modulation

s) In case of FHSS modulation:

- In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies:

- In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: 40

The minimum number of Hopping Frequencies: 40

- The Dwell Time: ms
- The Minimum Channel Occupation Time:
- The (average) Dwell Time: ms

t) Adaptive / non-adaptive equipment:

☐ non-adaptive Equipment

☒ adaptive Equipment without the possibility to switch to a non-adaptive mode

☐ adaptive Equipment which can also operate in a non-adaptive mode

u) In case of adaptive equipment:

The Channel Occupancy Time implemented by the equipment:

☒ The equipment has implemented an LBT based DAA mechanism

- In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment

☒ The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment:

☐ The equipment has implemented an non-LBT based DAA mechanism

☐ The equipment can operate in more than one adaptive mode

v) In case of non-adaptive Equipment:

The maximum RF Output Power (e.i.r.p.): 1.11dBm

The maximum (corresponding) Duty Cycle: /%

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

w) The worst case operational mode for each of the following tests:

- RF Output Power: GFSK
- Power Spectral Density: GFSK
- Duty cycle, Tx-Sequence, Tx-gap:
- Dwell time, Minimum Frequency Occupation & Hopping Sequence (only for FHSS equipment):
- Hopping Frequency Separation (only for FHSS equipment): GFSK
- Medium Utilisation:
- Receiver Blocking: GFSK
- Occupied Channel Bandwidth: GFSK
- Transmitter unwanted emissions in the OOB domain: GFSK
- Transmitter unwanted emissions in the spurious domain: GFSK
- Receiver spurious emissions: GFSK

x) The different transmit operating modes (tick all that apply):

☒ Operating mode 1: Single Antenna Equipment

☒ Equipment with only 1 antenna

☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time

☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)

☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ [i.3] legacy mode)

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

y) In case of Smart Antenna Systems:

- The number of Receive chains:
- The number of Transmit chains:

☐ symmetrical power distribution

☐ asymmetrical power distribution

In case of beam forming, the maximum beam forming gain:

NOTE: Beam forming gain does not include the basic gain of a single antenna.

z) Operating Frequency Range(s) of the equipment:

- Operating Frequency Range 1: 2402MHz to 2480MHz
- Operating Frequency Range 2: MHz to MHz

NOTE: Add more lines if more Frequency Ranges are supported.

aa) Occupied Channel Bandwidth(s):

- Occupied Channel Bandwidth 1: 0.834MHz
- Occupied Channel Bandwidth 2: MHz

NOTE: Add more lines if more channel bandwidths are supported.

bb) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☒ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐ Plug-in radio device (Equipment intended for a variety of host systems)

☐ Other

cc) The extreme operating conditions that apply to the equipment:

Operating temperature range: -10° C to 45° C

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

dd) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

- Antenna Type:

☒ Chip Antenna

Antenna Gain: 2.71dBi

If applicable, additional beamforming gain (excluding basic antenna gain): dB

☐ Temporary RF connector provided

☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)

☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels:

Power Level 1: dBm

Power Level 2: dBm

Power Level 3: dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

- For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

Power Level 1: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 2: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 3: dBm

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

ee) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☒ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

Supply Voltage ☐ AC mains State AC voltage 230V/50Hz

☒ DC State DC voltage 3.7V

In case of DC, indicate the type of power source

☐ Internal Power Supply

☐ External Power Supply or AC/DC adapter

☒ Battery

☐ Other:

ff) Describe the test modes available which can facilitate testing:

gg) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):

2.4GHz

hh) Geo-location capability supported by the equipment:

☐ Yes

☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.

☒ No

6 Photographs of the Test Setup

Radiated Emission Below 1GHz

Radiated Emission Above 1GHz


Radiated Emission Below 1GHz

Radiated Emission Above 1GHz


7 Photographs of the EUT

Photo 1

Photo 2


Photo 3

Photo 4


Photo 5

Photo 6


Photo 7

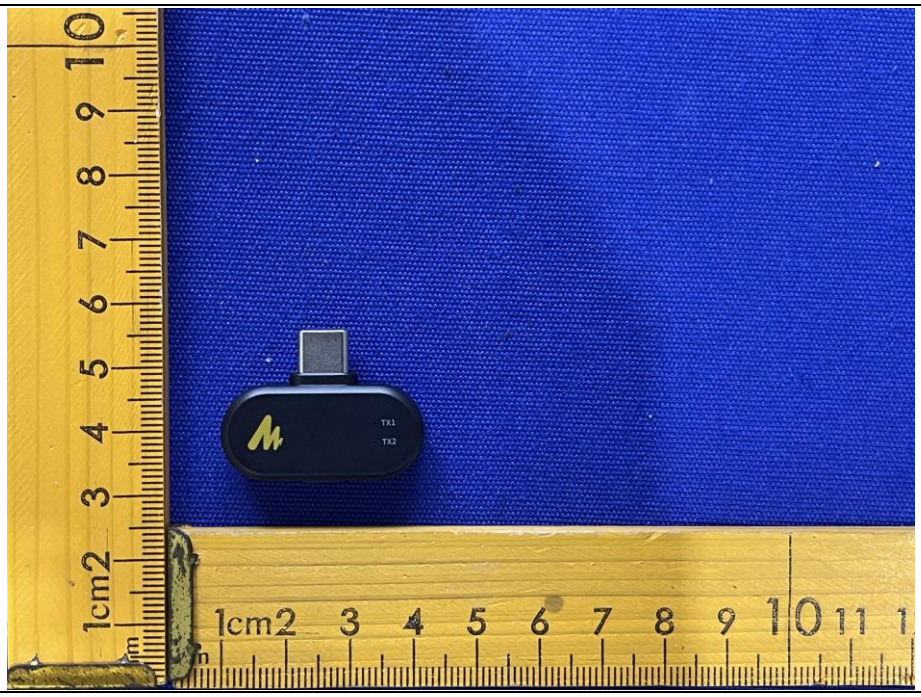
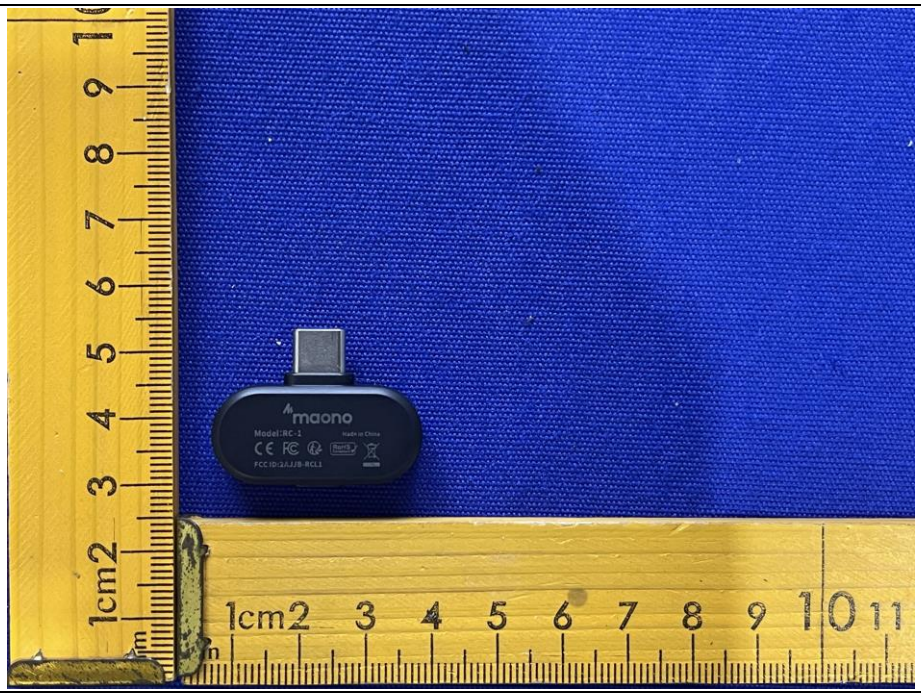


Photo 8



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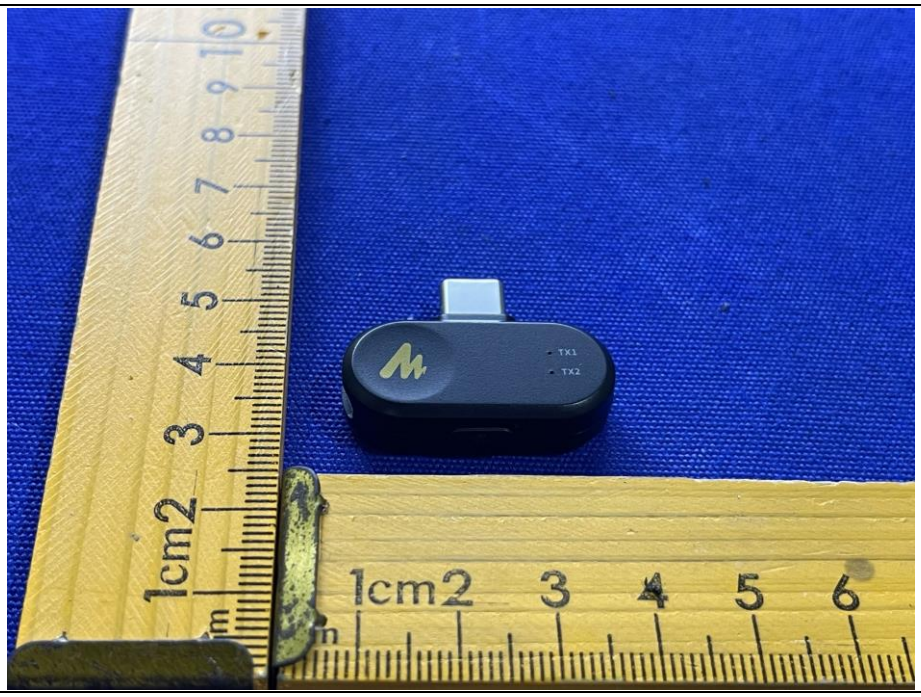

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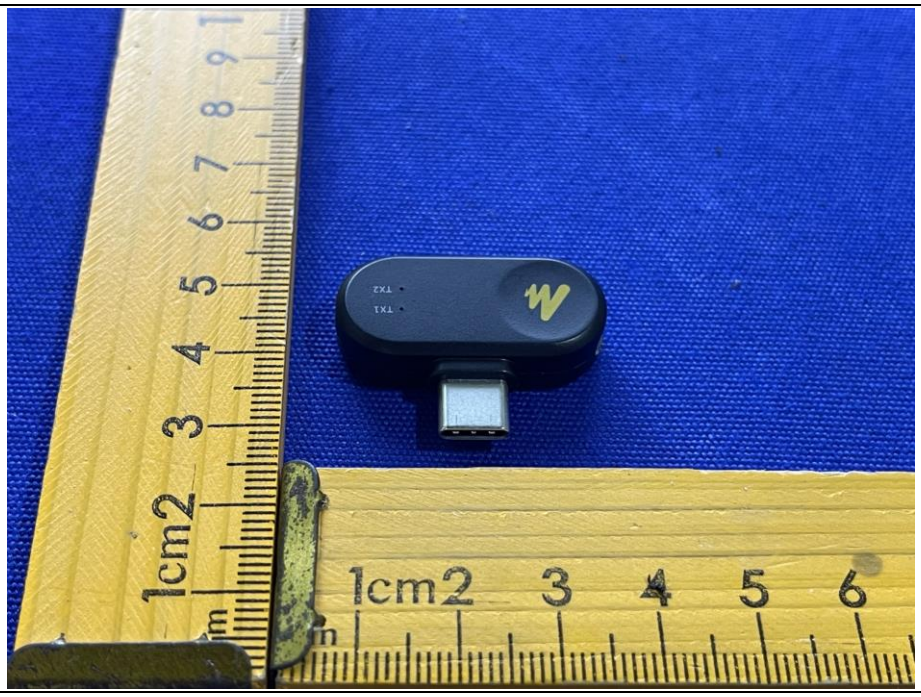
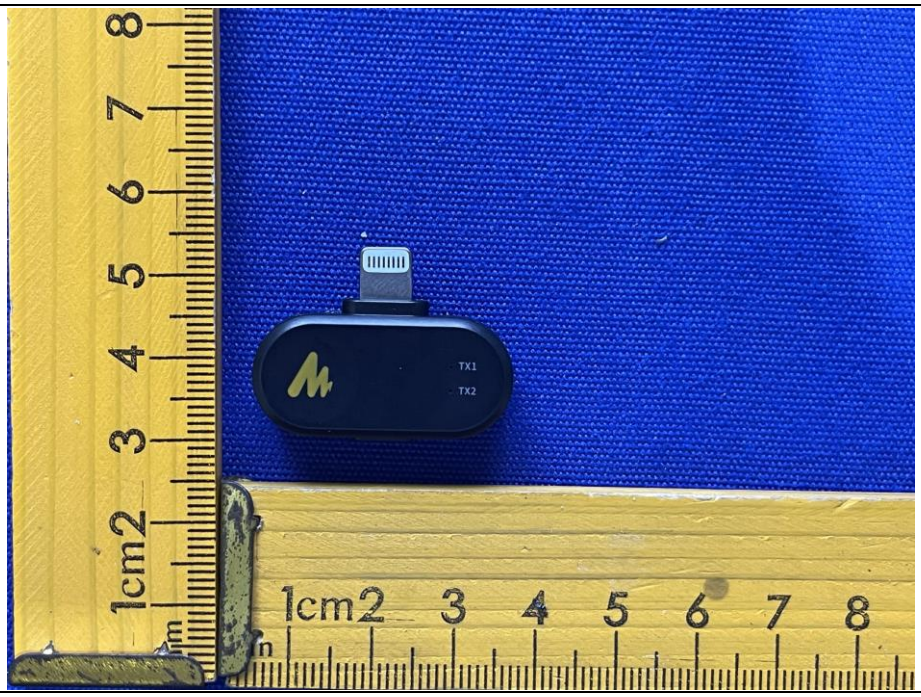


Photo 11

Photo 12


Photo 13



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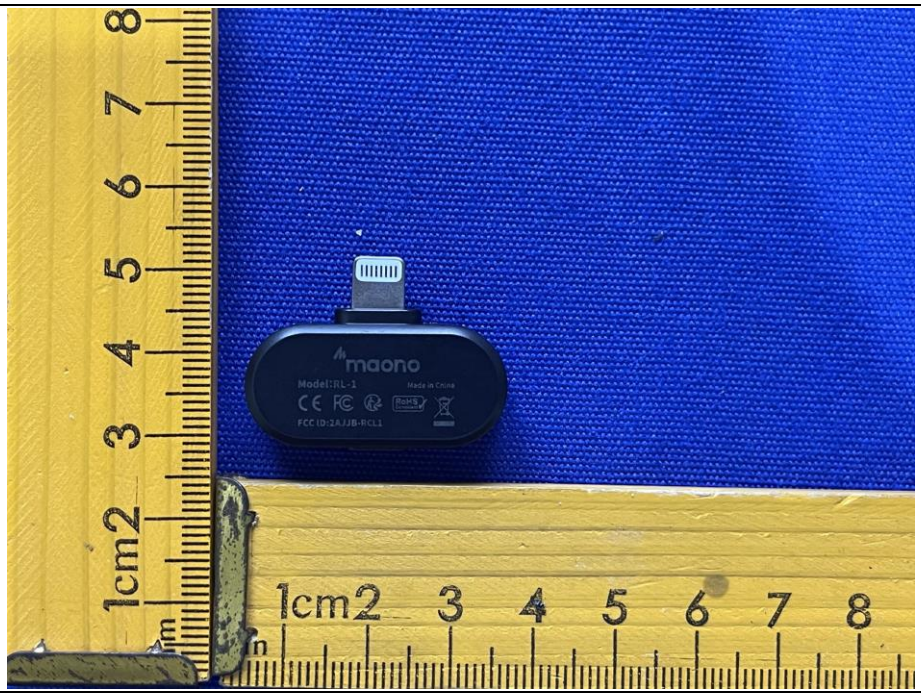

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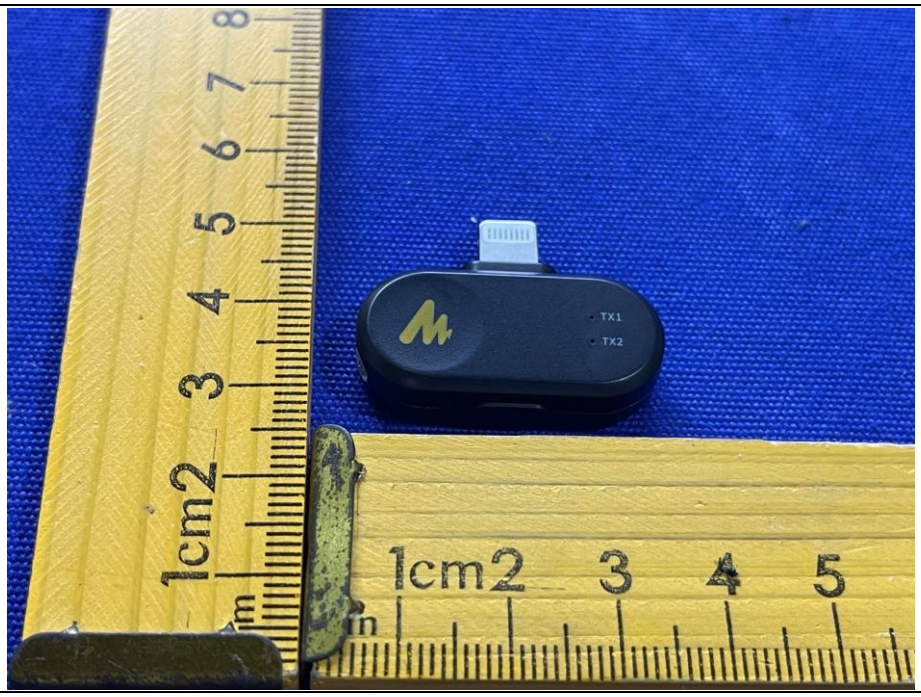


Photo 16

Photo 17

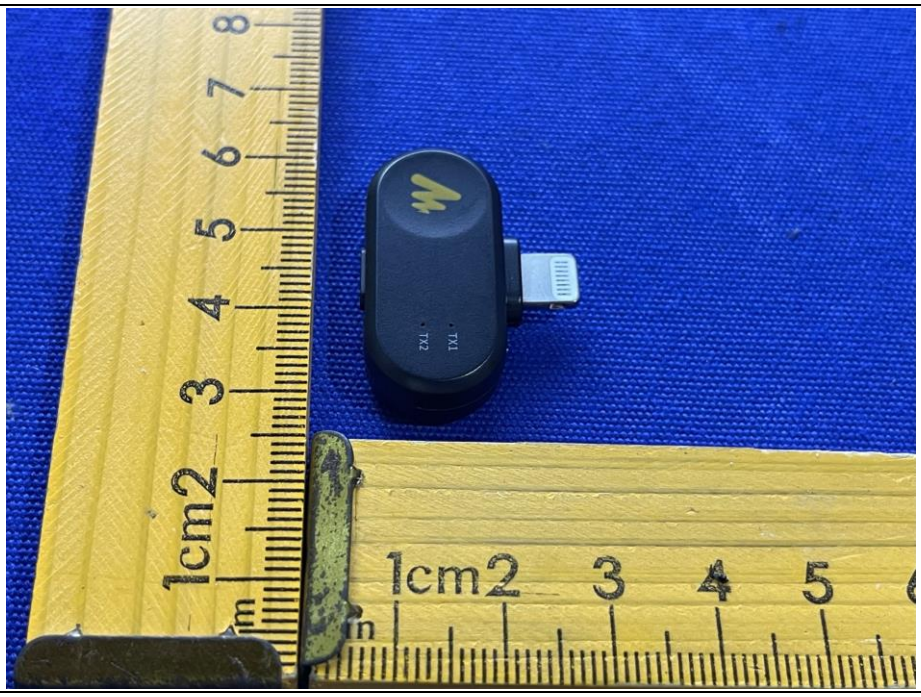
Photo 18


Photo 19

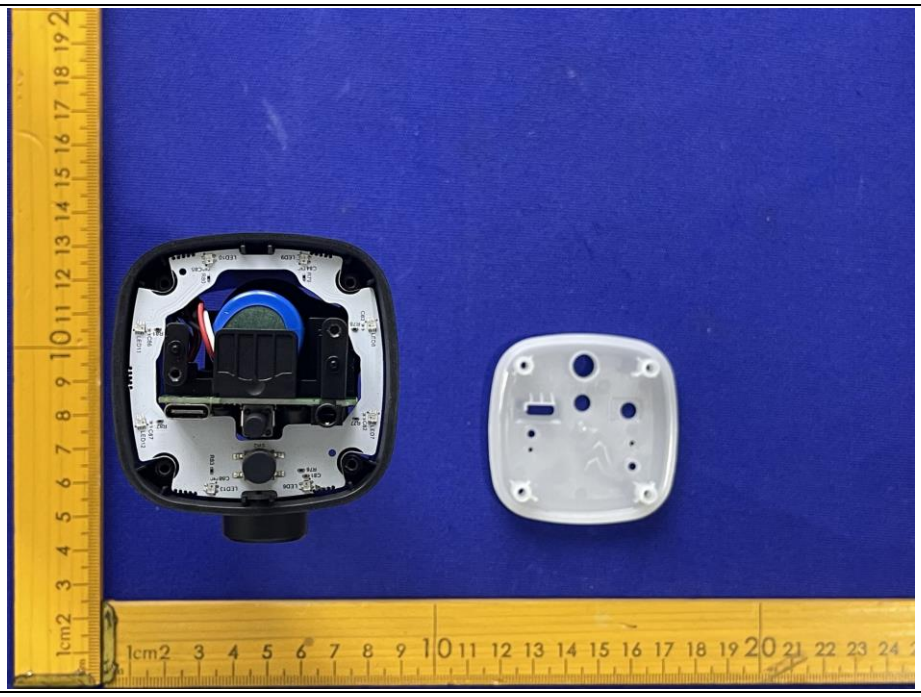
Photo 20


Photo 21

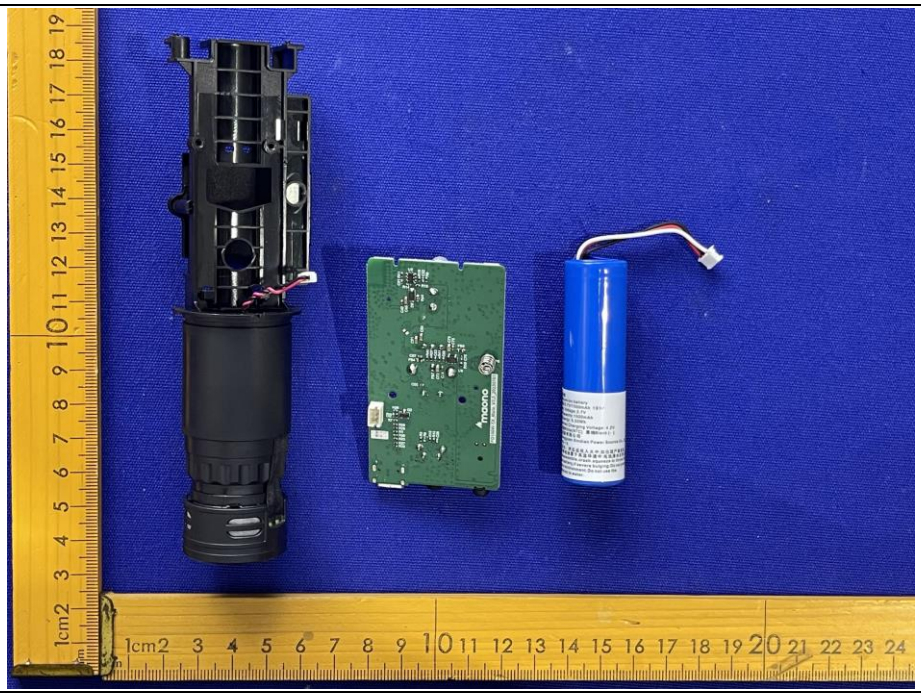
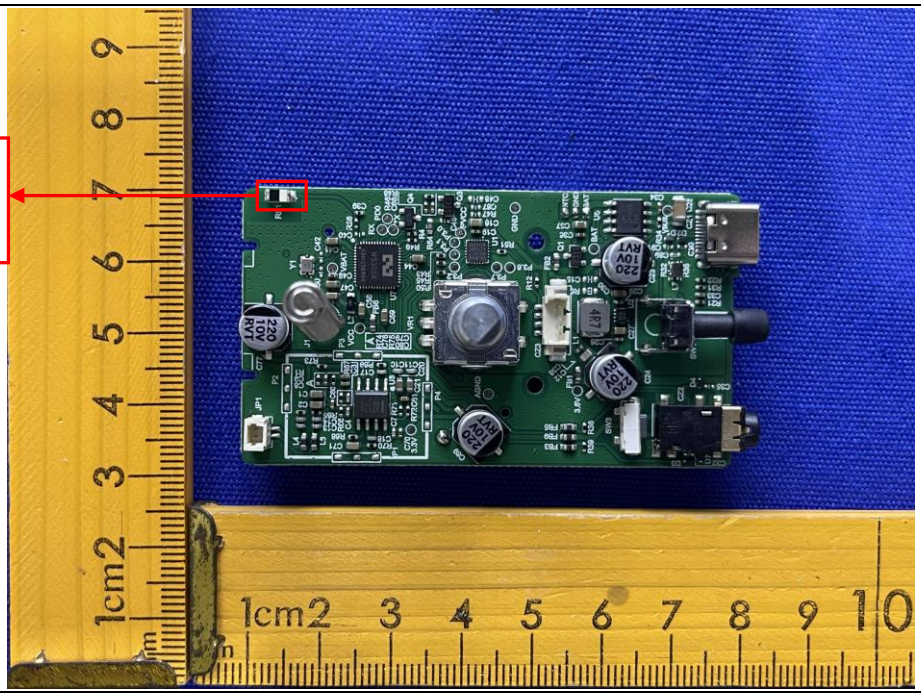
Photo 22


Photo 23

Photo 24



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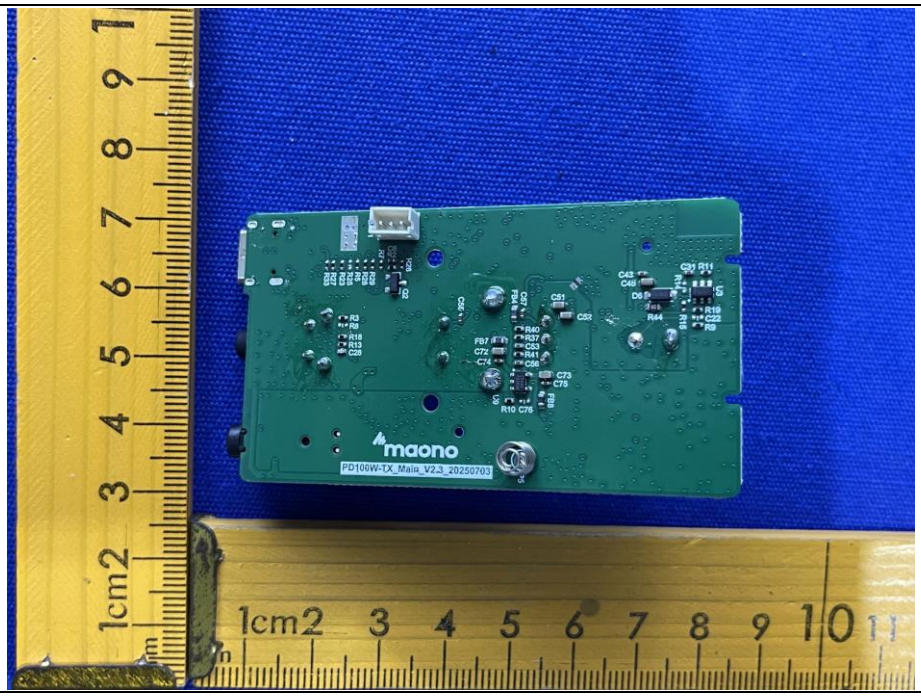
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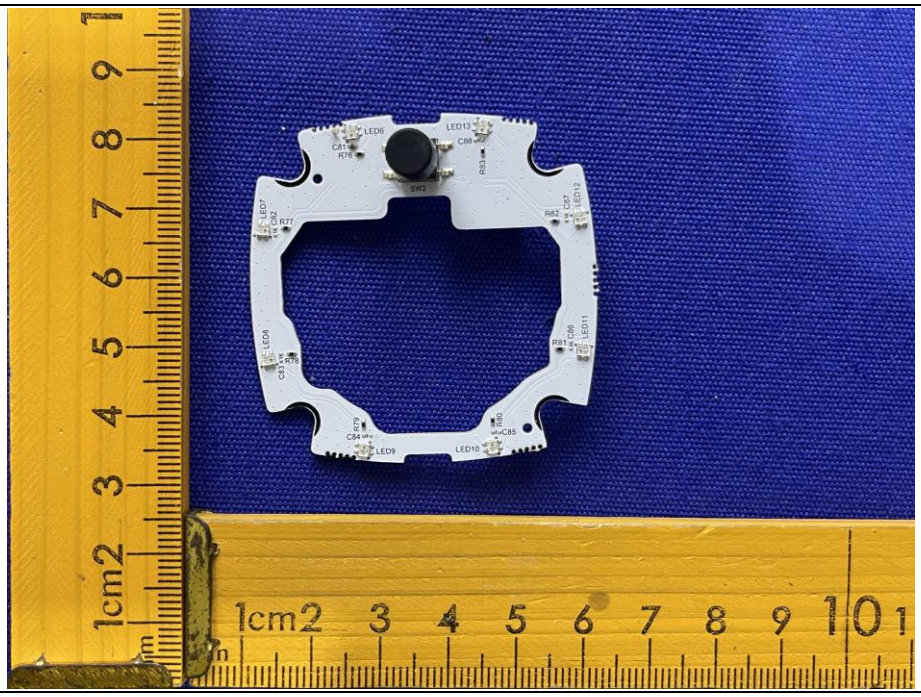

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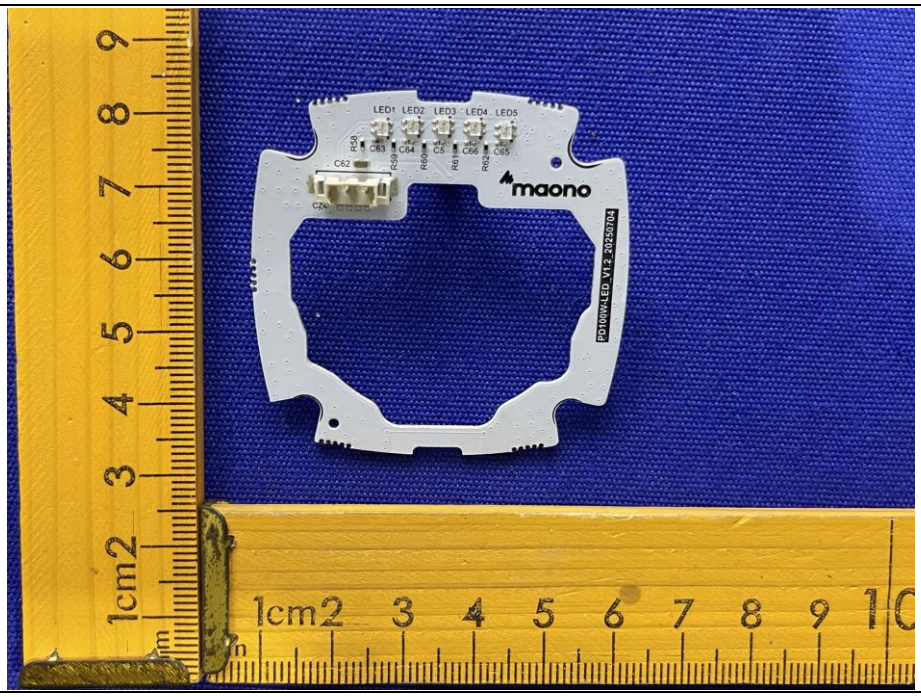
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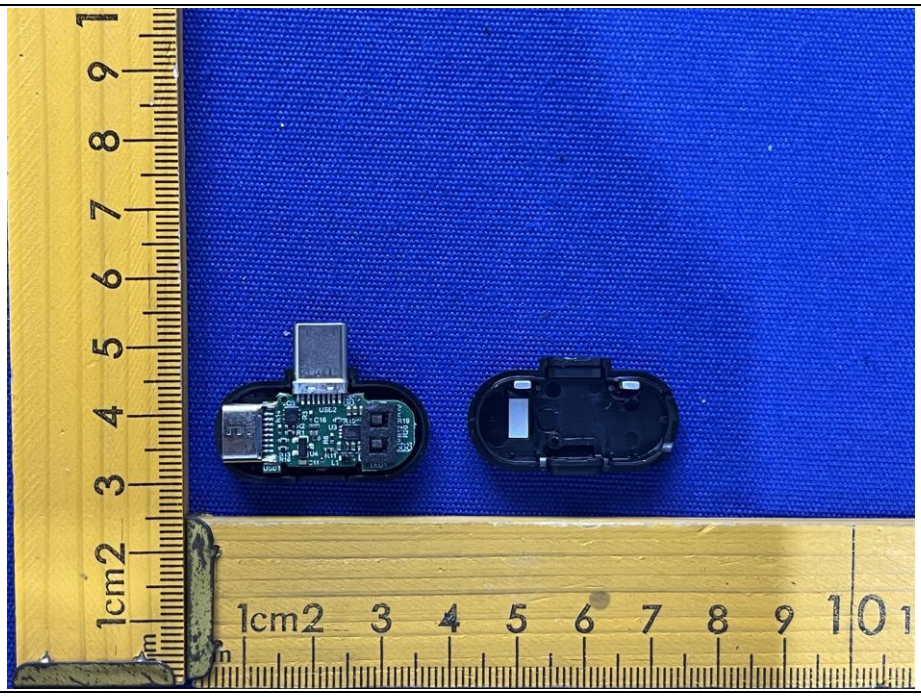

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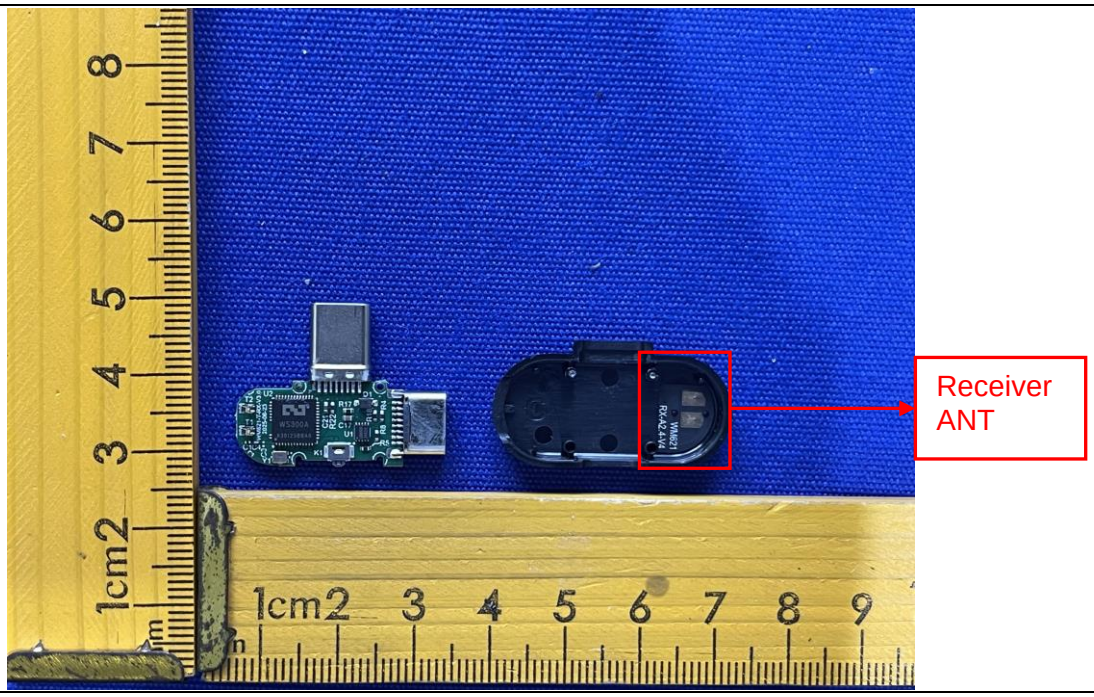

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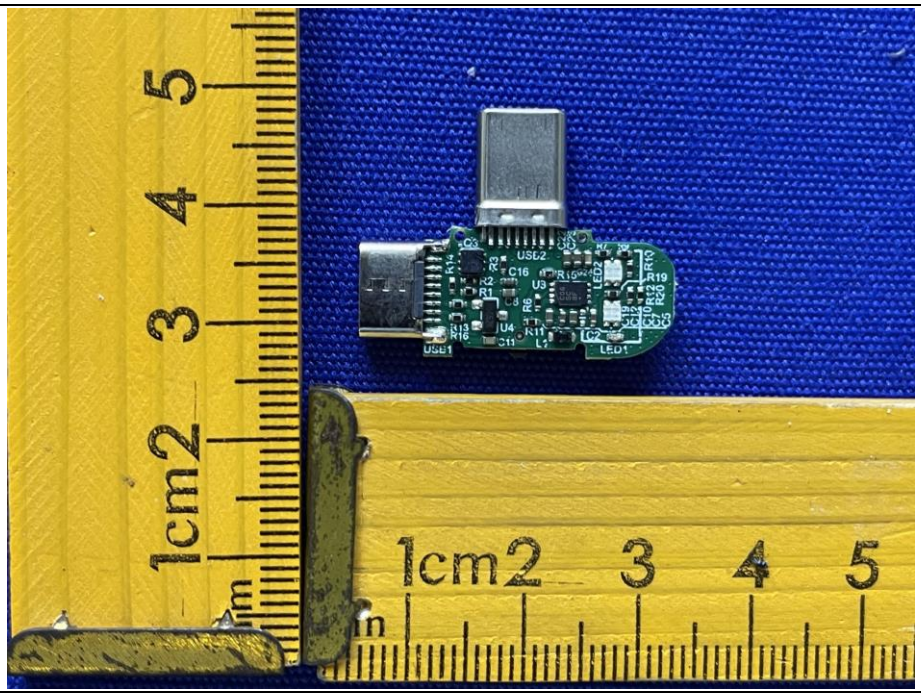

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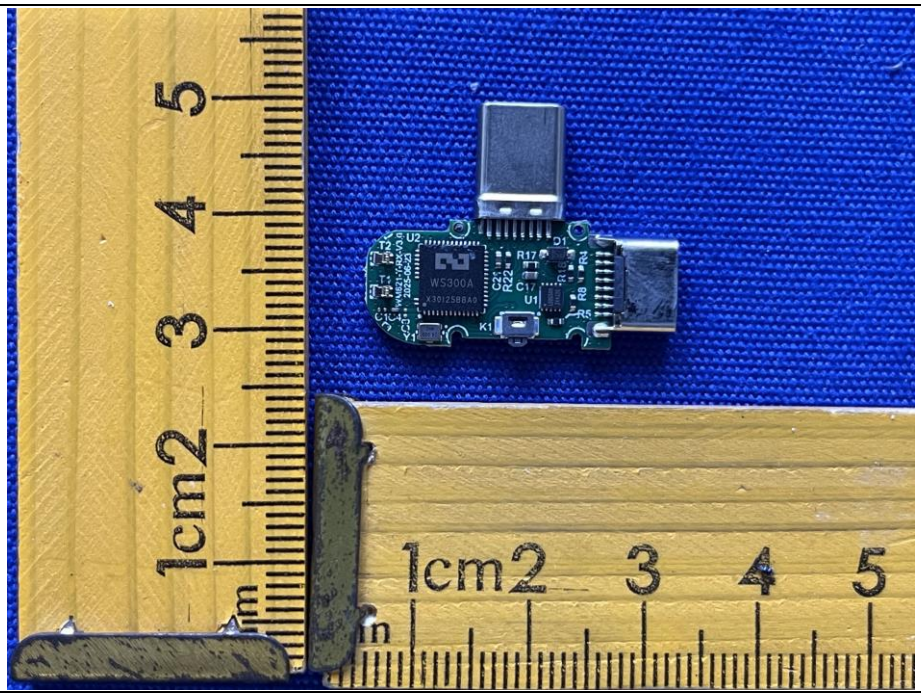

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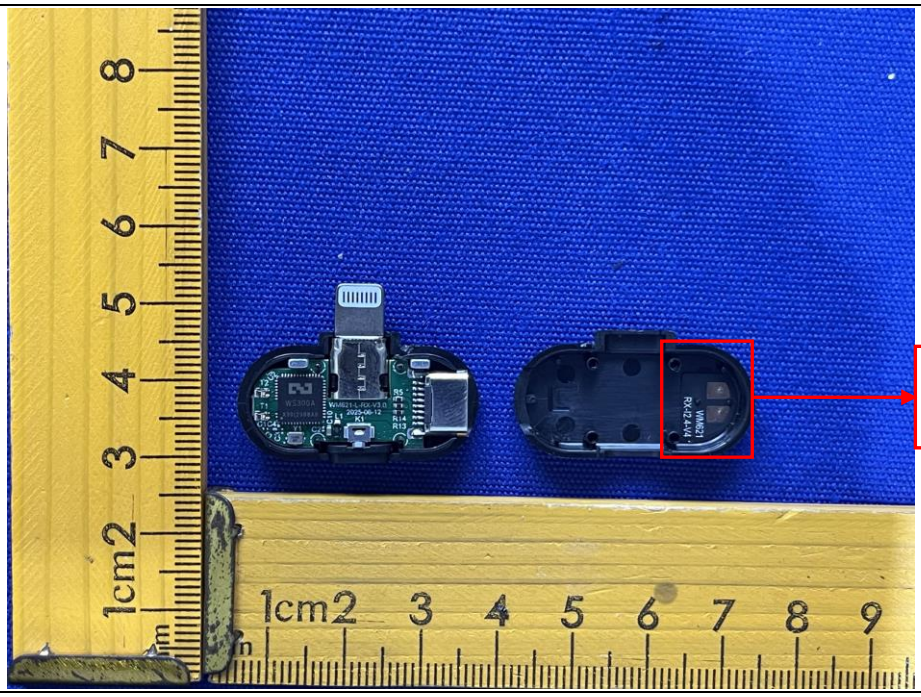

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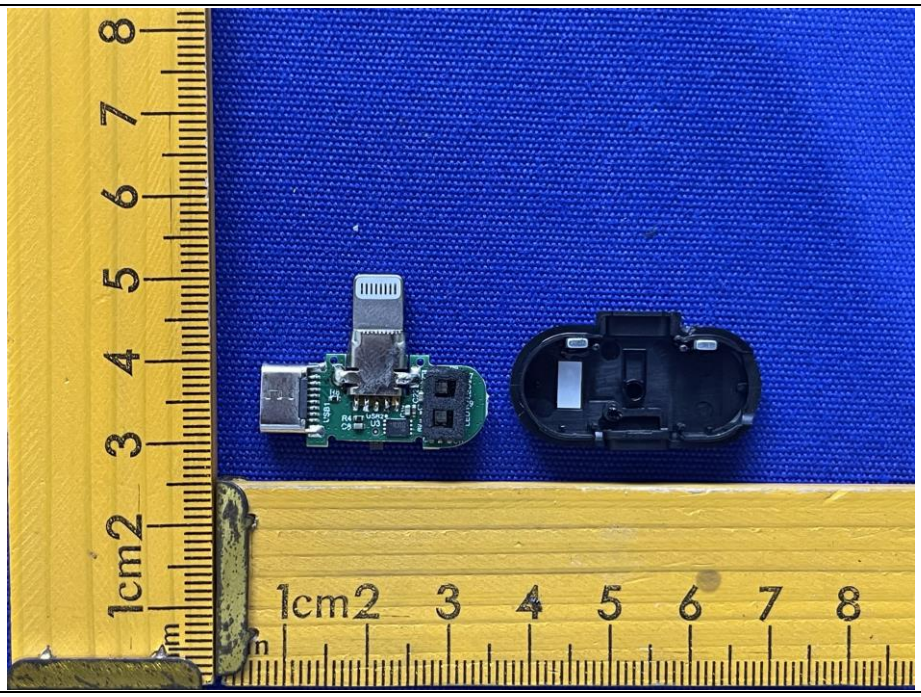

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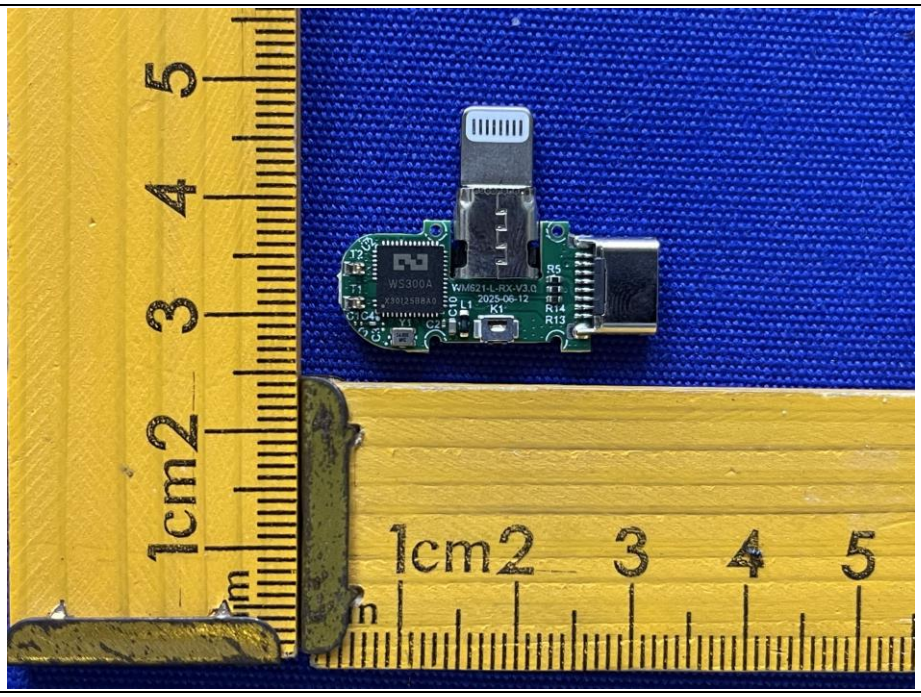

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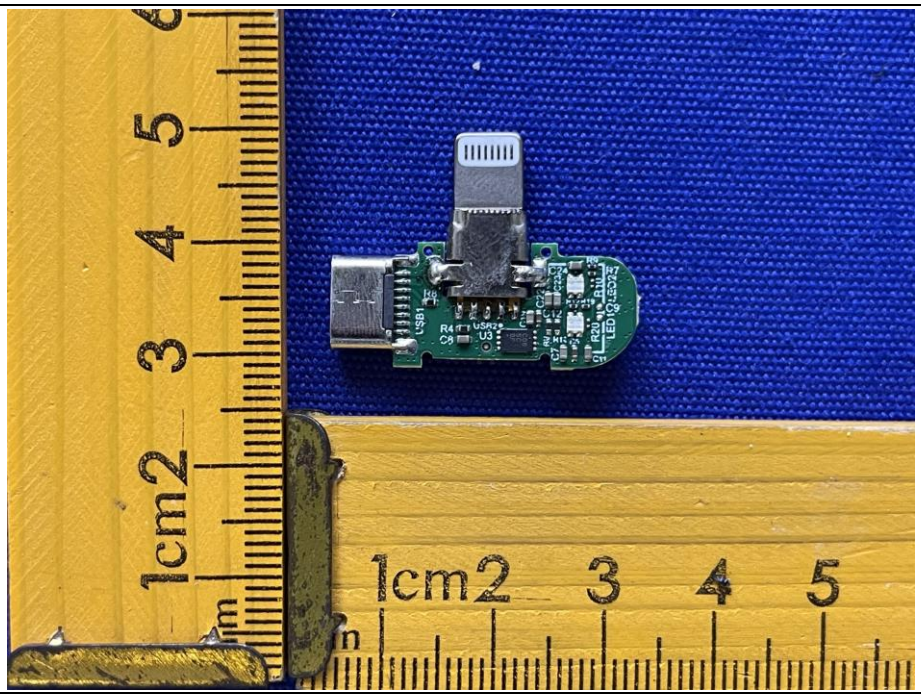

******** END OF REPORT ********