EMC TEST REPORT

Product Name:	Bicycle lights
Trade mark:	/
Model No.:	BK-5201, BK-1920
FCC ID:	2BP5H-BK5201
Report No.:	CTB25052606802E01
Applicant:	Wenzhou Kalushi Trading Co., Ltd
Address:	60 Lishe Road, Zeya Town, Ouhai District, Wenzhou City, Zhejiang Province
Manufacturer:	Wenzhou Kalushi Trading Co., Ltd
Address:	60 Lishe Road, Zeya Town, Ouhai District, Wenzhou City, Zhejiang Province
Prepared by:	Shenzhen CTB Testing Technology Co., Ltd.
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Sample No.:	25052606802
Date of Receipt:	May 28, 2025
Date of Test(s):	May 29, 2025 ~ Jun. 06, 2025
Date of Issue:	Jun. 10, 2025
Test Standard(s):	47 CFR Part 15 Subchapter B, ANSI C63.4: 2014
Test Result:	Pass

In the configuration tested, the EUT complied with the standards specified above.

Compiled by:	Reviewed by:	Approved by:
Blake Cai	Bin Mei	Rita Xiao

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "★" indicates the testing items were fulfilled by subcontracted lab. "※" indicates the items are not in CNAS accreditation scope.

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1. Description of version

Report No.	Issue Date	Description	Approved
CTB25052606802E01	Jun. 10, 2025	Original	Valid

2. Test summary

Test procedures according to the technical standards:

Standard	Test Item	Test Result
§15.107	Conducted Emission	PASS
§15.109	Radiated Emission	PASS

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 %

Test Item	Frequency	Expanded Uncertainty (U_{Lab})
No.1 Conducted Emission	150 kHz to 30 MHz	±3.1 dB
No.2 Conducted Emission	150 kHz to 30 MHz	±3.2 dB
Radiated Emission	30 MHz to 1000 MHz	± 4.1 dB
Radiated Emission	1000 MHz to 6000 MHz	±4.8 dB

4. General information

4.1. Description of EUT

Product name	Bicycle lights
Trade mark	/
Model No.	BK-5201
Serial Model No.	BK-1920
Model Difference	All model's only differ in appearance color and model naming; everything else is the same. Test sample model: BK-5201.
Rated Power	8.14W
Rated Voltage& current	DC 5V from adapter(AC 120V/60Hz) or 3.7V⎓2200mAh from battery
Highest Internal Frequency	<108MHz
Configuration	☒ Table-top ☐ Floor-standing
Classification	☐ Class A ☒ Class B
The highest frequency of the internal sources of the EUT	☐ below 1.705 MHz, the measurement shall only be made up to 30 MHz. ☒ between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz. ☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. ☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. ☐ above 1 GHz, the measurement shall be made up to 5th harmonic of the highest frequency or 40 GHz, whichever is lower.
Adapter Information	/

Note: The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.2. Description of accessory device

Description	Manufacturer	Model	Specification	Note
Adapter	HUAWEI	HW-050100C01	Input: 100-240V~ 50/60Hz 0.2A Output: 5V⎓1A	☐Applicant ☒CTB

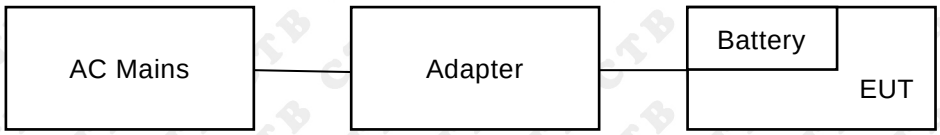
External I/O Cable

Cable Description	Shielded Type	Ferrite Core	Length(m)	Note
USB Cable	☐Shielded ☒Non-shielded	☐Yes ☒No	0.3	☒Applicant ☐CTB

4.3. Test conditions

Temperature: 15-25℃
Relative Humidity: 30-60 %
Atmospheric pressure: 800hPa-1060hPa

4.4. Block diagram of EUT configuration



4.5. Operating condition of EUT

The test system was pre-tested based on the consideration of all possible combinations of EUT operation modes according to test plan. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively. All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, (*)the worst data were recorded and reported.

Pretest Test Mode	Description	Test Voltage
Mode 1*	Charging	AC 120V/60Hz
Mode 2	Working	DC 3.7V

Conducted emission test		
Final Test Mode	Description	Test Voltage
Mode 1*	Charging	AC 120V/60Hz

Radiated emission test		
Final Test Mode	Description	Test Voltage
Mode 1*	Charging	AC 120V/60Hz

5. List of Test and Measurement Instruments

No.1 Continuous disturbance						
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated until
1	843 Shield Room	C/ R/ T	843	/	/	2027/6/21
2	LISN	ROHDE&SCHWARZ	ESH3-Z5	100318	/	2026/5/21
3	Pulse limiter	ROHDE&SCHWARZ	ESH3-Z2	0357.8810.54-1 02700-NB	/	2026/5/21
4	EMI TEST RECEIVER	R&S	ESCI	100428	V4.42.SP3	2026/5/21
5	Coaxial cable	Agilent	UCE500-SMNM-1.5M	/	/	2026/5/21
6	ISN	Schwarzbeck	NTFM8158	183	/	2025/6/30
7	ISN	Schwarzbeck	CAT5 8158	473	/	2025/6/23
8	Voltage Probe	Schwarzbeck	TK 9420	01189	/	2025/10/25
9	EMI test software	Frad	EZ-EMC	Ver/ EMC-con3A1/1	/	/
10	Current Probe	FCC	F-52B	199453	/	2026/5/23

Radiated emission(No.2 Chamber)						
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated until
1	966 Chamber	C/ R/ T	966	/	/	2026/11/14
2	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120 D	01911	/	2026/6/1
3	Broadband Antenna	Schwarzbeck	VULB 9168	1471	/	2025/10/25
4	Preamplifier	Agilent	8449B	3008A01838	/	2025/6/30
5	Preamplifier	Schwarzbeck	BBV 9743 B	00500	/	2026/5/29
6	EMI TEST RECEIVER	R&S	ESCI7	100861	/	2025/10/25
7	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/6/28
8	EMI test software	Farad	EZ-EMC	/	Ver. FARAD-3A1+	/
9	Coaxial cable	Rosenberg	8m	/	/	2025/10/25
10	Coaxial cable	Times	2m	/	/	2025/10/25
11	Coaxial cable	Times	2m	/	/	2025/10/25
12	Coaxial cable	Times	1m	/	/	2025/10/25
13	loop antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2026/6/1

6. Conducted Emission

6.1. Limit

Except for Class A devices:

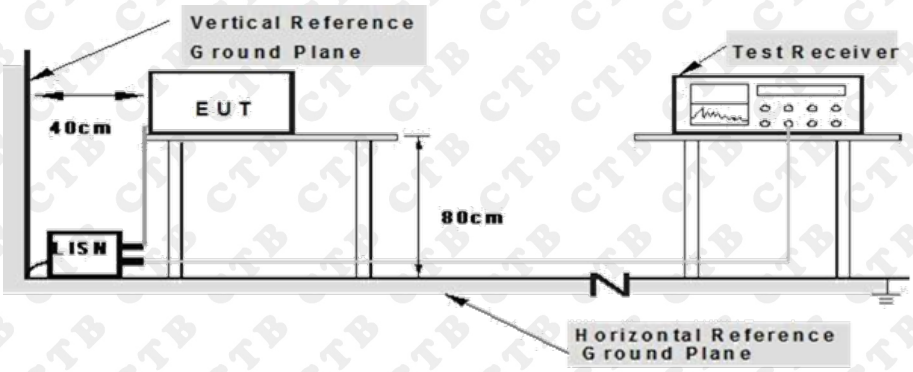
Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Note: Decreases with the logarithm of the frequency.

For Class A devices:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

6.2. Test setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

The setup of EUT is according with ANSI C63.4 measurement procedure. Specification used with FCC Part 15 limits.

6.3. EMI test receiver setup

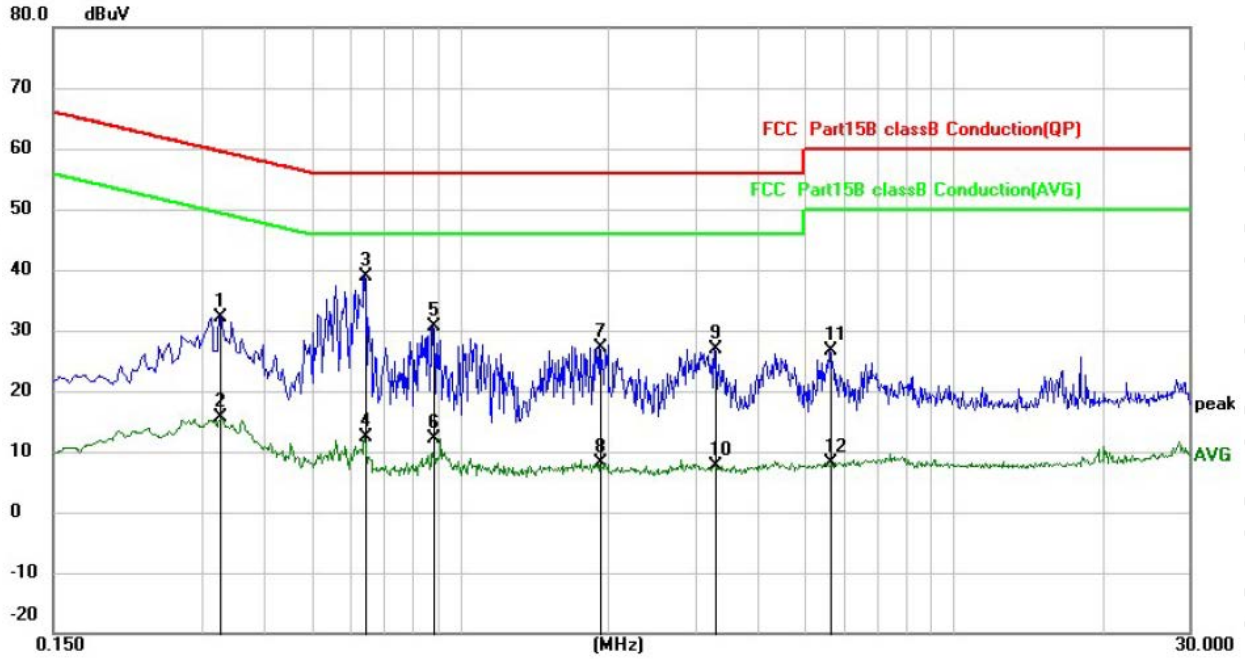
Frequency Range	9kHz-30MHz
Resolution Bandwidth	200Hz (9kHz-150kHz) 9kHz (150kHz-30MHz)

6.4. Test procedure

1. Measurement was performed in shielded room, and instruments used were followed clause 4 of ANSI C63.4.
2. Detailed test procedure was following clause 7 of ANSI C63.4.
3. Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

6.5. Test results

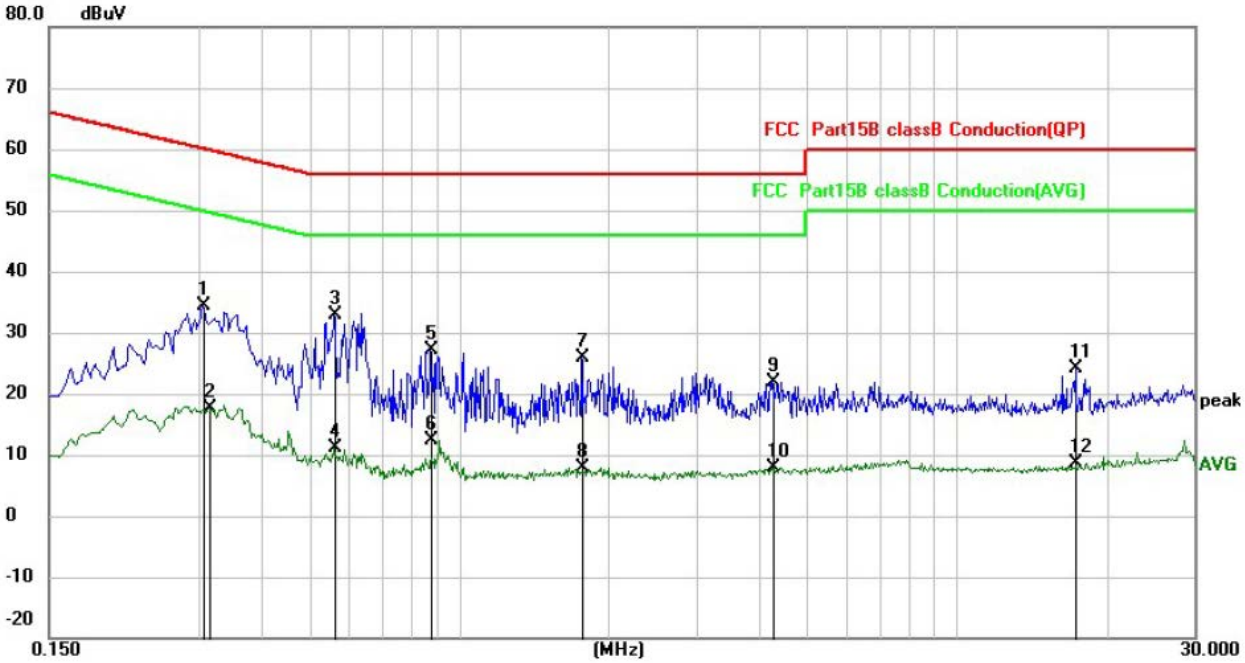
Temperature:	23℃	Relative Humidity:	54 %
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3260	21.50	10.62	32.12	59.55	-27.43	QP
2		0.3260	5.09	10.62	15.71	49.55	-33.84	AVG
3	*	0.6419	28.20	10.66	38.86	56.00	-17.14	QP
4		0.6419	1.76	10.66	12.42	46.00	-33.58	AVG
5		0.8820	19.87	10.86	30.73	56.00	-25.27	QP
6		0.8820	1.31	10.86	12.17	46.00	-33.83	AVG
7		1.9260	15.61	11.53	27.14	56.00	-28.86	QP
8		1.9260	-3.32	11.53	8.21	46.00	-37.79	AVG
9		3.2820	14.92	11.86	26.78	56.00	-29.22	QP
10		3.2820	-4.22	11.86	7.64	46.00	-38.36	AVG
11		5.6100	14.16	12.45	26.61	60.00	-33.39	QP
12		5.6100	-4.20	12.45	8.25	50.00	-41.75	AVG

Note: Result=Reading + Factor
Over Limit=Result - Limit

Temperature:	23℃	Relative Humidity:	54 %
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.3060	23.75	10.64	34.39	60.08	-25.69	QP
2		0.3140	7.09	10.63	17.72	49.86	-32.14	AVG
3	*	0.5620	22.33	10.57	32.90	56.00	-23.10	QP
4		0.5620	0.46	10.57	11.03	46.00	-34.97	AVG
5		0.8780	16.21	10.86	27.07	56.00	-28.93	QP
6		0.8780	1.44	10.86	12.30	46.00	-33.70	AVG
7		1.7660	14.36	11.43	25.79	56.00	-30.21	QP
8		1.7660	-3.59	11.43	7.84	46.00	-38.16	AVG
9		4.2500	9.93	12.07	22.00	56.00	-34.00	QP
10		4.2500	-4.19	12.07	7.88	46.00	-38.12	AVG
11		17.2979	10.75	13.45	24.20	60.00	-35.80	QP
12		17.2979	-4.82	13.45	8.63	50.00	-41.37	AVG

Note: Result=Reading + Factor
Over Limit=Result – Limit

7. Radiated emissions

7.1. Limit

Except for Class A devices (at 3m):

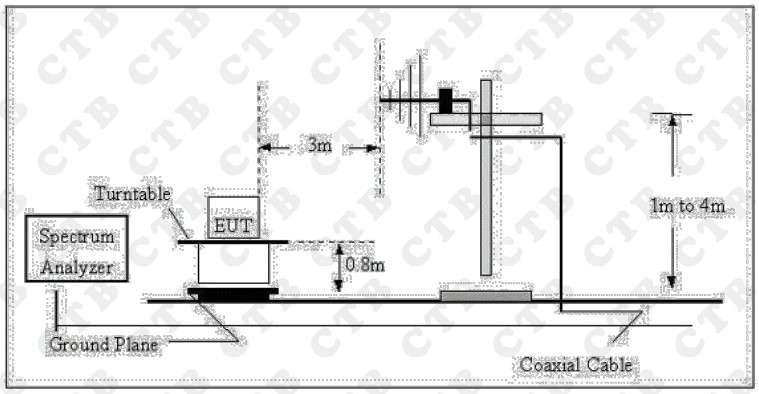
Frequency of emission (MHz)	Field strength (microvolts/meter)	
	(microvolts/meter)	(dBμV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

For Class A devices (at 10m):

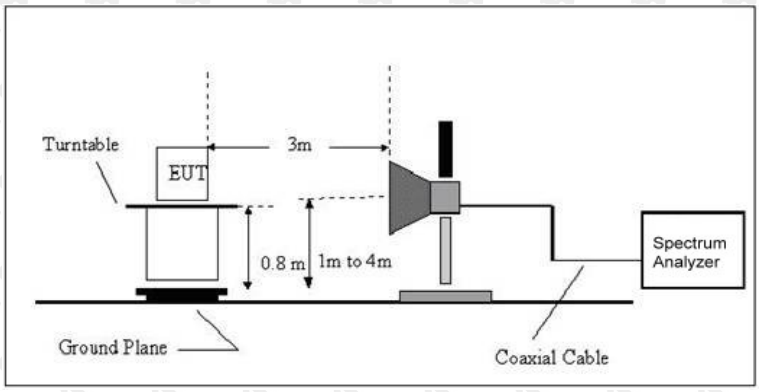
Frequency of emission (MHz)	Field strength (microvolts/meter)	
	(microvolts/meter)	(dBμV/m)
30-88	90	39
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

7.2. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz



Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in 3 meter Charmber test site, using the setup accordance with the ANSI C63.4:2014.

7.3. EMI test receiver setup and spectrum analyzer setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz-1000MHz	100kHz	300kHz	120kHz	QP
Above 1GHz	1MHz	3MHz	/	PK
	1MHz	10Hz	/	AVG

7.4. Test procedure

1. The measurement was performed in a semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4

2. Detailed test procedure was following clause 8 of ANSI C63.4.

7.5. Corrected Amplitude & Margin Calculation

1. The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

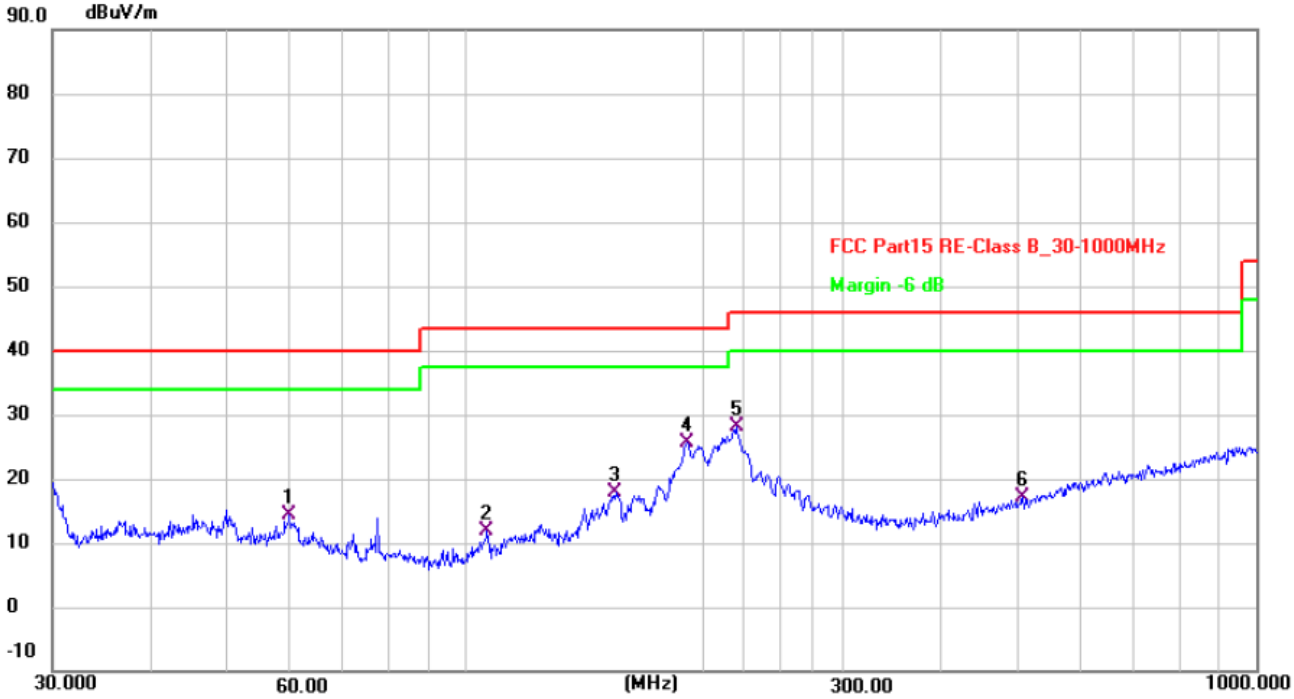
   Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

2. The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

   Margin = Limit – Corrected Amplitude

7.6. Test results

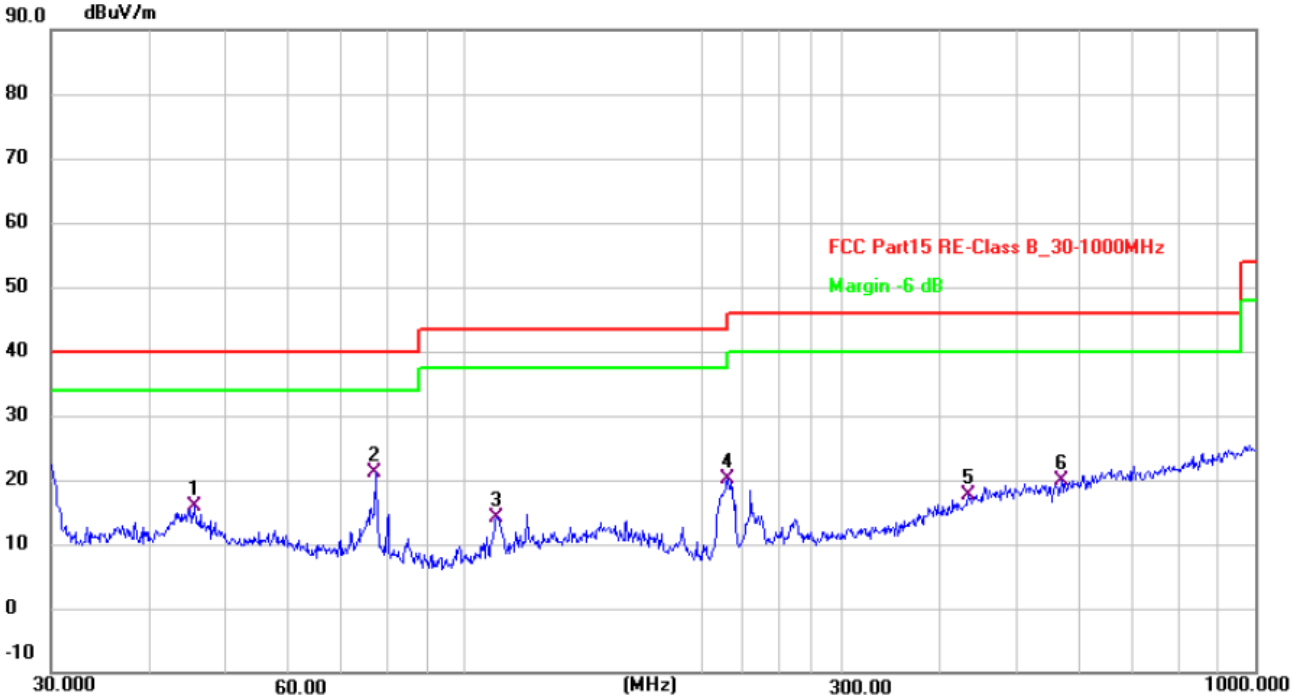
Temperature:	23℃	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	59.8588	29.29	-14.80	14.49	40.00	-25.51	QP
2	106.3850	28.99	-17.20	11.79	43.50	-31.71	QP
3	154.8204	30.83	-13.01	17.82	43.50	-25.68	QP
4 *	190.4050	41.39	-15.75	25.64	43.50	-17.86	QP
5	219.8448	44.27	-16.17	28.10	46.00	-17.90	QP
6	506.4790	25.67	-8.66	17.01	46.00	-28.99	QP

Note: Result=Reading+Factor
Over Limit=Result-Limit

Temperature:	23℃	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	45.5348	29.43	-13.48	15.95	40.00	-24.05	QP
2 *	77.3210	38.99	-17.74	21.25	40.00	-18.75	QP
3	109.7960	30.82	-16.74	14.08	43.50	-29.42	QP
4	215.2678	36.62	-16.40	20.22	43.50	-23.28	QP
5	434.0650	28.09	-10.42	17.67	46.00	-28.33	QP
6	568.6126	26.72	-6.76	19.96	46.00	-26.04	QP

Note: Result=Reading+Factor
Over Limit=Result-Limit

8. Photographs of test setup

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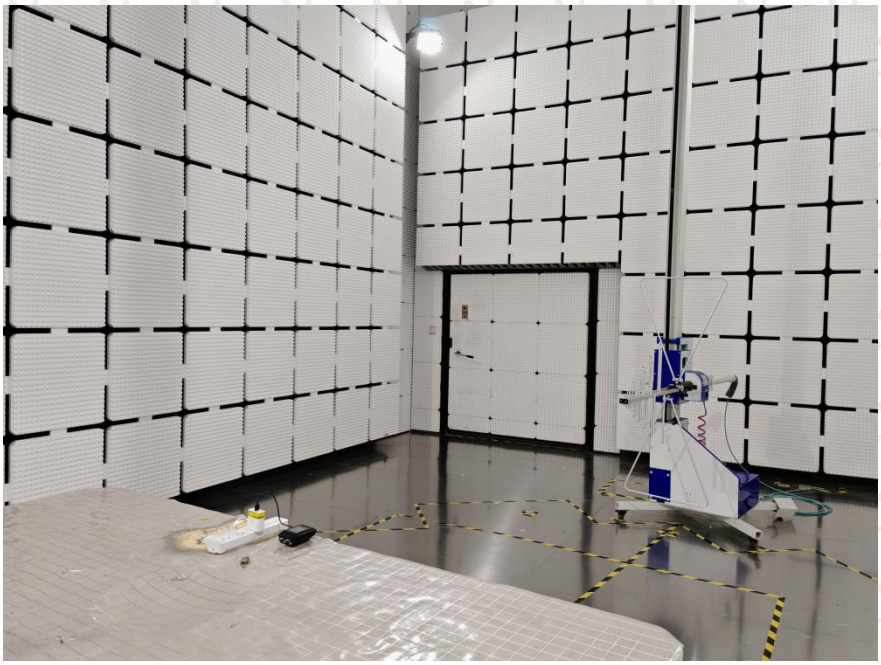

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9. Photographs of EUT

EUT photo 1

EUT photo 2

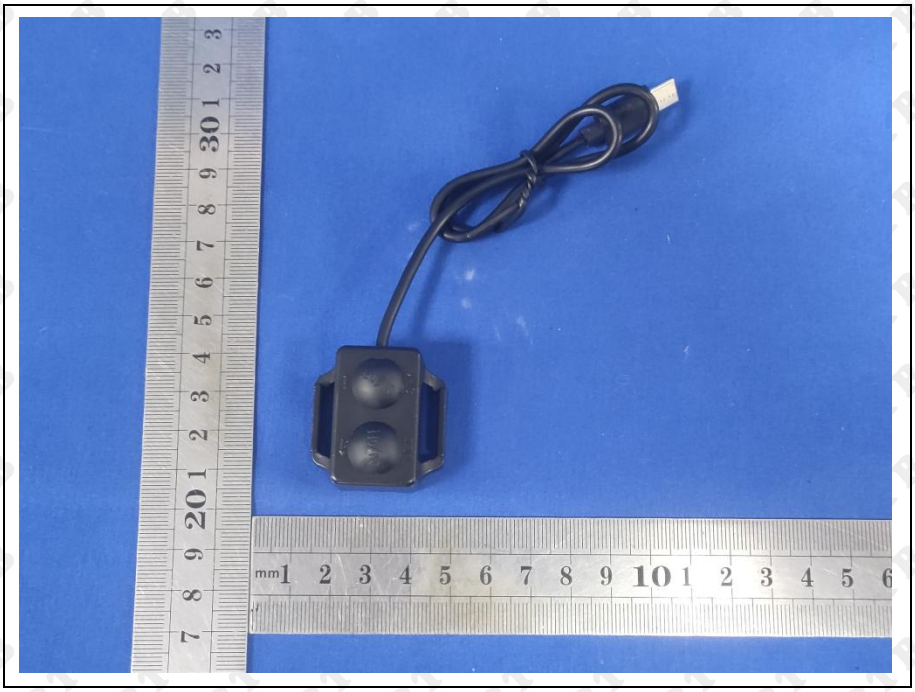
EUT photo 3

EUT photo 4

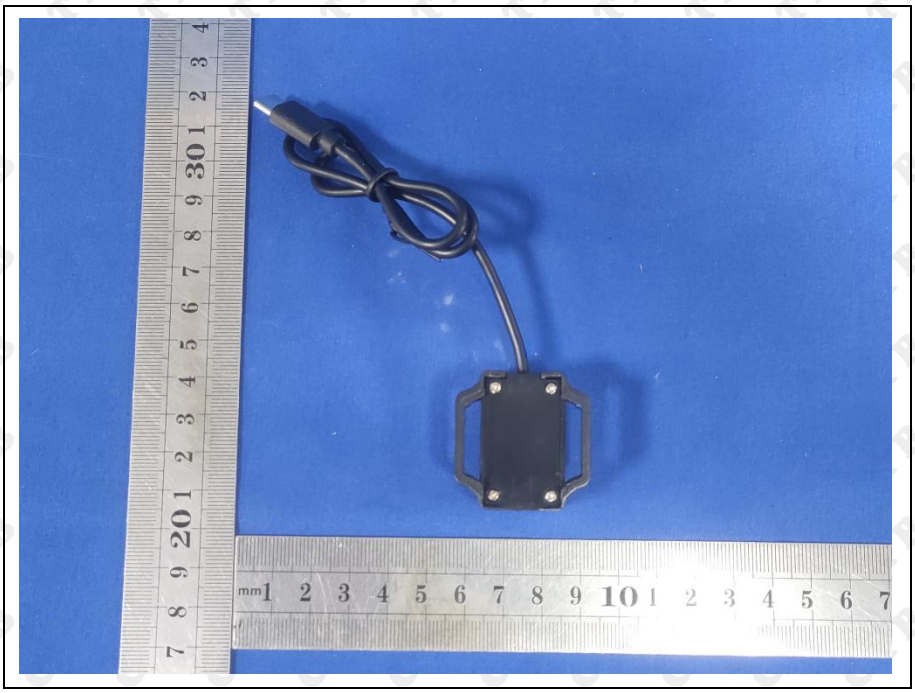
EUT photo 5

EUT photo 6

EUT photo 7



EUT photo 8



End of report