



Shenzhen CTL Testing Technology Co., Ltd.
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TEST REPORT

47 CFR Part 15, Subpart C

Report Reference No..... : CTL2407111021-WF

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Test Firm..... : Shenzhen CTL Testing Technology Co., Ltd.

Address..... : Floor 1-A, Baisha Technology Park, No.3011, Shahehexi Road,
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Applicant's name..... : Yuwei Technology (Dongguan) Co., Ltd.

Address..... : Room 301, No.15 Longjing Road, Guanjingtong, Fenggang
Town, Dongguan City, Guangdong Province, China

Test specification:

Standard..... : 47 CFR Part 15, Subpart C

Master TRF..... : Dated 2011-01

Test item description..... : Solar Power Bank

FCC ID..... : 2AZK8-HI-S226PW

Trade Mark..... : N/A

Model/Type reference..... : HI-S226PW

Antenna type..... : loop coil Antenna

Date of receipt of test item..... : July 12, 2024

Date of Test Date..... : July 12, 2024–July 19, 2024

Data of Issue..... : July 25, 2024

Result..... : Pass

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TEST REPORT

Test Report No. :	CTL2407111021-WF	July 25, 2024
		Date of issue

Equipment under Test : Solar Power Bank

Type / Model(s) : HI-S226PW

Applicant : **Yuwei Technology (Dongguan) Co., Ltd.**

Address : Room 301, No.15 Longjing Road, Guanjingtou, Fenggang Town, Dongguan City, Guangdong Province, China

Manufacturer : **Yuwei Technology (Dongguan) Co., Ltd.**

Address : Room 301, No.15 Longjing Road, Guanjingtou, Fenggang Town, Dongguan City, Guangdong Province, China

Test result	Pass *
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The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

** Modified History **

[illegible]

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1. TEST STANDARDS

The tests were performed according to following standards:

[47 CFR Part 15, Subpart C 15.207,15.209, 15.215\(c\)](#)

[ANSI C63.10-2013](#)

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	July 12, 2024
Testing commenced on	:	July 12, 2024
Testing concluded on	:	July 19, 2024

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	Input1/Input2: 5V===3A 9V===2A 12V===1.5A Output 1/Output 2: 5V===3A 9V===2.22A 12V===1.67A Output 3: 5V===3A 9V===2A 12V===1.5A 5V===4.5A 4.5V===5A Battery Capacity: 3.7V 27000mAh/99Wh Solar Panel: 6W Wireless Charging: 15W(5W/7.5W/10W)
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2.3. Short description of the Equipment under Test (EUT)

A Solar Power Bank work frequency range 110KHz-205KHz

Antenna type: loop coil Antenna

Modulation mode: FSK

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

Test Serial number: CTL2407111021

2.4. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting mode for testing.

Test Mode 1	AC Charging+Wireless output(15W MAX) full load
Test Mode 2	AC Charging+Wireless output(15W MAX) half load
Test Mode 3	AC Charging+Wireless output(15W MAX) no load
Test Mode 4	Wireless output(15W MAX) full load
Test Mode 5	Wireless output(15W MAX) half load
Test Mode 6	Wireless output(15W MAX) no load
Test Mode 7	AC Charging+Wireless output(10W MAX) full load
Test Mode 8	AC Charging+Wireless output(10W MAX) half load
Test Mode 9	AC Charging+Wireless output(10W MAX) no load
Test Mode 10	Wireless output(10W MAX) full load
Test Mode 11	Wireless output(10W MAX) half load
Test Mode 12	Wireless output(10W MAX) no load
Test Mode 13	AC Charging+Wireless output(7.5W MAX) full load
Test Mode 14	AC Charging+Wireless output(7.5W MAX) half load
Test Mode 15	AC Charging+Wireless output(7.5W MAX) no load
Test Mode 16	Wireless output(7.5W MAX) full load
Test Mode 17	Wireless output(7.5W MAX) half load
Test Mode 18	Wireless output(7.5W MAX) no load
Test Mode 19	AC Charging+Wireless output(5W MAX) full load
Test Mode 20	AC Charging+Wireless output(5W MAX) half load
Test Mode 21	AC Charging+Wireless output(5W MAX) no load
Test Mode 22	Wireless output(5W MAX) full load
Test Mode 23	Wireless output(5W MAX) half load
Test Mode 24	Wireless output(5W MAX) no load
Note: All modes have been tested and only the worst Test Mode 1 is reported.	

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

This submittal(s) (test report) is intended for **FCC ID: 2AZK8-HI-S226PW** filing to comply with FCC Part 15, Subpart C Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

2.7. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

Wireless Charging Test Rack	Manufacturer :	YBZ
	Model No. :	F18

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

3.2. Test Facility

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

CNAS-Lab Code: L7497

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

A2LA-Lab Cert. No. 4343.01

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

IC Registration No.: 9518B

CAB identifier: CN0041

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9518B.

FCC-Registration No.: 399832

Designation No.: CN1216

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832.

3.3. Environmental conditions

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

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Statement of the measurement uncertainty

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

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MH	4.10dB	(1)
Radiated Emission	30~1000MHz	4.08dB	(1)
Radiated Emission	Above 1GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

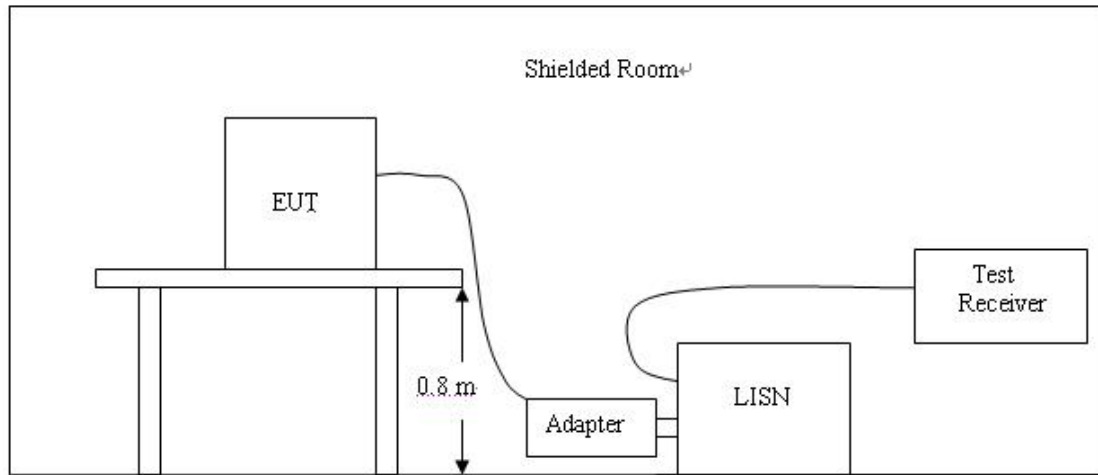
3.5. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ESH2-Z5	860014/010	2024/04/30	2025/04/29
Double cone logarithmic antenna	Schwarzbeck	VULB 9168	824	2023/02/13	2026/02/12
EMI Test Receiver	R&S	ESCI	1166.5950.03	2024/04/30	2025/04/29
Spectrum Analyzer	Keysight	N9020A	MY53420874	2024/05/01	2025/04/30
Active Loop Antenna	Da Ze	ZN30900A	/	2024/04/30	2025/04/29
Spectrum Analyzer	RS	FSP	1164.4391.38	2024/05/03	2025/05/02

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 The EUT received DC5V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

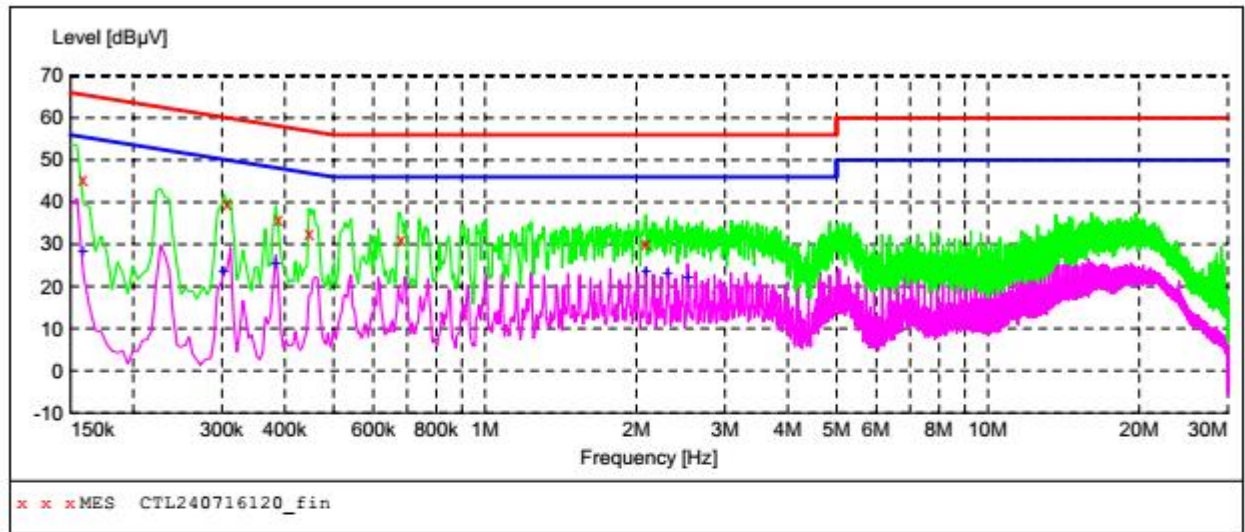
TEST RESULTS

Test Mode 1

L

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CTL240716120_fin"**

7/16/2024 8:59AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	45.40	10.0	66	20.1	QP	L1	GND
0.307500	39.90	10.0	60	20.1	QP	L1	GND
0.388500	36.00	10.0	58	22.1	QP	L1	GND
0.447000	32.80	10.0	57	24.1	QP	L1	GND
0.681000	31.00	10.0	56	25.0	QP	L1	GND
2.094000	30.40	10.1	56	25.6	QP	L1	GND

MEASUREMENT RESULT: "CTL240716120_fin2"

7/16/2024 8:59AM

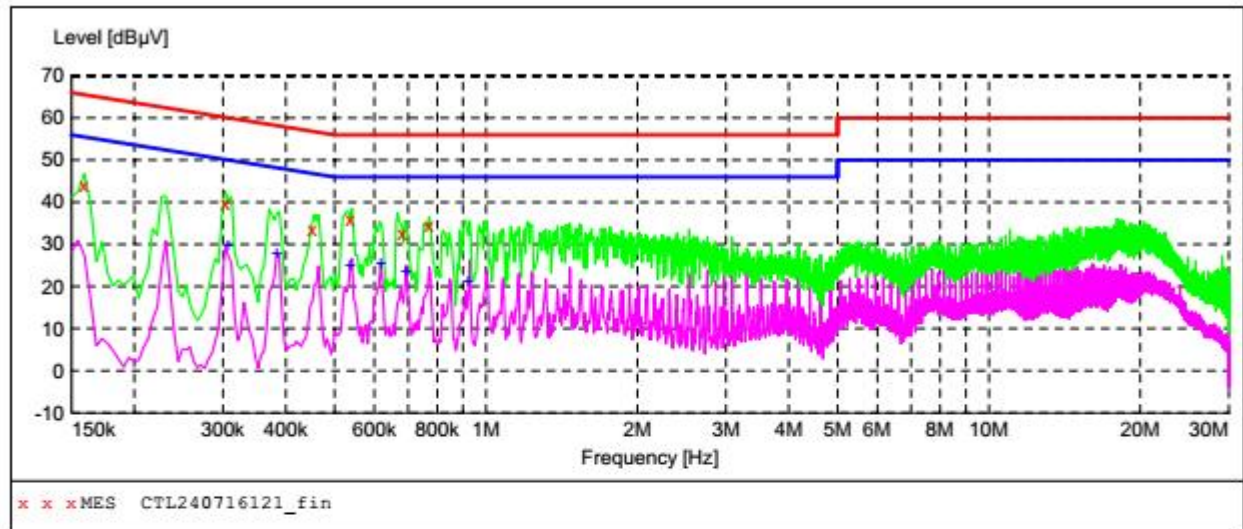
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	28.40	10.0	56	27.1	AV	L1	GND
0.303000	23.60	10.0	50	26.6	AV	L1	GND
0.384000	25.60	10.0	48	22.6	AV	L1	GND
2.089500	23.40	10.1	46	22.6	AV	L1	GND
2.310000	22.90	10.1	46	23.1	AV	L1	GND
2.535000	21.90	10.1	46	24.1	AV	L1	GND

Test Mode 1

N

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "CTL240716121_fin"**

7/16/2024 9:03AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	44.00	10.0	66	21.5	QP	N	GND
0.303000	39.70	10.0	60	20.5	QP	N	GND
0.451500	33.50	10.0	57	23.3	QP	N	GND
0.537000	35.70	10.0	56	20.3	QP	N	GND
0.681000	32.50	10.0	56	23.5	QP	N	GND
0.771000	34.60	10.0	56	21.4	QP	N	GND

MEASUREMENT RESULT: "CTL240716121_fin2"

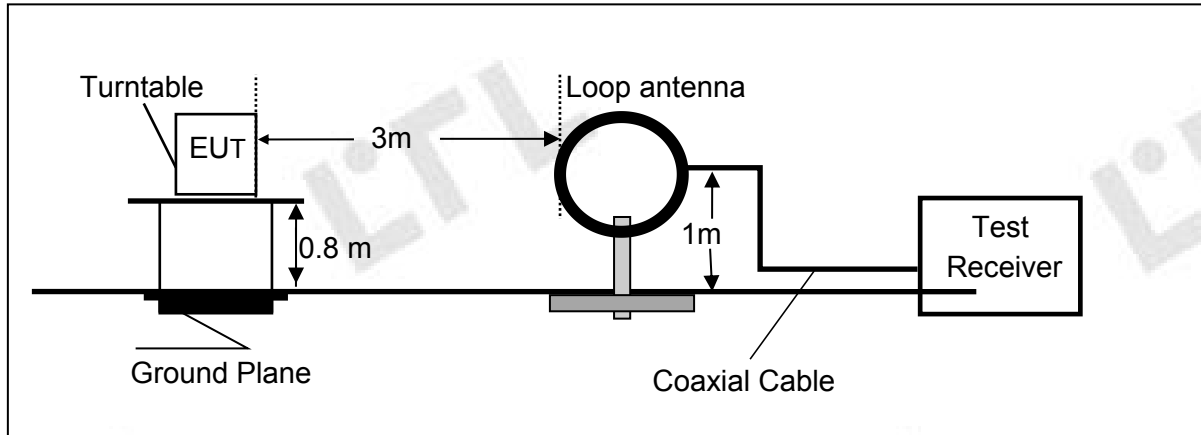
7/16/2024 9:03AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.307500	29.90	10.0	50	20.1	AV	N	GND
0.384000	27.70	10.0	48	20.5	AV	N	GND
0.537000	24.80	10.0	46	21.2	AV	N	GND
0.618000	25.40	10.0	46	20.6	AV	N	GND
0.694500	23.40	10.0	46	22.6	AV	N	GND
0.924000	21.10	10.1	46	24.9	AV	N	GND

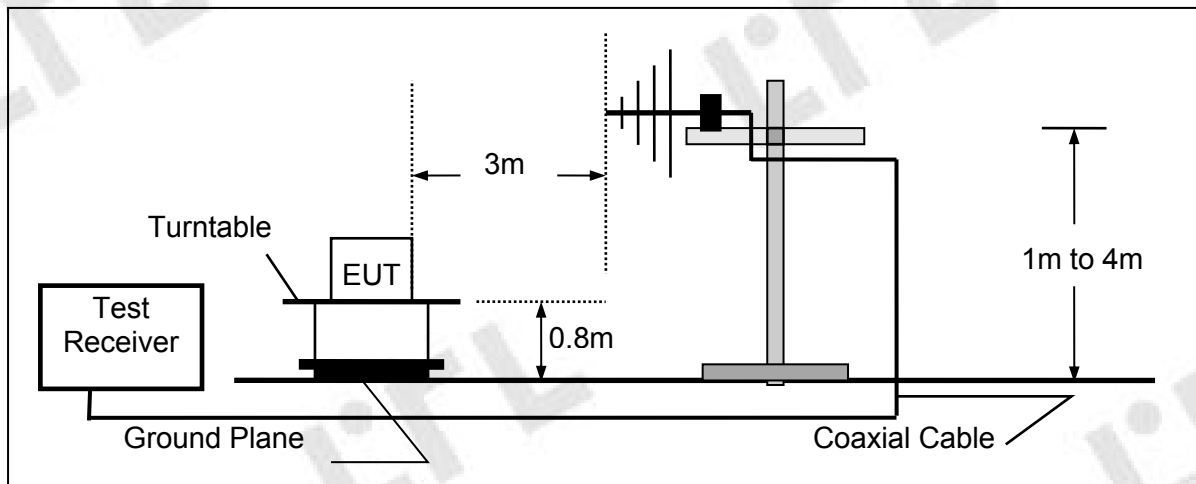
4.2. Radiated Emission

TEST CONFIGURATION

Radiated Emission Test Set-Up
Frequency range 9KHz – 30MHz



Frequency range 30MHz – 1000MHz



TEST PROCEDURE

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

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	36.8	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = AF + CL - AG$$

RADIATION LIMIT

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

9k~30MHz:

Frequency Range (MHz)	E-field Strength Limit @ 30m (mV/m)	E-field Strength Limit @ 3m (dBμV/m)
0.009-0.490	2400/F(kHz)	129-94
0.490-1.705	24000/F(kHz)	74-63
1.705-30	30	70

Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:

$$\text{Extrapolation(dB)} = 40\log_{10}(\text{Measurement Distance/Specification Distance})$$

Note:

- (1) The tighter limit shall apply at the edge between two frequency bands.
- (2) dBuV/m = 20*log(uV/m)

30M~1GHz:

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

Note:

(1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

TEST RESULTS

WORST-CASE RADIATED EMISSION BELOW 30 MHz

Test Mode 1



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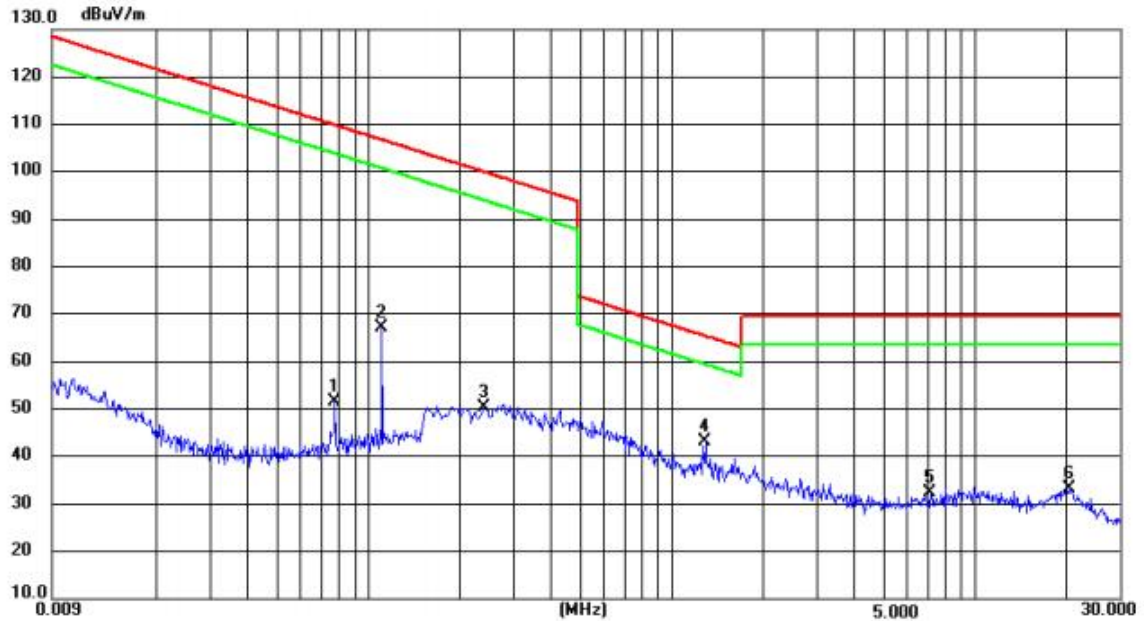
Radiated Emission Measurement

File :RF_7

Data :#294

Date: 2024/07/12

Time: 18:43:53



Site LAB Chamber 2

Polarization: **Horizontal**

Temperature: 25(C)

Limit: FCC Part 15 9K-30MHZ-2

Power:

Humidity: 50 %

EUT:

Distance: 3m

M/N: HI-S226PW

Mode: AC Charging+Wireless output(15W MAX) full load

Note: Yuwei Technology (Dongguan) Co., Ltd.

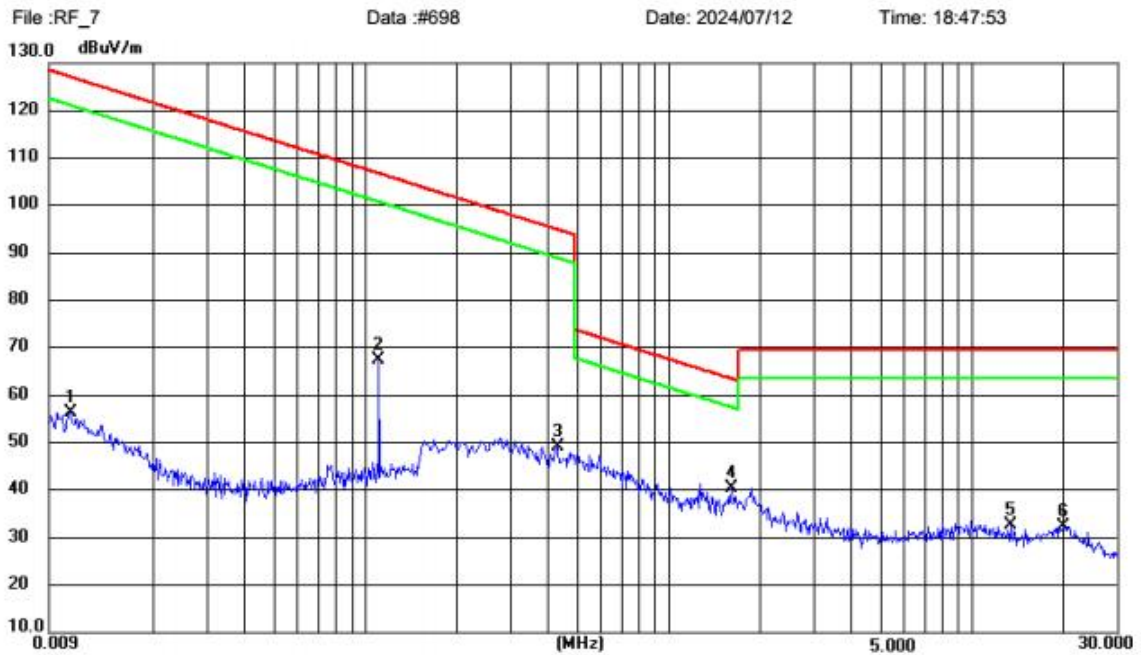
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark		
1	0.0769	30.84	20.67	51.51	109.89	58.38	peak	P			
2	0.1101	45.50	21.60	67.10	106.77	39.67	peak	P			
3	0.2400	27.54	22.90	50.44	100.00	49.56	peak	P			
4	1.2885	26.71	16.40	43.11	65.40	22.29	peak	P			
5	7.1205	13.87	18.42	32.29	69.54	37.25	peak	P			
6	20.5035	12.22	20.99	33.21	69.54	36.33	peak	P			

Test Mode 4



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Radiated Emission Measurement



Site LAB Chamber 2

Limit: FCC Part 15 9K-30MHZ-2

EUT:

M/N: HI-S226PW

Mode: Wireless output(15W MAX) full load

Note: Yuwei Technology (Dongguan) Co., Ltd.

Polarization: **Horizontal**

Power:

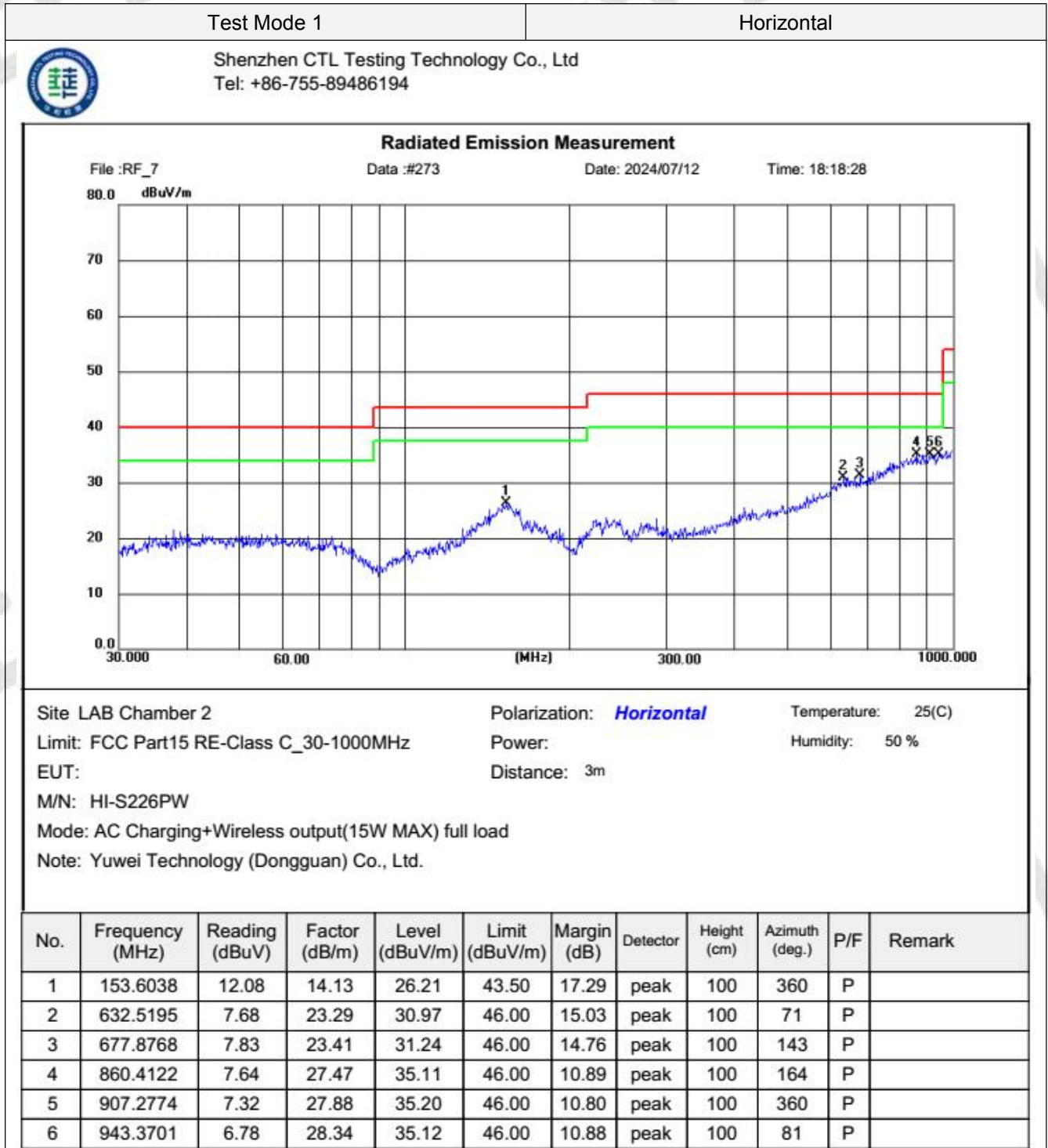
Distance: 3m

Temperature: 25(C)

Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark		
1	0.0105	33.78	22.52	56.30	127.18	70.88	peak	P			
2	0.1103	46.00	21.60	67.60	106.75	39.15	peak	P			
3	0.4276	26.57	22.61	49.18	94.98	45.80	peak	P			
4	1.6045	23.79	16.73	40.52	63.50	22.98	peak	P			
5	13.3300	13.77	18.93	32.70	69.54	36.84	peak	P			
6	19.9975	11.15	21.30	32.45	69.54	37.09	peak	P			

Radiated Emission Test Data 30-1000MHz:



Test Mode 1

Vertical



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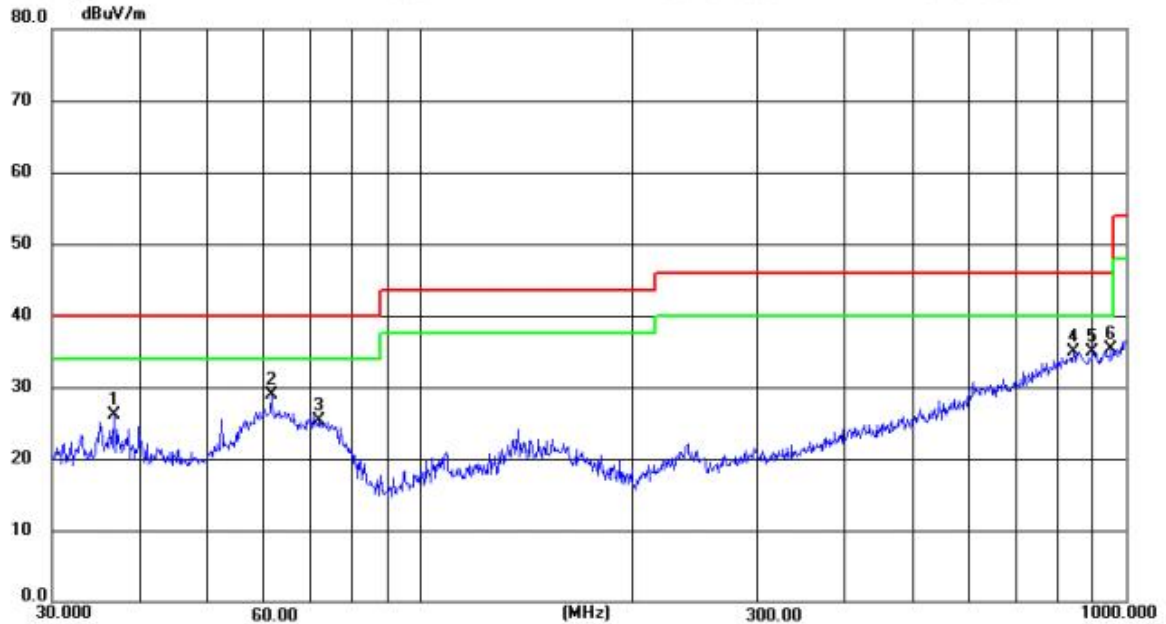
Radiated Emission Measurement

File :RF_7

Data :#274

Date: 2024/07/12

Time: 18:19:30



Site LAB Chamber 2

Polarization: **Vertical**

Temperature: 25(C)

Limit: FCC Part15 RE-Class C_30-1000MHz

Power:

Humidity: 50 %

EUT:

Distance: 3m

M/N: HI-S226PW

Mode: AC Charging+Wireless output(15W MAX) full load

Note: Yuwei Technology (Dongguan) Co., Ltd.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	36.8791	11.66	14.39	26.05	40.00	13.95	peak	100	330	P	
2	61.4001	14.61	14.29	28.90	40.00	11.10	peak	100	206	P	
3	71.9581	13.59	11.79	25.38	40.00	14.62	peak	100	83	P	
4	842.4988	7.71	27.28	34.99	46.00	11.01	peak	100	21	P	
5	898.1768	7.11	27.79	34.90	46.00	11.10	peak	100	248	P	
6	952.5111	6.97	28.34	35.31	46.00	10.69	peak	100	93	P	

Test Mode 4

Horizontal



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Radiated Emission Measurement

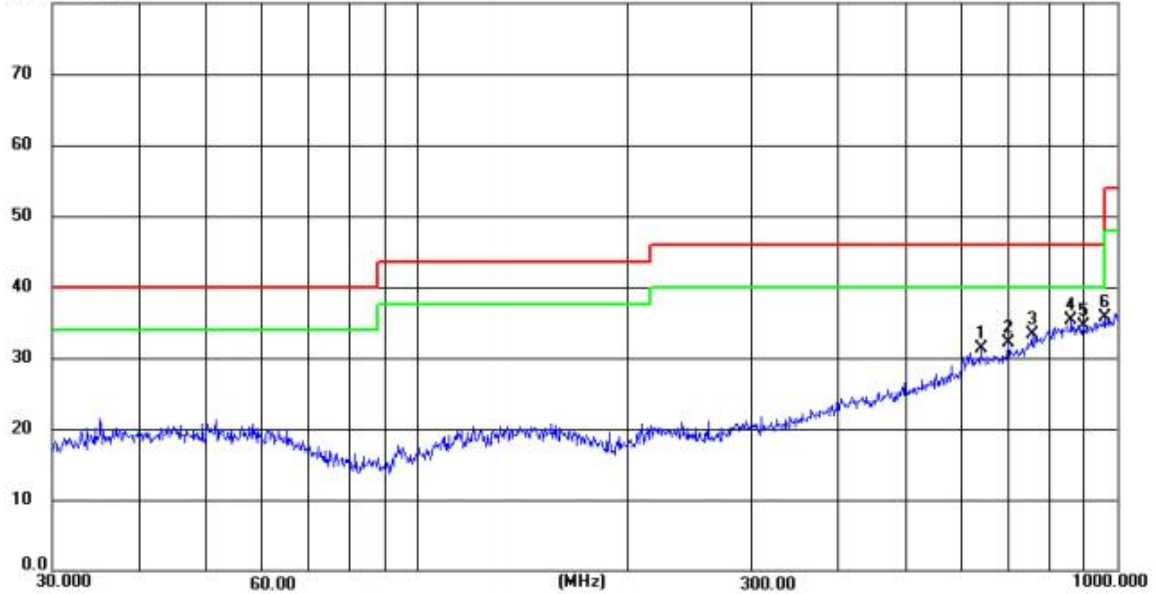
File :RF_7

Data :#271

Date: 2024/07/12

Time: 18:14:58

80.0 dBuV/m



Site LAB Chamber 2

Polarization: **Horizontal**

Temperature: 25(C)

Limit: FCC Part15 RE-Class C_30-1000MHz

Power:

Humidity: 50 %

EUT:

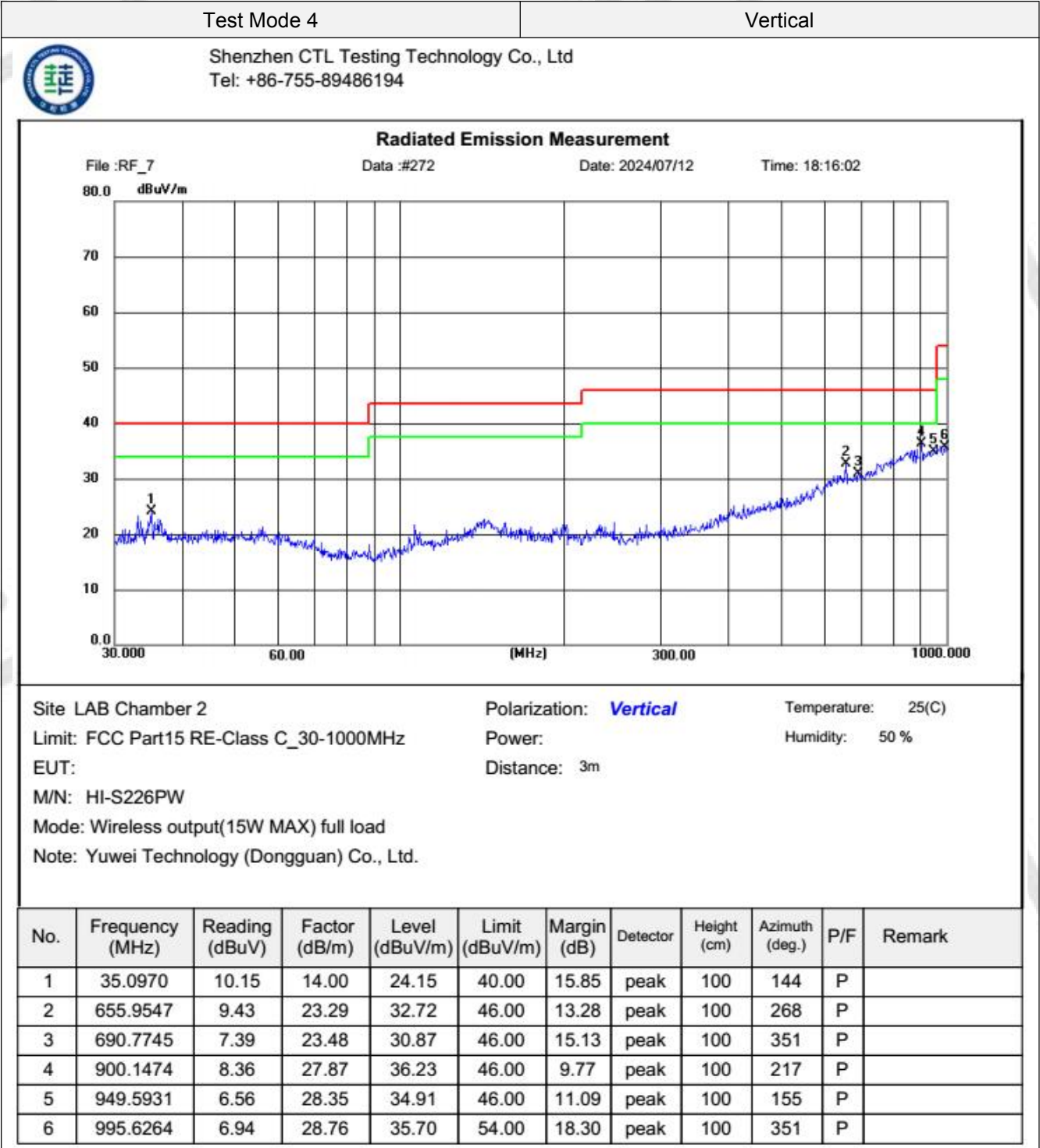
Distance: 3m

M/N: HI-S226PW

Mode: Wireless output(15W MAX) full load

Note: Yuwei Technology (Dongguan) Co., Ltd.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	639.7691	7.78	23.57	31.35	46.00	14.65	peak	100	340	P	
2	699.6110	8.56	23.50	32.06	46.00	13.94	peak	100	279	P	
3	756.7130	7.84	25.53	33.37	46.00	12.63	peak	100	237	P	
4	860.0351	7.77	27.46	35.23	46.00	10.77	peak	100	248	P	
5	896.2105	6.90	27.70	34.60	46.00	11.40	peak	100	360	P	
6	958.7943	7.20	28.41	35.61	46.00	10.39	peak	100	309	P	



4.3. 20dB Bandwidth/99% Bandwidth

TEST CONFIGURATION



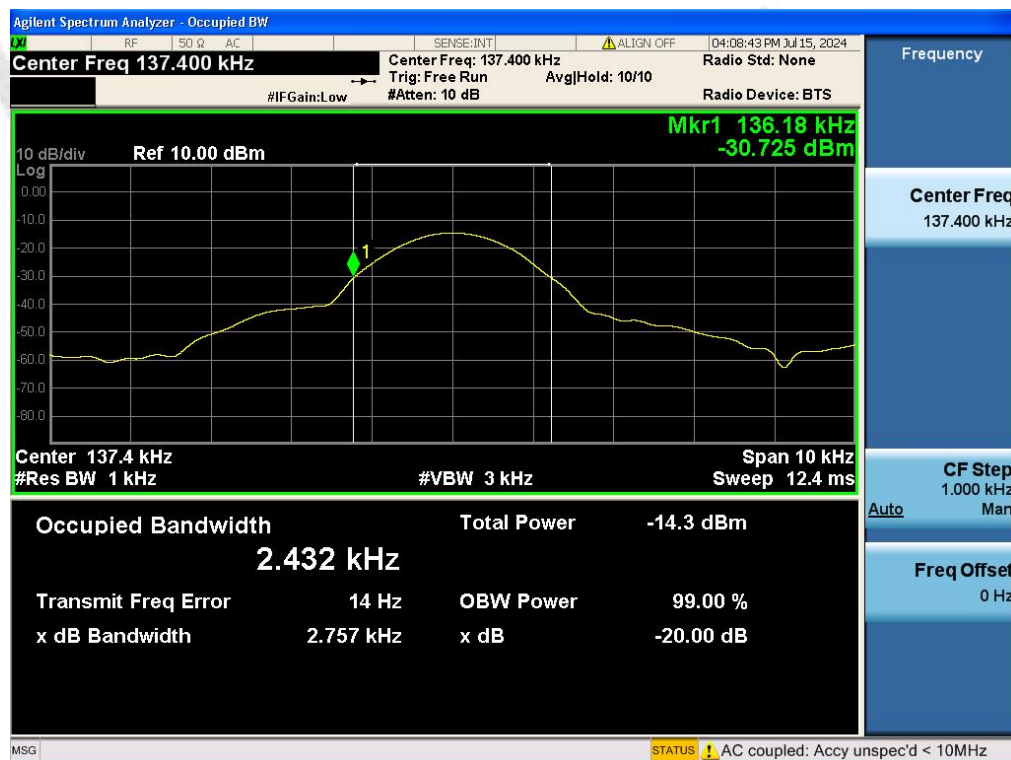
TEST PROCEDURE

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1KHz RBW and 3KHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

LIMIT

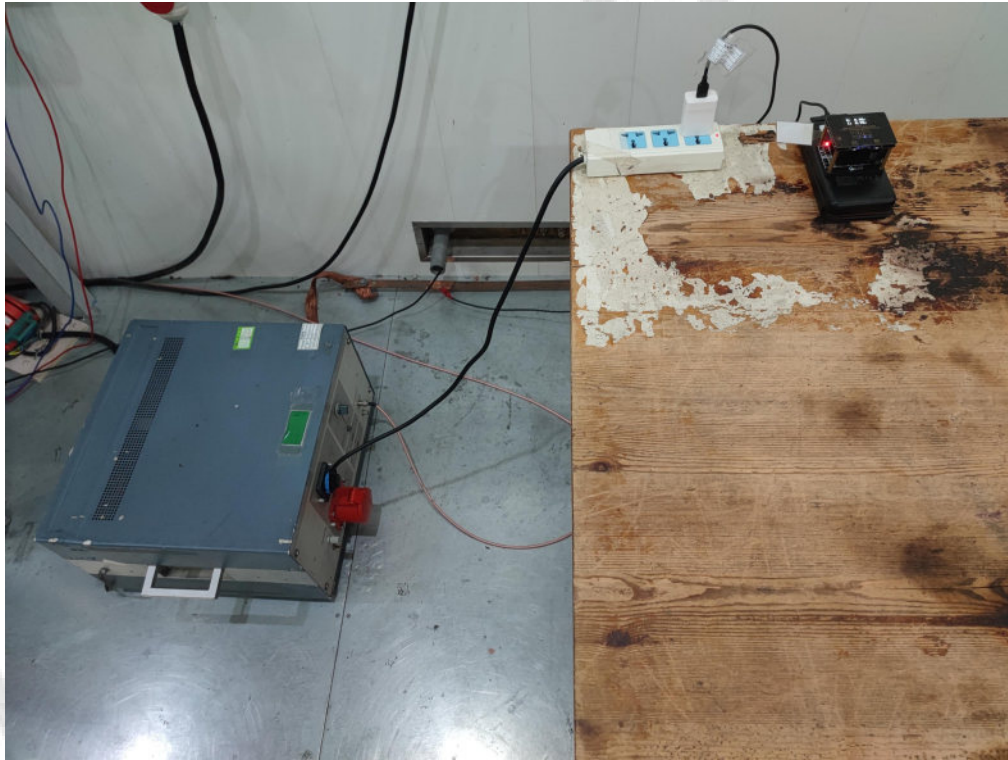
N/A

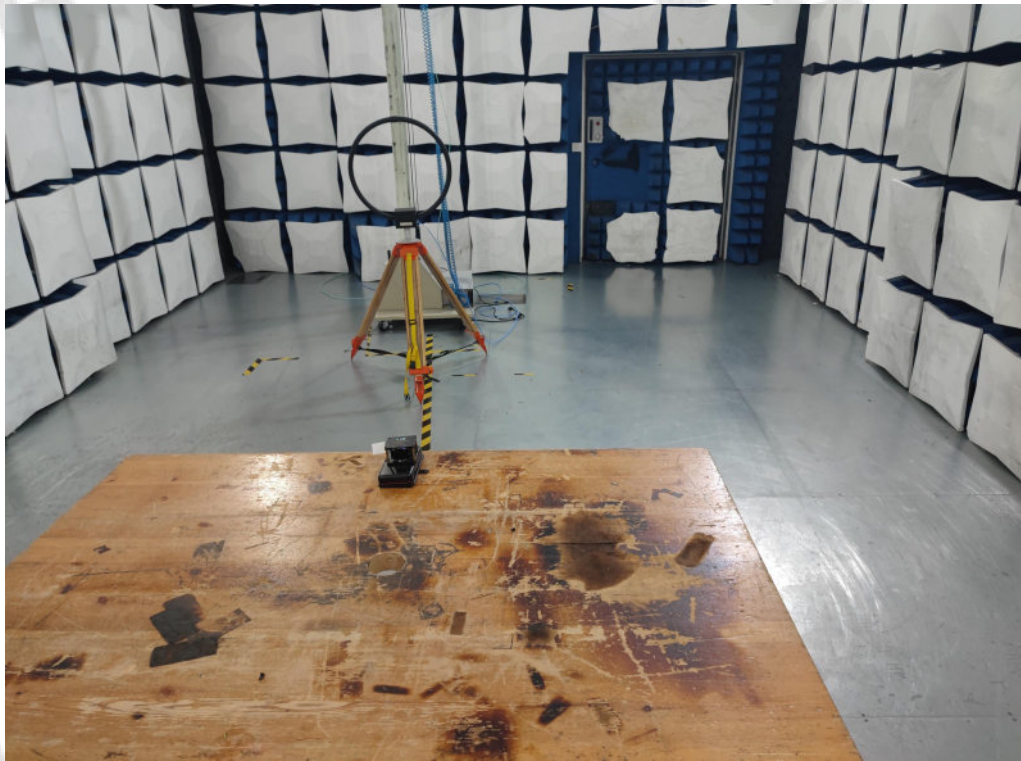
TEST RESULTS

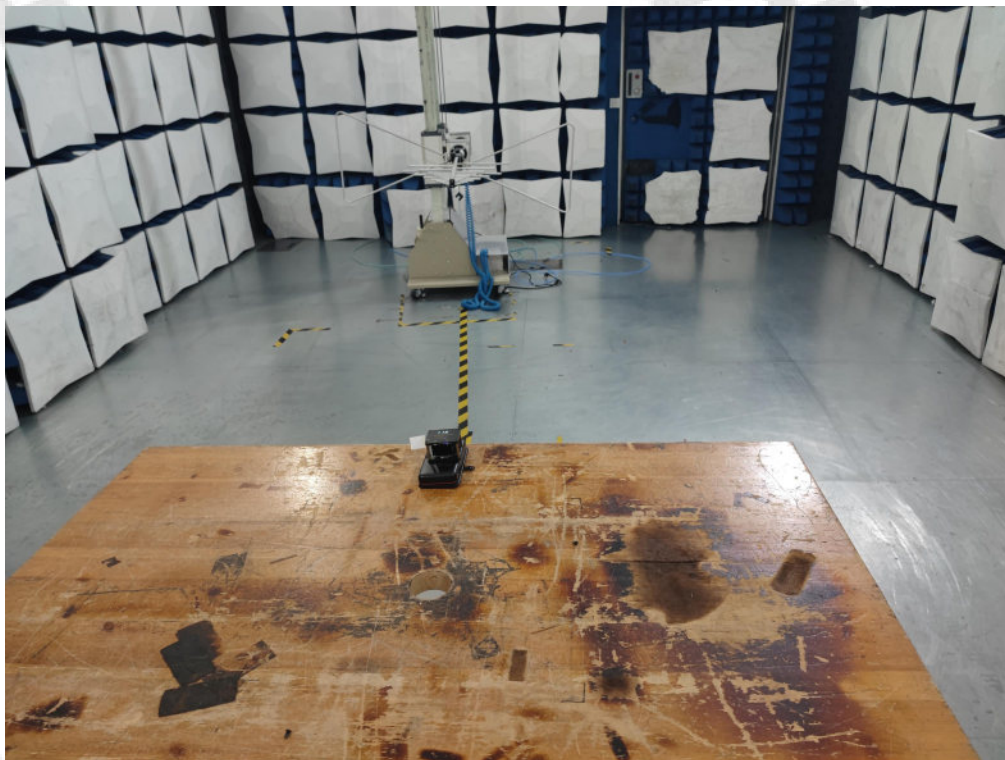


Frequency (kHz)	20dB Bandwidth (kHz)	Limit(kHz)	Verdict
137.4	2.757	/	PASS

5. Test Setup Photos of the EUT

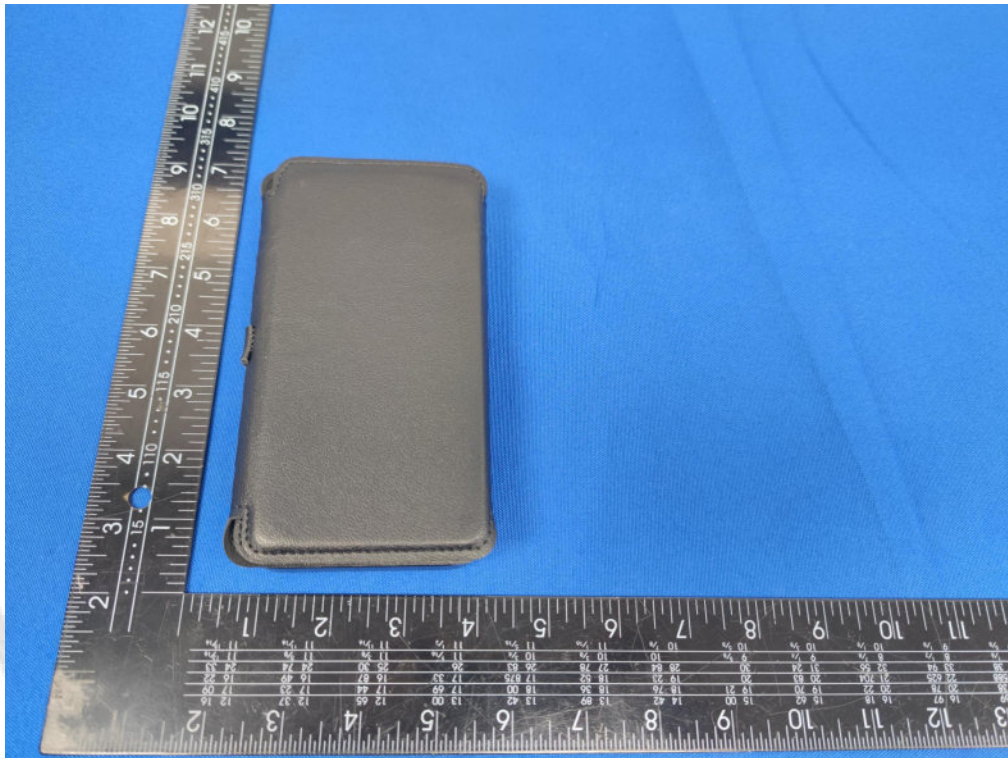


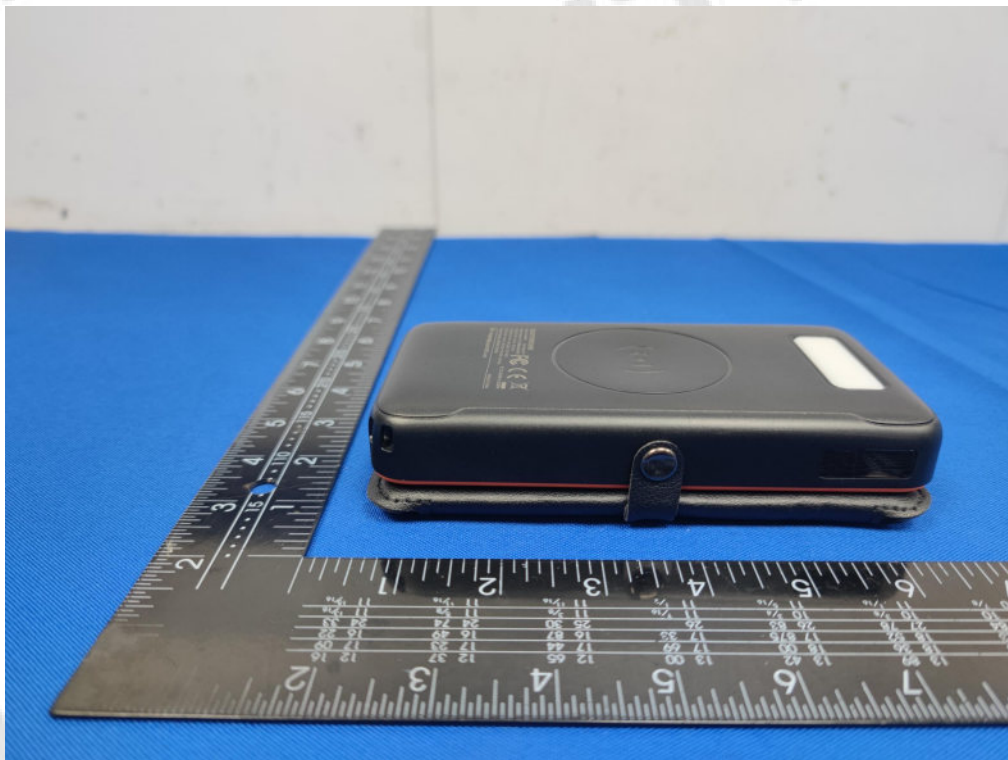


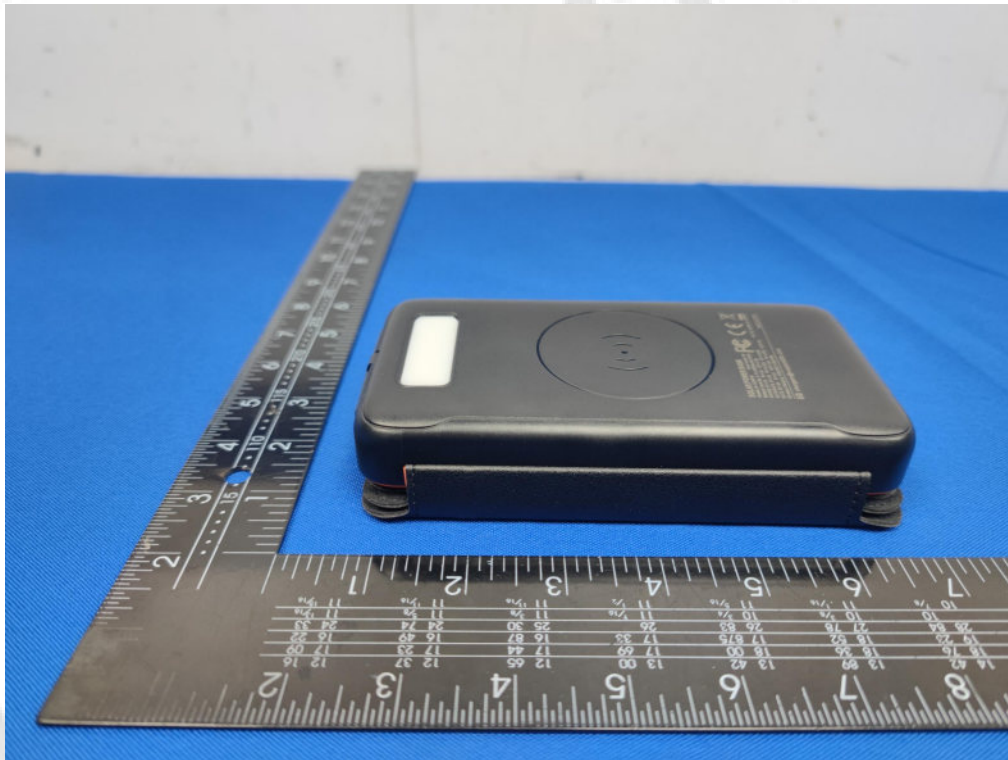


6. External and Internal Photos of the EUT

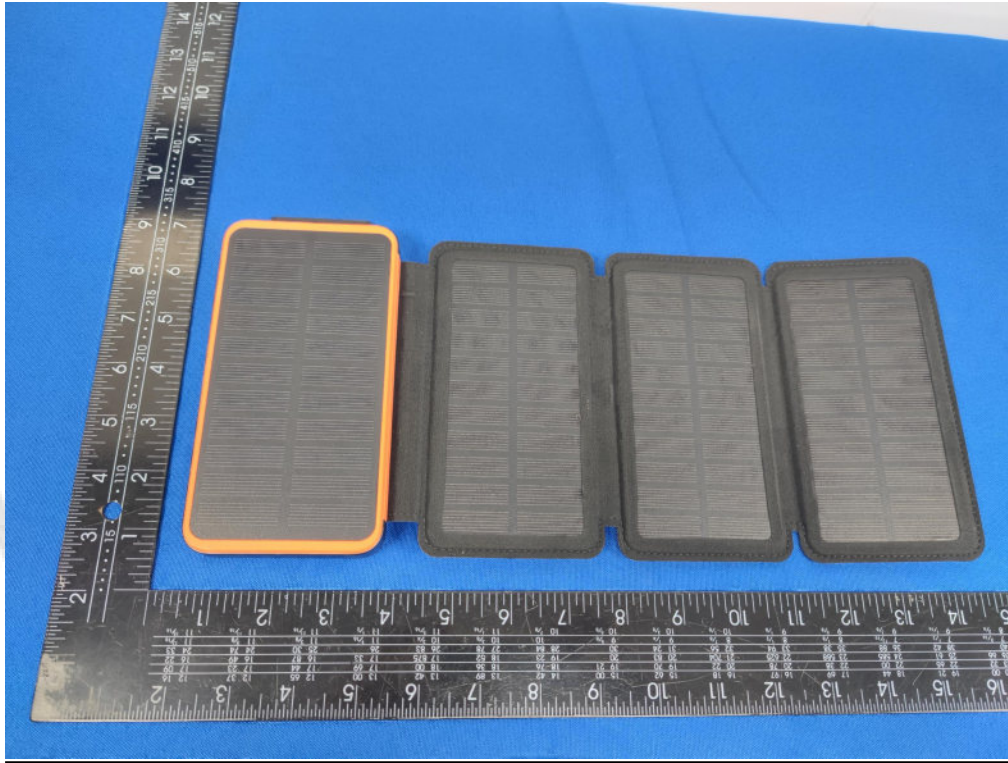
External Photos of EUT

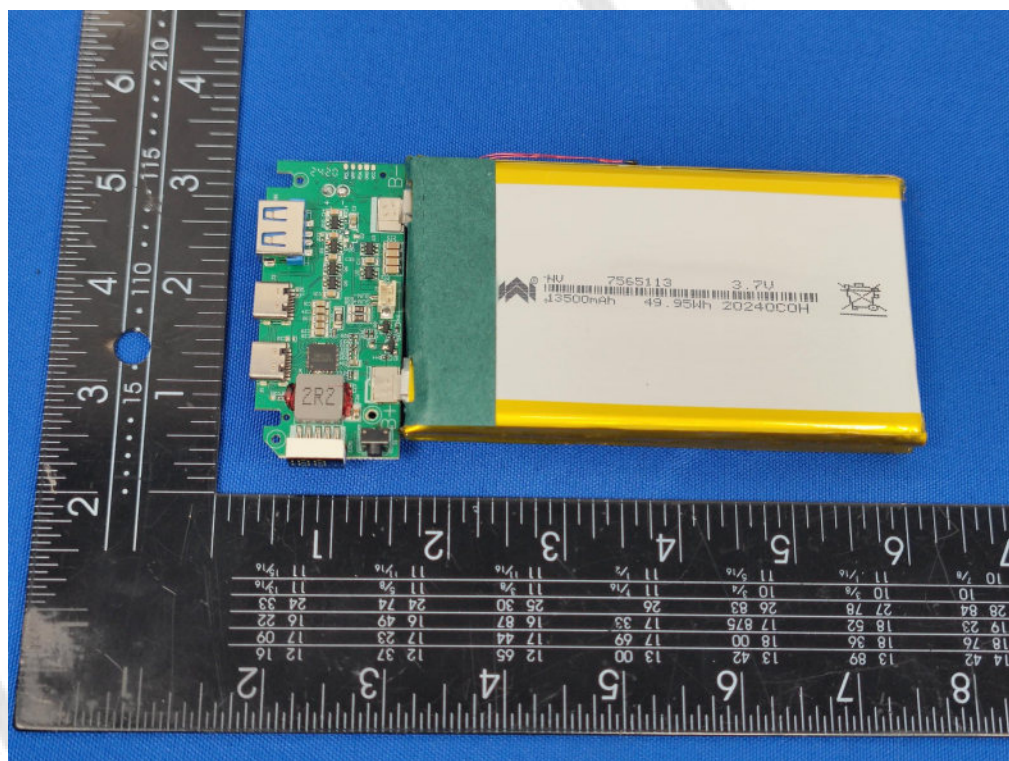
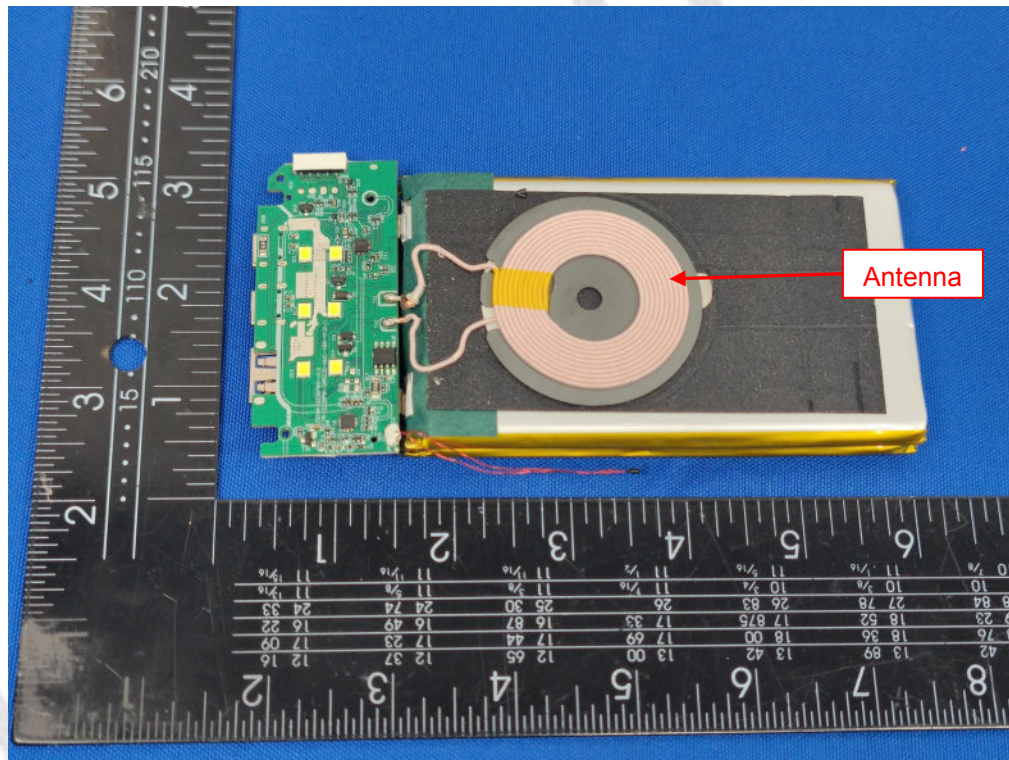








Internal Photos of EUT



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