TEST REPORT

Report No.:	TW2305182-02E
Applicant:	Shenzhen Juku Intelligent Technology Co., Ltd.
Product:	Wake-up Light with Wireless Charger
Model No.:	SRWW, SRWW-S, SRWW-B
Trademark:	Dekala
Test Standards:	FCC Part 15.247
Test Result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By:

Terry Tang

Terry Tang

Manager

Dated: May 30, 2023

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The 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 No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

Test Report Conclusion

Content

1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996

1.2 Applicant Details

Applicant: Shenzhen Juku Intelligent Technology Co., Ltd.
Address: Room 1009, Building 11, Tianan Yungu, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China
Telephone: --
Fax: --

1.3 Description of EUT

Product: Wake-up Light with Wireless Charger
Manufacturer: Shenzhen Juku Intelligent Technology Co., Ltd.
Address: Room 1009, Building 11, Tianan Yungu, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China
Trademark: Dekala
Additional Trademark: N/A
Model Number: SRWW
Additional Model Number: SRWW-S, SRWW-B
Hardware Version: SRWW Main v1.0
Software Version: 1.0.1
Serial No.: N/A
Type of Modulation GFSK (Bluetooth BLE)
Frequency range 2402-2480MHz
Frequency Selection By software
Channel Number 40
Antenna: PCB antenna with gain 2.5dBi Max
Rating: Input: DC12V, 2A
Power Supply: Model: YC-R66U120200K; Input: 100-240V~ 50/60Hz, 0.65A Max; Output: DC12V, 2A

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2023-05-16 to 2023-05-30

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by Andy

Print Name: Andy Xing

2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17
LISN	R&S	EZH3-Z5	100253	2022-07-18	2023-07-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-07-18	2023-07-17
Loop Antenna	EMCO	6507	00078608	2022-07-18	2025-07-17
Spectrum	R&S	FSIQ26	100292	2022-07-15	2023-07-14
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2022-07-18	2025-07-17
Horn Antenna	R&S	BBHA 9120D	9120D-631	2022-07-18	2024-07-17
Power meter	Anritsu	ML2487A	6K00003613	2022-07-18	2023-07-17
Power sensor	Anritsu	MA2491A	32263	2022-07-18	2023-07-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2022-07-18	2025-07-17
9*6*6 Anechoic	--	--	N/A	2022-07-26	2025-07-25
EMI Test Receiver	RS	ESVB	826156/011	2022-07-15	2023-07-14
EMI Test Receiver	RS	ESCS 30	834115/006	2022-07-15	2023-07-14
Spectrum	HP/Agilent	E4407B	MY50441392	2022-07-15	2023-07-14
Spectrum	RS	FSP	1164.4391.38	2022-07-15	2023-07-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2022-07-15	2023-07-14
RF Cable	Zhengdi	7m	--	2022-07-15	2023-07-14
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-07-15	2023-07-14
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-07-15	2023-07-14
LISN	SCHAFFNER	NNB42	00012	2022-08-18	2023-07-17
ESPI Test Receiver	R&S	ESPI 3	100379	2022-07-15	2023-07-14
LISN	R&S	EZH3-Z5	100294	2022-07-18	2023-07-17

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	**Test Type**	**Result**	**Notes**
FCC Part 15, Paragraph 15.207	**Conducted Emission Test**	**Pass**	**Complies**
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	**Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz**	**Pass**	**See page 17-18 of test report: 708881974888-00**
FCC Part 15, Paragraph 15.247(b)	**Maximum peak output power Limit: max. 30dBm**	**Pass**	**See page 15-16 of test report: 708881974888-00**
FCC Part 15, Paragraph 15.205 & 15.209	**Transmitter Radiated Emission Limit: Table 15.209**	**Pass**	**Complies**
FCC Part 15, Paragraph 15.247(e)	**Power Spectral Density Limit: max. 8dBm**	**Pass**	**See page 19-20 of test report: 708881974888-00**
FCC Part 15, Paragraph 15.247(d)	**Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209**	**Pass**	**For Band Edge, see page See page 25-26 of test report: 708881974888-00**

Note: 1. For 6dB occupied band, Maximum output power, PSD, and Band Edge tests, please see test report: 708881974888-00 with FCC ID: 2ANDL-WBR3

2. The test report 708881974888-00 is for WiFi and Bluetooth module with model name: SRWW.

3. Wake-up Light with Wireless Charger also employs WiFi and Bluetooth module with model name: SRWW without modification.

3.2 Test Standards

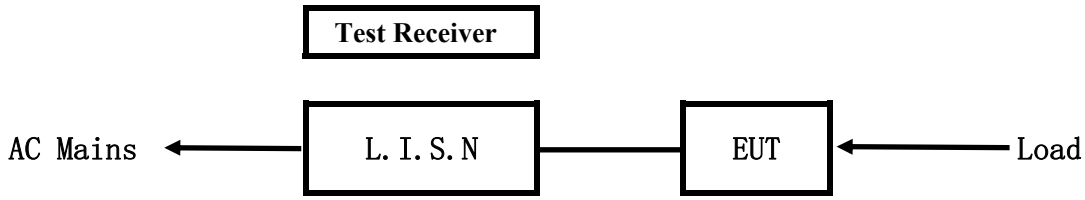
FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

5.0 Power Line Conducted Emission Test

5.1 Schematics of the test



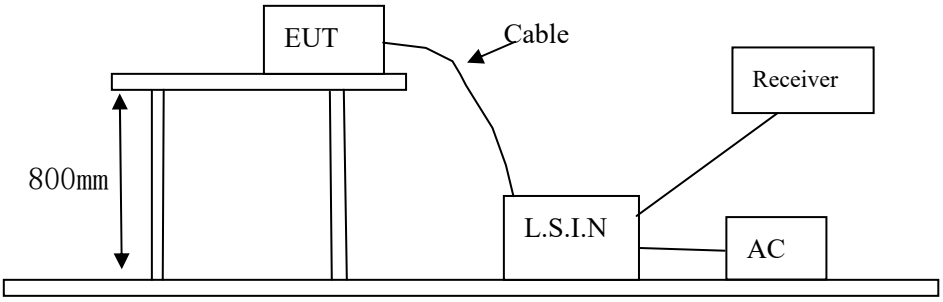
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
Wake-up Light with Wireless Charger	Shenzhen Juku Intelligent Technology Co., Ltd.	SRWW, SRWW-S, SRWW-B	2ARPE-SRWW

B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating
N/A			

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Qua i-peak Level	Average Level
0.15 ～ 0.50	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	56.0	46.0
5.00 ～ 30.00	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

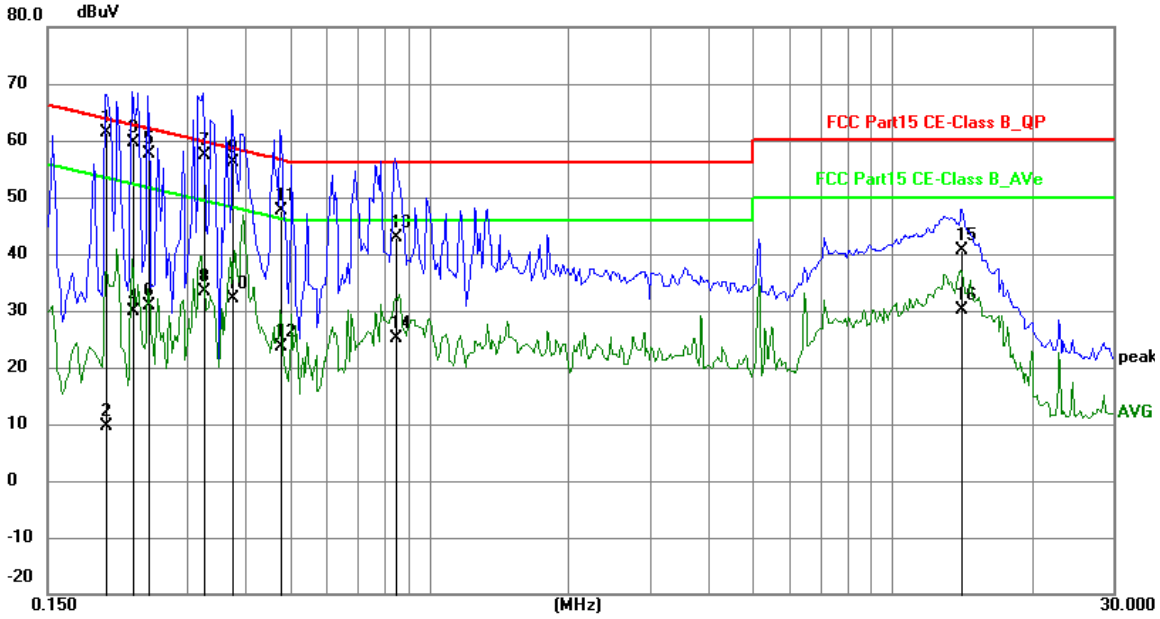
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2007	51.57	9.75	61.32	63.58	-2.26	QP	P
2	0.2007	0.00	9.75	9.75	53.58	-43.83	AVG	P
3	0.2280	49.76	9.75	59.51	62.52	-3.01	QP	P
4	0.2280	20.13	9.75	29.88	52.52	-22.64	AVG	P
5	0.2475	48.00	9.75	57.75	61.84	-4.09	QP	P
6	0.2475	21.05	9.75	30.80	51.84	-21.04	AVG	P
7	0.3255	47.69	9.76	57.45	59.57	-2.12	QP	P
8	0.3255	23.71	9.76	33.47	49.57	-16.10	AVG	P
9	0.3762	46.45	9.76	56.21	58.36	-2.15	QP	P
10	0.3762	22.25	9.76	32.01	48.36	-16.35	AVG	P
11	0.4776	37.81	9.77	47.58	56.38	-8.80	QP	P
12	0.4776	13.85	9.77	23.62	46.38	-22.76	AVG	P
13	0.8442	33.02	9.78	42.80	56.00	-13.20	QP	P
14	0.8442	15.40	9.78	25.18	46.00	-20.82	AVG	P
15	14.1306	30.39	10.34	40.73	60.00	-19.27	QP	P
16	14.1306	19.72	10.34	30.06	50.00	-19.94	AVG	P

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

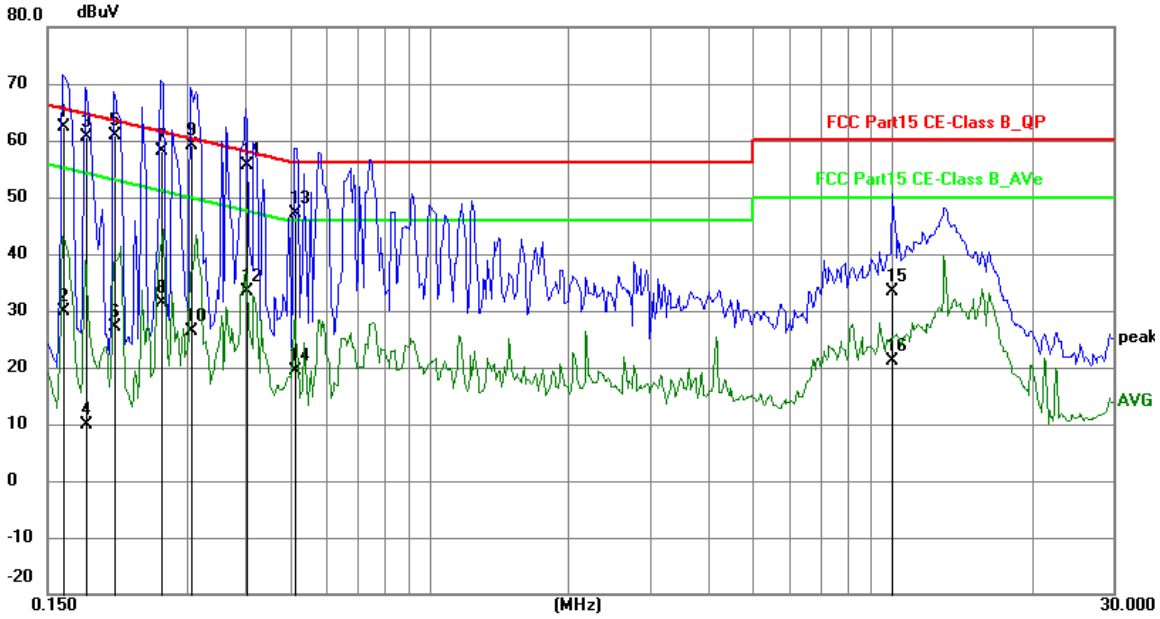
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1617	52.49	9.78	62.27	65.38	-3.11	QP	P
2	0.1617	20.12	9.78	29.90	55.38	-25.48	AVG	P
3	0.1812	50.91	9.76	60.67	64.43	-3.76	QP	P
4	0.1812	0.00	9.76	9.76	54.43	-44.67	AVG	P
5	0.2085	51.22	9.75	60.97	63.26	-2.29	QP	P
6	0.2085	17.36	9.75	27.11	53.26	-26.15	AVG	P
7	0.2631	48.39	9.75	58.14	61.33	-3.19	QP	P
8	0.2631	21.55	9.75	31.30	51.33	-20.03	AVG	P
9	0.3060	49.38	9.76	59.14	60.08	-0.94	QP	P
10	0.3060	16.54	9.76	26.30	50.08	-23.78	AVG	P
11	0.4035	45.94	9.76	55.70	57.78	-2.08	QP	P
12	0.4035	23.65	9.76	33.41	47.78	-14.37	AVG	P
13	0.5155	37.32	9.77	47.09	56.00	-8.91	QP	P
14	0.5155	9.73	9.77	19.50	46.00	-26.50	AVG	P
15	9.9966	23.23	10.16	33.39	60.00	-26.61	QP	P
16	9.9966	10.92	10.16	21.08	50.00	-28.92	AVG	P

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.

(3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.

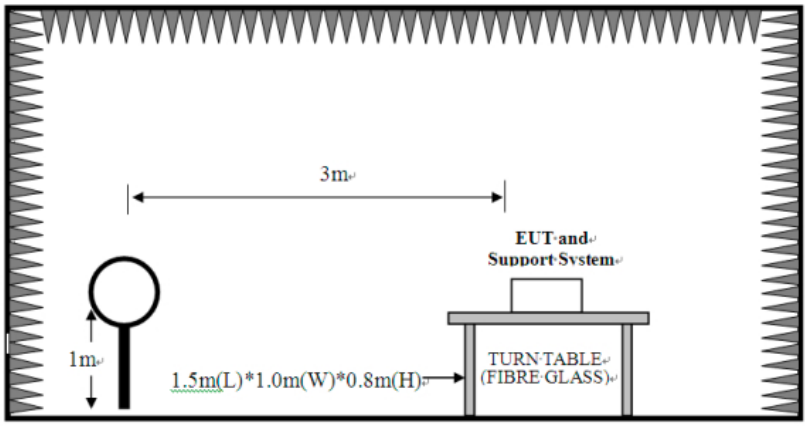
(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

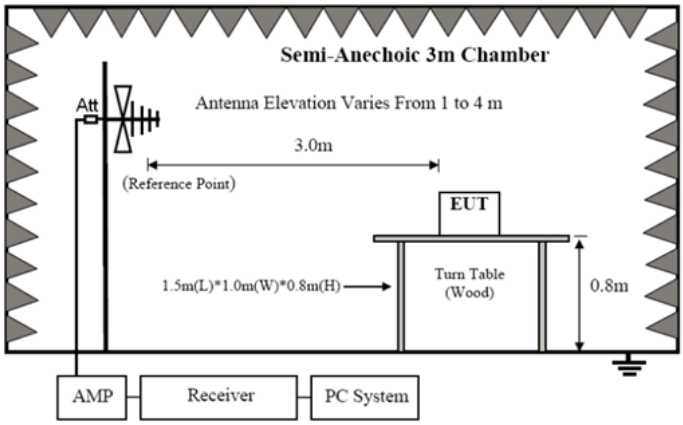
(6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

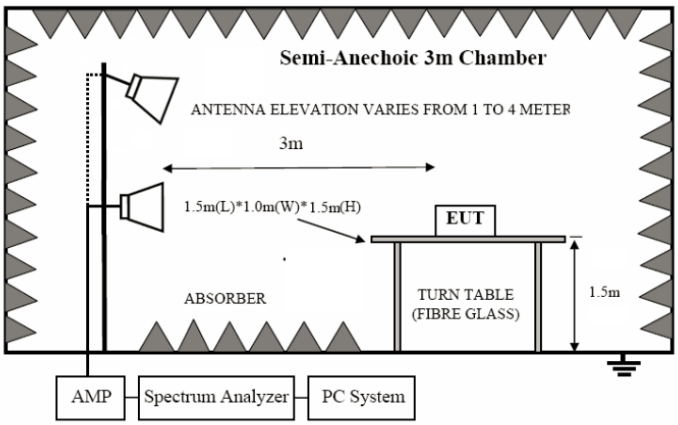
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
0.009-0.490	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.

5. For radiated emissions from 9kHz to 30MHz，the emission level is much less than the limit for more than 20dB. No necessary to take down the record.

Test result

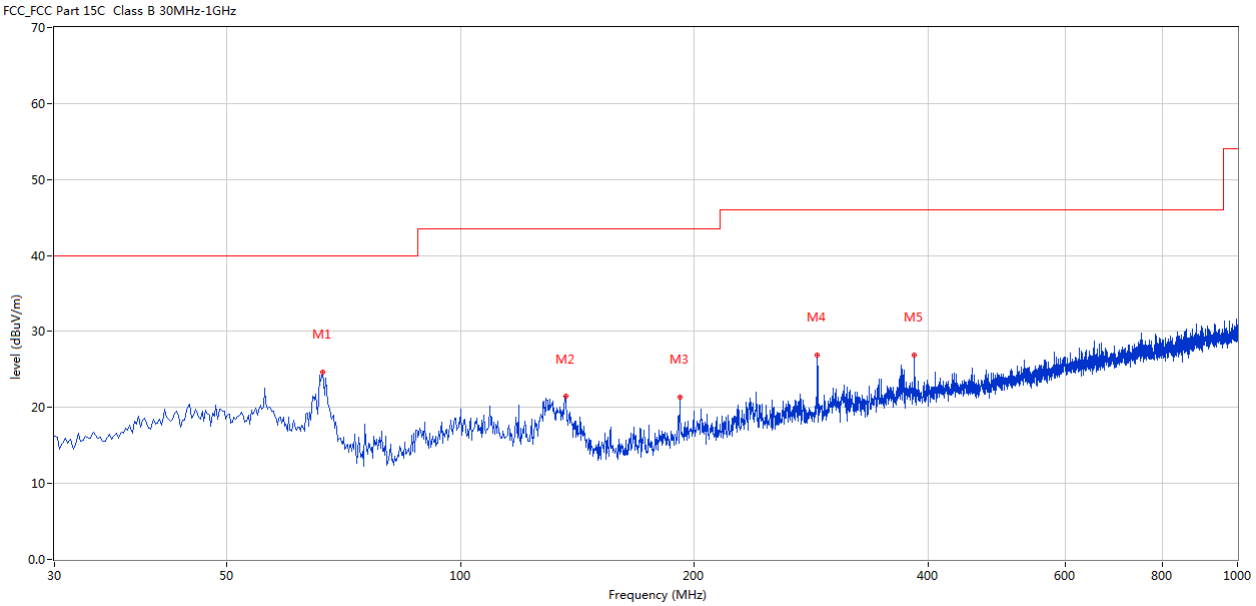
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keep Bluetooth Transmitting**

Results: **Pass**

Test Figure:



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	66.366	24.64	-14.08	40.0	-15.36	Peak	206.00	100	Horizontal	Pass
2	136.431	21.43	-17.16	43.5	-22.07	Peak	51.00	100	Horizontal	Pass
3	191.465	21.29	-14.15	43.5	-22.21	Peak	261.00	100	Horizontal	Pass
4	287.956	26.84	-11.27	46.0	-19.16	Peak	359.00	100	Horizontal	Pass
5	383.962	26.92	-9.16	46.0	-19.08	Peak	81.00	100	Horizontal	Pass

Test result

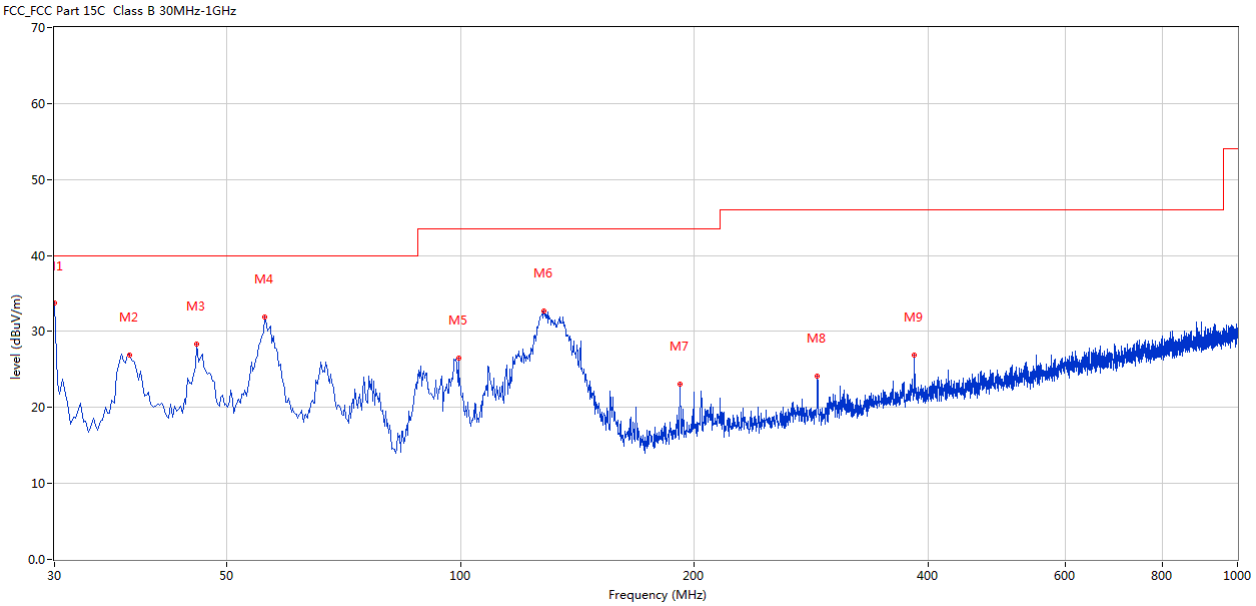
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: **Pass**

Test Figure:



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	30.000	33.69	-14.19	40.0	-6.31	Peak	239.00	100	Vertical	Pass
2	37.516	26.93	-12.95	40.0	-13.07	Peak	71.00	100	Vertical	Pass
3	45.759	28.35	-11.40	40.0	-11.65	Peak	93.00	100	Vertical	Pass
4	55.941	31.91	-12.00	40.0	-8.09	Peak	284.00	100	Vertical	Pass
5	99.338	26.47	-13.64	43.5	-17.03	Peak	50.00	100	Vertical	Pass
6	127.946	32.69	-16.70	43.5	-10.81	Peak	29.00	100	Vertical	Pass
7	191.465	23.05	-14.15	43.5	-20.45	Peak	220.00	100	Vertical	Pass
8	287.956	24.17	-11.27	46.0	-21.83	Peak	121.00	100	Vertical	Pass
9	383.962	26.88	-9.16	46.0	-19.12	Peak	119.00	100	Vertical	Pass

Operation Mode: Transmitting under Low Channel (2402MHz)

Frequency (MHz)	Reading Level (dBuV)	Pre-amp factor (dB)	Antenna factor (dB/m)	Cable Loss (dB)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
4804	37.3	34.7	31.2	6.4	40.2 (PK)	H	74(PK)/ 54(AV)
4804	37.0	34.7	31.2	6.4	39.9 (PK)	V	74(PK)/ 54(AV)
7206	--						74(PK)/ 54(AV
9608	--						74(PK)/ 54(AV
12010	--						74(PK)/ 54(AV
14412	--						74(PK)/ 54(AV
16814	--						74(PK)/ 54(AV
19216	--						74(PK)/ 54(AV
21618	--						74(PK)/ 54(AV
24020	--						74(PK)/ 54(AV

Operation Mode: Transmitting g under Middle Channel (2440MHz)

Frequency (MHz)	Reading Level (dBuV)	Pre-amp factor (dB)	Antenna factor (dB/m)	Cable Loss (dB)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
4880	37.6	34.8	31.3	6.6	40.7 (PK)	H	74(PK)/ 54(AV)
4880	37.8	34.8	31.3	6.6	40.9 (PK)	V	74(PK)/ 54(AV)
7320	--						74(PK)/ 54(AV
9760	--						74(PK)/ 54(AV
12200	--						74(PK)/ 54(AV
14640	--						74(PK)/ 54(AV
17080	--						74(PK)/ 54(AV
19520	--						74(PK)/ 54(AV
21960	--						74(PK)/ 54(AV
24400	--						74(PK)/ 54(AV

Operation Mode: Transmitting under High Channel (2480MHz)

Frequency (MHz)	Reading Level (dBuV)	Pre-amp factor (dB)	Antenna factor (dB/m)	Cable Loss (dB)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
4960	37.8	34.8	31.4	6.6	41.0 (PK)	H	74(PK)/ 54(AV)
4960	38.1	34.8	31.4	6.6	41.3 (PK)	V	74(PK)/ 54(AV)
7440	--						74(PK)/ 54(AV
9920	--						74(PK)/ 54(AV
12400	--						74(PK)/ 54(AV
14880	--						74(PK)/ 54(AV
17360	--						74(PK)/ 54(AV
19840	--						74(PK)/ 54(AV
22320	--						74(PK)/ 54(AV
24800	--						74(PK)/ 54(AV

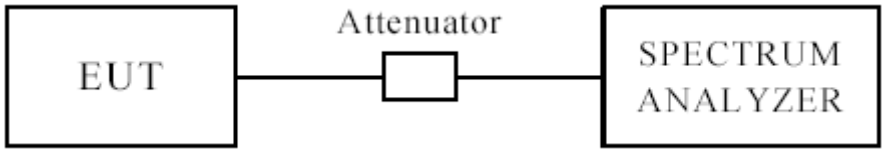
Note: 1. Level = Reading + AF + Cable - Pre-amplifier

2. Remark “---” means that the emissions level is too low to be measured

3. the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

7.0 Out of Band Measurement

7.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

7.2 Limits of Out of Band Emissions Measurement

1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

7.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. (Peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector)

For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

7.4 Test Result

Please see next pages

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

Restricted band Measurement

EUT	Wireless USB Adapter		Model	WD-4512BT
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
Horizontal				
2390	PK (dBμV/m)	39.81	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
Vertical				
2390	PK (dBμV/m)	40.25	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Restricted band Measurement

EUT	Wireless USB Adapter		Model	WD-4512BT
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
Horizontal				
2483.5	PK (dBμV/m)	43.06	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
Vertical				
2483.5	PK (dBμV/m)	43.95	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

8.0 Antenna Requirement

8.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Antenna Connected construction

PCB antenna with gain 2.5dBi Max

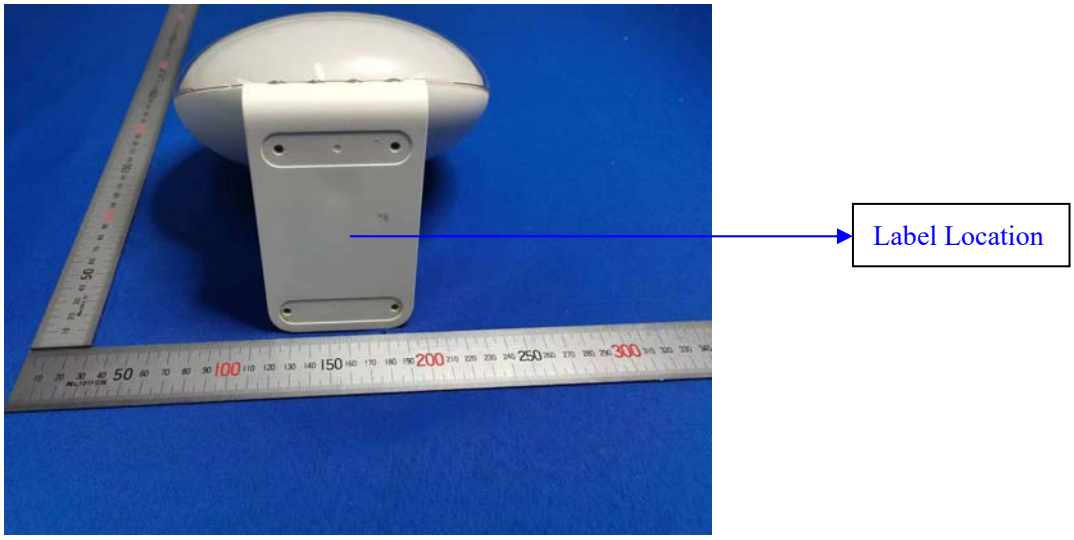
9.0 FCC ID Label

FCC ID: 2ARPE-SRWW

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

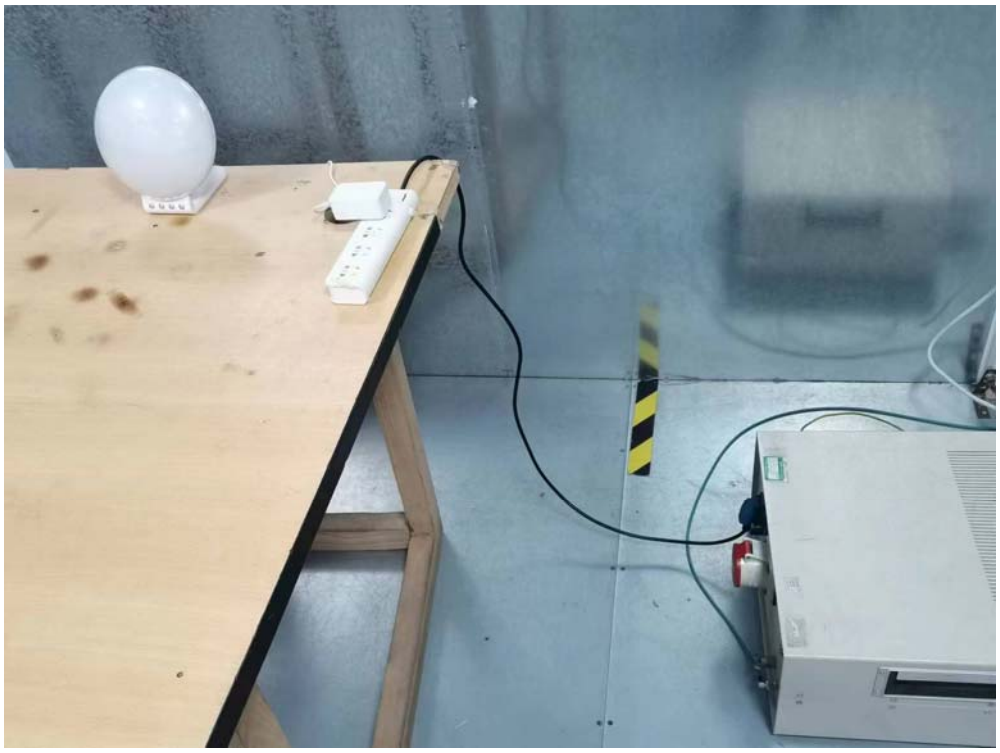
The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:

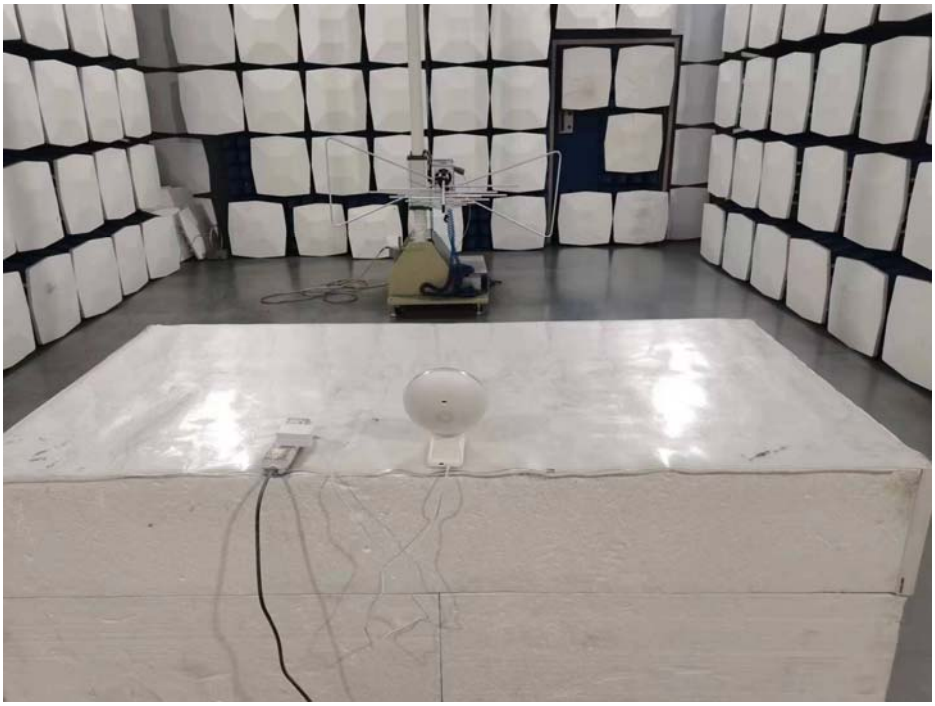


10.0 Photo of testing

Conducted Emission Test Setup:



Radiated Emission Test Setup:



Photographs – EUT

Please refer test report TW2305182-01E

End of the report