

---

# FCC Test Report

---

Report No.: AGC09264210101FE04

**FCC ID** : 2ARPE-SAC  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Smart Ambiance Lamp With Alarm Clock  
**BRAND NAME** : N/A  
**MODEL NAME** : SAC, SAC-001, SAC-002, SAC-003, SAC-004  
**APPLICANT** : Shenzhen Juku Intelligent Technology Co., Ltd.  
**DATE OF ISSUE** : Jan. 27, 2021  
**STANDARD(S)**  
**TEST PROCEDURE(S)** : FCC Part 15 Rules  
**REPORT VERSION** : V1.0

Attestation of *Global Compliance (Shenzhen) Co., Ltd*



**REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jan. 27, 2021	Valid	Initial Release

**TABLE OF CONTENTS**

- 1. VERIFICATION OF CONFORMITY.....4**
- 2. GENERAL INFORMATION.....5**
  - 2.1. PRODUCT DESCRIPTION..... 5
- 3. MEASUREMENT UNCERTAINTY.....6**
- 4. DESCRIPTION OF TEST MODES..... 7**
- 5. SYSTEM TEST CONFIGURATION..... 8**
  - 5.1. CONFIGURATION OF EUT SYSTEM..... 8
  - 5.2. EQUIPMENT USED IN EUT SYSTEM..... 8
  - 5.3. SUMMARY OF TEST RESULTS..... 8
- 6. TEST FACILITY.....9**
- 7. RADIATED EMISSION..... 10**
  - 7.1TEST LIMIT..... 10
  - 7.2. MEASUREMENT PROCEDURE.....11
  - 7.3. TEST SETUP.....12
  - 7.4. TEST RESULT.....13
- 8. 20DB BANDWIDTH..... 16**
  - 8.1. MEASUREMENT PROCEDURE..... 16
  - 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)..... 16
  - 8.3. MEASUREMENT RESULTS..... 17
- 9. FCC LINE CONDUCTED EMISSION TEST..... 18**
  - 9.1. LIMITS OF LINE CONDUCTED EMISSION TEST..... 18
  - 9.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST..... 18
  - 9.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST.....19
  - 9.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST..... 19
  - 9.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST.....20
- APPENDIX A: PHOTOGRAPHS OF TEST SETUP.....22**
- APPENDIX B: PHOTOGRAPHS OF EUT.....24**




**1. VERIFICATION OF CONFORMITY**

<b>Applicant</b>	Shenzhen Juku Intelligent Technology Co., Ltd.
<b>Address</b>	303, Building 12, Jinshun Industrial Zone, No.20, Huancheng South Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China
<b>Manufacturer</b>	Shenzhen Juku Intelligent Technology Co., Ltd.
<b>Address</b>	303, Building 12, Jinshun Industrial Zone, No.20, Huancheng South Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China
<b>Factory</b>	Shenzhen Juku Intelligent Technology Co., Ltd.
<b>Address</b>	303, Building 12, Jinshun Industrial Zone, No.20, Huancheng South Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China
<b>Product Designation</b>	Smart Ambiance Lamp With Alarm Clock
<b>Brand Name</b>	N/A
<b>Test Model</b>	SAC
<b>Series Model</b>	SAC-001, SAC-002, SAC-003, SAC-004
<b>Difference Description</b>	All the series models are the same as the test model except for the model names.
<b>Date of test</b>	Jan. 15, 2021 to Jan. 27, 2021
<b>Deviation</b>	No any deviation from the test method
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	AGCRT-US-BR/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with Section 15.207, 15.209, 15.203 of the FCC Part 15, Subpart C Rules.

The results of testing in this report apply to the product/system which was tested only.

Prepared By		
	Kelly Cheng (Project Engineer)	Jan. 27, 2021
Reviewed By		
	Max Zhang (Reviewer)	Jan. 27, 2021
Approved By		
	Forrest Lei (Authorized Officer)	Jan. 27, 2021

**2. GENERAL INFORMATION**

**2.1. PRODUCT DESCRIPTION**

A major technical description of EUT is described as following

<b>Operation Frequency</b>	110-205 kHz
<b>Test Frequency</b>	123kHz
<b>Maximum field strength</b>	55.71dBuV/m(PK)@3m
<b>Modulation</b>	FSK
<b>Number of channels</b>	1
<b>Antenna Designation</b>	Coil Antenna (Met 15.203 Antenna requirement)
<b>Hardware Version</b>	V4.0
<b>Software Version</b>	V2.0
<b>Power Supply</b>	Input: DC 12V, 2A, 24W Type-C Input: DC 12V,1A Wireless Output: 15W Max

### **3. MEASUREMENT UNCERTAINTY**

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission,  $U_c = \pm 3.2$  dB
- Uncertainty of Radiated Emission below 1GHz,  $U_c = \pm 3.9$  dB
- Uncertainty of Radiated Emission above 1GHz,  $U_c = \pm 4.8$  dB

**4. DESCRIPTION OF TEST MODES**

NO.	TEST MODE DESCRIPTION
1	Wireless charging Mode(Full load)
2	Wireless charging Mode(Half load)
3	Wireless charging Mode(Null load)

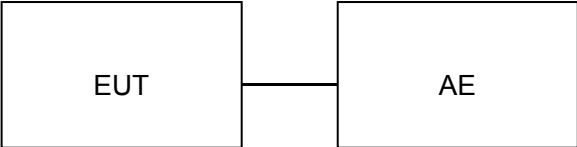
Note:

1. The mode 1 was the worst case and only the data of the worst case record in this report.

**5. SYSTEM TEST CONFIGURATION**

**5.1. CONFIGURATION OF EUT SYSTEM**

Configure :



**5.2. EQUIPMENT USED IN EUT SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark
1	Smart Ambiance Lamp With Alarm Clock	SAC	2ARPE-SAC	EUT
2	Adapter	SR-A5B1202000U	Input : AC100-240V~50/60Hz 0.75A Output: 12V, 2000mA	EUT

**5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.209	Radiated Emission	Compliant
§15.215	20dB bandwidth	Compliant
§15.207	Conducted Emission	Compliant



**6. TEST FACILITY**

<b>Test Site</b>	Attestation of Global Compliance (Shenzhen) Co., Ltd
<b>Location</b>	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
<b>Designation Number</b>	CN1259
<b>FCC Test Firm Registration Number</b>	975832
<b>A2LA Cert. No.</b>	5054.02
<b>Description</b>	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

**TEST EQUIPMENT OF CONDUCTED EMISSION TEST**

<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>S/N</b>	<b>Cal. Date</b>	<b>Cal. Due</b>
TEST RECEIVER	R&S	ESCI	10096	Sep. 29, 2020	Sep. 28, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03,2020	Jul. 02, 2021
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

**TEST EQUIPMENT OF RADIATED EMISSION TEST**

<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>S/N</b>	<b>Cal. Date</b>	<b>Cal. Due</b>
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 07, 2020	Dec. 06, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
ANTENNA	SCHWARZBECK	VULB9168	D69250	Jan. 09, 2019	Jan. 08, 2021
Test software	FARA	EZ_EMCC (Ver.RA-03A)	N/A	N/A	N/A

## 7. RADIATED EMISSION

### 7.1 TEST LIMIT

#### Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu$ V/m	dB( $\mu$ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB( $\mu$ V)/m (Peak) 54.0 dB( $\mu$ V)/m (Average)	

Remark: (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m  
(2) The smaller limit shall apply at the cross point between two frequency bands.  
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

**7.2. MEASUREMENT PROCEDURE**

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

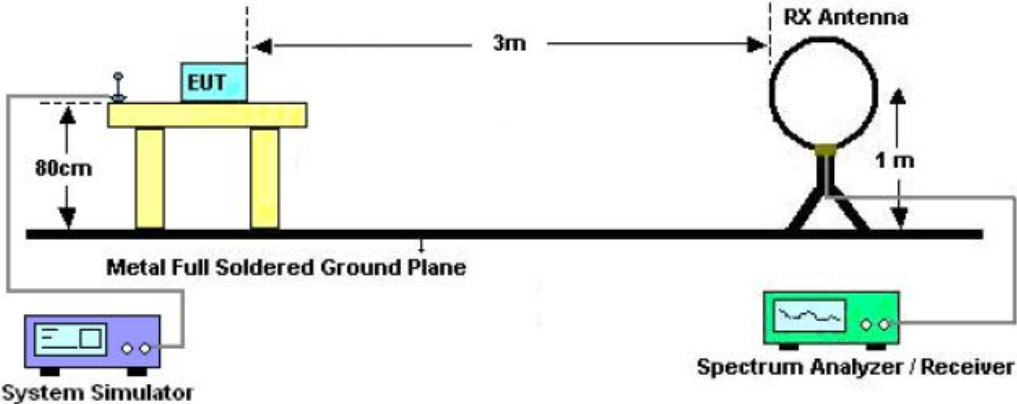
The following table is the setting of spectrum analyzer and receiver.

<b>Spectrum Parameter</b>	<b>Setting</b>
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

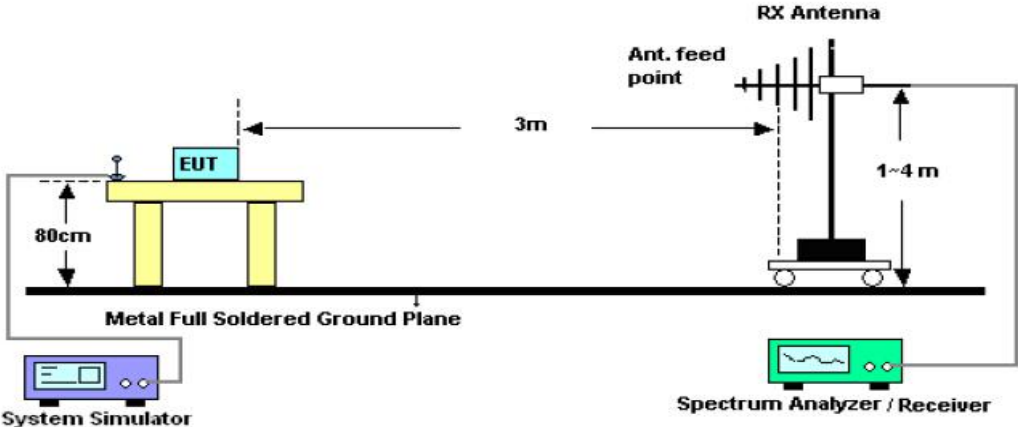
<b>Receiver Parameter</b>	<b>Setting</b>
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

7.3. TEST SETUP

Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



**7.4. TEST RESULT**

Frequency MHz	Polarization	Reading dB(uV) PK	Factor dB (1/m)	Level dB(uV/m) AV	Limit dB(uV/m) AV	Margin dB	Pass/Fail
0.123	Face	43.31	10.40	53.71	105.81	-52.10	Pass
0.123	Side	36.16	10.40	46.56	105.81	-59.25	Pass
0.119	Face	36.11	13.50	49.61	106.09	-56.48	Pass
0.119	Side	30.74	13.50	44.24	106.09	-61.85	Pass
0.110	Face	18.56	12.50	31.06	106.78	-75.72	Pass
0.110	Side	15.38	12.50	27.88	106.78	-78.90	Pass

**RADIATED EMISSION BELOW 30MHZ**

Note1: The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported. The peak level of the emission is less than the average limit, so the average level shall be less than the limit without test.

Note 2:  $Level(dBuV/m) = Reading(dBuV) + Factor(dB/m)$

$Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ loss(dB) + Attenuation(dB)\ for\ Attenuator$

$Margin = Level - Limit$

For 0.123MHz

$Limit(dBuV/m) = 20\log(2400/F(kHz)) + 40\log(300/3) = 105.81\ dBuV/m.$

For 0.119MHz

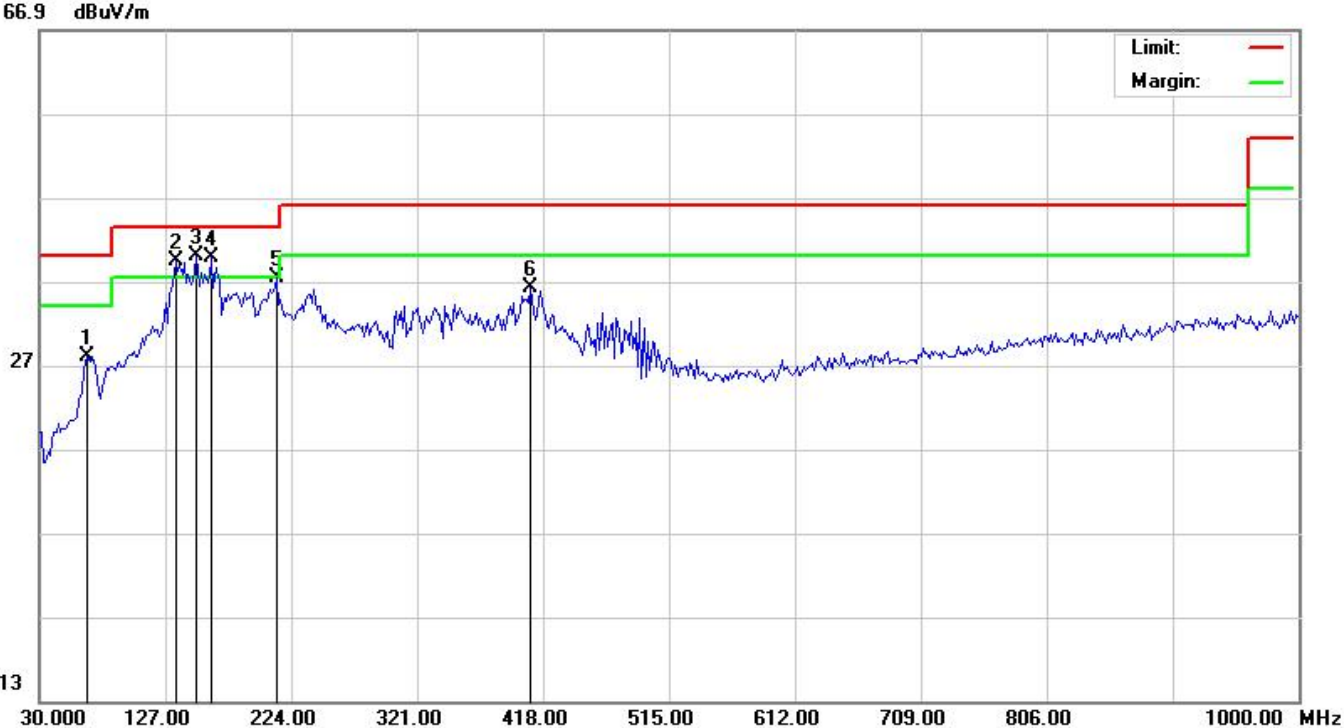
$Limit(dBuV/m) = 20\log(2400/F(kHz)) + 40\log(300/3) = 106.09\ dBuV/m.$

For 0.110MHz

$Limit(dBuV/m) = 20\log(2400/F(kHz)) + 40\log(300/3) = 106.78\ dBuV/m.$

**RADIATED EMISSION 30MHz- 1GHz**

EUT :	Smart Ambiance Lamp With Alarm Clock	Model Name. :	SAC
Temperature :	21.8 °C	Relative Humidity:	58%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	Mode 1	Polarization :	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		67.1833	11.26	16.76	28.02	40.00	-11.98	peak
2	!	135.0833	20.44	18.92	39.36	43.50	-4.14	peak
3	*	151.2500	20.76	19.21	39.97	43.50	-3.53	peak
4	!	162.5666	20.78	18.93	39.71	43.50	-3.79	peak
5		212.6833	22.94	14.44	37.38	43.50	-6.12	peak
6		408.3000	13.09	23.15	36.24	46.00	-9.76	peak

**RESULT: PASS**

EUT :	Smart Ambiance Lamp With Alarm Clock	Model Name. :	SAC
Temperature :	21.8 °C	Relative Humidity :	58%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	Mode 1	Polarization :	Vertical

66.9 dBuV/m



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		44.5499	17.87	14.47	32.34	40.00	-7.66	peak
2	*	133.4667	21.35	18.82	40.17	43.50	-3.33	peak
3	!	160.9499	18.74	19.09	37.83	43.50	-5.67	peak
4		230.4667	17.98	17.03	35.01	46.00	-10.99	peak
5		437.3999	11.77	23.73	35.50	46.00	-10.50	peak
6		453.5667	11.04	24.06	35.10	46.00	-10.90	peak

**RESULT: PASS**

**Note:**

Factor=Antenna Factor + Cable loss, Margin=Result-Limit.

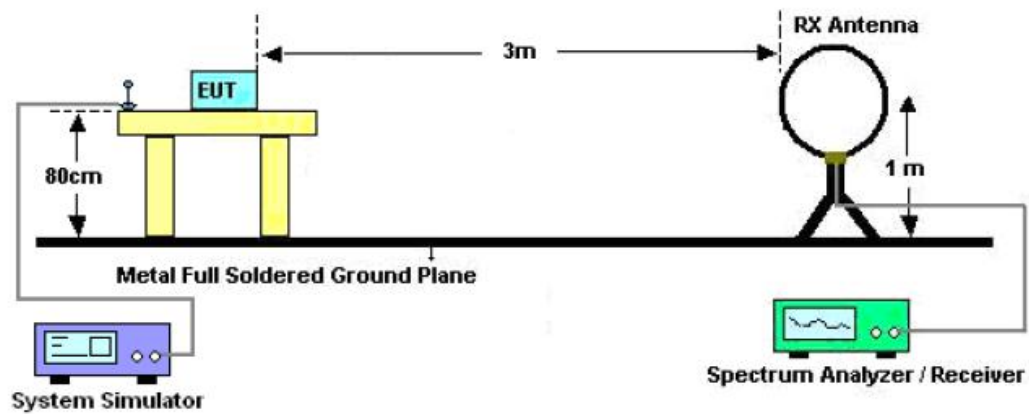
The “Factor” value can be calculated automatically by software of measurement system.

## 8. 20DB BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Set the EUT Work on operation frequency.
3. Set Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a channel  
The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)





8.3. MEASUREMENT RESULTS

TEST ITEM	20DB BANDWIDTH
TEST MODULATION	FSK

Test Data (Hz)		Criteria
Operate Channel	871	PASS

TEST PLOT OF BANDWIDTH



**9. FCC LINE CONDUCTED EMISSION TEST**

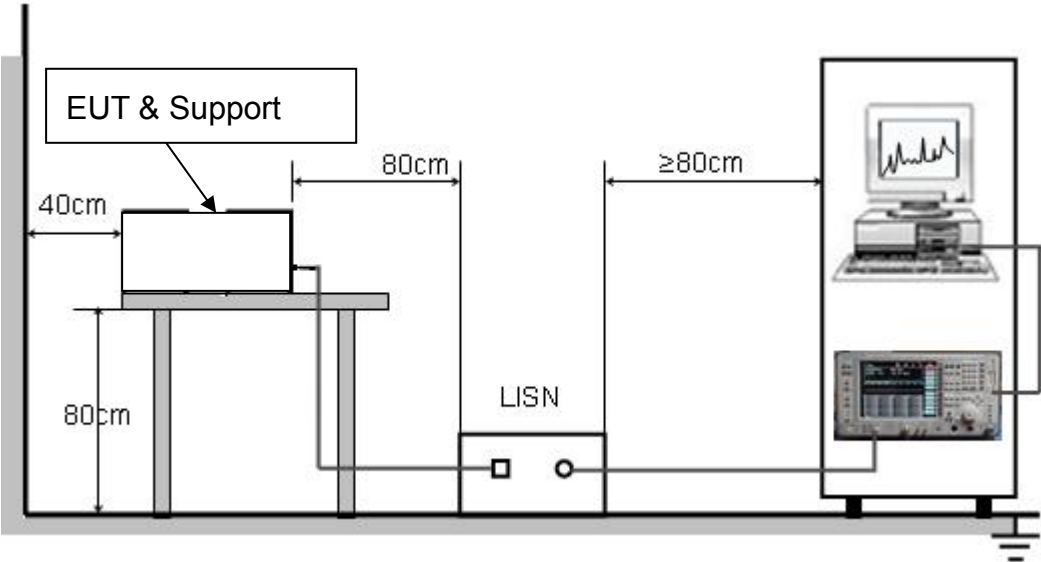
**9.1. LIMITS OF LINE CONDUCTED EMISSION TEST**

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

**9.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST**



### **9.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When 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 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN..
6. The 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.
9. The test mode(s) were scanned during the preliminary test.

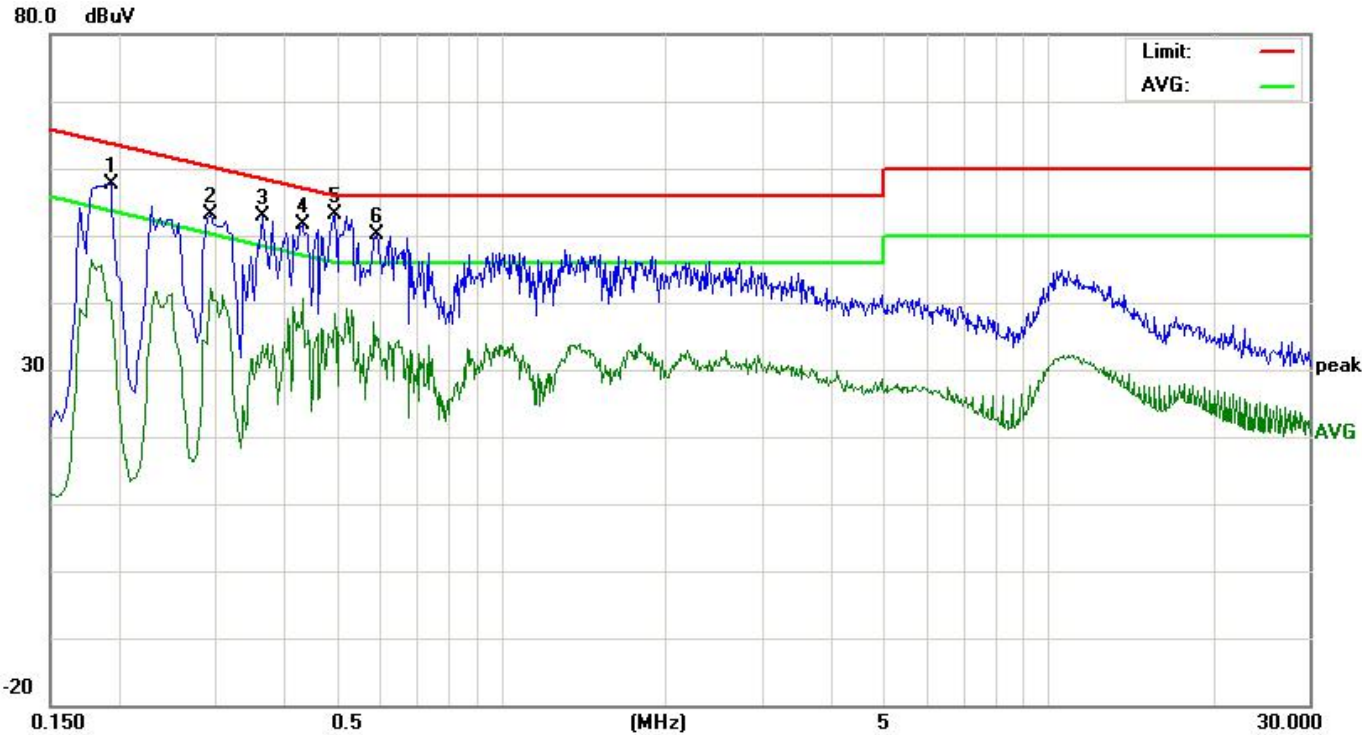
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### **9.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

9.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

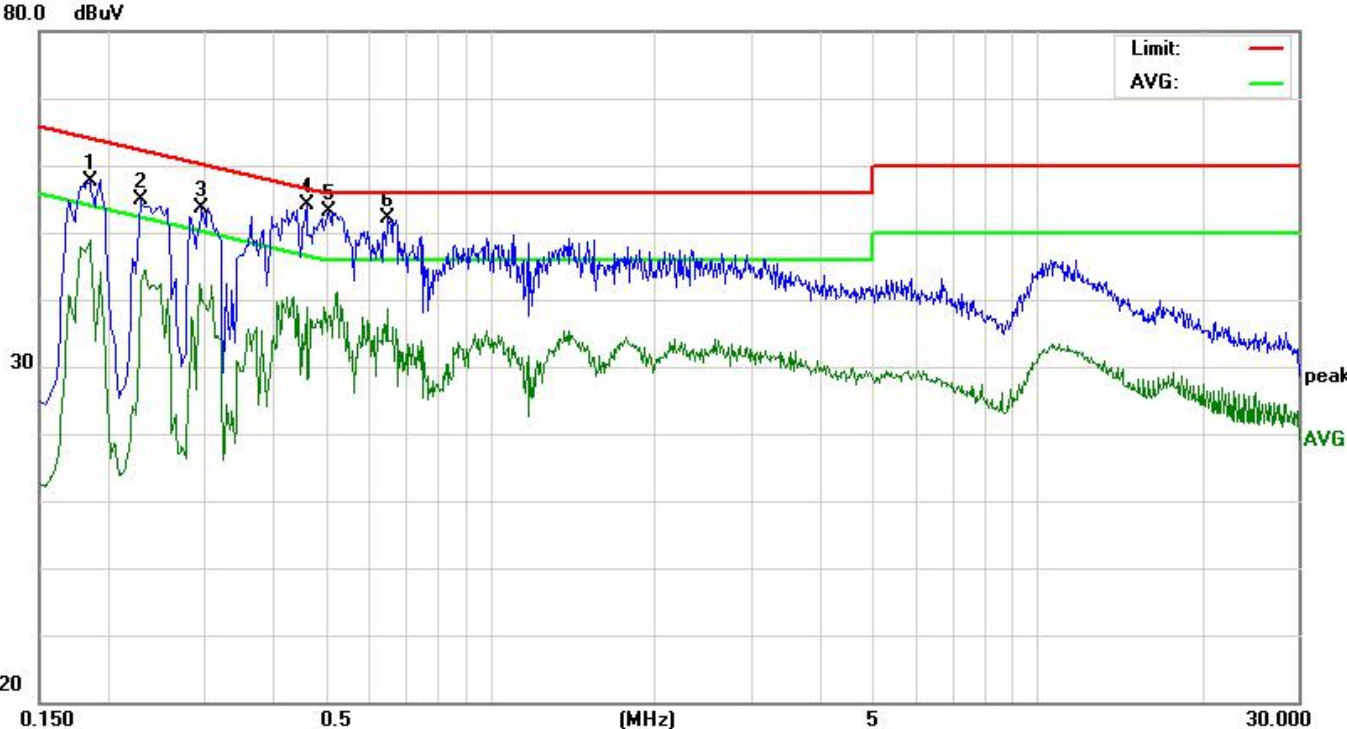
LINE CONDUCTED EMISSION TEST-L



No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor (dB)	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG	
1	0.1940	44.83	39.61	22.72	12.85	57.68	52.46	35.57	63.86	53.86	-11.40	-18.29	P
2	0.2940	40.03	35.99	24.69	12.99	53.02	48.98	37.68	60.41	50.41	-11.43	-12.73	P
3	0.3660	39.57	29.37	18.59	13.34	52.91	42.71	31.93	58.59	48.59	-15.88	-16.66	P
4	0.4340	38.03	34.42	23.93	13.59	51.62	48.01	37.52	57.18	47.18	-9.17	-9.66	P
5	0.4980	39.49	33.26	21.43	13.74	53.23	47.00	35.17	56.03	46.03	-9.03	-10.86	P
6	0.5940	36.37	30.76	20.14	13.82	50.19	44.58	33.96	56.00	46.00	-11.42	-12.04	P

RESULT: PASS

LINE CONDUCTED EMISSION TEST-N

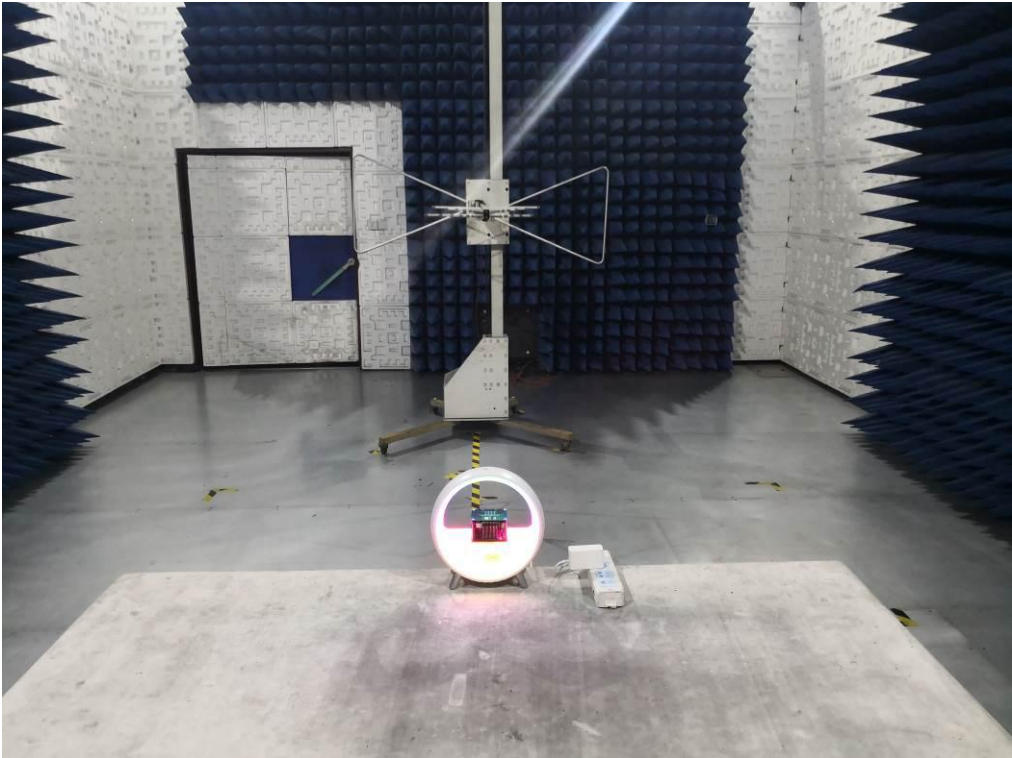
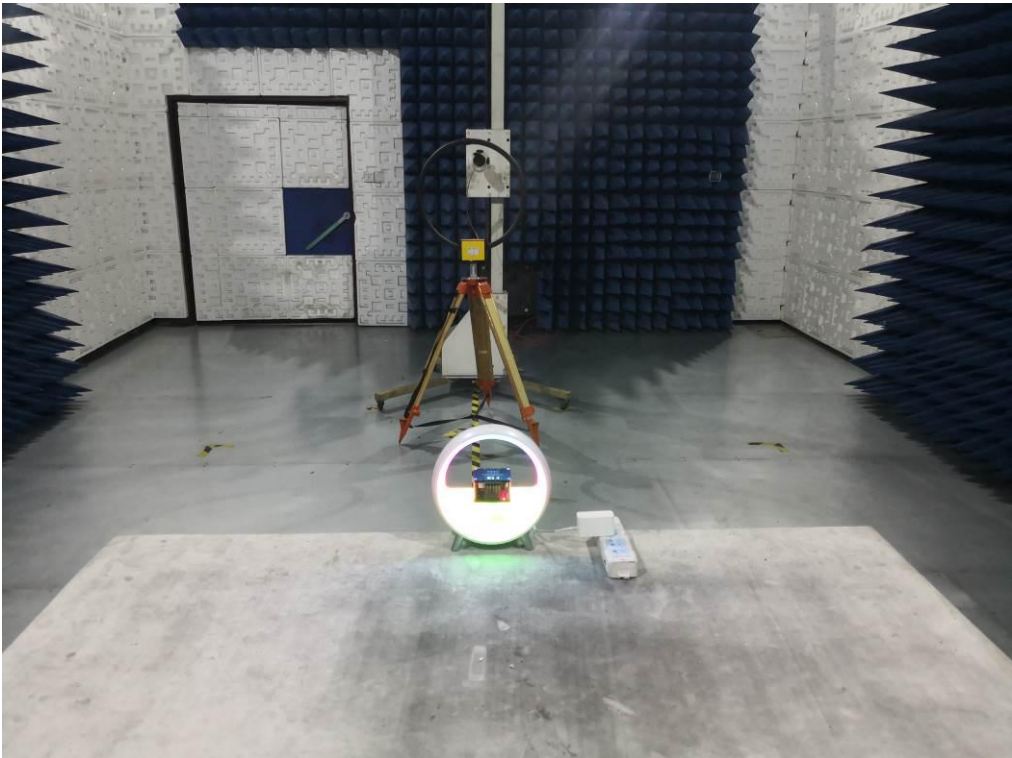


No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor (dB)	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG	
1	0.1860	44.89	42.45	32.69	12.84	57.73	55.29	45.53	64.21	54.21	-8.92	-8.68	P
2	0.2300	41.83	38.08	23.79	12.92	54.75	51.00	36.71	62.45	52.45	-11.45	-15.74	P
3	0.2980	40.68	37.67	26.80	13.00	53.68	50.67	39.80	60.30	50.30	-9.63	-10.50	P
4	0.4620	40.43	34.28	20.18	13.65	54.08	47.93	33.83	56.66	46.66	-8.73	-12.83	P
5	0.5100	39.30	34.91	22.02	13.75	53.05	48.66	35.77	56.00	46.00	-7.34	-10.23	P
6	0.6540	38.42	32.42	19.97	13.81	52.23	46.23	33.78	56.00	46.00	-9.77	-12.22	P

RESULT: PASS



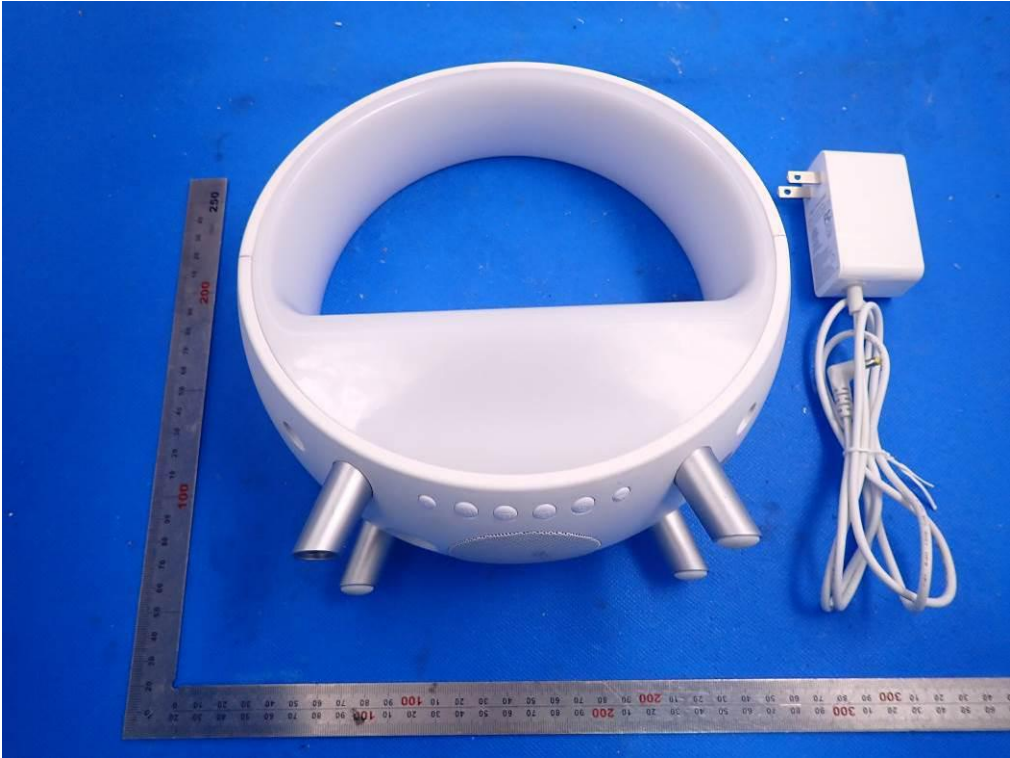
**APPENDIX A: PHOTOGRAPHS OF TEST SETUP**  
FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ



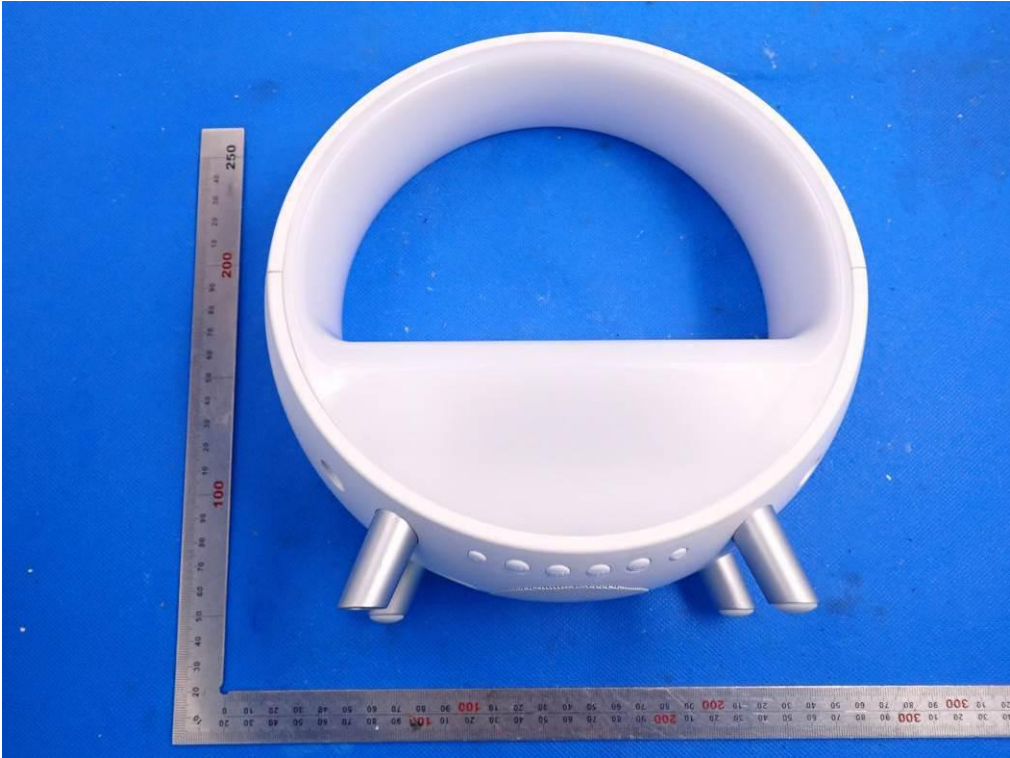
FCC LINE CONDUCTED EMISSION TEST SETUP



**APPENDIX B: PHOTOGRAPHS OF EUT**  
ALL VIEW OF EUT

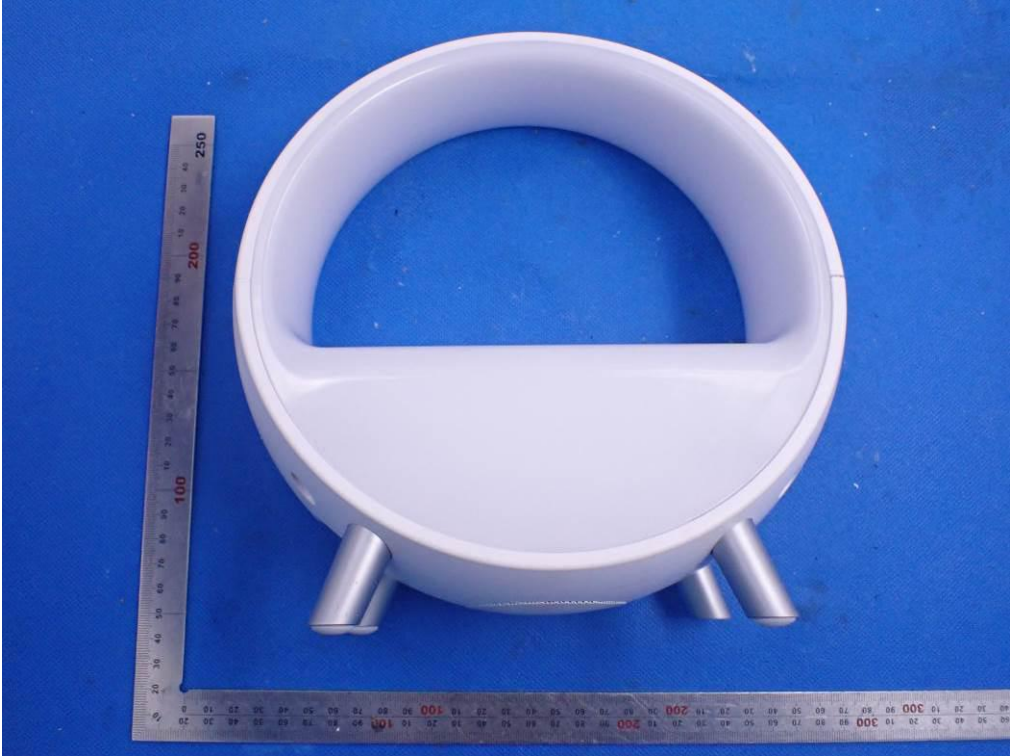


TOP VIEW OF EUT





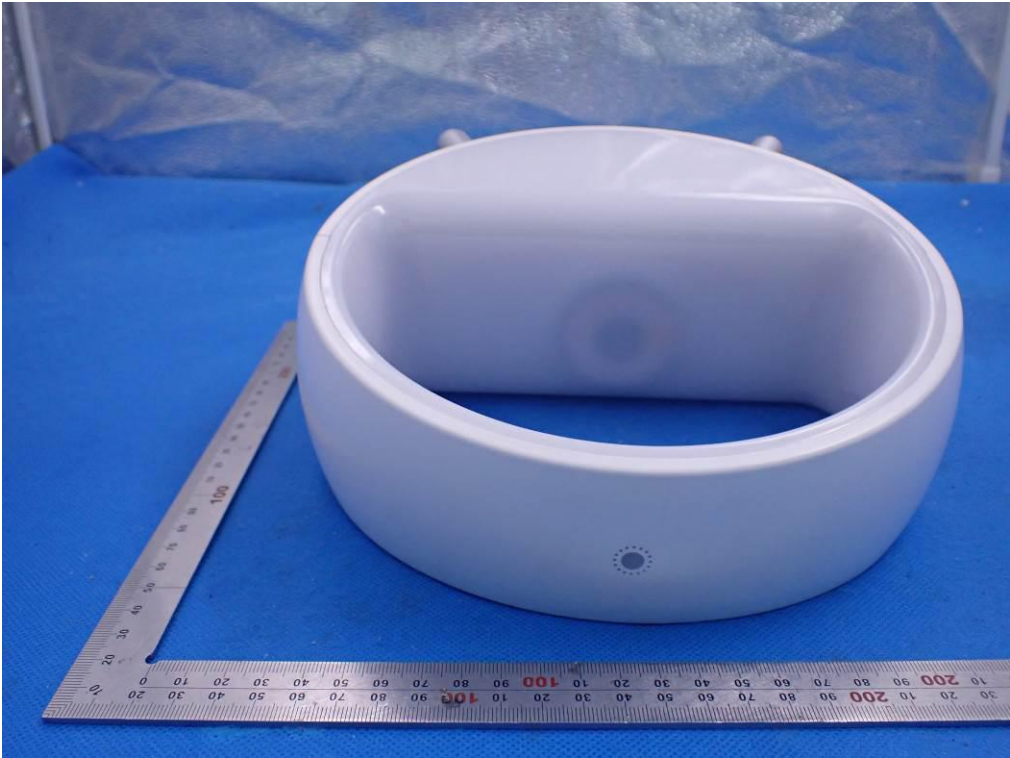
BOTTOM VIEW OF EUT



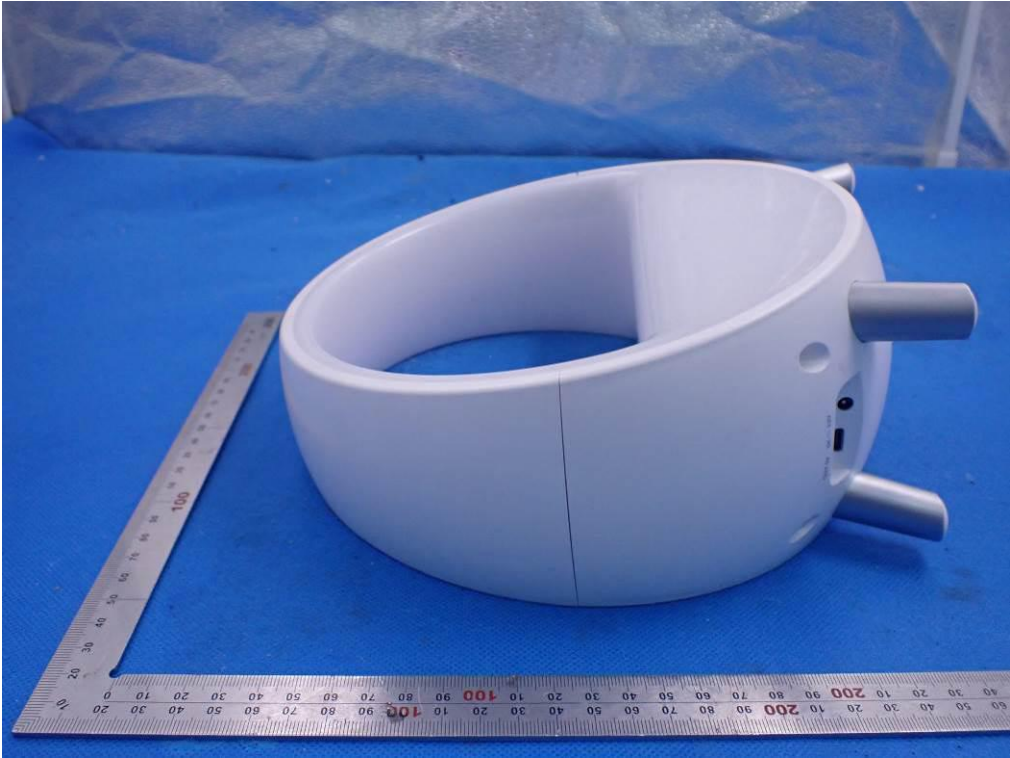
FRONT VIEW OF EUT



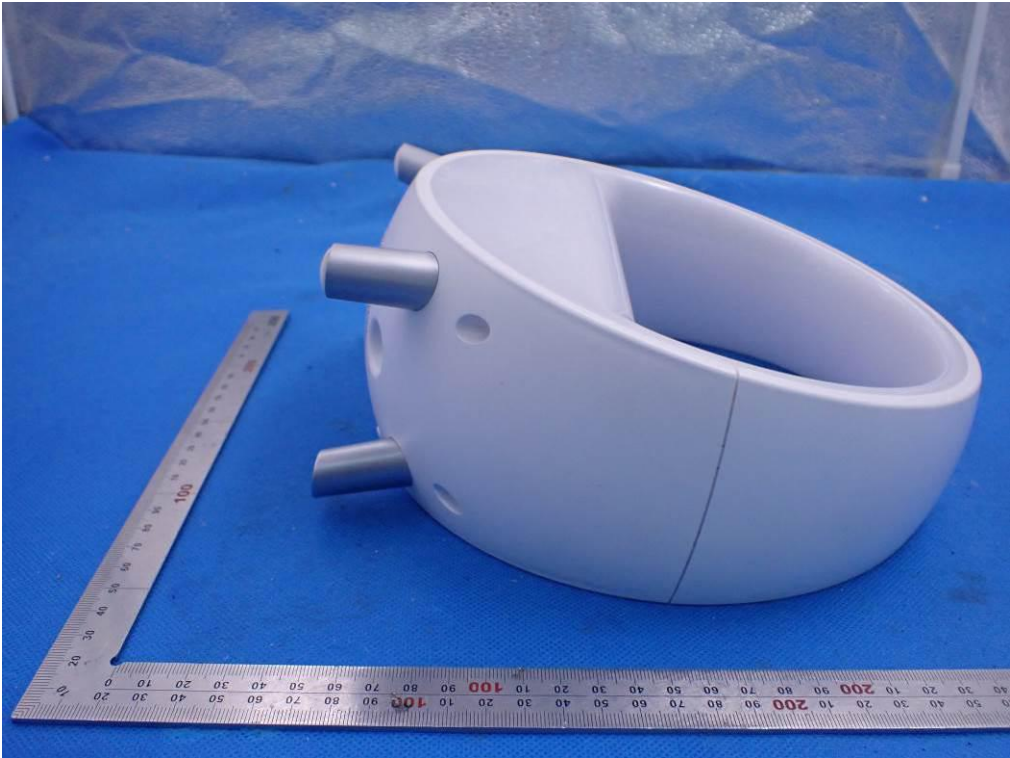
BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



VIEW OF EUT (PORT)-1

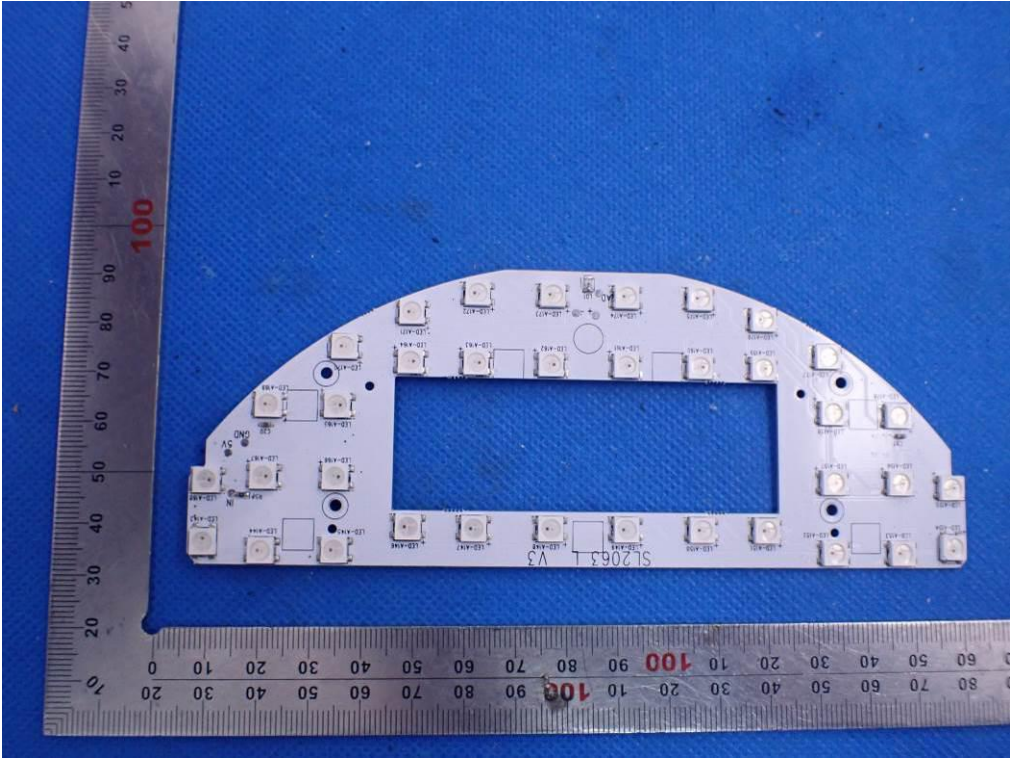




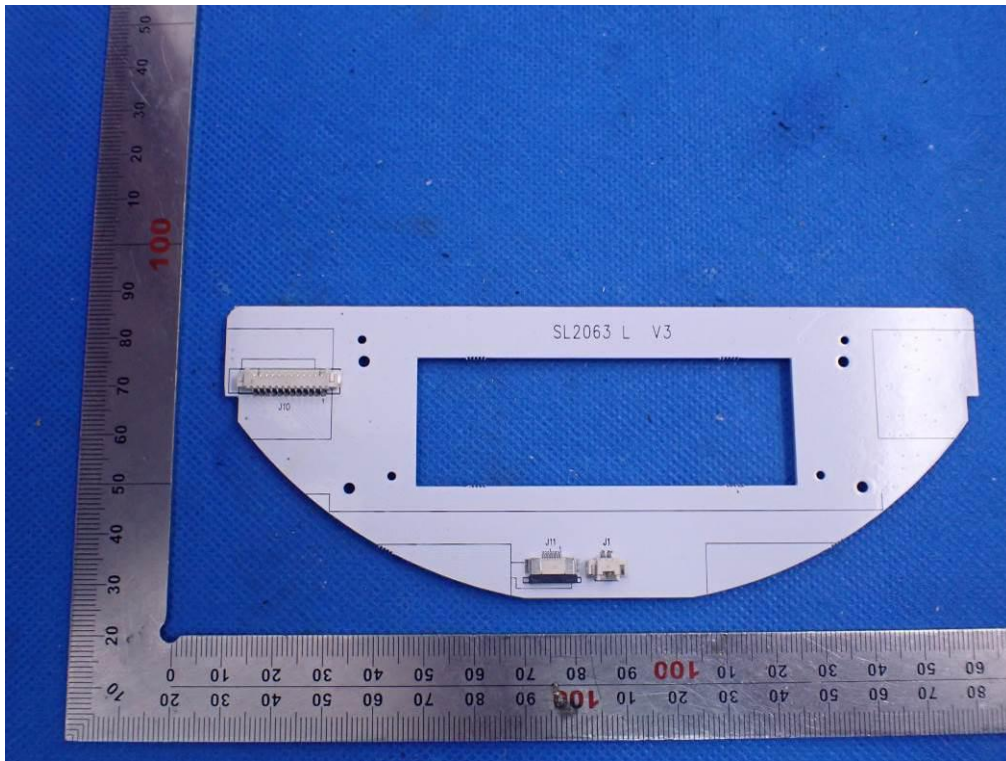
OPEN VIEW OF EUT



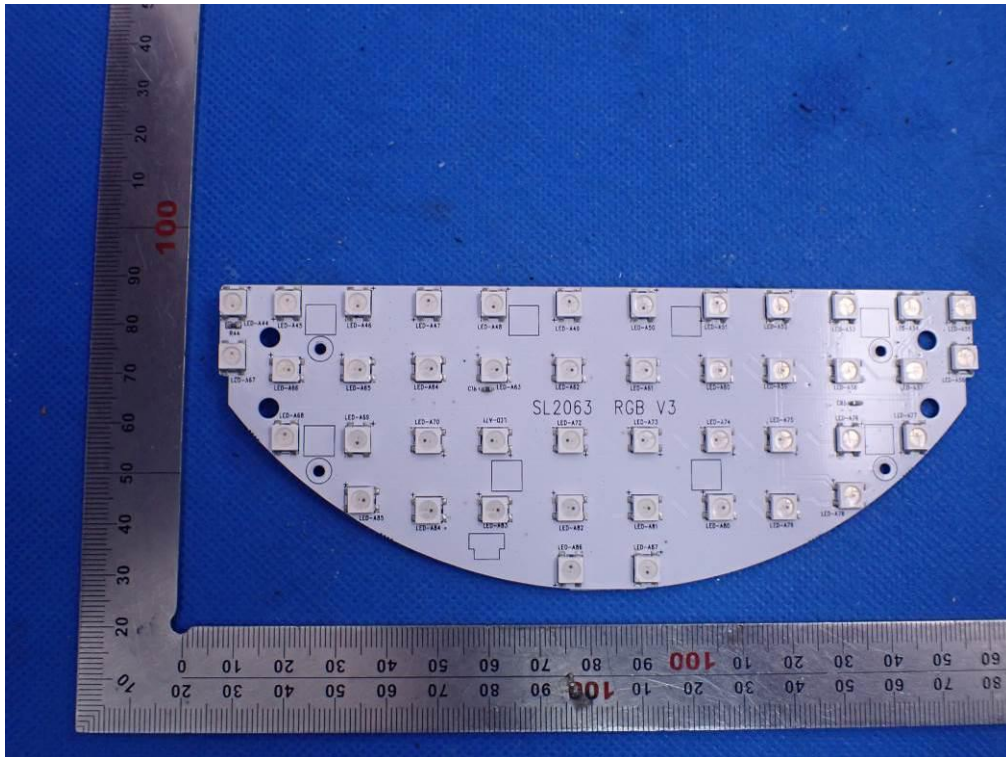
INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2

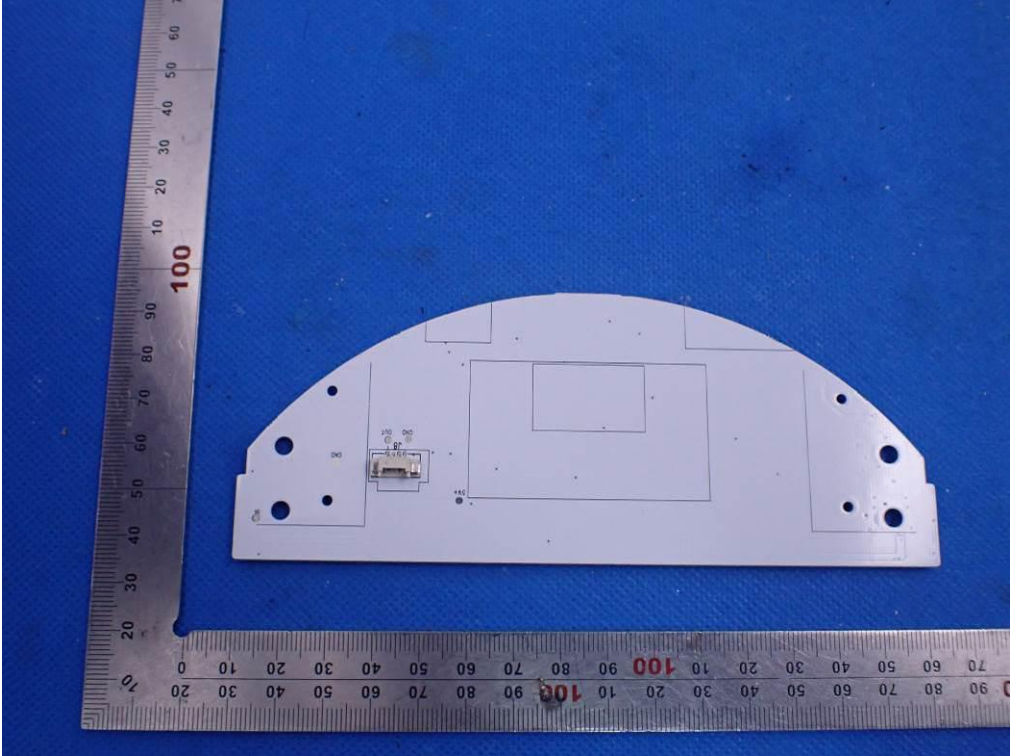


INTERNAL VIEW OF EUT-3

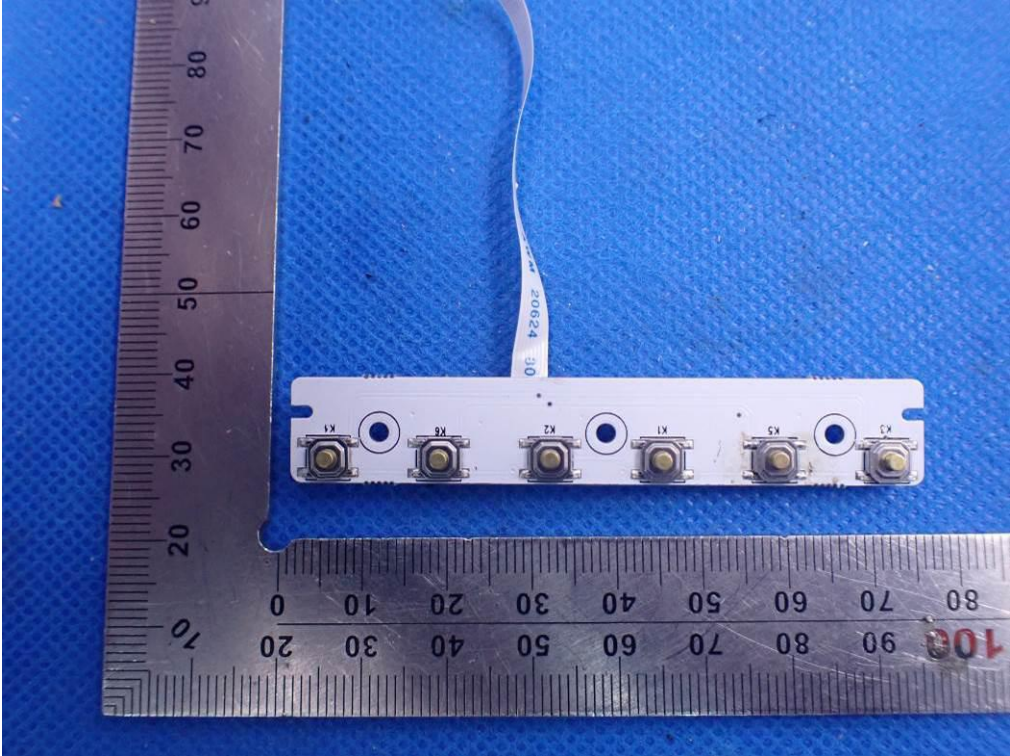




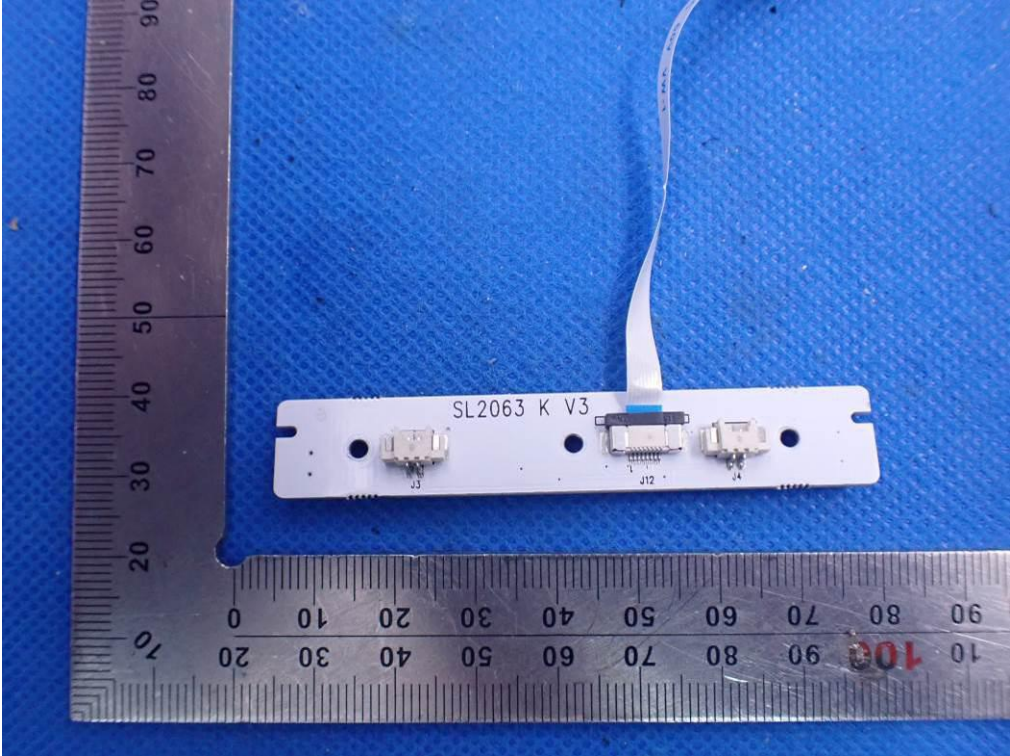
INTERNAL VIEW OF EUT-4



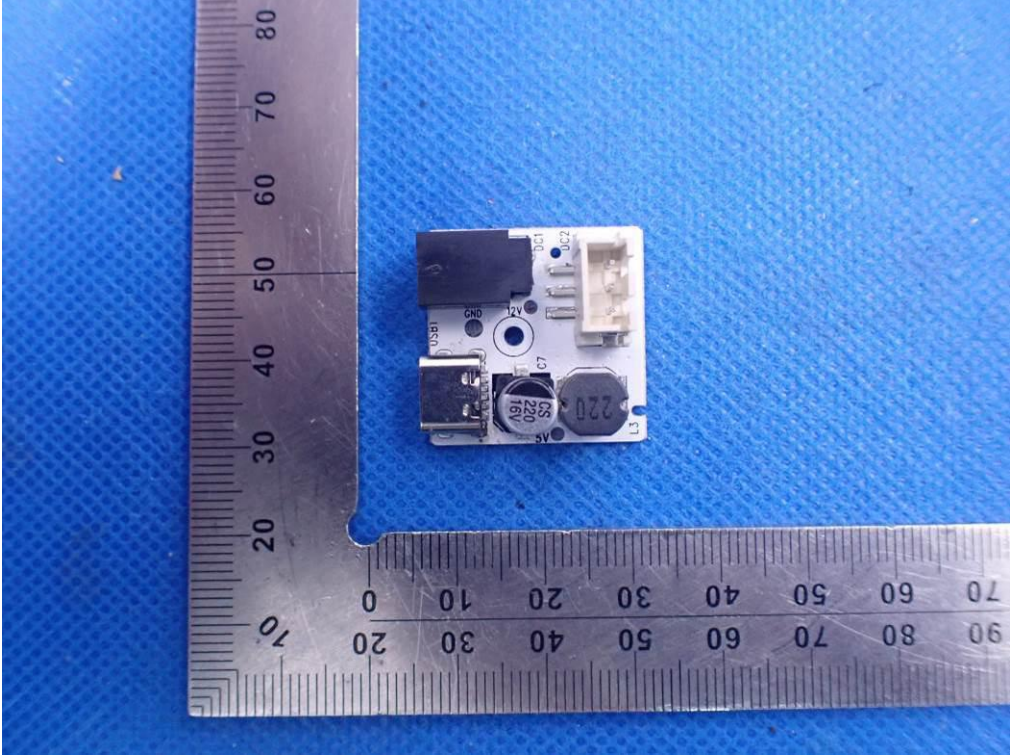
INTERNAL VIEW OF EUT-5



INTERNAL VIEW OF EUT-6

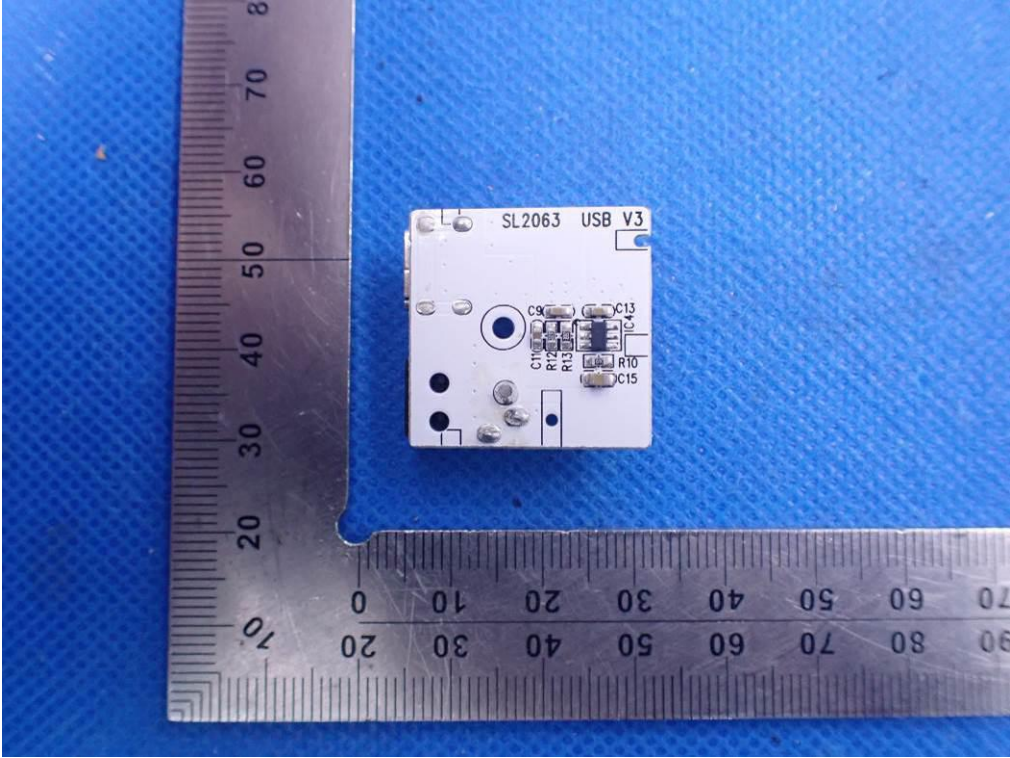


INTERNAL VIEW OF EUT-7

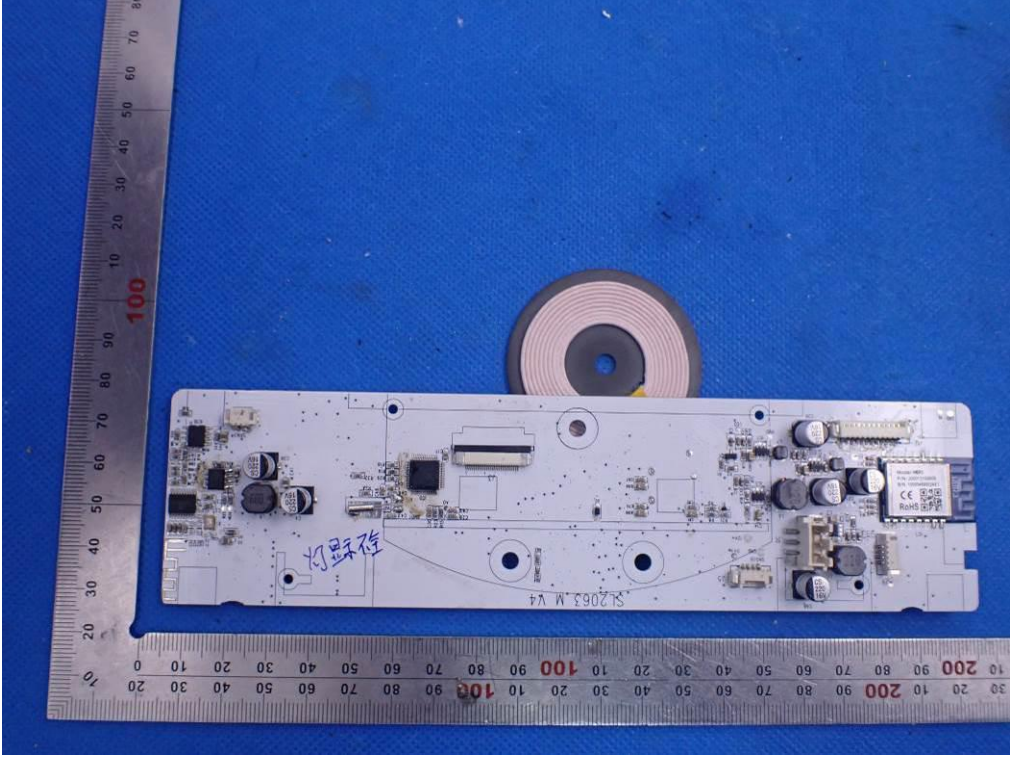




INTERNAL VIEW OF EUT-8

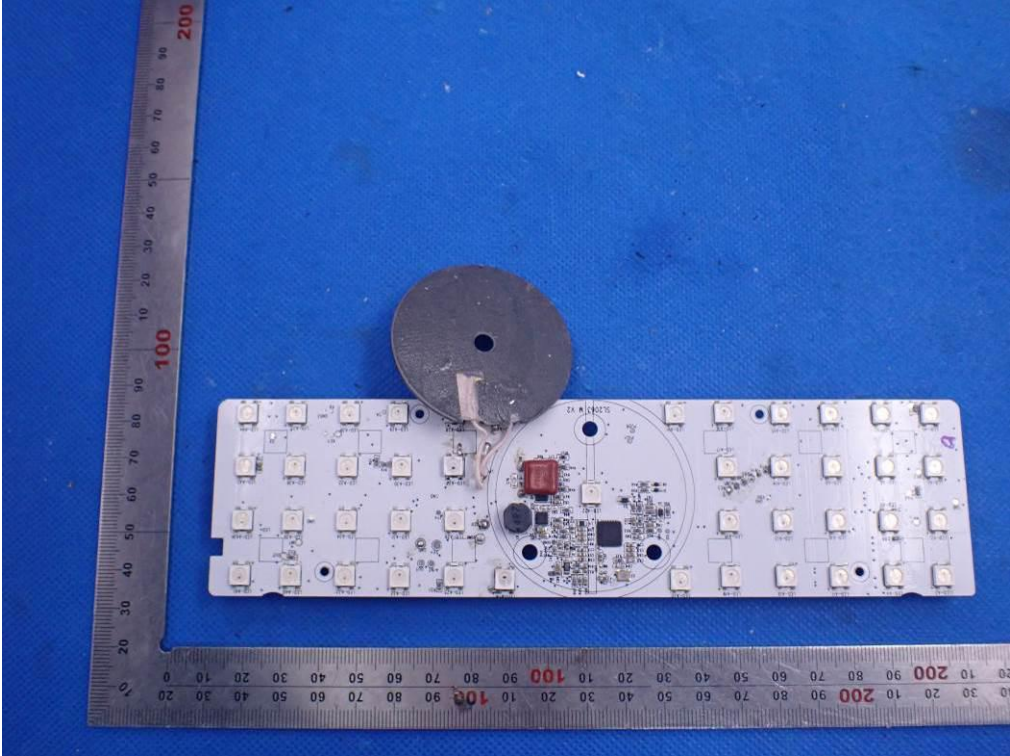


INTERNAL VIEW OF EUT-9

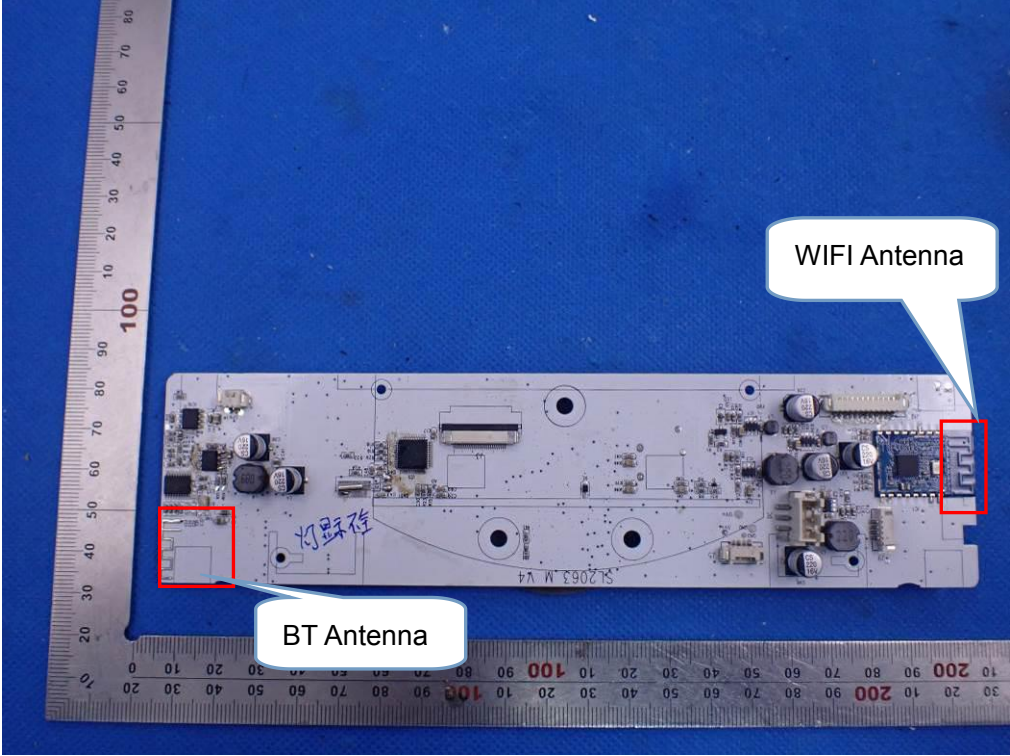




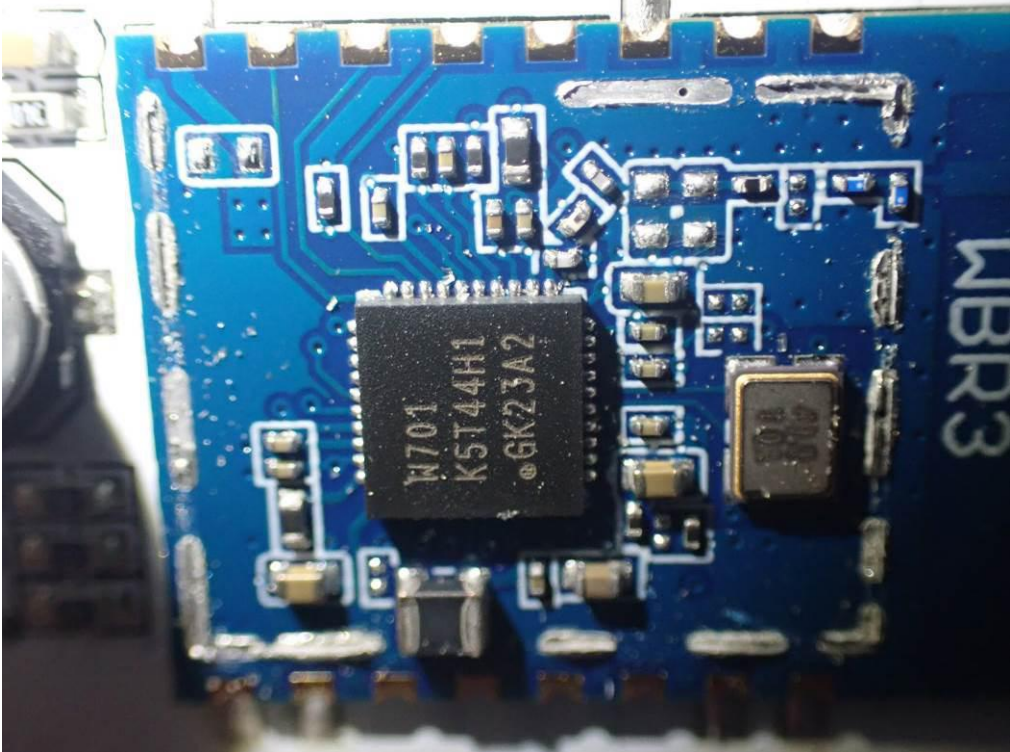
INTERNAL VIEW OF EUT-10



INTERNAL VIEW OF EUT-11



INTERNAL VIEW OF EUT-12

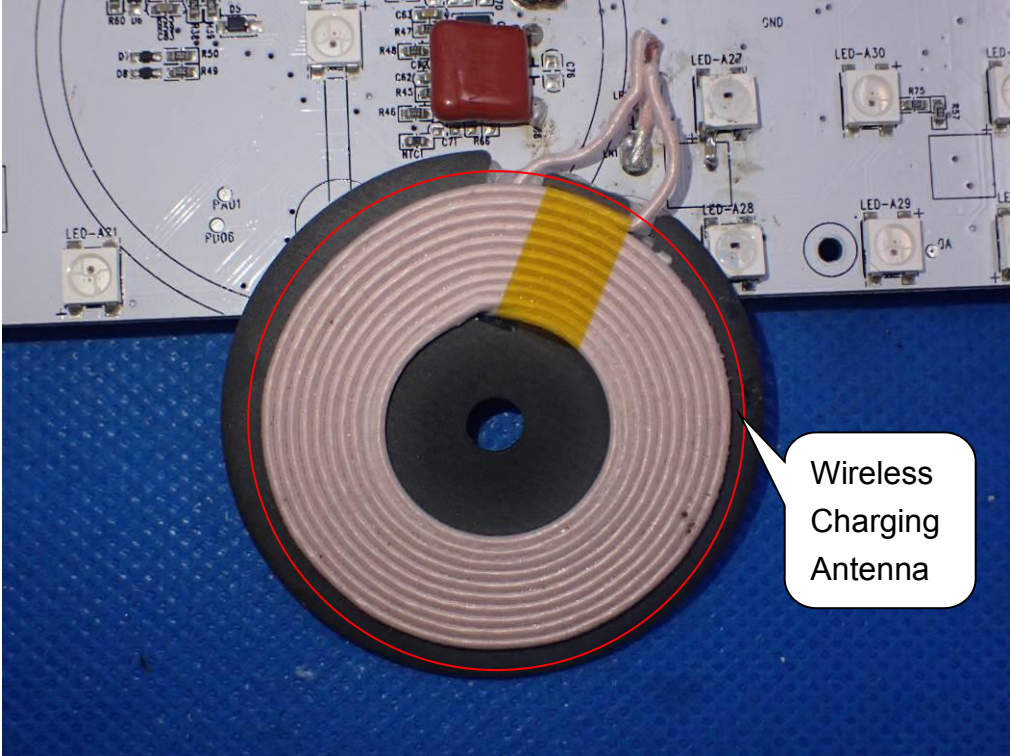


INTERNAL VIEW OF EUT-13

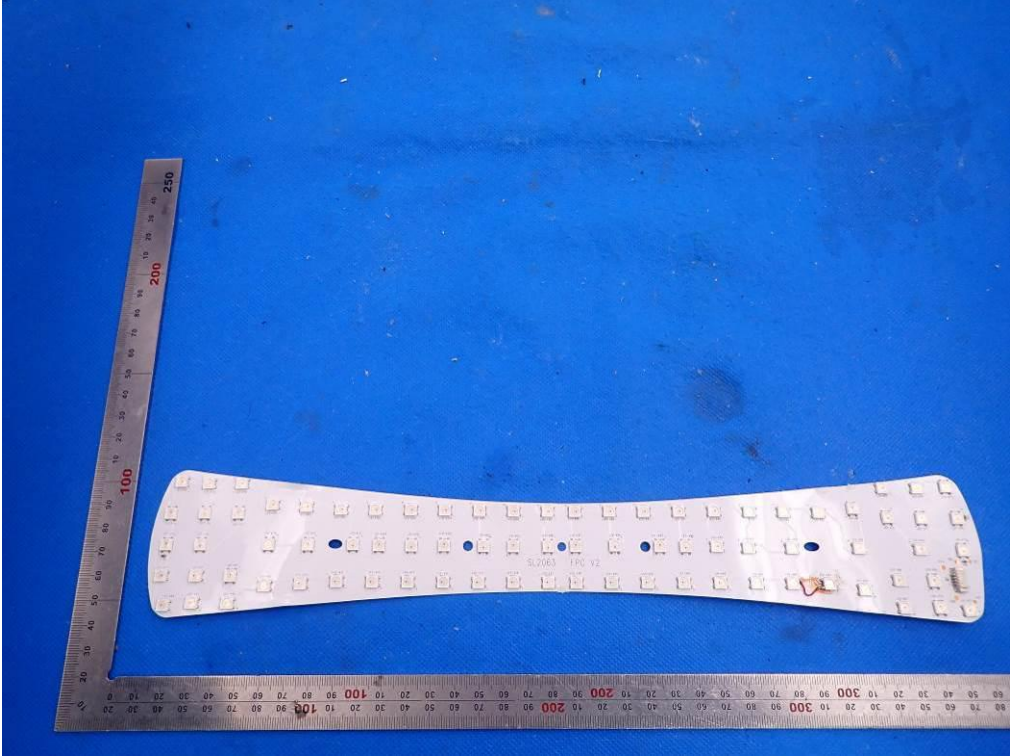




INTERNAL VIEW OF EUT-14



INTERNAL VIEW OF EUT-15



INTERNAL VIEW OF EUT-16



VIEW OF ADAPTER 1



----END OF REPORT----