



# FCC TEST REPORT

## FCC Part 15 B

**Report Number**..... : **ZKT-2302271033E**

Date of Test..... Feb. 27, 2023 to Mar. 03, 2023

Date of issue..... : Mar. 03, 2023

Total number of pages..... 24

Test Result ..... : PASS

**Testing Laboratory**..... : **Shenzhen ZKT Technology Co., Ltd.**

Address ..... 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

**Applicant's name** ..... : **Guangzhou TOPPING Technology Co., Ltd**

Address ..... : Rm201, 26th Jiaomen Rd, Huangge, Nansha, Guangzhou, China.

**Manufacturer's name** ..... : **Guangzhou TOPPING Technology Co., Ltd**

Address ..... : Rm201, 26th Jiaomen Rd, Huangge, Nansha, Guangzhou, China.

**Test specification:**

Standard..... : FCC Part 15 B, ANSI C63.4:2014

Test procedure..... : /

Non-standard test method ..... : N/A

**Test Report Form No**..... : TRF-EL-117\_V0

**Test Report Form(s) Originator**..... : ZKT Testing

**Master TRF** ..... : Dated: 2020-01-06

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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**Product name**..... : **Audio Amplifier**

Trademark ..... : TOPPING

Model/Type reference..... : TP22A

TP22AA, TP22AB, TP22AC, TP22AD

Ratings..... : Input: AC 100-240V 5.0A 50/60Hz



**Testing procedure and testing location:**

**Testing Laboratory**.....: **Shenzhen ZKT Technology Co., Ltd.**

**Address**.....: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

**Tested by (name + signature)**.....: Jim Liu

**Reviewer (name + signature)**.....: Jackson Fang

**Approved (name + signature)**.....: Lake Xie





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**1.VERSION**

Report No.	Version	Description	Approved
ZKT-2302271033E	Rev.01	Initial issue of report	Mar. 03, 2023



## 2.GENERAL INFORMATION

### 2.1 Description of Device (EUT)

EUT	: Audio Amplifier
Model Number	: TP22A TP22AA, TP22AB, TP22AC, TP22AD
Trademark	: TOPPING
Model Difference	: Only for different model name
Power Supply	: Input: AC 100-240V 5.0A 50/60Hz

### 2.2 Tested System Details

None.

### 2.3 Test Facility

#### Site Description

Name of Firm : Shenzhen ZKT Technology Co., Ltd.

Site Location : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225  
Designation Number: CN1299  
IC Registered No.: 27033

### 2.4 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Test item	Value (dB)
Conducted Emission (150K-30MHZ)	3.20
Radiated disturbance30MHz-1000MHz	4.80



## 2.5 Test Instrument Used

## Conducted emissions &amp; Magnetic Emission &amp; Disturbance power Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	Oct. 21, 2022	Oct. 20, 2023
2	LISN	CYBERTEK	EM5040A	E1850400149	Oct. 21, 2022	Oct. 20, 2023
3	Test Cable	N/A	C-01	N/A	Oct. 21, 2022	Oct. 20, 2023
4	Test Cable	N/A	C-02	N/A	Oct. 21, 2022	Oct. 20, 2023
5	Test Cable	N/A	C-03	N/A	Oct. 21, 2022	Oct. 20, 2023
6	EMI Test Receiver	R&S	ESCI3	101393	Oct. 28, 2022	Oct. 27, 2023
7	Triple-Loop Antenna	N/A	RF300	N/A	Oct. 28, 2022	Oct. 27, 2023
8	Absorbing Clamp	DZ	ZN23201	15034	Oct. 31, 2022	Oct. 30, 2023
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	\	\

## Radiation Test equipment

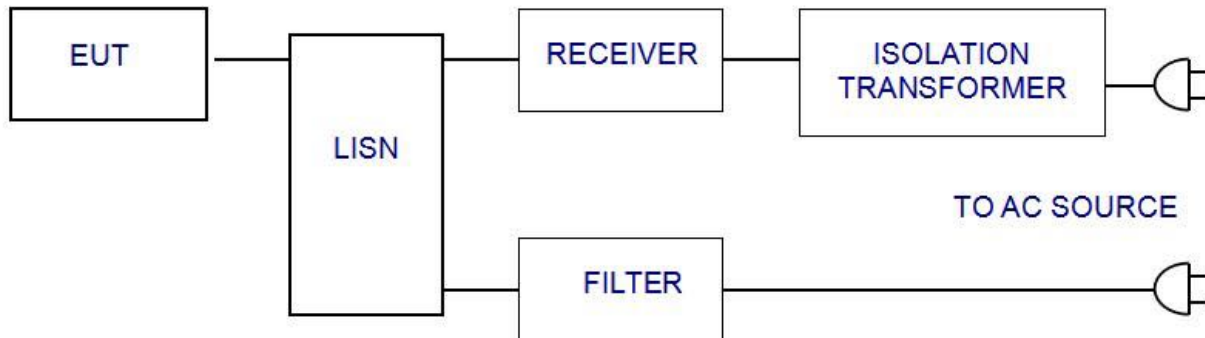
Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	Oct. 28, 2022	Oct. 27, 2023
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSQ	100363	Oct. 28, 2022	Oct. 27, 2023
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	101169	Oct. 28, 2022	Oct. 27, 2023
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	Nov. 02, 2022	Nov. 01, 2023
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	Nov. 01, 2022	Oct. 31, 2023
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	Oct. 28, 2022	Oct. 27, 2023
7	Loop Antenna	TESEQ	HLA6121	58357	Nov. 01, 2022	Oct. 31, 2023
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	060747	Nov. 15, 2022	Nov. 14, 2023
9	Amplifier (1GHz-26.5GHz)	Agilent	8449B	3008A00315	Oct. 28, 2022	Oct. 27, 2023
10	Amplifier (500MHz-40GHz)	全聚达	DLE-161	097	Oct. 28, 2022	Oct. 27, 2023
11	Test Cable	N/A	R-01	N/A	Oct. 28, 2022	Oct. 27, 2023
12	Test Cable	N/A	R-02	N/A	Oct. 28, 2022	Oct. 27, 2023
13	Test Cable	N/A	R-03	N/A	Oct. 28, 2022	Oct. 27, 2023
14	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	Nov. 15, 2022	Nov. 14, 2023
15	D.C. Power Supply	LongWei	TPR-6405 D	N/A	\	\
16	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	\	\



17	Turntable	MF	MF-7802B S	N/A	\	\
18	Antenna tower	MF	MF-7802B S	N/A	\	\

### 3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

#### 3.1 Block Diagram Of Test Setup



#### 3.2 Test Standard

FCC PART 15 B

#### 3.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB( $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

- Notes: 1. \*Decreasing linearly with logarithm of frequency.  
2. The lower limit shall apply at the transition frequencies.

#### 3.4 EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

#### 3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and simulators as shown in Section 3.1.
- 3.5.2 Turn on the power of all equipments.
- 3.5.3 Let the EUT work in test modes and test it.

#### 3.6 Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

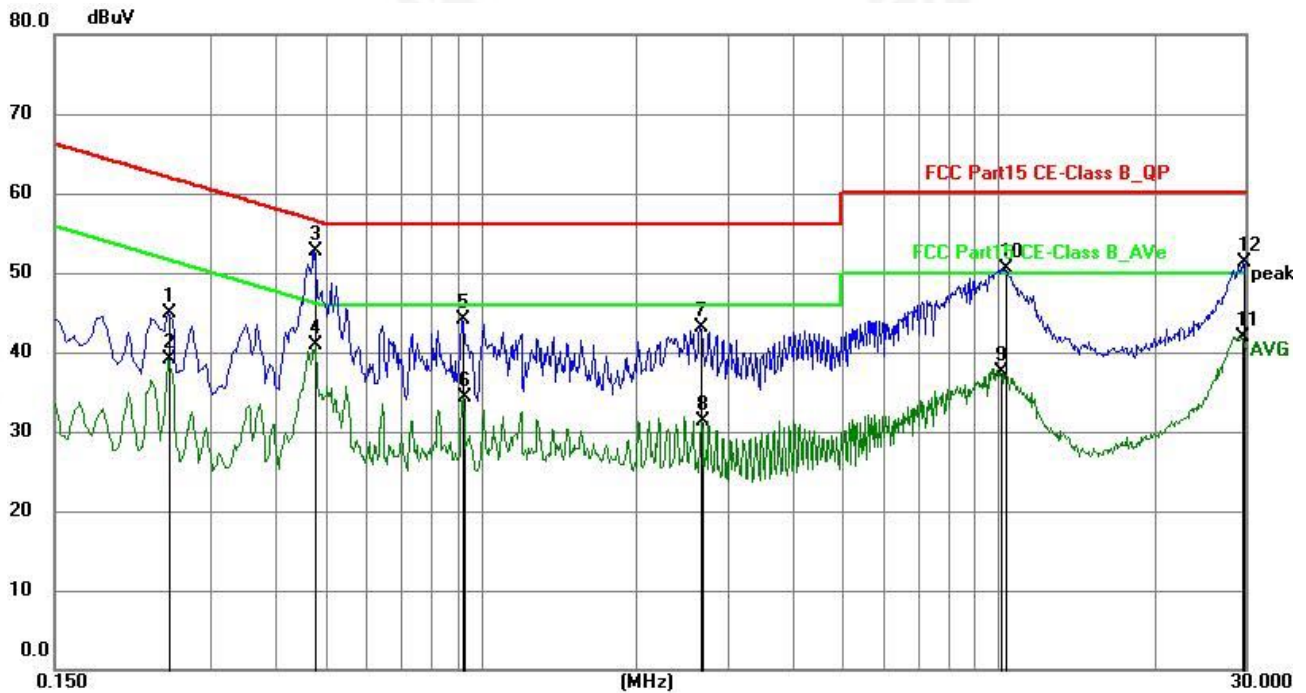


### 3.7 Test Result

PASS

Please refer to the following page.

Conducted Emission At The Mains Terminals Test Data			
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Working

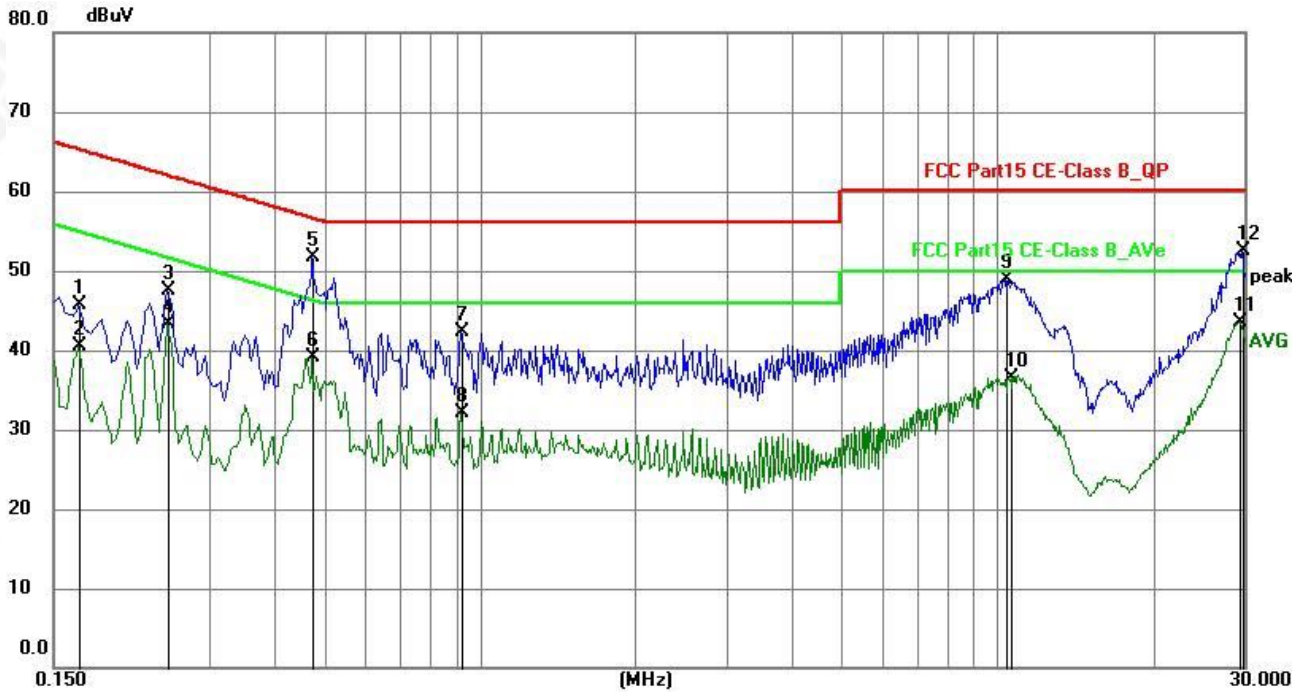


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2489	24.33	20.62	44.95	61.79	-16.84	QP	P	
2	0.2489	18.43	20.62	39.05	51.79	-12.74	AVG	P	
3	0.4783	32.05	20.64	52.69	56.37	-3.68	QP	P	
4	0.4786	20.19	20.64	40.83	46.36	-5.53	AVG	P	
5	0.9193	23.50	20.64	44.14	56.00	-11.86	QP	P	
6	0.9239	13.74	20.64	34.38	46.00	-11.62	AVG	P	
7	2.6610	22.31	20.72	43.03	56.00	-12.97	QP	P	
8	2.6655	10.63	20.72	31.35	46.00	-14.65	AVG	P	
9	10.1219	16.83	20.66	37.49	50.00	-12.51	AVG	P	
10	10.3063	29.94	20.66	50.60	60.00	-9.40	QP	P	
11	29.5665	21.47	20.46	41.93	50.00	-8.07	AVG	P	
12	29.7555	30.82	20.46	51.28	60.00	-8.72	QP	P	





Conducted Emission At The Mains Terminals Test Data			
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Working

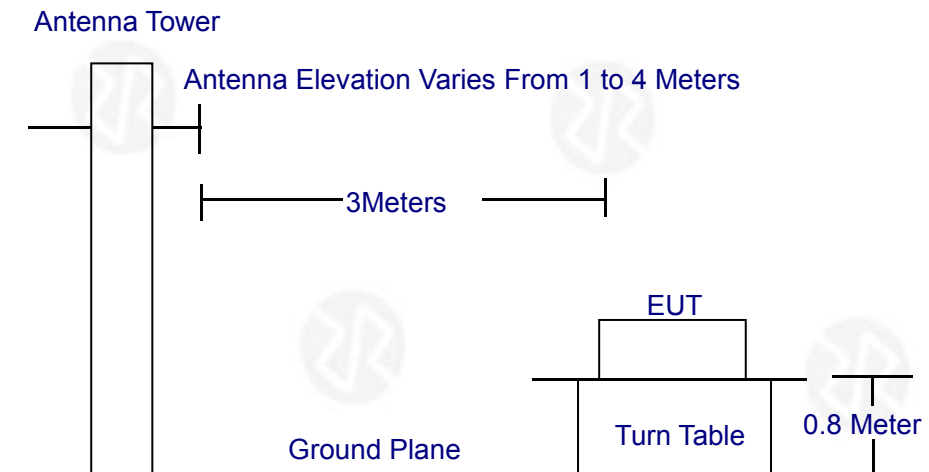


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1680	25.20	20.57	45.77	65.06	-19.29	QP	P	
2	0.1680	19.95	20.57	40.52	55.06	-14.54	AVG	P	
3	0.2489	26.91	20.54	47.45	61.79	-14.34	QP	P	
4	0.2489	22.80	20.54	43.34	51.79	-8.45	AVG	P	
5	0.4738	31.04	20.63	51.67	56.45	-4.78	QP	P	
6	0.4738	18.41	20.63	39.04	46.45	-7.41	AVG	P	
7	0.9193	21.79	20.56	42.35	56.00	-13.65	QP	P	
8	0.9193	11.59	20.56	32.15	46.00	-13.85	AVG	P	
9	10.3873	28.24	20.66	48.90	60.00	-11.10	QP	P	
10	10.6485	15.86	20.65	36.51	50.00	-13.49	AVG	P	
11	29.2378	22.86	20.65	43.51	50.00	-6.49	AVG	P	
12	29.7058	31.84	20.66	52.50	60.00	-7.50	QP	P	



## 4.RADIATION EMISSION TEST

### 4.1 Block Diagram of Test Setup



### 4.2 Test Standard

FCC PART 15 B

### 4.3 Radiation Limit

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB $\mu$ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

### 4.4 EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test. The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

### 4.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

### 4.6 Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.

The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz. The frequency range from 30MHz to 1000MHz is checked. The highest frequency of the internal sources of the EUT was below 108MHz, so the measurement was only made up to 1GHz.



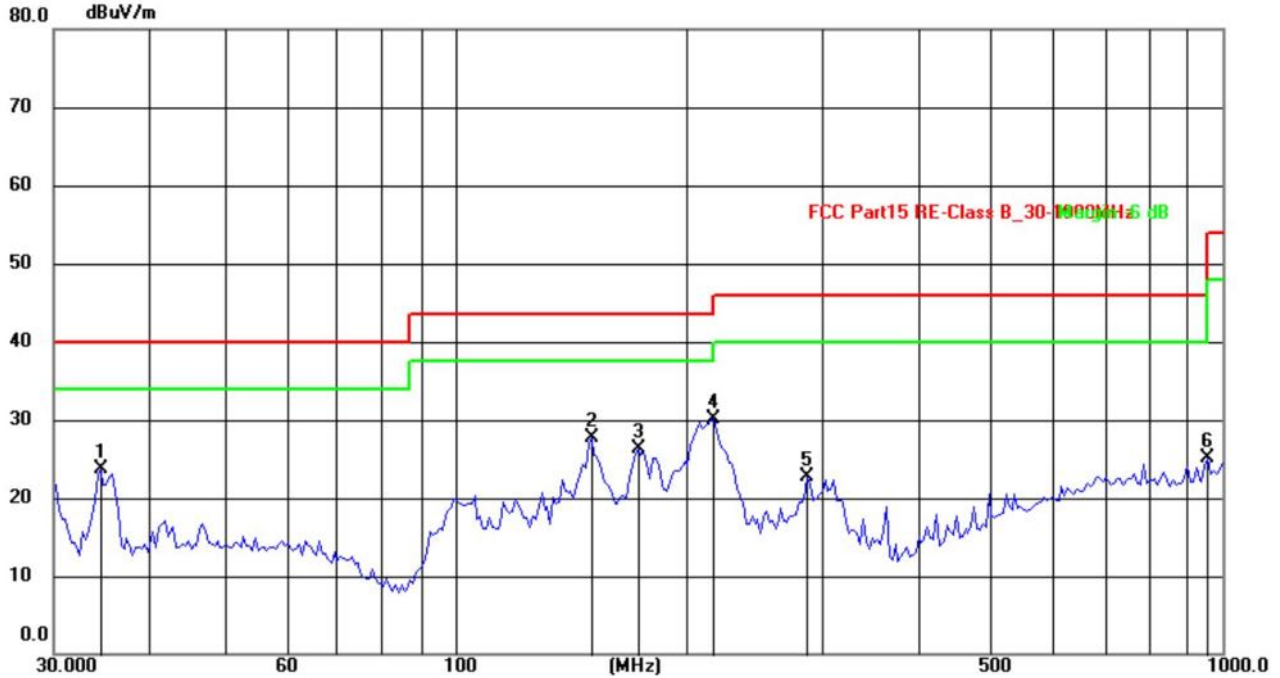
#### 4.7 Test Result

PASS

Please refer to the following page.



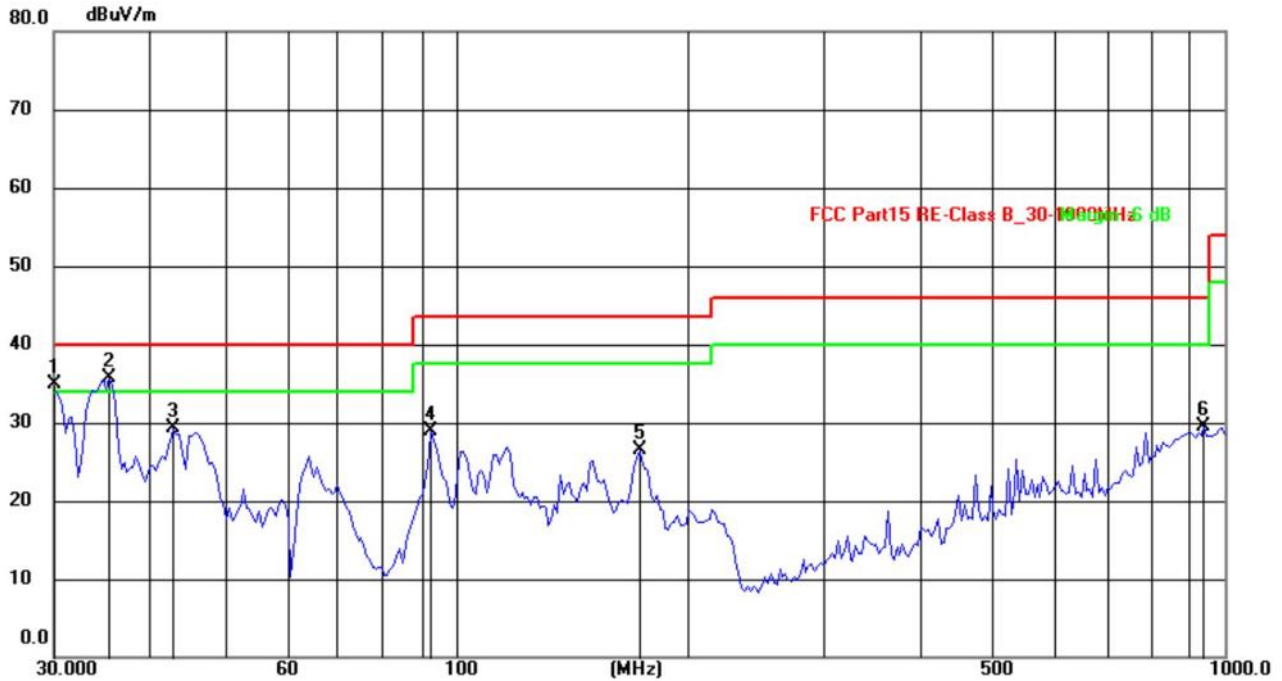
Radiation Emission Test Data			
Temperature:	26°C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



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	34.5172	38.69	-14.97	23.72	40.00	-16.28	QP				
2	150.5377	44.21	-16.54	27.67	43.50	-15.83	QP				
3	173.2050	43.50	-17.28	26.22	43.50	-17.28	QP				
4	217.5443	48.08	-17.92	30.16	46.00	-15.84	QP				
5	287.9904	38.10	-15.40	22.70	46.00	-23.30	QP				
6	957.1147	30.82	-5.78	25.04	46.00	-20.96	QP				



Radiation Emission Test Data			
Temperature:	26°C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



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	30.0000	53.26	-18.44	34.82	40.00	-5.18	QP				
2	35.4370	53.33	-17.54	35.79	40.00	-4.21	QP				
3	42.9750	46.37	-16.99	29.38	40.00	-10.62	QP				
4	92.9500	50.31	-21.41	28.90	43.50	-14.60	QP				
5	173.2050	46.41	-19.96	26.45	43.50	-17.05	QP				
6	940.4801	29.99	-0.53	29.46	46.00	-16.54	QP				

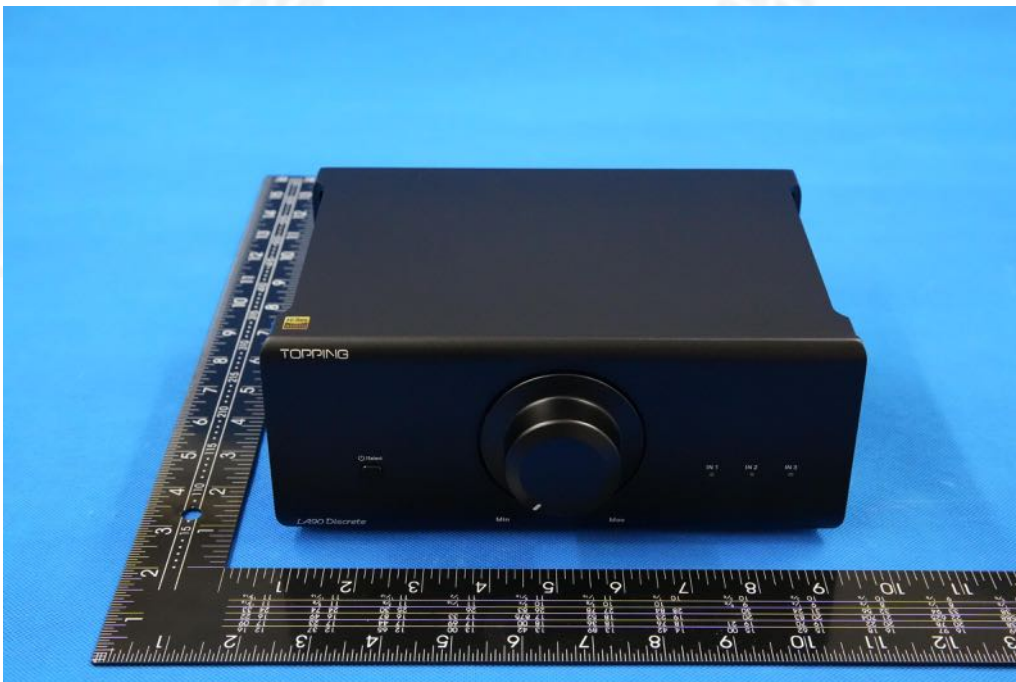


## 5.EUT PHOTOGRAPHS

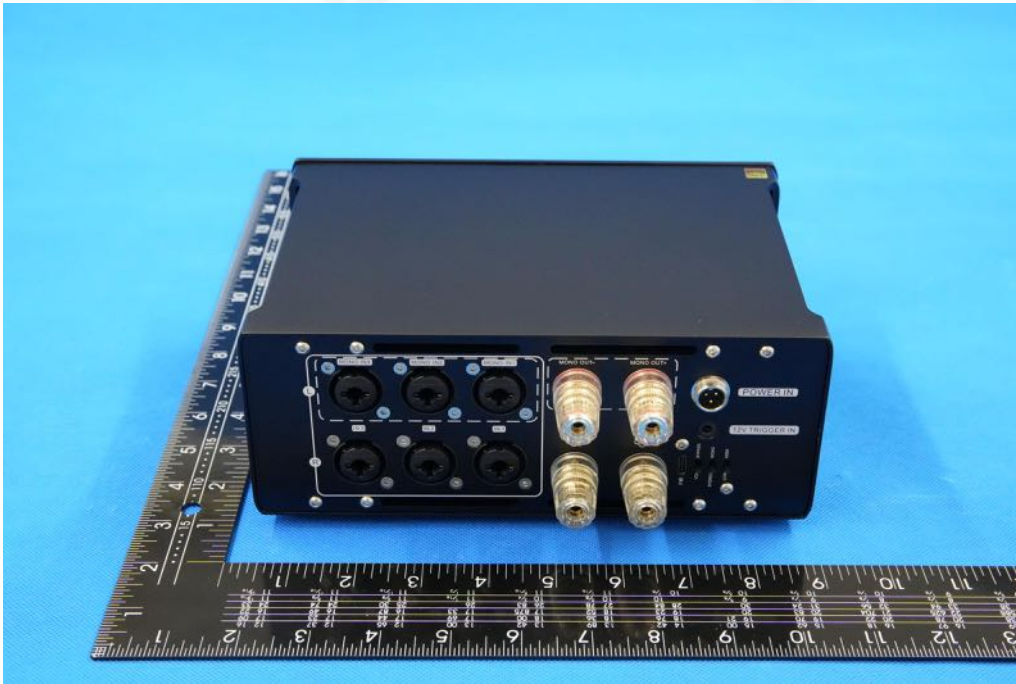
### EUT Photo 1



### EUT Photo 2



### EUT Photo 3



EUT Photo 4





EUT Photo 5



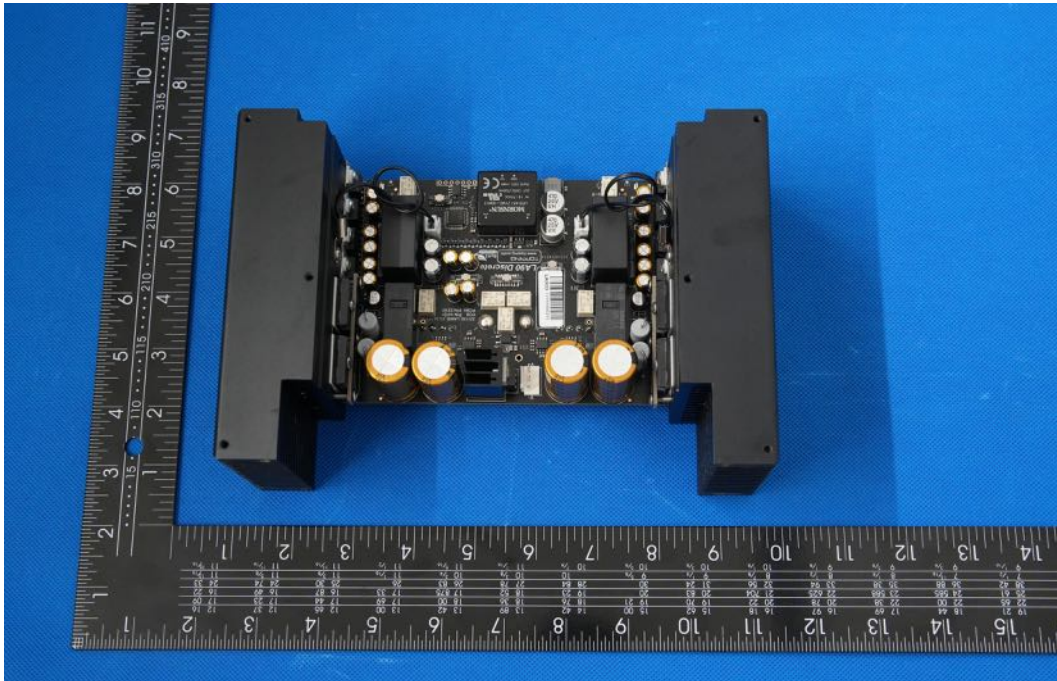
EUT Photo 6



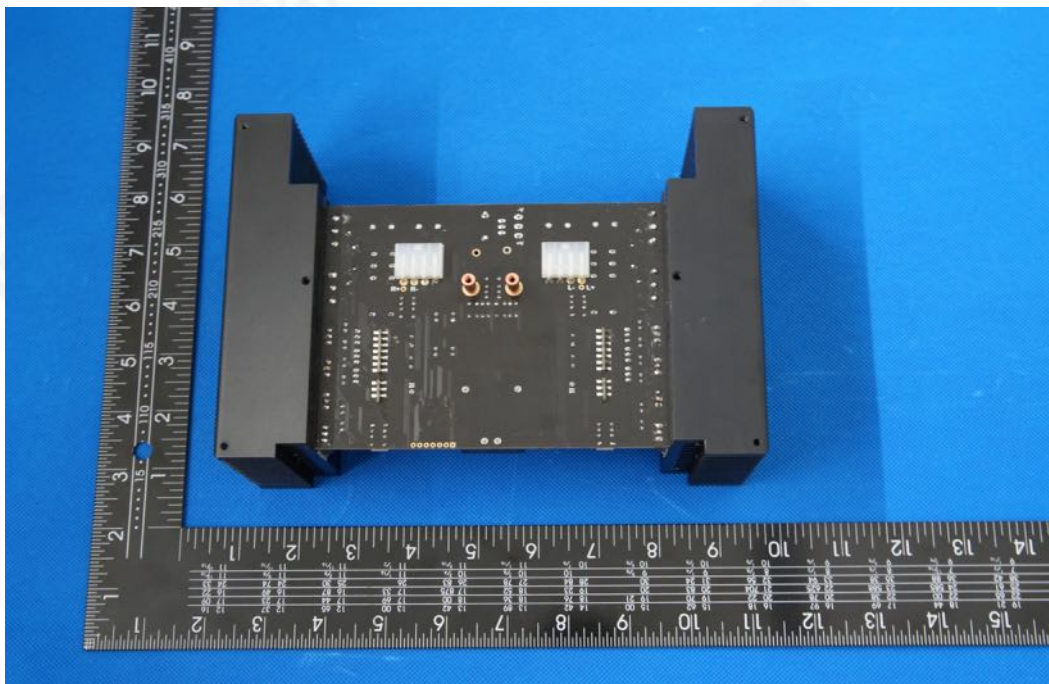




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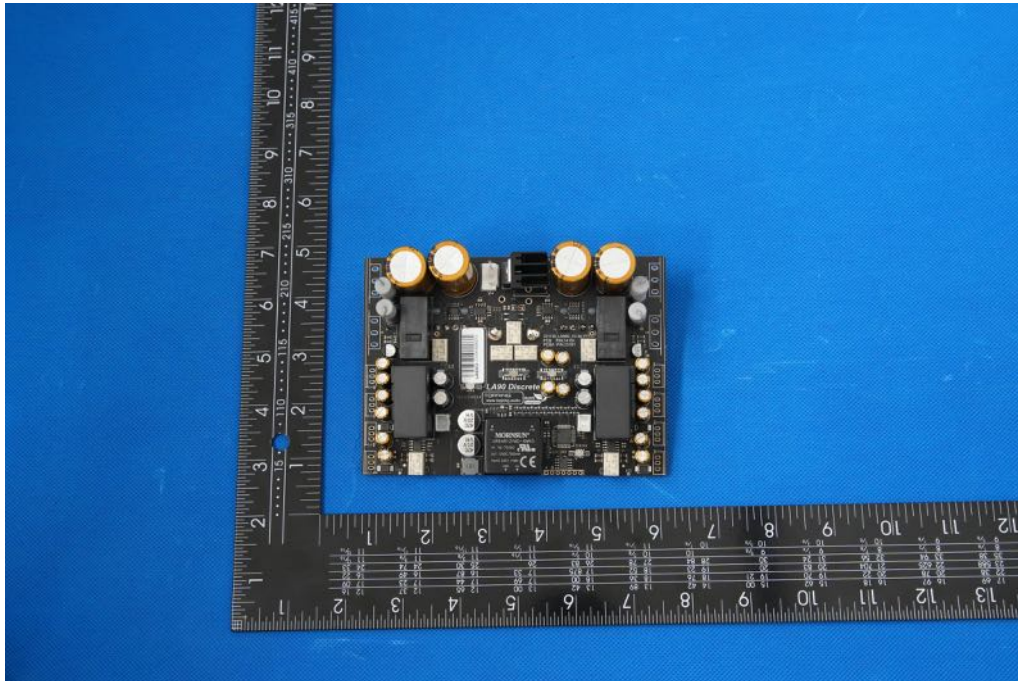


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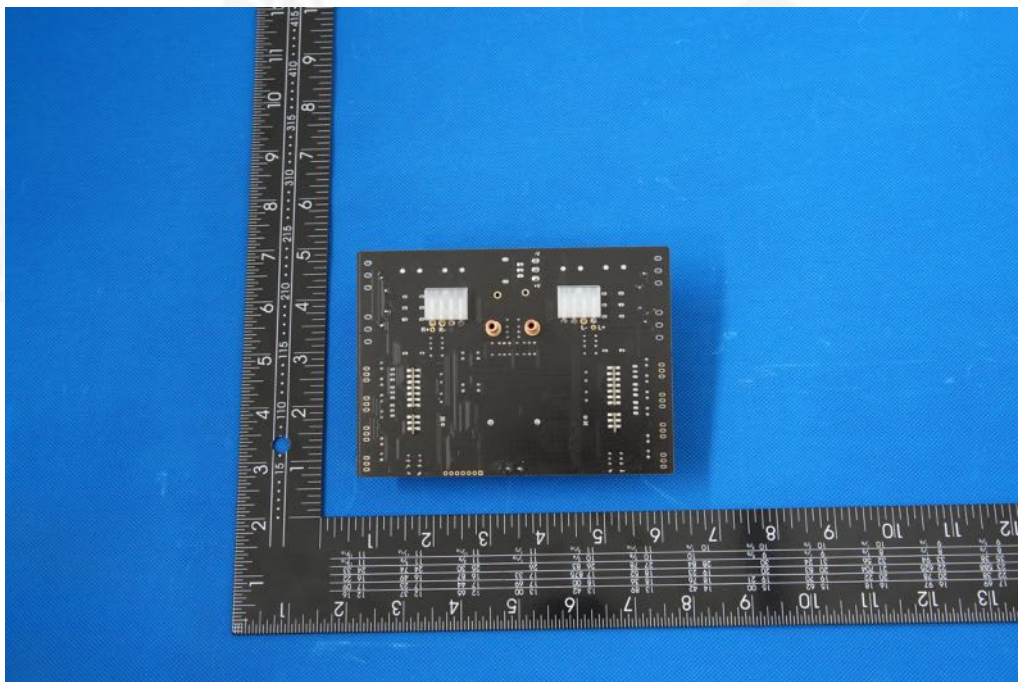




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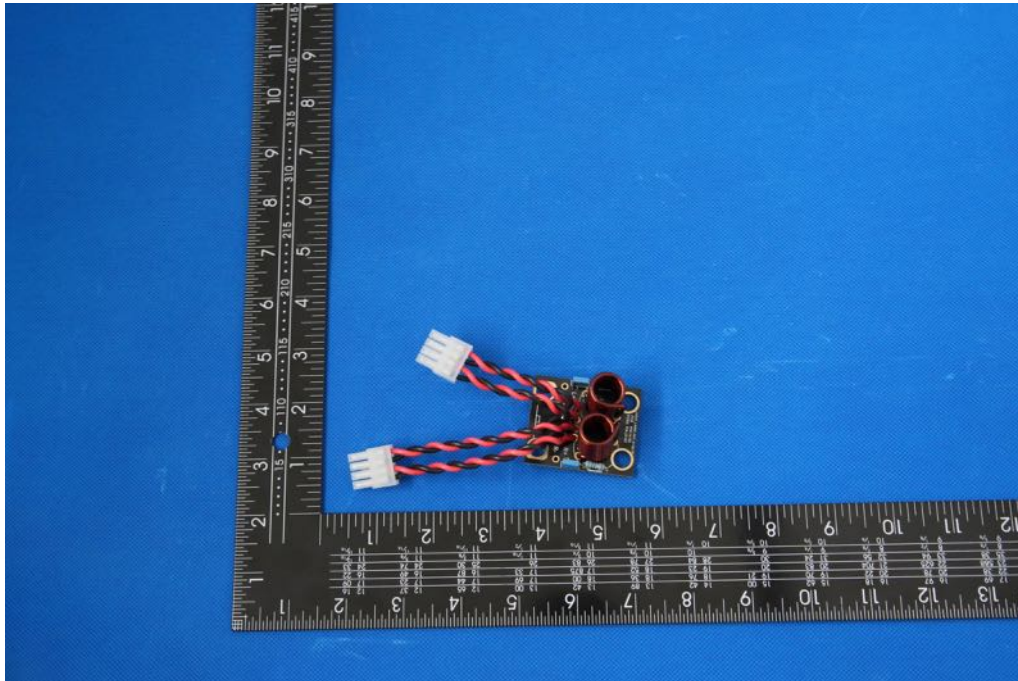


EUT Photo 10

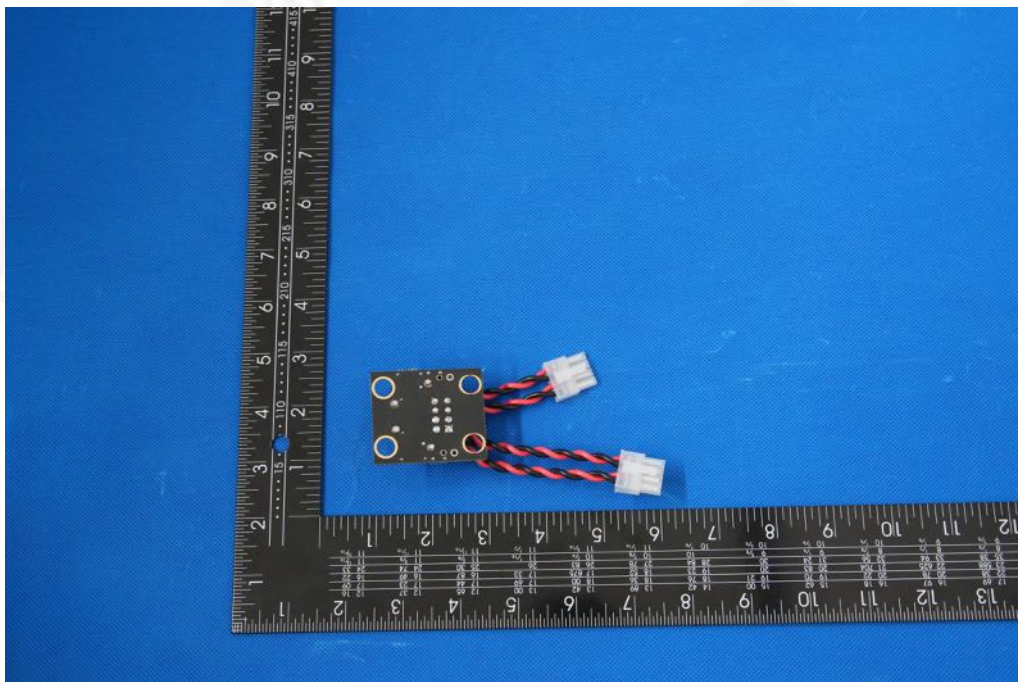




EUT Photo 11

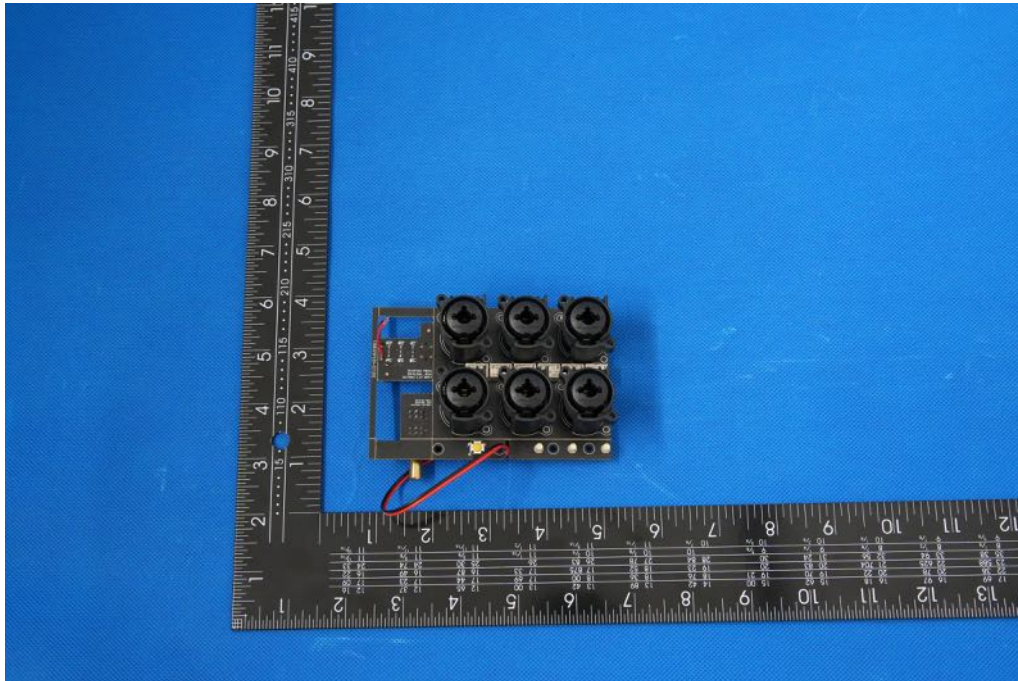


EUT Photo 12

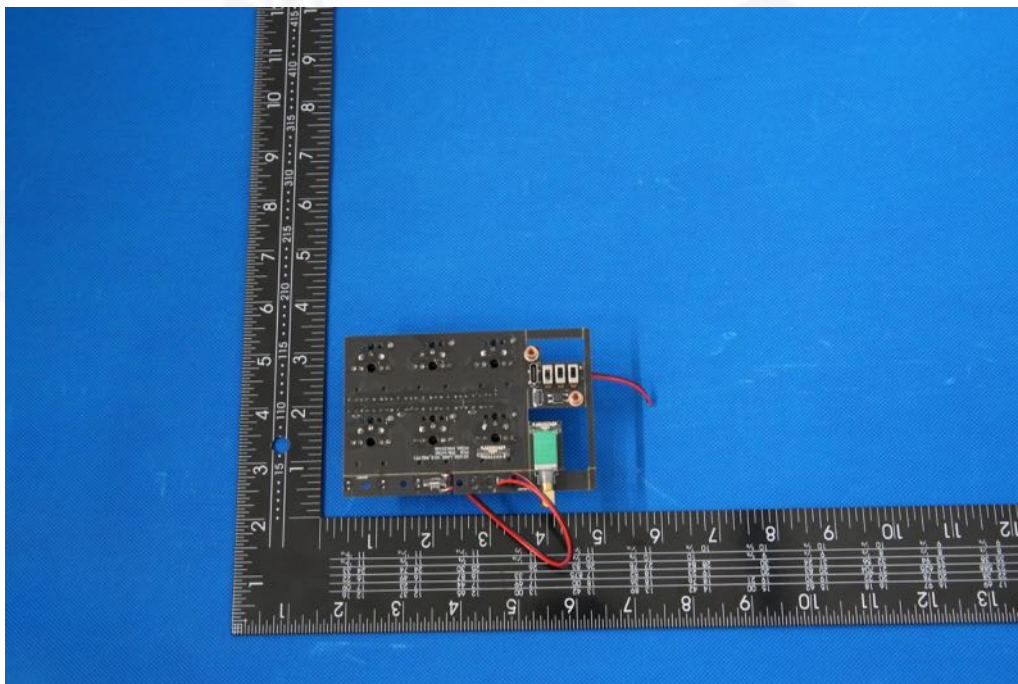




EUT Photo 13



EUT Photo 14





EUT Photo 15



EUT Photo 16





EUT Photo 17

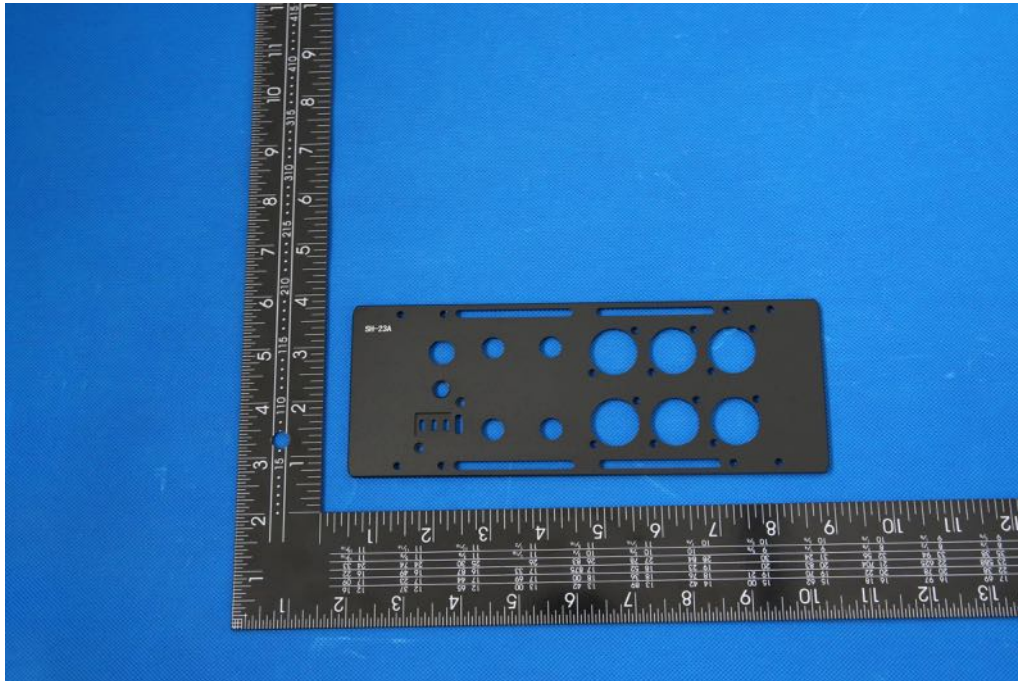


EUT Photo 18





EUT Photo 19



EUT Photo 20



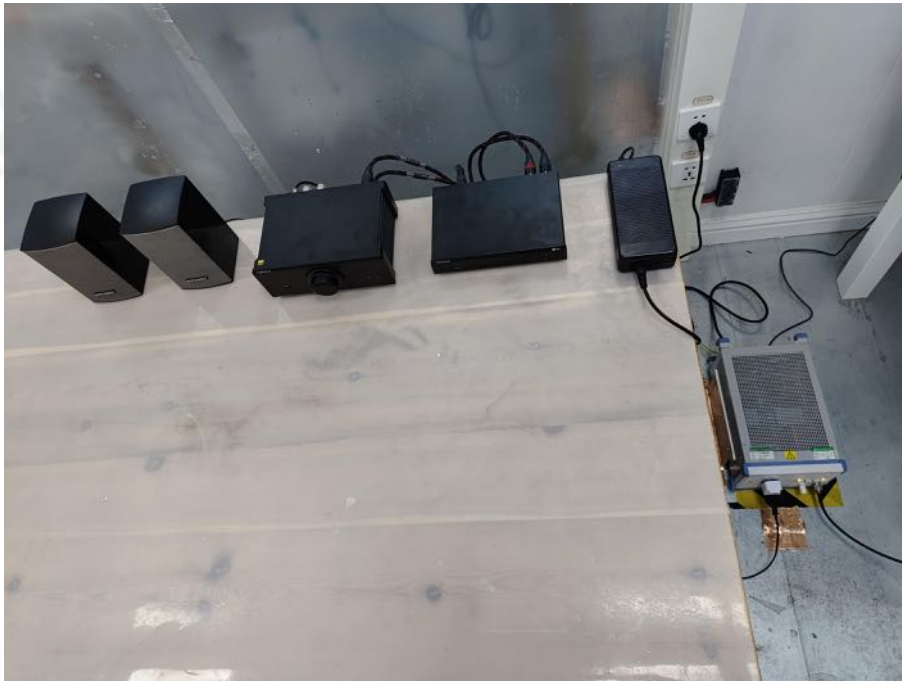


## 6.EUT TEST PHOTOGRAPHS

RE



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