

FCC SDoC TEST REPORT
Shenzhen Wesion Technology Co., Ltd.
Tone2 Pro
Test Model: Tone2 Pro

Prepared for	:	Shenzhen Wesion Technology Co., Ltd.
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Date of receipt of test sample	:	January 05, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	January 05, 2021 ~ January 04, 2021
Date of Report	:	January 05, 2021



FCC SDoC TEST REPORT

FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

Report Reference No. : LCS201228088AE

Date Of Issue : January 05, 2021

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure.... : Full application of Harmonised standards ☒
 Partial application of Harmonised standards ☐
 Other standard testing method ☐

Applicant's Name : Shenzhen Wesion Technology Co., Ltd.

Address : D#2101A, Caifugang Building, Baoyuan Road, Xixiang Street, Bao' an District, Shenzhen, China

Test Specification

Standard : FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

Test Report Form No..... : LCSEMC-1.0

TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF : Dated 2011-03

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Test Item Description. : Tone2 Pro

Trade Mark : Khadas

Test Model..... : Tone2 Pro

Ratings : DC 5V, 500mA

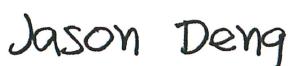
Result : Positive

Compiled by:



Emma Wang/ File administrators

Supervised by:



Jason Deng/ Technique principal

Approved by:



Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS201228088AEJanuary 05, 2021

Date of issue

Test Model..... : Tone2 Pro

EUT..... : Tone2 Pro

Applicant..... : Shenzhen Wesion Technology Co., Ltd.

Address..... : D#2101A, Caifugang Building, Baoyuan Road, Xixiang Street, Bao' an District, Shenzhen, China

Telephone..... : /

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Manufacturer..... : Shenzhen Wesion Technology Co., Ltd.

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Telephone..... : /

Fax..... : /

Factory..... : Shenzhen Wesion Technology Co., Ltd.

Address..... : D#2101A, Caifugang Building, Baoyuan Road, Xixiang Street, Bao' an District, Shenzhen, China

Telephone..... : /

Fax..... : /

Test Result according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	January 05, 2021	Initial Issue	Gavin Liang

TABLE OF CONTENTS

Test Report Description	Page
1. SUMMARY OF STANDARDS AND RESULTS	6
1.1. Description of Standards and Results	6
2. GENERAL INFORMATION	7
2.1. Description of Device (EUT)	7
2.2. Support Equipment List.....	7
2.3. Description of Test Facility	7
2.4. Statement of the Measurement Uncertainty	7
2.5. Measurement Uncertainty.....	8
3. TEST RESULTS	9
3.1. Radiated Emission Measurement.....	9
4. PHOTOGRAPHS OF TEST SETUP	13
5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	14

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	N/A
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	Class B	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode	Working	Record

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Tone2 Pro

Trade Mark : Khadas

Test Model : Tone2 Pro

Power Supply : DC 5V, 500mA

EUT Clock Frequency : $\leq 108\text{MHz}$

2.2. Support Equipment List

Name	Manufacturers	M/N	S/N
PC	DELL	vostro15-7570	--

2.3. Description of Test Facility

Site Description

EMC Lab. : NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

2.4. 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 LCS 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.

2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U_{lab})	Expanded Uncertainty (U_{cisp})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. TEST RESULTS

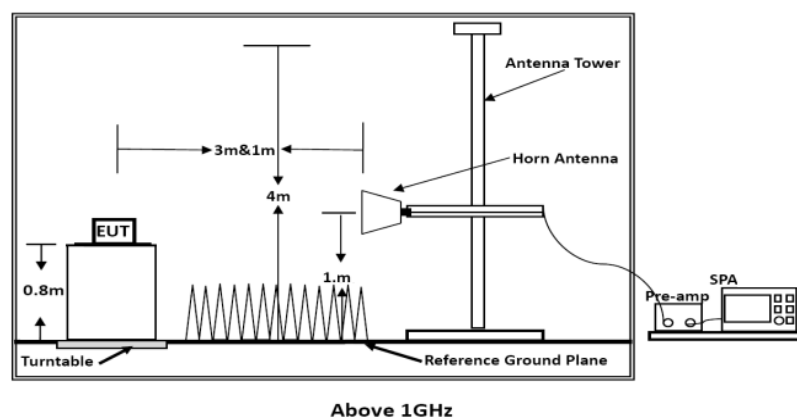
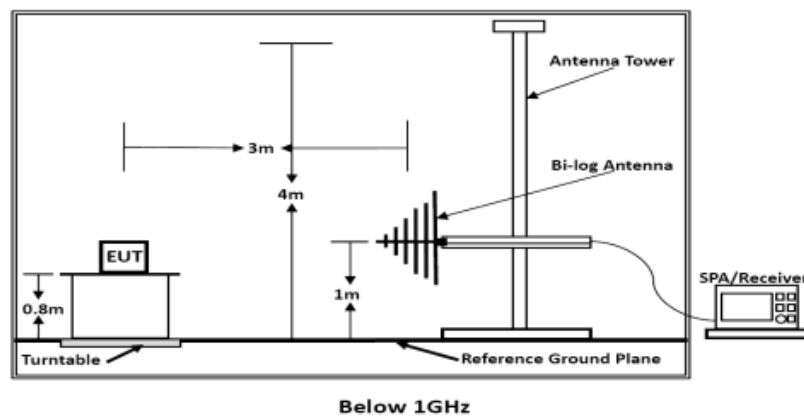
3.1. Radiated Emission Measurement

3.1.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	EZ	EZ-EMC	/	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-07-26
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2018-07-02
4	EMI Test Receiver	R&S	ESR 7	101181	2020-06-22
5	Broadband Preamplifier	/	BP-01M18G	P190501	2020-06-22

3.1.2. Block Diagram of Test Setup



3.1.3. Radiated Emission Limit (Class B)

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark : (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 (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.

Limits for Radiated Emission Above 1GHz

Frequency (MHz)	Distance (Meters)	Peak Limit ($\text{dB}\mu\text{V/m}$)	Average Limit ($\text{dB}\mu\text{V/m}$)
Above 1000	3	74	54

***Note: The lower limit applies at the transition frequency.

3.1.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.1.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown in Section 3.1.2.

3.5.2. Let the EUT work in test Mode 1 and measure it.

3.1.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.

The bandwidth of the Receiver is set at RBW/VNW 120KHz/300KHz.

The frequency range from 30MHz to 1000MHz is investigated.

The bandwidth of the Receiver is set at RBW/VNW 1MHz/3MHz.

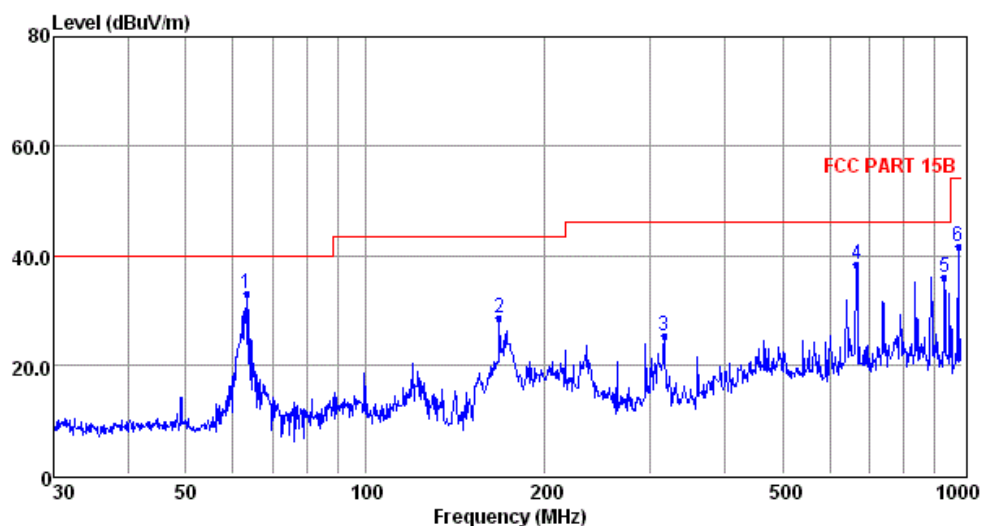
The frequency range from 1000MHz to 6000MHz is investigated.

3.1.7. Test Results

PASS.

The test result please refer to the next page.

Test Model	Tone2 Pro	Test Mode	Working
Environmental Conditions	22.2°C, 53.3% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Daiwei Dai	Test Voltage	DC 5V



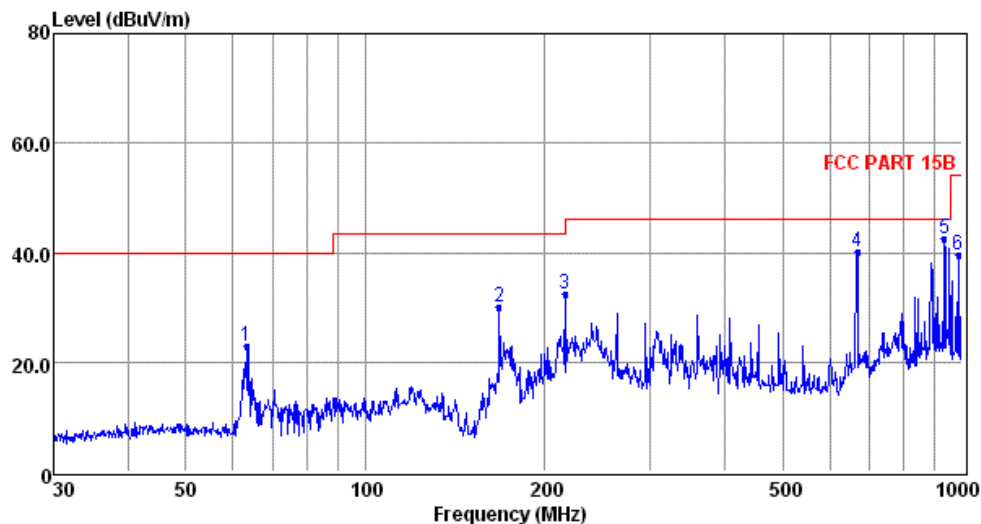
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	63.09	51.05	0.48	11.47	32.95	40.00	-7.05	QP
2	167.82	49.12	0.77	8.90	28.50	43.50	-15.00	QP
3	316.59	41.43	1.09	13.28	25.24	46.00	-20.76	QP
4	665.80	49.10	1.55	18.69	38.24	46.00	-7.76	QP
5	935.55	44.23	1.93	21.32	36.10	46.00	-9.90	QP
6	986.07	49.50	1.97	21.65	41.65	54.00	-12.35	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

Test Model	Tone2 Pro	Test Mode	Working
Environmental Conditions	22.2°C, 53.3% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Daiwei Dai	Test Voltage	DC 5V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	63.09	41.03	0.48	11.47	22.93	40.00	-17.07	QP
2	167.82	50.75	0.77	8.90	30.13	43.50	-13.37	QP
3	216.02	50.70	0.88	11.07	32.27	46.00	-13.73	QP
4	668.14	50.98	1.71	18.70	40.29	46.00	-5.71	QP
5	935.55	50.73	1.93	21.32	42.60	46.00	-3.40	QP
6	986.07	47.44	1.97	21.65	39.59	54.00	-14.41	QP

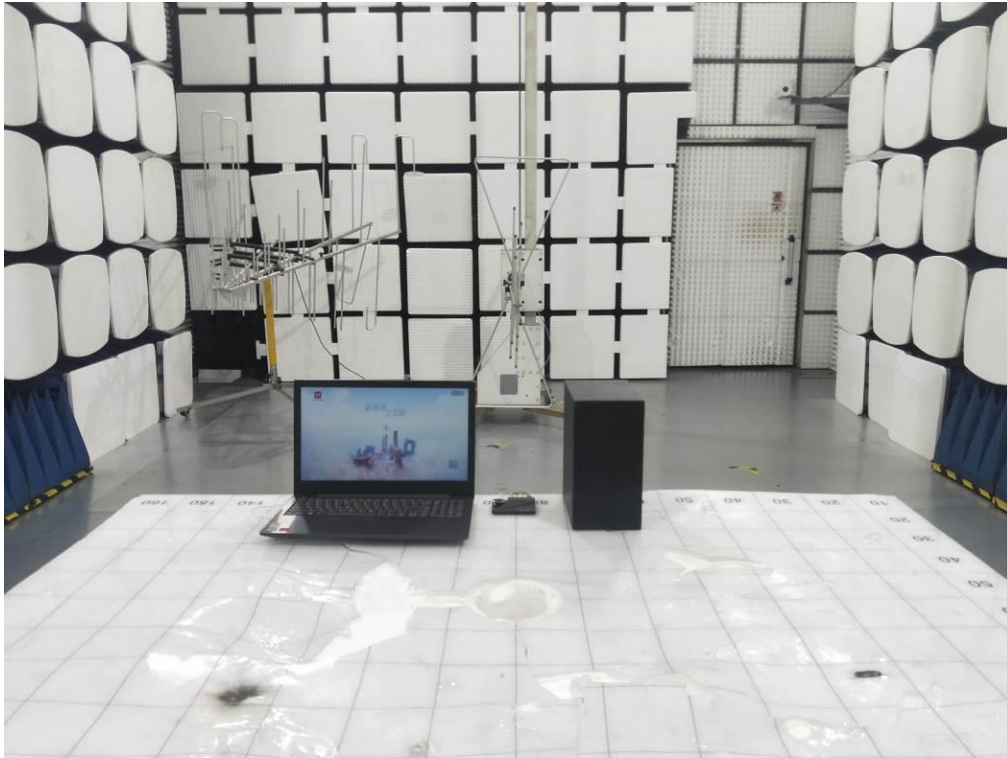
Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

4. PHOTOGRAPHS OF TEST SETUP



Test Setup Photo of Radiated Measurement (Below 1GHz)

5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1

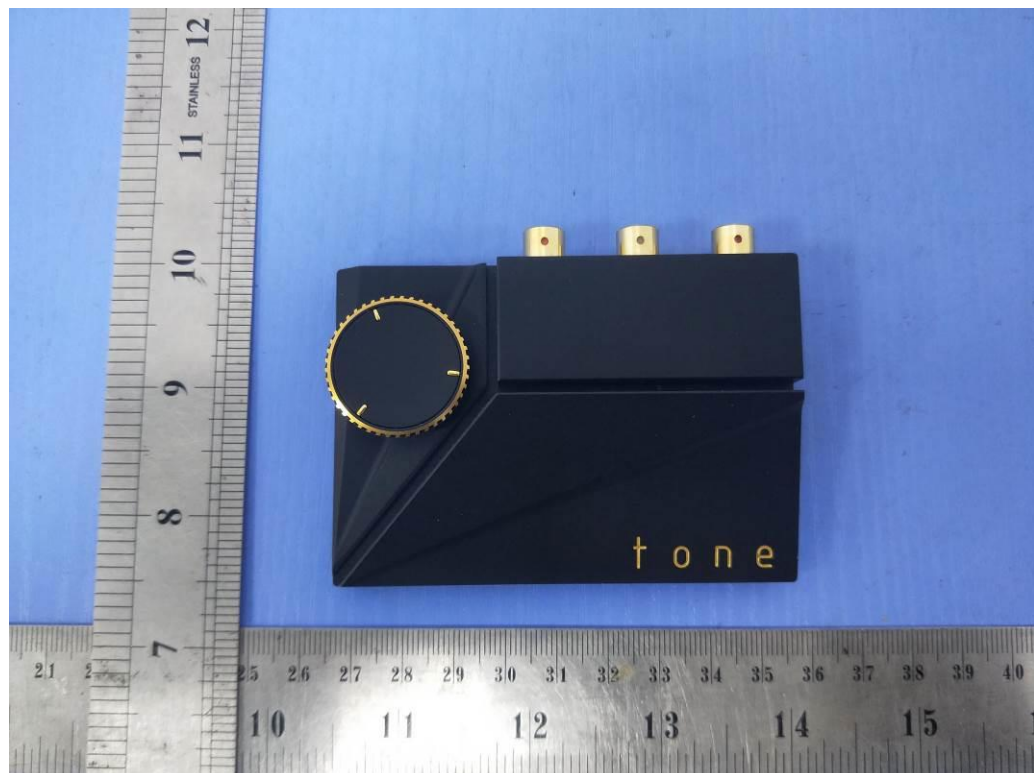


Fig. 2

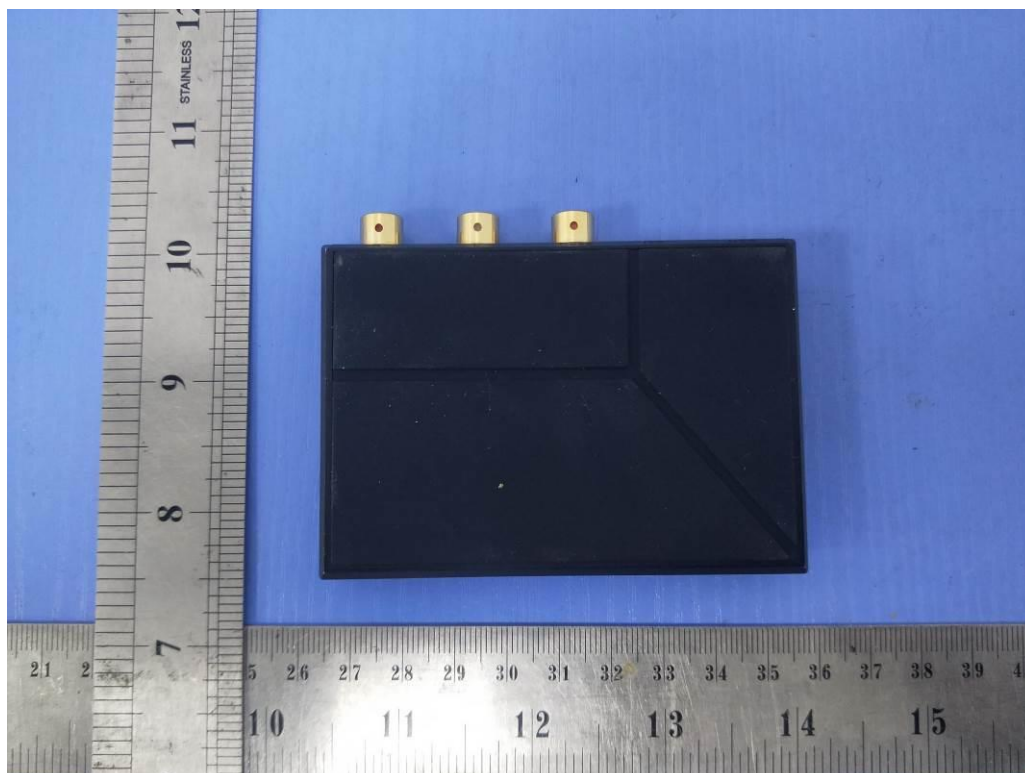


Fig. 3

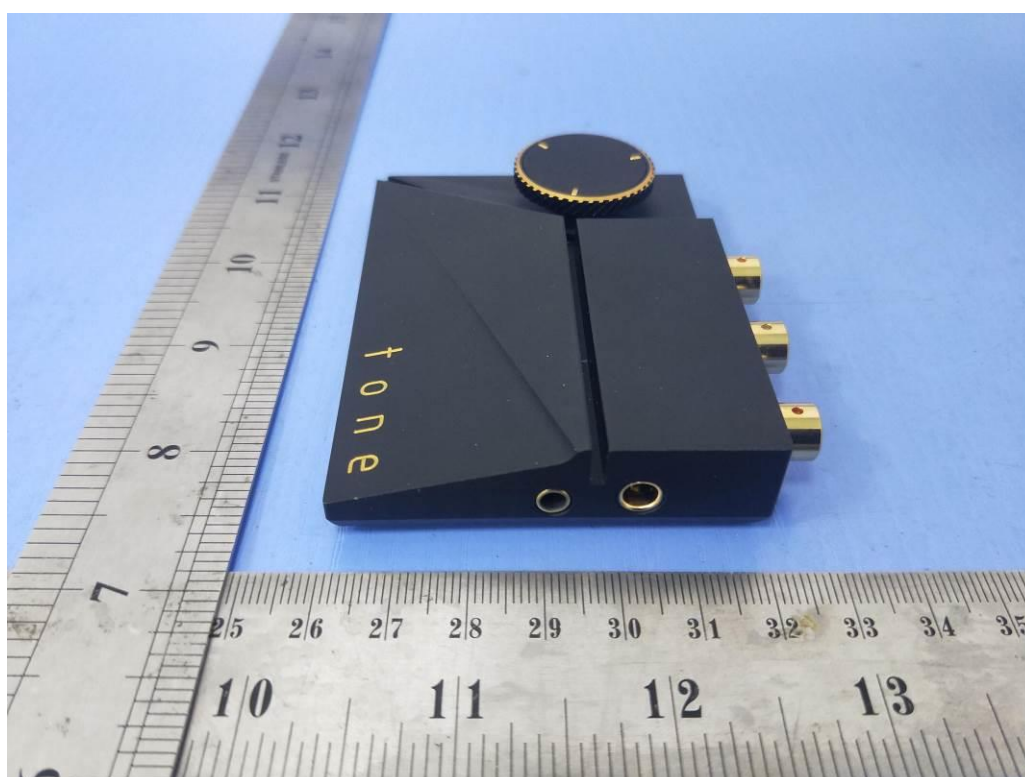


Fig. 4

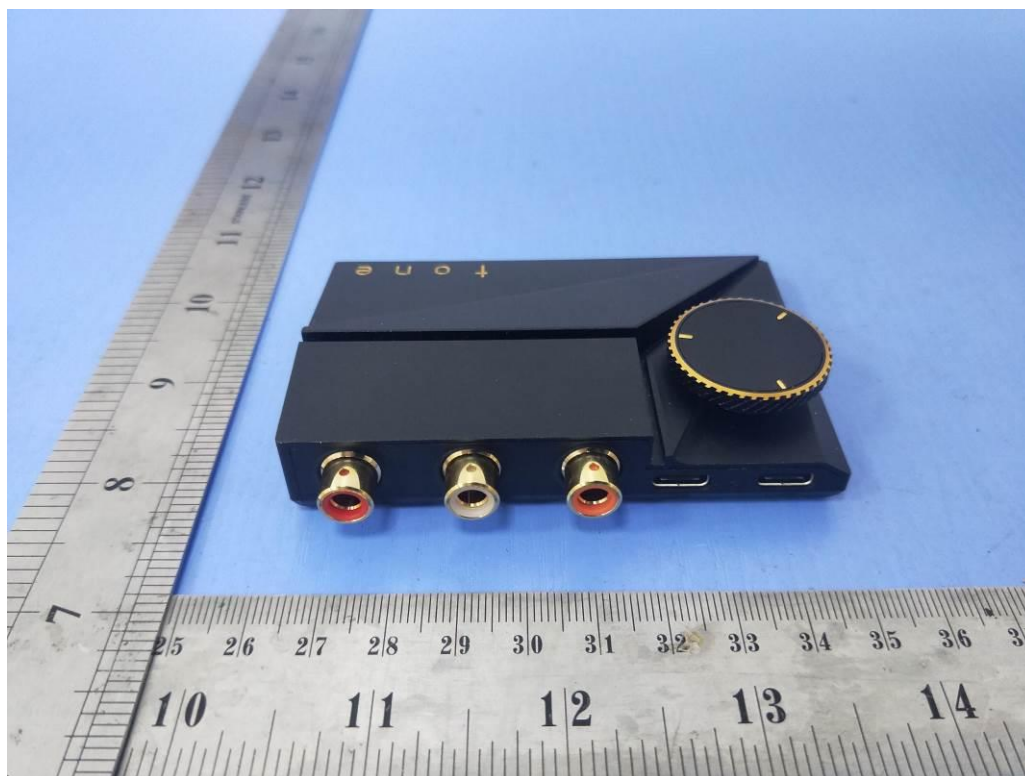


Fig. 5

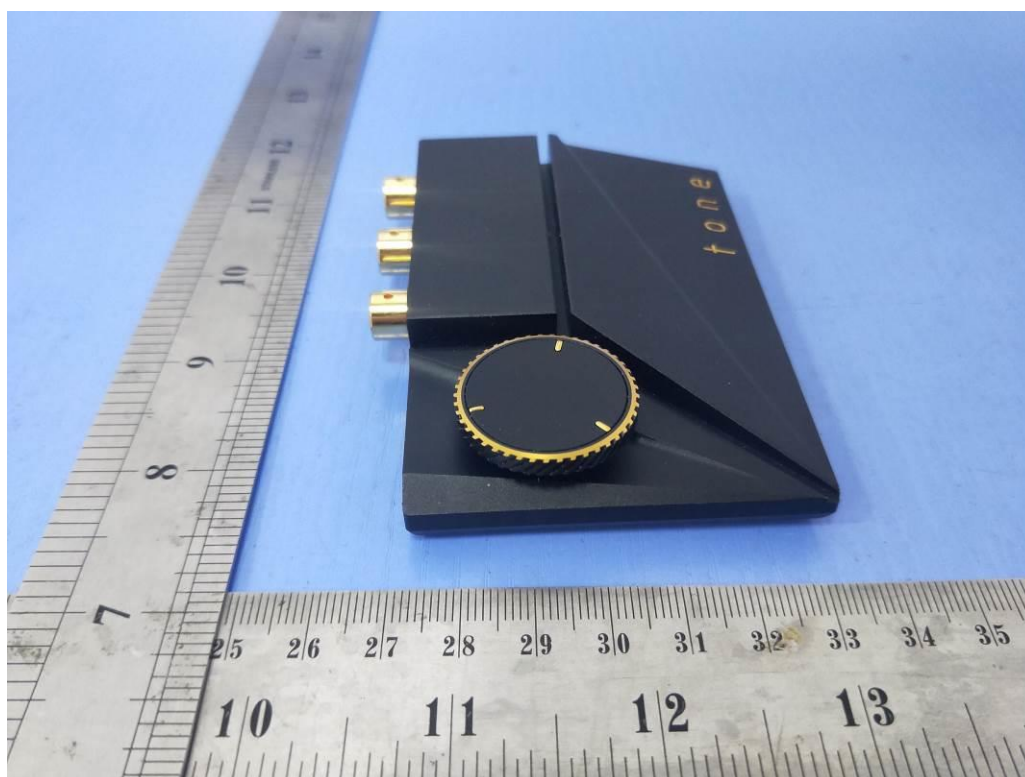


Fig. 6

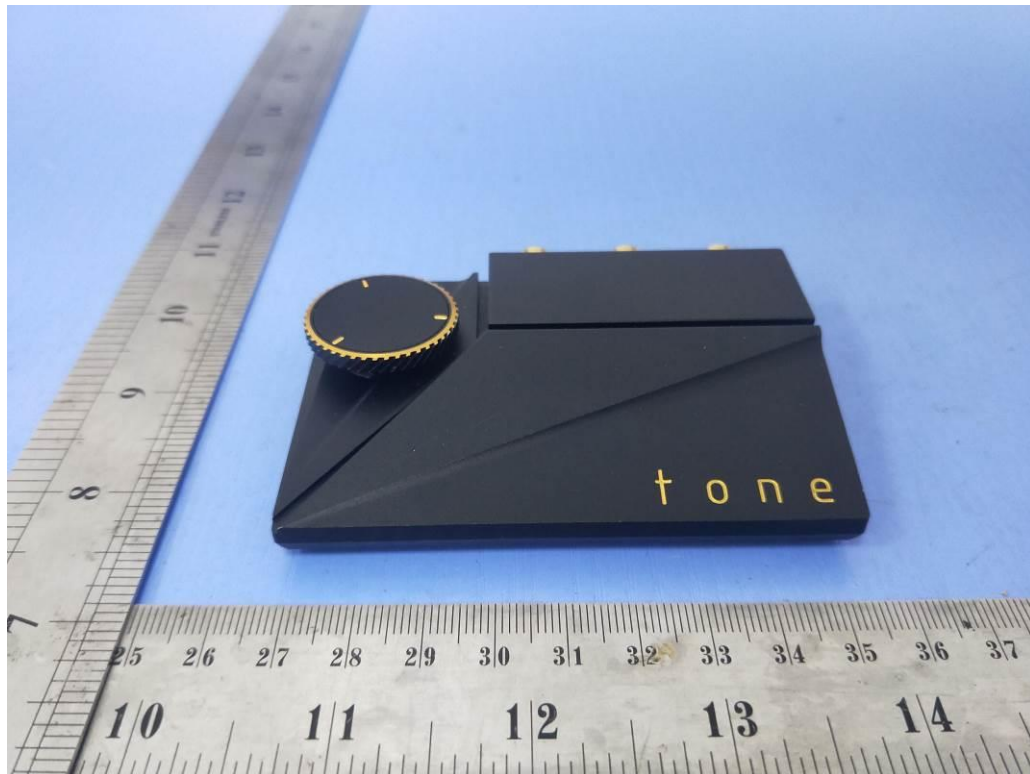


Fig. 7

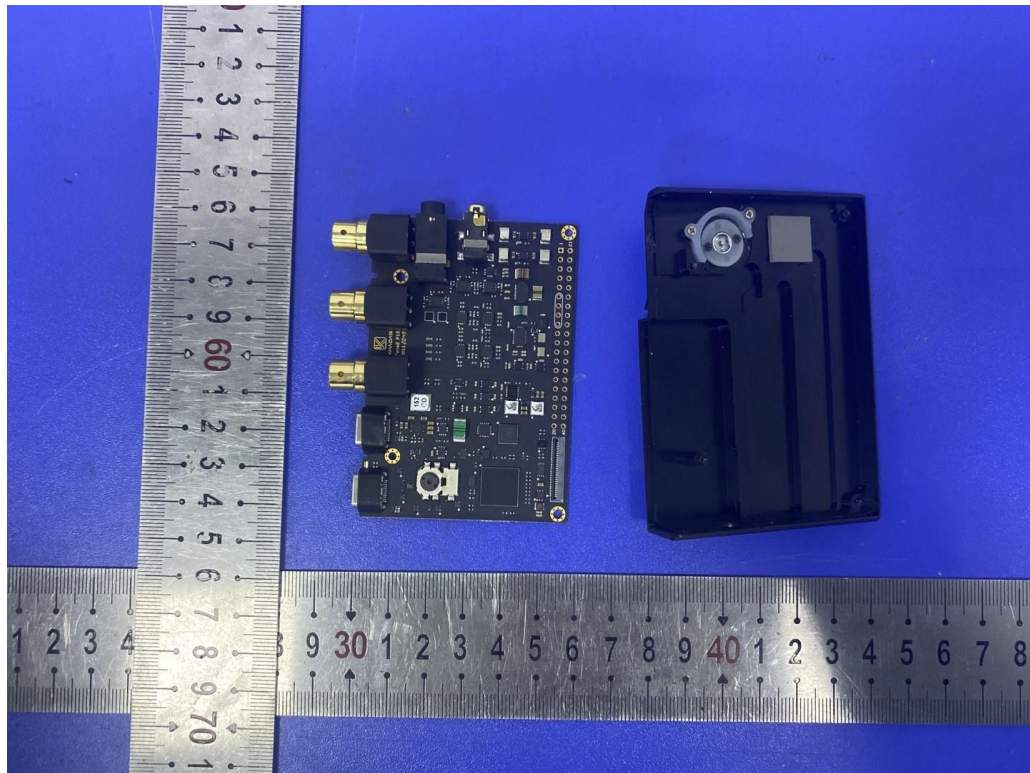


Fig. 8

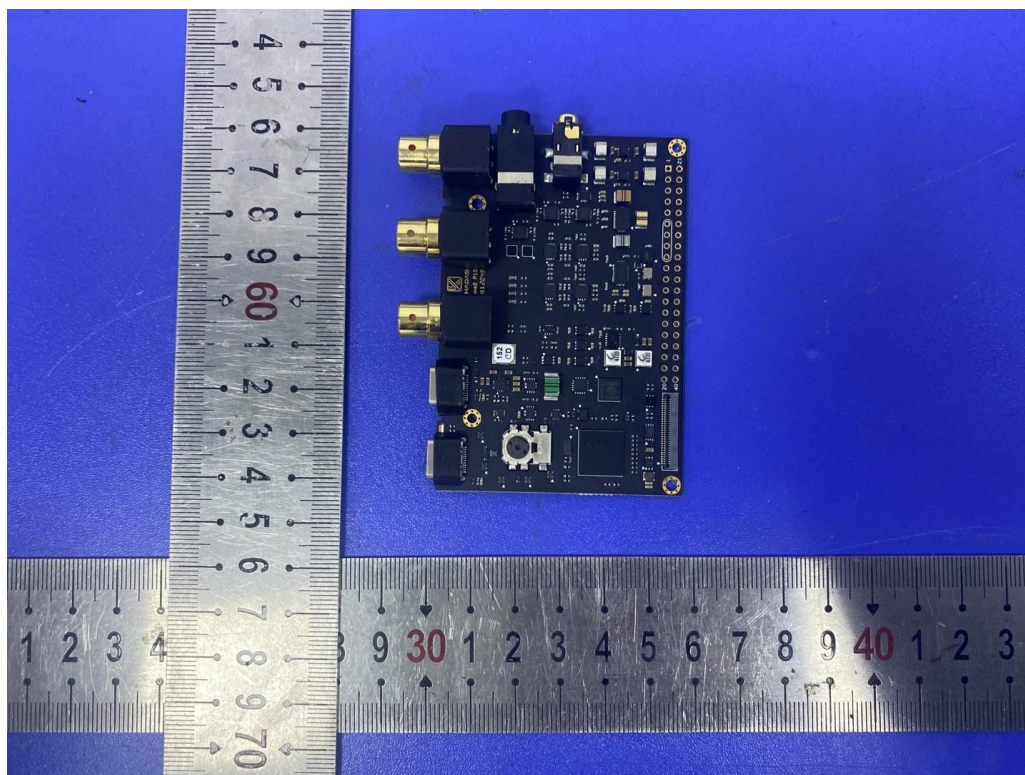


Fig. 9

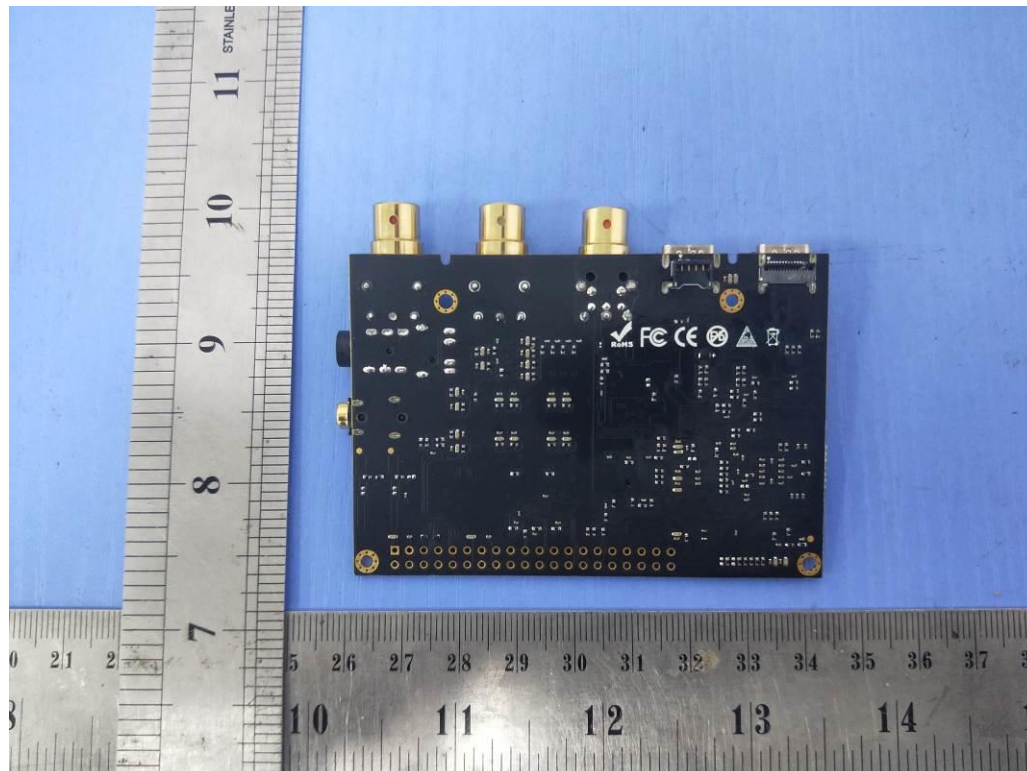


Fig. 10

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