## Shenzhen Huaxia Testing Technology Co., Ltd.



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Report Template Version: V05 Report Template Revision Date: 2021-11-03

# **Test Report**

Report No. :	CQASZ20220400532E-01
Applicant:	TV Ears Inc.
Address of Applicant:	2701 Via Orange Way Ste 1Spring Valley, CA 91978
Equipment Under Test (E	UT):
Product:	TV·Ears Long Range Headset System
All Model No.:	TV·Ears Long Range Headset System, Long Range Headset, Long Range Digital Transmitter
Test Model No.:	TV·Ears Long Range Headset System
Brand Name:	TV Ears
FCC ID:	2AUOK-TVEA01
Standards:	47 CFR Part 15, Subpart C
Date of Receipt:	2022-04-01
Date of Test:	2022-04-01 to 2022-04-25
Date of Issue:	2022-05-06
Test Result :	PASS*

lewis zhou Tested By: (Lewis Zhou) Reviewed By: (Rock Huang) PROV Approved By: (Jack Ai)

\* In the configuration tested, the EUT complied with the standards specified above.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.



# 1 Version

# **Revision History Of Report**

Report No.	Version	Description	Issue Date
CQASZ20220400532E-01	Rev.01	Initial report	2022-05-06



# 2 Test Summary

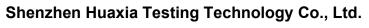
Test Item	Test Requirement Test method		Result
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
Radiated Spurious emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS



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# 4 General Information

### 4.1 Client Information

Applicant:	TV Ears Inc.
Address of Applicant:	2701 Via Orange Way Ste 1Spring Valley, CA 91978
Manufacturer:	DONGGUAN WISIC ELECTRONIC CO., LTD.
Address of Manufacturer:	Rm301, 2nd Building, No.5 Songyin Road, Tangxia Town, Dongguan City, Guangdong Province, China
Factory:	DONGGUAN WISIC ELECTRONIC CO., LTD.
Address of Factory:	Rm301, 2nd Building, No.5 Songyin Road, Tangxia Town, Dongguan City, Guangdong Province, China

### 4.2 General Description of EUT

Product Name:	TV·Ears Long Range Headset System		
Model No.:	TV · Ears Long Range Headset System, Long Range Headset, Long Range Digital Transmitter		
Test Model No.:	TV·Ears Long Range Headset System		
Trade Mark:	TV Ears		
Hardware Version:	V2.0		
Software Version:	V2.0		
Frequency Range:	5725MHz~5850MHz		
Modulation Type:	GFSK		
Sample Type:	☐ Mobile ☐ Portable ⊠ Fix Location		
Test mode:	Wireless mode		

#### Note:

All model: TV·Ears Long Range Headset System, Long Range Headset, Long Range Digital Transmitter We the undersigned hereby confirm that any of our production units bearing the following model numbers are identical in circuitry and electrical, mechanical and physical construction; the only differences is the being capacity and model No. for trading purpose.



### 4.3 Test Environment

Operating Environment:		
Temperature:	25.5 °C	
Humidity:	53 % RH	
Atmospheric Pressure:	1009mbar	
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.	

# **4.4** Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Remark	FCC certification
/	/	/	/	/



# 4.5 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 Huaxia 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.

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	±5.12dB	(1)
2	Radiated Emission (Above 1GHz)	±4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	±3.34dB	(1)
4	Radio Frequency	3×10 <sup>-8</sup>	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8°C	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	time	0.6 %.	(1)
14	Frequency Error	5.5 Hz	(1)

Hereafter the best measurement capability for CQA laboratory is reported:

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.





### 4.6 Test Location

#### Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

### 4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: **IC Registration No.: 22984-1** 

The 3m Semi-anechoic chamber of Shenzhen Huaxia Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

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

#### • CNAS (No. CNAS L5785)

CNAS has accredited Shenzhen Huaxia Testing Technology Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### • A2LA (Certificate No. 4742.01)

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

#### • FCC Registration No.: 522263

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen 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.:522263

#### **4.8** Abnormalities from Standard Conditions

None.

#### **4.9** Other Information Requested by the Customer

None.



# 4.10 Equipment List

			Instrument	Calibration	Calibration
Test Equipment	Manufacturer	Model No.	No.	Date	Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2021/9/10	2022/9/9
Spectrum analyzer	R&S	FSU26	CQA-038	2021/9/10	2022/9/9
		AFS4-00010300-18-10P-			
Preamplifier	MITEQ	4	CQA-035	2021/9/10	2022/9/9
		AMF-6D-02001800-29-			
Preamplifier	MITEQ	20P	CQA-036	2021/9/10	2022/9/9
Loop antenna	Schwarzbeck	FMZB1516	CQA-087	2021/10/14	2024/10/13
Bilog Antenna	R&S	HL562	CQA-011	2021/10/14	2024/10/13
Horn Antenna	R&S	HF906	CQA-012	2021/10/14	2024/10/13
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/10/14	2024/10/13
Coaxial Cable					
(Above 1GHz)	CQA	N/A	C019	2021/9/10	2022/9/9
Coaxial Cable					
(Below 1GHz)	CQA	N/A	C020	2021/9/10	2022/9/9
Antenna Connector	CQA	RFC-01	CQA-080	2021/9/10	2022/9/9
RF					
cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2021/9/10	2022/9/9
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2021/9/10	2022/9/9
EMI Test Receiver	R&S	ESPI3	CQA-013	2021/9/10	2022/9/9
LISN	R&S	ENV216	CQA-003	2021/9/10	2022/9/9
Coaxial cable	CQA	N/A	CQA-C009	2021/9/10	2022/9/9



# 5 Test results and Measurement Data

## 5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)

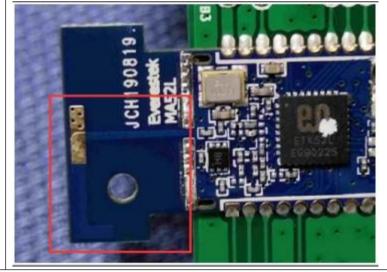
#### 15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### EUT Antenna:



The antenna is PCB antenna. The best case gain of the antenna is 0dBi.





# 5.2 Conducted Emissions

 Conducted Emissio				
Test Requirement:	47 CFR Part 15C Section 15.207			
Test Method:	ANSI C63.10: 2013			
Test Frequency Range:	: 150kHz to 30MHz			
Limit:		Limit (c	lBuV)	
	Frequency range (MHz)	Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the logarithn	n of the frequency.		
Test Procedure:	<ul> <li>5-30 60 50</li> <li>* Decreases with the logarithm of the frequency.</li> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The UISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ul>			
Test Setup:	Shielding Room	AE u u u u u u u u u u u u u	Test Receiver	



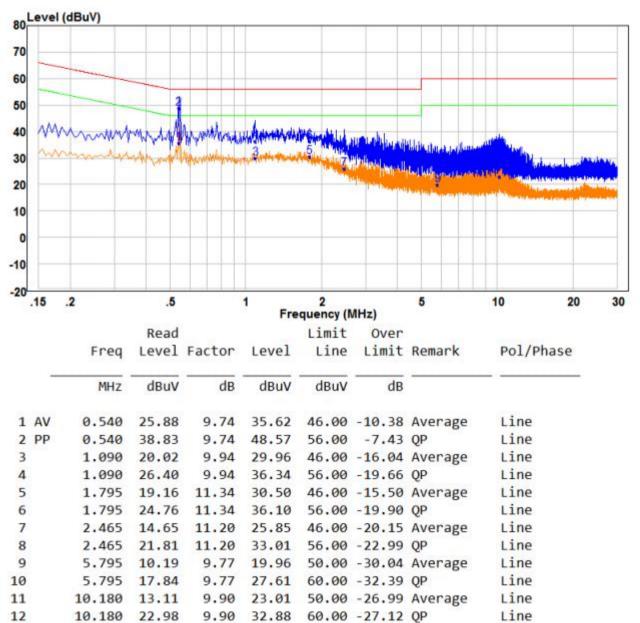
# Shenzhen Huaxia Testing Technology Co., Ltd.

Report No.: CQASZ20220400532E-01

Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel.
Final Test Mode:	Wireless mode
Test Voltage:	AC 120V/60Hz
Test Results:	Pass

#### **Measurement Data**

Live line:



Remark:

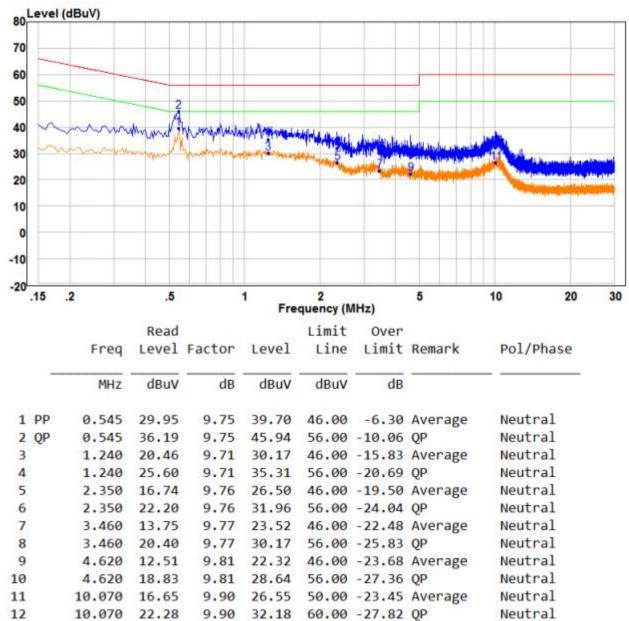
1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.







Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

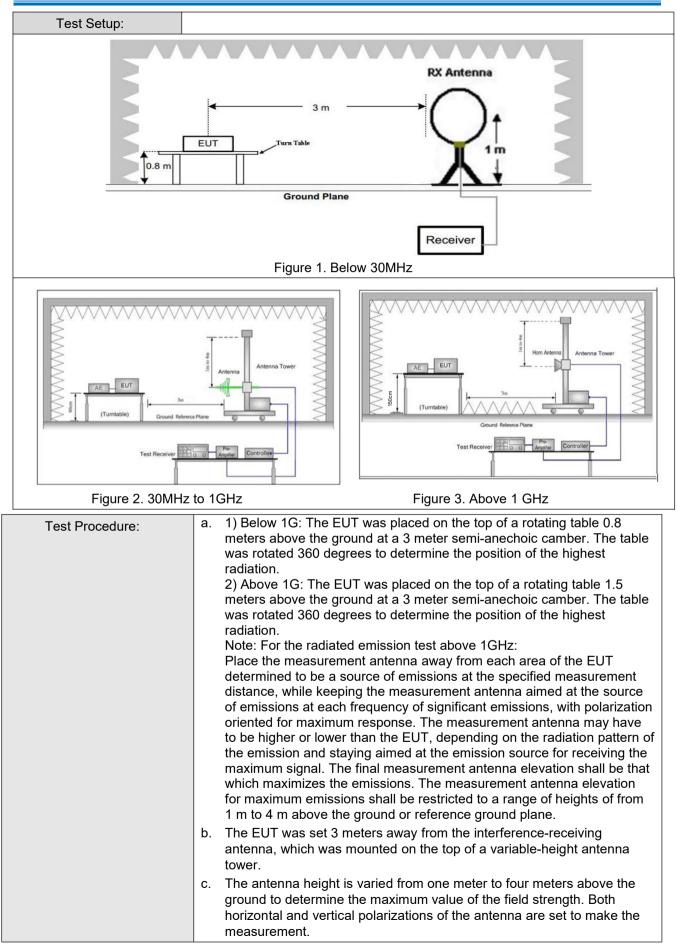


## 5.3 Radiated Spurious Emission & Restricted bands

Test Req	uirement:	47 CFR Part 15C Section 15.209 and 15.205								
Test Metl	hod:	ANSI C63.10: 2013								
Test Site:	:	Measurement Distance: 3m (Semi-Anechoic Chamber)								
Receiver	Setup:	Frequency		Detector	RBW	VBW	Remark	1		
		0.009MHz-0.090MHz		Peak	10kHz	z 30kHz	Peak	1		
		0.009MHz-0.090MH	z	Average	10kHz	z 30kHz	Average	1		
		0.090MHz-0.110MH	z	Quasi-peak	10kHz	z 30kHz	Quasi-peak	1		
		0.110MHz-0.490MH	z	Peak	10kHz	z 30kHz	Peak	]		
		0.110MHz-0.490MH	z	Average	10kHz	z 30kHz	Average			
		0.490MHz -30MHz		Quasi-peak	10kHz	z 30kHz	Quasi-peak			
		30MHz-1GHz		Peak	100 k⊢	lz 300kHz	Peak			
		Above 1GHz		Peak	1MHz	: 3MHz	Peak			
		Above IGHZ		Peak	1MHz	10Hz	Average			
Limit:		Frequency		eld strength crovolt/meter)	Limit (dBuV/m)	Remark	Measureme distance (n			
		0.009MHz-0.490MHz	2	400/F(kHz)	-	-	300			
		0.490MHz-1.705MHz	24	1000/F(kHz)	-	-	30			
		1.705MHz-30MHz		30	-	-	30			
		30MHz-88MHz		100	40.0	Quasi-peak	3			
		88MHz-216MHz		150	43.5	Quasi-peak	3			
		216MHz-960MHz		200	46.0	Quasi-peak	3			
		960MHz-1GHz 500		54.0	Quasi-peak	3				
		Above 1GHz		500	54.0	Average 3				
		Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequence emissions is 20dB above the maximum permitted average emission line applicable to the equipment under test. This peak limit applies to the peak emission level radiated by the device.								







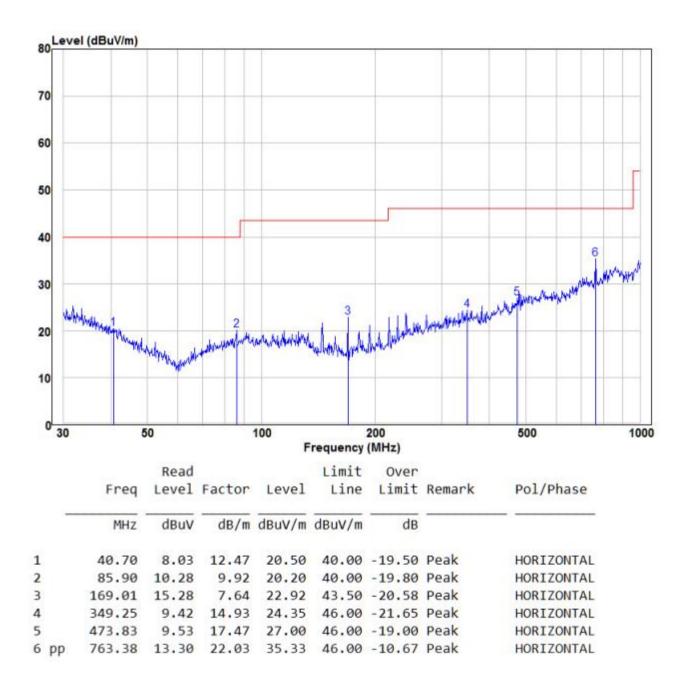


	<ul> <li>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> </ul>
	<ul> <li>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> <li>g. Test the EUT in the lowest channel ,the middle channel,the Highest channel</li> </ul>
	<ul> <li>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</li> <li>i. Repeat above procedures until all frequencies measured was complete.</li> </ul>
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Transmitting mode, Charge + Transmitting mode.
Final Test Mode:	Wireless mode
Test Results:	Pass



### 5.3.1 Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting	Horizontal



#### Remark:

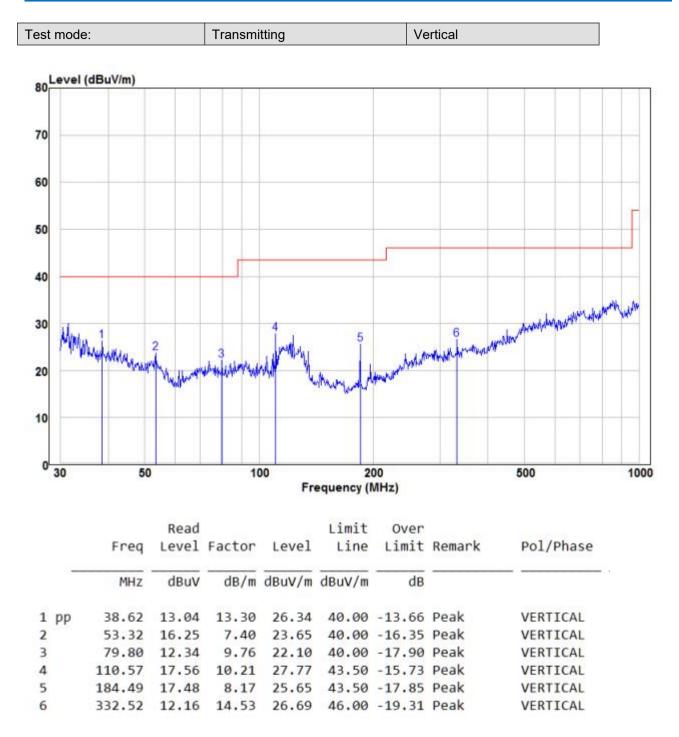
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.





Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor - Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

Note:In the case of the maximum transmission power of the product, the signals of 319.5MHz and 908.4MHz are not transmitted for a long time, so the main frequency of these two signals does not appear in the data.



### 5.3.2 Transmitter emission above 1GHz

Above 1GHz								
Test mode:		Transmitti	ng	Test channel:		Lowest		
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol. H/V	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	Π/ V	
5725	57.03	-2.77	54.26	74	-19.74	peak	Н	
5725	43.76	-2.77	40.99	54	-13.01	AVG	Н	
5727	99.16	-2.74	96.42	114	-17.58	peak	н	
5727	94.13	-2.74	91.39	94	-2.61	AVG	Н	
11454	48.62	6.84	55.46	74	-18.54	peak	Н	
11454	38.18	6.84	45.02	54	-8.98	AVG	н	
17181	40.72	13.02	53.74	74	-20.26	peak	Н	
17181	31.57	13.02	44.59	54	-9.41	AVG	Н	
5725	58.12	-2.77	55.35	74	-18.65	peak	V	
5725	43.76	-2.77	40.99	54	-13.01	AVG	V	
5727	96.67	-2.74	93.93	114	-20.07	peak	V	
5727	92.78	-2.74	90.04	94	-3.96	AVG	V	
11454	49.14	6.84	55.98	74	-18.02	peak	V	
11454	36.75	6.84	43.59	54	-10.41	AVG	V	
17181	41.69	13.02	54.71	74	-19.29	peak	V	
17181	30.62	13.02	43.64	54	-10.36	AVG	V	



# Shenzhen Huaxia Testing Technology Co., Ltd.

Test mode:		Transmitti	ng	Test chanr	nel:	Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	H/V
5780	96.06	-2.41	93.65	114	-20.35	peak	н
5780	94.41	-2.41	91.90	94	-2.10	AVG	н
11560	49.65	6.97	56.62	74	-17.38	peak	н
11560	37.67	6.97	44.64	54	-9.36	AVG	н
17340	43.48	15.71	59.19	74	-14.81	peak	н
17340	29.93	15.71	45.64	54	-8.36	AVG	н
5780	94.73	-2.41	92.32	114	-21.68	peak	V
5780	93.13	-2.41	90.72	94	-3.28	AVG	V
11560	48.68	6.97	55.65	74	-18.35	peak	V
11560	37.70	6.97	44.67	54	-9.33	AVG	V
17340	43.25	15.71	58.96	74	-15.04	peak	V
17340	29.74	15.71	45.45	54	-8.55	AVG	V



Test mode:		Transmitti	mitting Test channel:		Highest		
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector	Ant. Pol.
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре	H/V
5848	97.42	-2.31	95.11	114	-18.89	peak	Н
5848	94.79	-2.31	92.48	94	-1.52	AVG	н
5875	58.04	-2.21	55.83	74	-18.17	peak	н
5875	44.54	-2.21	42.33	54	-11.67	AVG	Н
11696	49.18	6.63	55.81	74	-18.19	peak	Н
11696	36.46	6.63	43.09	54	-10.91	AVG	Н
17544	42.13	16.05	58.18	74	-15.82	peak	Н
17544	30.59	16.05	46.64	54	-7.36	AVG	Н
5848	96.93	-2.31	94.62	114	-19.38	peak	V
5848	92.91	-2.31	90.60	94	-3.40	AVG	V
5875	55.69	-2.21	53.48	74	-20.52	peak	V
5875	43.21	-2.21	41.00	54	-13.00	AVG	V
11696	49.71	6.63	56.34	74	-17.66	peak	V
11696	37.41	6.63	44.04	54	-9.96	AVG	V
17544	41.34	16.05	57.39	74	-16.61	peak	V
17544	29.41	16.05	45.46	54	-8.54	AVG	V

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

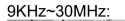
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.



# 6 Photographs - EUT Test Setup

# 6.1 Radiated Emission





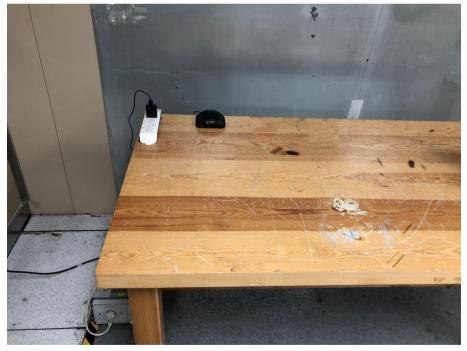








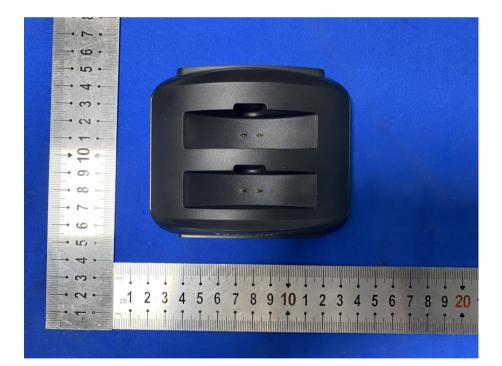
# 6.2 Conducted Emission





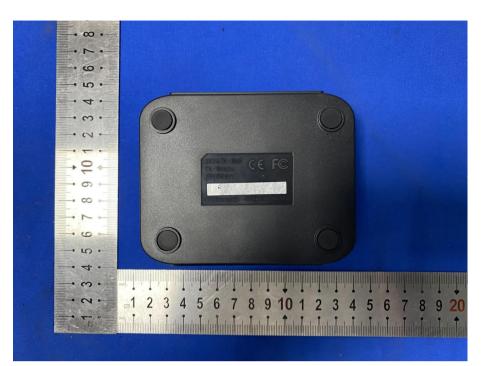
# 7 Photographs - EUT Constructional Details







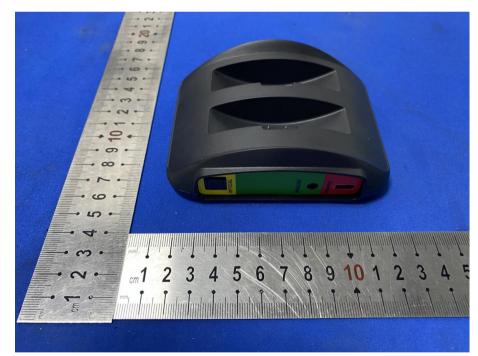










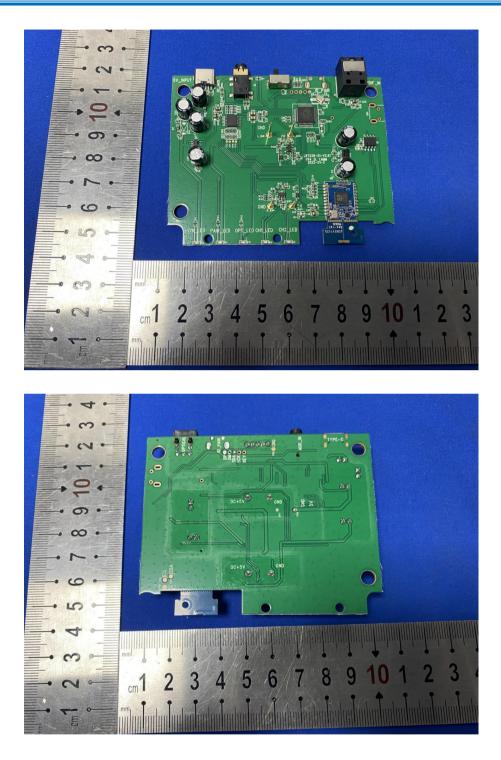












\*\*\* END OF REPORT \*\*\*