

# TEST REPORT

For FCC Part15B



**Report No.** .....: **CHTW24070029** Report verification:

**Project No.** .....: **SHT2404097802W**

**FCC ID**.....: **ZLZ-TEARQ**

**Applicant's name** .....: **Shenzhen Mindray Bio-Medical Electronics Co.,LTD.**

**Address**.....: Mindray Building, Keji 12th Road South, High-tech Industrial Park,  
Nanshan,518057 Shenzhen,PEOPLE'S REPUBLIC OF CHINA

**Product Name** .....: **Diagnostic Ultrasound System**

**Trade Mark** .....: **mindray**

**Model No.** .....: TE Air

**Listed Model(s)** .....: -

**Standard** .....: **FCC CFR Title 47 Part 15 Subpart B**

**Date of receipt of test sample**.....: May.20, 2024

**Date of testing**.....: May.20, 2024 - Jul.04, 2024

**Date of issue**.....: Jul.05, 2024

**Result**.....: **Pass**

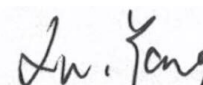
Compiled by  
(position+printed name+signature)....: File administrators Kiki Kong



Supervised by  
(position+printed name+signature)....: Project Engineer Kiki Kong



Approved by  
(position+printed name+signature)....: RF Manager Hans Hu



**Testing Laboratory Name** .....: **Shenzhen Huatongwei International Inspection Co., Ltd.**

**Address**.....: Building 7, Baiwang Idea Factory, No.1051, Songbai Road,  
Yangguang Community, Xili Subdistrict, Nanshan District,  
Shenzhen, Guangdong, China

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*The test report merely corresponds to the test sample.*

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## 1. TEST STANDARDS AND REPORT VERSION

### 1.1. Test Standards

The tests were performed according to following standards:

[FCC CFR Title 47 Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

### 1.2. Report version information

Revision No.	Date of issue	Description
N/A	2024-07-05	Original

## 2. TEST DESCRIPTION

Section	Test Item	Section in CFR 47	Result #1	Test Engineer
5.1	Conducted Emissions	15.107(a)	N/A	N/A
5.2	Radiated Emissions	15.109(a)	PASS	CHUANFENG LI

Note:

#1: The test result does not include measurement uncertainty value

N/A: Not tested

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	Shenzhen Mindray Bio-Medical Electronics Co.,LTD.
Address:	Mindray Building, Keji 12th Road South, High-tech Industrial Park, Nanshan,518057 Shenzhen,PEOPLE'S REPUBLIC OF CHINA
Manufacturer:	Shenzhen Mindray Bio-Medical Electronics Co.,LTD.
Address:	Mindray Building, Keji 12th Road South, High-tech Industrial Park, Nanshan,518057 Shenzhen,PEOPLE'S REPUBLIC OF CHINA
Factory:	Shenzhen Mindray Bio-Medical Electronics Co.,LTD.
Address:	Mindray Building, Keji 12th Road South, High-tech Industrial Park, Nanshan,518057 Shenzhen,PEOPLE'S REPUBLIC OF CHINA

#### 3.2. Product Description

Main unit information:	
Product Name:	Diagnostic Ultrasound System
Trade Mark:	<b>mindray</b>
Model No.:	TE Air
Listed Model(s):	-
Power supply:	DC 3.85V from battery
Hardware version:	02
Software version:	02
Accessory unit information:	
Battery information:	Model:LP11I003I 1ICP6/29/90 DC 3.85V 1650mAh 6.35Wh

Te Note:

#:

Probe Model No.:	e5M
Listed Probe Model(s):	i5M\z5M\z5Ms\z5Mt\5M\5Ms\5Mt\5Mx

TE Air ultrasonic diagnostic system consists of TE Air application software and wireless probe. The general-purpose probes include i5M\z5M\z5Ms\z5Mt\5M\5Ms\5Mt\5Mx and they all base on a same electrical design. They are used as typical and representative model on the test base on the original difference information list received from design input which base on market requirement. After analysis tiny difference about additional software added which not impact test result and the standard requirement and still covered by e5M.

### 3.3. sting Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China	
Connect information:	Tel: 86-755-26715499 E-mail: <a href="mailto:cs@szhtw.com.cn">cs@szhtw.com.cn</a> <a href="http://www.szhtw.com.cn">http://www.szhtw.com.cn</a>	
Qualifications	Type	Accreditation Number
	FCC Registration Number	762235
	FCC Designation Number	CN1181

## 4. TEST CONFIGURATION

### 4.1. Descriptions of test mode

Test mode O1	Working
--------------	---------

Test Item	Test mode for worse case
Conducted Emissions	-
Radiated Emissions	Test mode O1

### 4.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

### 4.3. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	3.21dB
2	Radiated Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

#### 4.4. Equipments Used during the Test

##### ● Conducted Emission

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2023/8/30	2024/8/29
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2023/08/18	2024/08/17
●	Protection Network	SCHWARZBECK	HTWE0567	VTSD9561FN	00899	2023/08/18	2024/08/17
●	ISN	FCC	HTWE0148	FCC-TLISN-T2-02	20371	2023/08/18	2024/08/17
●	ISN	FCC	HTWE0150	FCC-TLISN-T8-02	20375	2023/08/18	2024/08/17
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

##### ● Radiated Emission - 30MHz~1GHz

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2023/04/06	2026/04/05
●	EMI Test Receiver	R&S	HTWE0099	ESCI 7	100900	2023/8/30	2024/8/29
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2023/2/22	2026/2/21
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	/	2024/5/24	2025/5/23
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

##### ● Radiated emission-Above 1GHz

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2023/04/17	2026/04/16
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2023/08/22	2024/08/21
●	Horn Antenna	SCHWARZBECK	HTWE0126	BBHA 9120D	1011	2023/02/14	2026/02/13
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2023/02/20	2026/02/19
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0551	SCU18F	100855	2024/6/6	2025/6/5
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A



## 5. TEST CONDITIONS AND RESULTS

### 5.1. Conducted Emissions

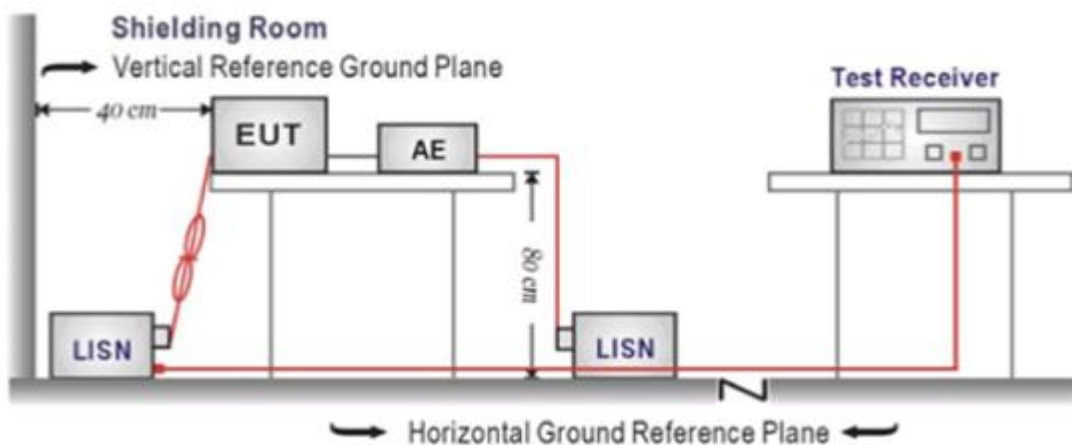
#### LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

Frequency range (MHz)	Limit (dBuV)	
	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 logarithm of the frequency.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

#### TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

☐ Passed ☒ Not Applicable

## 5.2. Radiated Emissions

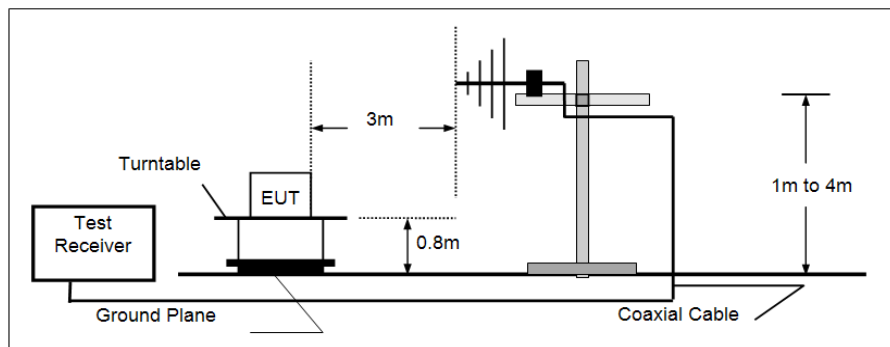
### LIMIT

#### FCC CFR Title 47 Part 15 Subpart B Section 15.109

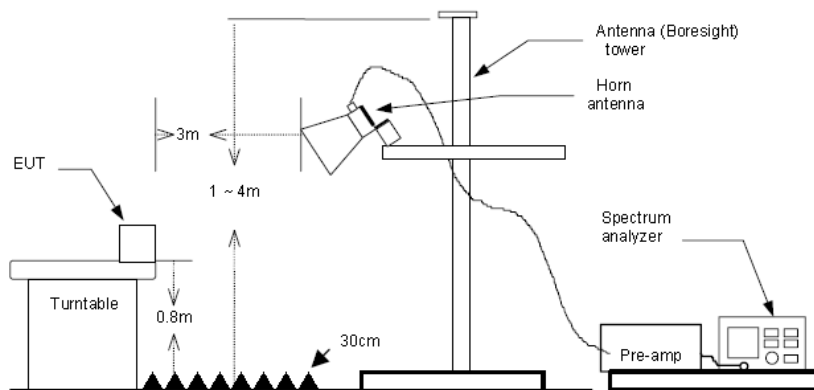
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### TEST CONFIGURATION

#### ➤ 30MHz ~ 1GHz



#### ➤ Above 1GHz



### TEST PROCEDURE

- The EUT was tested according to ANSI C63.4:2014.
- The EUT is placed on a turn table which is 0.8 meter above ground.
- The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
- Use the following spectrum analyzer settings
  - Span shall wide enough to fully capture the emission being measured;
  - Below 1GHz,  
RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;  
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
  - From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

**TEST MODE:**

Please refer to the clause 3.3

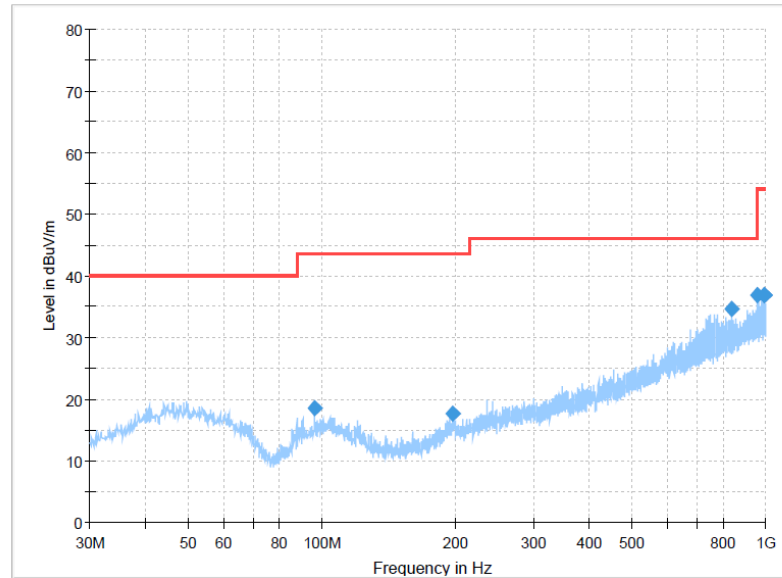
**TEST RESULTS**

☒ **Passed**      ☐ **Not Applicable**

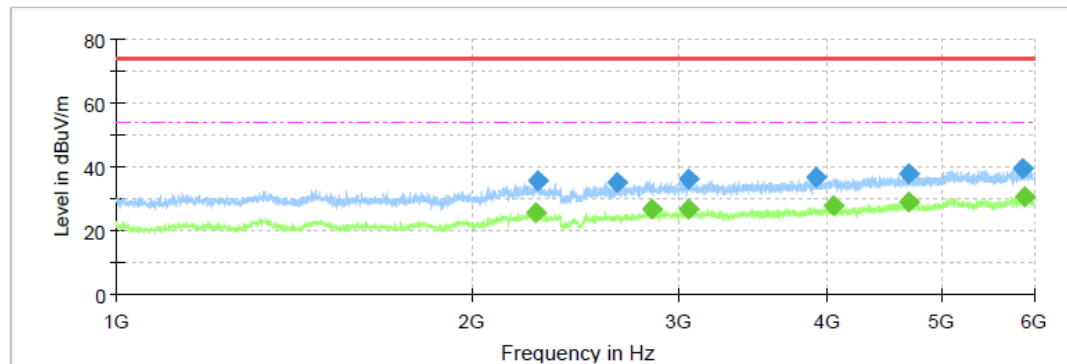
Note: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor  
The emission levels of frequency above 6GHz are very lower than limit and not show in test report.

Polarization:

Horizontal

**Final Result**

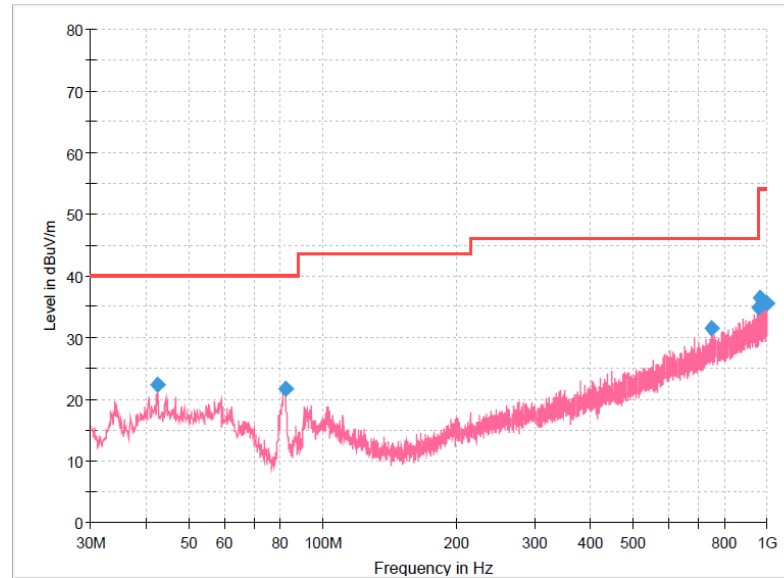
Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
96.0813	18.55	43.50	24.95	300.0	H	356.0	-10.9
196.7188	17.67	43.50	25.83	300.0	H	22.0	-9.7
835.2213	34.61	46.00	11.39	100.0	H	263.0	5.4
955.2588	36.92	46.00	9.08	100.0	H	294.0	7.7
990.4213	36.86	54.00	17.14	100.0	H	306.0	8.3
991.9975	36.82	54.00	17.18	100.0	H	318.0	8.3

**Final Result**

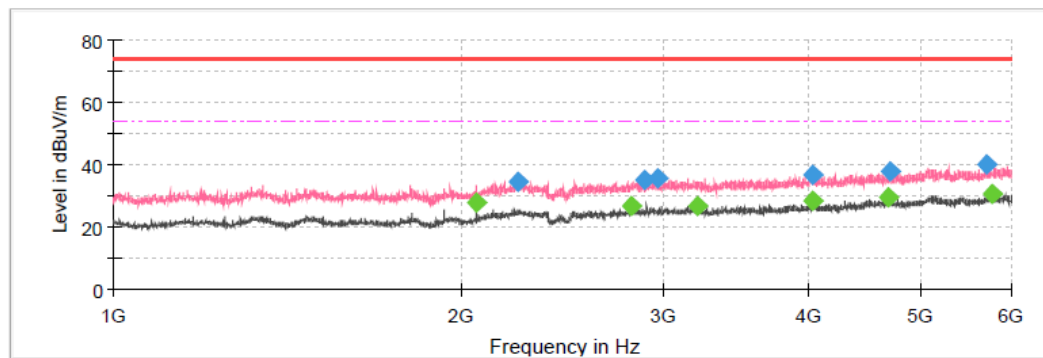
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2263.1250	---	25.62	54.00	28.38	150.0	H	149.0	-9.8
2275.6250	35.74	---	74.00	38.26	150.0	H	223.0	-9.8
2654.3750	35.17	---	74.00	38.83	150.0	H	139.0	-9.9
2840.0000	---	26.49	54.00	27.51	150.0	H	139.0	-8.9
3056.2500	35.88	---	74.00	38.12	150.0	H	204.0	-8.3
3058.1250	---	26.83	54.00	27.17	150.0	H	9.0	-8.3
3910.6250	36.58	---	74.00	37.42	150.0	H	84.0	-6.5
4052.5000	---	27.71	54.00	26.29	150.0	H	121.0	-6.0
4694.3750	---	28.84	54.00	25.16	150.0	H	112.0	-4.3
4699.3750	37.62	---	74.00	36.38	150.0	H	102.0	-4.3
5865.0000	39.21	---	74.00	34.79	150.0	H	195.0	-1.7
5889.3750	---	30.40	54.00	23.60	150.0	H	9.0	-1.6

Polarization:

Vertical

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.4888	22.29	40.00	17.71	100.0	V	82.0	-8.8
82.5013	21.77	40.00	18.23	100.0	V	318.0	-15.1
749.7400	31.56	46.00	14.44	100.0	V	274.0	4.3
955.2588	34.94	46.00	11.06	100.0	V	190.0	7.7
965.5650	36.40	54.00	17.60	100.0	V	198.0	7.7
999.2725	35.58	54.00	18.42	100.0	V	198.0	8.3

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2062.5000	---	27.86	54.00	26.14	150.0	V	221.0	-11.4
2242.5000	34.44	---	74.00	39.56	150.0	V	45.0	-9.7
2815.6250	---	26.63	54.00	27.37	150.0	V	202.0	-9.0
2882.5000	34.85	---	74.00	39.15	150.0	V	258.0	-8.6
2968.7500	35.33	---	74.00	38.67	150.0	V	110.0	-8.5
3211.2500	---	26.86	54.00	27.14	150.0	V	352.0	-7.9
4030.6250	36.85	---	74.00	37.15	150.0	V	212.0	-6.0
4035.0000	---	28.48	54.00	25.52	150.0	V	0.0	-6.0
4690.6250	---	29.20	54.00	24.80	150.0	V	128.0	-4.3
4706.8750	38.02	---	74.00	35.98	150.0	V	304.0	-4.3
5702.5000	39.78	---	74.00	34.22	150.0	V	313.0	-2.3
5771.8750	---	30.43	54.00	23.57	150.0	V	0.0	-2.1

## 6. TEST SETUP PHOTOS OF THE EUT

Radiated Emissions (30MHz-1GHz)



Radiated Emissions (Above 1GHz)



## 7. **EXTERNAL AND INTERNAL PHOTOS OF THE EUT**

Refer to the test report No.: CHTW24070026

-----End of Report-----