



# TEST REPORT

## No. 25T04Z200036-003

for

**Samsung Electronics Co., Ltd.**

**CRADLE**

**Model Name: EP-QR410**

**with**

**Hardware Version: REV1.0**

**Software Version: QR410.001**

**Issued Date: 2025-04-10**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

**Test Laboratory:**

**CTTL-Telecommunication Technology Labs, CAICT**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
25T04Z200036-003	Rev.0	1 <sup>st</sup> edition	2025-04-10

Note: the latest revision of the test report supersedes all previous versions.

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## 1. Test Laboratory

### 1.1. Introduction & Accreditation

**Telecommunication Technology Labs, CAICT** is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

### 1.2. Testing Location

#### CTTL (BDA)

Address: No. 18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, 100176, P.R. China

### 1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

### 1.4. Project data

Testing Start Date: 2025-03-06

Testing End Date: 2025-03-31

### 1.5. Signature



Li Yan

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Samsung Electronics Co., Ltd.  
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City: /  
Postal Code: /  
Country: /  
Contact Person: Jenni Chun  
Contact Email: j1.chun@samsung.com  
Telephone: +1-201-937-4203  
Fax: /

### **2.2. Manufacturer Information**

Company Name: Samsung Electronics Co., Ltd.  
Address: Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea  
City: /  
Postal Code: /  
Country: /  
Contact Person: Sunghoon Cho  
Contact Email: ggobi.cho@samsung.com  
Telephone: +82-10-2722-4159  
Fax: /

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	CRADLE
Model name	EP-QR410

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

#### **3.2. Internal Identification of EUT used during the test**

EUT ID*	IMEI/SN	HW Version	SW Version
EUT1	2504200036UT05a	REV1.0	R410.001

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE used during the test**

AE ID*	Name	Model	Manufacturer
AE1-1	Battery	L1413	EVE ENERGY CO., LTD
AE1-2	Battery	552528G	XINYU GANFENG ELECTRONICS CO.,LTD
AE2	Bluetooth Headset	SM-R410	Samsung Electronics. Co., Ltd.
AE3*	Adaptor	EP-TA200	RFT
AE5*	PC	T14S	/

\*AE ID: is used to identify the test sample in the lab internally.

\*AE3 and AE4 is not the AE for EUT, provided by the client for relevant tests.

\*AE5 is not the AE for EUT, provided by the Lab for relevant tests.

#### **3.4. EUT set-ups**

##### **Set-up**

EUT set-up No.	Combination of EUT and AE
Set.1	EUT+ Bluetooth Headset+ USB Cable +Adaptor
Set.2	EUT+ Bluetooth Headset+ USB Cable +PC

##### **Test mode**

Mode No.	Operating mode	Remarks
mode.1	Bluetooth Headset Charging mode	RE, CE

## 4. Reference Documents

### 4.1. Documents supplied by applicant

EUT parameters are supplied by the client or manufacturer, which is the basis of testing.

### 4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC 47 CFR Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2023
ANSI C63.4	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 40 GHz	2014

Note: The test methods have no deviation with standards.

## 5. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
	BR	Re-use test data from basic model report.

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	<b>CTTL(BDA)</b>
2	Conducted Emission	15.107(a)	B.2	P	<b>CTTL(BDA)</b>

## 6. Test Facilities Utilized

### Test Equipment

NO.	DESCRIPTION	TYPE	SERIES NUMBER	MANUFACTURER	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2025-06-06	1 year
2	Test Receiver	ESCI	100766	R&S	2025-04-18	1 year
3	LISN	ENV216	101459	R&S	2025-05-18	1 year
4	BiLog Antenna	VULB9163	01177	Schwarzbeck	2025-11-09	1 year
5	EMI Antenna	3117	00119021	ETS-Lindgren	2025-09-18	1 year

### Test Software

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V8.53.0	R&S
Conducted Emission	EMC32 V8.53.0	R&S

## 7. Measurement Uncertainty

Where relevant, the following measurement uncertainty (worse case) levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

### Location 1: CTTL (huayuan North Road)

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	4.72dB( $k=2$ )
	1GHz-18GHz	4.84dB( $k=2$ )
Conducted Emission	150kHz-30MHz	3.08dB( $k=2$ )

### Location 2: CTTL (BDA)

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	5.73dB( $k=2$ )
	1GHz-18GHz	5.58dB( $k=2$ )
Conducted Emission	150kHz-30MHz	3.10dB( $k=2$ )

## ANNEX A: EUT parameters

Description	CRADLE	
Model name	EP-QR410	
Marketing name	Galaxy Buds Core	
Brand name	SAMSUNG	
Cellular Bands	<input type="checkbox"/> GSM	/
	<input type="checkbox"/> CDMA	/
	<input type="checkbox"/> WCDMA	/
	<input type="checkbox"/> LTE	/
	<input type="checkbox"/> 5G NR SA	/
	<input type="checkbox"/> 5G NR NSA	/
Unlicensed Radio	<input type="checkbox"/> Wi-Fi 2.4GHz	<input type="checkbox"/> 802.11b <input type="checkbox"/> 802.11g
		<input type="checkbox"/> 802.11n <input type="checkbox"/> 20MHz <input type="checkbox"/> 40MHz
		<input type="checkbox"/> 802.11ac <input type="checkbox"/> 20MHz <input type="checkbox"/> 40MHz <input type="checkbox"/> 80MHz
		<input type="checkbox"/> 802.11ax <input type="checkbox"/> 20MHz <input type="checkbox"/> 40MHz <input type="checkbox"/> 80MHz
	<input type="checkbox"/> Wi-Fi 5GHz	<input type="checkbox"/> 802.11a
		<input type="checkbox"/> 802.11n <input type="checkbox"/> 20MHz <input checked="" type="checkbox"/> 40MHz
		<input type="checkbox"/> 802.11ac <input type="checkbox"/> 20MHz <input checked="" type="checkbox"/> 40MHz <input checked="" type="checkbox"/> 80MHz <input type="checkbox"/> 160MHz
		<input type="checkbox"/> 802.11ax <input type="checkbox"/> 20MHz <input type="checkbox"/> 40MHz <input type="checkbox"/> 80MHz <input type="checkbox"/> 160MHz
	<input type="checkbox"/> Wi-Fi 5.8GHz	<input type="checkbox"/> 802.11a
		<input type="checkbox"/> 802.11n <input type="checkbox"/> 20MHz <input checked="" type="checkbox"/> 40MHz
		<input type="checkbox"/> 802.11ac <input type="checkbox"/> 20MHz <input checked="" type="checkbox"/> 40MHz <input checked="" type="checkbox"/> 80MHz <input type="checkbox"/> 160MHz
		<input type="checkbox"/> 802.11ax <input type="checkbox"/> 20MHz <input type="checkbox"/> 40MHz <input type="checkbox"/> 80MHz <input type="checkbox"/> 160MHz
	<input type="checkbox"/> Bluetooth	<input type="checkbox"/> EDR <input type="checkbox"/> BLE4 <input type="checkbox"/> BLE5

For more EUT information please refers to the manufacturer's specifications or user's manual.

Disclaimer: The EUT information provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

## ANNEX B: MEASUREMENT RESULTS

### **B.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 15.109(a).

#### **B.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator at distances of 3 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

For the test setup photographs please see the test setup photos document.

#### **B.1.2 EUT Operating Mode**

The EUT is operating in charging mode.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

#### **B.1.3 Measurement Limit**

Frequency range (MHz)	Field strength limit ( $\mu$ V/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance.

#### **B.1.4 Test Condition**

Voltage (V)	Frequency (Hz)
120	60

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

### B.1.5 Measurement Results

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{Rpl} = P_{\text{Mea}} + G_A + G_{PL}$$

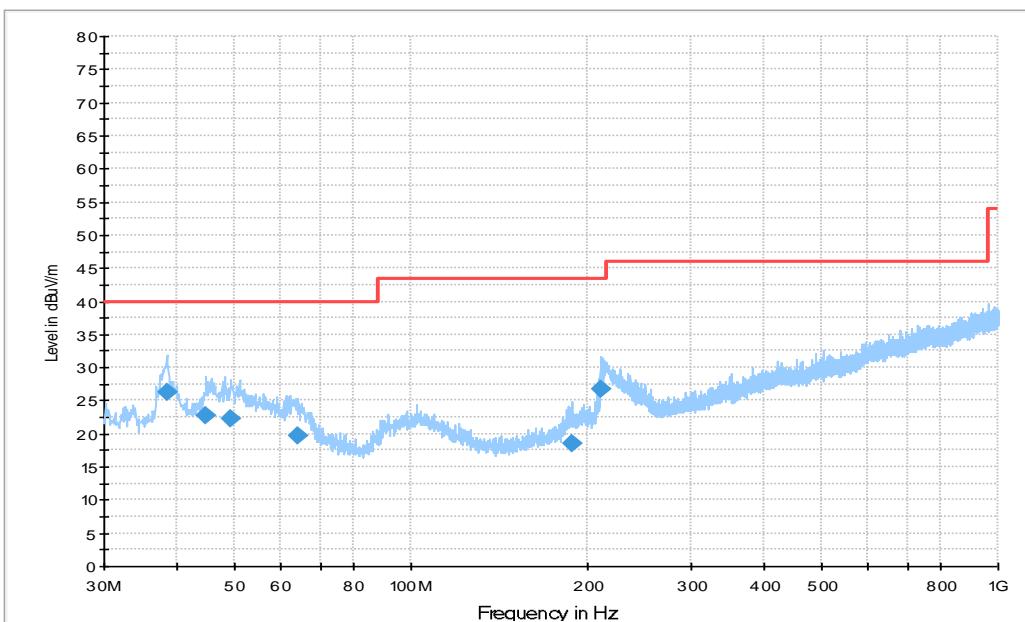
Where

$G_A$ : Antenna factor of receive antenna

$G_{PL}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

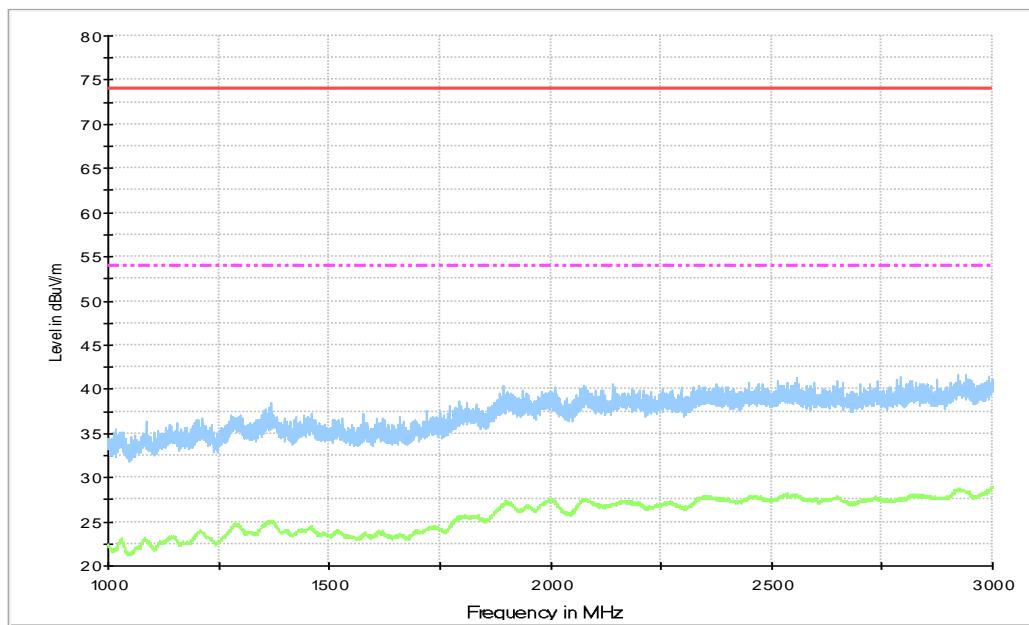
Note: all the set-up and operating mode list in section 3.4 were tested, only the worst test data are showed in this section.



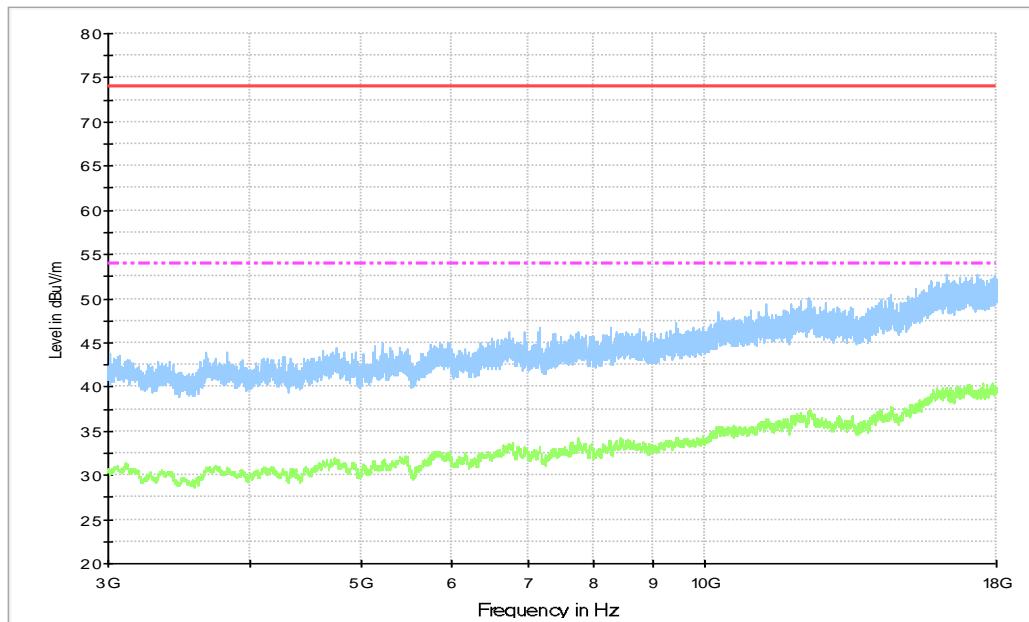
**Figure A.1 Radiated Emission from 30MHz to 1GHz**

## Final Result 1

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
38.442000	26.3	100.0	V	80.0	-1.3	13.7	40.0
44.824000	22.7	100.0	V	87.0	0.3	17.3	40.0
49.203000	22.4	100.0	V	202.0	0.5	17.6	40.0
64.358000	19.6	125.0	V	164.0	-2.1	20.4	40.0
187.58500	18.6	125.0	H	0.0	-1.8	24.9	43.5
211.27600	26.8	100.0	V	-10.0	-1.1	16.7	43.5



**Figure A.2 Radiated Emission from 1GHz to 3GHz**



**Figure A.3 Radiated Emission from 3GHz to 18GHz**

**Average detector result**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17540.500	40.42	-20.67	40.76	20.32	54.00	13.58	V
17540.000	40.40	-20.63	40.76	20.26	54.00	13.60	V
17542.500	40.35	-20.83	40.76	20.43	54.00	13.65	V
17541.500	40.35	-20.75	40.76	20.34	54.00	13.65	V
17882.500	40.34	-20.96	40.52	20.78	54.00	13.66	V
17542.000	40.33	-20.79	40.76	20.36	54.00	13.67	V

**Peak detector result**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
16266.000	52.72	-22.79	40.90	34.61	74.00	21.28	V
17296.500	52.70	-22.13	40.80	34.03	74.00	21.30	V
17961.000	52.47	-20.97	40.56	32.88	74.00	21.53	V
16909.000	52.45	-22.30	41.37	33.38	74.00	21.55	V
17101.500	52.33	-22.32	41.00	33.65	74.00	21.67	V
16706.000	52.33	-22.38	41.40	33.31	74.00	21.67	V

## B.2 Conducted Emission

### Reference

FCC: CFR Part 15.107(a).

### B.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

For the test setup photographs please see the test setup photos document.

### B.2.2 EUT Operating Mode

The EUT is operating in charging mode.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014.

### B.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	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

### B.2.4 Test Condition in charging mode

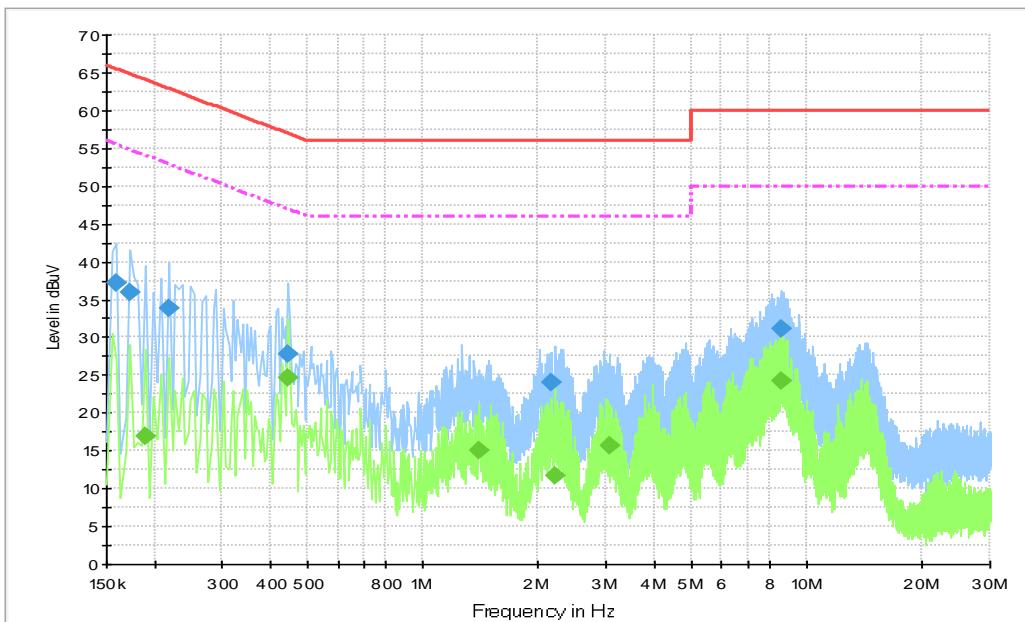
Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

## B.2.5 Measurement Results

Note: all the set-up and operating mode list in section 3.4 were tested, only the worst test data are showed in this section.

### Set.1+Mode1



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Figure A.4 Conducted Emission**

## Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	37.2	2000.0	9.000	N	20.1	28.4	65.5
0.172500	35.9	2000.0	9.000	N	20.0	28.9	64.8
0.217500	33.8	2000.0	9.000	N	20.0	29.2	62.9
0.447000	27.7	2000.0	9.000	N	20.2	29.2	56.9
2.166000	24.0	2000.0	9.000	L1	19.8	32.0	56.0
8.619000	31.2	2000.0	9.000	L1	19.9	28.8	60.0

## Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190500	17.0	2000.0	9.000	L1	20.0	37.0	54.0
0.447000	24.6	2000.0	9.000	L1	20.1	22.3	46.9
1.396500	15.1	2000.0	9.000	L1	19.9	30.9	46.0
2.197500	11.7	2000.0	9.000	N	20.0	34.3	46.0
3.070500	15.6	2000.0	9.000	L1	19.9	30.4	46.0
8.619000	24.2	2000.0	9.000	L1	19.9	25.8	50.0

**ANNEX C: Persons involved in this testing**

Test Item	Tester
Radiated Emission	Sun Tianyuan
Conducted Emission	Yan Xaorui

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