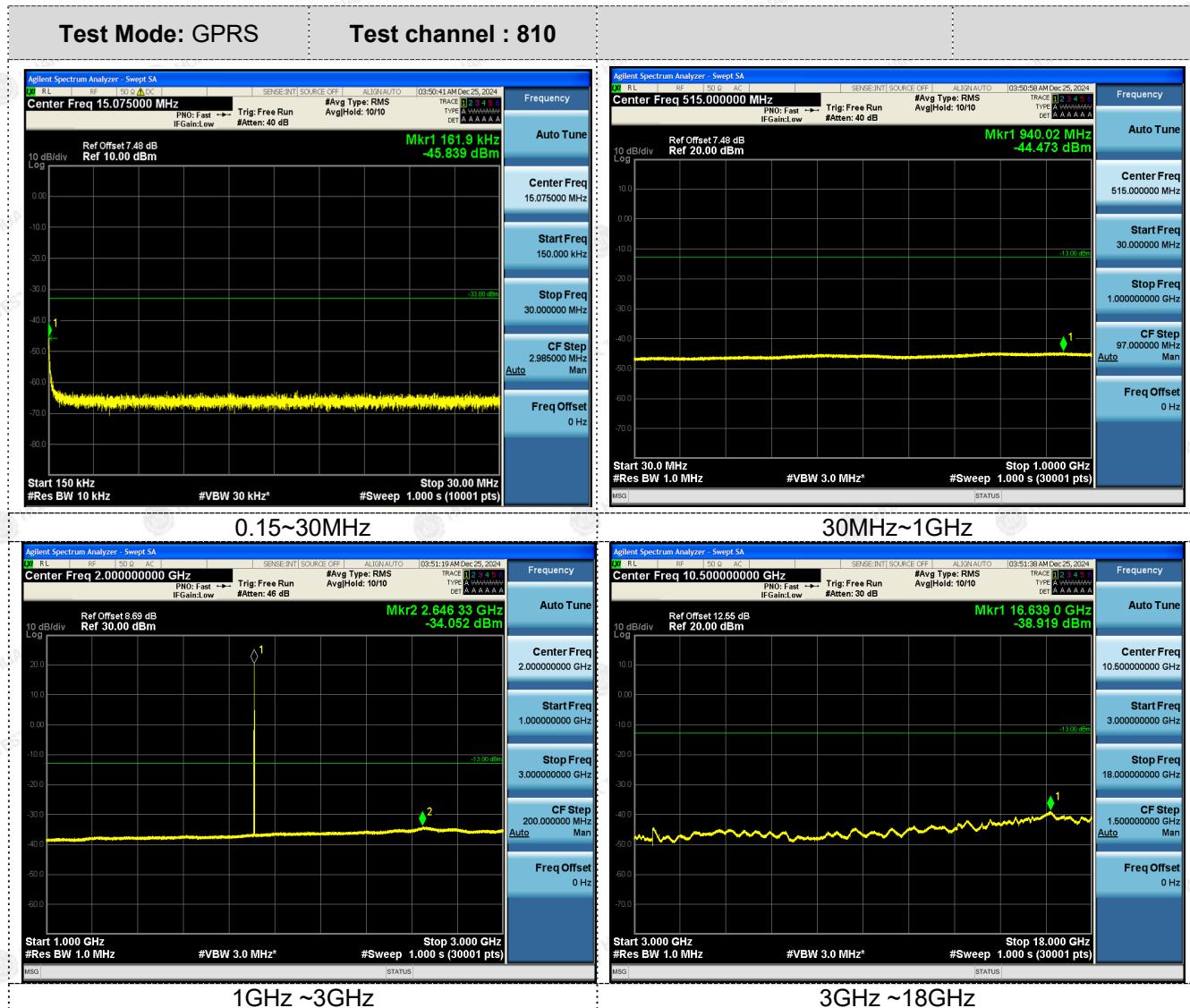




The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



4.6 Frequency Stability Test

TEST APPLICABLE

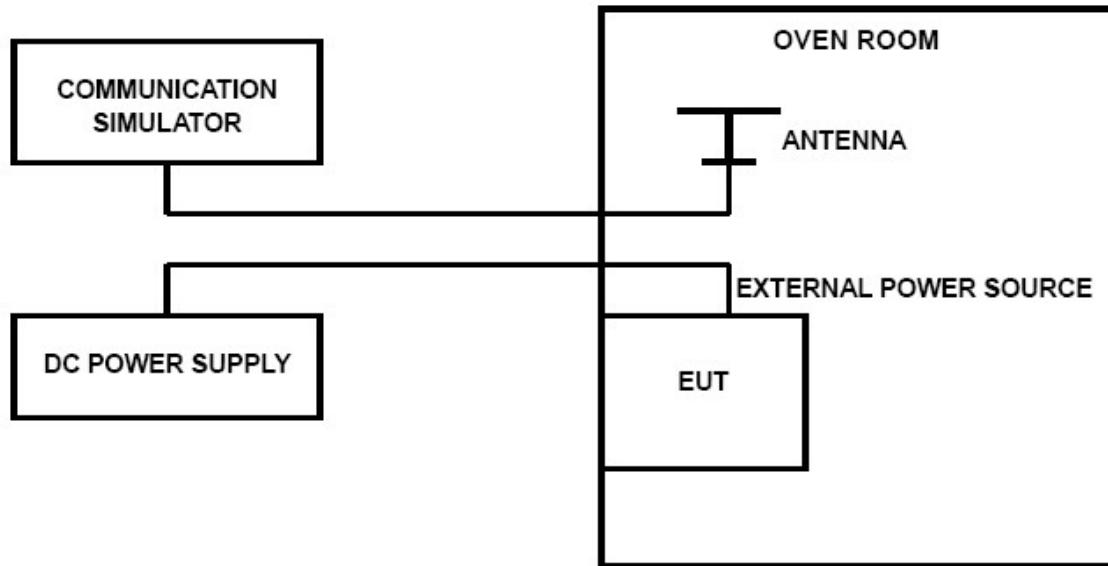
1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30°C to +50°C centigrade.
2. According to FCC Part 2 Section 2.1055 (E) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacturer.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried voltage equipment and the end voltage point was 10.8V.

TEST PROCEDURE

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature;
2. Subject the EUT to overnight soak at -30°C;
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on middle channel of PCS 1900 and GSM850, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1 Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 0.5 hours unpowered, to allow any self-heating to stabilize, before continuing;
6. Subject the EUT to overnight soak at +50°C;
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
8. Repeat the above measurements at 10°C increments from +50°C to -30°C. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure;

TEST CONFIGURATION



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

**TEST LIMITS*****For Hand carried battery powered equipment***

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.40VDC and 4.20VDC, with a nominal voltage of 3.80 DC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

TEST RESULTS

GPRS 850 Middle channel=190 channel=836.6MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	1.49	0.001781	2.50	PASS
5.0	25	-0.74	-0.000885	2.50	PASS
5.75	25	6.10	0.007291	2.50	PASS
5.0	-30	8.88	0.010614	2.50	PASS
5.0	-20	4.49	0.005367	2.50	PASS
5.0	-10	5.65	0.006754	2.50	PASS
5.0	0	8.10	0.009682	2.50	PASS
5.0	10	5.33	0.006371	2.50	PASS
5.0	20	0.32	0.000383	2.50	PASS
5.0	30	3.49	0.004112	2.50	PASS
5.0	40	1.19	0.001402	2.50	PASS
5.0	50	5.23	0.006162	2.50	PASS

GPRS 1900 Middle channel=661 channel=1880MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	13.69	0.007282	2.50	PASS
5.0	25	10.20	0.005426	2.50	PASS
5.75	25	20.82	0.011074	2.50	PASS
5.0	-30	16.14	0.008585	2.50	PASS
5.0	-20	19.79	0.010527	2.50	PASS
5.0	-10	15.30	0.008138	2.50	PASS
5.0	0	14.98	0.007968	2.50	PASS
5.0	10	12.88	0.006851	2.50	PASS
5.0	20	19.82	0.010543	2.50	PASS
5.0	30	11.88	0.006221	2.50	PASS
5.0	40	13.37	0.007001	2.50	PASS
5.0	50	22.89	0.011986	2.50	PASS



GSM 850 Middle channel=190 channel=836.6MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	5.39	0.006443	2.50	PASS
5.0	25	1.19	0.001422	2.50	PASS
5.75	25	3.10	0.003705	2.50	PASS
5.0	-30	3.13	0.003741	2.50	PASS
5.0	-20	7.75	0.009264	2.50	PASS
5.0	-10	5.26	0.006287	2.50	PASS
5.0	0	1.19	0.001422	2.50	PASS
5.0	10	-6.13	-0.007327	2.50	PASS
5.0	20	19.21	0.022962	2.50	PASS
5.0	30	3.94	0.004642	2.50	PASS
5.0	40	13.08	0.015410	2.50	PASS
5.0	50	11.59	0.013655	2.50	PASS

GSM 1900 Middle channel=661 channel=1880MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	15.95	0.008484	2.50	PASS
5.0	25	16.79	0.008931	2.50	PASS
5.75	25	19.47	0.010356	2.50	PASS
5.0	-30	20.50	0.010904	2.50	PASS
5.0	-20	12.79	0.006803	2.50	PASS
5.0	-10	15.63	0.008314	2.50	PASS
5.0	0	14.79	0.007867	2.50	PASS
5.0	10	19.79	0.010527	2.50	PASS
5.0	20	28.67	0.015250	2.50	PASS
5.0	30	19.60	0.010263	2.50	PASS
5.0	40	42.81	0.022416	2.50	PASS
5.0	50	45.43	0.023788	2.50	PASS

EGPRS 850 Middle channel=190 channel=836.6MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	-1.94	-0.002319	2.50	PASS
5.0	25	-7.46	-0.008917	2.50	PASS
5.75	25	-0.36	-0.000430	2.50	PASS
5.0	-30	-3.84	-0.004590	2.50	PASS
5.0	-20	-1.55	-0.001853	2.50	PASS
5.0	-10	0.48	0.000574	2.50	PASS
5.0	0	-1.84	-0.002199	2.50	PASS
5.0	10	0.87	0.001040	2.50	PASS
5.0	20	1.87	0.002235	2.50	PASS
5.0	30	-5.04	-0.005938	2.50	PASS
5.0	40	-5.00	-0.005891	2.50	PASS
5.0	50	2.65	0.003122	2.50	PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



EGPRS 1900 Middle channel=661 channel=1880MHz					
DC Power	Temperature (°C)	Frequency error(Hz)	Frequency error(ppm)	Limit (ppm)	Verdict
4.25	25	-0.10	-0.000053	2.50	PASS
5.0	25	-0.68	-0.000362	2.50	PASS
5.75	25	8.72	0.004638	2.50	PASS
5.0	-30	4.42	0.002351	2.50	PASS
5.0	-20	9.20	0.004894	2.50	PASS
5.0	-10	8.07	0.004293	2.50	PASS
5.0	0	4.10	0.002181	2.50	PASS
5.0	10	-2.71	-0.001441	2.50	PASS
5.0	20	9.30	0.004947	2.50	PASS
5.0	30	-0.45	-0.000236	2.50	PASS
5.0	40	1.65	0.000864	2.50	PASS
5.0	50	11.33	0.005933	2.50	PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

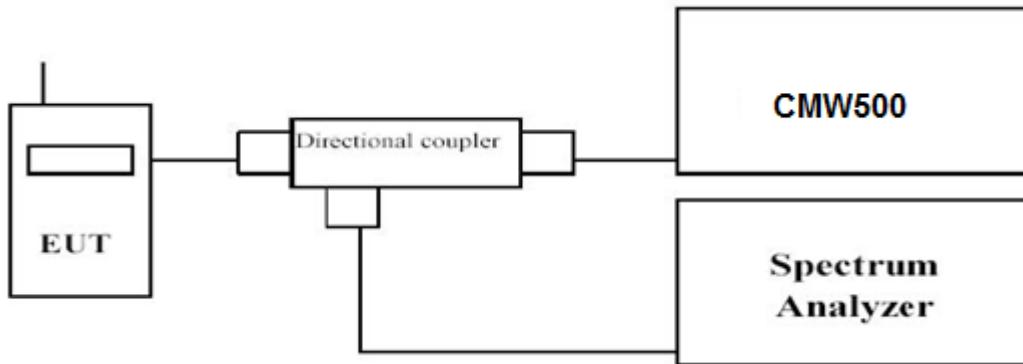


4.7 Peak-to-Average Ratio (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

Use spectrum to measure the total peak power and record as P_{Pk} . Use spectrum to measure the total average power and record as P_{Avg} . Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm).

Determine the PAPR from:

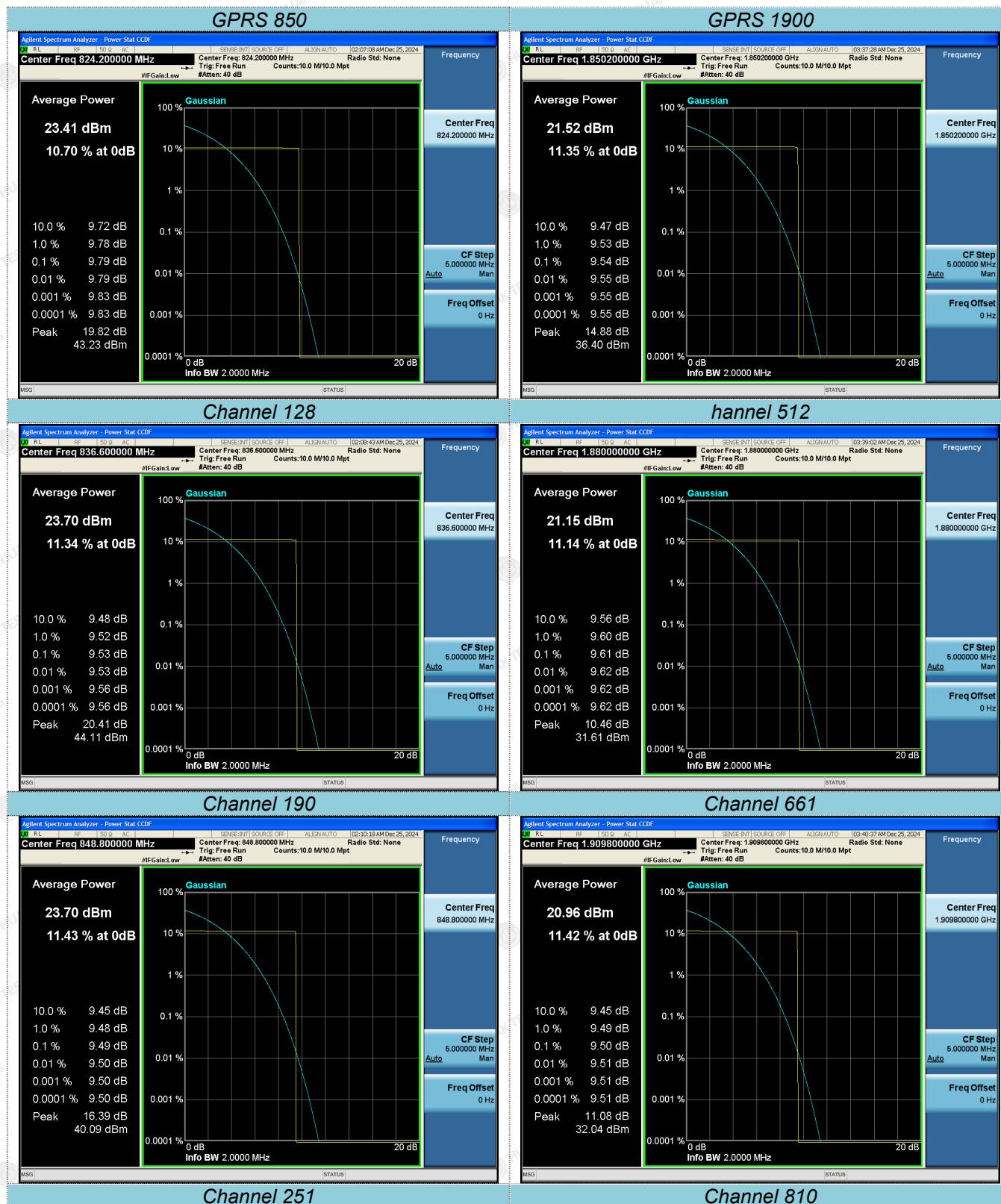
$$\text{PAPR (dB)} = P_{Pk} (\text{dBm}) - P_{Avg} (\text{dBm}).$$

TEST RESULTS

Note: We tested EGPRS/GPRS/GSM mode and recorded the worst case at the GPRS mode.

GPRS 850			
Frequency (MHz)	Peak power	AV power	Measured (dB)
824.20	43.23	23.41	9.79
836.60	44.11	23.70	9.53
848.80	40.09	23.70	9.49

GPRS 1900			
Frequency (MHz)	Peak power	AV power	Measured (dB)
1850.20	36.40	21.52	9.54
1880.00	31.61	21.15	9.61
1909.80	32.04	20.96	9.50

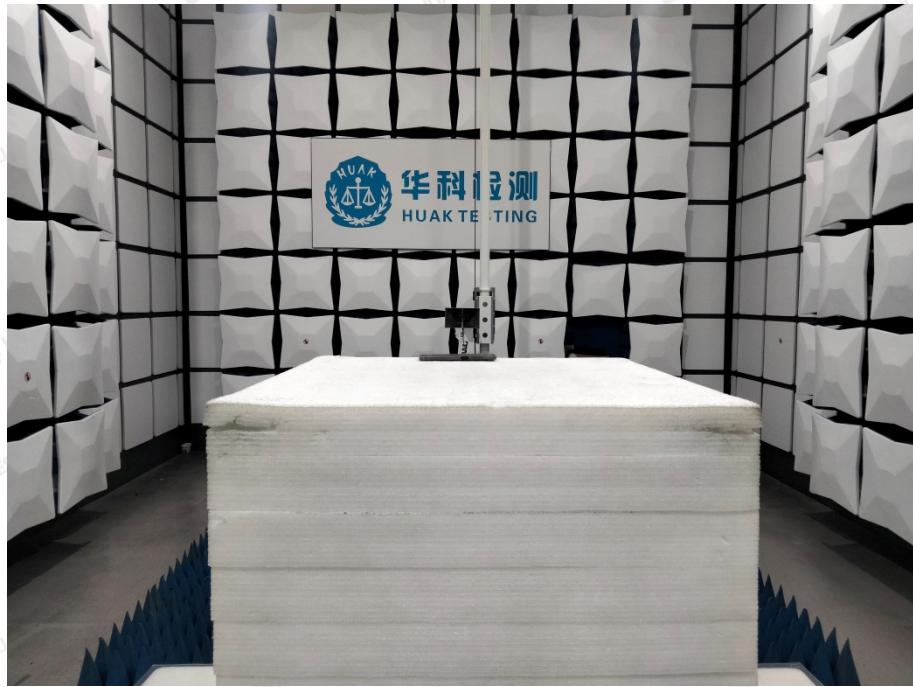
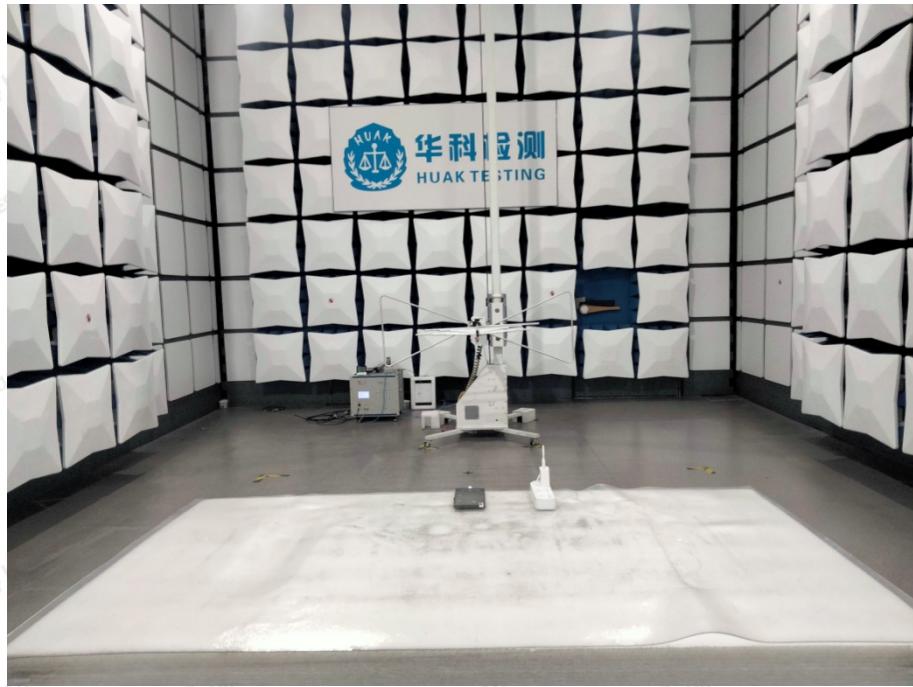


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



5 Test Setup Photos of the EUT

Test Model No.: S25 Ultra
Radiated Emissions



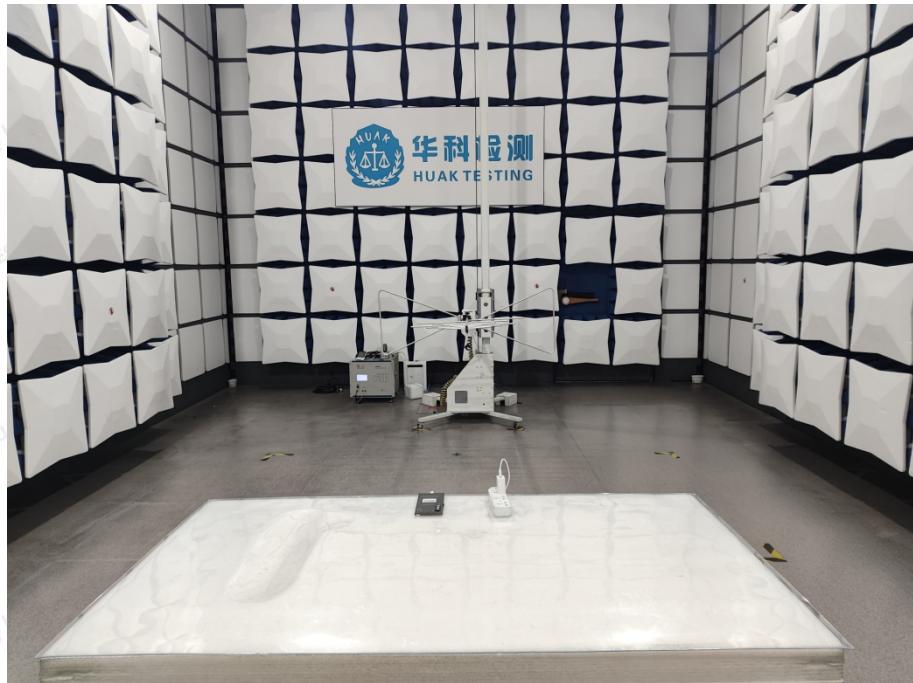
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: X24 Ultra
Radiated Emissions



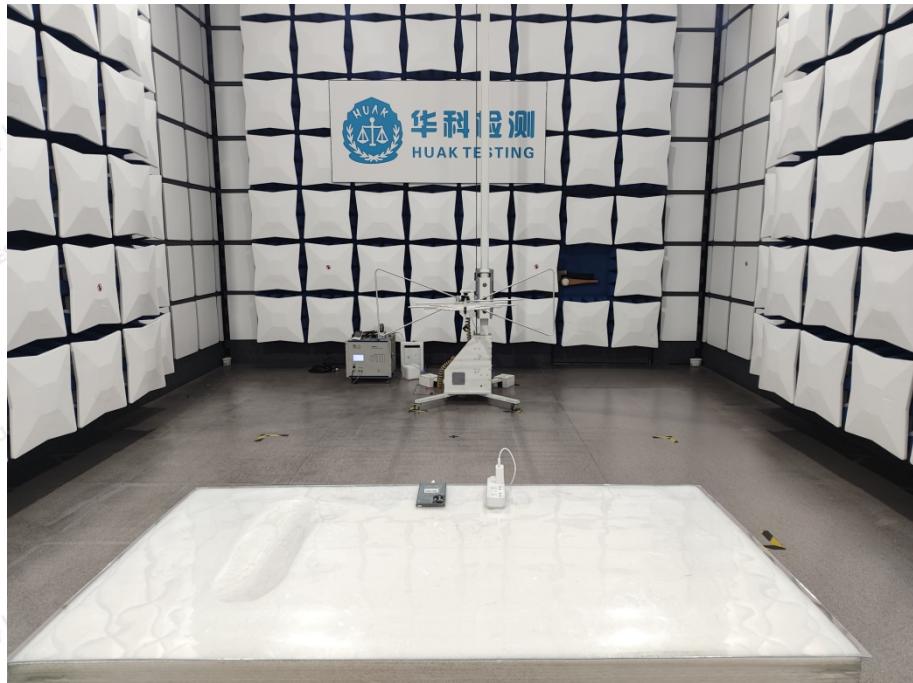
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: C24 Ultra
Radiated Emissions



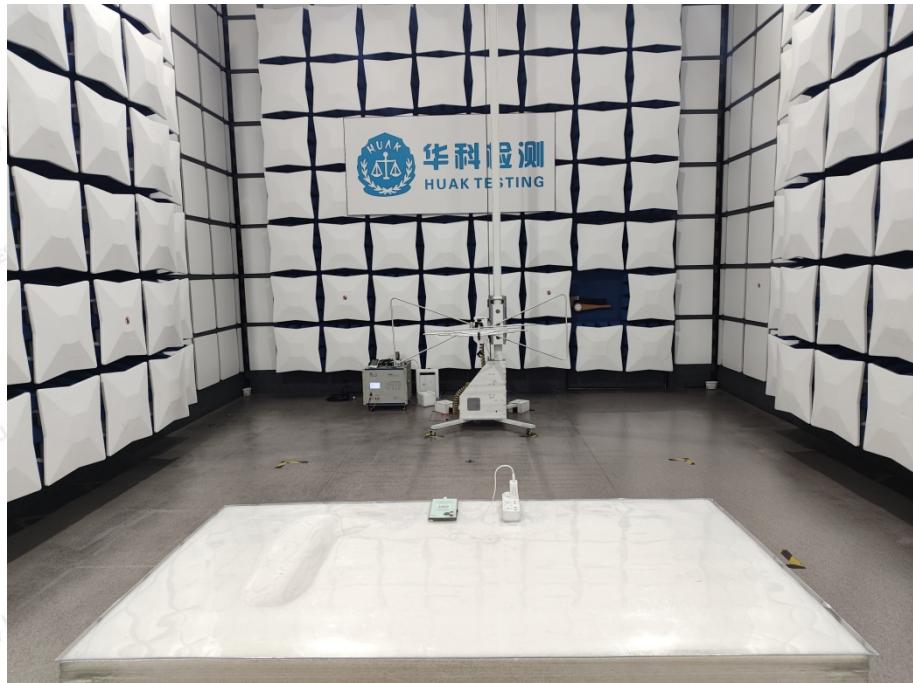
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: C25
Radiated Emissions



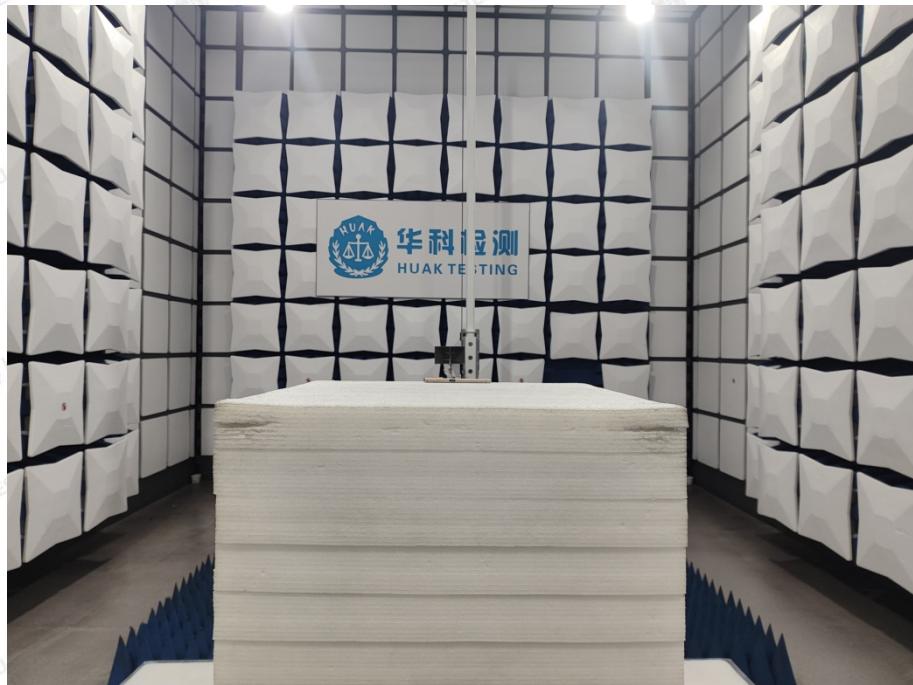
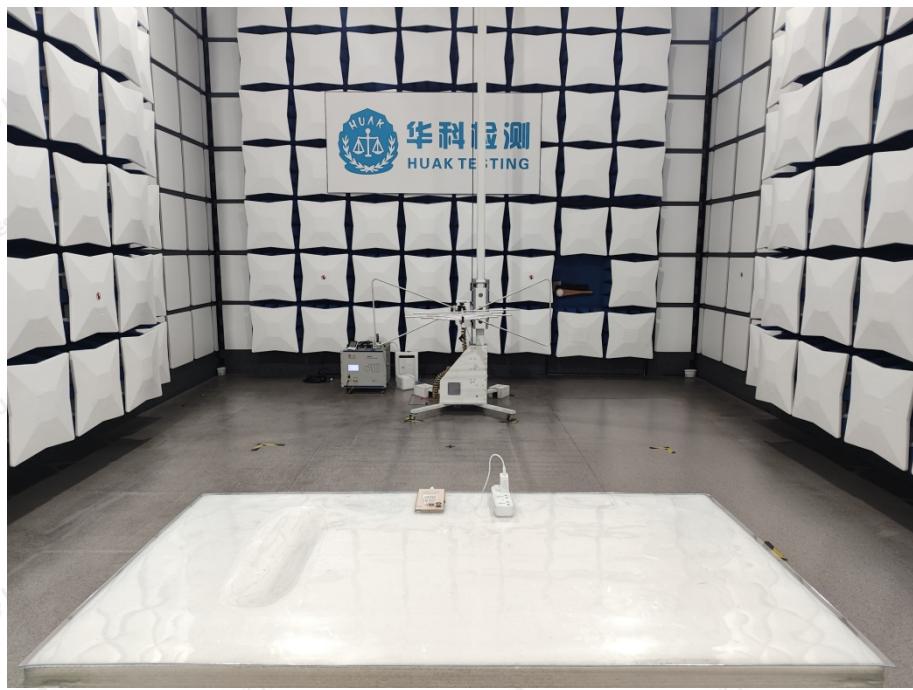
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: I15 Ultra
Radiated Emissions



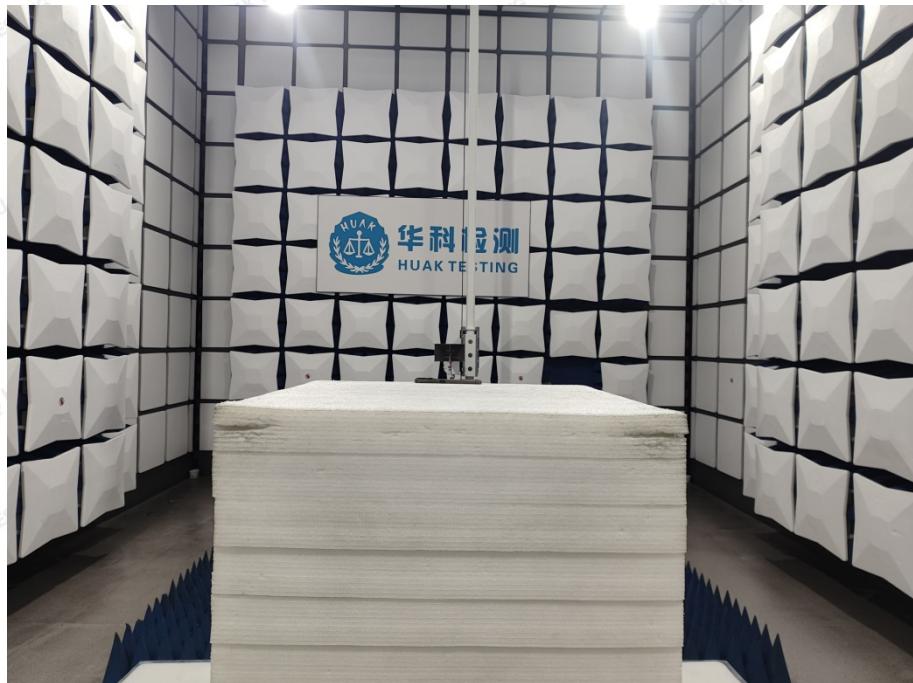
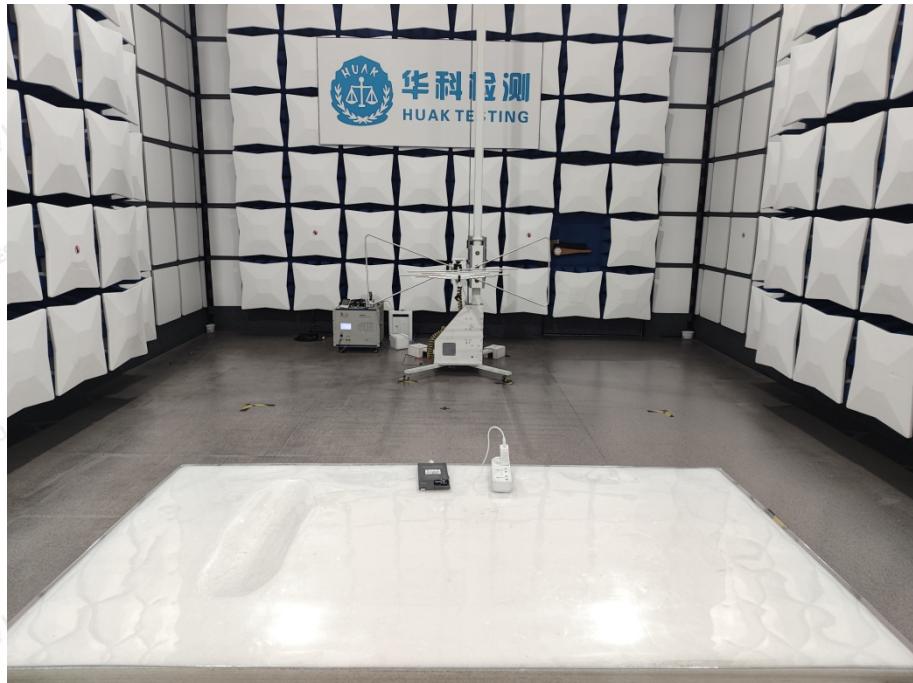
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: C7 Ultra
Radiated Emissions



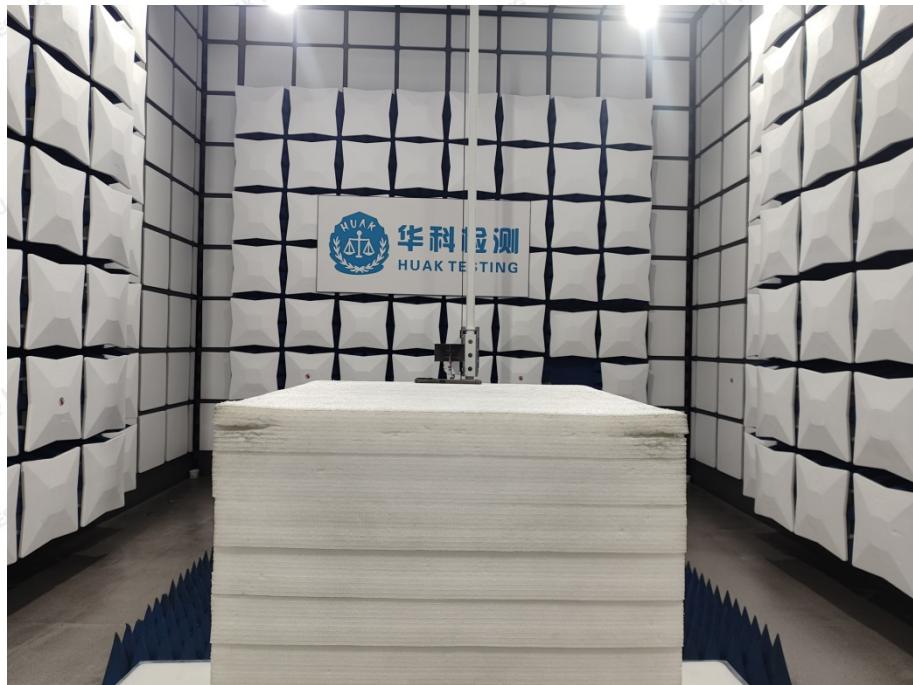
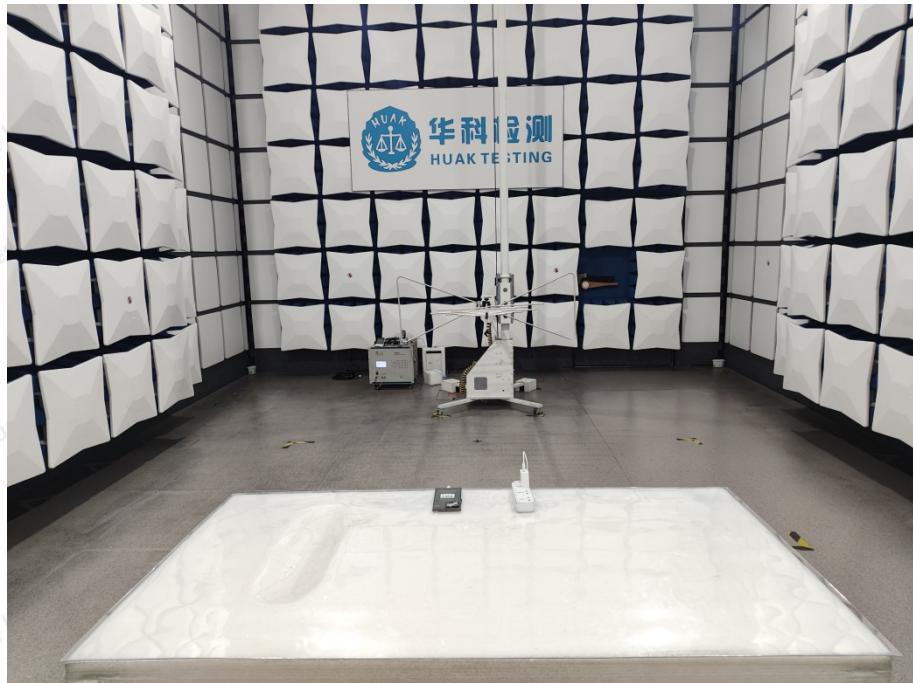
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



Series Model No.: S24 Ultra
Radiated Emissions



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>

TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



6 Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

.....End of Report.....

