

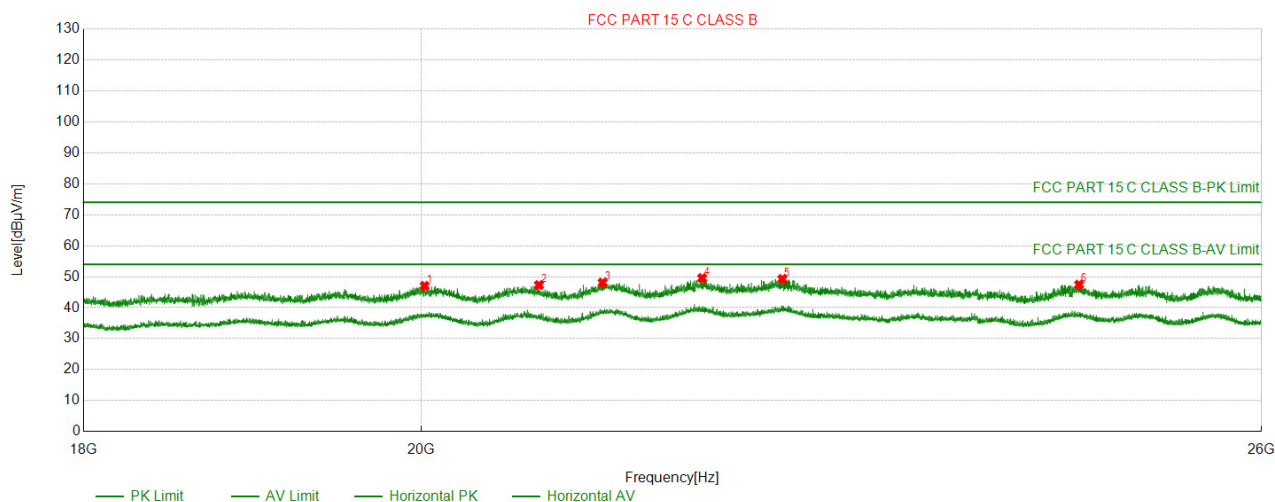


HUAKE TESTING

For 18GHz to 26GHz

ANT 1:

Antenna polarity: Horizontal



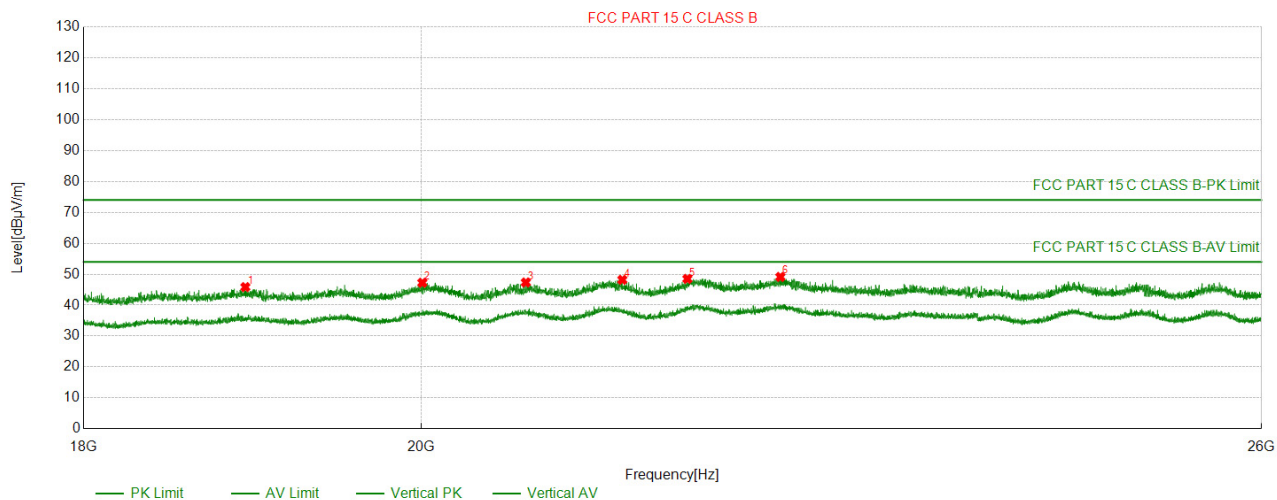
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20022.602	40.56	47.05	6.49	74.00	26.95	150	290	Horizontal
2	20749.875	41.38	47.30	5.92	74.00	26.70	150	40	Horizontal
3	21166.717	42.32	48.09	5.77	74.00	25.91	150	110	Horizontal
4	21834.783	43.87	49.56	5.69	74.00	24.44	150	20	Horizontal
5	22387.639	43.78	49.26	5.48	74.00	24.74	150	120	Horizontal
6	24560.656	41.45	47.44	5.99	74.00	26.56	150	160	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



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Antenna polarity: Vertical



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18932.893	40.73	45.84	5.11	74.00	28.16	150	330	Vertical
2	20008.201	40.74	47.24	6.50	74.00	26.76	150	310	Vertical
3	20665.067	41.36	47.33	5.97	74.00	26.67	150	160	Vertical
4	21297.130	42.44	48.20	5.76	74.00	25.80	150	300	Vertical
5	21733.973	42.79	48.50	5.71	74.00	25.50	150	320	Vertical
6	22374.037	43.65	49.14	5.49	74.00	24.86	150	340	Vertical

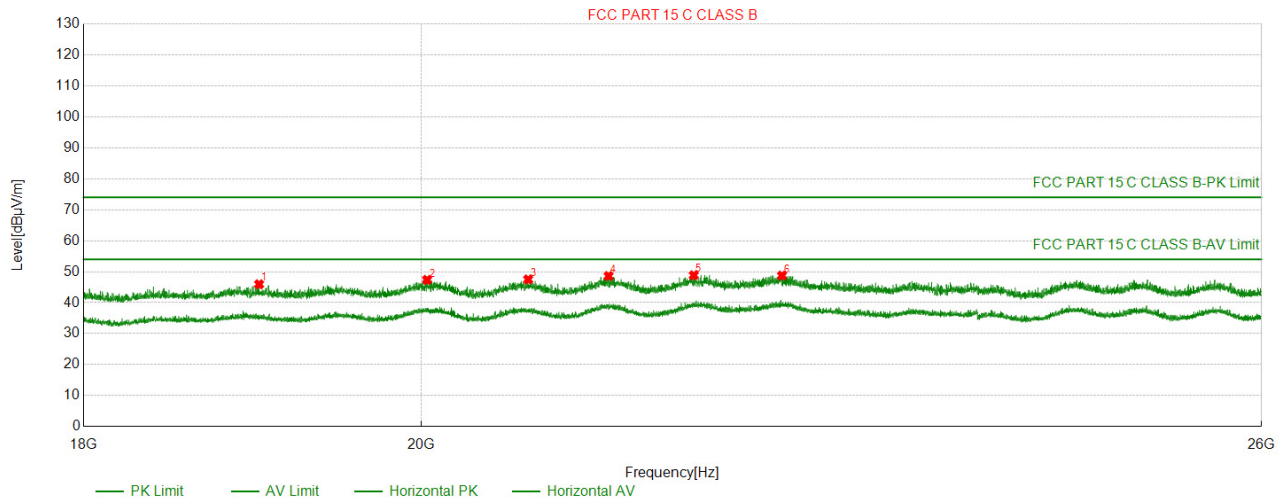
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



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ANT 2:

Antenna polarity: Horizontal



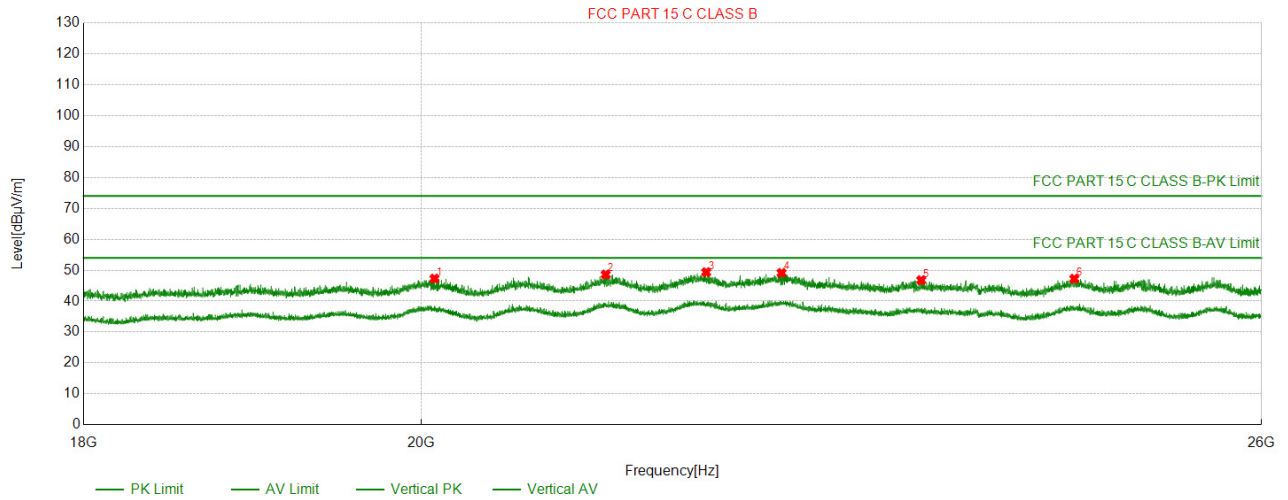
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19014.501	40.84	45.95	5.11	74.00	28.05	150	30	Horizontal
2	20037.804	40.90	47.37	6.47	74.00	26.63	150	80	Horizontal
3	20680.268	41.55	47.51	5.96	74.00	26.49	150	90	Horizontal
4	21205.921	42.84	48.61	5.77	74.00	25.39	150	300	Horizontal
5	21777.178	43.14	48.85	5.71	74.00	25.15	150	190	Horizontal
6	22385.239	43.26	48.75	5.49	74.00	25.25	150	120	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



Antenna polarity: Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20084.208	40.87	47.29	6.42	74.00	26.71	150	170	Vertical
2	21186.719	42.83	48.59	5.76	74.00	25.41	150	60	Vertical
3	21861.986	43.67	49.35	5.68	74.00	24.65	150	110	Vertical
4	22382.038	43.64	49.13	5.49	74.00	24.87	150	330	Vertical
5	23379.738	41.41	46.78	5.37	74.00	27.22	150	10	Vertical
6	24523.852	41.29	47.24	5.95	74.00	26.76	150	270	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



4.4 Maximum Peak Output Power Measurement

4.4.1 Limit

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 Test Procedure

The maximum peak conducted output power may be measured using a broadband peak RF automatic control unit. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF automatic control unit with a thermocouple detector or equivalent. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

4.4.3 Deviation from Standard

No deviation.

4.4.4 Test Setup



4.4.5 Test Results

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Result
CH01	2404	24.45	30.00	Pass
CH02	2442	25.85		Pass
CH03	2480	26.83		Pass

Note:

1. The test results including the cable loss.
2. During the test, the "duty cycle factor" has already been added to the testing software.



4.5 Power Spectral Density

4.5.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.5.2 Test Procedure

Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.

Set the RBW = 3 kHz.

Set the VBW = 10 KHz.

Set the span to 1.5 times the DTS channel bandwidth.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum power level.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

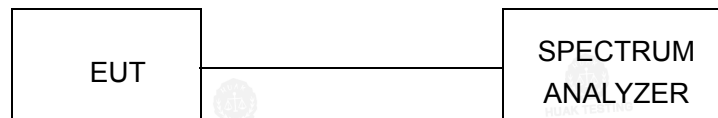
The resulting peak PSD level no more than 8dBm.

During the test, the "duty cycle factor" has already been added to the testing software.

4.5.3 Deviation from Standard

No deviation.

4.5.4 Test Setup



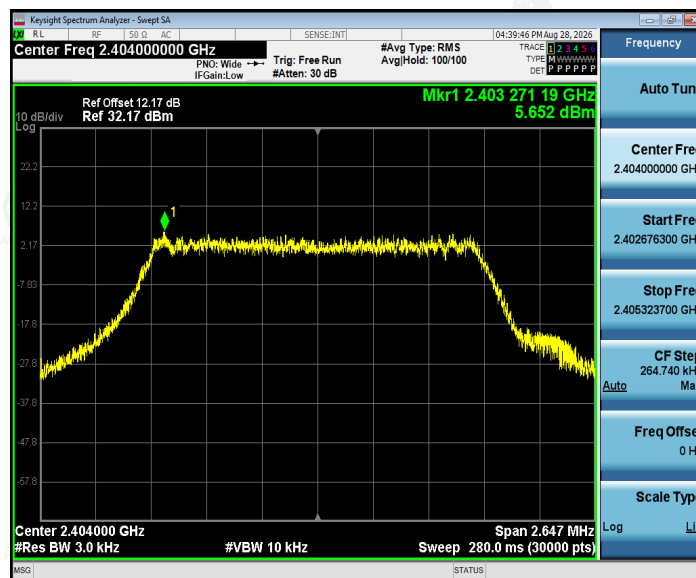


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4.5.5 Test Results

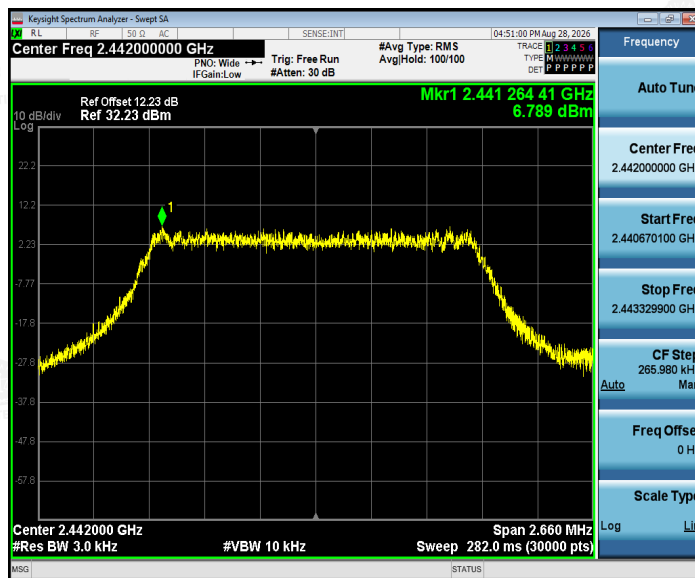
Channel	Channel Frequency (MHz)	Test Result (dBm/3kHz)
CH01	2404	5.65
CH02	2442	6.79
CH03	2480	7.35
Limit : 8dBm/3KHz		
Test Result	PASS	

CH01

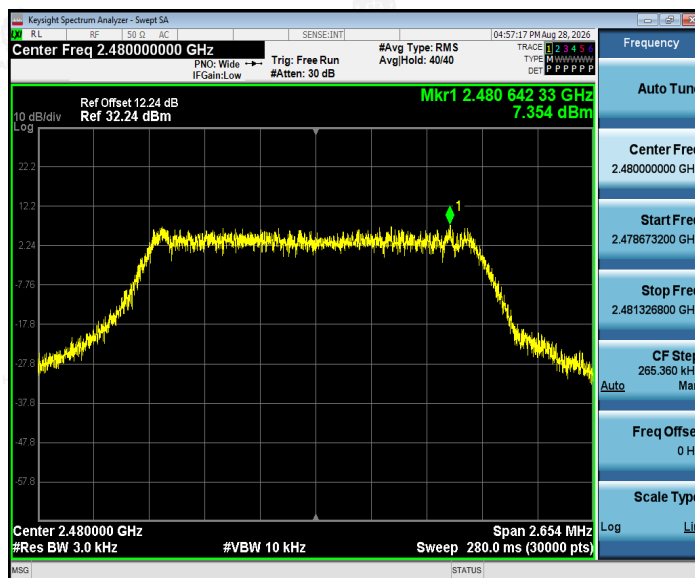


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CH02



CH03





4.6 6dB Bandwidth

4.6.1 Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

4.6.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300 KHz.

The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.6.3 Deviation from Standard

No deviation.

4.6.4 Test Setup



4.6.5 Test Result

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Limit (KHz)	Result
CH01	2404	1.708	≥500	Pass
CH02	2442	1.716		Pass
CH03	2480	1.712		Pass

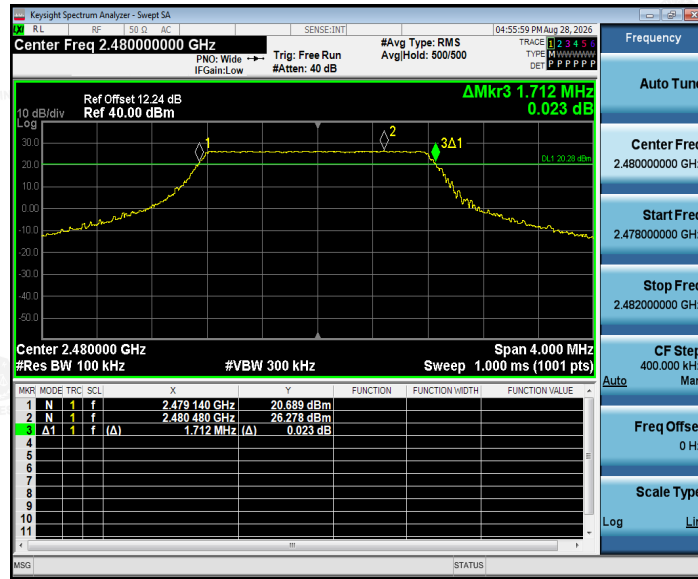
CH01



CH02



CH03





4.7 Occupied Bandwidth

4.7.1 Test Procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

RBW=1% to 5% of the OBW

VBW=approximately 3 X RBW

Detector=Peak

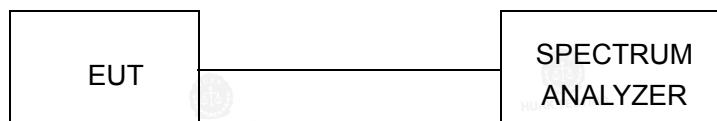
Trace Mode: Max Hold

Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recorded.

4.7.2 Deviation from Standard

No deviation.

4.7.3 Test Setup



4.7.4 Test Result

N/A



4.8 Band Edge

4.8.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under FCC rules in section 5.8.1, the attenuation required shall be 30 dB instead of 20 dB.

4.8.2 Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, RBW $\geq$ 1% of the span, VBW $\geq$ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

4.8.3 Deviation from Standard

No deviation.

4.8.4 Test Setup

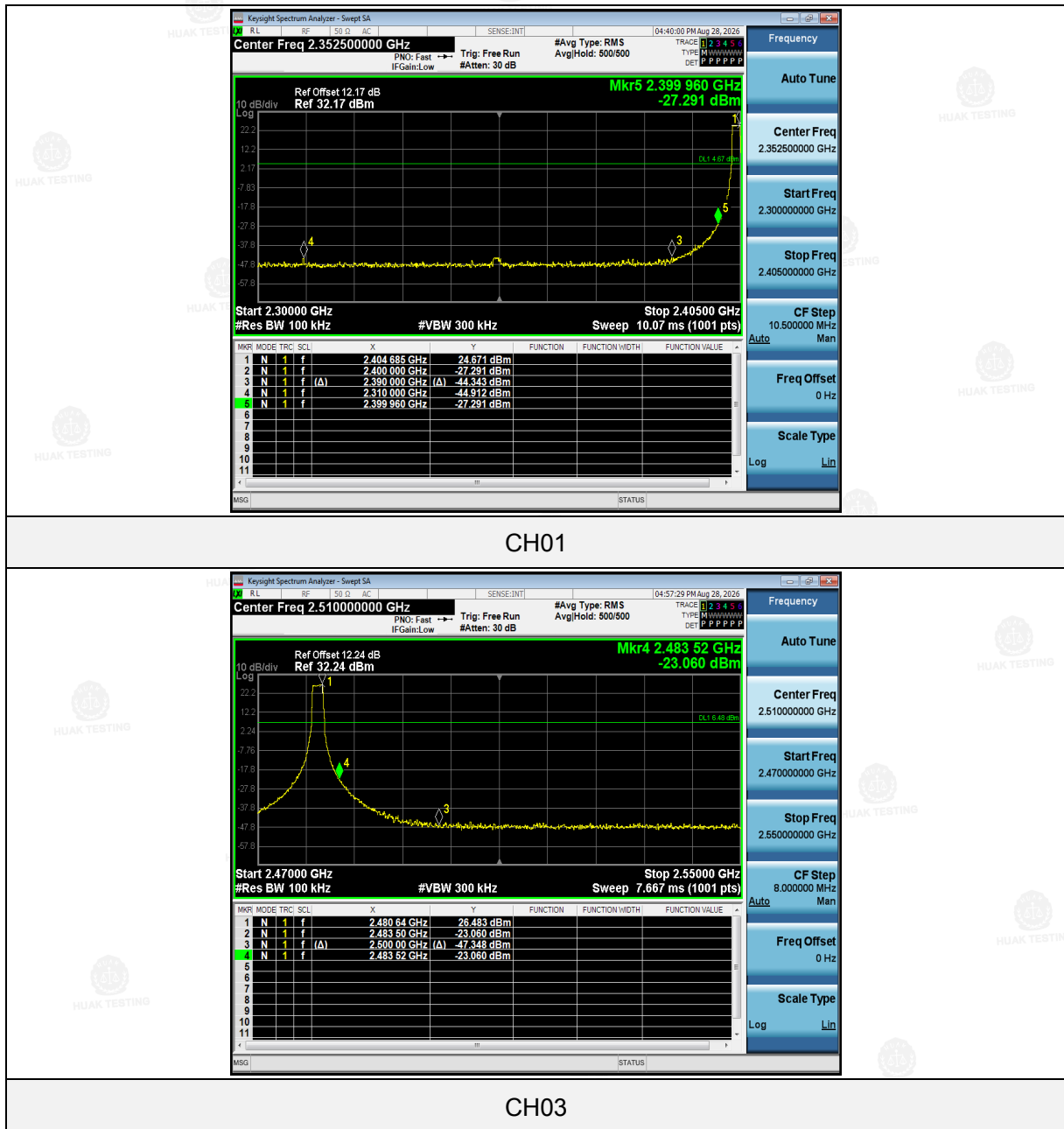




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4.8.5 Test Results

PASS



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4.9 Conducted Spurious Emissions

4.9.1 Applied Procedures / Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

For below 30MHz, For 9KHz-150kHz, 150K-10MHz, We use the RBW 1KHz, 10KHz, So the limit need to calculated by " $10\lg(BW1/BW2)$ ". For example For 9KHz-150kHz, RBW 1KHz, The Limit = the highest emission level-20-10log(100/1) = the highest emission level-40.

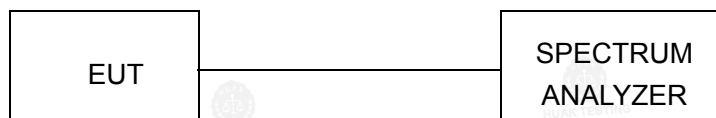
4.9.2 Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, $RBW \geq 1\%$ of the span, $VBW \geq RBW$, Sweep = auto, Detector function = peak, Trace = max hold.

4.9.3 Deviation from Standard

No deviation.

4.9.4 Test Setup

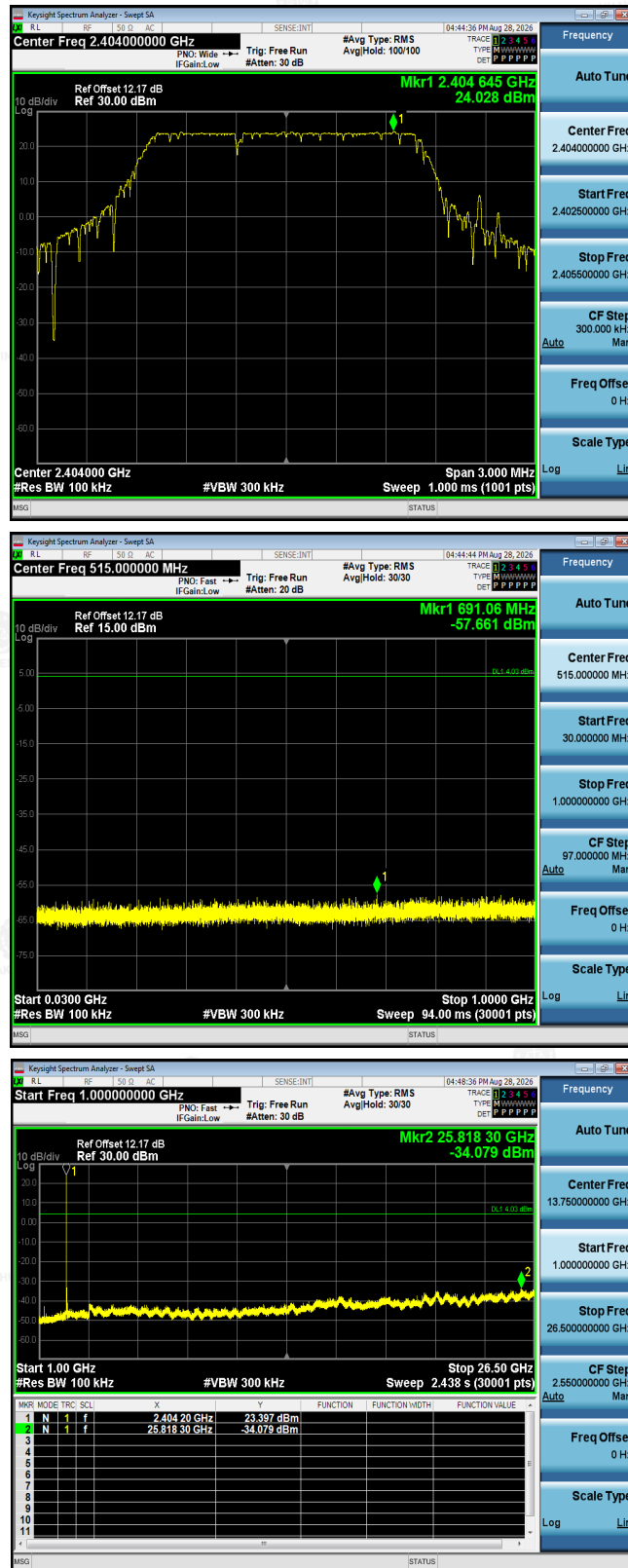




HUAKE TESTING

4.9.5 Test Results

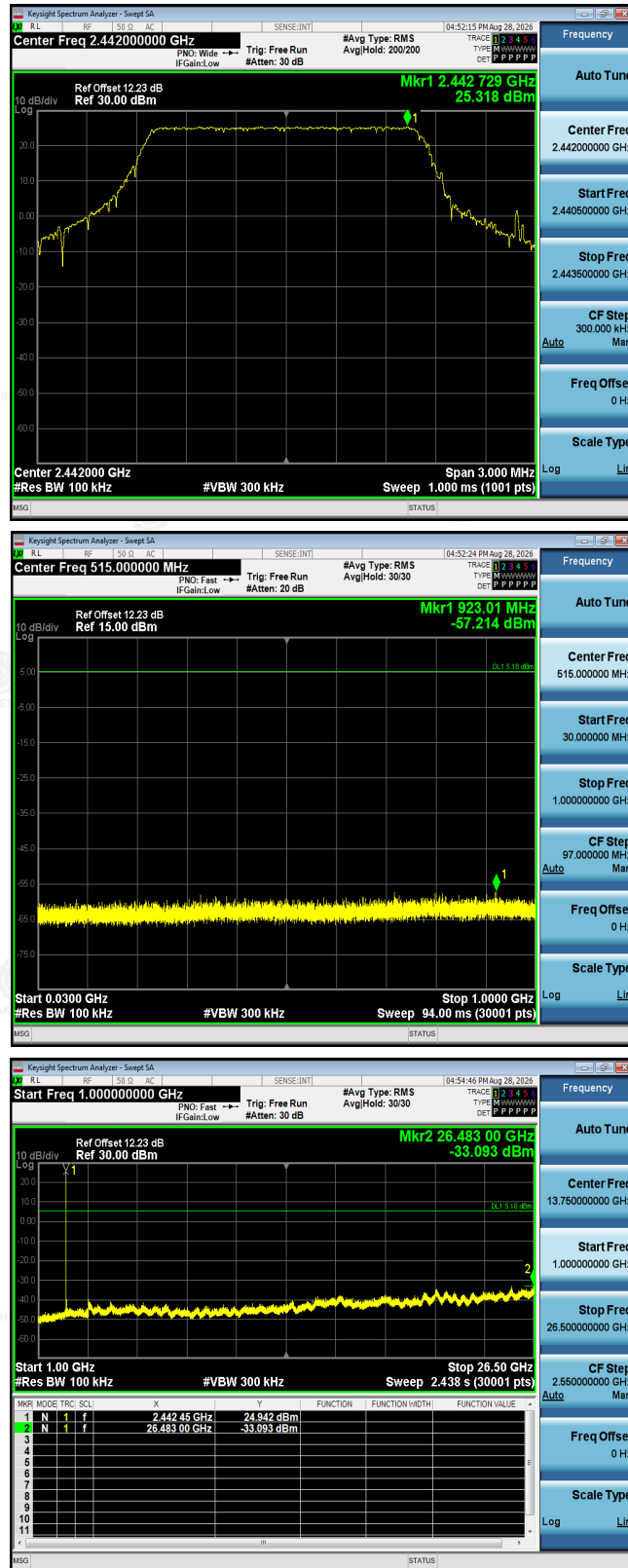
CH01



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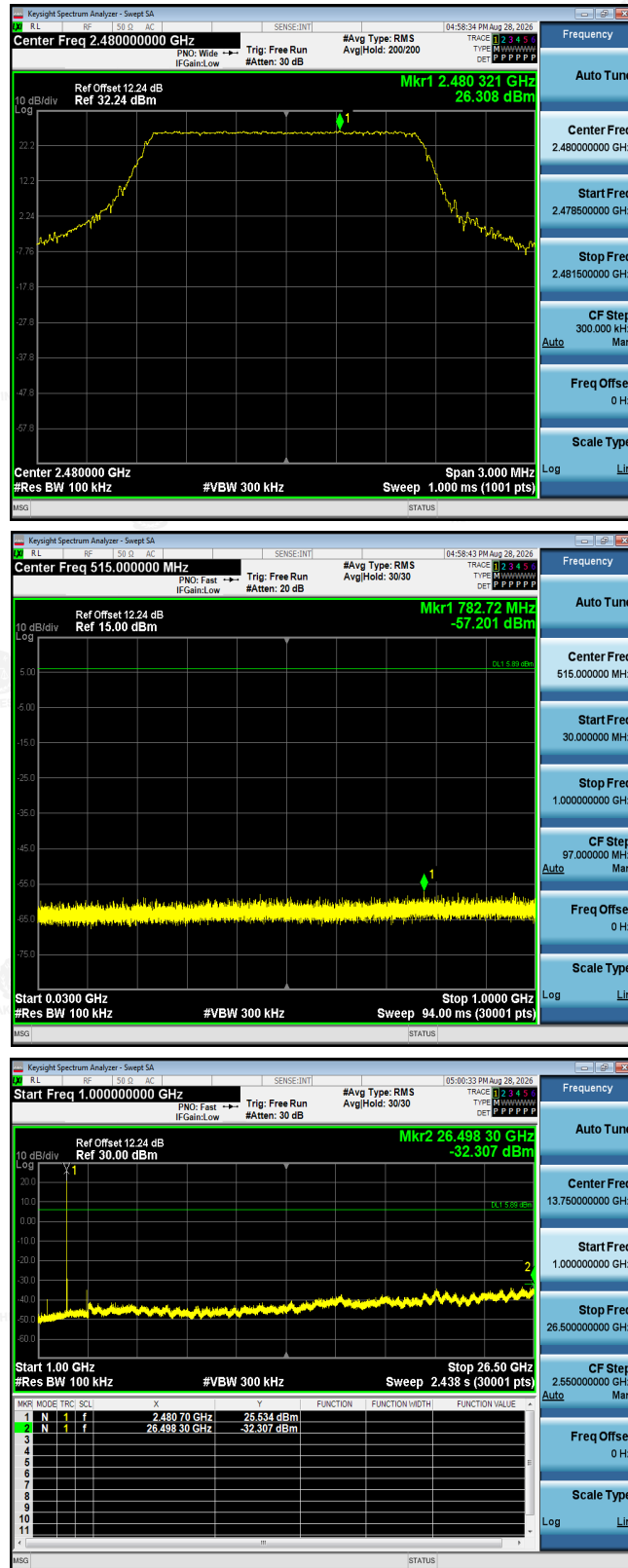
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Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

CH02



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CH03

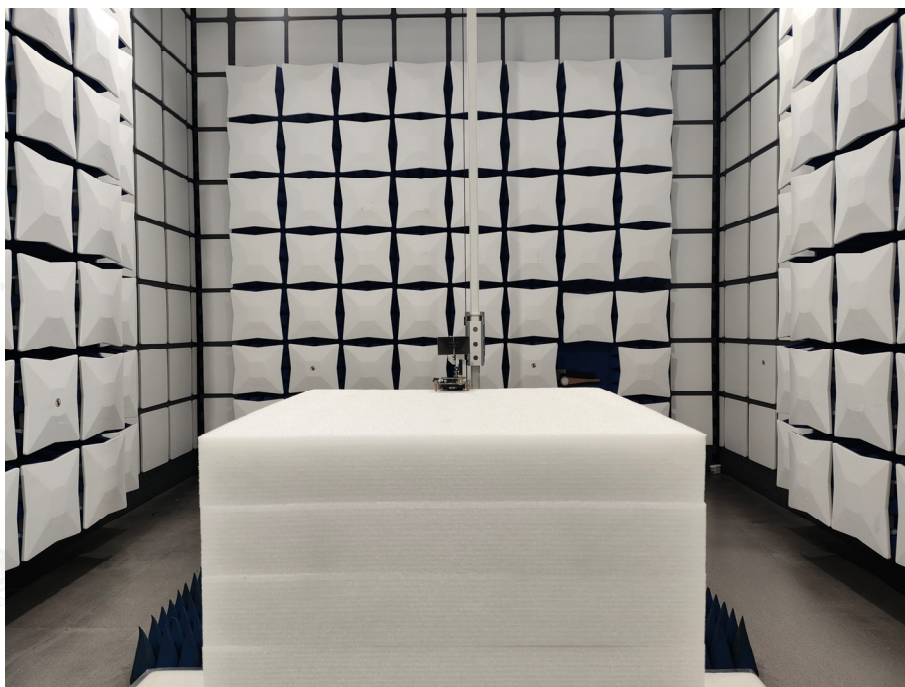
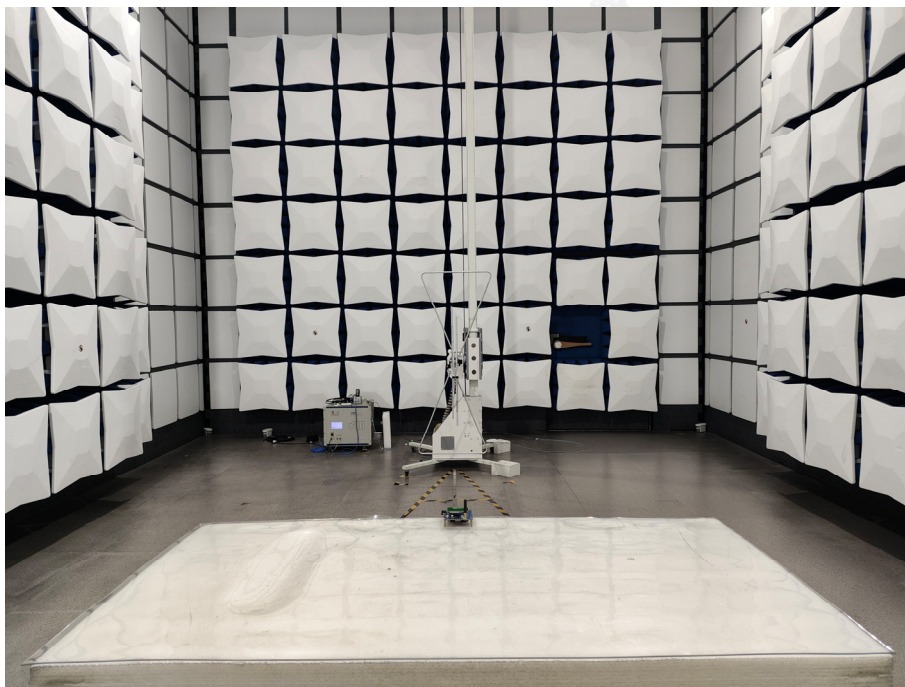


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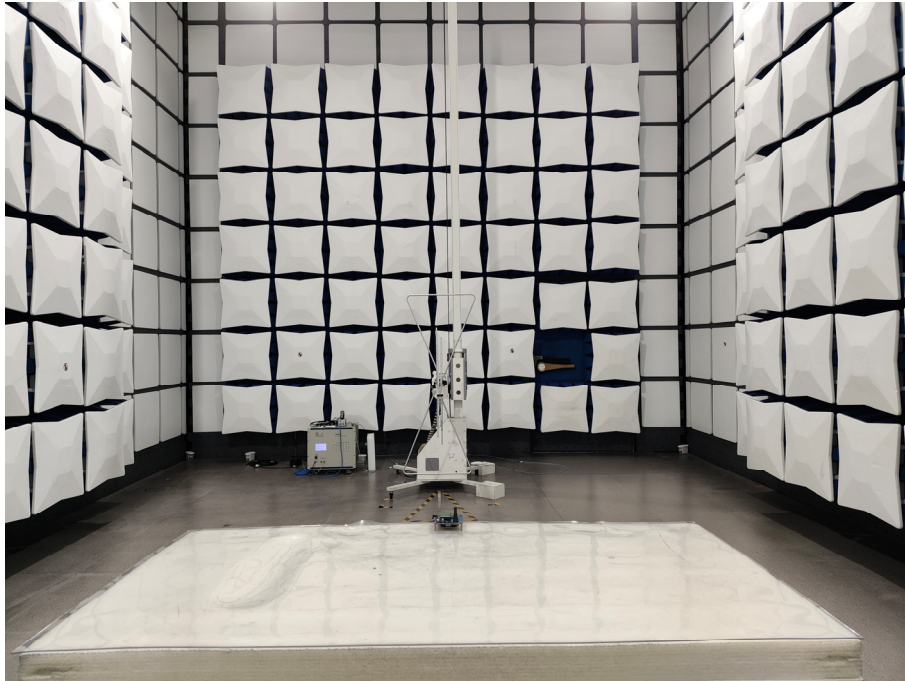
5 Test Setup Photos of the EUT

ANT1:

Radiated Emission



Radiated Emission



AC Conducted Emission

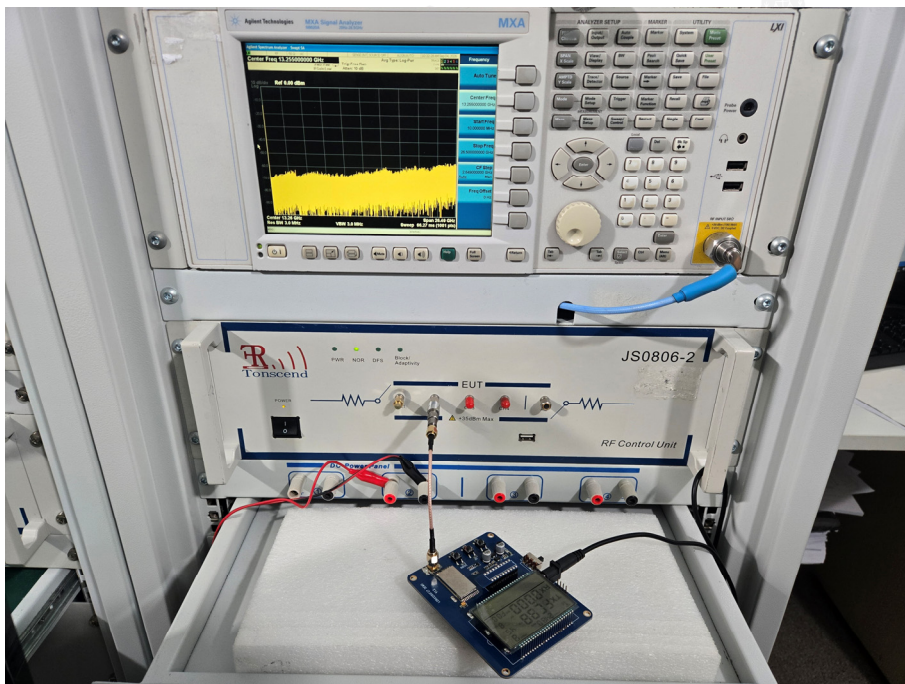
ANT 1:



ANT 2:



RF Conducted Emission



6 Photos of the EUT

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

-----End of test report-----