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4.1.5 Conducted Spurious Emission & Authorized-band band-edge

RESULT:

PASS

Test standard

: FCC Part 15.247(d)

Requirement

: ANSI C63.10-2013, Clause 11.11.1(a)

KDB 558074 D01 v05r02, Clause 8.5

Kind of test site

: Shielded room

Test setup

Test Channel

: Low/Middle/High for spurious, Low/High for Band

Edge

Operation Mode

: A.1.a

Ambient temperature

: 21.6°C

Relative humidity

: 36%

For details refer to following test plot.

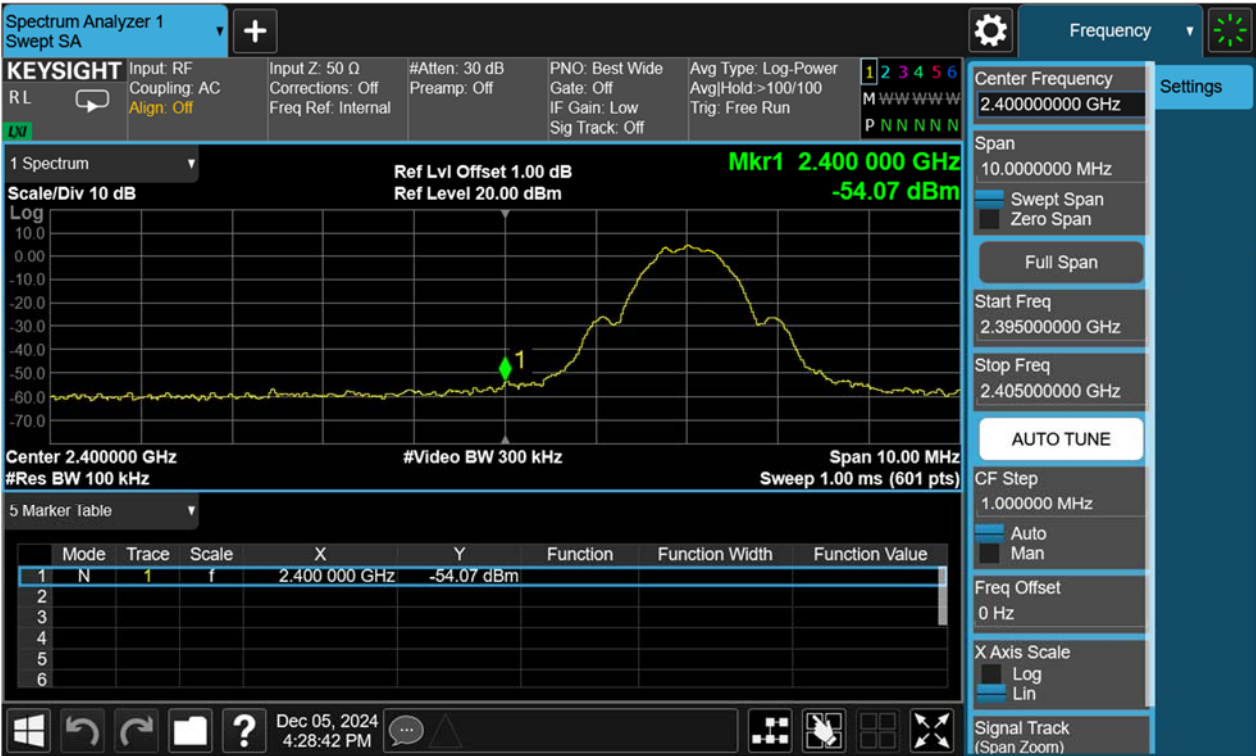
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Figure 19: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, BLE-1Mbps Carrier Level



Band Edge



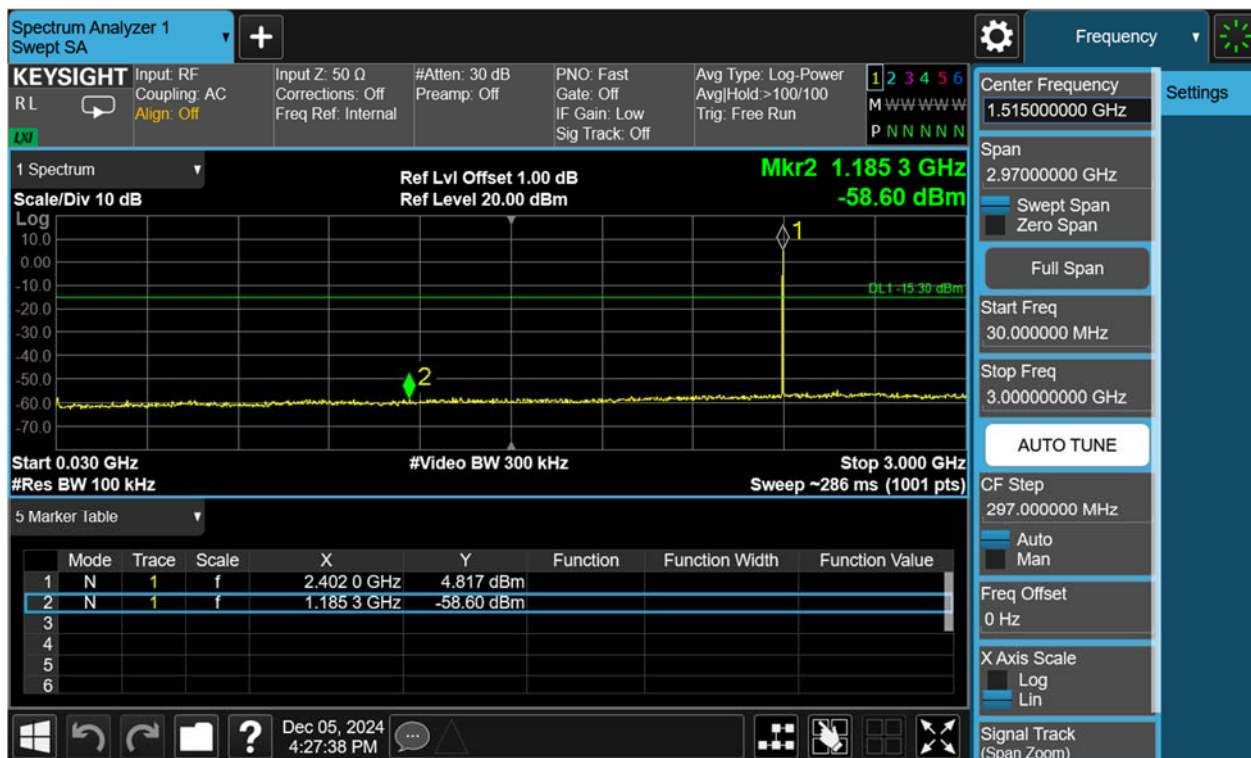
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Conducted spurious emissions 30MHz-25GHz



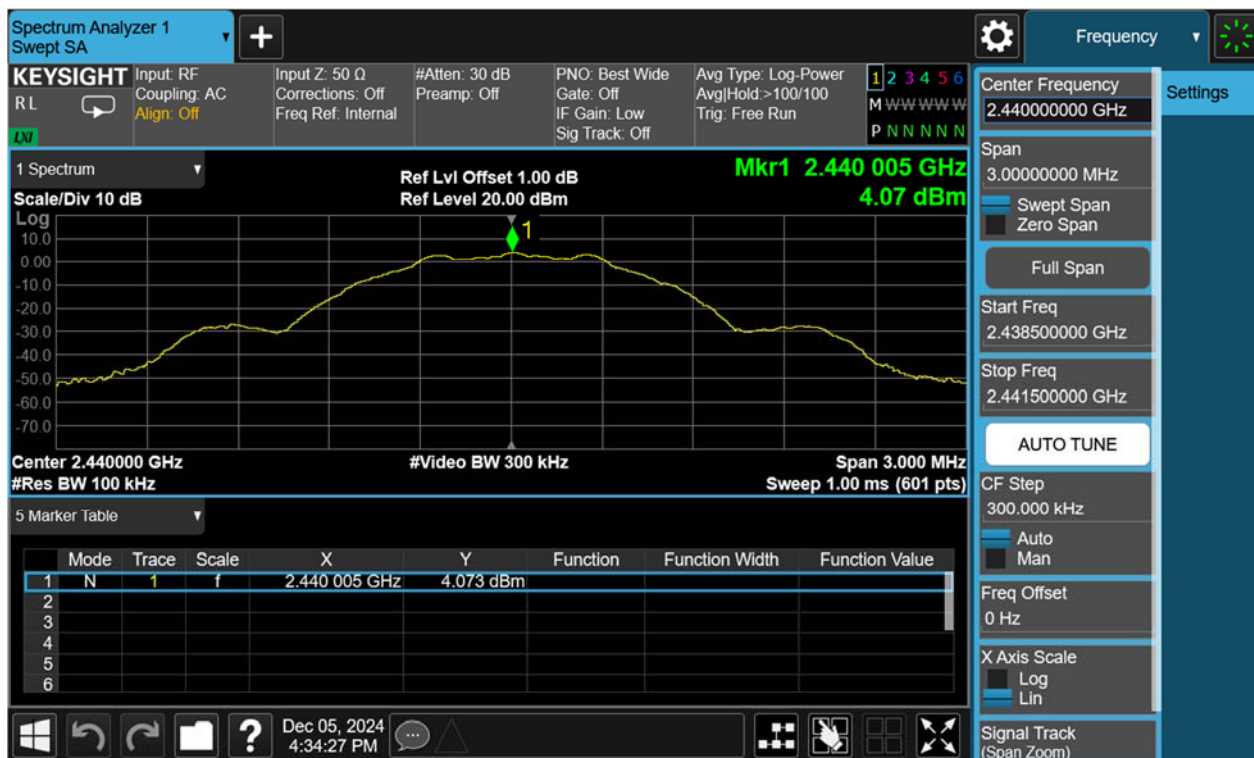
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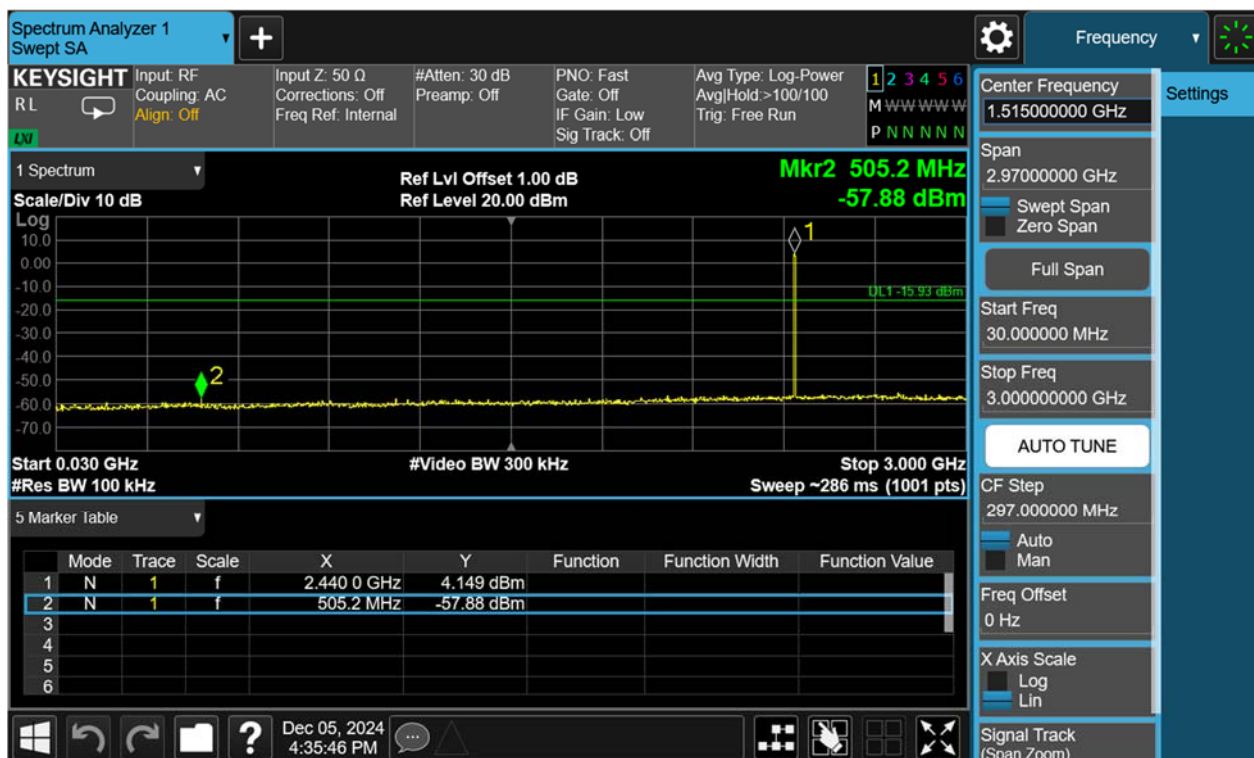
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Figure 20: Conducted Spurious Emission & Authorized-band band-edge, 2440MHz, BLE-1Mbps Carrier Level



Conducted spurious emissions 30MHz-25GHz

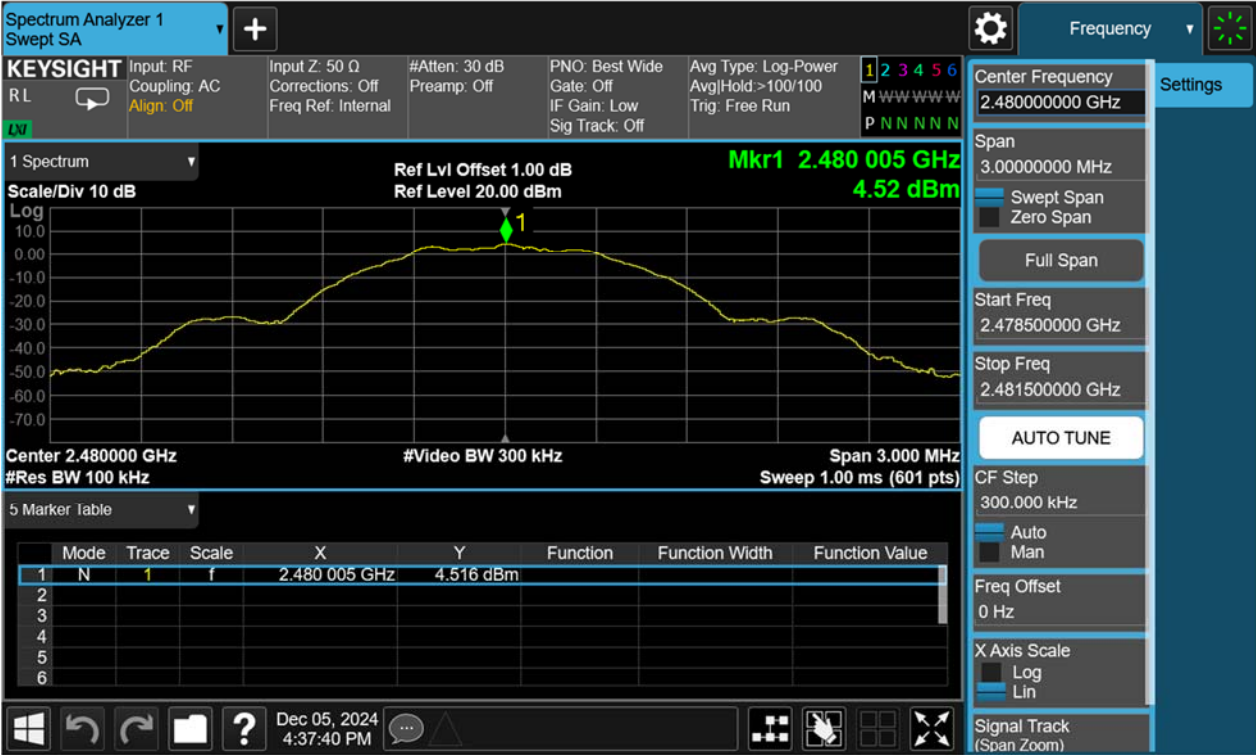


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Figure 21: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, BLE-1Mbps Carrier Level



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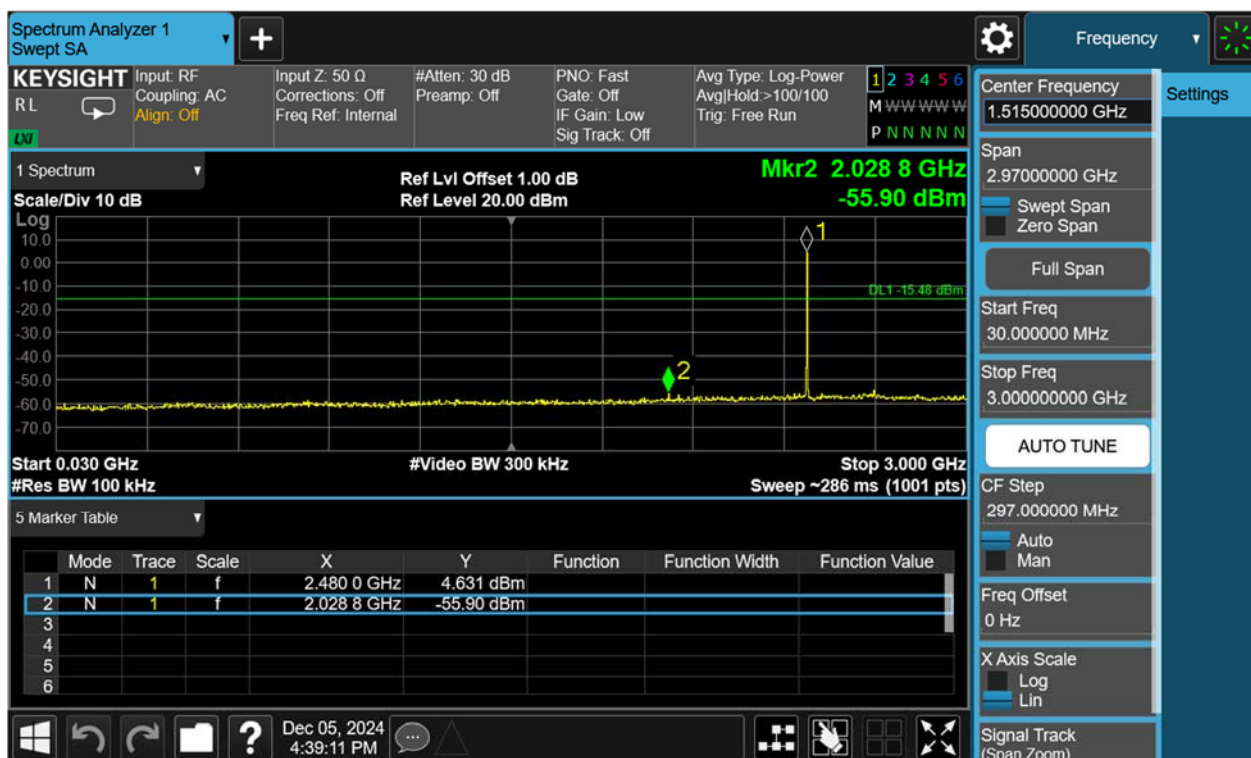
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Band Edge



Conducted spurious emissions 30MHz-25GHz

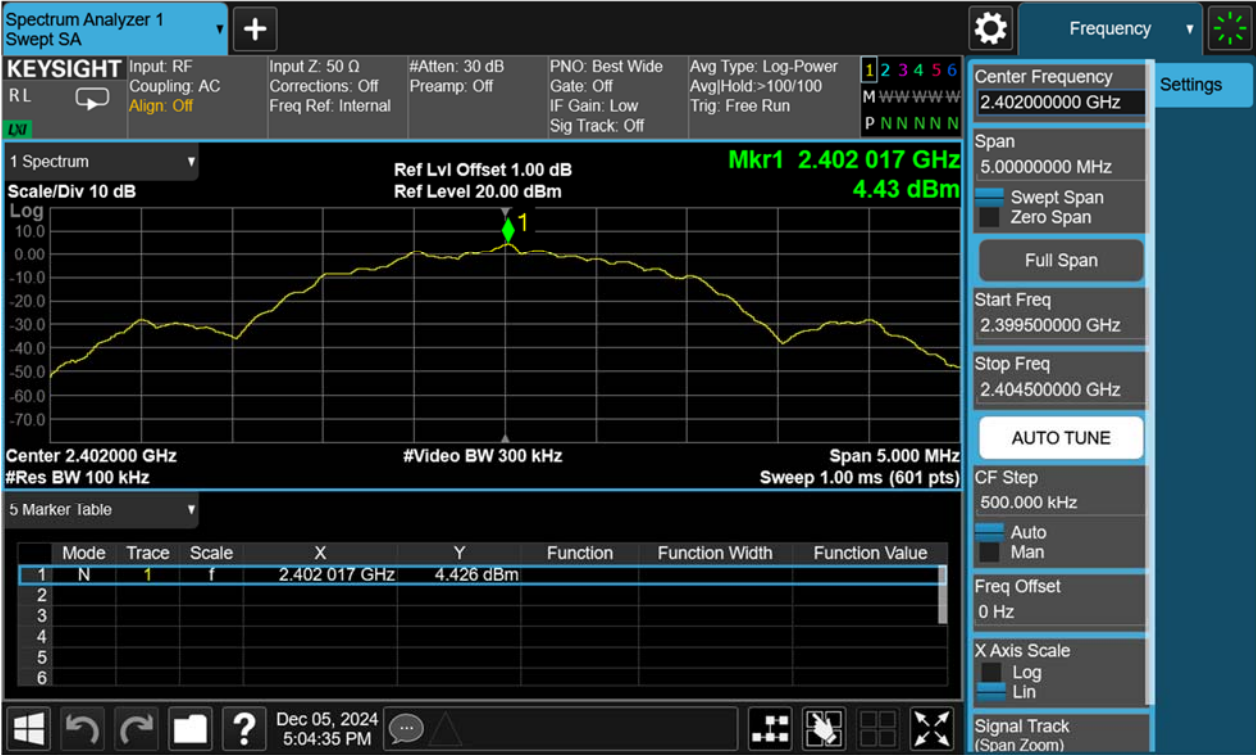


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Figure 22: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, BLE-2Mbps Carrier Level



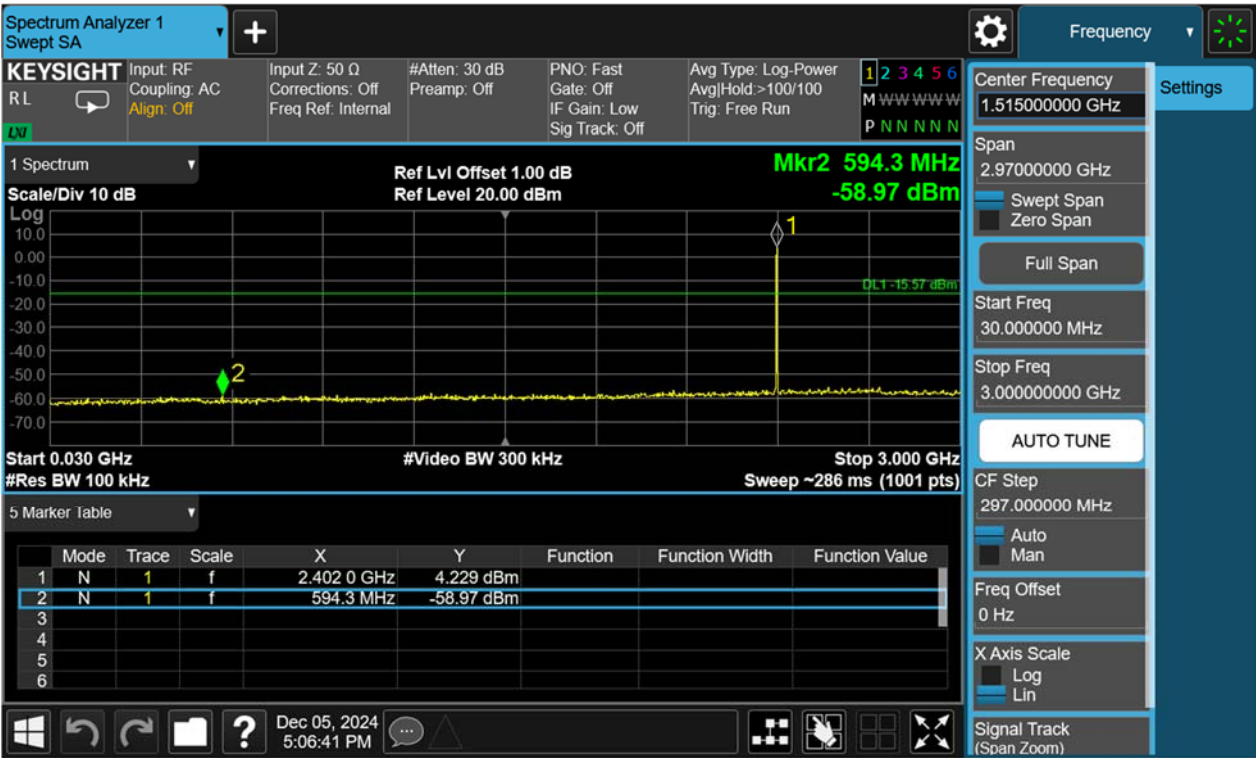
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Band Edge



Conducted spurious emissions 30MHz-25GHz



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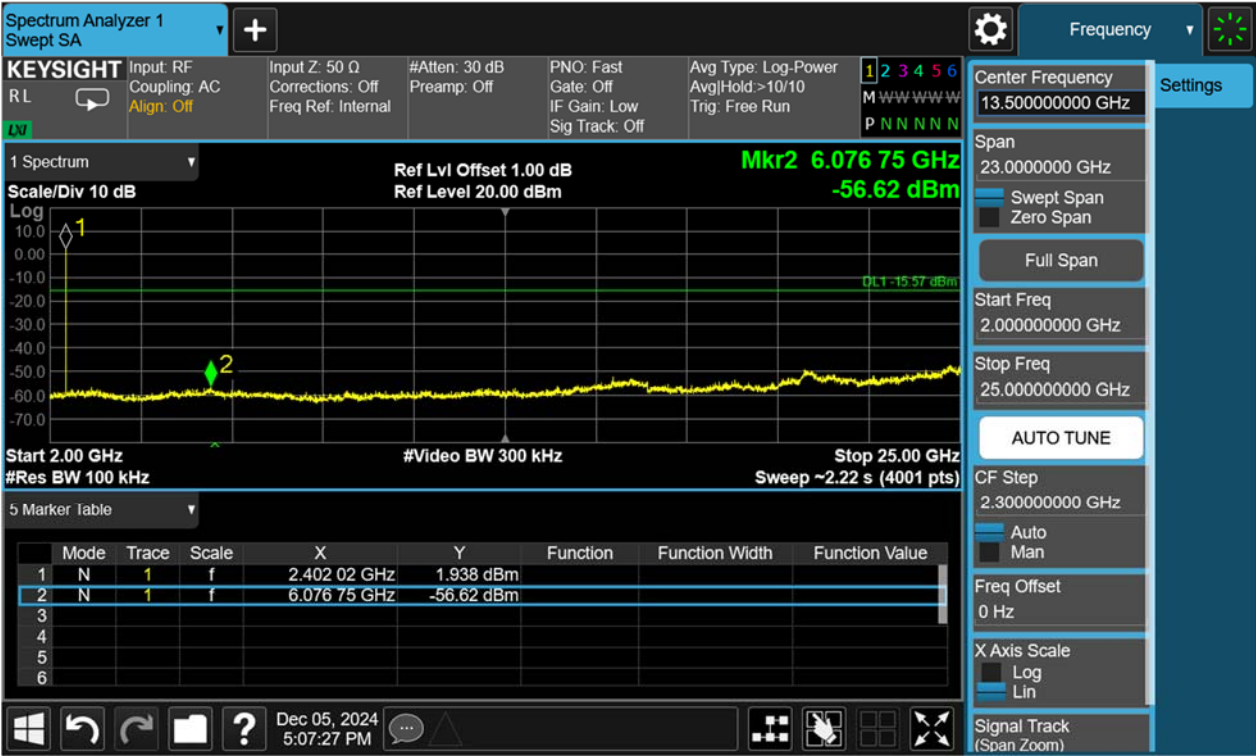


Figure 23: Conducted Spurious Emission & Authorized-band band-edge, 2440MHz, BLE-2Mbps Carrier Level



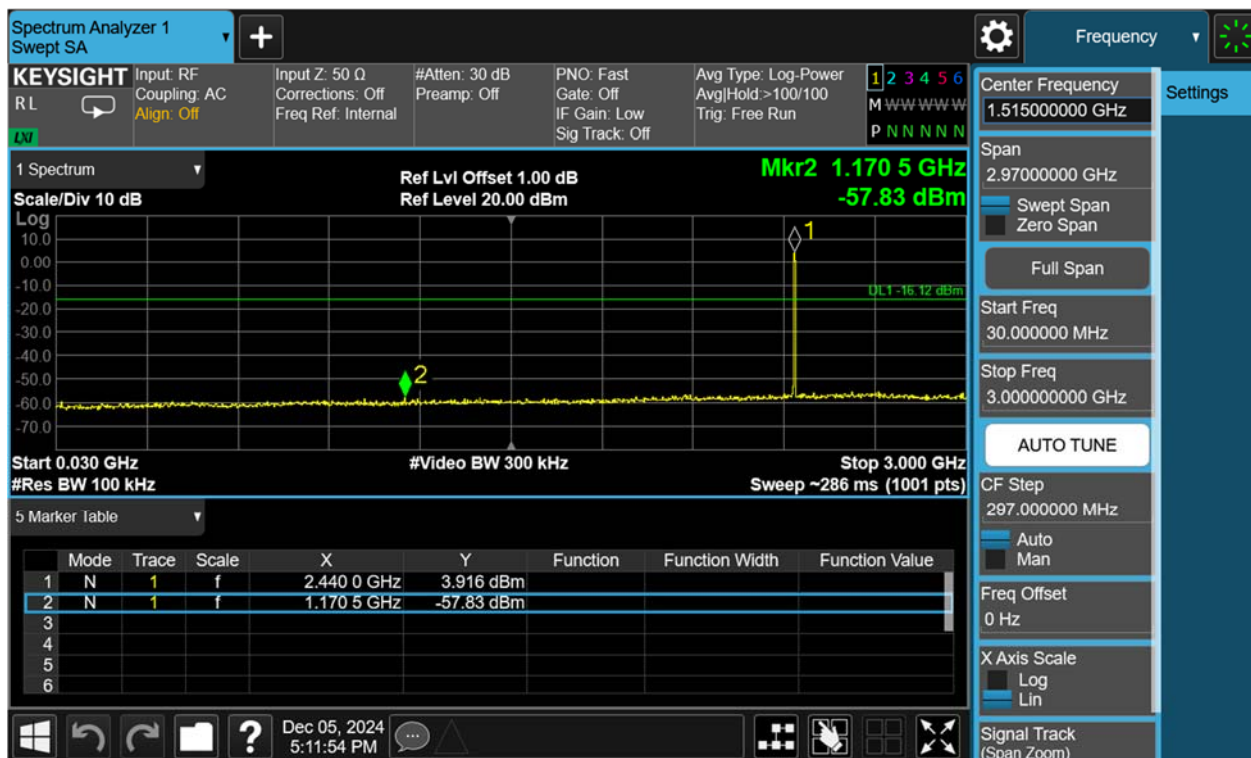
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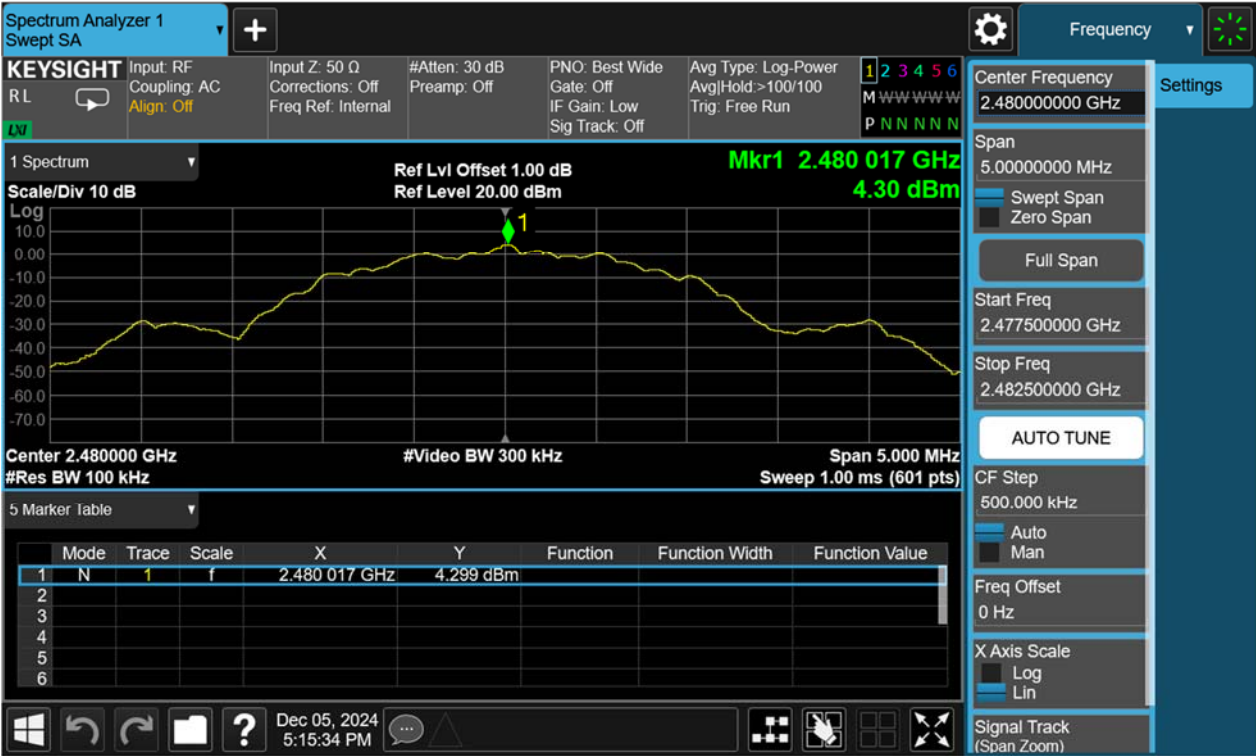
Conducted spurious emissions 30MHz-25GHz



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Figure 24: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, BLE-2Mbps Carrier Level



Band Edge



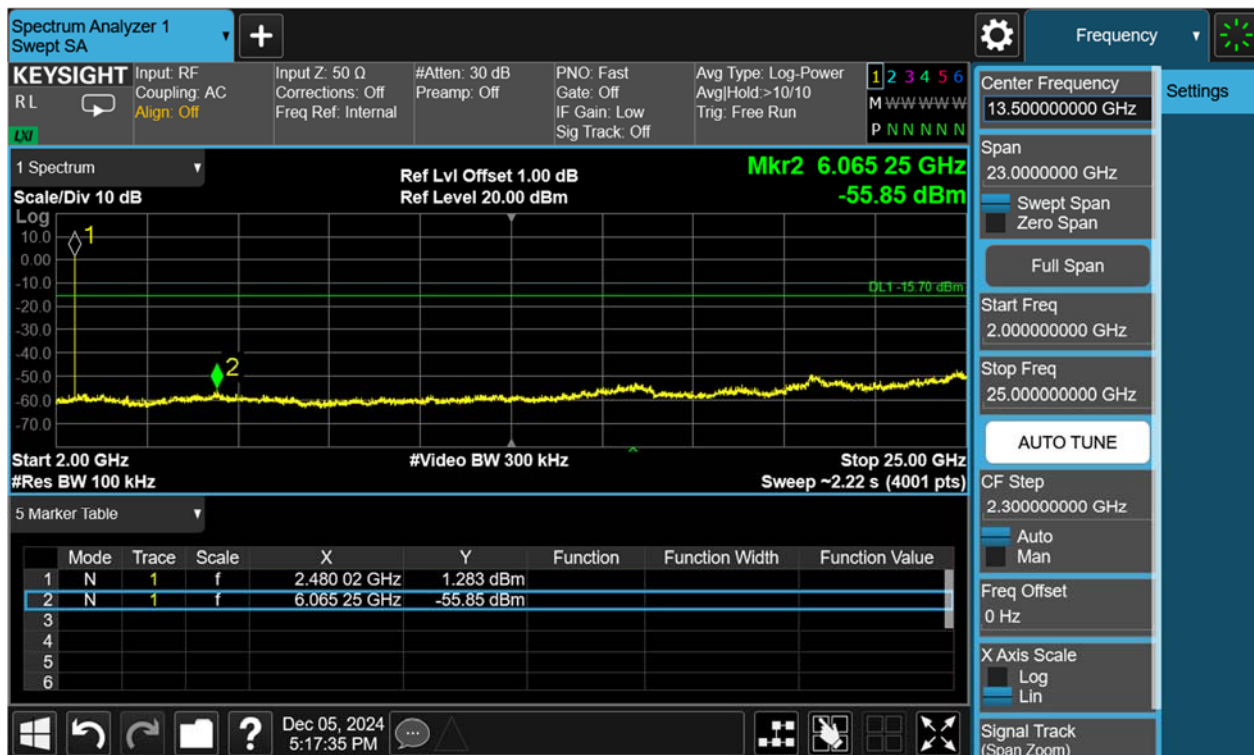
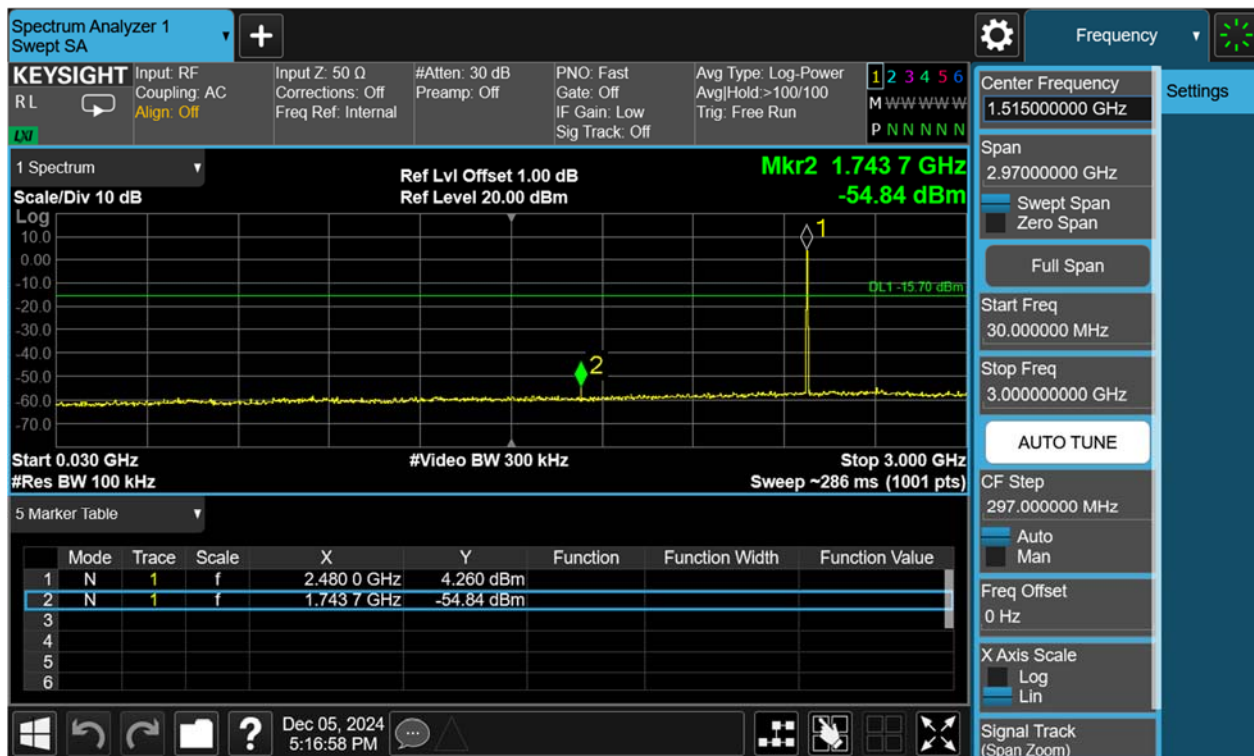
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Conducted spurious emissions 30MHz-25GHz



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4.1.6 Radiated Emission

RESULT:

PASS

Test standard : FCC Part 15.247(d), 15.205, 15.209
Requirement : ANSI C63.10-2013 clause 11.12,
KDB 558074 D01 v05r02, Clause 8.6
Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : Low/Middle/High
Operation Mode : A
Ambient temperature : 25.1°C
Relative humidity : 47%

Notes

Test plots please refer to the annex document "SHE24110067-02DE DATA BLE-TX EXHIBIT A".

1. For 9 kHz ~ 30 MHz, the amplitude of spurious emissions that are attenuated by more than 20dB below the permissible. The value has no need to be reported. In addition, During 30MHz to 1GHz test frequency range, only the worst mode data was reported in this report.
2. The spurious above 18GHz is noise only and 20dB below the limit. The value has no need to be reported.
3. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

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4.1.7 Band Edge (Restricted-band band-edge)

RESULT:

PASS

Test standard

: FCC Part 15.247(d), 15.205, 15.209

Requirement

: ANSI C63.10-2013 clause 11.13,
KDB 558074 D01 v05r02, Clause 8.7

Kind of test site

: 3m Semi-Anechoic Chamber

Test setup

Test Channel

: Low/Middle/High

Operation Mode

: A.1

Ambient temperature

: 25.1°C

Relative humidity

: 47%

Notes

Test plots please refer to the annex document “SHE24110067-02DE DATA BLE-TX EXHIBIT A”.

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4.2 Mains Emissions

4.2.1 Conducted Emission on AC Mains

RESULT:

PASS

Test standard	: FCC Part 15.207(a)
Requirement	: ANSI C63.10-2013, Clause 6.2
Kind of test site	: Shielded room

Test setup

Input Voltage	: which received AC 120V, 60Hz Power
Operation Mode	: A.1.a
Earthing	: Disconnected to GND
Ambient temperature	: 21.6°C
Relative humidity	: 49%

For details refer to following test plot.

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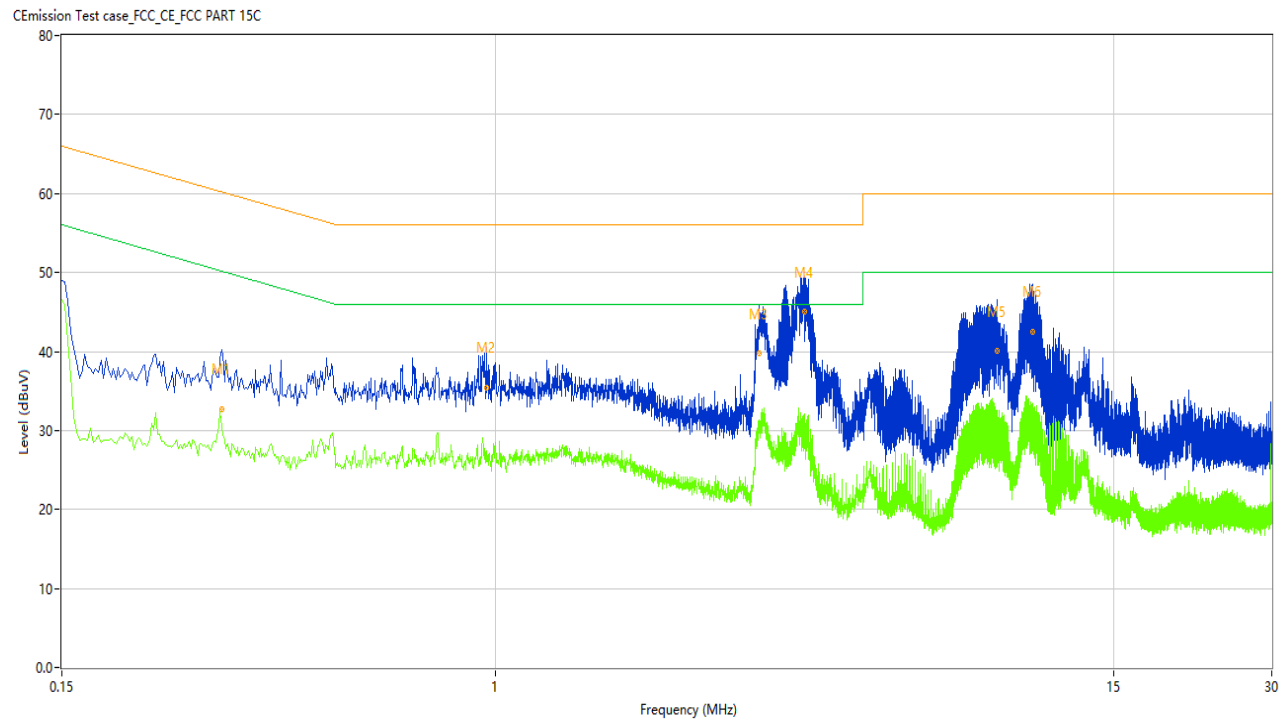
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Note: The all configurations were tested respectively, but only the worst data (at low channel) shown here.

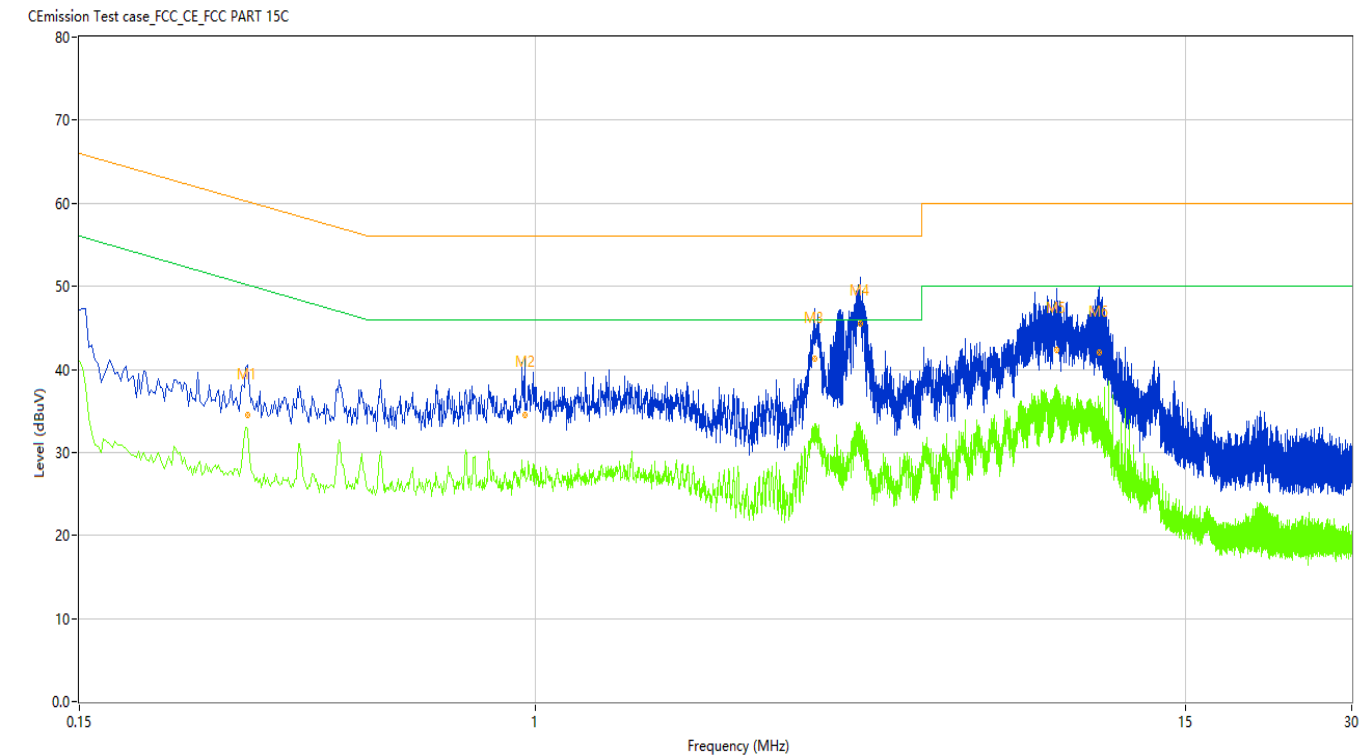
Figure 25: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.302	38.27	10.10	60.19	21.92	Peak	L	Pass
1*	0.302	32.62	10.10	60.19	27.57	QP	L	Pass
1**	0.302	30.37	10.10	50.19	19.82	AV	L	Pass
2	0.962	39.96	9.94	56.00	16.04	Peak	L	Pass
2*	0.962	35.38	9.94	56.00	20.62	QP	L	Pass
2**	0.962	27.36	9.94	46.00	18.64	AV	L	Pass
3	3.176	46.19	10.09	56.00	9.81	Peak	L	Pass
3*	3.176	39.70	10.09	56.00	16.30	QP	L	Pass
3**	3.176	31.18	10.09	46.00	14.82	AV	L	Pass
4	3.884	49.83	10.06	56.00	6.17	Peak	L	Pass
4*	3.884	45.03	10.06	56.00	10.97	QP	L	Pass
4**	3.884	31.27	10.06	46.00	14.73	AV	L	Pass
5	9.008	48.52	10.25	60.00	11.48	Peak	L	Pass
5*	9.008	40.13	10.25	60.00	19.87	QP	L	Pass
5**	9.008	31.95	10.25	50.00	18.05	AV	L	Pass
6	10.536	50.60	10.28	60.00	9.40	Peak	L	Pass
6*	10.536	42.43	10.28	60.00	17.57	QP	L	Pass
6**	10.536	33.27	10.28	50.00	16.73	AV	L	Pass

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Figure 26: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.302	38.11	10.10	60.19	22.08	Peak	N	Pass
1*	0.302	34.43	10.10	60.19	25.76	QP	N	Pass
1**	0.302	32.89	10.10	50.19	17.30	AV	N	Pass
2	0.958	39.24	9.95	56.00	16.76	Peak	N	Pass
2*	0.958	34.48	9.95	56.00	21.52	QP	N	Pass
2**	0.958	28.10	9.95	46.00	17.90	AV	N	Pass
3	3.204	48.22	10.09	56.00	7.78	Peak	N	Pass
3*	3.204	41.24	10.09	56.00	14.76	QP	N	Pass
3**	3.204	32.56	10.09	46.00	13.44	AV	N	Pass
4	3.876	51.36	10.06	56.00	4.64	Peak	N	Pass
4*	3.876	45.42	10.06	56.00	10.58	QP	N	Pass
4**	3.876	33.13	10.06	46.00	12.87	AV	N	Pass
5	8.800	49.40	10.24	60.00	10.60	Peak	N	Pass
5*	8.800	42.28	10.24	60.00	17.72	QP	N	Pass
5**	8.800	38.12	10.24	50.00	11.88	AV	N	Pass
6	10.478	50.19	10.28	60.00	9.81	Peak	N	Pass
6*	10.478	42.00	10.28	60.00	18.00	QP	N	Pass
6**	10.478	35.72	10.28	50.00	14.28	AV	N	Pass

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5 Appendixes

5.1 Photographs of the Sample



Front of the sample



Rear of the sample

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Left of the sample



Right of the sample

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Top of the sample



Bottom of the sample

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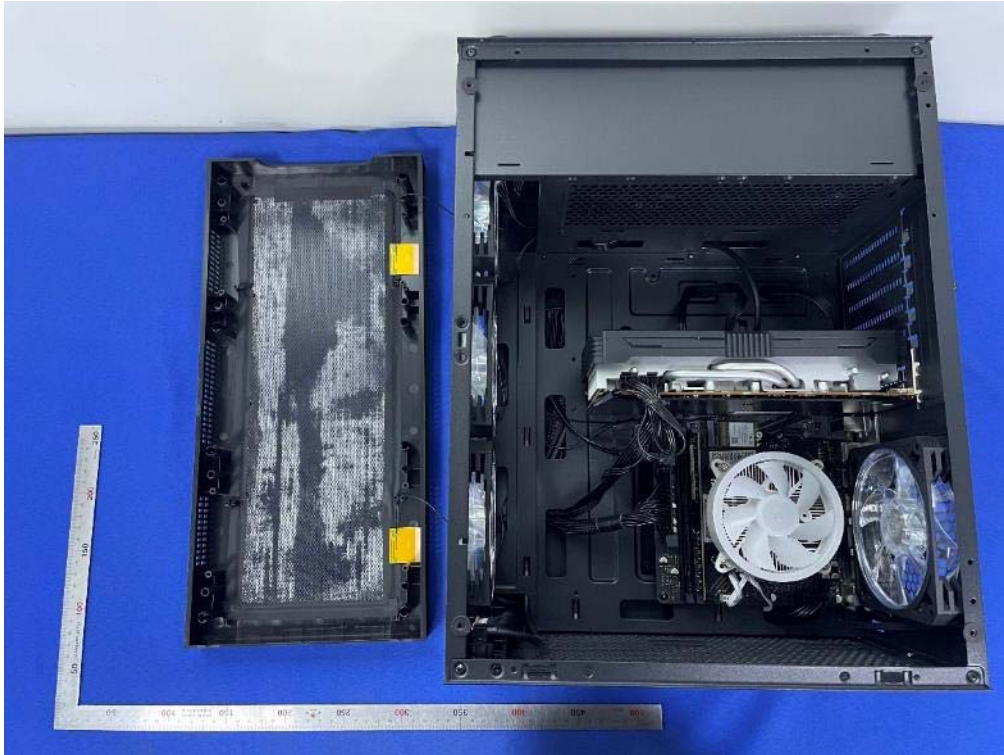
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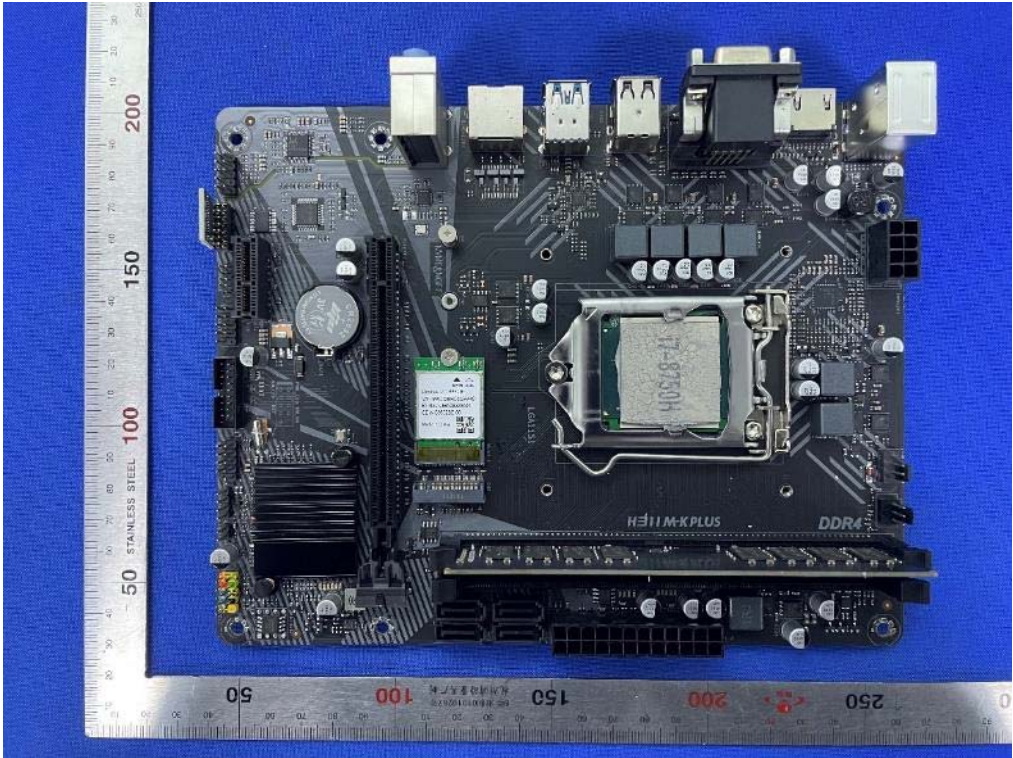


Open-1 of the sample

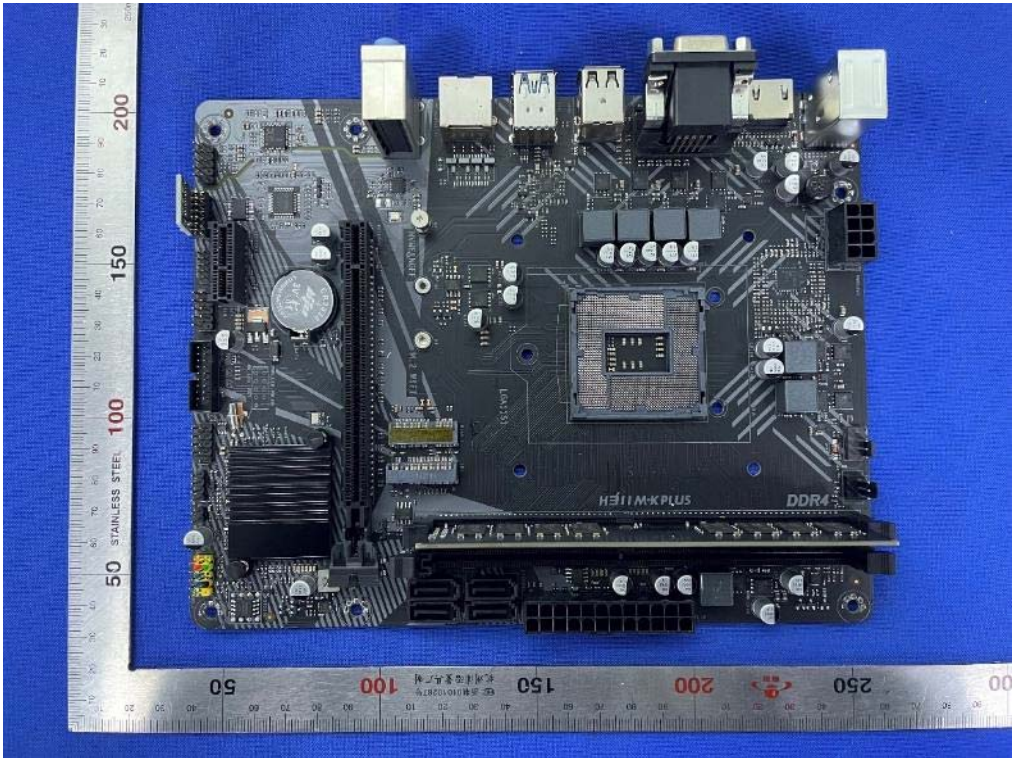


Internal-1 of the sample

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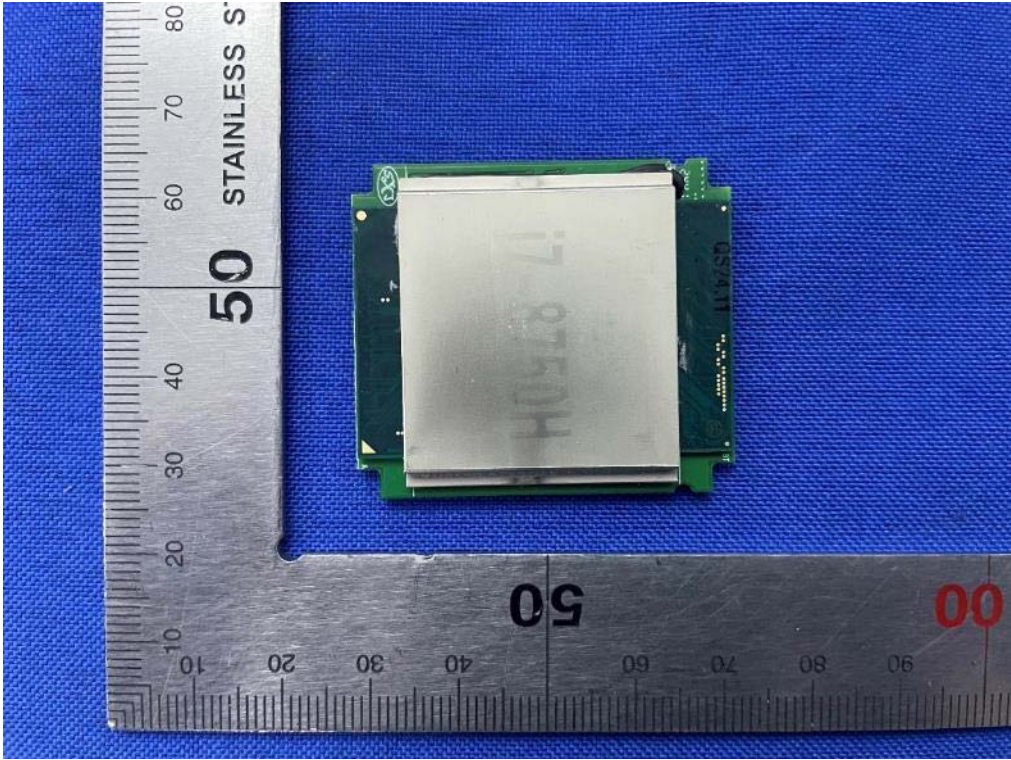
Internal-2 of the sample



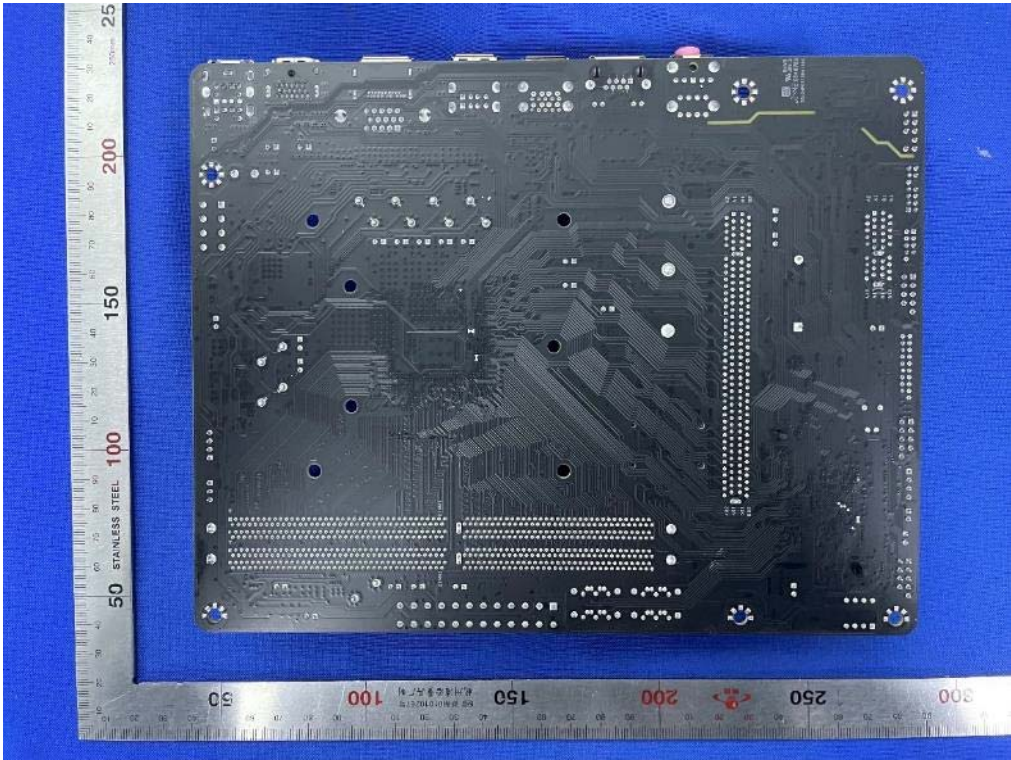
Internal-3 of the sample

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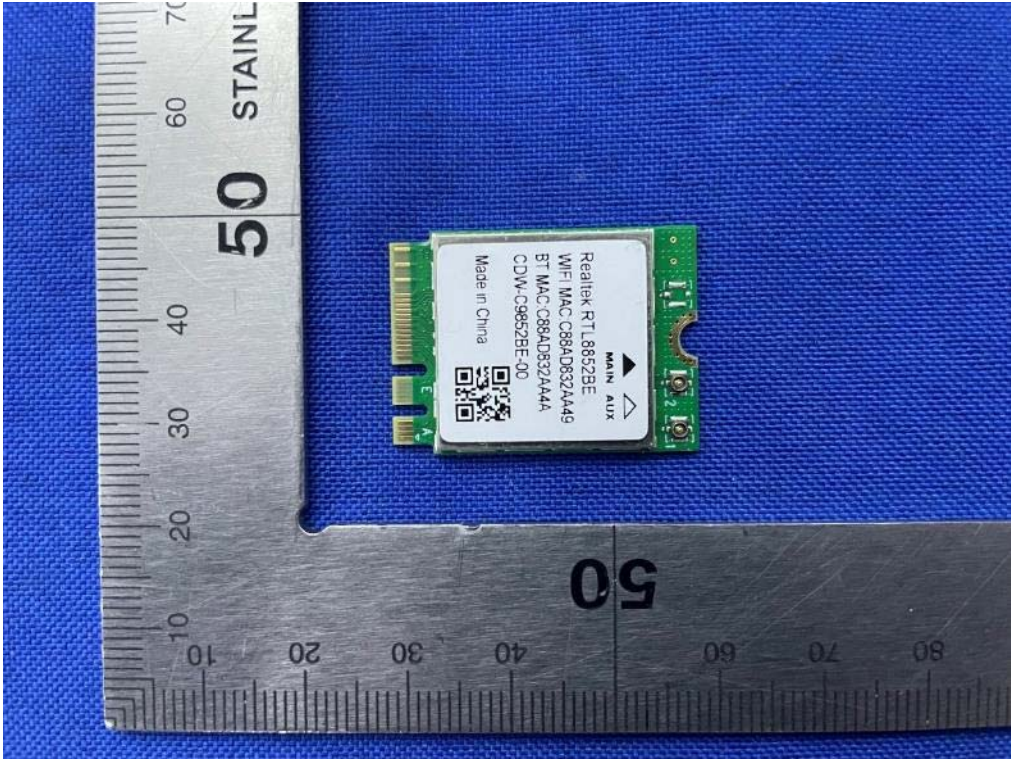
Internal-4 of the sample



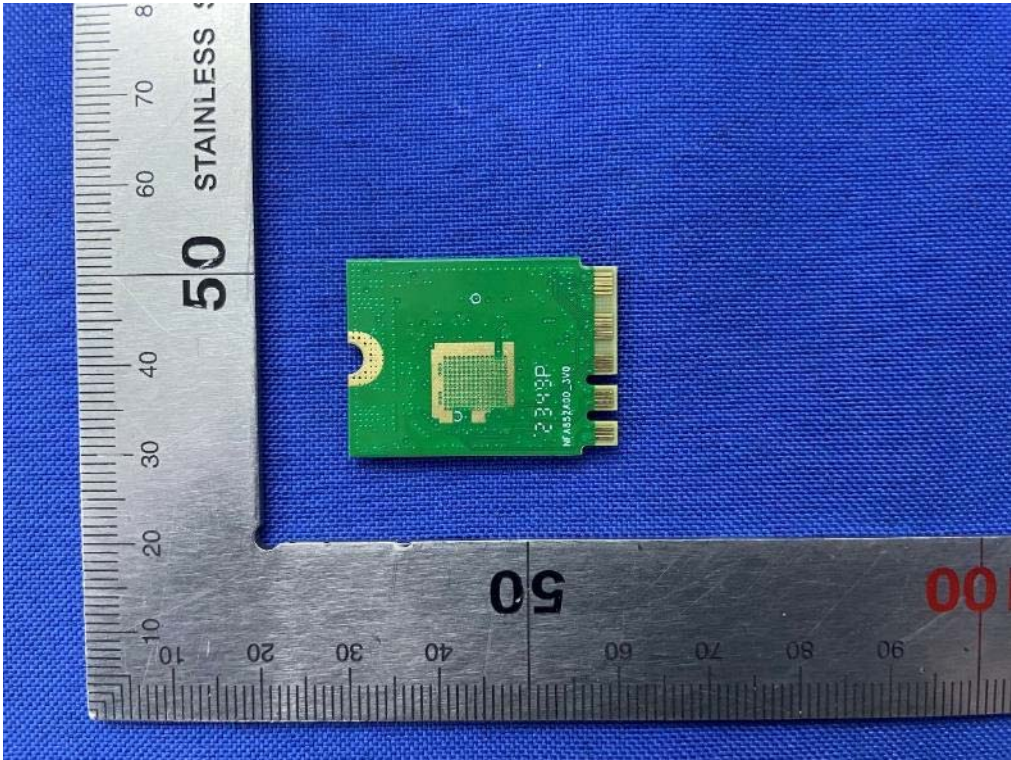
Internal-5 of the sample

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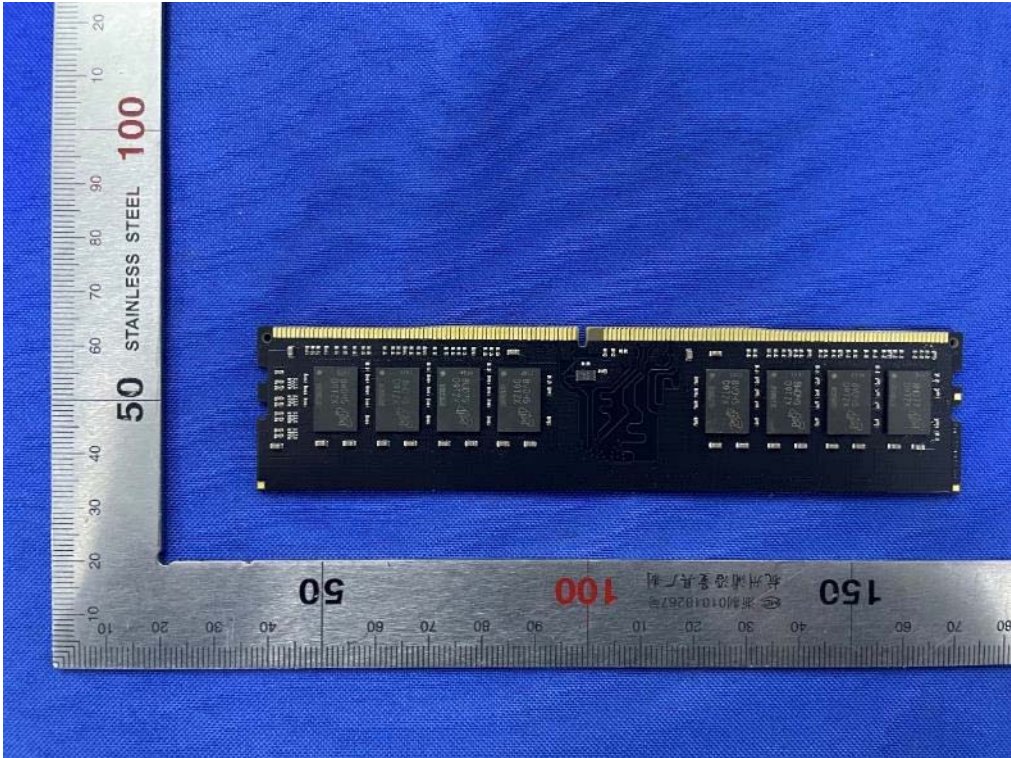


Internal-6 of the sample

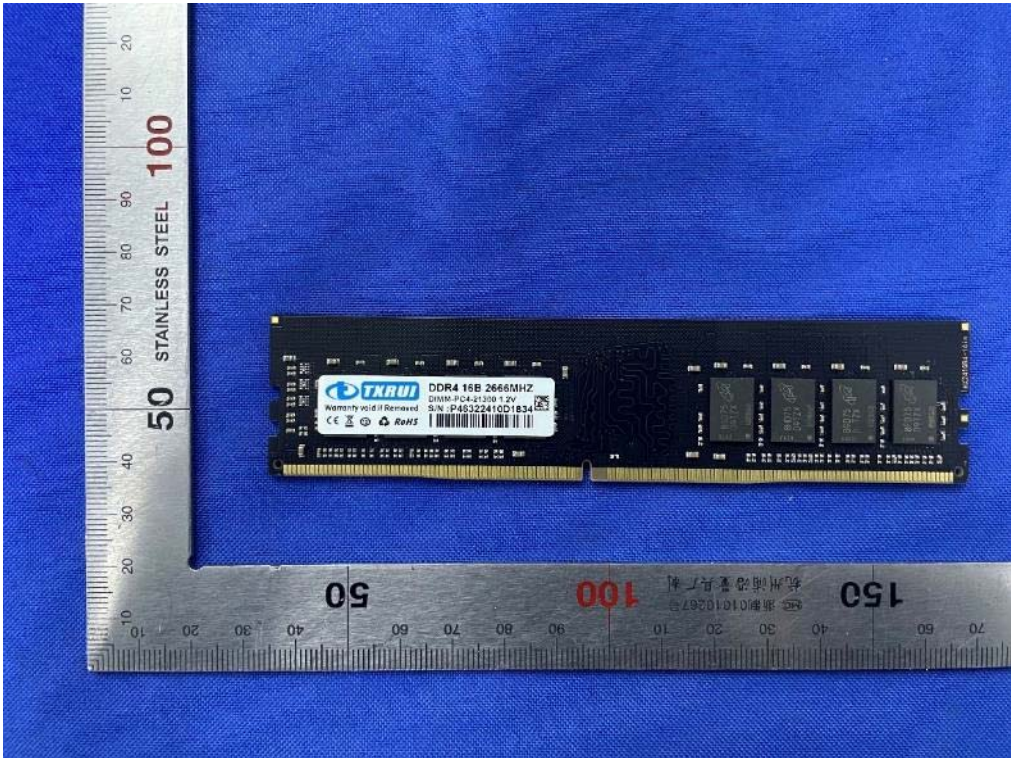


Internal-7 of the sample

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Internal-8 of the sample



Internal-9 of the sample

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Internal-10 of the sample



Internal-11 of the sample

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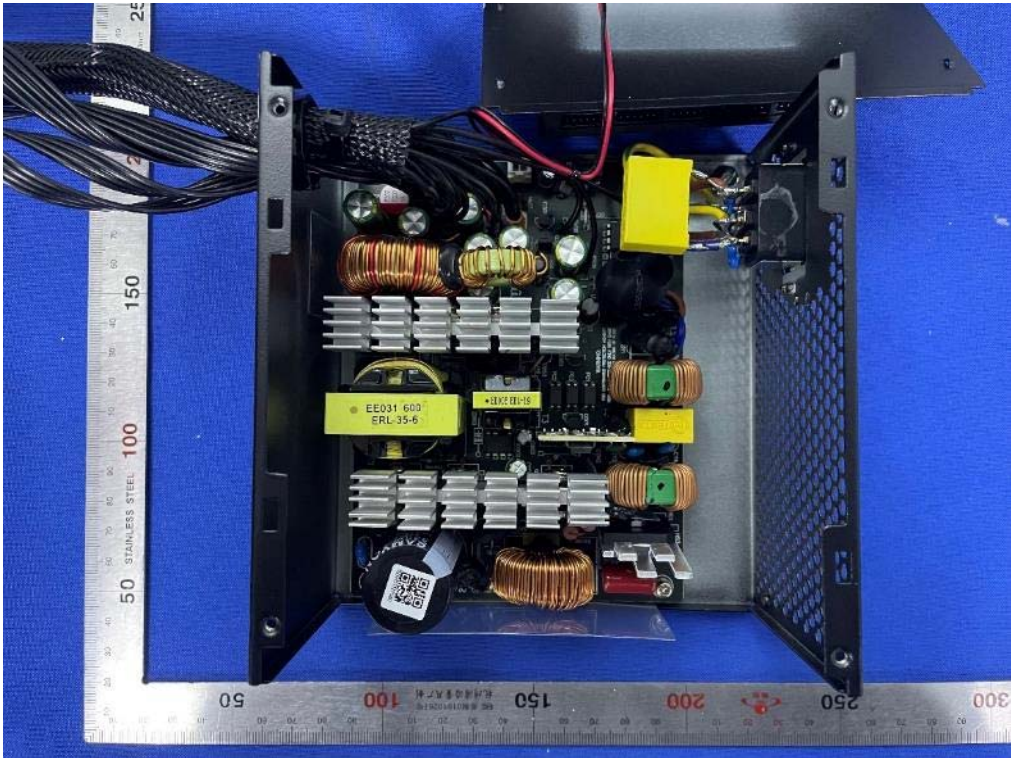
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Internal-12 of the sample



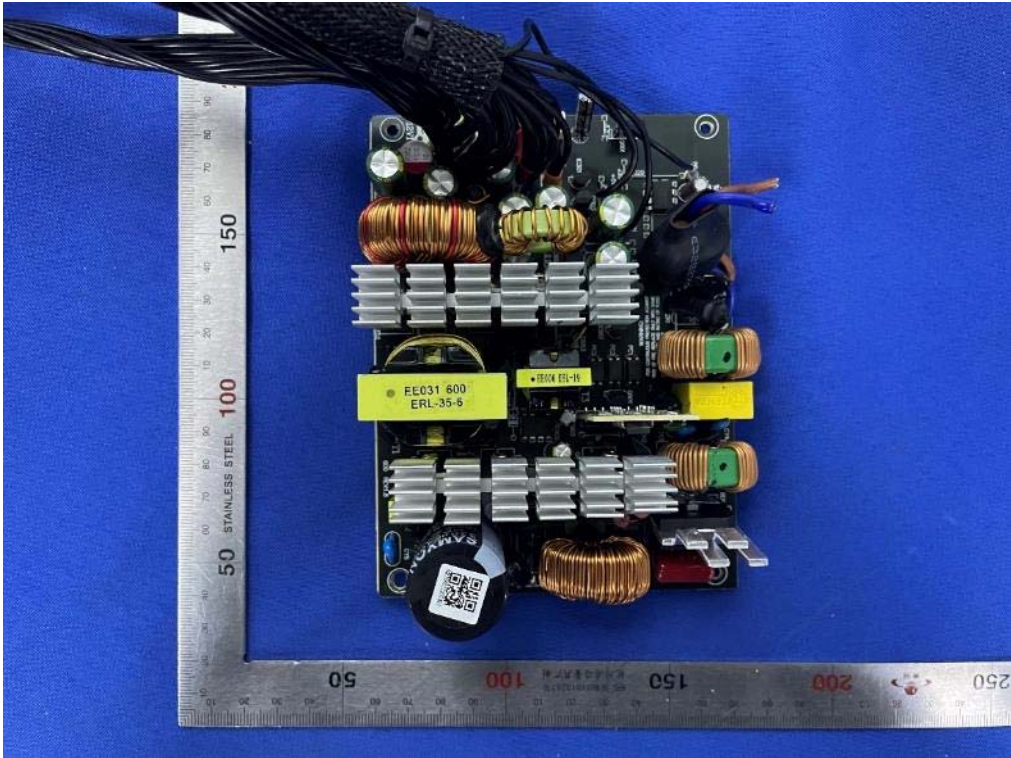
Internal-13 of the sample

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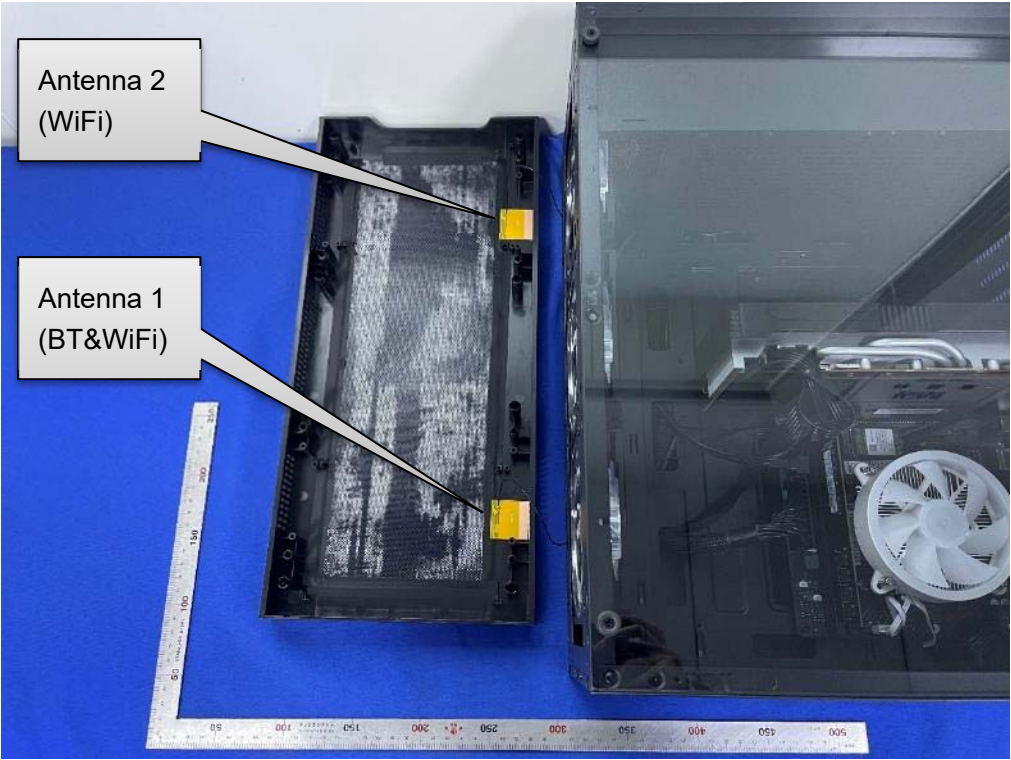


Internal-14 of the sample



Internal-15 of the sample

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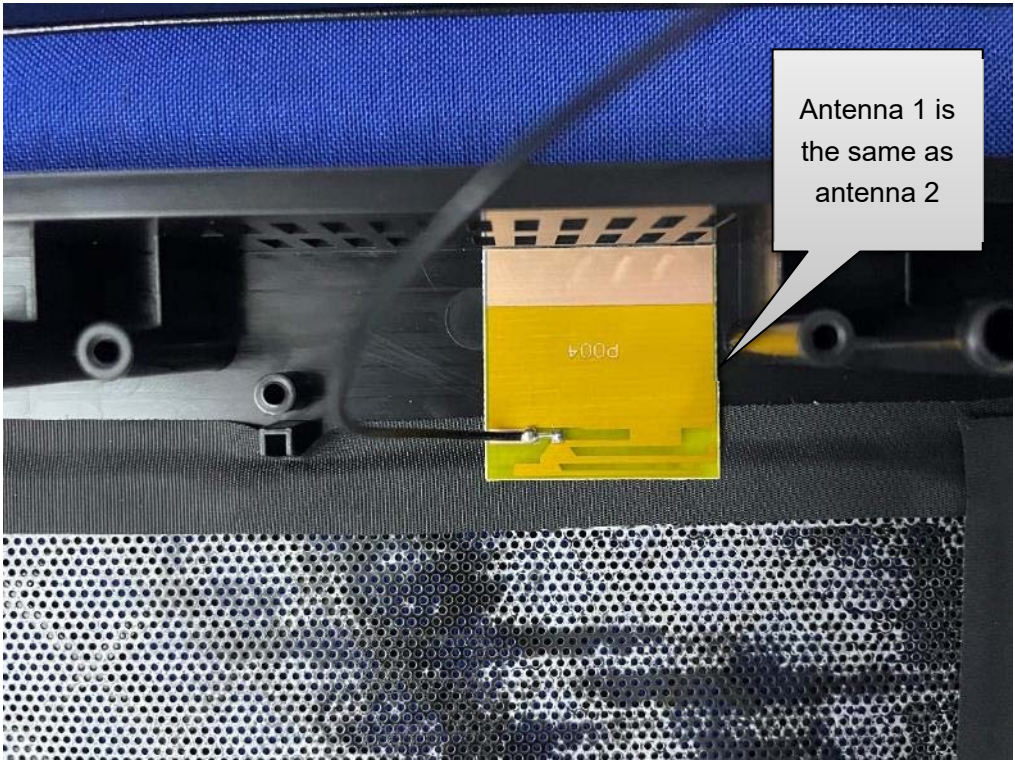
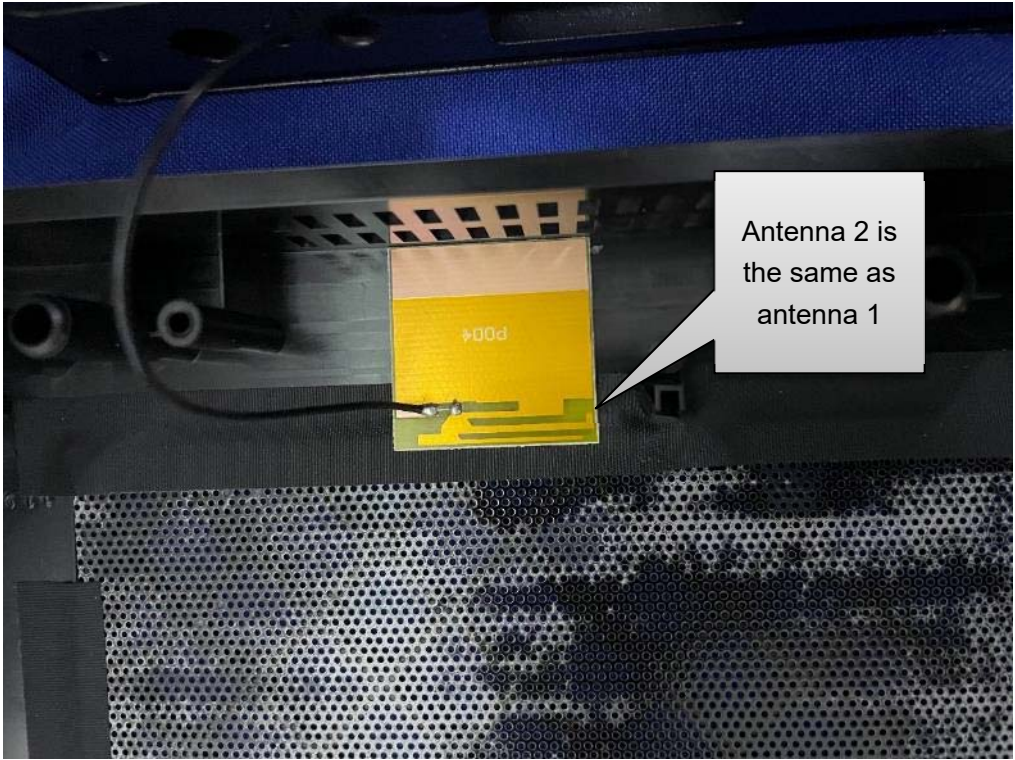


Antenna Position



Antenna Interface

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Antenna Photo

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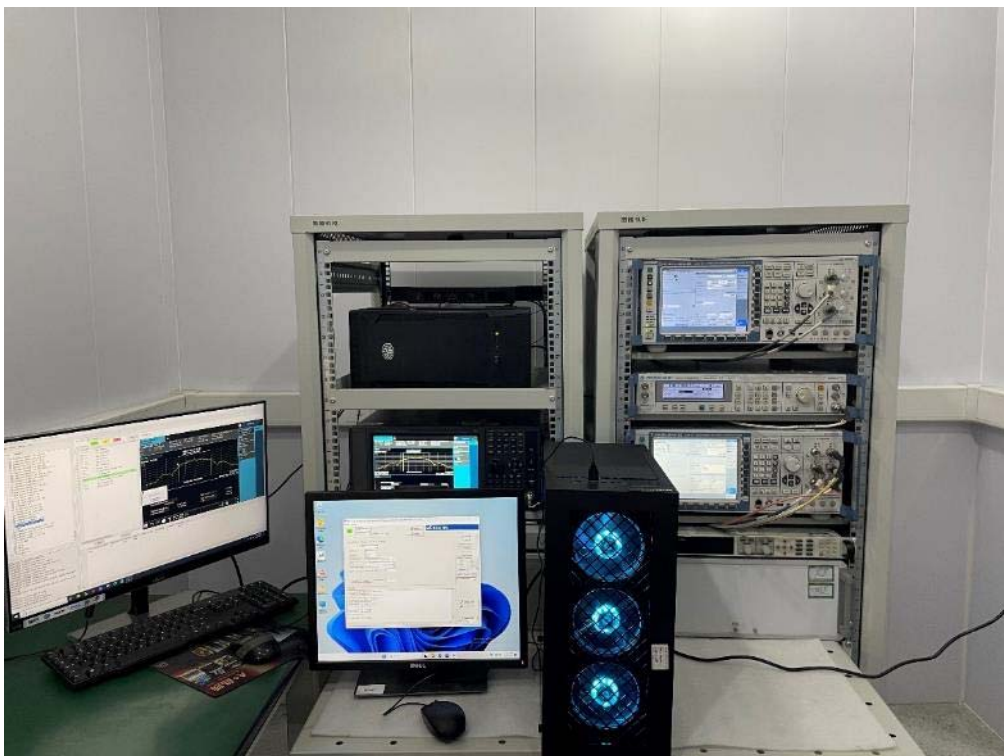
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5.2 Set-up for Conducted Emissions



5.3 Set-up for Conducted RF test at Antenna Port



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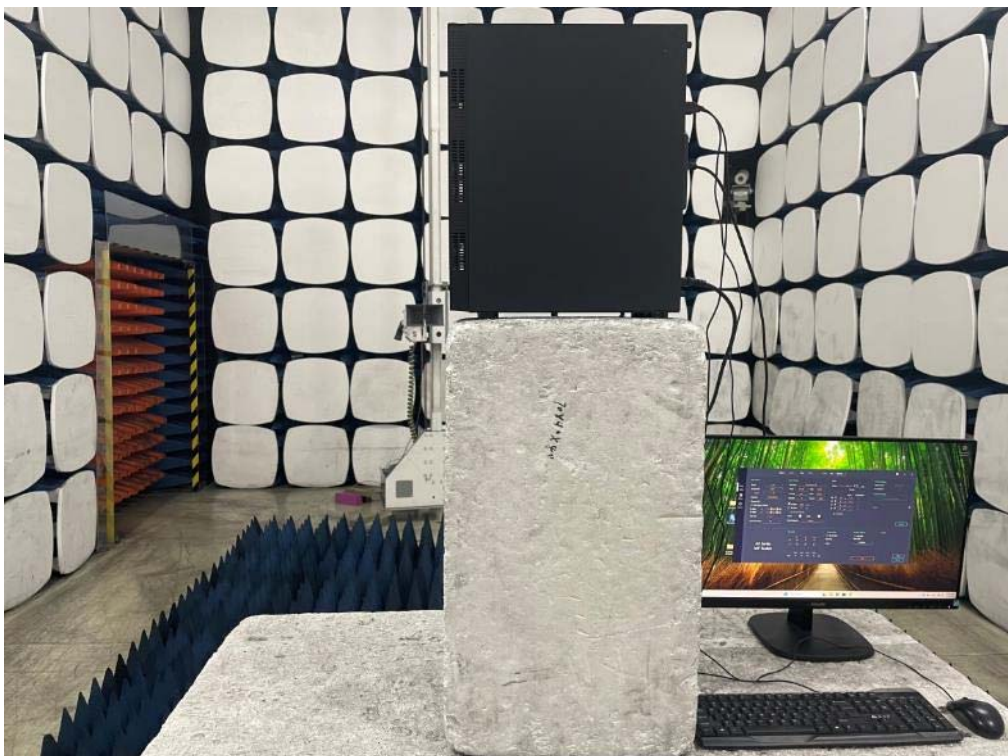
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5.4 Set-up for Spurious Emissions below 1GHz



5.5 Set-up for Spurious Emissions above 1GHz



End of the report