Conducted spurious emissions 30MHz-25GHz

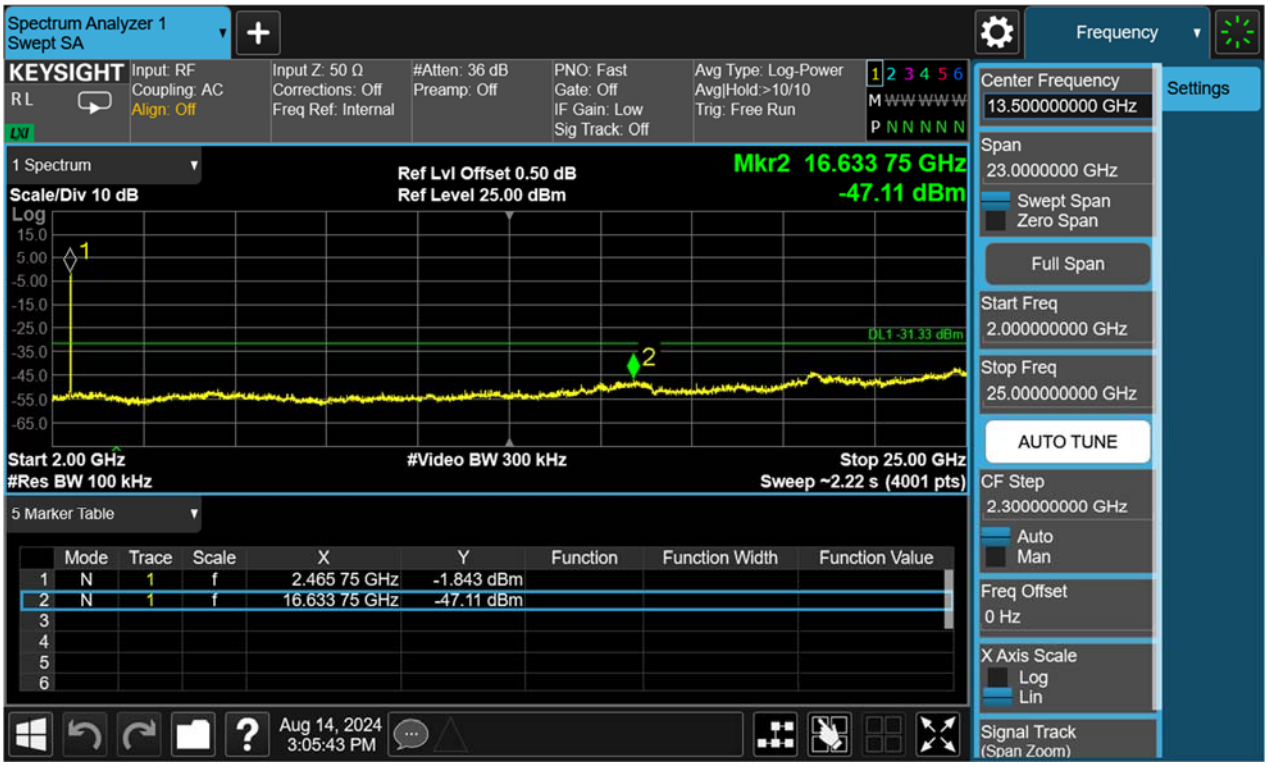
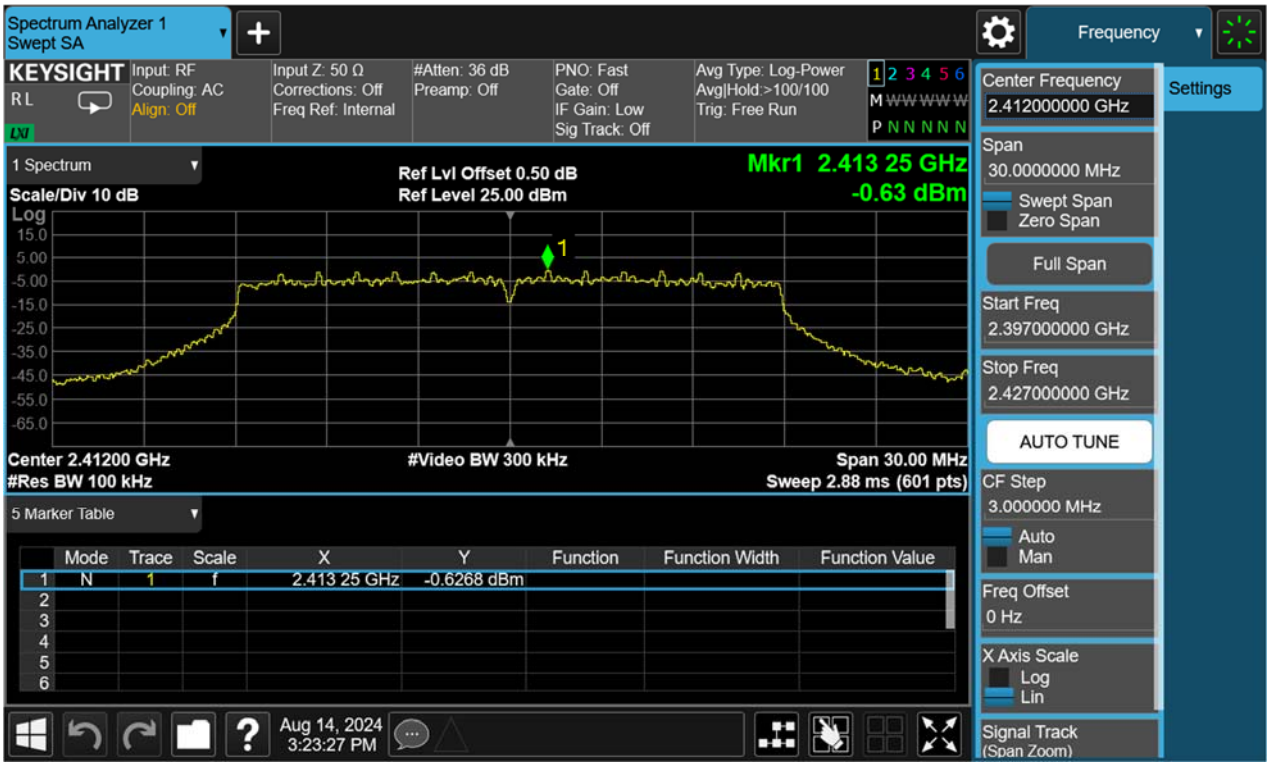


Figure 25: Conducted Spurious Emission & Authorized-band band-edge, 802.11n(HT20), 2412MHz

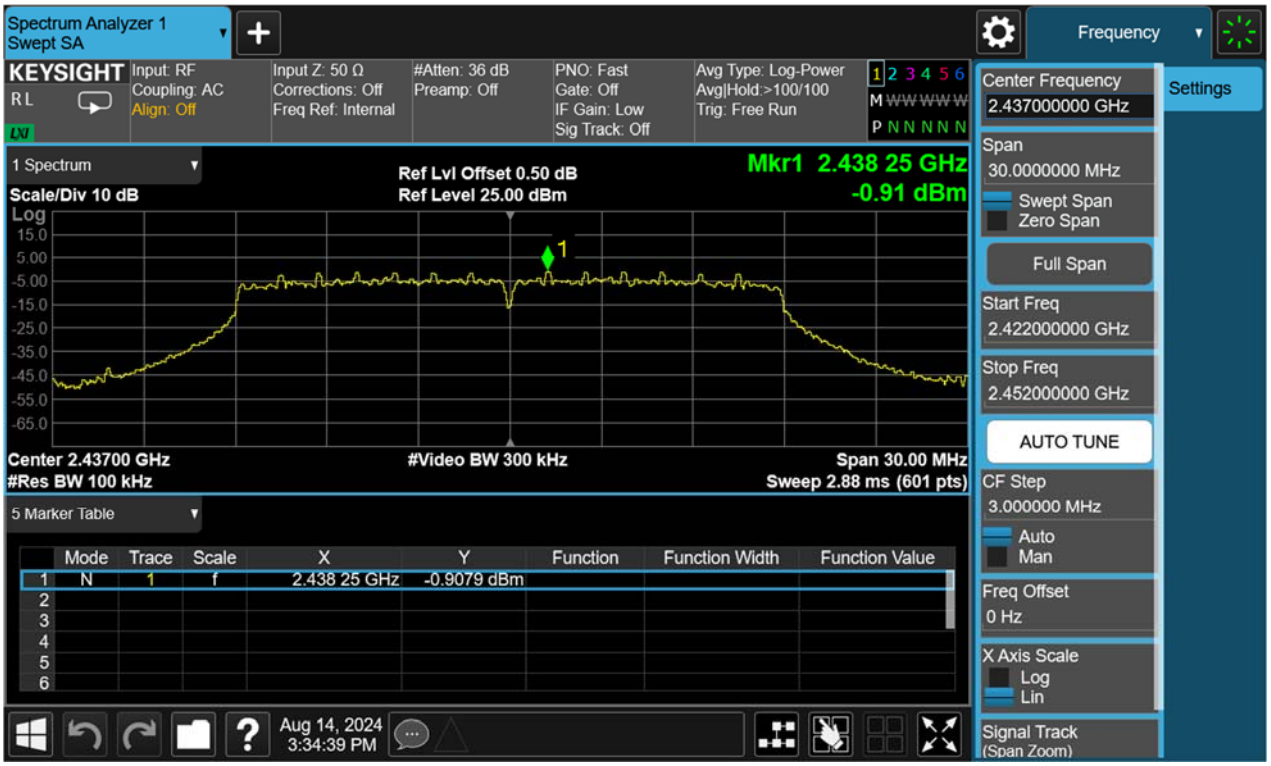
Carrier Level



Band Edge

Conducted spurious emissions 30MHz-25GHz

Figure 26: Conducted Spurious Emission & Authorized-band band-edge, 802.11n(HT20), 2437MHz Carrier Level



Conducted spurious emissions 30MHz-25GHz

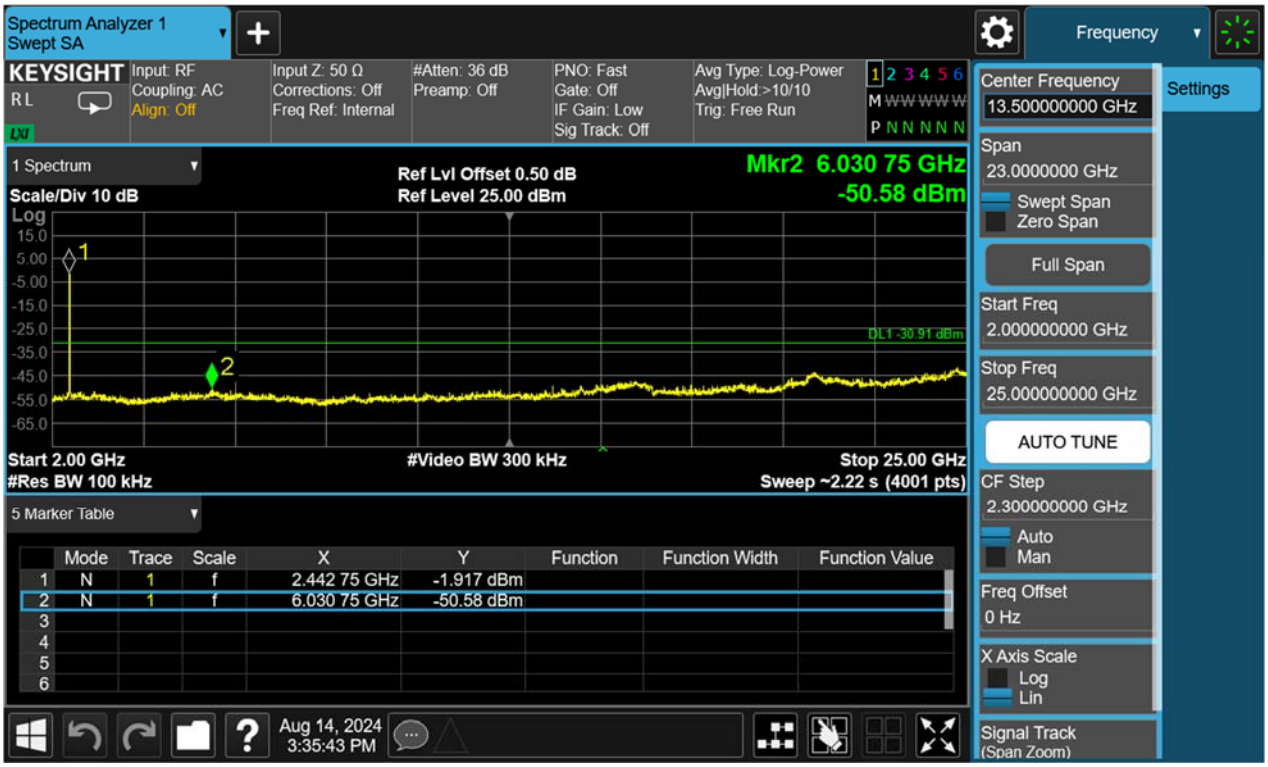
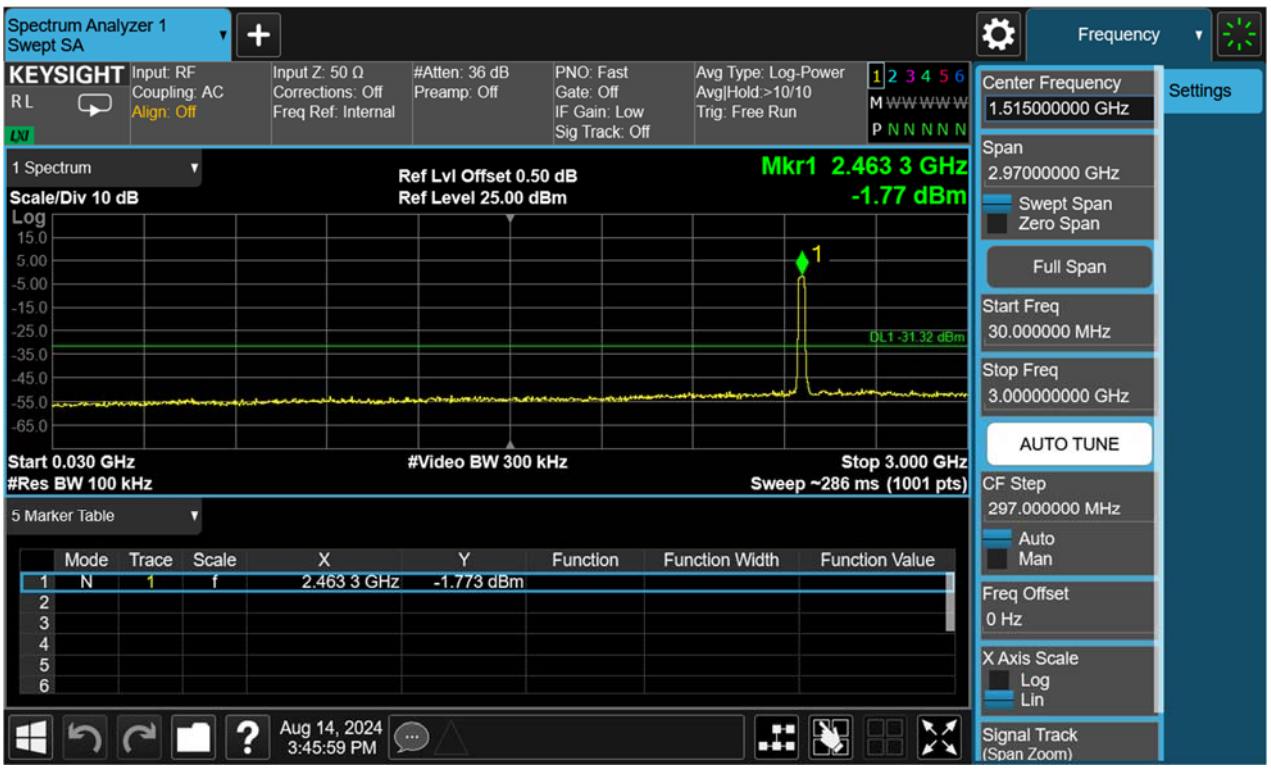


Figure 27: Conducted Spurious Emission & Authorized-band band-edge, 802.11n(HT20), 2462MHz Carrier Level

Band Edge

Conducted spurious emissions 30MHz-25GHz




Spectrum Analyzer 1
Swept SA
Frequency
KEYSIGHT
Input: RF
Coupling: AC
Align: Off
Input Z: 50 Ω
Corrections: Off
Freq Ref: Internal
#Atten: 36 dB
Preamp: Off
PNO: Fast
Gate: Off
IF Gain: Low
Sig Track: Off
Avg Type: Log-Power
Avg|Hold:>10/10
Trig: Free Run
1 Spectrum
Scale/Div 10 dB
Ref Lvl Offset 0.50 dB
Ref Level 25.00 dBm
Mkr2 6.065 25 GHz
-49.39 dBm
DL1 -31.32 dBm
Start 2.00 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Stop 25.00 GHz
Sweep ~2.22 s (4001 pts)
5 Marker Table
Mode Trace Scale X Y Function Function Width Function Value
1 N 1 f 2.465 75 GHz -2.116 dBm
2 N 1 f 6.065 25 GHz -49.39 dBm
Aug 14, 2024
3:46:37 PM
Center Frequency
13.500000000 GHz
Span
23.0000000 GHz
Swept Span
Zero Span
Full Span
Start Freq
2.000000000 GHz
Stop Freq
25.000000000 GHz
AUTO TUNE
CF Step
2.300000000 GHz
Auto
Man
Freq Offset
0 Hz
X Axis Scale
Log
Lin
Signal Track
(Span Zoom)
Settings

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.1.a
Ambient temperature	:	24.1°C
Relative humidity	:	53%

Notes

Test plots please refer to the annex document "SHE24090032-02CE DATA WIFI 2.4GHz-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.

2. The spurious above 18GHz is noise only and 20dB below the limit. The value has no need to be reported.

3. All test modes had been pre-tested, but only the 802.11b at low channel of below 1 GHz is the worst case and recorded in the report.

4. 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.

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.a
Ambient temperature	:	23.4°C
Relative humidity	:	41%

Notes:

1. Test plots please refer to the annex document "SHE24090032-02CE DATA WIFI 2.4GHz-TX EXHIBIT A".

2. 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.

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

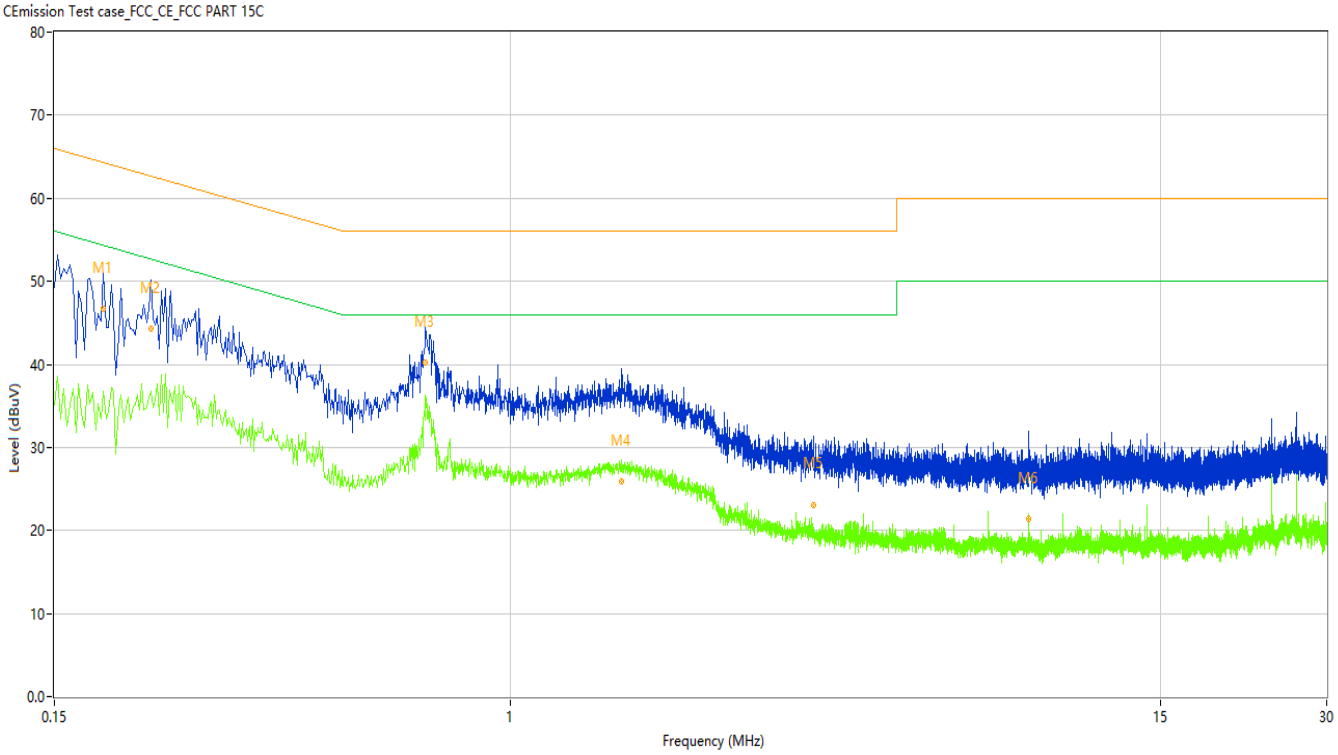
Test setup

Input Voltage	:	DC 12V supply by AC adapter (which received AC 120V, 60Hz)
Operation Mode	:	A.1.a
Earthing	:	Disconnected to GND
Ambient temperature	:	21°C
Relative humidity	:	50%

For details refer to following test plot.

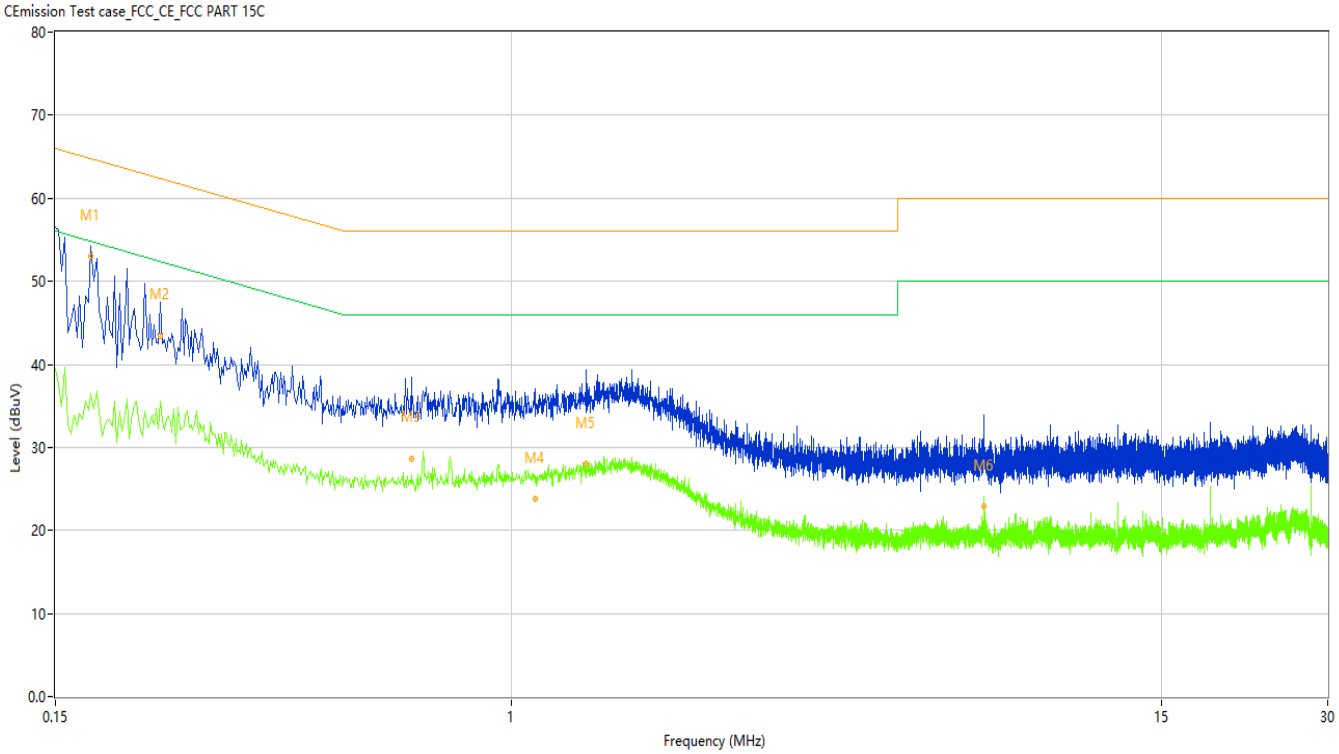
Note：All test modes had been pre-tested, but only the 802.11b at low channel is the worst case and recorded in the report.

Figure 28: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.184	54.79	9.84	64.30	9.51	Peak	L	Pass
1*	0.184	46.65	9.84	64.30	17.65	QP	L	Pass
1**	0.184	36.71	9.84	54.30	17.59	AV	L	Pass
2	0.224	52.14	9.90	62.67	10.53	Peak	L	Pass
2*	0.224	44.23	9.90	62.67	18.44	QP	L	Pass
2**	0.224	36.77	9.90	52.67	15.90	AV	L	Pass
3	0.704	44.24	9.88	56.00	11.76	Peak	L	Pass
3*	0.704	40.24	9.88	56.00	15.76	QP	L	Pass
3**	0.704	36.34	9.88	46.00	9.66	AV	L	Pass
4	1.590	32.87	9.76	56.00	23.13	Peak	L	Pass
4*	1.590	25.87	9.76	56.00	30.13	QP	L	Pass
4**	1.590	28.43	9.76	46.00	17.57	AV	L	Pass
5	3.546	28.25	9.79	56.00	27.75	Peak	L	Pass
5*	3.546	22.98	9.79	56.00	33.02	QP	L	Pass
5**	3.546	20.27	9.79	46.00	25.73	AV	L	Pass
6	8.668	28.95	9.68	60.00	31.05	Peak	L	Pass
6*	8.668	21.36	9.68	60.00	38.64	QP	L	Pass
6**	8.668	21.67	9.68	50.00	28.33	AV	L	Pass

Figure 29: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.174	60.26	9.96	64.77	4.51	Peak	N	Pass
1*	0.174	52.98	9.96	64.77	11.79	QP	N	Pass
1**	0.174	36.47	9.96	54.77	18.30	AV	N	Pass
2	0.232	53.79	9.98	62.38	8.59	Peak	N	Pass
2*	0.232	43.35	9.98	62.38	19.03	QP	N	Pass
2**	0.232	35.53	9.98	52.38	16.85	AV	N	Pass
3	0.660	35.38	9.98	56.00	20.62	Peak	N	Pass
3*	0.660	28.60	9.98	56.00	27.40	QP	N	Pass
3**	0.660	26.73	9.98	46.00	19.27	AV	N	Pass
4	1.106	31.08	9.90	56.00	24.92	Peak	N	Pass
4*	1.106	23.86	9.90	56.00	32.14	QP	N	Pass
4**	1.106	26.45	9.90	46.00	19.55	AV	N	Pass
5	1.370	33.89	9.91	56.00	22.11	Peak	N	Pass
5*	1.370	27.99	9.91	56.00	28.01	QP	N	Pass
5**	1.370	28.03	9.91	46.00	17.97	AV	N	Pass
6	7.164	31.30	9.80	60.00	28.70	Peak	N	Pass
6*	7.164	22.93	9.80	60.00	37.07	QP	N	Pass
6**	7.164	23.33	9.80	50.00	26.67	AV	N	Pass

5 Appendixes

5.1 Photographs of the Sample

All of the sample

Front of the sample

Rear of the sample

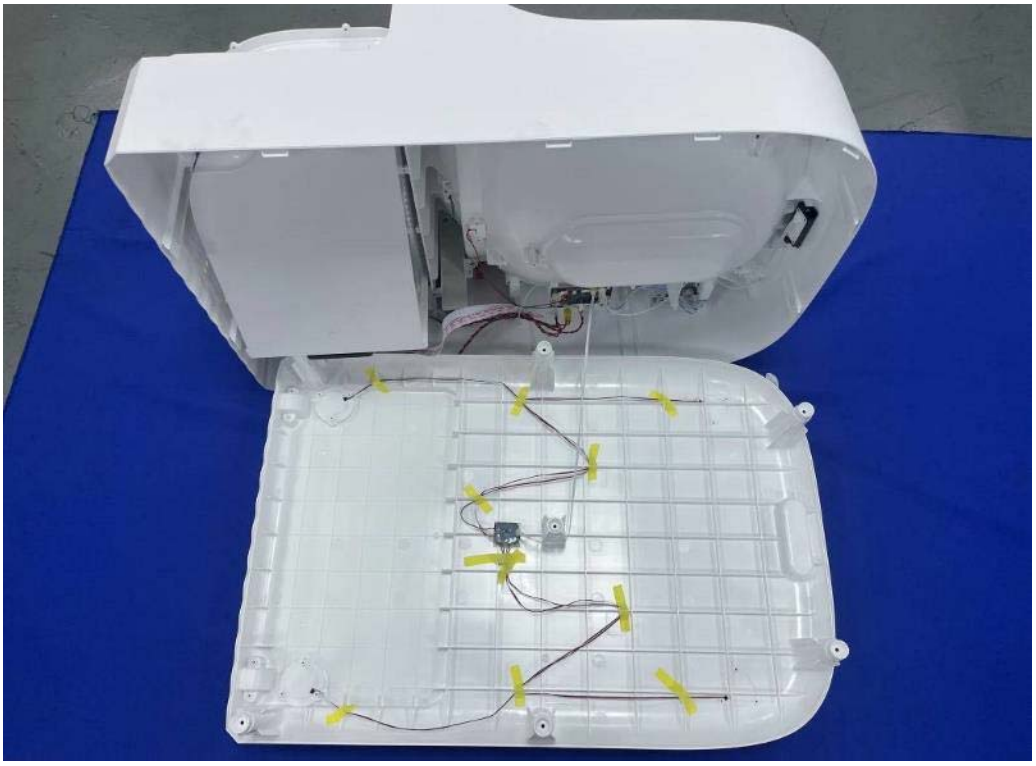
Left of the sample

Right of the sample

Top of the sample

Bottom of the sample

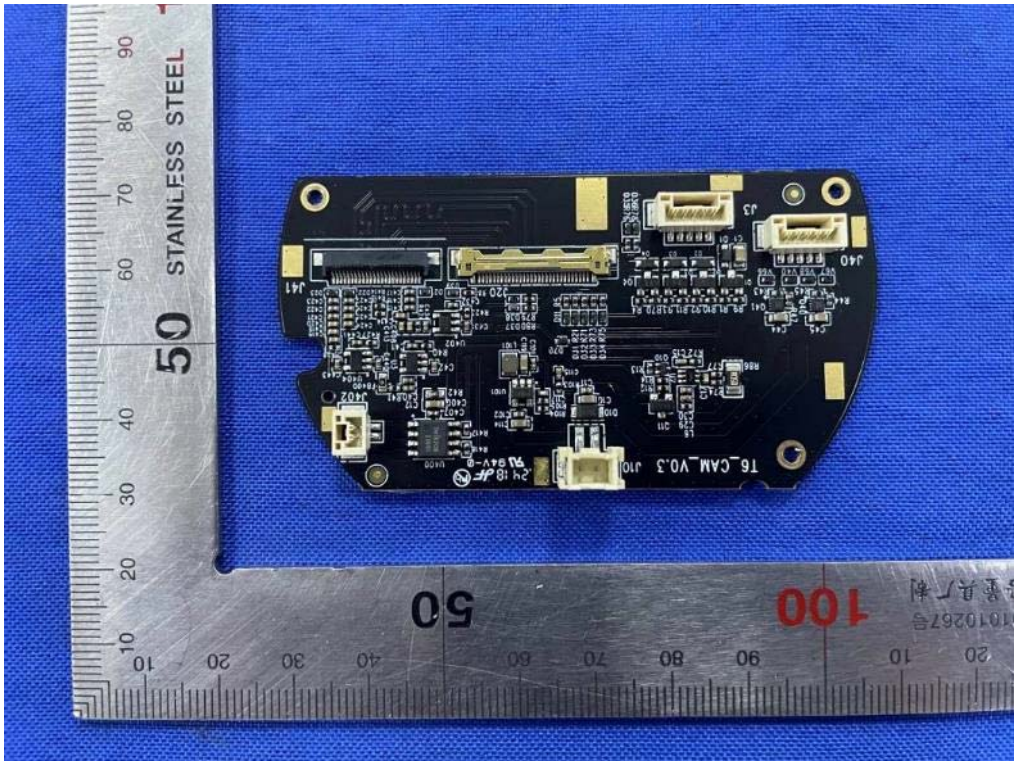
Open-1 of the sample



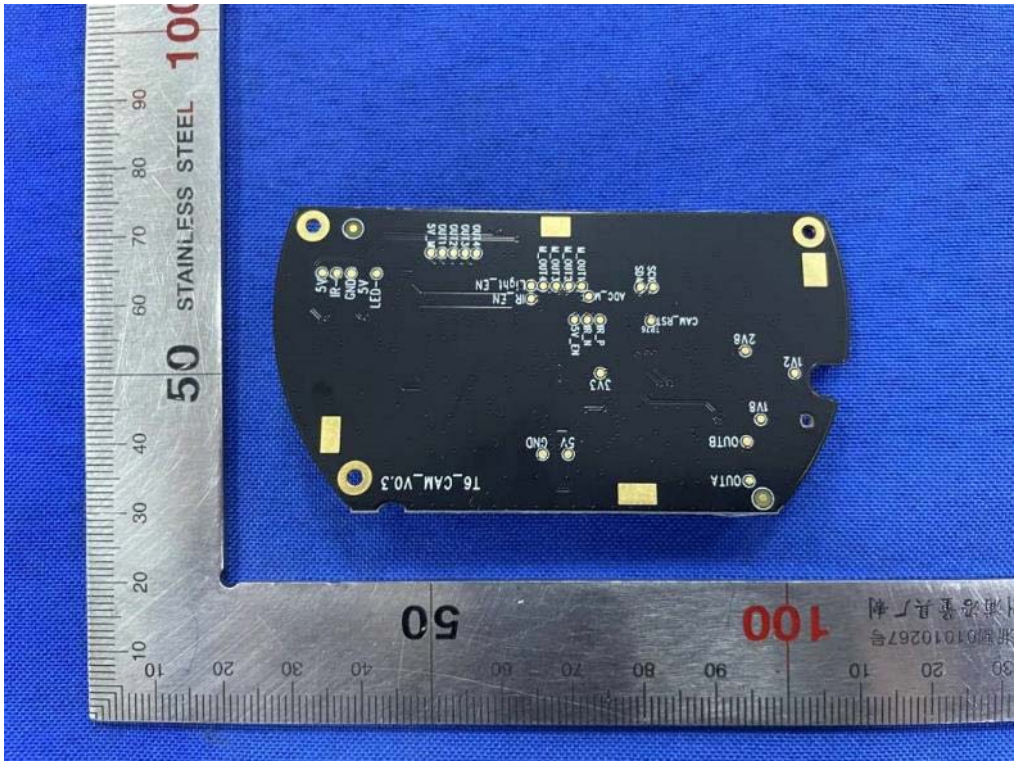
Open-2 of the sample

Open-3 of the sample

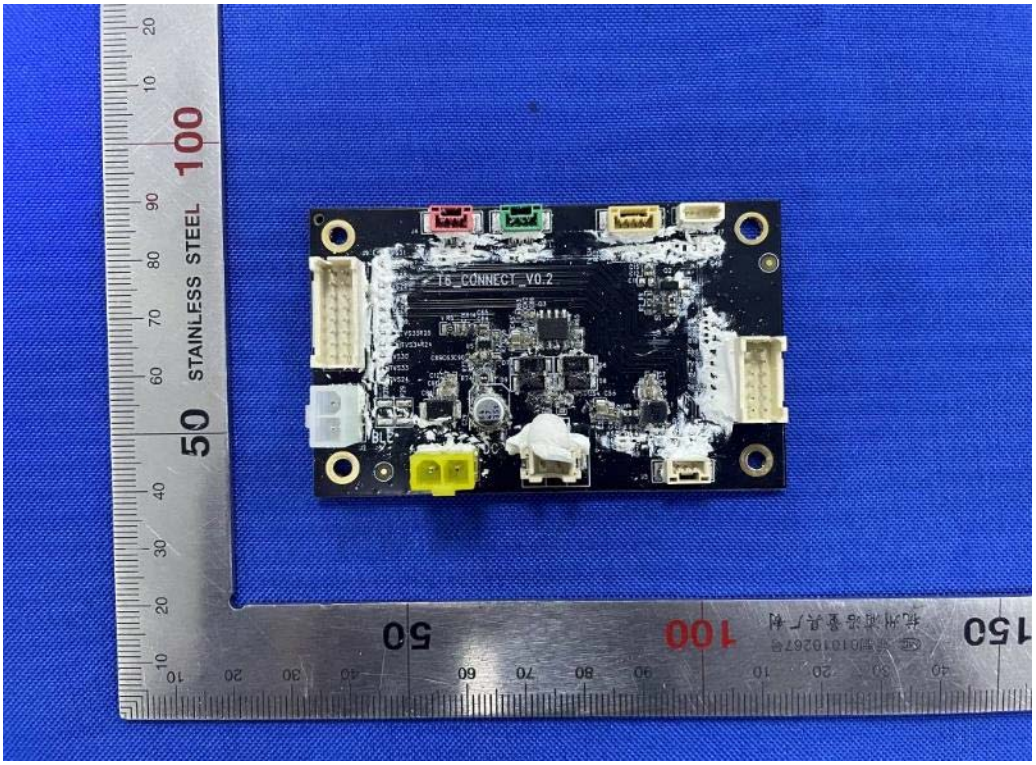
Open-4 of the sample



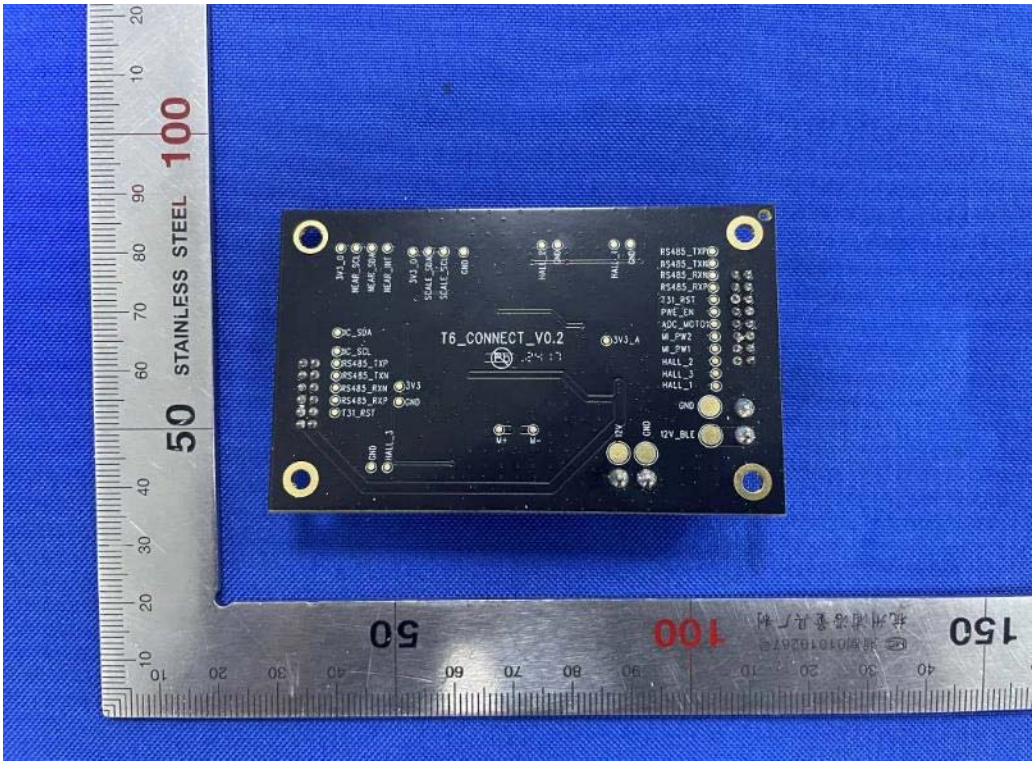
Internal-1 of the sample



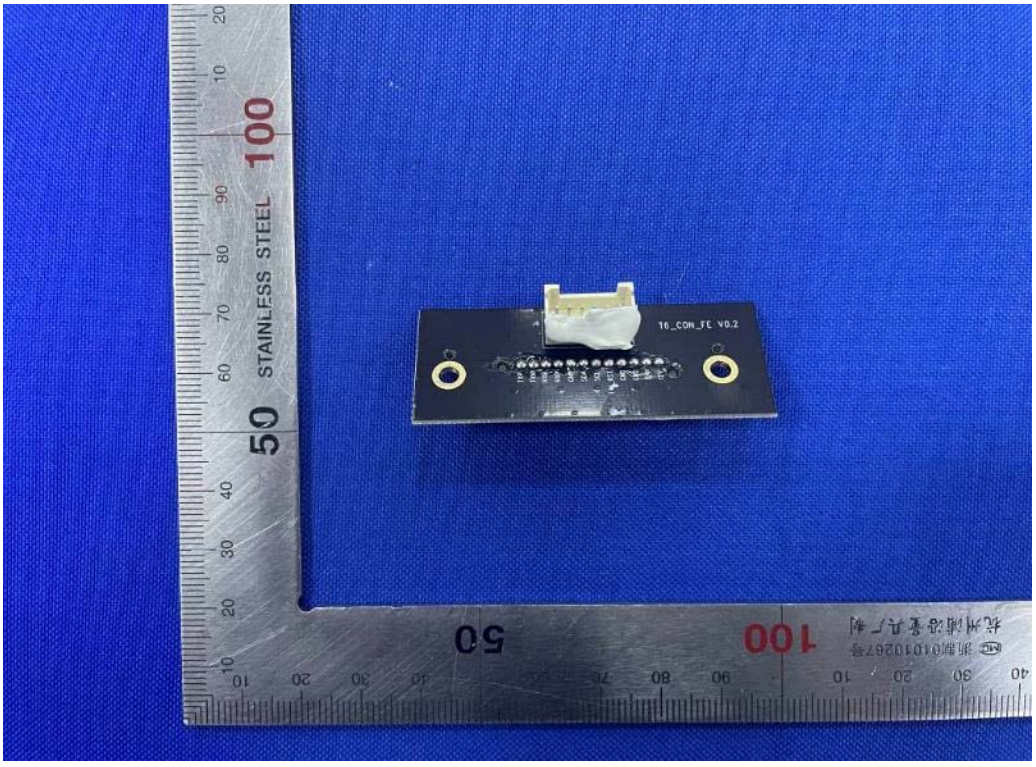
Internal-2 of the sample



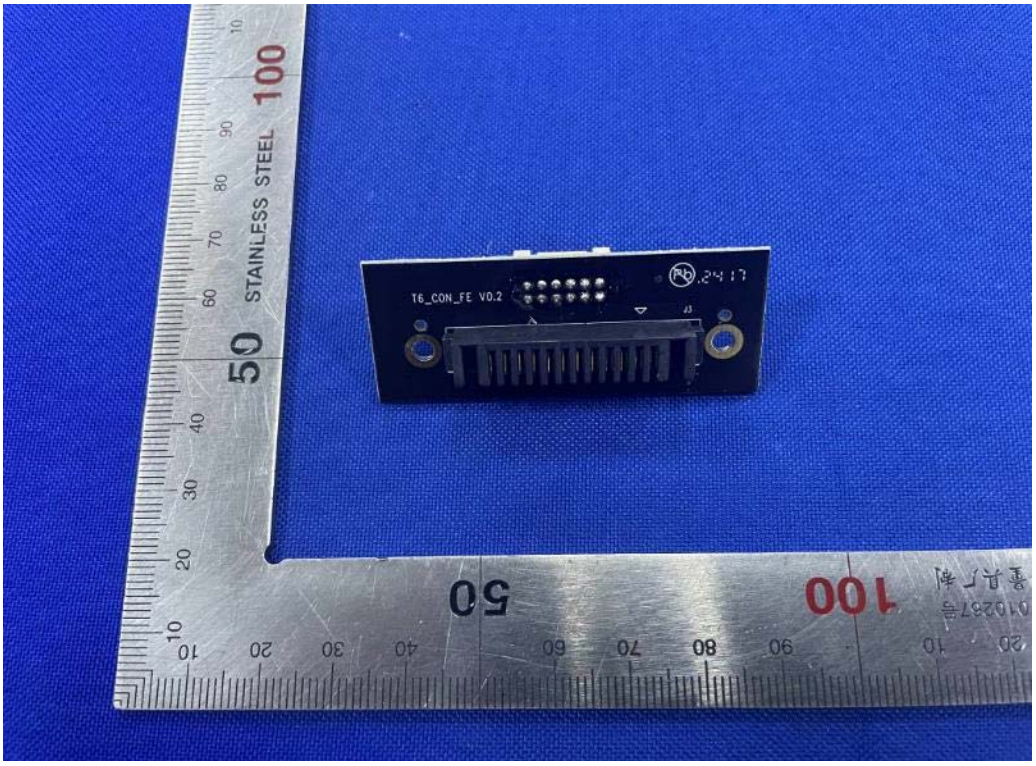
Internal-3 of the sample



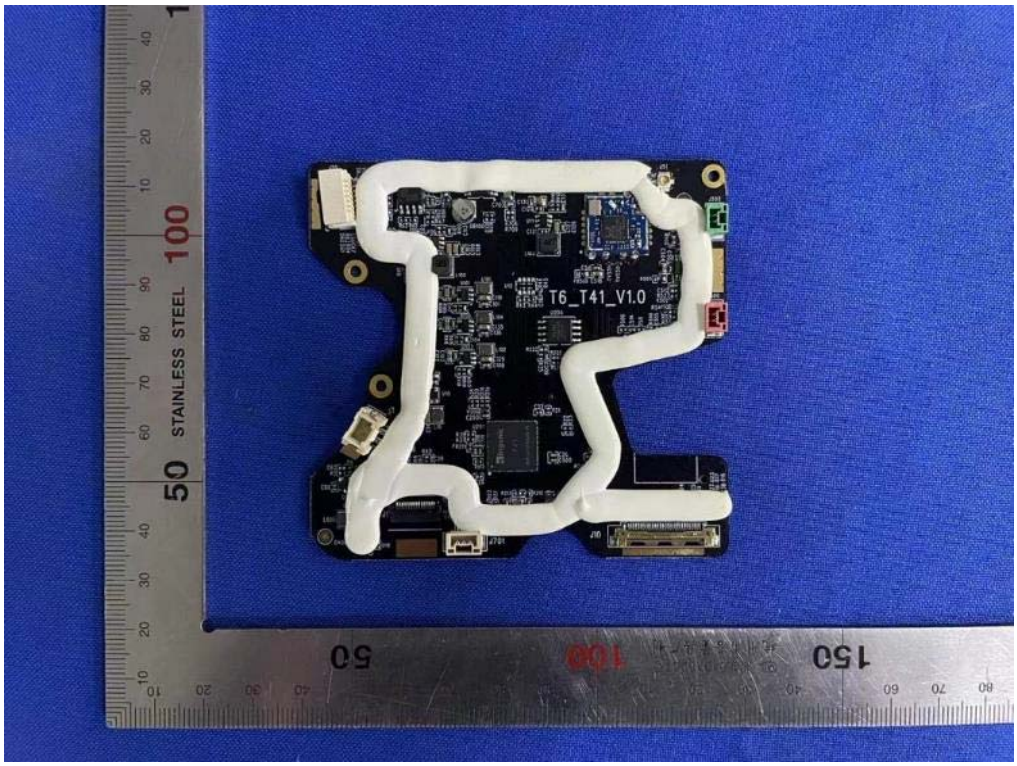
Internal-4 of the sample



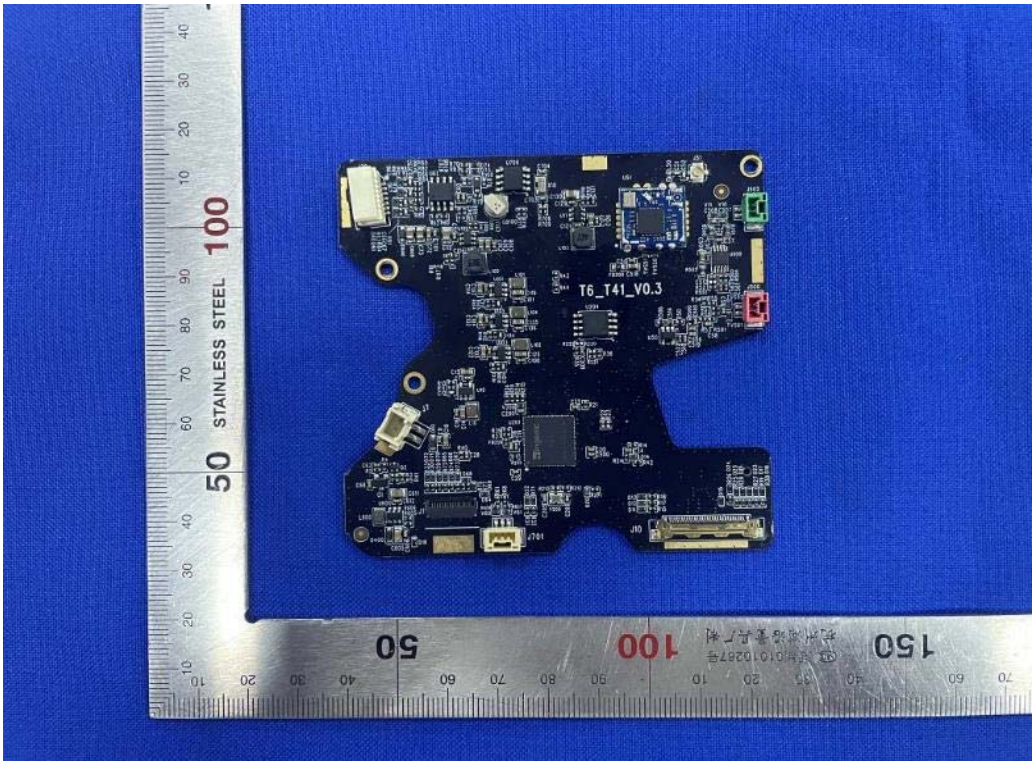
Internal-5 of the sample



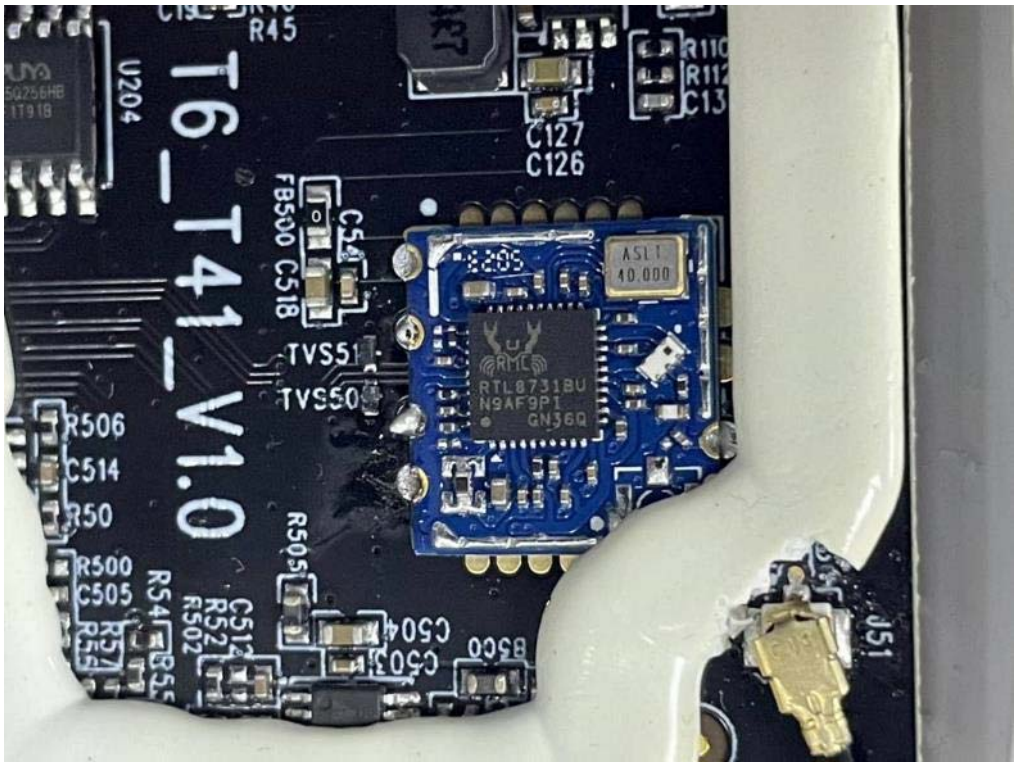
Internal-6 of the sample



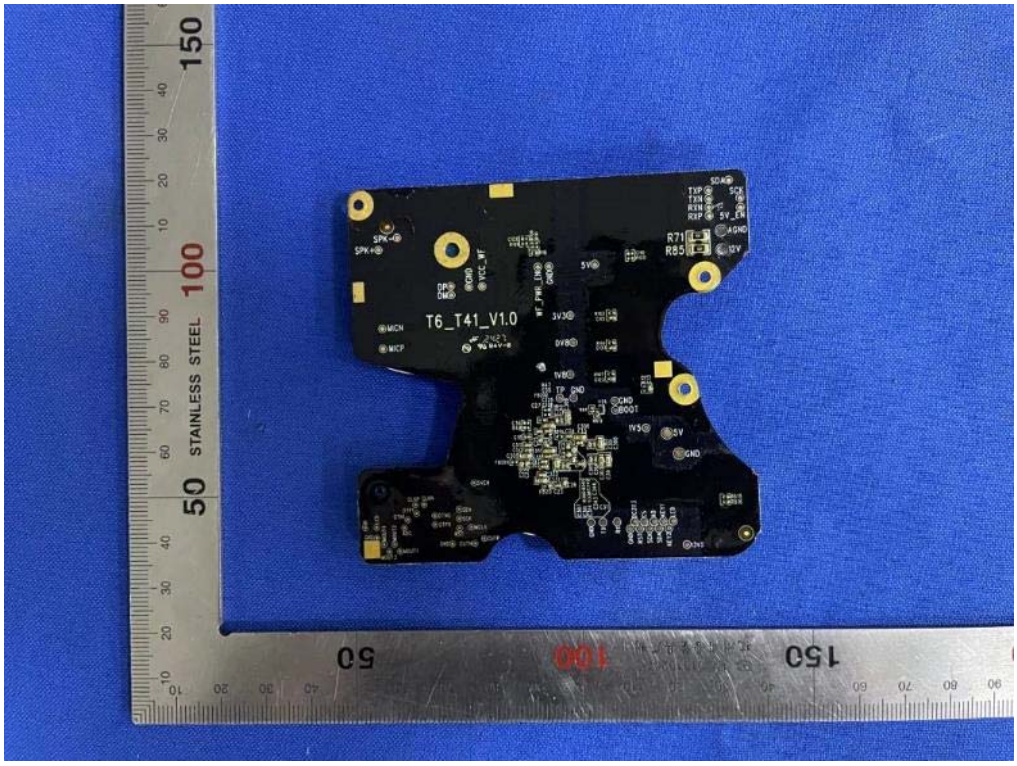
Internal-7 of the sample



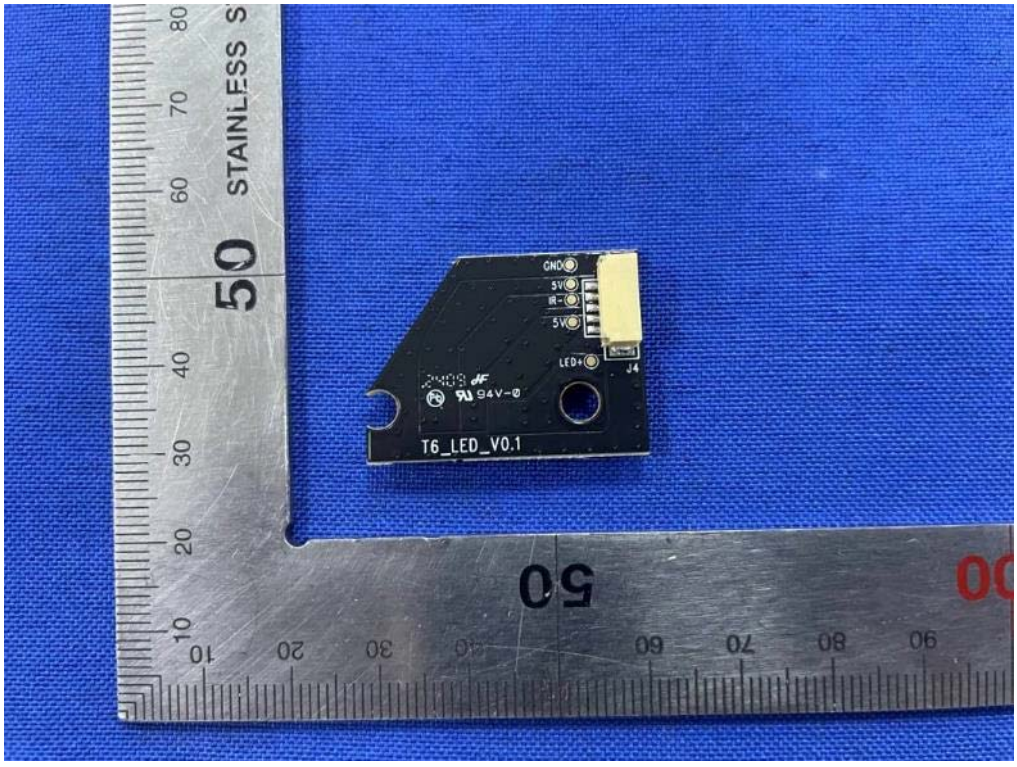
Internal-8 of the sample



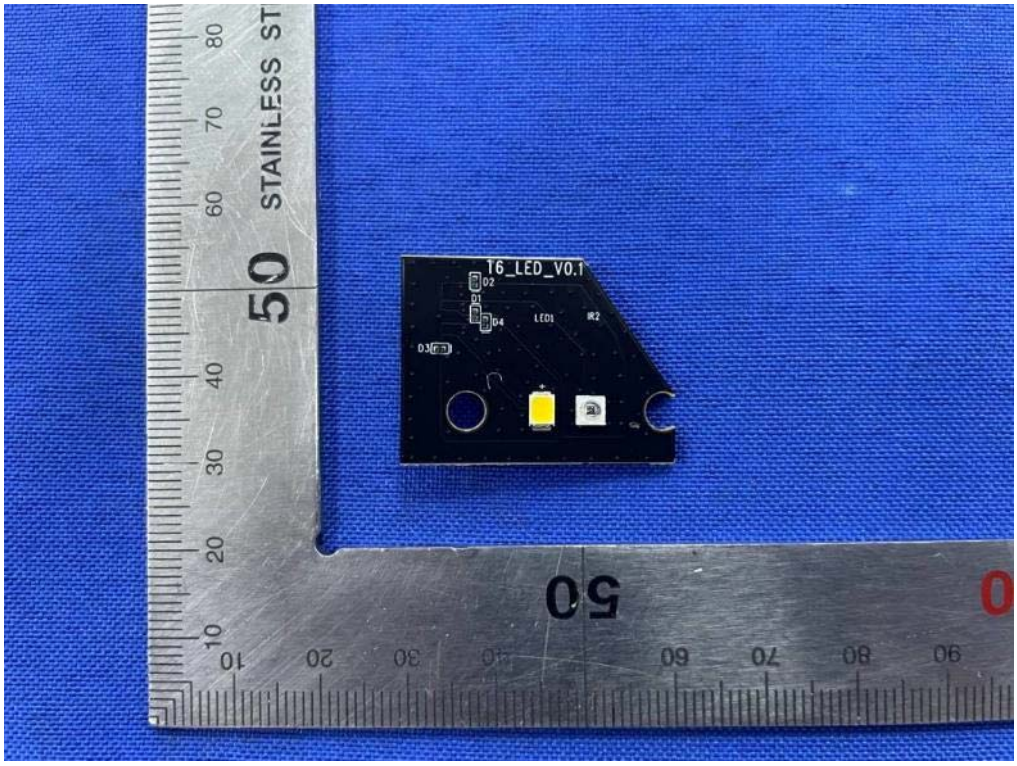
Internal-9 of the sample



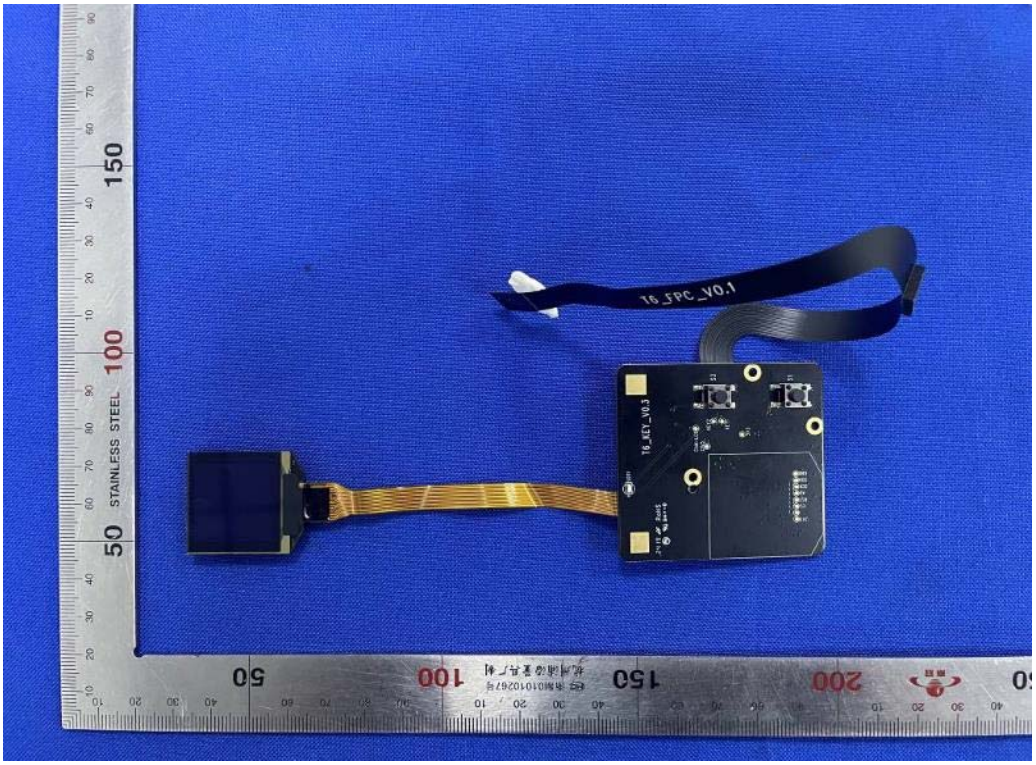
Internal-10 of the sample



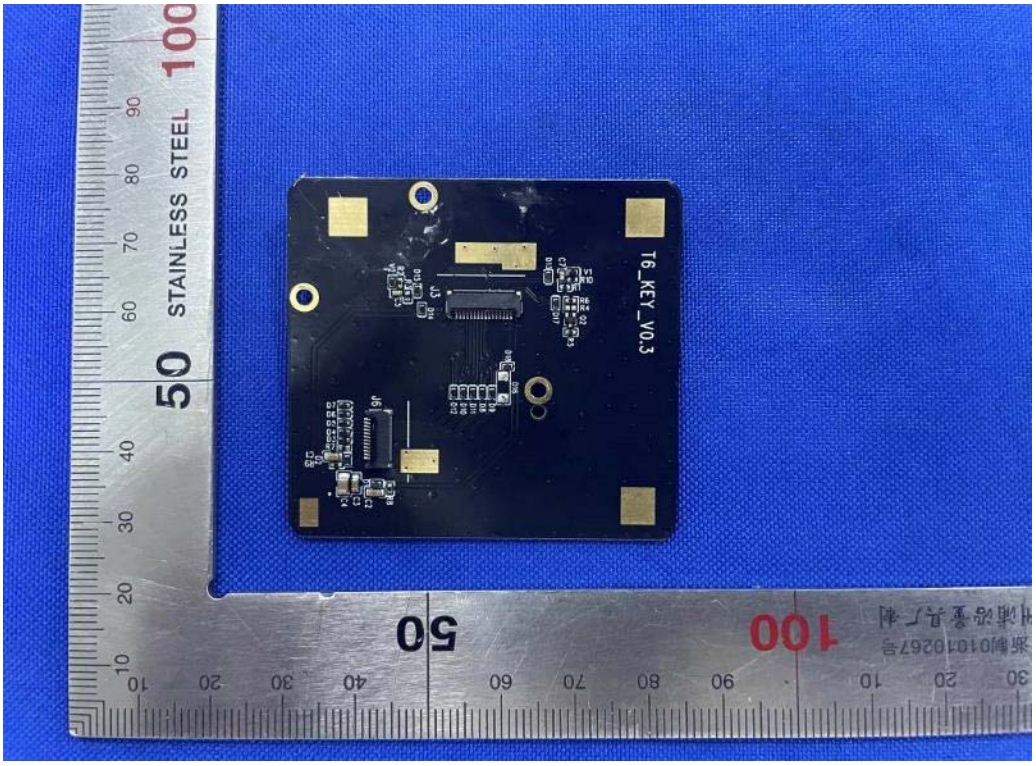
Internal-11 of the sample



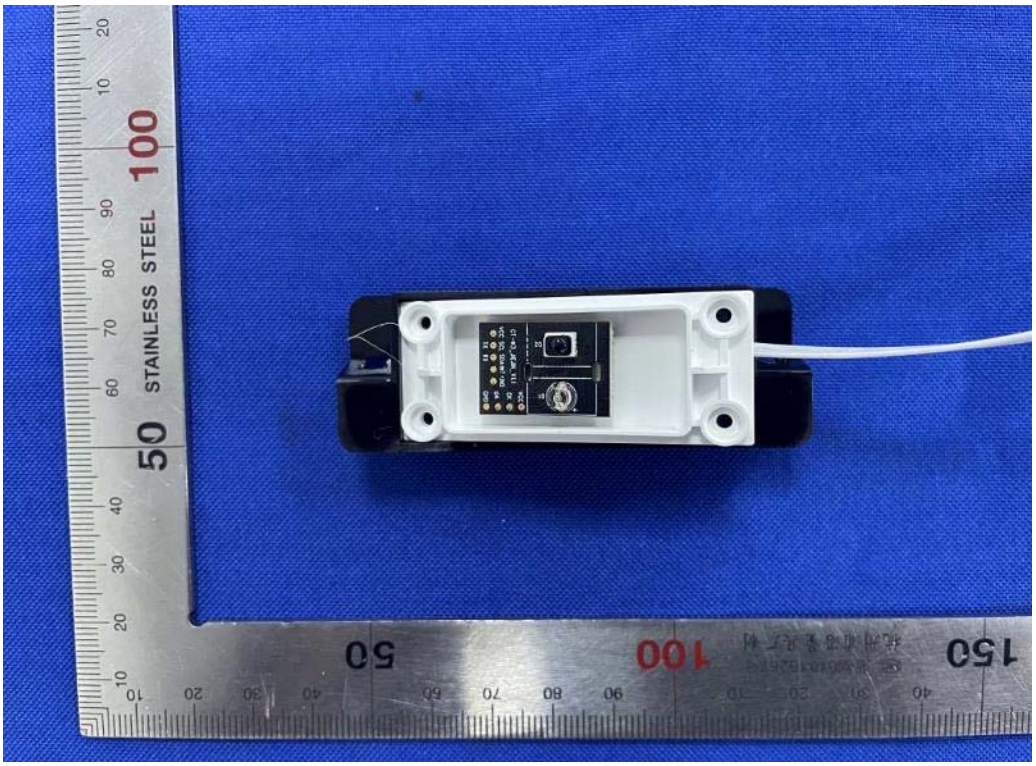
Internal-12 of the sample



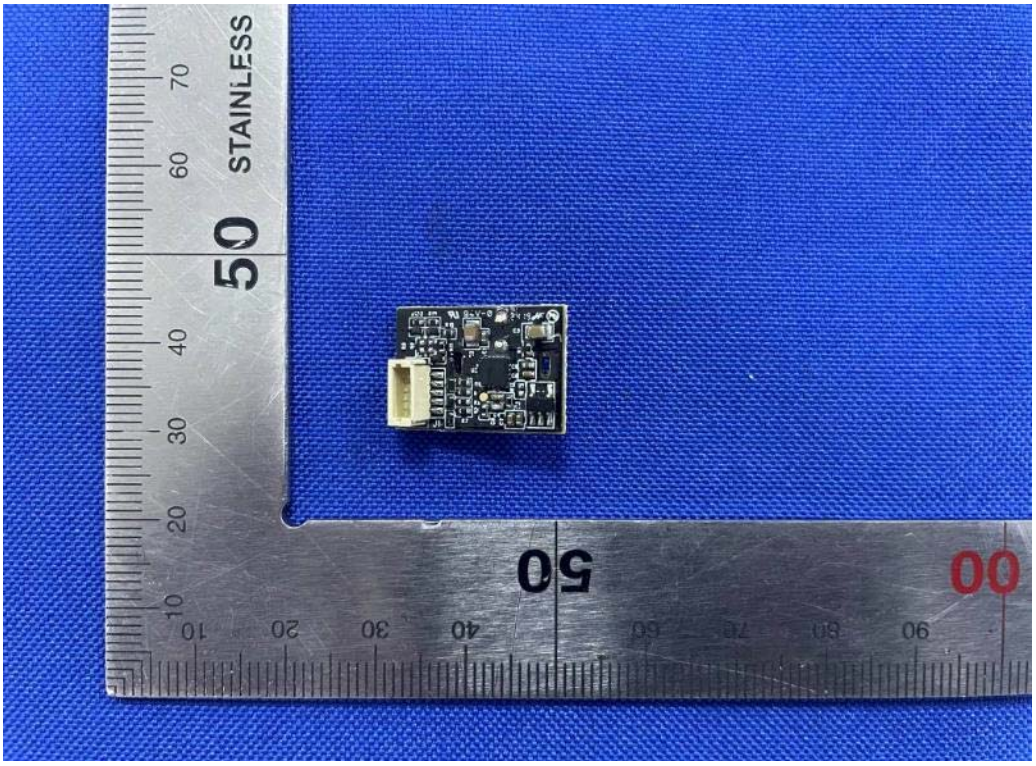
Internal-13 of the sample



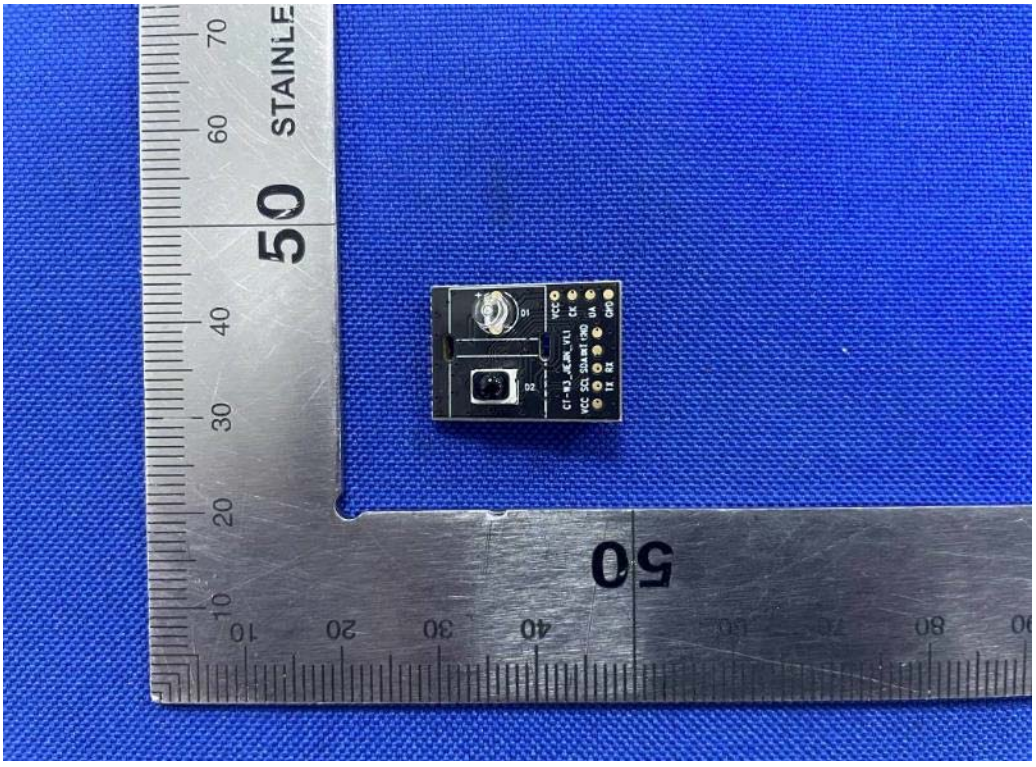
Internal-14 of the sample



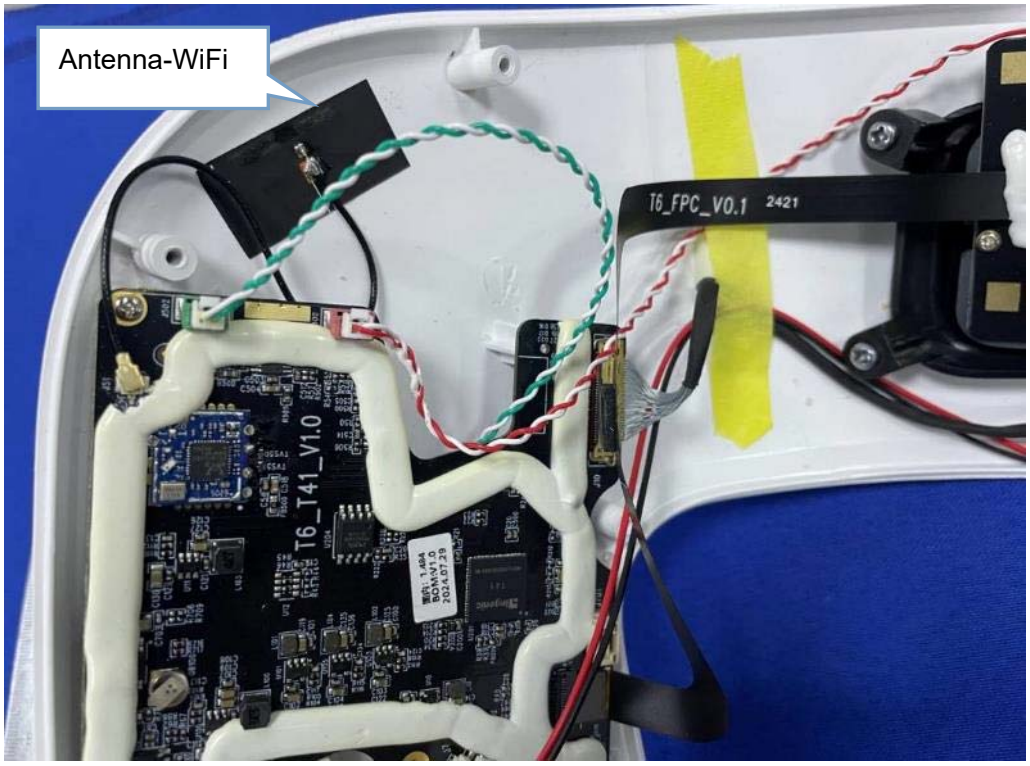
Internal-15 of the sample



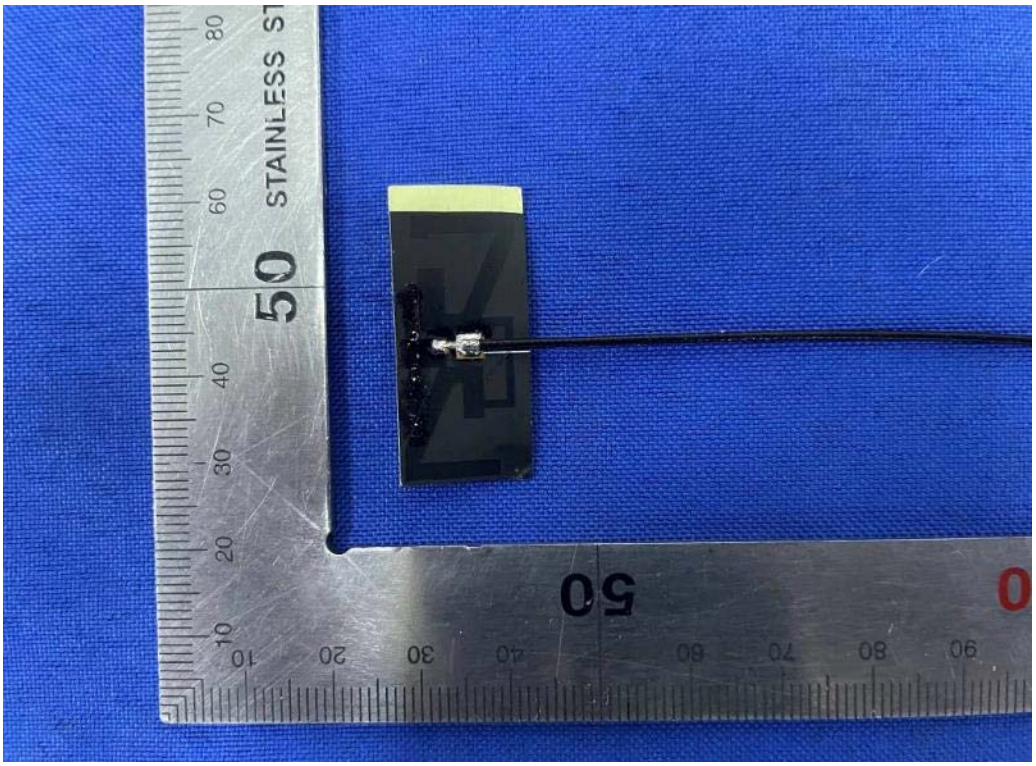
Internal-16 of the sample



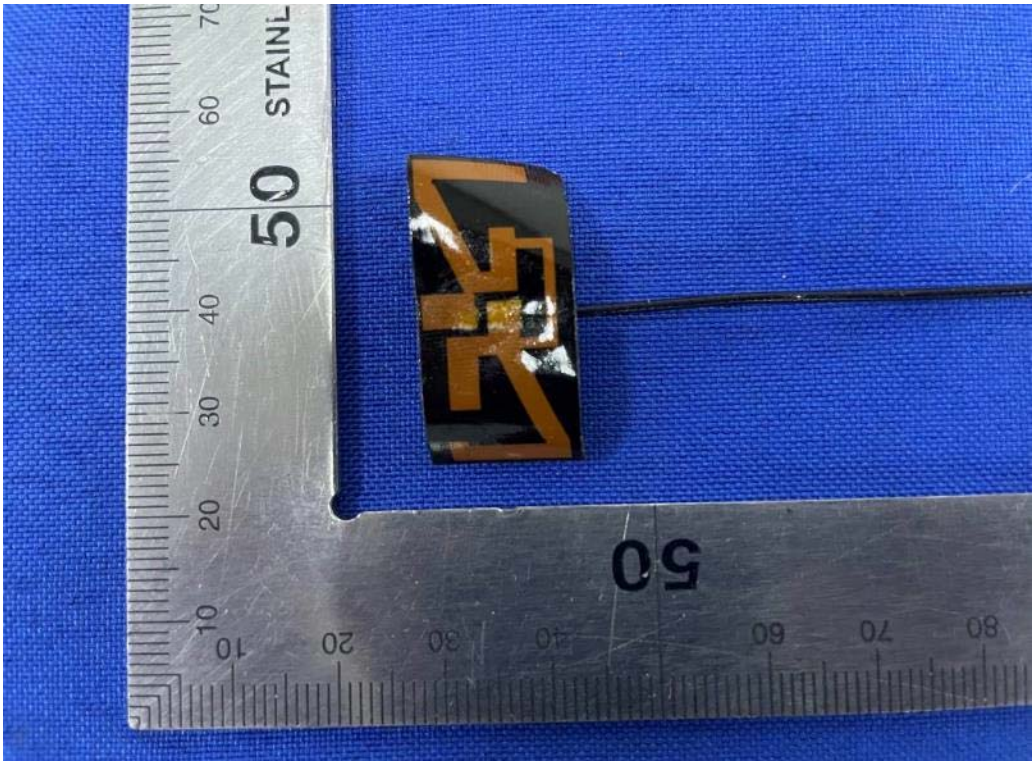
Internal-17 of the sample



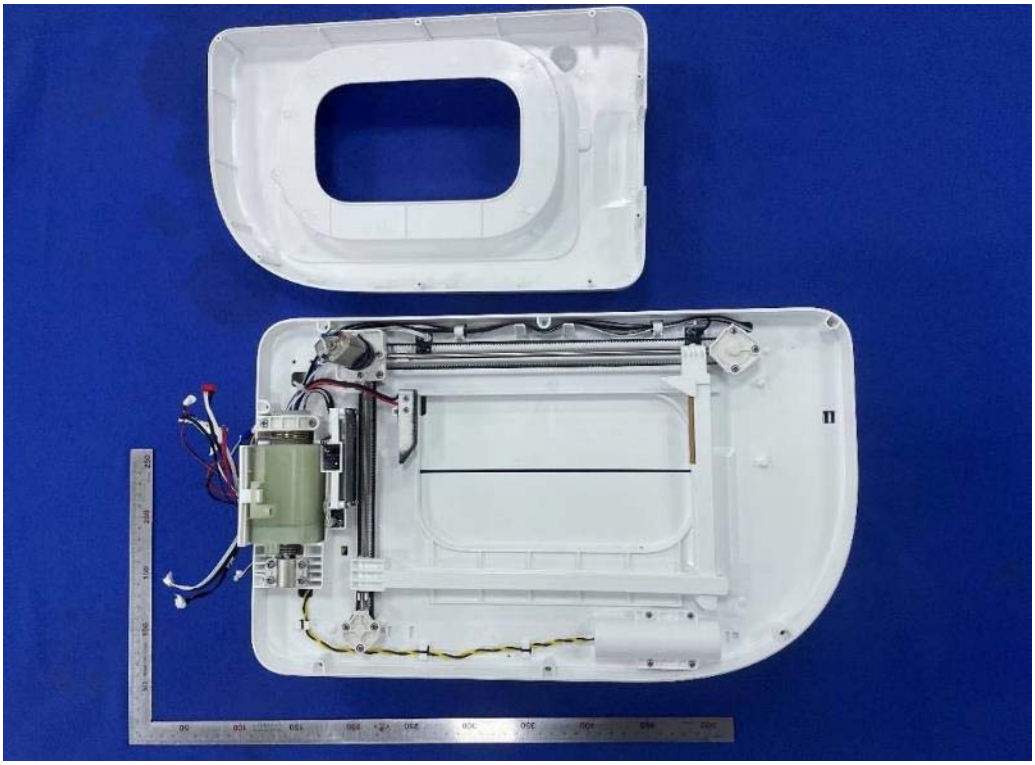
Antenna position--WiFi



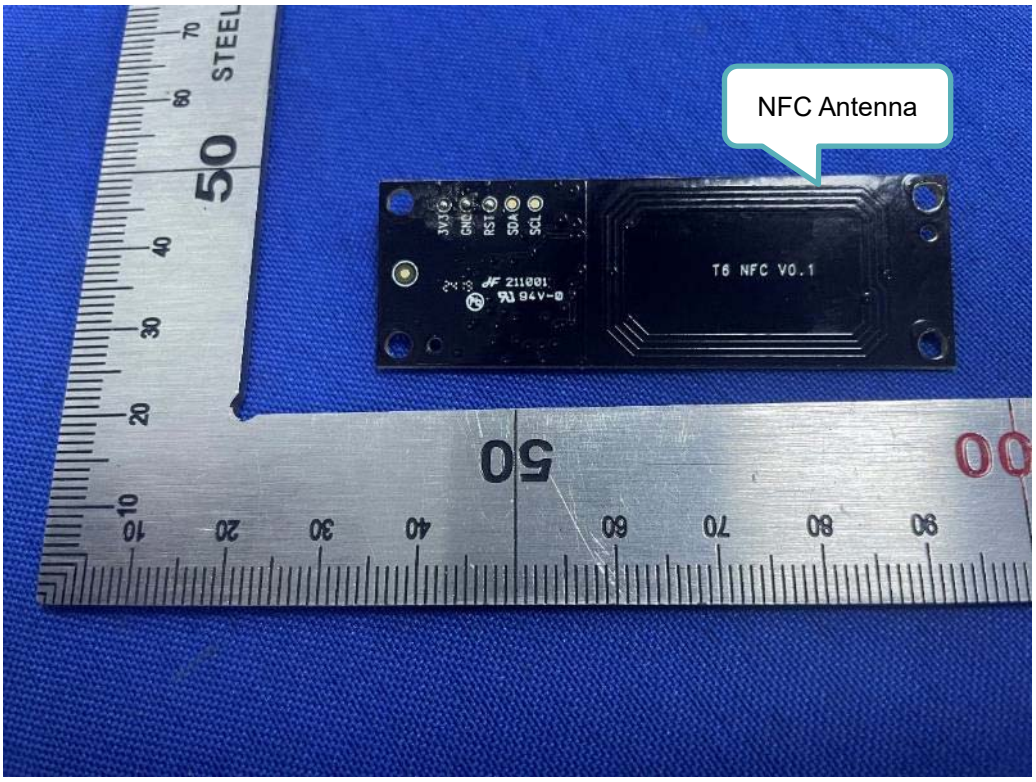
WiFi Antenna photo-1



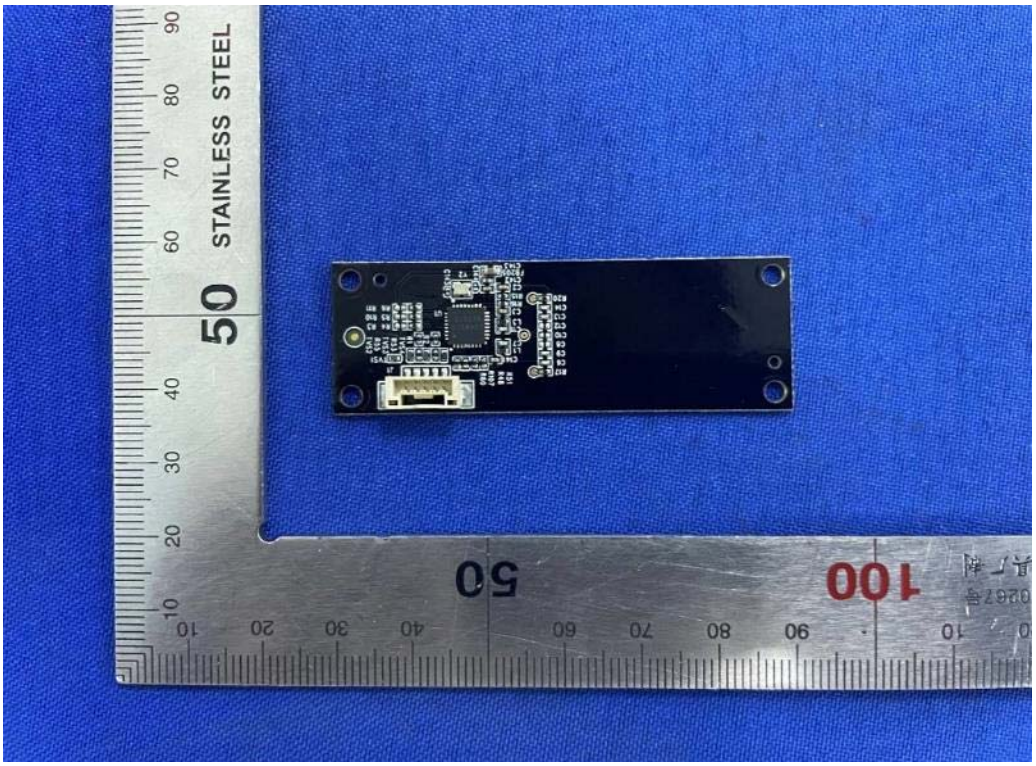
WiFi Antenna photo-2



NFC-Open Photo

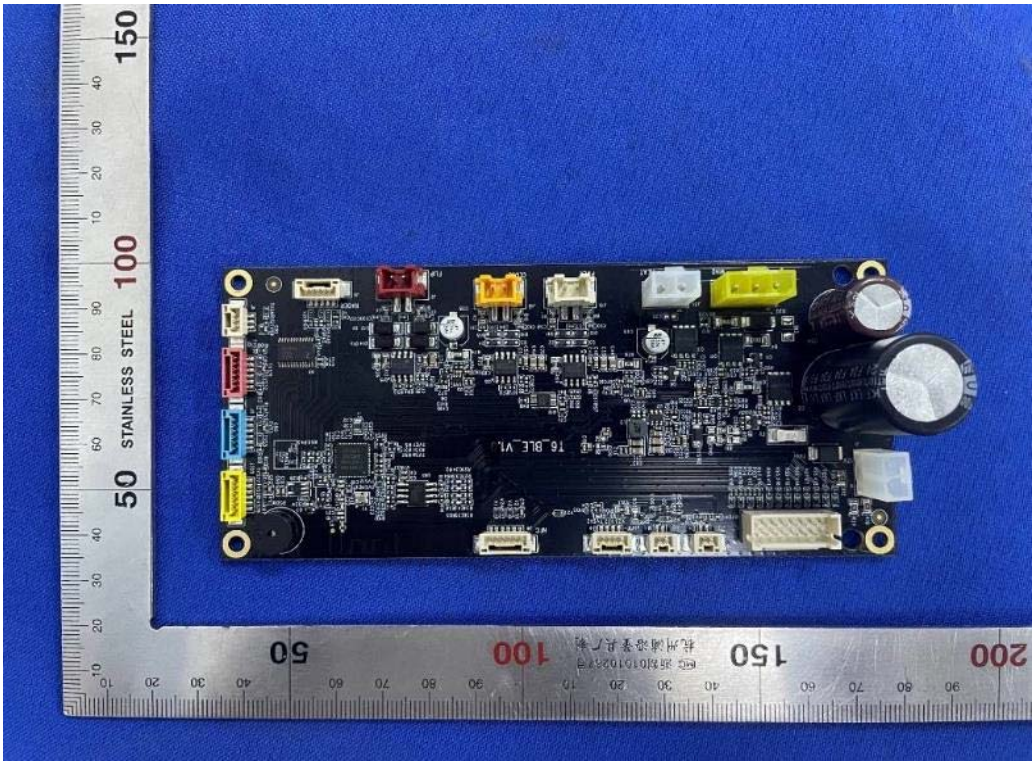


NFC—PCB Board (Back)

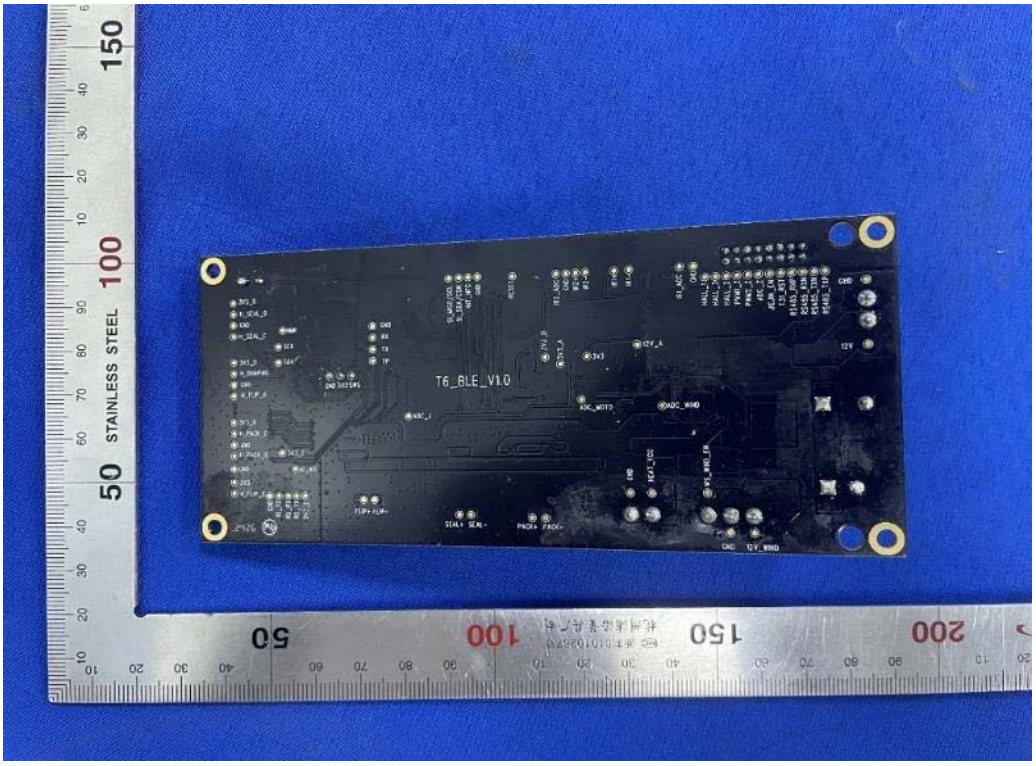


NFC—PCB Board (Front)

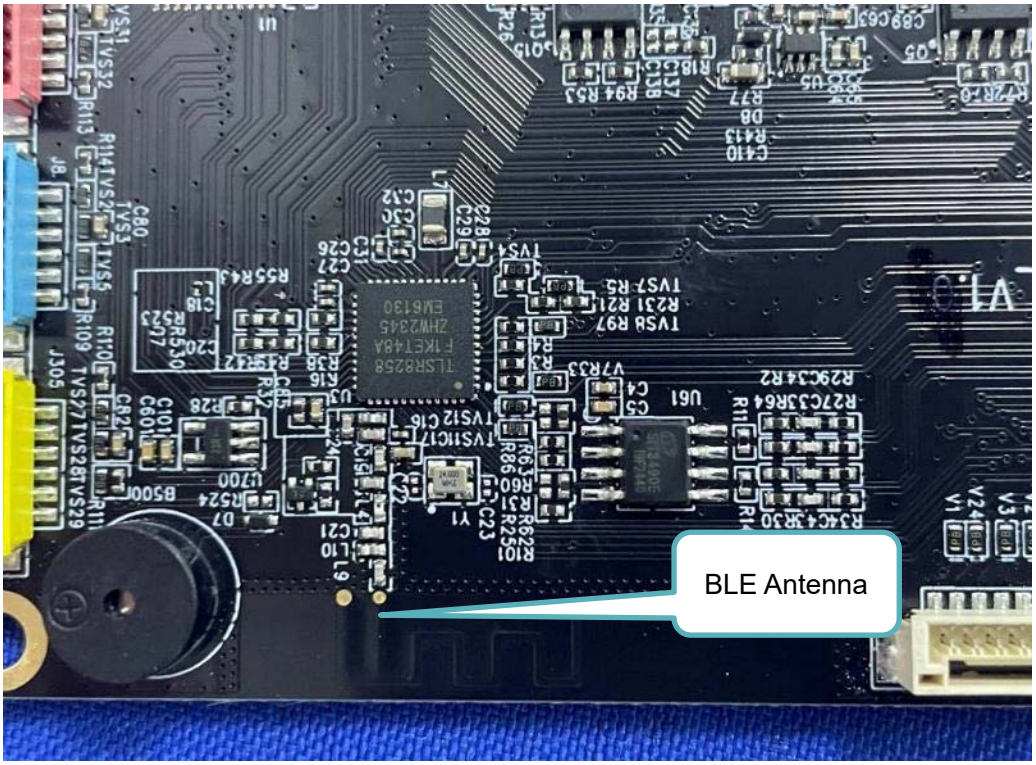
Bluetooth LE-Open Photo



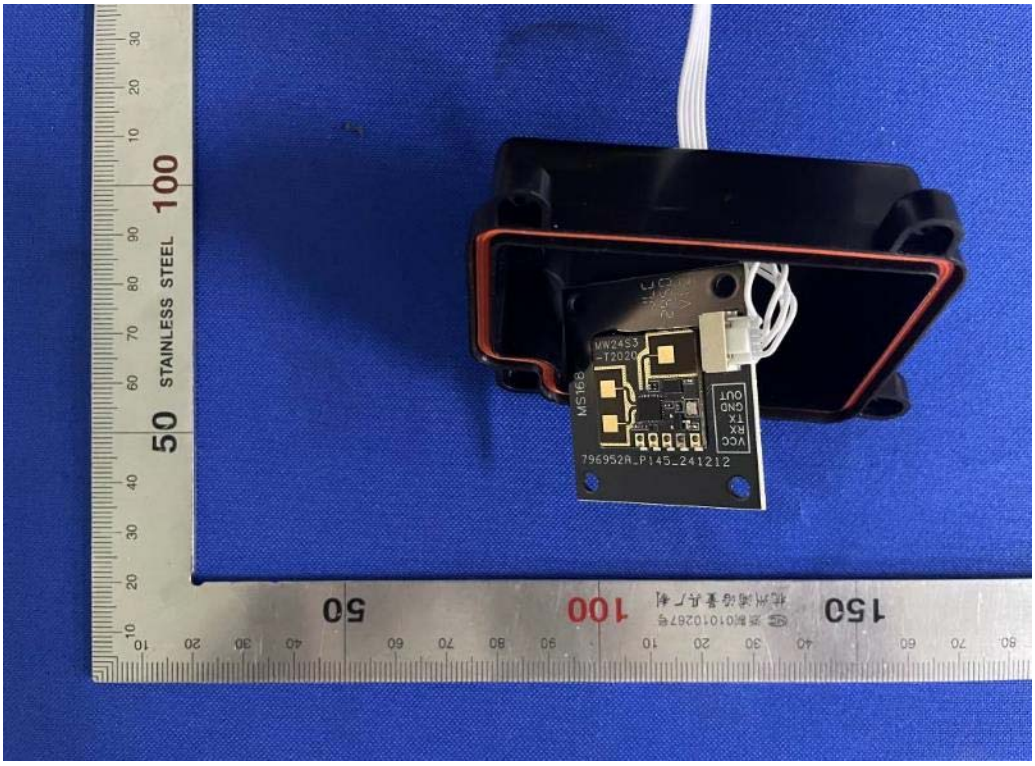
Bluetooth LE—PCB Board (Front)



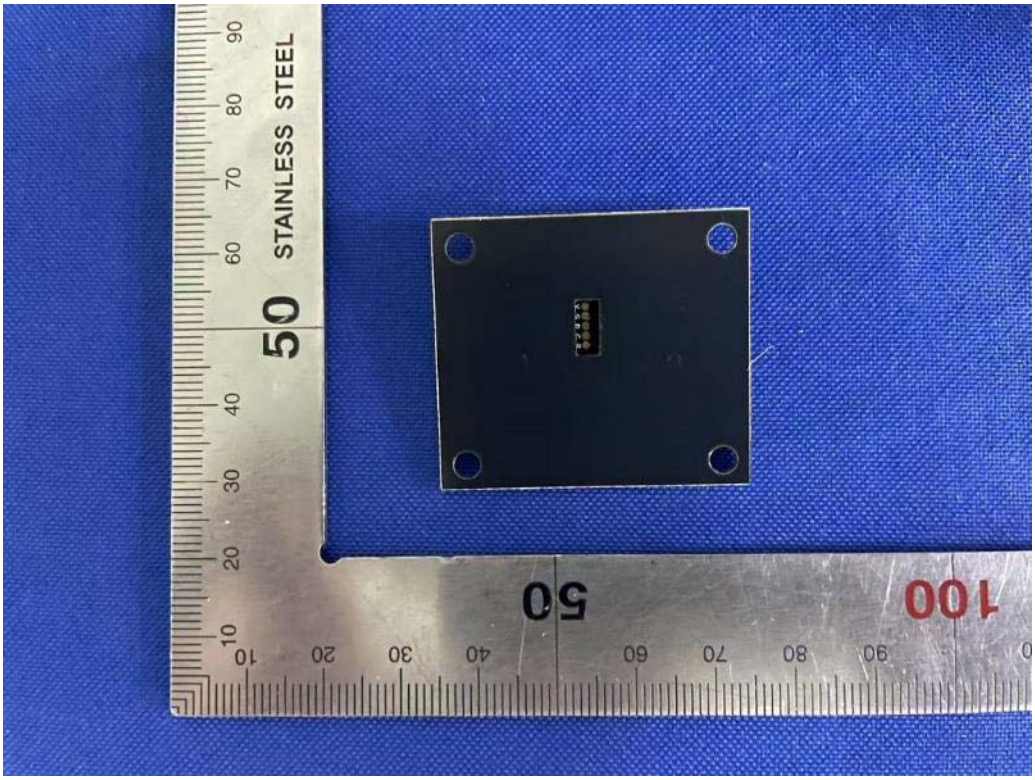
Bluetooth LE—PCB Board (Back)



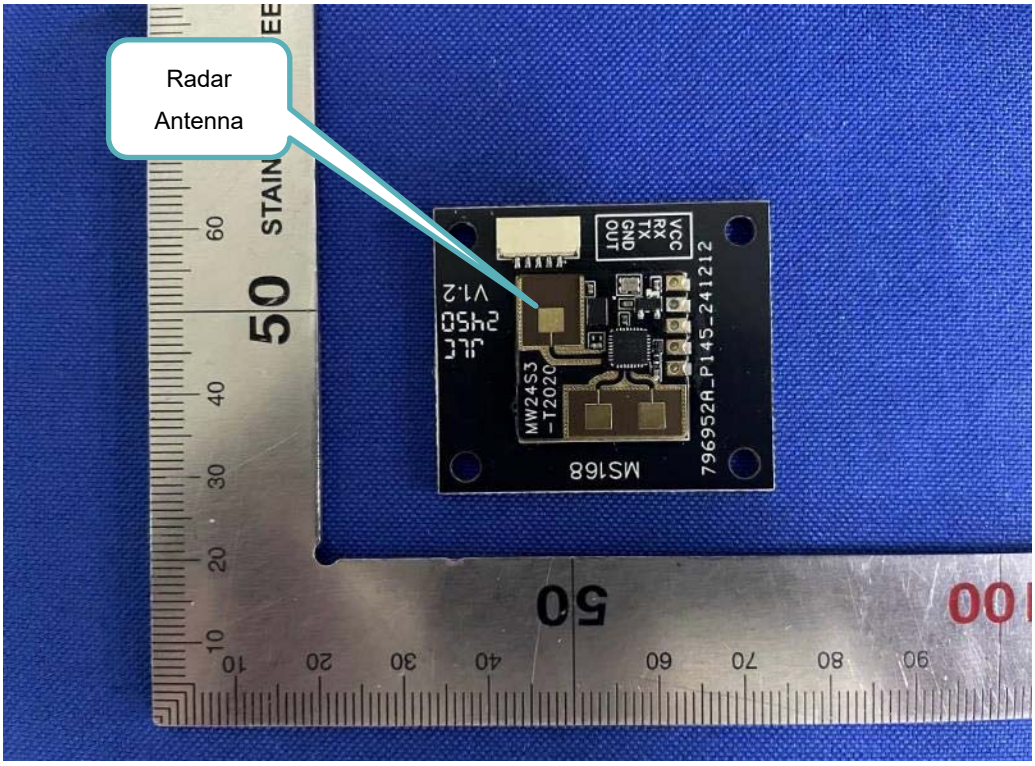
Bluetooth LE—Antenna Position



Radar Photo-1



Radar Photo-2



Radar Photo-3

Adapter-1

Adapter-2

Power Port

5.2 Set-up for Conducted Emissions

5.3 Set-up for Conducted RF test at Antenna Port

5.4 Set-up for Spurious Emissions below 1GHz

5.5 Set-up for Spurious Emissions above 1GHz

End of the report