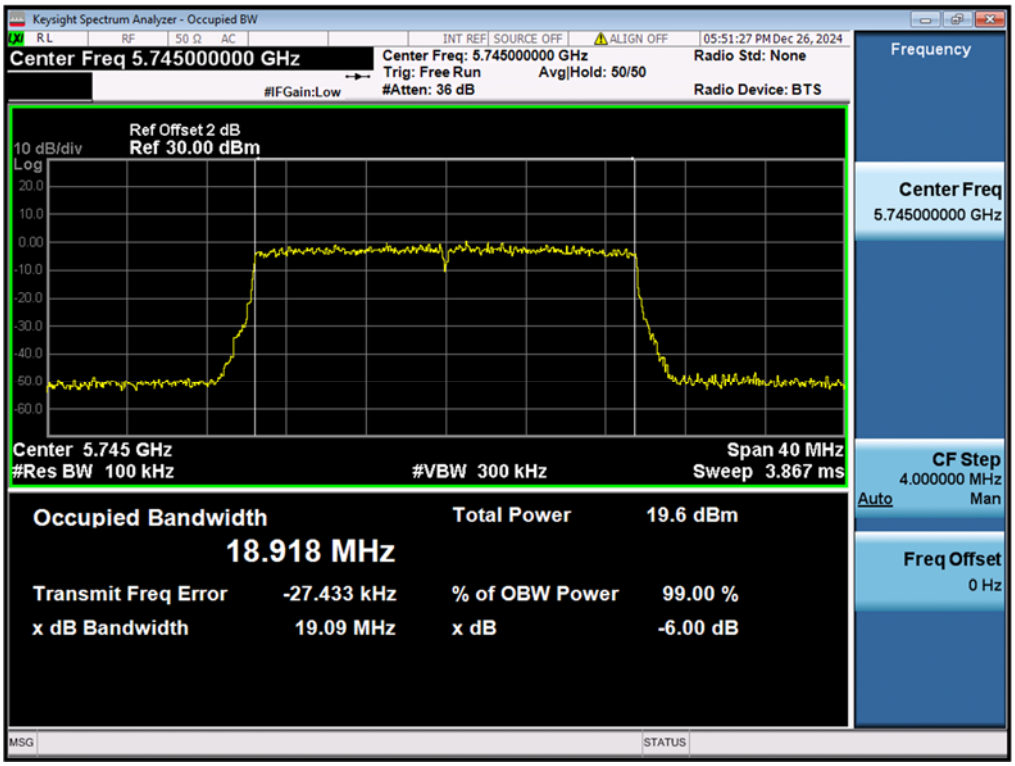
Figure 30: The plots of 6dB Bandwidth, 802.11ax(HE20), 5745MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

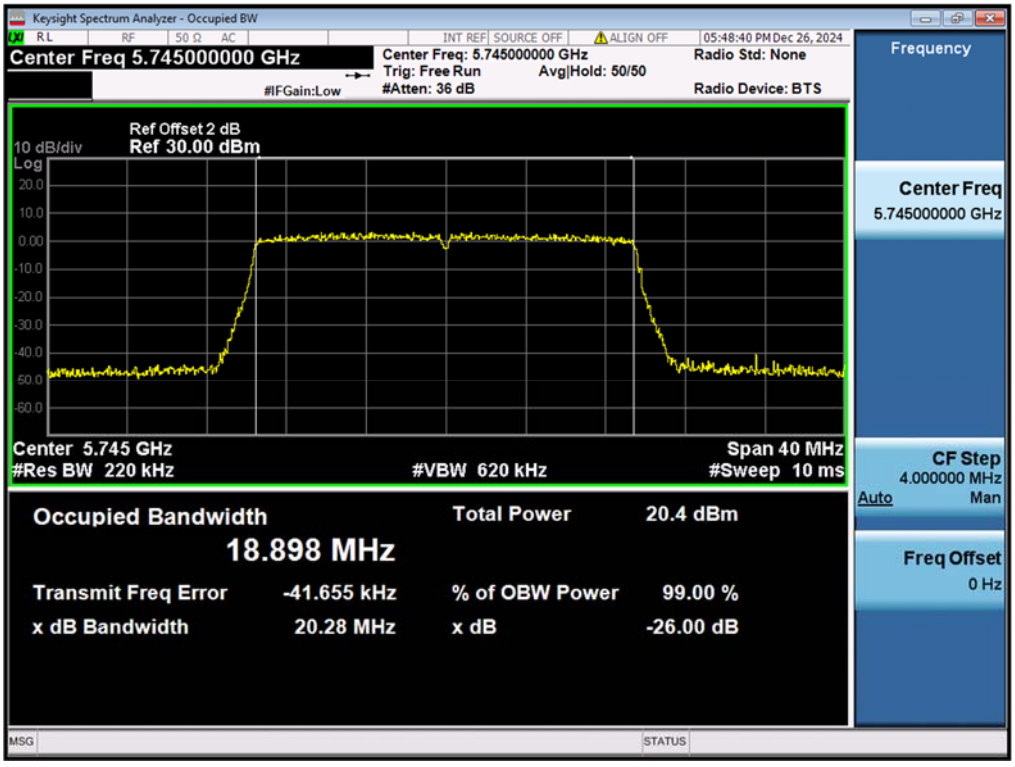
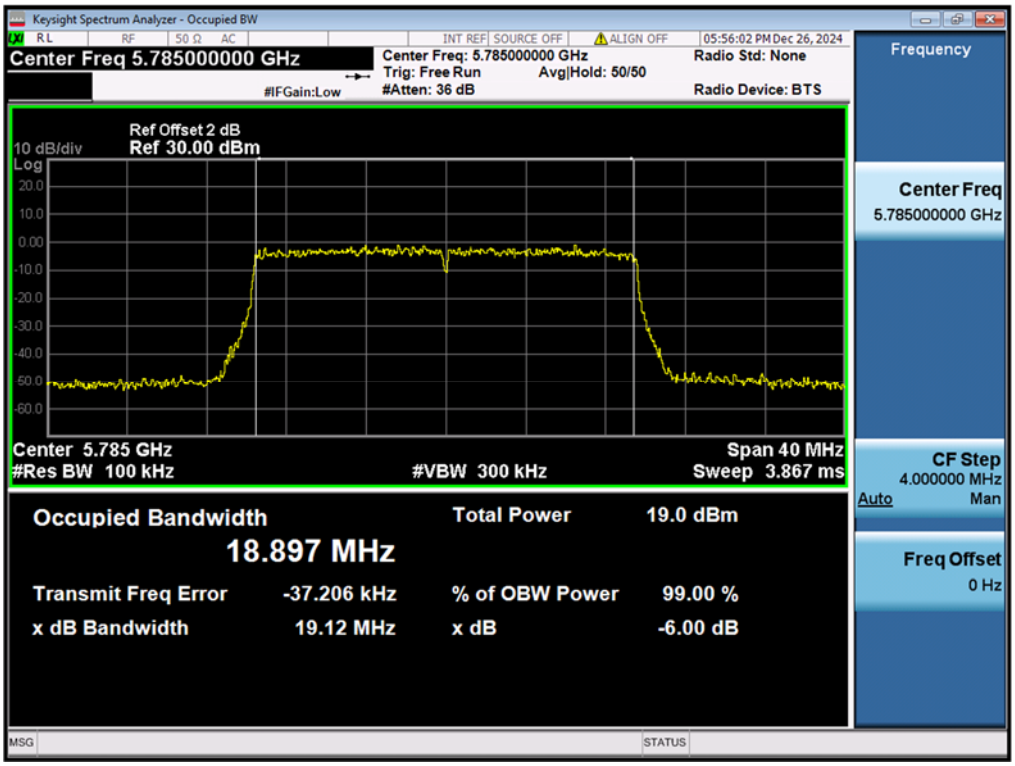


Figure 31: The plots of 6dB Bandwidth, 802.11ax(HE20), 5785MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

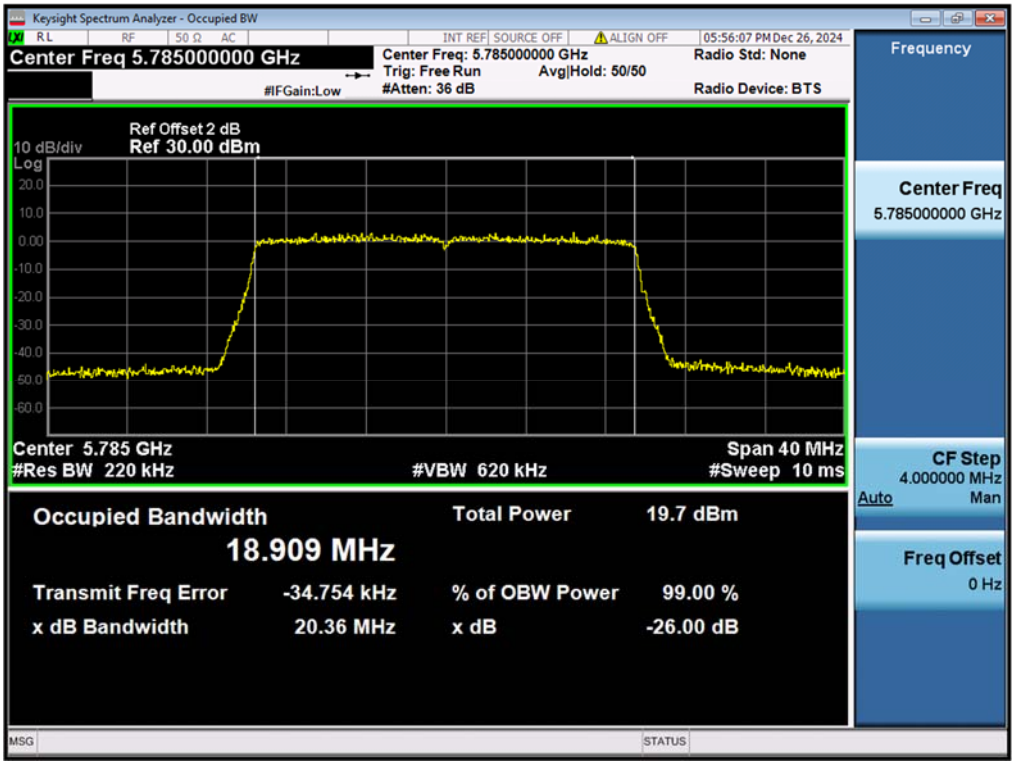
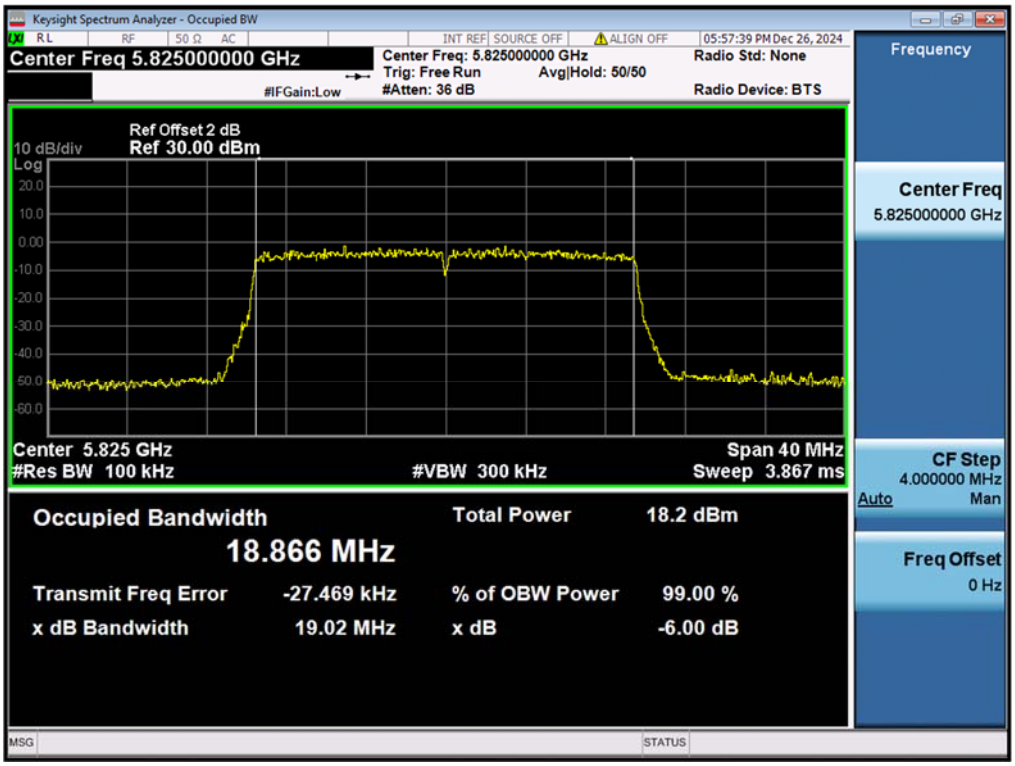


Figure 32: The plots of 6dB Bandwidth, 802.11ax(HE20), 5825MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

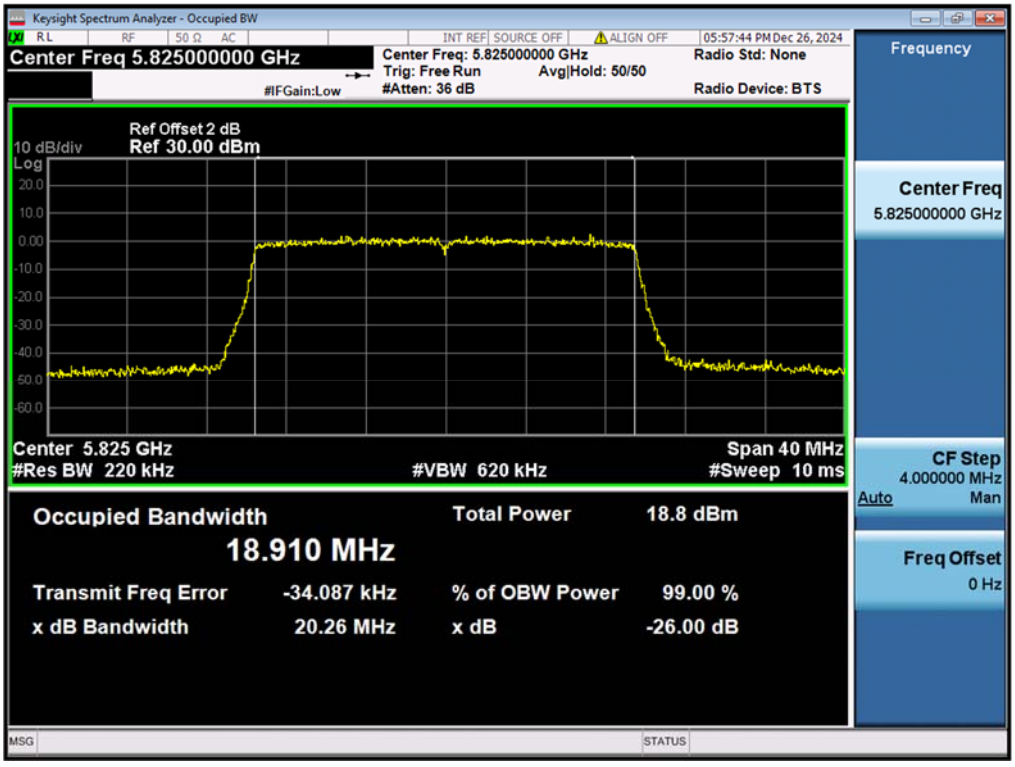
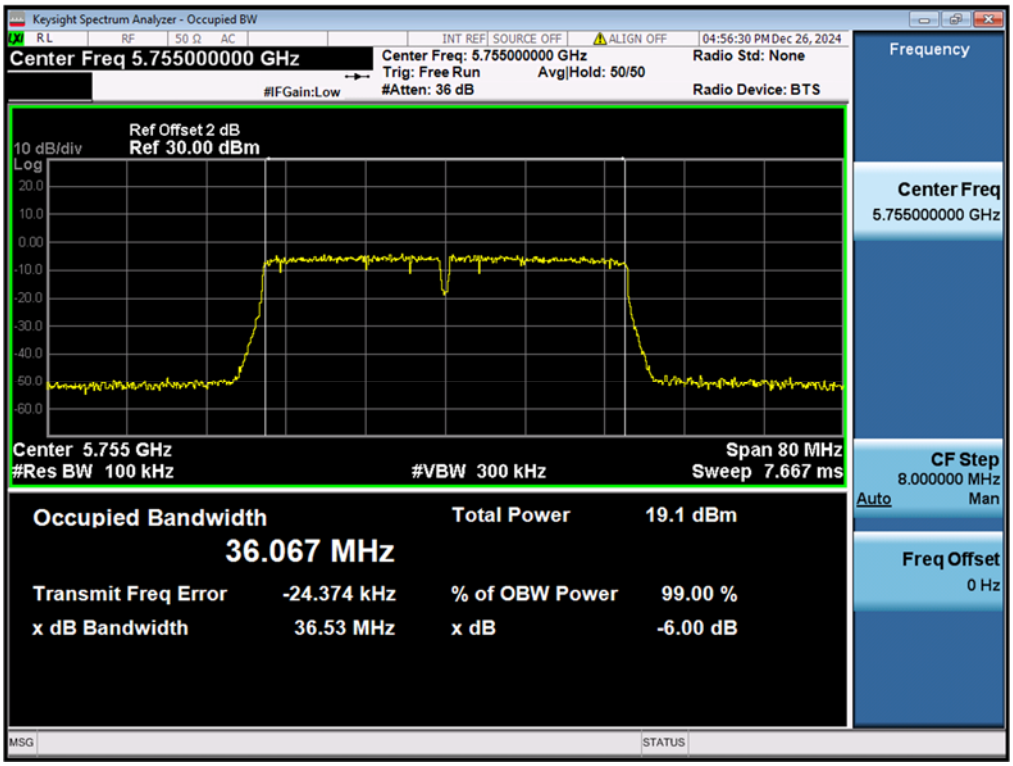


Figure 33: The plots of 6dB Bandwidth, 802.11n(HT40), 5755MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

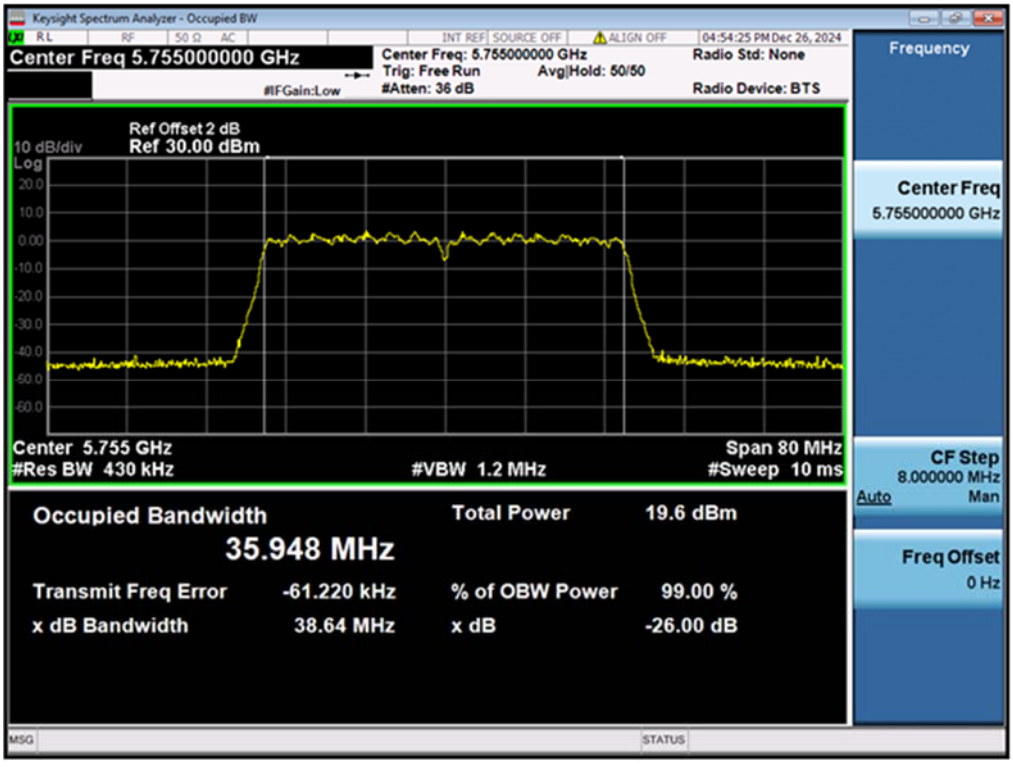
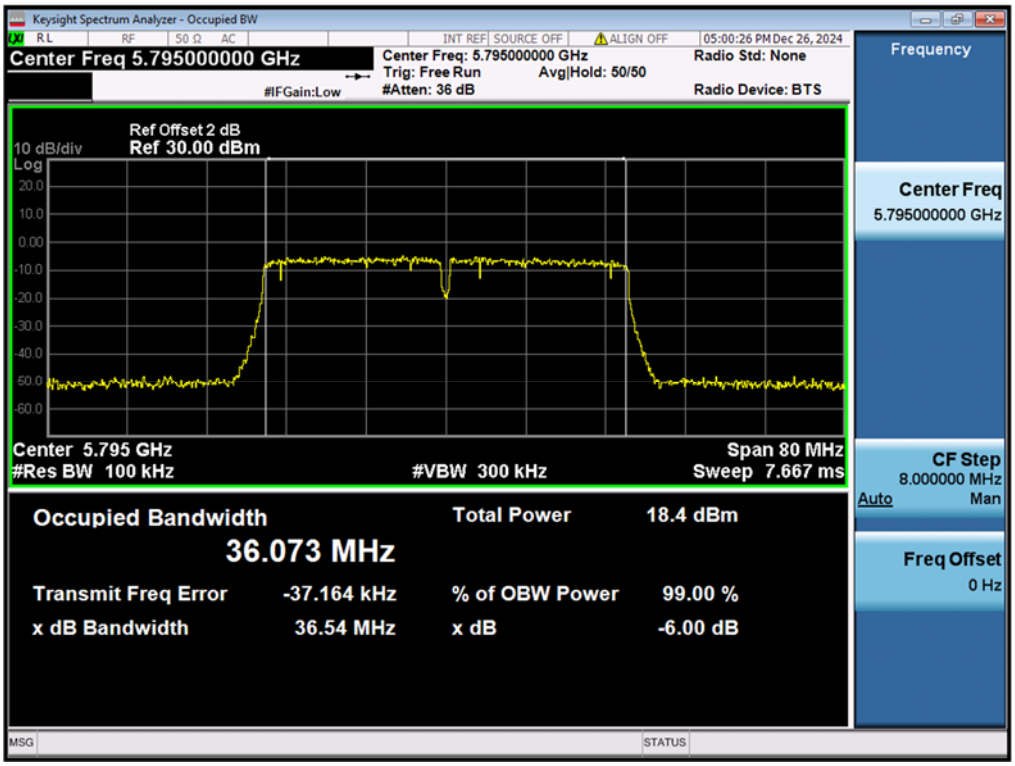


Figure 34: The plots of 6dB Bandwidth, 802.11n(HT40), 5795MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

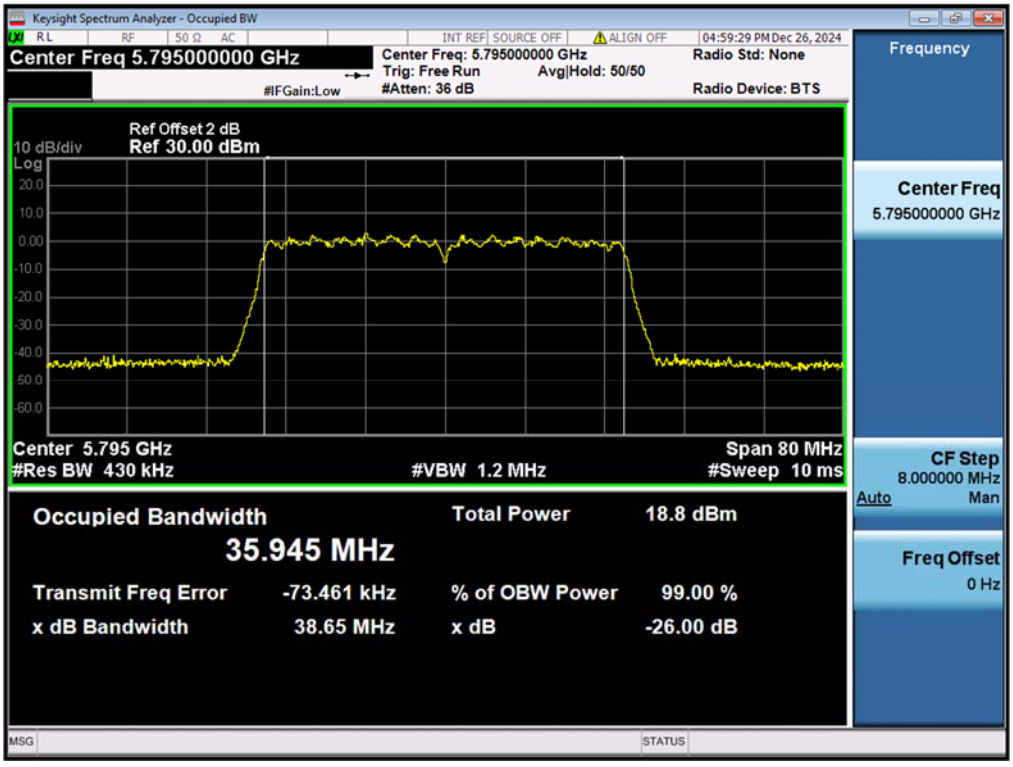
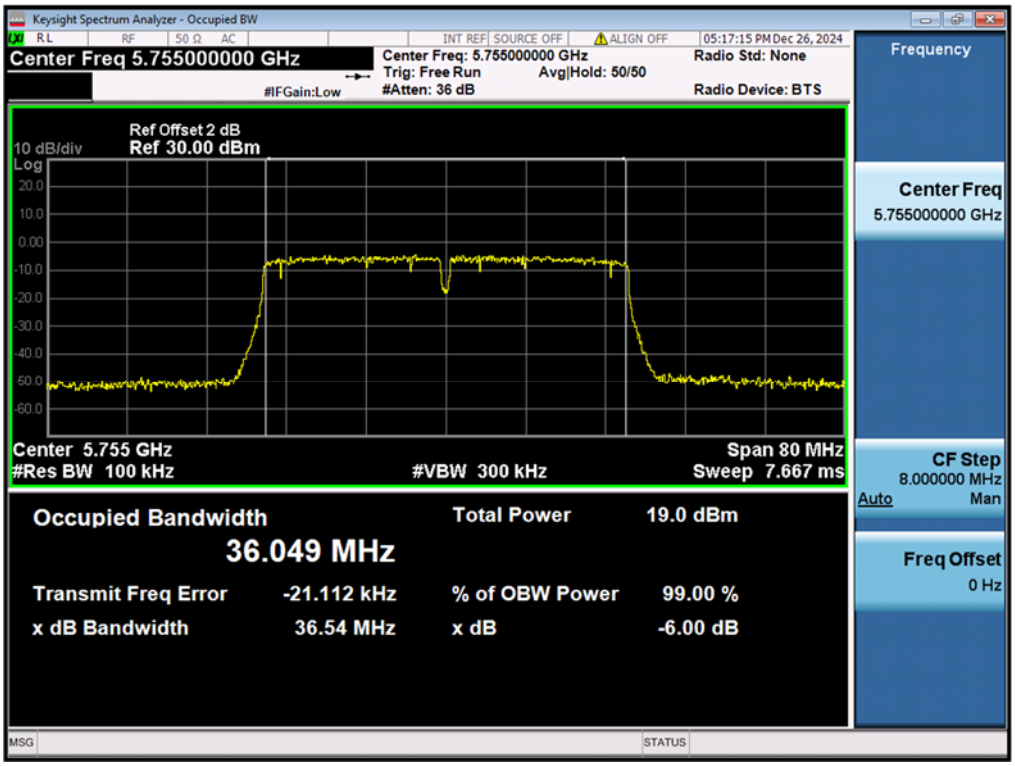


Figure 35: The plots of 6dB Bandwidth, 802.11ac(VHT40), 5755MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

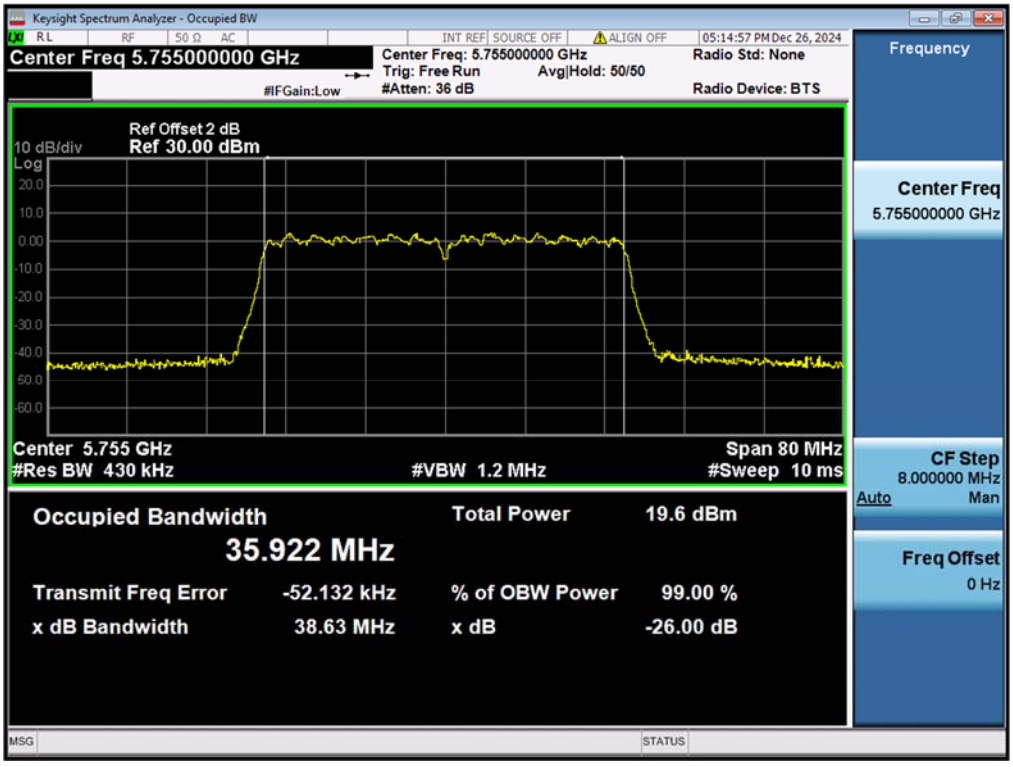
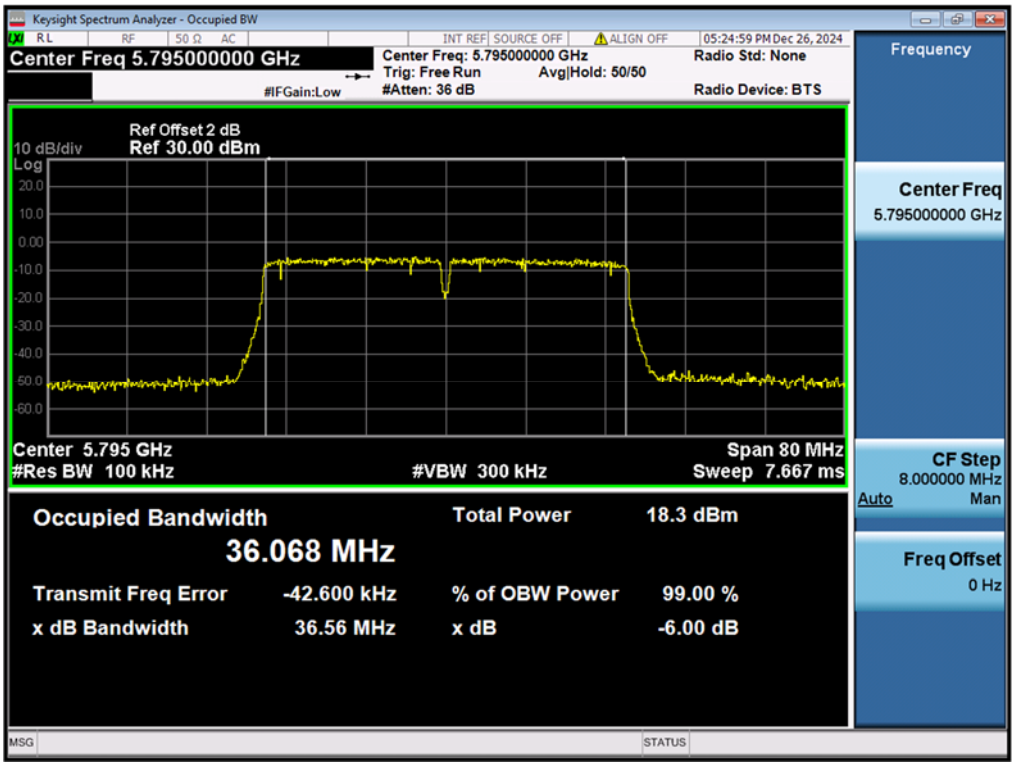


Figure 36: The plots of 6dB Bandwidth, 802.11ac(VHT40), 5795MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

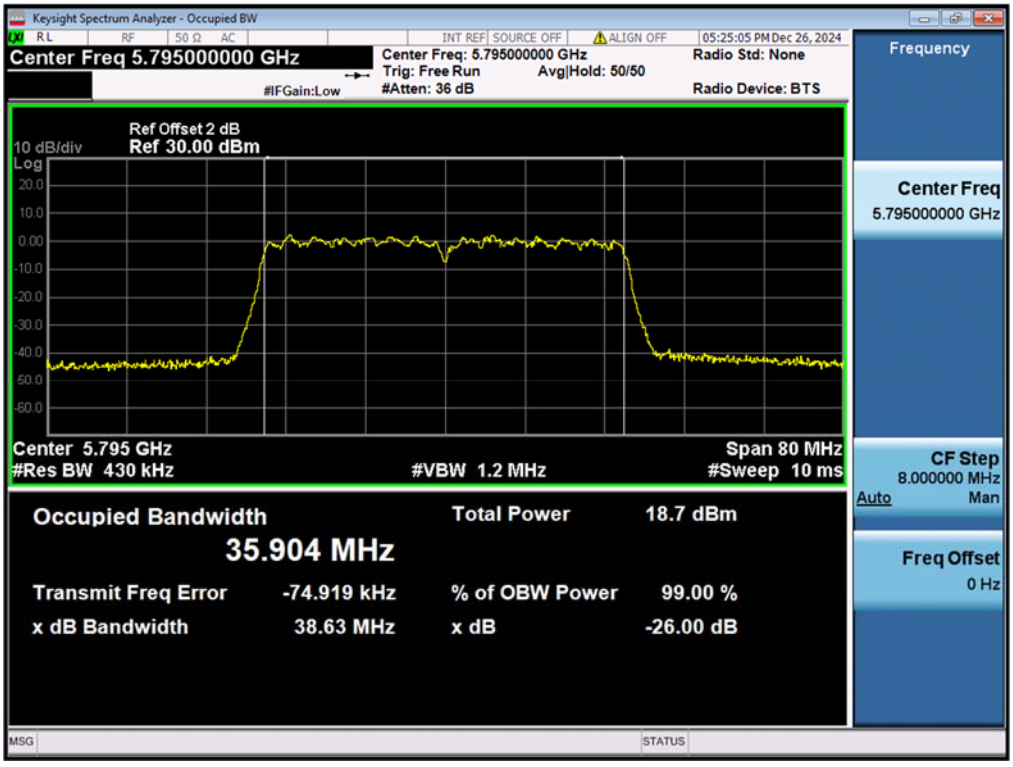
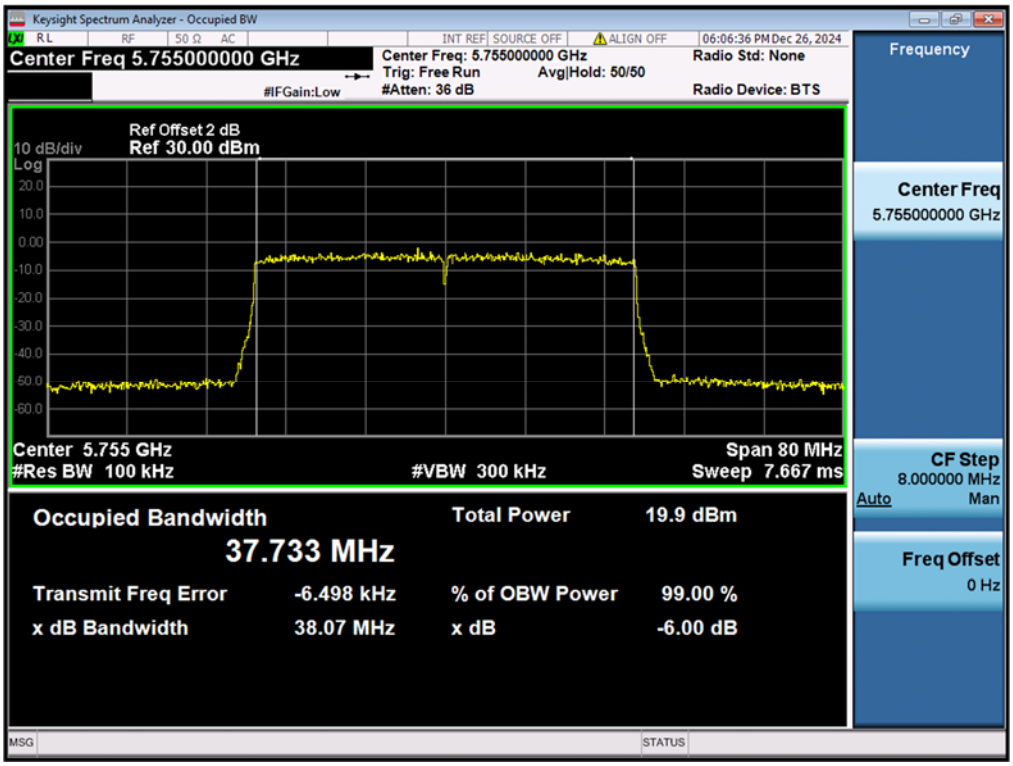


Figure 37: The plots of 6dB Bandwidth, 802.11ax(HE40), 5755MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

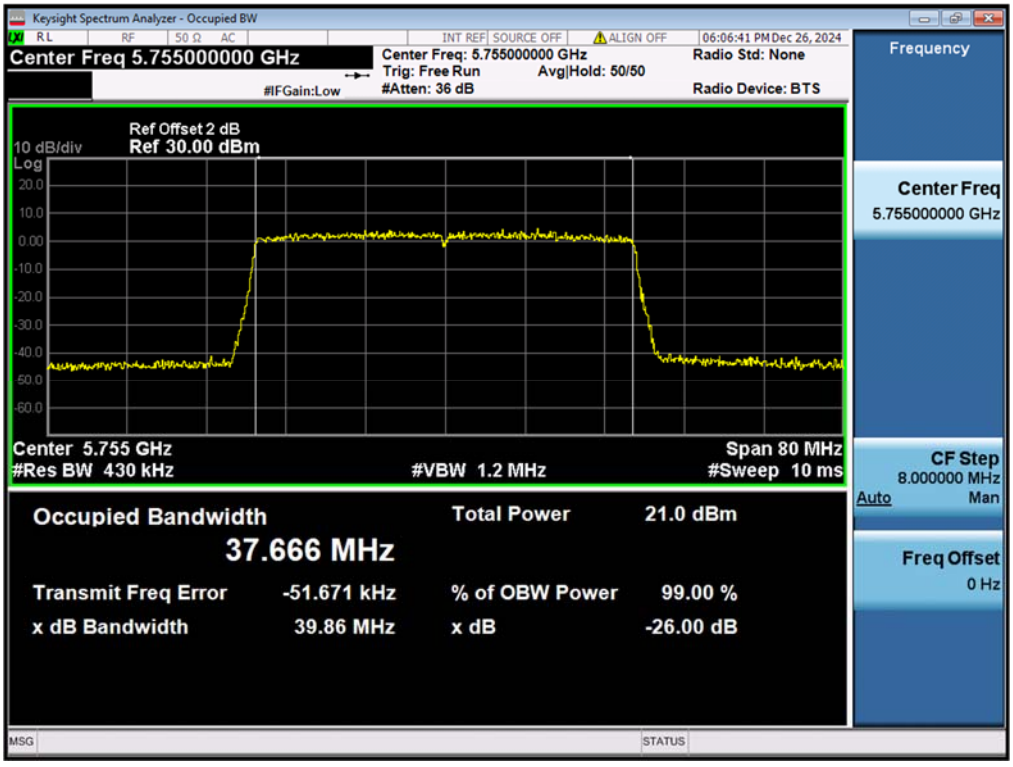
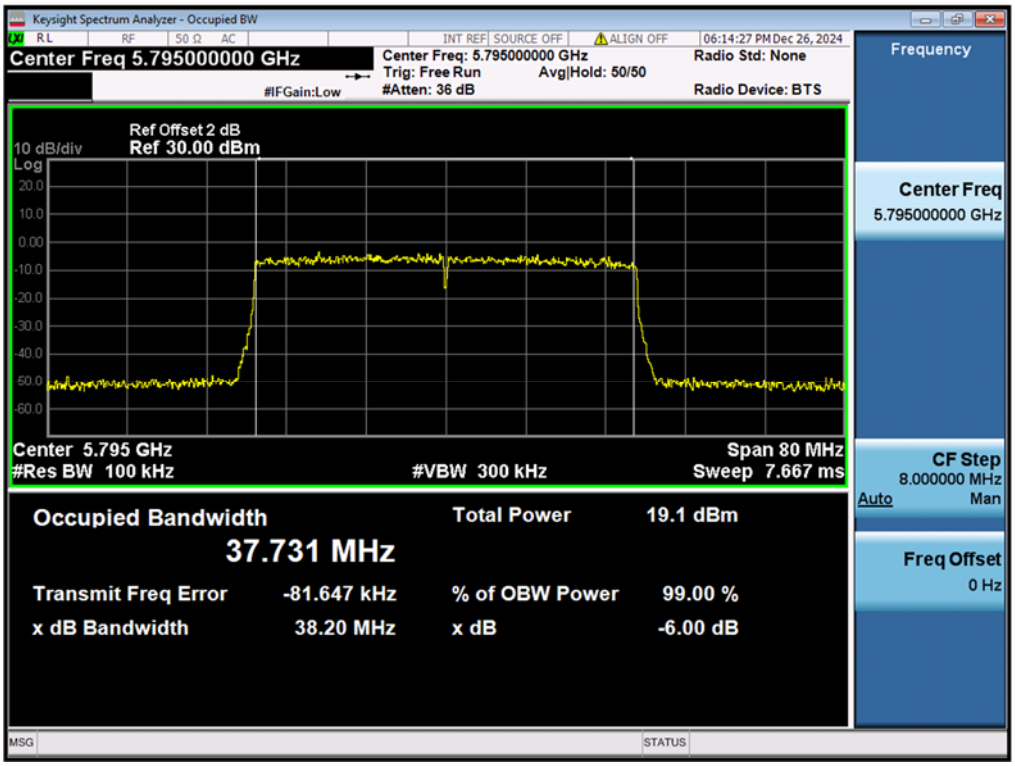


Figure 38: The plots of 6dB Bandwidth, 802.11ax(HE40), 5795MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

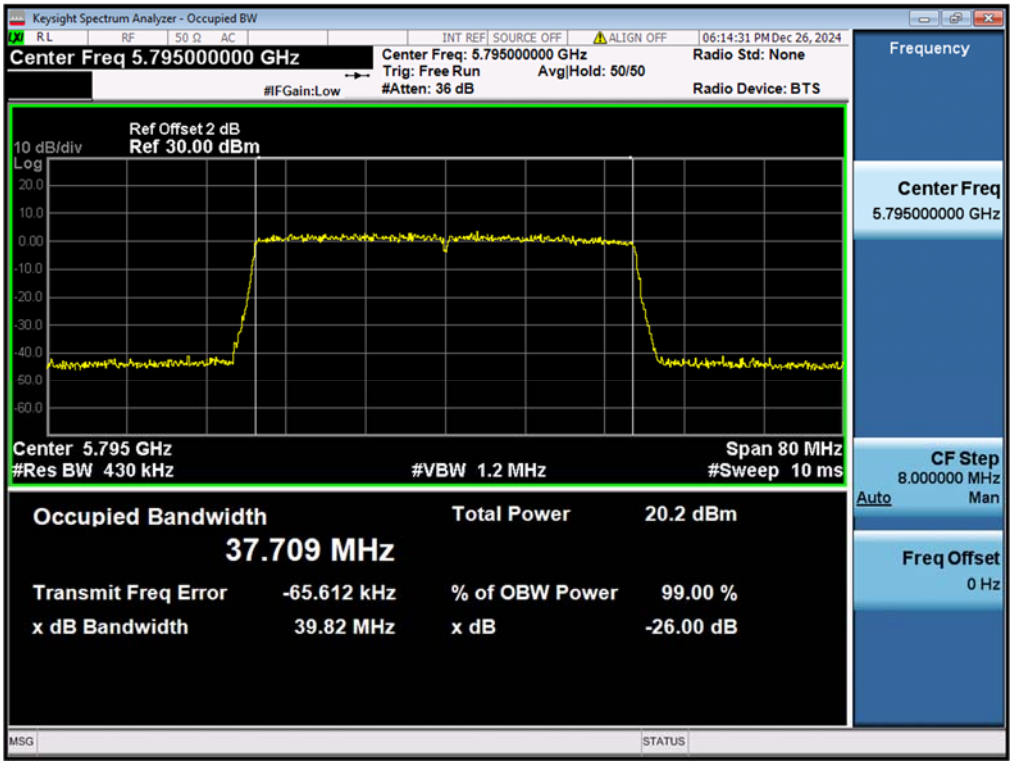
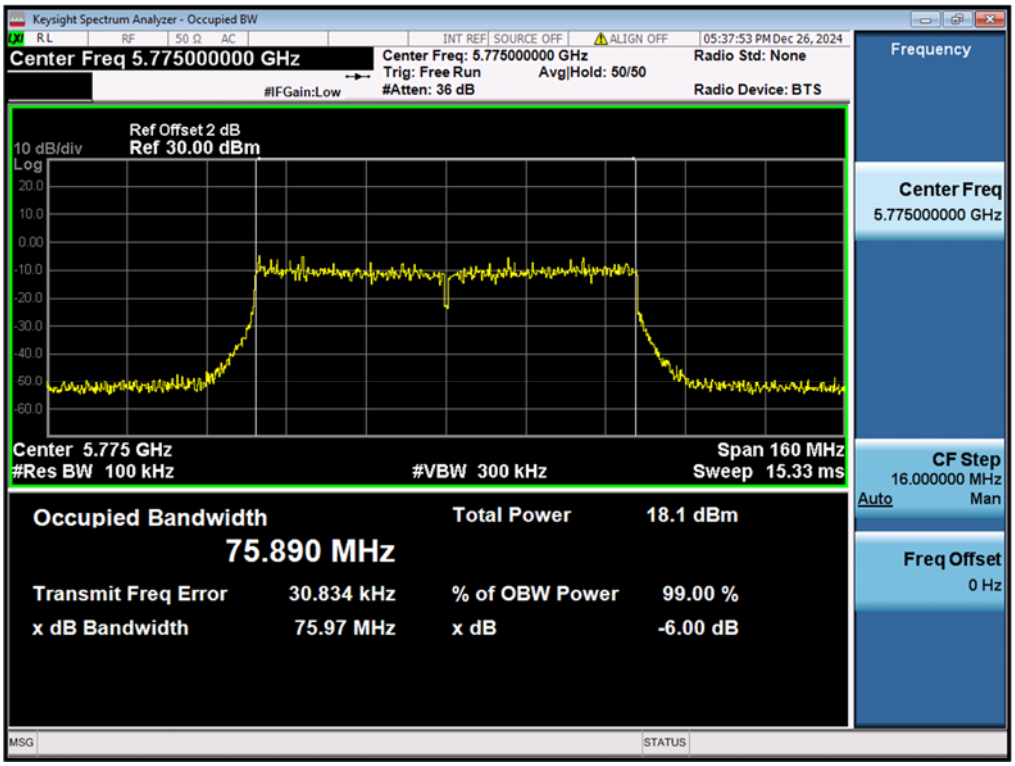


Figure 39: The plots of 6dB Bandwidth, 802.11ac(VHT80), 5775MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth

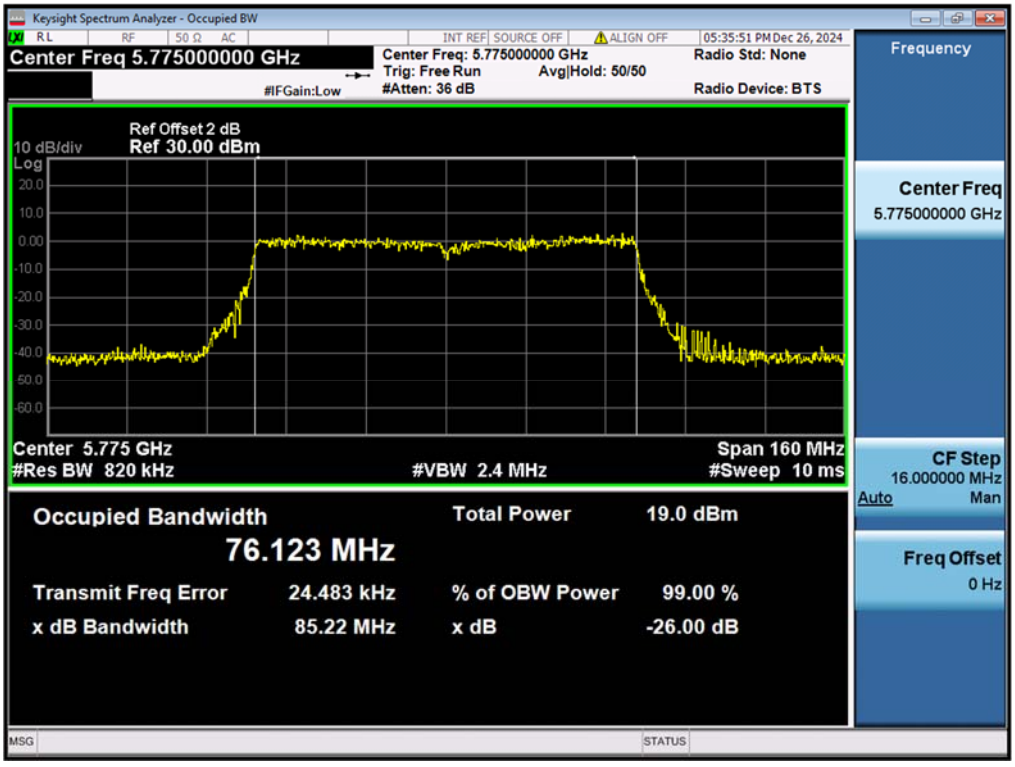
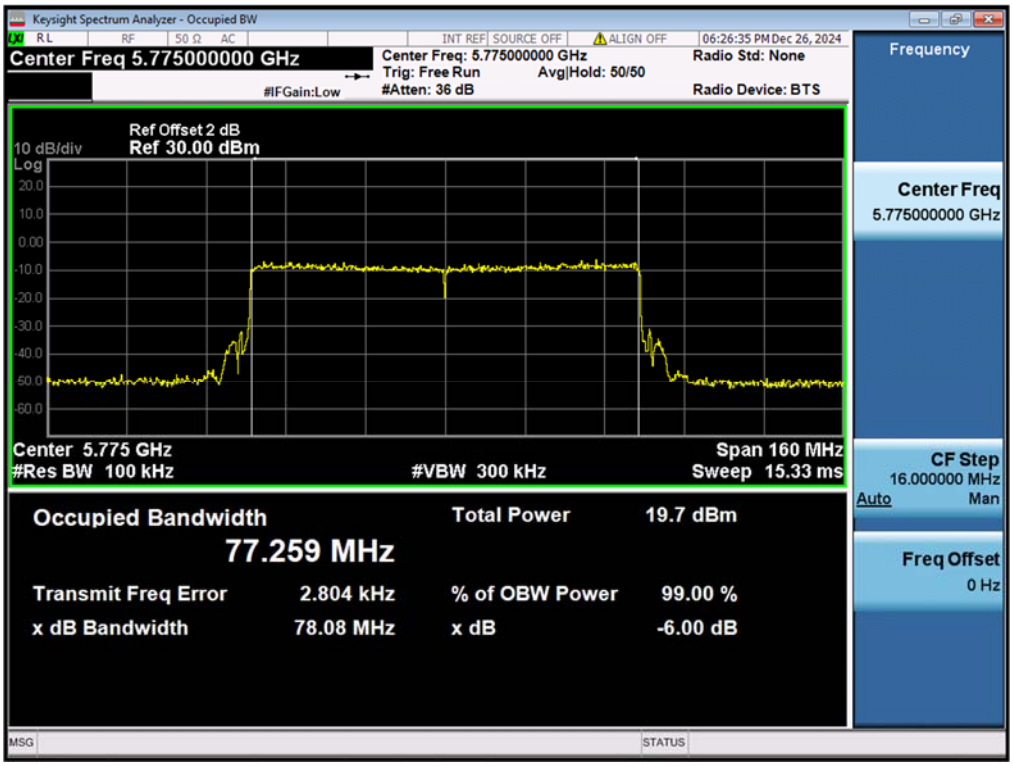
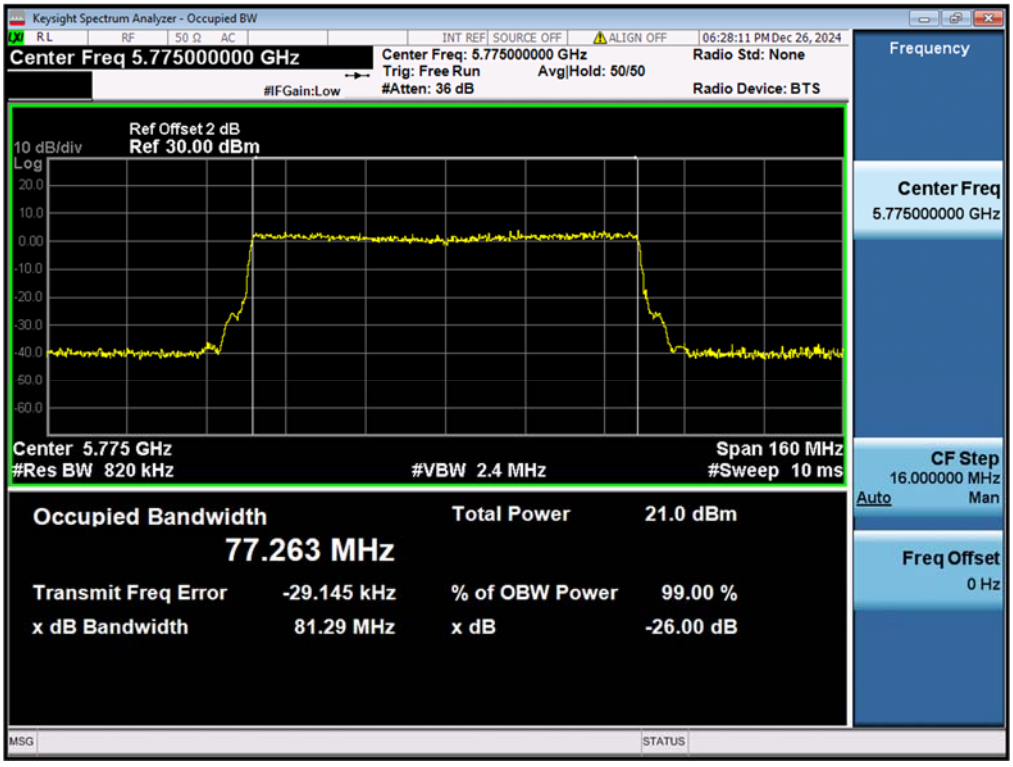


Figure 40: The plots of 6dB Bandwidth, 802.11ax(HE80), 5775MHz

Test Plot of -6dB Bandwidth



Test Plot of 99% Occupied Bandwidth



4.1.5 Maximum Conducted Output Power Spectral Density

RESULT: **PASS**

Test standard	:	FCC Part 15.407(a)
Requirement	:	ANSI C63.10-2013 clause 12.5(SA-2), KDB 789033
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/Middle/High
Operation Mode	:	A.1.a
Ambient temperature	:	19.9-20.3°C
Relative humidity	:	35-44%

Notes:

1.Test plots please refer to the annex document "SHE24110067-02GE DATA WIFI 5GHz- Maximum Conducted Output Power Spectral Density Chain1 EXHIBIT A

2. Test plots please refer to the annex document "SHE24110067-02GE DATA WIFI 5GHz- Maximum Conducted Output Power Spectral Density Chain2 EXHIBIT A

Table 5: Maximum Conducted Output Power Spectral Density for U-NII-1 (5150 – 5250 MHz)

Test Mode	Duty Cycle (%)	Test Channel (MHz)	Maximum Conducted Output Power Spectral Density			Applicable Limit (dBm/MHz)
			Chain 1 (dBm/MHz)	Chain 2 (dBm/MHz)	Total (dBm/MHz)	
802.11a	100	5180	5.41	6.58	N/A	11
		5220	5.20	5.22	N/A	
		5240	5.10	4.86	N/A	
802.11n(HT20)	100	5180	3.71	4.14	6.94	
		5220	2.77	3.51	6.17	
		5240	3.35	3.14	6.26	
802.11ac(VHT20)	100	5180	4.01	4.00	7.02	
		5220	3.38	3.78	6.59	
		5240	2.88	3.15	6.03	
802.11ax(HE20)	100	5180	2.78	4.26	6.59	
		5220	2.82	3.24	6.05	
		5240	2.44	2.38	5.42	
802.11n(HT40)	100	5190	2.18	2.59	5.40	
		5230	1.68	1.81	4.76	
802.11ac(VHT40)	100	5190	2.28	2.44	5.37	
		5230	1.49	1.50	4.51	
802.11ax(HE40)	100	5190	2.95	3.51	6.25	
		5230	1.99	2.62	5.33	
802.11ac(VHT80)	100	5210	-1.58	-0.73	1.88	
802.11ax(HE80)	100	5210	-1.02	-0.24	2.40	

Notes:

1. 802.11a support SISO and 802.11n/ac/ax support MIMO.
2. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

Table 6: Maximum Conducted Output Power Spectral Density for U-NII-3 (5725 – 5850 MHz)

Test Mode	Duty Cycle (%)	Test Channel (MHz)	Maximum Conducted Output Power Spectral Density			Applicable Limit (dBm/500kHz)
			Chain 1 (dBm/500KHz)	Chain 2 (dBm/500KHz)	Total (dBm/500KHz)	
802.11a	100	5745	5.19	5.10	N/A	30
		5785	4.17	4.49	N/A	
		5825	3.62	3.91	N/A	
802.11n(HT20)	100	5745	5.08	5.41	8.26	
		5785	4.62	5.02	7.83	
		5825	4.06	4.13	7.11	
802.11ac(VHT20)	100	5745	5.00	5.97	8.52	
		5785	4.99	5.36	8.19	
		5825	4.21	3.96	7.10	
802.11ax(HE20)	100	5745	5.05	5.85	8.48	
		5785	4.56	5.04	7.82	
		5825	4.03	4.19	7.12	
802.11n(HT40)	100	5755	1.98	2.60	5.31	
		5795	1.61	1.22	4.43	
802.11ac(VHT40)	100	5755	1.67	1.83	4.76	
		5795	1.48	1.25	4.38	
802.11ax(HE40)	100	5755	2.99	3.28	6.15	
		5795	2.08	2.66	5.39	
802.11ac(VHT80)	100	5775	-2.61	-2.63	0.39	
802.11ax(HE80)	100	5775	-1.55	-0.91	1.79	

Notes:

1. 802.11a support SISO and 802.11n/ac/ax support MIMO.
2. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

4.1.6 Conducted Spurious Emission

RESULT: **PASS**

Test standard	:	FCC Part 15.407(b), 15.209
Requirement	:	ANSI C63.10-2013 clause 12.7.4, KDB 789033
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Low/Middle/High
Operation Mode	:	A.1.a
Ambient temperature	:	19.9-20.3°C
Relative humidity	:	35-44%

Notes

1. Two transmit chains (chain 1 and chain 2) had been tested, the chain 2 was the worst case and record in the test report.

2. The spurious emission at chain 2 is more than 3dB below the limits, so the MIMO results for the spurious emissions are comply with the requirement.

3. The spurious above 25GHz is noise only. The value has no need to be reported.

4. *Test plots please refer to the annex document "SHE24110067-02GE DATA WIFI 5GHz-TX CSE EXHIBIT A".*

4.1.7 Radiated Emission

RESULT: **PASS**

Test standard	:	FCC Part 15.407(b), 15.209, 15.205
Requirement	:	ANSI C63.10-2013 clause 12.7.4, KDB 789033
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/Middle/High
Operation Mode	:	A.1.a
Ambient temperature	:	25.1°C
Relative humidity	:	47%

Notes:

Test plots please refer to the annex document "SHE24110067-02GE DATA WIFI5GHz-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. 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. All antenna (SISO and MIMO) had been tested, The 802.11a20 of antenna 1 and The 802.11n/ac/ax of MIMO mode are the worst case and record in the test report.
5. Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Results-Limit.

4.1.8 Band Edge (Restricted-band band-edge)

RESULT: **PASS**

Test standard	:	FCC Part 15.407(b)
Requirement	:	ANSI C63.10-2013 clause 12.7.4.4, KDB 789033
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/High
Operation Mode	:	A.1.a
Ambient temperature	:	25.1°C
Relative humidity	:	47%

Notes:

Test plots please refer to the annex document "SHE24110067-02GE DATA WIFI5GHz-TX EXHIBIT A"

1. 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.

2. All antenna (SISO and MIMO) had been tested, The 802.11a20 of antenna 1 and The 802.11n/ac/ax of MIMO mode are the worst case and record in the test report.

3. Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Results-Limit.

4.1.9 Frequency Stability

RESULT: **PASS**

Test standard : FCC Part 15.407(g)
Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High
Operation Mode : A.1.a
Ambient temperature : 24.5°C
Relative humidity : 58%

Table 2: Frequency Stability

U-NII-1 (5150 – 5250 MHz):

Voltage vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
20	AC 120V	5179.977425	4.36	±20
	AC 100V	5179.977550	4.33	
	AC 240V	5179.977900	4.27	

Temperature vs. Frequency Stability (5180MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
AC 120V	0	5179.978200	4.21	±20
	10	5179.978125	4.22	
	20	5179.977775	4.29	
	30	5179.978050	4.24	
	40	5179.978275	4.19	
	50	5179.977725	4.30	
	60	5179.977400	4.36	
	70	5179.977175	4.41	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

U-NII-3 (5725 – 5850 MHz):

Voltage vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Temp (°C)	Voltage (V)			
20	AC 120V	.	2.89	±20
	AC 100V	5744.983250	2.92	
	AC 240V	5744.983050	2.95	

Temperature vs. Frequency Stability (5745MHz)

Test Conditions		Frequency (MHz)	Max. Deviation (ppm)	Limit (ppm)
Voltage (V)	Temp (°C)			
AC 120V	0	5744.983450	2.88	±20
	10	5744.982700	3.01	
	20	5744.982600	3.03	
	30	5744.980825	3.34	
	40	5744.980775	3.35	
	50	5744.981325	3.25	
	60	5744.981175	3.28	
	70	5744.981400	3.24	

Note:

The all configurations were tested respectively, but only the worst channel shown here.

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

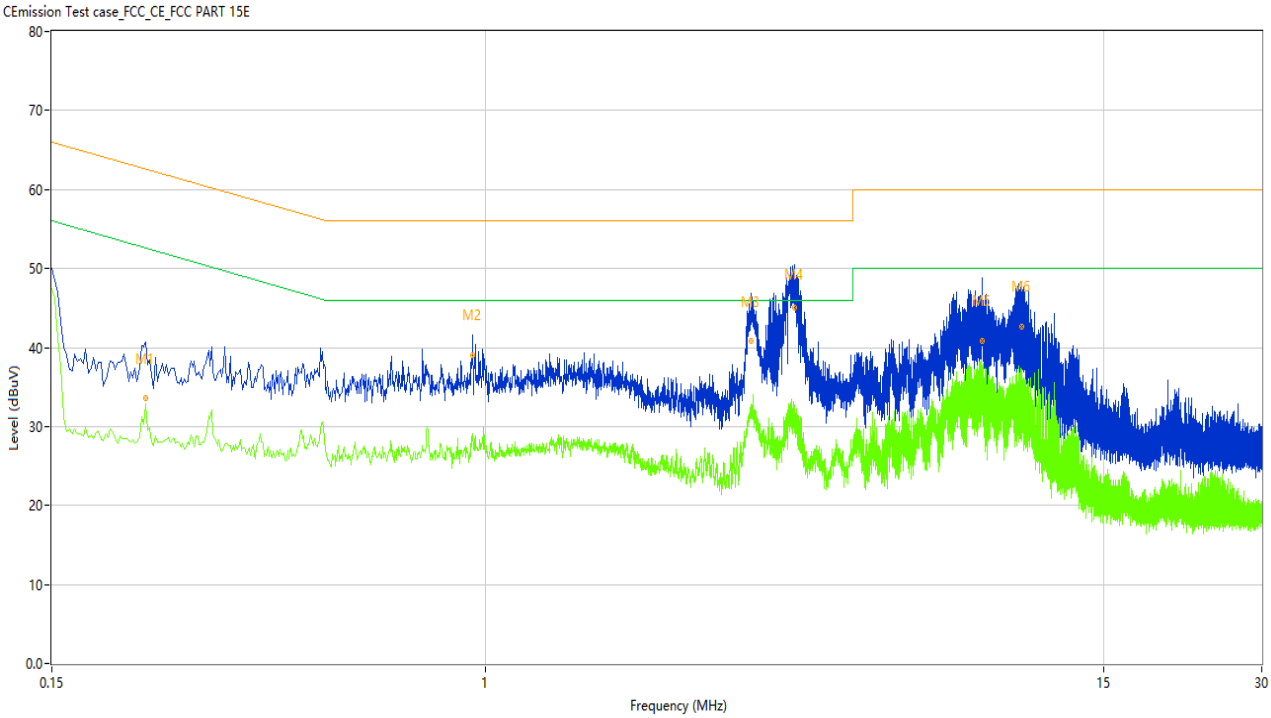
Test setup

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

For details refer to following test plot.

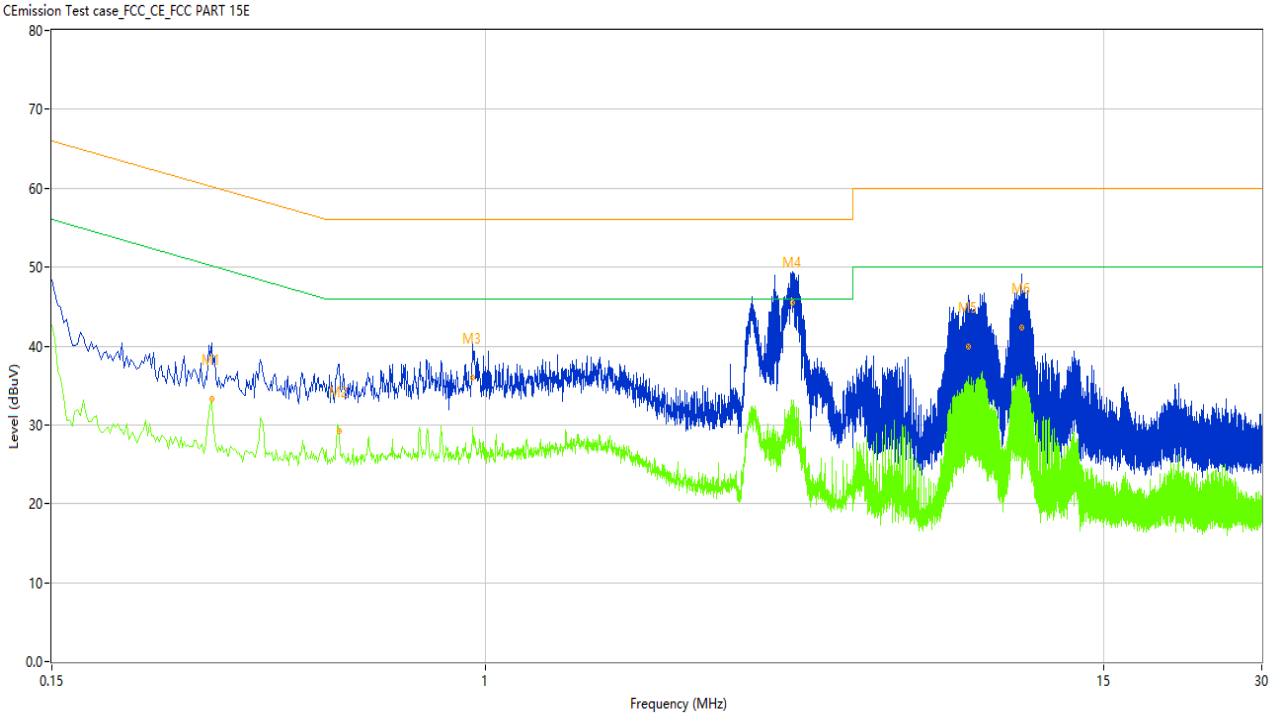
Note：The all configurations were tested respectively, but only the worst configuration shown here.

Figure 41: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.226	39.05	10.23	62.60	23.55	Peak	L	Pass
1*	0.226	33.53	10.23	62.60	29.07	QP	L	Pass
1**	0.226	32.85	10.23	52.60	19.75	AV	L	Pass
2	0.948	43.62	10.10	56.00	12.38	Peak	L	Pass
2*	0.948	38.99	10.10	56.00	17.01	QP	L	Pass
2**	0.948	29.06	10.10	46.00	16.94	AV	L	Pass
3	3.212	48.27	10.11	56.00	7.73	Peak	L	Pass
3*	3.212	40.75	10.11	56.00	15.25	QP	L	Pass
3**	3.212	31.47	10.11	46.00	14.53	AV	L	Pass
4	3.880	50.52	10.15	56.00	5.48	Peak	L	Pass
4*	3.880	45.01	10.15	56.00	10.99	QP	L	Pass
4**	3.880	32.13	10.15	46.00	13.87	AV	L	Pass
5	8.818	47.78	10.34	60.00	12.22	Peak	L	Pass
5*	8.818	40.77	10.34	60.00	19.23	QP	L	Pass
5**	8.818	37.68	10.34	50.00	12.32	AV	L	Pass
6	10.472	49.79	10.38	60.00	10.21	Peak	L	Pass
6*	10.472	42.65	10.38	60.00	17.35	QP	L	Pass
6**	10.472	36.97	10.38	50.00	13.03	AV	L	Pass

Figure 42: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.302	37.74	10.10	60.19	22.45	Peak	N	Pass
1*	0.302	33.23	10.10	60.19	26.96	QP	N	Pass
1**	0.302	33.03	10.10	50.19	17.16	AV	N	Pass
2	0.528	34.99	10.04	56.00	21.01	Peak	N	Pass
2*	0.528	29.17	10.04	56.00	26.83	QP	N	Pass
2**	0.528	28.99	10.04	46.00	17.01	AV	N	Pass
3	0.946	43.17	9.98	56.00	12.83	Peak	N	Pass
3*	0.946	35.97	9.98	56.00	20.03	QP	N	Pass
3**	0.946	28.49	9.98	46.00	17.51	AV	N	Pass
4	3.848	50.16	10.07	56.00	5.84	Peak	N	Pass
4*	3.848	45.43	10.07	56.00	10.57	QP	N	Pass
4**	3.848	31.36	10.07	46.00	14.64	AV	N	Pass
5	8.298	47.00	10.23	60.00	13.00	Peak	N	Pass
5*	8.298	39.85	10.23	60.00	20.15	QP	N	Pass
5**	8.298	32.82	10.23	50.00	17.18	AV	N	Pass
6	10.496	49.01	10.28	60.00	10.99	Peak	N	Pass
6*	10.496	42.33	10.28	60.00	17.67	QP	N	Pass
6**	10.496	36.25	10.28	50.00	13.75	AV	N	Pass

5 Appendixes

5.1 Photographs of the Sample

Front of the sample

Rear of the sample

Left of the sample

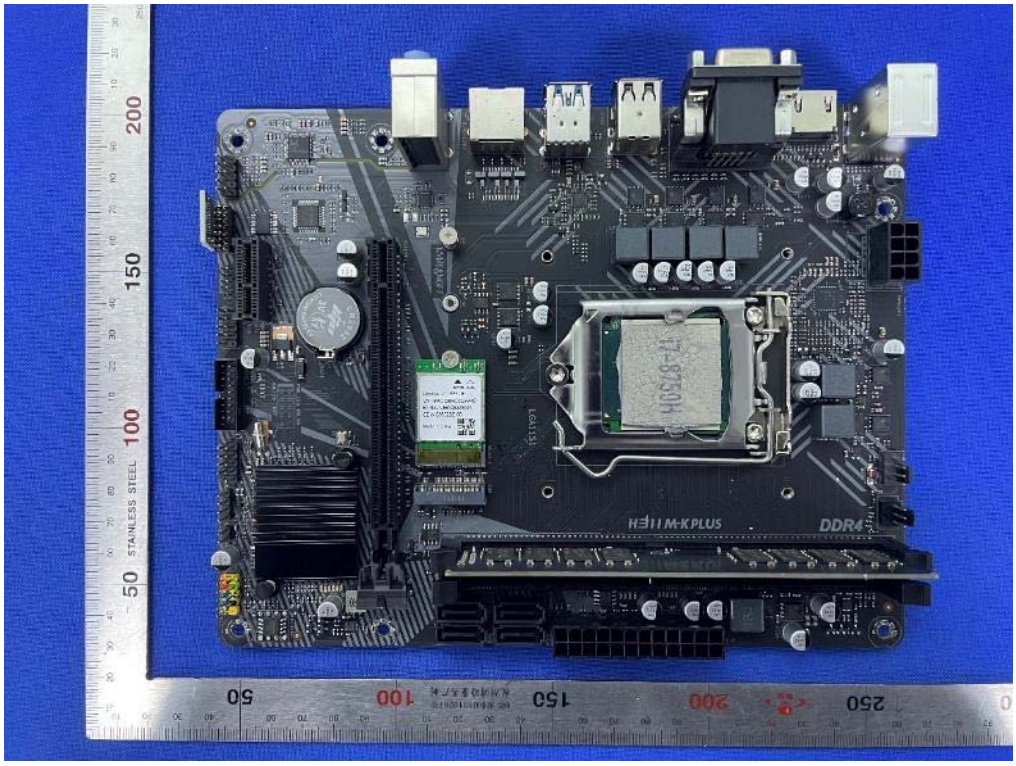
Right of the sample

Top of the sample

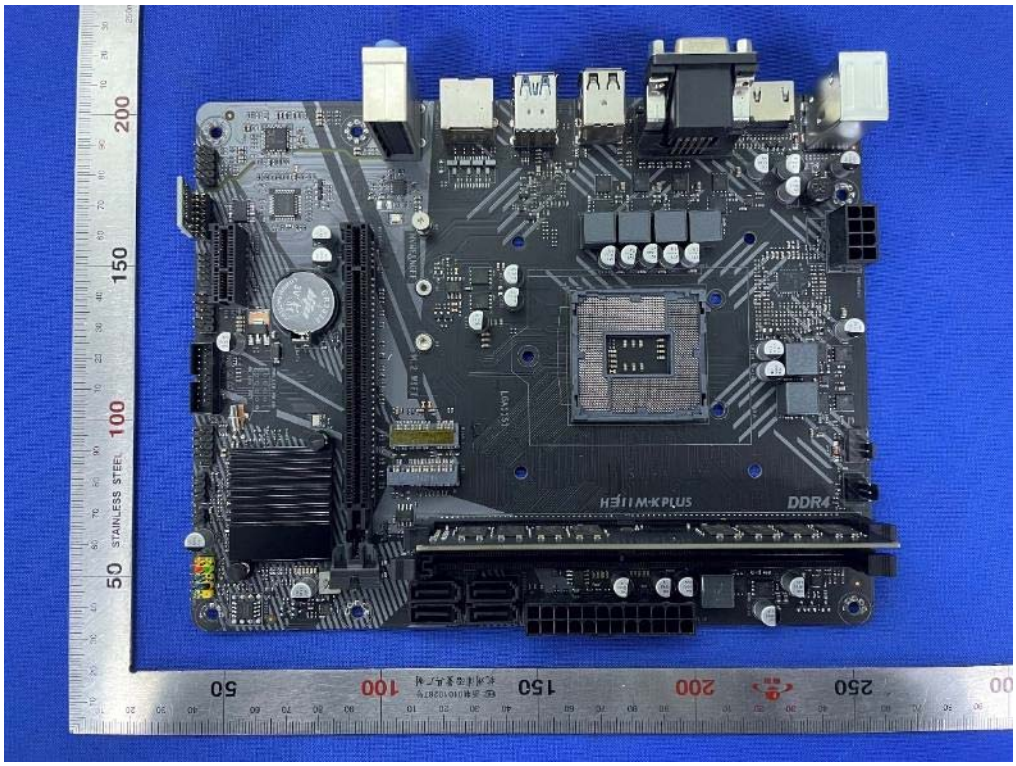
Bottom of the sample

Open-1 of the sample

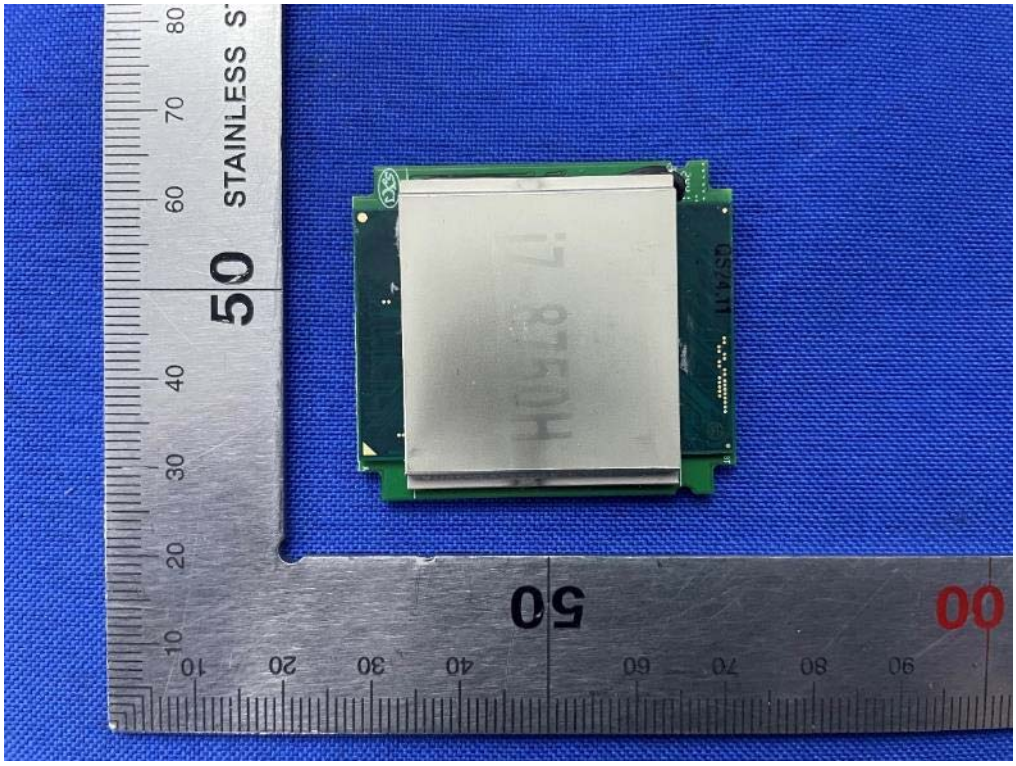
Internal-1 of the sample



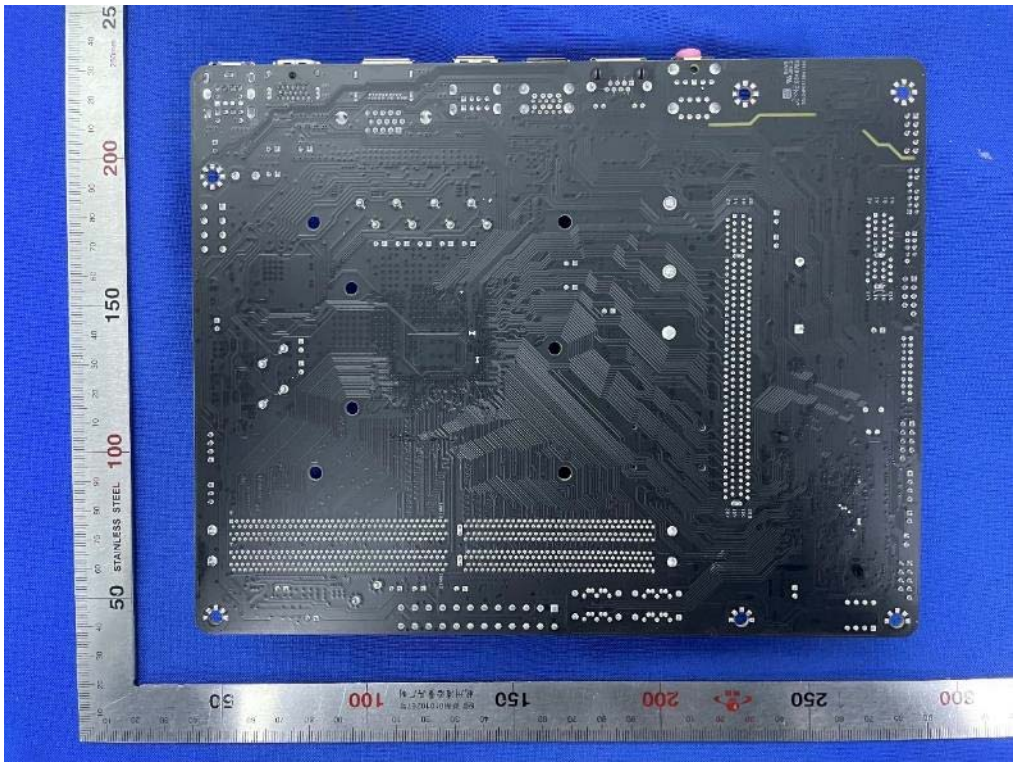
Internal-2 of the sample



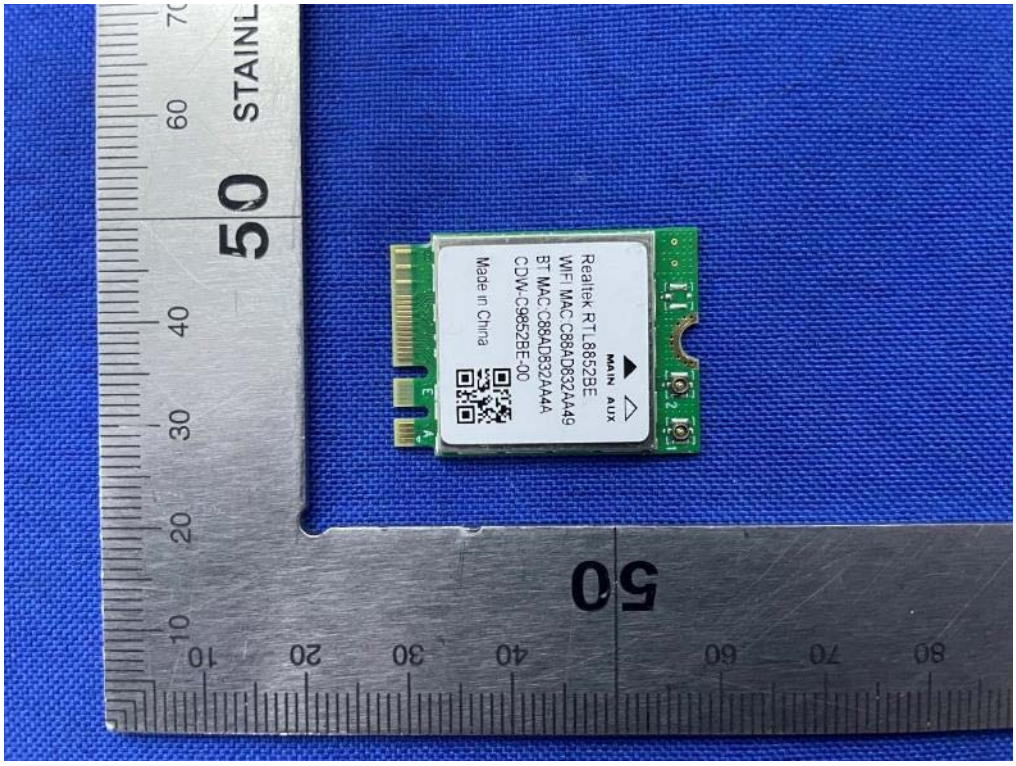
Internal-3 of the sample



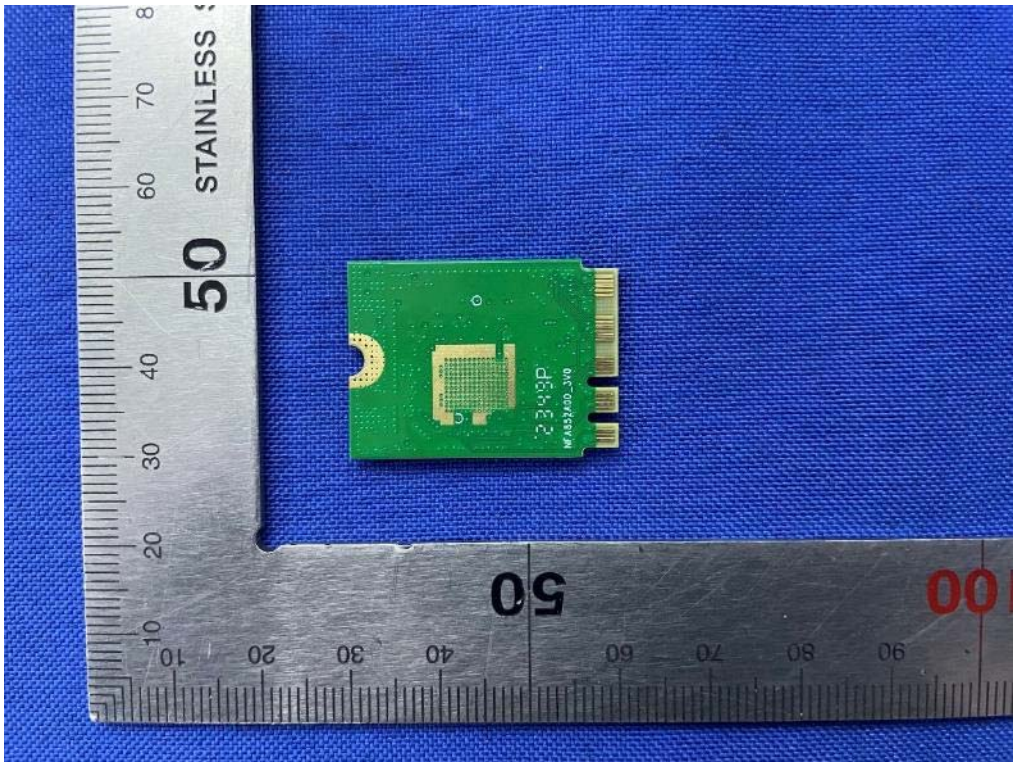
Internal-4 of the sample



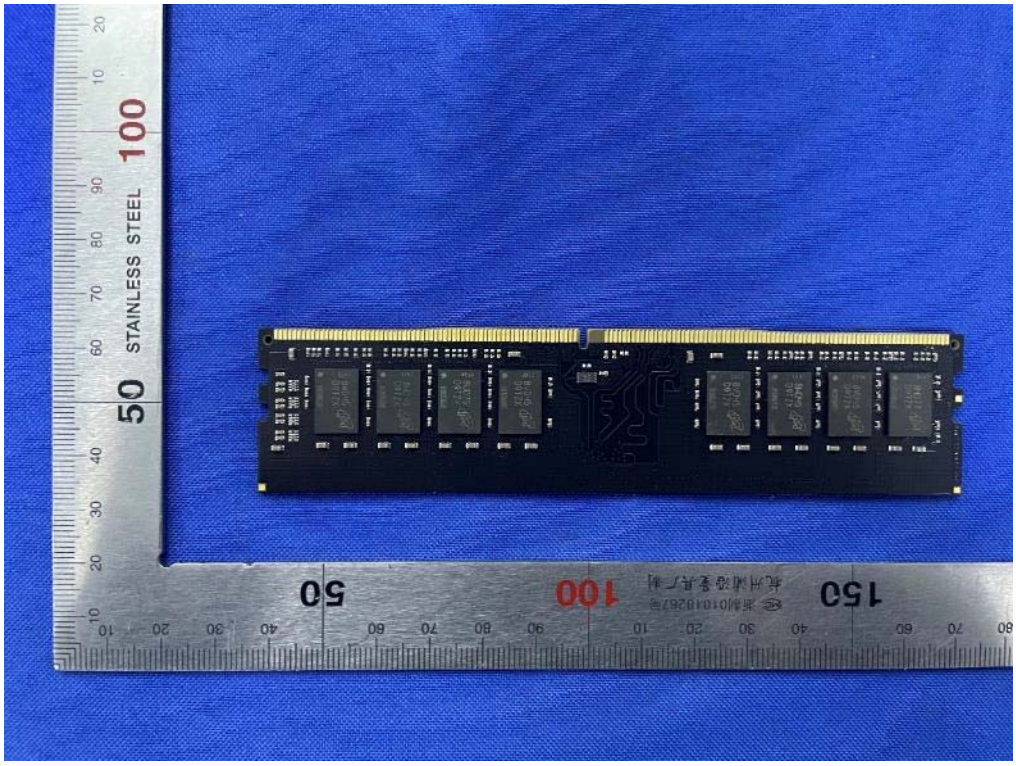
Internal-5 of the sample



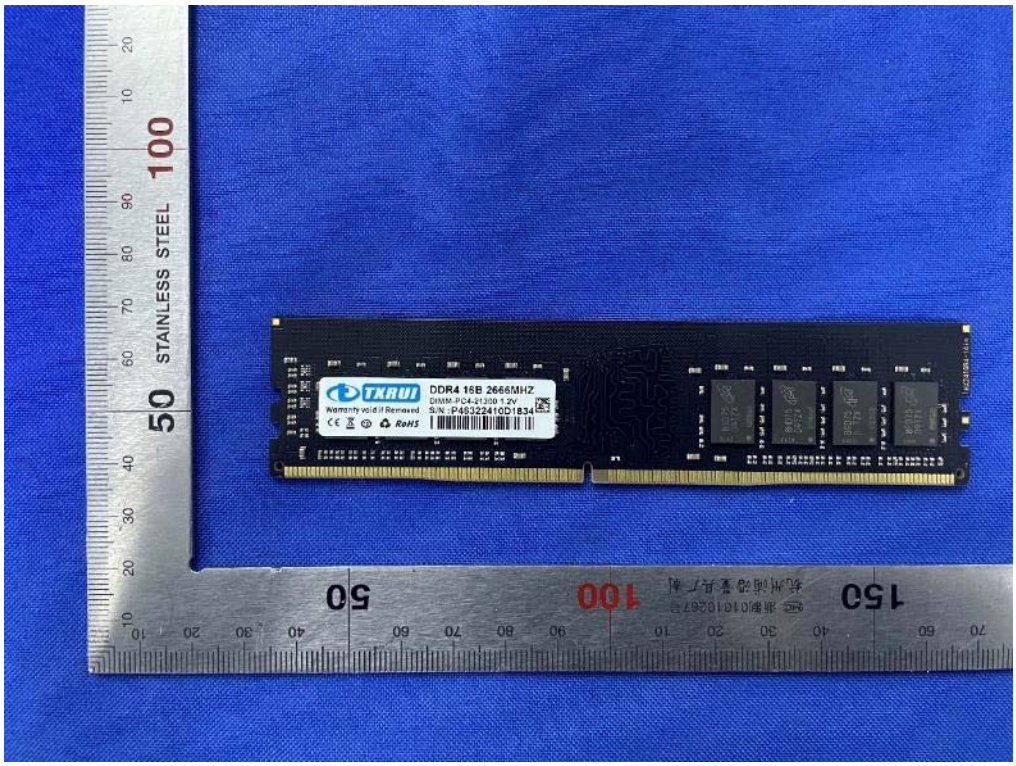
Internal-6 of the sample



Internal-7 of the sample



Internal-8 of the sample

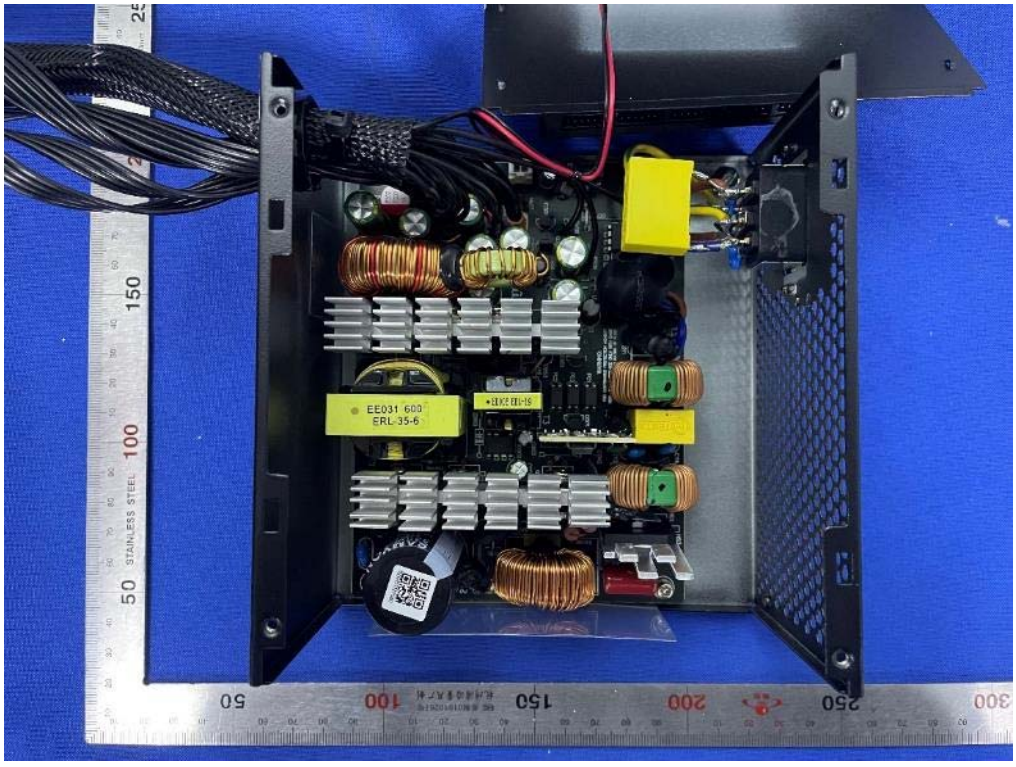


Internal-9 of the sample

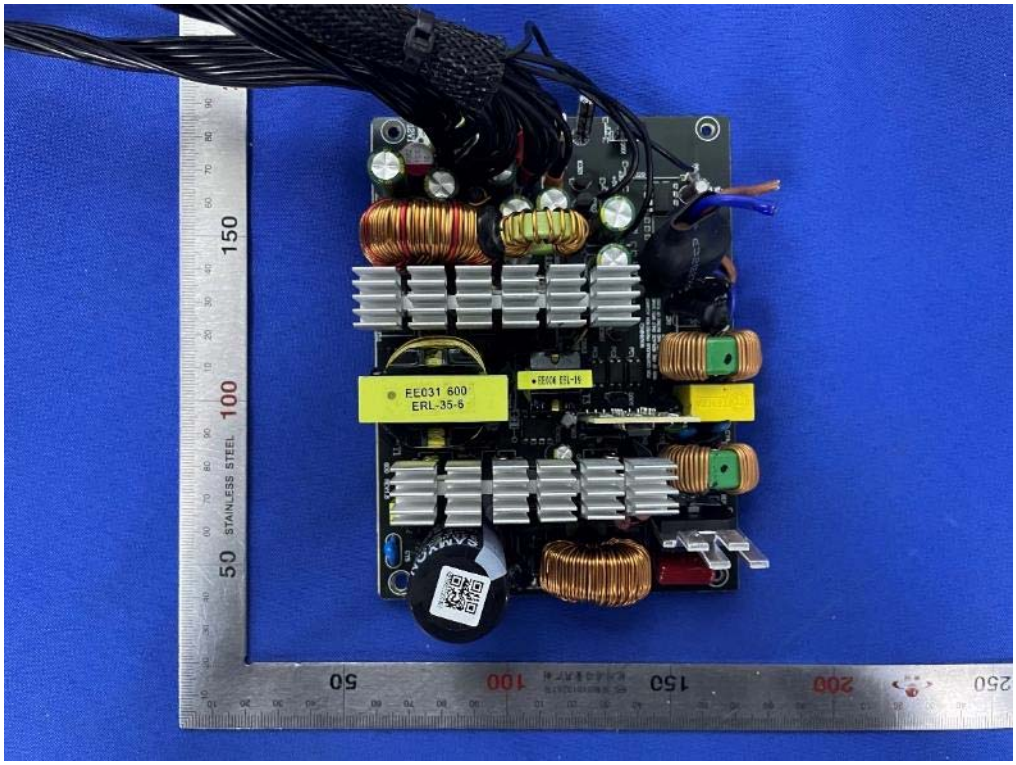
Internal-10 of the sample

Internal-11 of the sample

Internal-12 of the sample

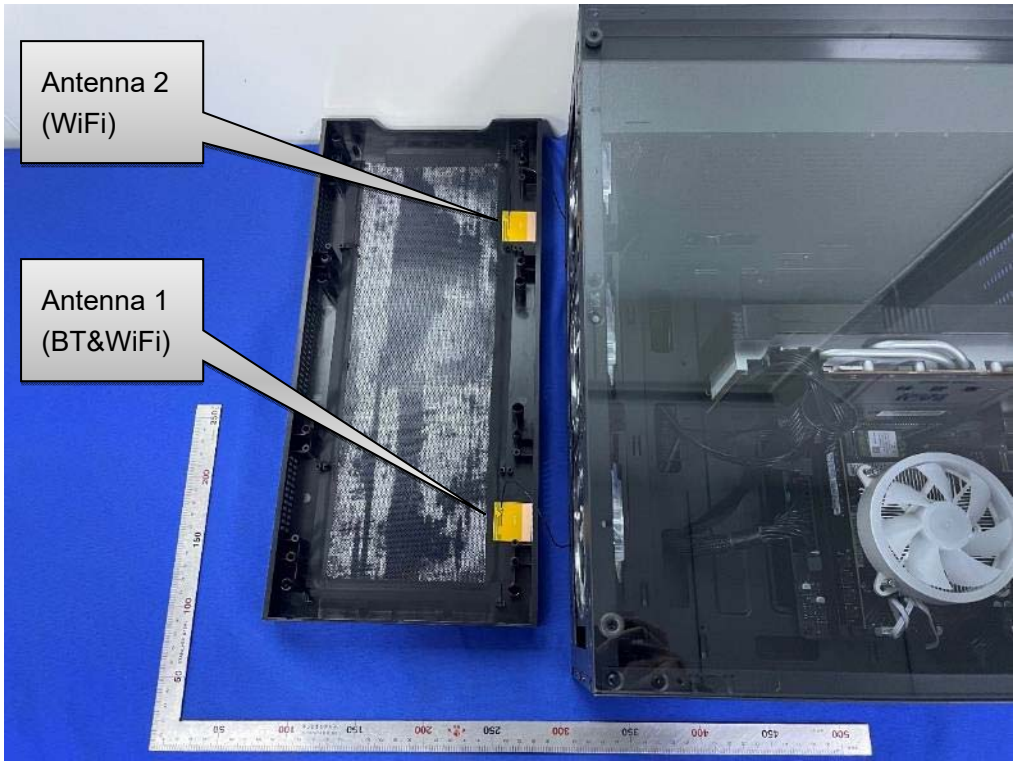


Internal-13 of the sample



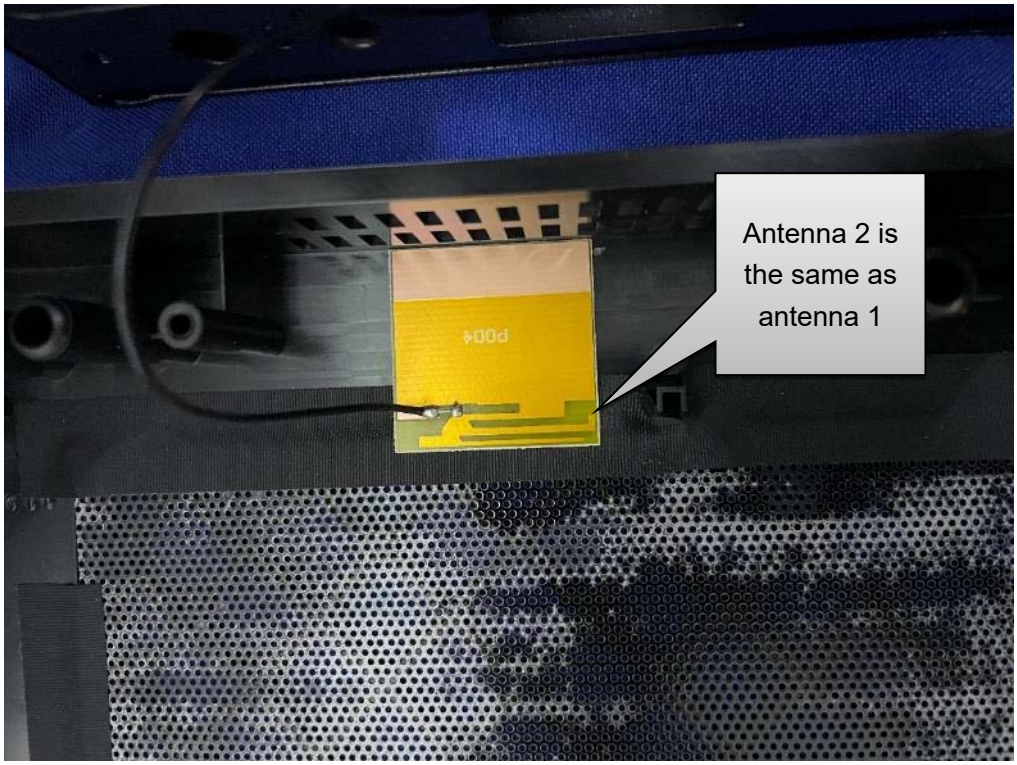
Internal-14 of the sample

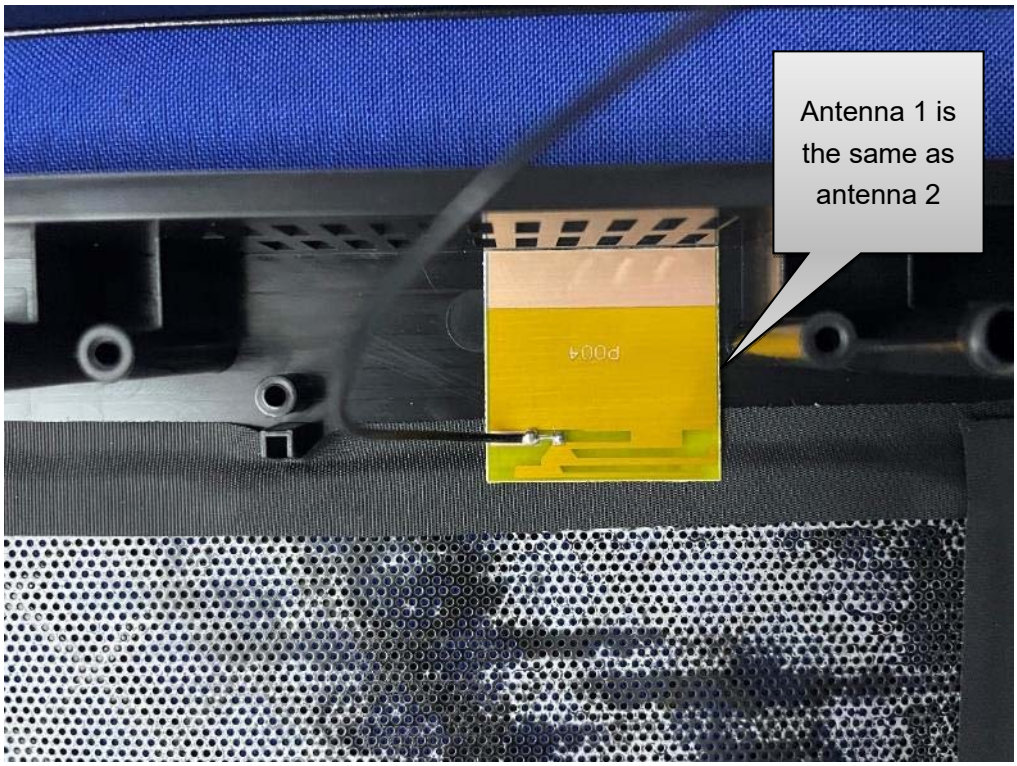
Internal-15 of the sample



Antenna Position

Antenna Interface

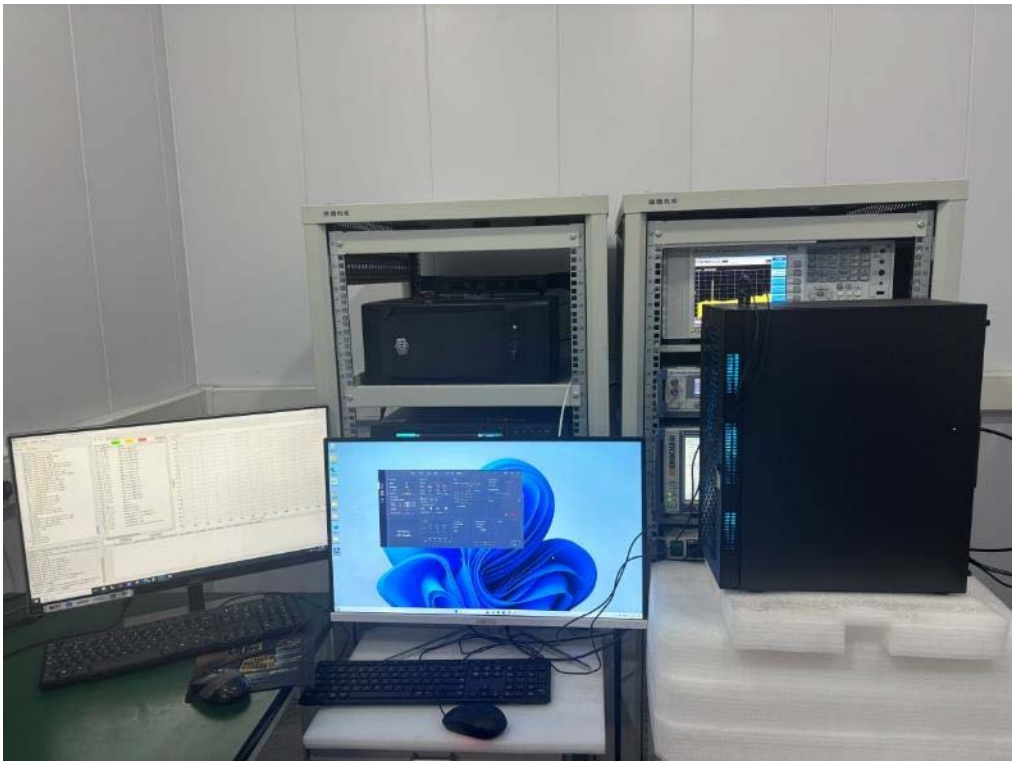




Antenna Photo

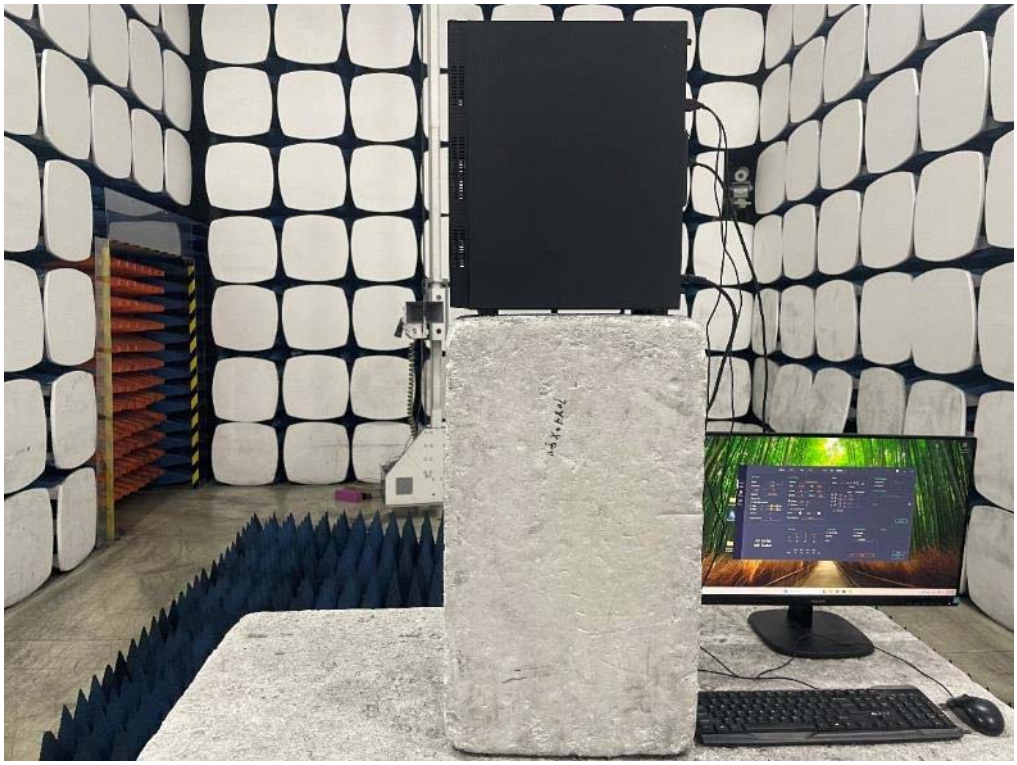
5.2 Set-up for Conducted Emissions

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