Figure 31: Hopping Frequency Separation, Hopping Mode, GFSK

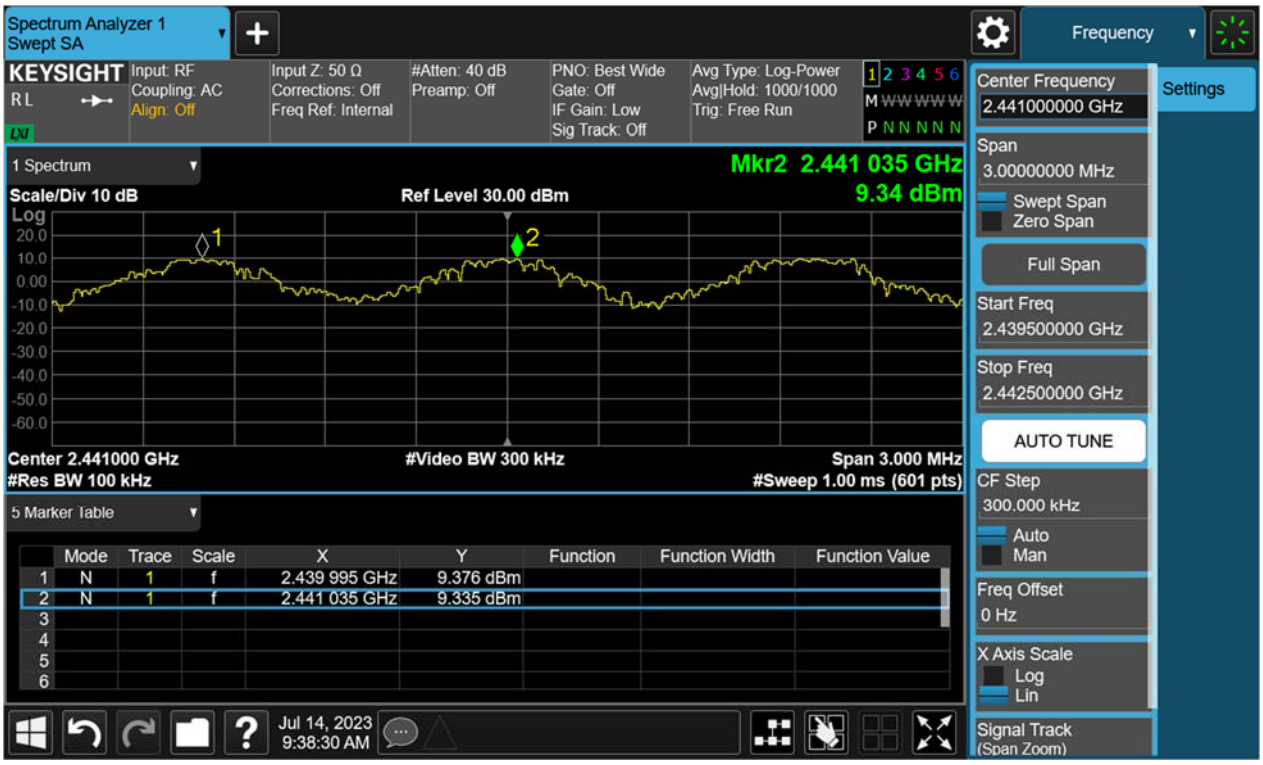


Figure 32: Hopping Frequency Separation, Hopping Mode, π/4-DQPSK

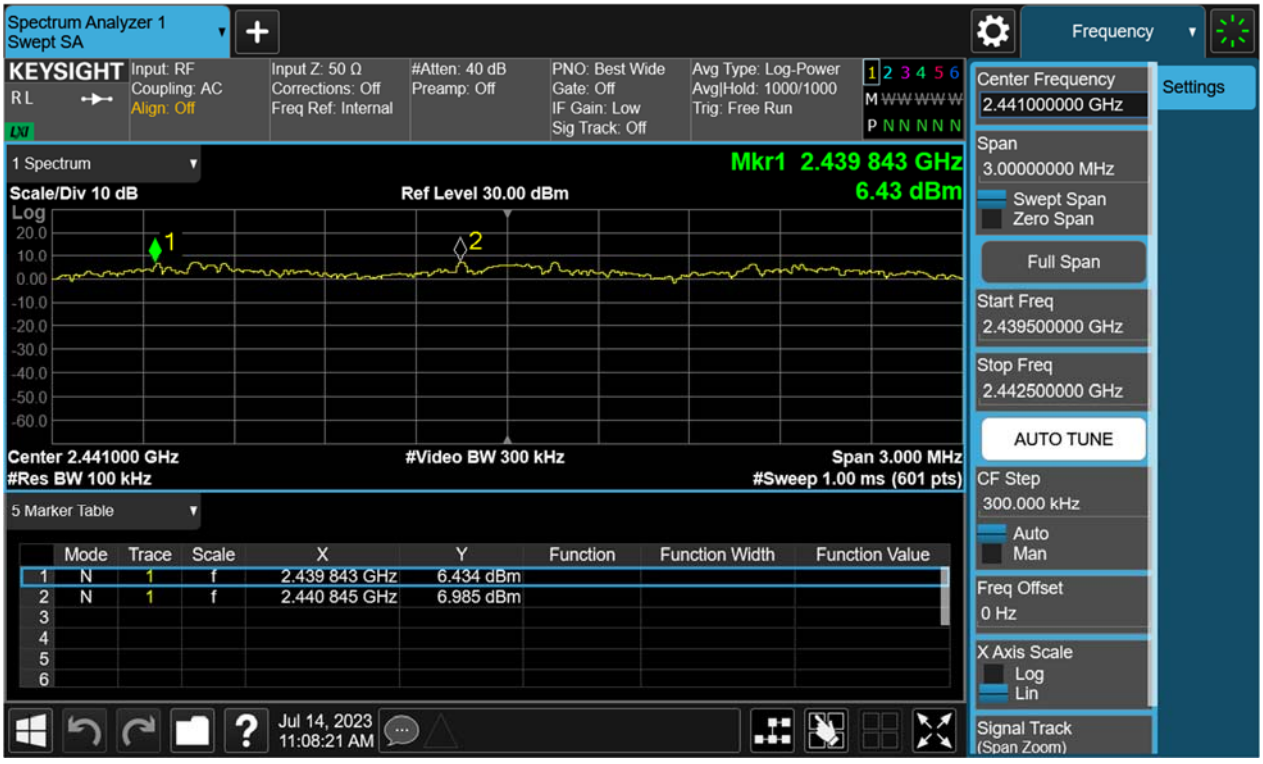
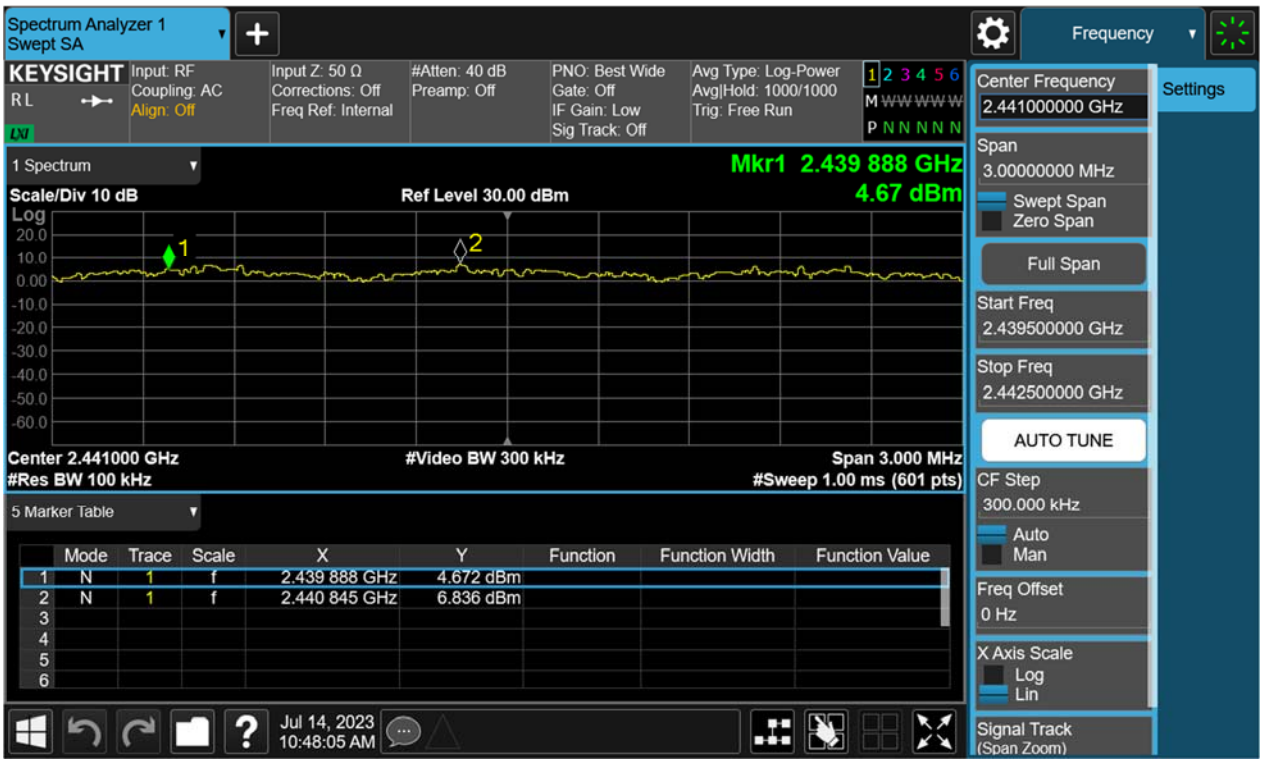


Figure 33: Hopping Frequency Separation, Hopping Mode, 8DPSK



4.1.8 Number of Hopping Frequency

RESULT: **PASS**

Test standard : FCC Part 15.247(a)(1)(iii)

Requirement : ANSI C63.10-2013, Clause 7.8.3
KDB 558074 D01 v05r02, Clause 2.2

Kind of test site : Shielded room

Test setup

Test Channel : Hopping

Operation Mode : A.1.a.iv

Ambient temperature : 24.9°C

Relative humidity : 51%

Table 4: Number of Hopping Frequency

Mode	Frequency Range	Measured Quantity of Hopping Channel	Limit
GFSK	2400 – 2483.5	79	≥15
π/4-DQPSK	2400 – 2483.5	79	≥15
8-DPSK	2400 – 2483.5	79	≥15

Figure 34: Number of Hopping Frequency, Hopping Mode, GFSK

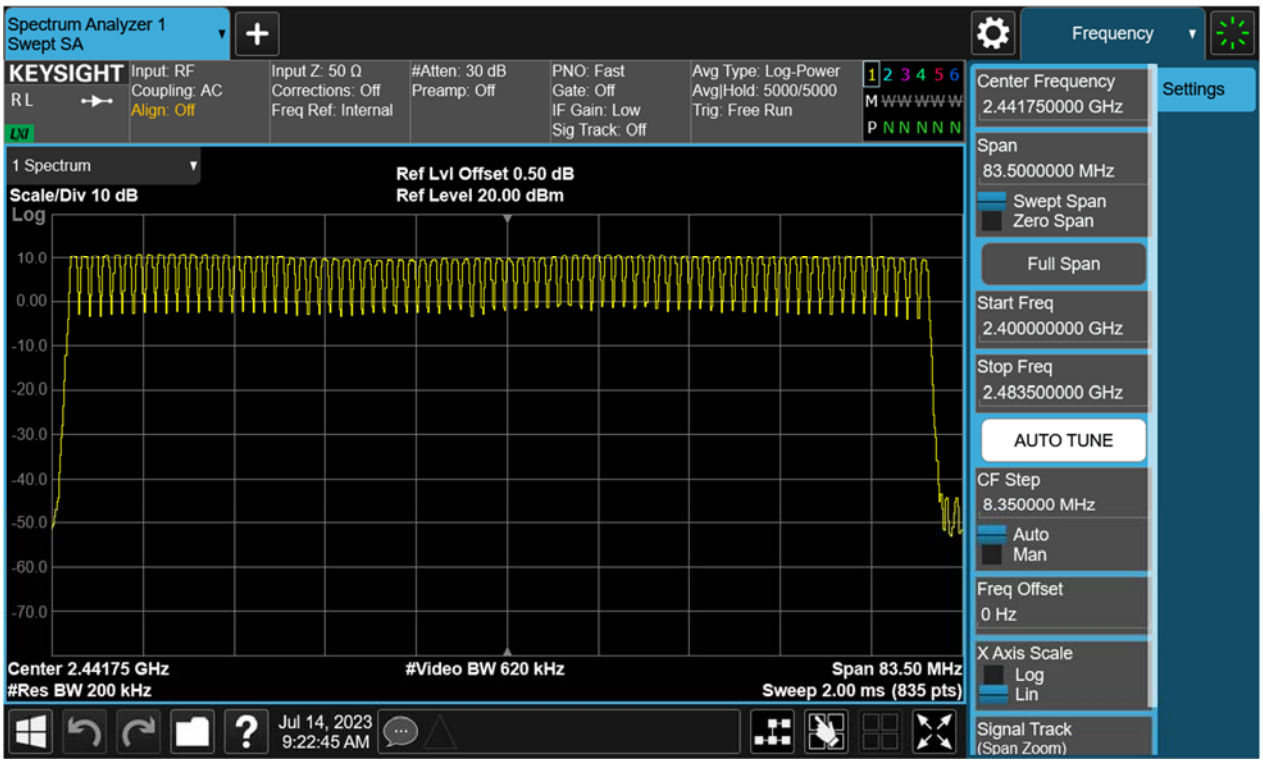


Figure 35: Number of Hopping Frequency, Hopping Mode, π/4-DQPSK

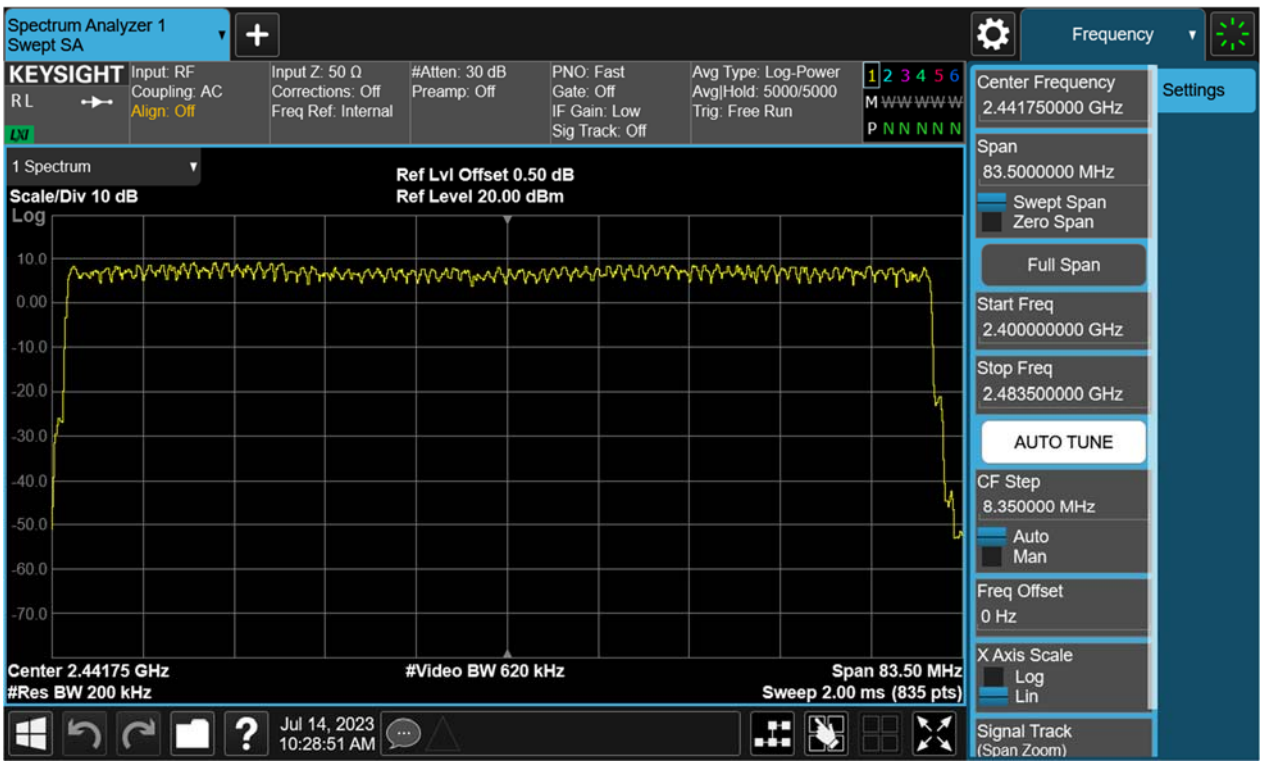
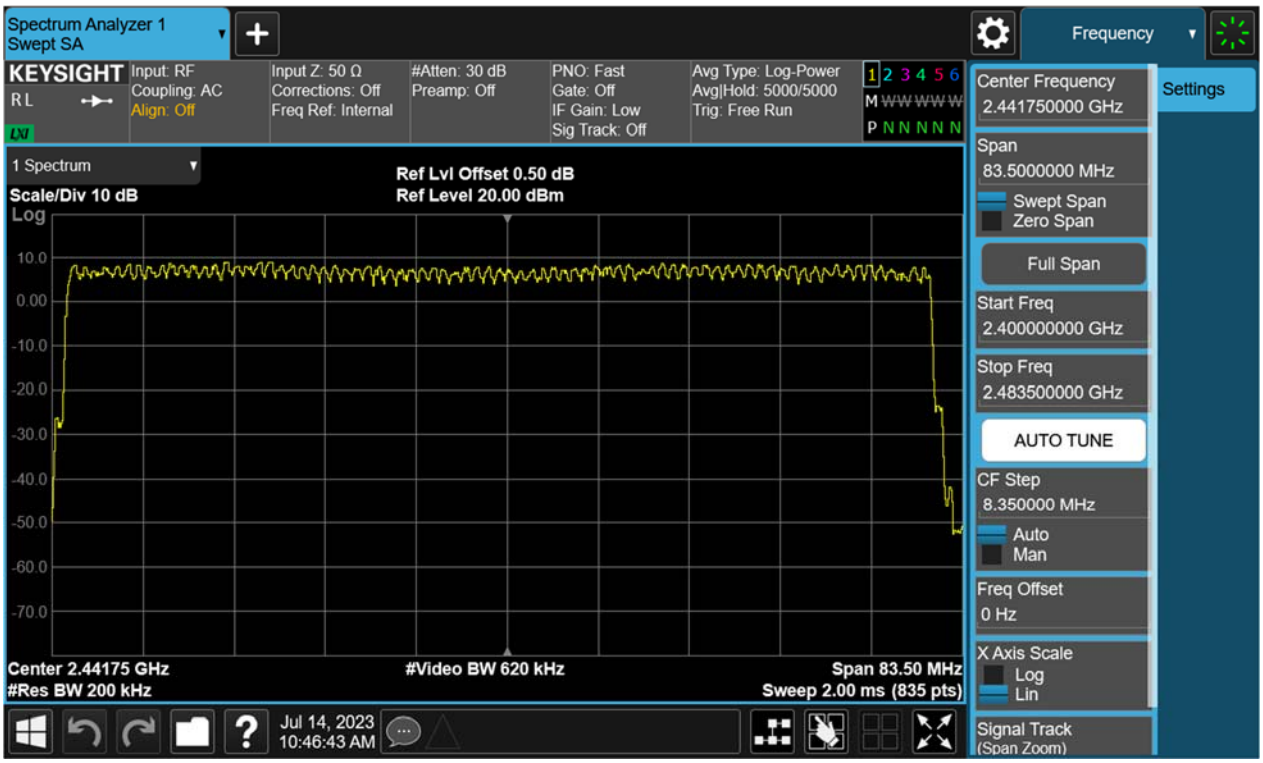


Figure 36: Number of Hopping Frequency, Hopping Mode, 8-DPSK



4.1.9 Time of Occupancy

RESULT: **PASS**

Test standard : FCC Part 15.247(a)(1)(iii)

Requirement : ANSI C63.10-2013, Clause 7.8.4
KDB 558074 D01 v05r02, Clause 2.2

Kind of test site : Shielded room

Test setup

Test Channel : Middle

Operation Mode : A.1.a

Ambient temperature : 24.9°C

Relative humidity : 51%

Table 5: Time of Occupancy

Mode	Packet Type	Pulse Time (ms)	Total of Dwell Time (ms)	Total of Dwell Time (s)	Limit (s)
GFSK	DH1	0.3817	122.144	0.1221	0.4
	DH3	1.6350	261.600	0.2616	0.4
	DH5	2.8870	307.947	0.3079	0.4
π/4-DQPSK	DH1	0.3867	123.744	0.1237	0.4
	DH3	1.6400	262.400	0.2624	0.4
	DH5	2.8870	307.947	0.3079	0.4
8-DPSK	DH1	0.3867	123.744	0.1237	0.4
	DH3	1.6350	261.600	0.2616	0.4
	DH5	2.8870	307.947	0.3079	0.4

Note:

For DH1 package type:

Total of Dwell = Pulse Time*(1600/2)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

For DH3 package type:

Total of Dwell = Pulse Time*(1600/4)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

For DH5 package type:

Total of Dwell = Pulse Time*(1600/6)/Number of Hopping Frequency*Period

Period = 0.4* Number of Hopping Frequency

Figure 37: Time of Occupancy, 2441MHz, GFSK DH1

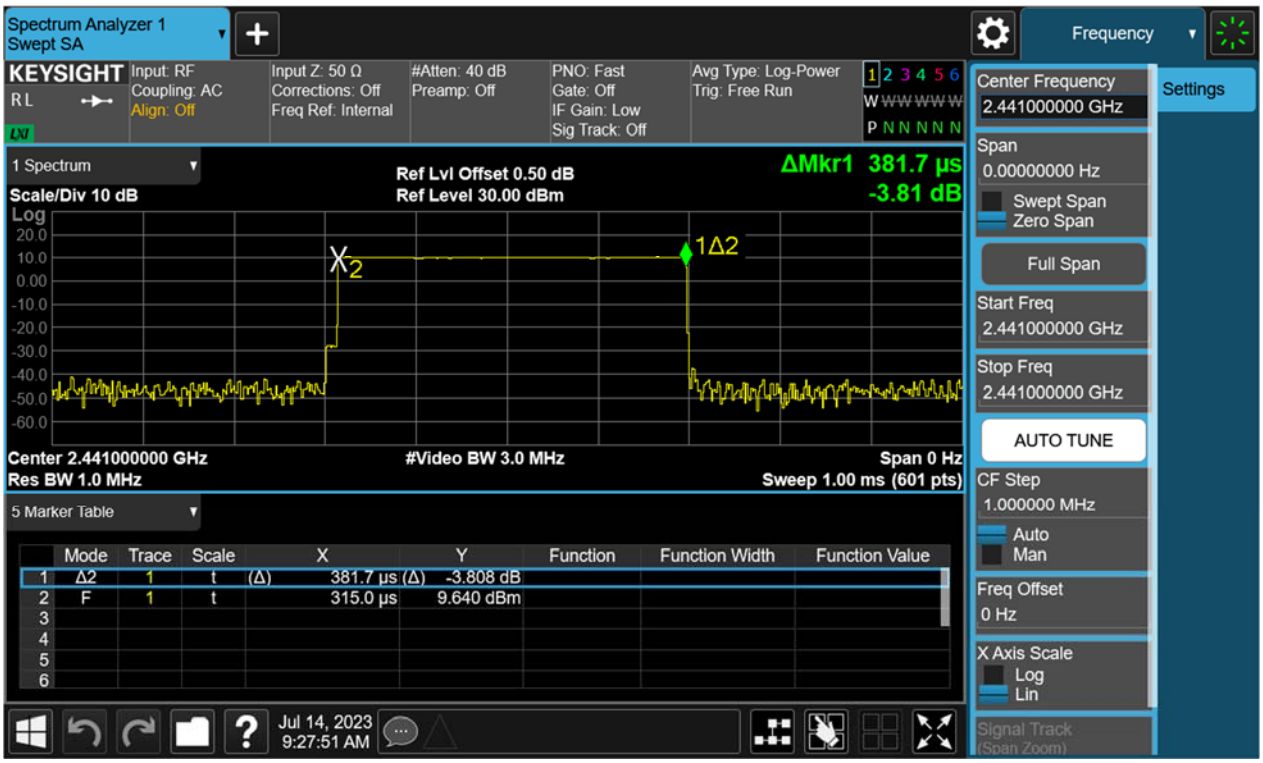


Figure 38: Time of Occupancy, 2441MHz, GFSK DH3

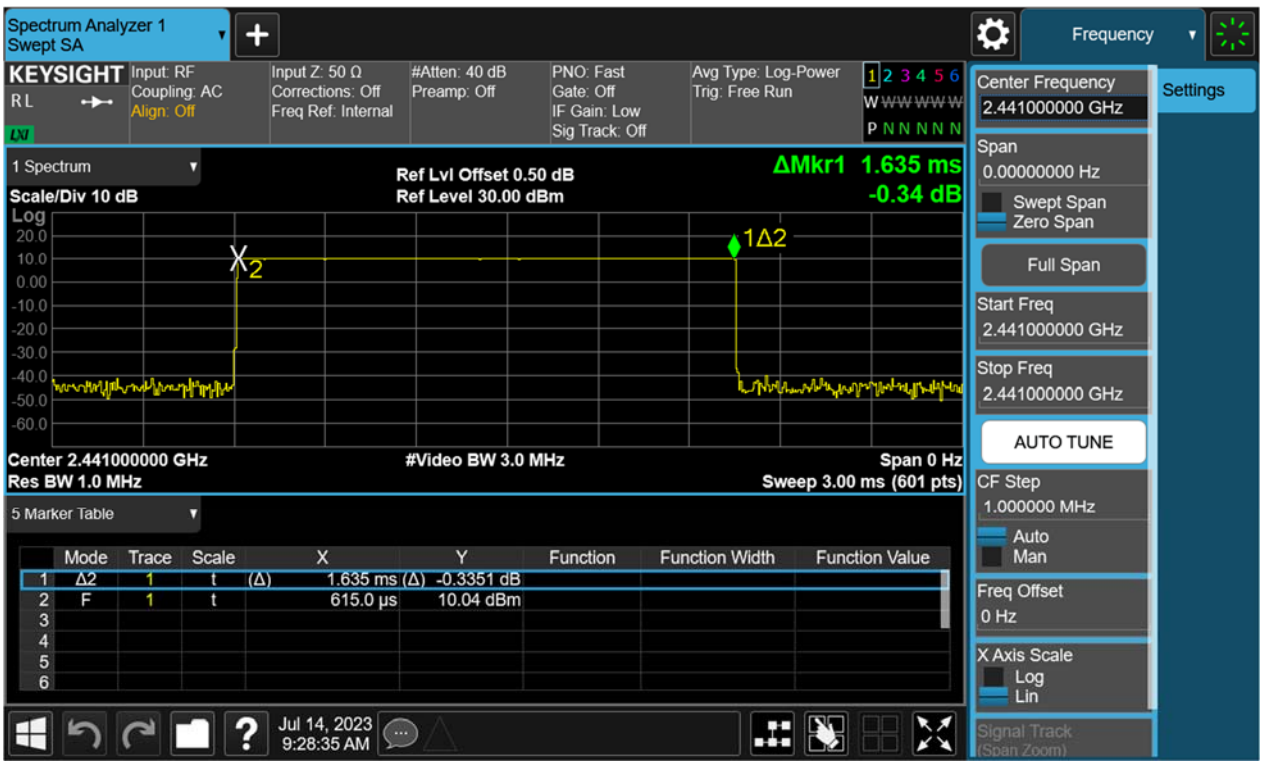


Figure 39: Time of Occupancy, 2441MHz, GFSK DH5

Figure 40: Time of Occupancy, 2441MHz, π/4-DQPSK DH1

Figure 41: Time of Occupancy, 2441MHz, π/4-DQPSK DH3

Figure 42: Time of Occupancy, 2441MHz, π/4-DQPSK DH5

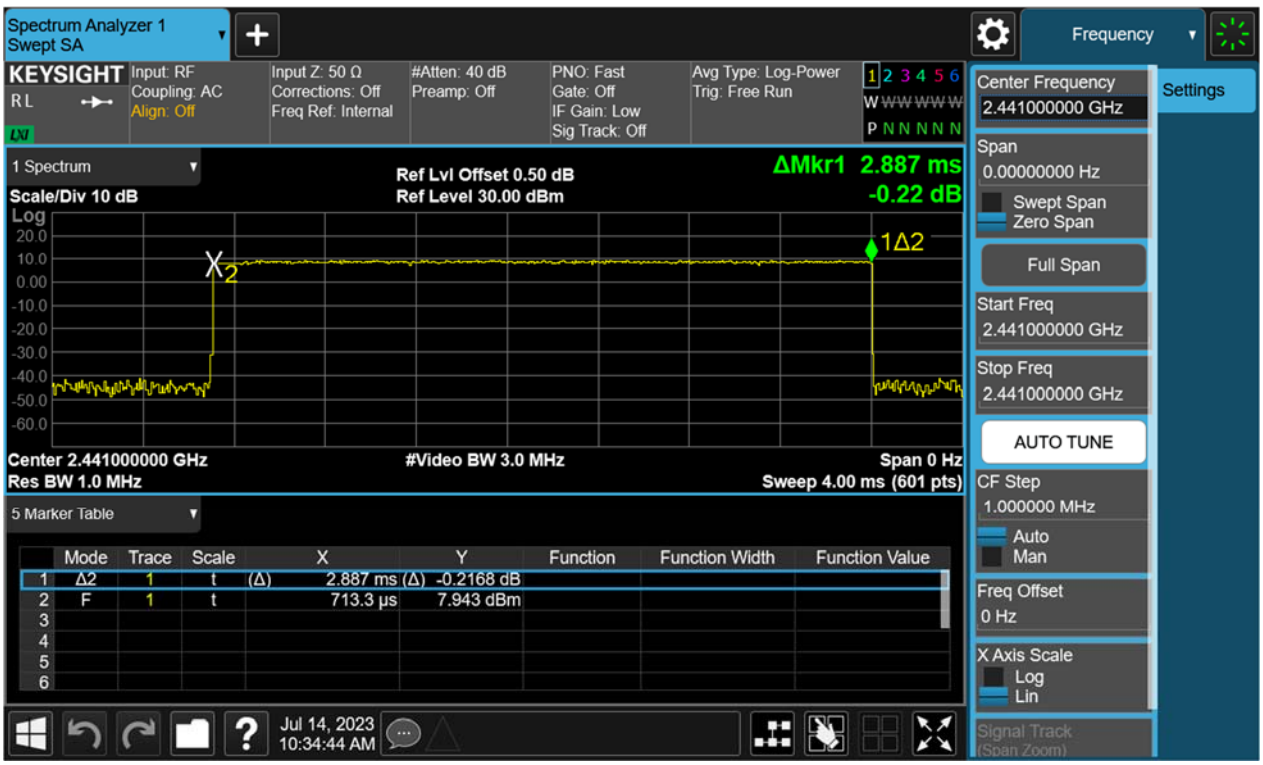


Figure 43: Time of Occupancy, 2441MHz, 8-DPSK DH1

Figure 44: Time of Occupancy, 2441MHz, 8-DPSK DH3

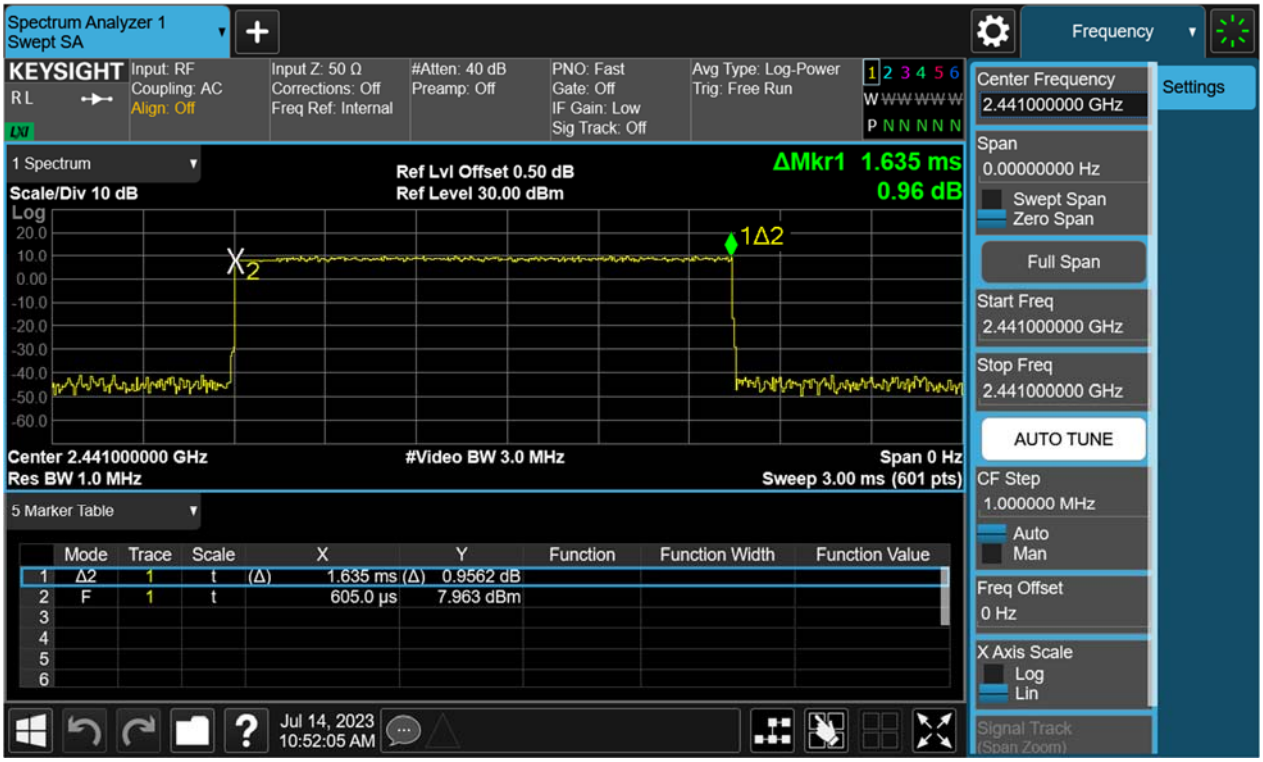
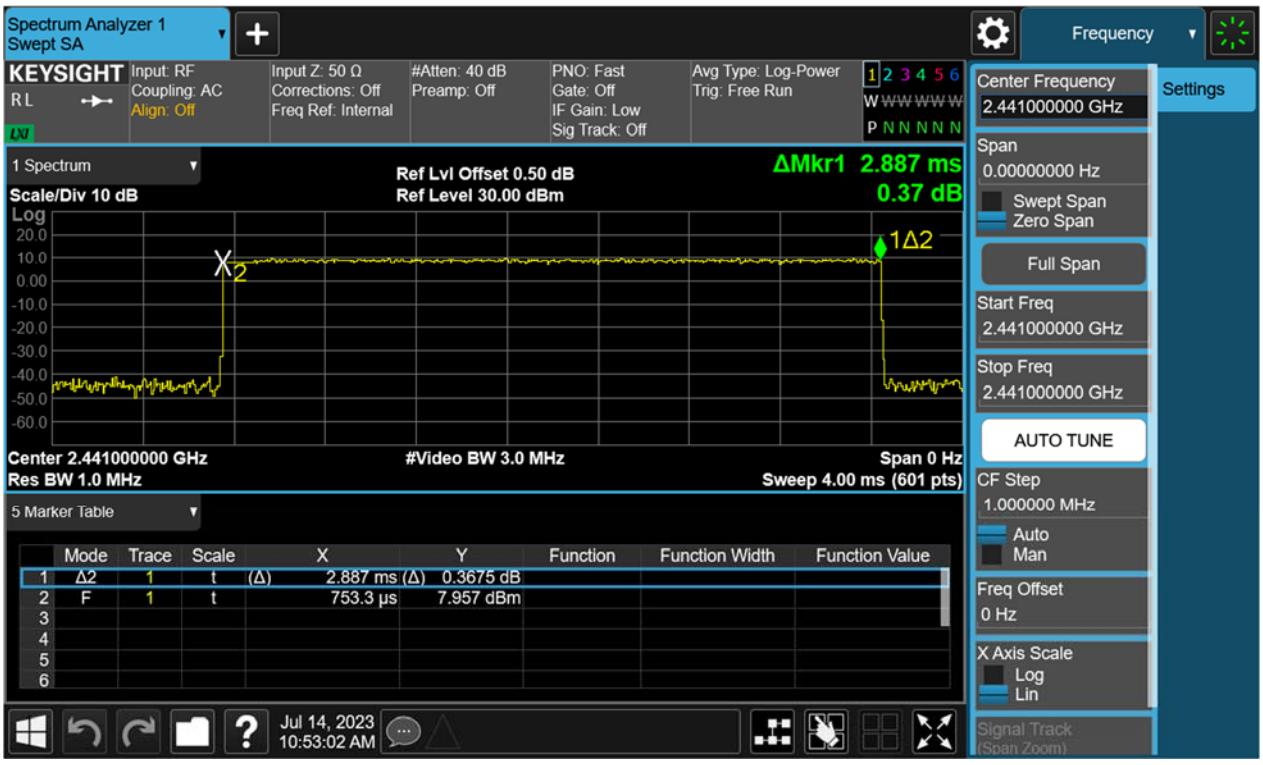


Figure 45: Time of Occupancy, 2441MHz, 8-DPSK DH5



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

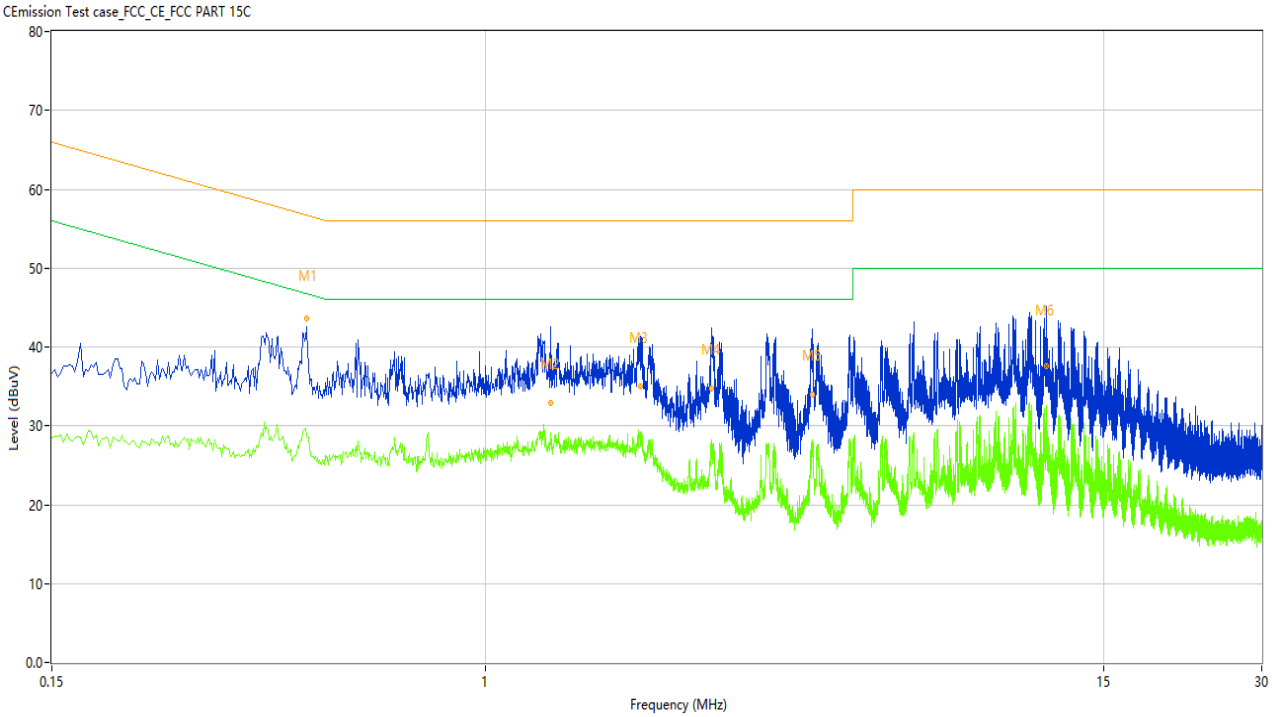
Input Voltage	:	which received AC 120V, 60Hz Power
Operation Mode	:	A.1.a
Earthing	:	Connected to GND
Ambient temperature	:	23.6°C
Relative humidity	:	57%

For details refer to following test plot.

Note：

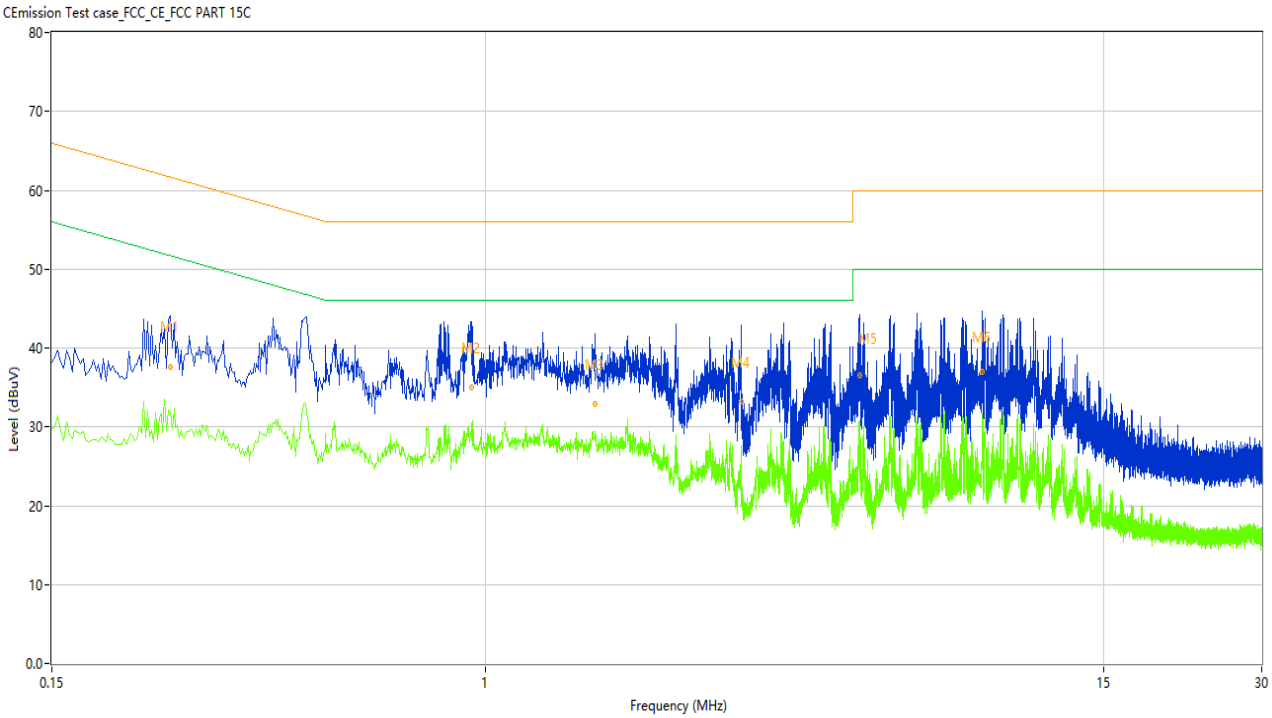
The all configurations were tested respectively, Only the worst mode data of GFSK-hopping-DH5 was recorded in the test report.

Figure 46: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.458	50.40	9.96	56.73	6.33	Peak	L	Pass
1*	0.458	43.67	9.96	56.73	13.06	QP	L	Pass
1**	0.458	28.73	9.96	46.73	18.00	AV	L	Pass
2	1.334	40.25	9.84	56.00	15.75	Peak	L	Pass
2*	1.334	32.83	9.84	56.00	23.17	QP	L	Pass
2**	1.334	29.18	9.84	46.00	16.82	AV	L	Pass
3	1.976	41.68	9.85	56.00	14.32	Peak	L	Pass
3*	1.976	34.94	9.85	56.00	21.06	QP	L	Pass
3**	1.976	29.10	9.85	46.00	16.90	AV	L	Pass
4	2.694	41.77	9.84	56.00	14.23	Peak	L	Pass
4*	2.694	34.79	9.84	56.00	21.21	QP	L	Pass
4**	2.694	28.23	9.84	46.00	17.77	AV	L	Pass
5	4.200	42.51	9.82	56.00	13.49	Peak	L	Pass
5*	4.200	33.93	9.82	56.00	22.07	QP	L	Pass
5**	4.200	27.03	9.82	46.00	18.97	AV	L	Pass
6	11.682	44.66	9.64	60.00	15.34	Peak	L	Pass
6*	11.682	37.62	9.64	60.00	22.38	QP	L	Pass
6**	11.682	32.58	9.64	50.00	17.42	AV	L	Pass

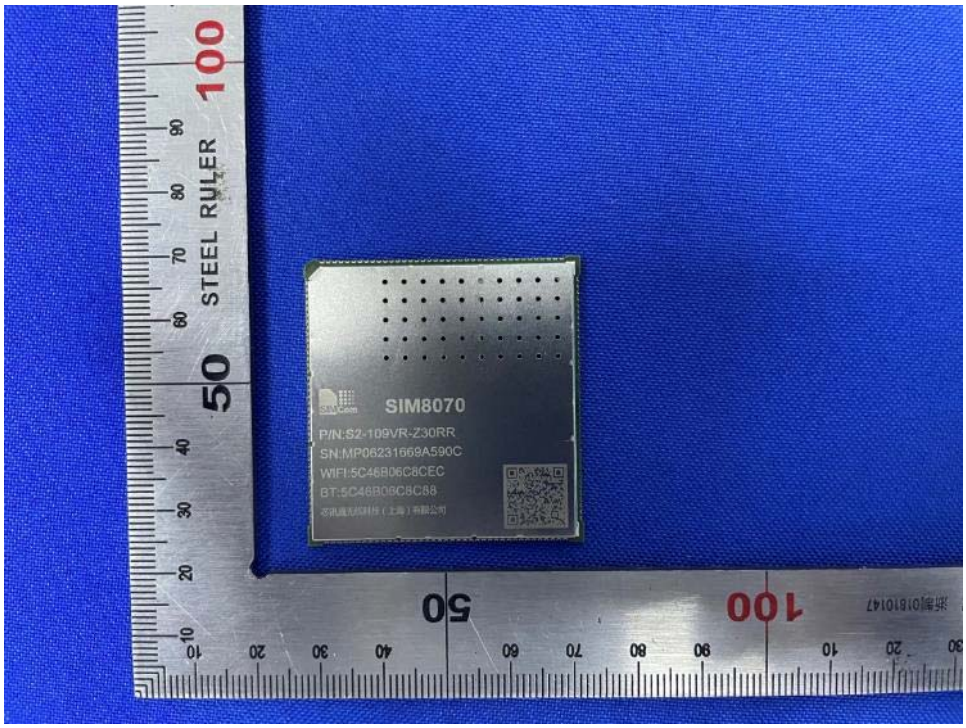
Figure 47: Conducted Emission on AC Mains, N Phase



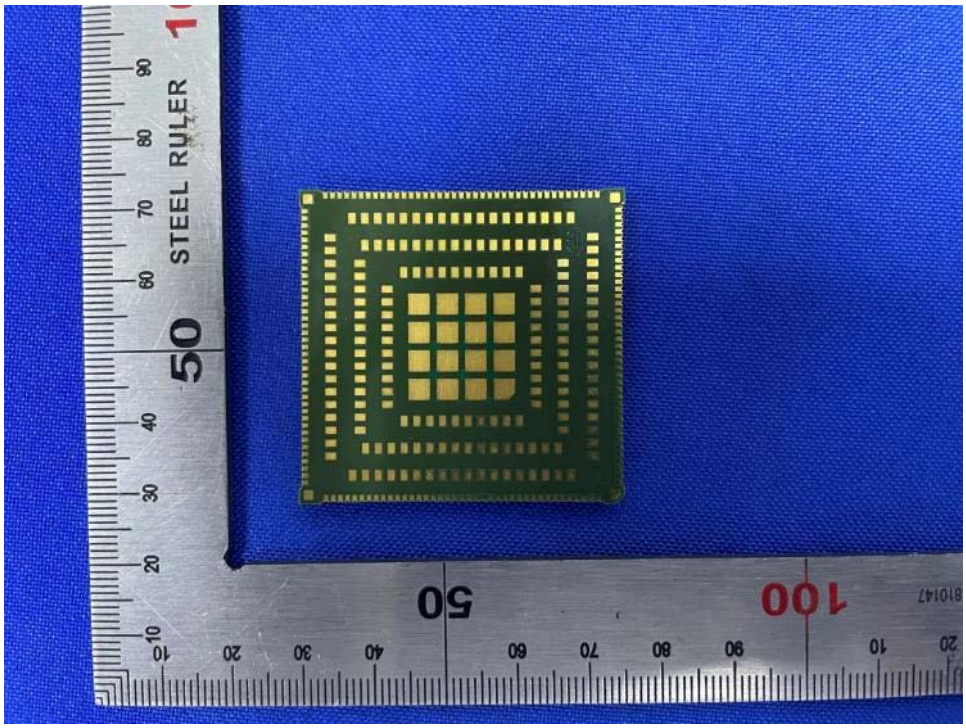
No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.252	43.96	10.06	61.69	17.73	Peak	N	Pass
1*	0.252	37.61	10.06	61.69	24.08	QP	N	Pass
1**	0.252	31.78	10.06	51.69	19.91	AV	N	Pass
2	0.944	43.26	10.04	56.00	12.74	Peak	N	Pass
2*	0.944	35.03	10.04	56.00	20.97	QP	N	Pass
2**	0.944	30.49	10.04	46.00	15.51	AV	N	Pass
3	1.620	44.53	9.94	56.00	11.47	Peak	N	Pass
3*	1.620	32.92	9.94	56.00	23.08	QP	N	Pass
3**	1.620	29.44	9.94	46.00	16.56	AV	N	Pass
4	3.066	43.79	9.91	56.00	12.21	Peak	N	Pass
4*	3.066	33.20	9.91	56.00	22.80	QP	N	Pass
4**	3.066	27.62	9.91	46.00	18.38	AV	N	Pass
5	5.170	44.62	9.73	60.00	15.38	Peak	N	Pass
5*	5.170	36.56	9.73	60.00	23.44	QP	N	Pass
5**	5.170	30.75	9.73	50.00	19.25	AV	N	Pass
6	8.828	45.07	9.79	60.00	14.93	Peak	N	Pass
6*	8.828	37.01	9.79	60.00	22.99	QP	N	Pass
6**	8.828	31.73	9.79	50.00	18.27	AV	N	Pass

5 Appendixes

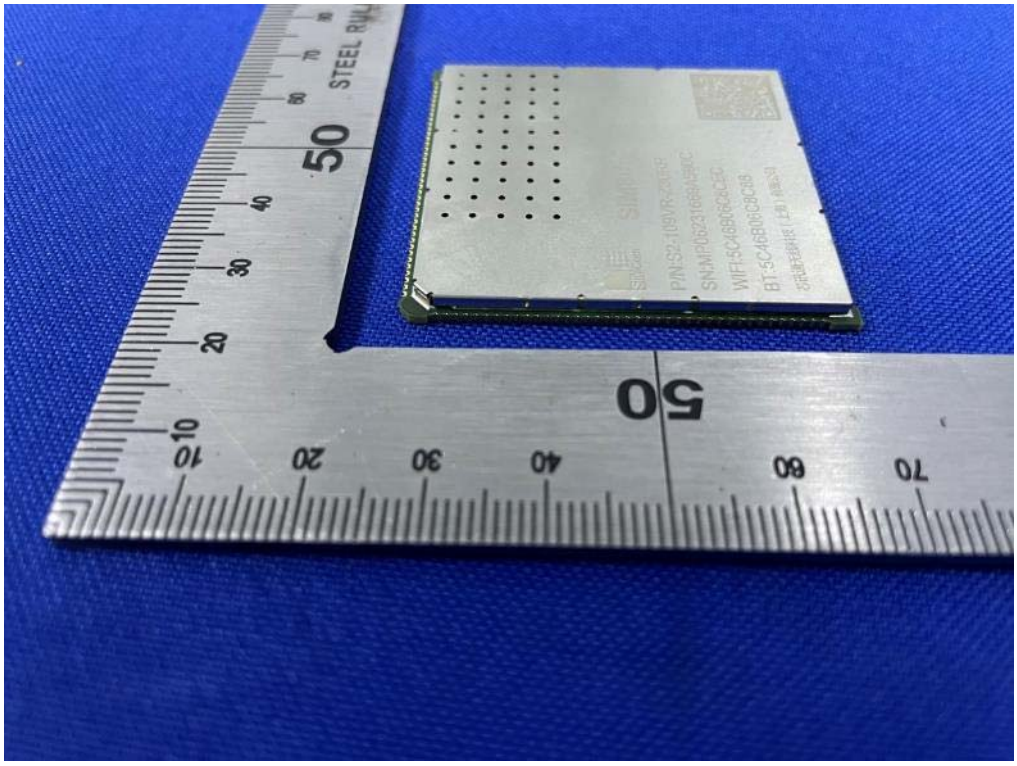
5.1 Photographs of the Sample



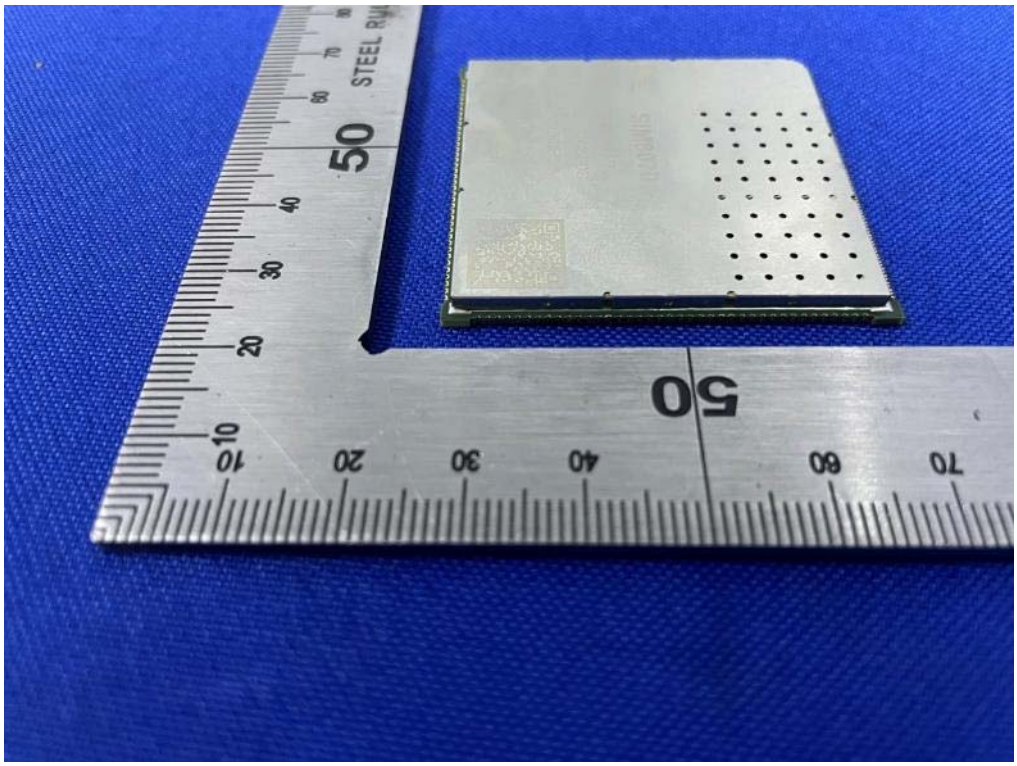
Front of the sample



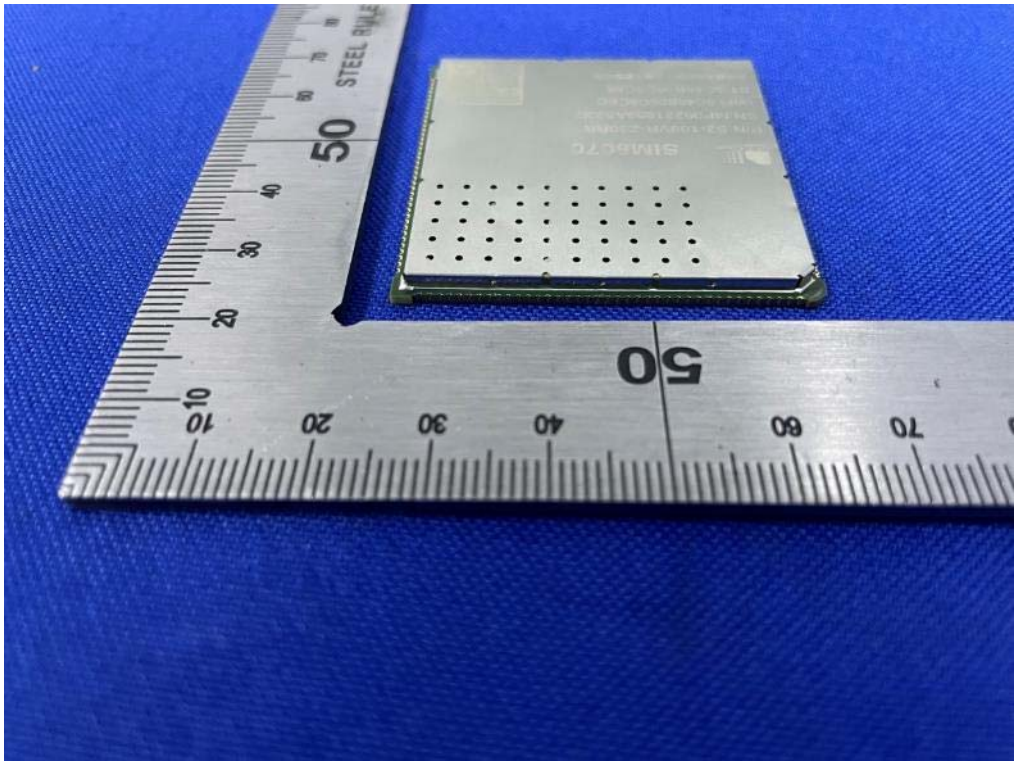
Rear of the sample



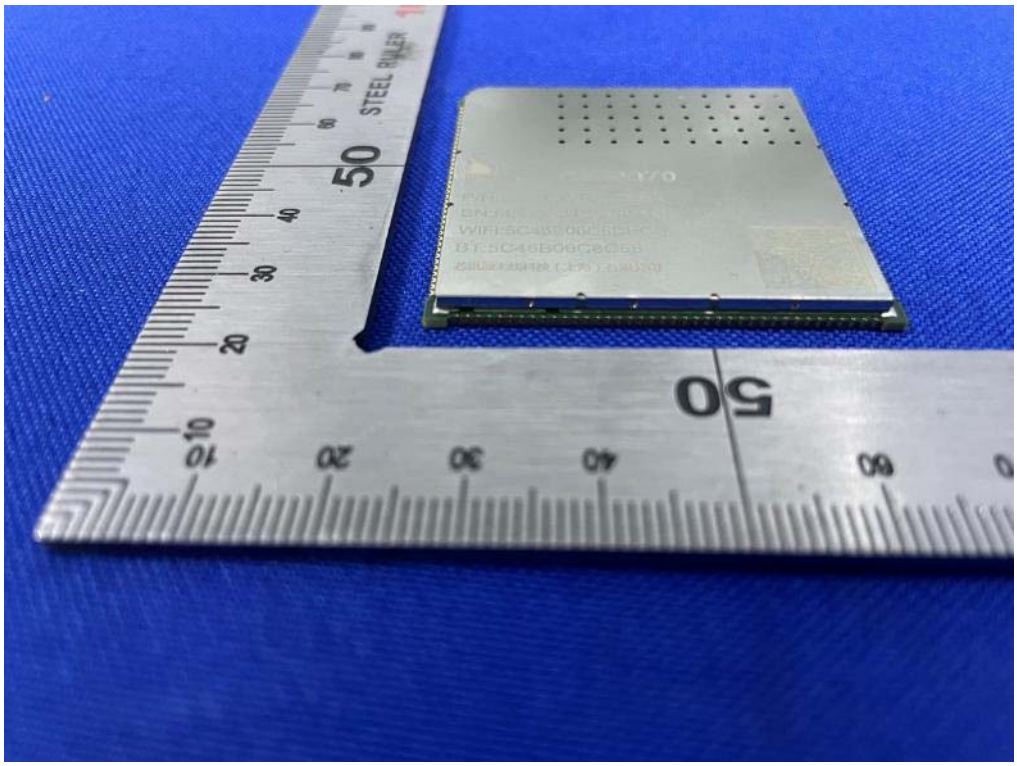
Left of the sample



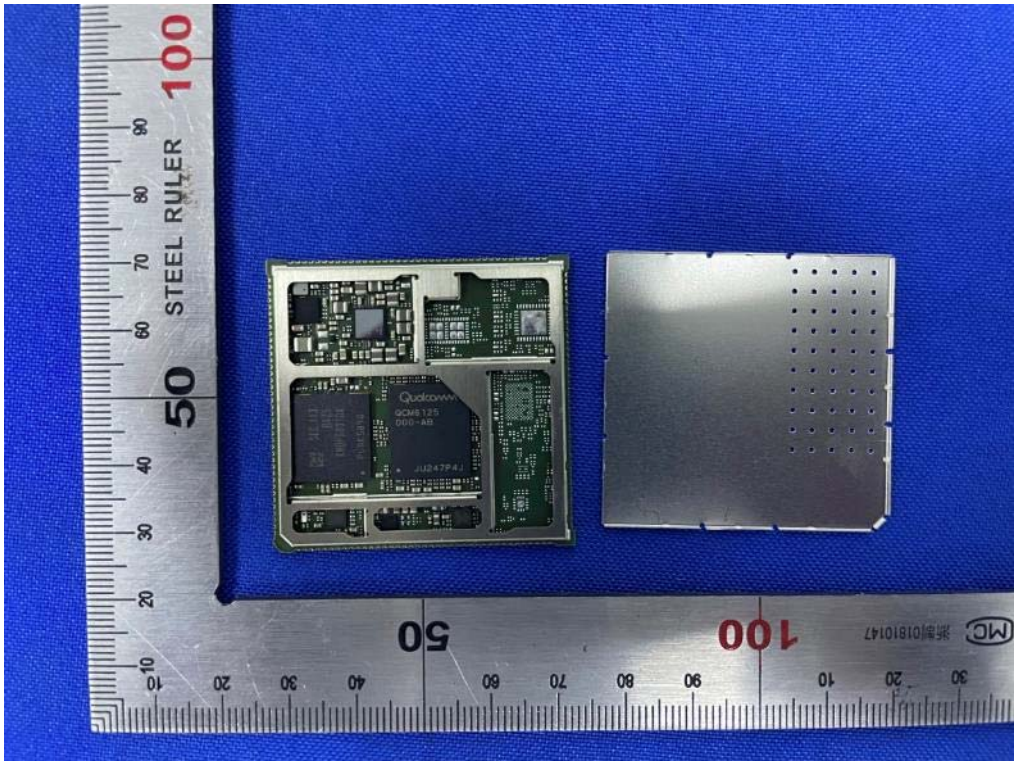
Right of the sample



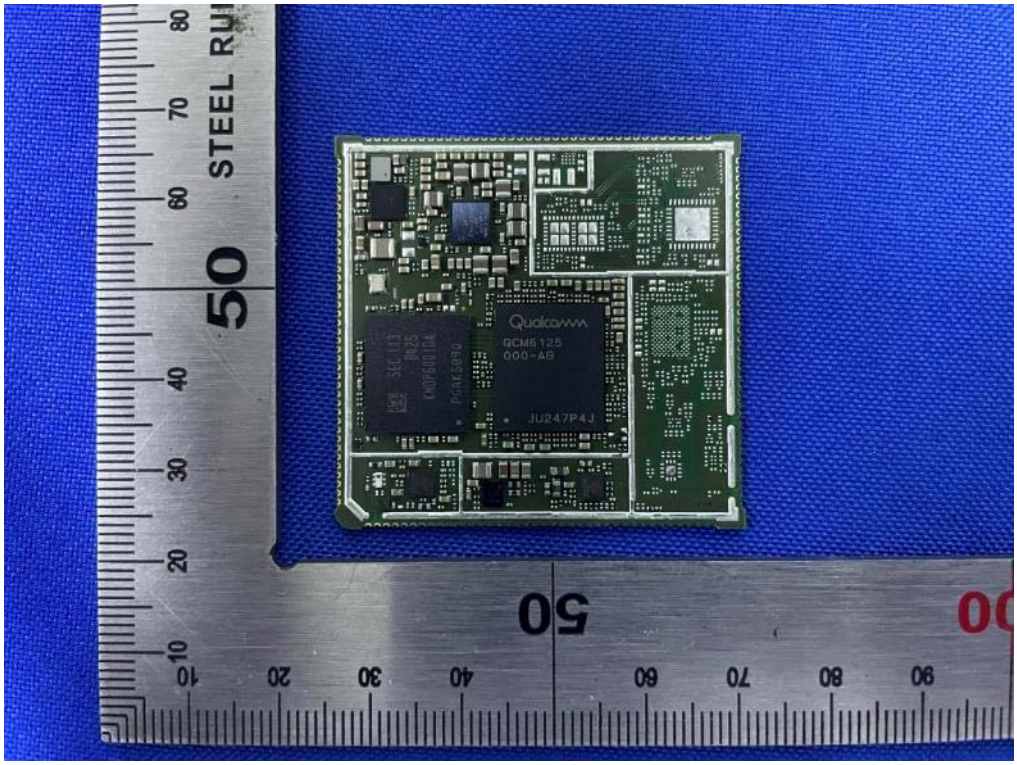
Top of the sample



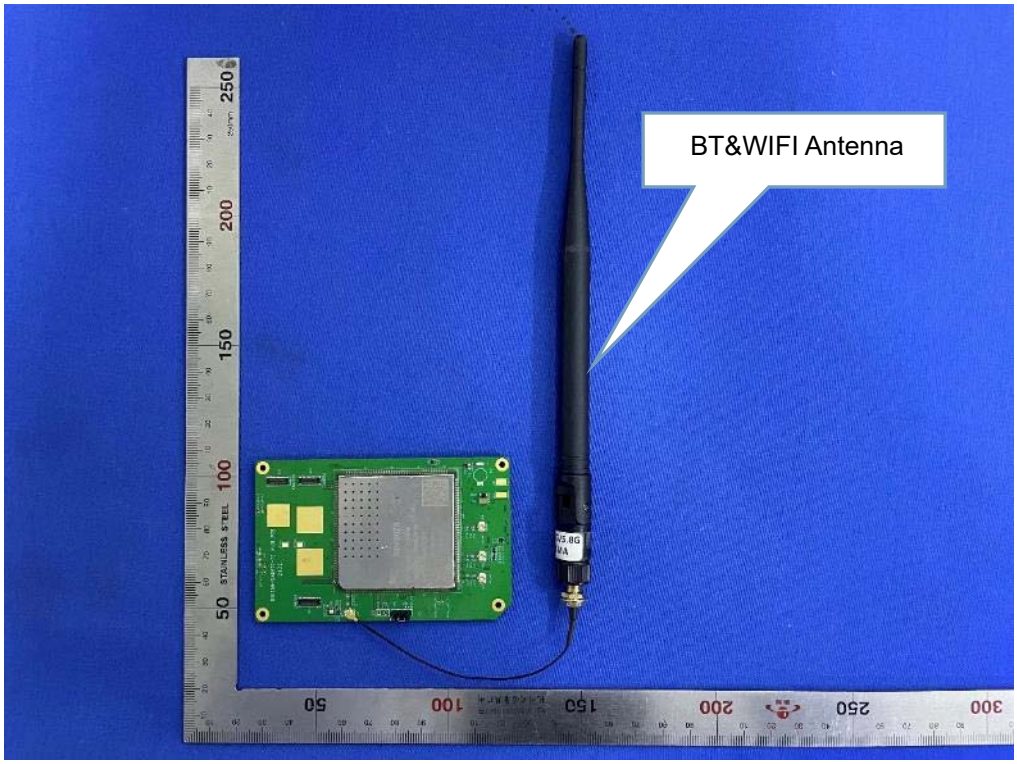
Bottom of the sample



Open of the sample

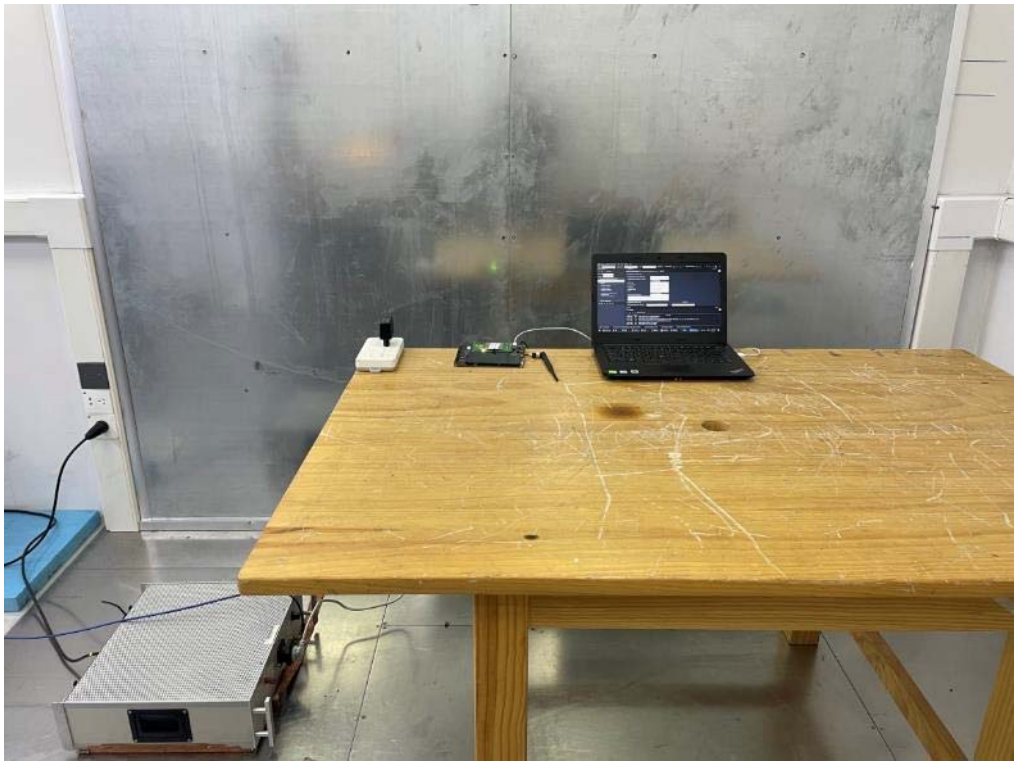


Internal-1 of the sample



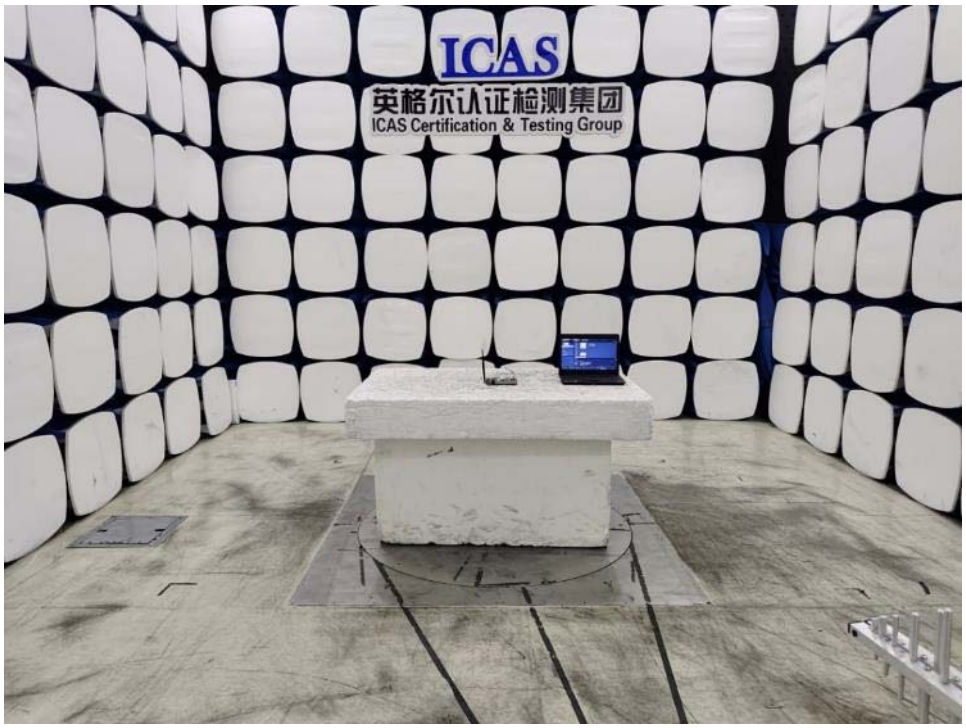
Antenna Position

5.2 Set-up for Conducted Emission on AC Mains

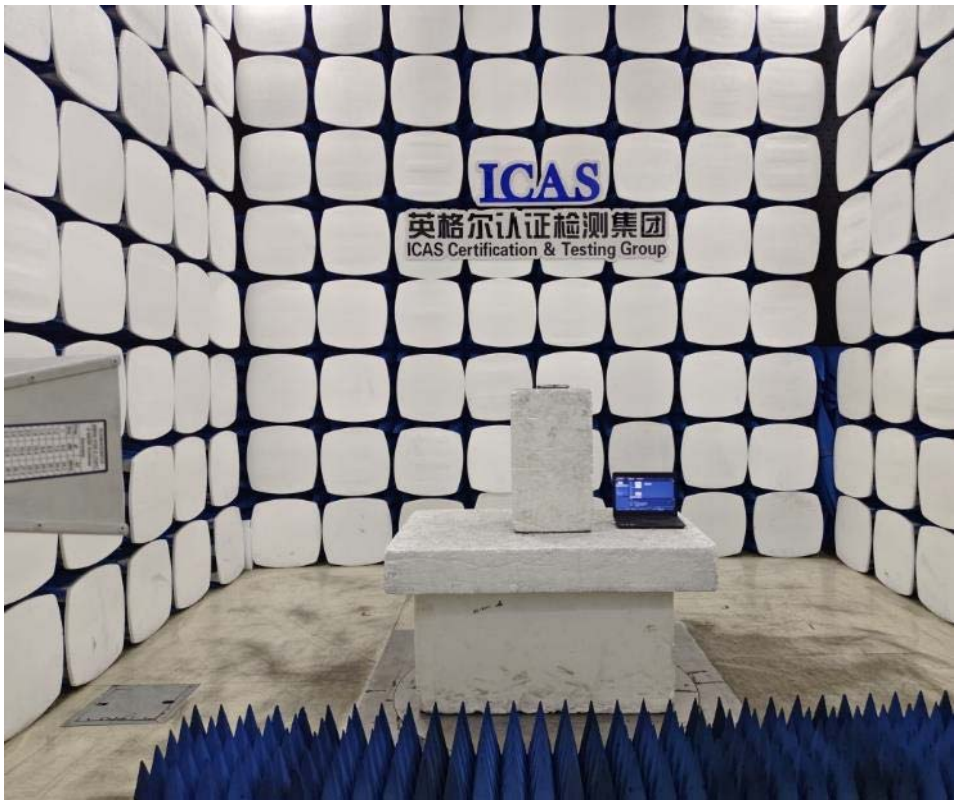


5.3 Set-up for Conducted RF test at Antenna Port

5.4 Set-up for Radiated Spurious Emissions below 1GHz



5.5 Set-up for Radiated Spurious Emissions above 1GHz



End of the report