

Report No.: SHE23060106-01CE **Date:** 2023-09-15 Page 51 of 70

Figure 31: Hopping Frequency Separation, Hopping Mode, GFSK



Figure 32: Hopping Frequency Separation, Hopping Mode, $\pi/4$ -DQPSK



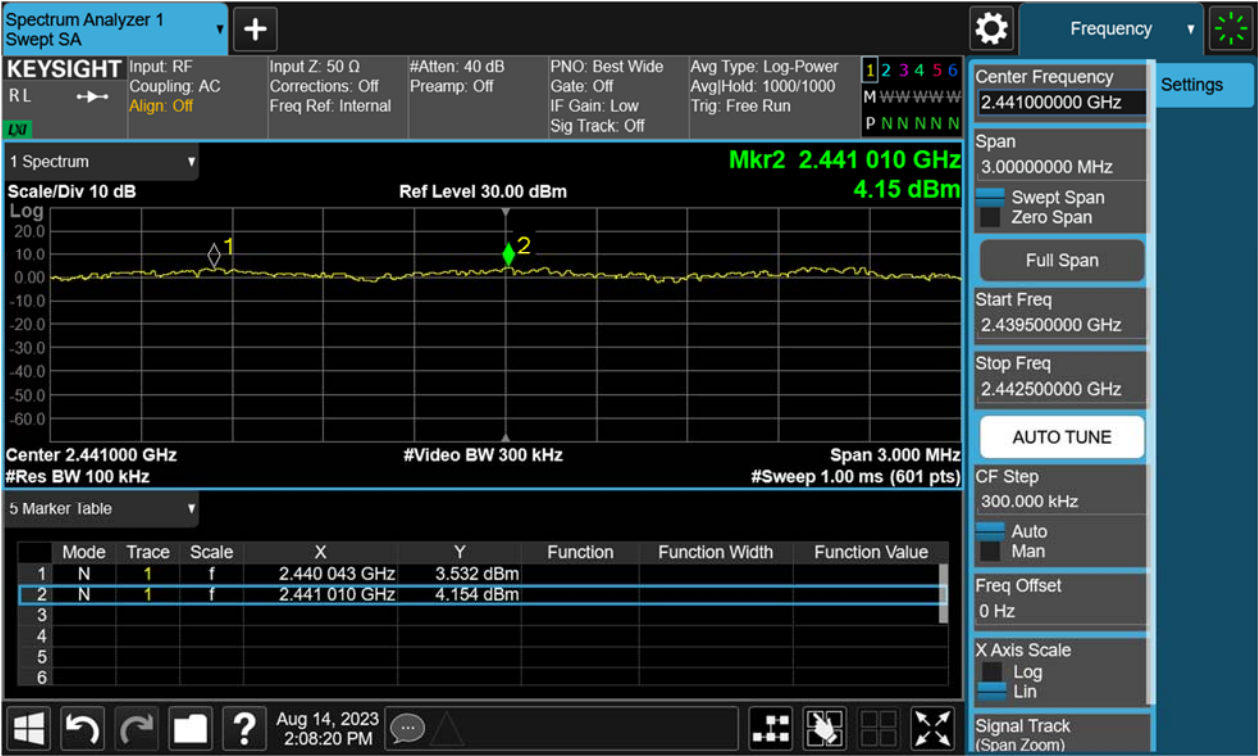
TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 52 of 70

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



TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 53 of 70

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
$\pi/4$ -DQPSK	2400 – 2483.5	79	≥15
8-DPSK	2400 – 2483.5	79	≥15

TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 54 of 70

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

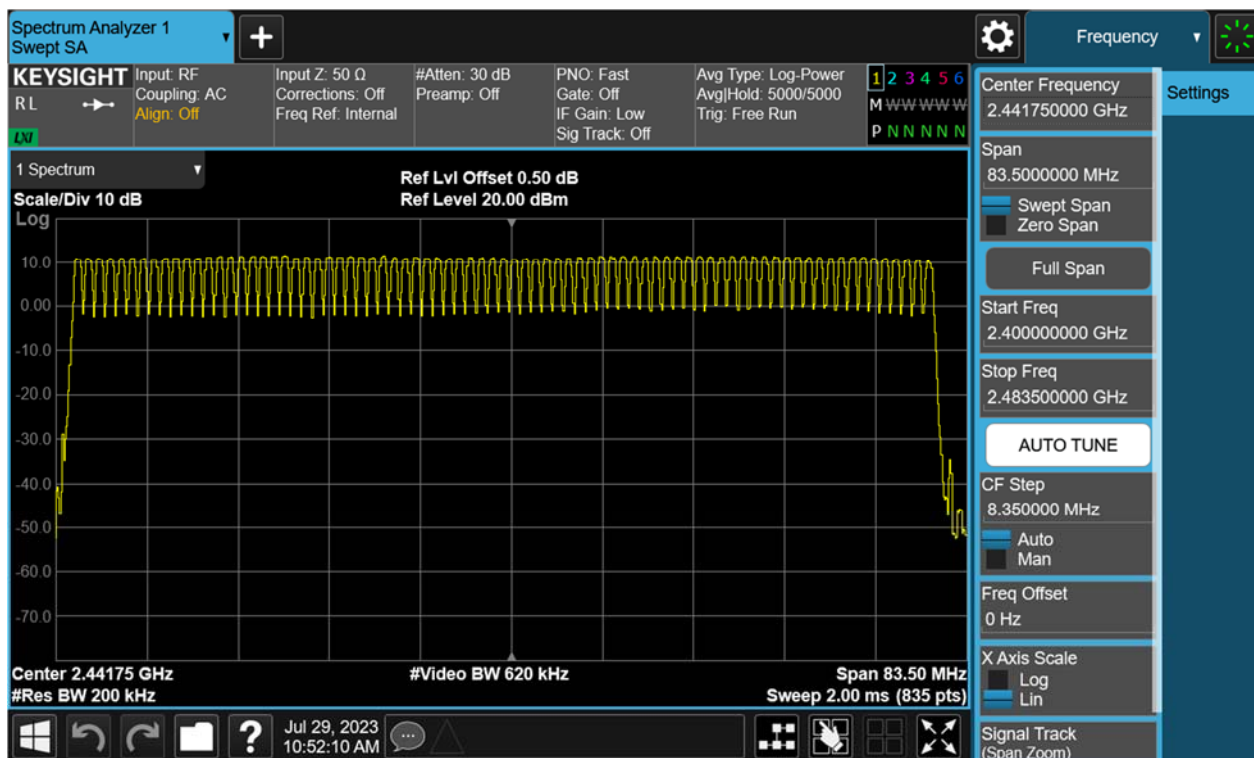
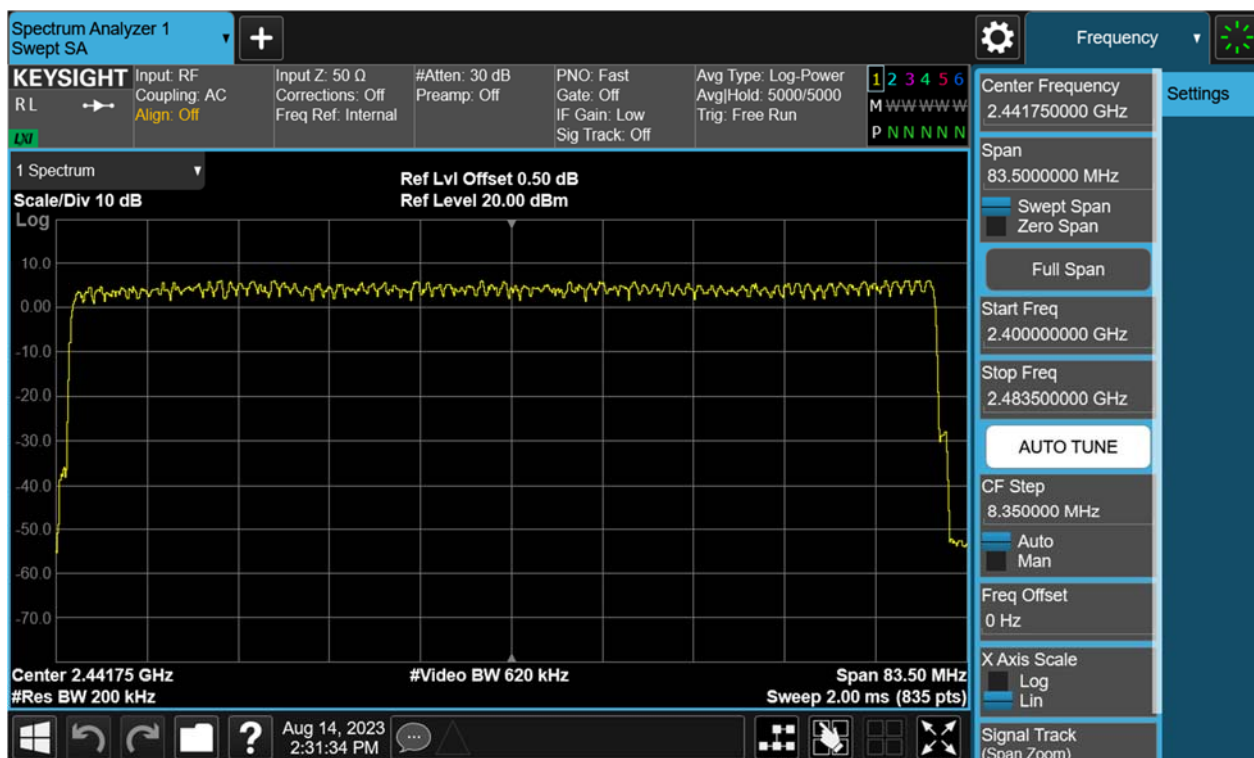


Figure 35: Number of Hopping Frequency, Hopping Mode, $\pi/4$ -DQPSK



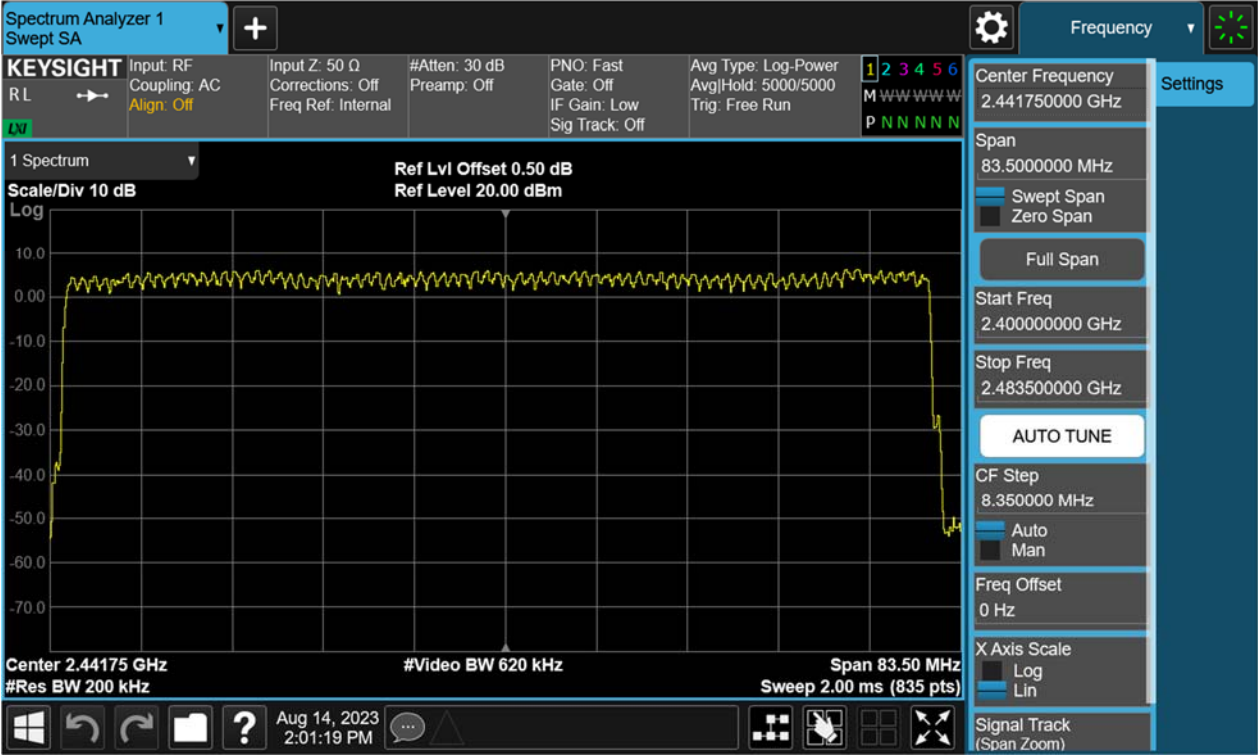
TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 55 of 70

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



TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 56 of 70

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	1.6400	262.400	0.2624	0.4
	DH5	2.8870	307.947	0.3079	0.4
$\pi/4$ -DQPSK	DH1	0.3850	123.200	0.1232	0.4
	DH3	1.6350	261.600	0.2616	0.4
	DH5	2.8870	307.947	0.3079	0.4
8-DPSK	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

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

TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 57 of 70

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

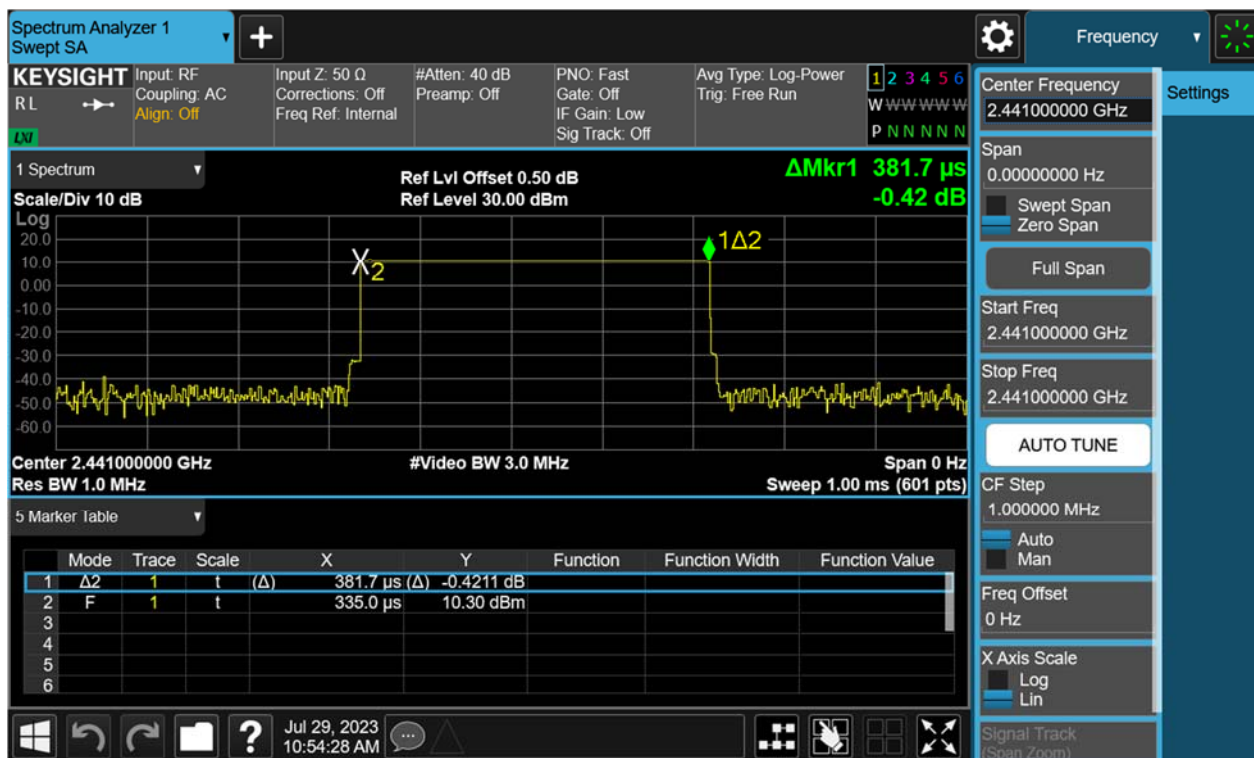
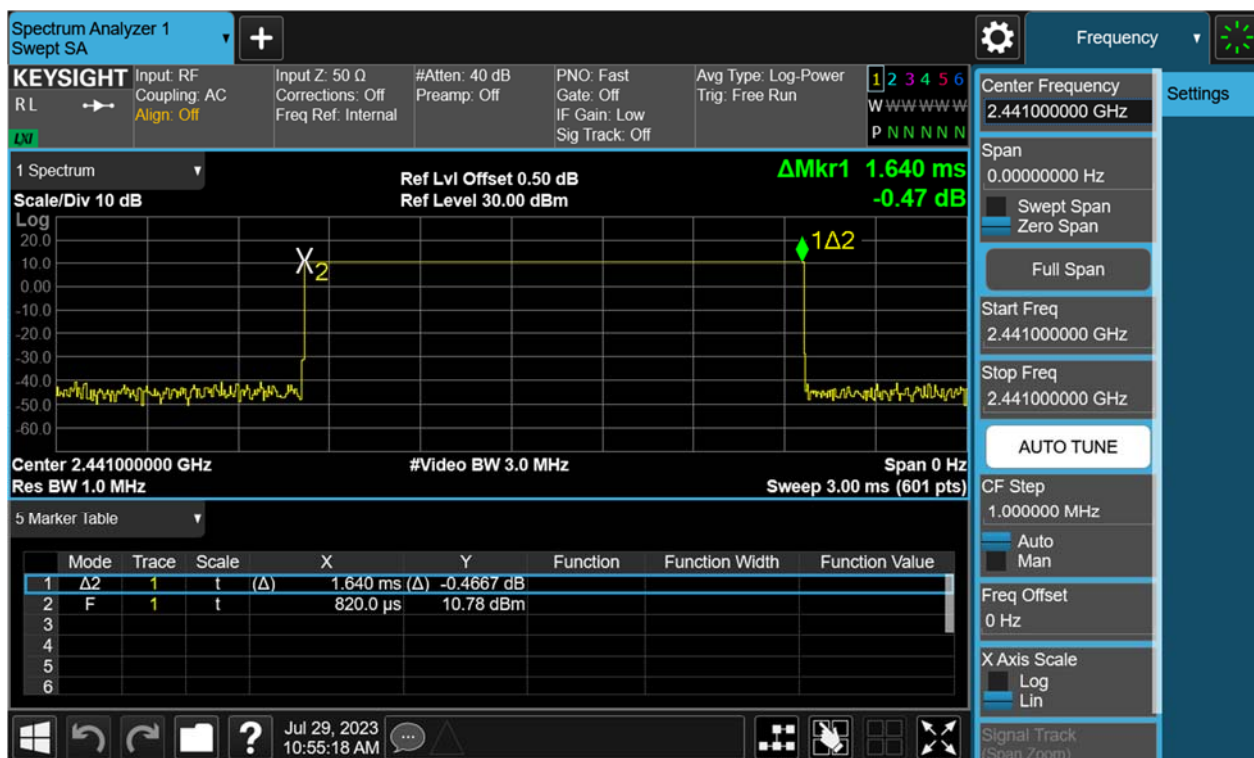


Figure 38: Time of Occupancy, 2441MHz, GFSK DH3



TEST REPORT

Report No.: SHE23060106-01CE

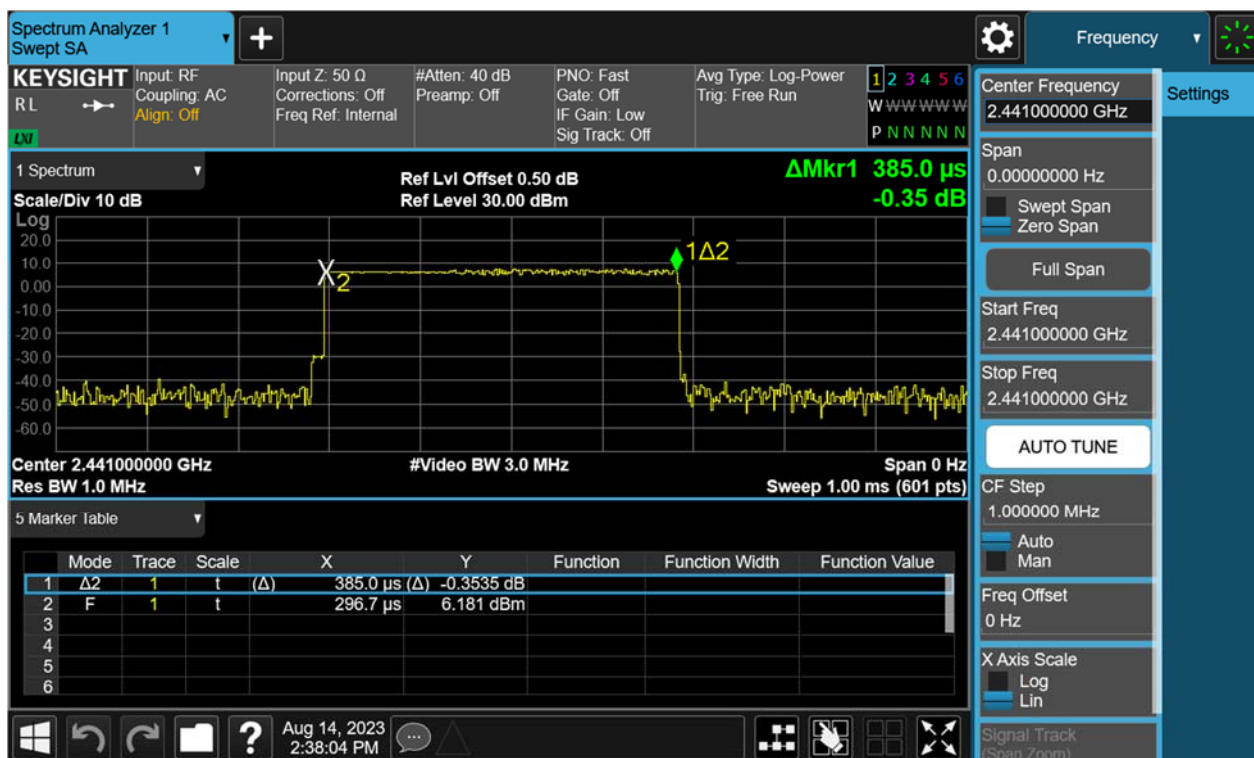
Date: 2023-09-15

Page 58 of 70

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



Figure 40: Time of Occupancy, 2441MHz, $\pi/4$ -DQPSK DH1



TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 59 of 70

Figure 41: Time of Occupancy, 2441MHz, $\pi/4$ -DQPSK DH3

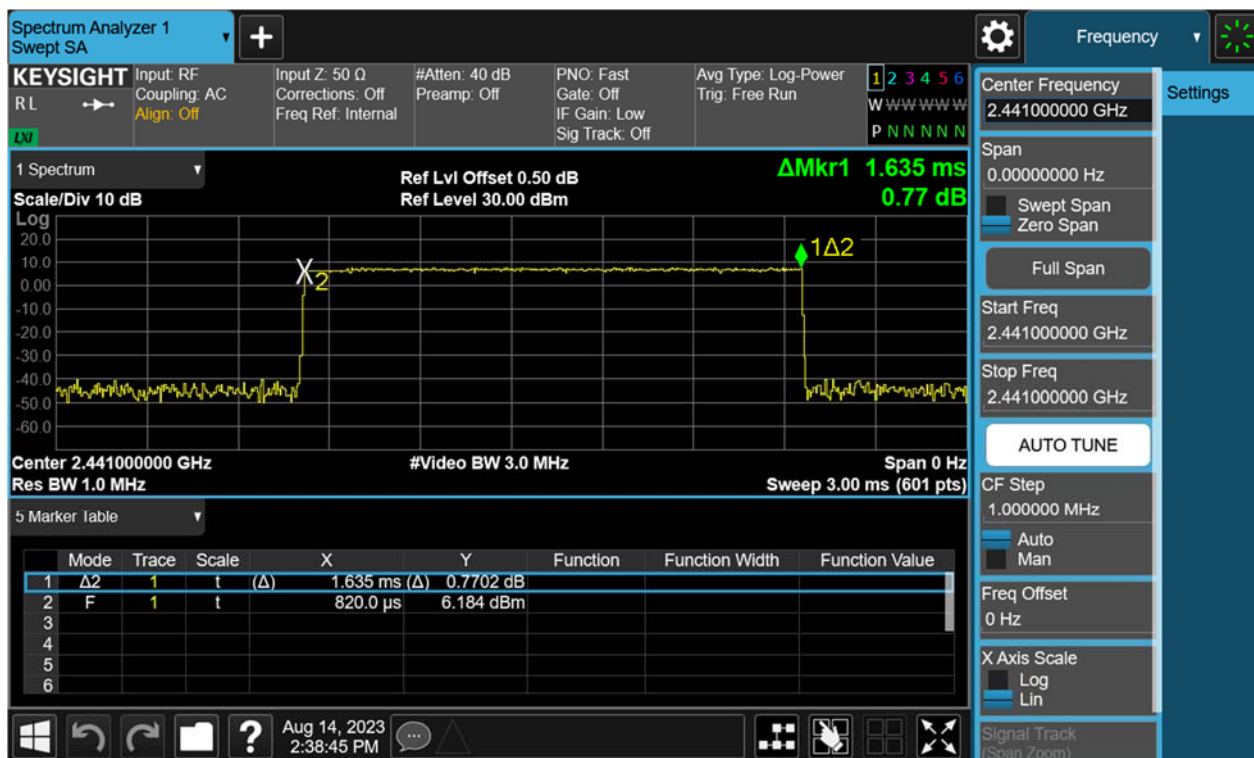
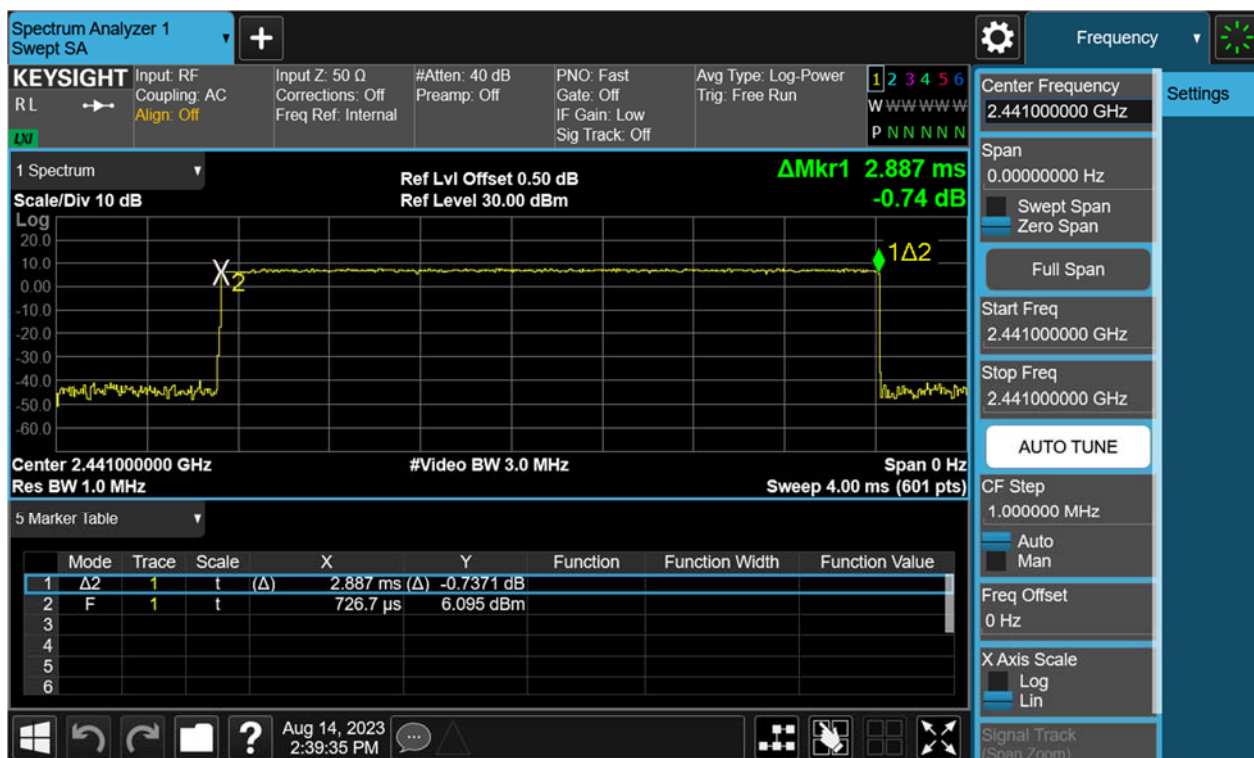


Figure 42: Time of Occupancy, 2441MHz, $\pi/4$ -DQPSK DH5



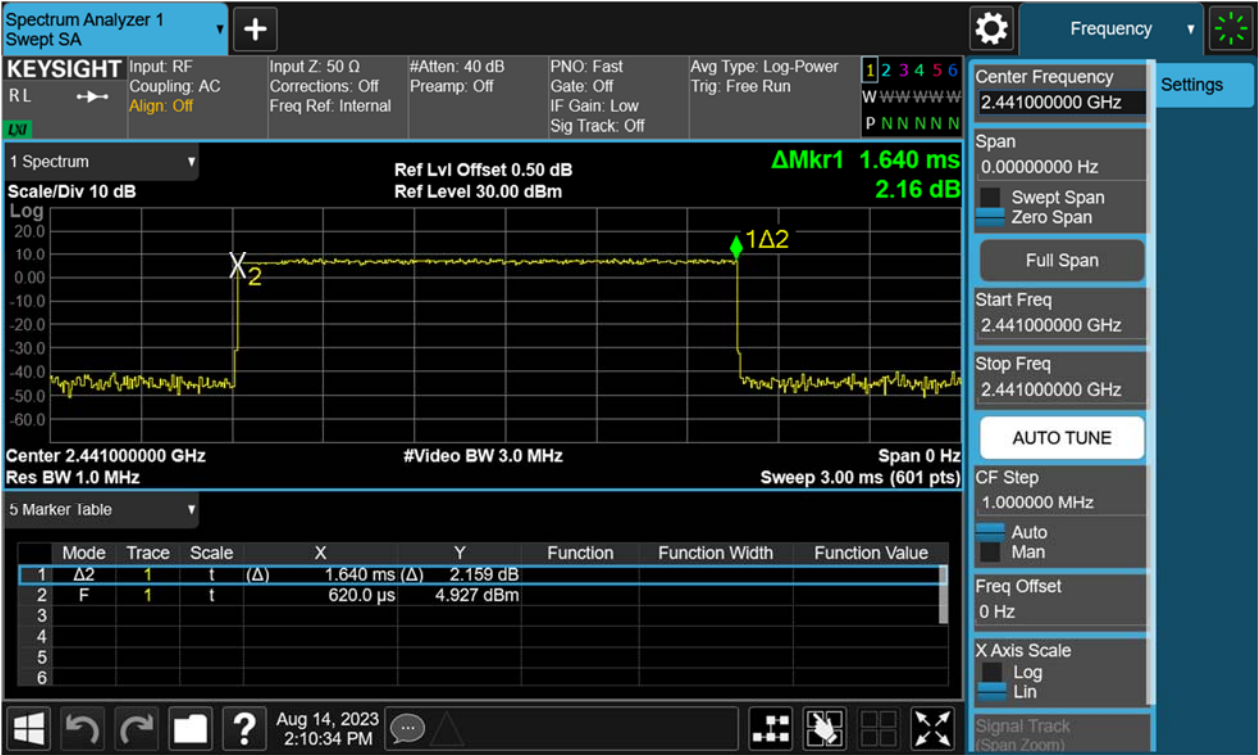
TEST REPORT

Report No.: SHE23060106-01CE Date: 2023-09-15 Page 60 of 70

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



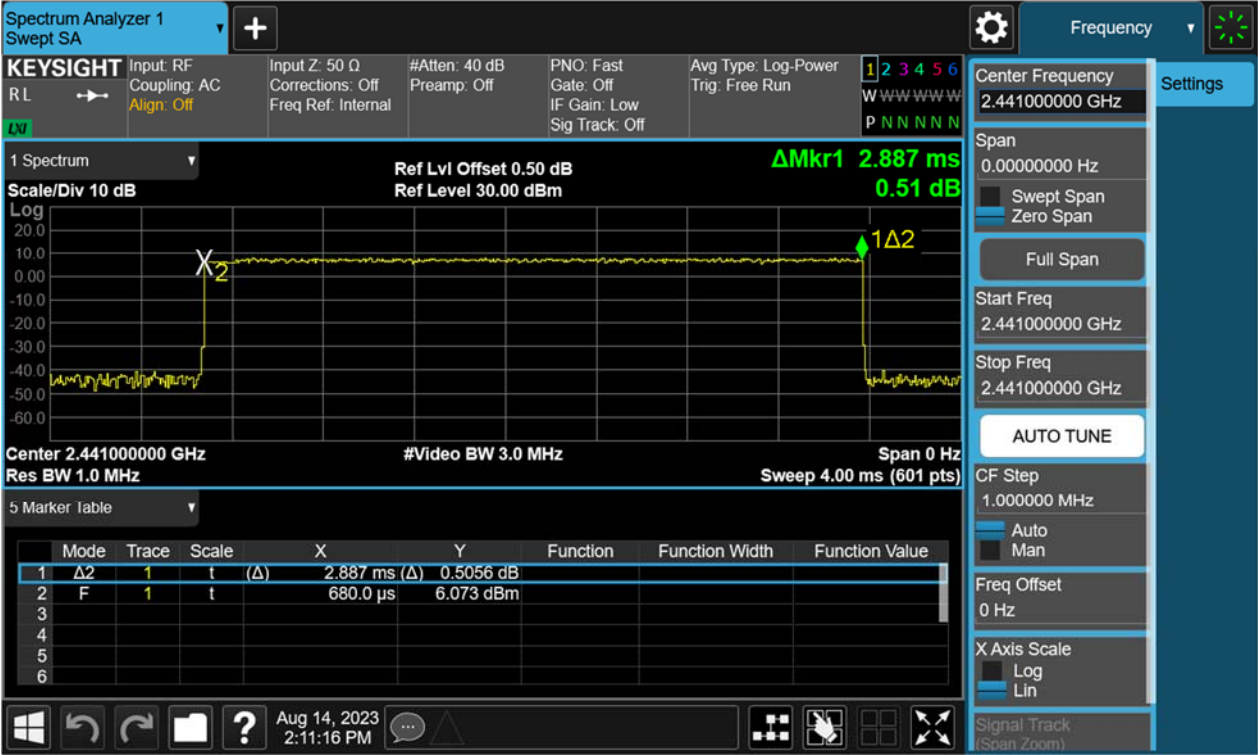
Figure 44: Time of Occupancy, 2441MHz, 8-DPSK DH3



TEST REPORT

Report No.: SHE23060106-01CE Date: 2023-09-15 Page 61 of 70

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



TEST REPORT

Report No.: SHE23060106-01CE Date: 2023-09-15 Page 62 of 70

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.

TEST REPORT

Report No.: SHE23060106-01CE

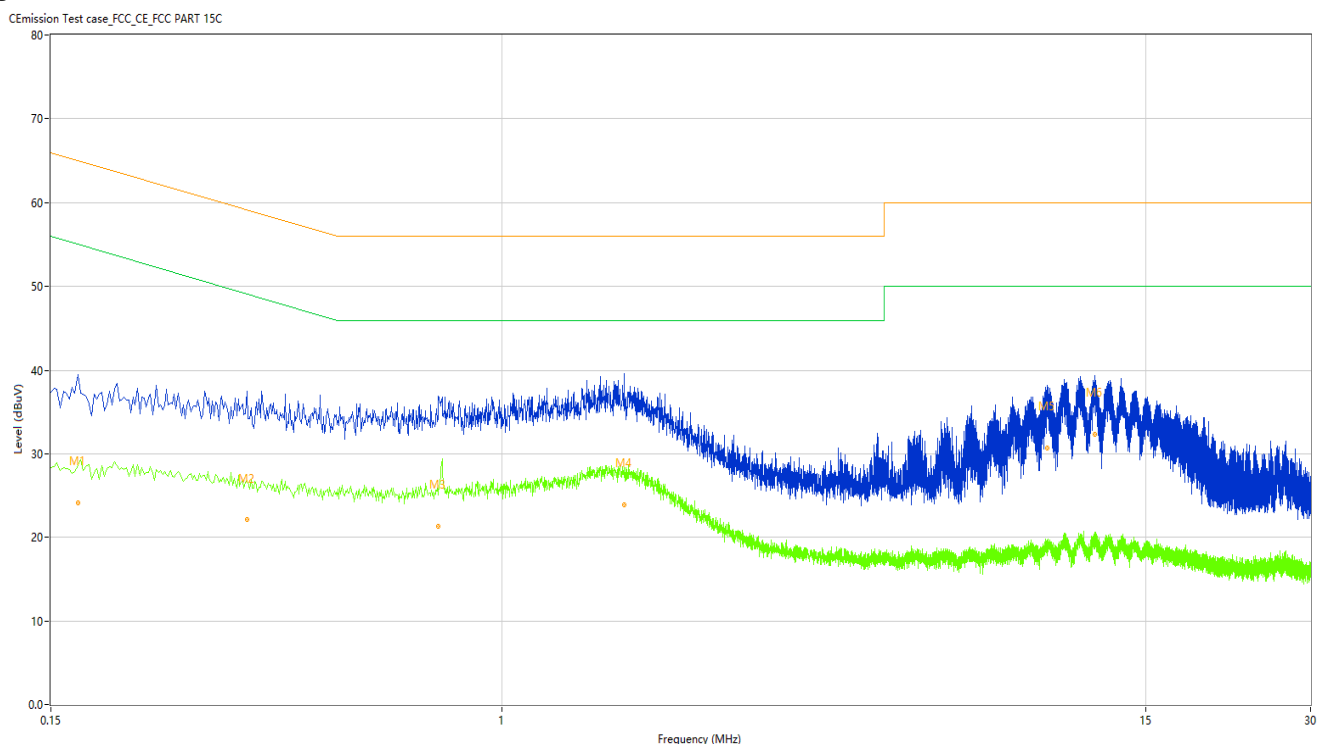
Date: 2023-09-15

Page 63 of 70

Note:

The all configurations were tested respectively, Only the worst mode data of 8DPSK-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	0.168	32.05	9.94	65.06	33.01	Peak	L	Pass
1*	0.168	24.11	9.94	65.06	40.95	QP	L	Pass
1**	0.168	28.59	9.94	55.06	26.47	AV	L	Pass
2	0.342	31.21	9.96	59.15	27.94	Peak	L	Pass
2*	0.342	22.10	9.96	59.15	37.05	QP	L	Pass
2**	0.342	26.80	9.96	49.15	22.35	AV	L	Pass
3	0.766	29.95	9.94	56.00	26.05	Peak	L	Pass
3*	0.766	21.34	9.94	56.00	34.66	QP	L	Pass
3**	0.766	25.77	9.94	46.00	20.23	AV	L	Pass
4	1.672	31.18	9.85	56.00	24.82	Peak	L	Pass
4*	1.672	23.81	9.85	56.00	32.19	QP	L	Pass
4**	1.672	28.32	9.85	46.00	17.68	AV	L	Pass
5	9.924	37.64	9.68	60.00	22.36	Peak	L	Pass
5*	9.924	30.67	9.68	60.00	29.33	QP	L	Pass
5**	9.924	18.93	9.68	50.00	31.07	AV	L	Pass
6	12.108	38.36	9.63	60.00	21.64	Peak	L	Pass
6*	12.108	32.32	9.63	60.00	27.68	QP	L	Pass
6**	12.108	20.35	9.63	50.00	29.65	AV	L	Pass

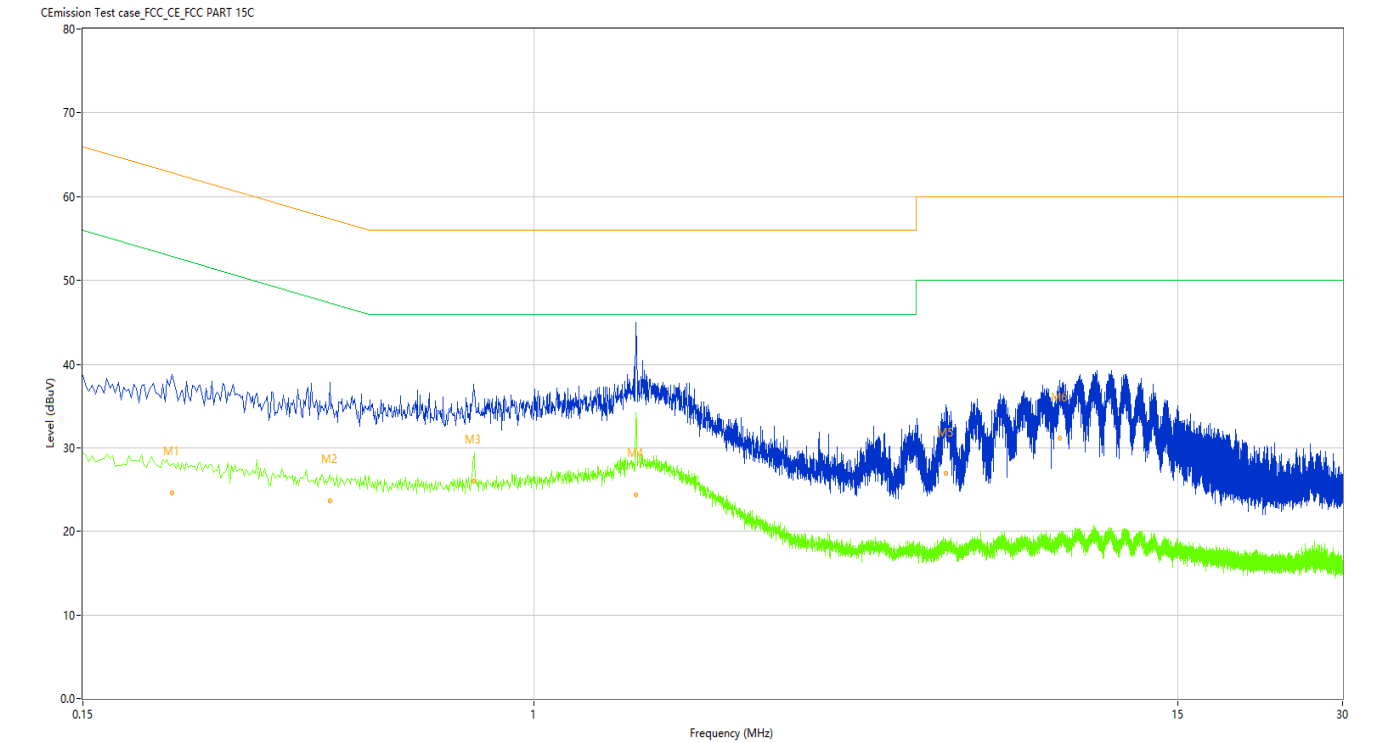
TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 64 of 70

Figure 47: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.218	33.36	10.05	62.89	29.53	Peak	N	Pass
1*	0.218	24.61	10.05	62.89	38.28	QP	N	Pass
1**	0.218	27.95	10.05	52.89	24.94	AV	N	Pass
2	0.424	34.32	10.07	57.37	23.05	Peak	N	Pass
2*	0.424	23.61	10.07	57.37	33.76	QP	N	Pass
2**	0.424	26.79	10.07	47.37	20.58	AV	N	Pass
3	0.776	32.34	10.04	56.00	23.66	Peak	N	Pass
3*	0.776	25.93	10.04	56.00	30.07	QP	N	Pass
3**	0.776	28.53	10.04	46.00	17.47	AV	N	Pass
4	1.536	31.54	9.94	56.00	24.46	Peak	N	Pass
4*	1.536	24.35	9.94	56.00	31.65	QP	N	Pass
4**	1.536	33.34	9.94	46.00	12.66	AV	N	Pass
5	5.656	34.55	9.76	60.00	25.45	Peak	N	Pass
5*	5.656	26.95	9.76	60.00	33.05	QP	N	Pass
5**	5.656	18.33	9.76	50.00	31.67	AV	N	Pass
6	9.140	37.21	9.78	60.00	22.79	Peak	N	Pass
6*	9.140	31.06	9.78	60.00	28.94	QP	N	Pass
6**	9.140	19.22	9.78	50.00	30.78	AV	N	Pass

TEST REPORT

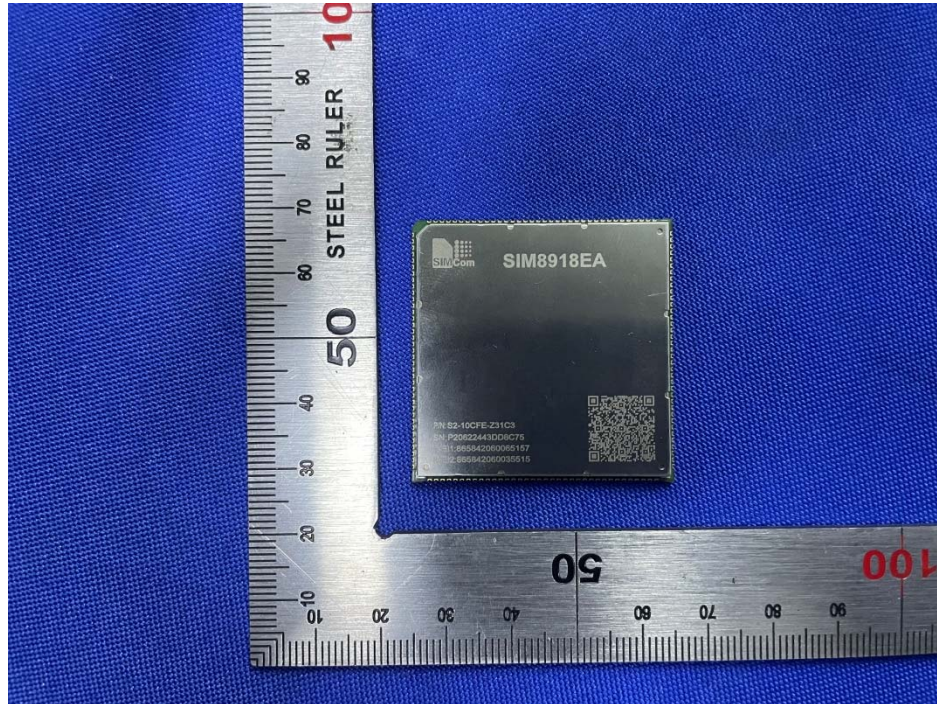
Report No.: SHE23060106-01CE

Date: 2023-09-15

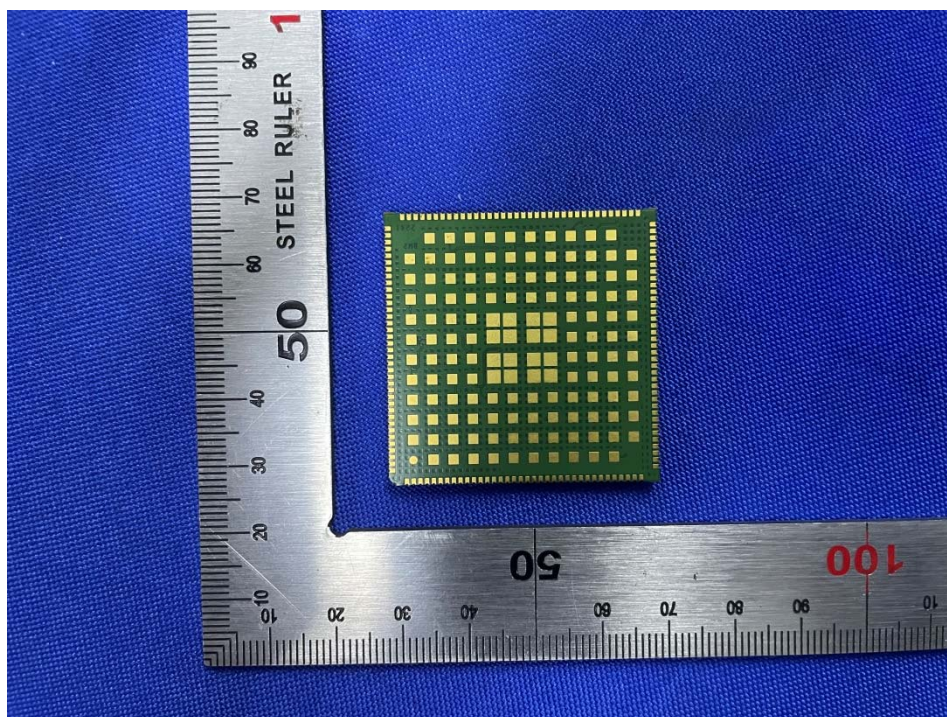
Page 65 of 70

5 Appendixes

5.1 Photographs of the Sample



Front of the sample



Rear of the sample

TEST REPORT

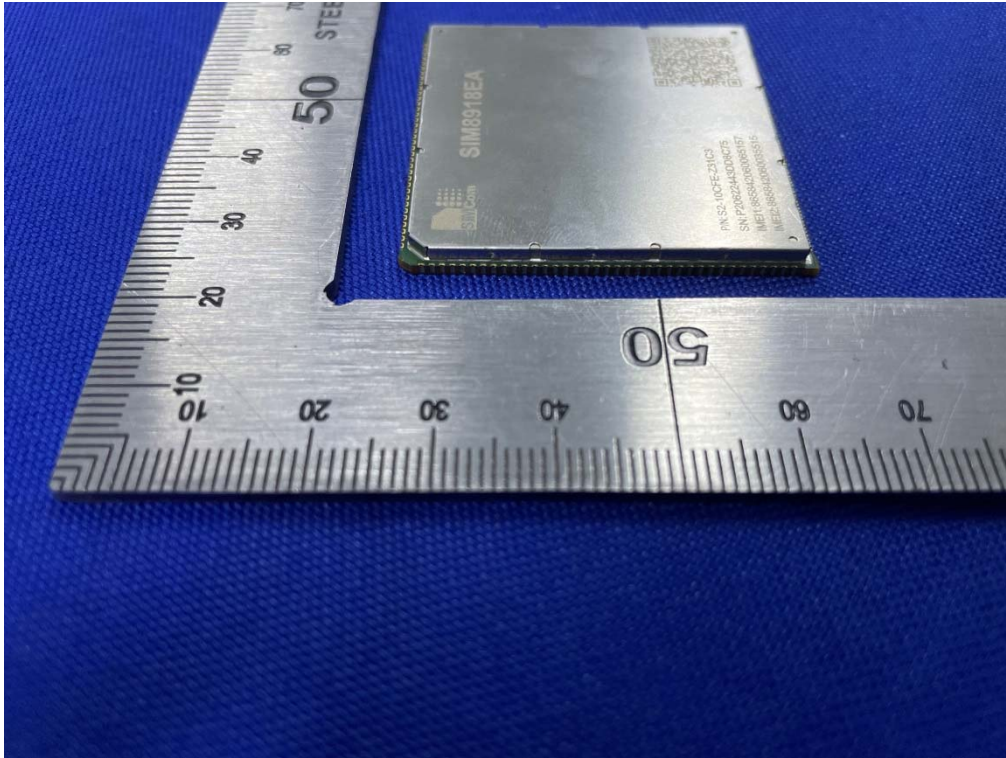
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SHE23060106-01CE

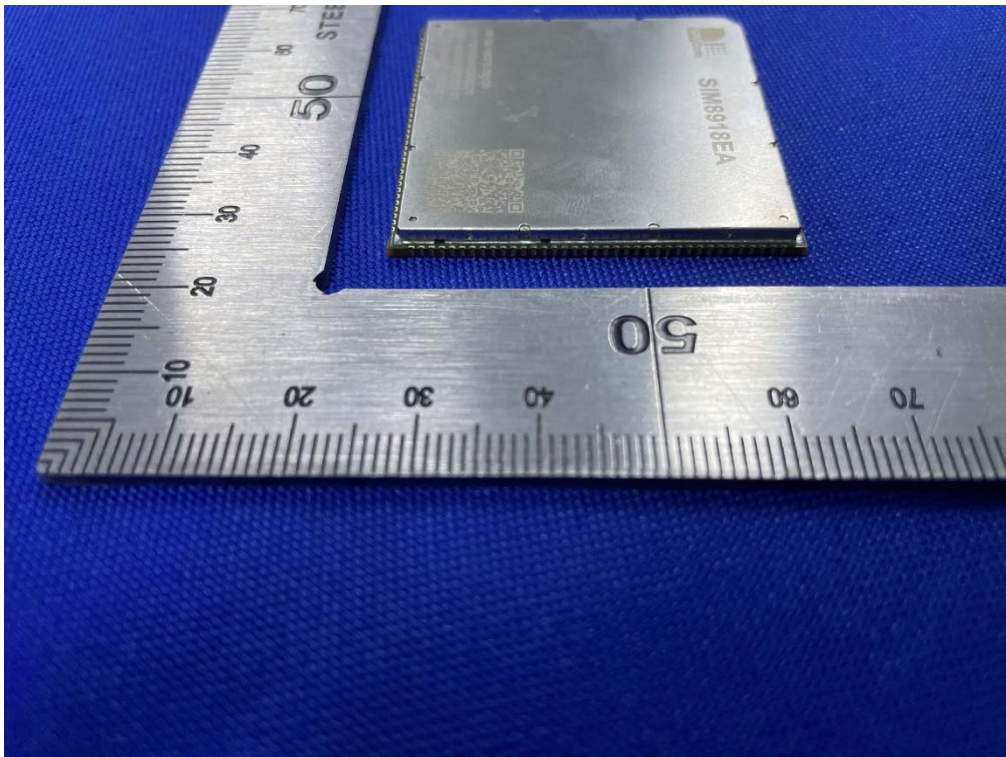
Date:

2023-09-15

Page 66 of 70



Left of the sample



Right of the sample

TEST REPORT

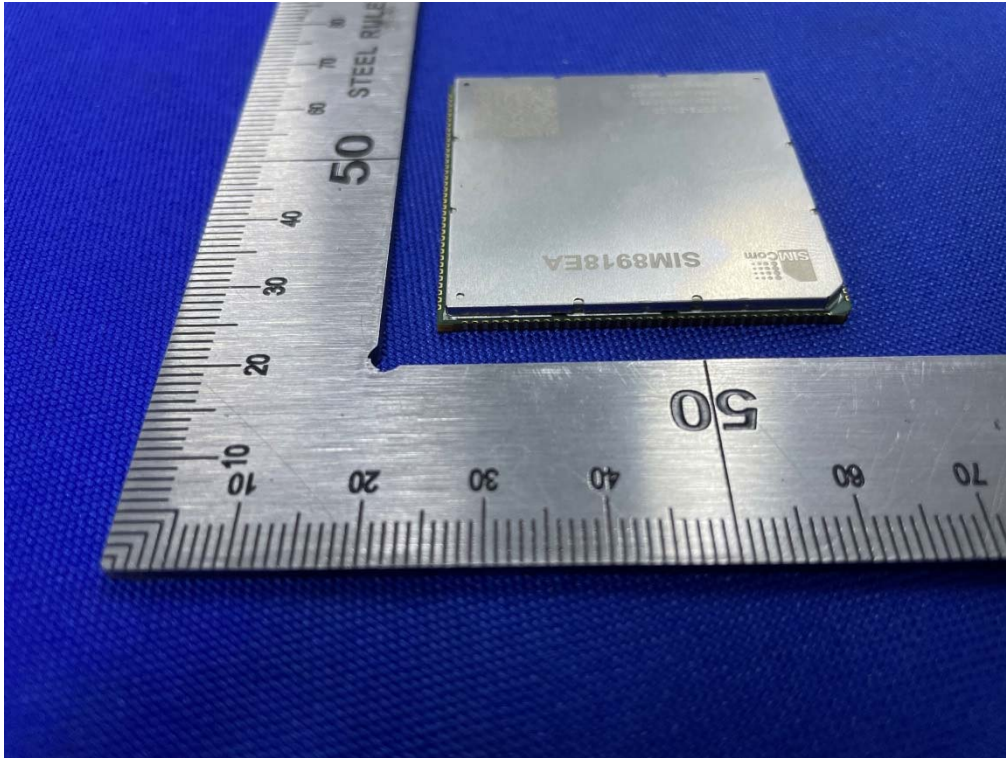
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SHE23060106-01CE

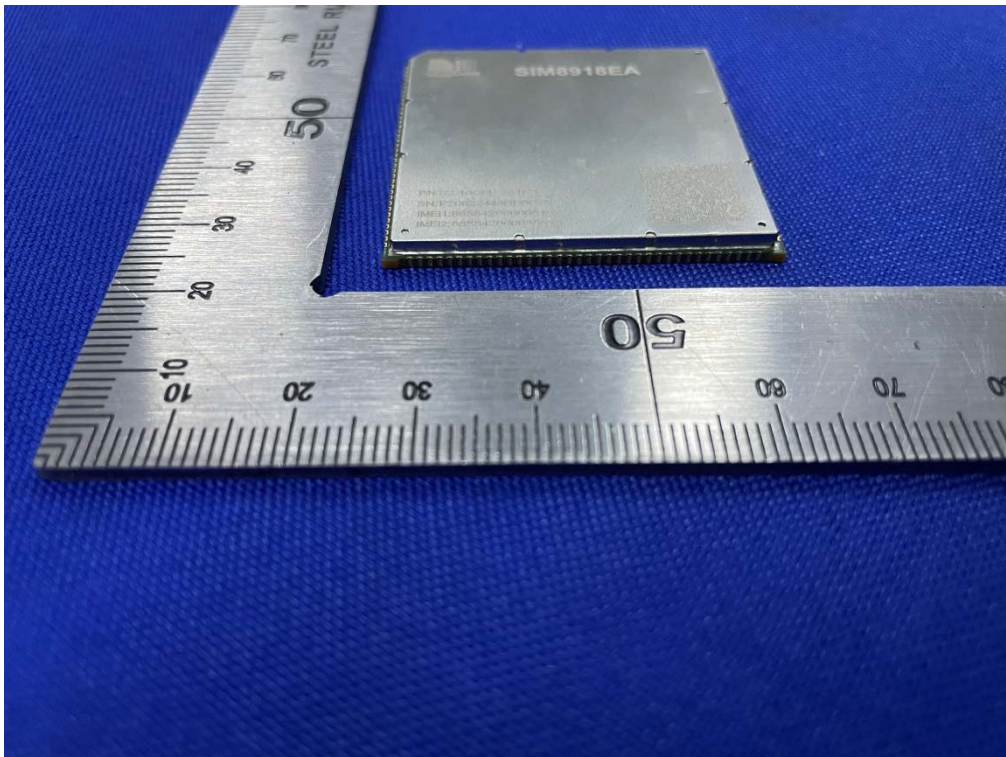
Date:

2023-09-15

Page 67 of 70

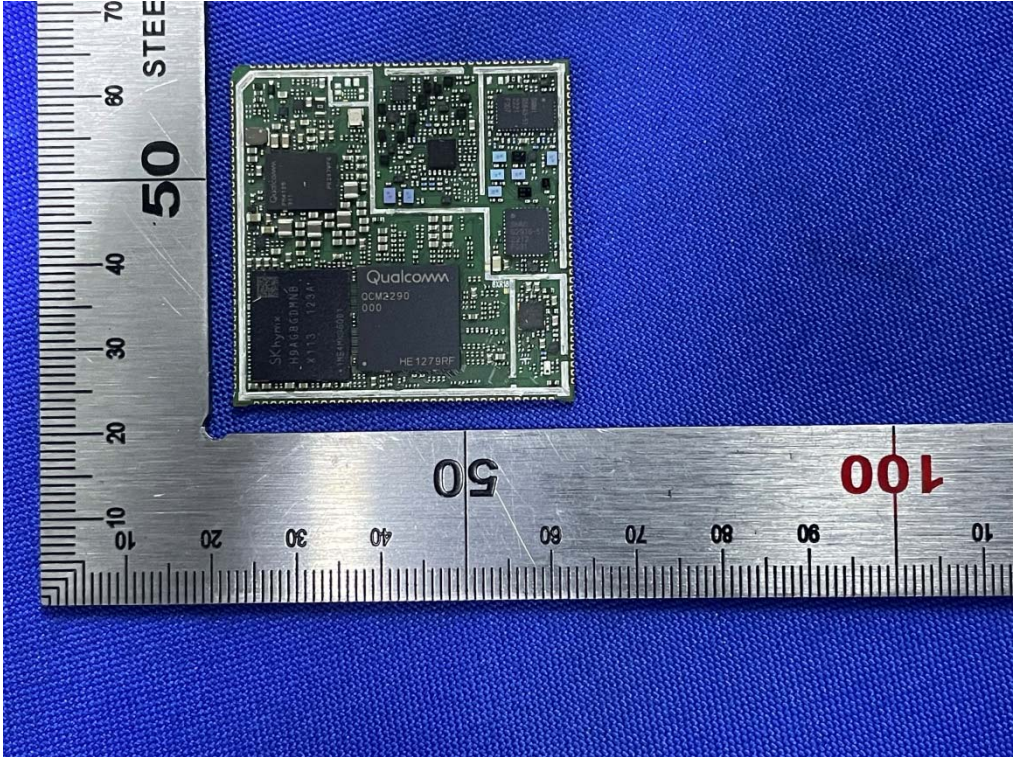


Top of the sample

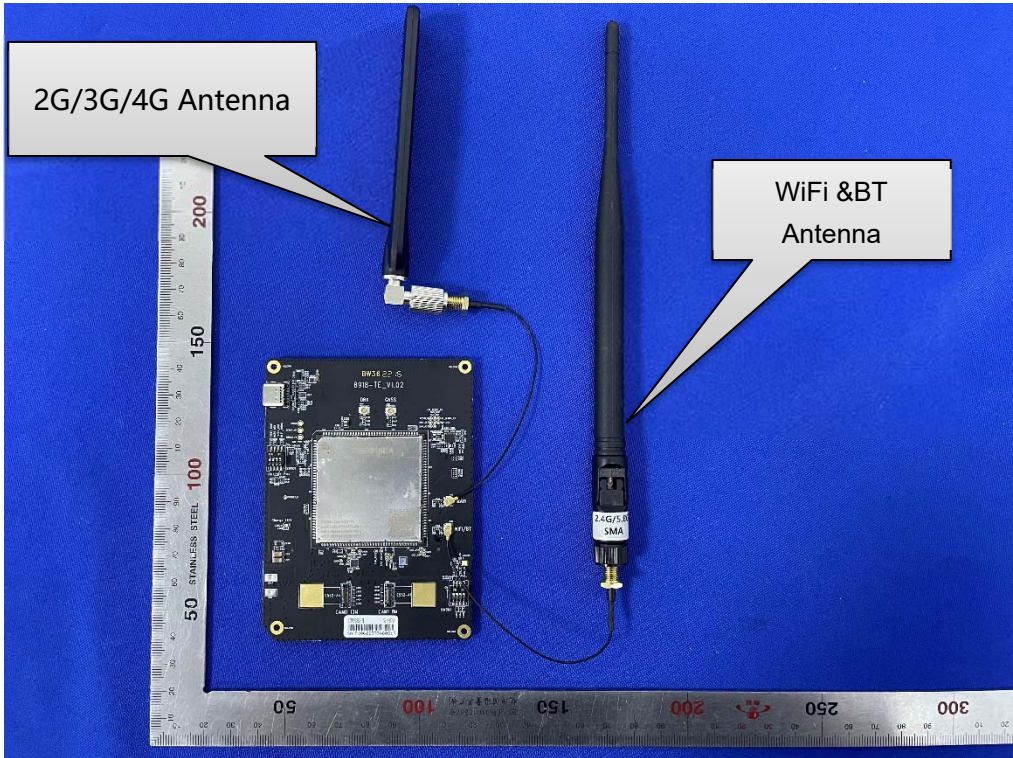


Bottom of the sample

TEST REPORT



Internal-1 of the sample



Antenna Photo

TEST REPORT

Report No.: SHE23060106-01CE

Date: 2023-09-15

Page 69 of 70

5.2 Set-up for Conducted Emission on AC Mains



5.3 Set-up for Conducted RF test at Antenna Port



TEST REPORT

Report No.: SHE23060106-01CE

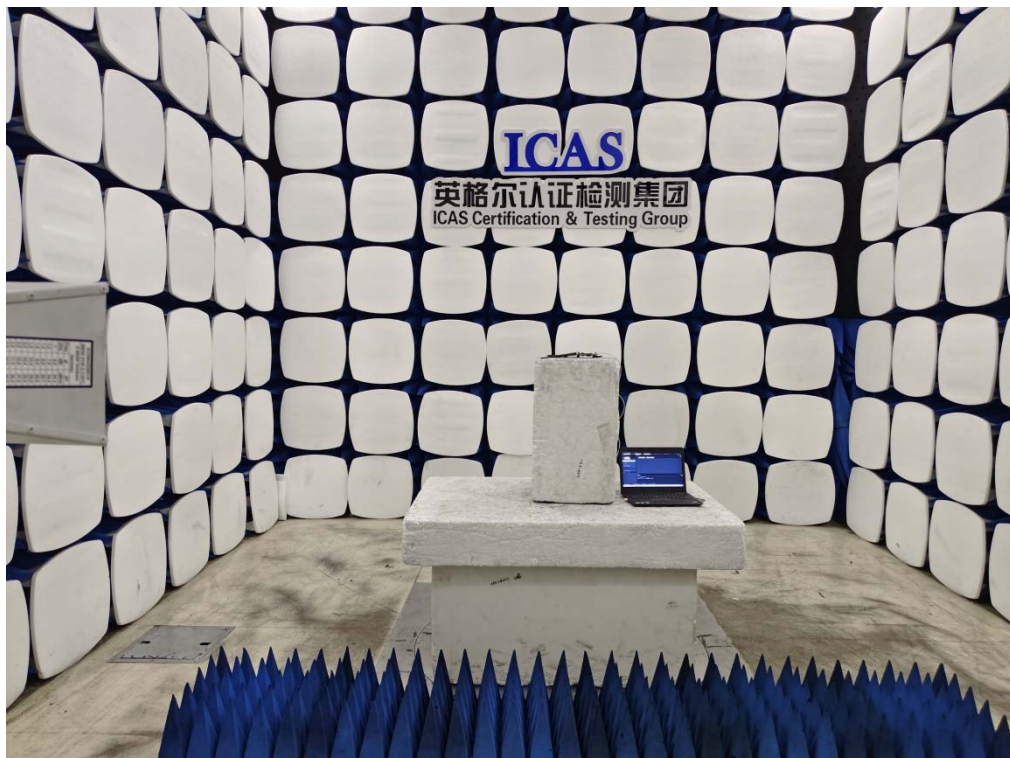
Date: 2023-09-15

Page 70 of 70

5.4 Set-up for Radiated Spurious Emissions below 1GHz



5.5 Set-up for Radiated Spurious Emissions above 1GHz



End of the report