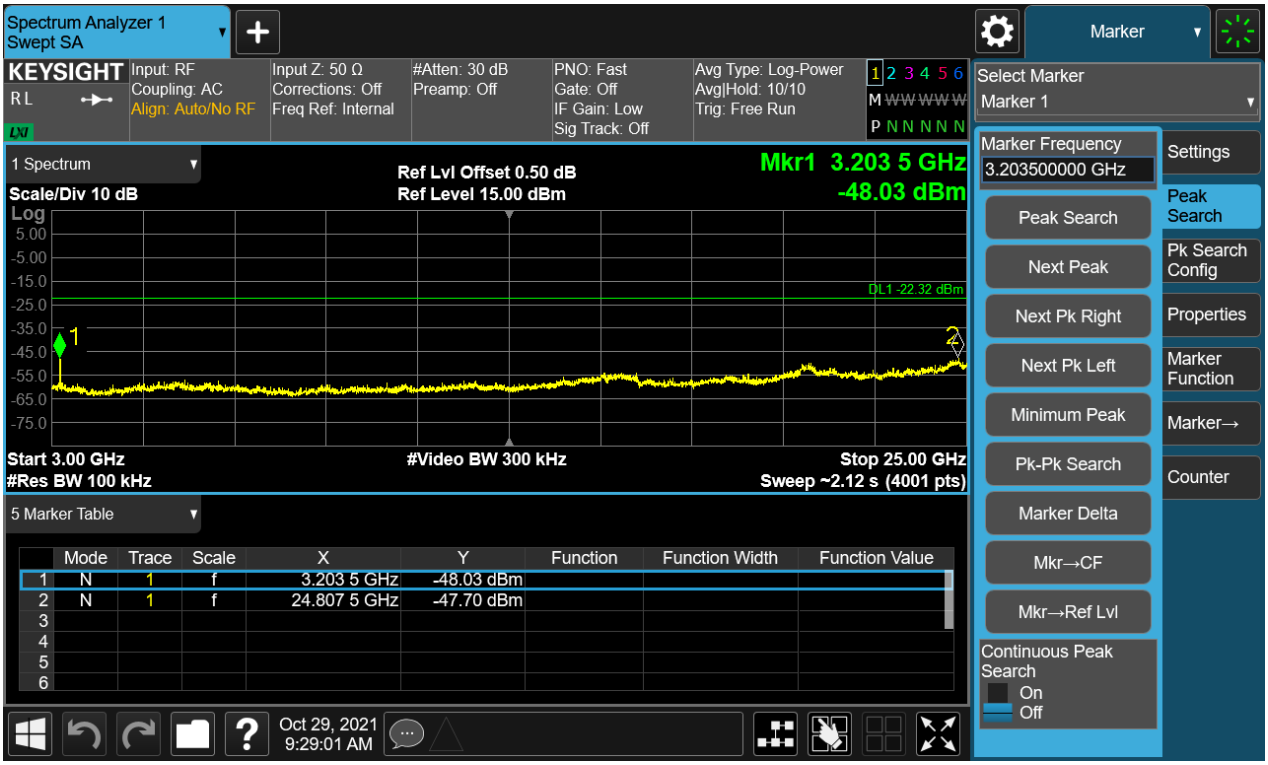
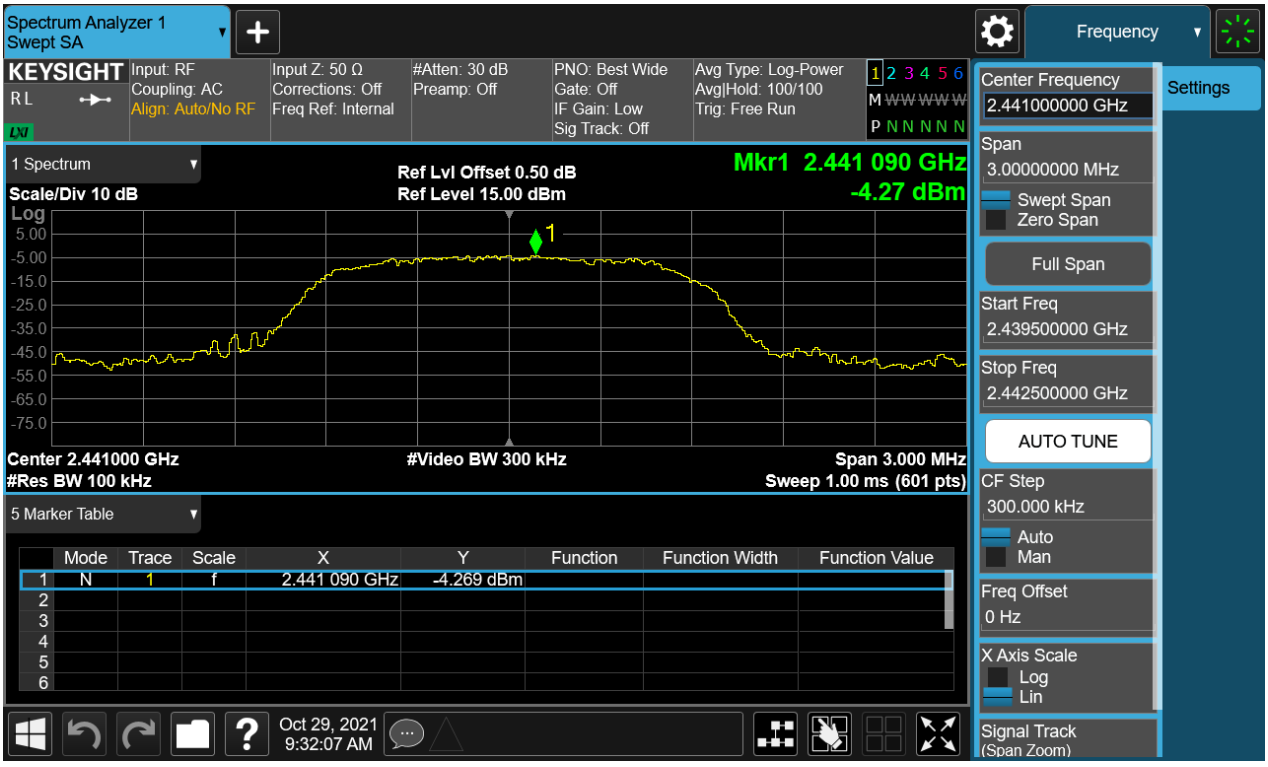
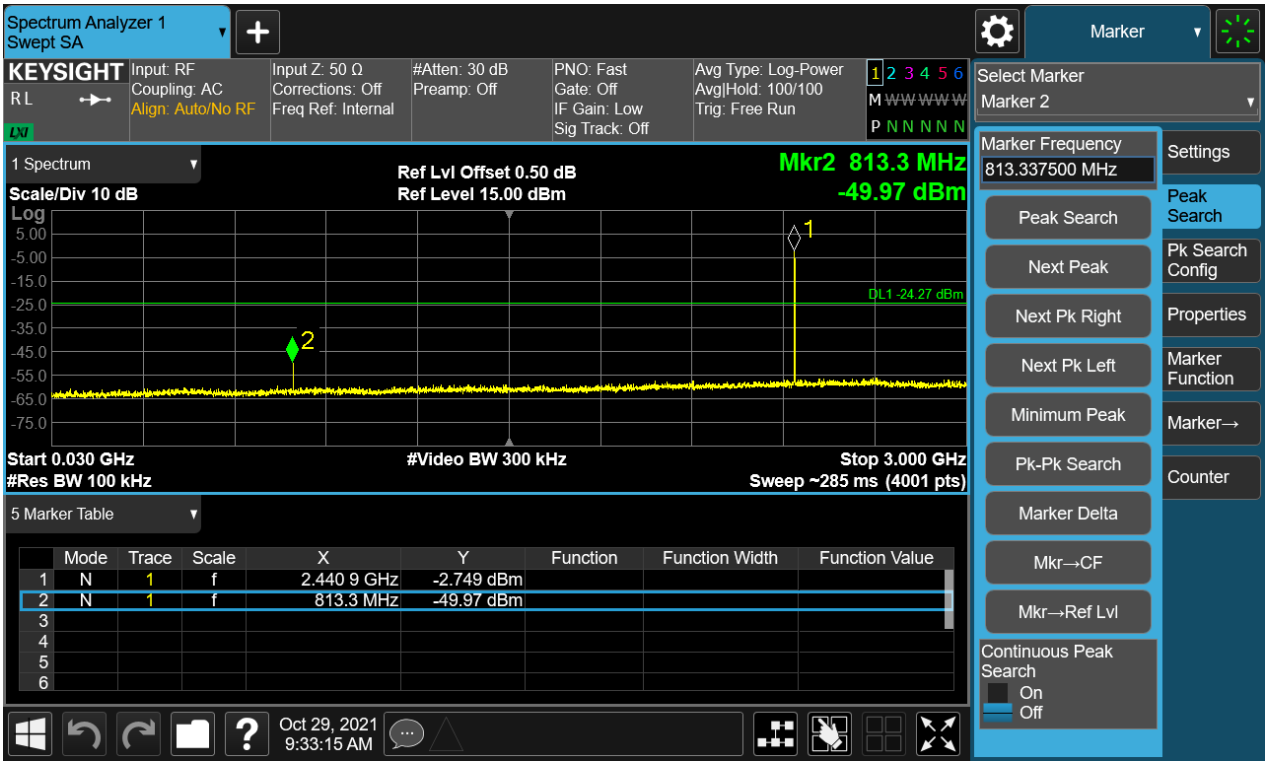


Figure 20: Conducted Spurious Emission & Authorized-band band-edge, 2441MHz, 8-DPSK Carrier Level



Conducted spurious emissions 30MHz-25GHz



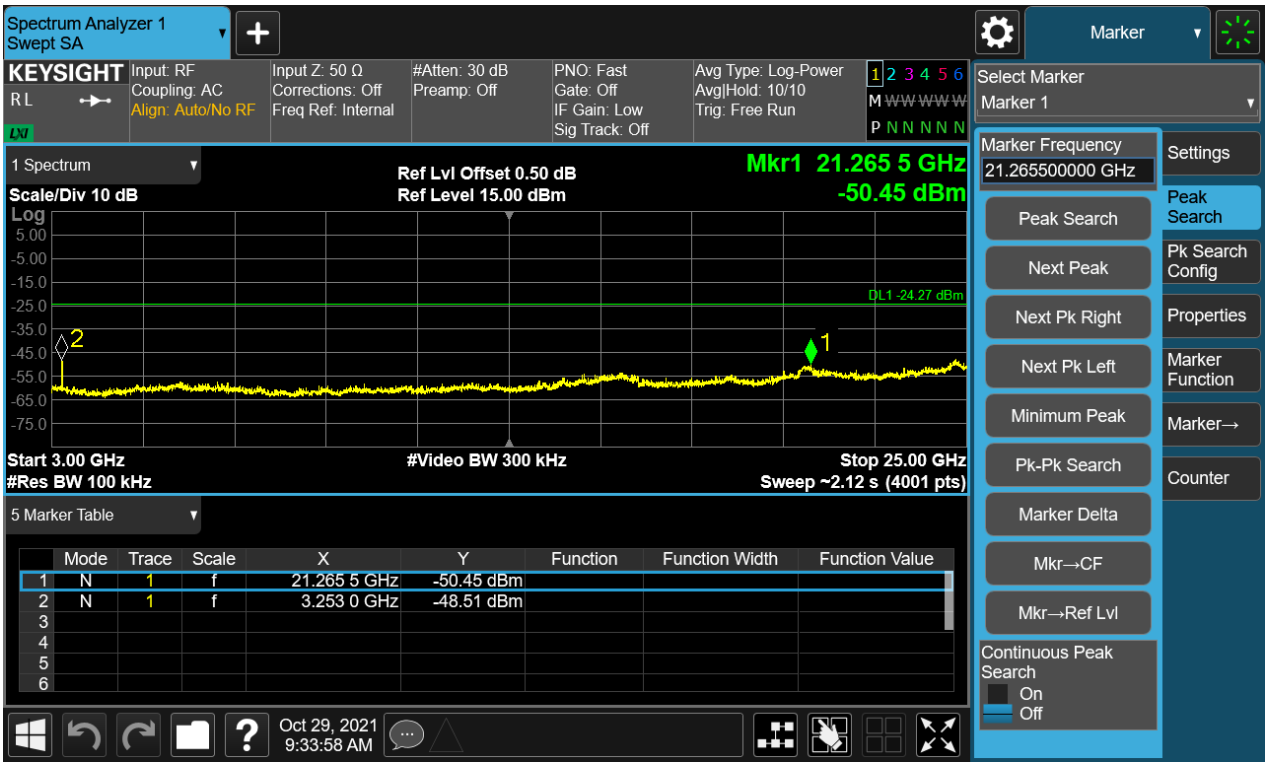
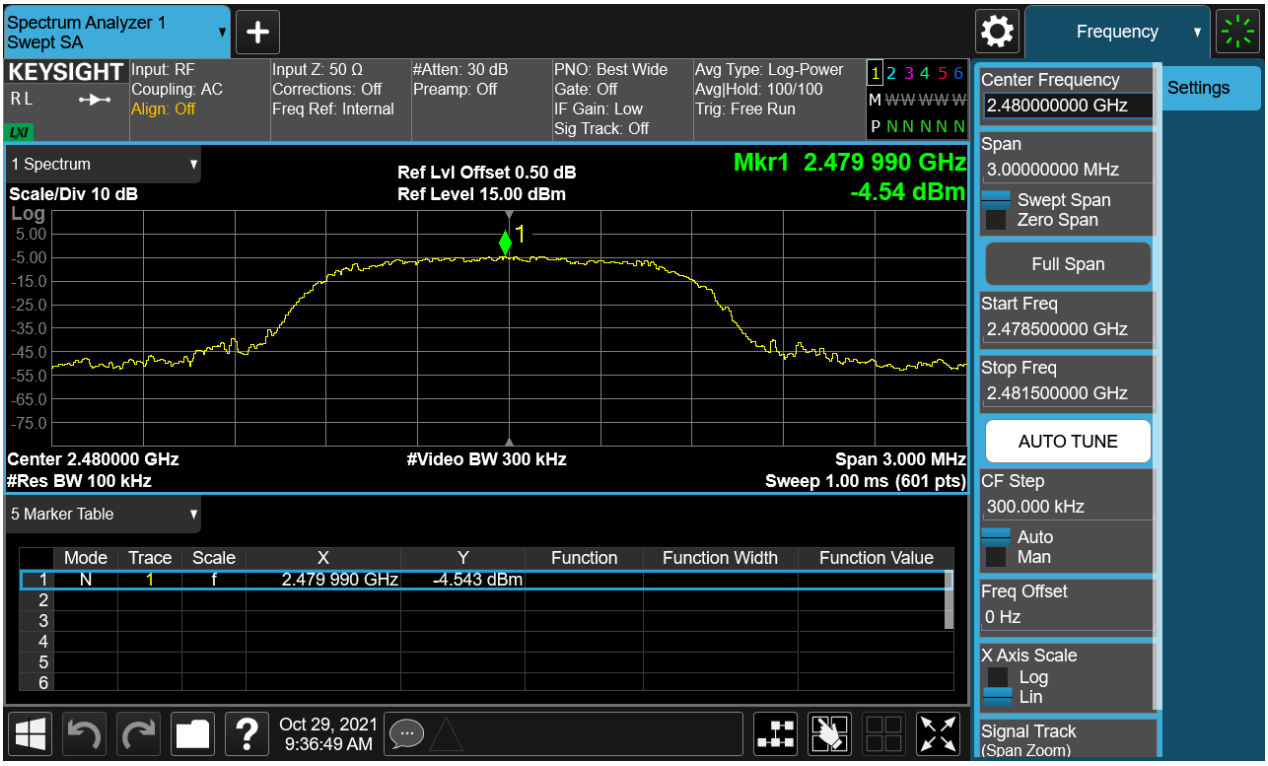


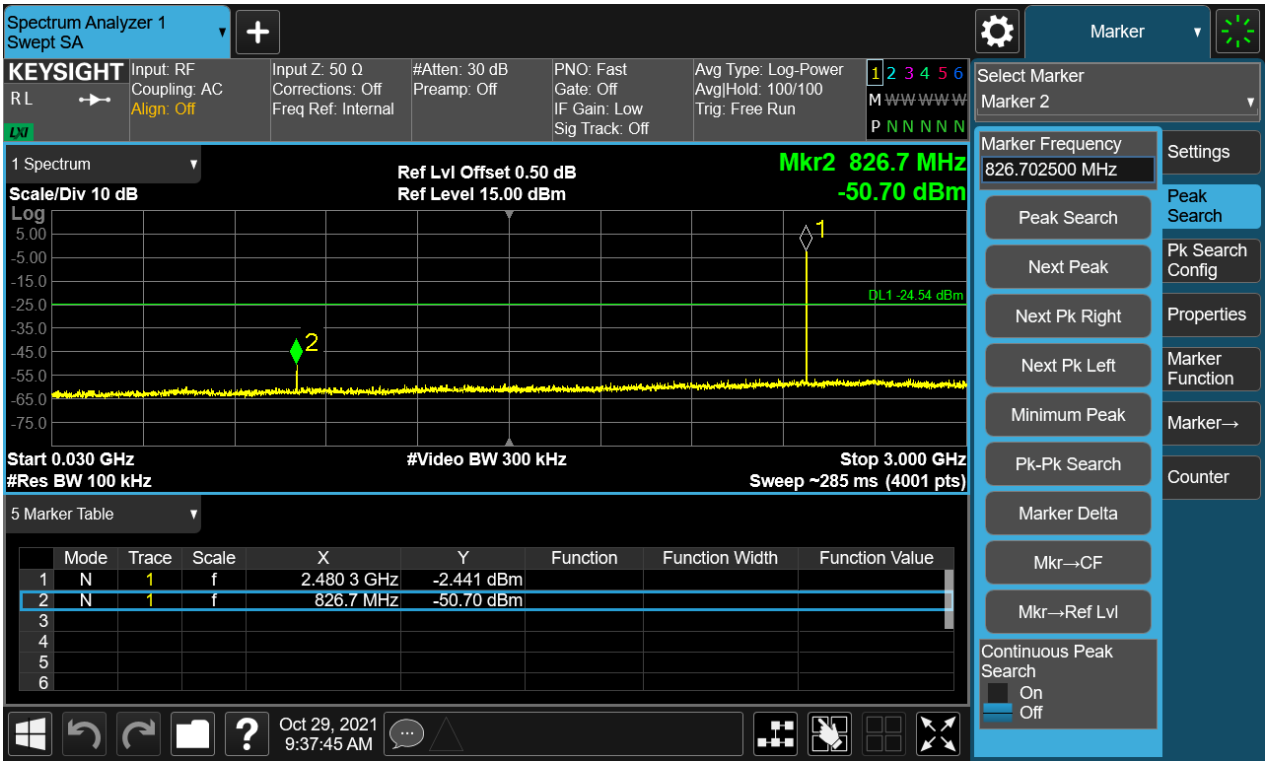
Figure 21: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, 8-DPSK

Carrier Level



Band Edge

Conducted spurious emissions 30MHz-25GHz



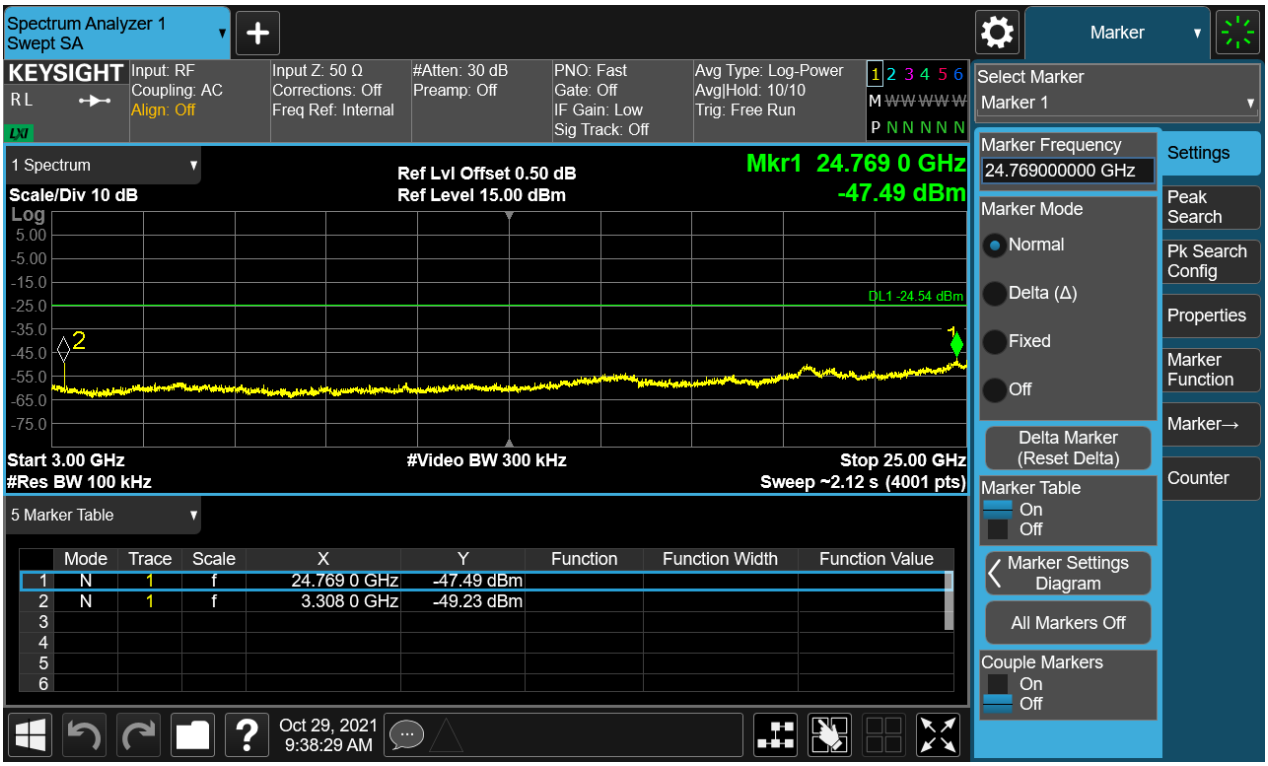
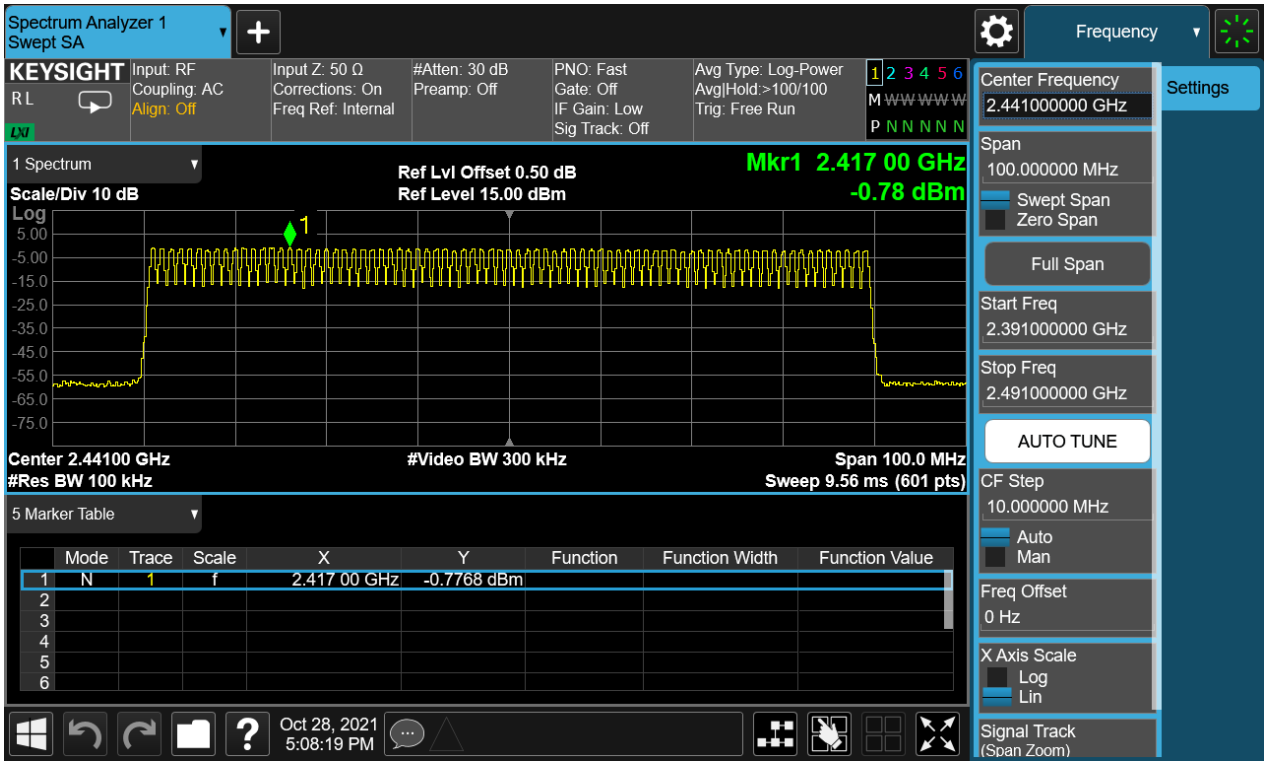
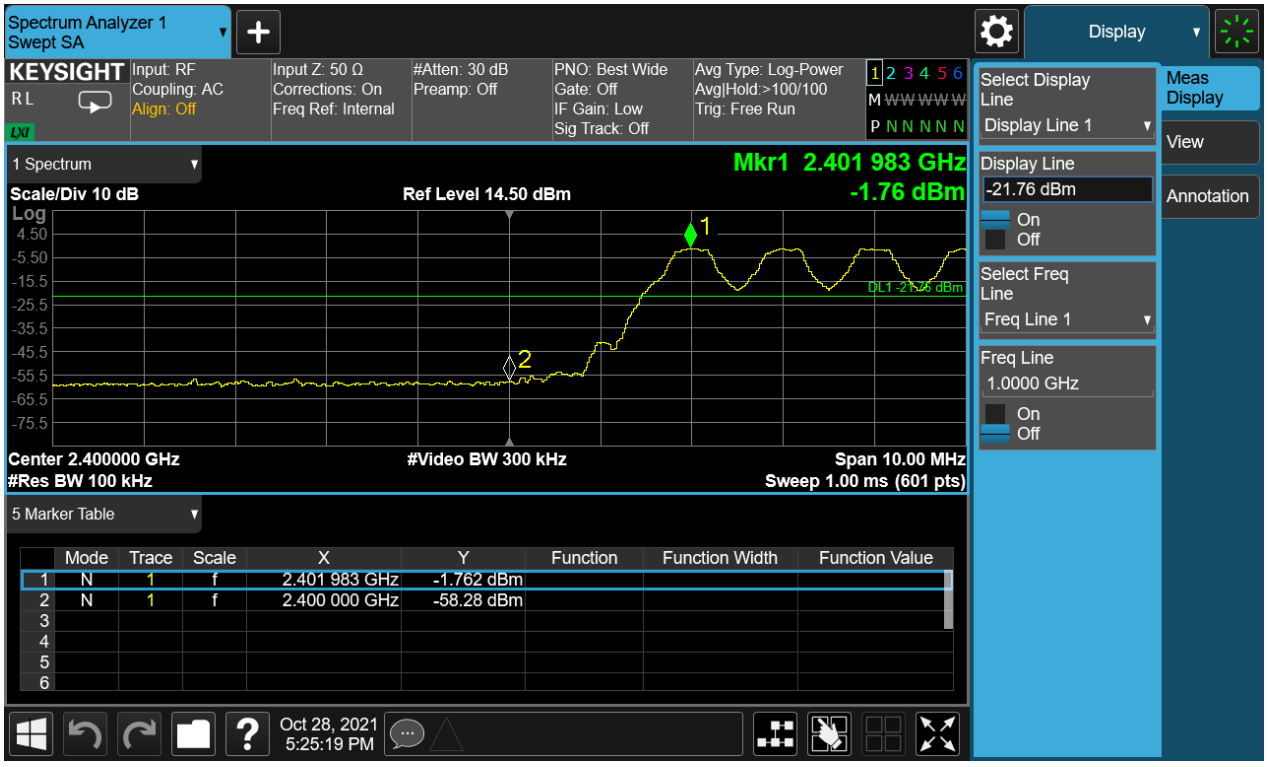


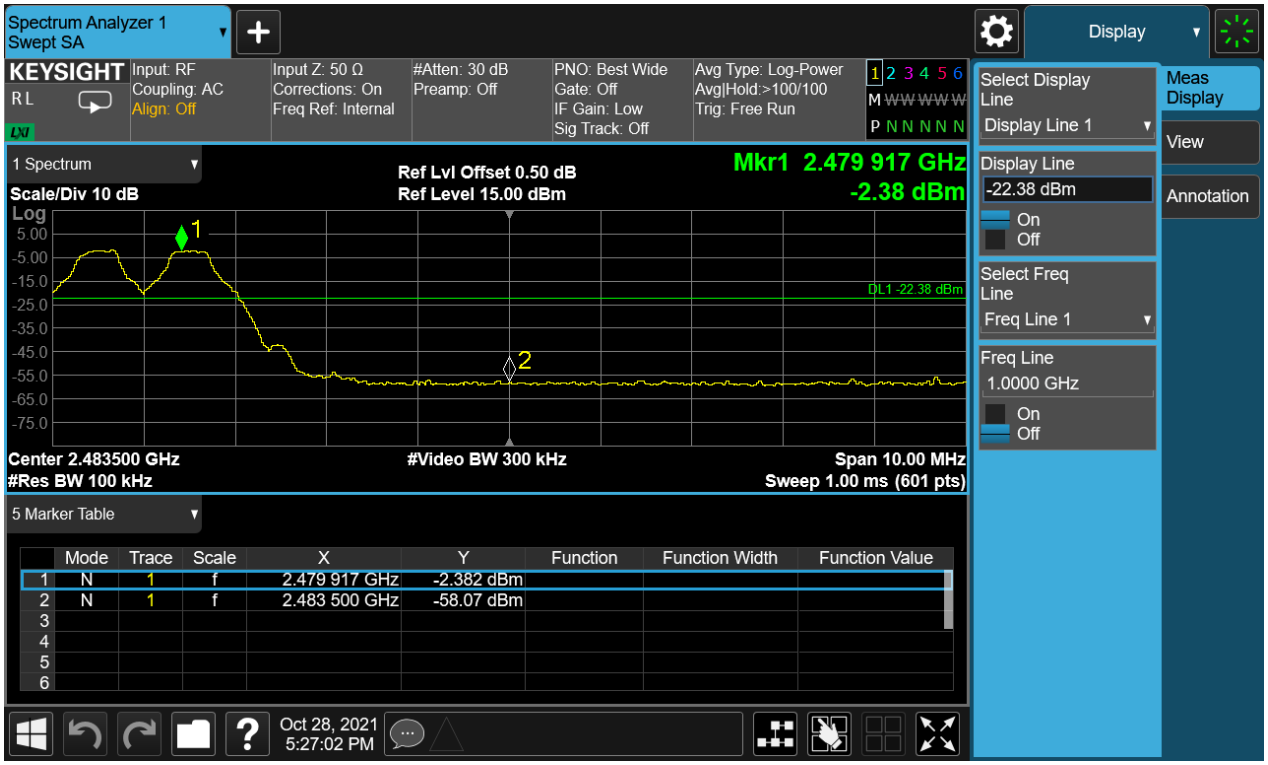
Figure 22: Conducted Spurious Emission & Authorized-band band-edge, Hopping Mode, GFSK Carrier Level



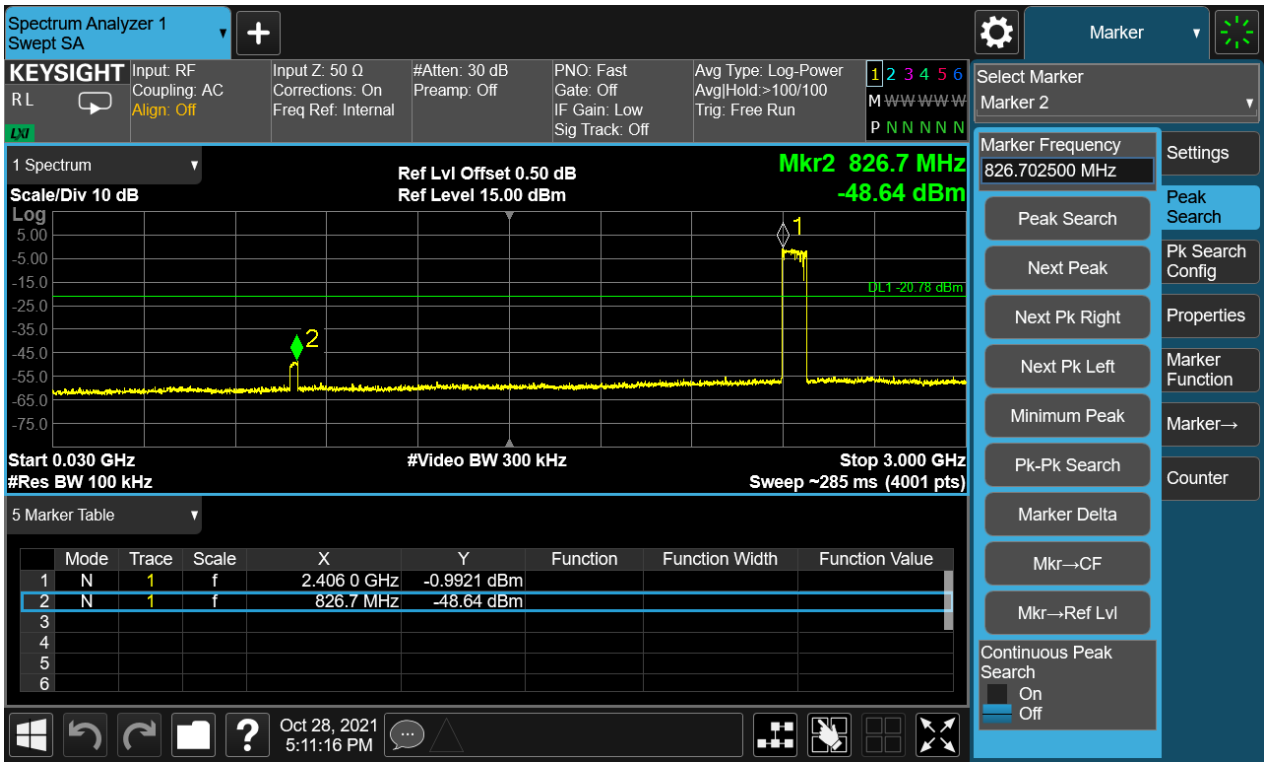
Band Edge(Low)



Band Edge(High)



Conducted spurious emissions 30MHz-25GHz



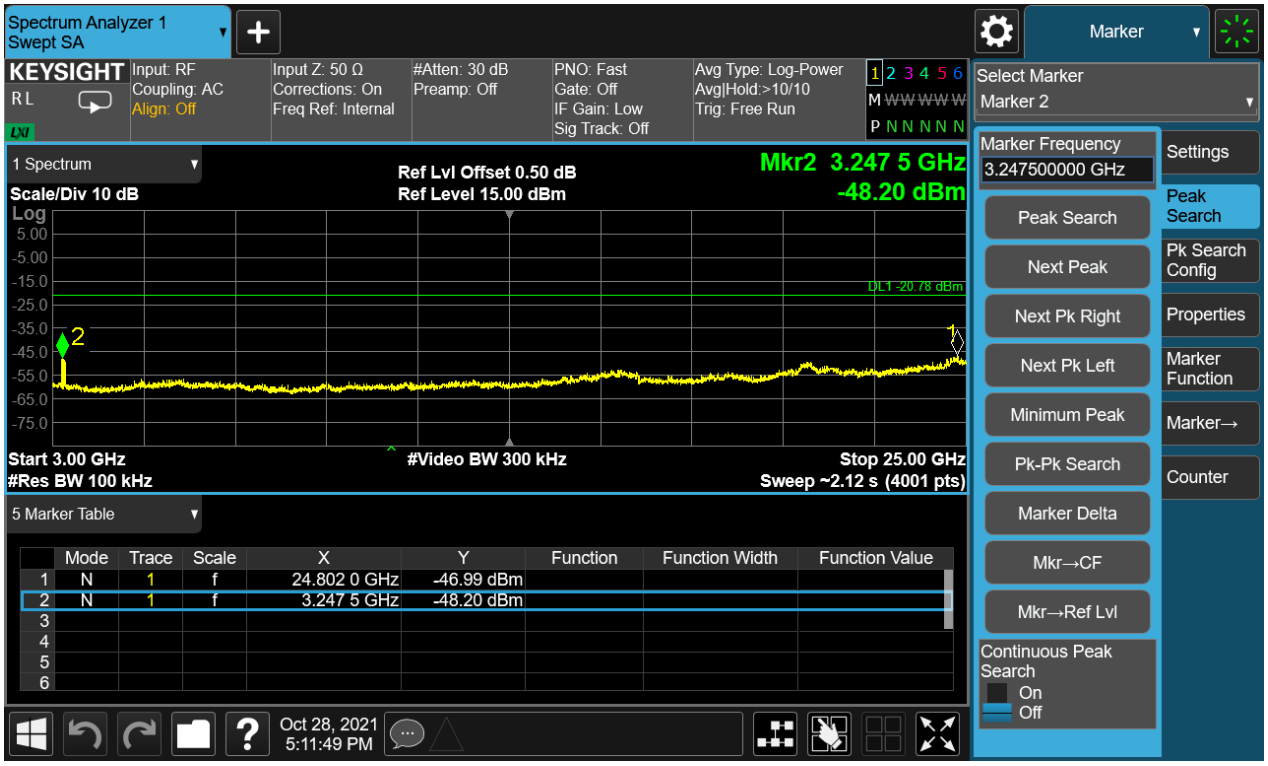
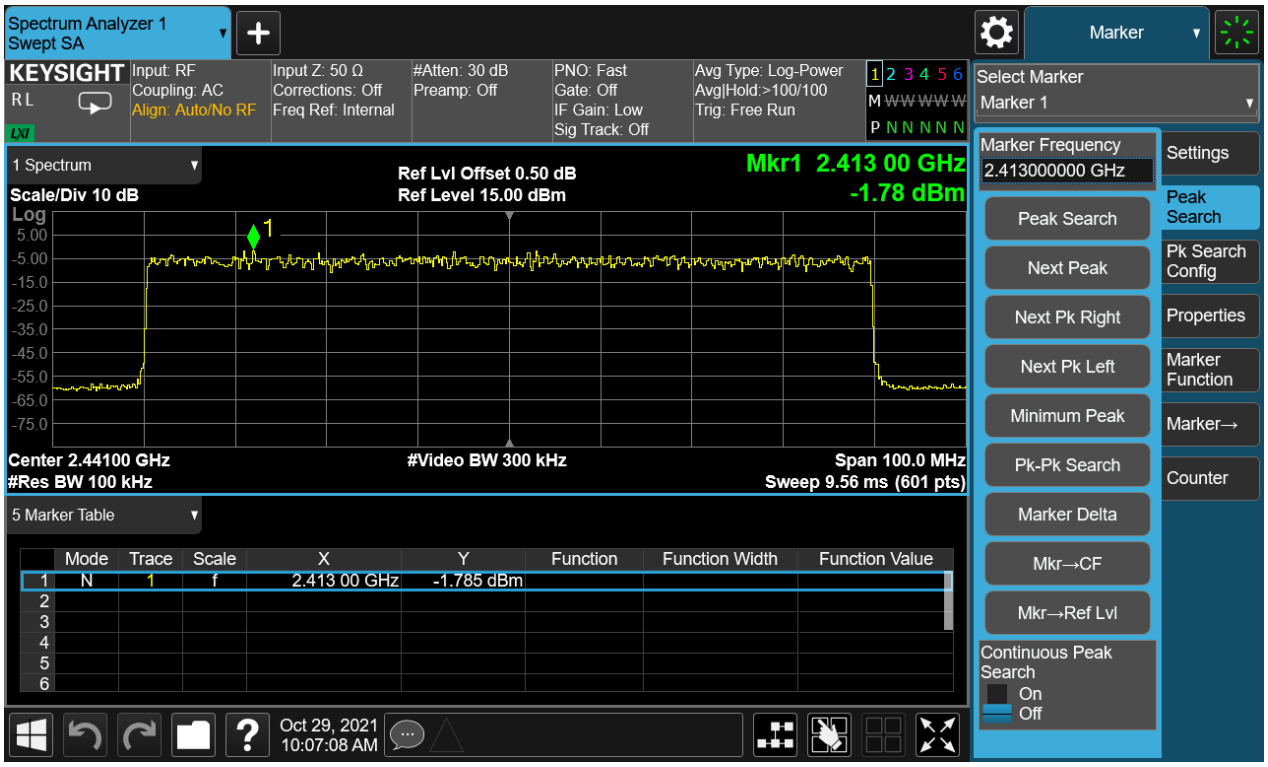
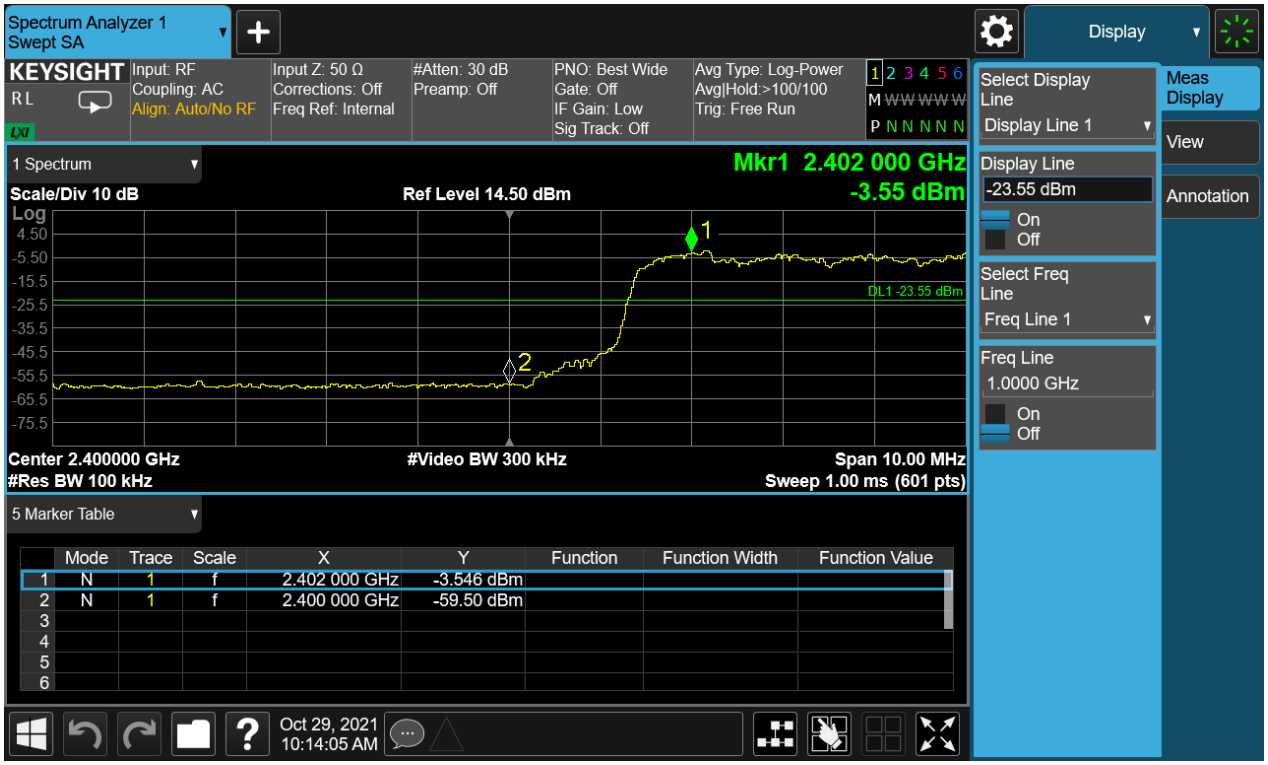


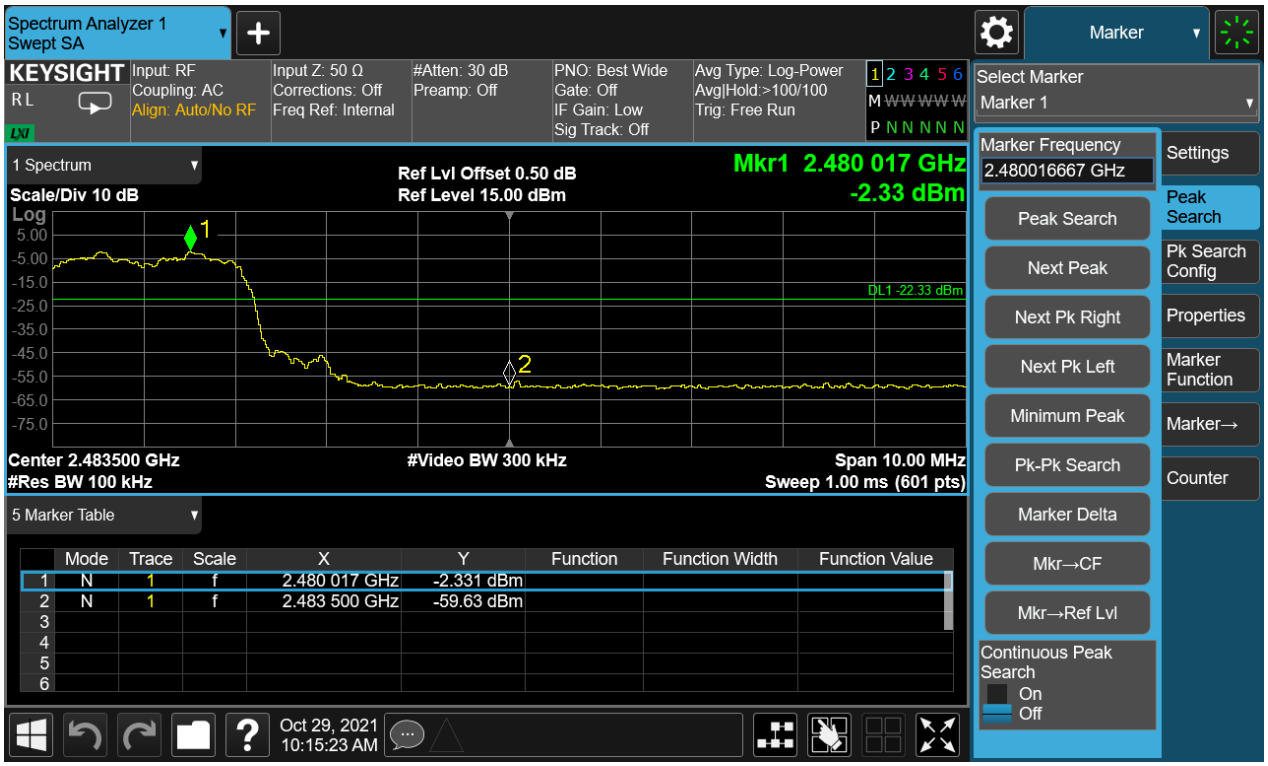
Figure 23: Conducted Spurious Emission & Authorized-band band-edge, Hopping Mode, 8-DPSK Carrier Level



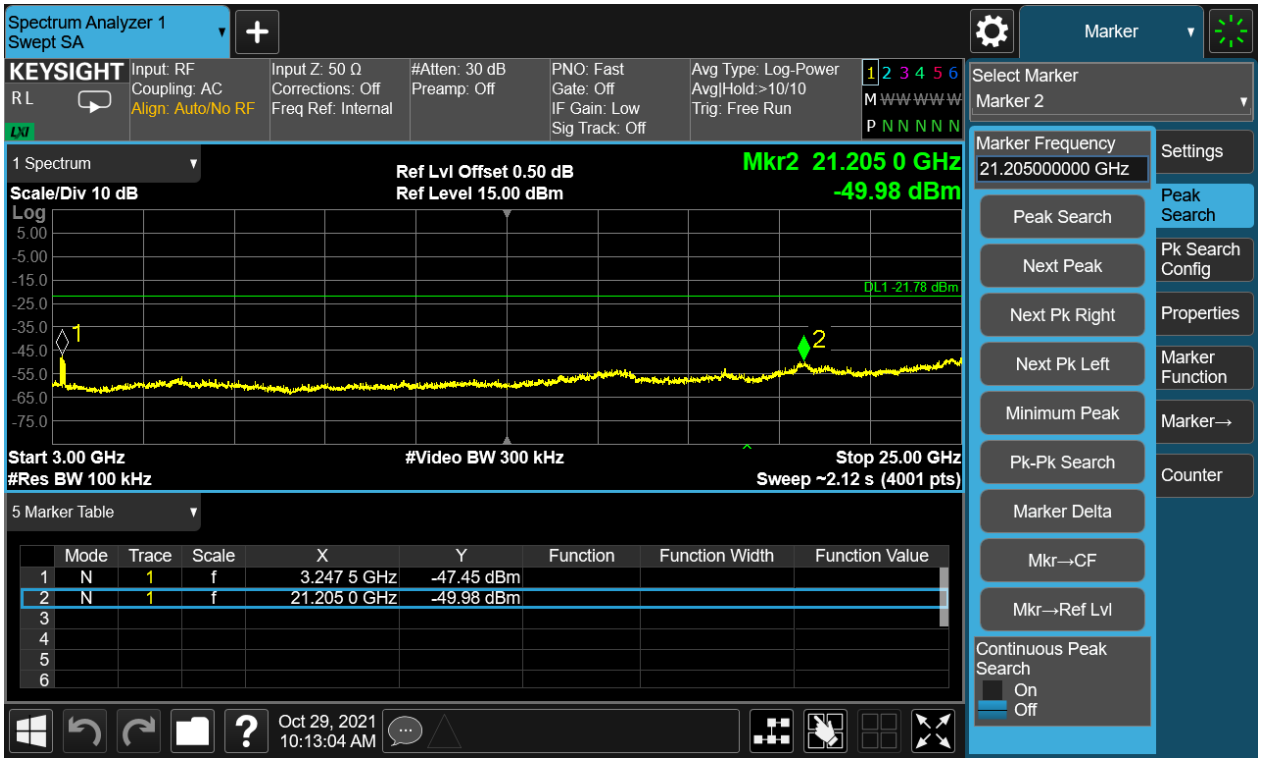
Band Edge(Low)



Band Edge(High)



Conducted spurious emissions 30MHz-25GHz



4.1.5 Radiated Spurious Emission

RESULT: **PASS**

Test standard	:	FCC Part 15.247(d), 15.205, 15.209
Requirement	:	ANSI C63.10-2013
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/Middle/High
Operation Mode	:	A
Ambient temperature	:	25°C
Relative humidity	:	52%

Notes

Test plots please refer to the annex document "SHE21100025-02BE DATA BDEDR-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 is working in the Normal link mode below 1 GHz.
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.

4.1.6 Band Edge (Restricted-band band-edge)

RESULT: **PASS**

Test standard	:	FCC Part 15.247(d), 15.205, 15.209
Requirement	:	ANSI C63.10-2013
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/Middle/High
Operation Mode	:	A.1
Ambient temperature	:	25°C
Relative humidity	:	52%

Notes

Test plots please refer to the annex document "SHE21100025-02BE DATA BDEDR-TX EXHIBIT A".

4.1.7 Hopping Frequency Separation

RESULT: **PASS**

Test standard : FCC Part 15.247(a)(1)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Hopping
Operation Mode : A.1.a.iv
Ambient temperature : 25°C
Relative humidity : 50%

Table 3: Hopping Frequency Separation

Mode	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)
GFSK	2441	1.070	≥ 25kHz or two-thirds of 20dB bandwidth
8-DPSK	2441	1.035	

*Note: The systems operate with an output power no greater than 125mW.

Figure 24: Hopping Frequency Separation, Hopping Mode, GFSK

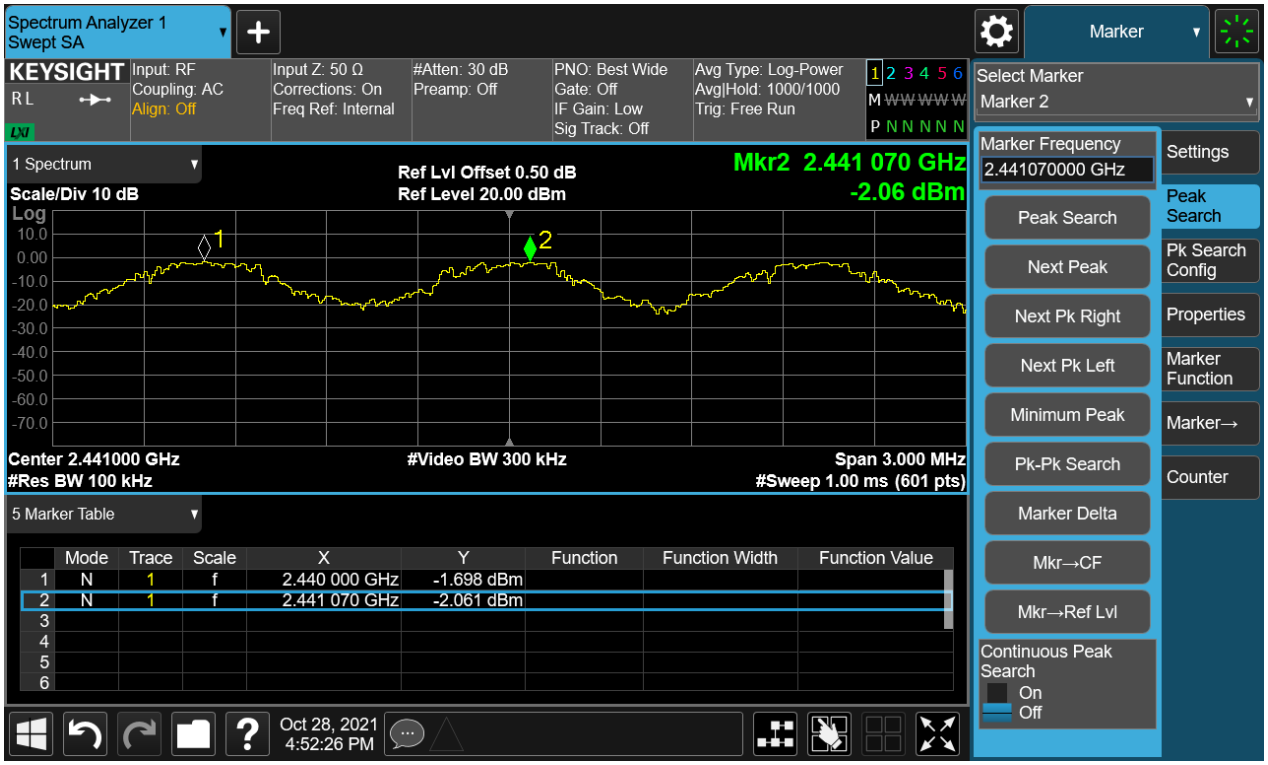
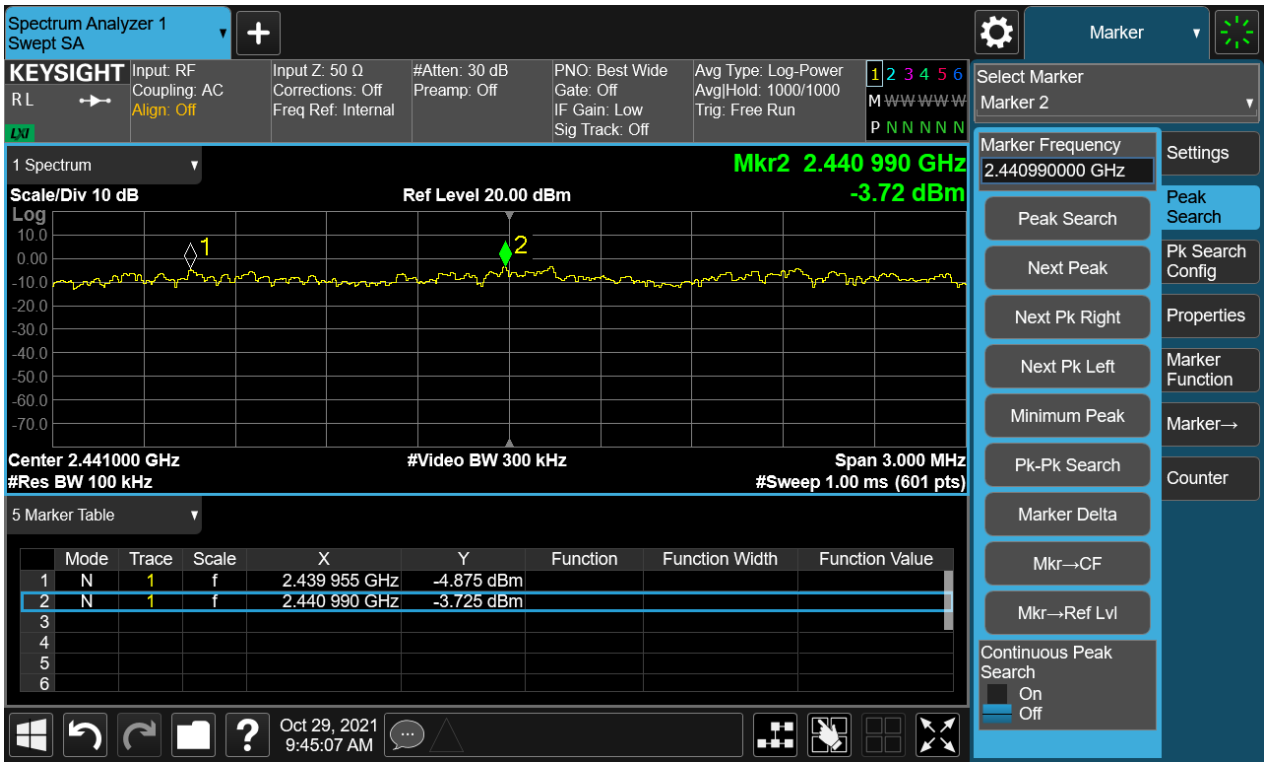


Figure 25: Hopping Frequency Separation, Hopping Mode, 8DPSK



4.1.8 Number of Hopping Frequency

RESULT: **PASS**

Test standard	:	FCC Part 15.247(a)(1)(iii) RSS-247 5.1(4)
Requirement	:	ANSI C63.10-2013
Kind of test site	:	Shielded room

Test setup

Test Channel	:	Hopping
Operation Mode	:	A.1.a.iv
Ambient temperature	:	25°C
Relative humidity	:	50%

Table 2: Number of Hopping Frequency

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

Figure 26: Number of Hopping Frequency, Hopping Mode, GFSK

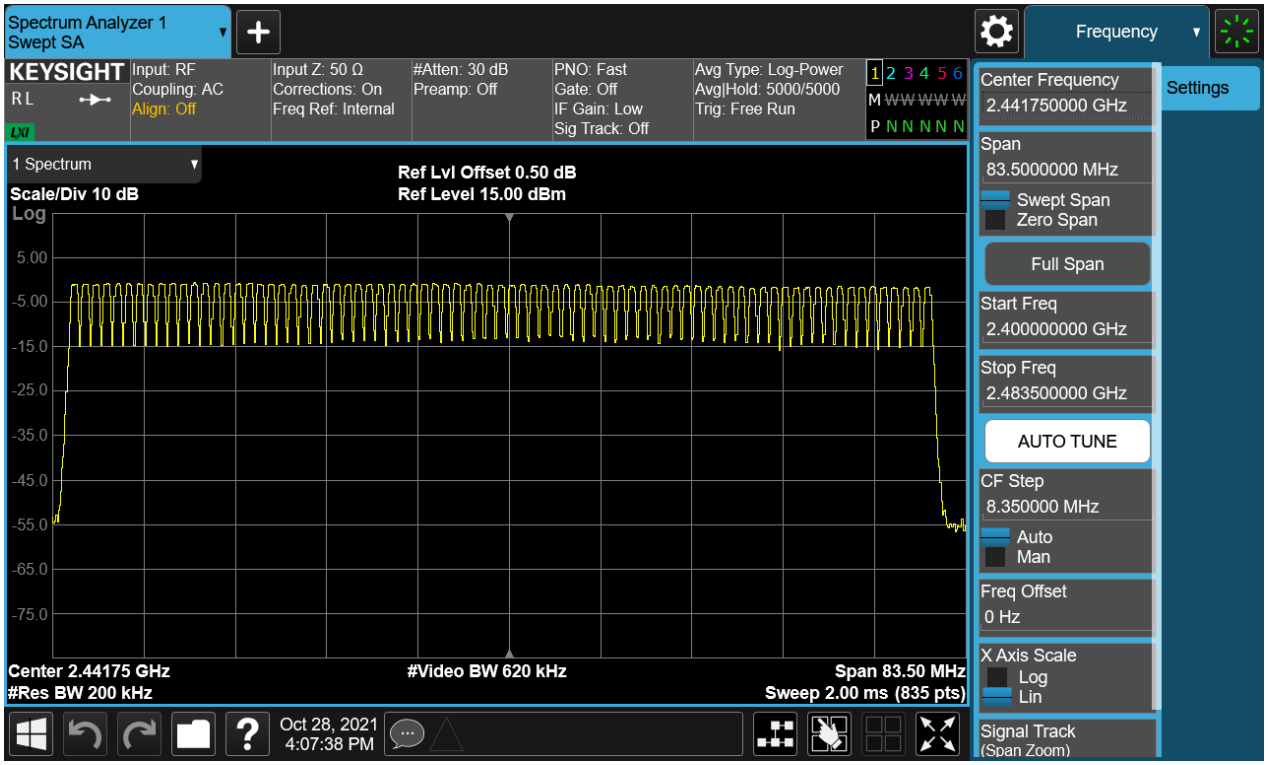


Figure 27: Number of Hopping Frequency, Hopping Mode, 8-DPSK

4.1.9 Time of Occupancy

RESULT: **PASS**

Test standard : FCC Part 15.247(a)(1)(iii)
Requirement : ANSI C63.10-2013
Kind of test site : Shielded room

Test setup

Test Channel : Middle
Operation Mode : A.1.a
Ambient temperature : 25°C
Relative humidity : 50%

Table 3: Time of Occupancy

Mode	Packet Type	Pulse Time (ms)	Total of Dwell (ms)	Limit (s)
GFSK	DH1	0.383	122.56	0.4
	DH3	1.650	264.00	0.4
	DH5	2.900	309.33	0.4
8-DPSK	DH1	0.400	128.00	0.4
	DH3	1.665	266.40	0.4
	DH5	2.920	311.47	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 28: Time of Occupancy, 2441MHz, GFSK DH1

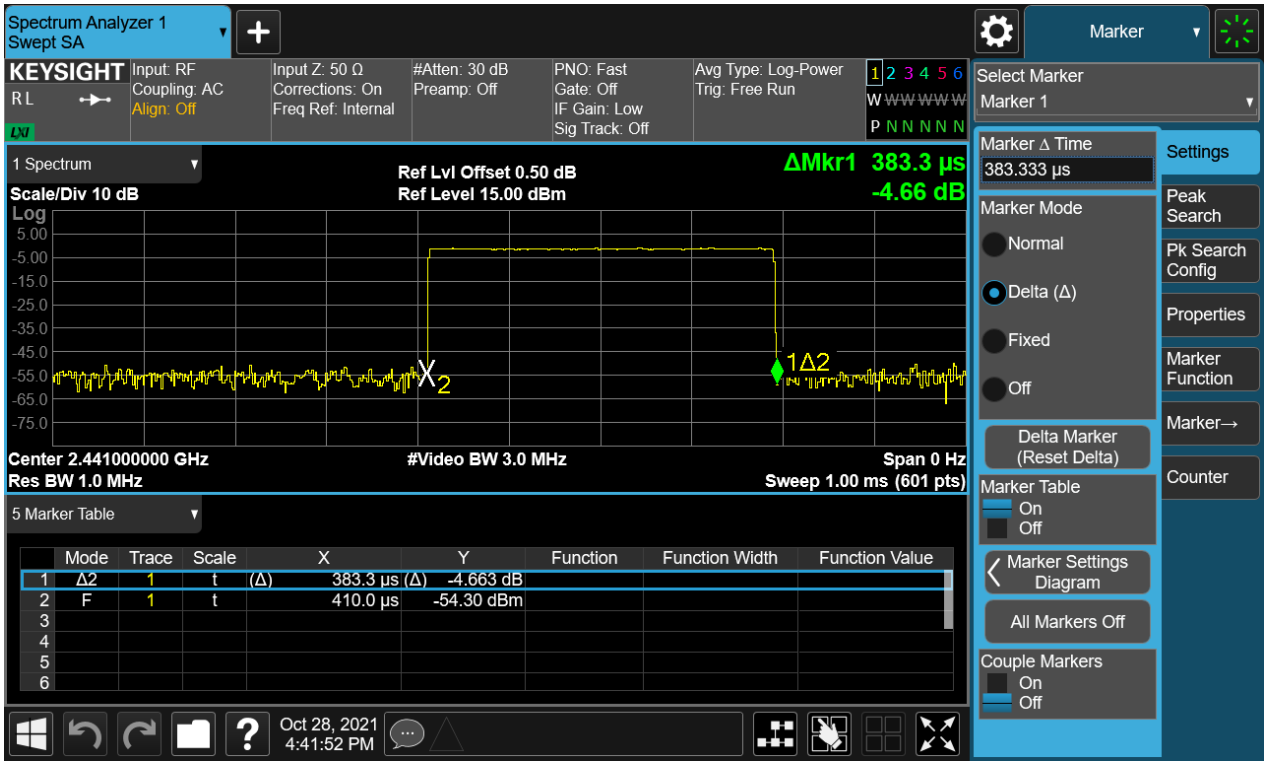


Figure 26: Time of Occupancy, 2441MHz, GFSK DH3

Figure 30: Time of Occupancy, 2441MHz, GFSK DH5

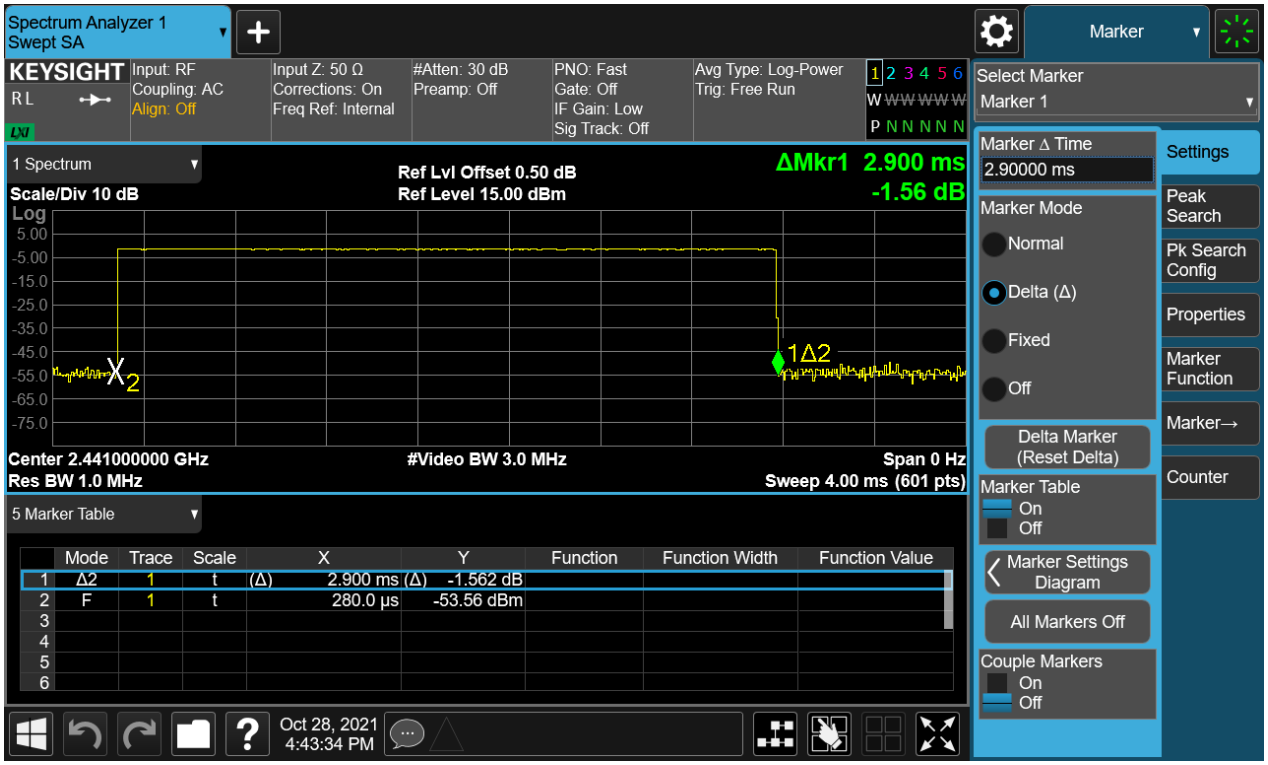


Figure 31: Time of Occupancy, 2441MHz, 8-DPSK DH1

Figure 32: Time of Occupancy, 2441MHz, 8-DPSK DH3

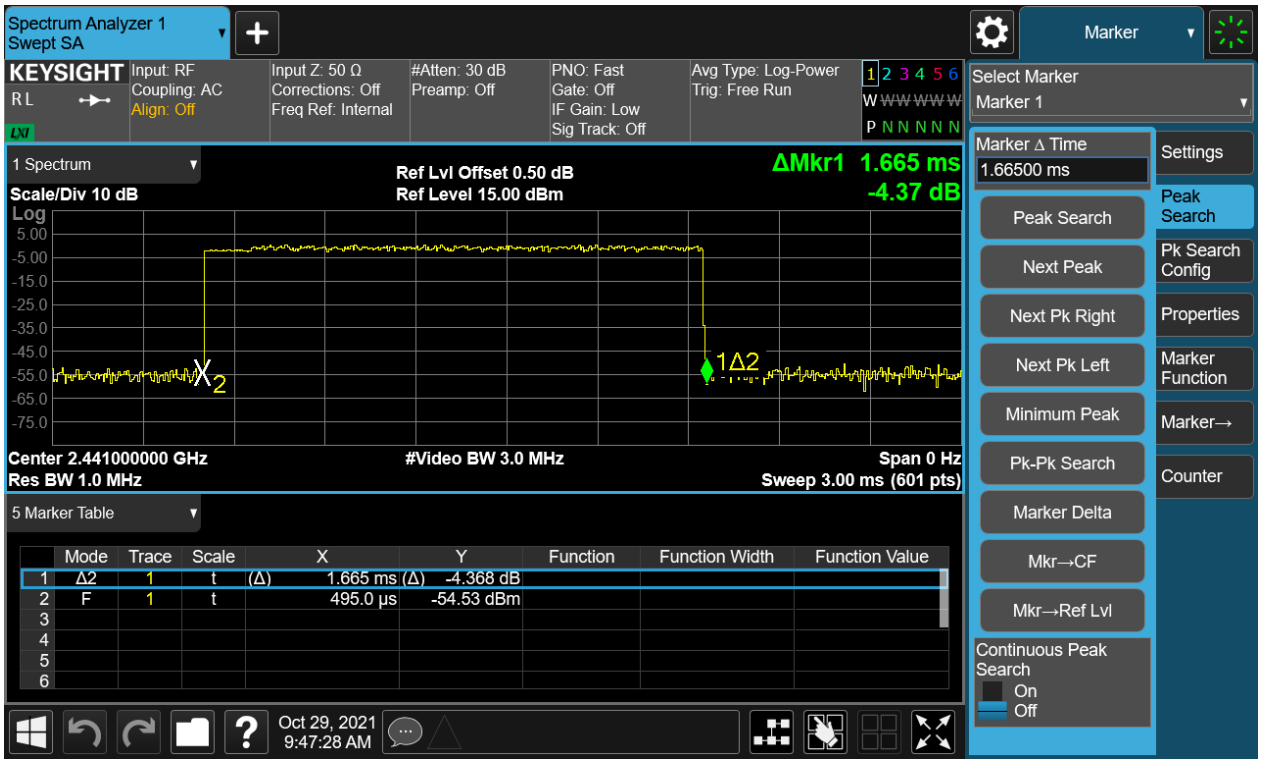
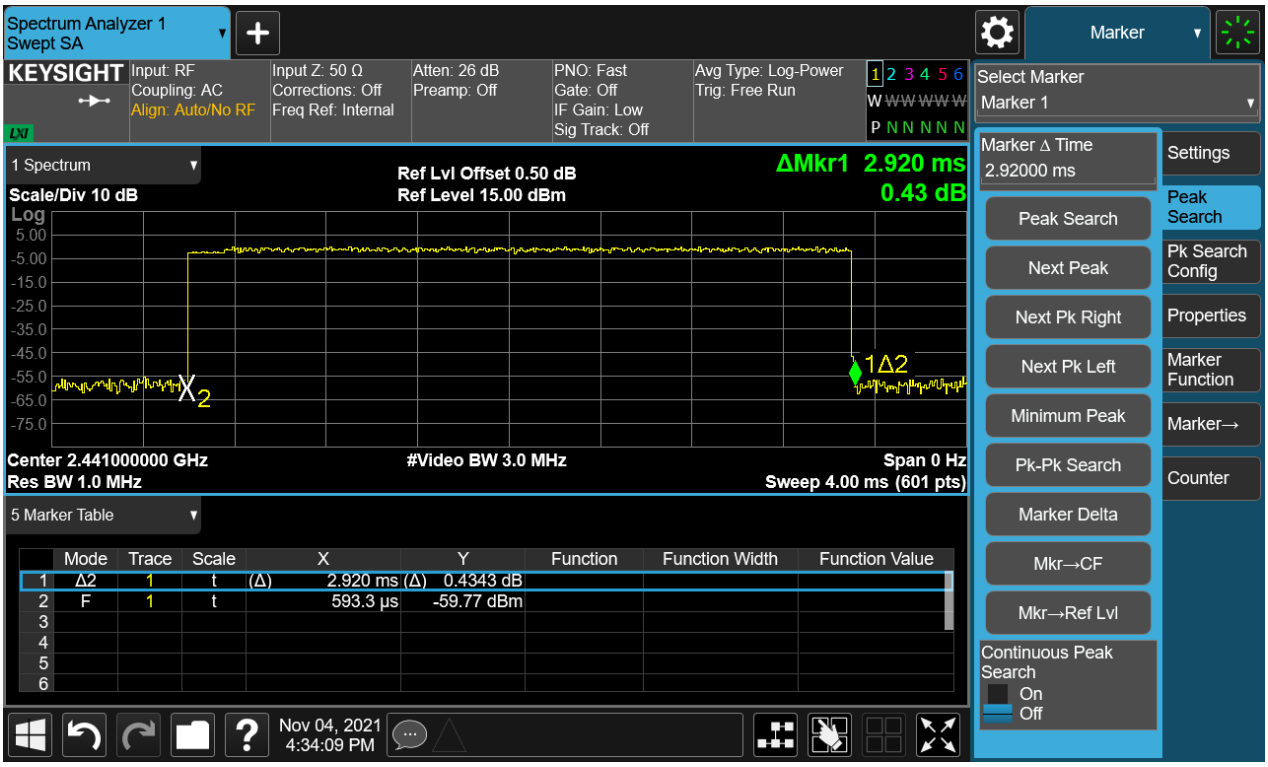


Figure 33: Time of Occupancy, 2441MHz, 8-DPSK DH5



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
Kind of test site	:	Shielded room

Test setup

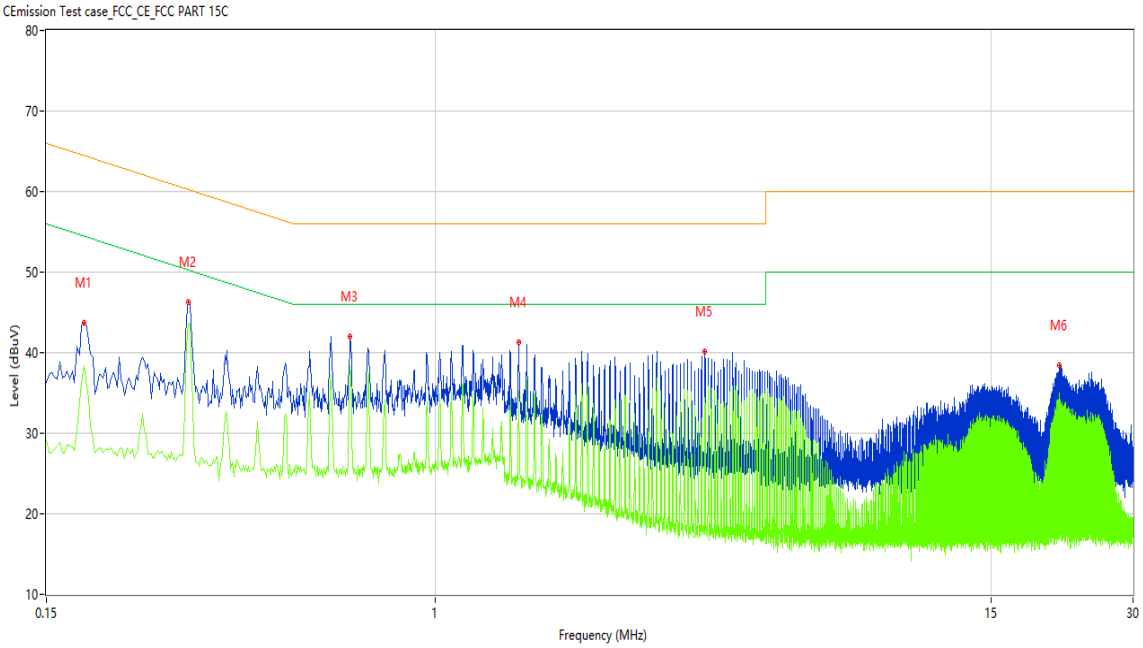
Input Voltage	:	AC 120V, 60Hz
Operation Mode	:	A.1.a
Earthing	:	Not Connected
Ambient temperature	:	23°C
Relative humidity	:	51%

For details refer to following test plot.

Note：

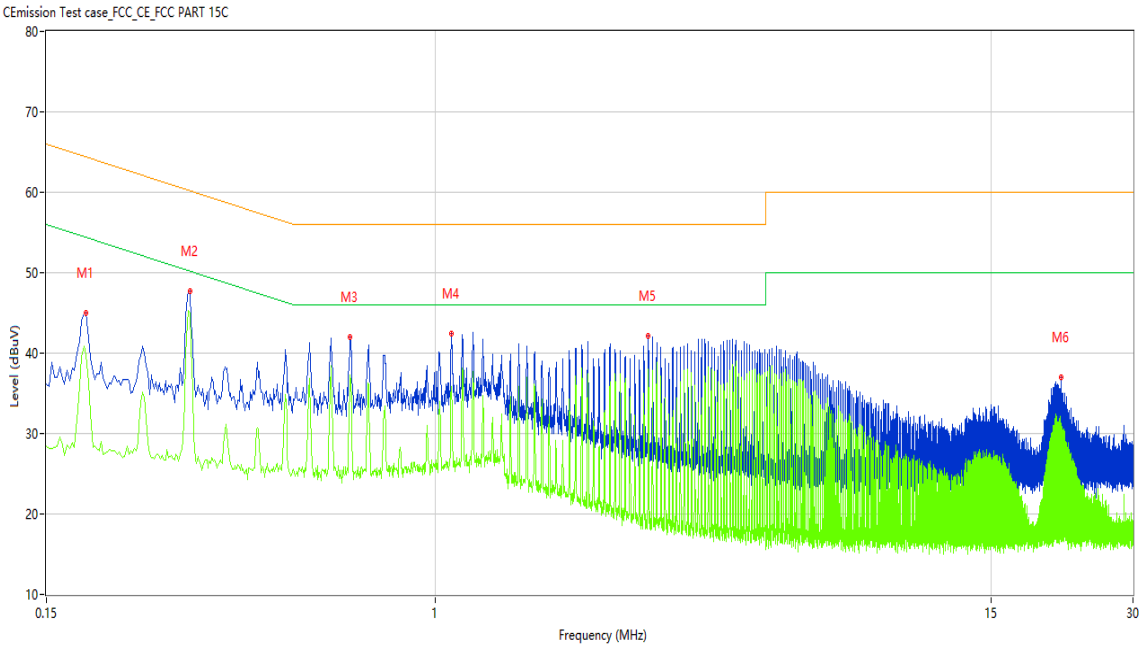
The all configurations were tested respectively, but only the worst configuration shown here.

Figure 34: Conducted Emission on AC Mains, L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.180	43.04	10.24	64.49	-21.45	Peak	L	Pass
1*	0.180	40.17	10.24	64.49	-24.32	QP	L	Pass
1**	0.180	38.44	10.24	54.49	-16.05	AV	L	Pass
2	0.300	46.09	10.21	60.24	-14.15	Peak	L	Pass
2*	0.300	44.44	10.21	60.24	-15.80	QP	L	Pass
2**	0.300	43.56	10.21	50.24	-6.68	AV	L	Pass
3	0.660	40.66	10.32	56.00	-15.34	Peak	L	Pass
3*	0.660	38.59	10.32	56.00	-17.41	QP	L	Pass
3**	0.660	38.35	10.32	46.00	-7.65	AV	L	Pass
4	1.500	40.41	10.18	56.00	-15.59	Peak	L	Pass
4*	1.500	37.87	10.18	56.00	-18.13	QP	L	Pass
4**	1.500	35.28	10.18	46.00	-10.72	AV	L	Pass
5	3.722	40.15	10.19	56.00	-15.85	Peak	L	Pass
5*	3.722	38.18	10.19	56.00	-17.82	QP	L	Pass
5**	3.722	34.38	10.19	46.00	-11.62	AV	L	Pass
6	20.952	37.56	10.98	60.00	-22.44	Peak	L	Pass
6*	20.952	35.20	10.98	60.00	-24.80	QP	L	Pass
6**	20.952	35.01	10.98	50.00	-14.99	AV	L	Pass

Figure 35: Conducted Emission on AC Mains, N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.182	44.02	10.24	64.39	-20.37	Peak	N	Pass
1*	0.182	41.36	10.24	64.39	-23.03	QP	N	Pass
1**	0.182	39.88	10.24	54.39	-14.51	AV	N	Pass
2	0.302	46.77	10.21	60.19	-13.42	Peak	N	Pass
2*	0.302	44.71	10.21	60.19	-15.48	QP	N	Pass
2**	0.302	44.98	10.21	50.19	-5.21	AV	N	Pass
3	0.660	40.32	10.32	56.00	-15.68	Peak	N	Pass
3*	0.660	38.08	10.32	56.00	-17.92	QP	N	Pass
3**	0.660	37.24	10.32	46.00	-8.76	AV	N	Pass
4	1.082	40.09	10.20	56.00	-15.91	Peak	N	Pass
4*	1.082	37.87	10.20	56.00	-18.13	QP	N	Pass
4**	1.082	35.62	10.20	46.00	-10.38	AV	N	Pass
5	2.822	41.57	10.16	56.00	-14.43	Peak	N	Pass
5*	2.822	40.04	10.16	56.00	-15.96	QP	N	Pass
5**	2.822	38.06	10.16	46.00	-7.94	AV	N	Pass
6	21.128	35.03	10.98	60.00	-24.97	Peak	N	Pass
6*	21.128	32.63	10.98	60.00	-27.37	QP	N	Pass
6**	21.128	31.34	10.98	50.00	-18.66	AV	N	Pass

5 Appendixes

5.1 Photographs of the Sample

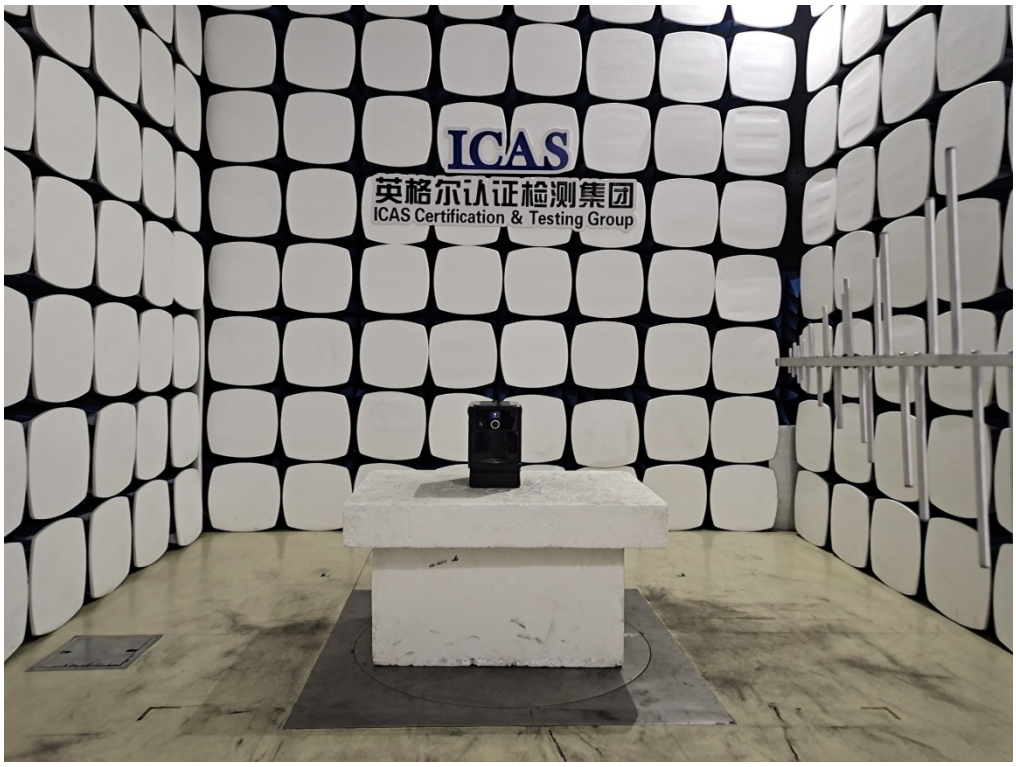
Front of the sample

Rear of the sample

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