

# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 41 of 52

## 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 : 52%

**Table 5: 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

# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 42 of 52

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

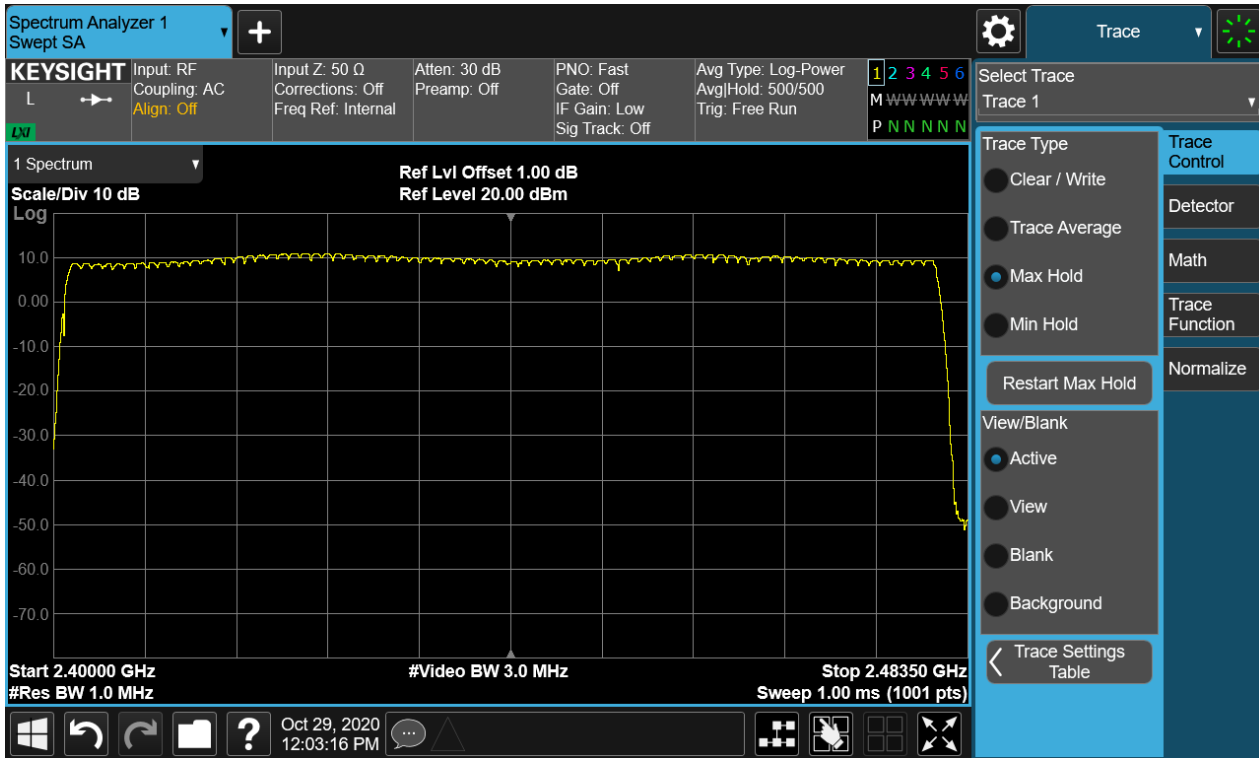
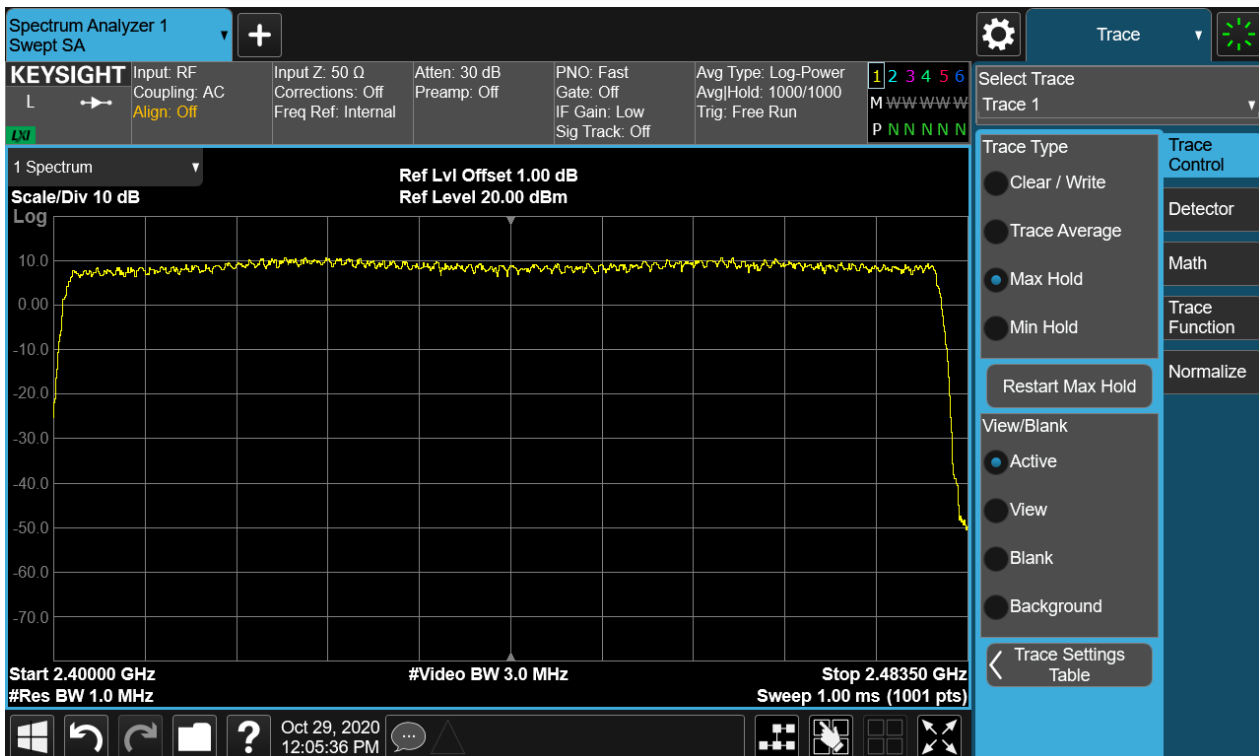


Figure 27: Number of Hopping Frequency, Hopping Mode, 8-DPSK



# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 43 of 52

## 4.1.9 Time of Occupancy

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 : Middle  
Operation Mode : A.1.a  
Ambient temperature : 25°C  
Relative humidity : 52%

Table 6: Time of Occupancy

Mode	Packet Type	Pulse Time (ms)	Total of Dwell (ms)	Limit (s)
GFSK	DH1	0.4067	130.144	0.4
	DH3	1.6800	268.800	0.4
	DH5	2.9330	312.853	0.4
8-DPSK	DH1	0.4133	132.256	0.4
	DH3	1.6780	268.480	0.4
	DH5	2.9330	312.853	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.: SHE20090007-02HE

Date: 2021-04-09

Page 44 of 52

Figure 28: Time of Occupancy, 2441MHz, GFSK DH1

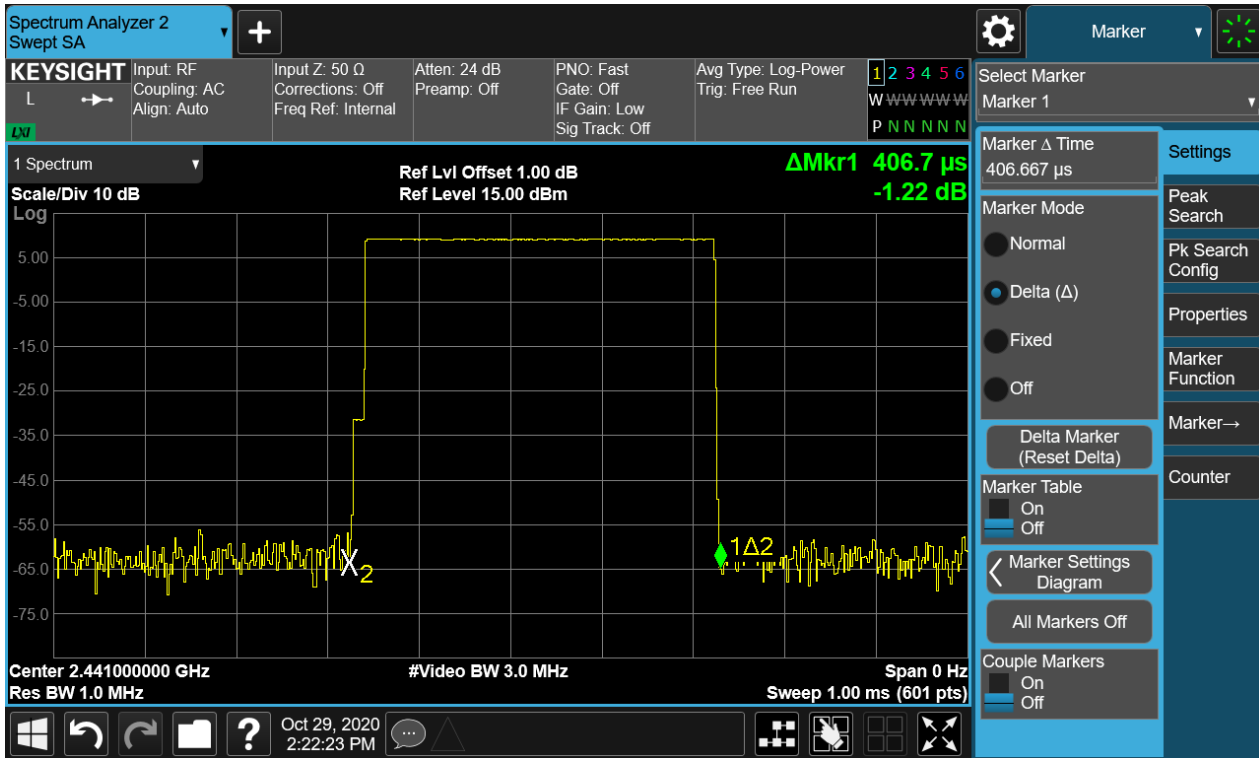
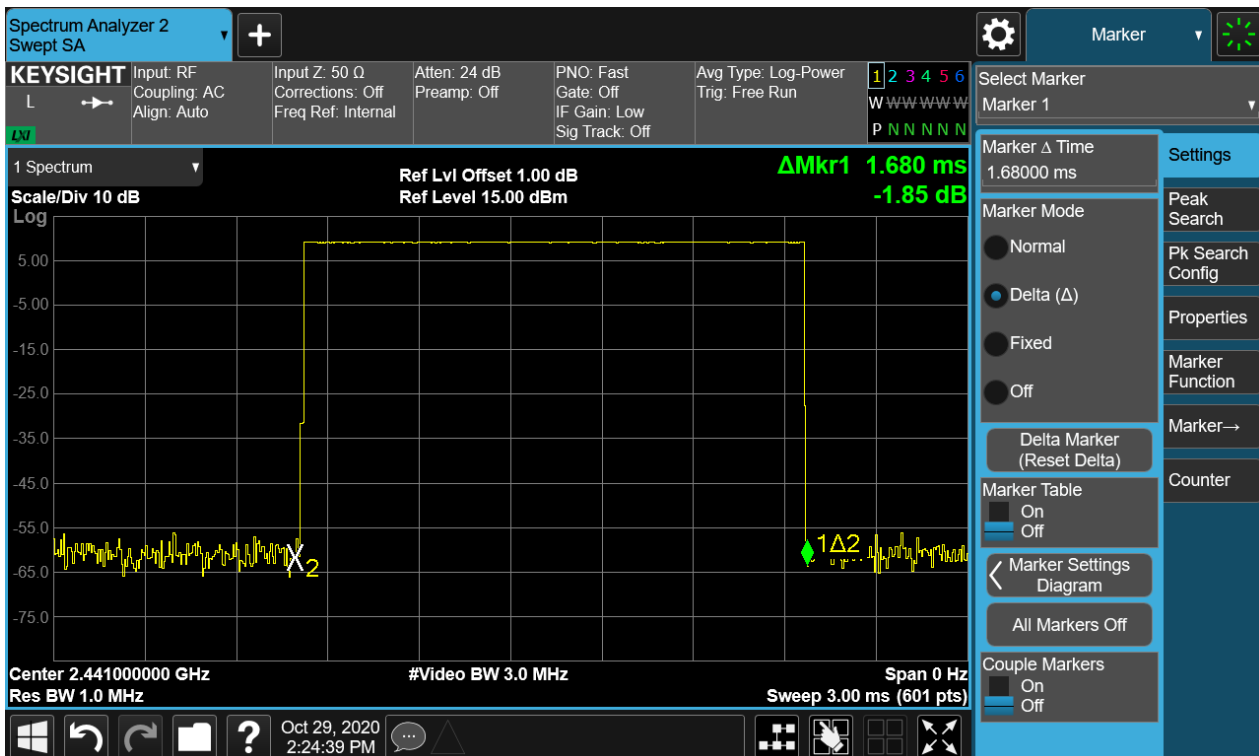


Figure 29: Time of Occupancy, 2441MHz, GFSK DH3



# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 45 of 52

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

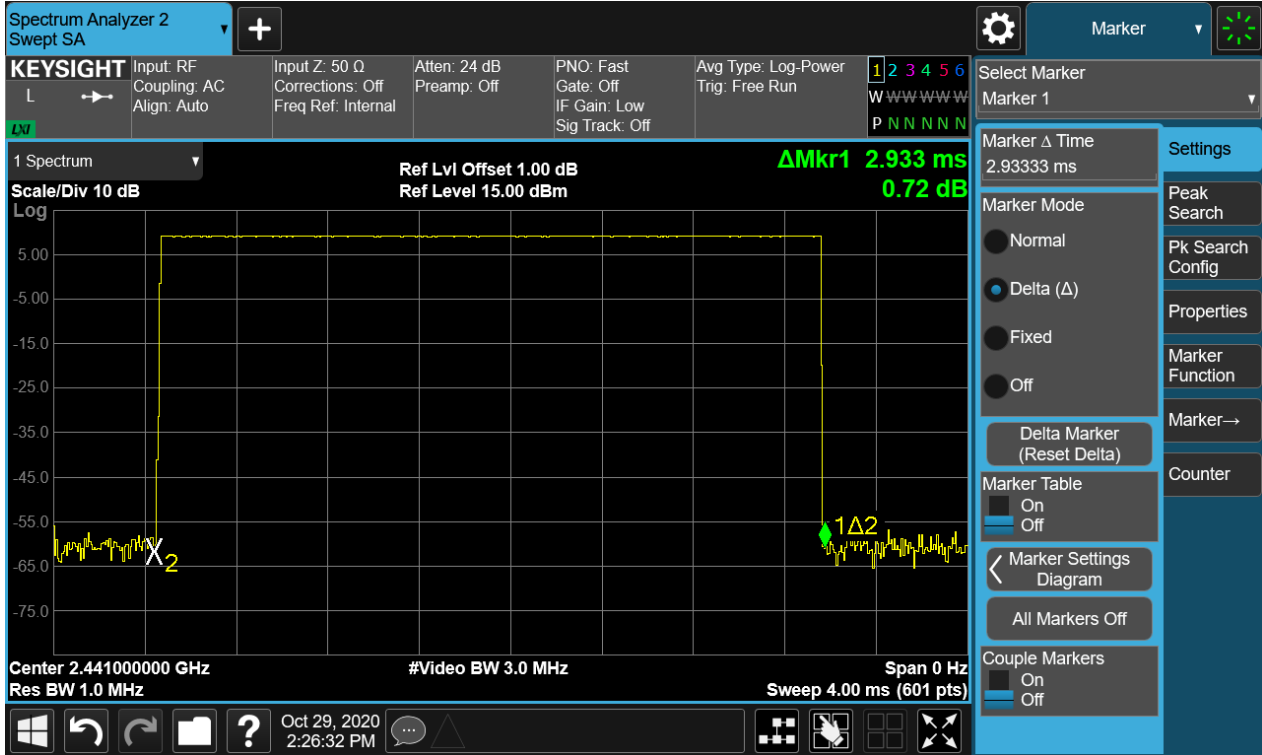
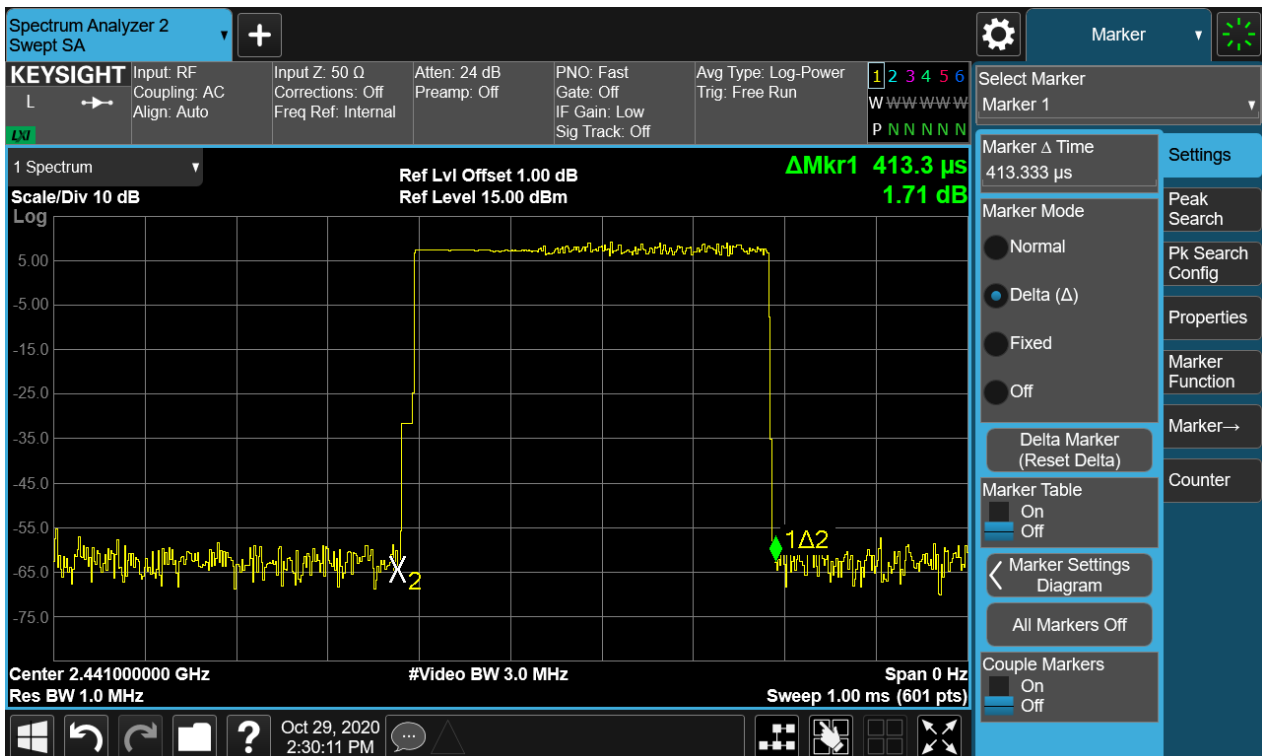


Figure 31: Time of Occupancy, 2441MHz, 8-DPSK DH1



# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 46 of 52

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

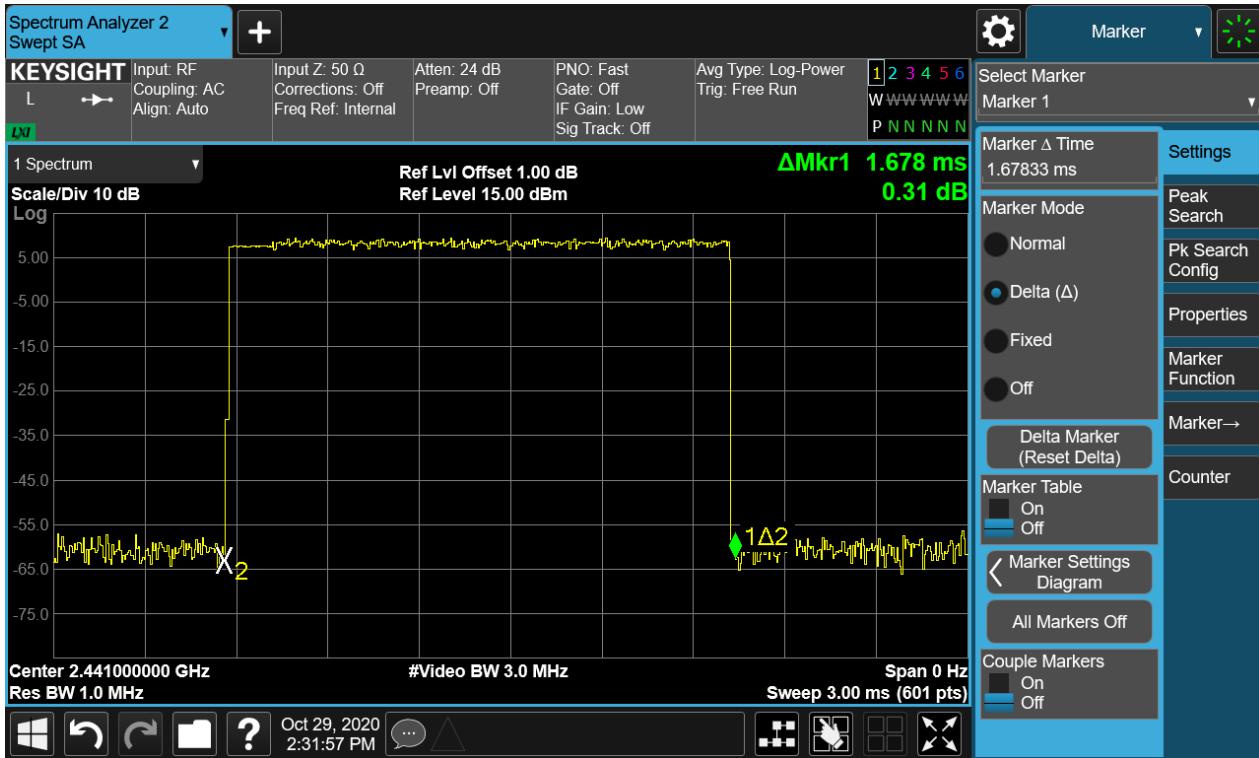
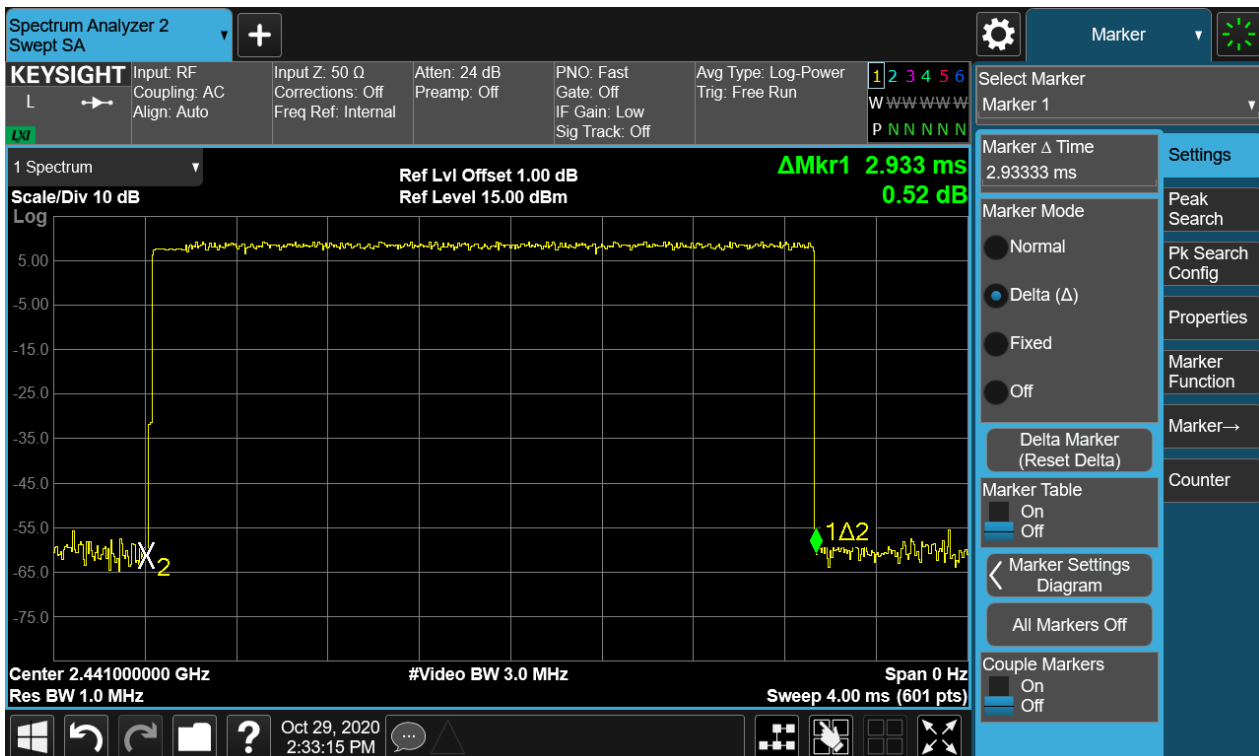


Figure 33: Time of Occupancy, 2441MHz, 8-DPSK DH5



# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 47 of 52

## 4.2 Mains Emissions

### 4.2.1 Conducted Emission on AC Mains

RESULT:

**PASS**

Test standard : FCC Part 15.207(a)  
RSS-Gen 8.8  
Requirement : ANSI C63.10-2013  
Kind of test site : Shielded room

#### Test setup

Input Voltage : AC 120V, 60Hz; AC 240V, 50Hz  
Operation Mode : A.1.a  
Earthing : Not Connected  
Ambient temperature : 25°C  
Relative humidity : 52%

For details refer to following test plot.

# TEST REPORT

Report No.: SHE20090007-02HE

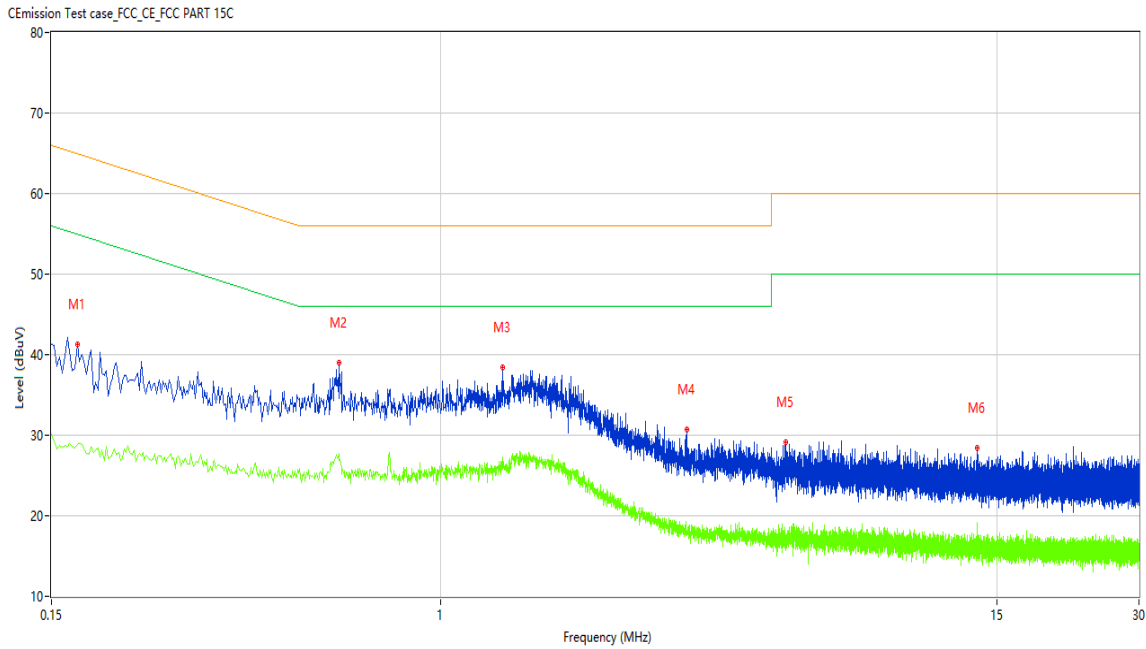
Date: 2021-04-09

Page 48 of 52

**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	0.170	40.19	9.67	64.96	-24.77	Peak	L	Pass
1*	0.170	29.88	9.67	64.96	-35.08	QP	L	Pass
1**	0.170	28.86	9.67	54.96	-26.10	AV	L	Pass
2	0.608	37.97	9.76	56.00	-18.03	Peak	L	Pass
2*	0.608	28.80	9.76	56.00	-27.20	QP	L	Pass
2**	0.608	27.72	9.76	46.00	-18.28	AV	L	Pass
3	1.350	29.55	9.67	56.00	-26.45	Peak	L	Pass
3*	1.350	22.01	9.67	56.00	-33.99	QP	L	Pass
3**	1.350	27.26	9.67	46.00	-18.74	AV	L	Pass
4	3.310	22.82	9.69	56.00	-33.18	Peak	L	Pass
4*	3.310	13.43	9.69	56.00	-42.57	QP	L	Pass
4**	3.310	18.18	9.69	46.00	-27.82	AV	L	Pass
5	5.366	22.72	9.70	60.00	-37.28	Peak	L	Pass
5*	5.366	14.64	9.70	60.00	-45.36	QP	L	Pass
5**	5.366	17.41	9.70	50.00	-32.59	AV	L	Pass
6	13.628	18.76	9.58	60.00	-41.24	Peak	L	Pass
6*	13.628	11.38	9.58	60.00	-48.62	QP	L	Pass
6**	13.628	19.21	9.58	50.00	-30.79	AV	L	Pass



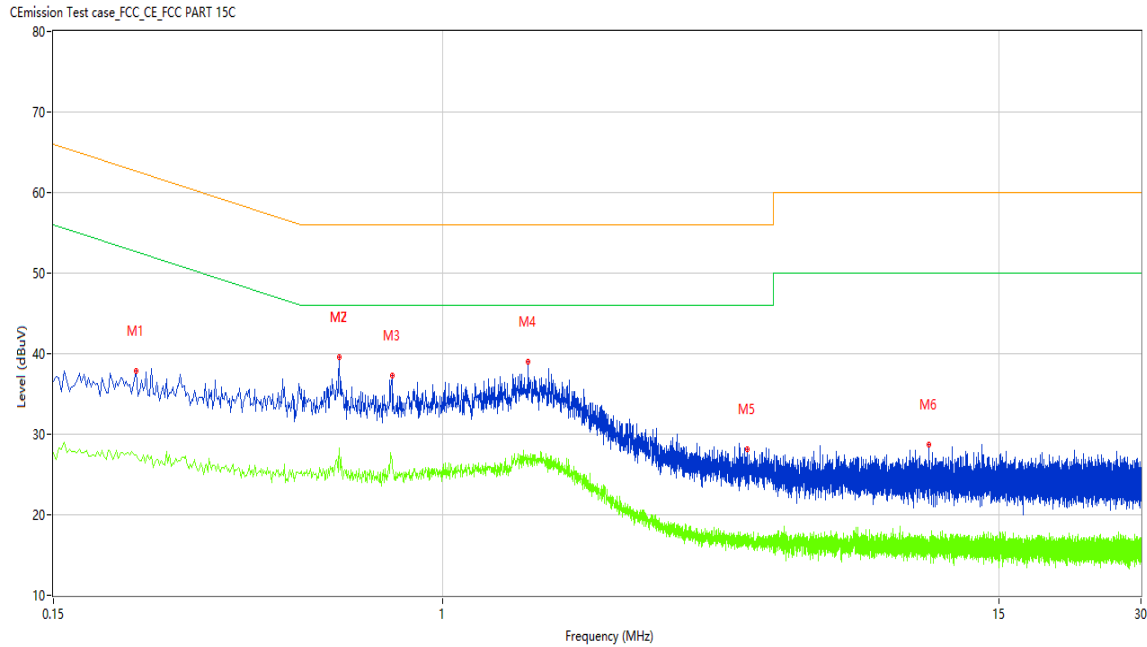
# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 49 of 52

**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	0.224	35.76	9.68	62.67	-26.91	Peak	N	Pass
1*	0.224	25.87	9.68	62.67	-36.80	QP	N	Pass
1**	0.224	27.42	9.68	52.67	-25.25	AV	N	Pass
2	0.604	36.81	9.76	56.00	-19.19	Peak	N	Pass
2*	0.604	26.40	9.76	56.00	-29.60	QP	N	Pass
2**	0.604	28.27	9.76	46.00	-17.73	AV	N	Pass
3	0.780	29.94	9.75	56.00	-26.06	Peak	N	Pass
3*	0.780	22.98	9.75	56.00	-33.02	QP	N	Pass
3**	0.780	26.93	9.75	46.00	-19.07	AV	N	Pass
4	1.516	29.78	9.67	56.00	-26.22	Peak	N	Pass
4*	1.516	22.79	9.67	56.00	-33.21	QP	N	Pass
4**	1.516	26.98	9.67	46.00	-19.02	AV	N	Pass
5	4.412	25.07	9.69	56.00	-30.93	Peak	N	Pass
5*	4.412	14.82	9.69	56.00	-41.18	QP	N	Pass
5**	4.412	16.66	9.69	46.00	-29.34	AV	N	Pass
6	10.678	19.42	9.65	60.00	-40.58	Peak	N	Pass
6*	10.678	11.41	9.65	60.00	-48.59	QP	N	Pass
6**	10.678	16.28	9.65	50.00	-33.72	AV	N	Pass
7	0.604	39.53	9.76	56.00	-16.47	Peak	N	Pass
7**	0.604	28.27	9.76	46.00	-17.73	AV	N	Pass

# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 50 of 52

## 5 Appendixes

### 5.1 Photographs of the Sample



Front of the sample



Rear of the sample

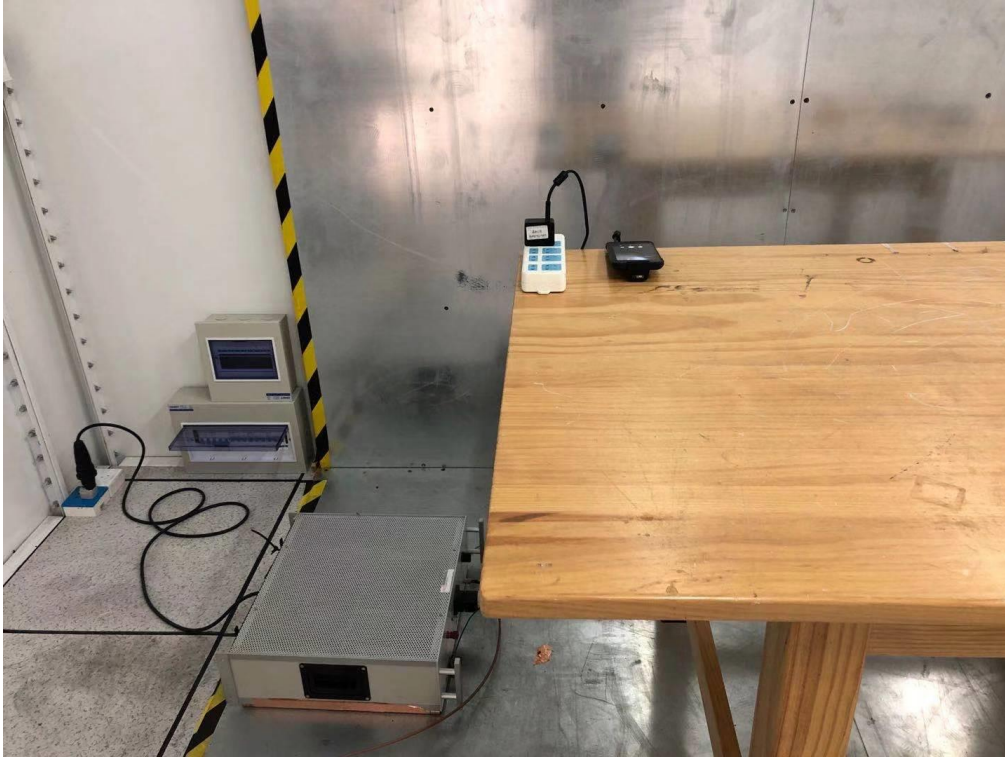
# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 51 of 52

## 5.2 Set-up for Conducted Emissions



## 5.3 Set-up for Conducted RF test at Antenna Port





# TEST REPORT

Report No.: SHE20090007-02HE

Date: 2021-04-09

Page 52 of 52

## 5.4 Set-up for Spurious Emissions below 1GHz



## 5.5 Set-up for Spurious Emissions above 1GHz



\*\*\*End of the report\*\*\*