

**8DPSK Ch78 3GHz-18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14309.8	42.46	20.7	21.76	H
14687.5	43.32	21	22.32	V
15457.6	43.94	22.7	21.24	H
16295.0	46.52	25.7	20.82	V
16912.1	47.82	27.4	20.42	H
17516.0	47.79	27.6	20.19	H

**Secondary supply**
**For GFSK**

Channel	Frequency Range	Test Results	Conclusion
Ch78 2480MHz	30MH~1GHz	Fig.55	P
	1GHz~3GHz	Fig.56	P
	3GHz~18GHz	Fig.57	P
Power(low )	2.31GHz~2.5GHz	Fig.58	P
Power(high)	2.31GHz~2.5GHz	Fig.59	P

**GFSK Ch78 30MHz-1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.4	19.95	-22	41.95	V
35.0	18.96	-21.9	40.86	V
35.3	20.56	-21.9	42.46	V
40.7	27.45	-20.6	48.05	V
44.2	24.63	-20.3	44.93	V
93.0	26.18	-24.7	50.88	H

**GFSK Ch78 1GHz-3GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
----------------	----------------	-----------	--------------	----------

2627.3	54.8	7.5	47.3	V
2655.3	56.11	7.7	48.41	H
2708.4	54.85	7.9	46.95	V
2759.4	54.51	7.7	46.81	H
2820.2	54.89	8	46.89	H
2887.6	55.67	8.7	46.97	V

**GFSK Ch78 1GHz-3GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2627.3	42.13	7.5	34.63	V
2655.3	42.6	7.7	34.9	H
2708.4	42.53	7.9	34.63	V
2759.4	42.45	7.7	34.75	H
2820.2	42.74	8	34.74	H
2887.6	43.47	8.7	34.77	V

**GFSK Ch78 3GHz-18GHz (Peak)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
13414.5	52.28	16.6	35.68	V
14315.7	54.26	20.5	33.76	V
15365.0	55.28	22.3	32.98	V
15985.8	59.03	25.2	33.83	H
16917.6	60.42	27.4	33.02	V
17831.8	59.85	28.1	31.75	H

**GFSK Ch78 3GHz-18GHz (Average)**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14315.7	42.21	20.5	21.71	V
15365.0	43.37	22.3	21.07	V

15985.8	47.08	25.2	21.88	H
16917.6	47.89	27.4	20.49	V
17831.8	47.87	28.1	19.77	H

**Note: Only the worst case is written in the report.**

**Conclusion: PASS**

**Test graphs as below:**

**Main supply**

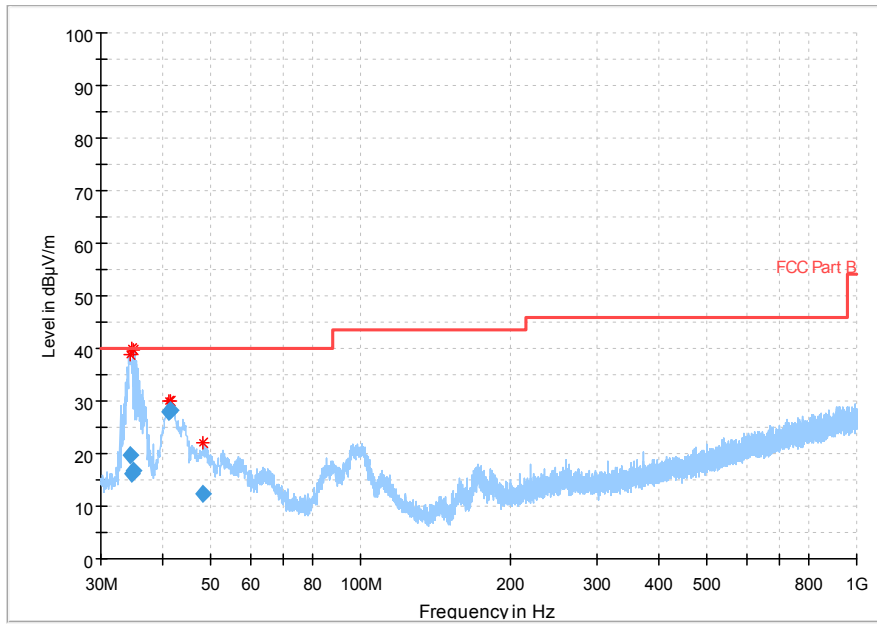


Fig.40 Radiated emission: GFSK, Ch78, 30MHz~1GHz

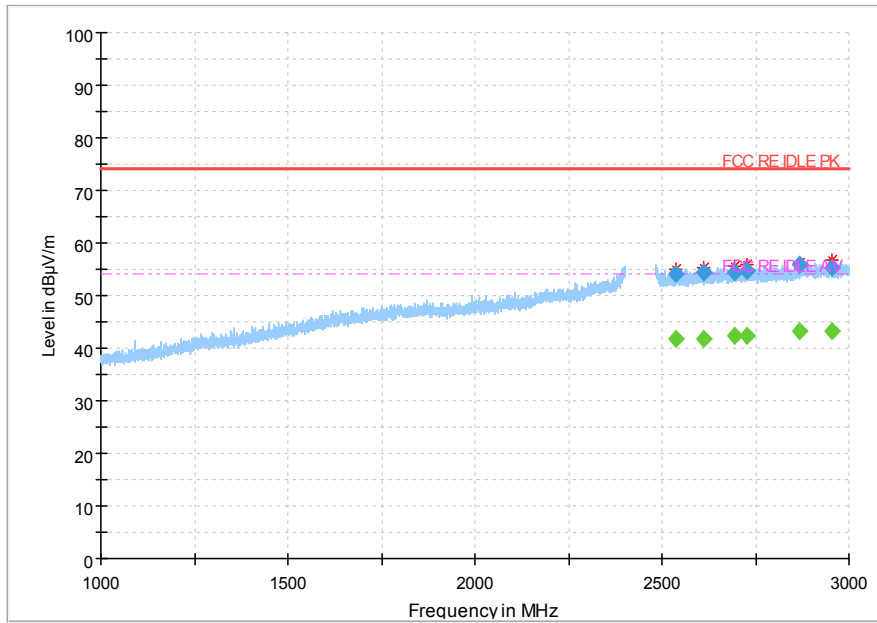


Fig.41 Radiated emission: GFSK, Ch78, 1GHz~3GHz

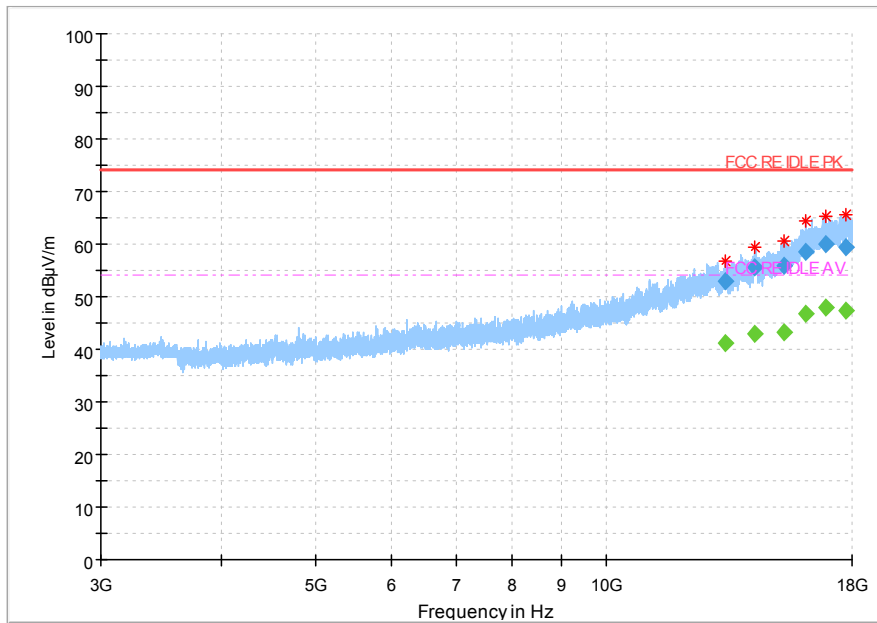
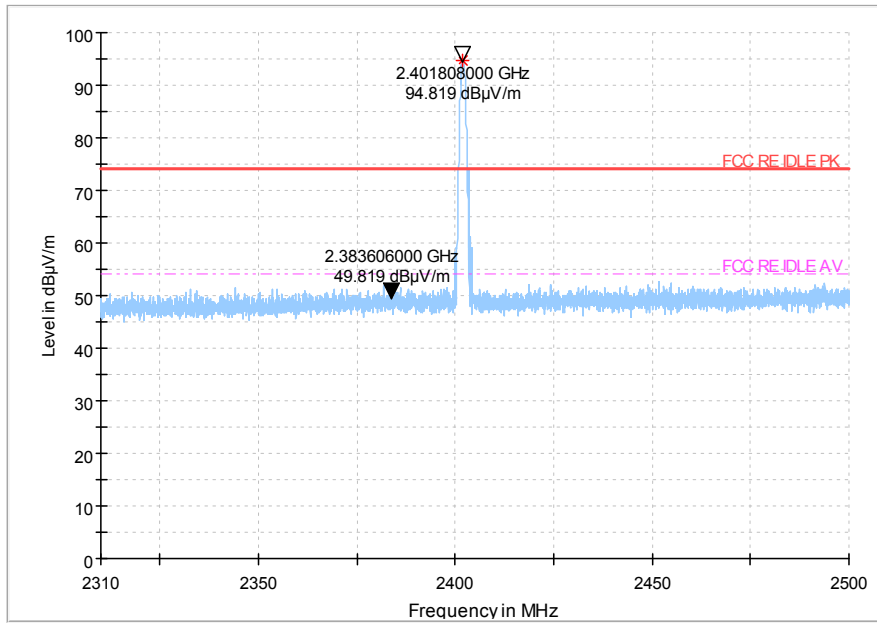
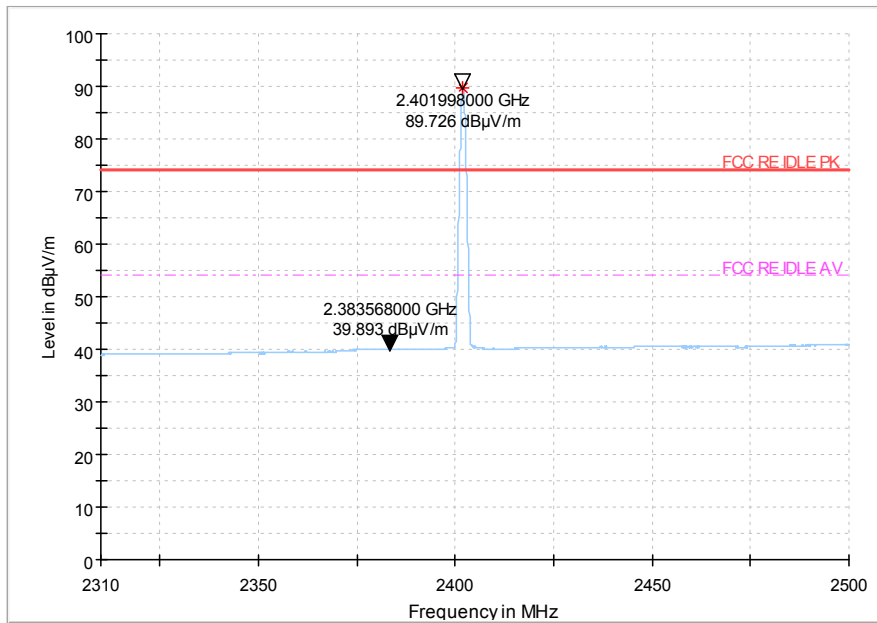


Fig.42 Radiated emission: GFSK, Ch78, 3GHz~18GHz

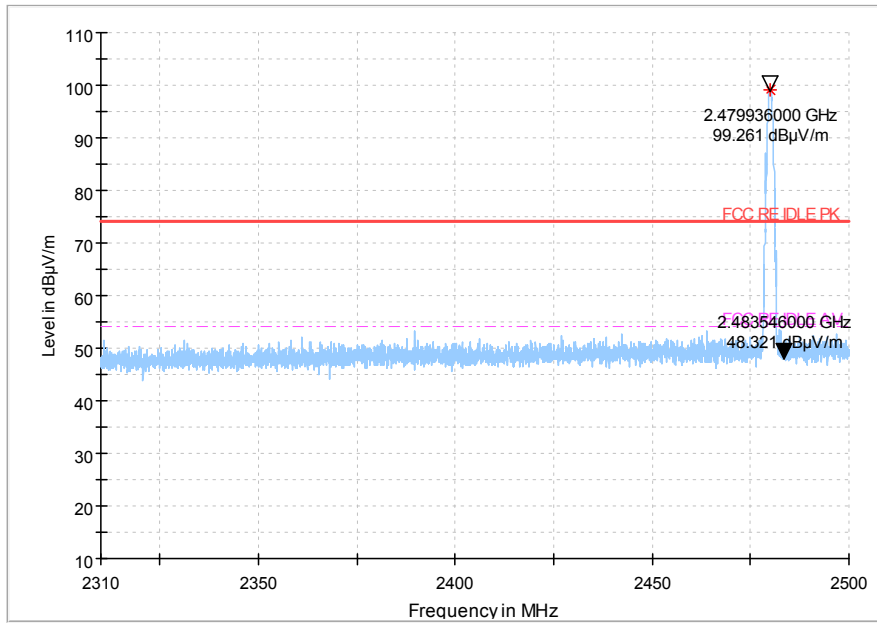


Peak

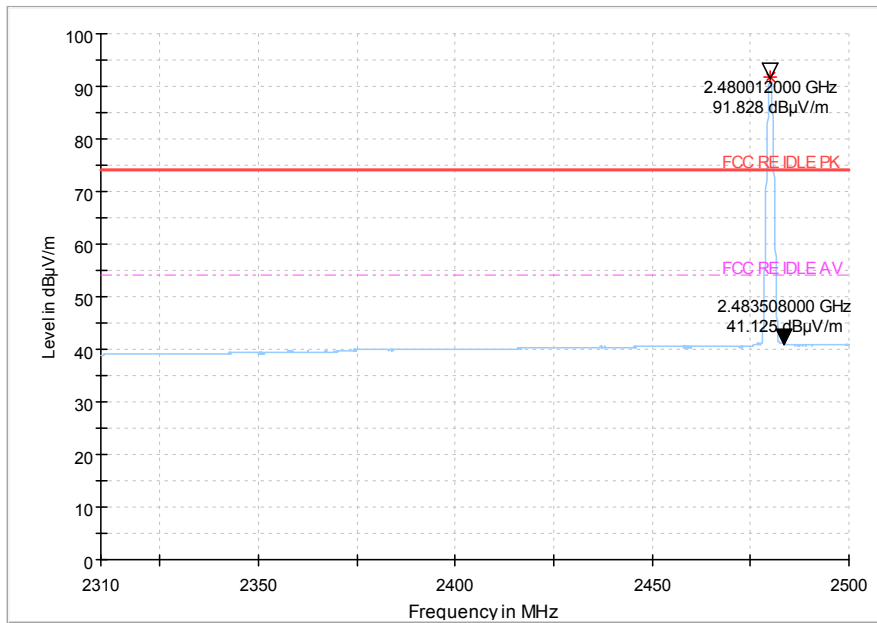


Average

Fig.43 Radiated emission (Power): GFSK, low channel



Peak



Average

Fig.44 Radiated emission (Power): GFSK, high channel

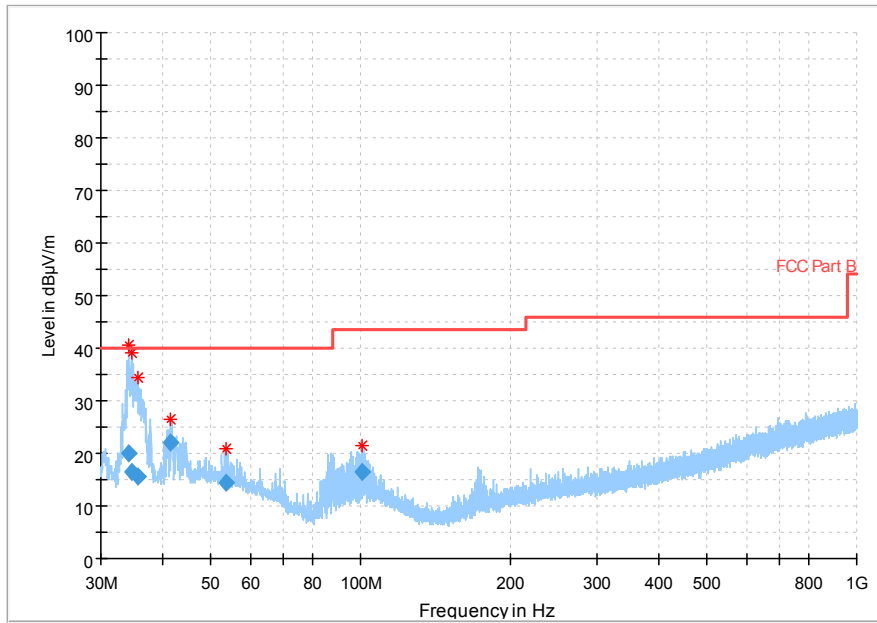


Fig.45 Radiated emission:  $\pi/4$  DQPSK, Ch78, 30MHz~1GHz

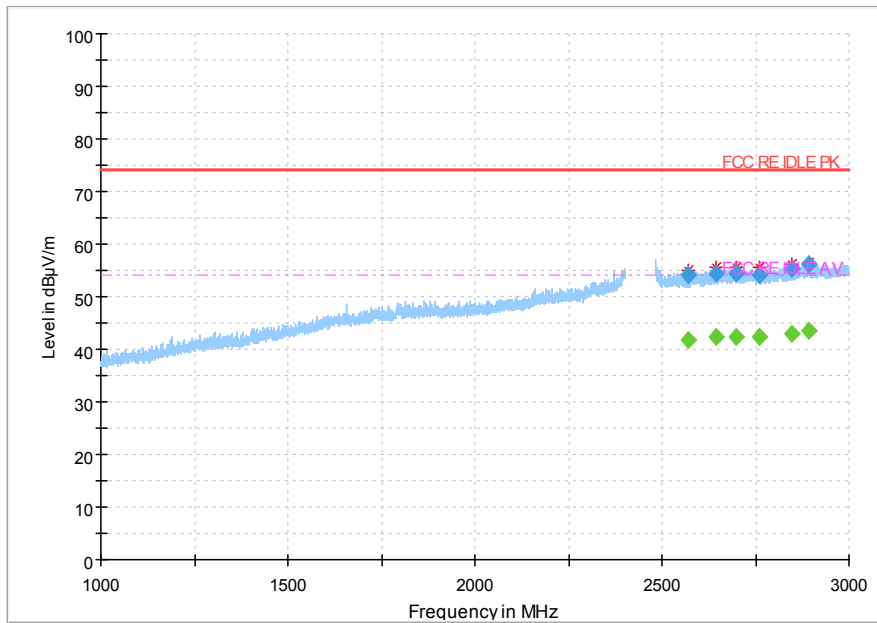


Fig.46 Radiated emission:  $\pi/4$  DQPSK, Ch78, 1GHz~3GHz

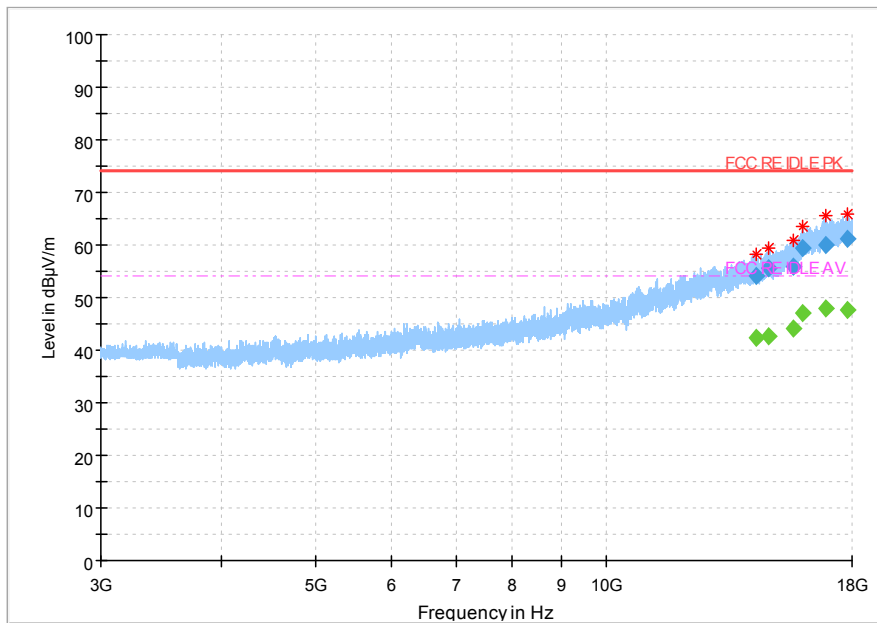
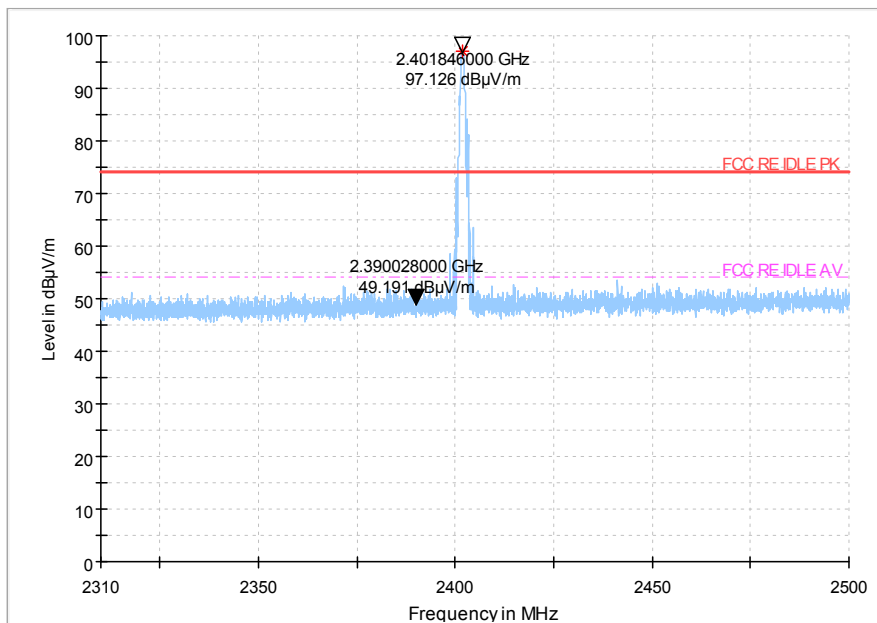
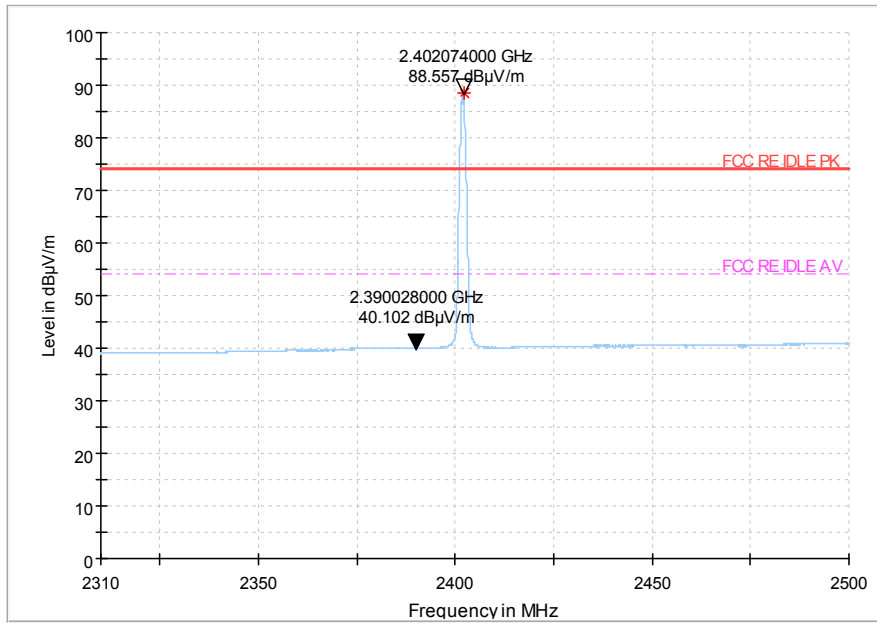


Fig.47 Radiated emission:  $\pi/4$  DQPSK, Ch78, 3GHz~18GHz



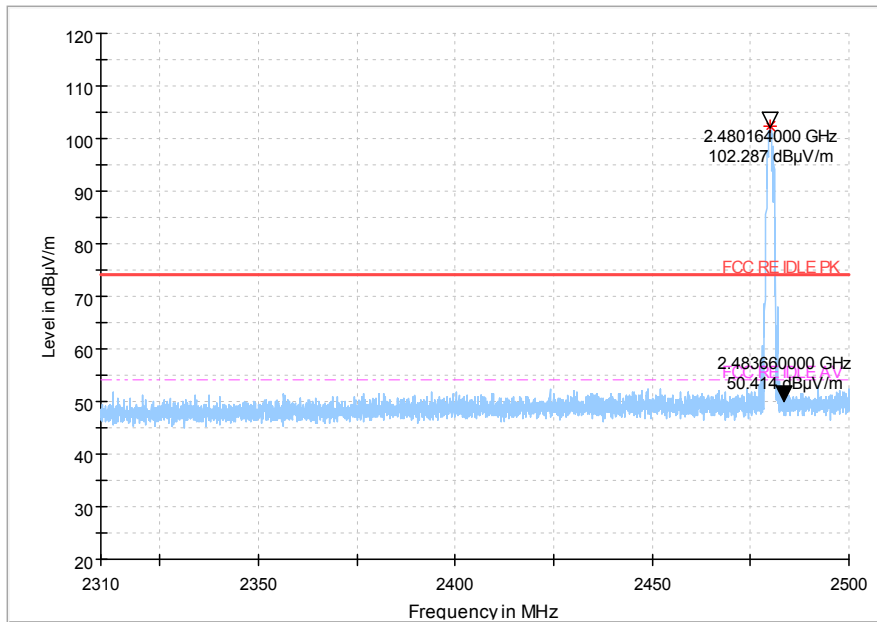
Peak



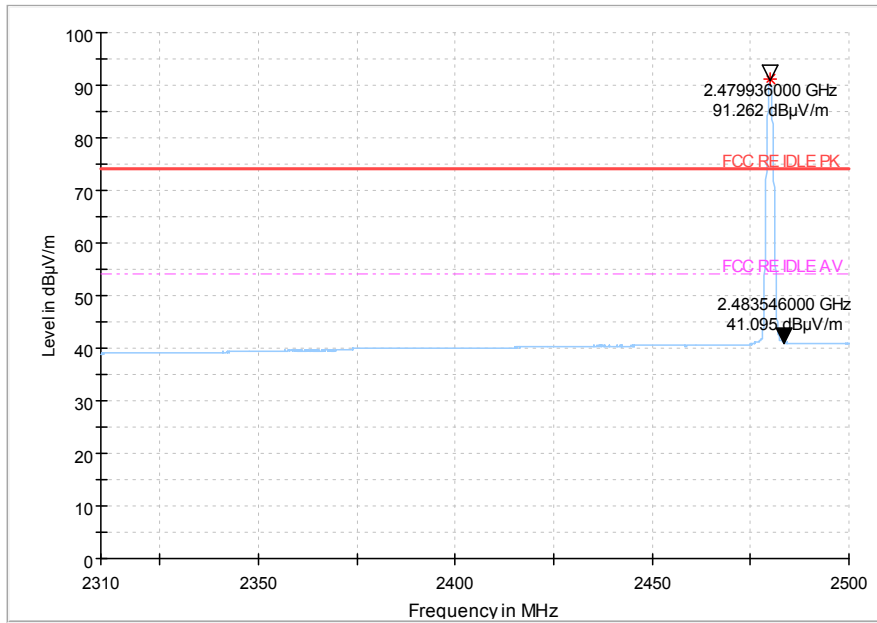


Average

Fig.48 Radiated emission (Power):  $\pi/4$  DQPSK, low channel



Peak



Average

Fig.49 Radiated emission (Power):  $\pi/4$  DQPSK, high channel

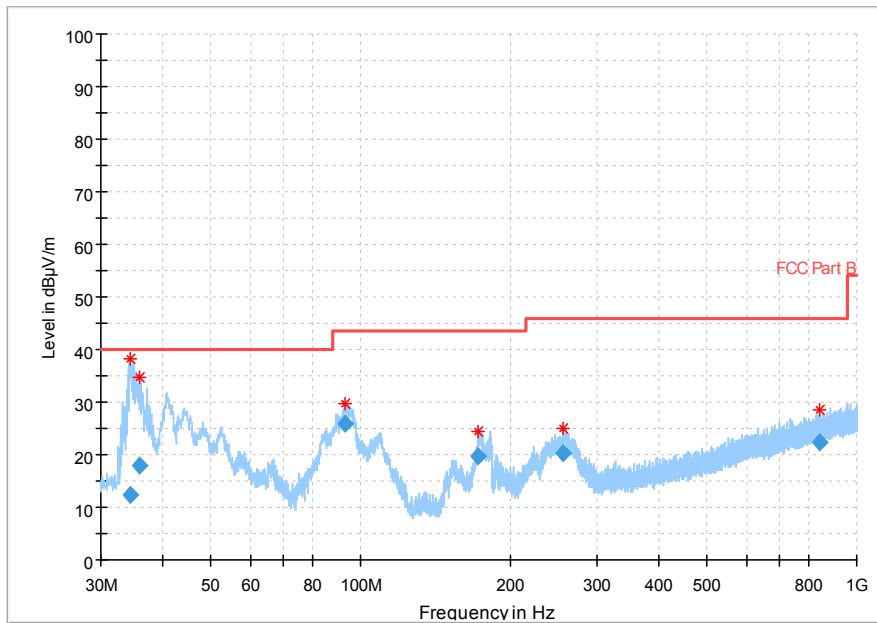


Fig.50 Radiated emission: 8DPSK, Ch78, 30MHz~1GHz

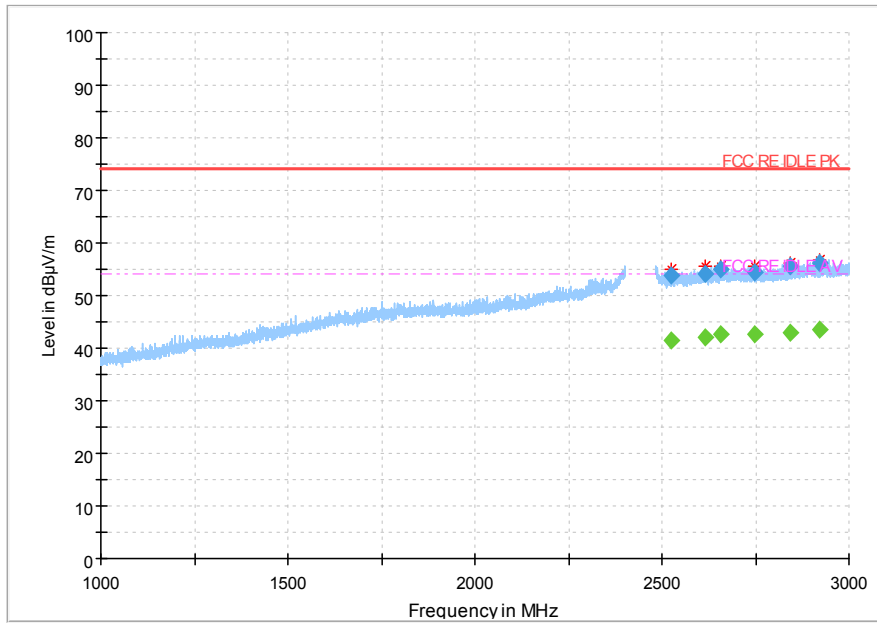


Fig.51 Radiated emission: 8DPSK, Ch78, 1GHz~3GHz

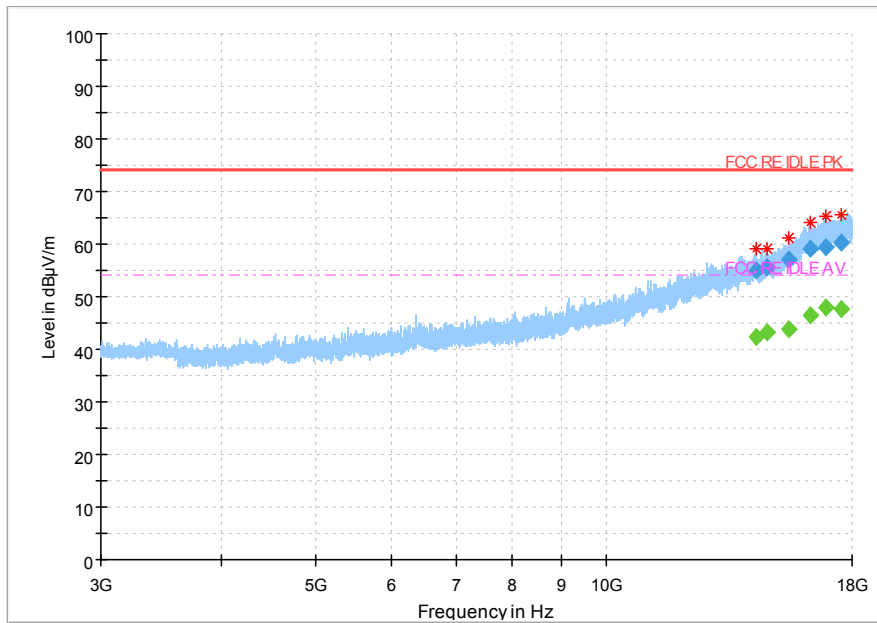
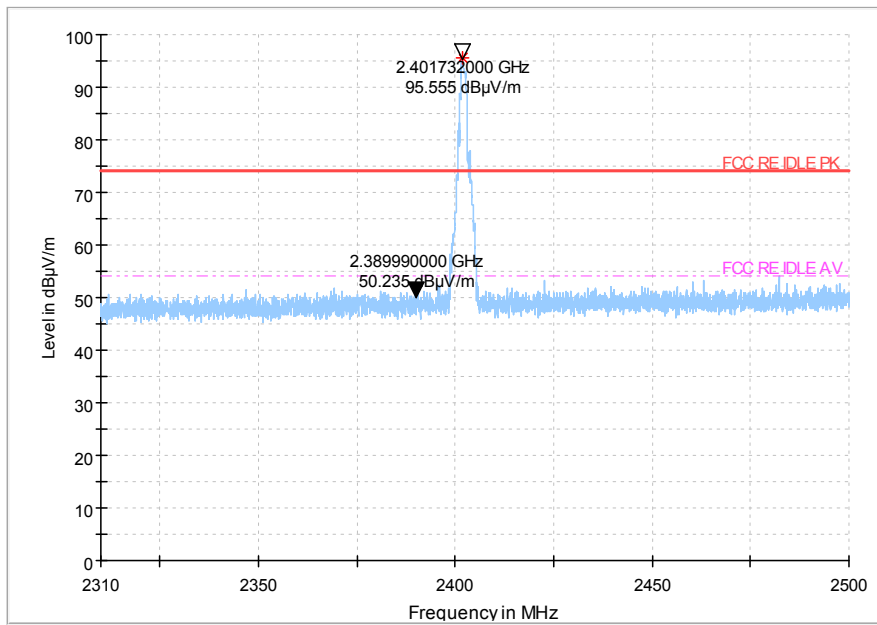
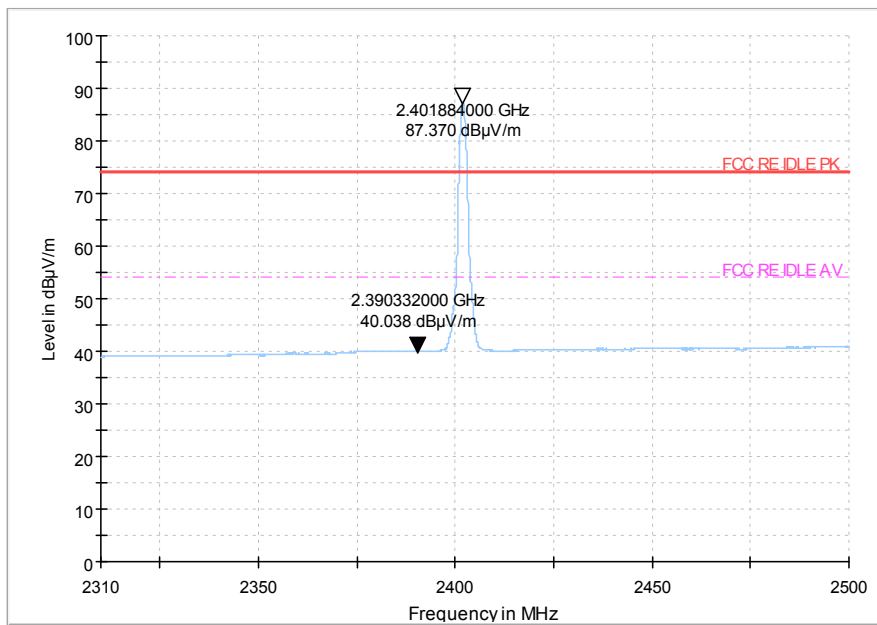


Fig.52 Radiated emission: 8DPSK, Ch78, 3GHz~18GHz

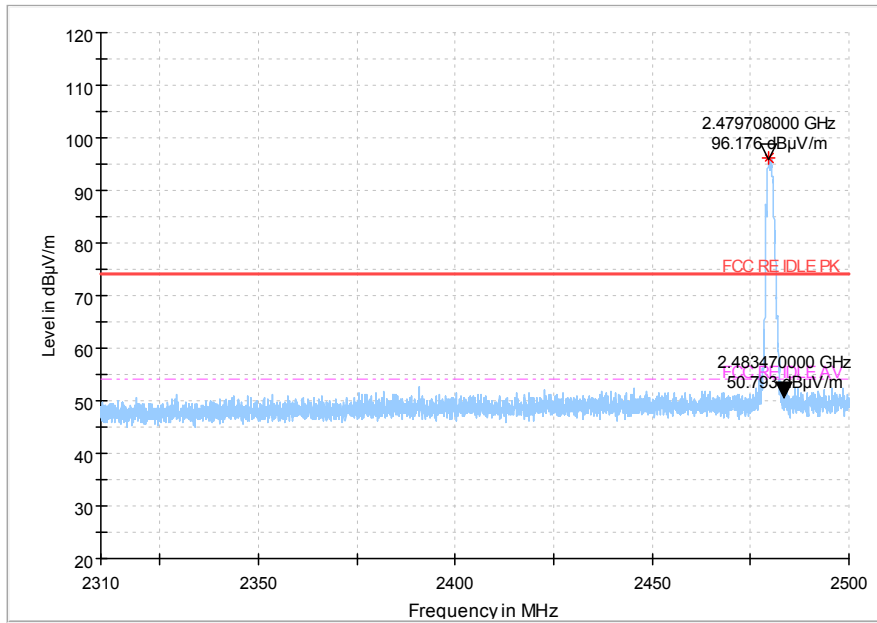


Peak

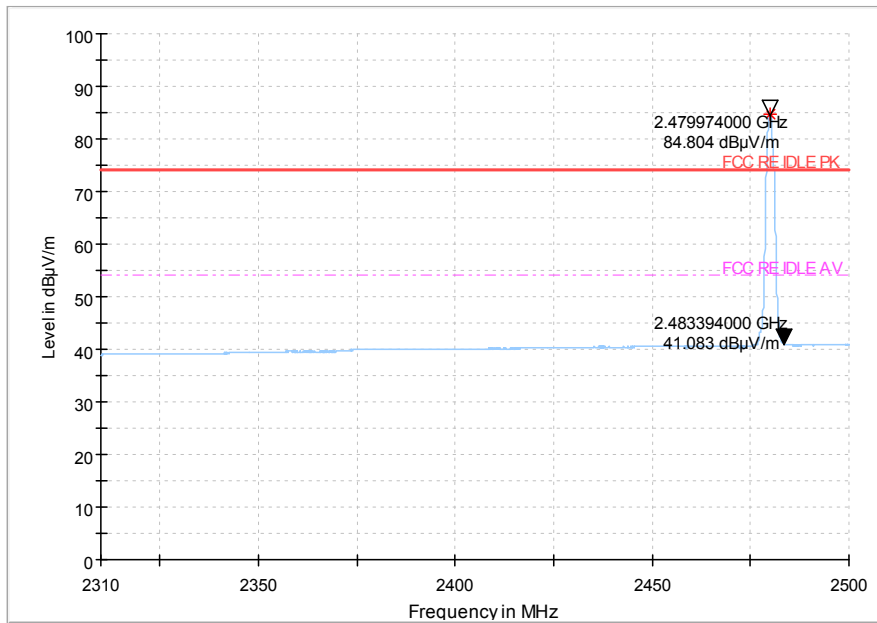


Average

Fig.53 Radiated emission (Power): 8DPSK, low channel



Peak



Average

Fig.54 Radiated emission (Power): 8DPSK, high channel

**Secondary supply**

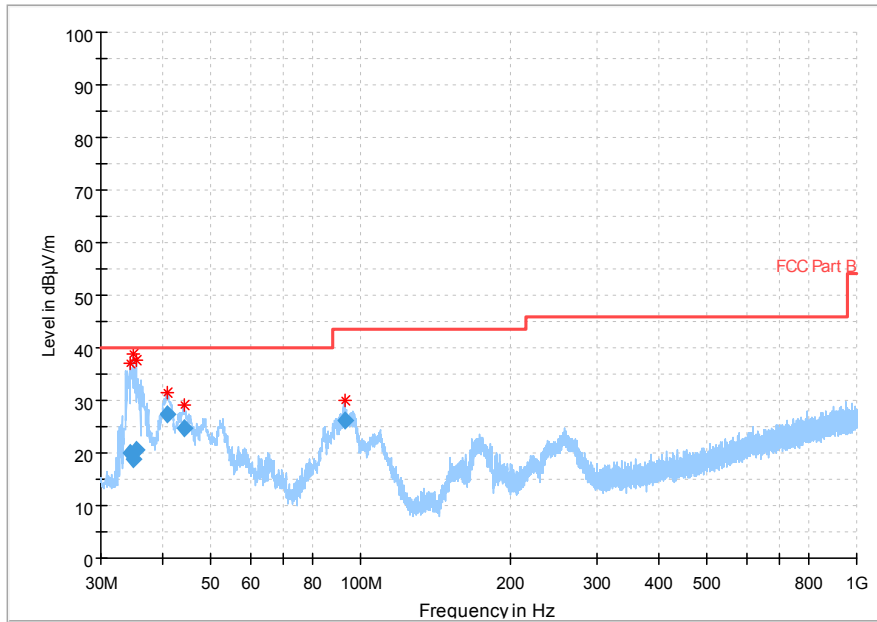


Fig.55 Radiated emission: GFSK, Ch78, 30MHz~1GHz

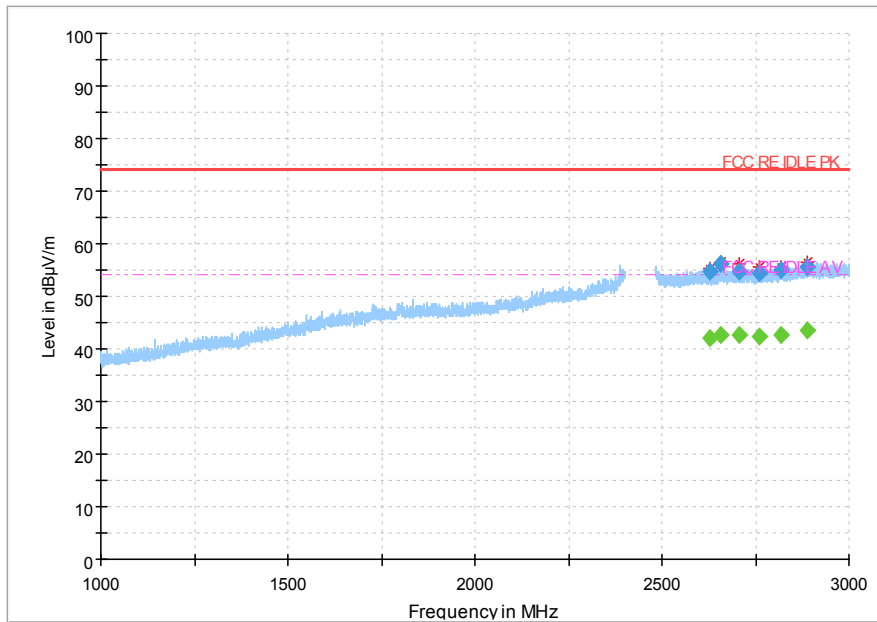


Fig.56 Radiated emission: GFSK, Ch78, 1GHz~3GHz

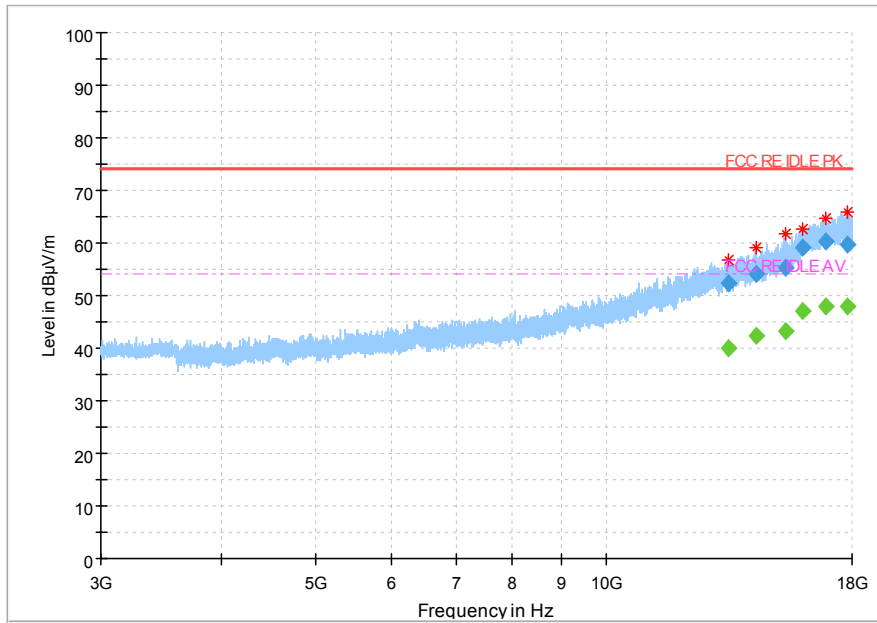
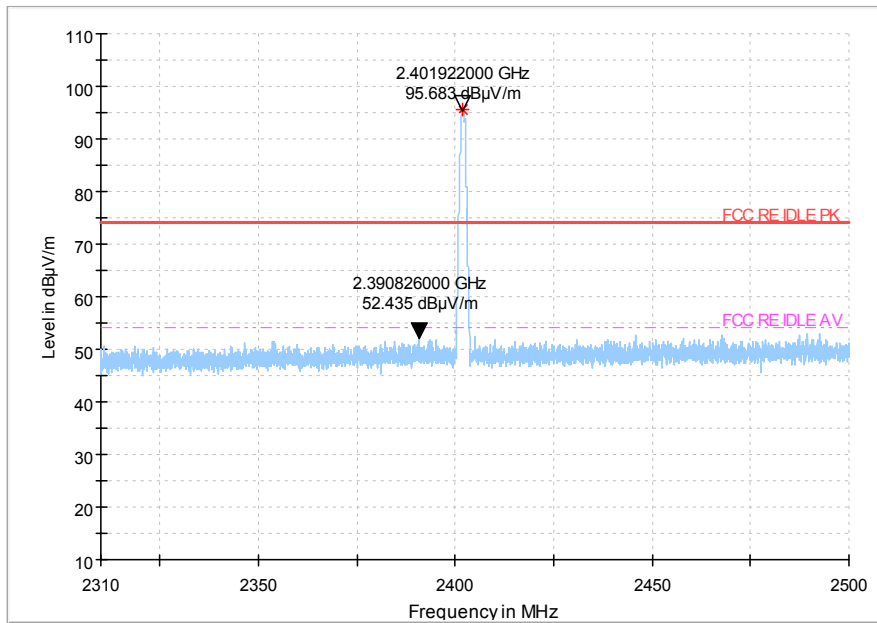
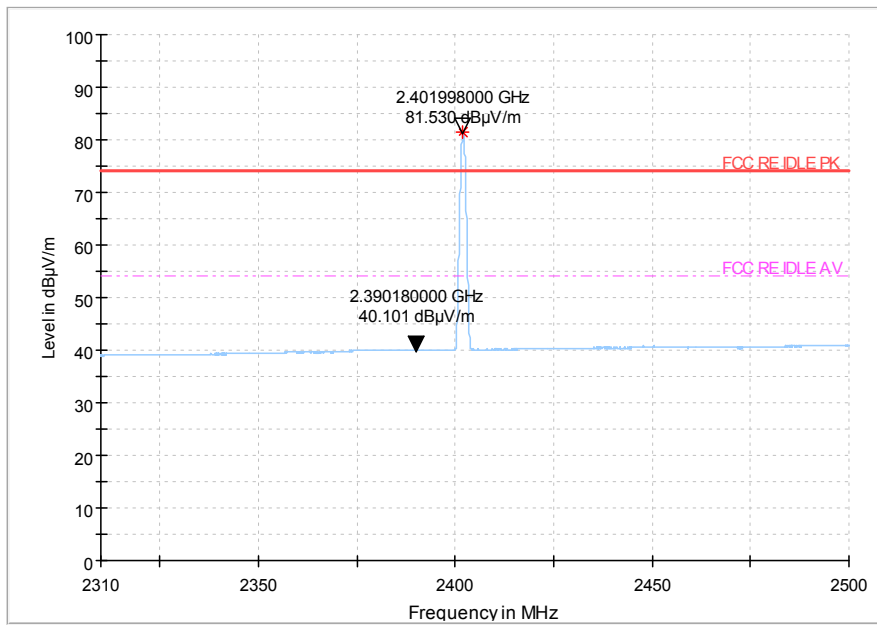


Fig.57 Radiated emission: GFSK, Ch78, 3GHz~18GHz

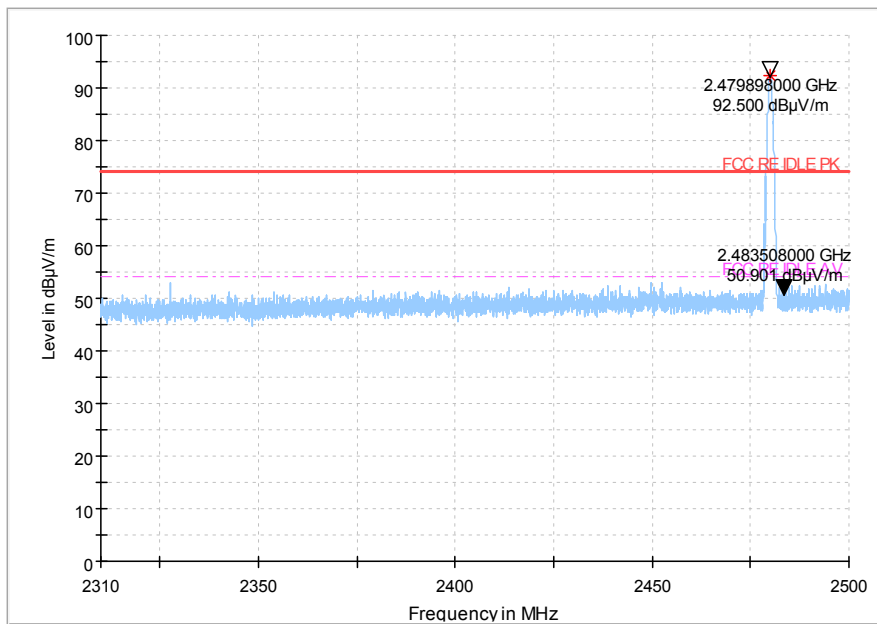


Peak



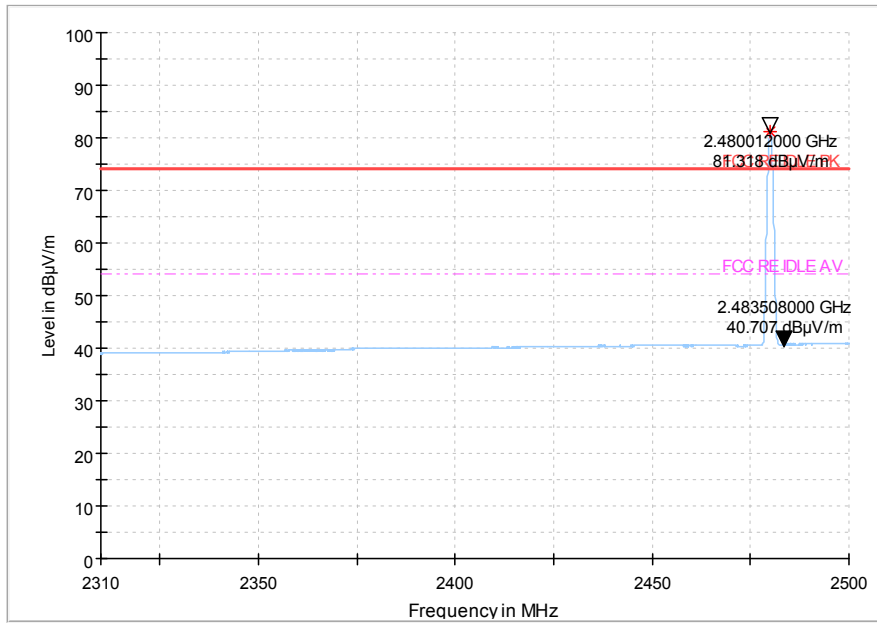
Average

Fig.58 Radiated emission (Power): GFSK, low channel



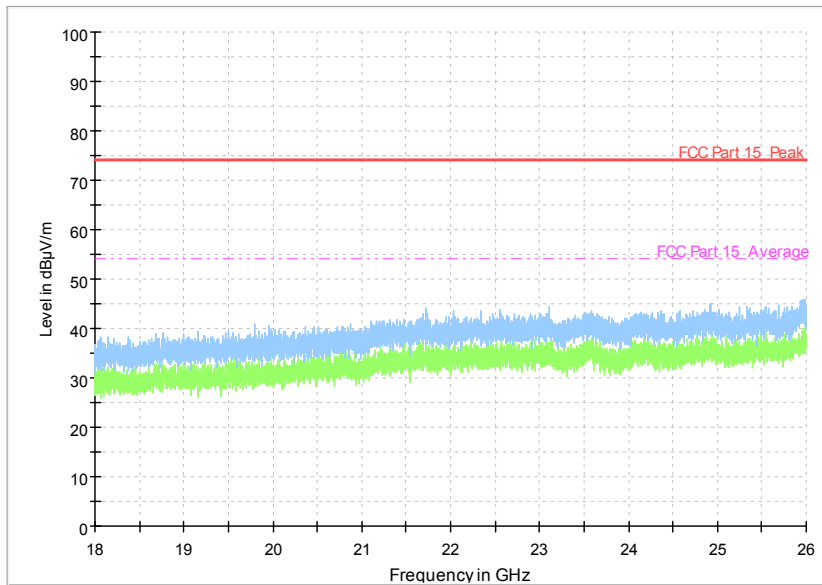
Peak





Average

Fig.59 Radiated emission (Power): GFSK, high channel



ALL Channel 18GHz~26GHz

### 6.5. Time Of Occupancy (Dwell Time)

#### 6.5.1 Measurement Limit:

Standard	Limit (ms)
FCC 47CFR Part 15.247 (a) (1) (iii)	< 400

#### 6.5.2 Test procedures

The measurement is according to ANSI C63.10 clause 7.8.4

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 8.
4. Span: Zero span, centered on a hopping channel.
5. RBW shall be  $\leq$  channel spacing and where possible RBW should be set  $\gg 1 / T$ , where T is the expected dwell time per channel.
6. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
7. Detector function: Peak.
8. Trace: Max hold.
9. Use the marker-delta function, and record it.

**Note:** For AFH mode, Test Period = 0.4 (second/ channel) x 20 Channel = 8 sec,  
 For FHSS mode, Test Period = 0.4 (second/ channel) x 79 Channel = 31.6 sec,  
 So the Time of Occupancy (Dwell Time) of AFH mode = Time of Occupancy (Dwell Time) of FHSS mode / 79 Channel x 20 Channel

Modulation type	Frequency(MHz)	Dwell Time (ms)	Limit(ms)	Conclusion
AFH(GFSK DH5)	2402-2421MHz	63.40	400	P
AFH( $\pi/4$ DQPSK DH5)	2402-2421MHz	63.78	400	P
AFH(8DPSK DH5)	2402-2421MHz	65.25	400	P

#### 6.5.3 Measurement Result

##### For GFSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.60	69.47	P
		Fig.61		
	DH3	Fig.62	193.02	P
		Fig.63		
	DH5	Fig.64	250.43	P
		Fig.65		

### For $\pi/4$ DQPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	2DH1	Fig.66	66	P
		Fig.67		
	2DH3	Fig.68	204.35	P
		Fig.69		
	2DH5	Fig.70	251.95	P
		Fig.71		

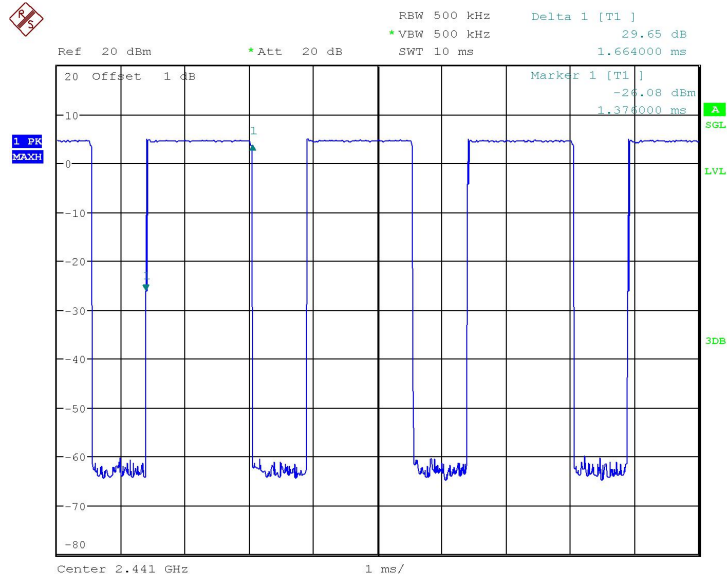
### For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	3DH1	Fig.72	68.8	P
		Fig.73		
	3DH3	Fig.74	202.7	P
		Fig.75		
	3DH5	Fig.76	257.74	P
		Fig.77		

**Conclusion: PASS**

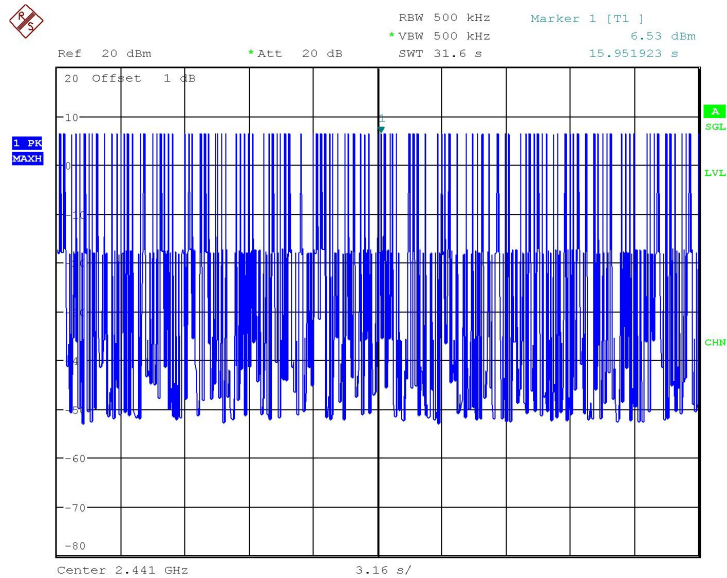
**Test graphs as below:**





Date: 6.DEC.2018 10:48:10

Fig.62 Time of occupancy (Dwell Time): Ch39, Packet DH3



Date: 6.DEC.2018 10:49:13

Fig.63 Number of Transmissions Measurement: Ch39, Packet DH3

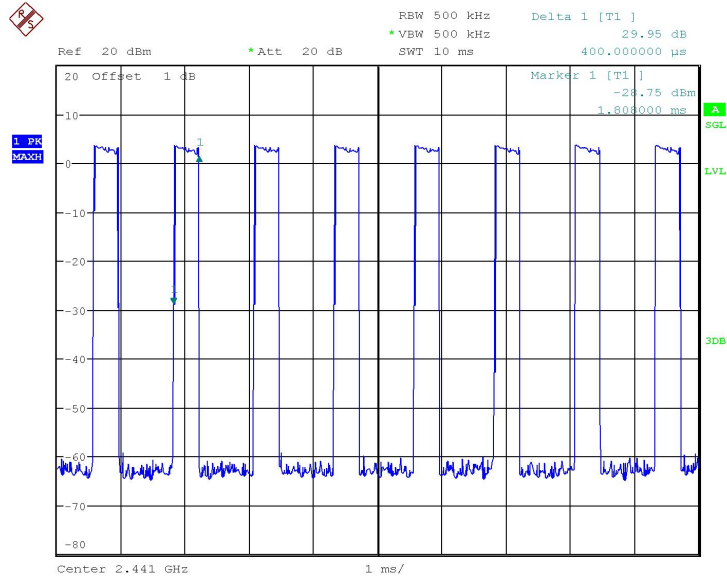






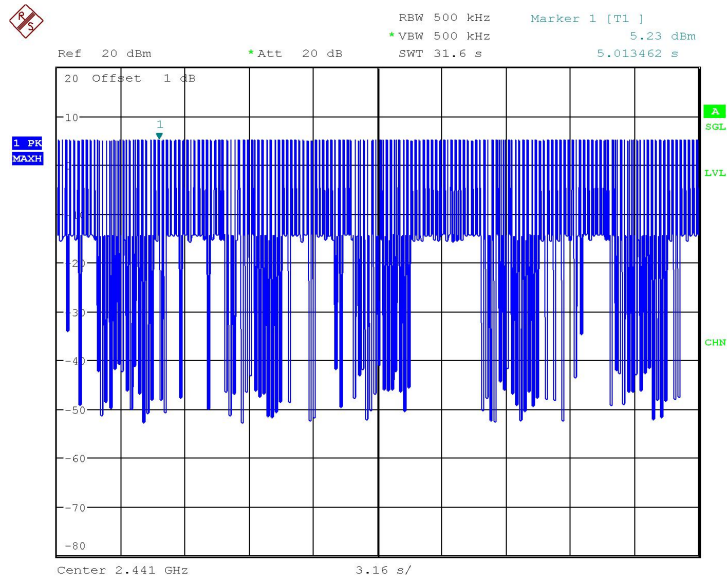






Date: 6.DEC.2018 10:58:50

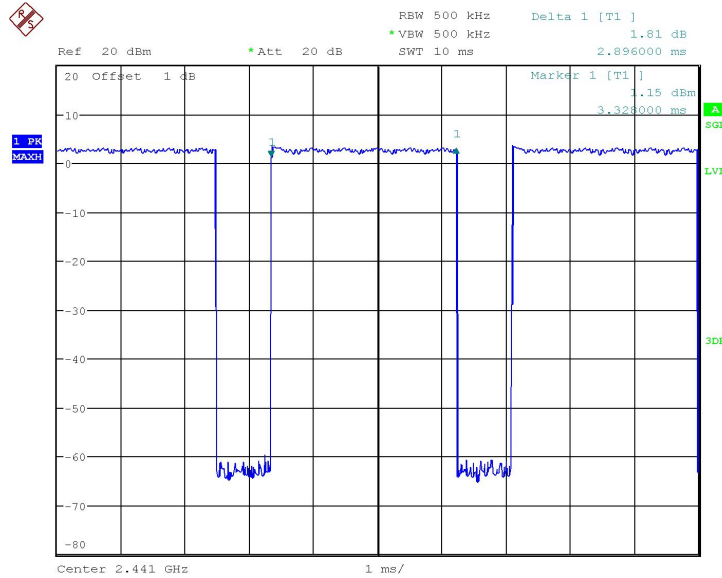
Fig.72 Time of occupancy (Dwell Time): Ch39,Packet 3-DH1



Date: 6.DEC.2018 11:00:40

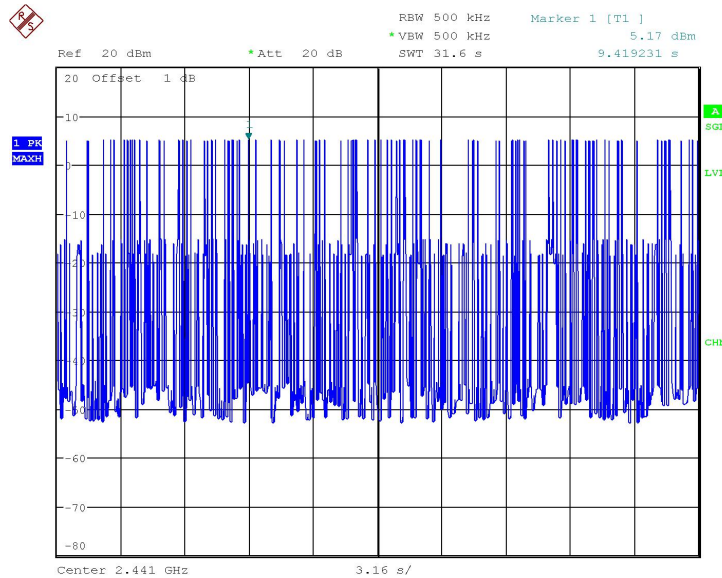
Fig.73 Number of Transmissions Measurement: Ch39, Packet 3-DH1





Date: 6.DEC.2018 11:04:09

Fig.76 Time of occupancy (Dwell Time): Ch39,Packet 3-DH5



Date: 6.DEC.2018 11:05:11

Fig.77 Number of Transmissions Measurement: Ch39, Packet 3-DH5

## 6.6. 20dB Bandwidth

### 6.6.1 Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (a) (1)	N/A

**6.6.2 Test procedures**

The measurement is according to ANSI C63.10 clause 7.8.7

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 7.
4. Span: two or five times of OBW
5. RBW= 1% to 5% of the OBW; VBW is approximately three times of RBW; Max Hold.
6. Select the max peak, and N DB DOWN=20dB.
7. Record the results.

**6.6.3 Measurement Uncertainty:**

Measurement Uncertainty	$\pm 0.0031\text{MHz}$
-------------------------	------------------------

**Measurement Result:**
**For GFSK**

Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig.78	764.423	P
39	Fig.79	764.423	P
78	Fig.80	764.423	P

**For  $\pi/4$  DQPSK**

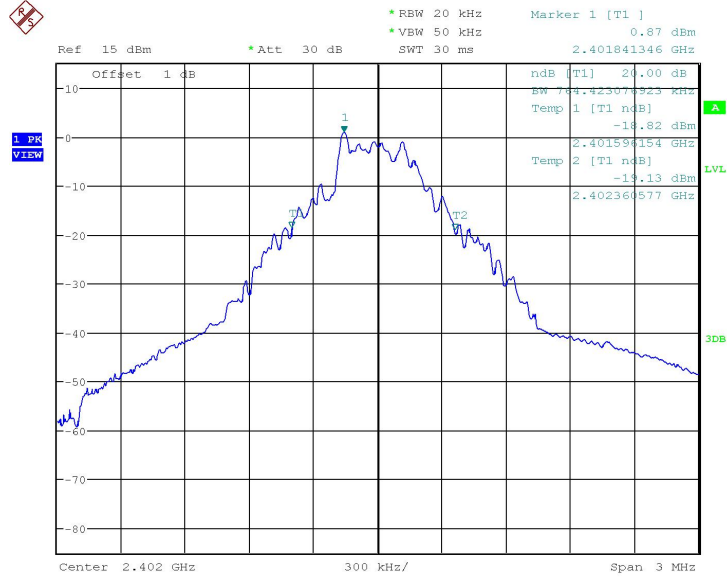
Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig.81	1288.462	P
39	Fig.82	1283.654	P
78	Fig.83	1288.462	P

**For 8DPSK**

Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig.84	812.5	P
39	Fig.85	807.692	P
78	Fig.86	812.5	P

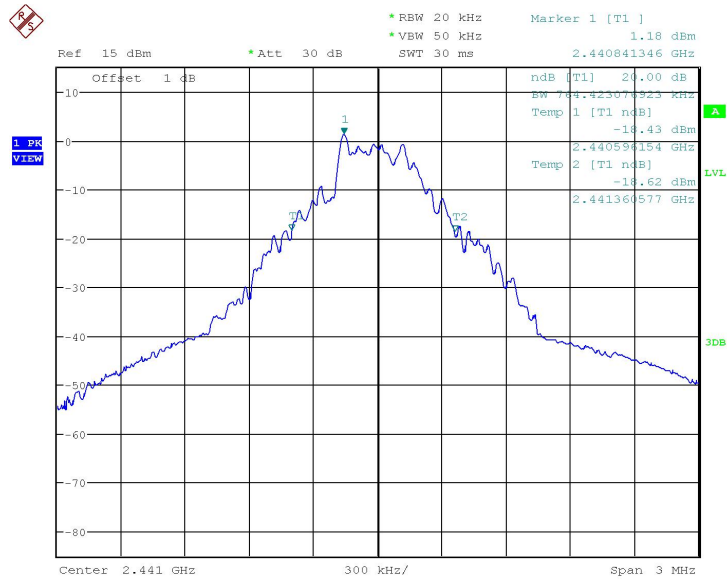
**Conclusion: PASS**

**Test graphs as below:**



Date: 6.DEC.2018 10:04:02

Fig.78 20dB Bandwidth: GFSK, Ch0



Date: 6.DEC.2018 10:05:14

Fig.79 20dB Bandwidth: GFSK, Ch39