Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	1 GHz ~ 18 GHz	Fig.42	**P**
	39	1 GHz ~ 18 GHz	Fig.43	**P**
	78	1 GHz ~ 18 GHz	Fig.44	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.45	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.46	**P**
π /4 DQPSK	0	1 GHz ~ 18 GHz	Fig.47	**P**
	39	1 GHz ~ 18 GHz	Fig.48	**P**
	78	1 GHz ~ 18 GHz	Fig.49	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.50	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.51	**P**
8DPSK	0	1 GHz ~ 18 GHz	Fig.52	**P**
	39	1 GHz ~ 18 GHz	Fig.53	**P**
	78	1 GHz ~ 18 GHz	Fig.54	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.55	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.56	**P**
/	All channels	9 kHz ~ 30 MHz	Fig.57	**P**
		30 MHz ~ 1 GHz	Fig.58	**P**
		18 GHz ~ 26.5 GHz	Fig.59	**P**

Worst Case Result

GFSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13748.500000	53.54	74.00	20.46	V	17.0
14683.500000	54.41	74.00	19.59	V	17.8
15570.500000	55.26	74.00	18.74	V	19.6
16271.500000	56.69	74.00	17.31	V	20.9
16630.000000	57.90	74.00	16.10	V	22.0
17695.500000	57.53	74.00	16.47	V	23.1

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13950.000000	41.61	54.00	12.39	V	17.2
14543.500000	42.50	54.00	11.50	V	17.9
15576.500000	43.73	54.00	10.27	V	19.6
15668.000000	45.26	54.00	8.74	V	20.1
16637.500000	45.78	54.00	8.22	V	21.9
17703.500000	45.45	54.00	8.55	V	23.1

π /4 DQPSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13998.000000	53.52	74.00	20.48	V	17.0
14590.500000	54.54	74.00	19.46	V	17.9
15560.000000	55.99	74.00	18.01	V	19.5
15655.000000	57.05	74.00	16.95	V	20.0
16579.000000	57.30	74.00	16.70	V	22.1
17466.500000	57.44	74.00	16.56	V	22.4

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13952.000000	41.72	54.00	12.28	V	17.2
14564.000000	42.57	54.00	11.43	V	17.9
15577.500000	44.05	54.00	9.95	V	19.7
15652.000000	45.26	54.00	8.74	V	20.0
16649.500000	45.87	54.00	8.13	V	21.8
17696.500000	45.49	54.00	8.51	V	23.1

8DPSK CH78 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13940.000000	53.46	74.00	20.54	V	17.2
14651.500000	55.09	74.00	18.91	V	17.8
15564.000000	55.23	74.00	18.77	V	19.5
16242.500000	57.10	74.00	16.90	V	21.1
16648.500000	57.58	74.00	16.42	V	21.8
17889.000000	58.11	74.00	15.89	V	24.1

Frequency (MHz)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol	Corr. (dB)
13979.000000	41.68	54.00	12.32	V	17.0
14542.500000	42.51	54.00	11.49	V	17.9
15570.000000	43.93	54.00	10.07	V	19.6
15667.500000	45.04	54.00	8.96	V	20.1
16645.000000	45.82	54.00	8.18	V	21.9
17696.500000	45.57	54.00	8.43	V	23.1

Note:
A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.
The measurement results are obtained as described below:
Result = P_{Mea} + Cable Loss + Antenna Factor - Gain of the preamplifier

See below for test graphs.
Conclusion: Pass

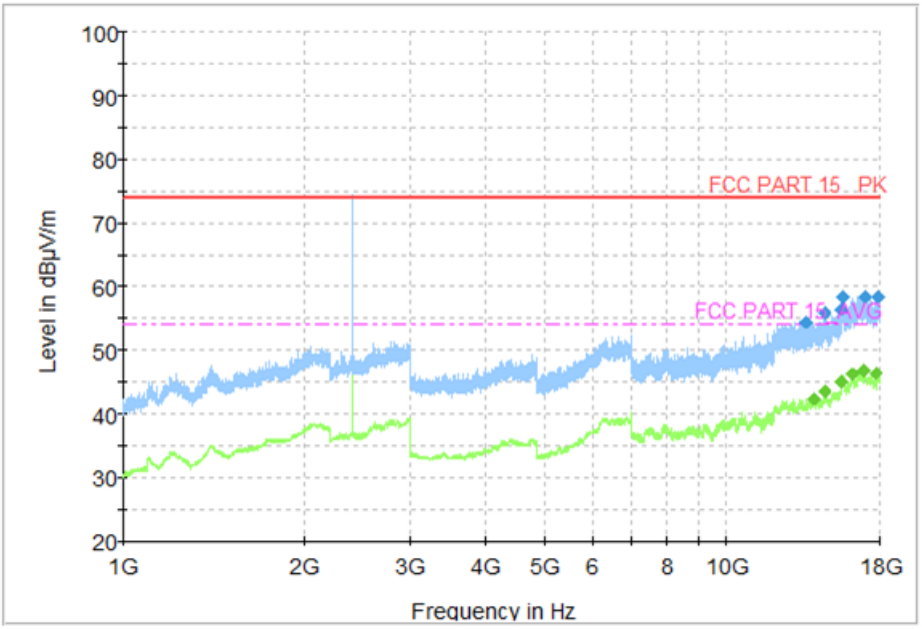

Fig. 42 Radiated Spurious Emission (GFSK, Ch0, 1GHz ~ 18GHz)

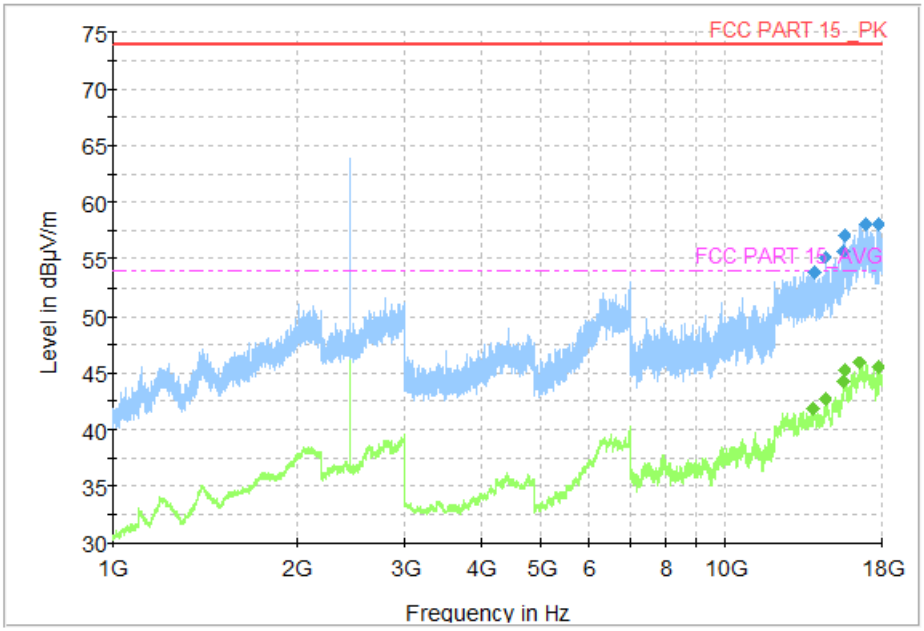

Fig. 43 Radiated Spurious Emission (GFSK, Ch39, 1GHz ~ 18GHz)

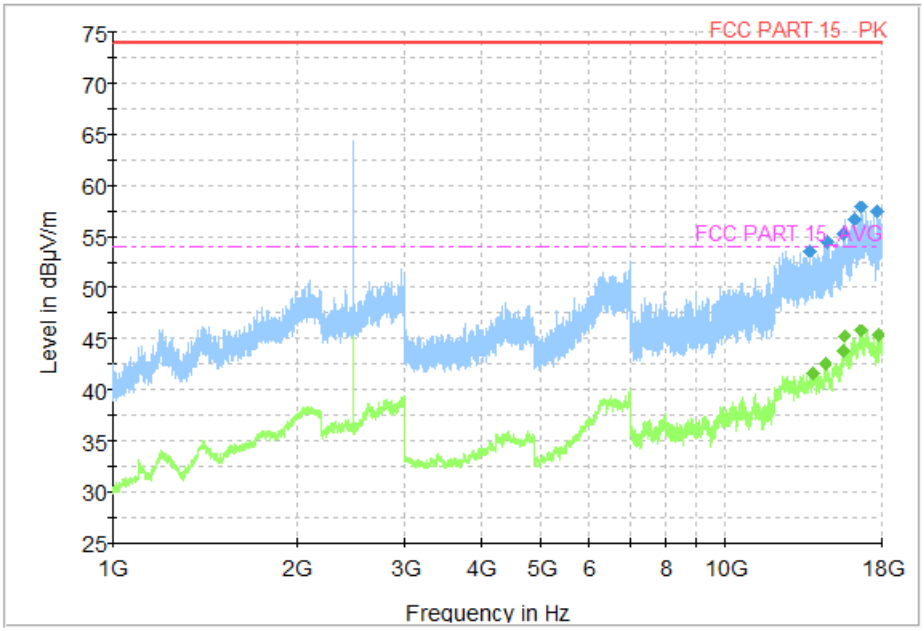

Fig. 44 Radiated Spurious Emission (GFSK, Ch78, 1GHz ~ 18GHz)

Fig. 45 Radiated Band Edges (GFSK, Ch0, 2380GHz ~ 2450GHz)

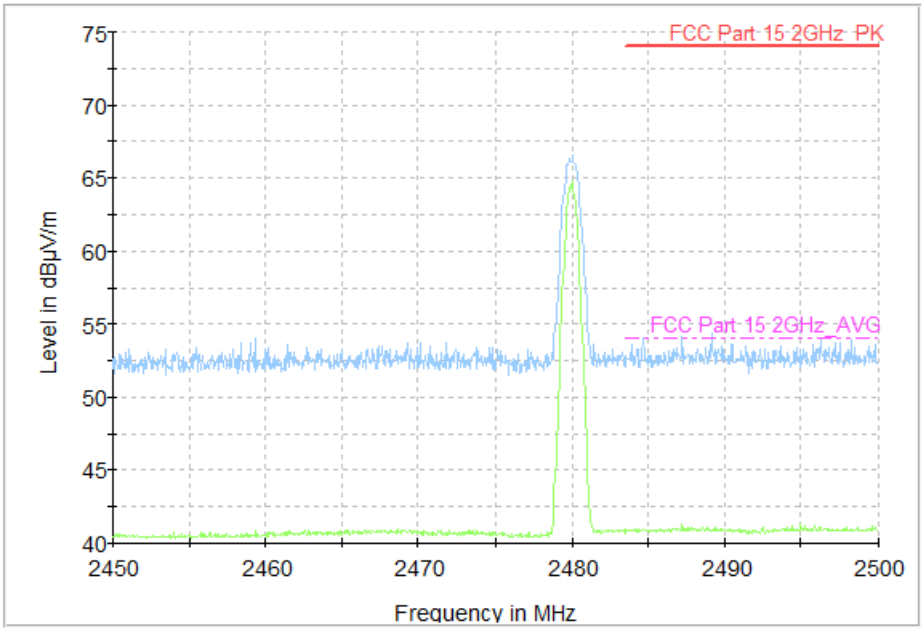

Fig. 46 Radiated Band Edges (GFSK, Ch78, 2450GHz ~ 2500GHz)

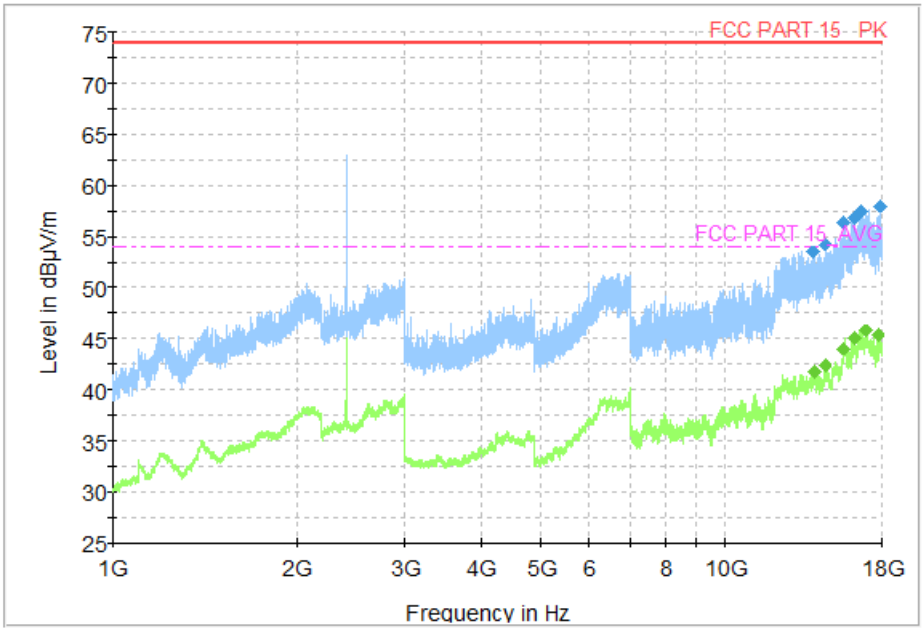

Fig. 47 Radiated Spurious Emission (π /4 DQPSK, Ch0, 1GHz ~ 18GHz)

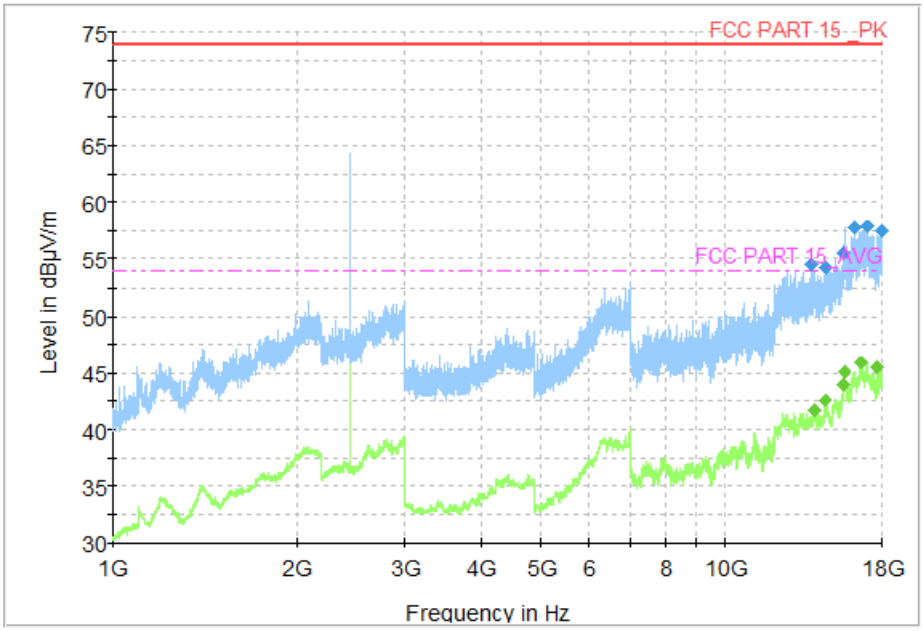

Fig. 48 Radiated Spurious Emission (π /4 DQPSK, Ch39, 1GHz ~ 18GHz)

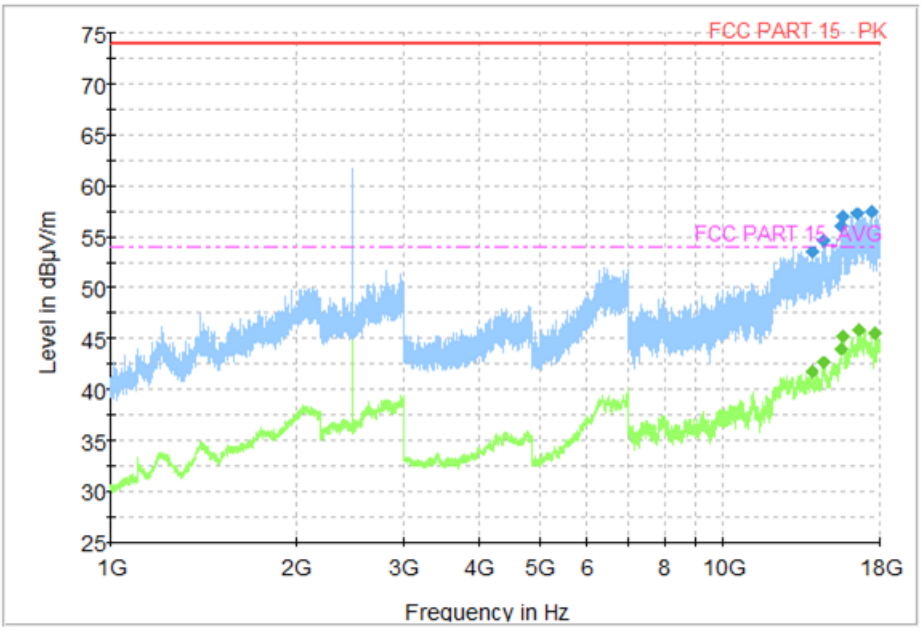

Fig. 49 Radiated Spurious Emission (π /4 DQPSK, Ch78, 1GHz ~ 18GHz)

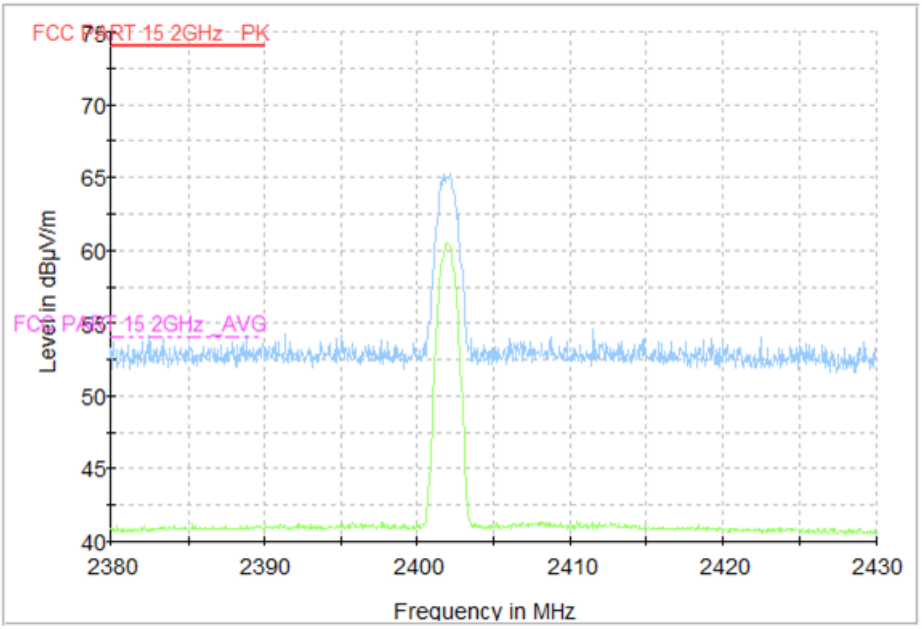

Fig. 50 Radiated Band Edges (π /4 DQPSK, Ch0, 2380GHz ~ 2450GHz)

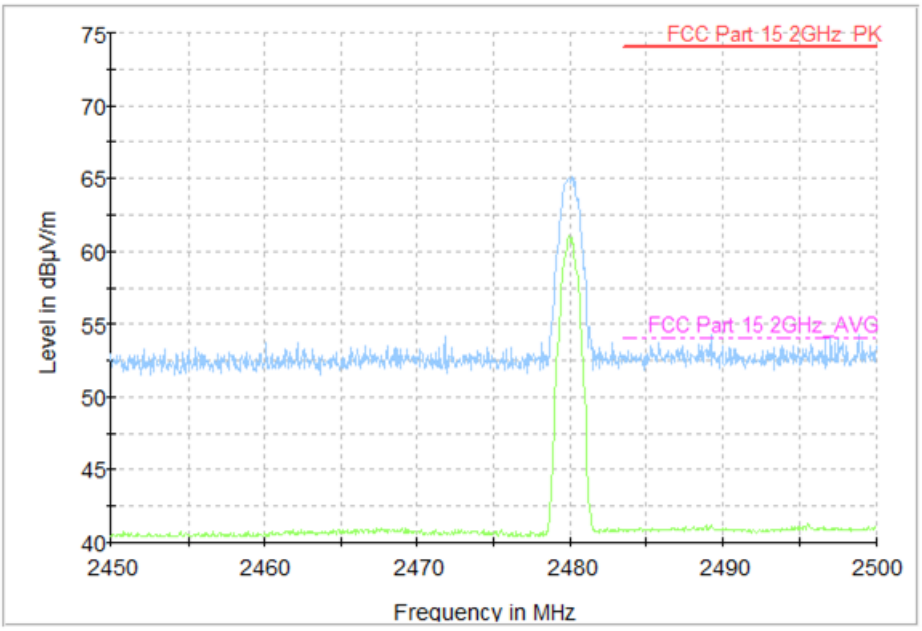

Fig. 51 Radiated Band Edges (π /4 DQPSK, Ch78, 2450GHz ~ 2500GHz)

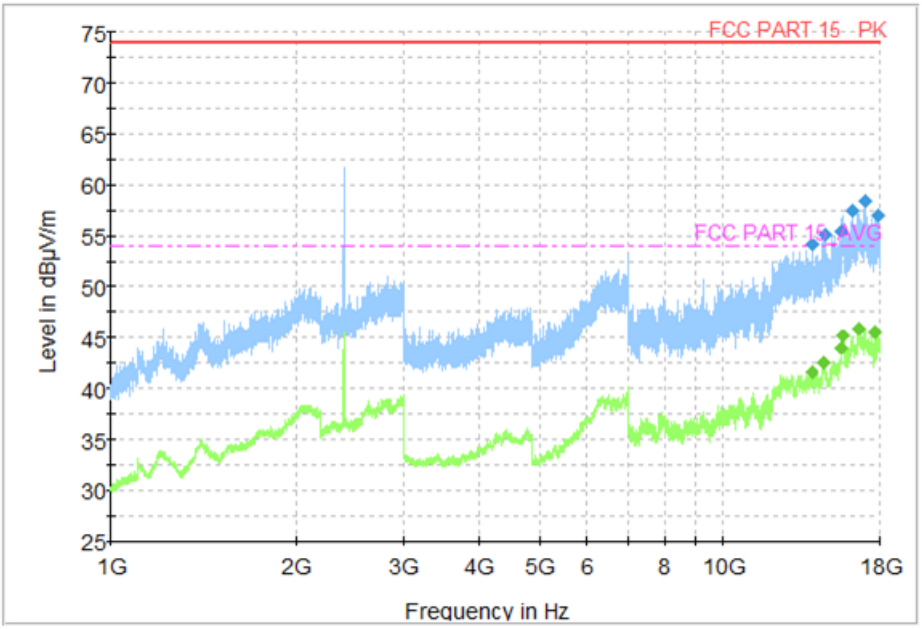

Fig. 52 Radiated Spurious Emission (8DPSK, Ch0, 1GHz ~ 18GHz)

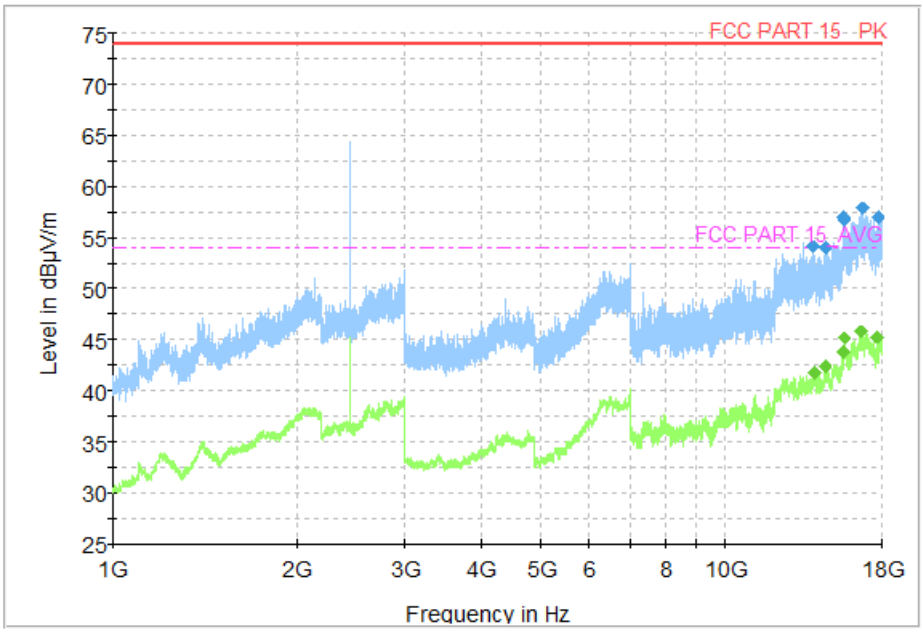

Fig. 53 Radiated Spurious Emission (8DPSK, Ch39, 1GHz ~ 18GHz)

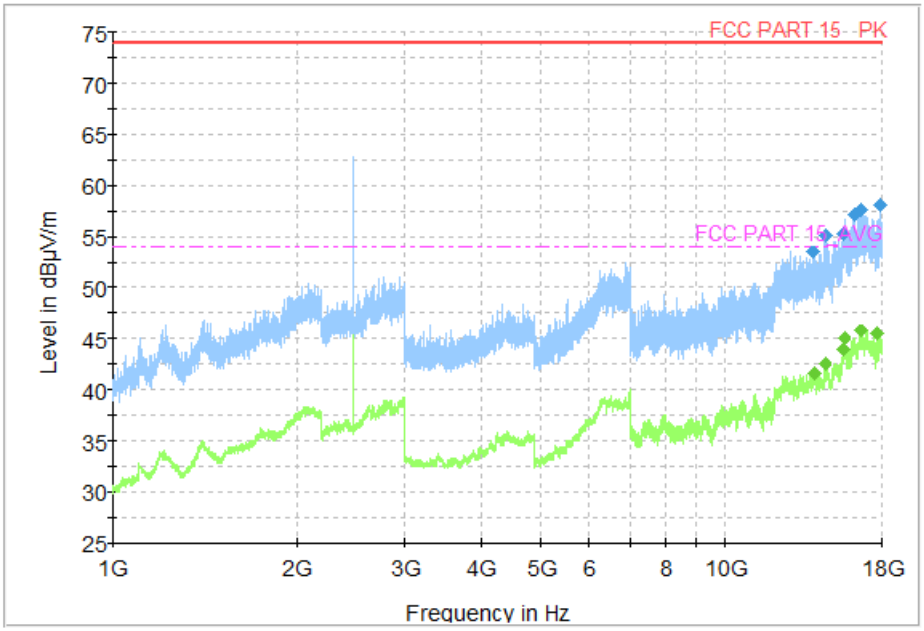

Fig. 54 Radiated Spurious Emission (8DPSK, Ch78, 1GHz ~ 18GHz)

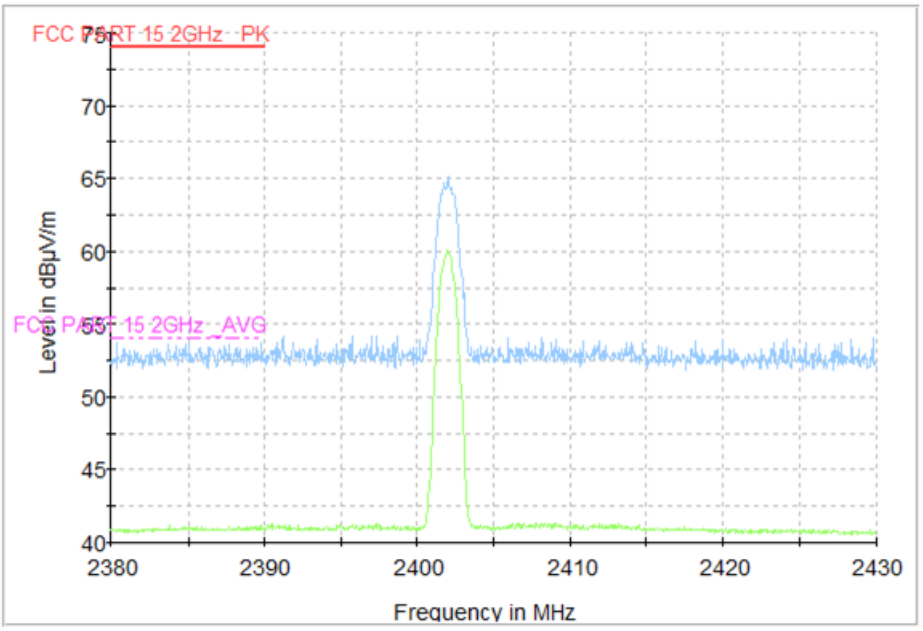

Fig. 55 Radiated Band Edges (8DPSK, Ch0, 2380GHz ~ 2450GHz)

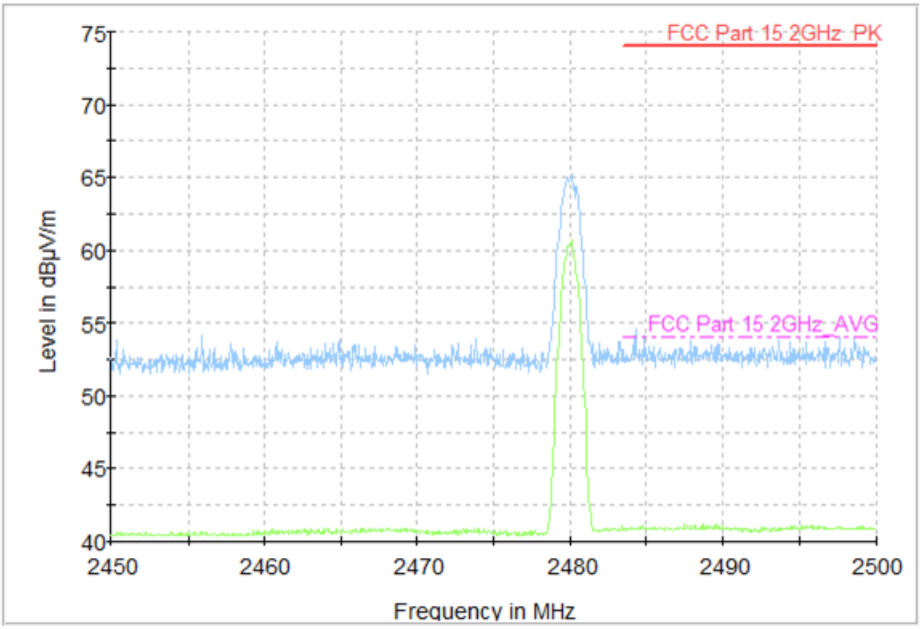

Fig. 56 Radiated Band Edges (8DPSK, Ch78, 2450GHz ~ 2500GHz)

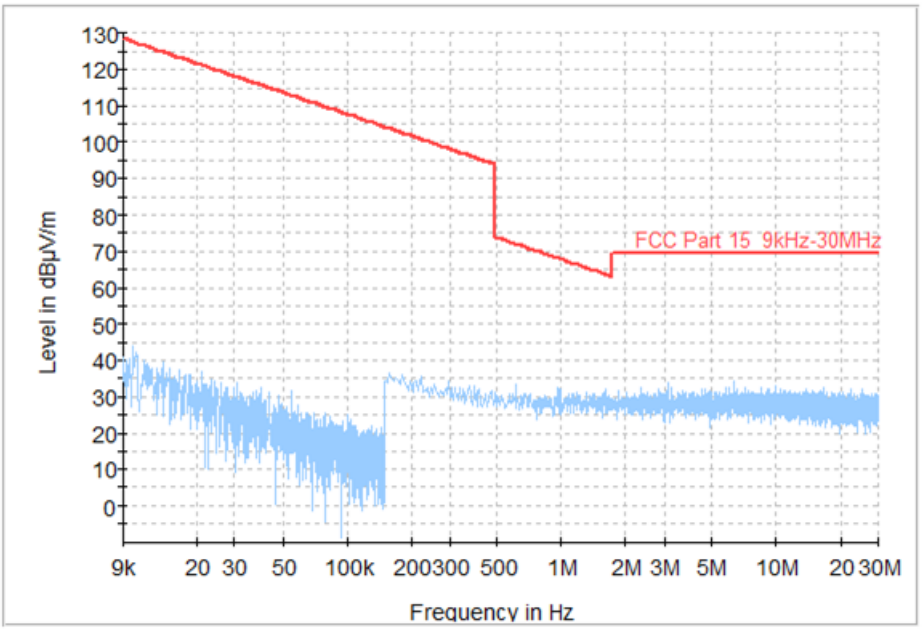

Fig. 57 Radiated Spurious Emission (All Channels, 9kHz ~ 30MHz)

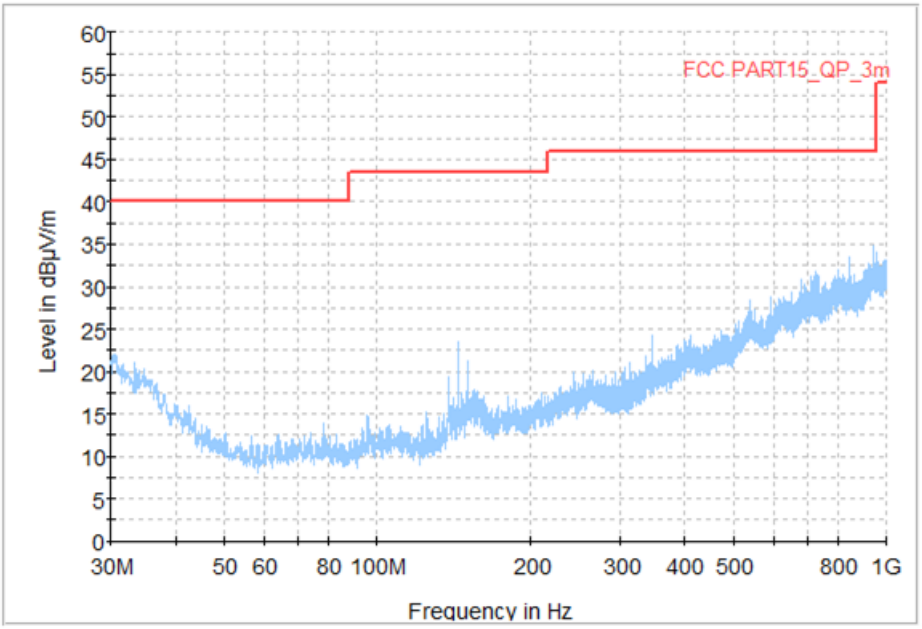

Fig. 58 Radiated Spurious Emission (All Channels, 30MHz ~ 1GHz)

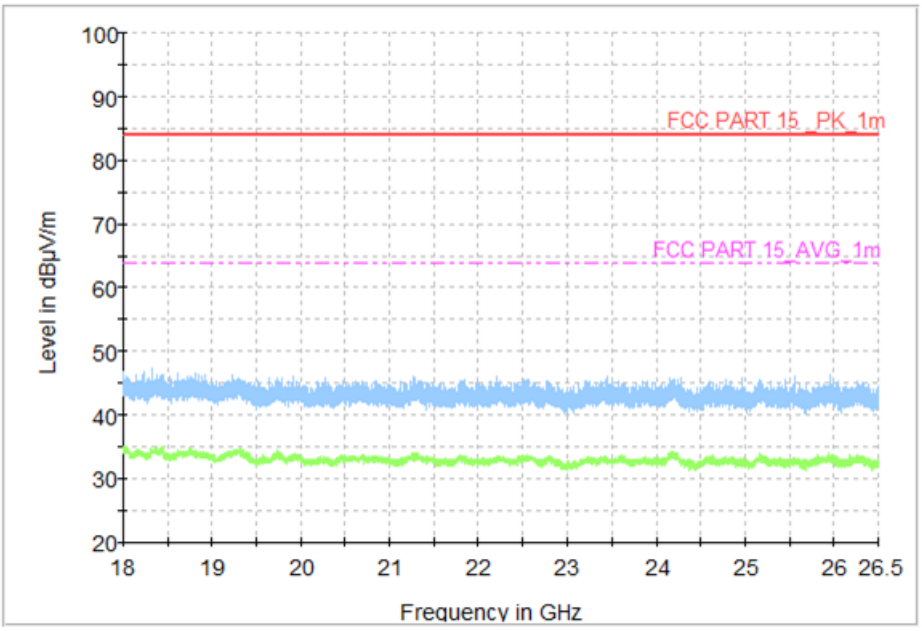

Fig. 59 Radiated Spurious Emission (All Channels, 18GHz ~ 26.5GHz)

A.6 20dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) & RSS-247 section 5.1	/

Measurement Result:

Mode	Channel	20dB Bandwidth (kHz)		conclusion
GFSK	0	Fig.60	944.25	/
	39	Fig.61	942.75	
	78	Fig.62	942.75	
π /4 DQPSK	0	Fig.63	1289.25	/
	39	Fig.64	1287.75	
	78	Fig.65	1286.25	
8DPSK	0	Fig.66	1285.50	/
	39	Fig.67	1284.00	
	78	Fig.68	1284.00	

See below for test graphs.
Conclusion: PASS

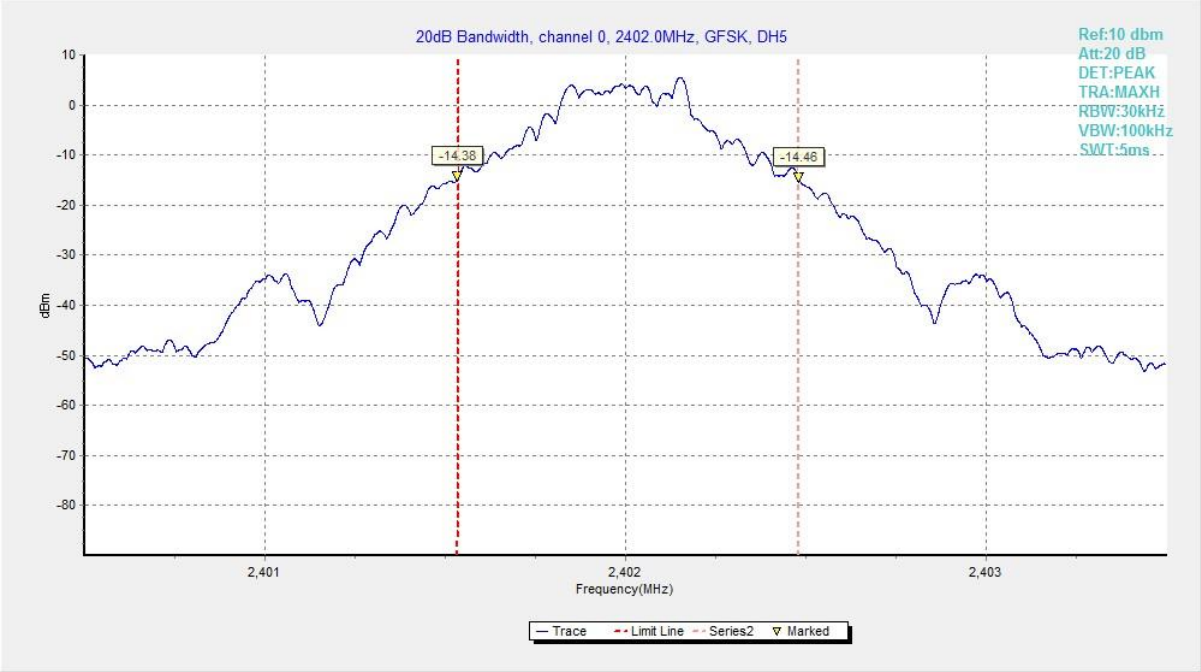

Fig. 60 20dB Bandwidth (GFSK, Ch 0)

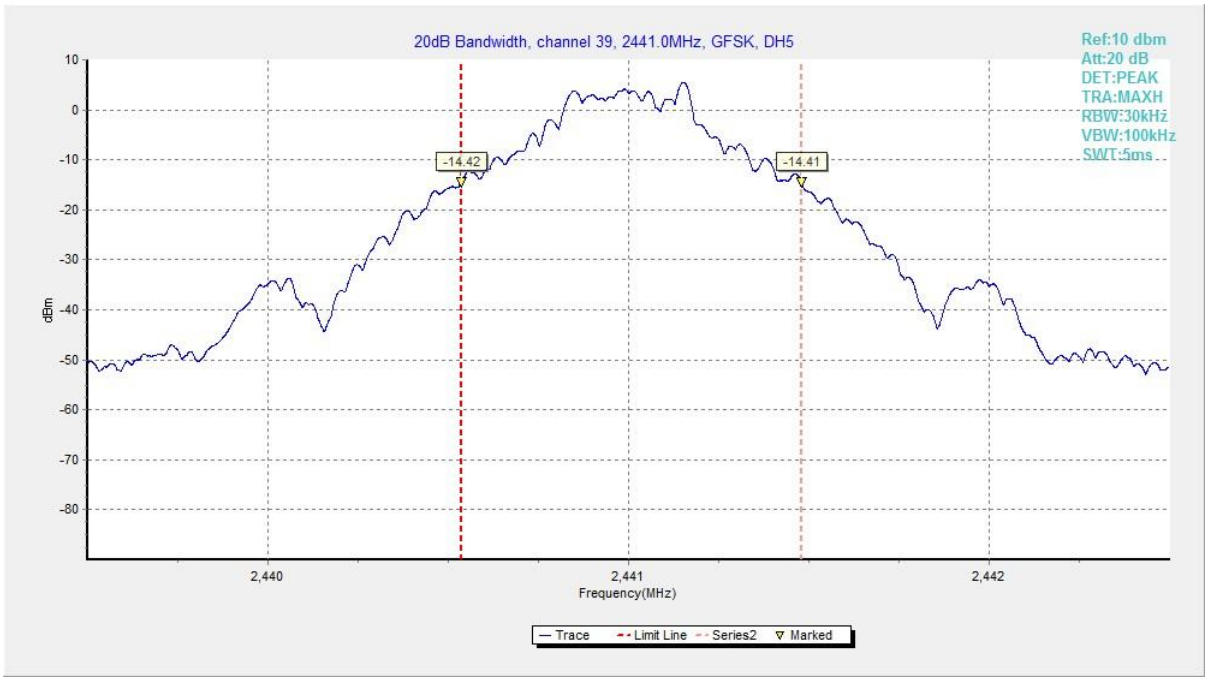

Fig. 61 20dB Bandwidth (GFSK, Ch 39)

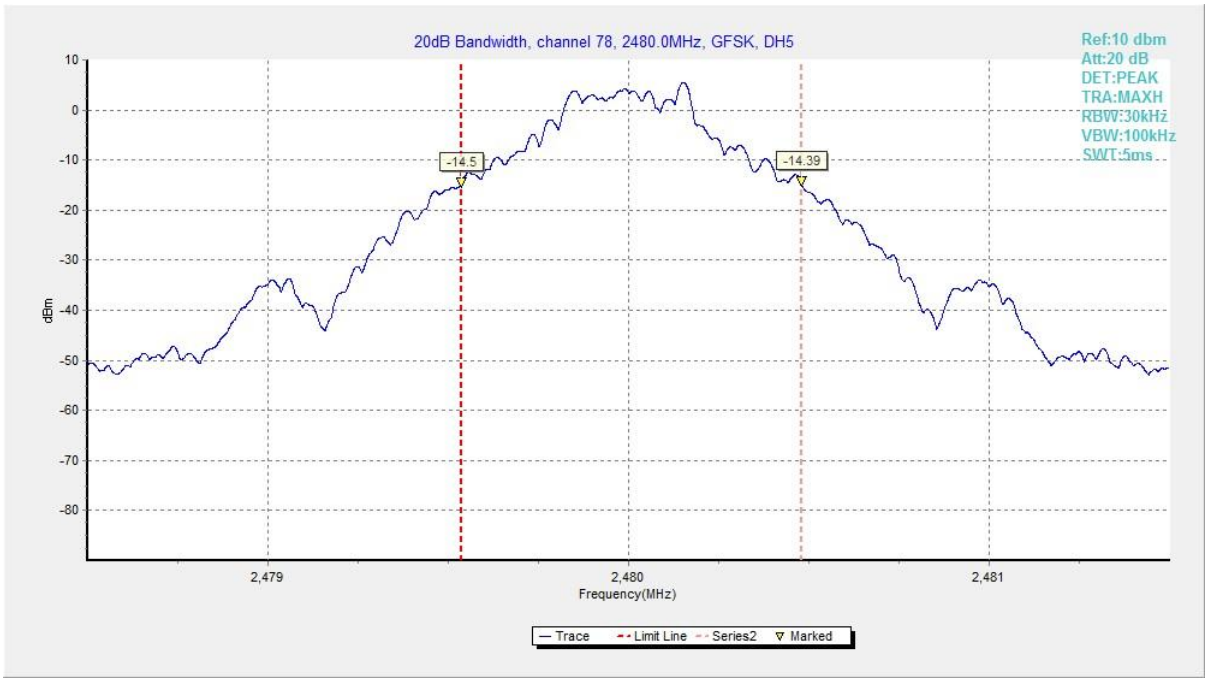

Fig. 62 20dB Bandwidth (GFSK, Ch 78)

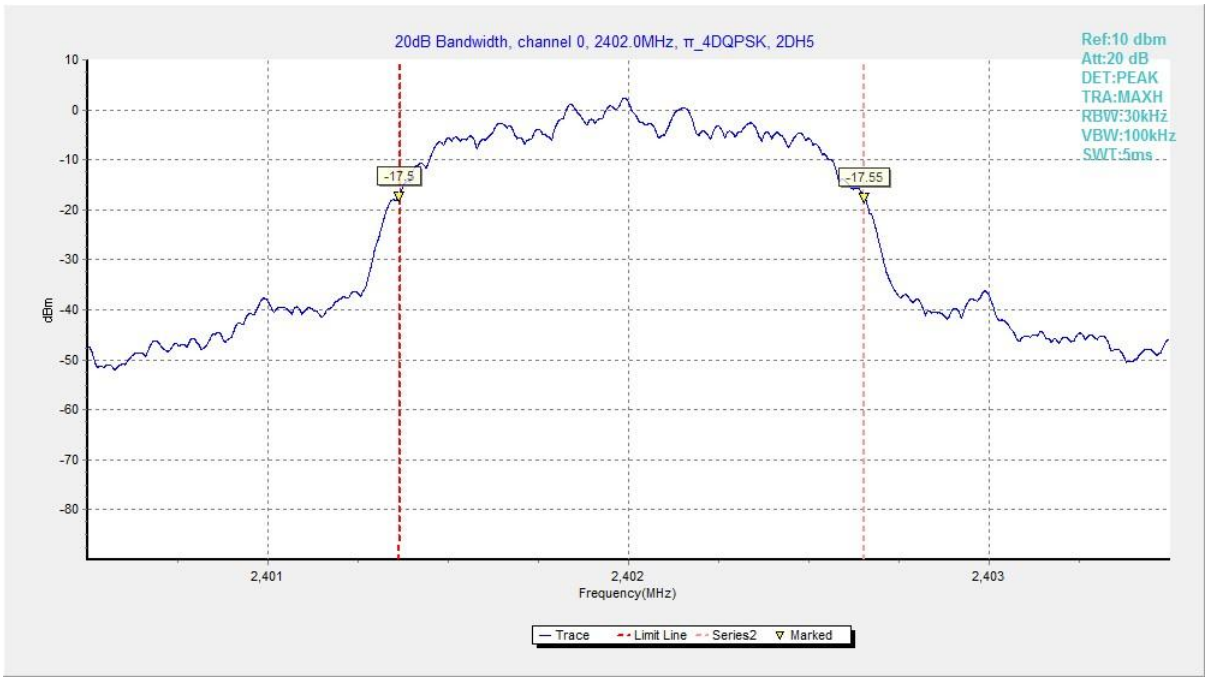

Fig. 63 20dB Bandwidth (π /4 DQPSK, Ch 0)

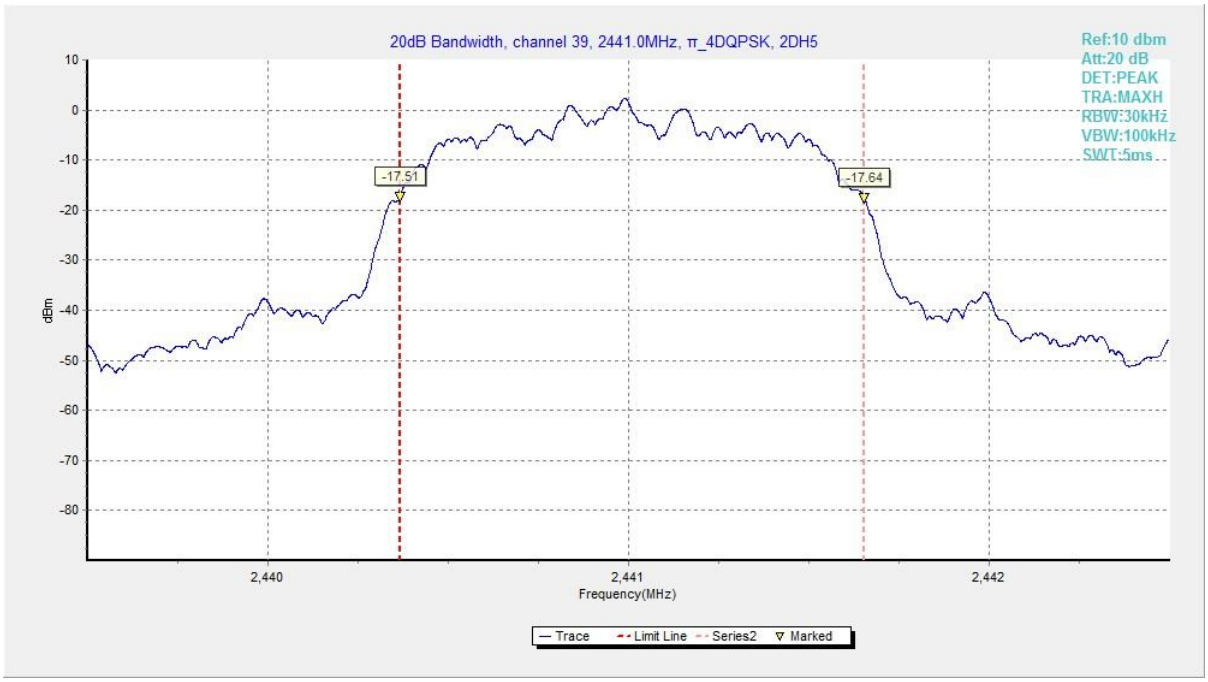

Fig. 64 20dB Bandwidth (π /4 DQPSK, Ch 39)

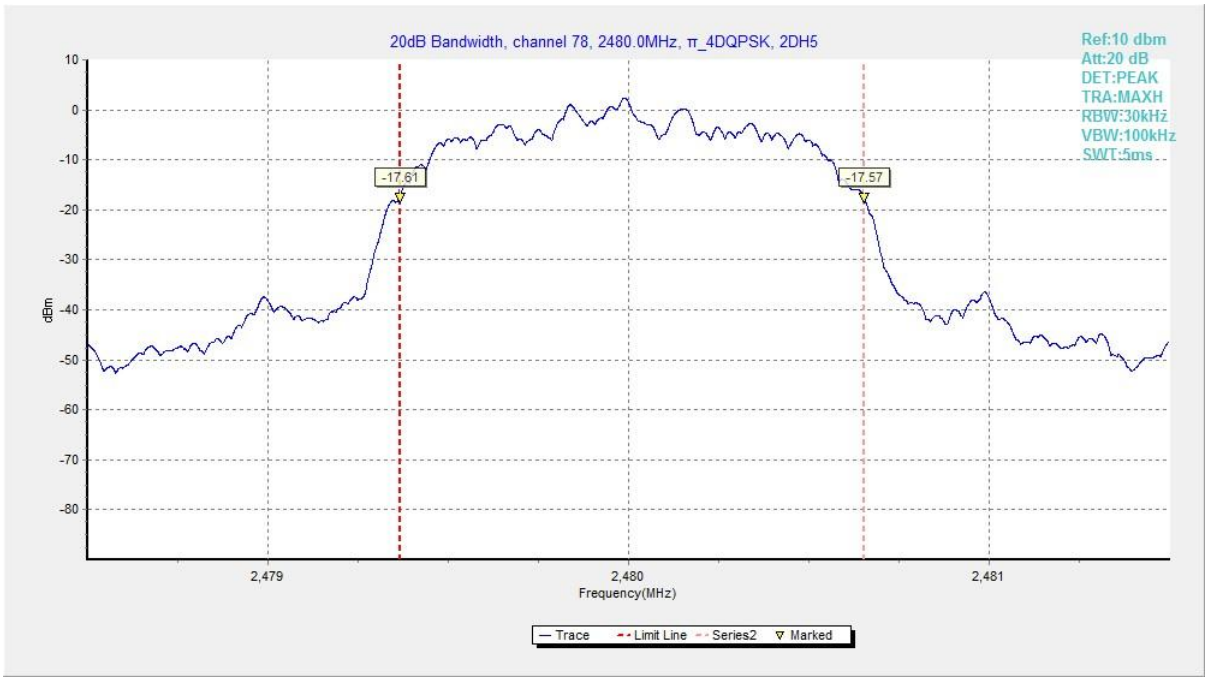

Fig. 65 20dB Bandwidth (π /4 DQPSK, Ch 78)

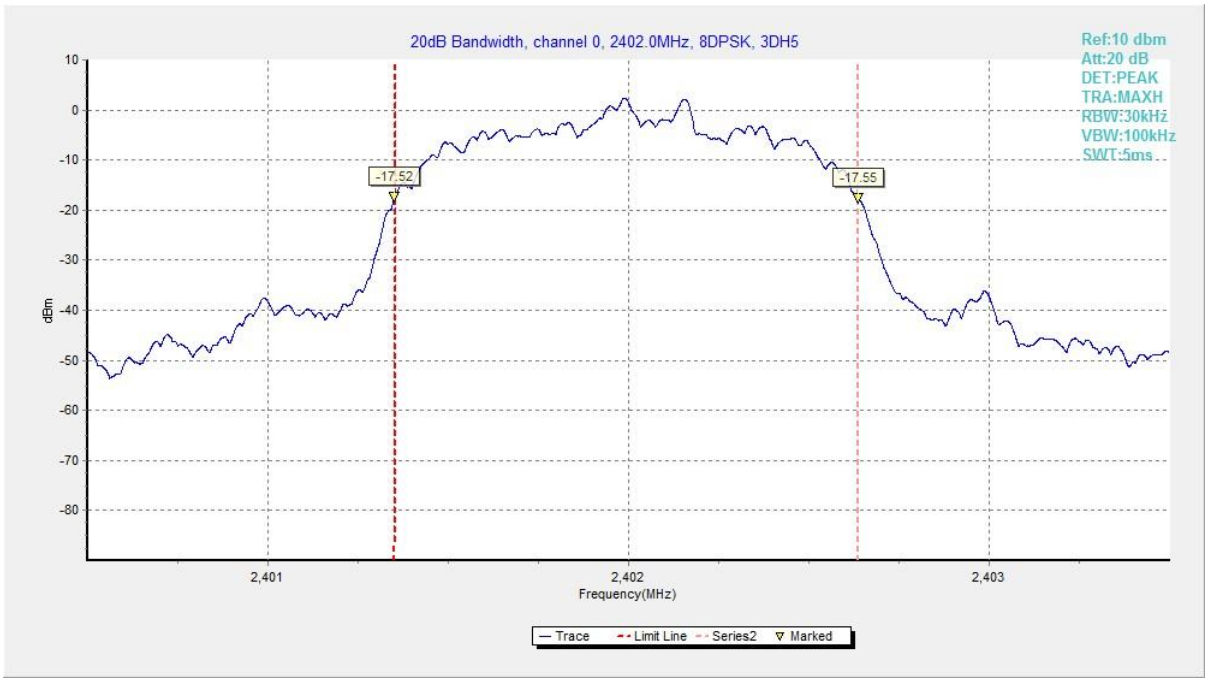

Fig. 66 20dB Bandwidth (8DPSK, Ch 0)

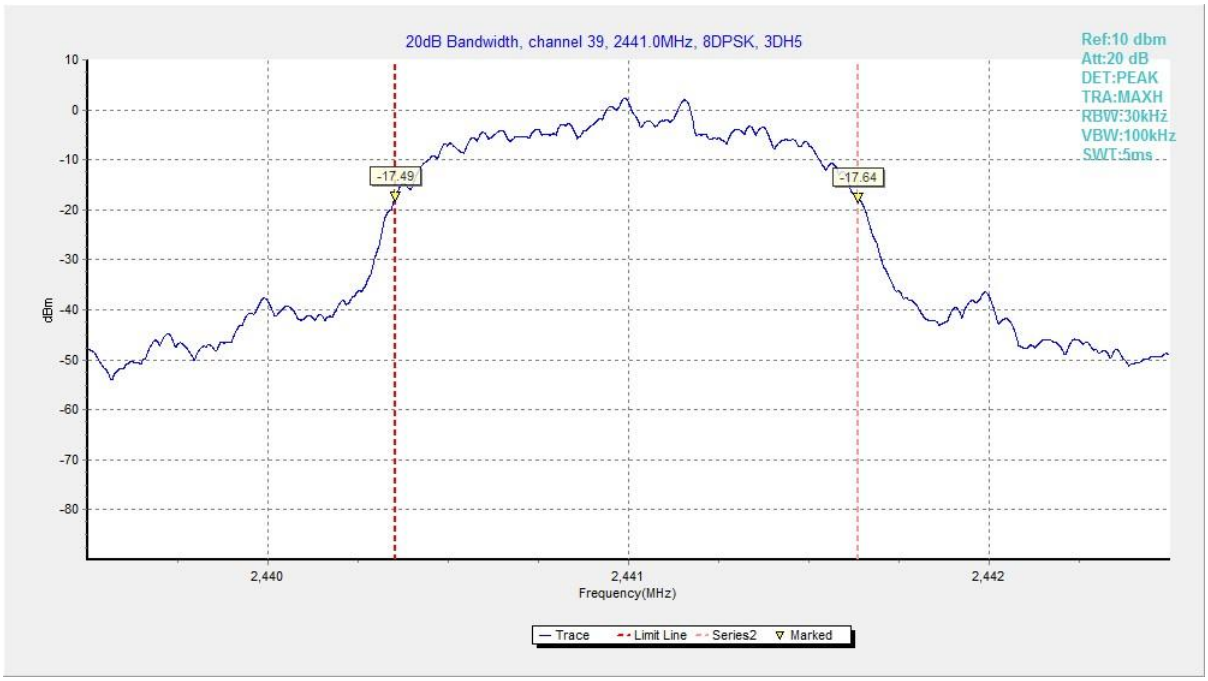

Fig. 67 20dB Bandwidth (8DPSK, Ch 39)

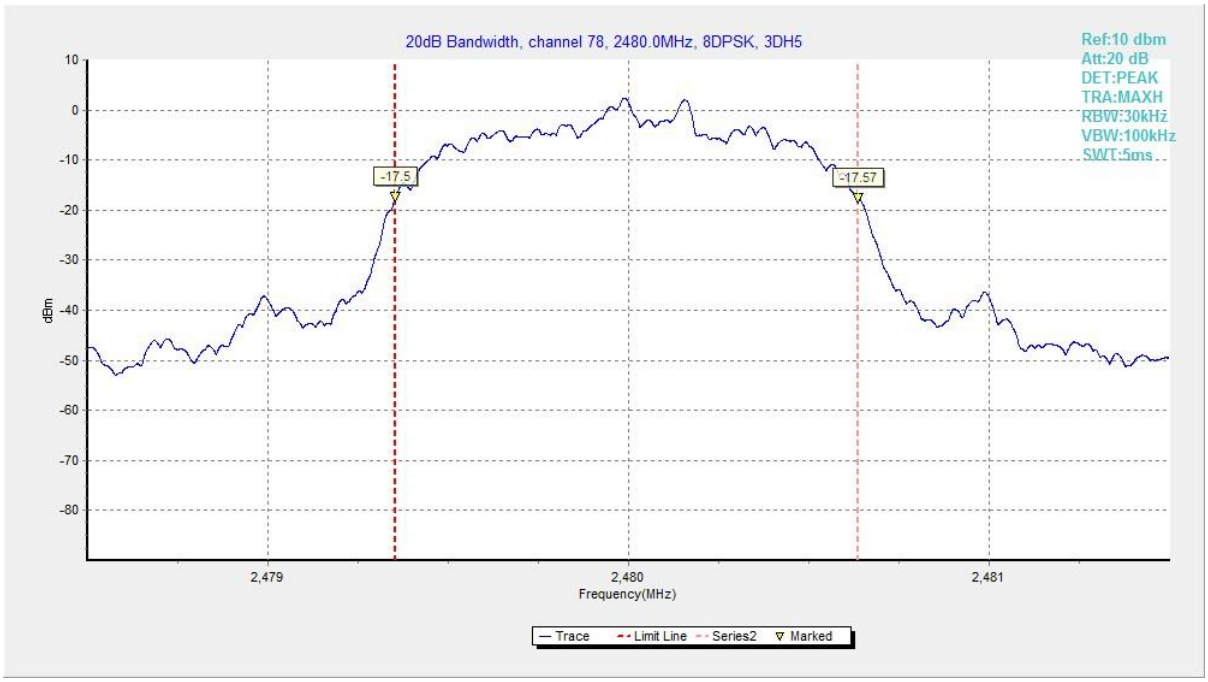

Fig. 68 20dB Bandwidth (8DPSK, Ch 78)

A.7 Time of Occupancy (Dwell Time)

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (a) & RSS-247 section 5.1	< 400 ms

Measurement Results:

Mode	Channel	Packet	Dwell Time(ms)		Conclusion
GFSK	39	DH5	Fig.69	202.01	**P**
			Fig.70		
π /4 DQPSK	39	2-DH5	Fig.71	198.35	**P**
			Fig.72		
8DPSK	39	3-DH5	Fig.73	224.26	**P**
			Fig.74		

See below for test graphs.
Conclusion: Pass

Fig. 69 Time of Occupancy (Dwell Time) (GFSK, Ch39)

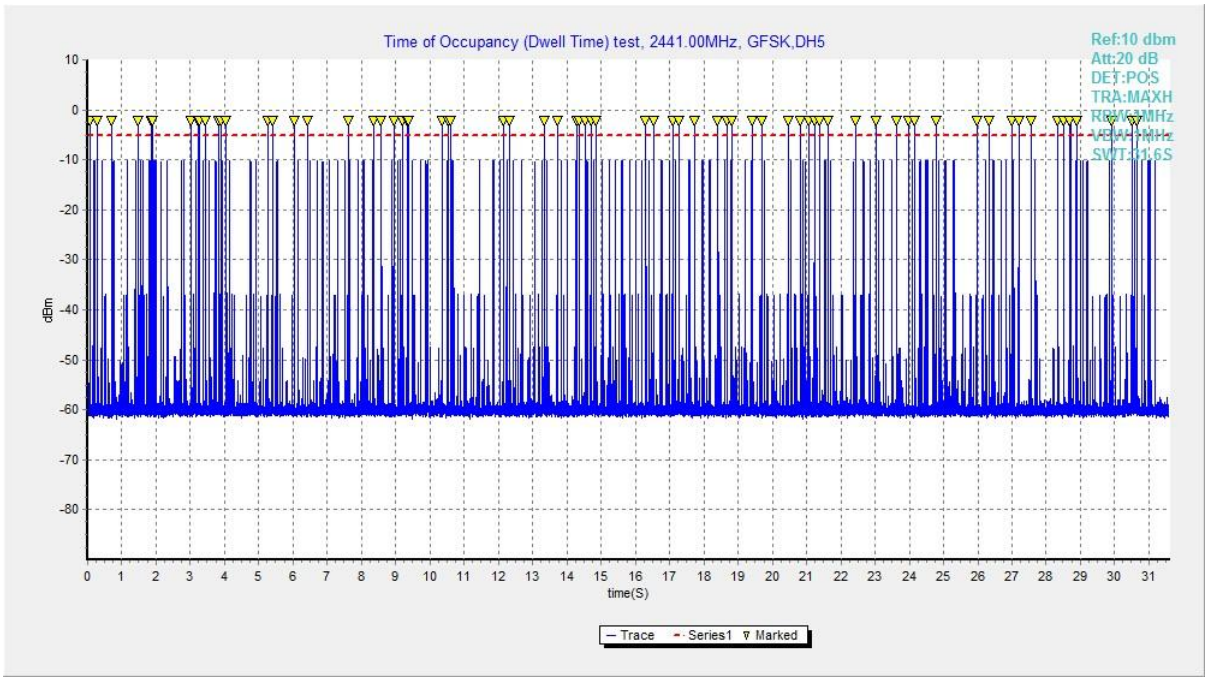

Fig. 70 Number of Transmissions (GFSK, Ch39)

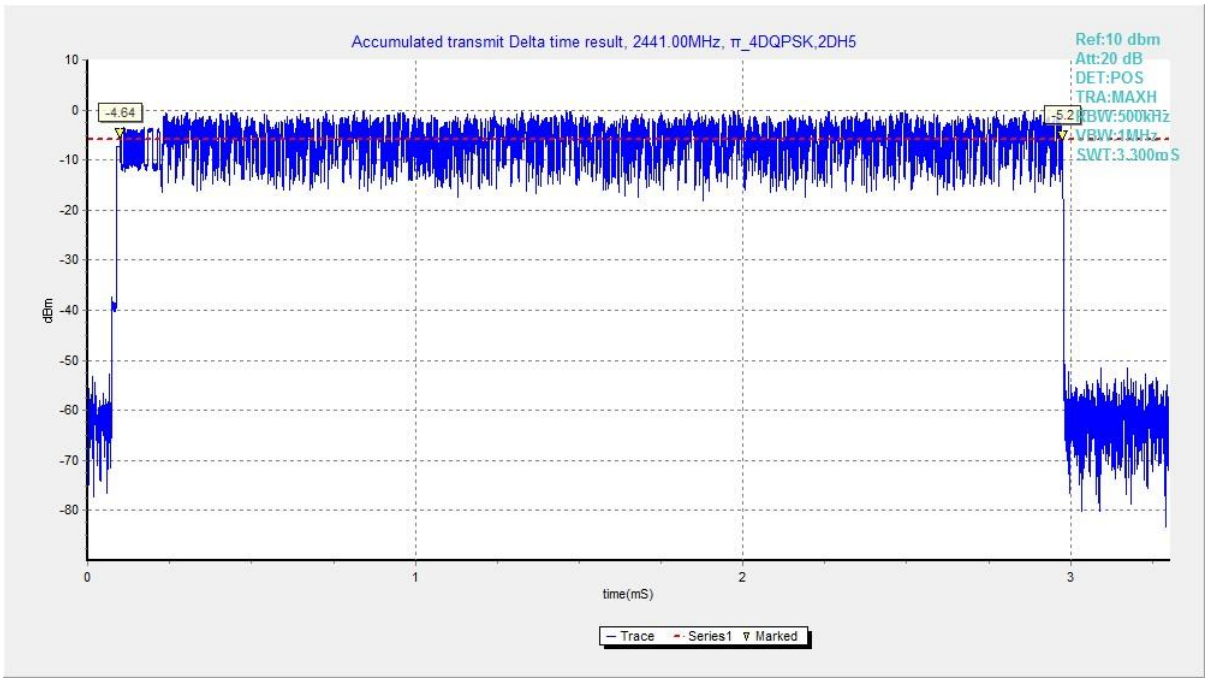

Fig. 71 Time of Occupancy (Dwell Time) (π /4 DQPSK, Ch39)

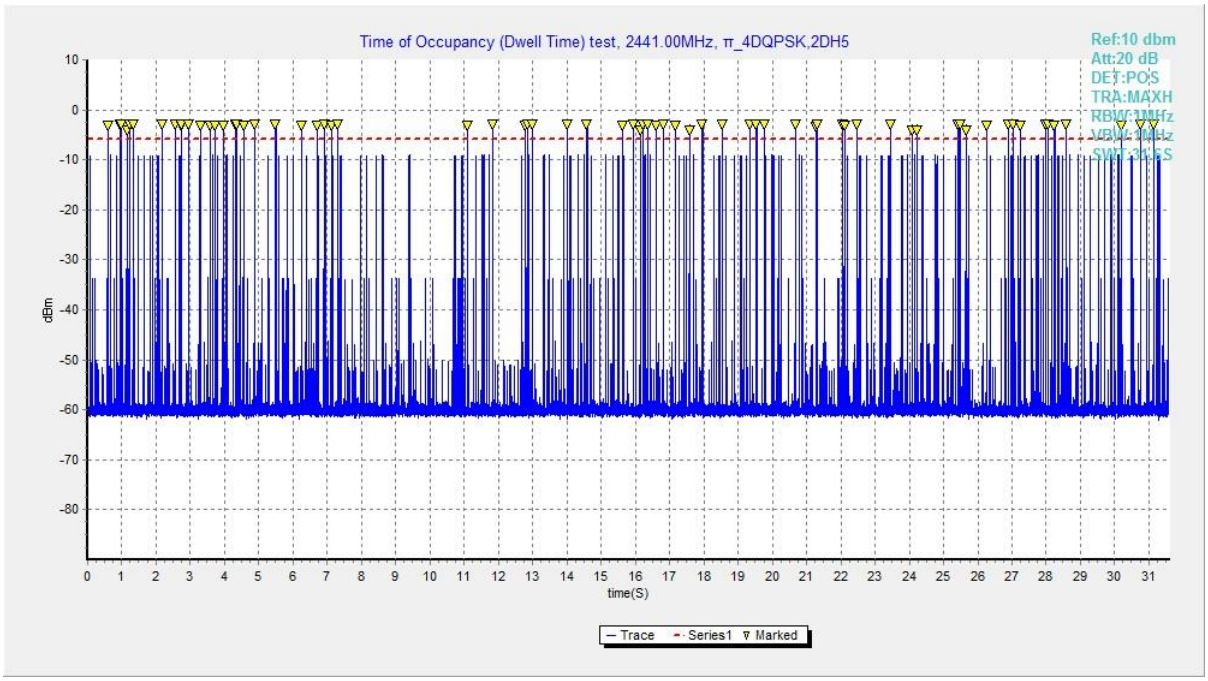

Fig. 72 Number of Transmissions (π /4 DQPSK, Ch39)

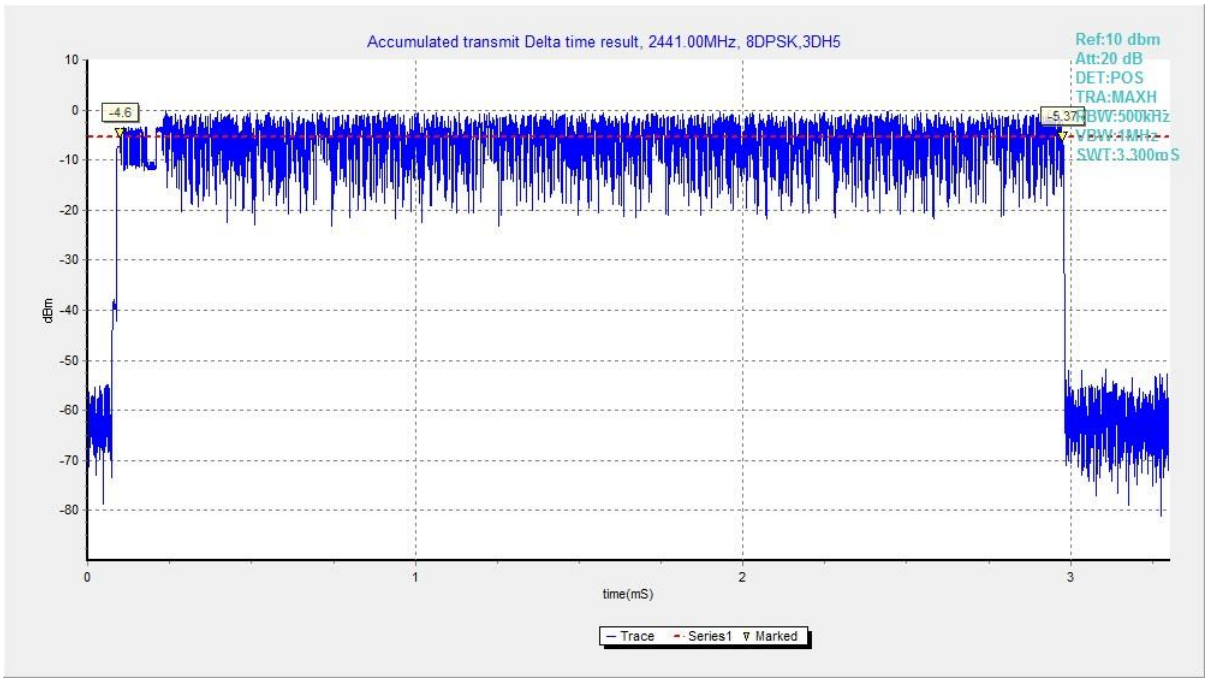

Fig. 73 Time of Occupancy (Dwell Time) (8DPSK, Ch39)

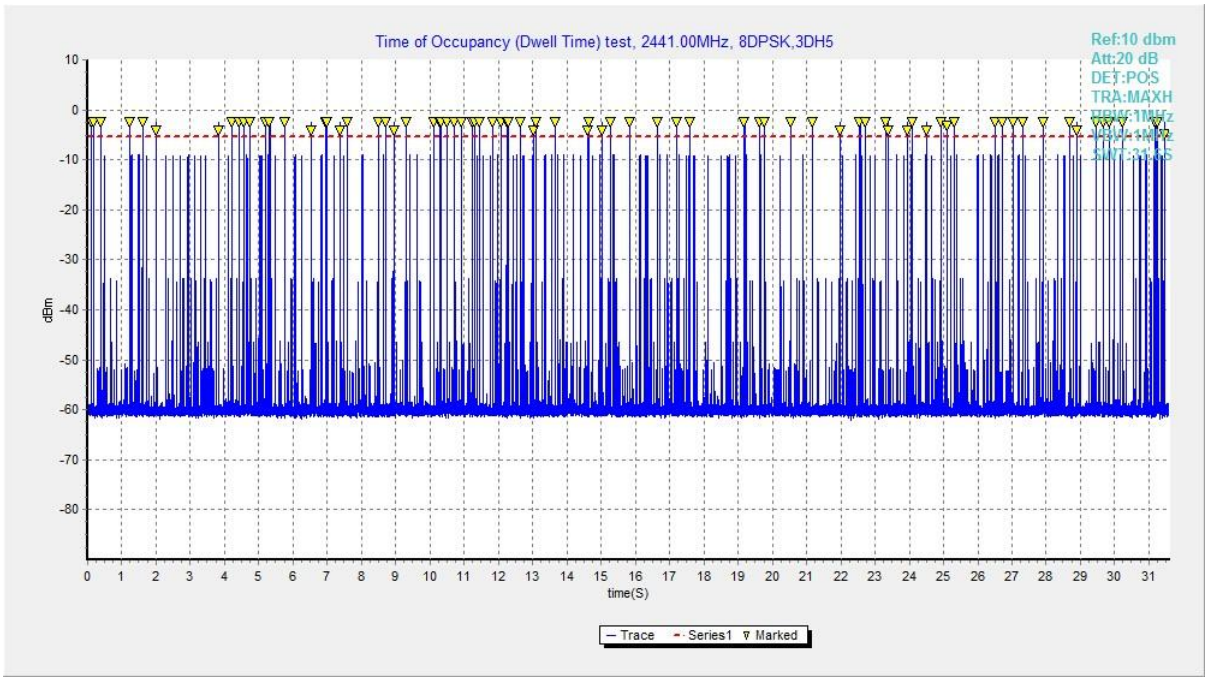

Fig. 74 Number of Transmissions (8DPSK, Ch39)

A.8 Number of Hopping Channels

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) & RSS-247 section 5.1	At least 15 non-overlapping channels

Measurement Results:

Mode	Packet	Number of hopping channels		Test result	Conclusion
GFSK	DH5	Fig.75	Fig.76	79	**P**
π /4 DQPSK	2-DH5	Fig.77	Fig.78	79	**P**
8DPSK	3-DH5	Fig.79	Fig.80	79	**P**

See below for test graphs.
Conclusion: Pass

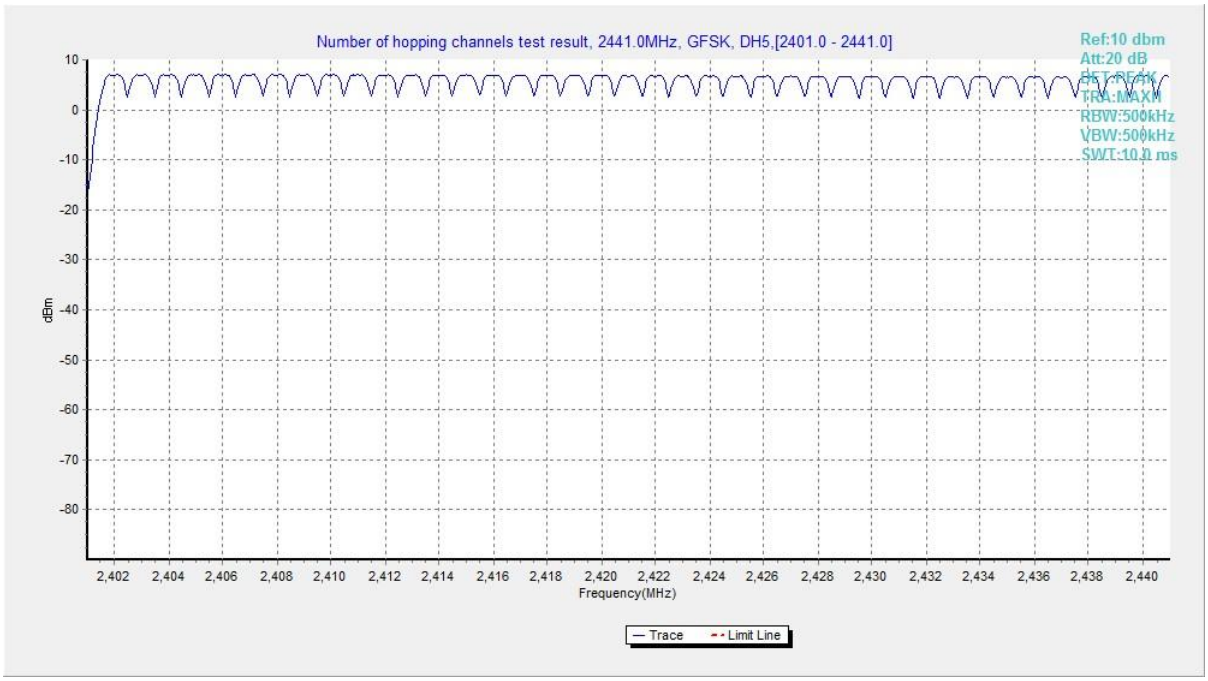

Fig. 75 Hopping channel ch0 ~ ch39 (GFSK)

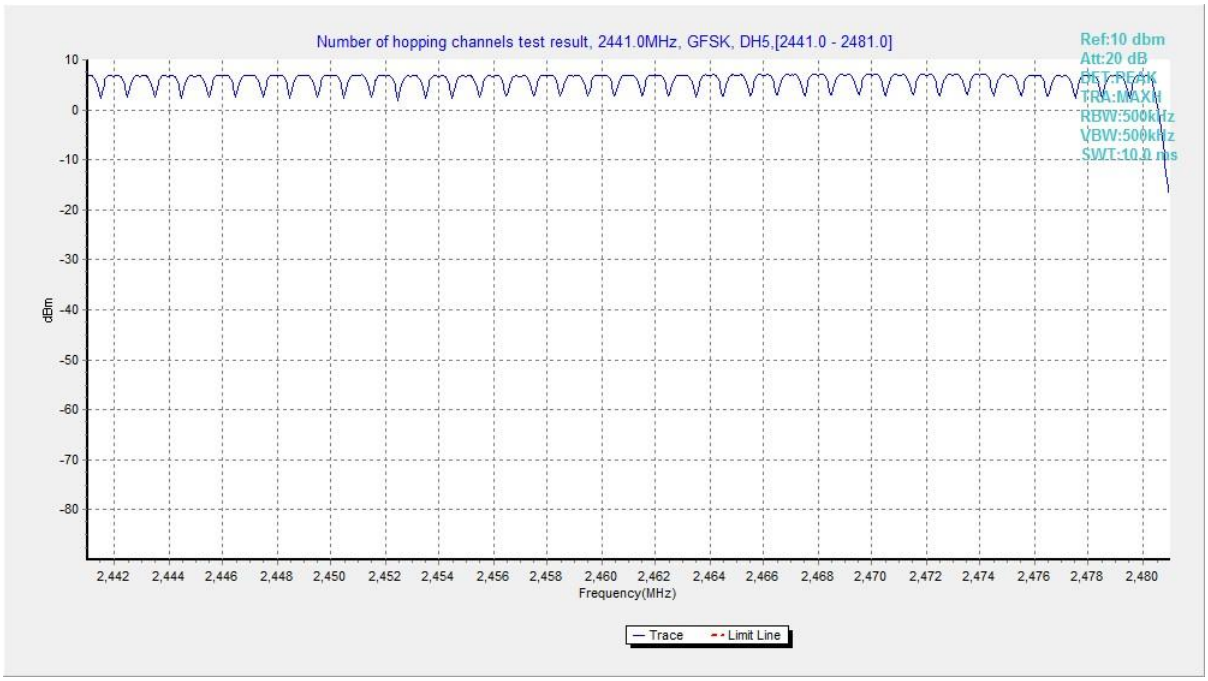

Fig. 76 Hopping channel ch40 ~ ch78 (GFSK)

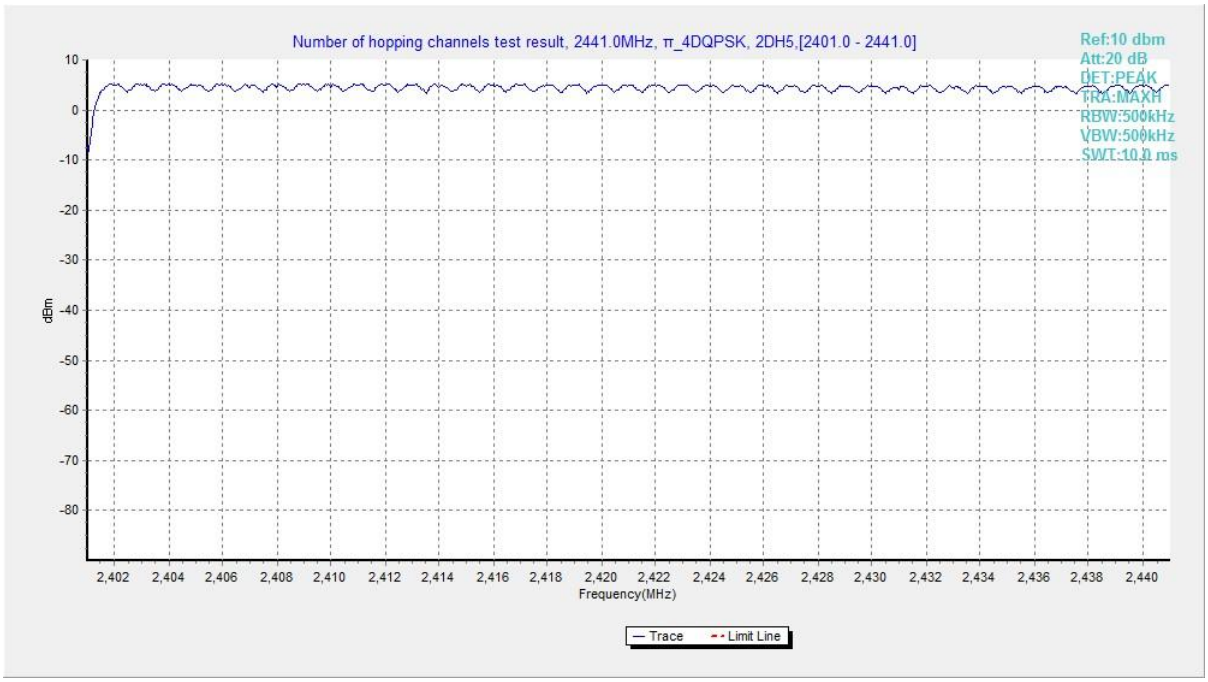

Fig. 77 Hopping channel ch0 ~ ch39 (π /4 DQPSK)

Fig. 78 Hopping channel ch40 ~ ch78 (π /4 DQPSK)

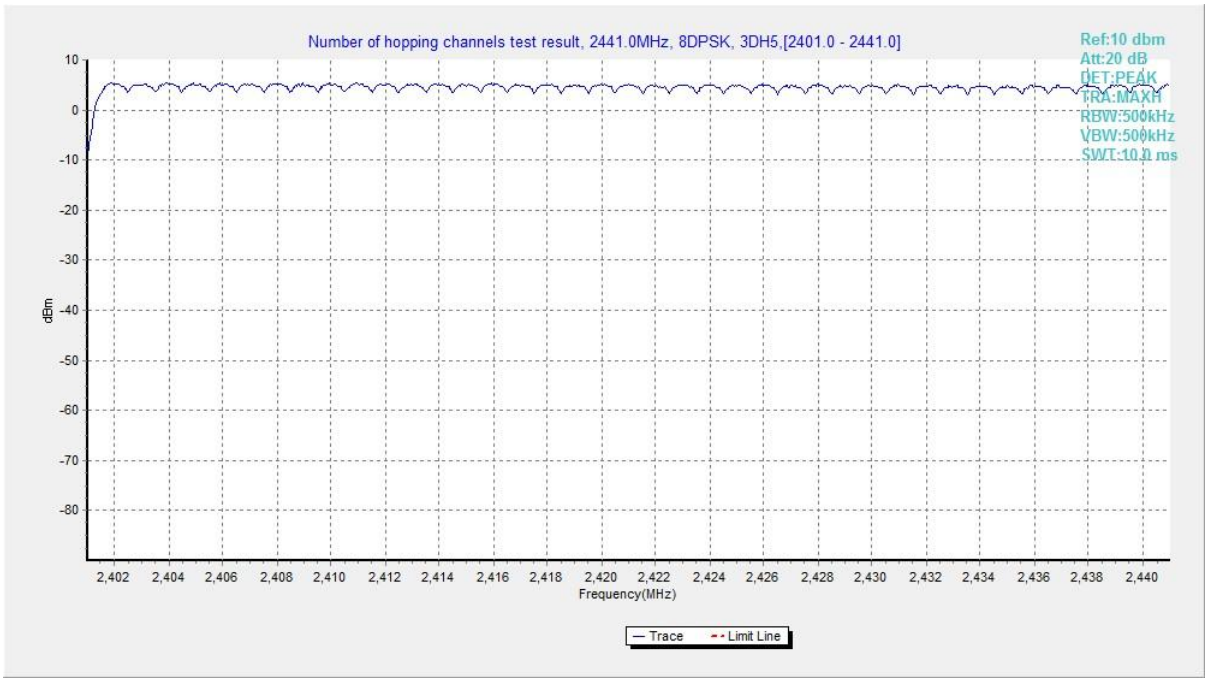

Fig. 79 Hopping channel ch0 ~ ch39 (8DPSK)

Fig. 80 Hopping channel ch40 ~ ch78 (8DPSK)

A.9 Carrier Frequency Separation

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) & RSS-247 section 5.1	By a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater

Measurement Results:

Mode	Channel	Packet	Separation of hopping channels	Test result (MHz)	Conclusion
GFSK	39	DH5	Fig.81	1.00	**P**
π /4 DQPSK	39	2-DH5	Fig.82	1.00	**P**
8DPSK	39	3-DH5	Fig.83	1.00	**P**

See below for test graphs.
Conclusion: Pass

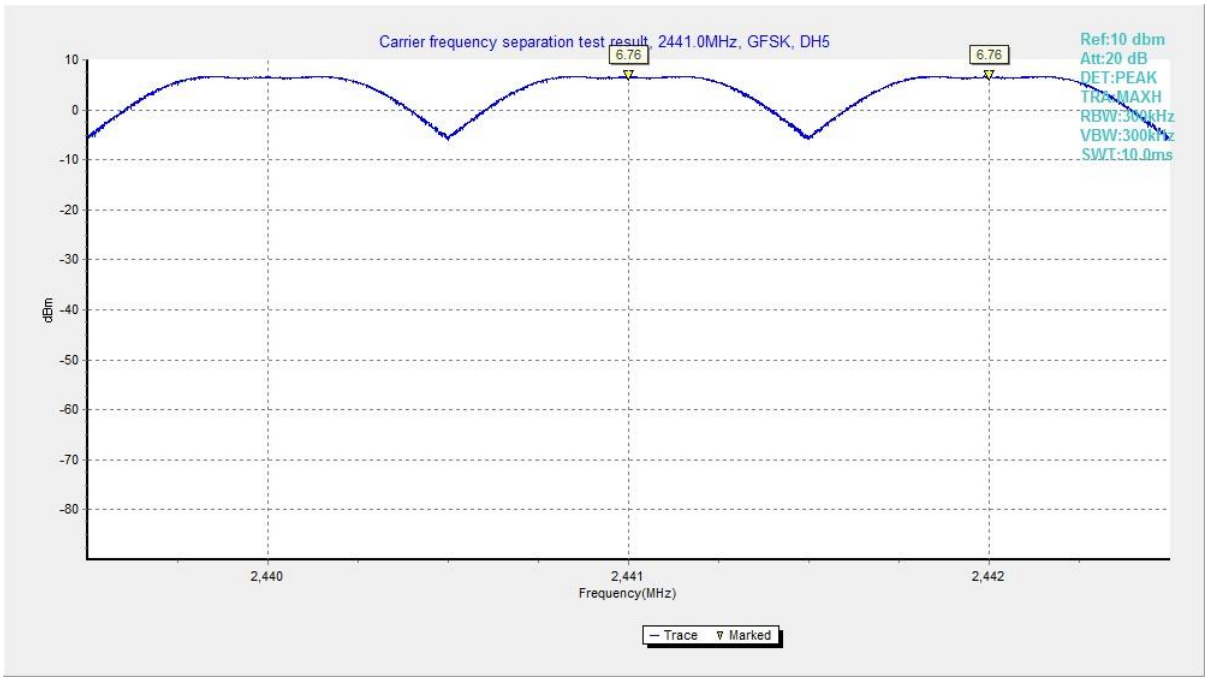

Fig. 81 Carrier Frequency Separation (GFSK, Ch39)

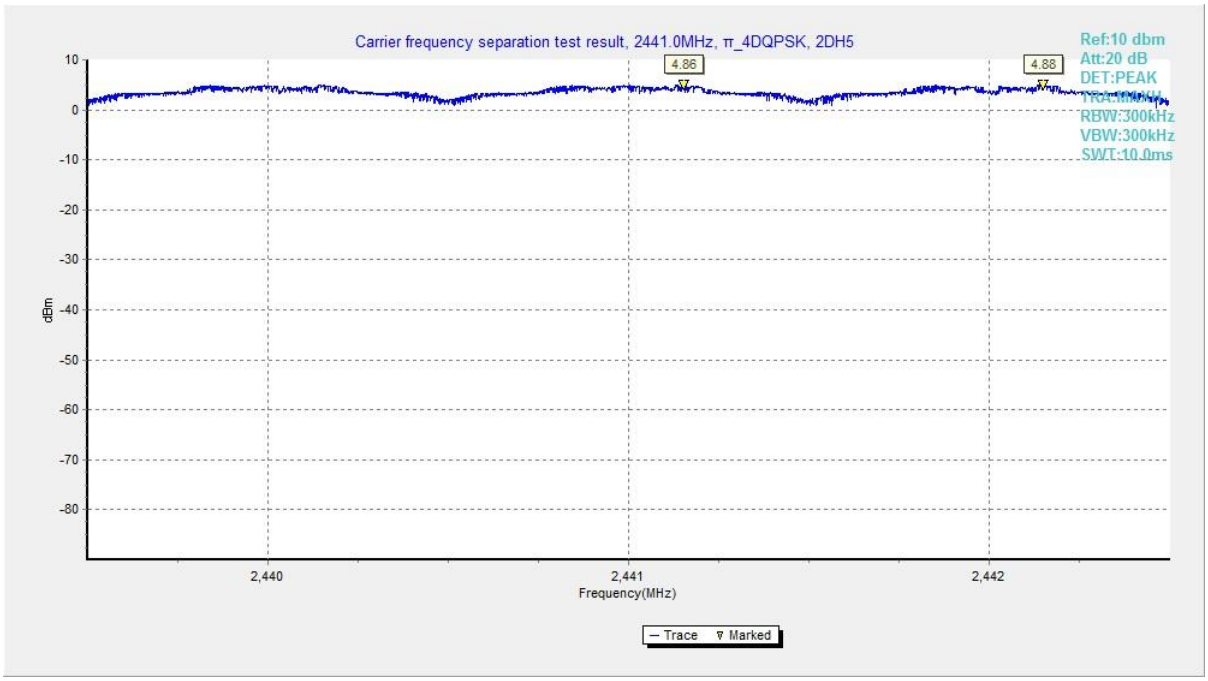

Fig. 82 Carrier Frequency Separation (π /4 DQPSK, Ch39)

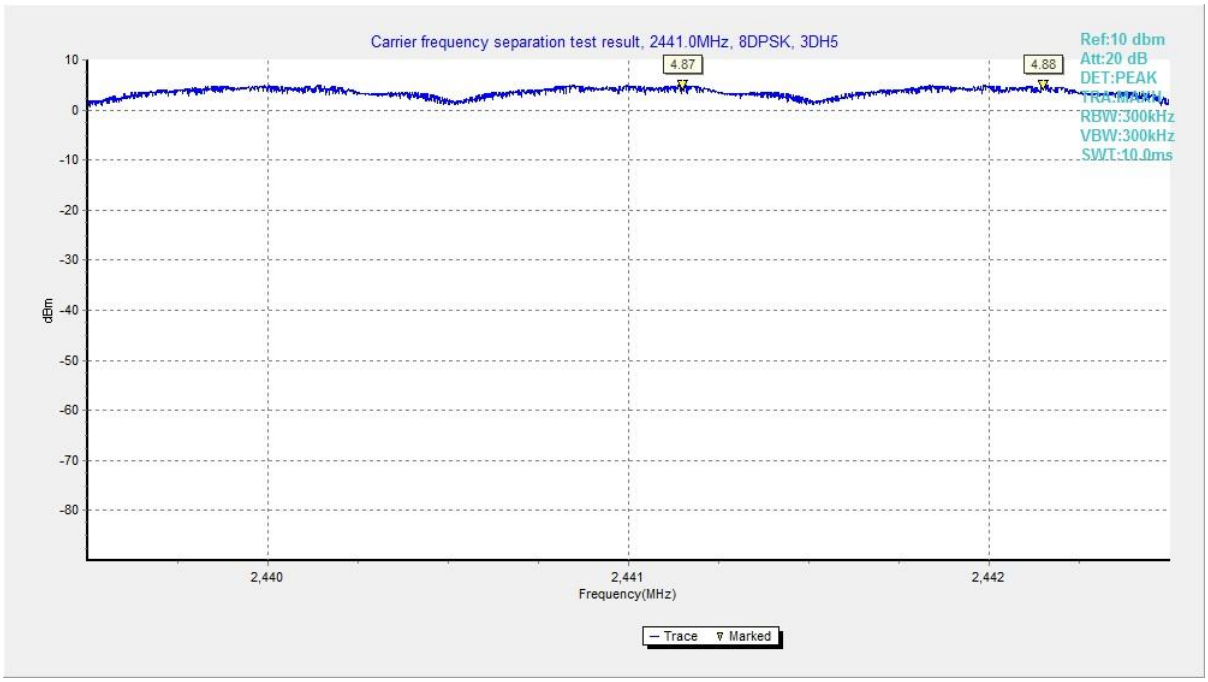

Fig. 83 Carrier Frequency Separation (8DPSK, Ch39)

A.10 AC Power line Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

BT (Quasi-peak Limit) - AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.84	Fig.85	P
0.5 to 5	56			
5 to 30	60			
Note: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

BT (Average Limit) - AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.84	Fig.85	P
0.5 to 5	46			
5 to 30	50			
Note: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Test Condition:

Voltage (V)	Frequency (Hz)
240	60

Measurement Result and limit:

BT (Quasi-peak Limit) - AE2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.86	Fig.87	P
0.5 to 5	56			
5 to 30	60			
Note: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

BT (Average Limit) - AE2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	

0.15 to 0.5	56 to 46	Fig.86	Fig.87	**P**
0.5 to 5	46			
5 to 30	50			
Note: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Note: The measurement results include the L1 and N measurements.

See below for test graphs.
Conclusion: Pass

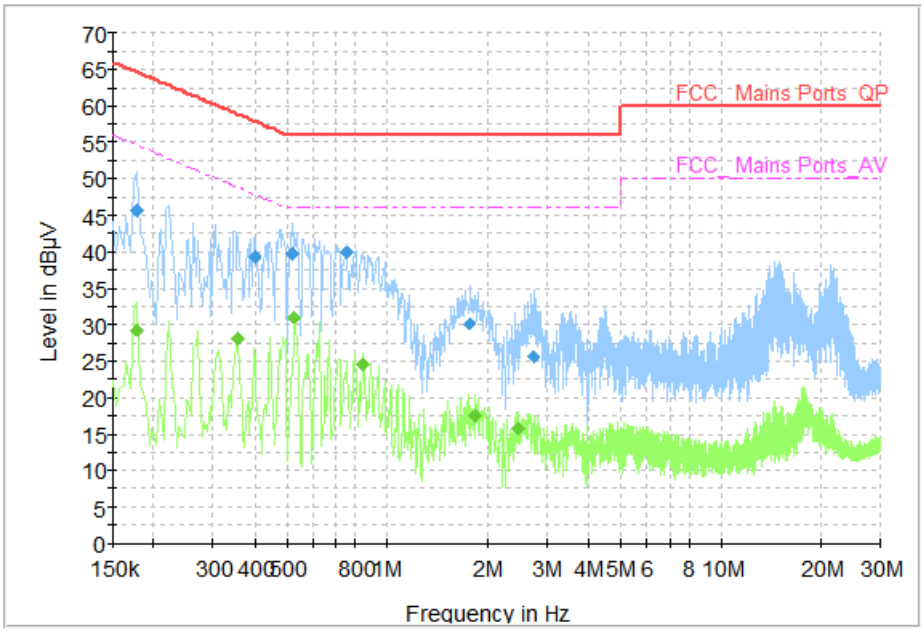

Fig. 84 AC Powerline Conducted Emission (Traffic, AE2, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.178000	45.66	64.58	18.92	N	ON	9.6
0.402000	39.37	57.81	18.44	N	ON	9.6
0.518000	39.63	56.00	16.37	N	ON	9.7
0.758000	39.77	56.00	16.23	L1	ON	9.7
1.762000	30.19	56.00	25.81	N	ON	9.7
2.754000	25.62	56.00	30.38	N	ON	9.7

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.178000	29.19	54.58	25.39	N	ON	9.6
0.358000	28.04	48.78	20.74	L1	ON	9.7
0.530000	31.05	46.00	14.95	L1	ON	9.7
0.846000	24.45	46.00	21.55	L1	ON	9.7
1.830000	17.39	46.00	28.61	L1	ON	9.7
2.458000	15.78	46.00	30.22	L1	ON	9.7

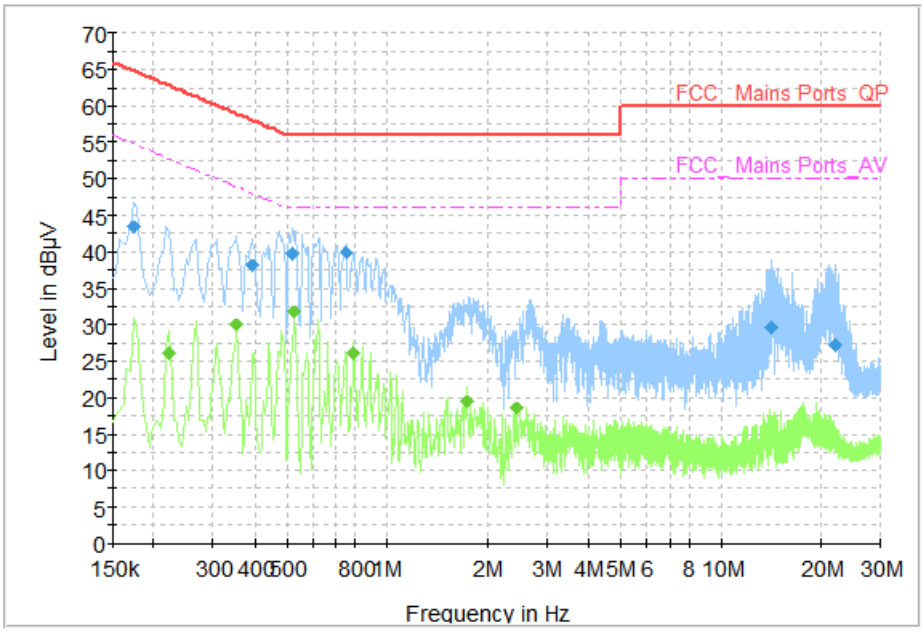

Fig. 85 AC Power line Conducted Emission (Idle, AE2, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.174000	43.40	64.77	21.36	L1	ON	9.7
0.394000	38.17	57.98	19.81	N	ON	9.6
0.518000	39.68	56.00	16.32	N	ON	9.7
0.754000	39.79	56.00	16.21	L1	ON	9.7
14.090000	29.64	60.00	30.36	N	ON	9.9
22.050000	27.23	60.00	32.77	N	ON	10.4

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.222000	26.09	52.74	26.65	N	ON	9.6
0.354000	30.01	48.87	18.86	L1	ON	9.7
0.530000	31.71	46.00	14.29	L1	ON	9.7
0.794000	26.11	46.00	19.89	L1	ON	9.7
1.730000	19.41	46.00	26.59	L1	ON	9.7
2.434000	18.48	46.00	27.52	L1	ON	9.7

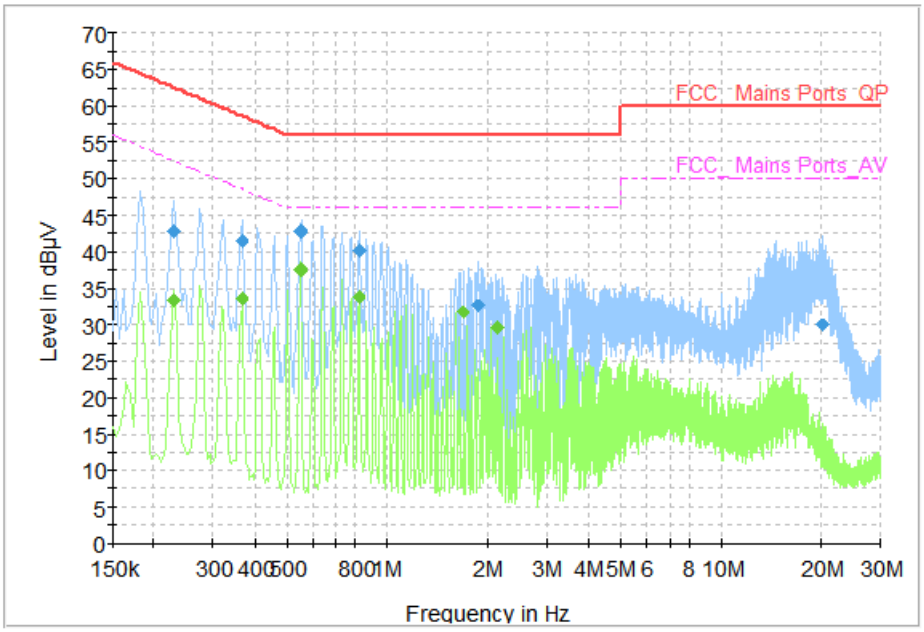

Fig. 86 AC Powerline Conducted Emission (Traffic, AE2, 240V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	42.78	62.45	19.67	L1	ON	9.7
0.366000	41.48	58.59	17.11	N	ON	9.6
0.550000	42.90	56.00	13.10	L1	ON	9.7
0.826000	40.17	56.00	15.83	N	ON	9.7
1.870000	32.67	56.00	23.33	N	ON	9.7
20.114000	30.02	60.00	29.98	N	ON	10.4

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	33.31	52.45	19.14	L1	ON	9.7
0.366000	33.52	48.59	15.07	L1	ON	9.7
0.550000	37.47	46.00	8.53	L1	ON	9.7
0.822000	33.90	46.00	12.10	L1	ON	9.7
1.690000	31.80	46.00	14.20	L1	ON	9.7
2.146000	29.60	46.00	16.40	L1	ON	9.7

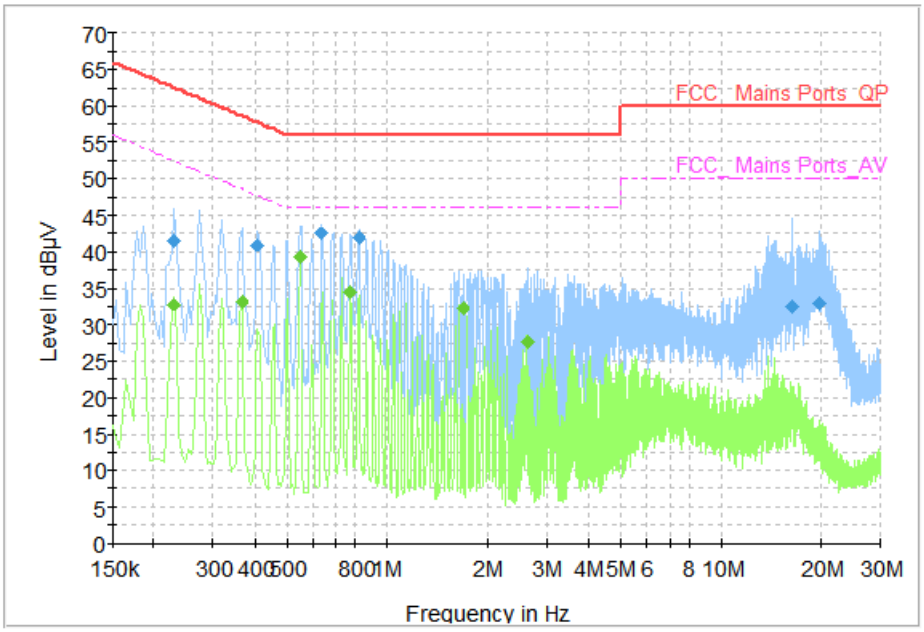

Fig. 87 AC Power line Conducted Emission (Idle, AE2, 240V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	41.45	62.45	21.00	N	ON	9.6
0.410000	40.98	57.65	16.67	N	ON	9.7
0.638000	42.52	56.00	13.48	L1	ON	9.7
0.822000	41.94	56.00	14.06	N	ON	9.7
16.250000	32.50	60.00	27.50	N	ON	10.1
19.742000	33.06	60.00	26.94	N	ON	10.4

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	32.86	52.45	19.59	L1	ON	9.7
0.366000	33.21	48.59	15.38	L1	ON	9.7
0.546000	39.29	46.00	6.71	L1	ON	9.7
0.774000	34.33	46.00	11.67	L1	ON	9.7
1.686000	32.20	46.00	13.80	L1	ON	9.7
2.646000	27.62	46.00	18.38	L1	ON	9.7

A.11 Occupied Bandwidth

Measurement Limit:

Standard	Limit
RSS-Gen section 6.7	/

Measurement Result:

Mode	Channel	Occupied Bandwidth (kHz)		conclusion
GFSK	0	Fig.88	1012.25	/
	39	Fig.89	1013.25	
	78	Fig.90	1012.25	
π /4 DQPSK	0	Fig.91	973.76	/
	39	Fig.92	955.26	
	78	Fig.93	974.76	
8DPSK	0	Fig.94	1066.73	/
	39	Fig.95	1040.74	
	78	Fig.96	1071.73	

See below for test graphs.
Conclusion: Pass

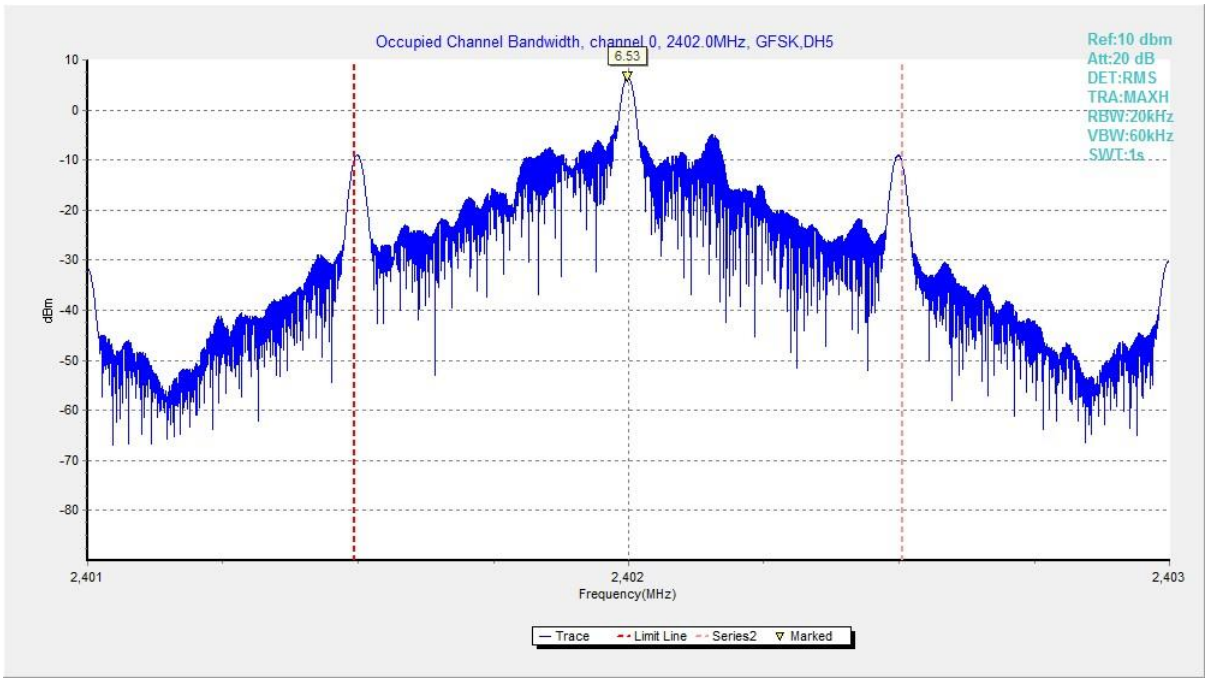

Fig. 88 Occupied Bandwidth (GFSK, Ch 0)

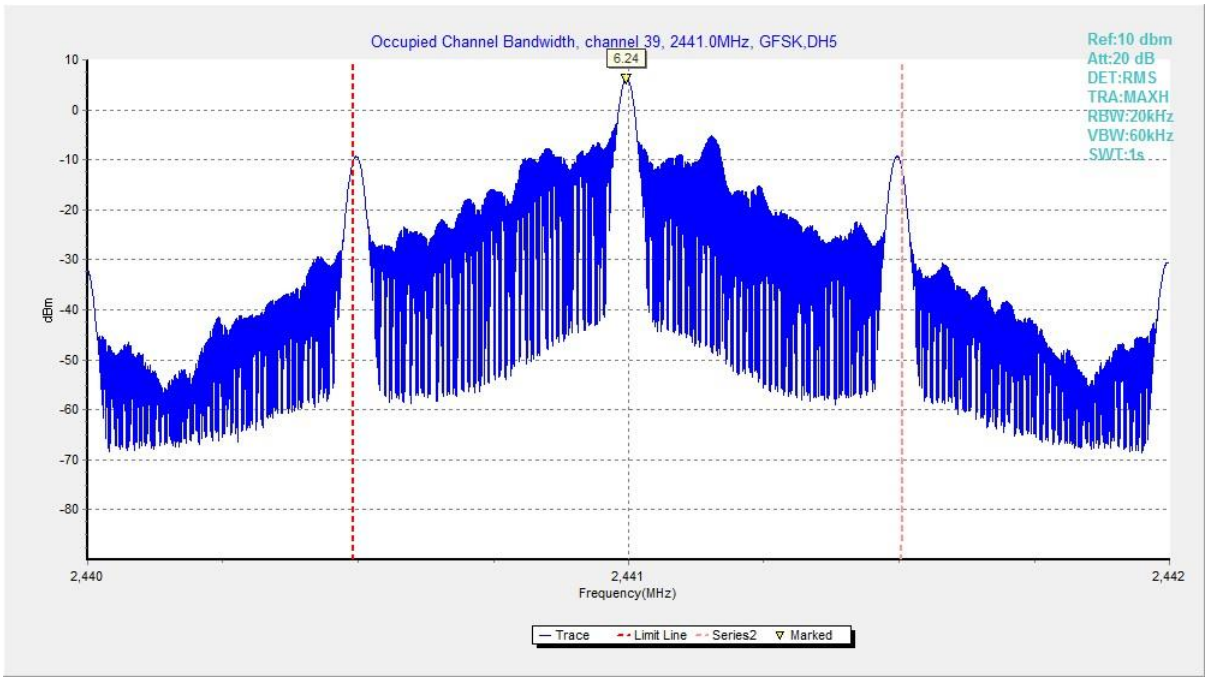

Fig. 89 Occupied Bandwidth (GFSK, Ch 39)

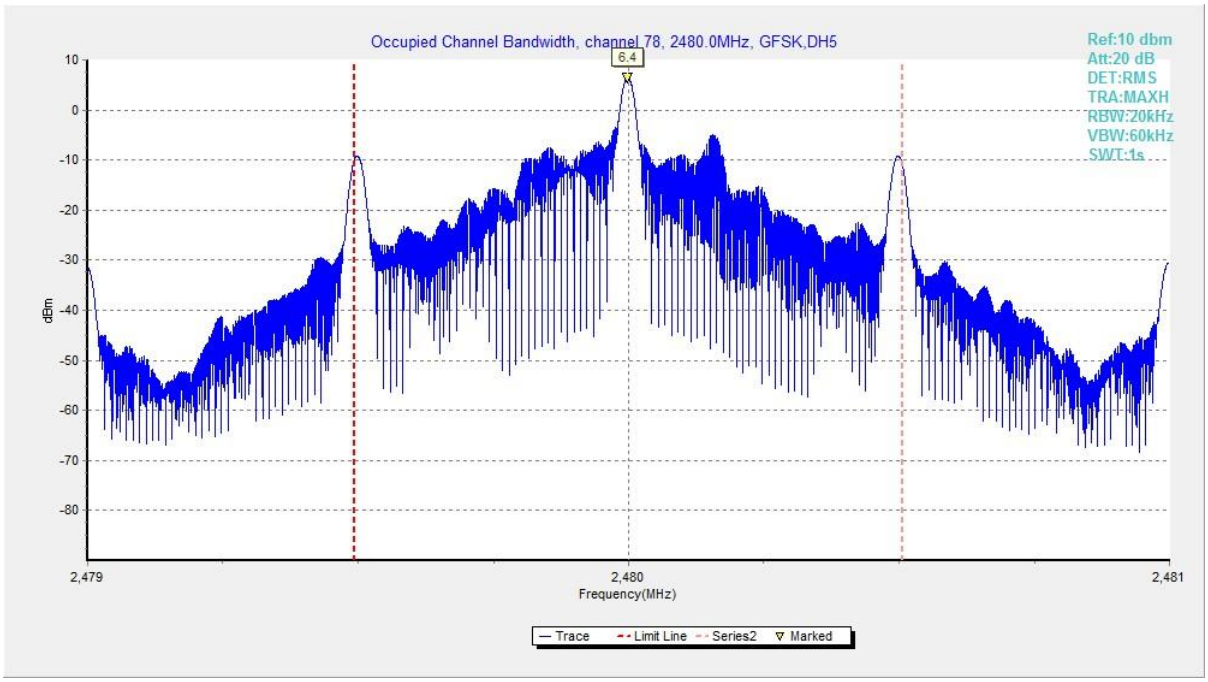

Fig. 90 Occupied Bandwidth (GFSK, Ch 78)

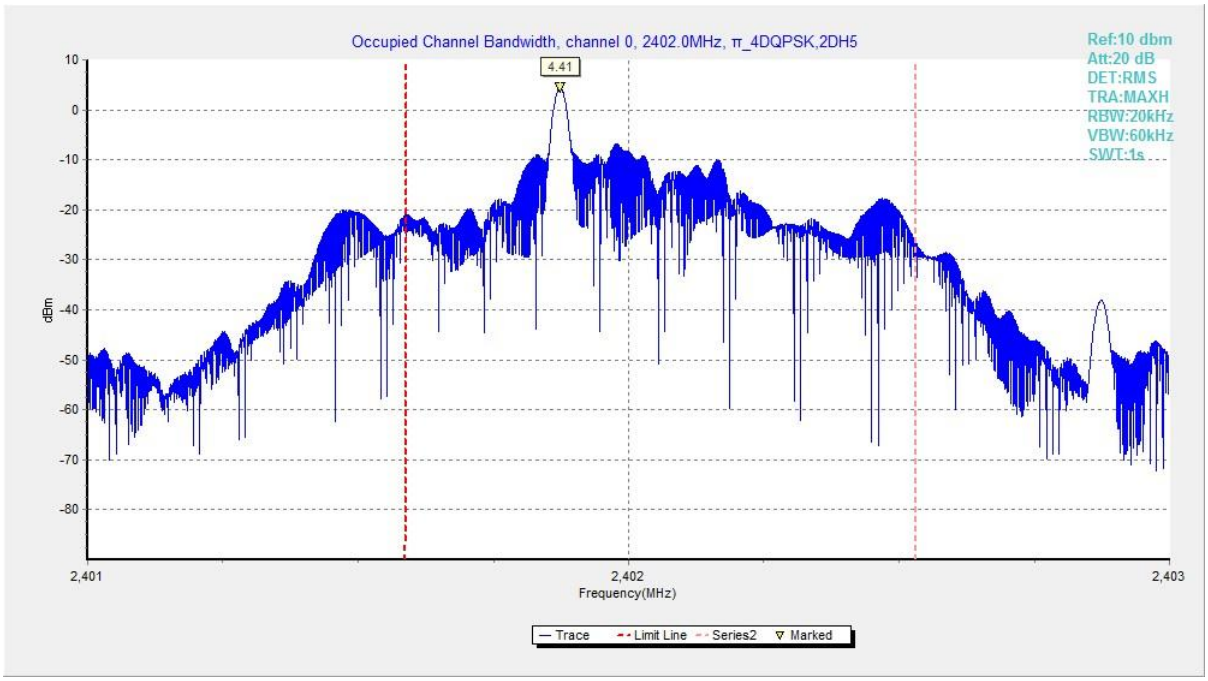

Fig. 91 Occupied Bandwidth (π /4 DQPSK, Ch 0)

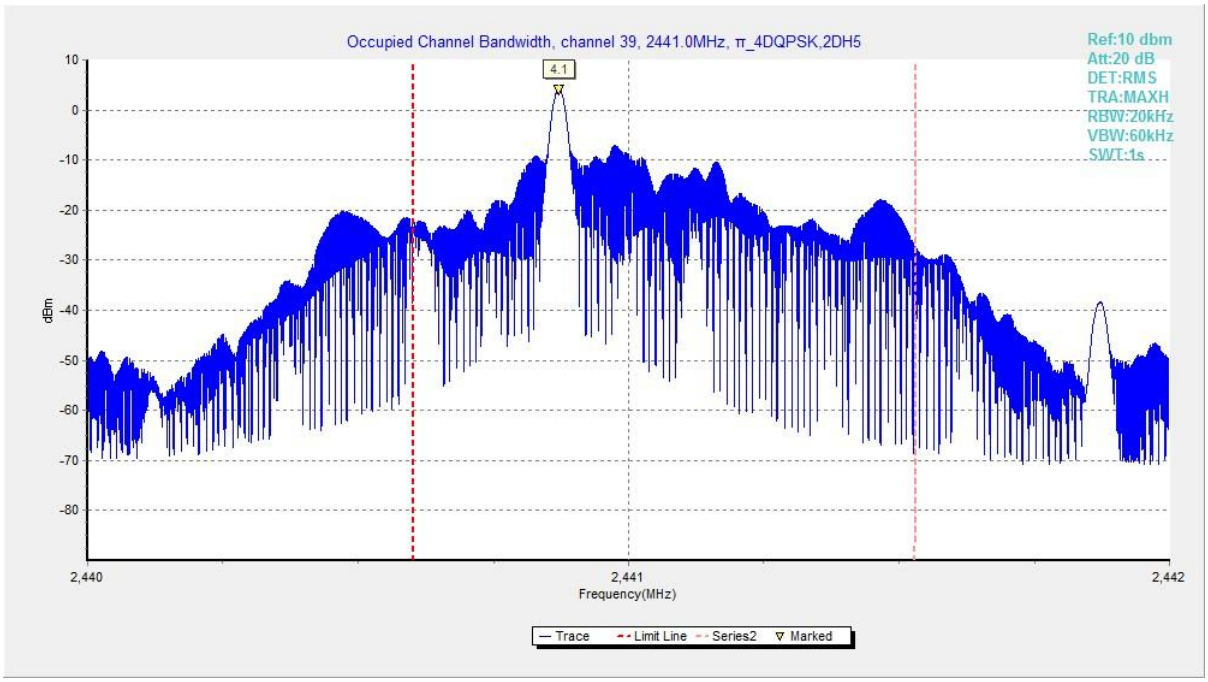

Fig. 92 Occupied Bandwidth (π /4 DQPSK, Ch 39)

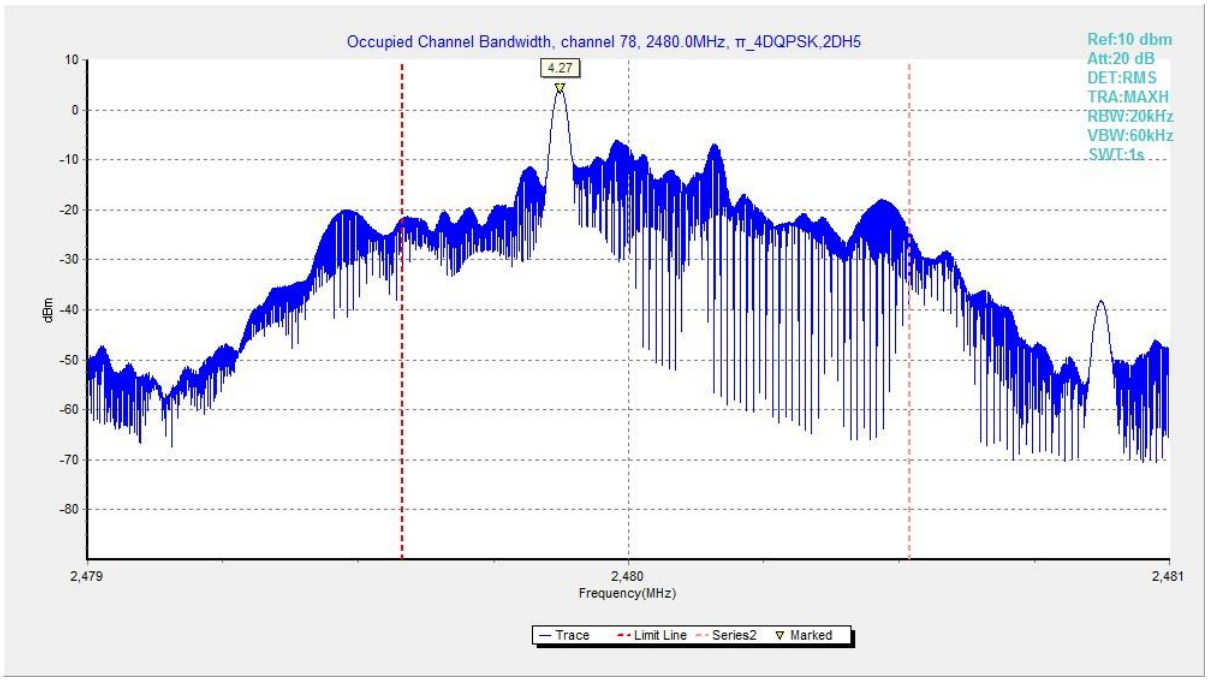

Fig. 93 Occupied Bandwidth (π /4 DQPSK, Ch 78)

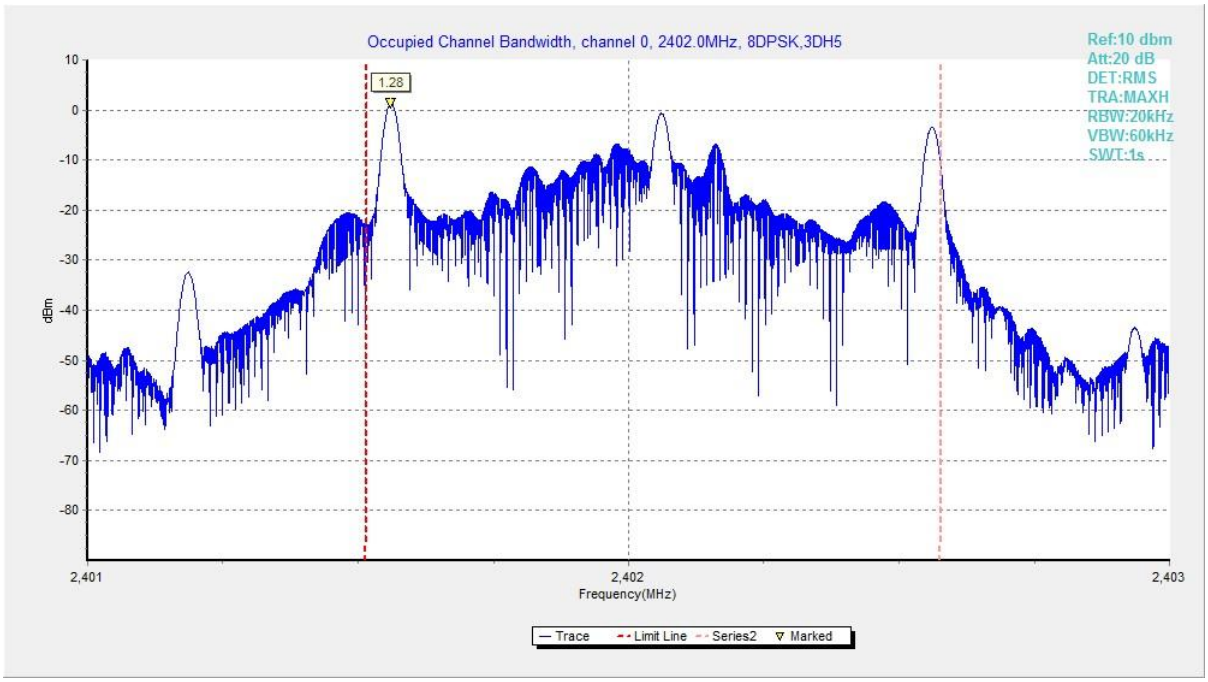

Fig. 94 Occupied Bandwidth (8DPSK, Ch 0)

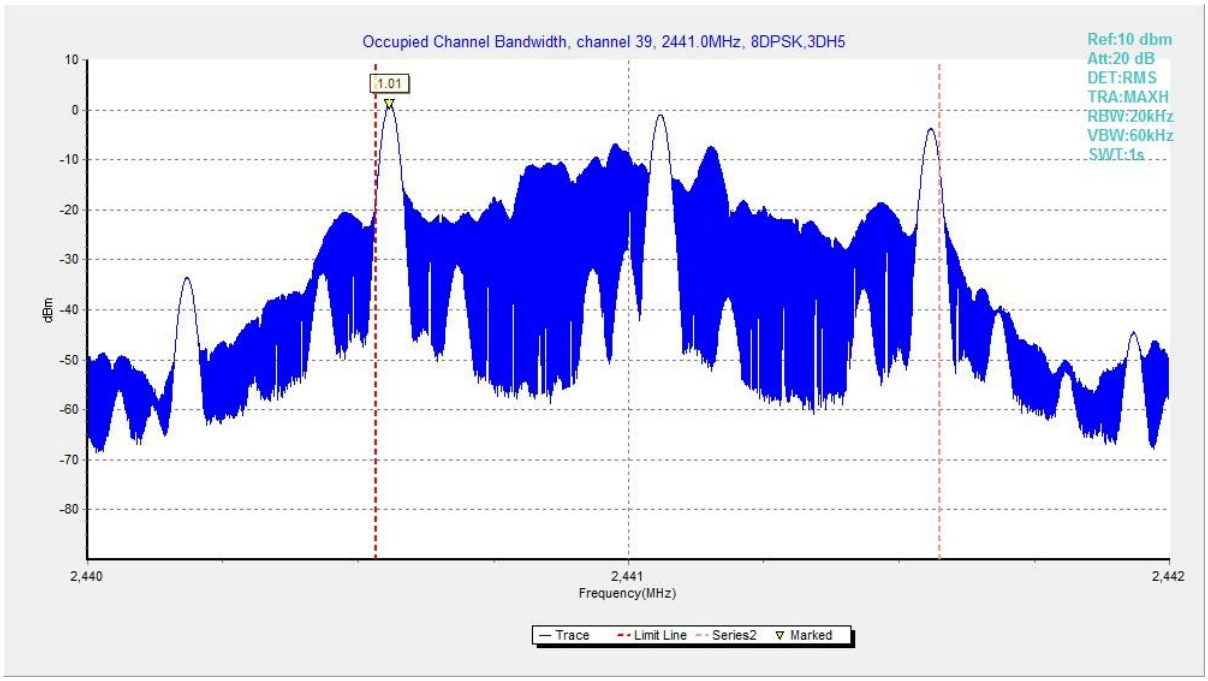

Fig. 95 Occupied Bandwidth (8DPSK, Ch 39)

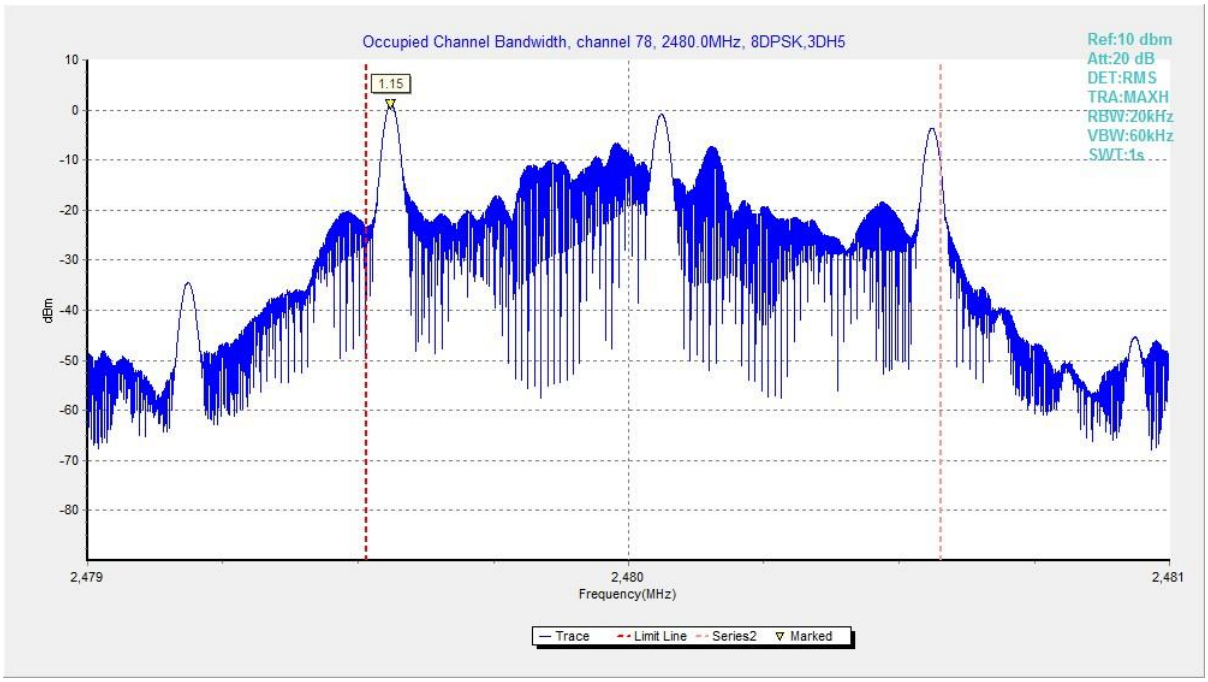

Fig. 96 Occupied Bandwidth (8DPSK, Ch 78)

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