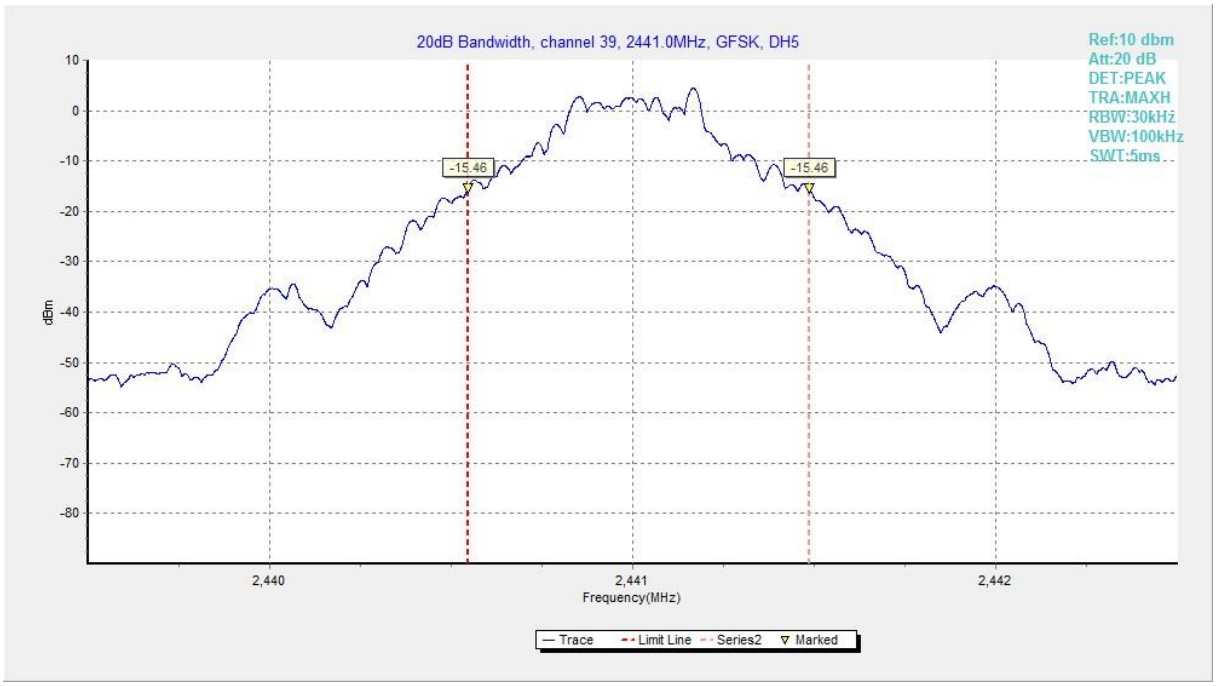

Fig. 70 20dB Bandwidth (GFSK, Ch 39)

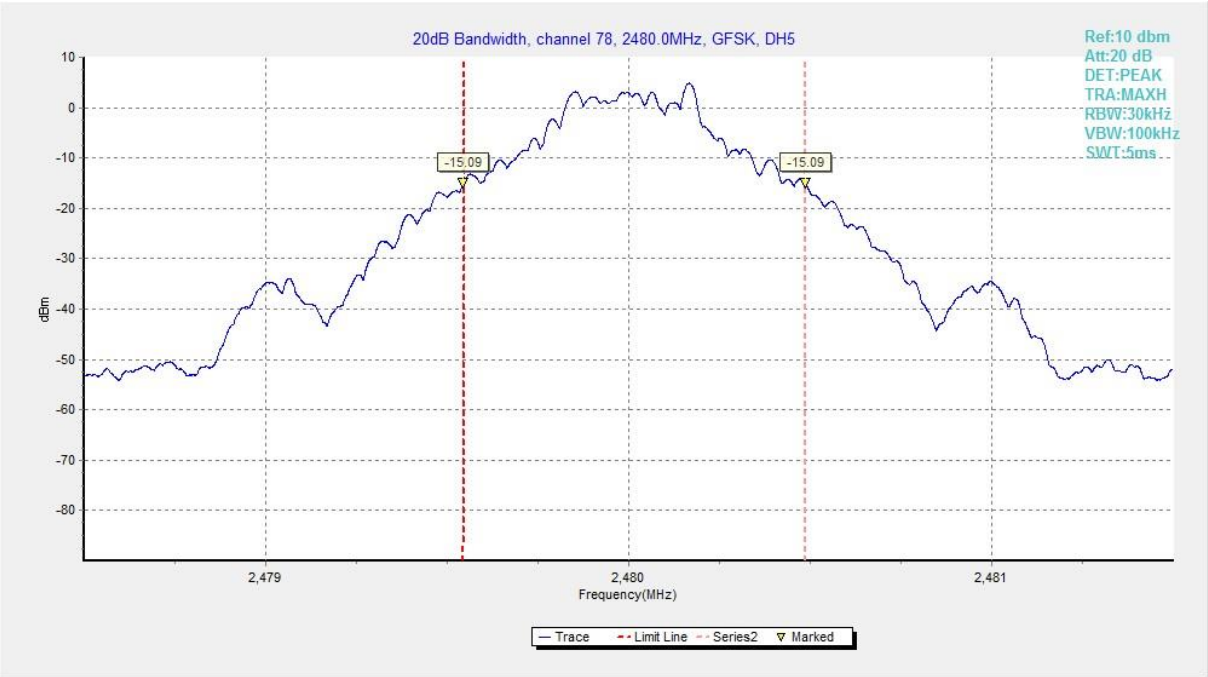

Fig. 71 20dB Bandwidth (GFSK, Ch 78)

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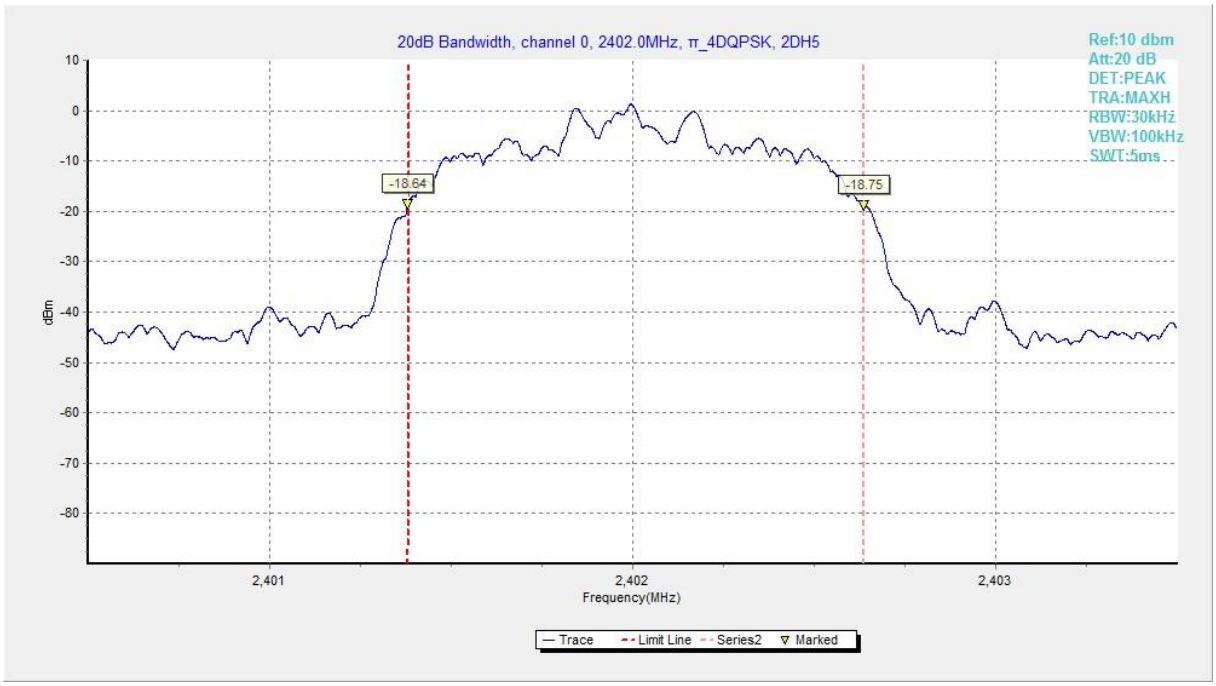

Fig. 72 20dB Bandwidth (π /4 DQPSK, Ch 0)

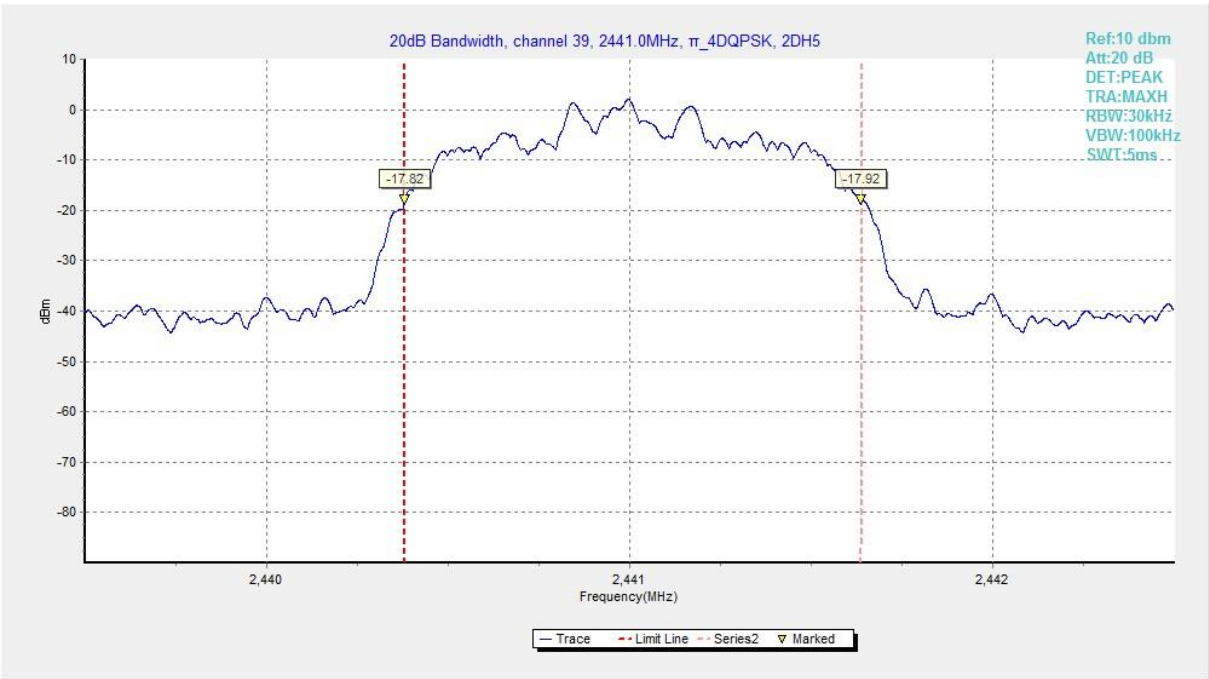

Fig. 73 20dB Bandwidth (π /4 DQPSK, Ch 39)

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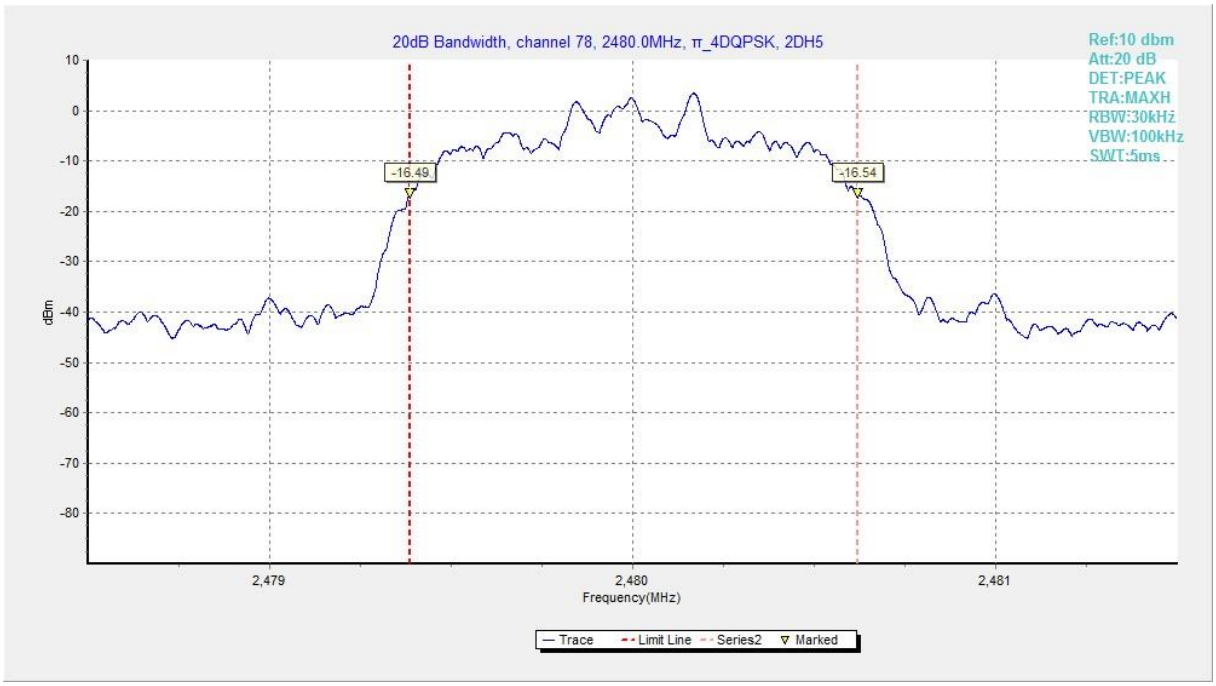

Fig. 74 20dB Bandwidth (π /4 DQPSK, Ch 78)

Fig. 75 20dB Bandwidth (8DPSK, Ch 0)

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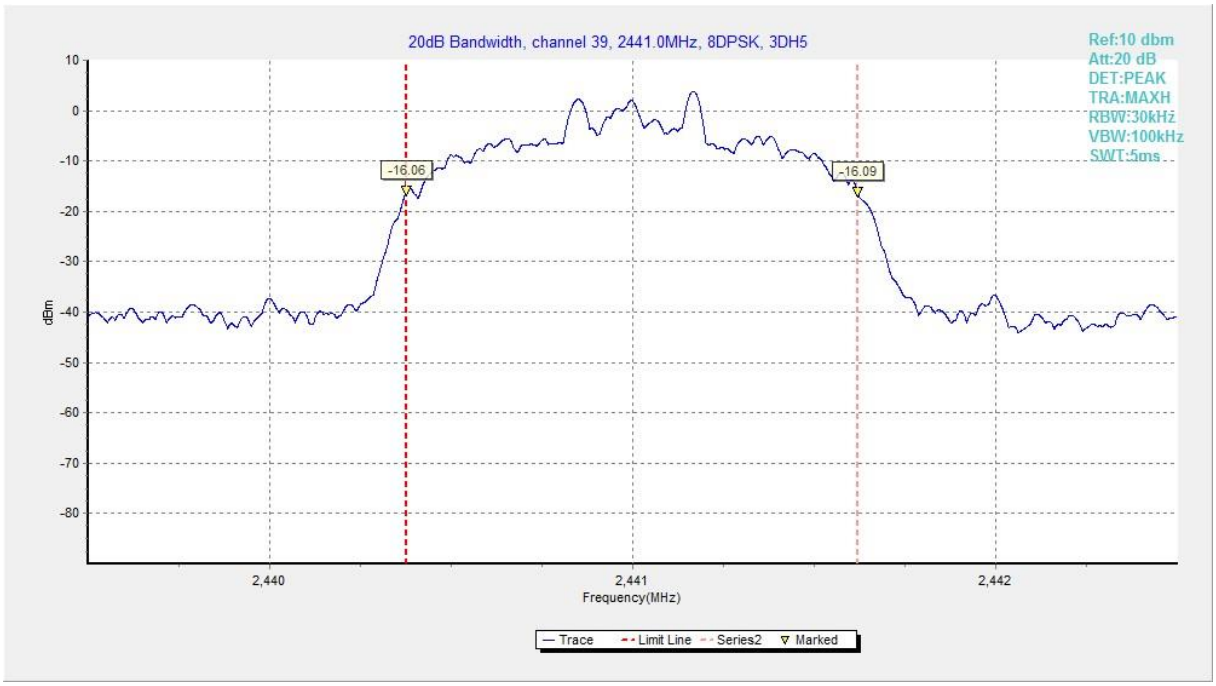

Fig. 76 20dB Bandwidth (8DPSK, Ch 39)

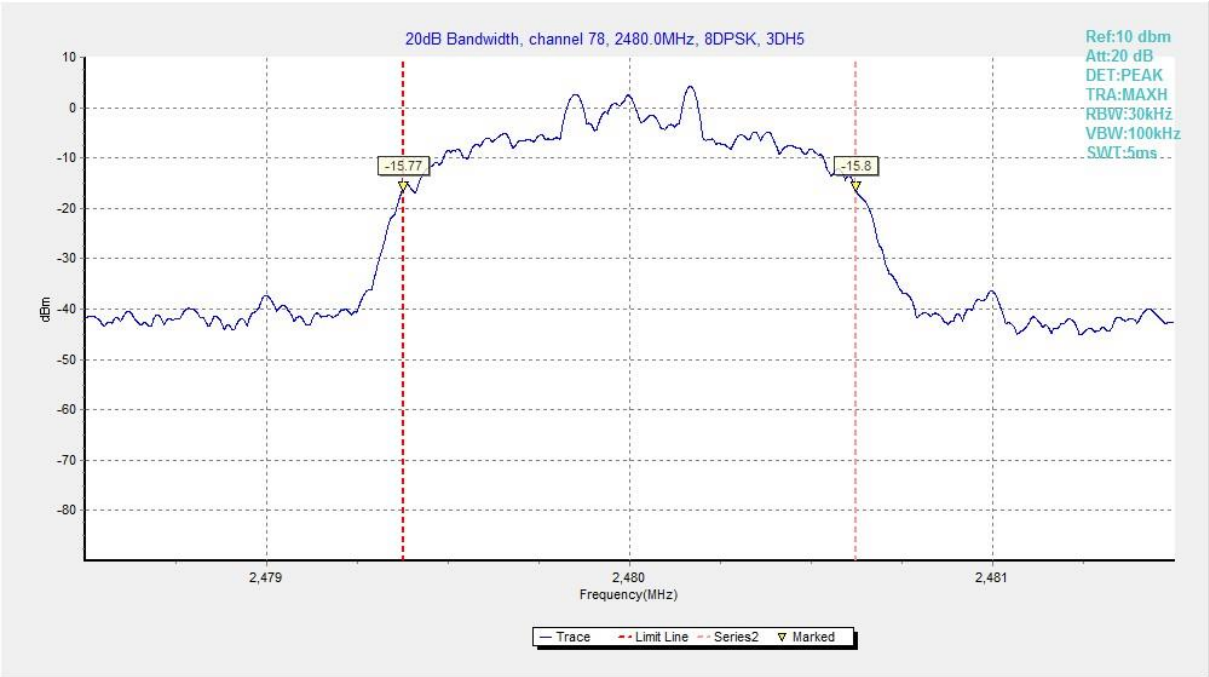

Fig. 77 20dB Bandwidth (8DPSK, Ch 78)

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A.6 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.78	307.44	**P**
			Fig.79		
π /4 DQPSK	39	2-DH5	Fig.80	307.10	**P**
			Fig.81		
8DPSK	39	3-DH5	Fig.82	308.02	**P**
			Fig.83		

See below for test graphs.

Conclusion: Pass

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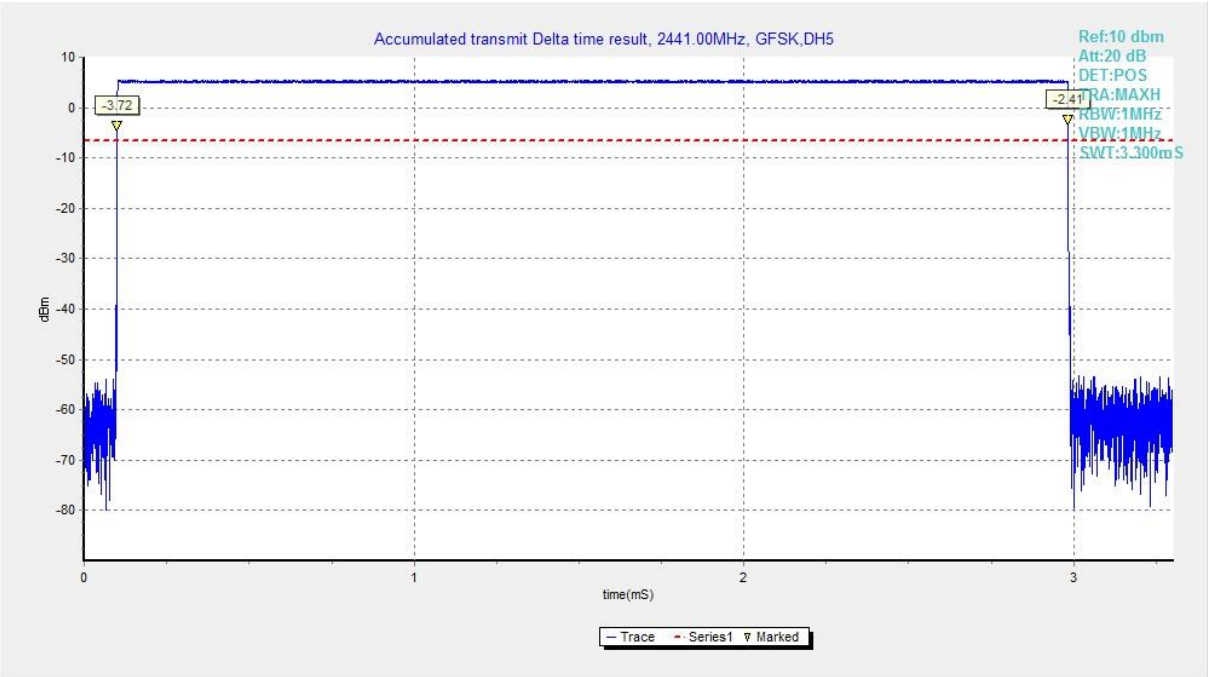

Fig. 78 Time of Occupancy(Dwell Time) (GFSK, Ch39)

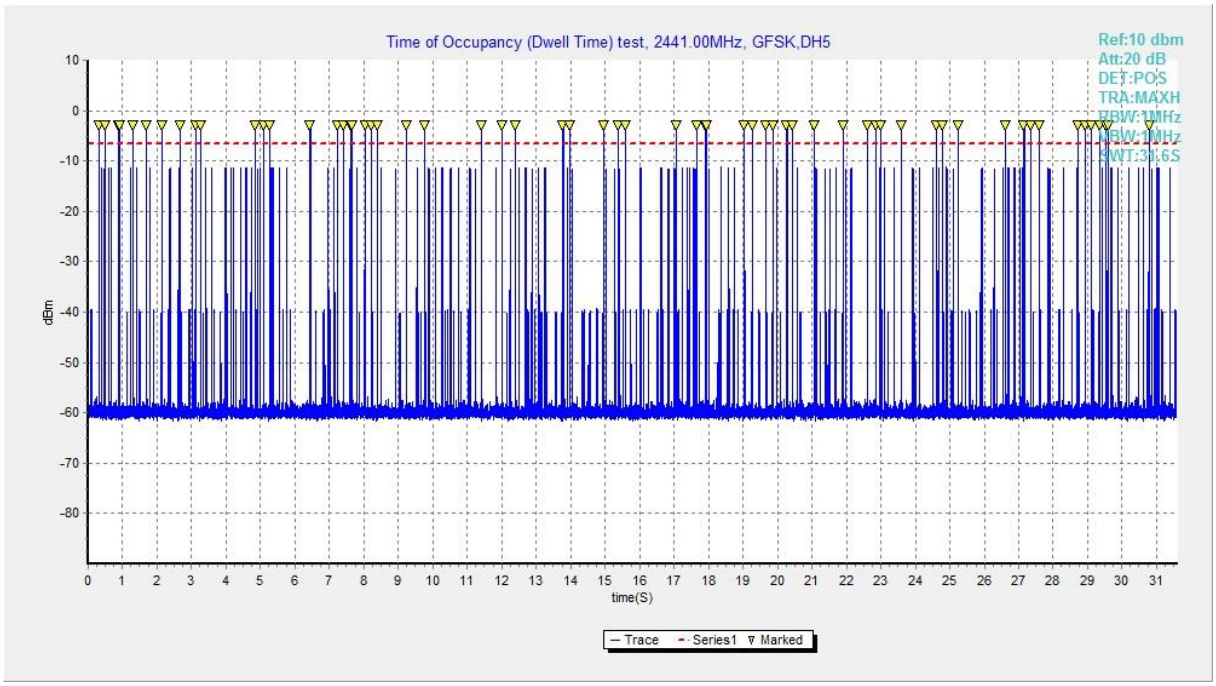

Fig. 79 Time of Occupancy(Dwell Time) (GFSK, Ch39)

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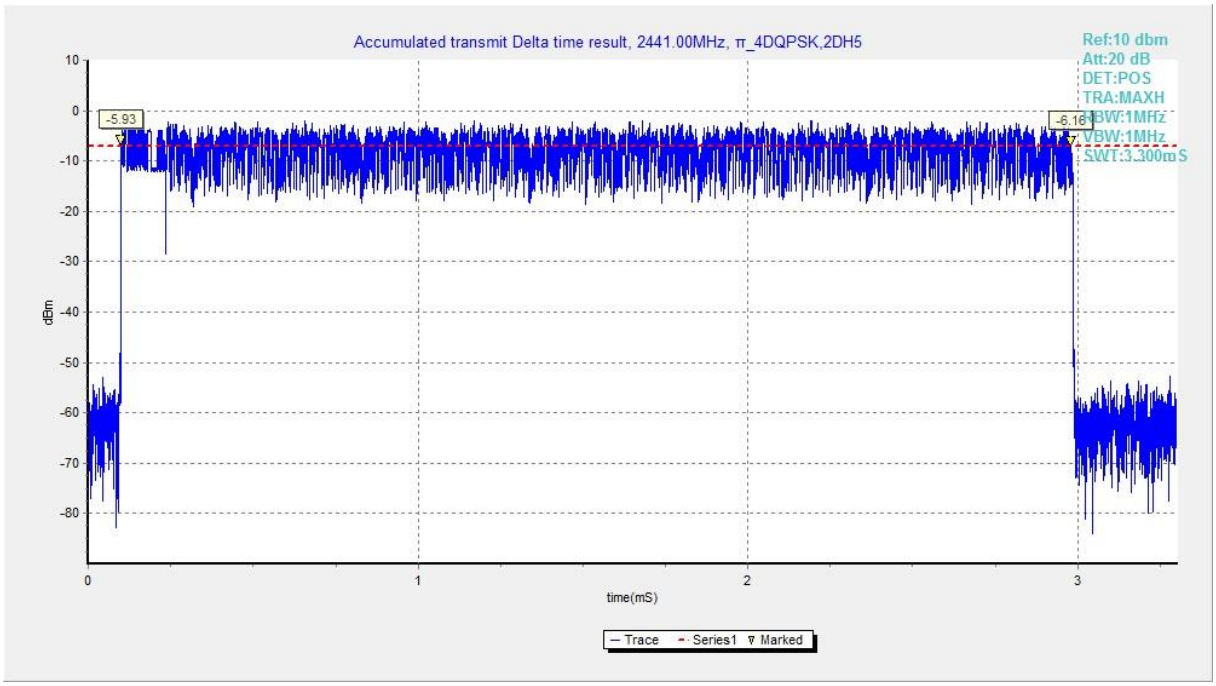

Fig. 80 Time of Occupancy(Dwell Time) (π /4 DQPSK, Ch39)

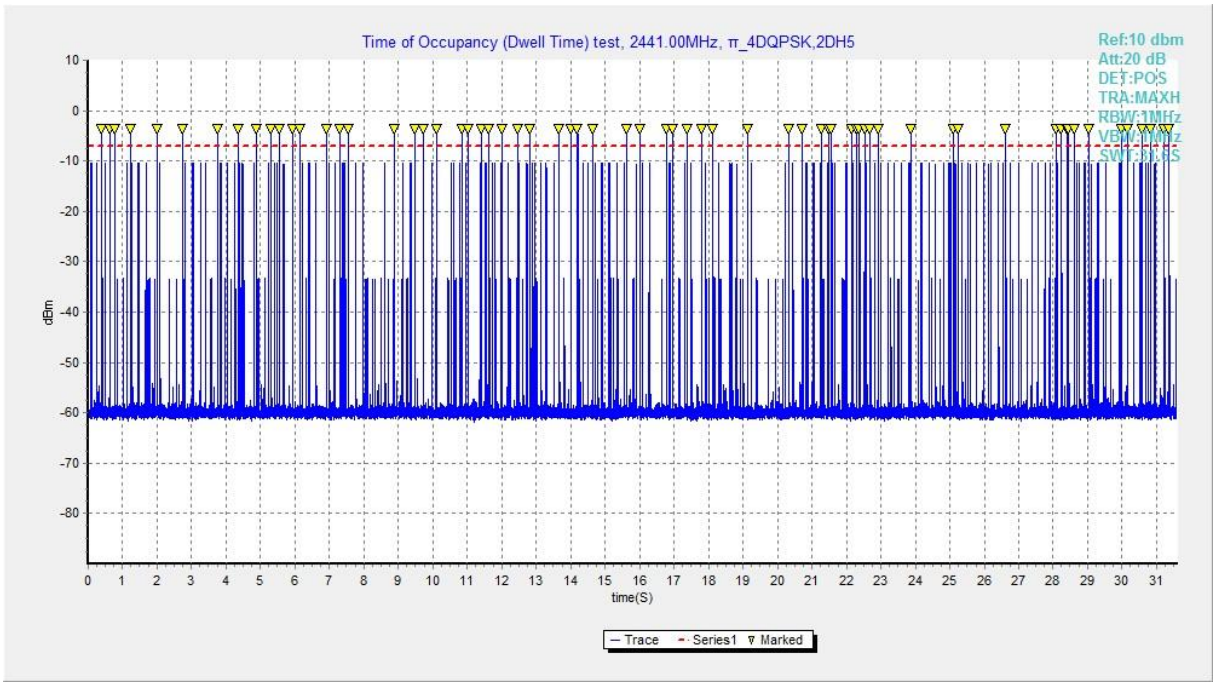

Fig. 81 Time of Occupancy(Dwell Time) (π /4 DQPSK, Ch39)

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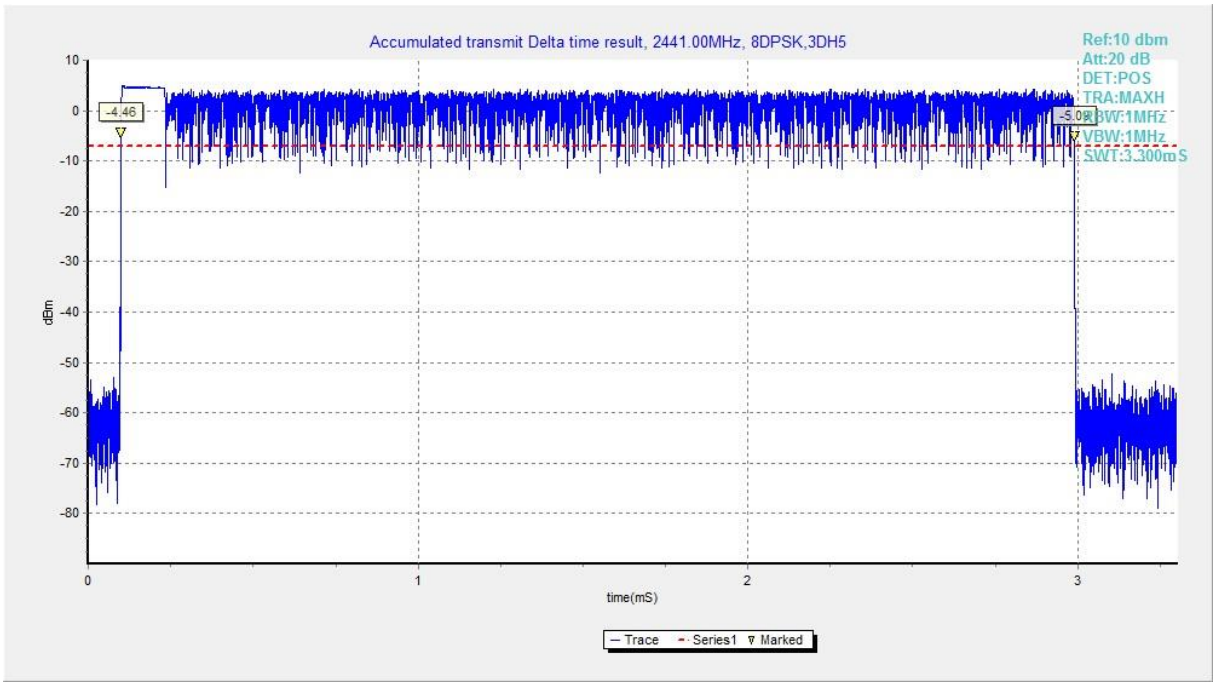

Fig. 82 Time of Occupancy(Dwell Time) (8DPSK, Ch39)

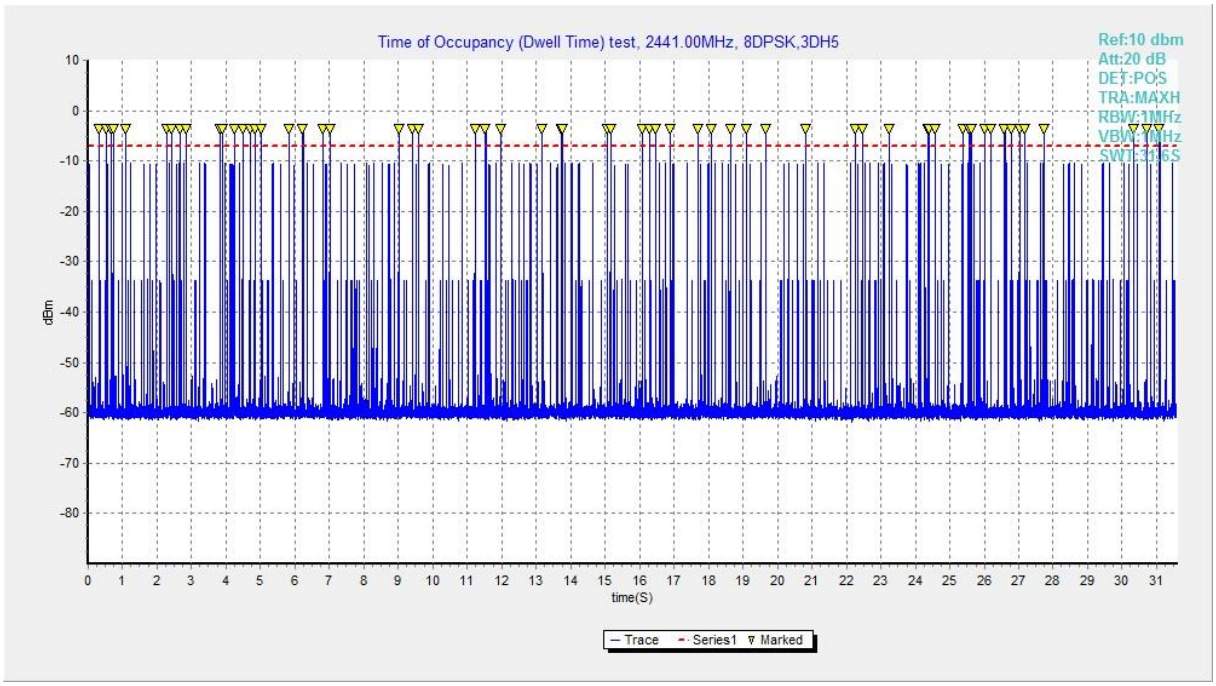

Fig. 83 Time of Occupancy(Dwell Time) (8DPSK, Ch39)

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A.7 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		Test result	Conclusion
GFSK	DH5	Fig.84	Fig.85	79	**P**
π /4 DQPSK	2-DH5	Fig.86	Fig.87	79	**P**
8DPSK	3-DH5	Fig.88	Fig.89	79	**P**

See below for test graphs.

Conclusion: Pass

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Fig. 84 Hopping channel ch0~39 (GFSK, Ch39)

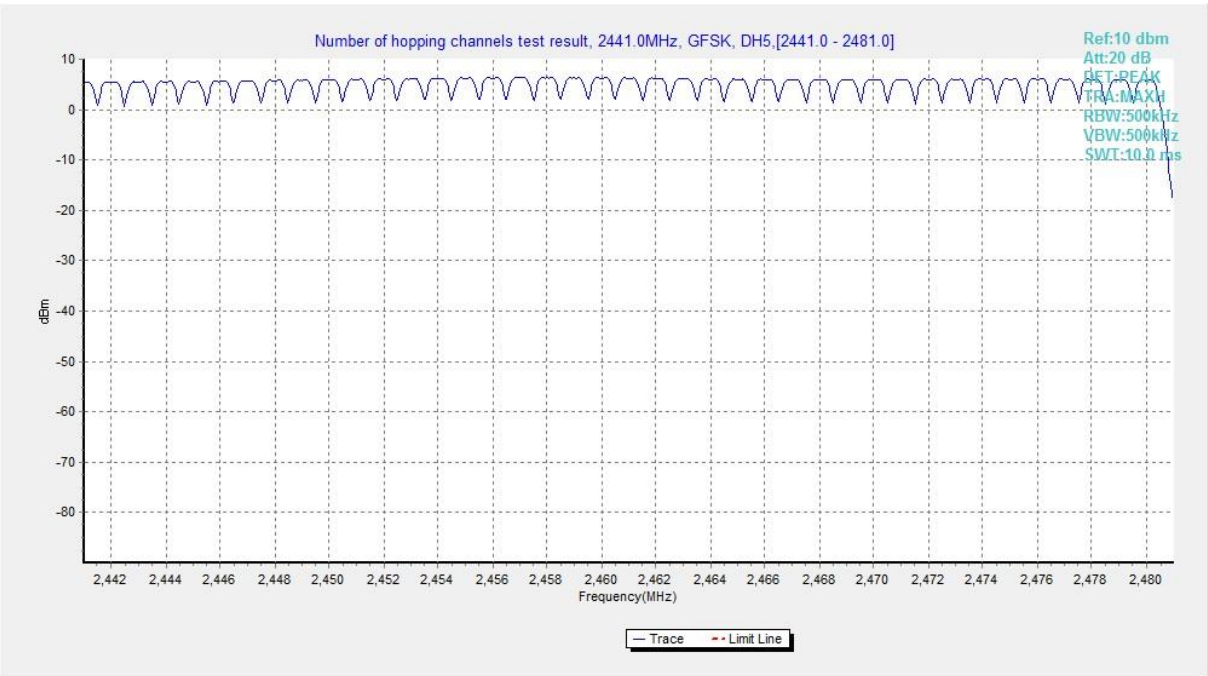

Fig. 85 Hopping channel ch39~78 (GFSK, Ch39)

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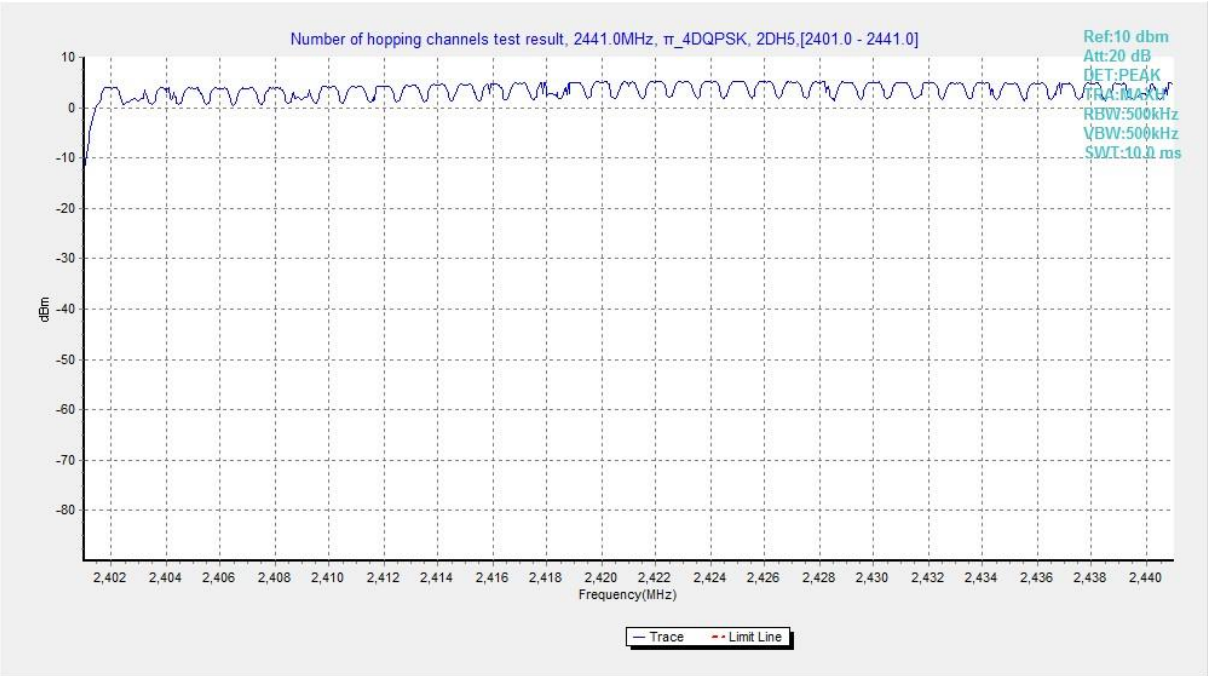

Fig. 86 Hopping channel ch0~39 (π /4 DQPSK, Ch39)

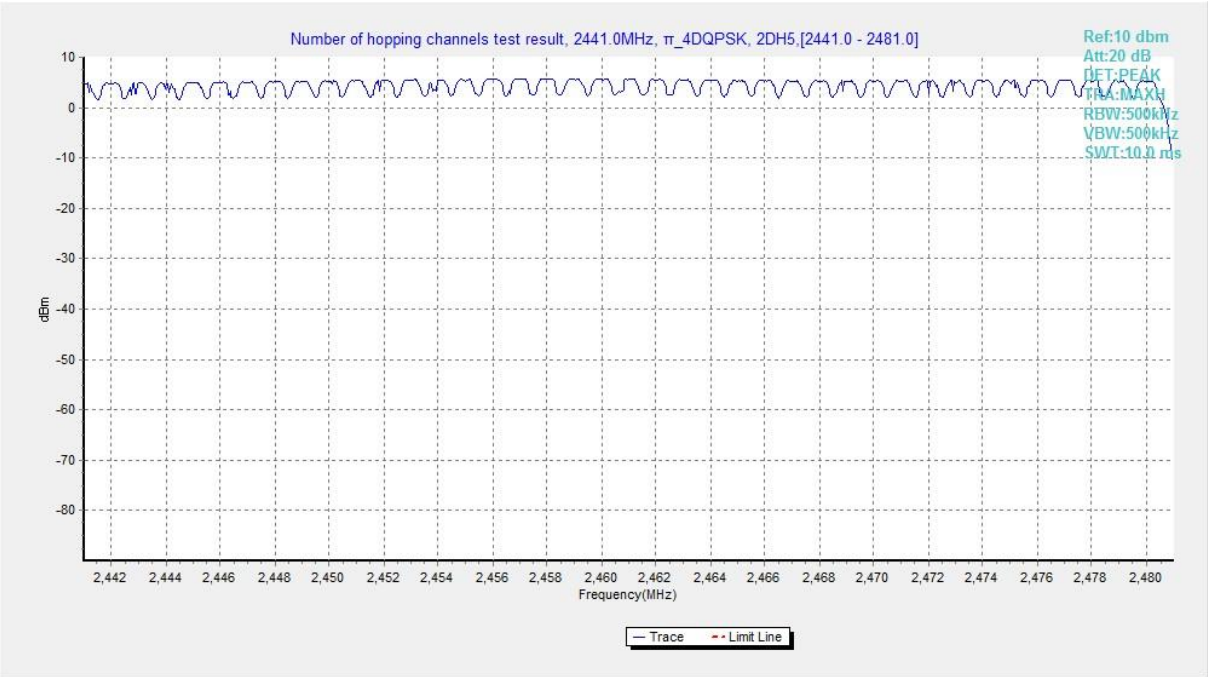

Fig. 87 Hopping channel ch39~78 (π /4 DQPSK, Ch39)

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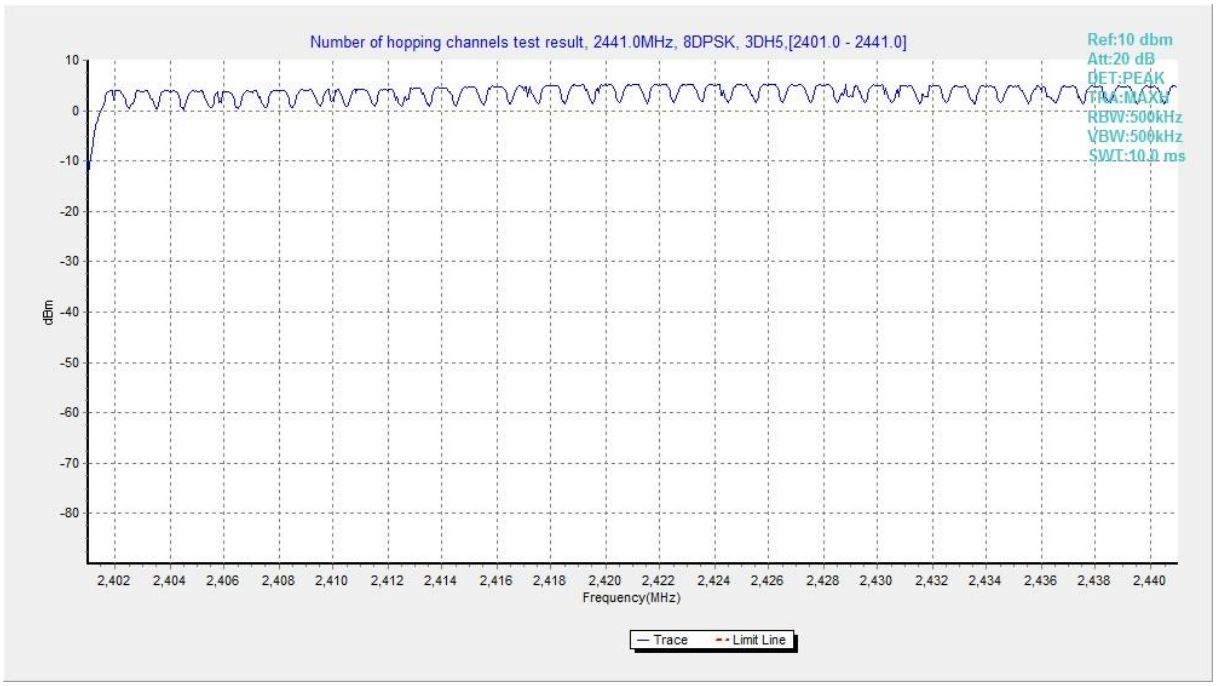

Fig. 88 Hopping channel ch0~39 (8DPSK, Ch39)

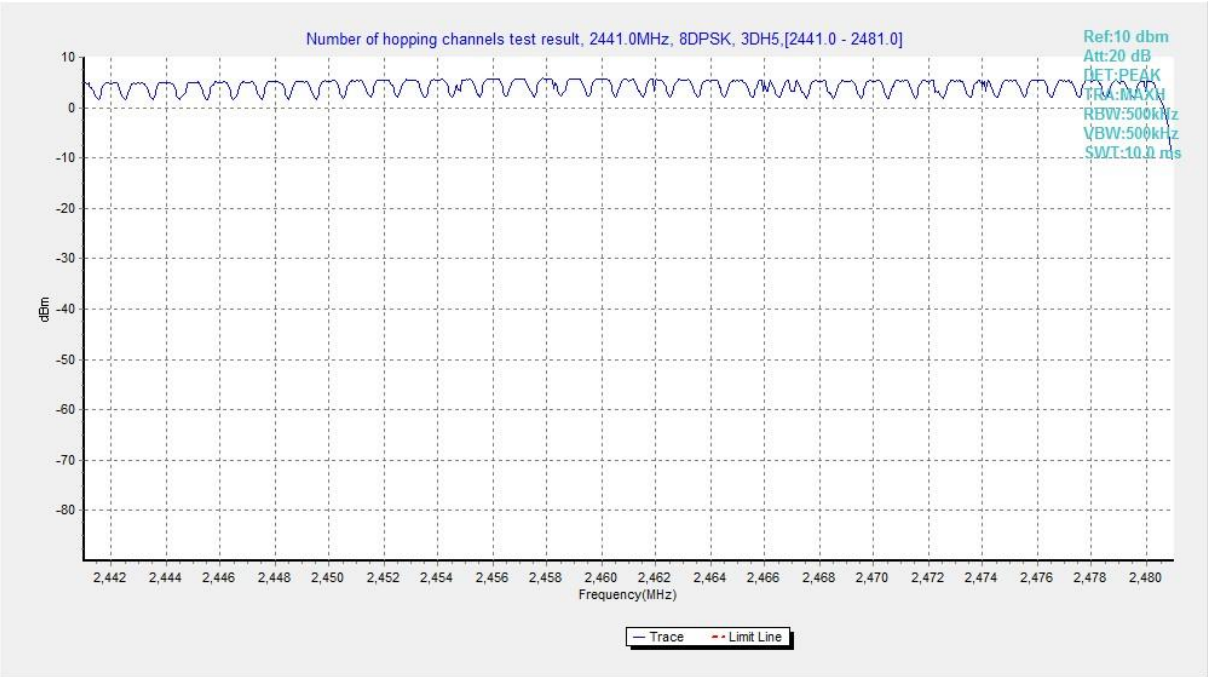

Fig. 89 Hopping channel ch39~78 (8DPSK, Ch39)

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A.8 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 (kHz)	Conclusion
GFSK	39	DH5	Fig.90	1001.25	**P**
π /4 DQPSK	39	2-DH5	Fig.91	984.00	**P**
8DPSK	39	3-DH5	Fig.92	1020.75	**P**

See below for test graphs.

Conclusion: Pass

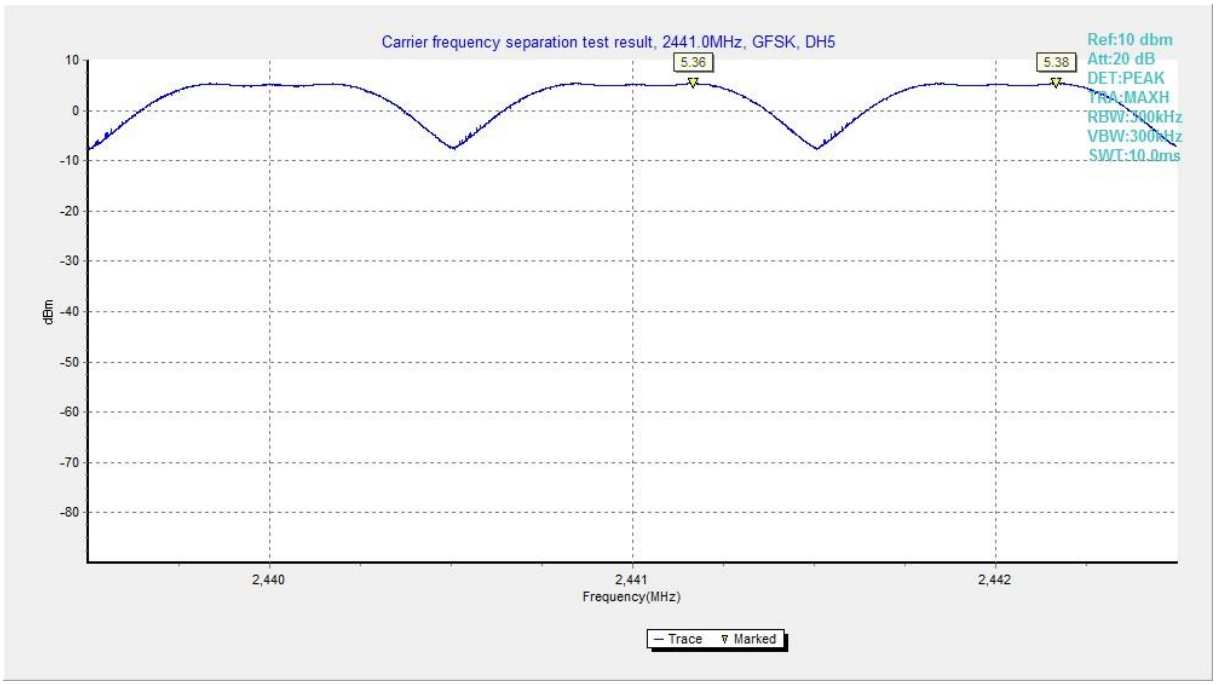

Fig. 90 Carrier Frequency Separation (GFSK, Ch39)

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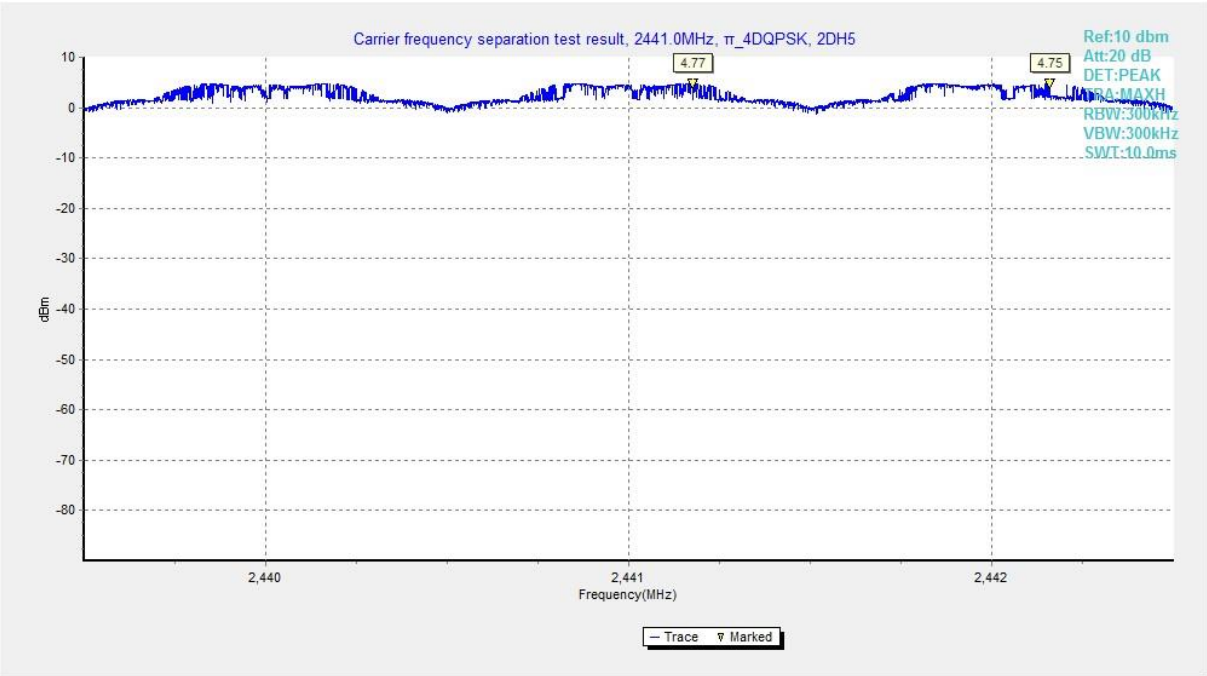

Fig. 91 Carrier Frequency Separation (π /4 DQPSK, Ch39)

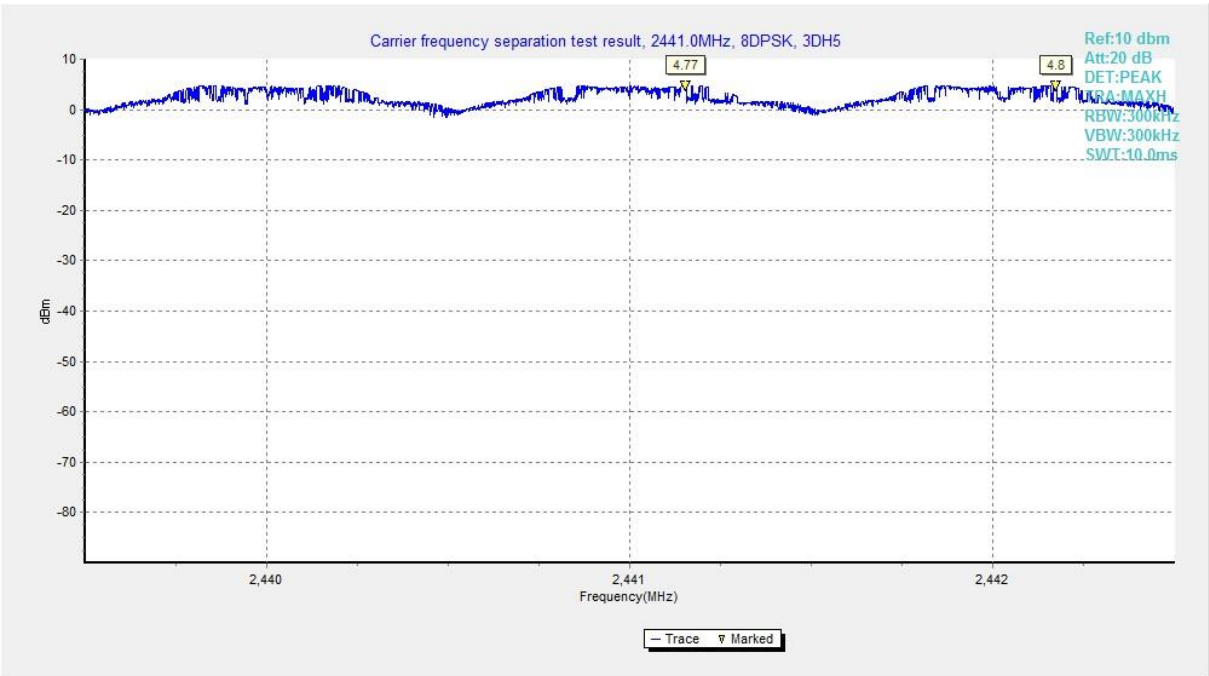

Fig. 92 Carrier Frequency Separation (8DPSK, Ch39)

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A.9 AC Power line Conducted Emission

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

BT (Quasi-peak Limit)-A2-1, A3-1

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	66 to 56	Fig.93	Fig.94	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)-A2-1, A3-1

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.93	Fig.94	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.				

BT (Quasi-peak Limit)-A2-2, A3-2

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.16 to 0.5	66 to 56	Fig.95	Fig.96	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)-A2-2, A3-2

Frequency range (MHz)	Average-peak Limit (dBμV)	Result (dBμV)		Conclusion
		Traffic	Idle	
0.15 to 0.5	56 to 46	Fig.95	Fig.96	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

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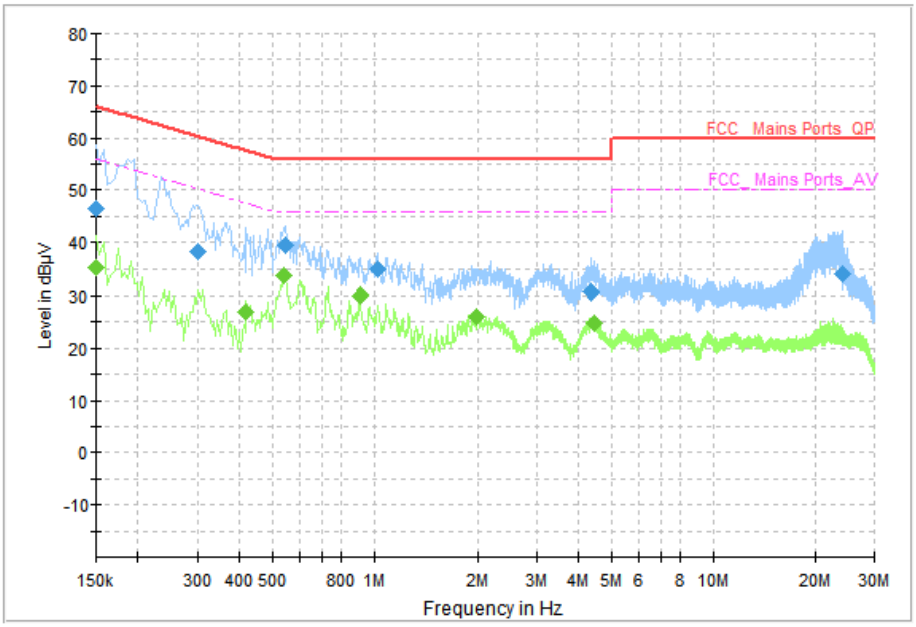

Fig. 93 AC Powerline Conducted Emission (Traffic), A2-1, A3-1

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	46.40	66.00	19.60	N	ON	10
0.302000	38.34	60.19	21.85	N	ON	10
0.546000	39.33	56.00	16.67	L1	ON	10
1.022000	34.80	56.00	21.20	L1	ON	10
4.342000	30.68	56.00	25.32	L1	ON	10
24.030000	33.94	60.00	26.06	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	35.07	56.00	20.93	N	ON	10
0.418000	26.96	47.49	20.53	L1	ON	10
0.538000	33.63	46.00	12.37	L1	ON	10
0.906000	29.96	46.00	16.04	L1	ON	10
1.990000	25.89	46.00	20.11	L1	ON	10
4.422000	24.95	46.00	21.05	L1	ON	10

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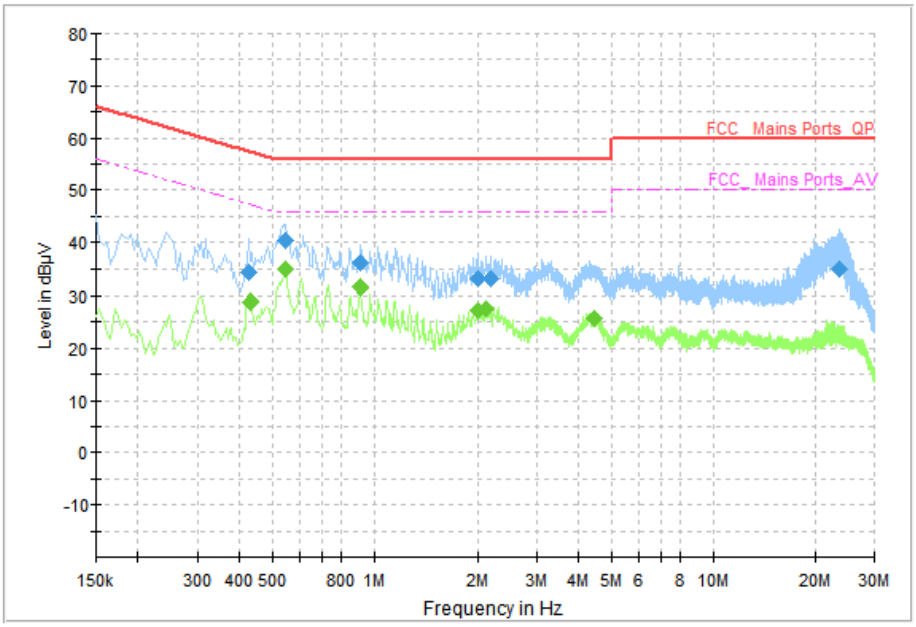

Fig. 94 AC Power line Conducted Emission (Idle), A2-1, A3-1

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.426000	34.14	57.33	23.19	N	ON	10
0.546000	40.46	56.00	15.54	L1	ON	10
0.910000	36.23	56.00	19.77	L1	ON	10
2.006000	33.04	56.00	22.96	L1	ON	10
2.186000	33.09	56.00	22.91	L1	ON	10
23.722000	34.96	60.00	25.04	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.430000	28.88	47.25	18.37	L1	ON	10
0.546000	34.75	46.00	11.25	L1	ON	10
0.910000	31.41	46.00	14.59	L1	ON	10
2.006000	27.35	46.00	18.65	L1	ON	10
2.122000	27.68	46.00	18.32	L1	ON	10
4.422000	25.69	46.00	20.31	L1	ON	10

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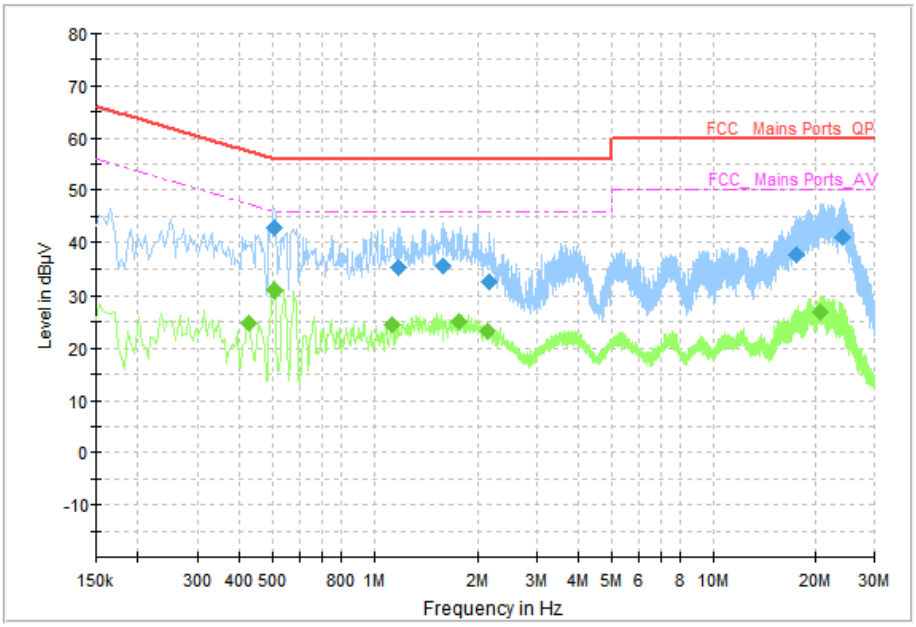

Fig. 95 AC Powerline Conducted Emission (Traffic), A2-2, A3-2

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.506000	42.85	56.00	13.15	L1	ON	10
1.182000	35.33	56.00	20.67	L1	ON	10
1.590000	35.37	56.00	20.63	L1	ON	10
2.170000	32.33	56.00	23.67	L1	ON	10
17.574000	37.52	60.00	22.48	L1	ON	10
24.066000	40.83	60.00	19.17	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.426000	24.69	47.33	22.64	L1	ON	10
0.506000	30.76	46.00	15.24	L1	ON	10
1.126000	24.45	46.00	21.55	N	ON	10
1.762000	25.15	46.00	20.85	N	ON	10
2.138000	23.34	46.00	22.66	N	ON	10
20.790000	26.93	50.00	23.07	L1	ON	10

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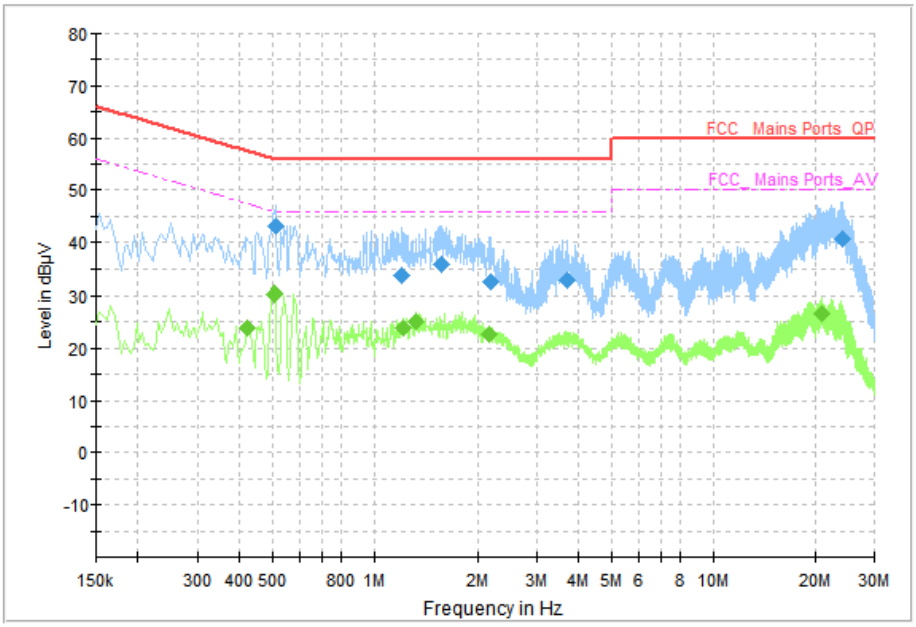

Fig. 96 AC Power line Conducted Emission (Idle), A2-2, A3-2

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.510000	43.15	56.00	12.85	L1	ON	10
1.210000	33.68	56.00	22.32	L1	ON	10
1.558000	35.65	56.00	20.35	L1	ON	10
2.202000	32.52	56.00	23.48	L1	ON	10
3.686000	32.74	56.00	23.26	L1	ON	10
24.066000	40.54	60.00	19.46	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.422000	24.00	47.41	23.41	N	ON	10
0.506000	30.18	46.00	15.82	N	ON	10
1.218000	23.81	46.00	22.19	N	ON	10
1.330000	25.15	46.00	20.85	N	ON	10
2.166000	22.68	46.00	23.32	N	ON	10
21.022000	26.76	50.00	23.24	L1	ON	10

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A.10 99% Occupied Bandwidth

Measurement Limit:

Standard	Limit
RSS-Gen section 6.7	/

Measurement Result:

Mode	Channel	Occupied Bandwidth (kHz)		conclusion
GFSK	0	Fig.97	895.78	/
	39	Fig.98	895.28	
	78	Fig.99	899.78	
π /4 DQPSK	0	Fig.100	1165.21	/
	39	Fig.101	1172.21	
	78	Fig.102	1175.71	
8DPSK	0	Fig.103	1186.20	/
	39	Fig.104	1189.20	
	78	Fig.105	1191.20	

See below for test graphs.

Conclusion: Pass

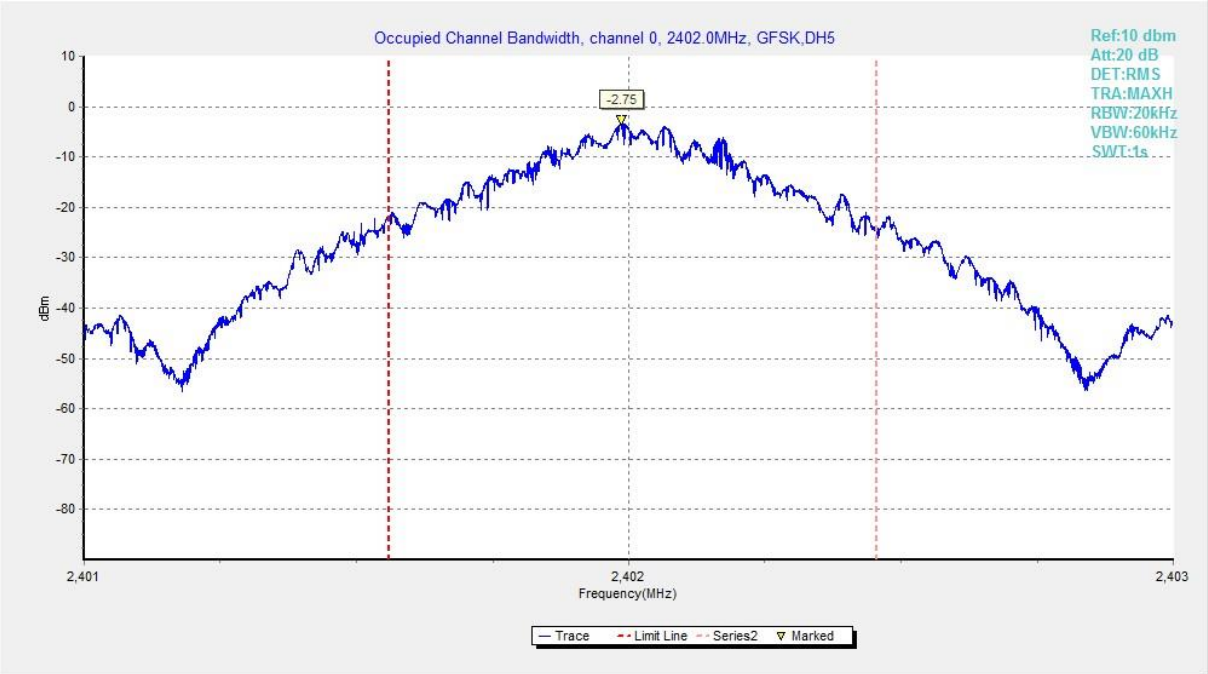

Fig. 97 99% Occupied Bandwidth (GFSK, Ch 0)

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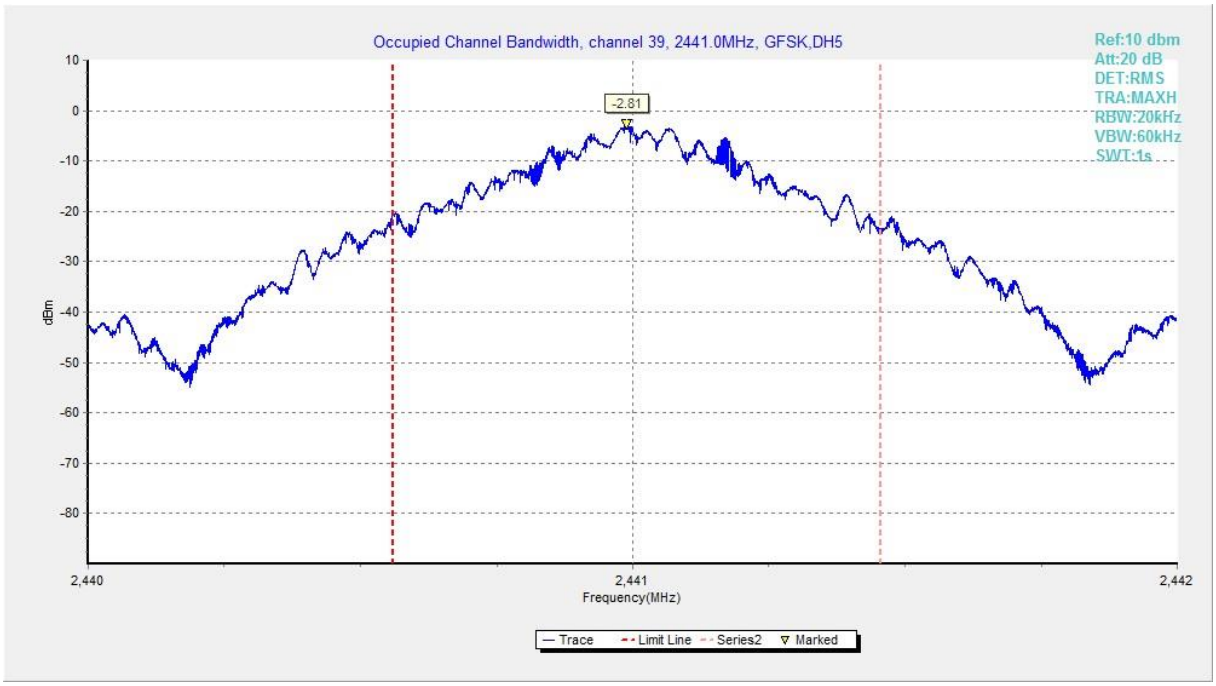

Fig. 98 99% Occupied Bandwidth (GFSK, Ch 39)

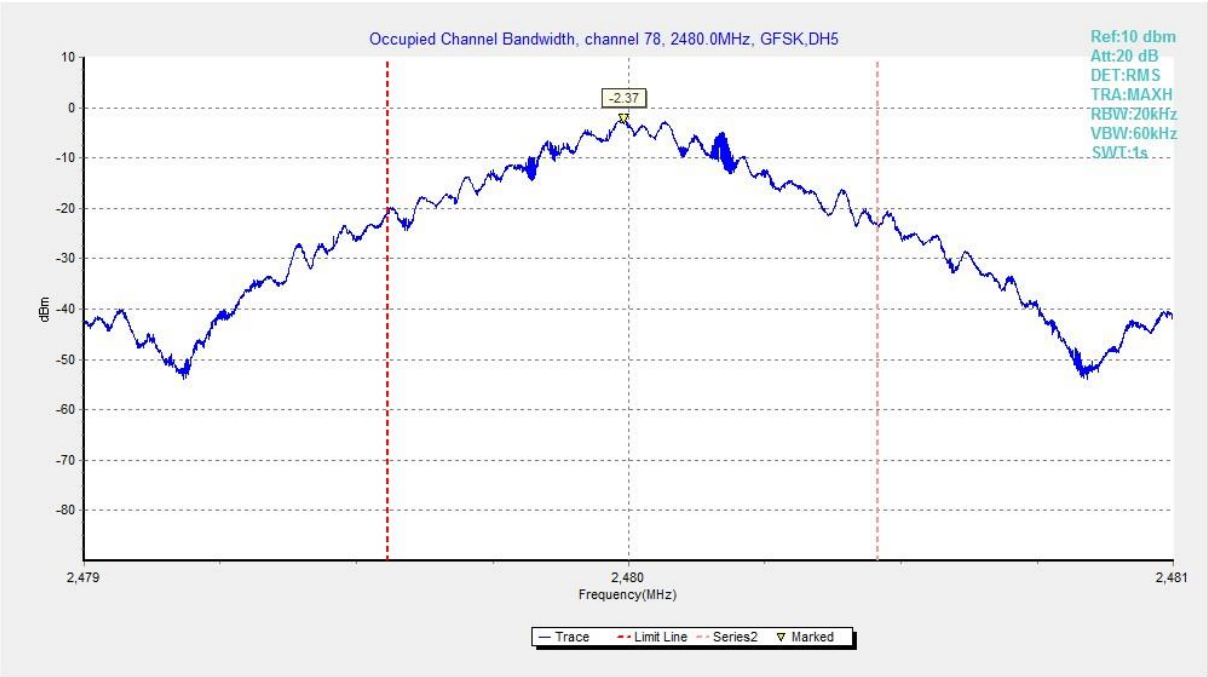

Fig. 99 99% Occupied Bandwidth (GFSK, Ch 78)

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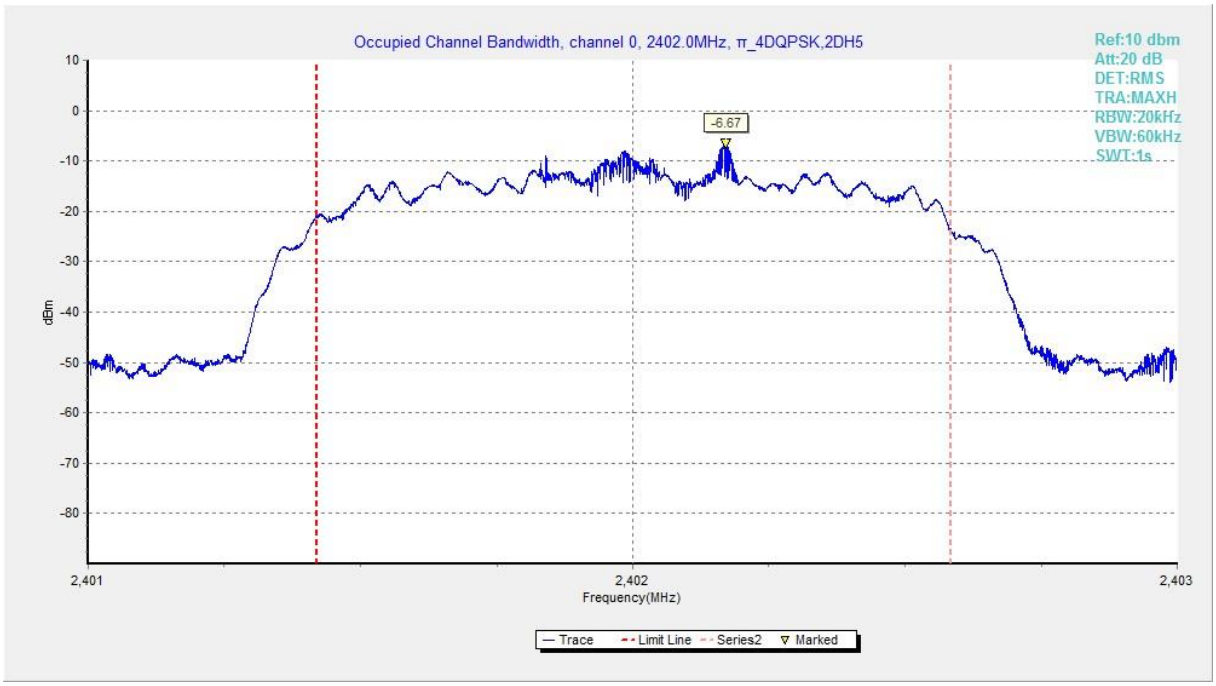

Fig. 100 99% Occupied Bandwidth (π /4 DQPSK, Ch 0)

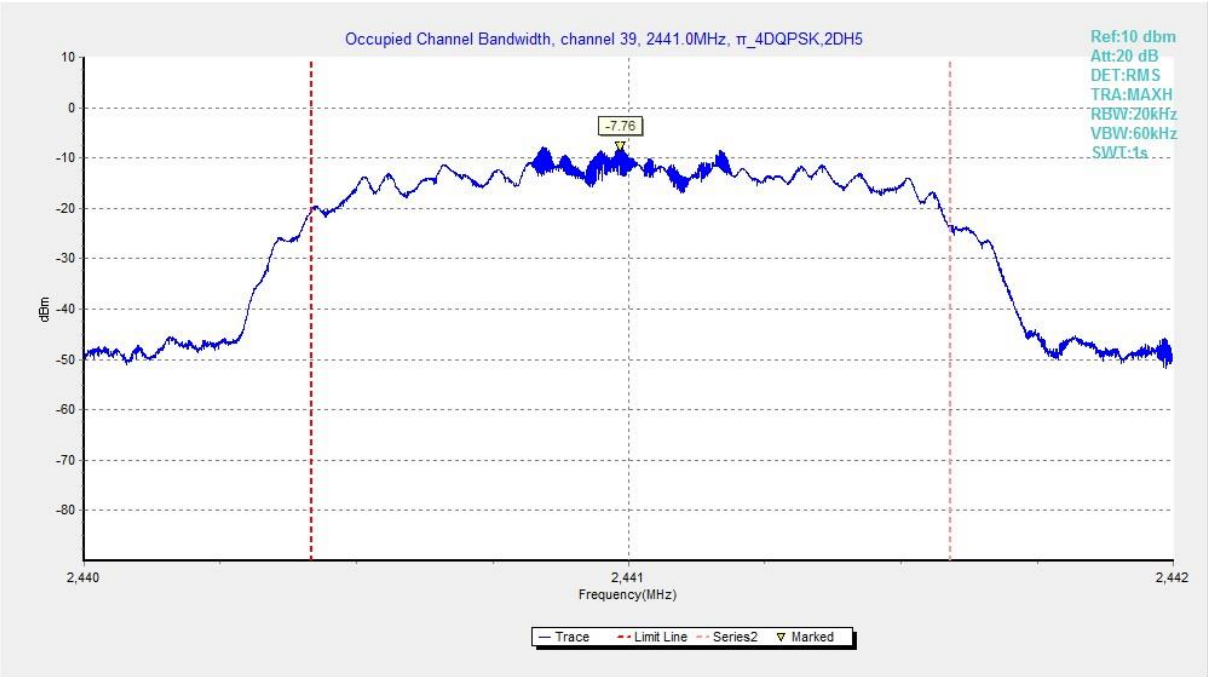

Fig. 101 99% Occupied Bandwidth (π /4 DQPSK, Ch 39)

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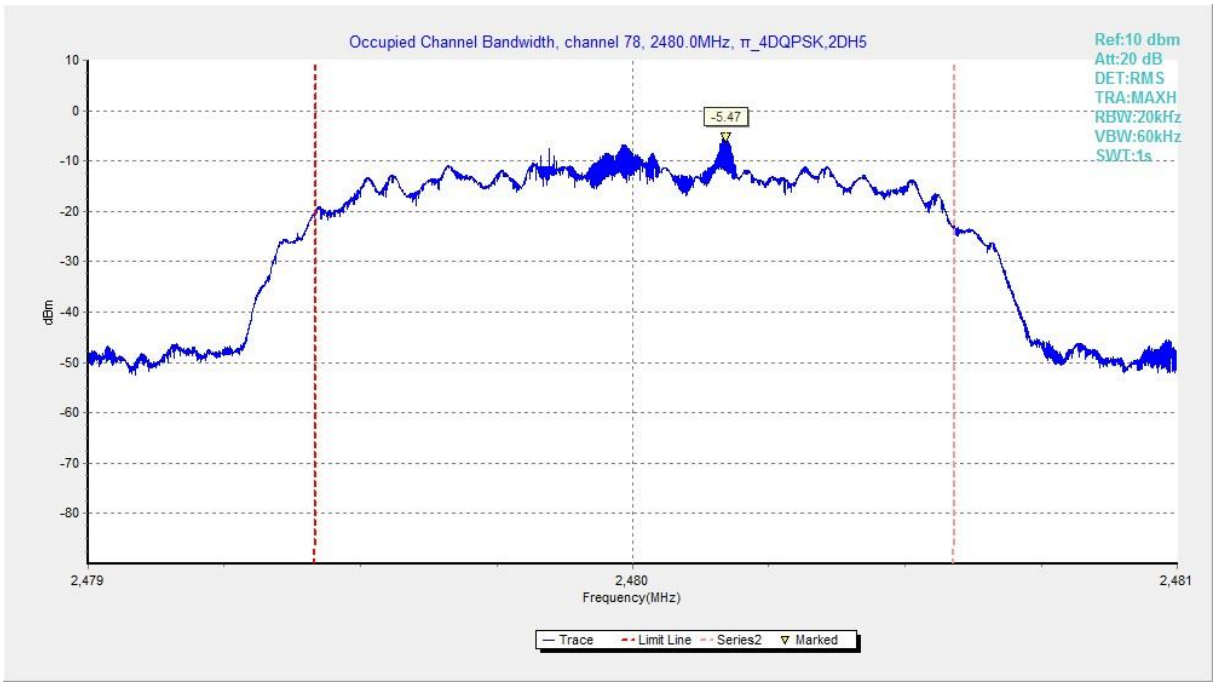

Fig. 102 99% Occupied Bandwidth (π /4 DQPSK, Ch 78)

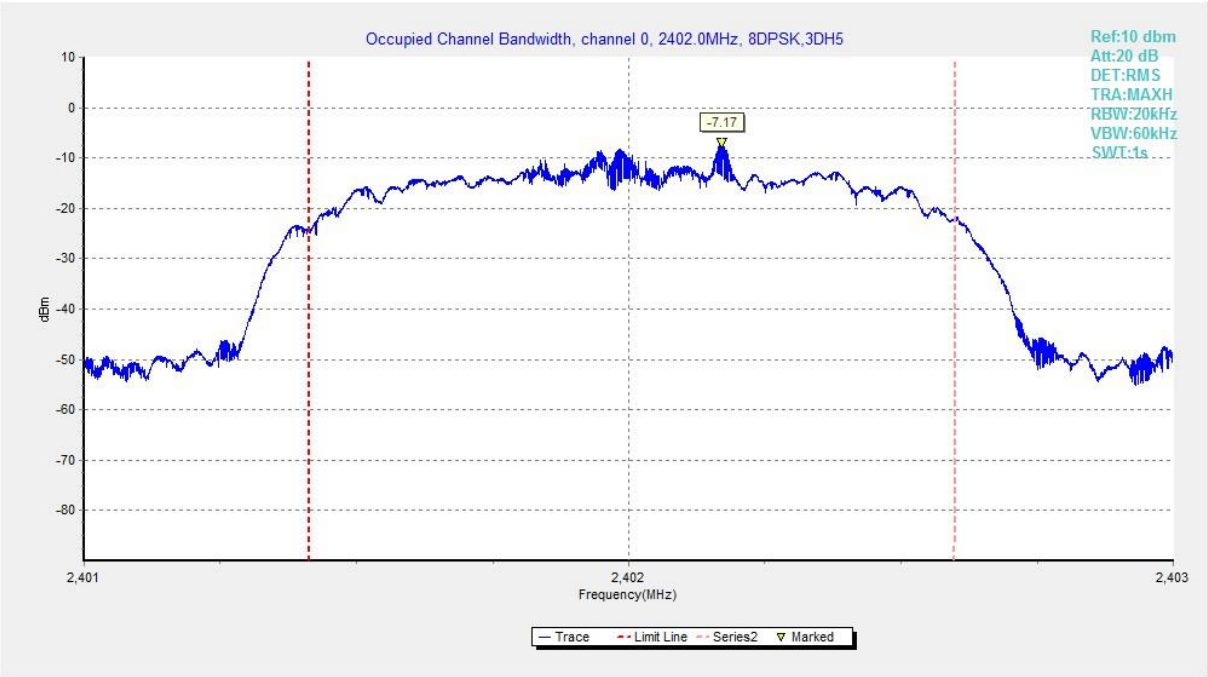

Fig. 103 99% Occupied Bandwidth (8DPSK, Ch 0)

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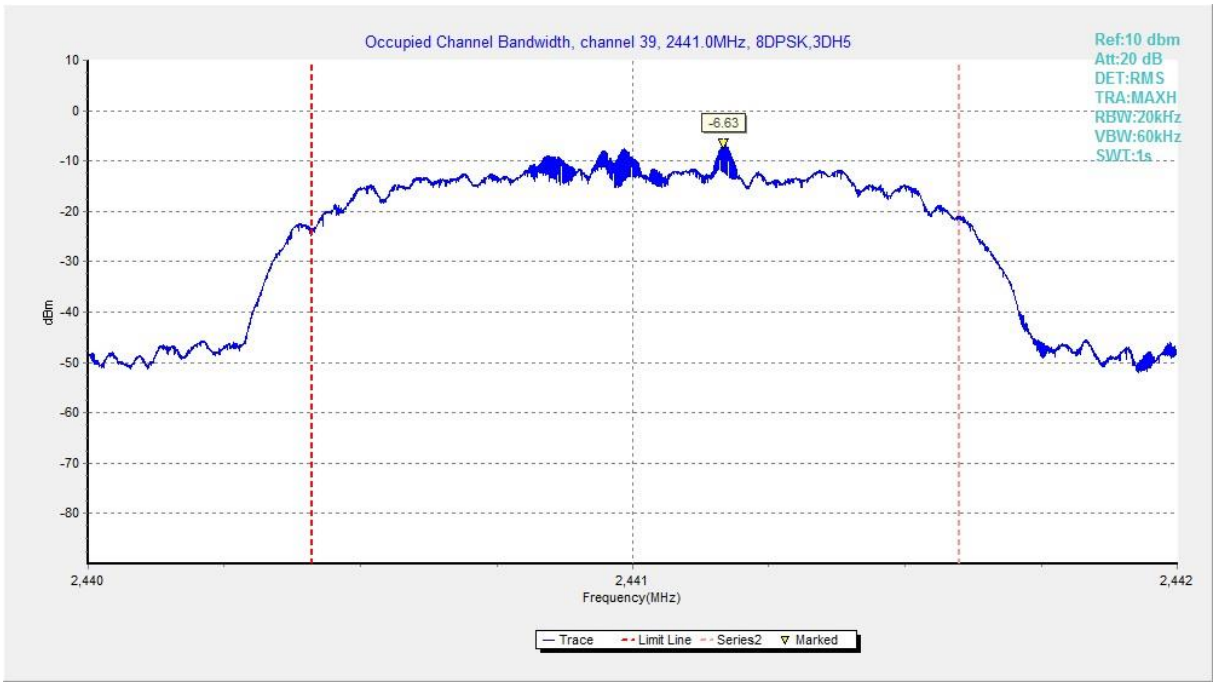

Fig. 104 99% Occupied Bandwidth (8DPSK, Ch 39)

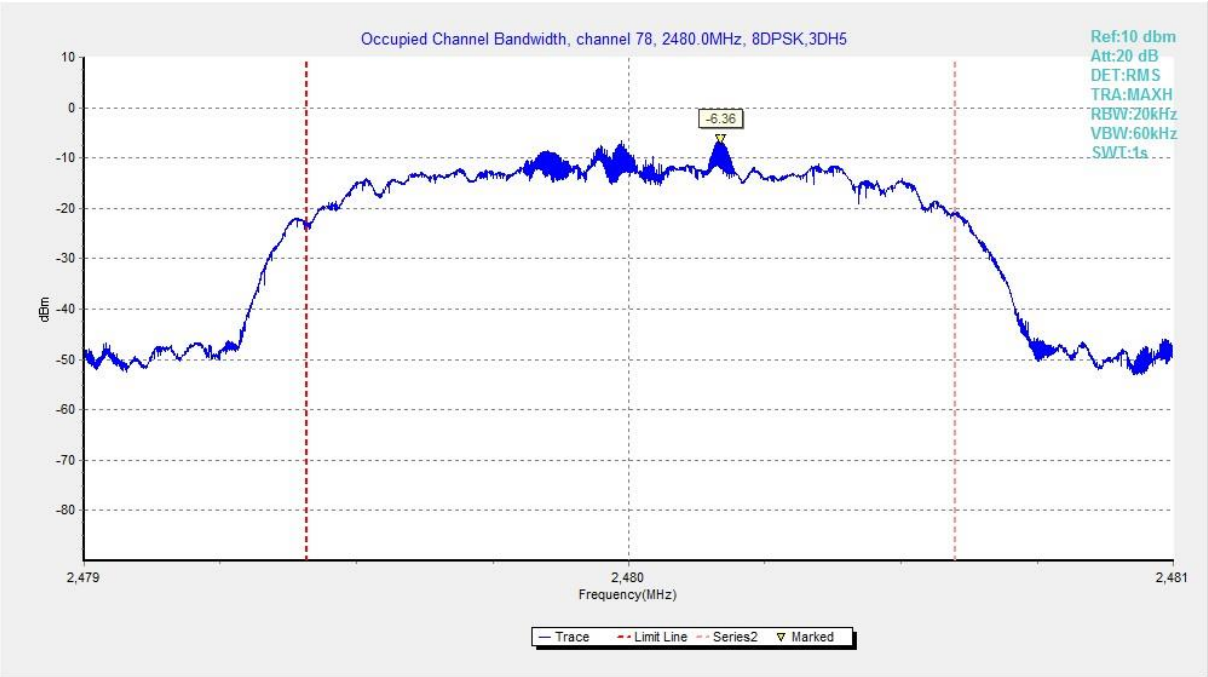

Fig. 105 99% Occupied Bandwidth (8DPSK, Ch 78)

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