

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

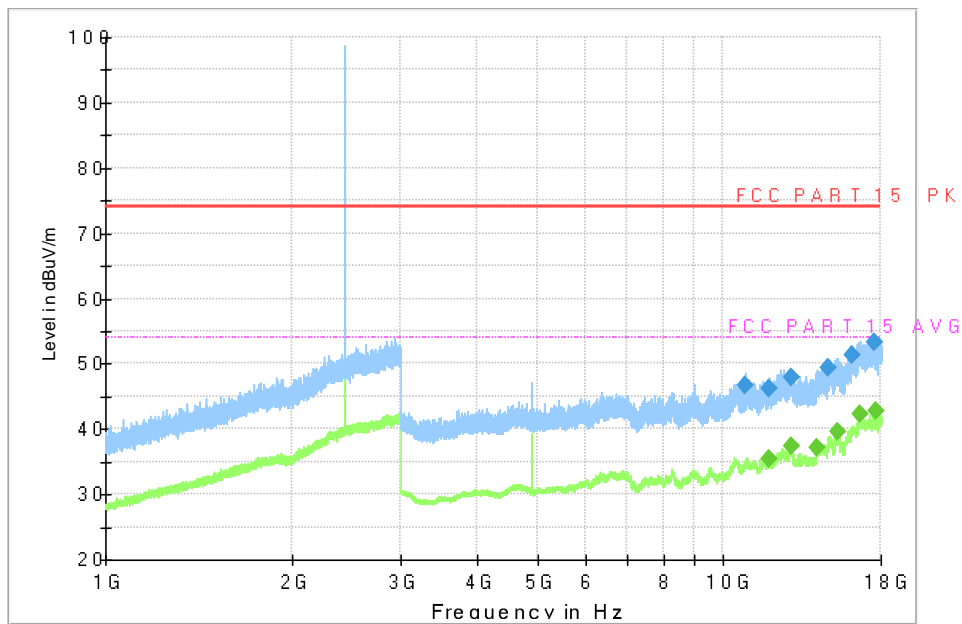


Fig. 43 Radiated Spurious Emission (GFSK, Ch39, 1GHz ~ 18GHz)

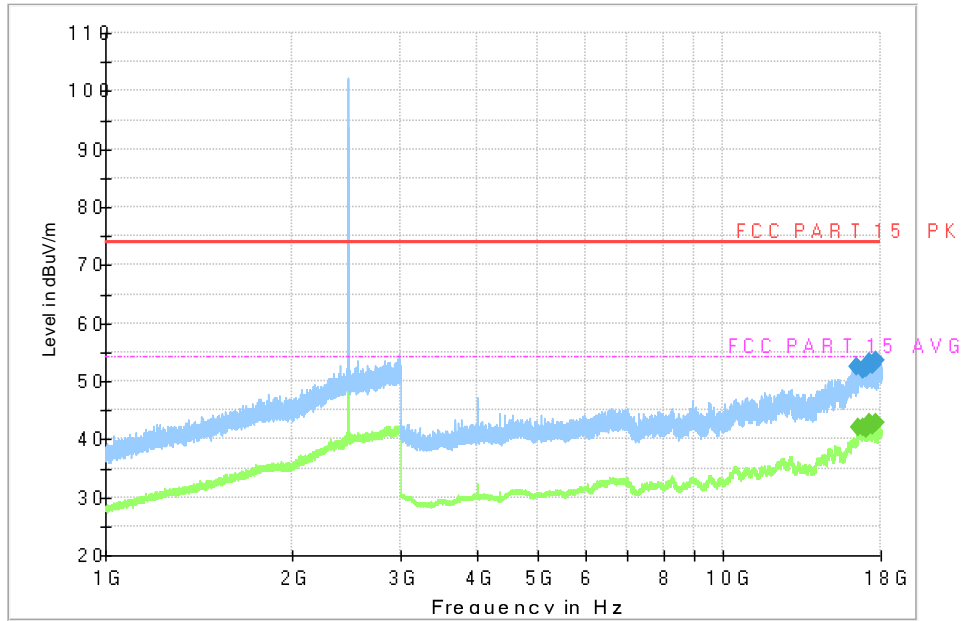


Fig. 44 Radiated Spurious Emission (GFSK, Ch78, 1GHz ~ 18GHz)

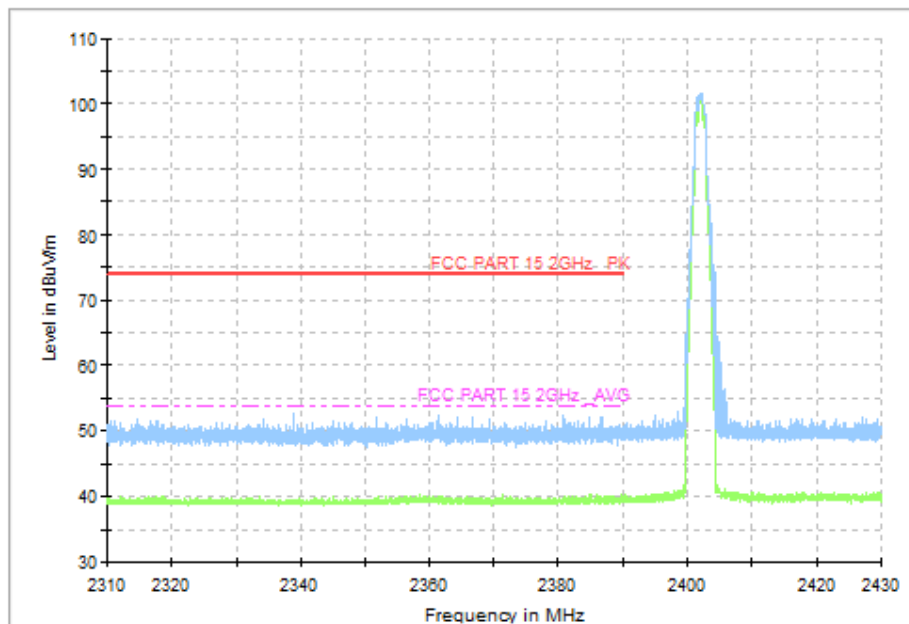


Fig. 45 Radiated Band Edges (GFSK, Ch0, 2380GHz ~ 2450GHz)

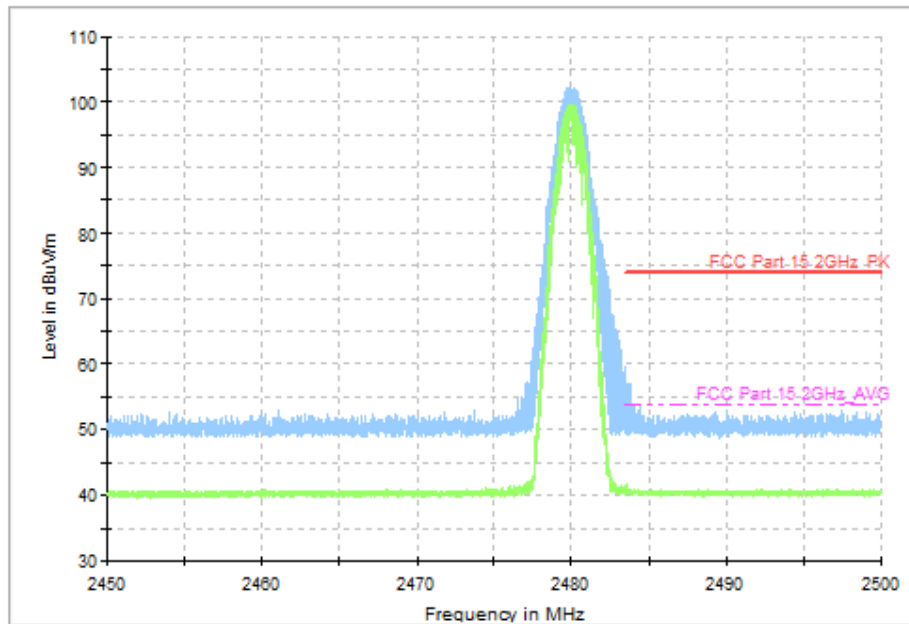


Fig. 46 Radiated Band Edges (GFSK, Ch78, 2450GHz ~ 2500GHz)

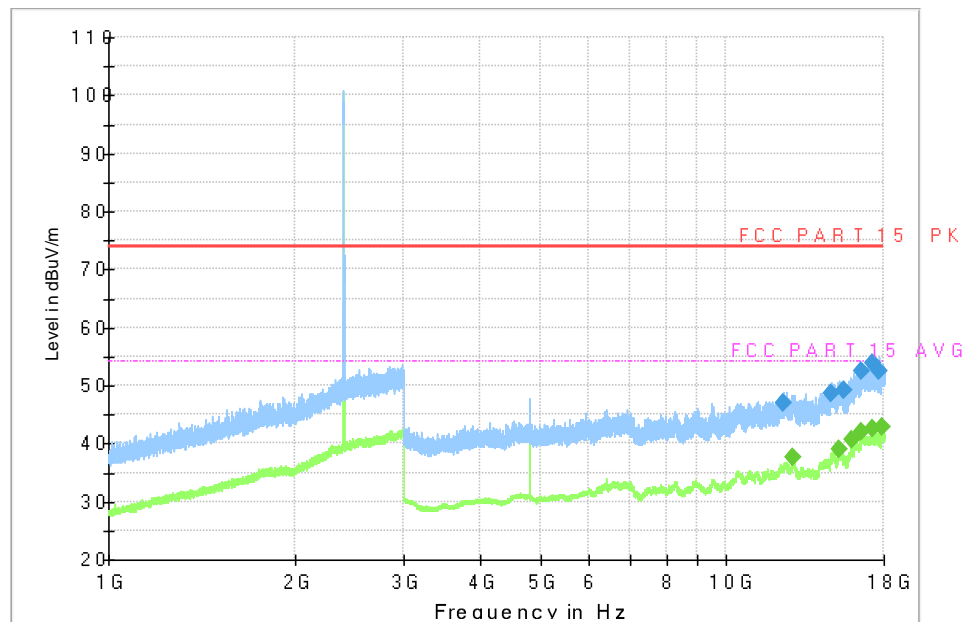


Fig. 47 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch0, 1GHz ~ 18GHz)

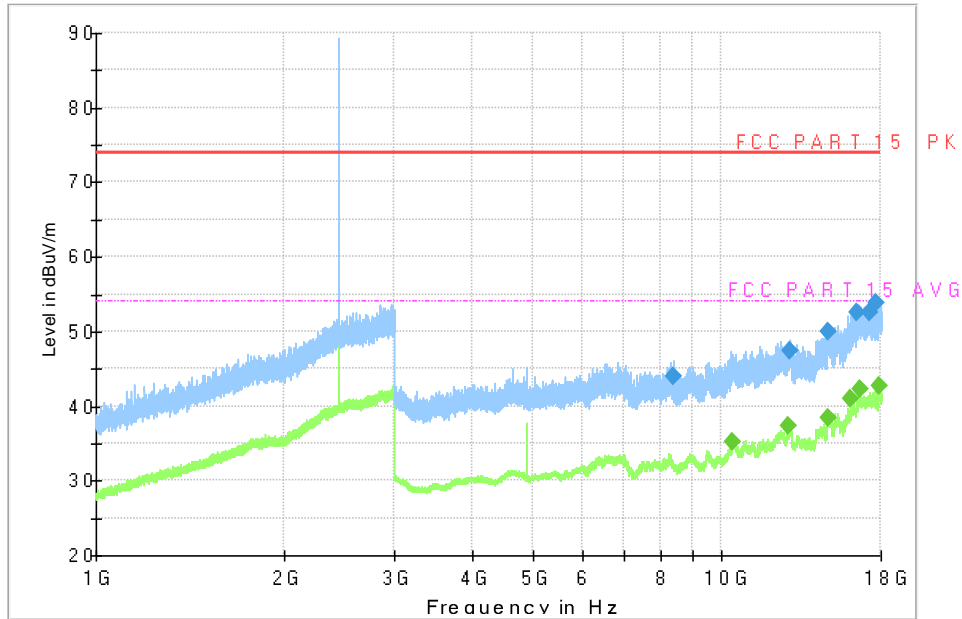


Fig. 48 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch39, 1GHz ~ 18GHz)

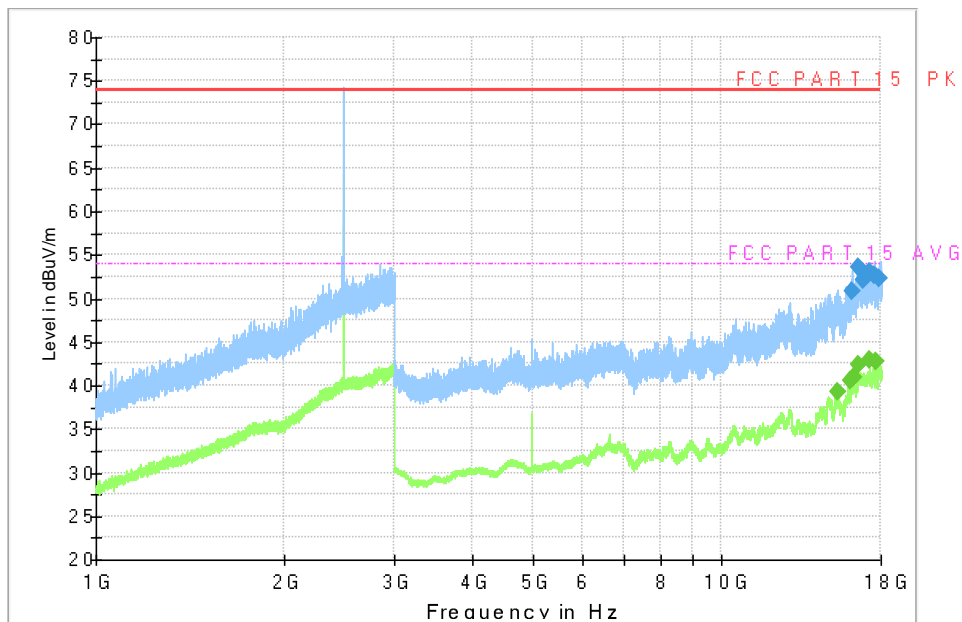


Fig. 49 Radiated Spurious Emission ($\pi/4$ DQPSK, Ch78, 1GHz ~ 18GHz)

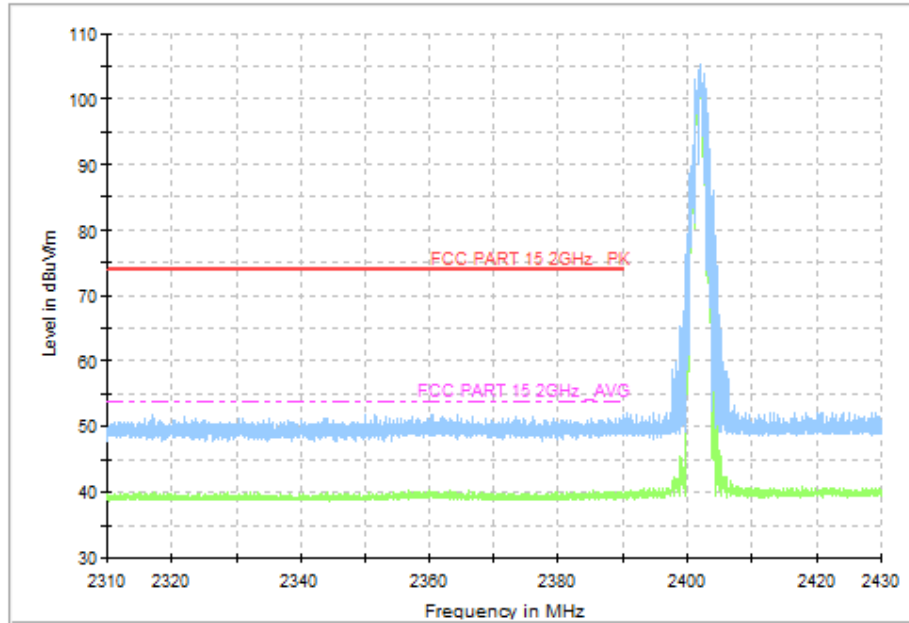


Fig. 50 Radiated Band Edges ($\pi/4$ DQPSK, Ch0, 2380GHz ~ 2450GHz)

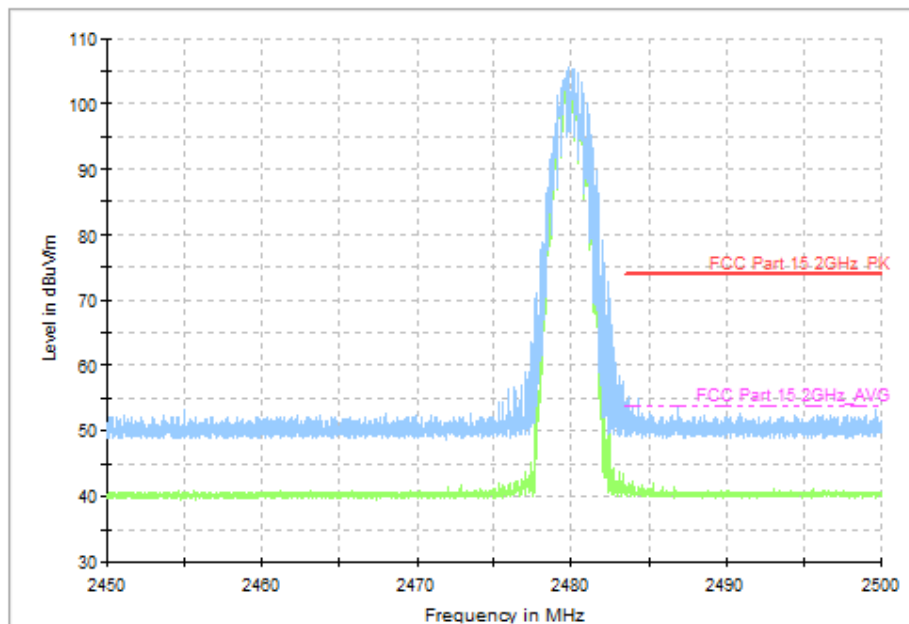


Fig. 51 Radiated Band Edges ($\pi/4$ DQPSK, Ch78, 2450GHz ~ 2500GHz)

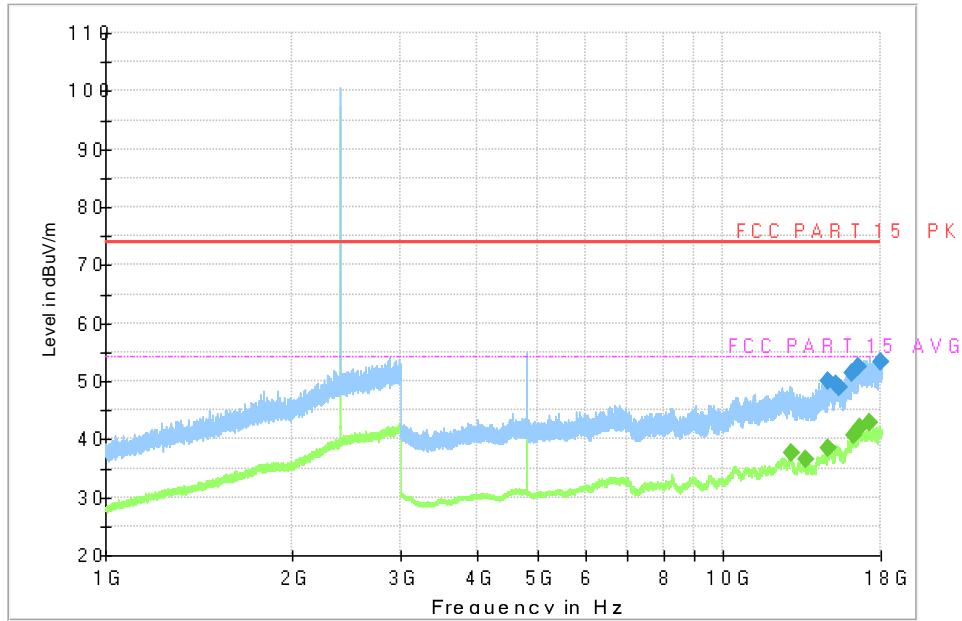


Fig. 52 Radiated Spurious Emission (8DPSK, Ch0, 1GHz ~ 18GHz)

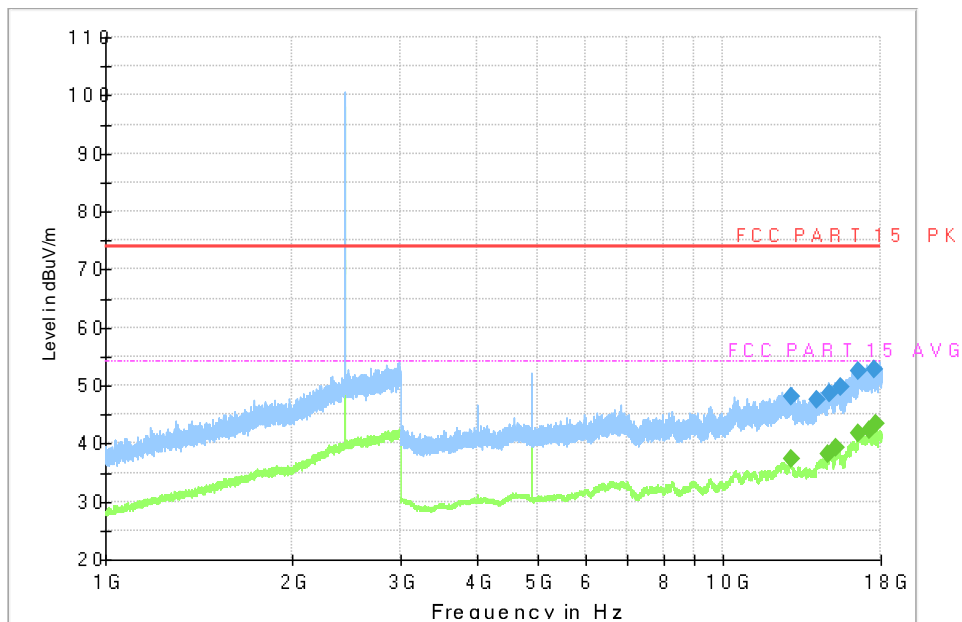


Fig. 53 Radiated Spurious Emission (8DPSK, Ch39, 1GHz ~ 18GHz)

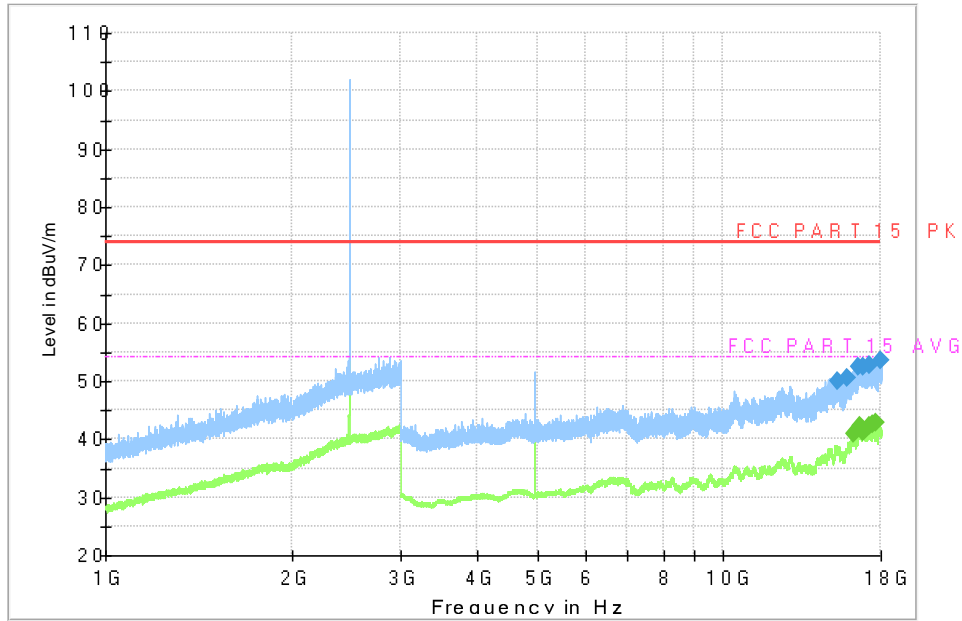


Fig. 54 Radiated Spurious Emission (8DPSK, Ch78, 1GHz ~ 18GHz)

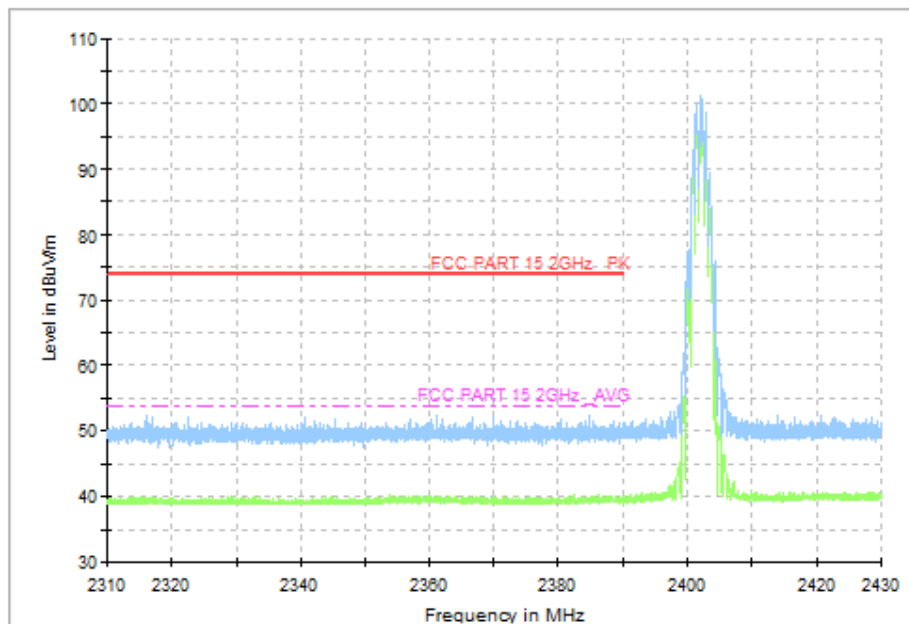


Fig. 55 Radiated Band Edges (8DPSK, Ch0, 2380GHz ~ 2450GHz)

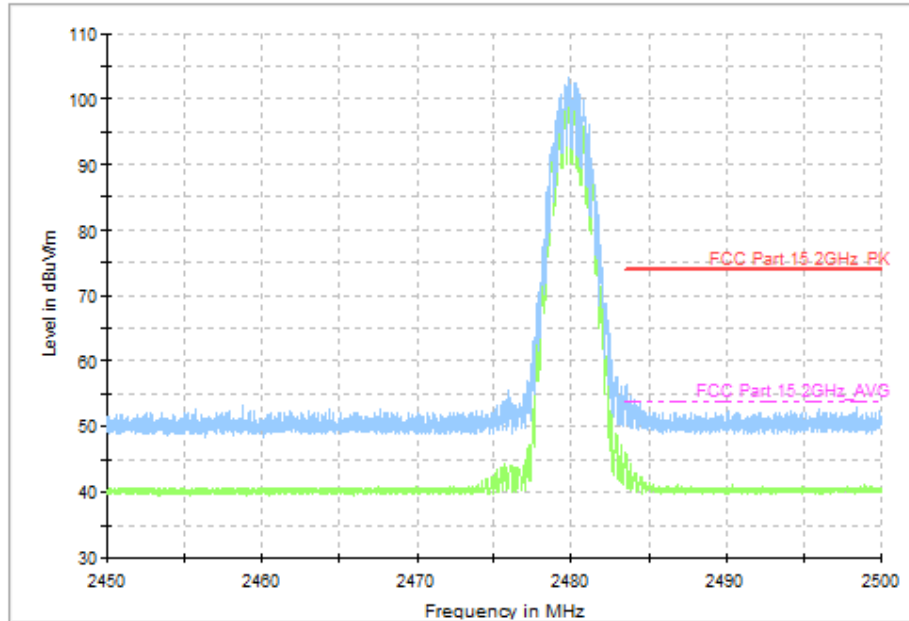


Fig. 56 Radiated Band Edges (8DPSK, Ch78, 2450GHz ~ 2500GHz)

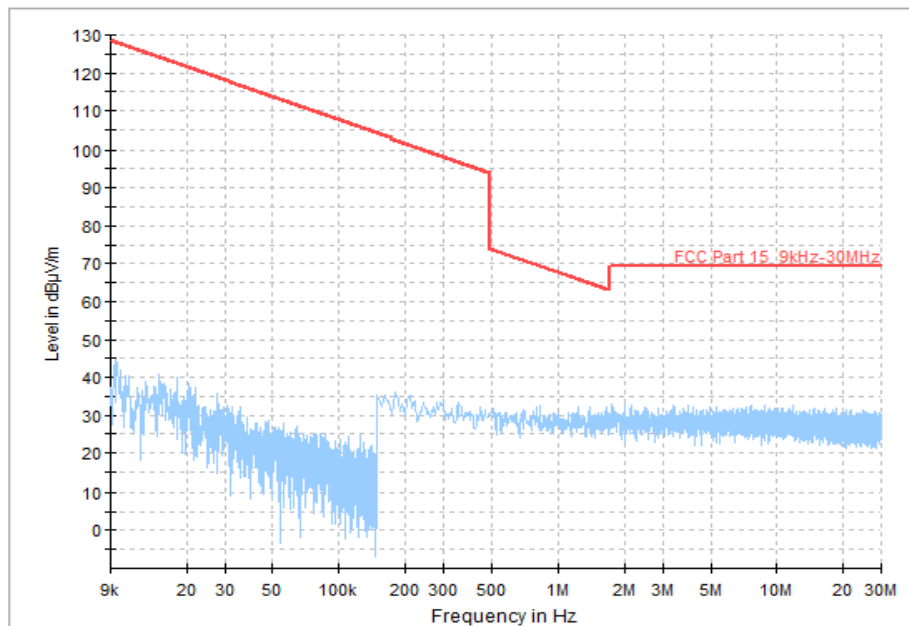


Fig. 57 Radiated Spurious Emission (All Channels, 9kHz ~ 30MHz)

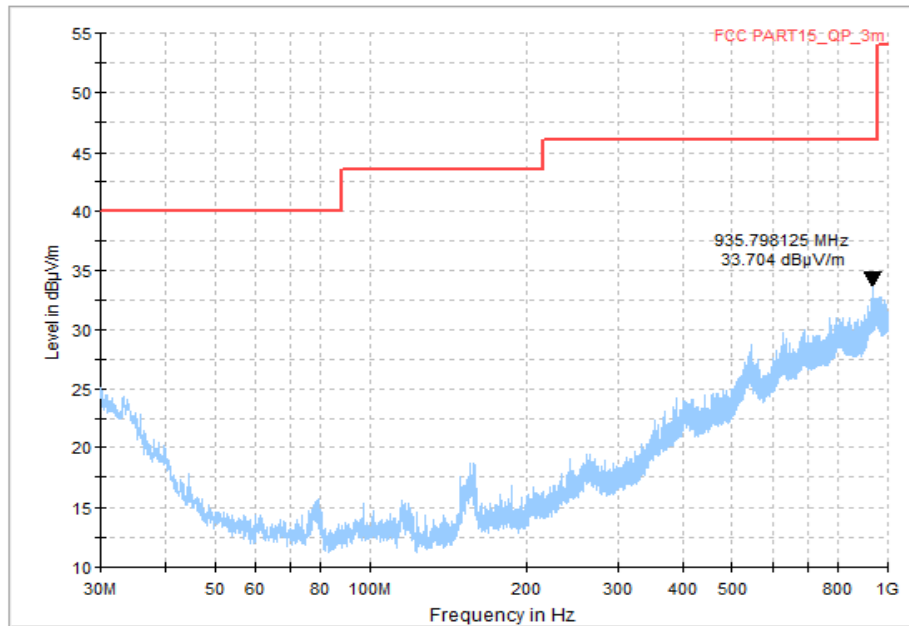


Fig. 58 Radiated Spurious Emission (All Channels, 30MHz ~ 1GHz)

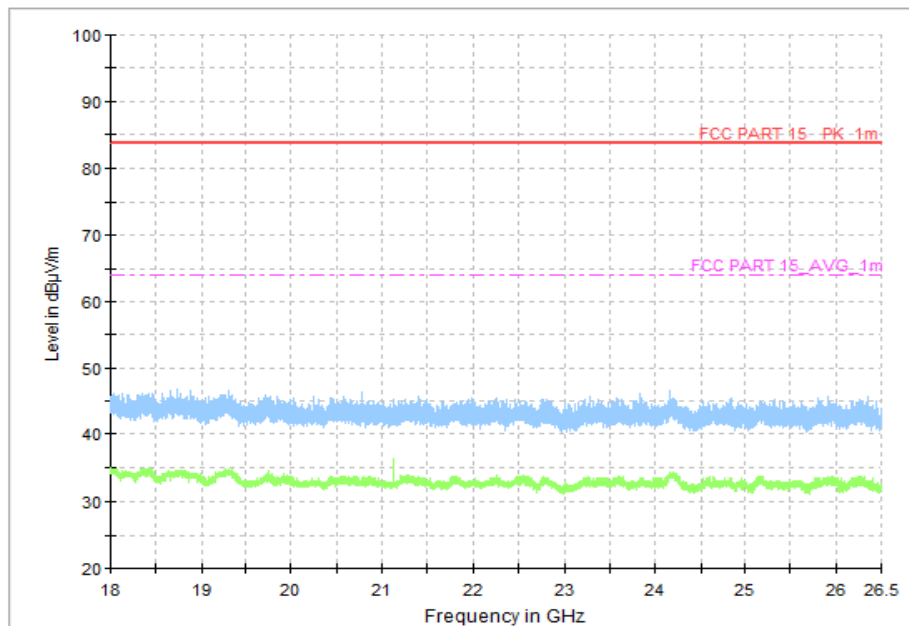


Fig. 59 Radiated Spurious Emission (All Channels, 18GHz ~ 26.5GHz)

A.5 20dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	/

Measurement Result:

Mode	Channel	20dB Bandwidth (kHz)		conclusion
GFSK	0	Fig.60	981.00	/
	39	Fig.61	938.25	
	78	Fig.62	954.75	
$\pi/4$ DQPSK	0	Fig.63	1285.50	/
	39	Fig.64	1284.75	
	78	Fig.65	1300.50	
8DPSK	0	Fig.66	1302.00	/
	39	Fig.67	1281.75	
	78	Fig.68	1274.25	

See below for test graphs.

Conclusion: PASS

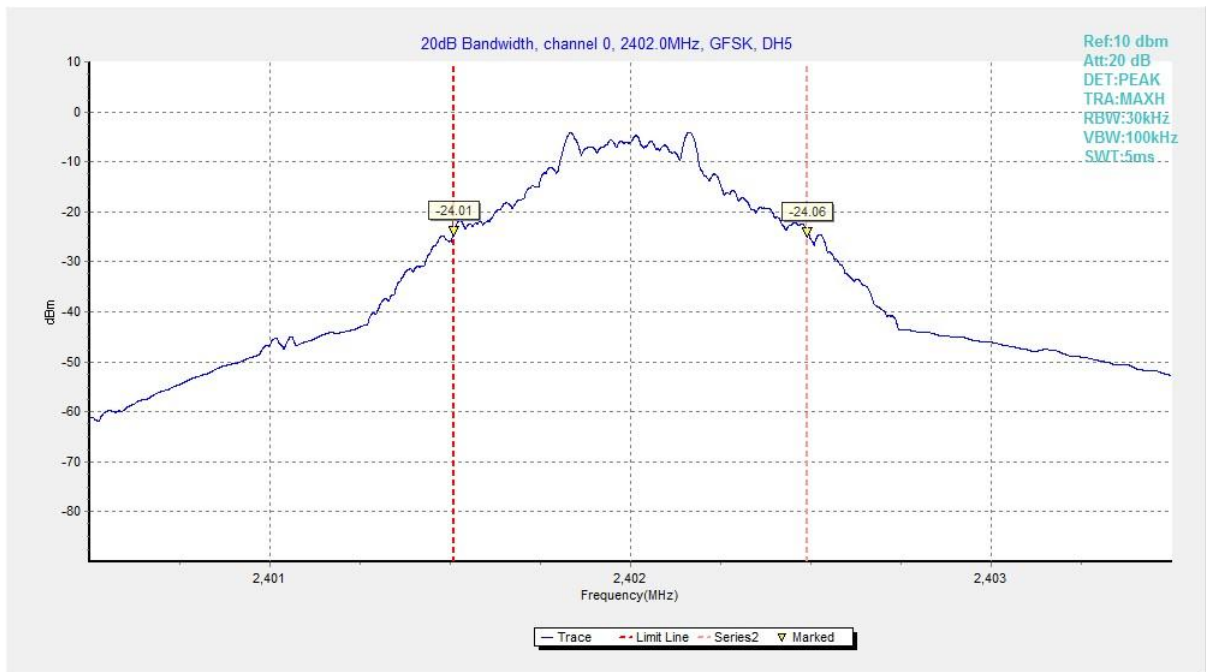


Fig. 60 20dB Bandwidth (GFSK, Ch 0)

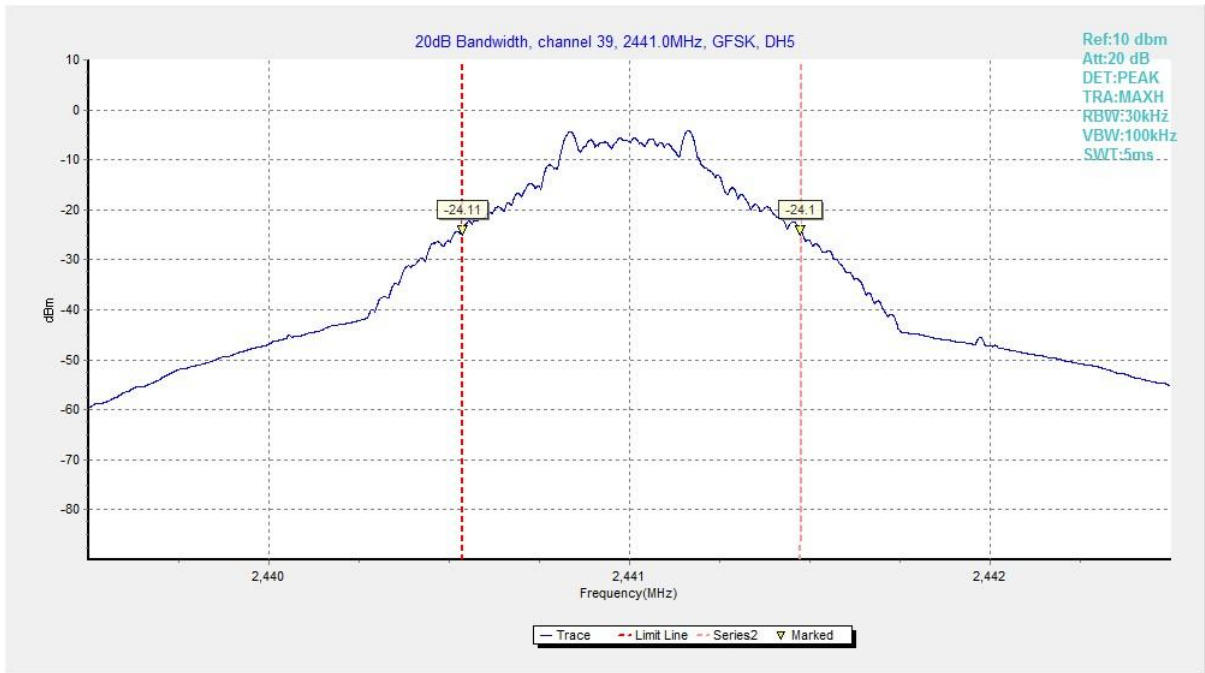


Fig. 61 20dB Bandwidth (GFSK, Ch 39)

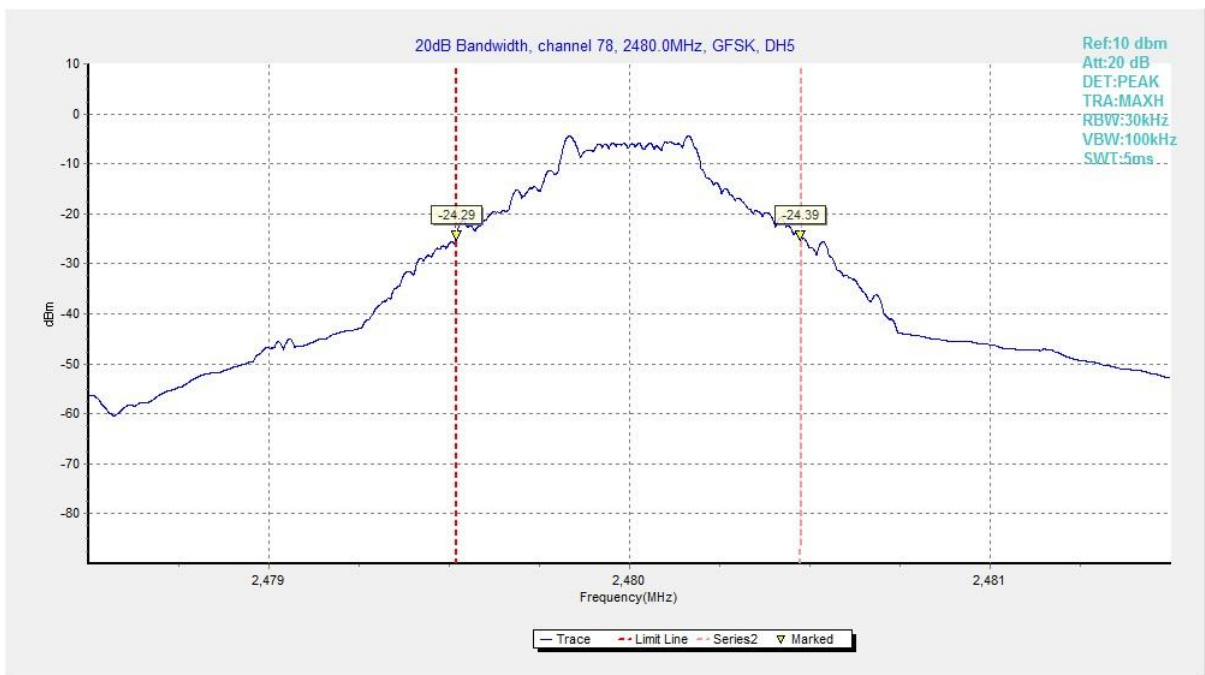


Fig. 62 20dB Bandwidth (GFSK, Ch 78)

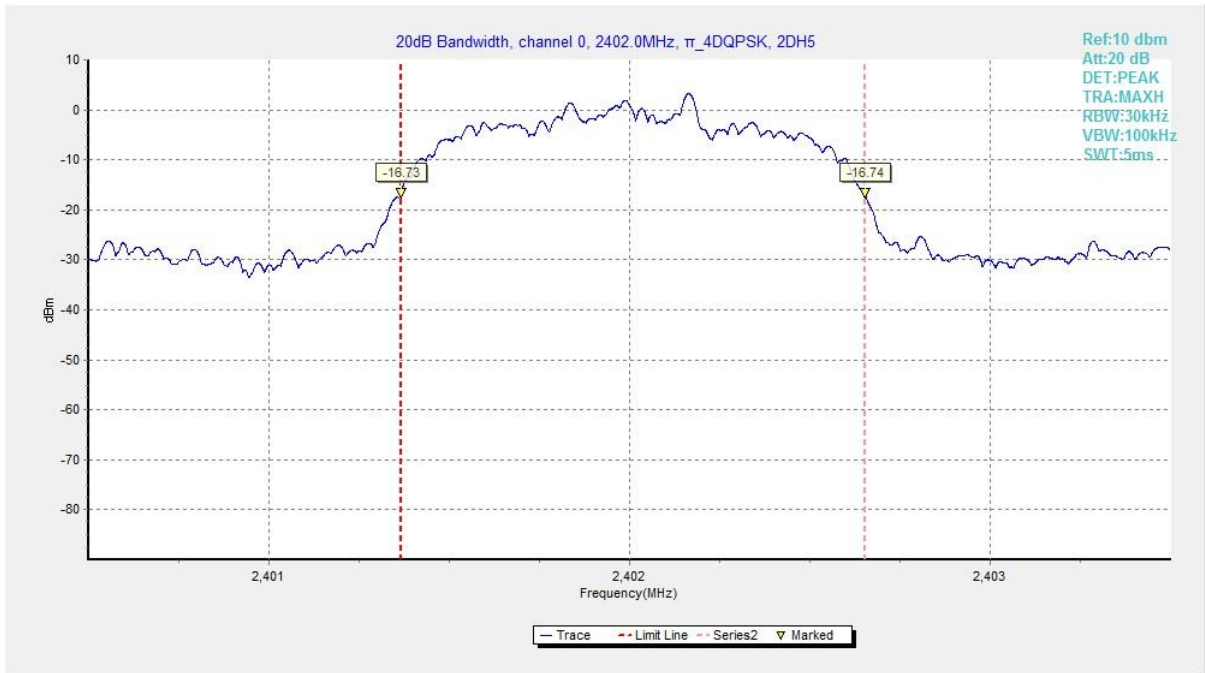


Fig. 63 20dB Bandwidth (π /4 DQPSK, Ch 0)

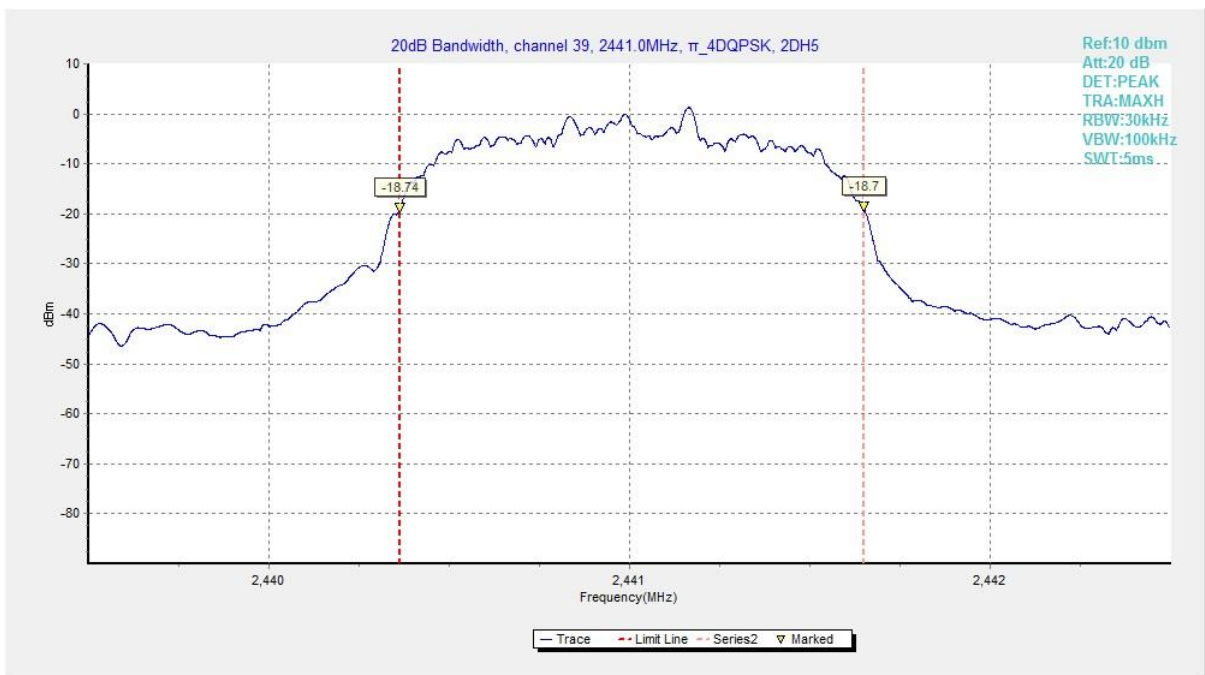


Fig. 64 20dB Bandwidth (π /4 DQPSK, Ch 39)

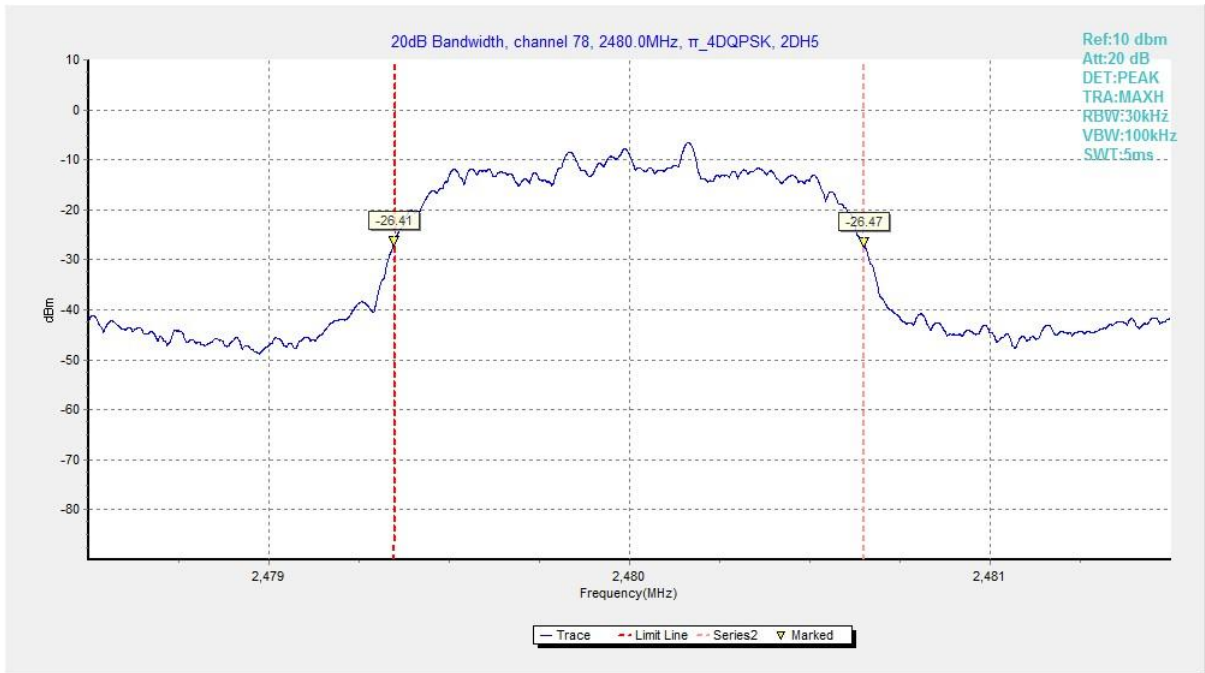


Fig. 65 20dB Bandwidth ($\pi/4$ DQPSK, Ch 78)

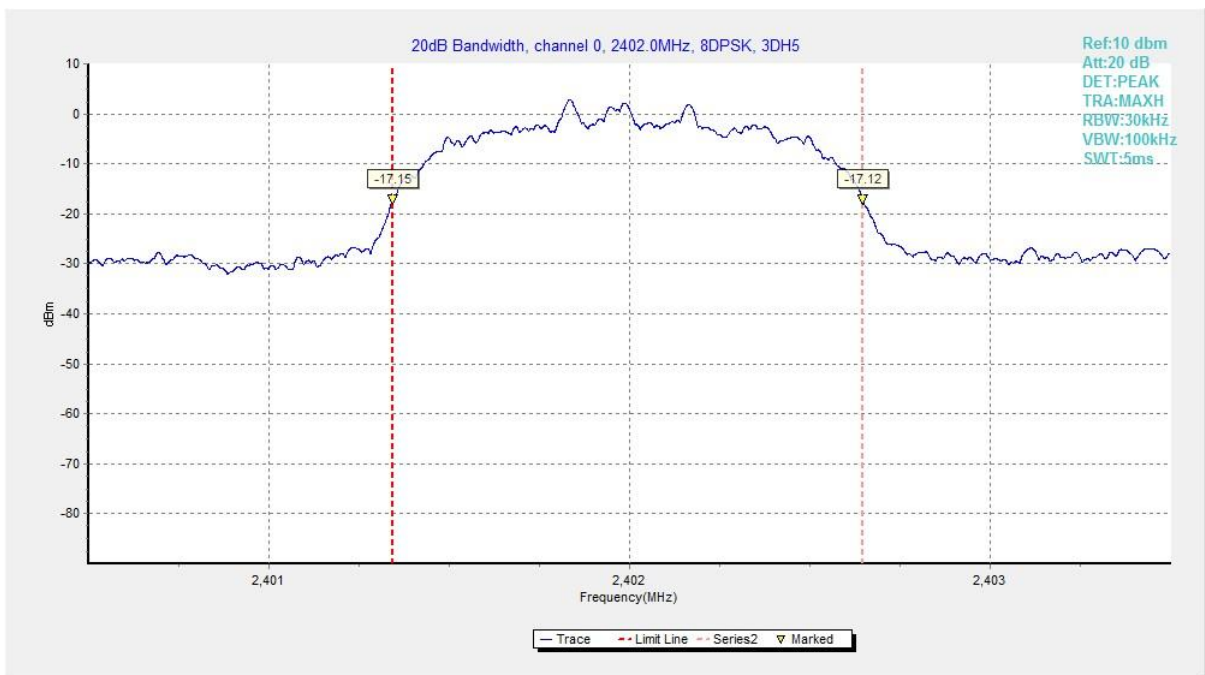


Fig. 66 20dB Bandwidth (8DPSK, Ch 0)



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

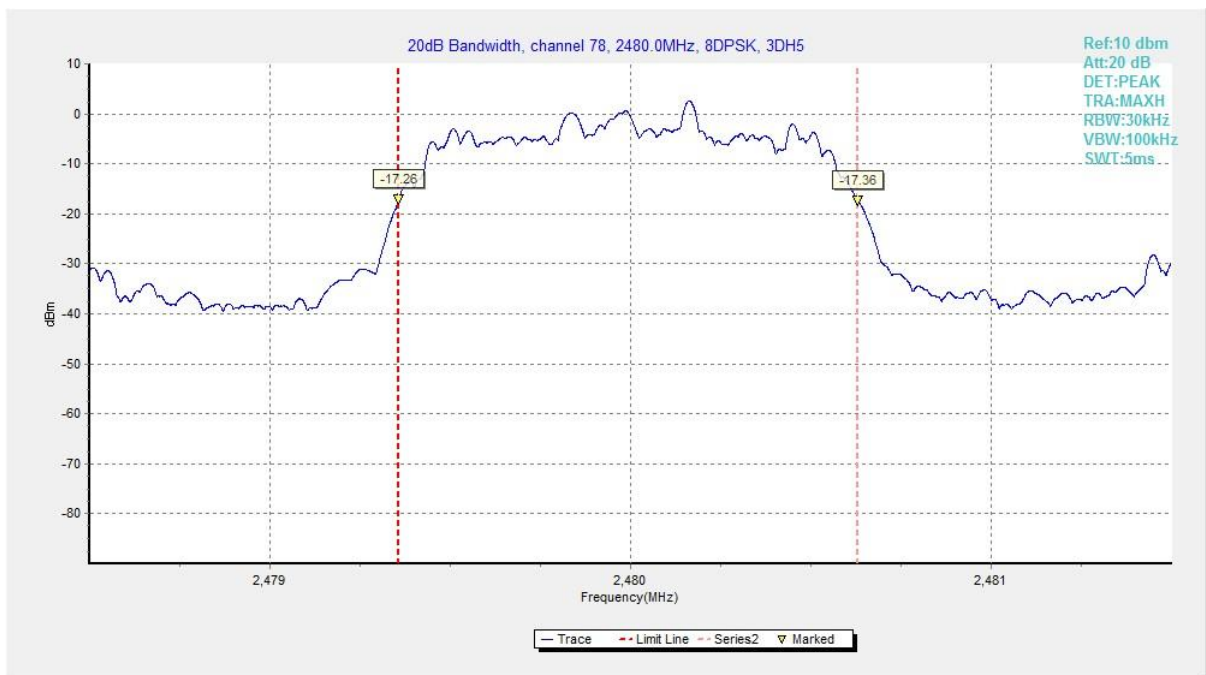


Fig. 68 20dB Bandwidth (8DPSK, Ch 78)

A.6 Time of Occupancy (Dwell Time)

Measurement Limit:

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

Measurement Results:

Mode	Channel	Packet	Dwell Time(ms)		Conclusion
GFSK	39	DH5	Fig.69	147.71	P
			Fig.70		
$\pi/4$ DQPSK	39	2-DH5	Fig.71	204.63	P
			Fig.72		
8DPSK	39	3-DH5	Fig.73	175.21	P
			Fig.74		

See below for test graphs.

Conclusion: Pass

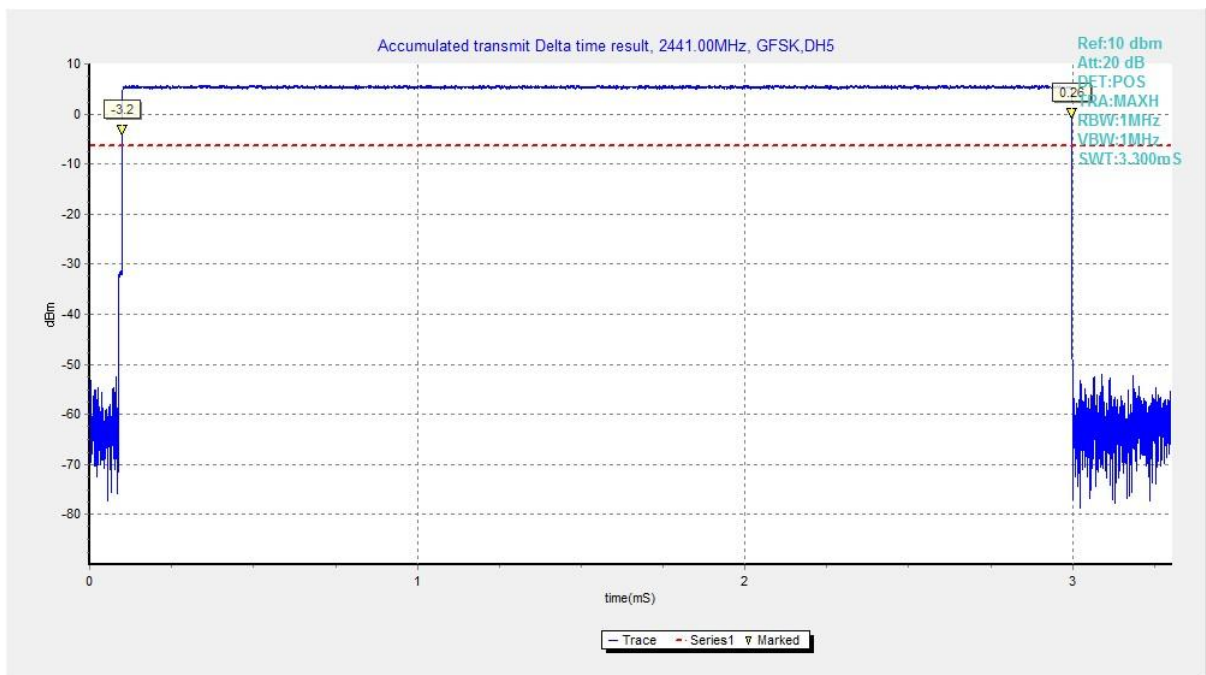


Fig. 69 Time of Occupancy(Dwell Time) (GFSK, Ch39)

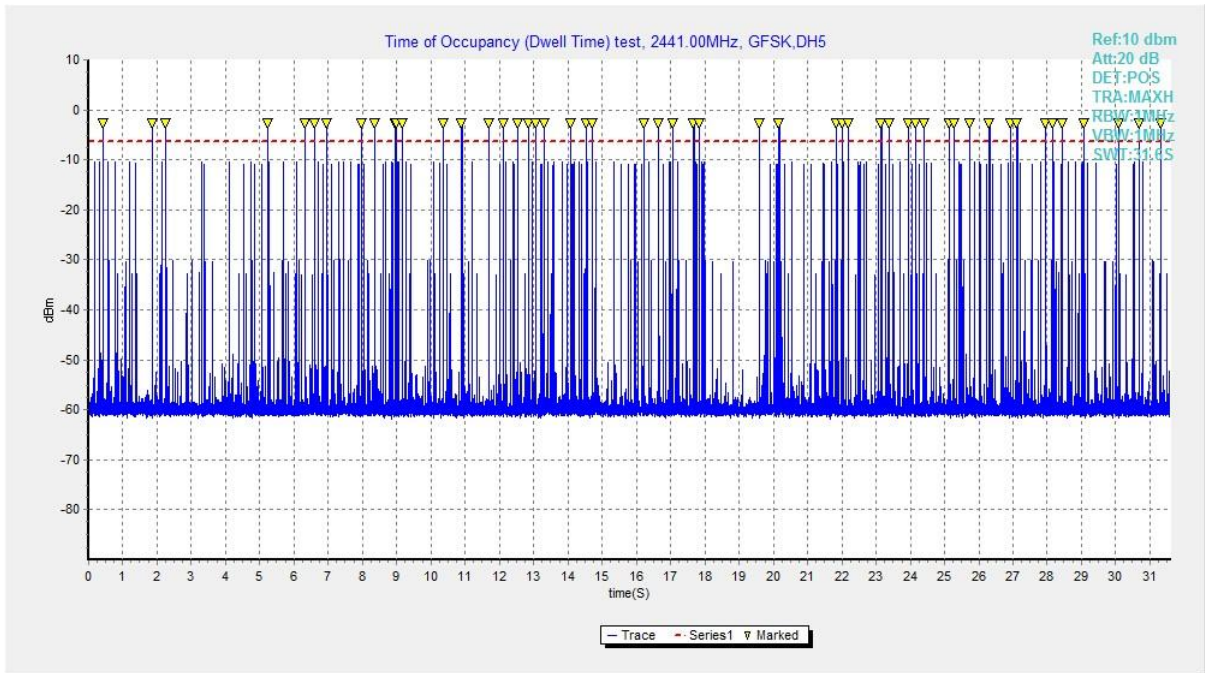


Fig. 70 Time of Occupancy(Dwell Time) (GFSK, Ch39)

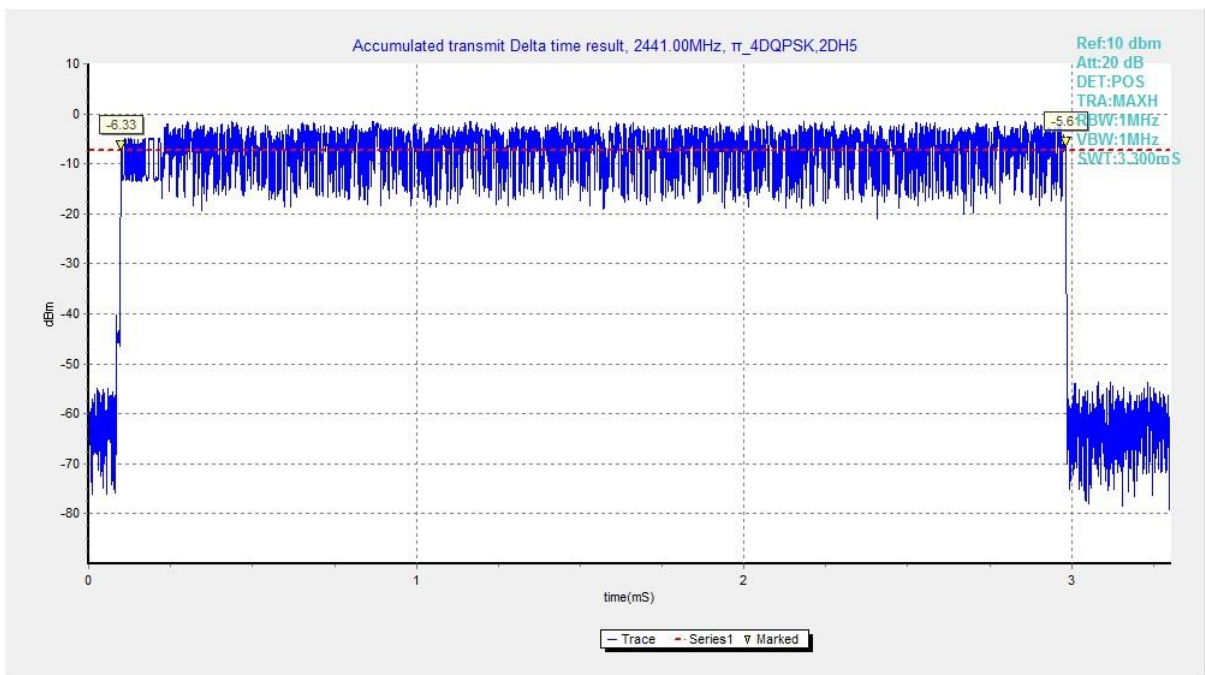


Fig. 71 Time of Occupancy(Dwell Time) ($\pi/4$ DQPSK, Ch39)

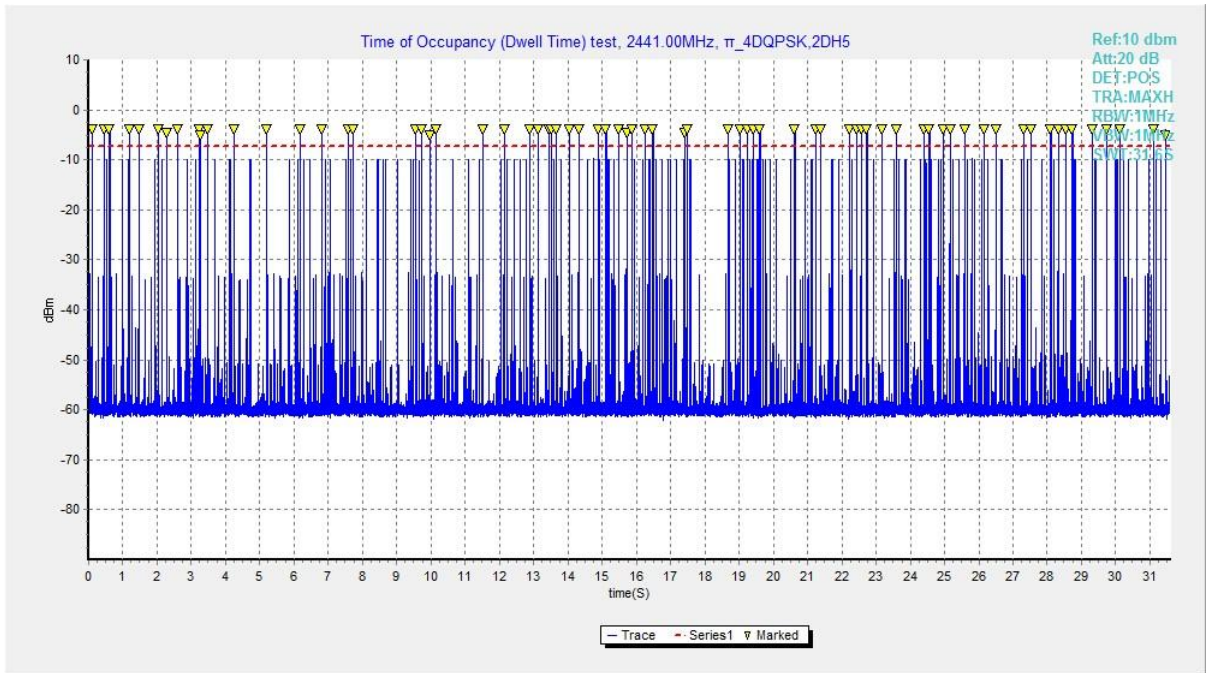


Fig. 72 Time of Occupancy(Dwell Time) (π /4 DQPSK, Ch39)

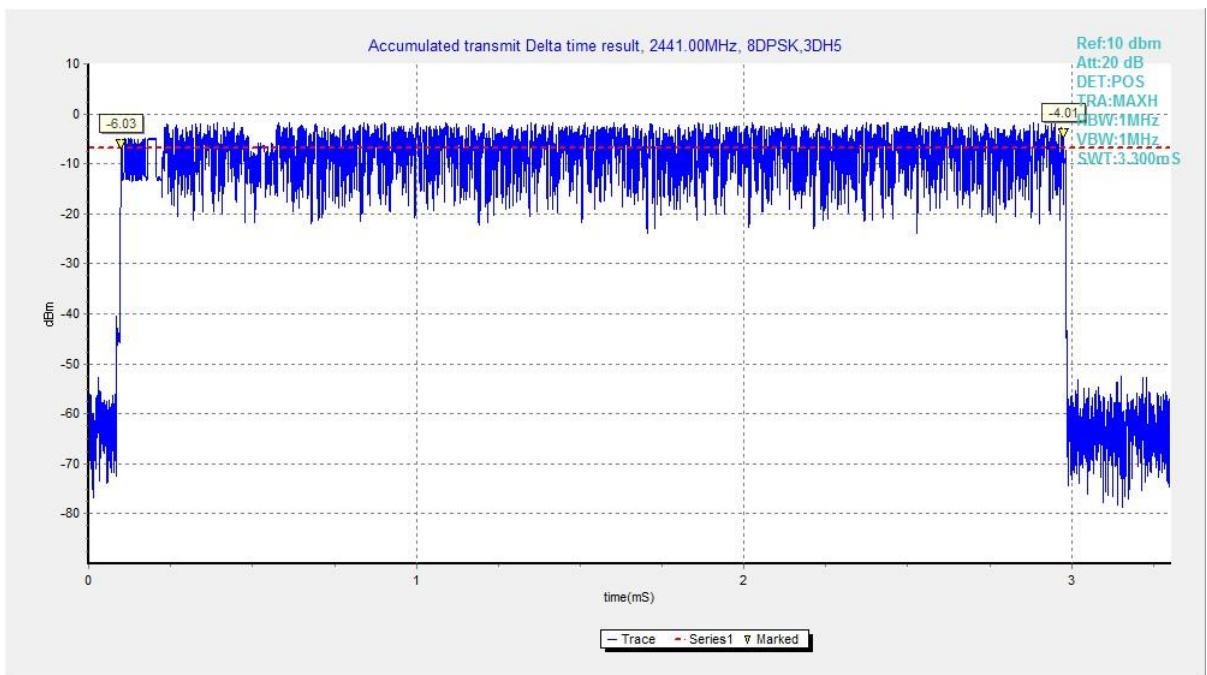


Fig. 73 Time of Occupancy(Dwell Time) (8DPSK, Ch39)

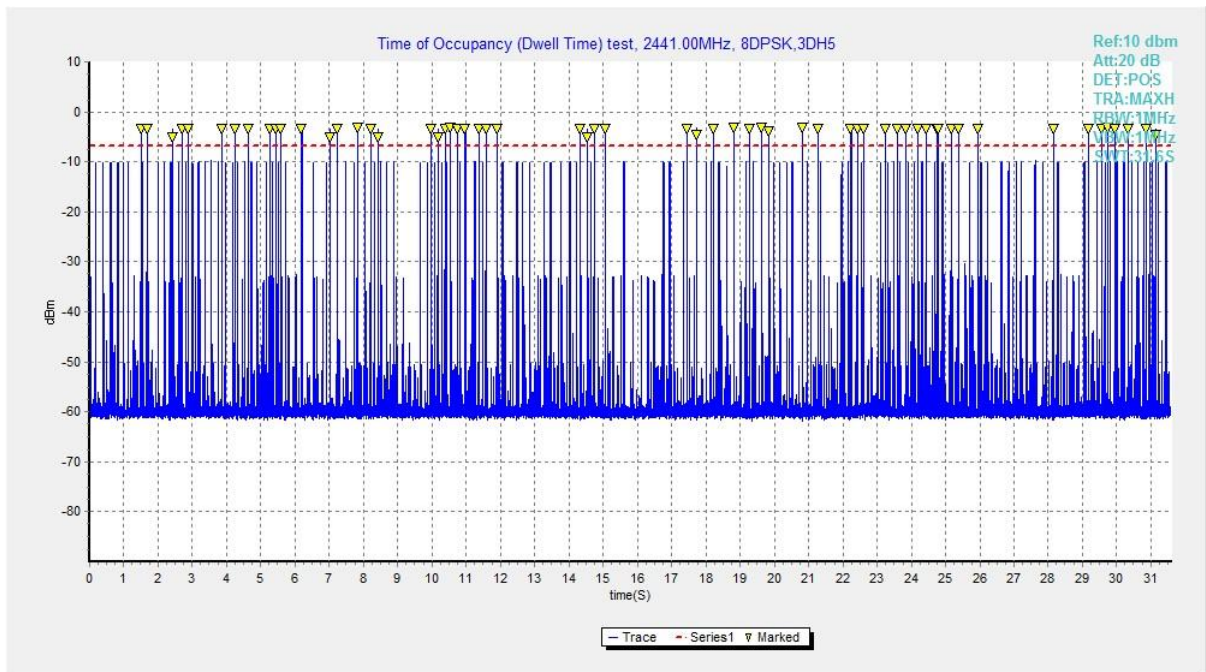


Fig. 74 Time of Occupancy(Dwell Time) (8DPSK, Ch39)

A.7 Number of Hopping Channels

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a)	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
$\pi/4$ 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

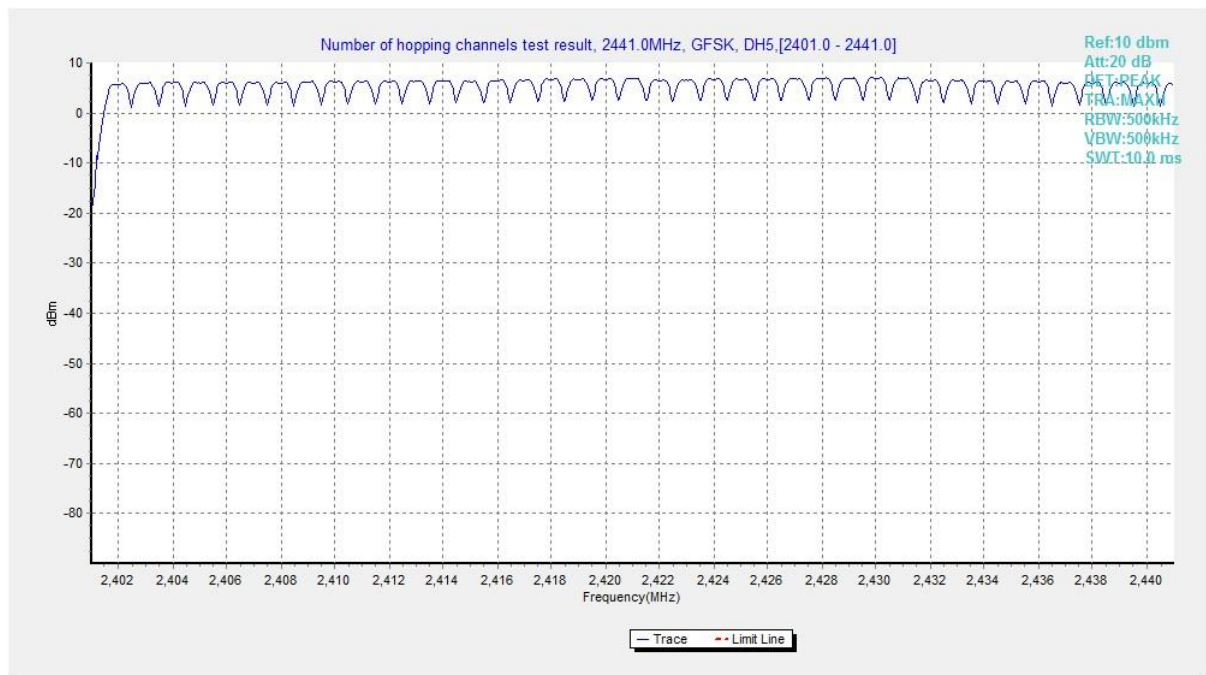


Fig. 75 Hopping channel ch0~39 (GFSK, Ch39)

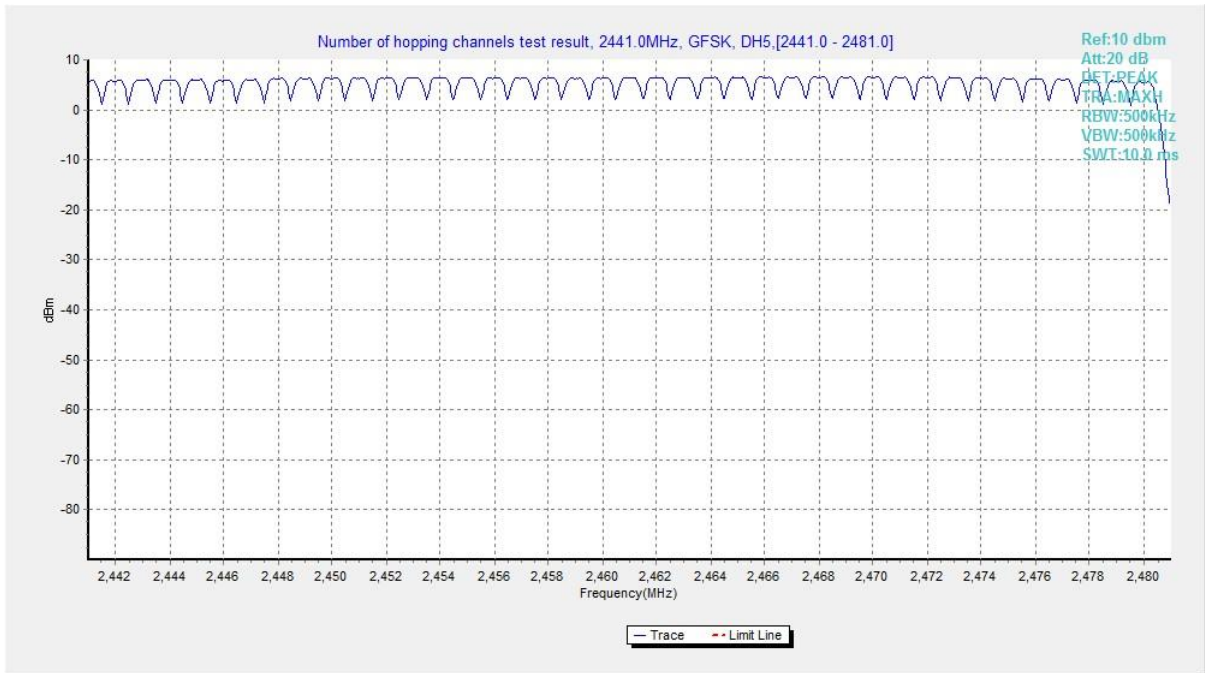


Fig. 76 Hopping channel ch40~78 (GFSK, Ch39)

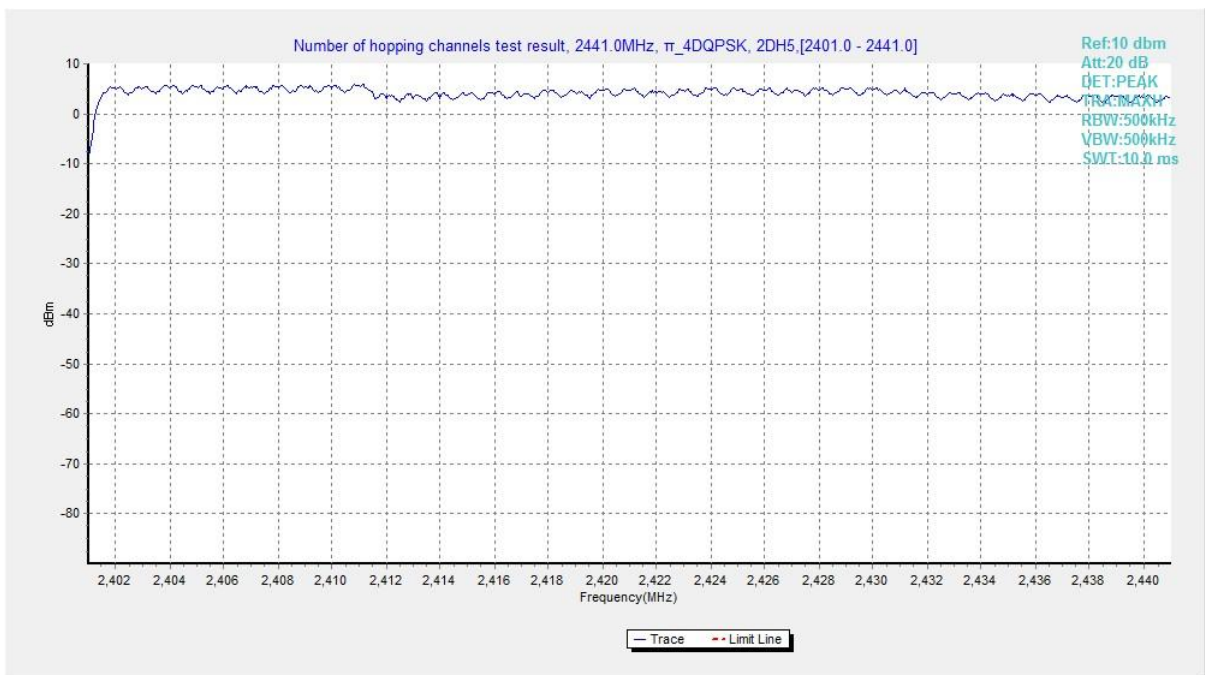


Fig. 77 Hopping channel ch0~39 ($\pi/4$ DQPSK, Ch39)

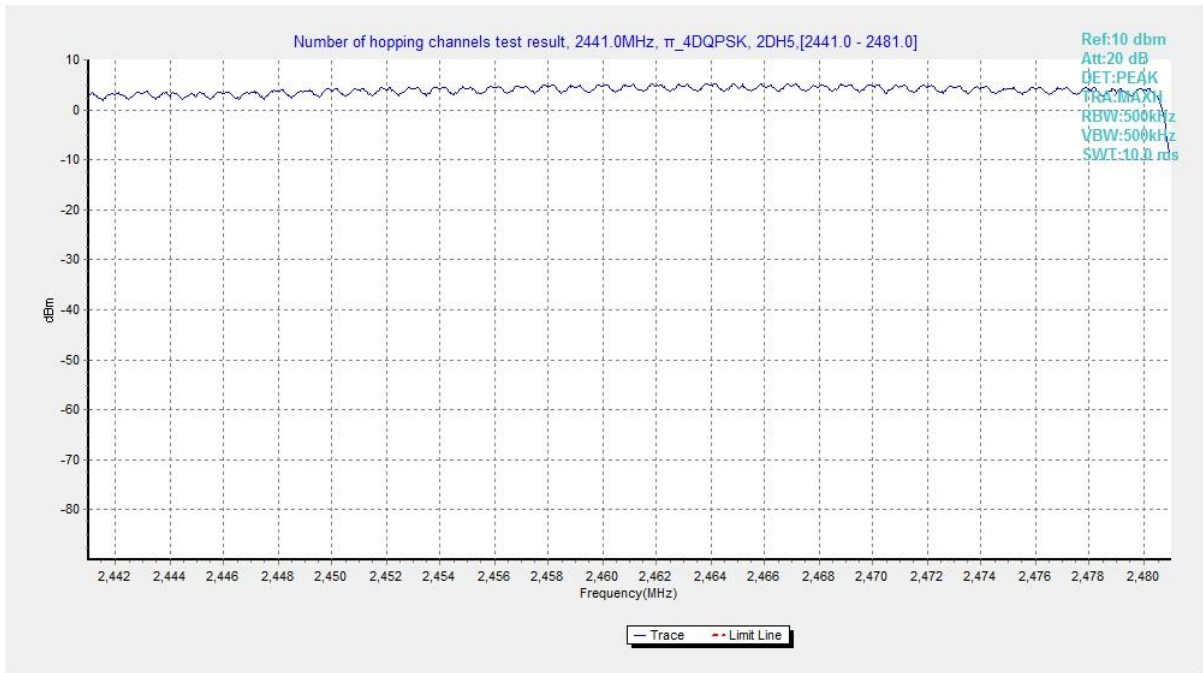


Fig. 78 Hopping channel ch40~78 ($\pi/4$ DQPSK, Ch39)

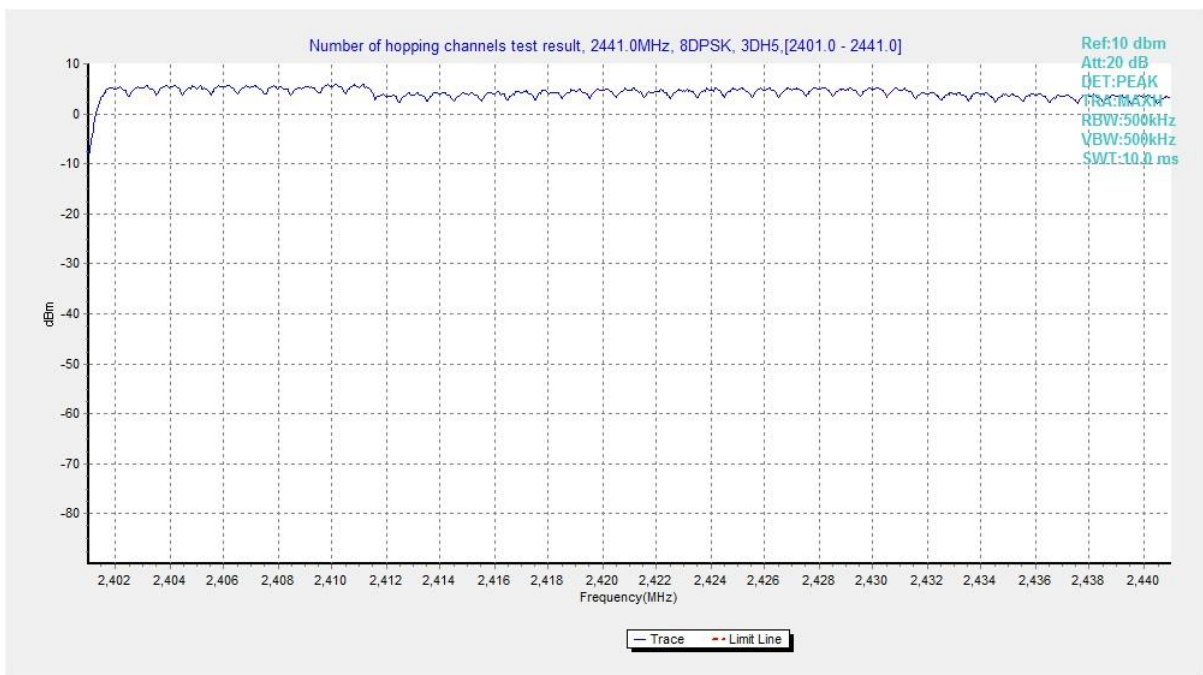


Fig. 79 Hopping channel ch0~39 (8DPSK, Ch39)

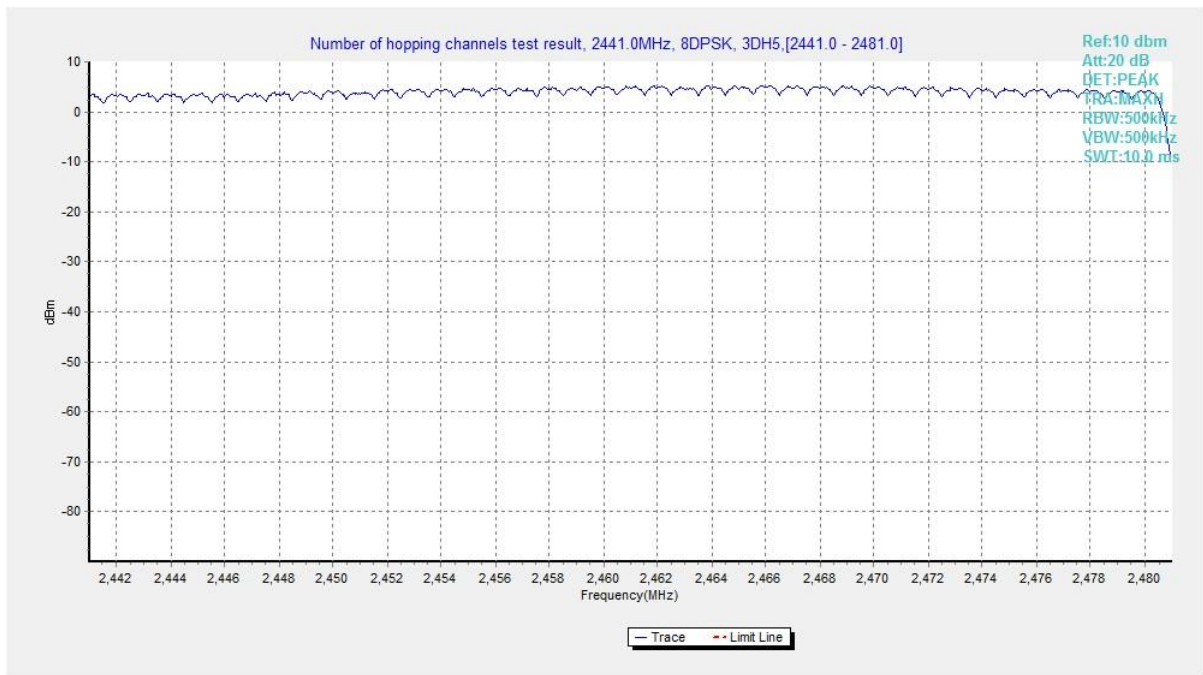


Fig. 80 Hopping channel ch40~78 (8DPSK, Ch39)

A.8 Carrier Frequency Separation

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a)	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	1.32	P
$\pi/4$ DQPSK	39	2-DH5	Fig.82	1.00	P
8DPSK	39	3-DH5	Fig.83	1.32	P

See below for test graphs.

Conclusion: Pass

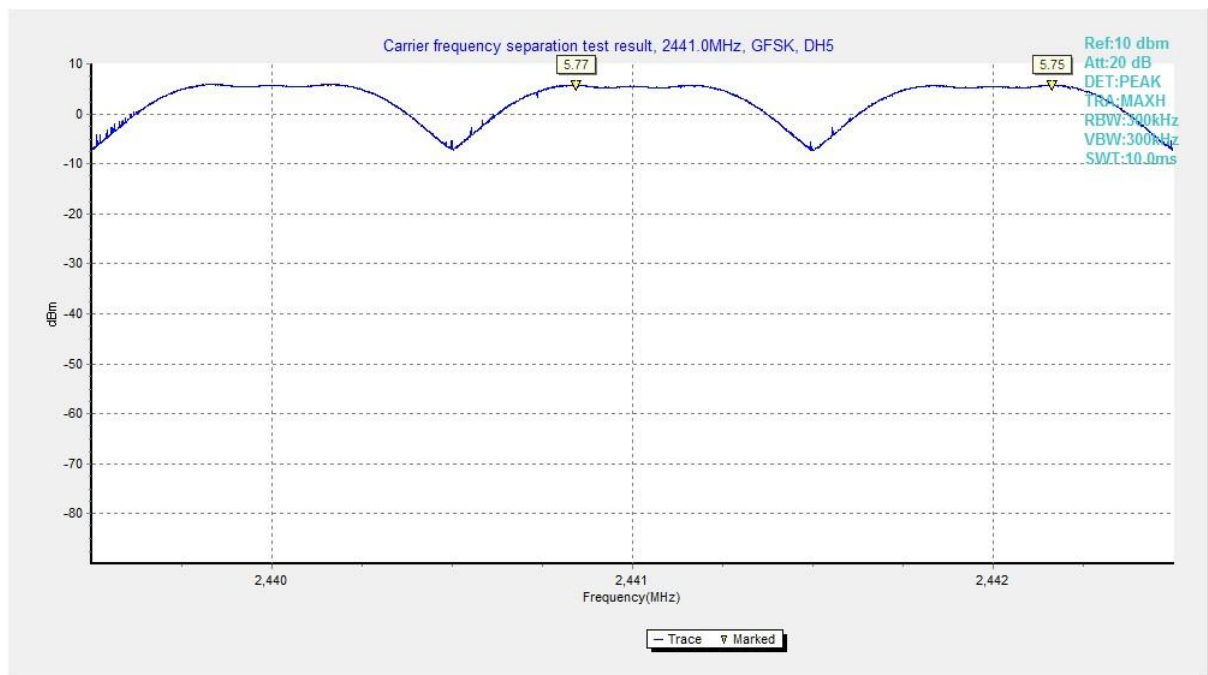


Fig. 81 Carrier Frequency Separation (GFSK, Ch39)

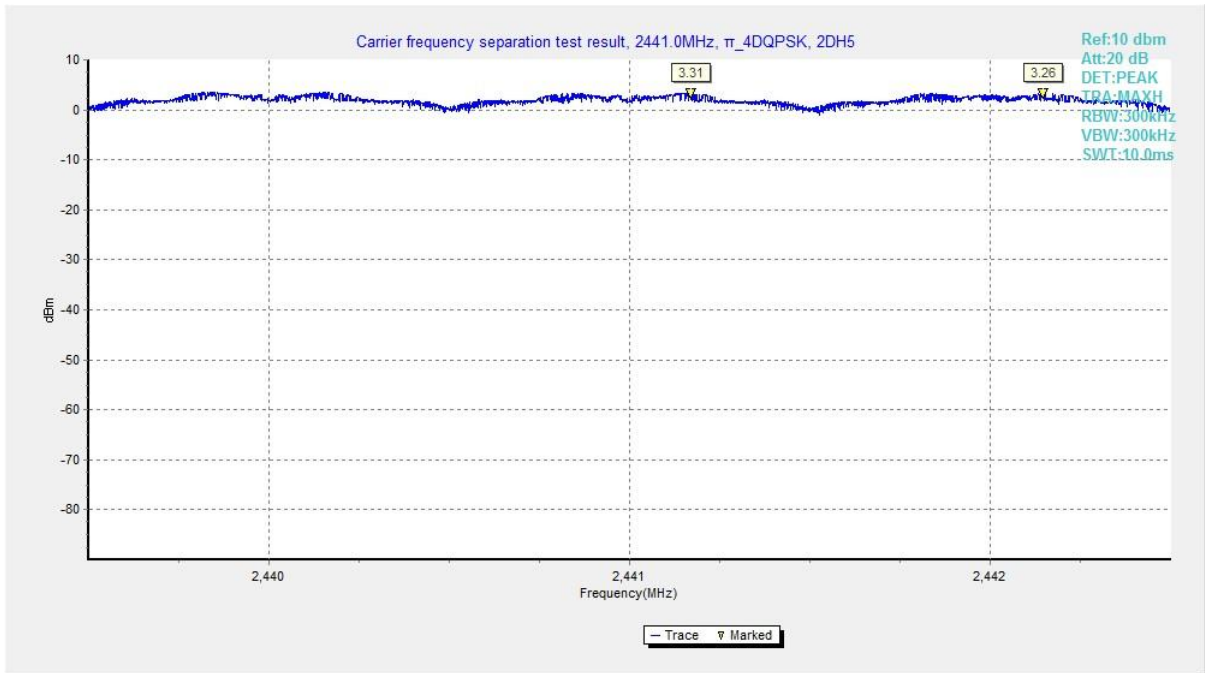


Fig. 82 Carrier Frequency Separation (π /4 DQPSK, Ch39)

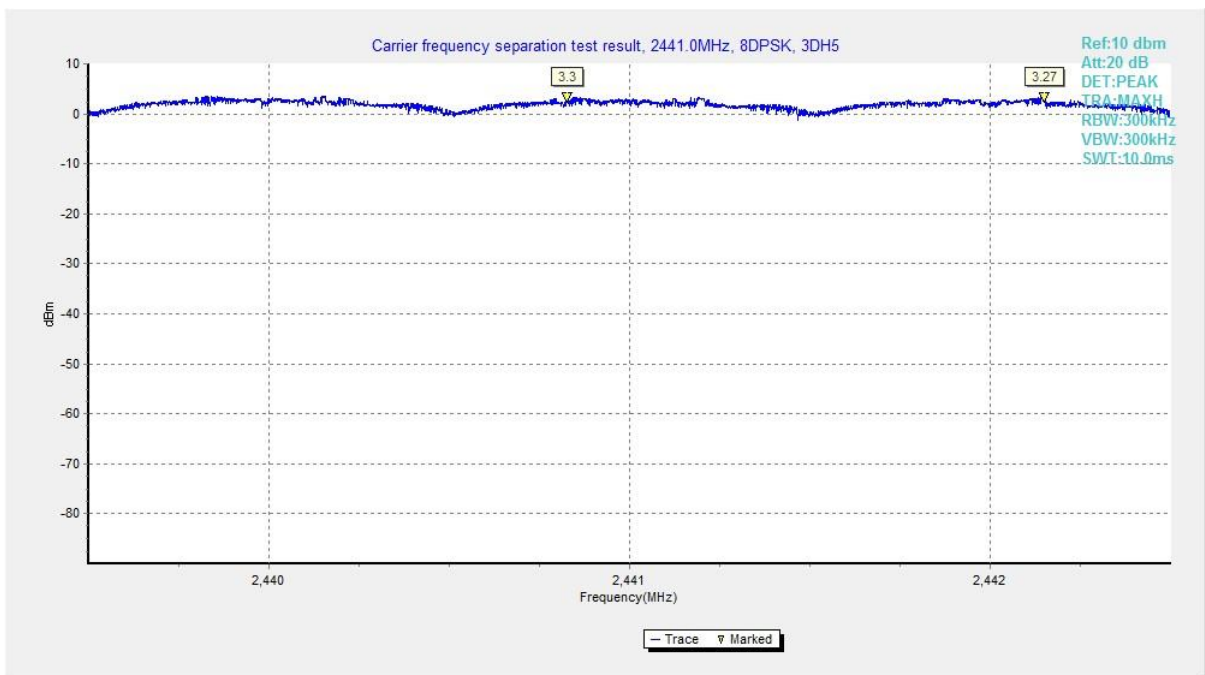


Fig. 83 Carrier Frequency Separation (8DPSK, Ch39)

A.9 AC Power line Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

BT (Quasi-peak Limit) - AE3

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		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) - AE3

Frequency range (MHz)	Average-peak Limit (dB μ V)	Result (dB μ V)		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.

BT (Quasi-peak Limit) - AE4

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		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) - AE4

Frequency range (MHz)	Average-peak Limit (dB μ V)	Result (dB μ V)		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

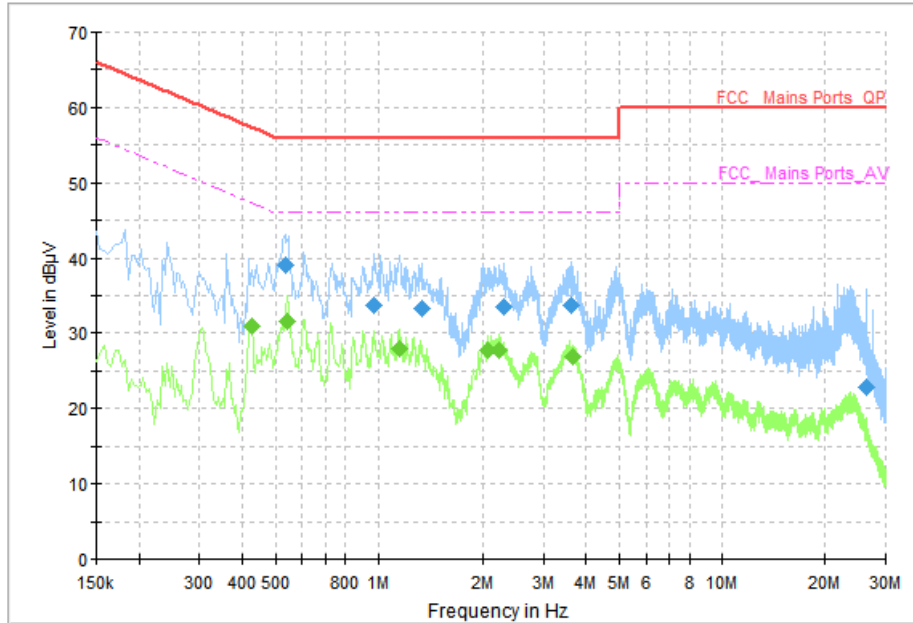


Fig. 84 AC Powerline Conducted Emission (Traffic, AE3, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.534000	39.09	56.00	16.91	N	ON	10
0.966000	33.66	56.00	22.34	N	ON	10
1.334000	33.25	56.00	22.75	N	ON	10
2.298000	33.58	56.00	22.42	N	ON	10
3.622000	33.70	56.00	22.30	N	ON	10
26.250000	22.84	60.00	37.16	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.426000	30.87	47.33	16.46	N	ON	10
0.542000	31.56	46.00	14.44	N	ON	10
1.154000	28.00	46.00	18.00	N	ON	10
2.054000	27.65	46.00	18.35	N	ON	10
2.218000	27.78	46.00	18.22	N	ON	10
3.654000	26.94	46.00	19.06	N	ON	10

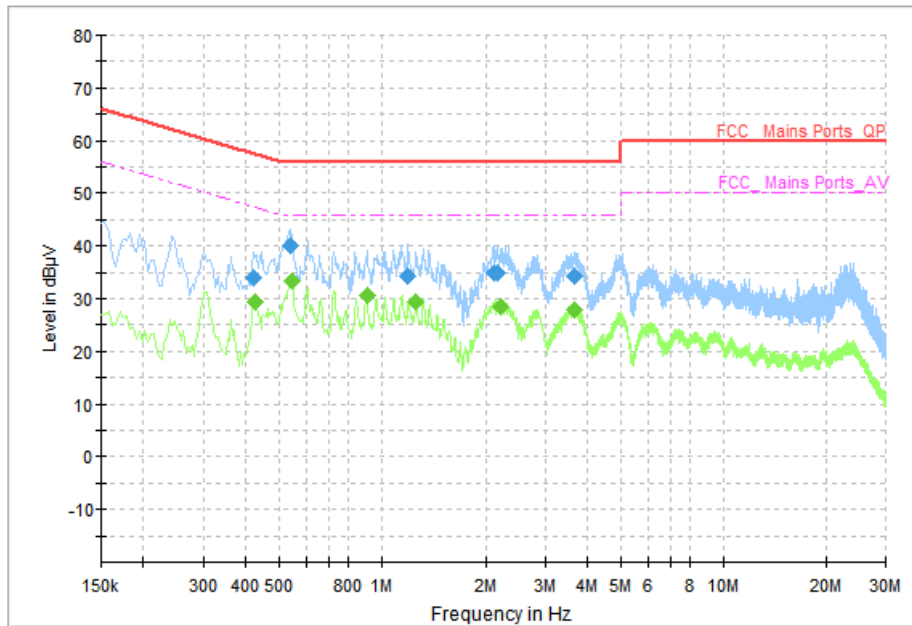


Fig. 85 AC Power line Conducted Emission (Idle, AE3, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.422000	34.05	57.41	23.36	N	ON	10
0.542000	40.04	56.00	15.96	N	ON	10
1.198000	34.16	56.00	21.84	N	ON	10
2.110000	34.87	56.00	21.13	N	ON	10
2.170000	35.02	56.00	20.98	N	ON	10
3.666000	34.16	56.00	21.84	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.426000	29.45	47.33	17.88	N	ON	10
0.546000	33.41	46.00	12.59	N	ON	10
0.906000	30.58	46.00	15.42	N	ON	10
1.266000	29.34	46.00	16.66	N	ON	10
2.206000	28.55	46.00	17.45	N	ON	10
3.662000	27.86	46.00	18.14	N	ON	10

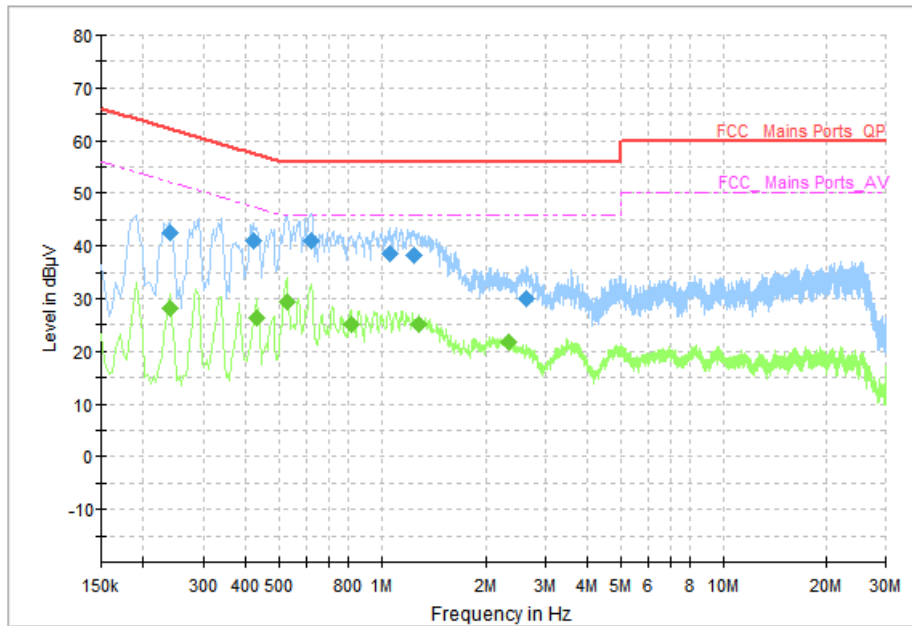


Fig. 86 AC Powerline Conducted Emission (Traffic, AE4, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.238000	42.56	62.17	19.61	N	ON	10
0.422000	40.89	57.41	16.52	N	ON	10
0.622000	40.84	56.00	15.16	N	ON	10
1.054000	38.67	56.00	17.33	L1	ON	10
1.250000	38.24	56.00	17.76	L1	ON	10
2.646000	29.97	56.00	26.03	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.238000	28.04	52.17	24.12	N	ON	10
0.430000	26.26	47.25	20.99	N	ON	10
0.526000	29.47	46.00	16.53	N	ON	10
0.814000	25.27	46.00	20.73	N	ON	10
1.294000	25.14	46.00	20.86	L1	ON	10
2.342000	21.73	46.00	24.27	N	ON	10

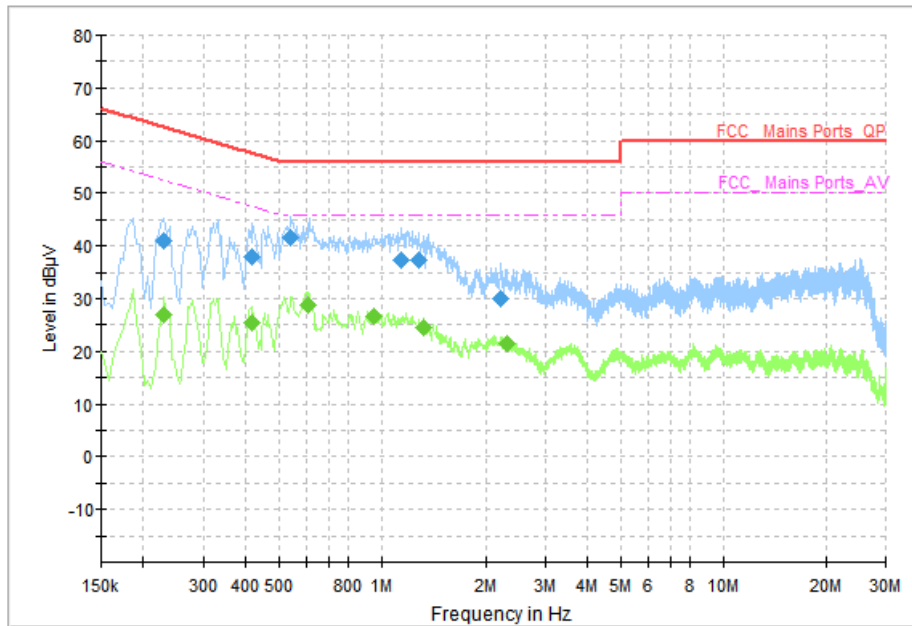


Fig. 87 AC Power line Conducted Emission (Idle, AE4, 120V)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	40.89	62.45	21.55	N	ON	10
0.414000	37.79	57.57	19.78	N	ON	10
0.542000	41.65	56.00	14.35	N	ON	10
1.146000	37.39	56.00	18.61	L1	ON	10
1.286000	37.20	56.00	18.80	L1	ON	10
2.218000	30.08	56.00	25.92	N	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.230000	26.98	52.45	25.47	N	ON	10
0.414000	25.48	47.57	22.09	N	ON	10
0.610000	28.89	46.00	17.11	N	ON	10
0.950000	26.57	46.00	19.43	N	ON	10
1.334000	24.60	46.00	21.40	L1	ON	10
2.314000	21.39	46.00	24.61	N	ON	10

END OF REPORT