

GFSK Ch 0 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2384.700	46.31	2.9	32.0	11.42	54.0	7.7	H	155	170
2388.600	46.29	2.9	32.0	11.43	54.0	7.7	H	155	150
4804.500	33.31	-32.8	34.5	31.66	54.0	20.7	H	155	20
7206.000	37.24	-31.6	36.1	32.77	54.0	16.8	H	155	180
9607.500	40.96	-30.0	37.0	34.01	54.0	13.0	H	155	202
12010.500	42.31	-29.8	39.3	32.84	54.0	11.7	H	155	8

GFSK Ch 39 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2436.000	46.42	2.9	32.0	11.53	54.0	7.6	H	155	28
2444.200	46.53	2.9	32.2	11.42	54.0	7.5	H	155	248
4882.500	32.94	-32.7	34.5	31.15	54.0	21.1	H	155	38
7323.000	38.49	-31.9	36.1	34.34	54.0	15.5	H	155	98
9763.500	39.19	-30.6	37.2	32.56	54.0	14.8	H	155	183
12205.500	44.00	-29.4	39.2	34.21	54.0	10.0	H	155	356

GFSK Ch 78 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.700	47.19	2.9	32.8	11.50	54.0	6.8	H	155	92
2484.200	46.77	2.9	32.7	11.10	54.0	7.2	H	155	68
4960.500	33.73	-33.4	34.5	32.60	54.0	20.3	H	155	118
7440.000	37.50	-31.8	36.0	33.24	54.0	16.5	H	155	354
9919.500	41.18	-29.9	37.4	33.70	54.0	12.8	H	155	18
12400.500	43.48	-29.5	39.1	33.85	54.0	10.5	H	155	38

$\pi/4$ DQPSK Ch 0 - Average

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2387.900	46.30	2.9	32.0	11.44	54.0	7.7	H	155	22
2389.700	46.30	2.9	32.0	11.45	54.0	7.7	H	155	44
4804.500	33.39	-32.8	34.5	31.74	54.0	20.6	H	155	242
7206.000	37.32	-31.6	36.1	32.85	54.0	16.7	H	155	176
9607.500	40.95	-30.0	37.0	34.00	54.0	13.0	H	155	88
12010.500	42.31	-29.8	39.3	32.84	54.0	11.7	V	155	22

$\pi/4$ DQPSK Ch 39 - Average

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2436.300	46.43	2.9	32.0	11.54	54.0	7.6	H	155	6
2443.800	46.60	2.9	32.2	11.51	54.0	7.4	H	155	26
4882.500	32.99	-32.7	34.5	31.21	54.0	21.0	H	155	92
7323.000	38.52	-31.9	36.1	34.37	54.0	15.5	H	155	24
9763.500	39.16	-30.6	37.2	32.53	54.0	14.8	H	155	136
12205.500	44.05	-29.4	39.2	34.26	54.0	9.9	H	155	356

$\pi/4$ DQPSK Ch 78 - Average

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.600	47.90	2.9	32.8	12.21	54.0	6.1	H	155	22
2483.800	47.29	2.9	32.8	11.61	54.0	6.7	H	155	242
4960.500	33.49	-33.4	34.5	32.37	54.0	20.5	V	155	44
7440.000	37.45	-31.8	36.0	33.19	54.0	16.6	H	155	88
9919.500	41.15	-29.9	37.4	33.67	54.0	12.9	V	155	176
12400.500	43.45	-29.5	39.1	33.82	54.0	10.6	H	155	0

8DPSK Ch 0 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2388.000	46.32	2.9	32.0	11.46	54.0	7.7	H	155	268
2390.000	46.29	2.9	32.0	11.44	54.0	7.7	H	155	138
4804.500	33.34	-32.8	34.5	31.69	54.0	20.7	H	155	104
7206.000	37.38	-31.6	36.1	32.91	54.0	16.6	H	155	40
9607.500	41.01	-30.0	37.0	34.06	54.0	13.0	H	155	28
12010.500	42.28	-29.8	39.3	32.80	54.0	11.7	H	155	8

8DPSK Ch 39 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2434.900	46.46	2.9	32.0	11.60	54.0	7.5	H	155	92
2447.300	46.48	2.9	32.3	11.29	54.0	7.5	H	155	136
4882.500	32.96	-32.7	34.5	31.18	54.0	21.0	H	155	8
7323.000	38.48	-31.9	36.1	34.32	54.0	15.5	H	155	70
9763.500	39.22	-30.6	37.2	32.59	54.0	14.8	H	155	48
12205.500	44.04	-29.4	39.2	34.25	54.0	10.0	H	155	246

8DPSK Ch 78 - Average

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.500	46.81	2.9	32.8	11.12	54.0	7.2	H	155	132
2483.900	46.46	2.9	32.7	10.78	54.0	7.5	H	155	28
4960.500	33.47	-33.4	34.5	32.34	54.0	20.5	H	155	38
7440.000	37.50	-31.8	36.0	33.24	54.0	16.5	H	155	65
9919.500	41.18	-29.9	37.4	33.70	54.0	12.8	H	155	4
12400.500	43.43	-29.5	39.1	33.80	54.0	10.6	H	155	24

GFSK Ch 0 – Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2382.800	60.31	2.9	32.0	25.42	74.0	13.7	H	155	176
2386.664	60.00	2.9	32.0	25.13	74.0	14.0	H	155	154
4804.000	39.35	-32.9	34.5	37.70	74.0	34.7	V	155	22
7206.000	43.46	-31.6	36.1	38.99	74.0	30.5	V	155	176
9608.000	46.22	-30.0	37.0	39.26	74.0	27.8	H	155	198
12010.000	46.90	-29.8	39.3	37.43	74.0	27.1	H	155	0

GFSK Ch 39 - Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2374.400	47.44	-26.7	32.1	42.04	74.0	26.6	H	155	22
2503.200	47.58	-26.3	32.4	41.57	74.0	26.4	H	155	242
4882.000	40.53	-32.7	34.5	38.74	74.0	33.5	V	155	44
7323.000	43.63	-31.9	36.1	39.47	74.0	30.4	H	155	88
9764.000	44.34	-30.6	37.2	37.71	74.0	29.7	V	155	176
12205.000	47.55	-29.4	39.2	37.76	74.0	26.4	H	155	0

GFSK Ch 78 - Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.620	60.64	2.9	32.8	24.95	74.0	13.4	H	155	88
2492.010	60.57	2.9	32.5	25.11	74.0	13.4	H	155	66
4960.000	40.72	-33.4	34.5	39.59	74.0	33.3	H	155	110
7440.000	42.39	-31.8	36.0	38.13	74.0	31.6	V	155	0
9920.000	45.34	-29.9	37.4	37.87	74.0	28.7	H	155	22
12400.000	46.88	-29.5	39.1	37.25	74.0	27.1	H	155	44

$\pi/4$ DQPSK Ch 0 - Peak

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2387.140	60.77	2.9	32.0	25.91	74.0	13.2	H	155	22
2388.680	60.25	2.9	32.0	25.40	74.0	13.7	H	155	44
4804.000	41.22	-32.9	34.5	39.57	74.0	32.8	H	155	242
7206.000	41.62	-31.6	36.1	37.15	74.0	32.4	H	155	176
9608.000	46.67	-30.0	37.0	39.72	74.0	27.3	H	155	88
12010.000	46.05	-29.8	39.3	36.58	74.0	28.0	V	155	22

$\pi/4$ DQPSK Ch 39 - Peak

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2363.600	46.96	-27.4	31.9	42.44	74.0	27.0	V	155	0
2515.200	47.54	-26.6	32.5	41.60	74.0	26.5	V	155	22
4882.000	39.36	-32.7	34.5	37.58	74.0	34.6	V	155	88
7323.000	45.16	-31.9	36.1	41.00	74.0	28.8	V	155	22
9764.000	44.25	-30.6	37.2	37.62	74.0	29.8	H	155	132
12205.000	47.29	-29.4	39.2	37.50	74.0	26.7	H	155	352

$\pi/4$ DQPSK Ch 78 - Peak

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2491.270	60.42	2.9	32.5	24.94	74.0	13.6	H	155	22
2492.500	60.51	2.9	32.5	25.06	74.0	13.5	H	155	44
4960.000	39.31	-33.4	34.5	38.19	74.0	34.7	V	155	88
7440.000	42.66	-31.8	36.0	38.40	74.0	31.3	V	155	0
9920.000	46.22	-29.9	37.4	38.75	74.0	27.8	H	155	110
12400.000	46.62	-29.5	39.1	36.99	74.0	27.4	H	155	132

8DPSK Ch 0 - Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2382.940	59.83	2.9	32.0	24.93	74.0	14.2	H	155	264
2389.492	59.88	2.9	32.0	25.03	74.0	14.1	H	155	132
4804.000	38.88	-32.9	34.5	37.23	74.0	35.1	H	155	110
7206.000	42.64	-31.6	36.1	38.17	74.0	31.4	H	155	44
9608.000	46.42	-30.0	37.0	39.46	74.0	27.6	H	155	22
12010.000	45.50	-29.8	39.3	36.03	74.0	28.5	V	155	0

8DPSK Ch 39 - Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2357.200	46.67	-27.7	31.8	42.57	74.0	27.3	H	155	88
2516.600	47.35	-26.6	32.6	41.42	74.0	26.7	V	155	132
4882.000	39.35	-32.7	34.5	37.56	74.0	34.7	H	155	0
7323.000	44.12	-31.9	36.1	39.96	74.0	29.9	H	155	66
9764.000	44.94	-30.6	37.2	38.31	74.0	29.1	V	155	44
12205.000	47.97	-29.4	39.2	38.18	74.0	26.0	V	155	242

8DPSK Ch 78 - Peak

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2495.190	60.54	2.9	32.4	25.16	74.0	13.5	H	155	110
2497.490	60.83	2.9	32.4	25.52	74.0	13.2	H	155	22
4960.000	40.04	-33.4	34.5	38.91	74.0	34.0	V	155	44
7440.000	42.37	-31.8	36.0	38.11	74.0	31.6	V	155	66
9920.000	45.48	-29.9	37.4	38.01	74.0	28.5	V	155	0
12400.000	46.54	-29.5	39.1	36.92	74.0	27.5	H	155	22

Conclusion: PASS

Test graphs as below:

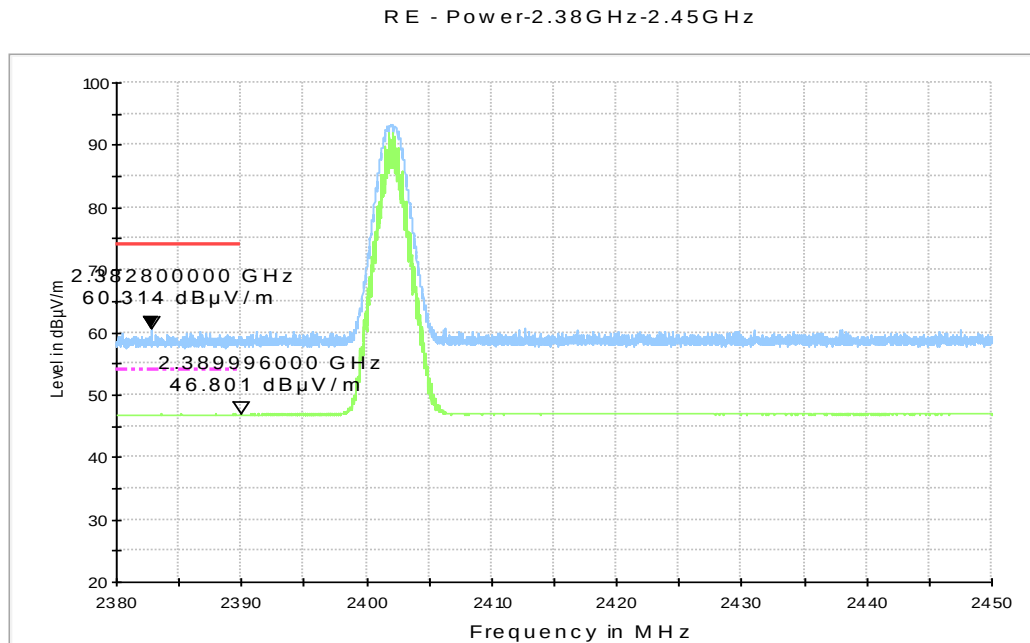


Fig.58. Radiated emission (Power): GFSK, low channel

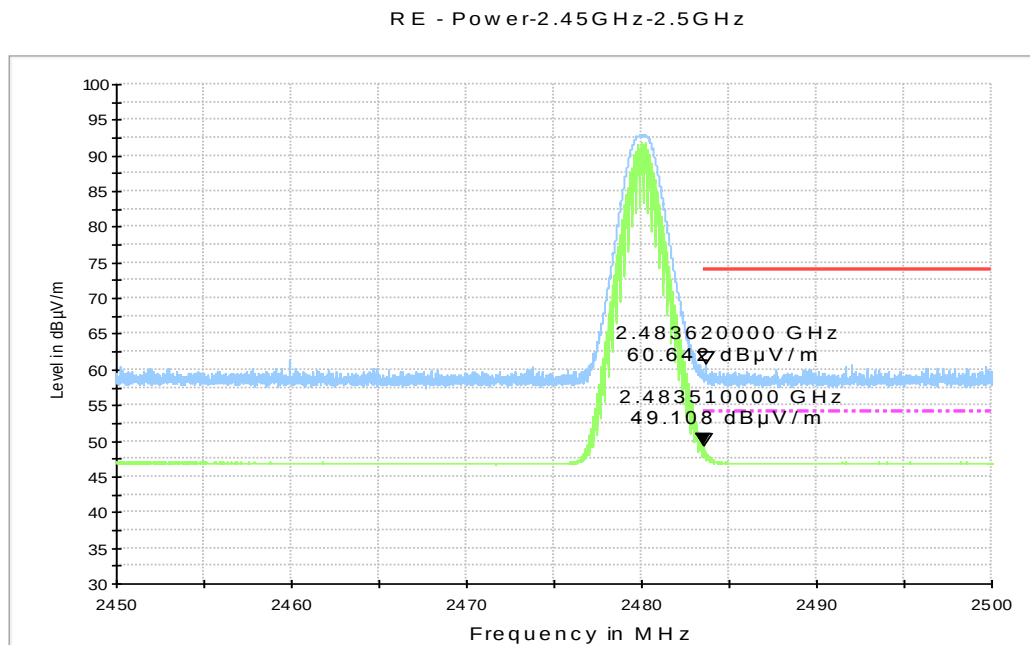


Fig.59. Radiated emission (Power) GFSK, high channel

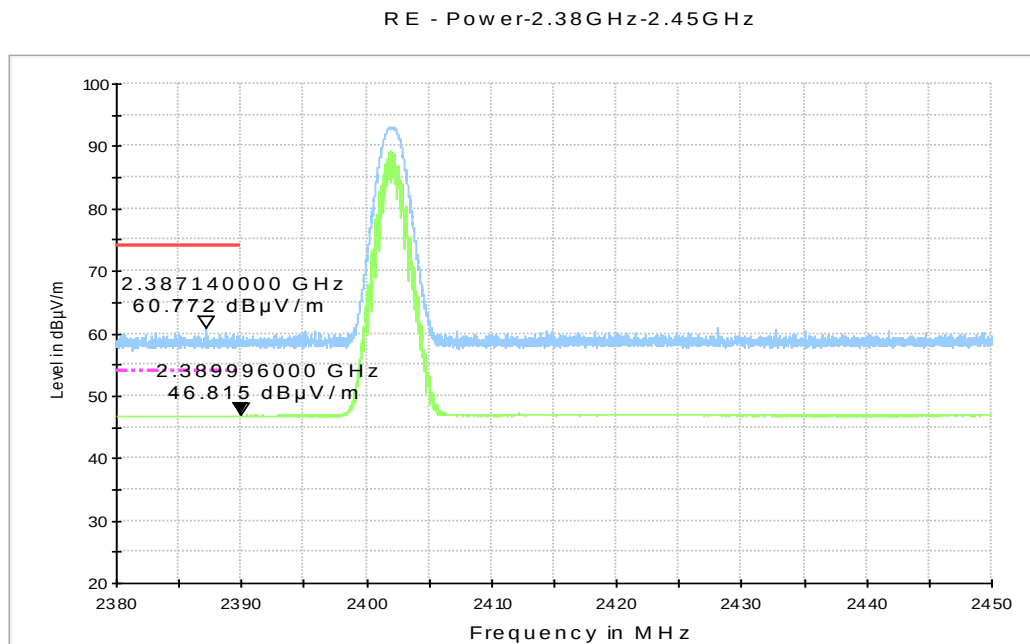


Fig.60. Radiated emission (Power): $\pi/4$ DQPSK, low channel

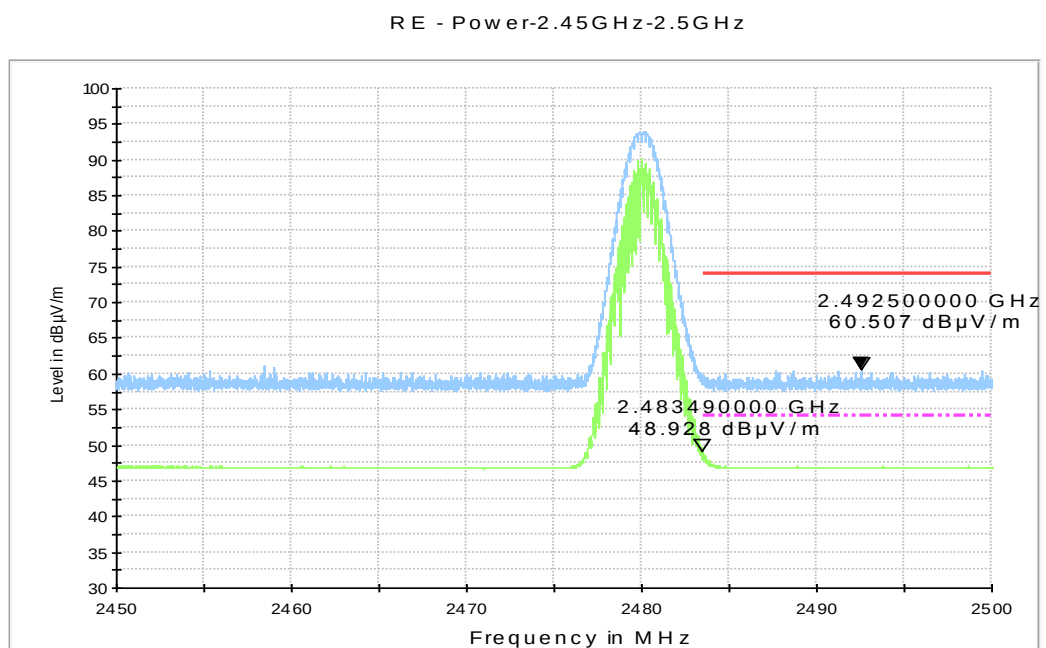


Fig.61. Radiated emission (Power): $\pi/4$ DQPSK, high channel

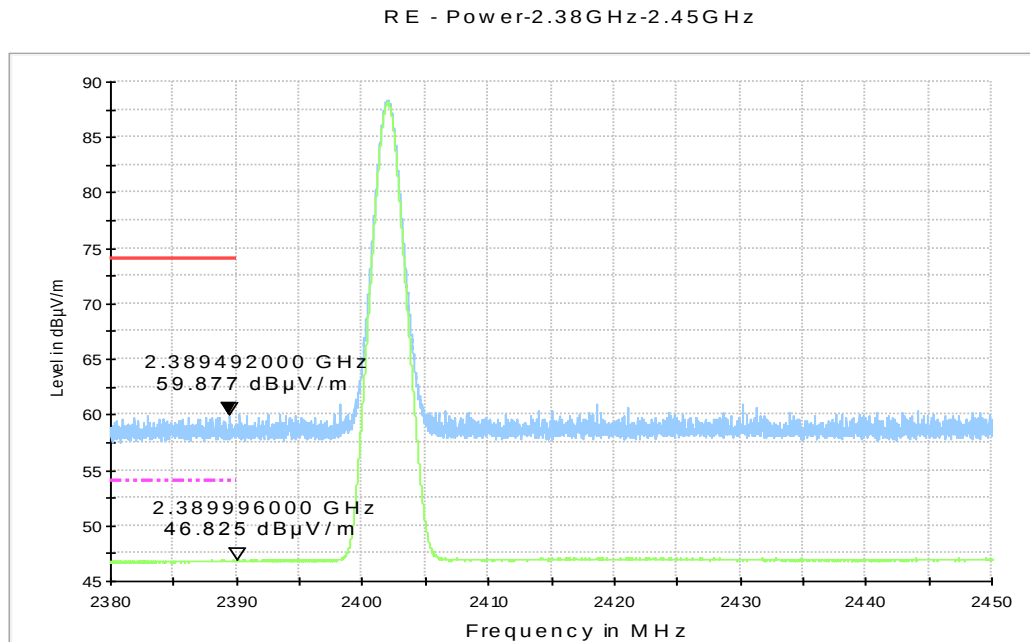


Fig.62. Radiated emission (Power): 8DPSK, low channel

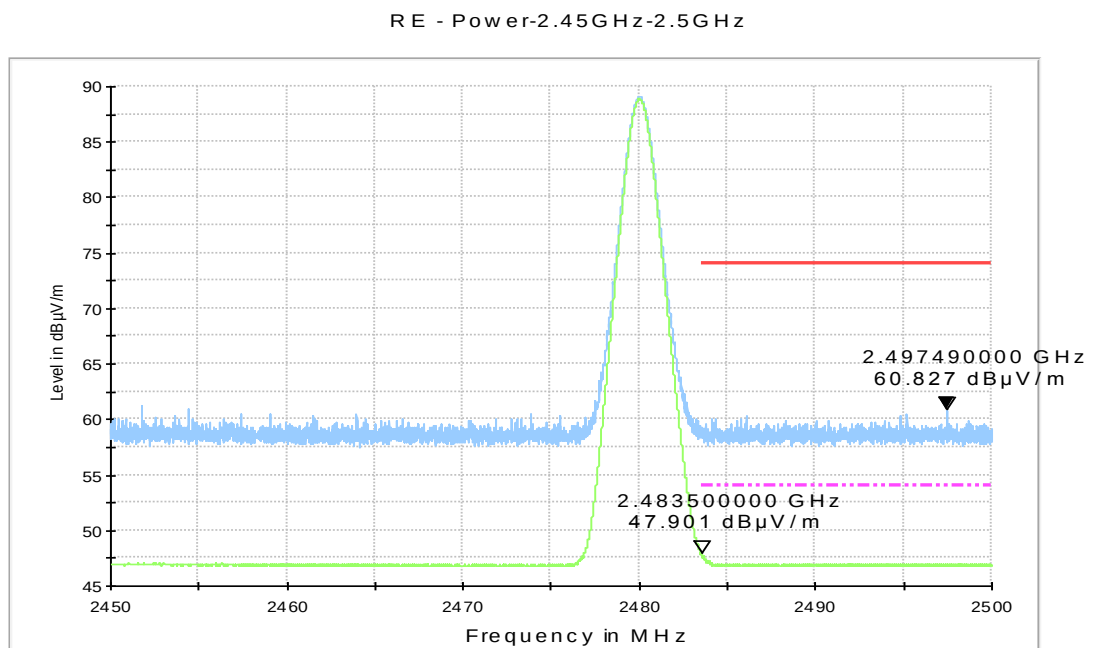


Fig.63. Radiated emission (Power): 8DPSK, high channel

A.6. Time of Occupancy (Dwell Time)

Method of Measurement: See ANSI C63.10-clause 7.8.4

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = zero span, centered on a hopping channel
- RBW = 1 MHz
- VBW $\geq$ RBW
- Sweep = as necessary to capture the entire dwell time per hopping channel
- Detector function = peak
- Trace = max hold

Measure a pulse time in time domain at middle frequency and then count the hopping number in 31.6s(which equals with 0.4 multiply 79) of middle frequency ,then multiply the pulse time and hopping number and record them.

Measurement Limit:

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

Measurement Result:

For GFSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.64	121.15	P
		Fig.65		
	DH3	Fig.66	157.16	P
		Fig.67		
	DH5	Fig.68	213.52	P
		Fig.69		

For $\pi/4$ DQPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.70	123.43	P
		Fig.71		
	DH3	Fig.72	160.62	P
		Fig.73		
	DH5	Fig.74	181.88	P
		Fig.75		

For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.76	122.99	P
		Fig.77		
	DH3	Fig.78	186.71	P

	DH5	Fig.79	210.88	P
		Fig.80		
		Fig.81		

Conclusion: PASS

Test graphs as below:

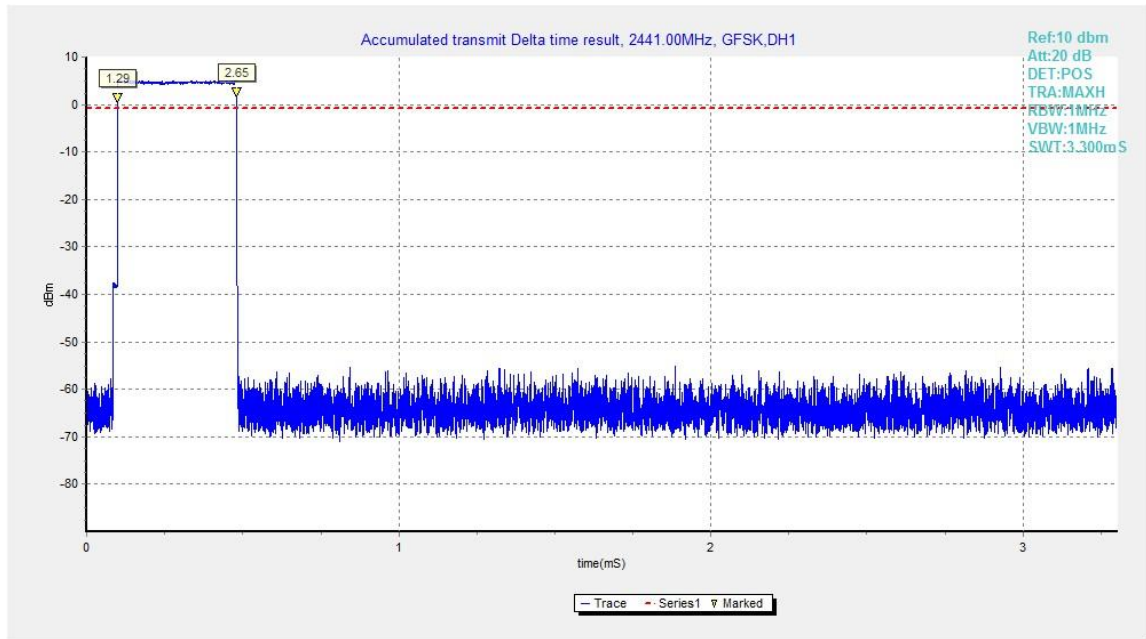


Fig.64. Time of occupancy (Dwell Time): Channel 39, Packet DH1

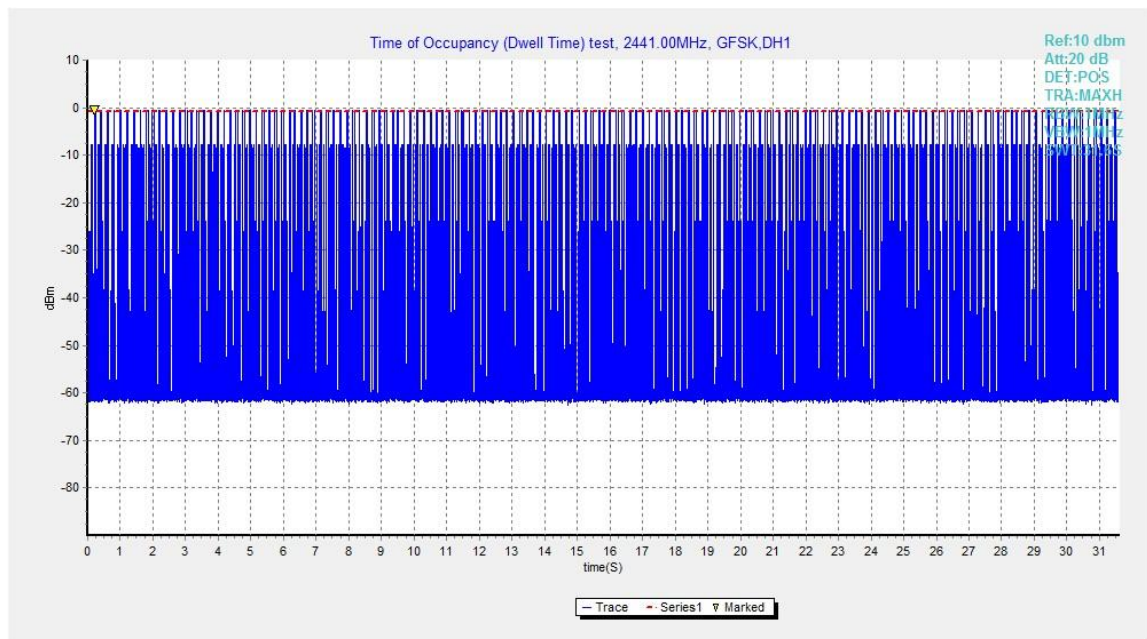


Fig.65. Number of Transmissions Measurement: Channel 39,Packet DH1

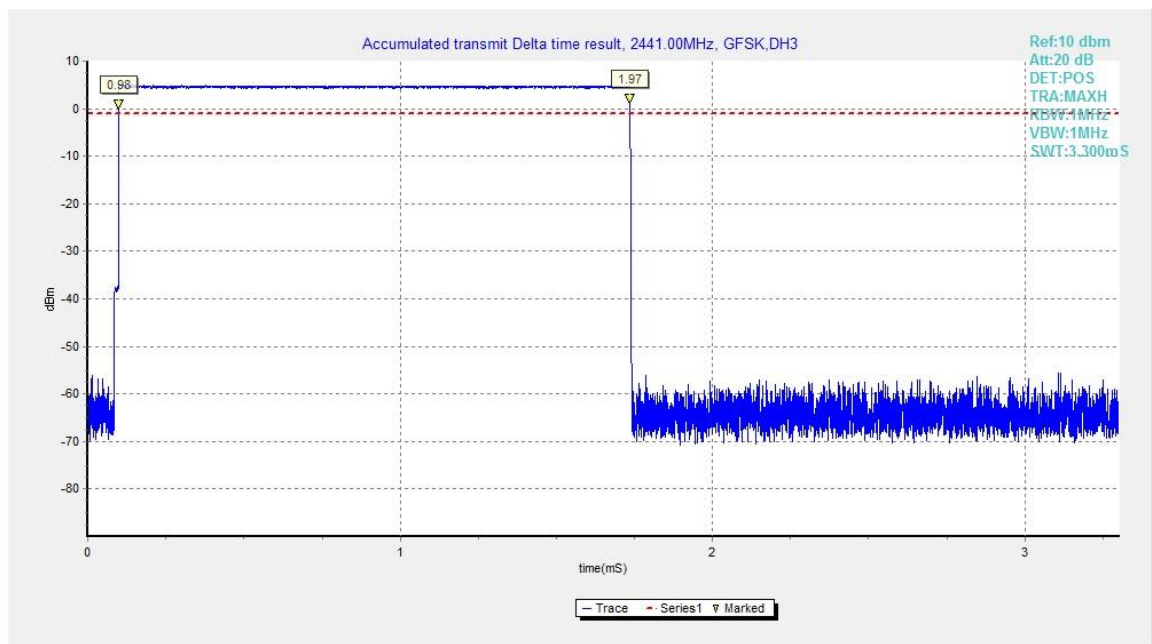


Fig.66. Time of occupancy (Dwell Time): Channel 39, Packet DH3

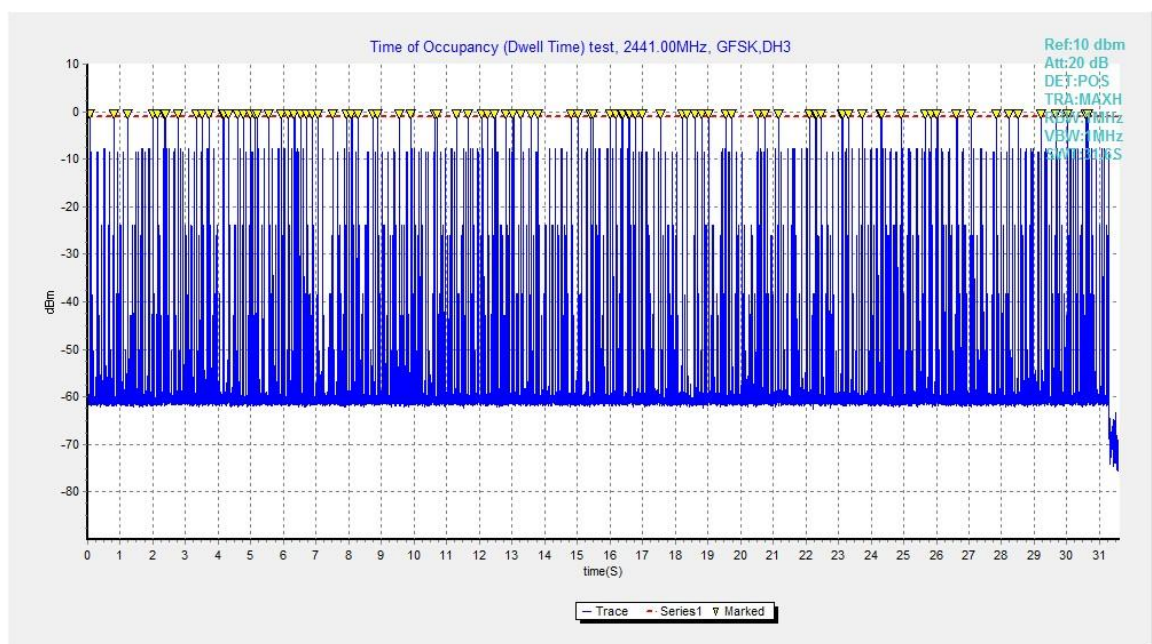


Fig.67. Number of Transmissions Measurement: Channel 39,Packet DH3

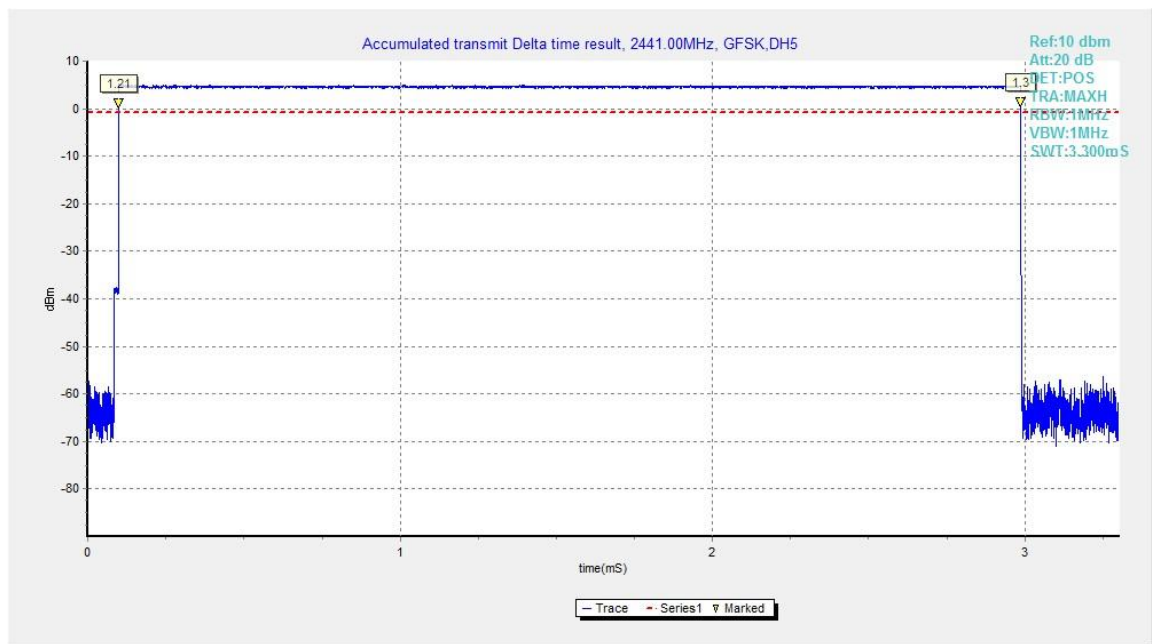


Fig.68. Time of occupancy (Dwell Time): Channel 39, Packet DH5

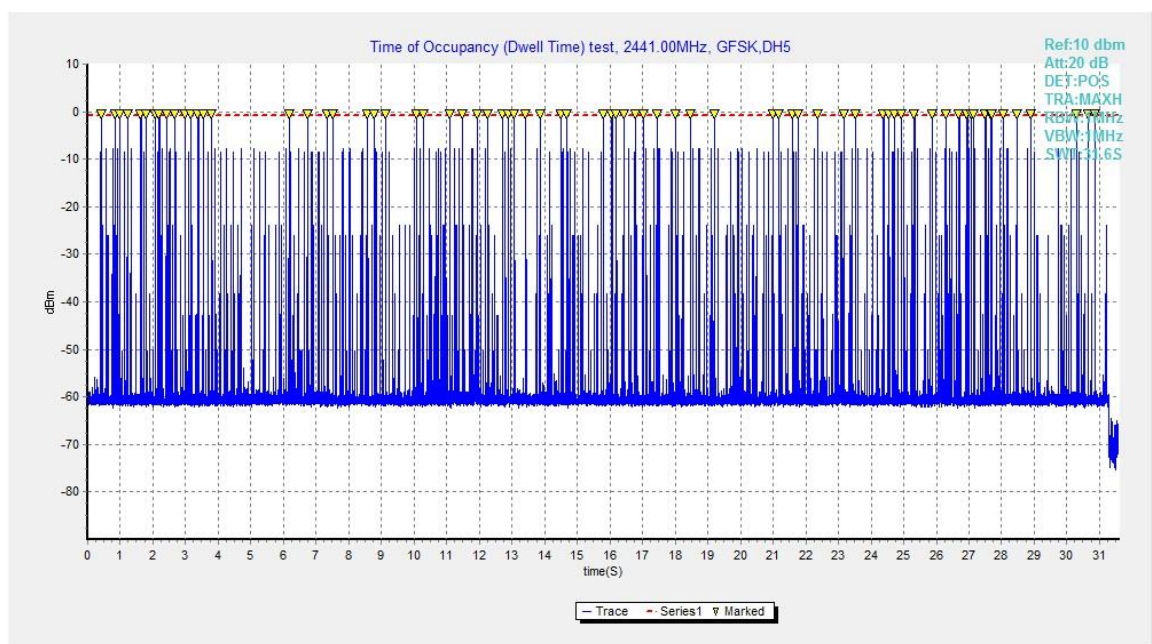


Fig.69. Number of Transmissions Measurement: Channel 39,Packet DH5

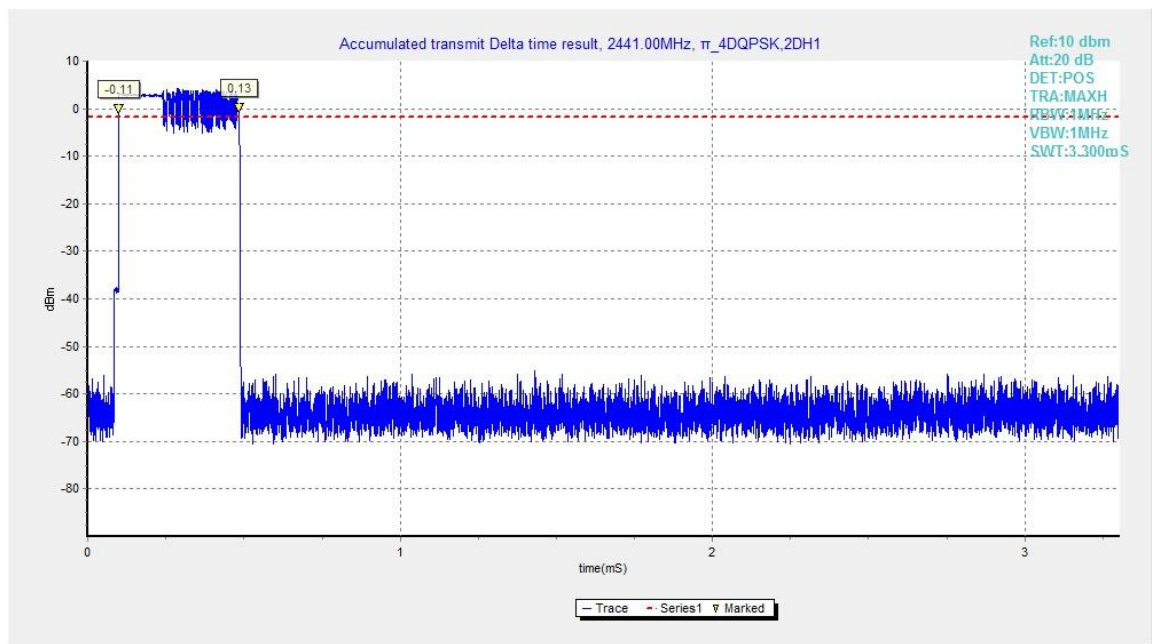


Fig.70. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1

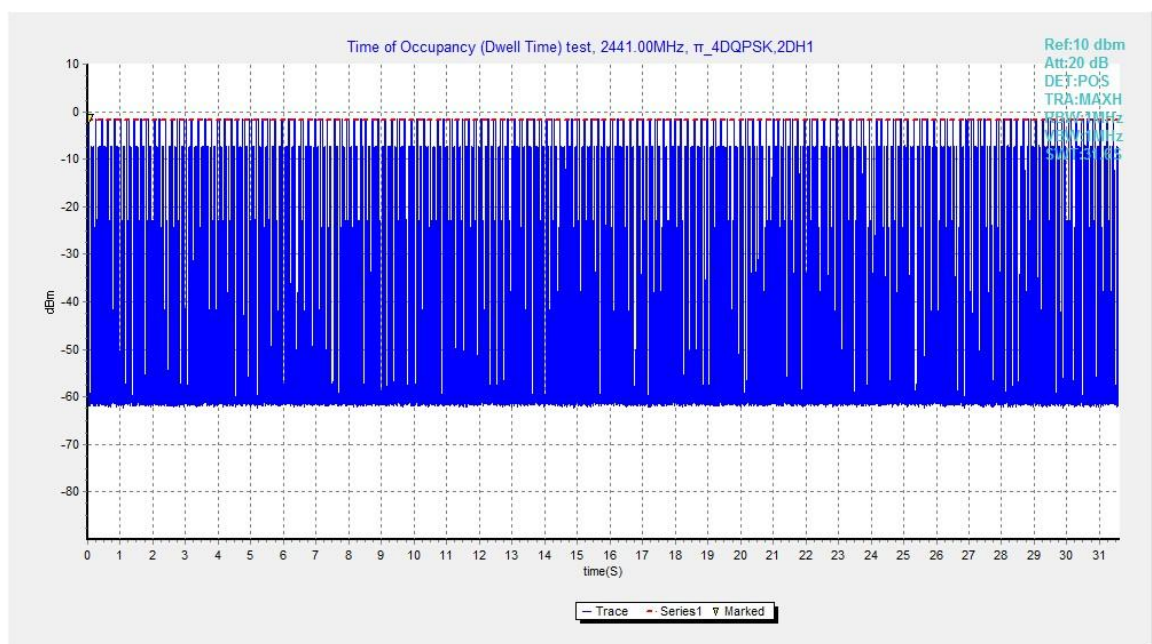


Fig.71. Number of Transmissions Measurement: Channel 39,Packet 2-DH1

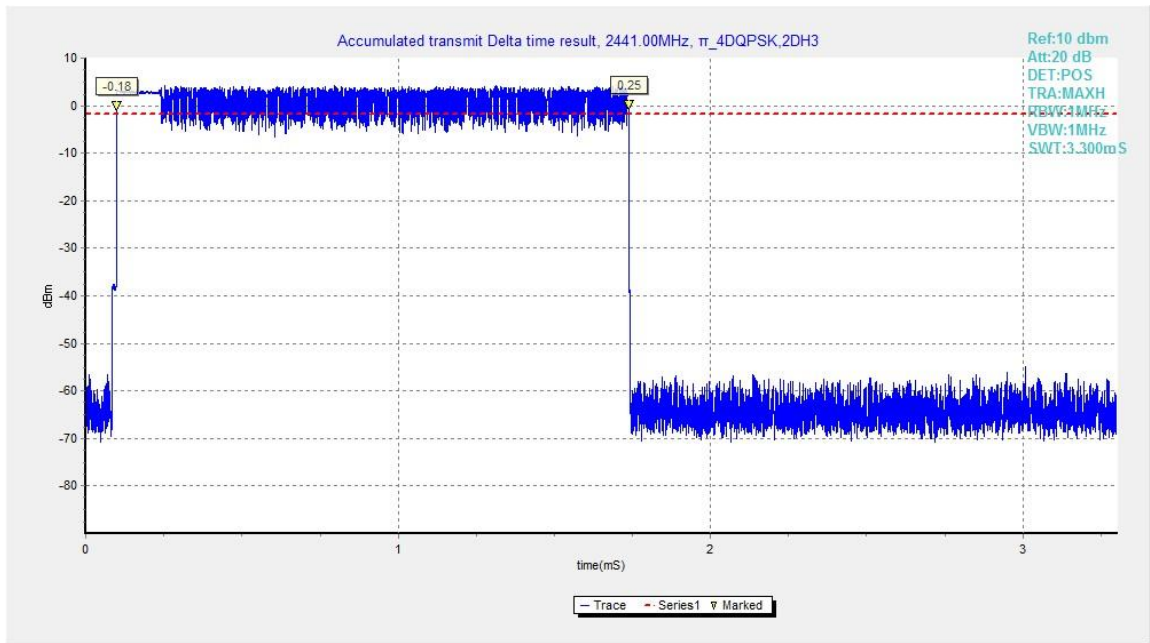


Fig.72. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3

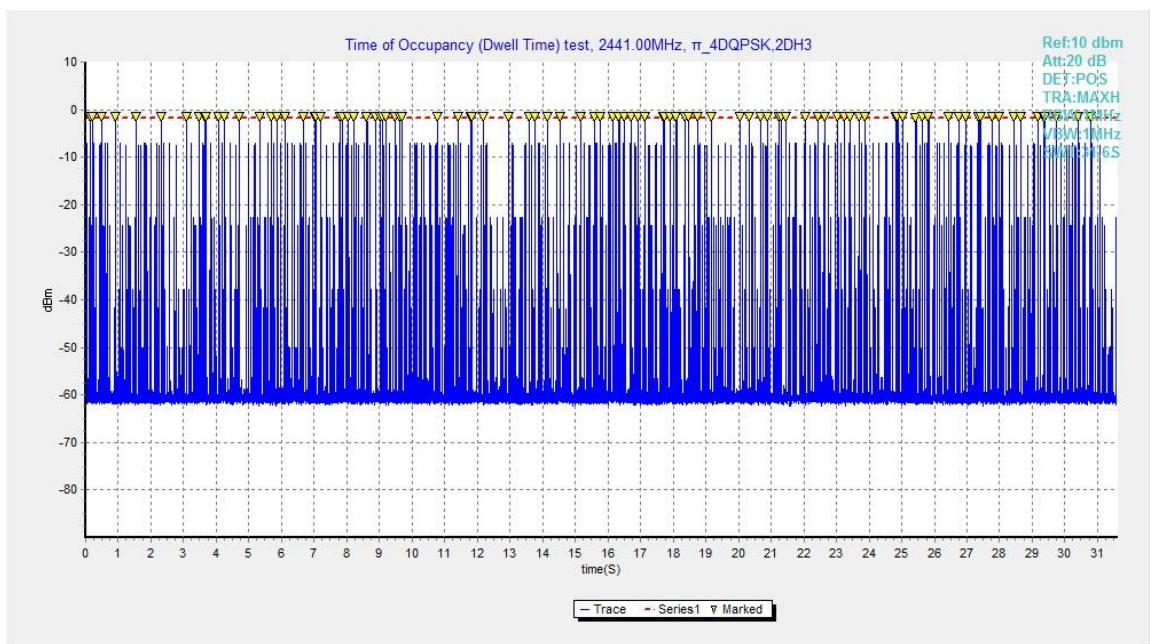


Fig.73. Number of Transmissions Measurement: Channel 39,Packet 2-DH3

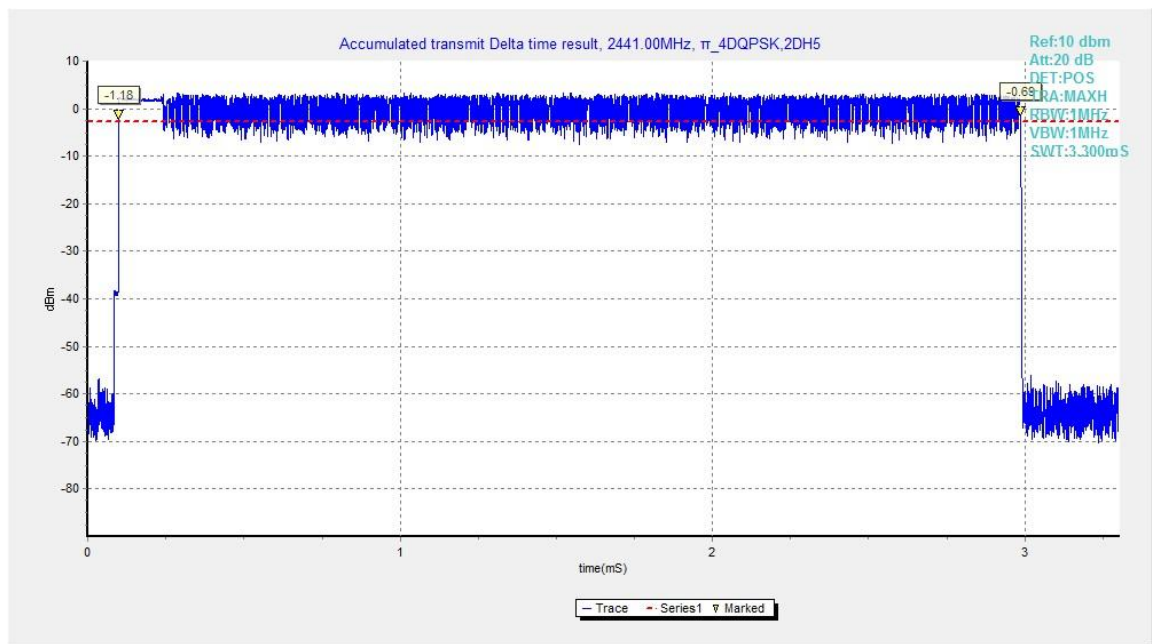


Fig.74. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5

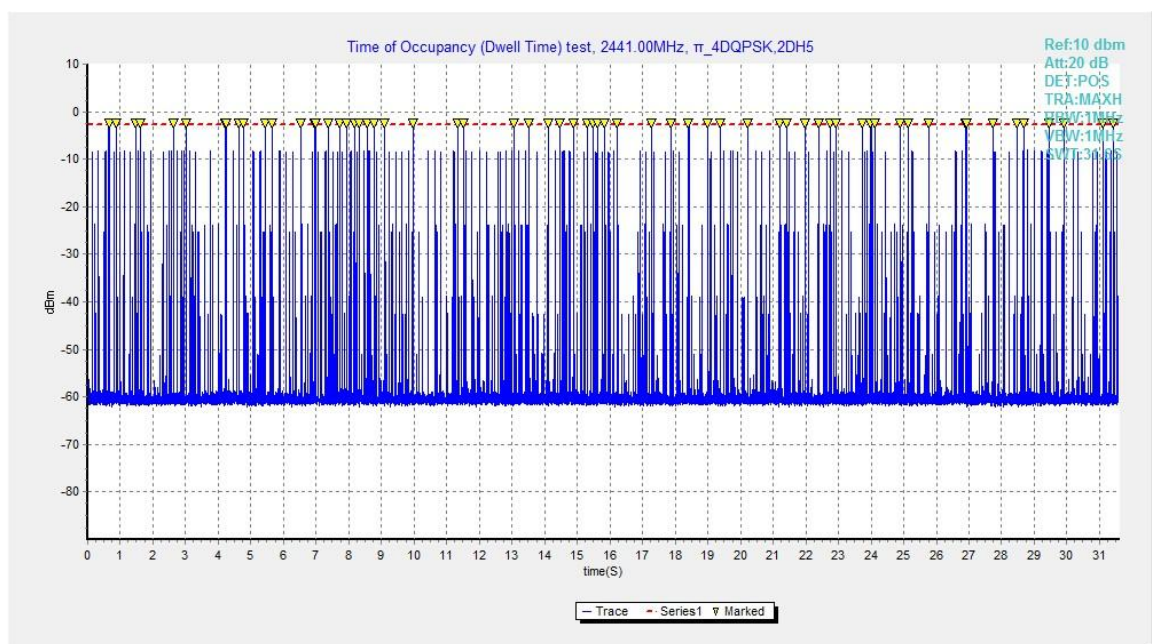


Fig.75. Number of Transmissions Measurement: Channel 39,Packet 2-DH5

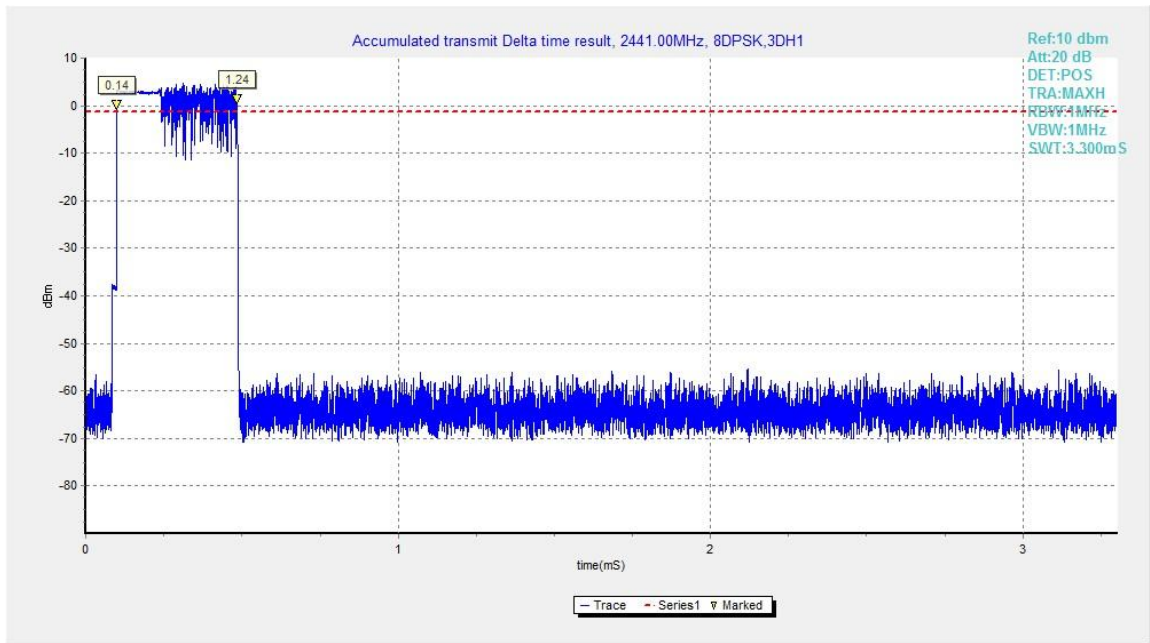


Fig.76. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1

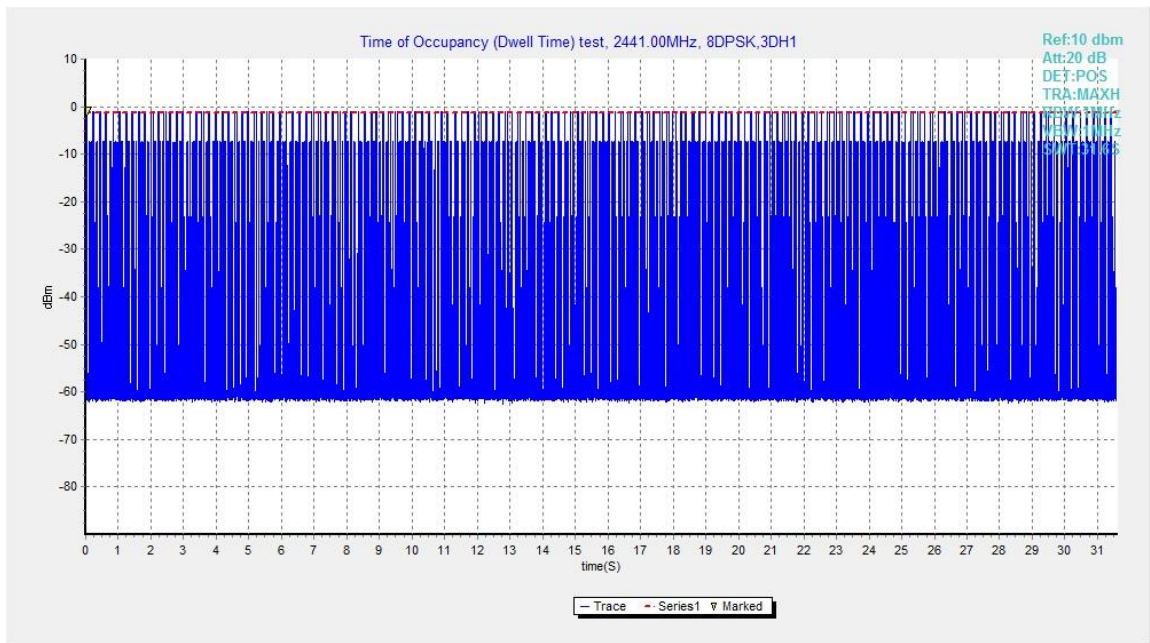


Fig.77. Number of Transmissions Measurement: Channel 39,Packet 3-DH1

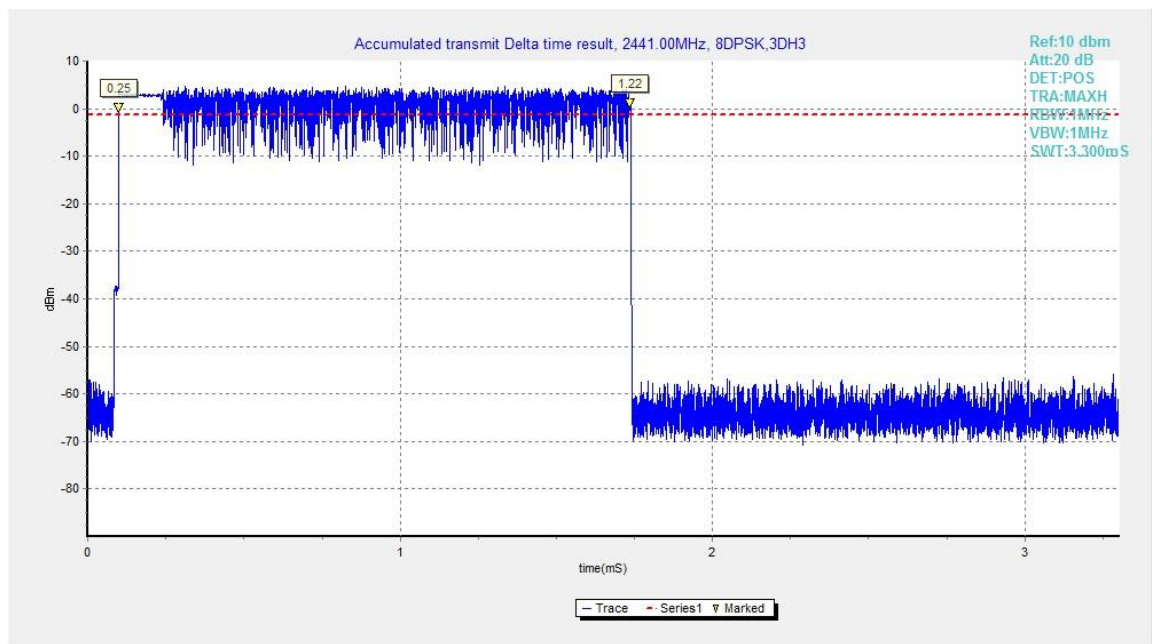


Fig.78. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3

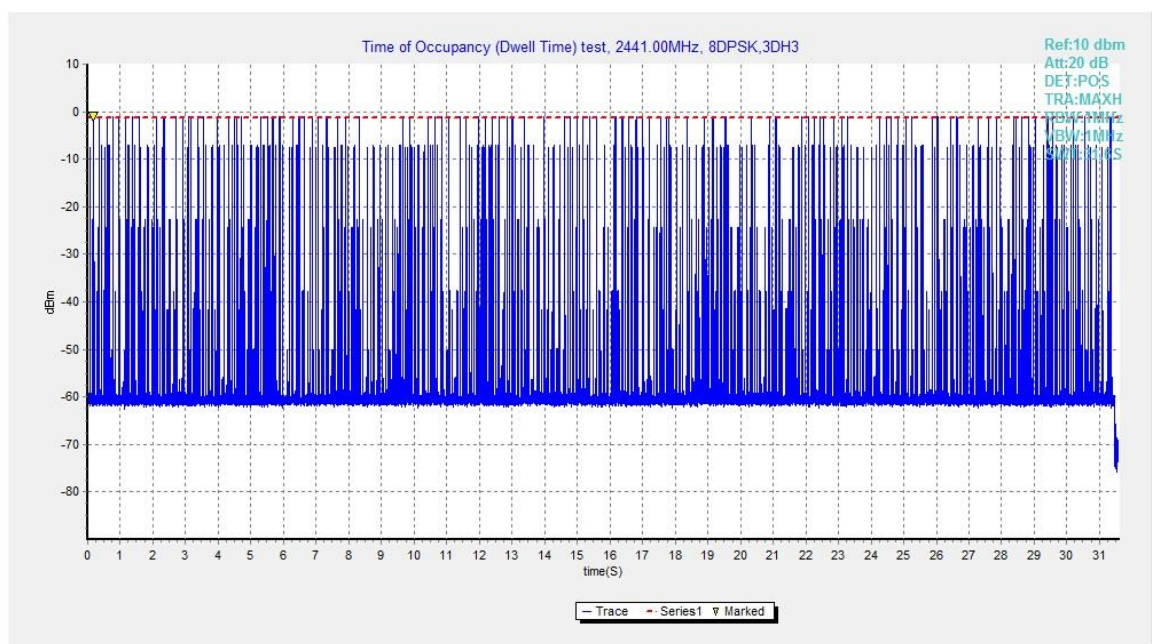


Fig.79. Number of Transmissions Measurement: Channel 39,Packet 3-DH3

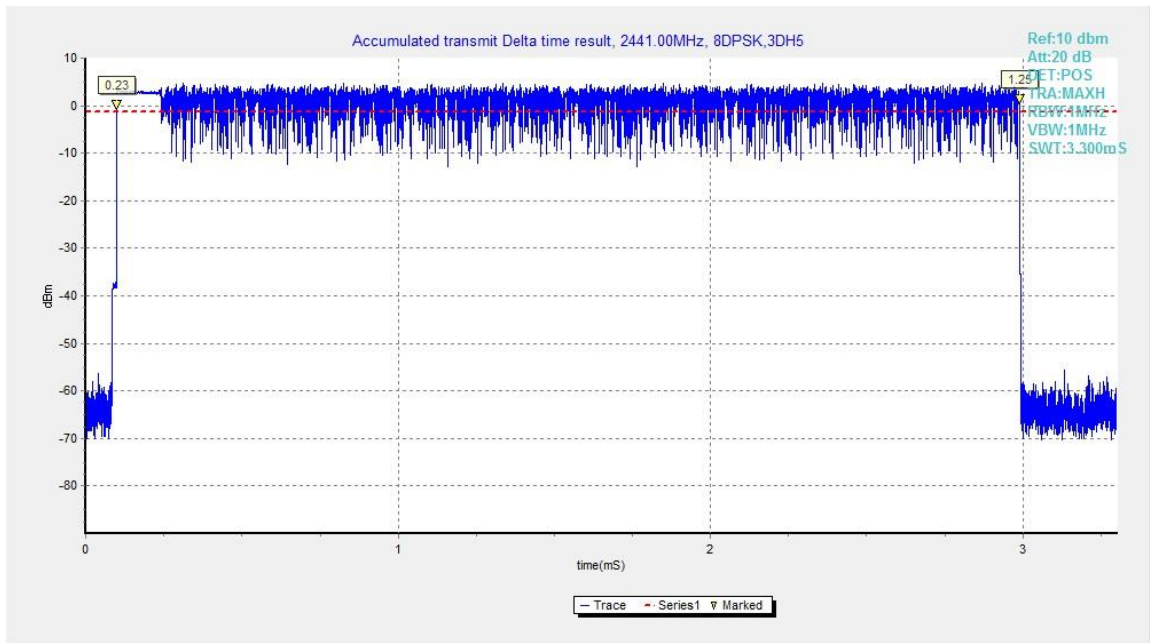


Fig.80. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5

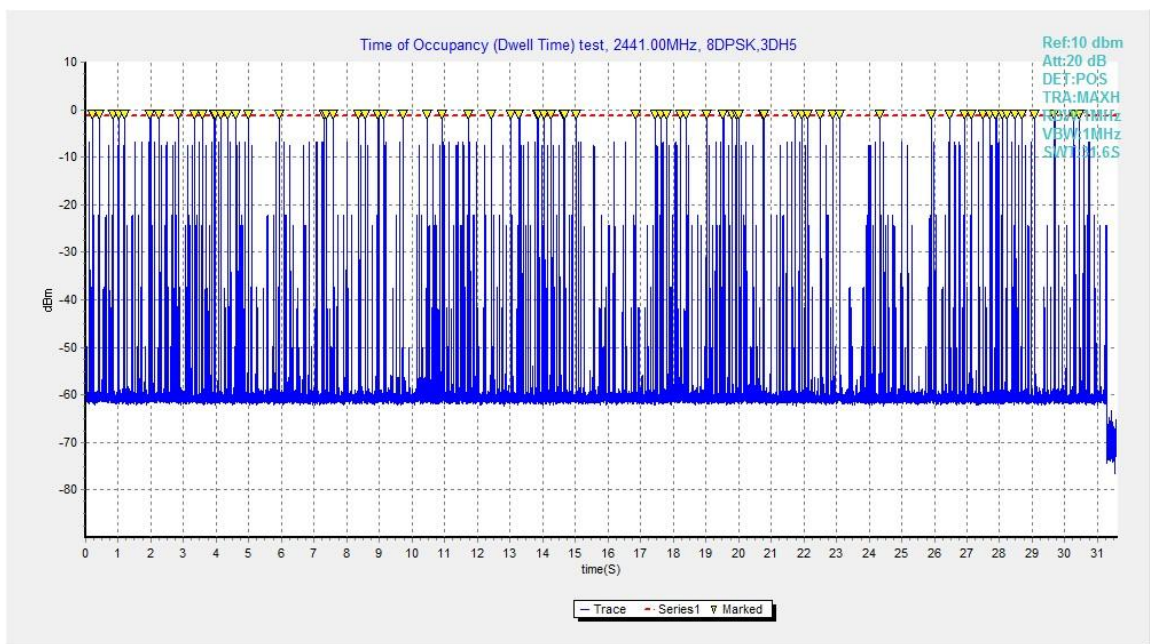


Fig.81. Number of Transmissions Measurement: Channel 39,Packet 3-DH5

A.7. 20dB Bandwidth

Method of Measurement: See ANSI C63.10-clause 6.9.2

Measurement Procedure - Unwanted Emissions

1. Set RBW = 30kHz.
2. Set VBW = 100 kHz.
3. Set span to 3MHz
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a)(1)	NA *

Use NdB Down function of the SA to measure the 20dB Bandwidth

* Comment: This test case is not required according to the latest FCC 47 CFR Part 15.247. But the test results are necessary for “carrier frequency separation” test case, in Annex A.8.

Measurement Results:

For GFSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.82	943.50	NA
39	Fig.83	947.25	NA
78	Fig.84	942.75	NA

For $\pi/4$ DQPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.85	1284.00	NA
39	Fig.86	1281.75	NA
78	Fig.87	1283.25	NA

For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.88	1274.25	NA
39	Fig.89	1269.75	NA
78	Fig.90	1270.50	NA

Conclusion: NA

Test graphs as below:

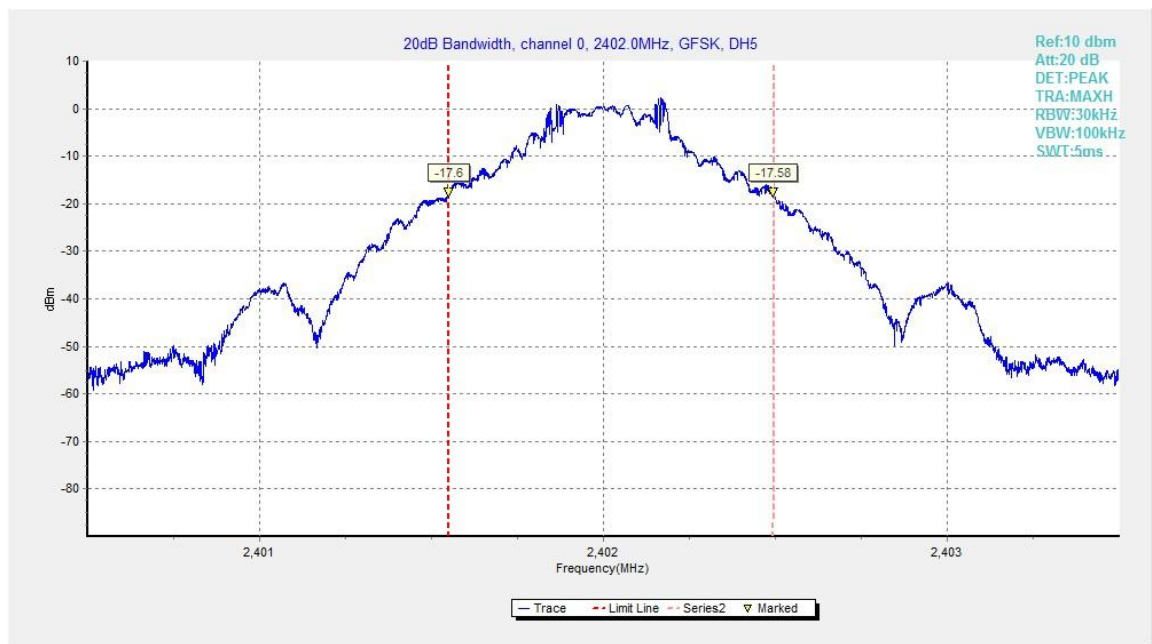


Fig.82. 20dB Bandwidth: GFSK, Channel 0

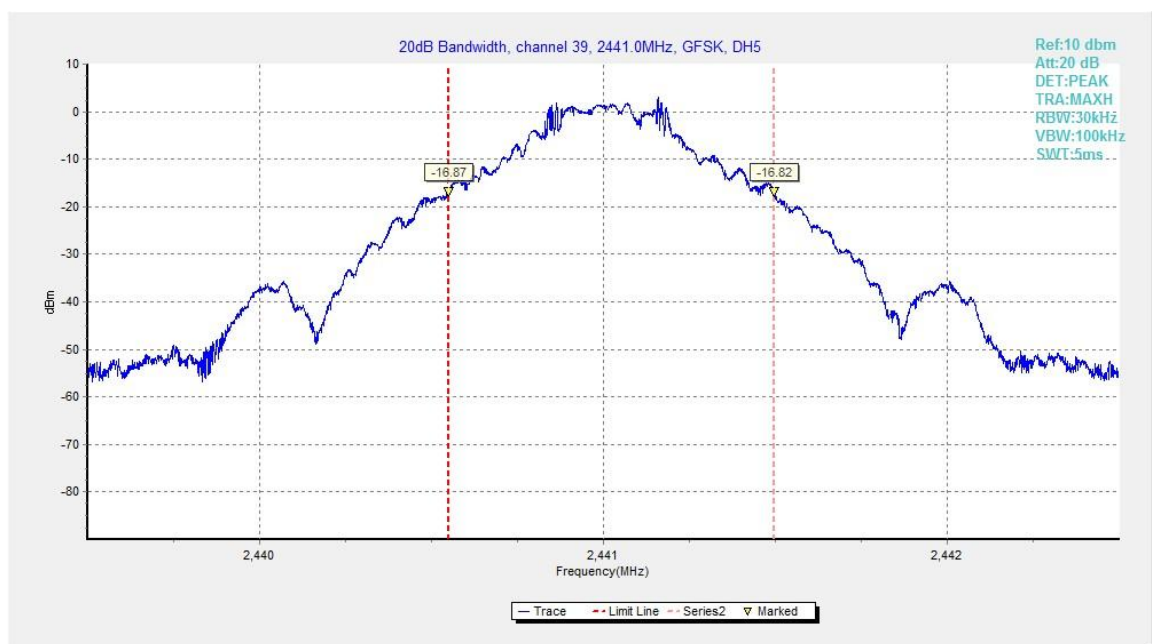


Fig.83. 20dB Bandwidth: GFSK, Channel 39

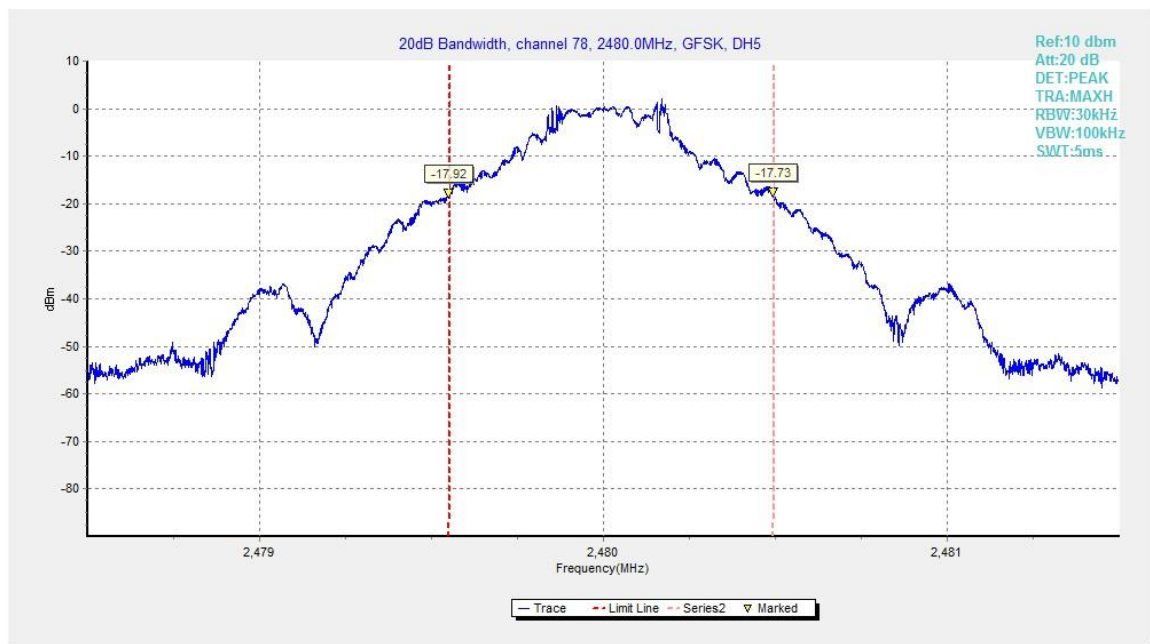


Fig.84. 20dB Bandwidth: GFSK, Channel 78

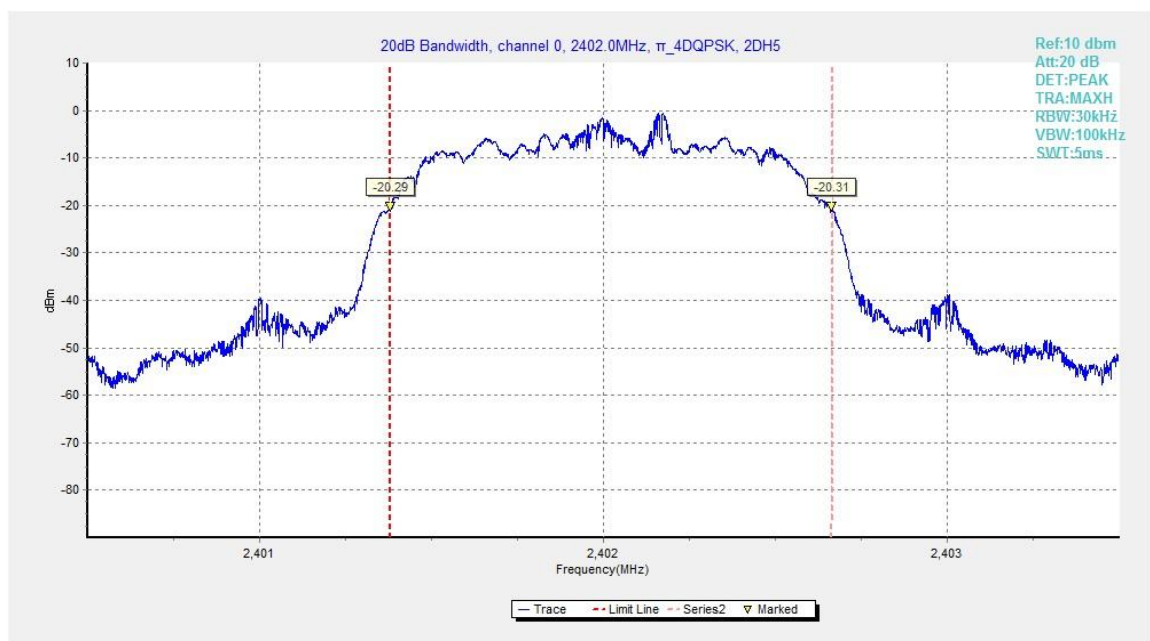


Fig.85. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 0

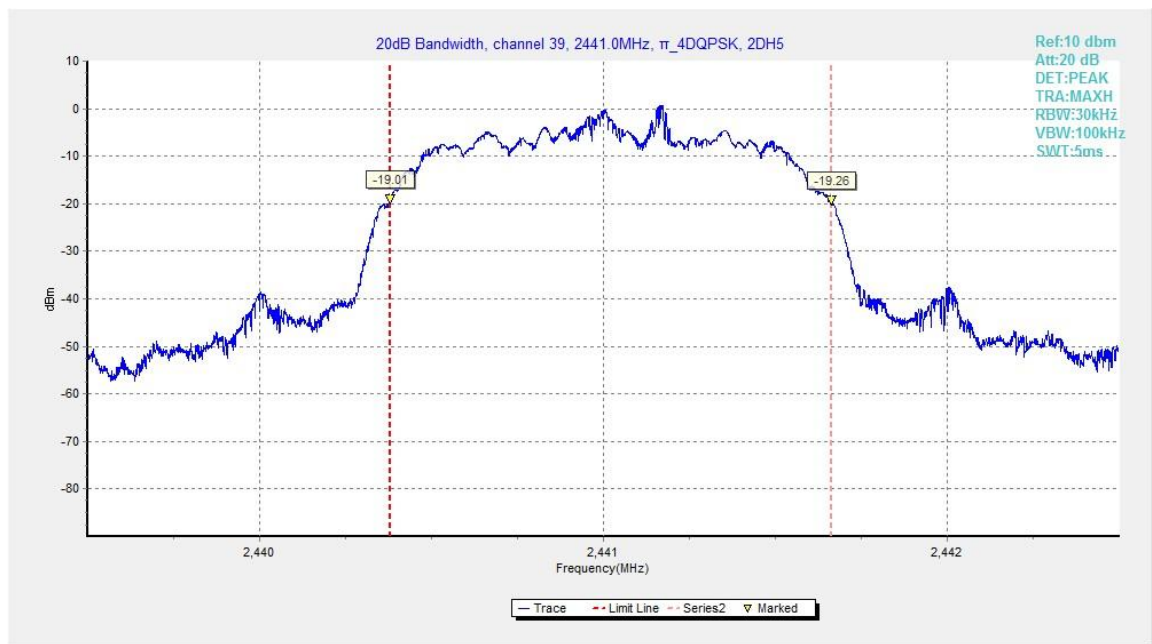


Fig.86. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 39

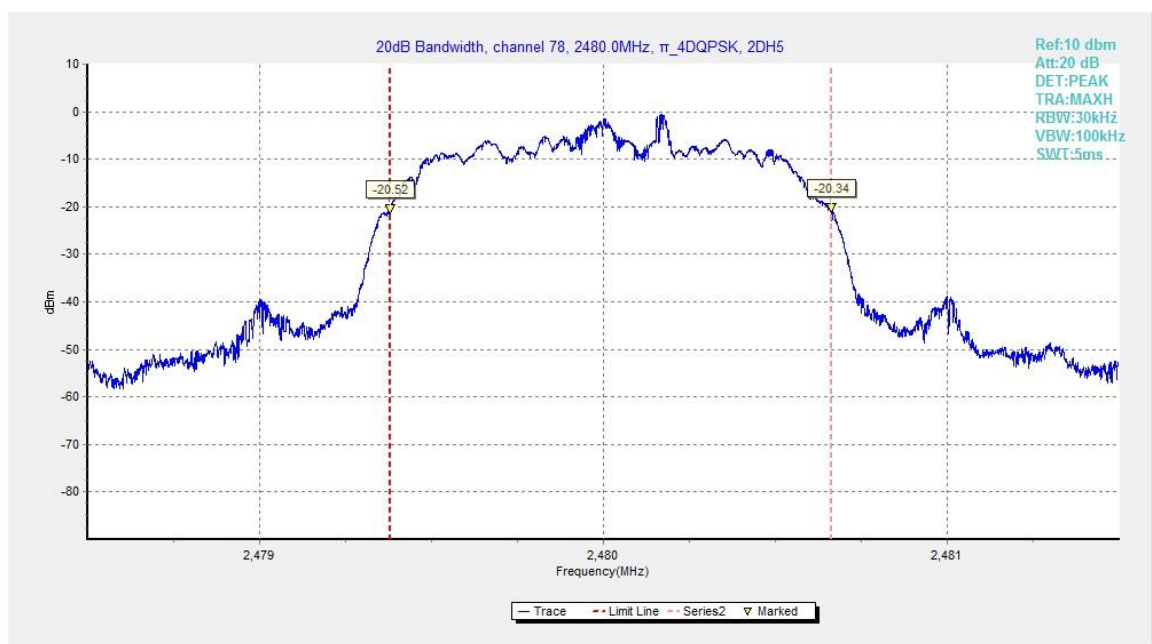


Fig.87. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 78

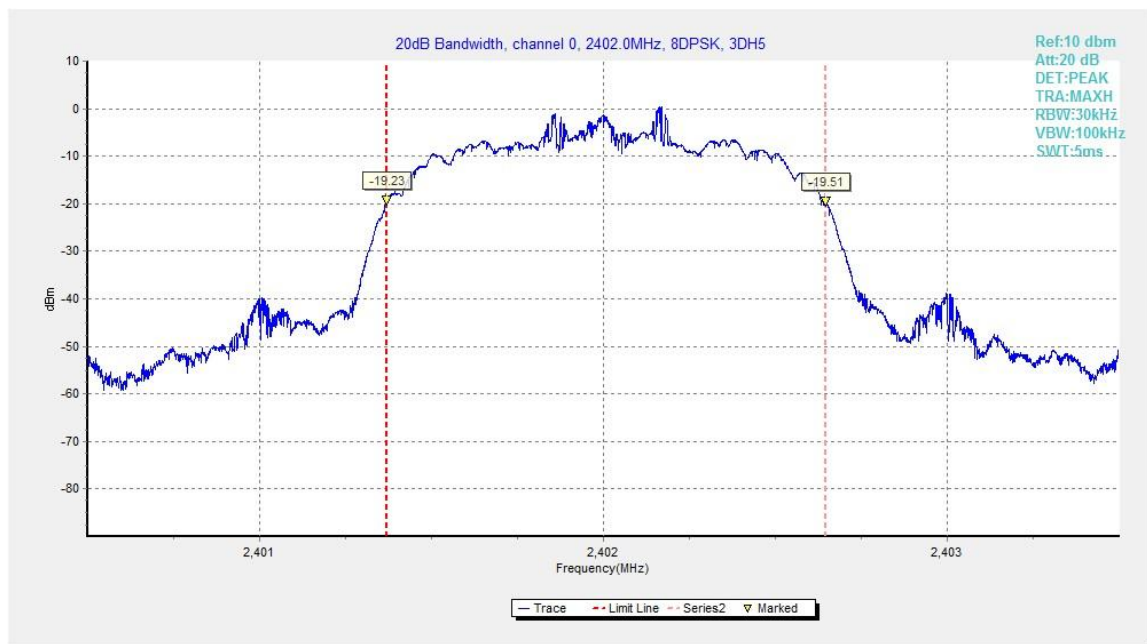


Fig.88. 20dB Bandwidth: 8DPSK, Channel 0

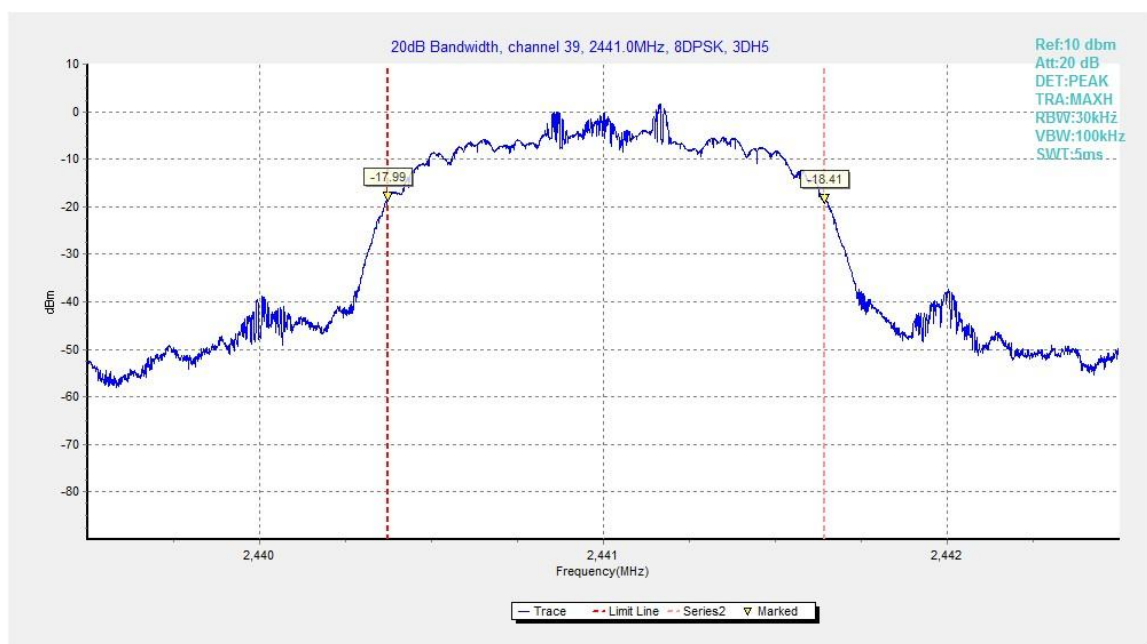


Fig.89. 20dB Bandwidth: 8DPSK, Channel 39

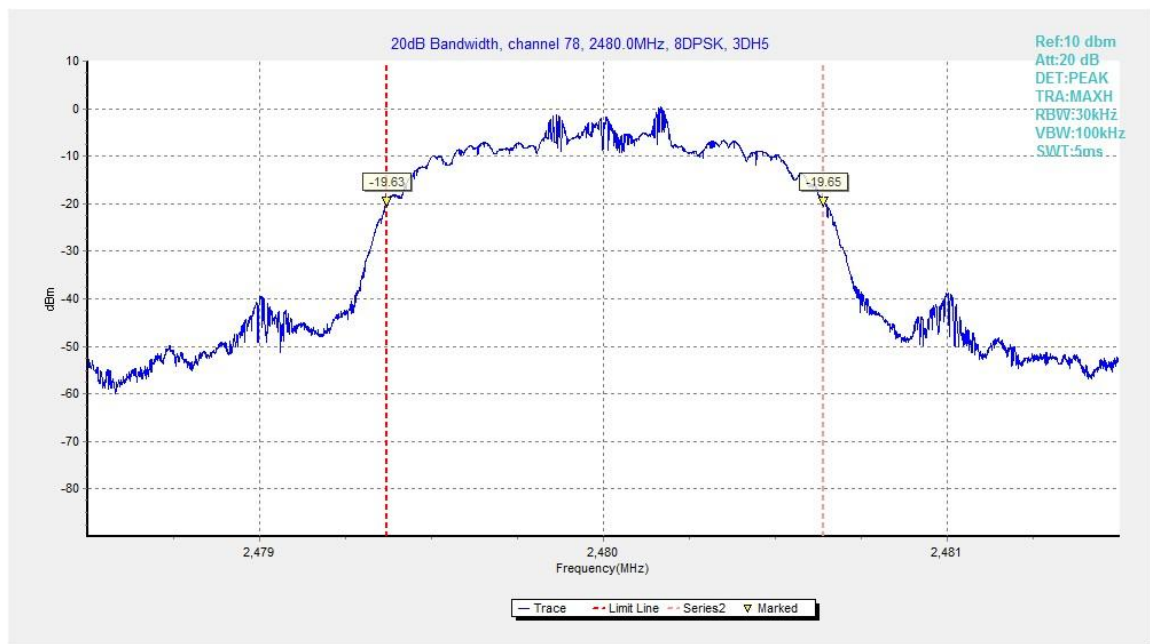


Fig.90. 20dB Bandwidth: 8DPSK, Channel 78

A.8. Carrier Frequency Separation

Method of Measurement: See ANSI C63.10-clause 7.8.2

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = 3MHz
- RBW=300kHz
- VBW=300kHz
- Sweep = auto
- Detector function = peak
- Trace = max hold
- Allow the trace to stabilize

Search the peak marks of the middle frequency and adjacent channel, then record the separation between them.

* Comment: This limit should be over 25 kHz or $(2/3) * 20\text{dB}$ bandwidth, whichever is greater.

Measurement Limit:

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1)	over 25 kHz or $(2/3) * 20\text{dB}$ bandwidth

Measurement Result:

For GFSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.91	838.50	P

For $\pi/4$ DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.92	1293.00	P

For 8DPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.93	1012.50	P

Conclusion: PASS

Test graphs as below:

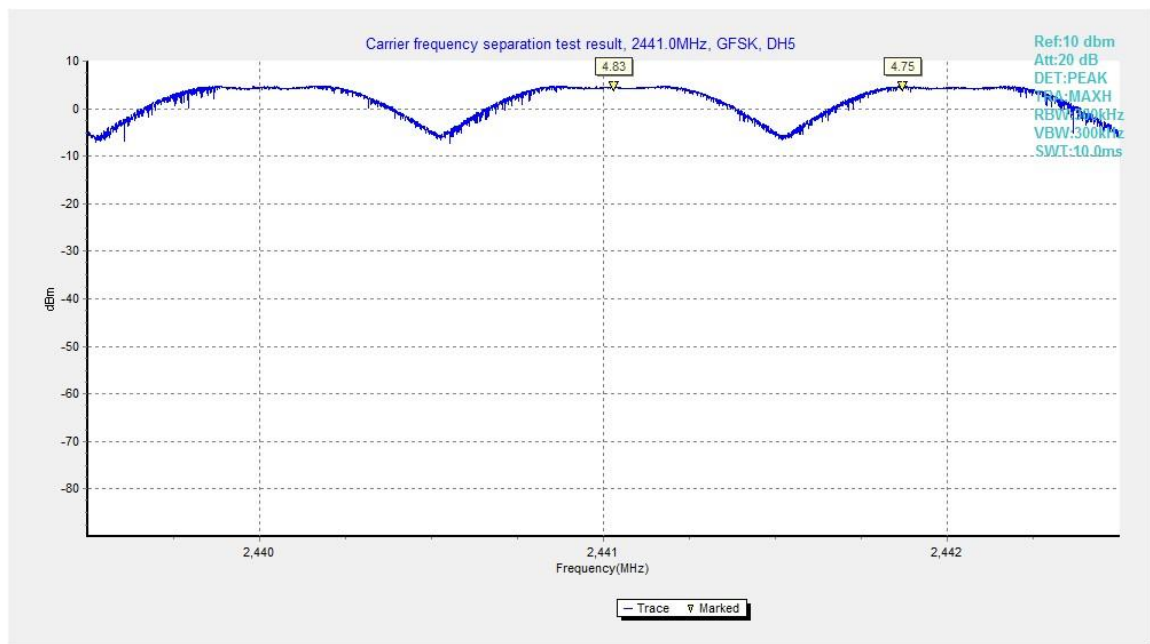


Fig.91. Carrier frequency separation measurement: GFSK, Channel 39

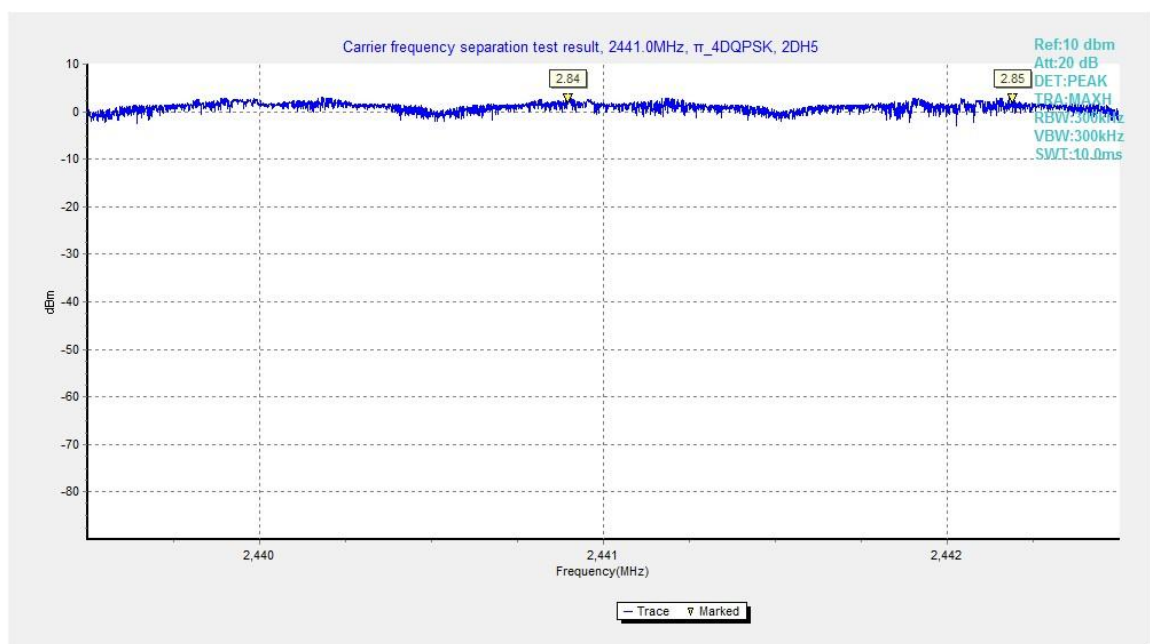


Fig.92. Carrier frequency separation measurement: $\pi/4$ DQPSK, Channel 39

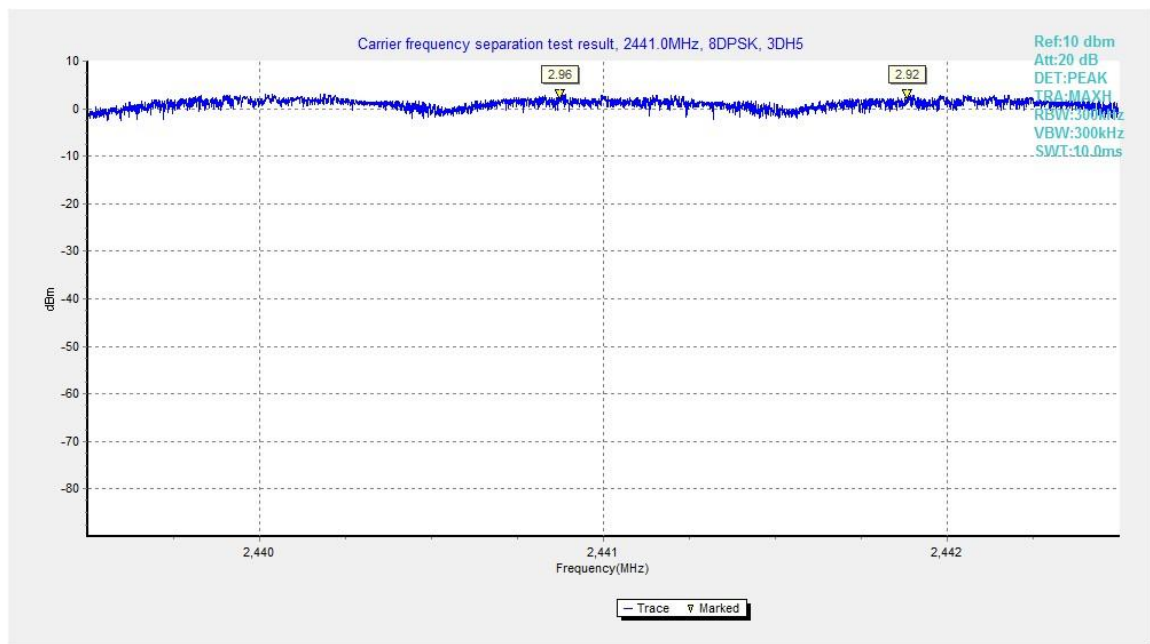


Fig.93. Carrier frequency separation measurement: 8DPSK, Channel 39

A.9. Number of Hopping Channels

Method of Measurement: See ANSI C63.10-clause 7.8.3

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = the frequency band of operation
- RBW = 500kHz
- VBW = 500kHz
- Sweep = auto
- Detector function = peak
- Trace = max hold
- Allow the trace to stabilize

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) (1)(iii)	At least 15 non-overlapping channels

Measurement Result:

For GFSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.94	79	P
40~78	Fig.95		

For $\pi/4$ DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.96	79	P
40~78	Fig.97		

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.98	79	P
40~78	Fig.99		

Conclusion: PASS

Test graphs as below:

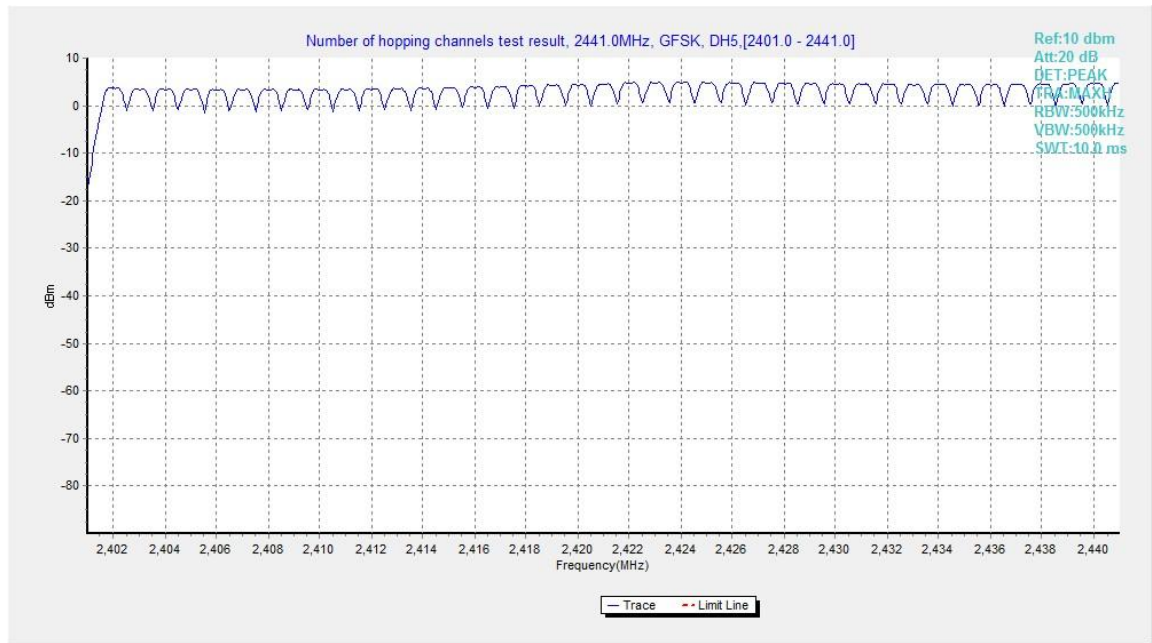


Fig.94. Number of hopping frequencies: GFSK, Channel 0 - 39

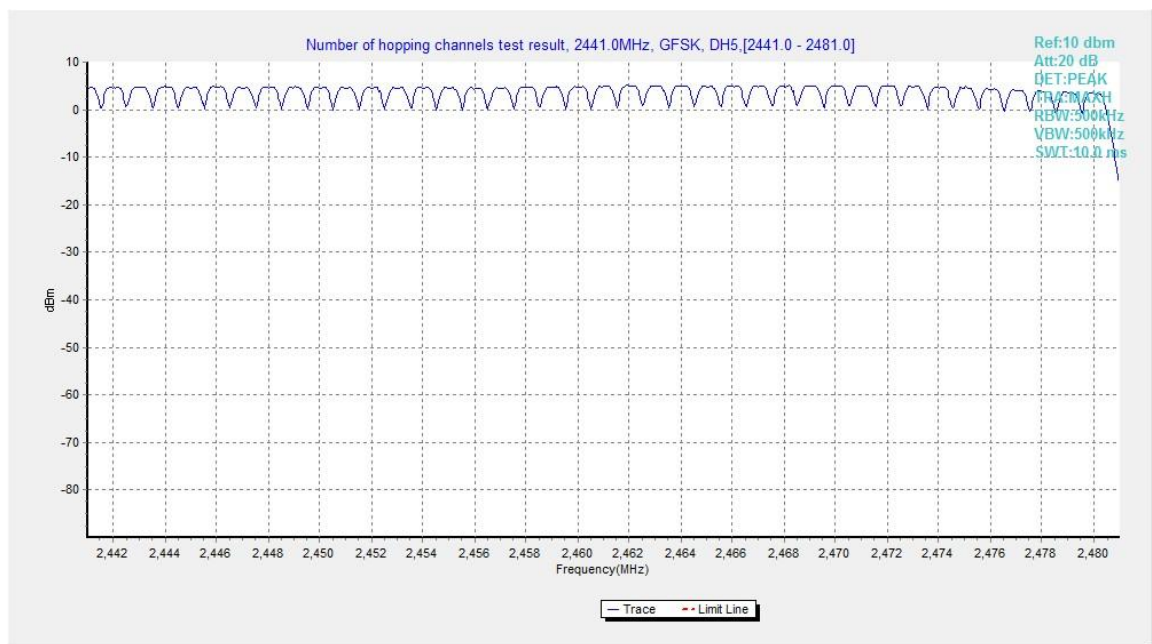


Fig.95. Number of hopping frequencies: GFSK, Channel 40 - 78

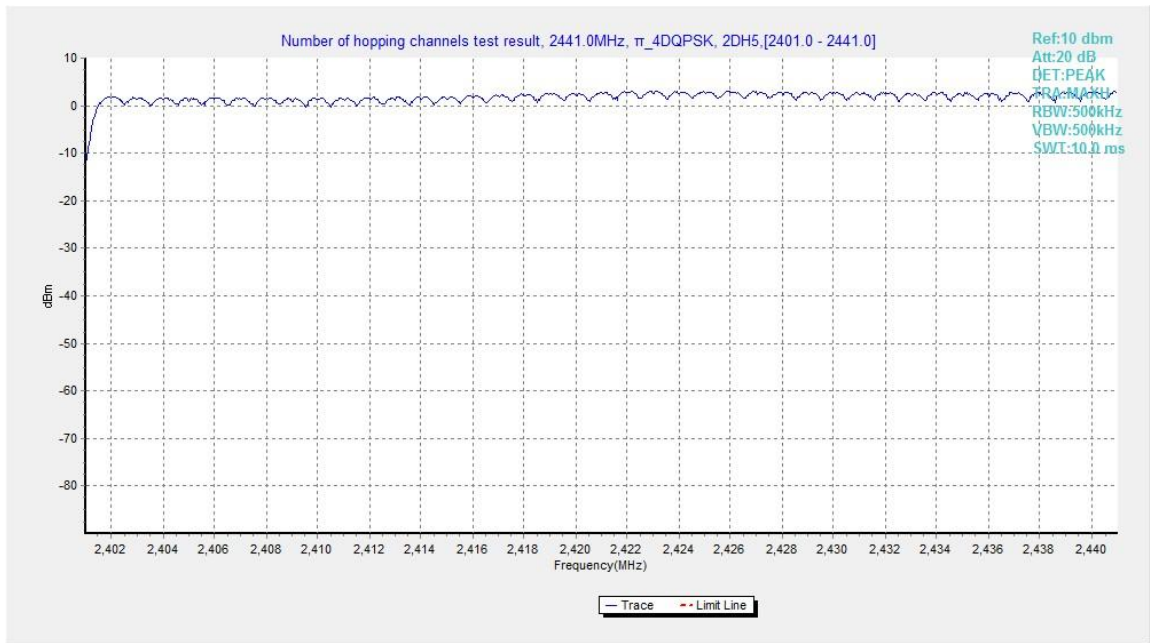


Fig.96. Number of hopping frequencies: $\pi/4$ DQPSK, Channel 0 - 39

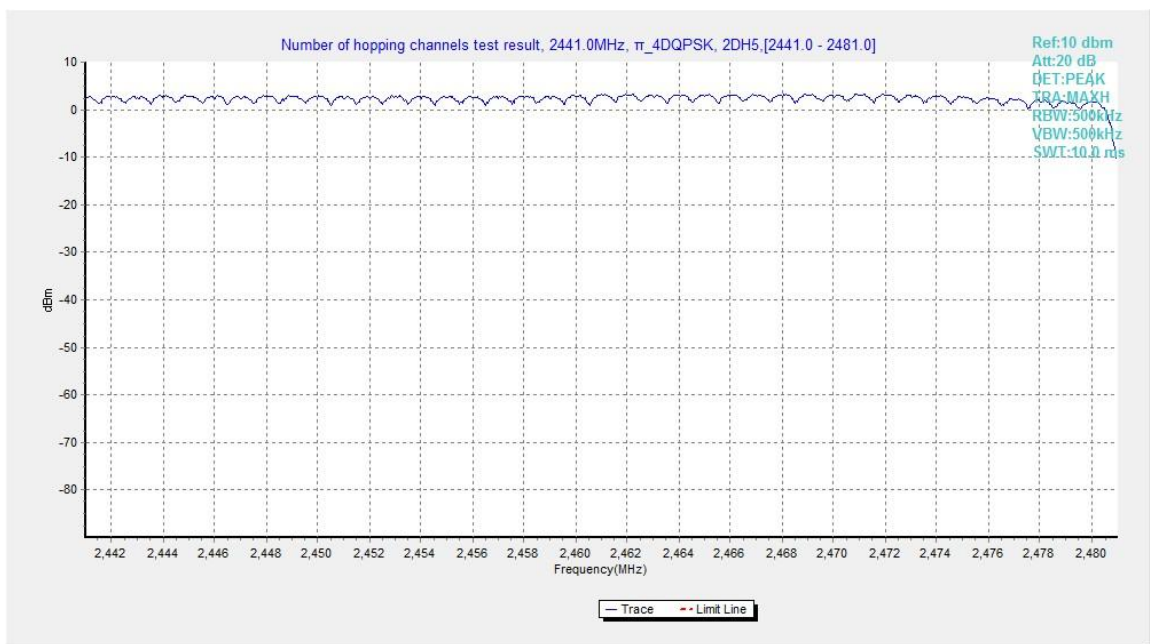


Fig.97. Number of hopping frequencies: $\pi/4$ DQPSK, Channel 40 - 78

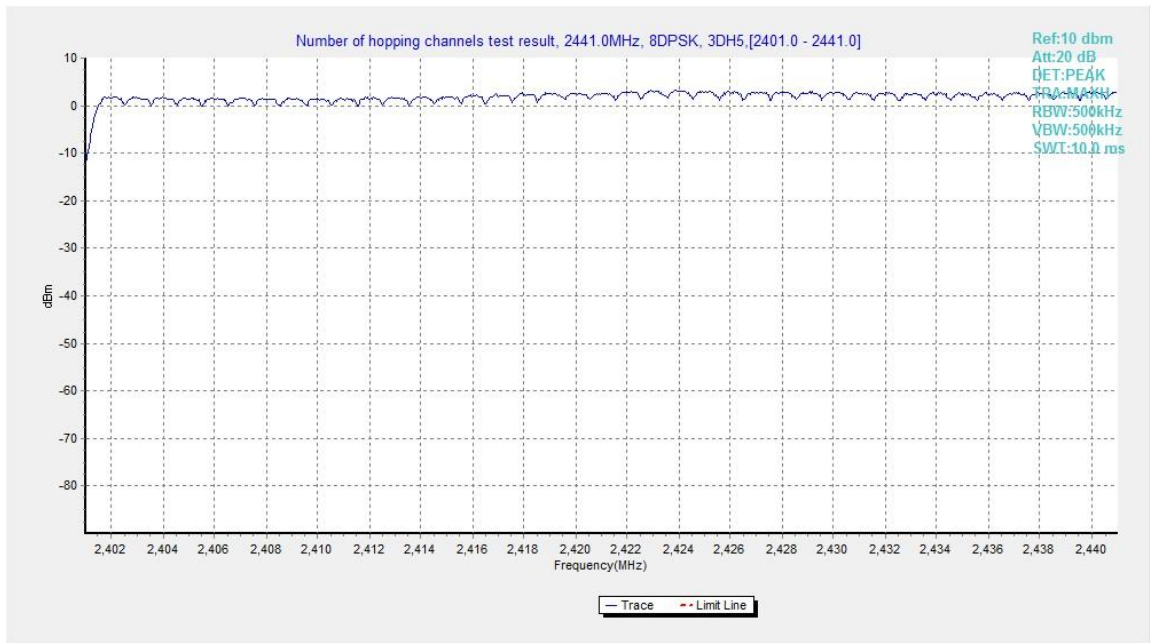


Fig.98. Number of hopping frequencies: 8DPSK, Channel 0 - 39

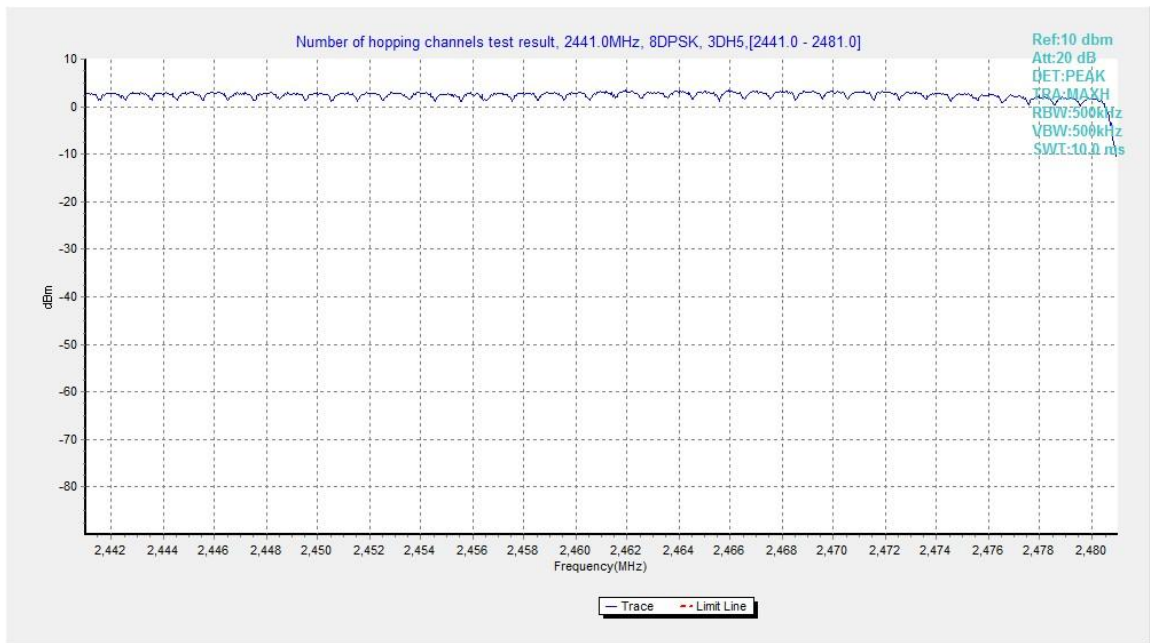


Fig.99. Number of hopping frequencies: 8DPSK, Channel 40 - 78

A.10. AC Powerline Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2

1. the one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
2. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
3. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
4. If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.
5. If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.³⁶ Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Conclusion
0.15 to 0.5	66 to 56	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.



Bluetooth (Average Limit)

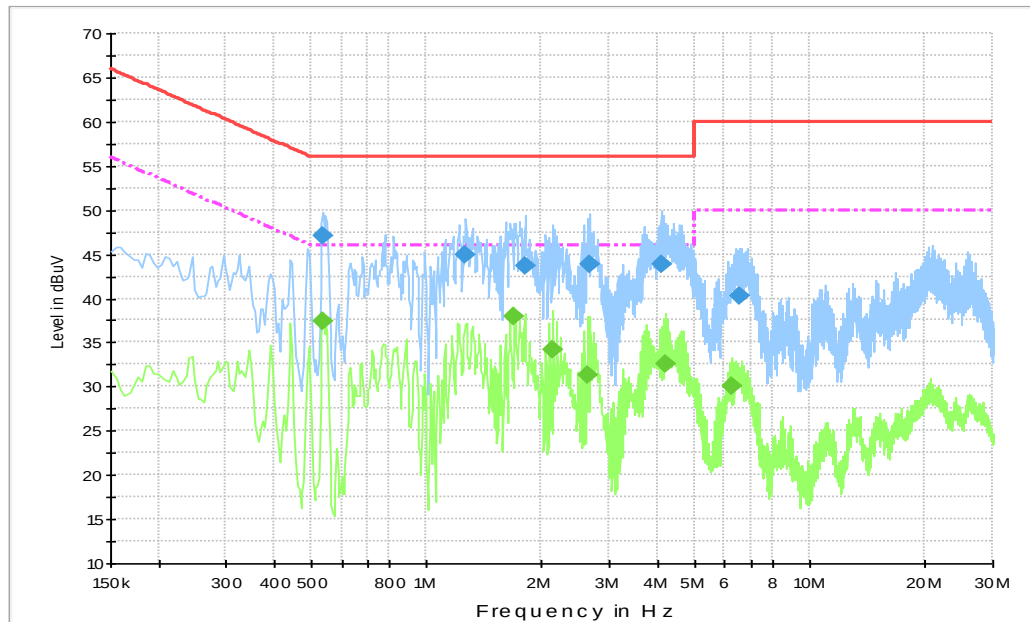
Frequency range (MHz)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	56 to 46	P
0.5 to 5	46	
5 to 30	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

The measurement is made according to ANSI C63.10

Conclusion: PASS

Test graphs as below:

Traffic (With AE3):



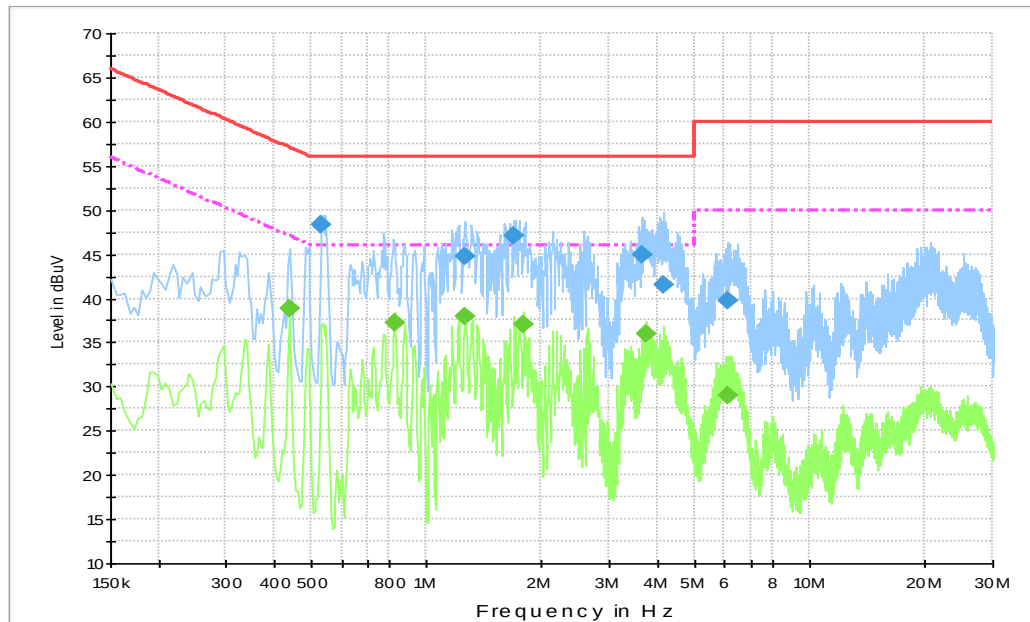
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.537000	47.1	10000.0	9.000	GND	L1	10.3	8.9	56.0
1.266000	44.8	10000.0	9.000	GND	L1	10.4	11.2	56.0
1.815000	43.7	10000.0	9.000	GND	L1	10.4	12.3	56.0
2.674500	43.9	10000.0	9.000	GND	L1	10.5	12.1	56.0
4.087500	43.9	10000.0	9.000	GND	L1	10.5	12.1	56.0
6.549000	40.2	10000.0	9.000	GND	L1	10.7	19.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.537000	37.4	10000.0	9.000	GND	L1	10.3	8.6	46.0
1.698000	38.0	10000.0	9.000	GND	L1	10.4	8.0	46.0
2.139000	34.2	10000.0	9.000	GND	L1	10.4	11.8	46.0
2.629500	31.4	10000.0	9.000	GND	L1	10.5	14.6	46.0
4.186500	32.6	10000.0	9.000	GND	L1	10.5	13.4	46.0
6.274500	30.1	10000.0	9.000	GND	L1	10.7	19.9	50.0

Idle (With AE3):



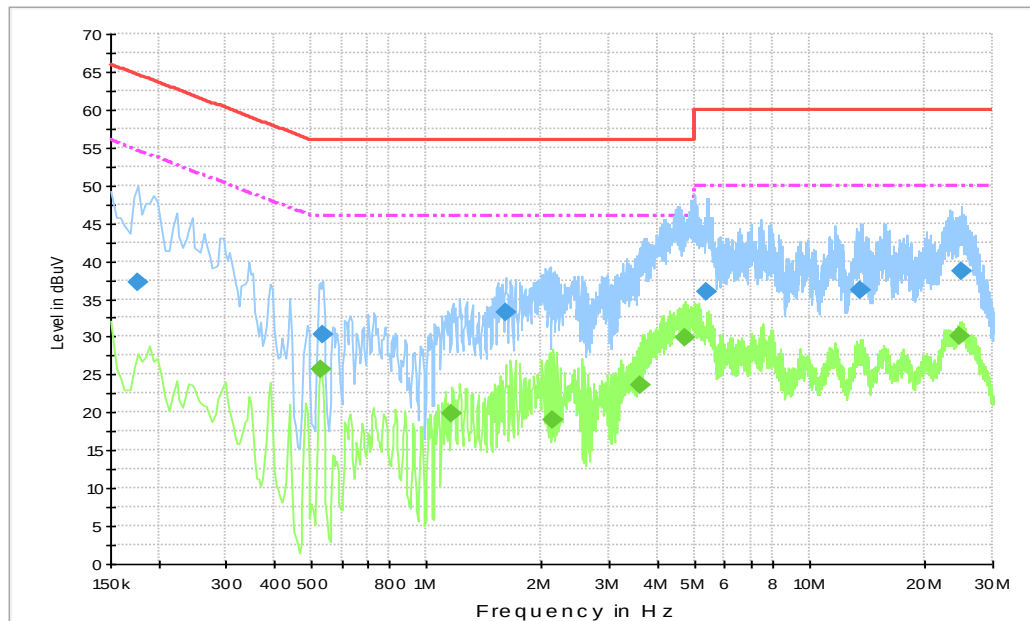
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.532500	48.2	10000.0	9.000	GND	L1	10.3	7.8	56.0
1.261500	44.7	10000.0	9.000	GND	L1	10.4	11.3	56.0
1.693500	47.1	10000.0	9.000	GND	L1	10.4	8.9	56.0
3.633000	44.8	10000.0	9.000	GND	L1	10.5	11.2	56.0
4.137000	41.6	10000.0	9.000	GND	L1	10.5	14.4	56.0
6.103500	39.8	10000.0	9.000	GND	L1	10.6	20.2	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.438000	38.8	10000.0	9.000	GND	L1	10.3	8.3	47.1
0.825000	37.2	10000.0	9.000	GND	L1	10.4	8.8	46.0
1.261500	37.9	10000.0	9.000	GND	L1	10.4	8.1	46.0
1.792500	37.0	10000.0	9.000	GND	L1	10.4	9.0	46.0
3.732000	36.0	10000.0	9.000	GND	L1	10.5	10.0	46.0
6.112500	29.0	10000.0	9.000	GND	L1	10.6	21.0	50.0

Traffic (With AE4):



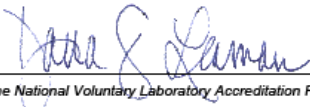
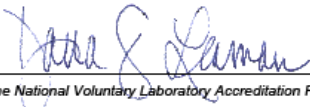
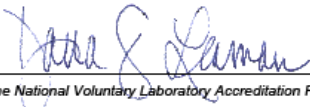
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	37.1	10000.0	9.000	GND	L1	10.3	27.5	64.6
0.537000	30.3	10000.0	9.000	GND	L1	10.3	25.7	56.0
1.608000	33.3	10000.0	9.000	GND	L1	10.4	22.7	56.0
5.401500	35.9	10000.0	9.000	GND	L1	10.6	24.1	60.0
13.618500	36.2	10000.0	9.000	GND	L1	11.0	23.8	60.0
24.774000	38.7	10000.0	9.000	GND	L1	11.5	21.3	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.532500	25.8	10000.0	9.000	GND	N	10.3	20.2	46.0
1.167000	19.9	10000.0	9.000	GND	L1	10.3	26.1	46.0
2.143500	19.0	10000.0	9.000	GND	L1	10.4	27.0	46.0
3.601500	23.6	10000.0	9.000	GND	L1	10.4	22.4	46.0
4.722000	29.8	10000.0	9.000	GND	L1	10.5	16.2	46.0
24.504000	30.0	10000.0	9.000	GND	L1	11.5	20.0	50.0

ANNEX E: Accreditation Certificate

United States Department of Commerce National Institute of Standards and Technology NVLAP[®] Certificate of Accreditation to ISO/IEC 17025:2005 NVLAP LAB CODE: 600118-0 Telecommunication Technology Labs, CAICT Beijing China <i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i> Electromagnetic Compatibility & Telecommunications <i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).</i> <table><tr><td> 2018-09-28 through 2019-09-30 <i>Effective Dates</i> </td><td></td><td>  <i>For the National Voluntary Laboratory Accreditation Program</i> </td></tr></table>		2018-09-28 through 2019-09-30 <i>Effective Dates</i>		 <i>For the National Voluntary Laboratory Accreditation Program</i>
2018-09-28 through 2019-09-30 <i>Effective Dates</i>		 <i>For the National Voluntary Laboratory Accreditation Program</i>		

END OF REPORT