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)
2386.000	46.24	2.9	32.0	11.37	54.0	7.8	H	155	20
2388.700	46.29	2.9	32.0	11.43	54.0	7.7	H	155	45
4804.500	34.98	-32.8	34.5	33.33	54.0	19.0	H	155	240
7206.000	37.82	-31.6	36.1	33.35	54.0	16.2	H	155	180
9607.500	37.62	-30.0	37.0	30.67	54.0	16.4	H	155	85
12010.500	42.66	-29.8	39.3	33.19	54.0	11.3	H	155	25

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)
2387.300	46.28	2.9	32.0	11.41	54.0	7.7	H	155	175
2488.100	46.36	2.9	32.6	10.79	54.0	7.6	H	155	5
4882.500	34.97	-32.7	34.5	33.18	54.0	19.0	H	155	26
7323.000	37.63	-31.9	36.1	33.47	54.0	16.4	H	155	355
9763.500	38.11	-30.6	37.2	31.48	54.0	15.9	H	155	6
12205.500	43.42	-29.4	39.2	33.63	54.0	10.6	H	155	12

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)
2483.500	48.38	2.9	32.8	12.69	54.0	5.6	H	155	20
2491.700	46.39	2.9	32.5	10.92	54.0	7.6	H	155	248
4960.500	35.00	-33.4	34.5	33.88	54.0	19.0	H	155	49
7441.200	37.67	-31.8	36.0	33.41	54.0	16.3	H	155	335
9919.500	40.35	-29.9	37.4	32.87	54.0	13.7	H	155	180
12400.500	43.84	-29.5	39.1	34.21	54.0	10.2	H	155	8

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)
2386.510	60.16	2.9	32.0	25.29	74.0	13.8	H	155	22
2386.902	59.69	2.9	32.0	24.82	74.0	14.3	H	155	44
4803.750	39.11	-32.9	34.5	37.46	74.0	34.9	H	155	242
7206.000	41.43	-31.6	36.1	36.96	74.0	32.6	H	155	176
9608.250	40.05	-30.0	37.0	33.10	74.0	33.9	H	155	88
12009.750	45.86	-29.8	39.3	36.39	74.0	28.1	V	155	22

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)
2379.400	47.96	-32.0	32.0	47.92	74.0	26.0	H	155	176
2503.000	49.73	-32.0	32.1	49.63	74.0	24.3	H	155	0
4881.750	40.18	-32.7	34.5	38.40	74.0	33.8	V	155	22
7323.000	41.21	-31.9	36.1	37.05	74.0	32.8	V	155	352
9764.250	41.59	-30.6	37.2	34.96	74.0	32.4	V	155	0
12204.750	46.06	-29.4	39.2	36.27	74.0	27.9	V	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)
2483.700	59.61	2.9	32.8	23.92	74.0	14.4	H	155	22
2492.210	59.50	2.9	32.5	24.04	74.0	14.5	H	155	242
4959.750	40.26	-33.4	34.5	39.12	74.0	33.7	V	155	44
7440.200	40.73	-31.8	36.0	36.47	74.0	33.3	H	155	330
9920.250	45.42	-29.9	37.4	37.95	74.0	28.6	H	155	176
12399.750	45.52	-29.5	39.1	35.90	74.0	28.5	H	155	0

π/4 DQPSK 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)
2385.500	46.28	2.9	32.0	11.40	54.0	7.7	H	155	135
2389.900	46.29	2.9	32.0	11.44	54.0	7.7	H	155	160
4804.500	35.01	-32.8	34.5	33.36	54.0	19.0	H	155	92
7206.000	37.74	-31.6	36.1	33.27	54.0	16.3	H	155	115
9607.500	37.57	-30.0	37.0	30.62	54.0	16.4	H	155	112
12010.500	42.68	-29.8	39.3	33.21	54.0	11.3	H	155	85

π/4 DQPSK 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)
2386.200	46.30	2.9	32.0	11.43	54.0	7.7	H	155	5
2486.500	46.43	2.9	32.7	10.82	54.0	7.6	H	155	25
4882.500	34.91	-32.7	34.5	33.13	54.0	19.1	H	155	356
7323.000	37.59	-31.9	36.1	33.44	54.0	16.4	H	155	350
9763.500	38.13	-30.6	37.2	31.50	54.0	15.9	H	155	185
12205.500	43.43	-29.4	39.2	33.64	54.0	10.6	H	155	187

π/4 DQPSK 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	46.61	2.9	32.8	10.92	54.0	7.4	H	155	86
2494.400	46.39	2.9	32.5	10.99	54.0	7.6	H	155	107
4960.500	34.98	-33.4	34.5	33.85	54.0	19.0	H	155	130
7440.600	37.72	-31.8	36.0	33.46	54.0	16.3	H	155	152
9919.500	40.35	-29.9	37.4	32.88	54.0	13.6	H	155	174
12400.500	43.86	-29.5	39.1	34.23	54.0	10.1	H	155	195

π/4 DQPSK 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)
2381.918	59.11	2.9	32.0	24.20	74.0	14.9	H	155	132
2387.574	59.46	2.9	32.0	24.59	74.0	14.5	H	155	154
4803.750	38.58	-32.9	34.5	36.94	74.0	35.4	V	155	88
7206.000	40.86	-31.6	36.1	36.39	74.0	33.1	H	155	110
9608.250	40.88	-30.0	37.0	33.93	74.0	33.1	V	155	110
12009.750	44.42	-29.8	39.3	34.95	74.0	29.6	V	155	88

π/4 DQPSK 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)
2376.600	48.14	-32.2	32.0	48.36	74.0	25.9	H	155	0
2499.000	49.52	-31.9	32.1	49.32	74.0	24.5	H	155	22
4881.750	38.54	-32.7	34.5	36.75	74.0	35.5	H	155	352
7323.000	40.51	-31.9	36.1	36.35	74.0	33.5	V	155	352
9764.250	41.60	-30.6	37.2	34.97	74.0	32.4	V	155	176
12204.750	46.11	-29.4	39.2	36.32	74.0	27.9	V	155	176

π/4 DQPSK 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)
2490.380	59.84	2.9	32.6	24.33	74.0	14.2	V	155	88
2499.840	60.23	2.9	32.3	24.98	74.0	13.8	H	155	110
4959.750	40.61	-33.4	34.5	39.48	74.0	33.4	V	155	132
7440.400	40.71	-31.8	36.0	36.45	74.0	33.3	H	155	154
9920.250	44.53	-29.9	37.4	37.06	74.0	29.5	V	155	176
12399.750	44.72	-29.5	39.1	35.10	74.0	29.3	V	155	198

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)
2384.700	46.25	2.9	32.0	11.37	54.0	7.7	H	155	175
2387.800	46.35	2.9	32.0	11.48	54.0	7.7	H	155	194
4804.500	35.06	-32.8	34.5	33.41	54.0	18.9	H	155	215
7206.000	37.73	-31.6	36.1	33.26	54.0	16.3	H	155	196
9607.500	37.59	-30.0	37.0	30.64	54.0	16.4	H	155	241
12010.500	42.66	-29.8	39.3	33.19	54.0	11.3	H	155	259

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)
2389.600	46.33	2.9	32.0	11.48	54.0	7.7	H	155	40
2483.500	46.40	2.9	32.8	10.71	54.0	7.6	H	155	65
4882.500	35.03	-32.7	34.5	33.25	54.0	19.0	H	155	84
7323.000	37.69	-31.9	36.1	33.53	54.0	16.3	H	155	107
9763.500	38.16	-30.6	37.2	31.53	54.0	15.8	H	155	135
12205.500	43.40	-29.4	39.2	33.61	54.0	10.6	H	155	151

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	46.52	2.9	32.8	10.83	54.0	7.5	H	155	6
2499.400	46.44	2.9	32.3	11.18	54.0	7.6	H	155	48
4960.500	34.88	-33.4	34.5	33.76	54.0	19.1	H	155	92
7441.000	37.64	-31.8	36.0	33.38	54.0	16.4	H	155	48
99195.000	40.37	0.0	0.0	40.37	54.0	13.6	H	155	68
12400.500	43.78	-29.5	39.1	34.15	54.0	10.2	H	155	92

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)
2381.946	59.37	2.9	32.0	24.47	74.0	14.6	V	155	176
2387.490	59.26	2.9	32.0	24.40	74.0	14.7	H	155	198
4803.750	39.28	-32.9	34.5	37.63	74.0	34.7	V	155	220
7206.000	41.72	-31.6	36.1	37.25	74.0	32.3	H	155	198
9608.250	41.08	-30.0	37.0	34.12	74.0	32.9	H	155	242
12009.750	44.69	-29.8	39.3	35.21	74.0	29.3	V	155	264

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)
2375.600	49.02	-32.3	32.0	49.33	74.0	25.0	V	155	44
2499.200	49.20	-31.9	32.1	49.00	74.0	24.8	H	155	66
4817.500	39.76	-32.8	34.5	38.04	74.0	34.2	H	155	88
7323.000	40.65	-31.9	36.1	36.50	74.0	33.4	V	155	110
9764.250	41.19	-30.6	37.2	34.55	74.0	32.8	V	155	132
12204.750	45.36	-29.4	39.2	35.57	74.0	28.6	H	155	154

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)
2492.160	59.87	2.9	32.5	24.41	74.0	14.1	H	155	0
2499.310	59.87	2.9	32.3	24.61	74.0	14.1	H	155	44
4959.750	38.01	-33.4	34.5	36.88	74.0	36.0	V	155	88
7440.100	39.73	-31.8	36.0	35.47	74.0	34.3	V	155	44
9920.250	44.23	-29.9	37.4	36.76	74.0	29.8	V	155	66
12399.750	44.97	-29.5	39.1	35.34	74.0	29.0	H	155	88

Conclusion: PASS

Test graphs as below:

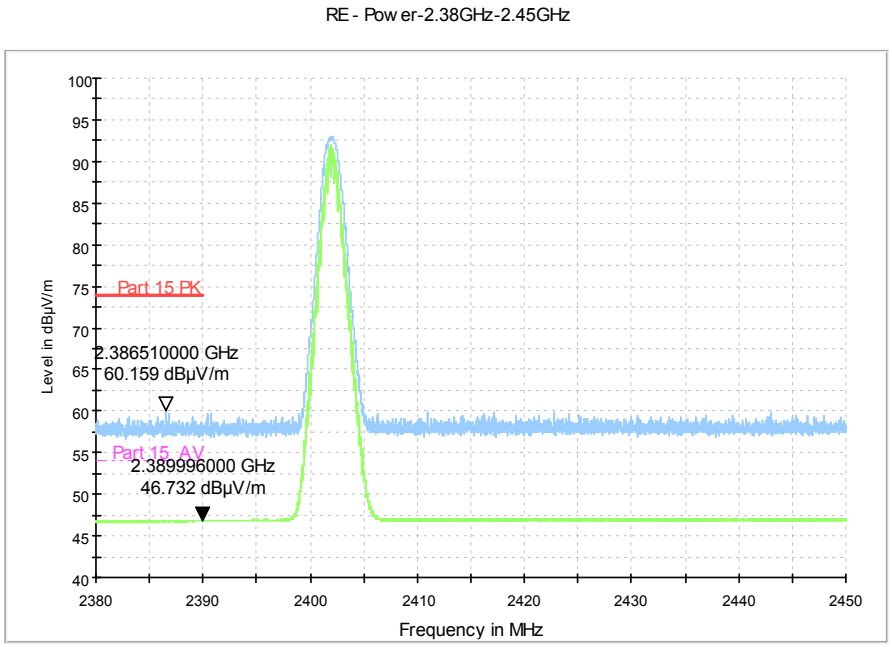


Fig.58. Radiated emission (Power): GFSK, low channel

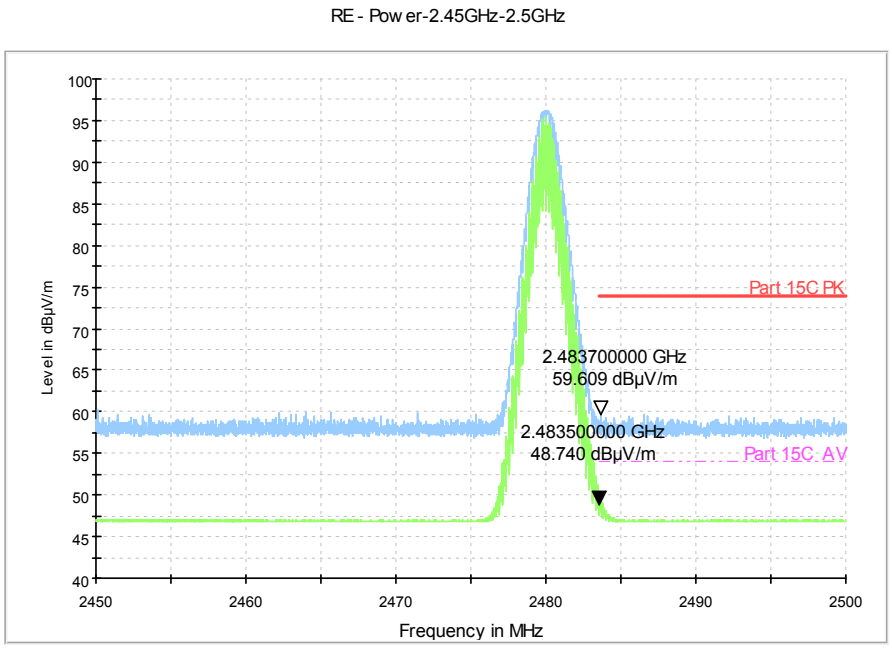


Fig.59. Radiated emission (Power) GFSK, high channel

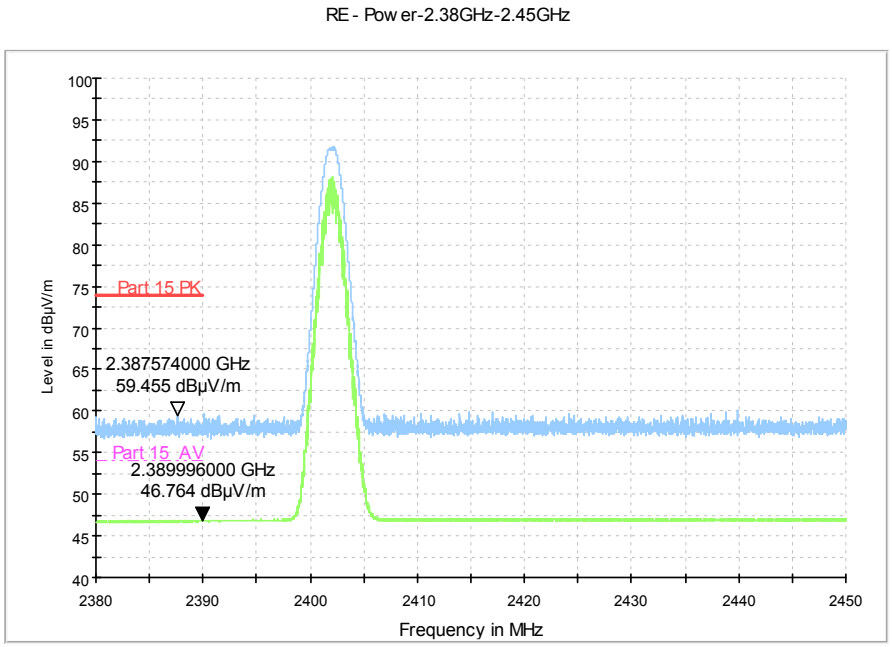


Fig.60. Radiated emission (Power): π/4 DQPSK, low channel

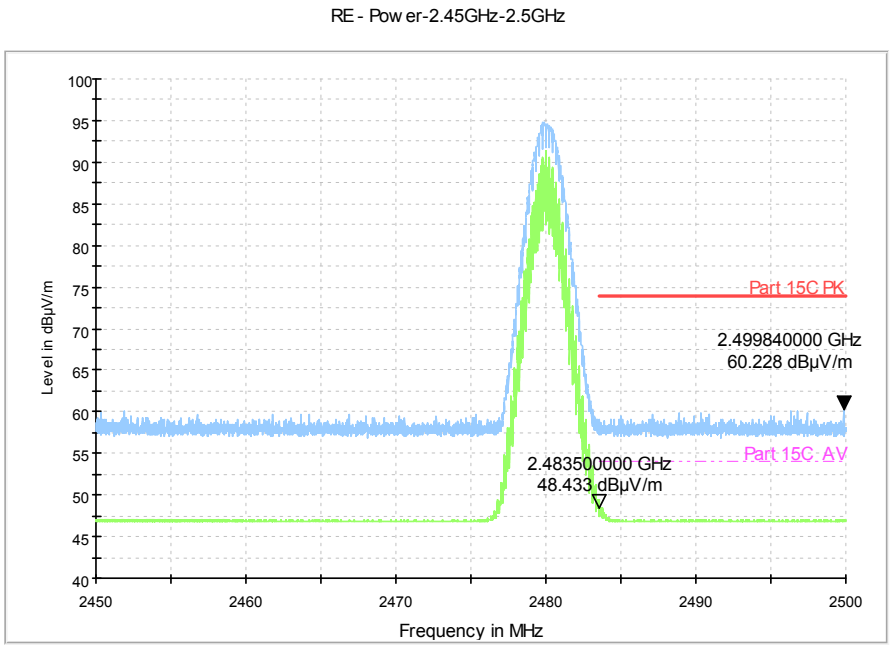


Fig.61. Radiated emission (Power): π/4 DQPSK, high channel

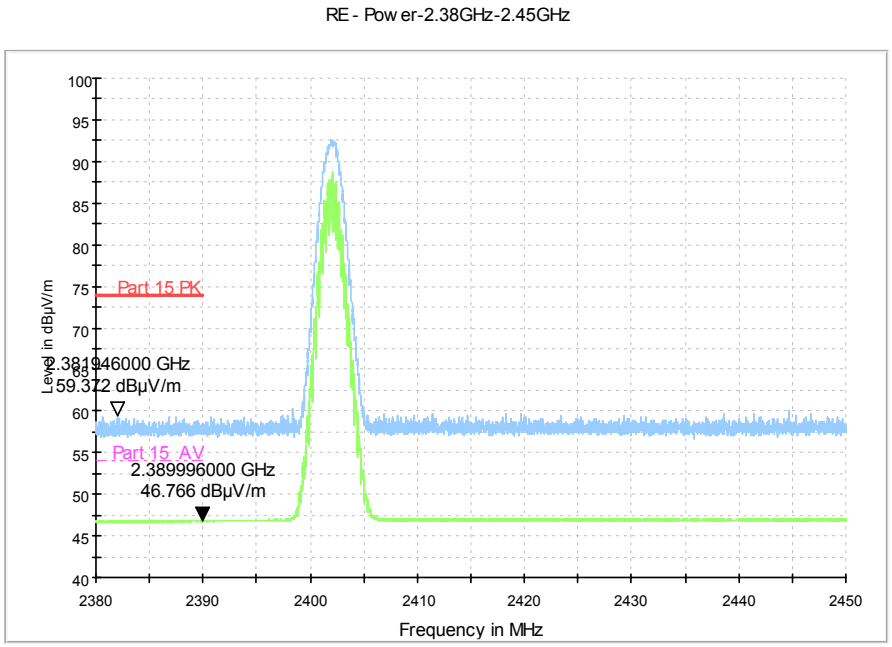


Fig.62. Radiated emission (Power): 8DPSK, low channel

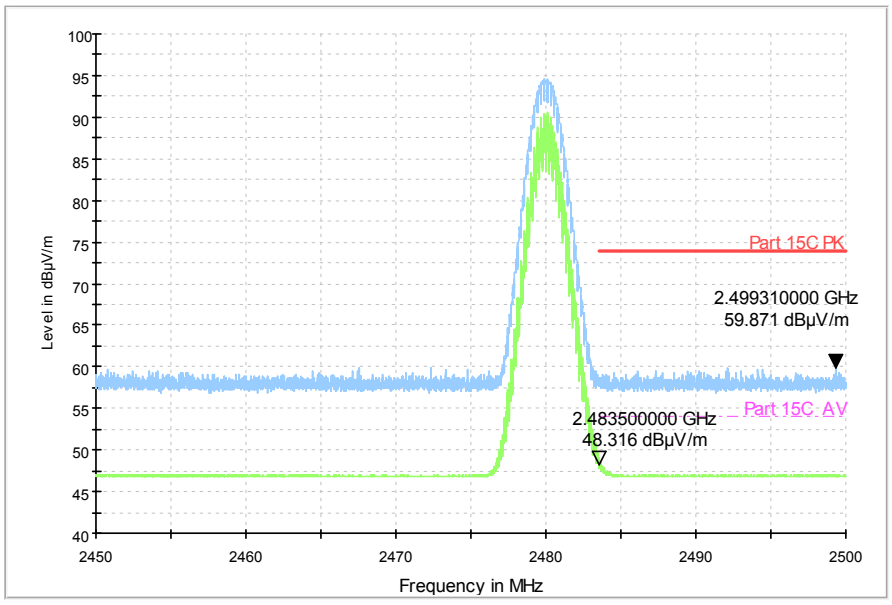


Fig.63. Radiated emission (Power): 8DPSK, high channel

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 ≥ 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	121.53	P
		Fig.65		
	DH3	Fig.66	168.62	P
		Fig.67		
	DH5	Fig.68	173.12	P
		Fig.69		

For π/4 DQPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.70	123.43	P
		Fig.71		
	DH3	Fig.72	154.30	P
		Fig.73		
	DH5	Fig.74	153.33	P
		Fig.75		

For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.76	123.82	P
		Fig.77		
	DH3	Fig.78	188.36	P

		Fig.79		
	DH5	Fig.80	167.57	P
		Fig.81		

Conclusion: PASS

Test graphs as below:

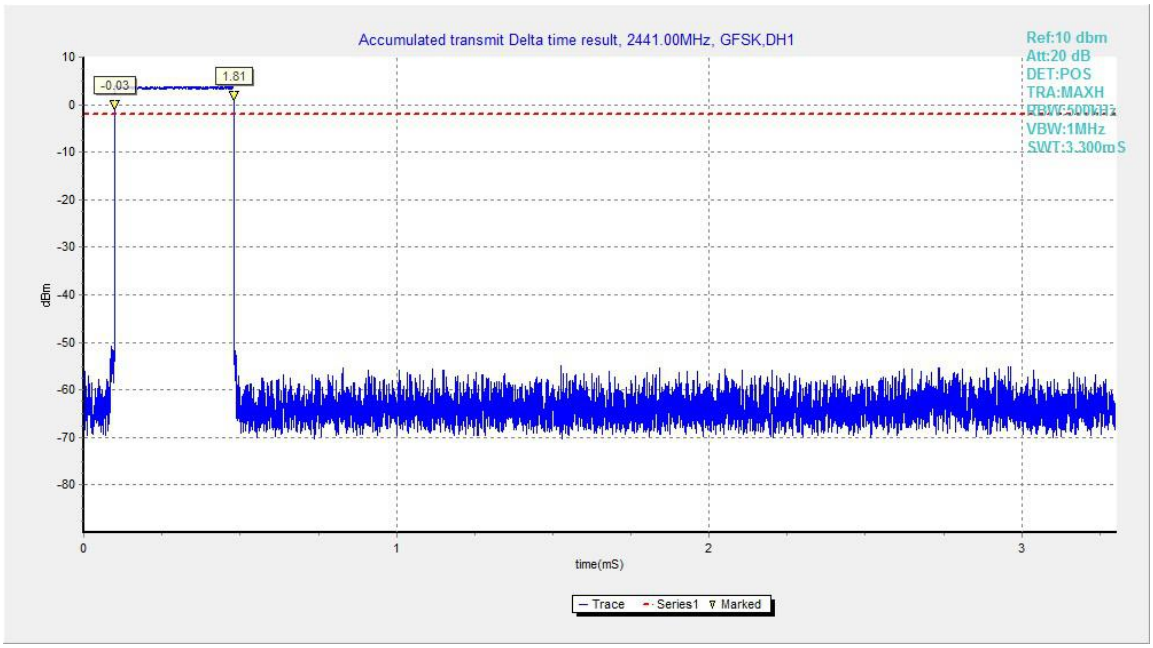


Fig.64. Time of occupancy (Dwell Time): Channel 39, Packet DH1

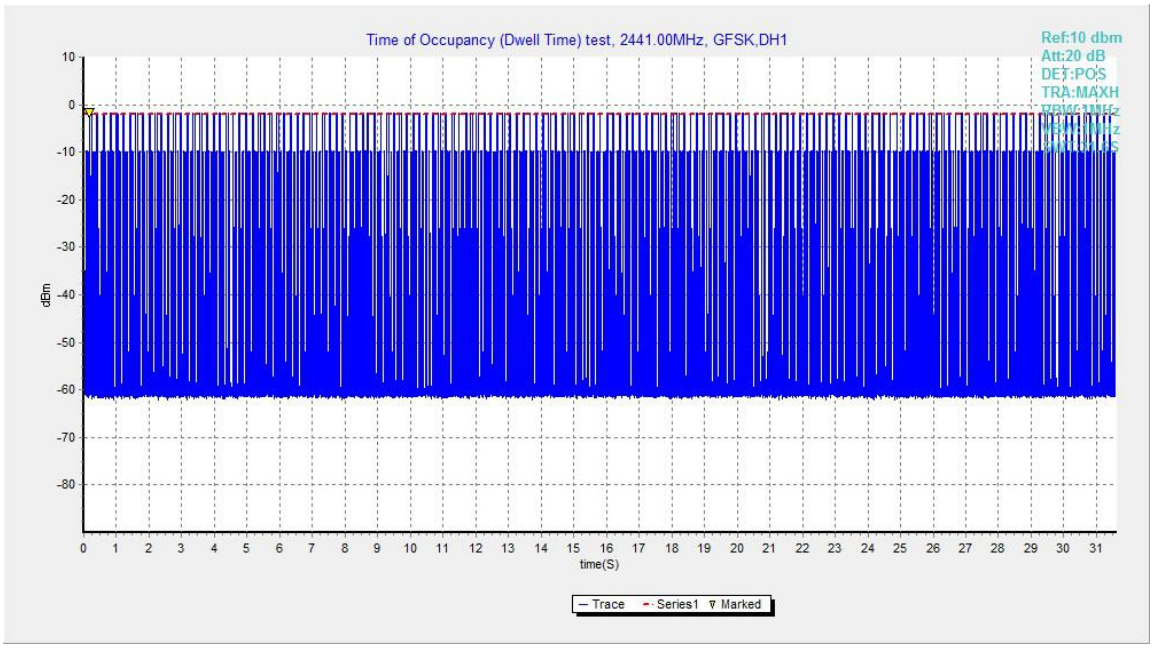


Fig.65. Number of Transmissions Measurement: Channel 39,Packet DH1

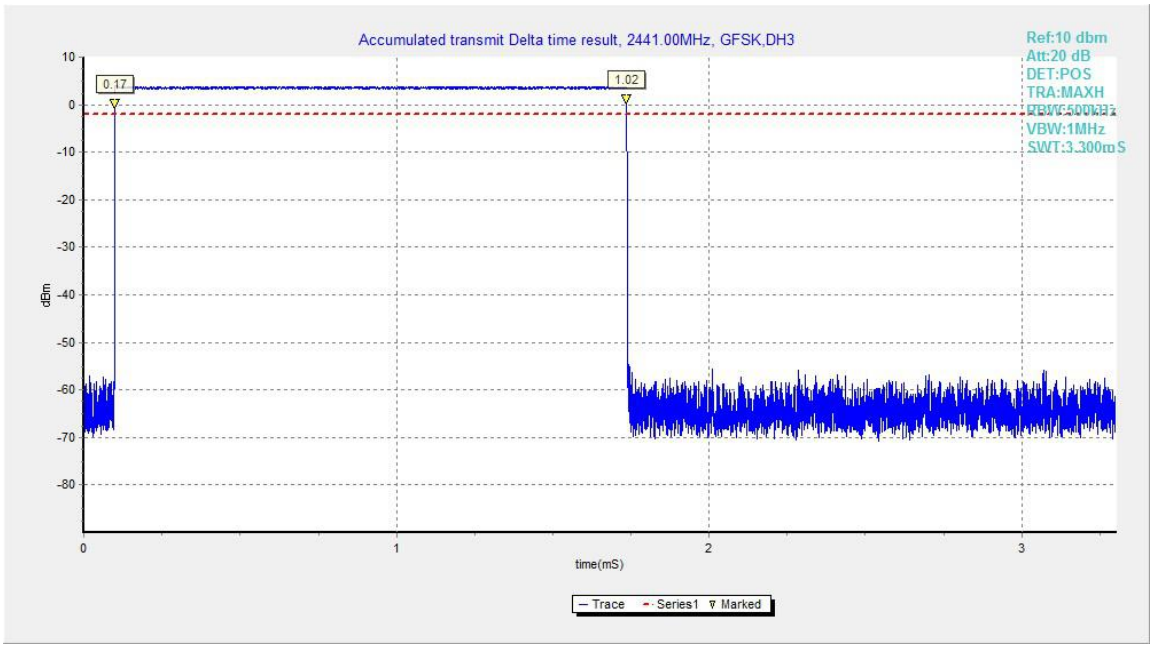


Fig.66. Time of occupancy (Dwell Time): Channel 39, Packet DH3

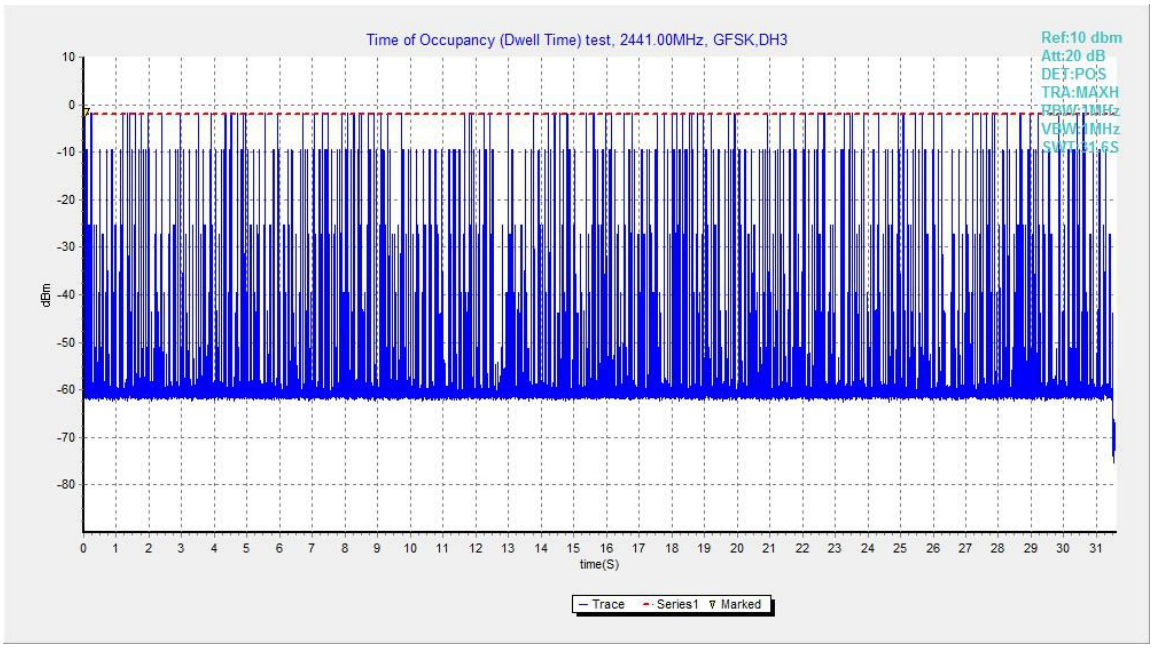


Fig.67. Number of Transmissions Measurement: Channel 39,Packet DH3

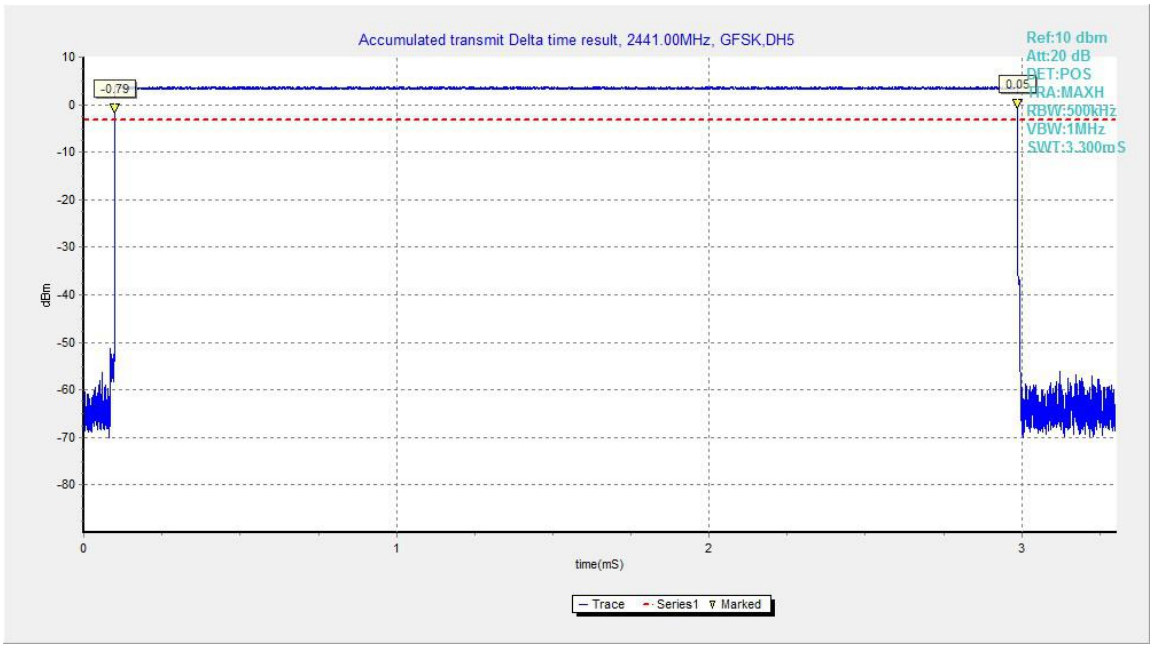


Fig.68. Time of occupancy (Dwell Time): Channel 39, Packet DH5

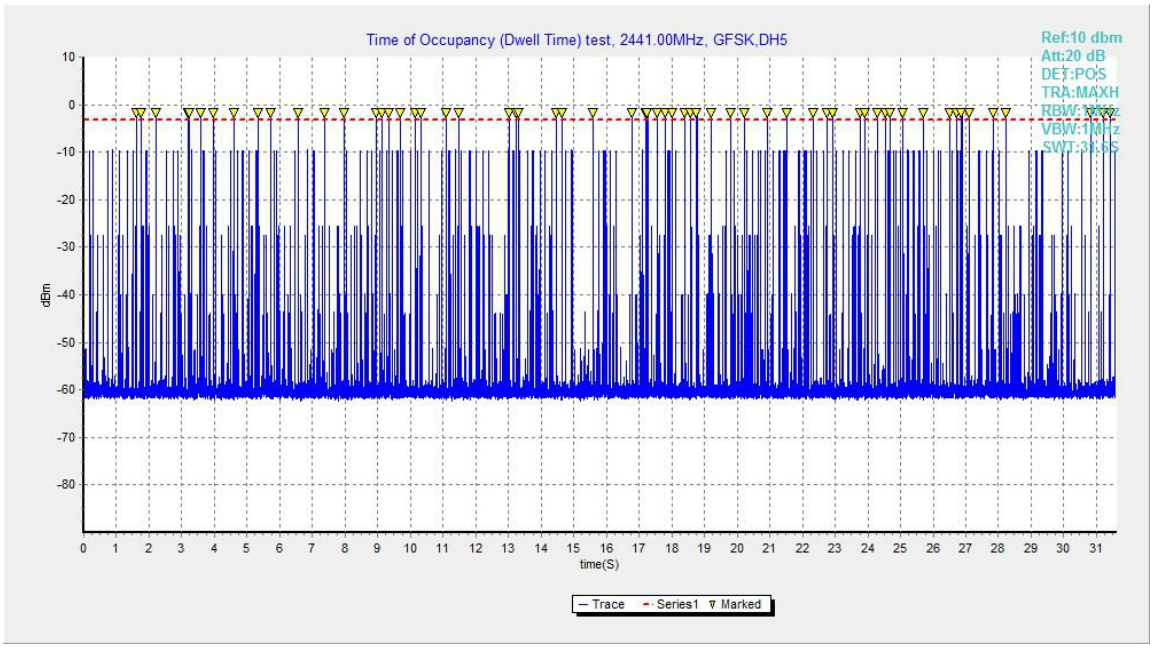


Fig.69. Number of Transmissions Measurement: Channel 39,Packet DH5

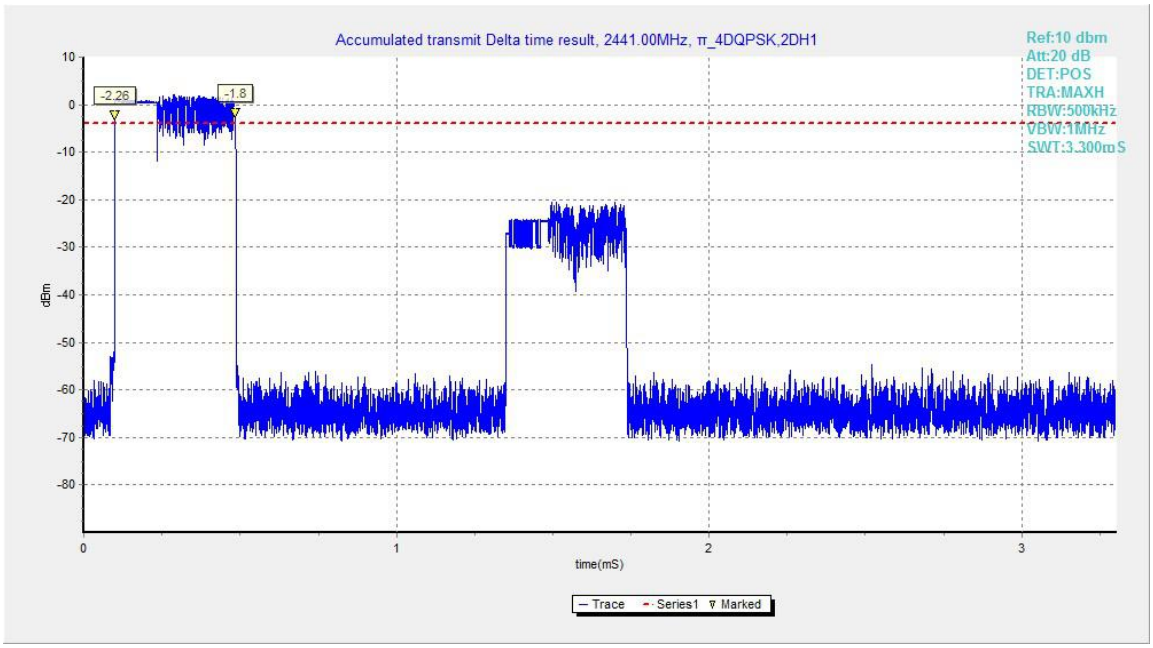


Fig.70. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1

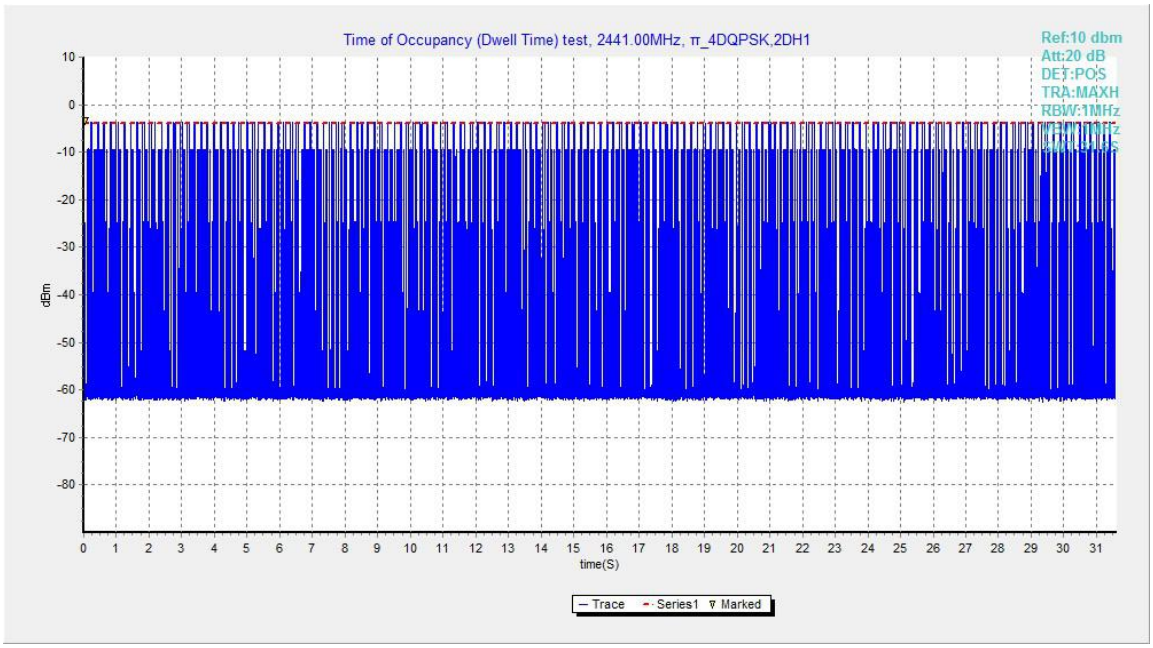


Fig.71. Number of Transmissions Measurement: Channel 39,Packet 2-DH1

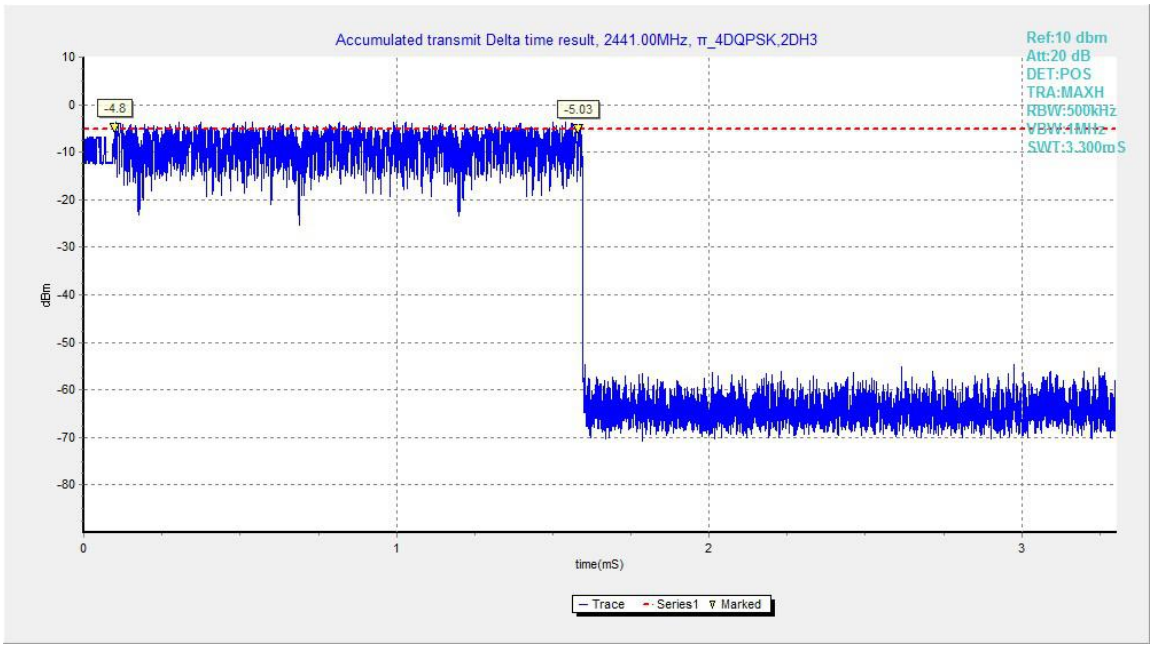


Fig.72. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3

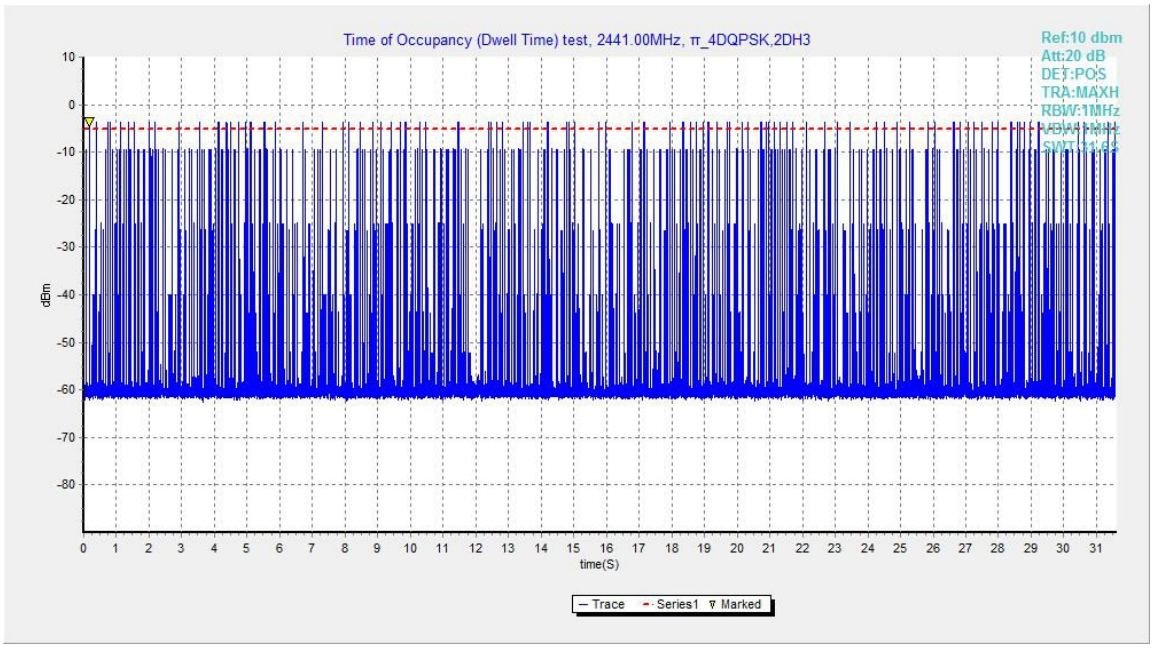


Fig.73. Number of Transmissions Measurement: Channel 39,Packet 2-DH3

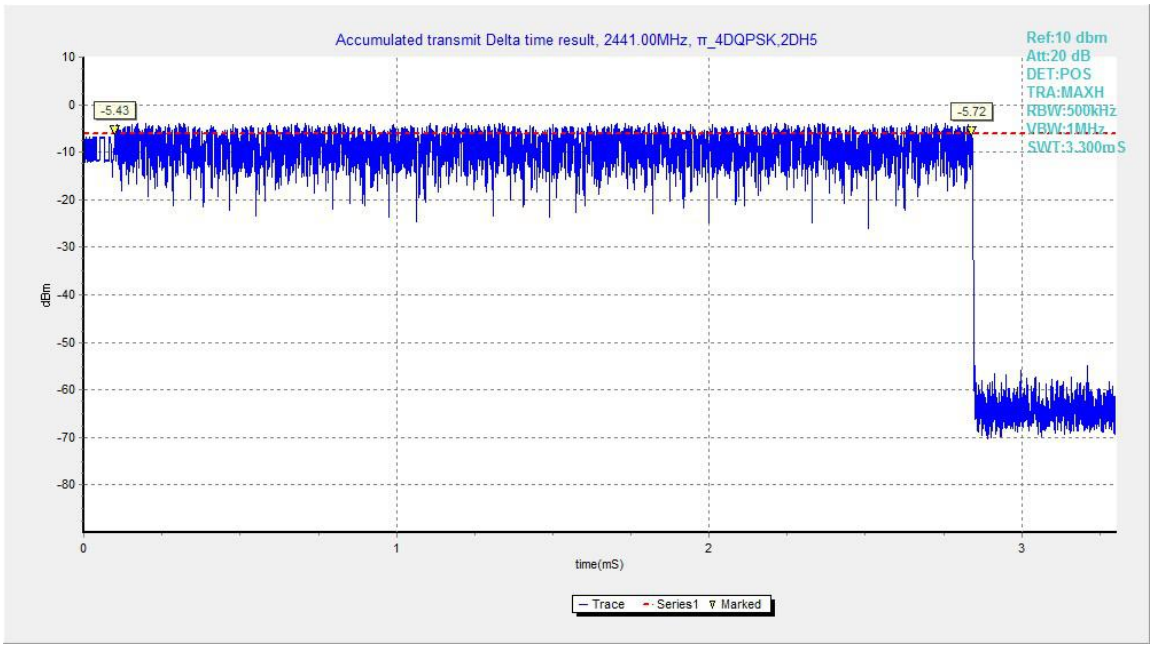


Fig.74. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5

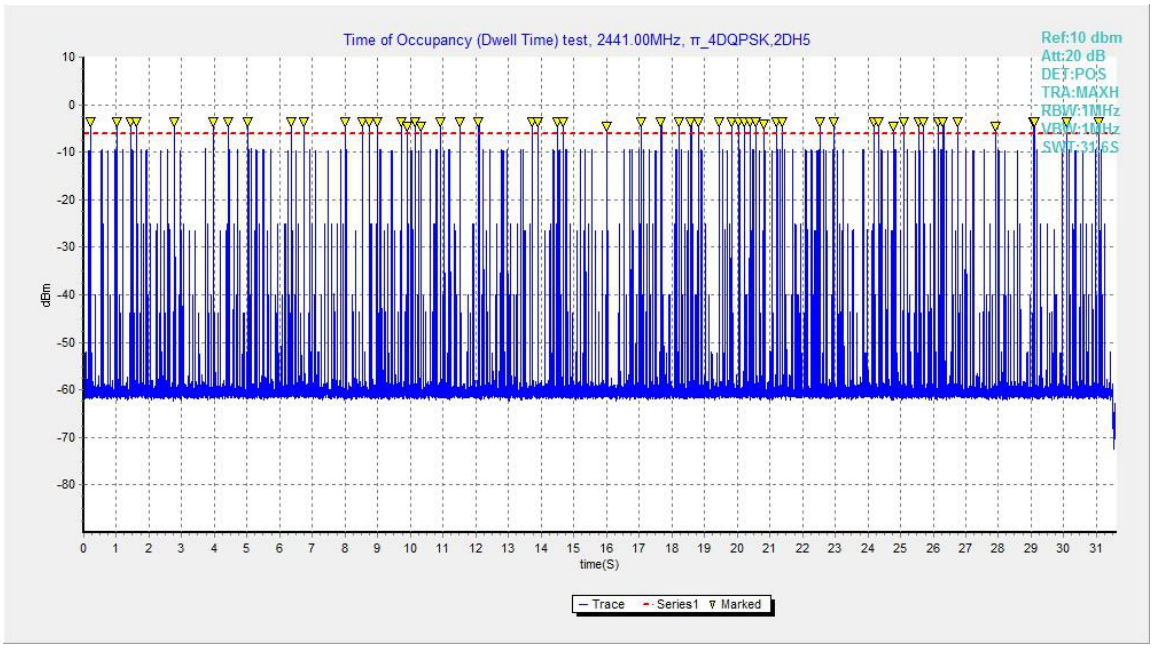


Fig.75. Number of Transmissions Measurement: Channel 39,Packet 2-DH5

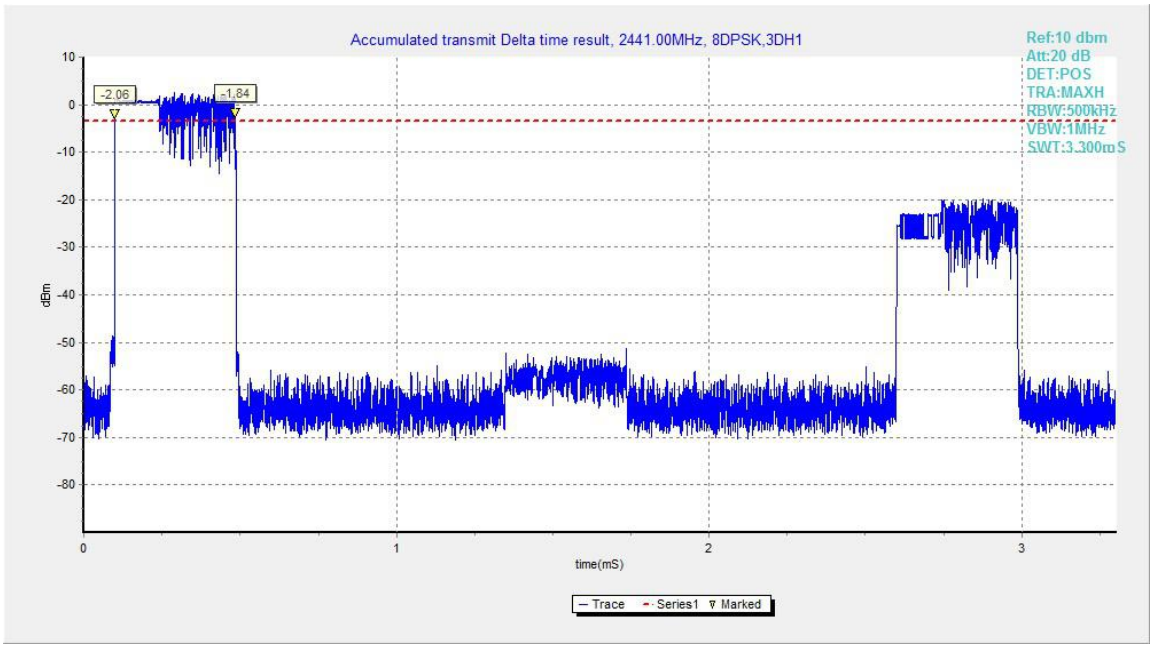


Fig.76. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1

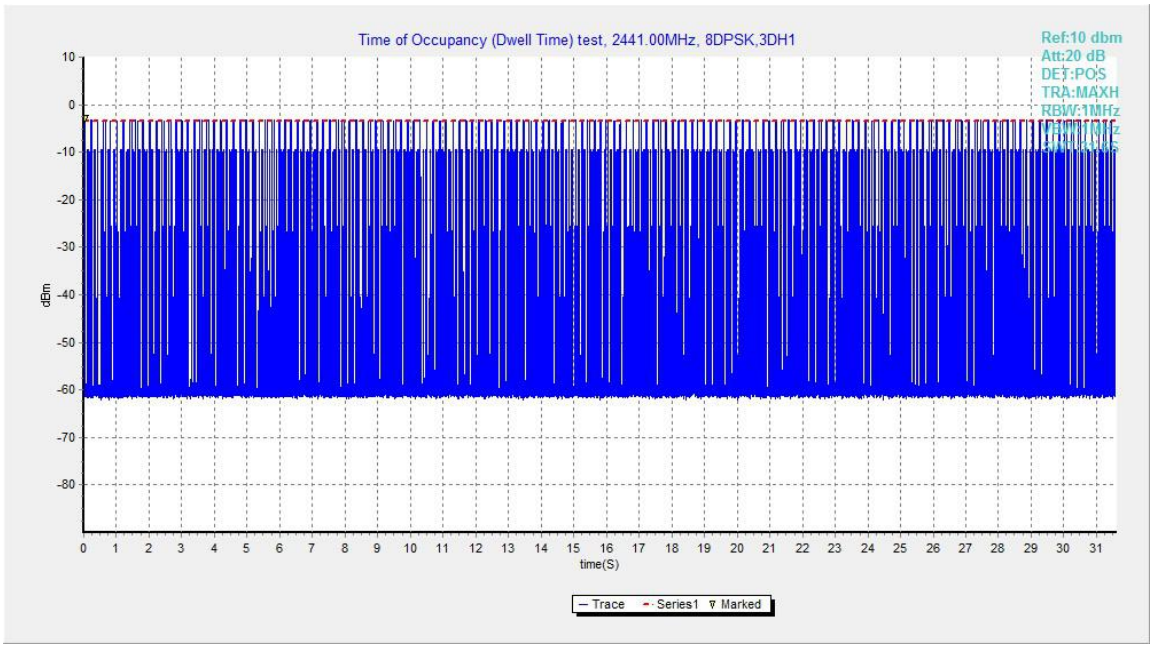


Fig.77. Number of Transmissions Measurement: Channel 39,Packet 3-DH1

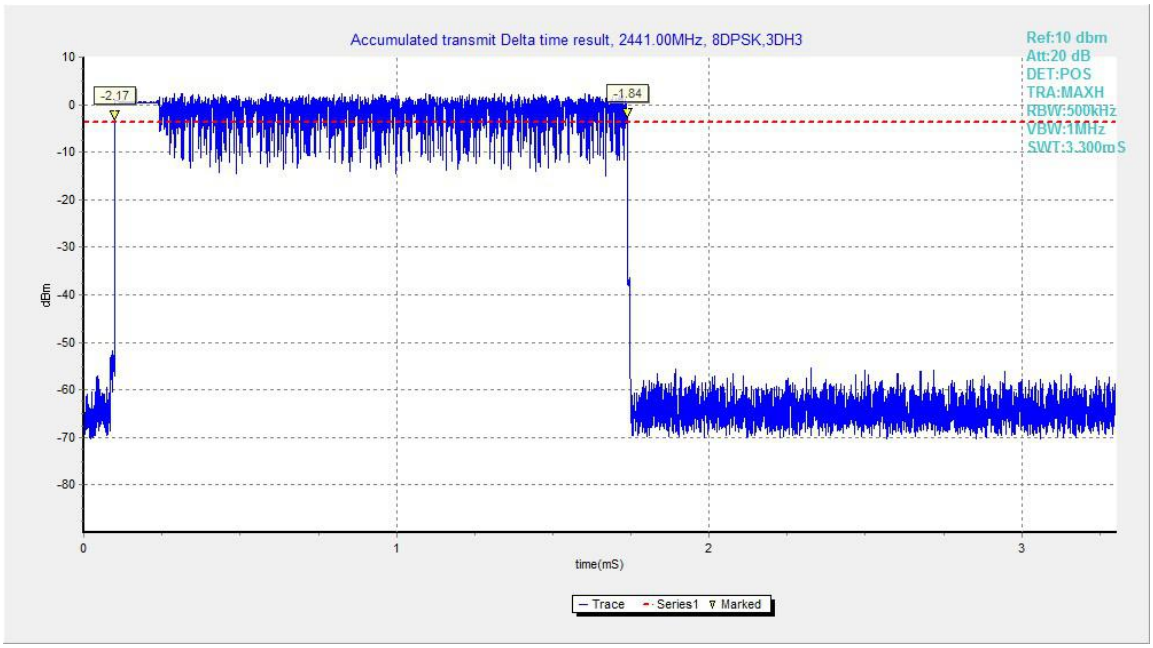


Fig.78. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3

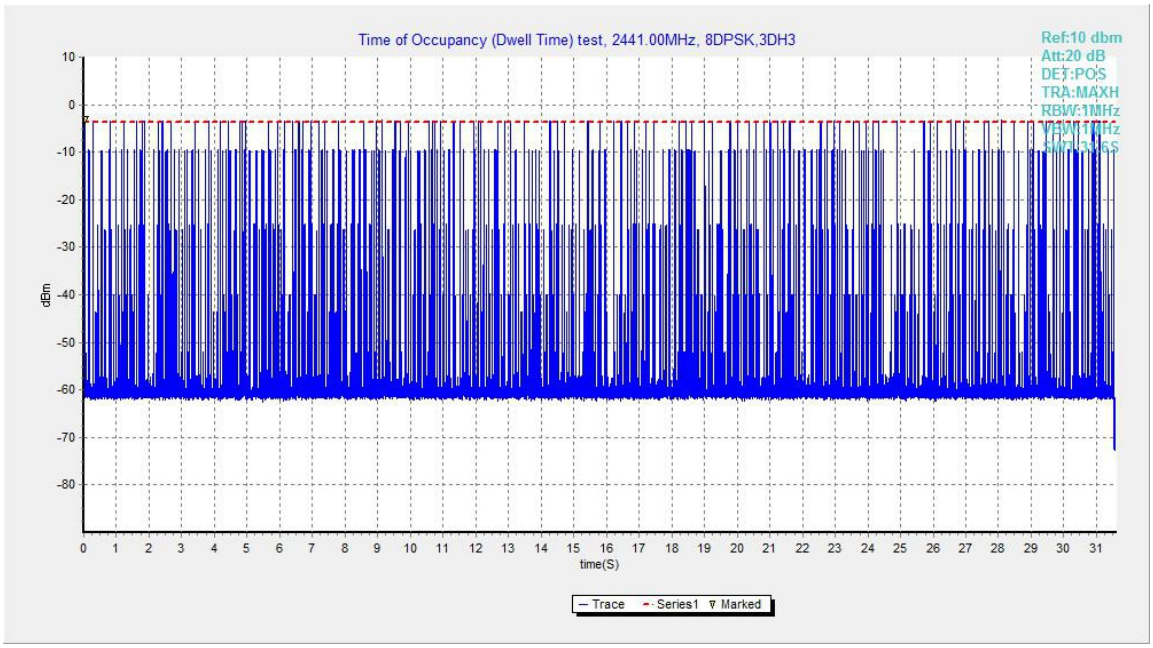


Fig.79. Number of Transmissions Measurement: Channel 39,Packet 3-DH3

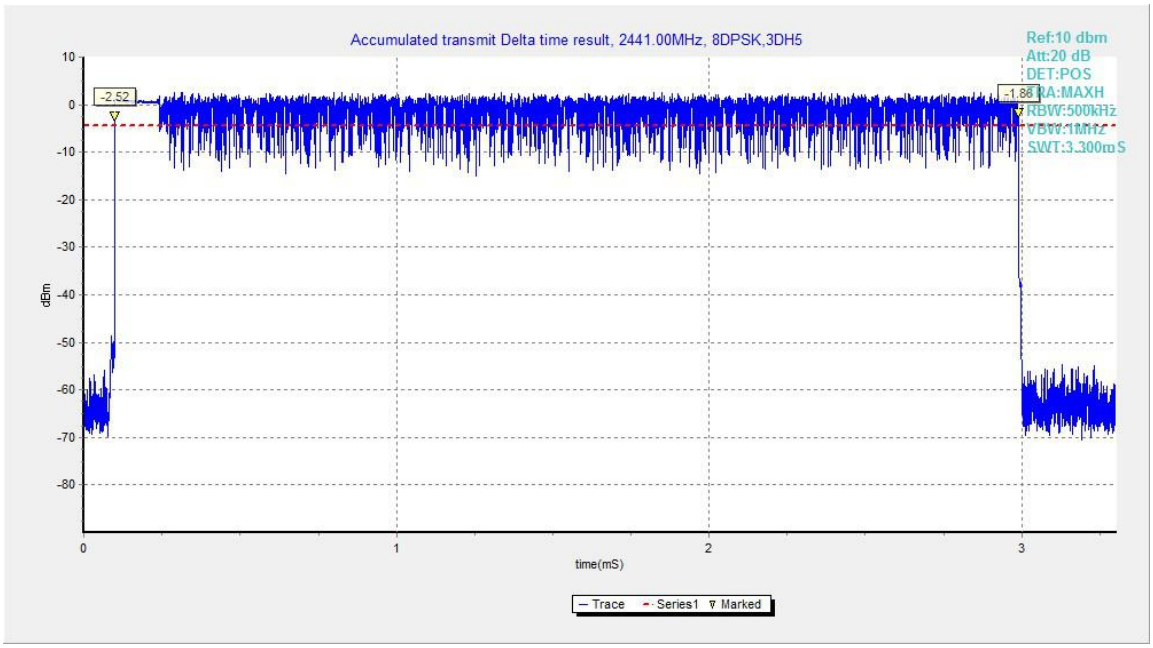


Fig.80. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5

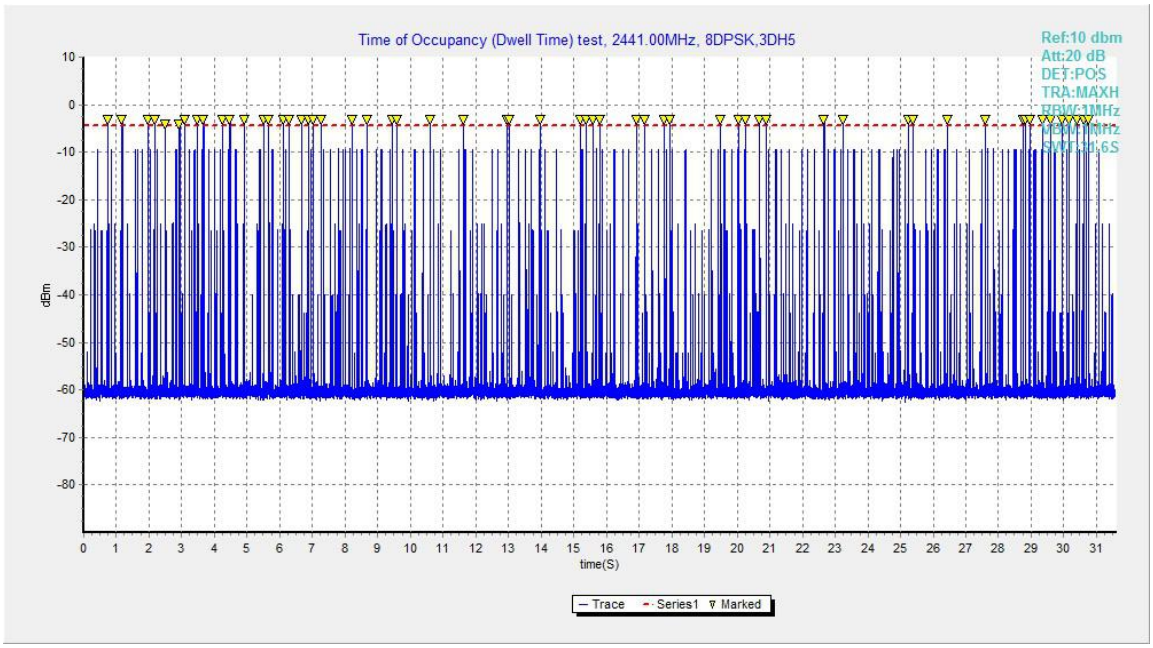


Fig.81. Number of Transmissions Measurement: Channel 39,Packet 3-DH5

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	917.25	NA
39	Fig.83	928.50	NA
78	Fig.84	892.50	NA

For π/4 DQPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.85	1296.75	NA
39	Fig.86	1280.25	NA
78	Fig.87	1305.75	NA

For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.88	1296.75	NA
39	Fig.89	1280.25	NA
78	Fig.90	1296.00	NA

Conclusion: NA

Test graphs as below:

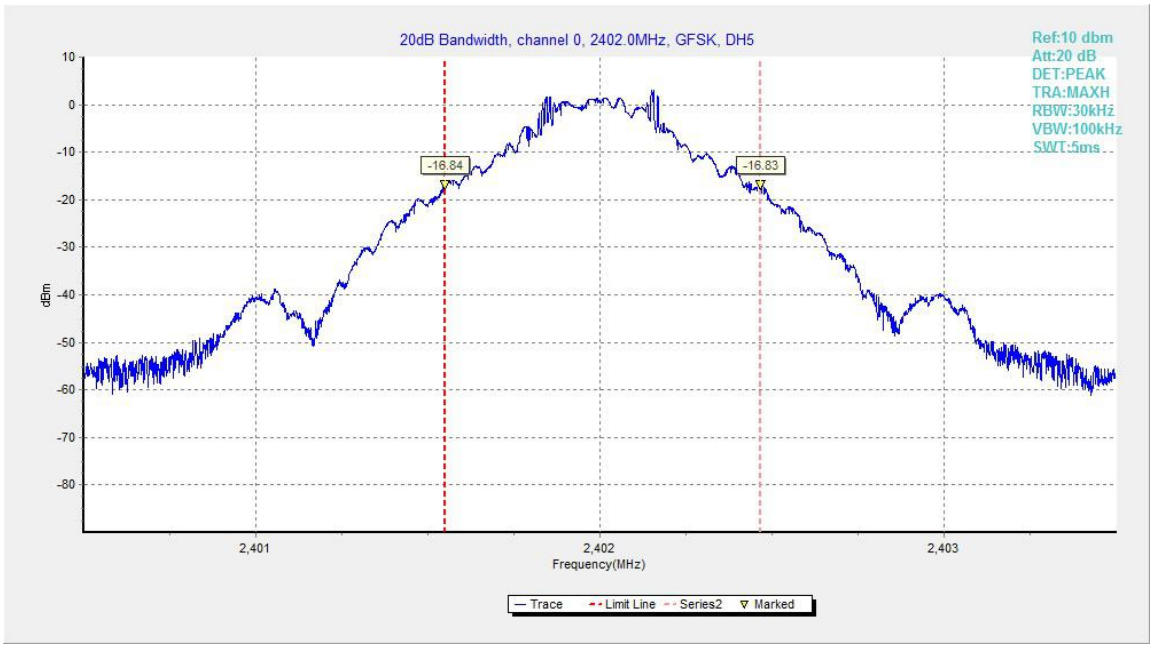


Fig.82. 20dB Bandwidth: GFSK, Channel 0

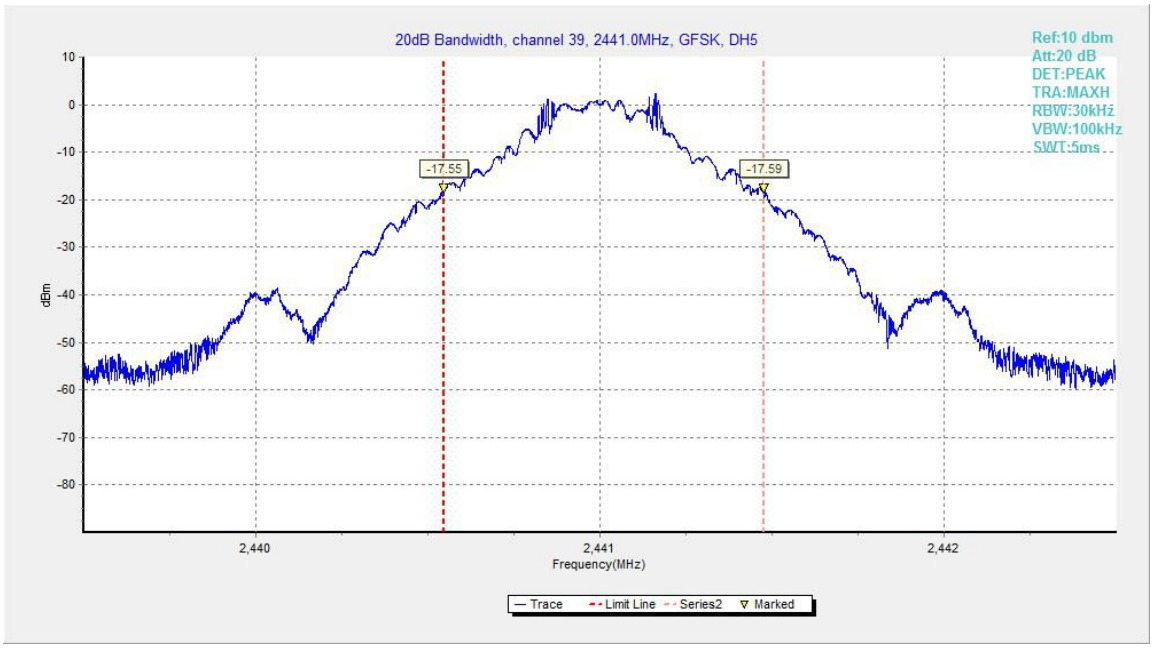


Fig.83. 20dB Bandwidth: GFSK, Channel 39

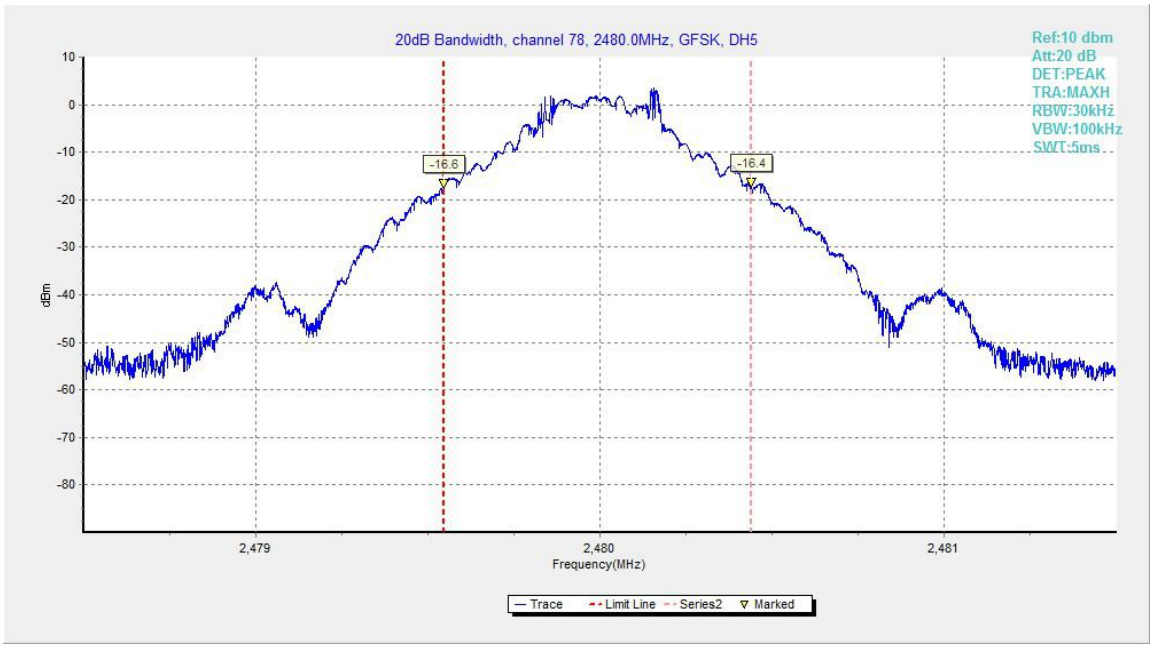


Fig.84. 20dB Bandwidth: GFSK, Channel 78

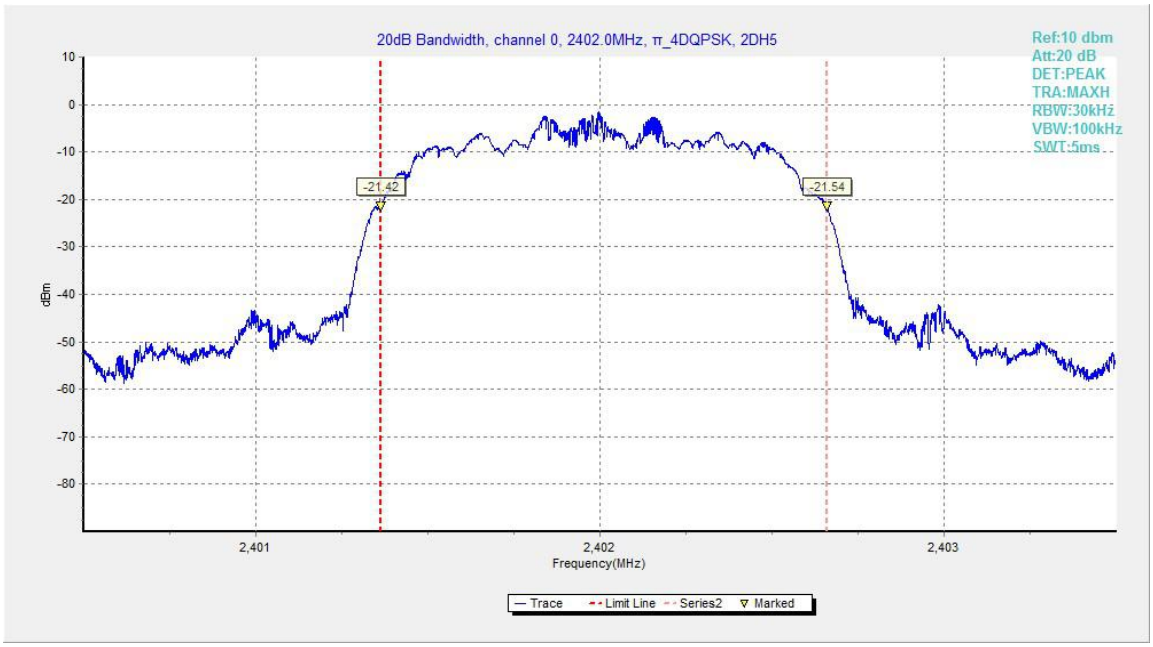


Fig.85. 20dB Bandwidth: π/4 DQPSK, Channel 0

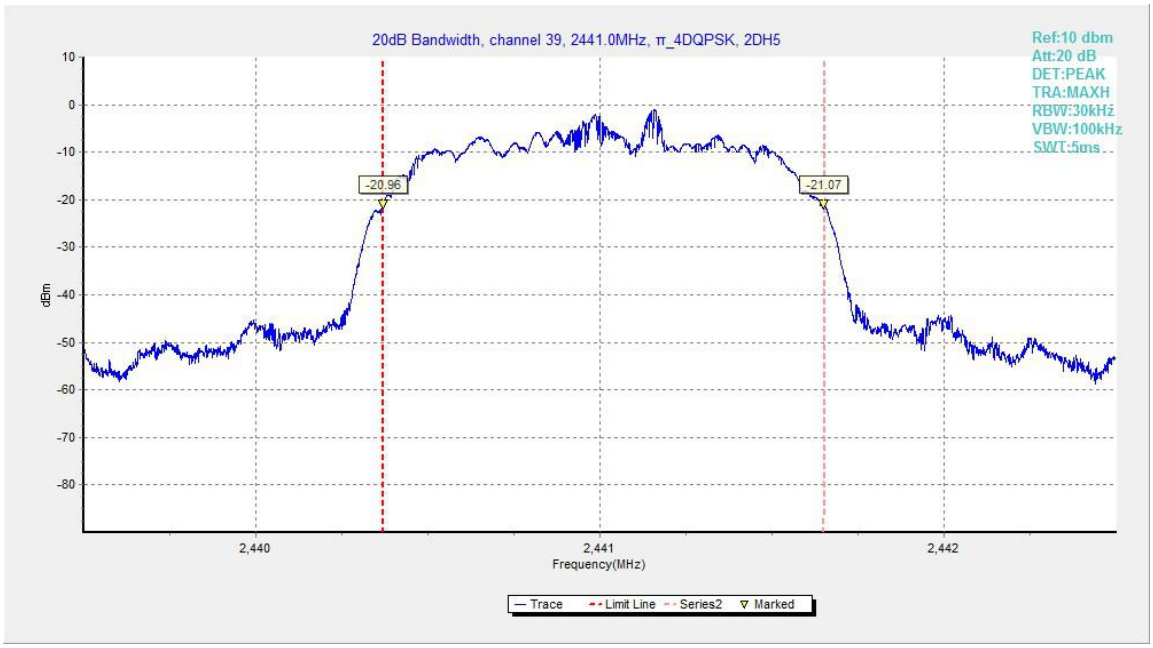


Fig.86. 20dB Bandwidth: π/4 DQPSK, Channel 39

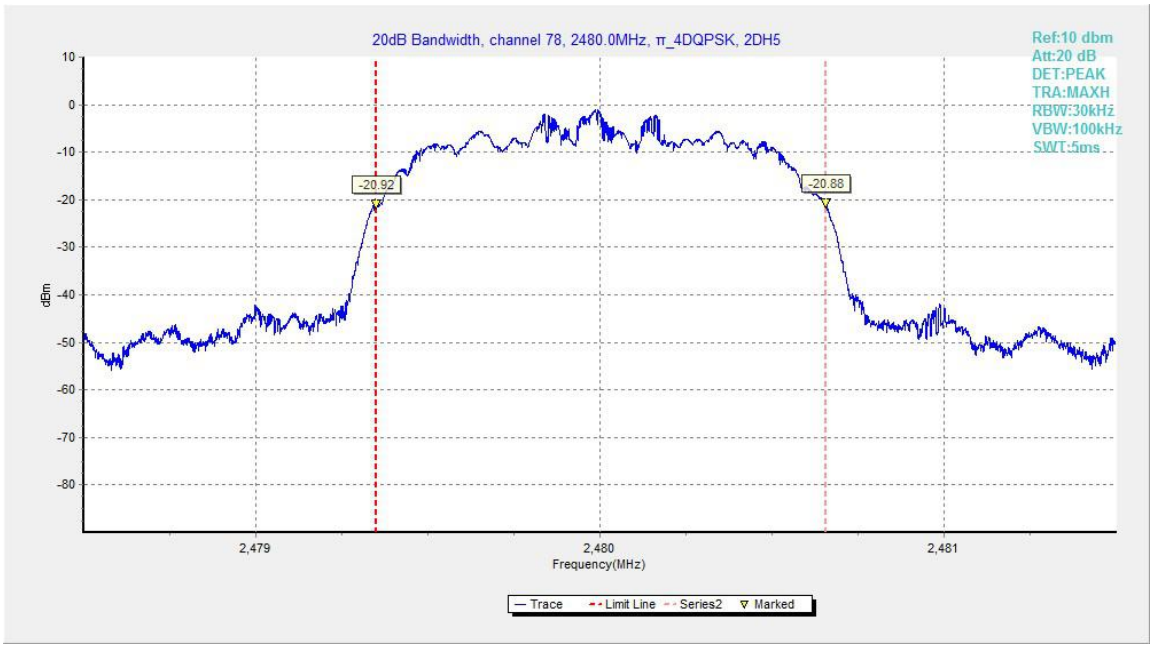


Fig.87. 20dB Bandwidth: π/4 DQPSK, Channel 78

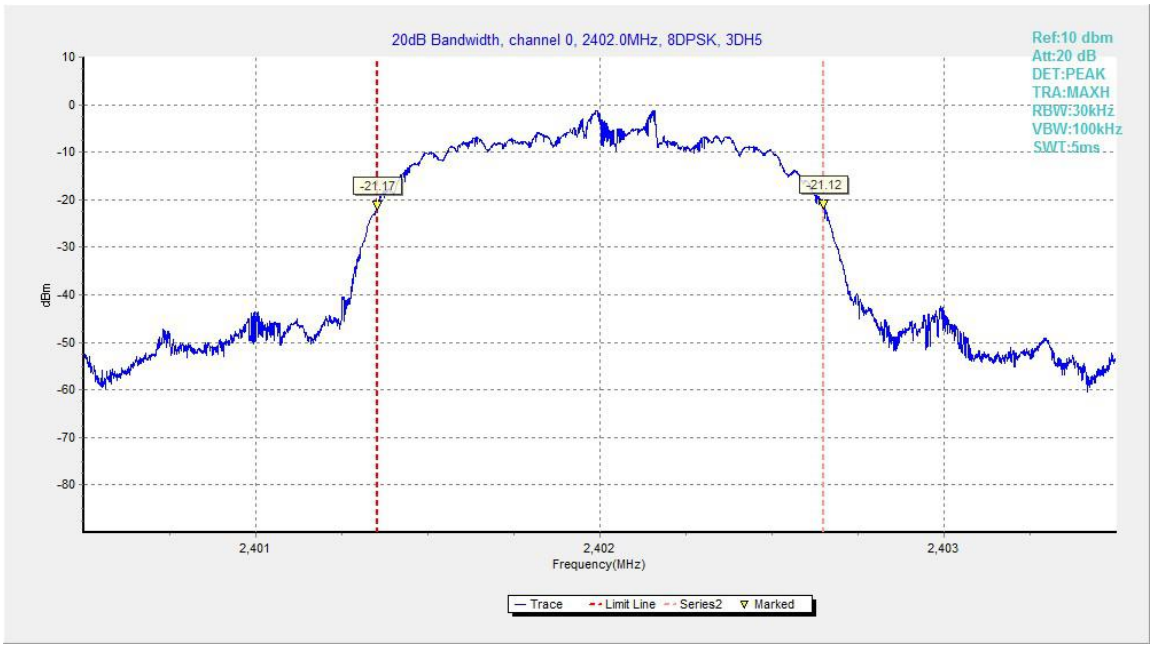


Fig.88. 20dB Bandwidth: 8DPSK, Channel 0

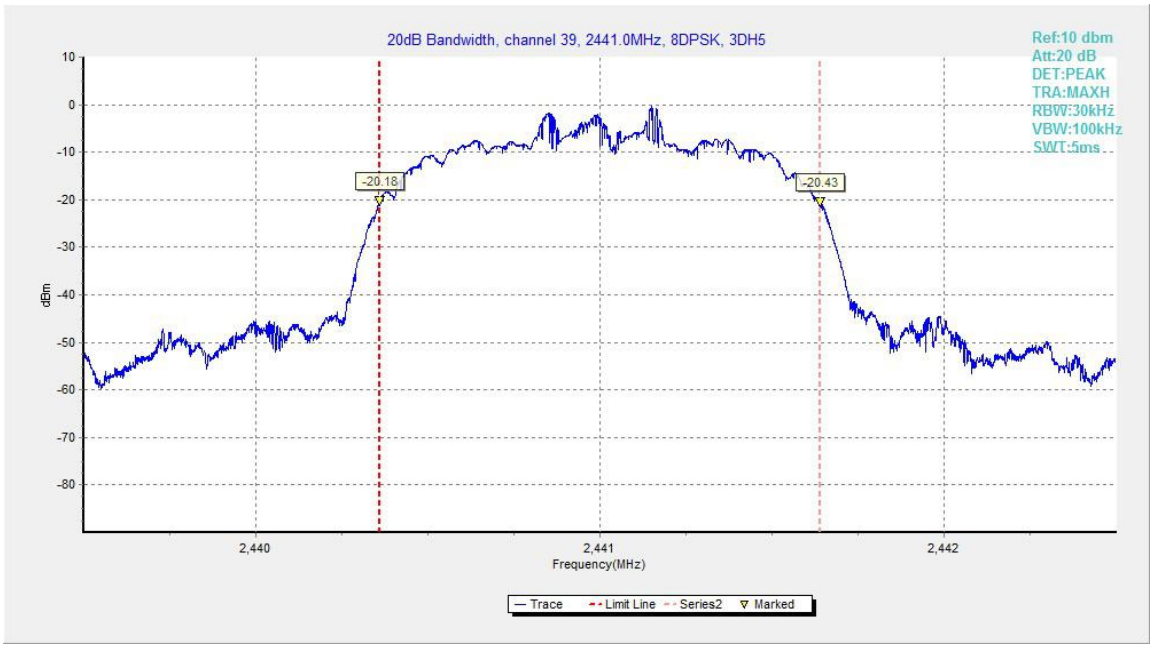


Fig.89. 20dB Bandwidth: 8DPSK, Channel 39

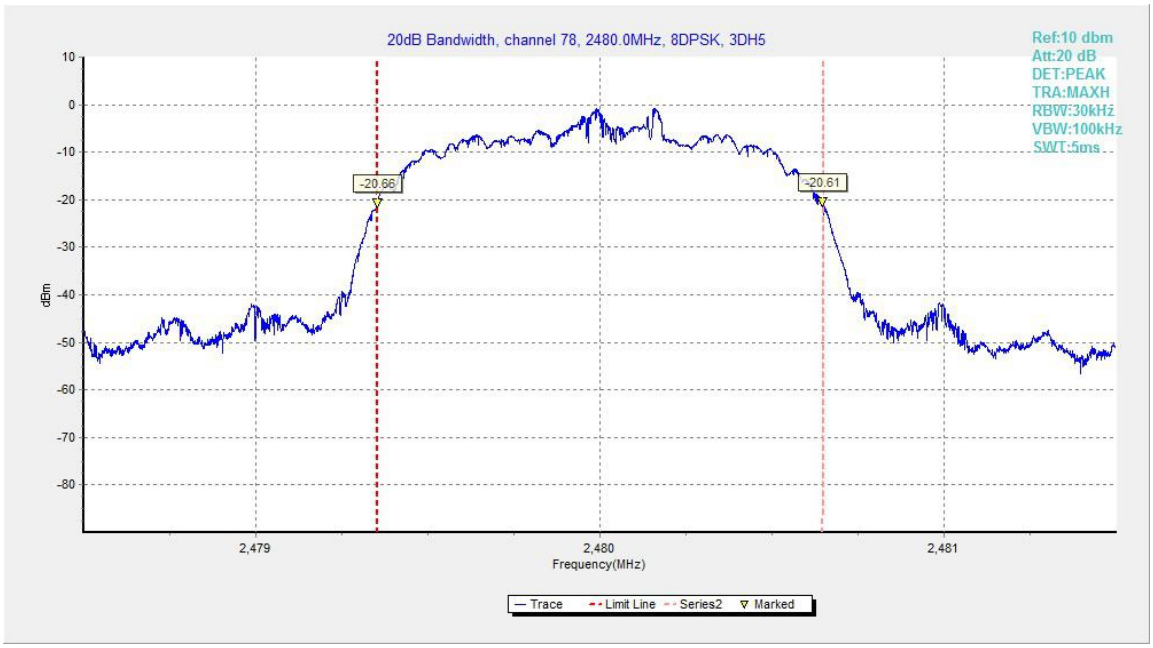


Fig.90. 20dB Bandwidth: 8DPSK, Channel 78

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) * 20dB bandwidth, whichever is greater.

Measurement Limit:

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

Measurement Result:

For GFSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.91	1013.25	P

For π/4 DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.92	1019.25	P

For 8DPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.93	1047.00	P

Conclusion: PASS

Test graphs as below:

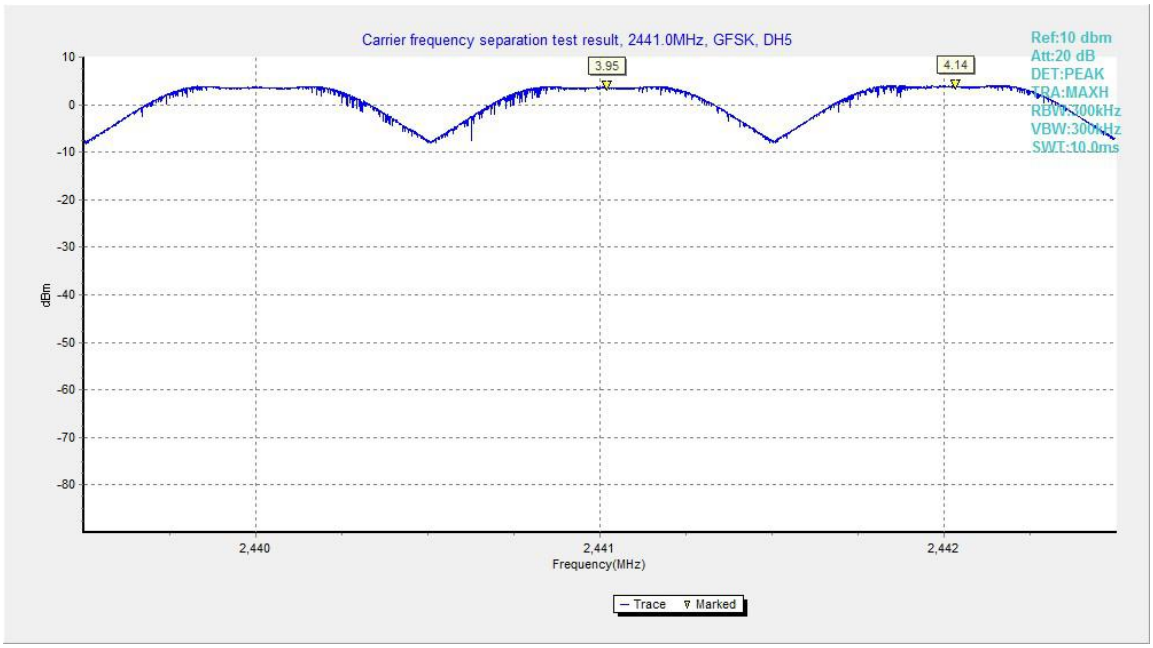


Fig.91. Carrier frequency separation measurement: GFSK, Channel 39

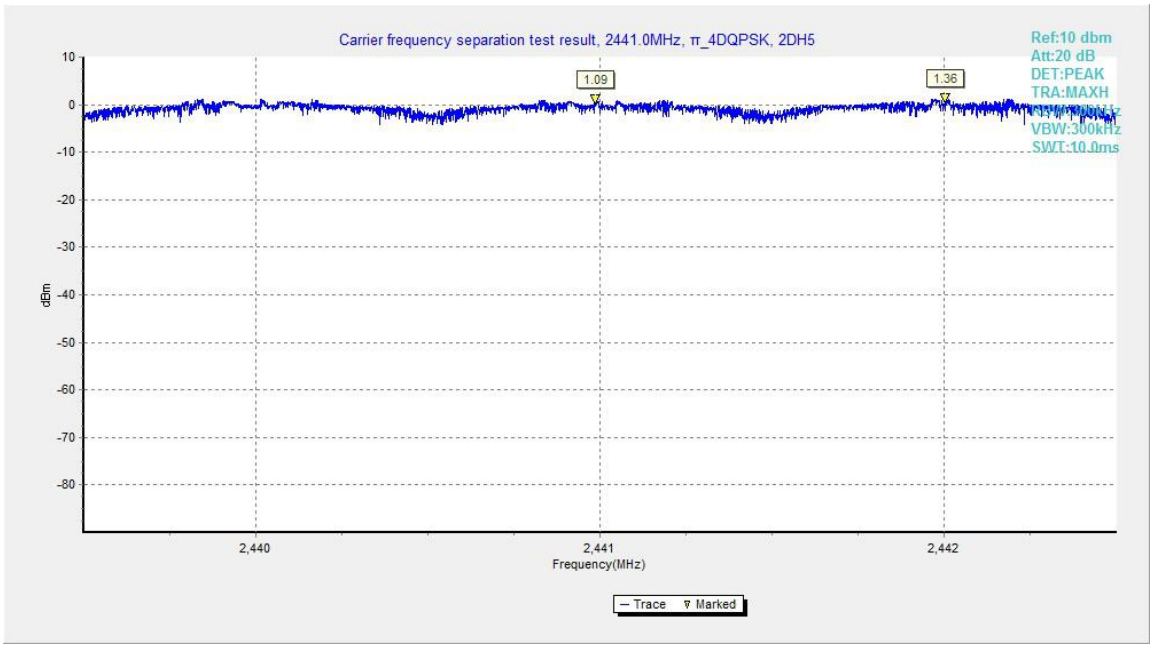


Fig.92. Carrier frequency separation measurement: π/4 DQPSK, Channel 39

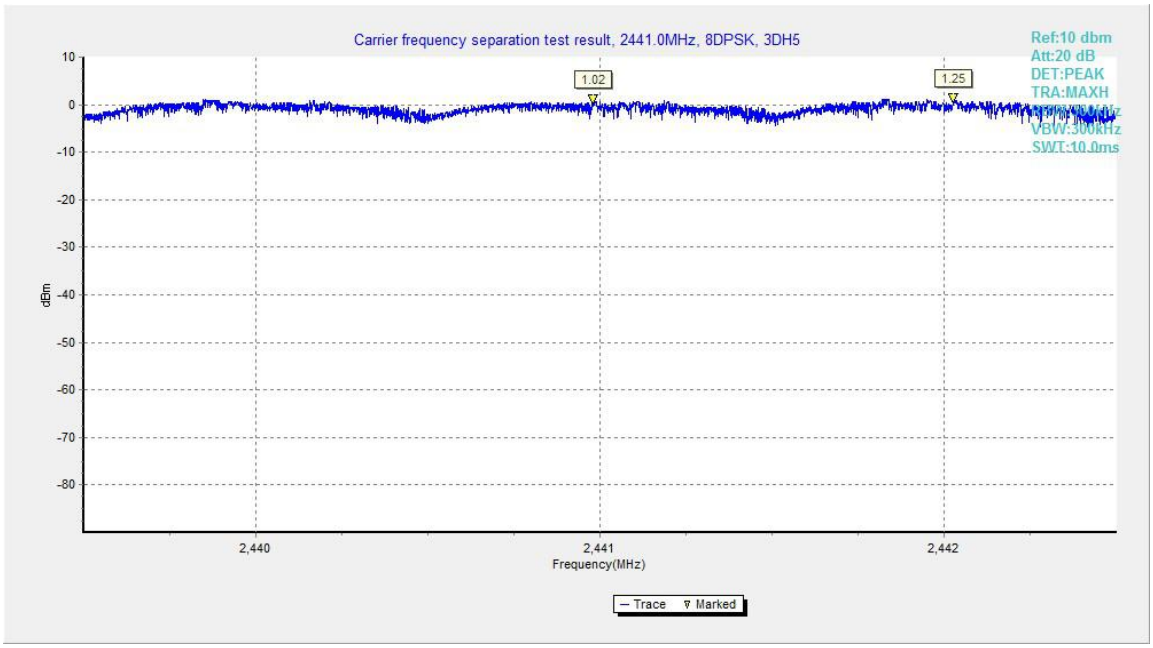


Fig.93. Carrier frequency separation measurement: 8DPSK, Channel 39

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		

Forπ/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:

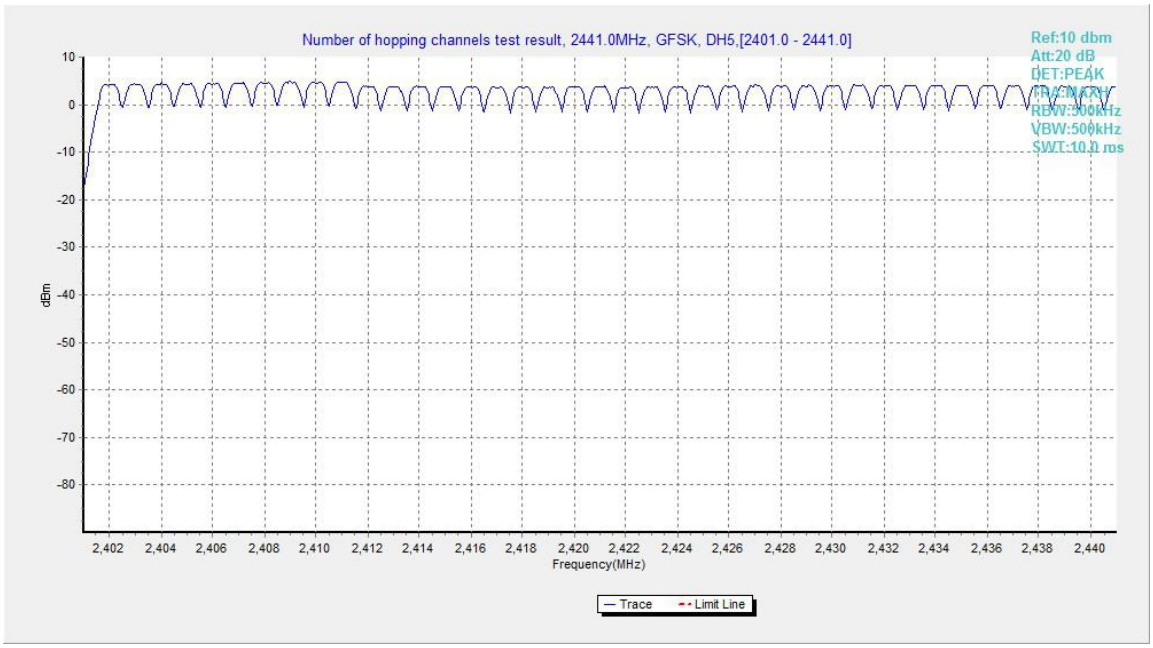


Fig.94. Number of hopping frequencies: GFSK, Channel 0 - 39

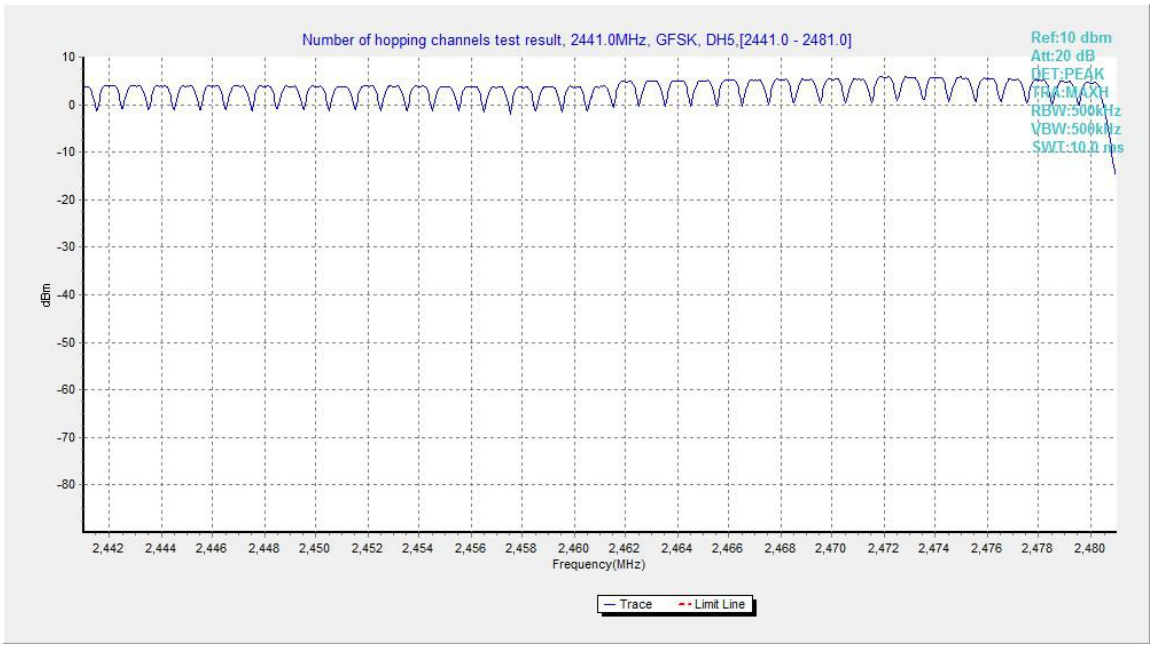


Fig.95. Number of hopping frequencies: GFSK, Channel 40 - 78

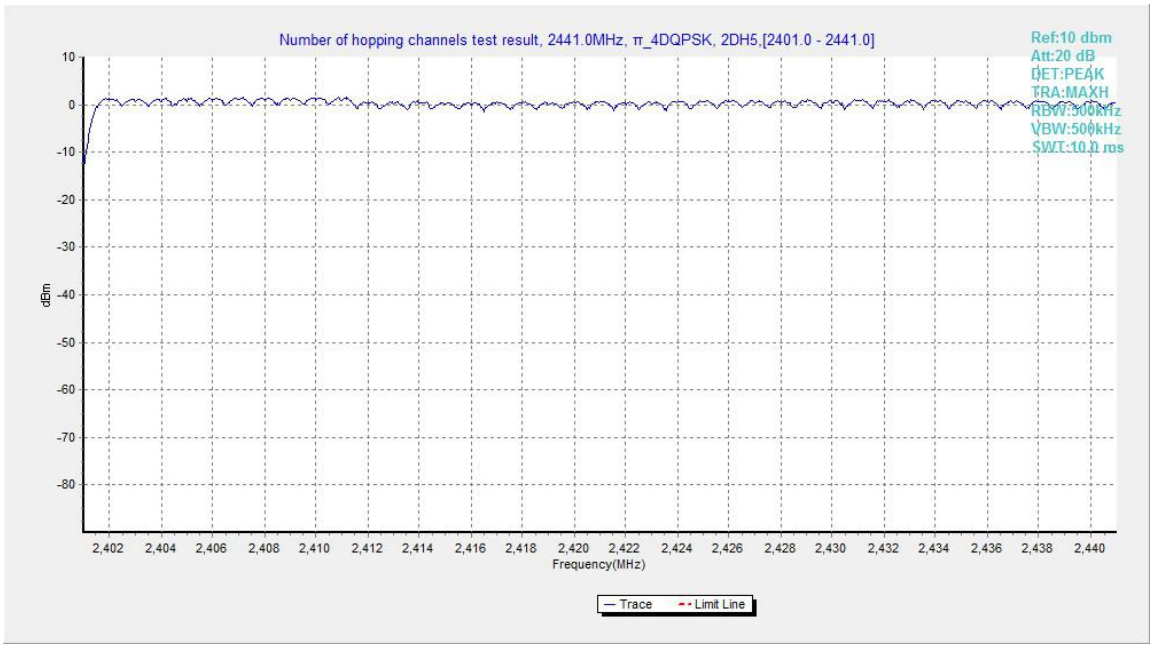


Fig.96. Number of hopping frequencies: π/4 DQPSK, Channel 0 - 39

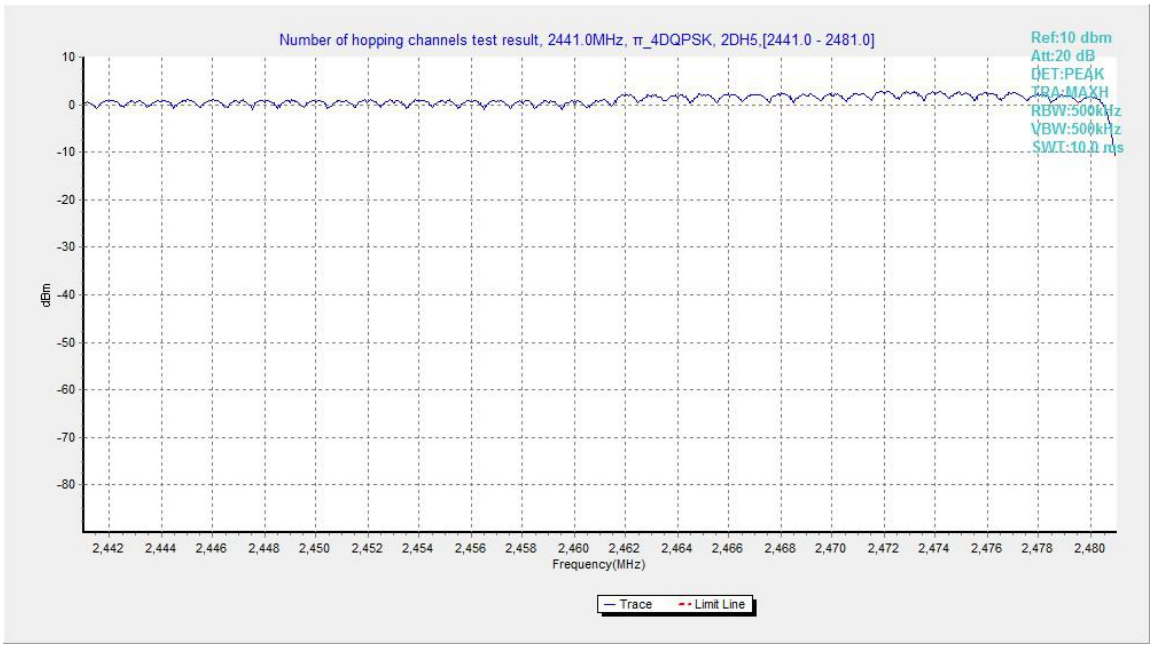


Fig.97. Number of hopping frequencies: π/4 DQPSK, Channel 40 - 78

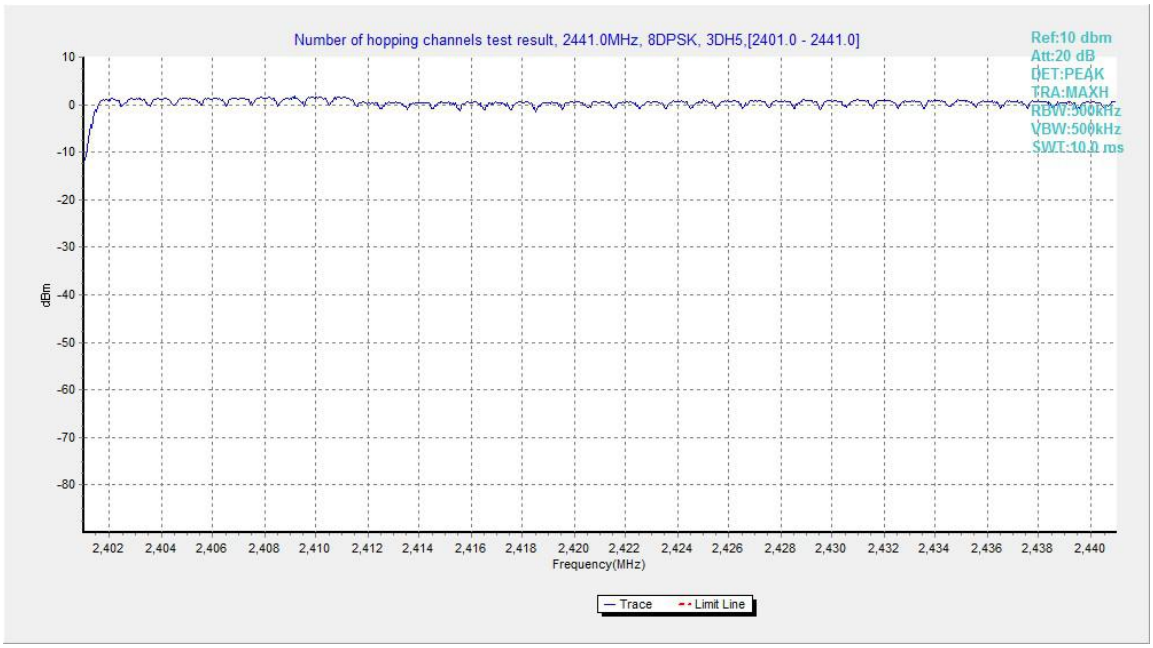


Fig.98. Number of hopping frequencies: 8DPSK, Channel 0 - 39

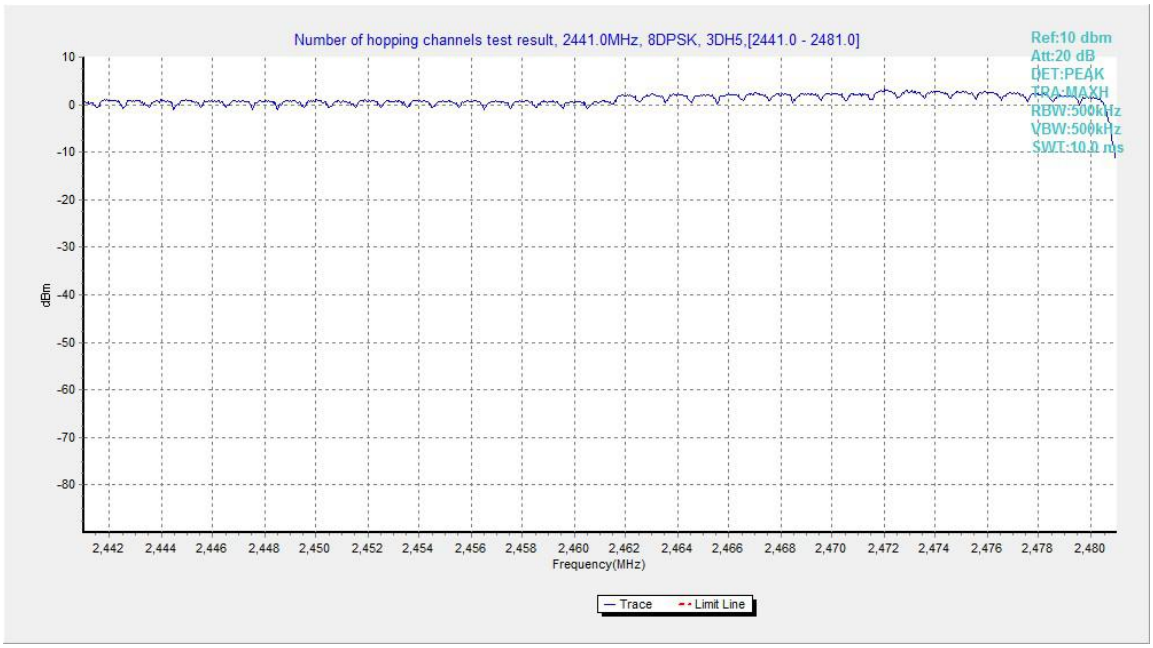


Fig.99. Number of hopping frequencies: 8DPSK, Channel 40 - 78

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)

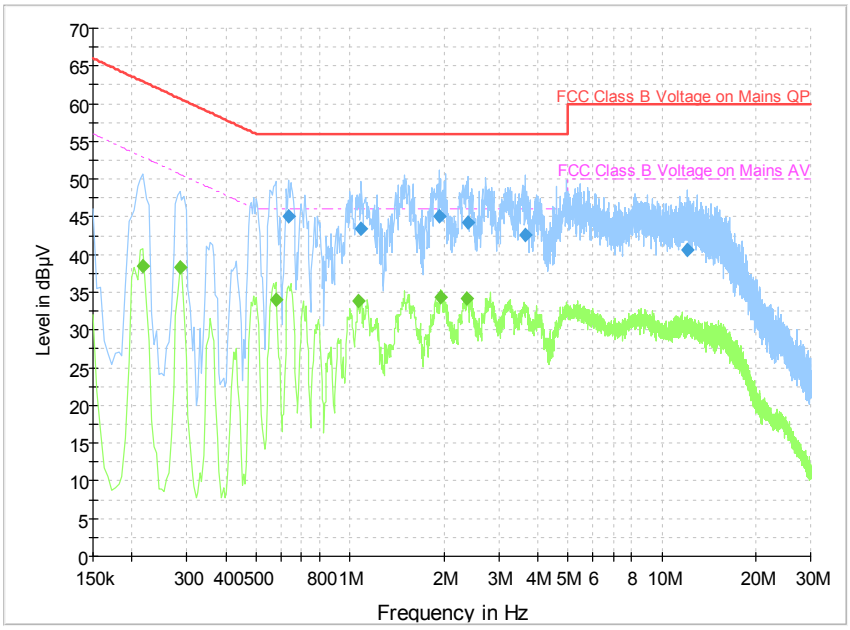
Frequency range (MHz)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	56 to 46	P
0.5 to 5	46	
5 to 30	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

The measurement is made according to ANSI C63.10

Conclusion: PASS

Test graphs as below:

Traffic:



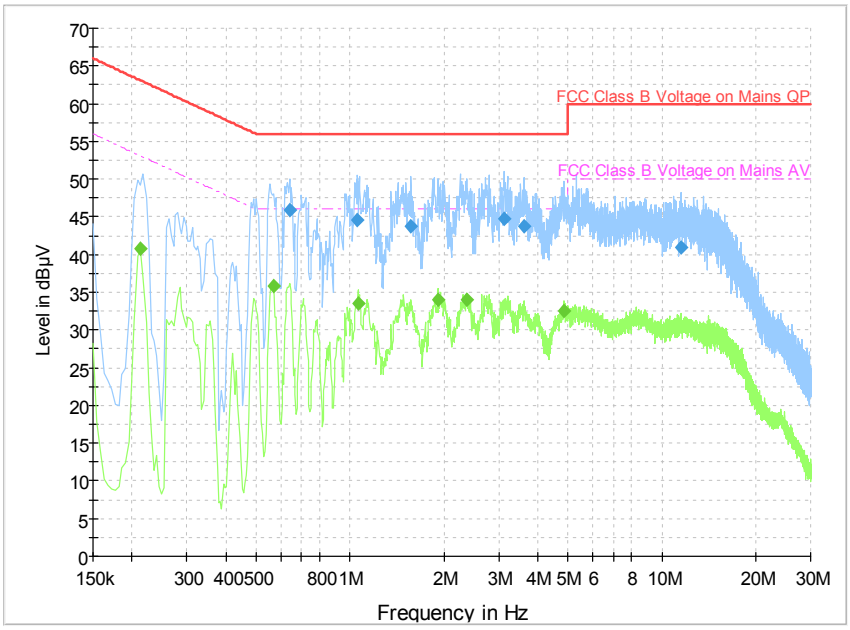
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.636000	45.1	2000.0	9.000	On	L1	19.8	10.9	56.0
1.086000	43.5	2000.0	9.000	On	L1	19.6	12.5	56.0
1.936500	45.1	2000.0	9.000	On	L1	19.7	10.9	56.0
2.382000	44.3	2000.0	9.000	On	L1	19.7	11.7	56.0
3.655500	42.6	2000.0	9.000	On	L1	19.6	13.4	56.0
12.102000	40.6	2000.0	9.000	On	L1	19.9	19.4	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.217500	38.5	2000.0	9.000	On	L1	19.8	14.4	52.9
0.285000	38.4	2000.0	9.000	On	L1	19.8	12.3	50.7
0.577500	34.0	2000.0	9.000	On	L1	19.9	12.0	46.0
1.068000	33.8	2000.0	9.000	On	L1	19.6	12.2	46.0
1.950000	34.4	2000.0	9.000	On	L1	19.7	11.6	46.0
2.368500	34.1	2000.0	9.000	On	L1	19.7	11.9	46.0

Idle:



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.640500	45.9	2000.0	9.000	On	L1	19.8	10.1	56.0
1.059000	44.6	2000.0	9.000	On	L1	19.6	11.4	56.0
1.572000	43.7	2000.0	9.000	On	L1	19.7	12.3	56.0
3.115500	44.8	2000.0	9.000	On	L1	19.7	11.2	56.0
3.615000	43.7	2000.0	9.000	On	L1	19.6	12.3	56.0
11.499000	40.9	2000.0	9.000	On	L1	19.9	19.1	60.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	40.8	2000.0	9.000	On	L1	19.8	12.2	53.1
0.568500	35.8	2000.0	9.000	On	L1	19.9	10.2	46.0
1.063500	33.6	2000.0	9.000	On	L1	19.6	12.4	46.0
1.918500	34.0	2000.0	9.000	On	L1	19.7	12.0	46.0
2.364000	34.1	2000.0	9.000	On	L1	19.7	11.9	46.0
4.861500	32.6	2000.0	9.000	On	L1	19.6	13.4	46.0

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

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

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).

2016-09-29 through 2017-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

*****END OF REPORT*****