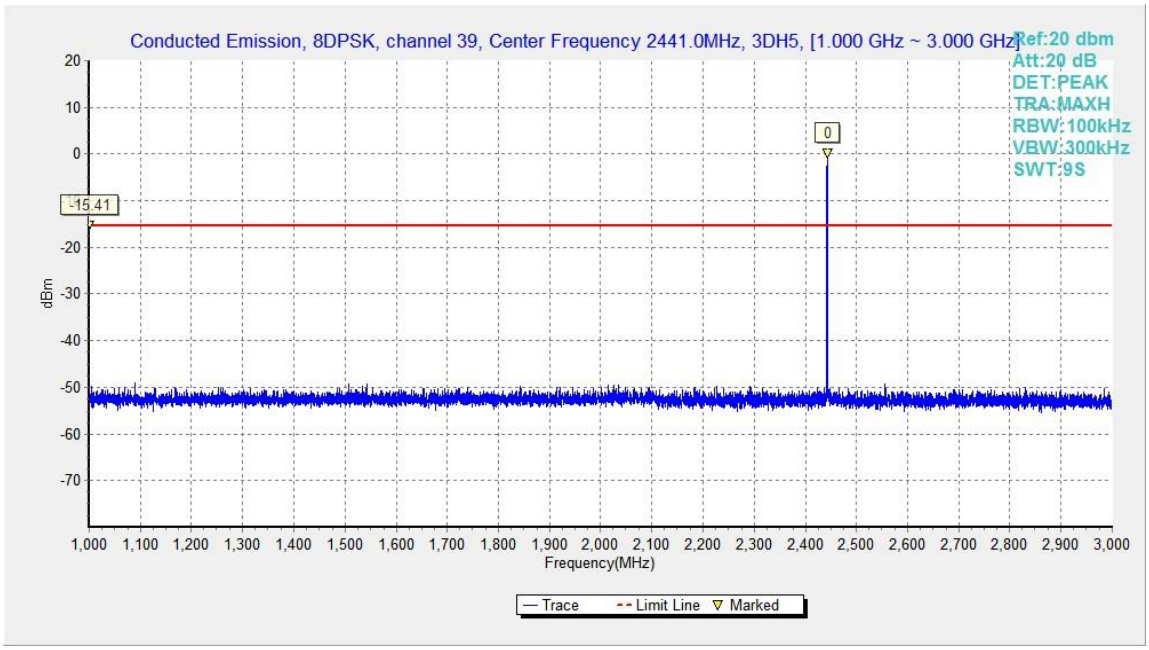

Fig.50. Conducted spurious emission: 8DPSK, Channel 39, 1GHz - 3GHz

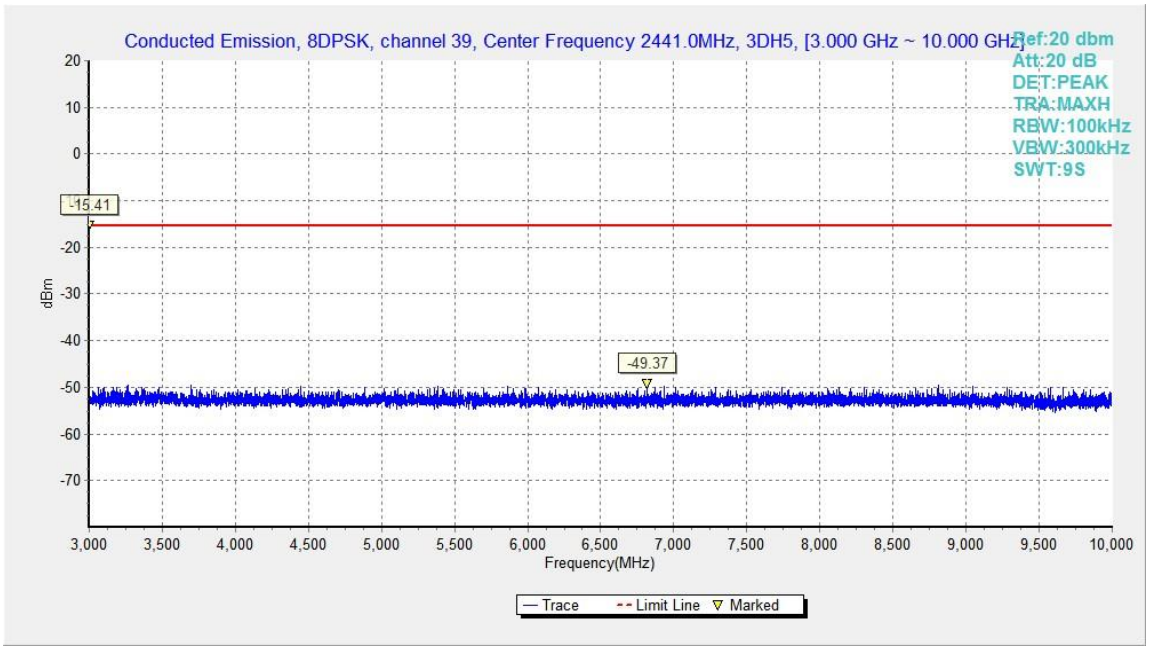

Fig.51. Conducted spurious emission: 8DPSK, Channel 39, 3GHz - 10GHz

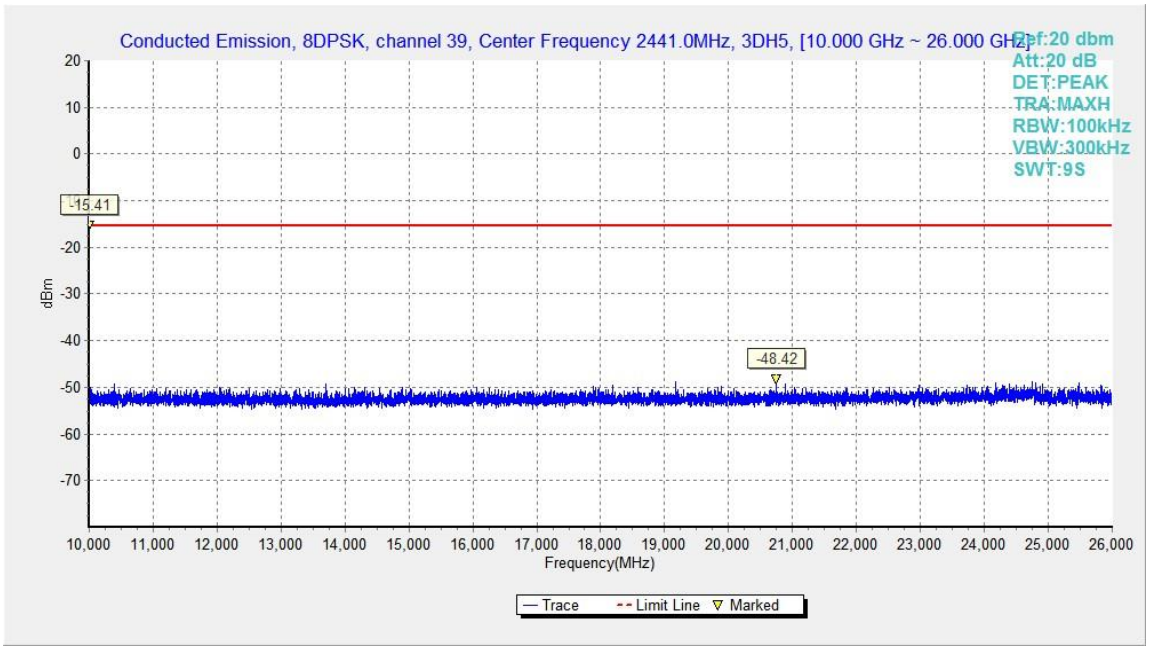

Fig.52. Conducted spurious emission: 8DPSK, Channel 39, 10GHz – 26GHz

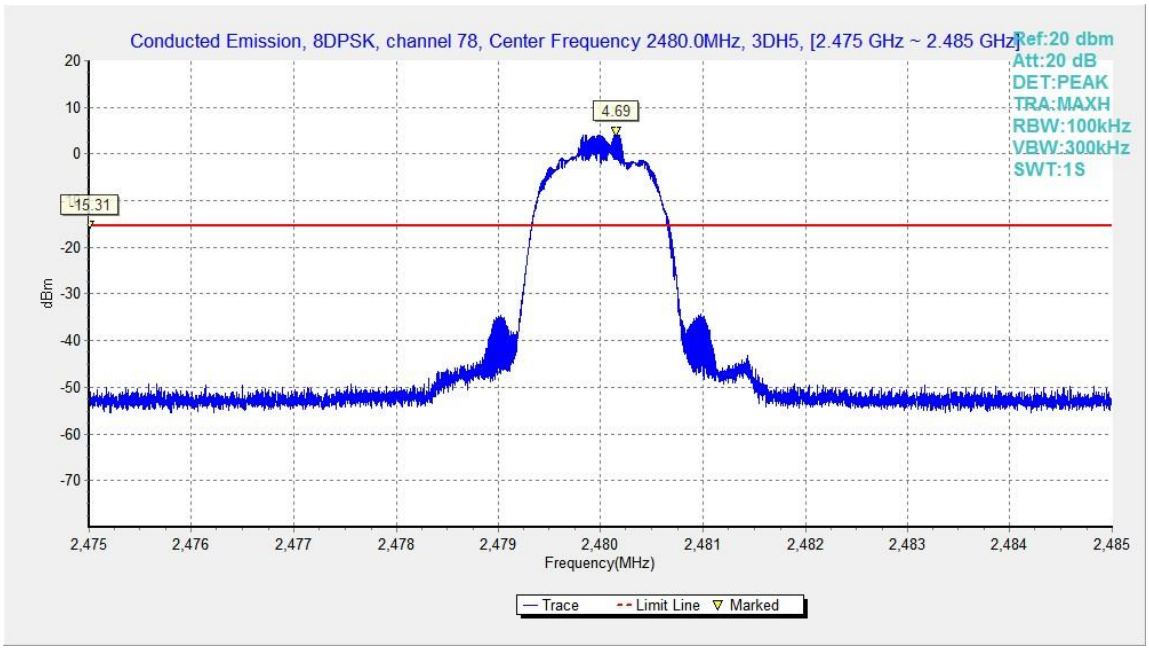

Fig.53. Conducted spurious emission: 8DPSK, Channel 78, 2480MHz

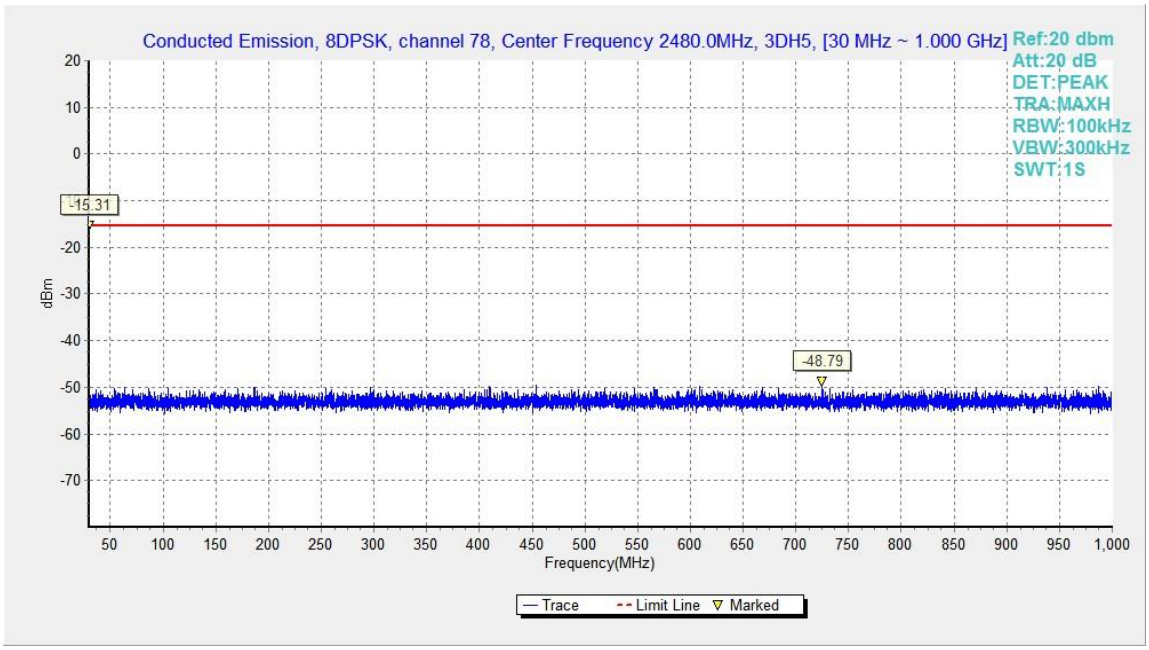

Fig.54. Conducted spurious emission: 8DPSK, Channel 78, 30MHz - 1GHz

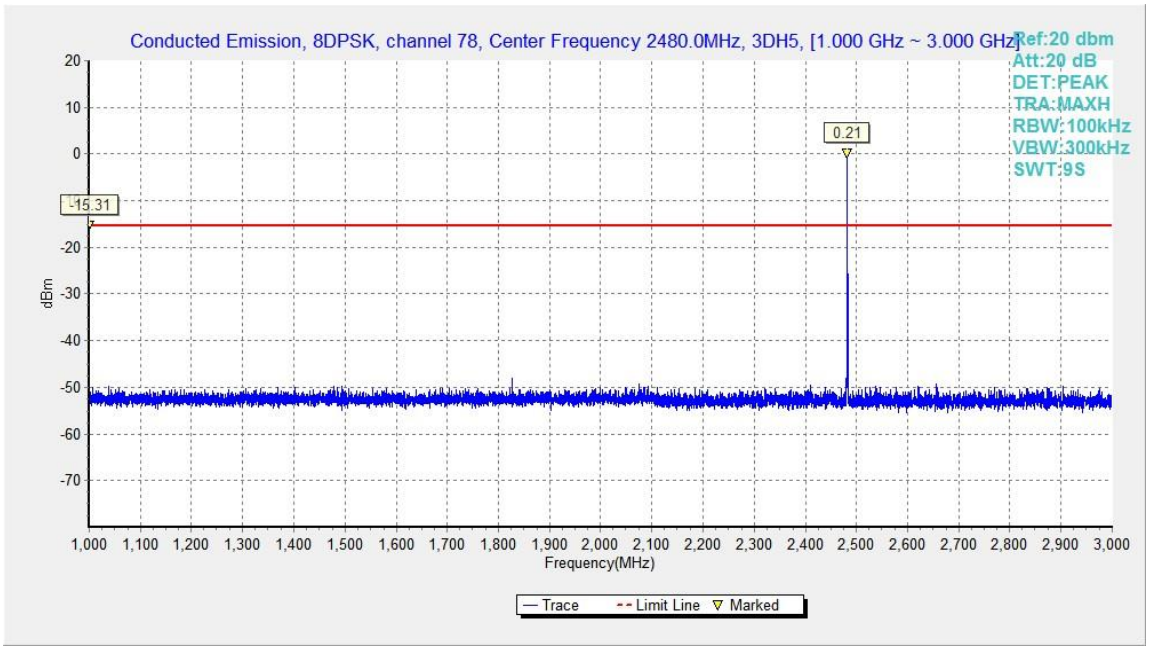

Fig.55. Conducted spurious emission: 8DPSK, Channel 78, 1GHz - 3GHz

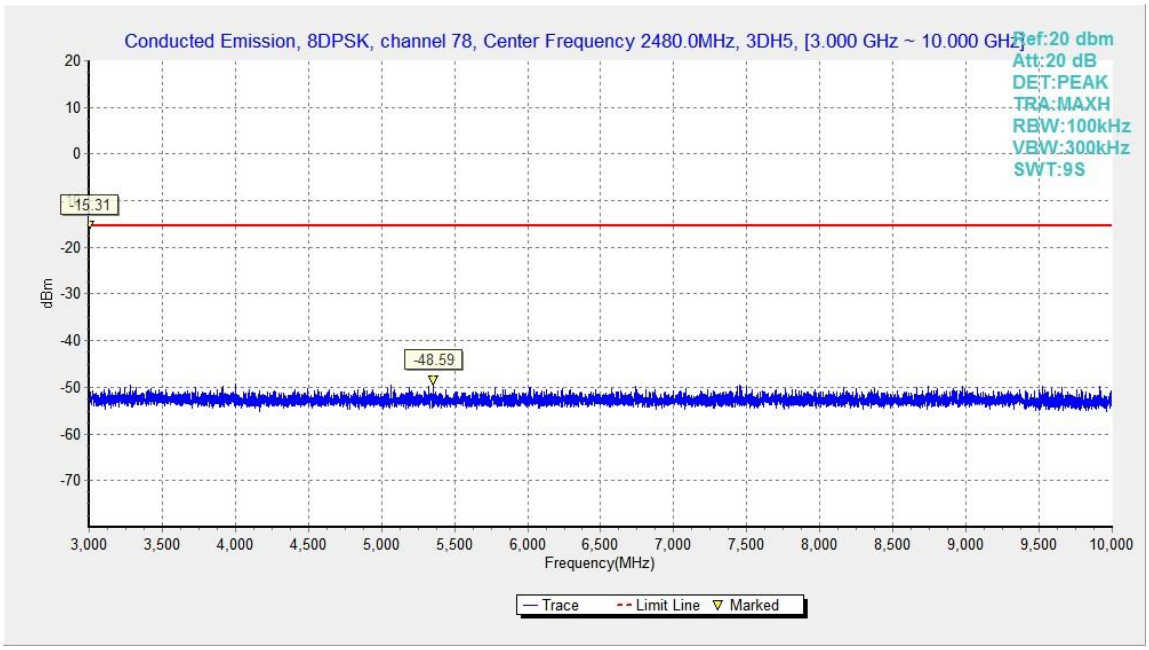

Fig.56. Conducted spurious emission: 8DPSK, Channel 78, 3GHz - 10GHz

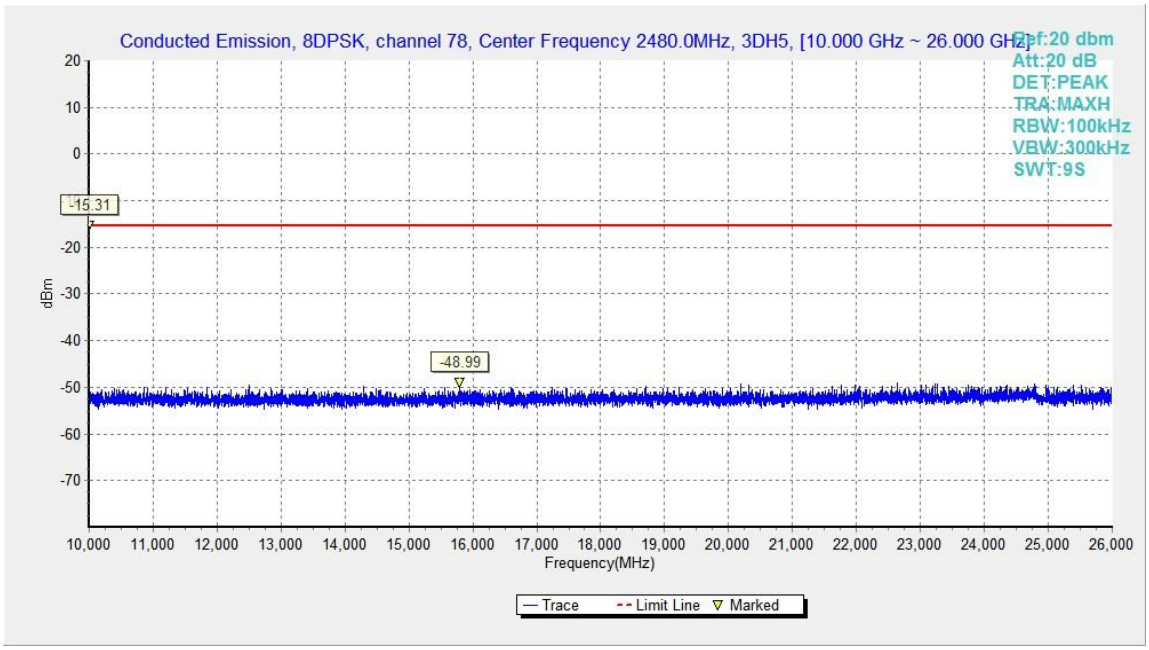

Fig.57. Conducted spurious emission: 8DPSK, Channel 78, 10GHz - 26GHz

B.5. 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	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	DH1	Fig.58	0.37	Fig.59	319	118.03	P
	DH3	Fig.60	1.63	Fig.61	107	174.41	P
	DH5	Fig.62	2.88	Fig.63	70	201.6	P

For π/4 DQPSK

Channel	Packet	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	2DH1	Fig.64	0.38	Fig.65	320	121.6	P
	2DH3	Fig.66	1.63	Fig.67	112	182.56	P
	2DH5	Fig.68	2.88	Fig.69	75	216	P

For 8DPSK

Channel	Packet	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	3DH1	Fig.70	0.38	Fig.71	321	121.98	P
	3DH3	Fig.72	1.63	Fig.73	100	163	P
	3DH5	Fig.74	2.88	Fig.75	63	181.44	P

Conclusion: PASS

Test graphs as below:

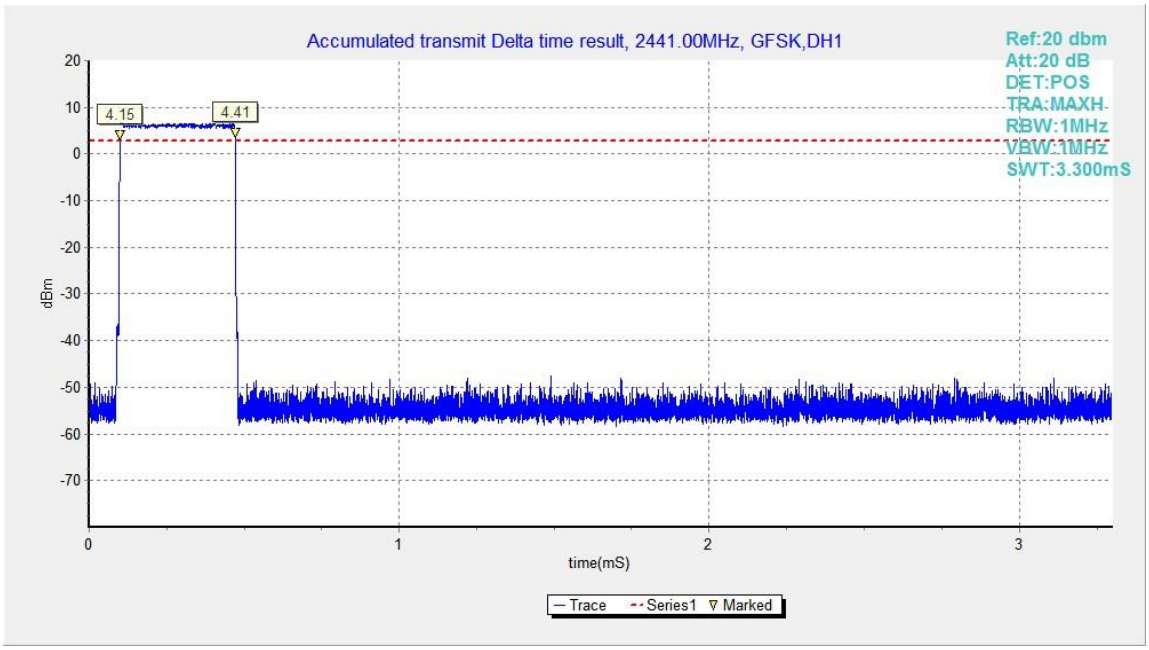

Fig.58. Time of occupancy (Dwell Time): Channel 39, Packet DH1

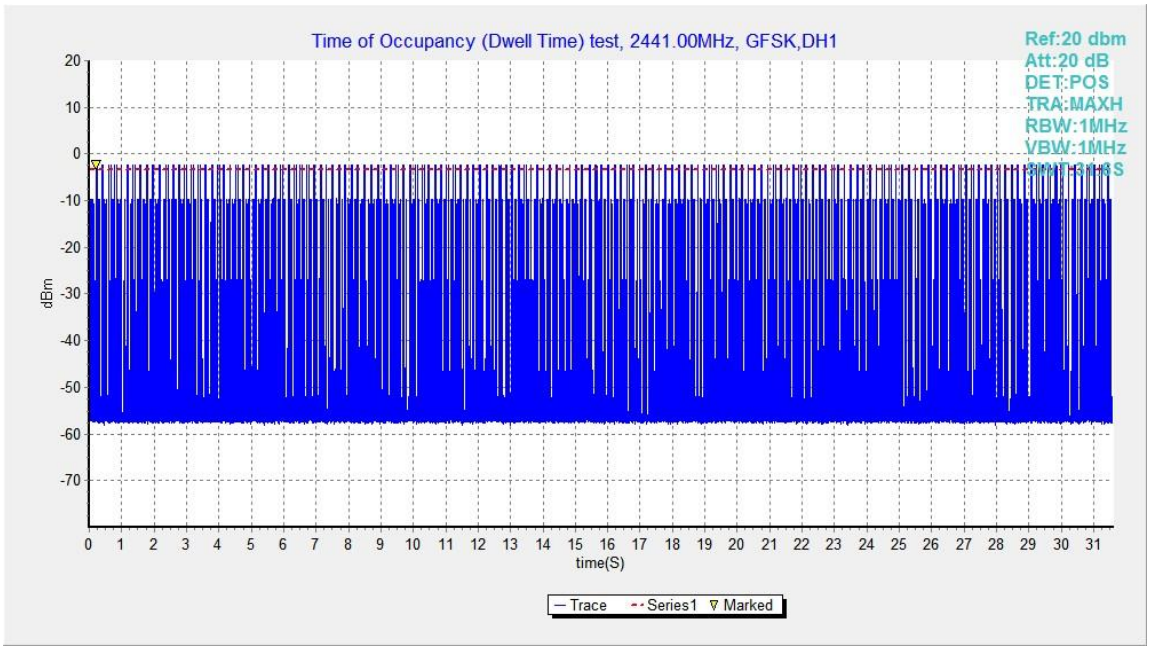

Fig.59. Number of Transmissions Measurement: Channel 39,Packet DH1

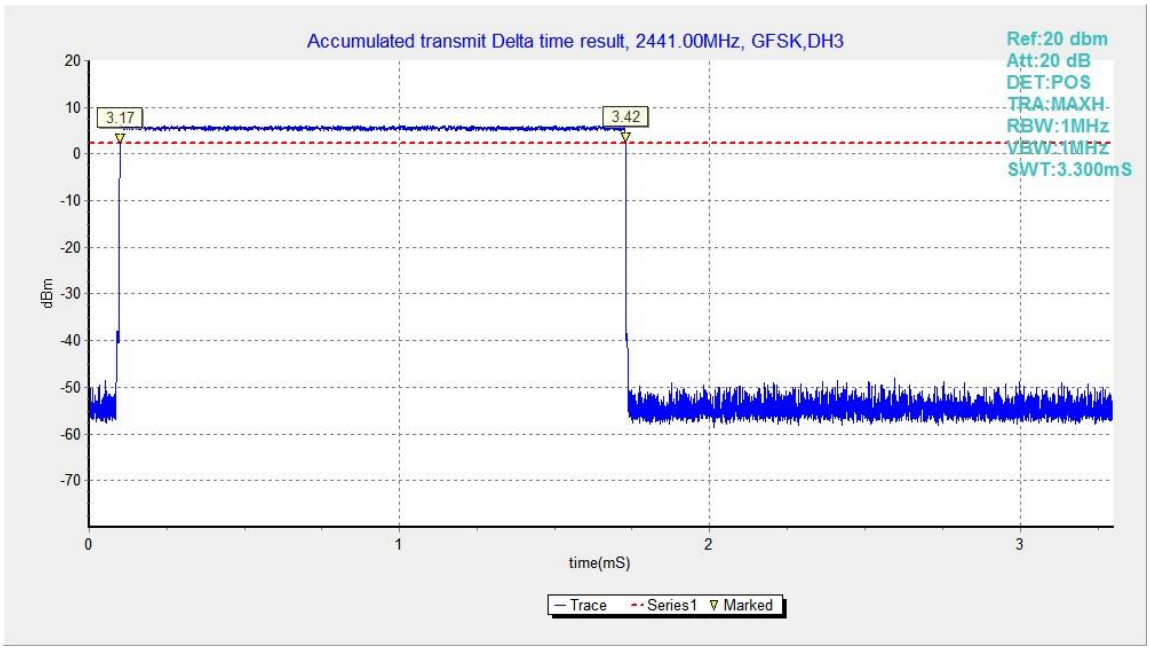

Fig.60. Time of occupancy (Dwell Time): Channel 39, Packet DH3

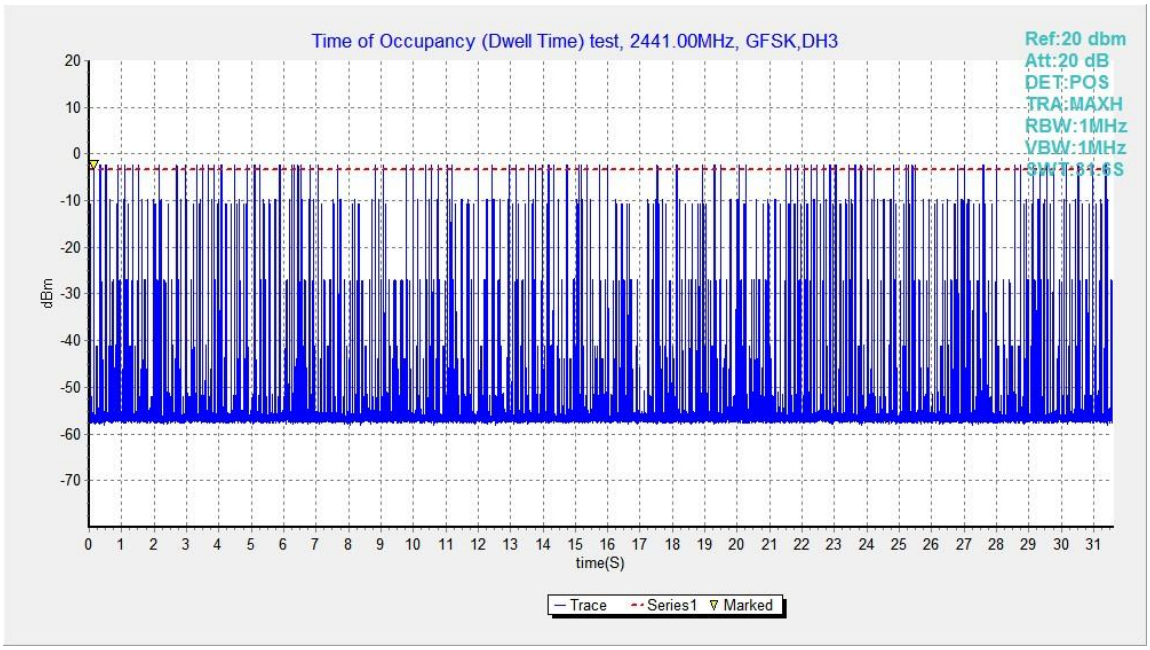

Fig.61. Number of Transmissions Measurement: Channel 39,Packet DH3

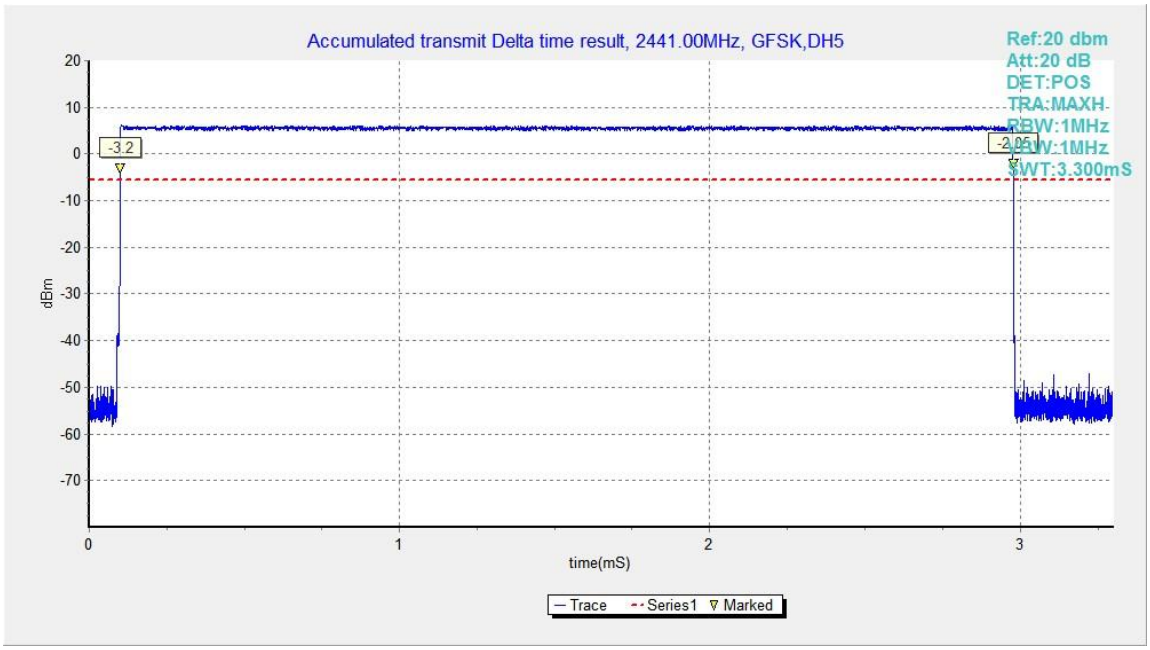

Fig.62. Time of occupancy (Dwell Time): Channel 39, Packet DH5

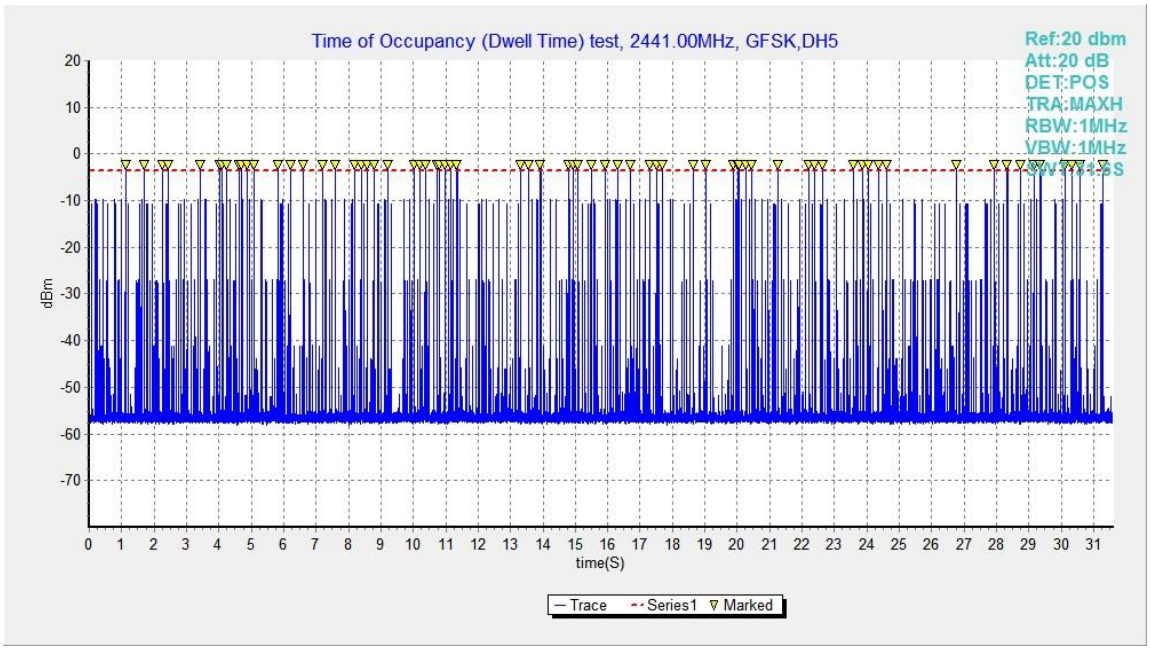

Fig.63. Number of Transmissions Measurement: Channel 39,Packet DH5

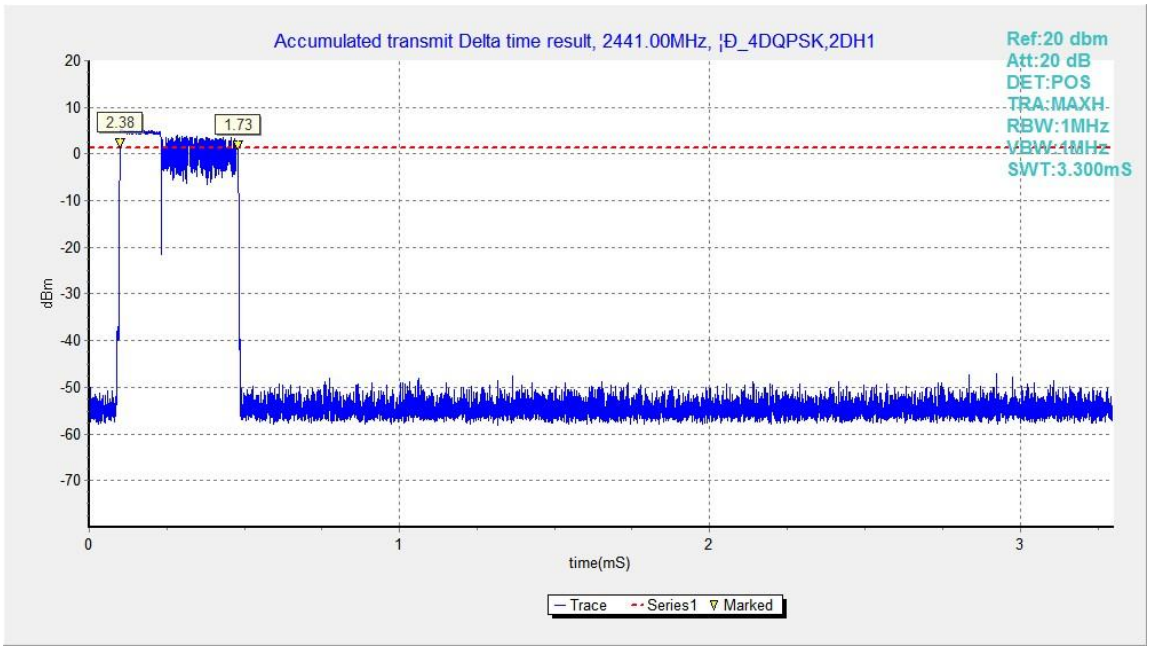

Fig.64. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1

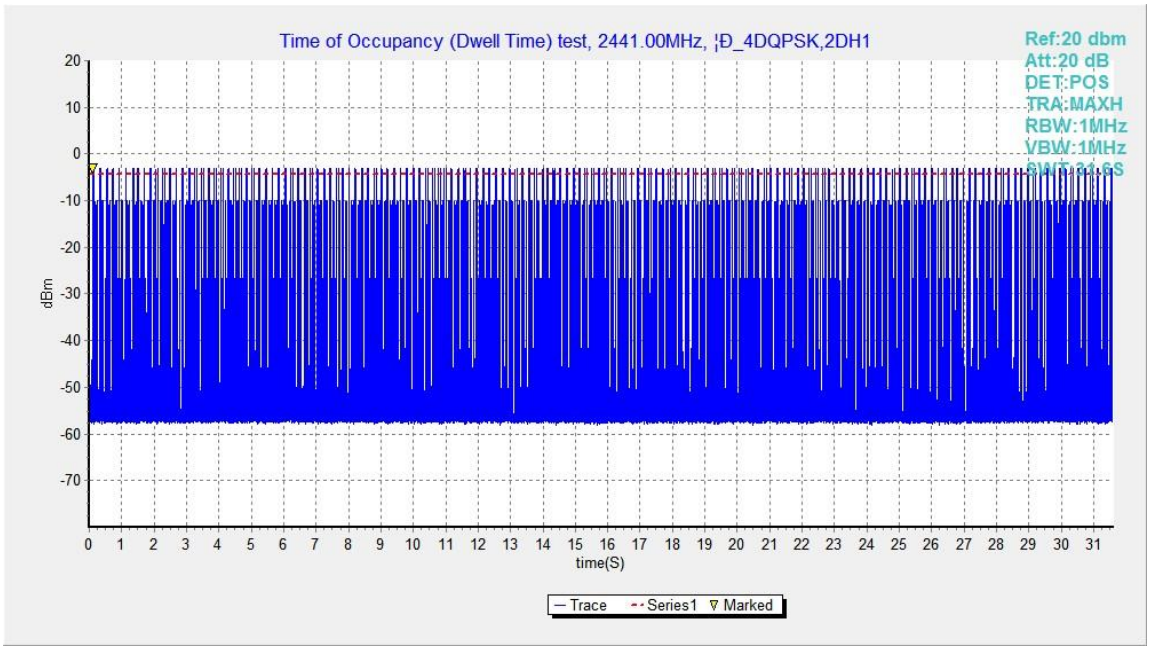

Fig.65. Number of Transmissions Measurement: Channel 39,Packet 2-DH1

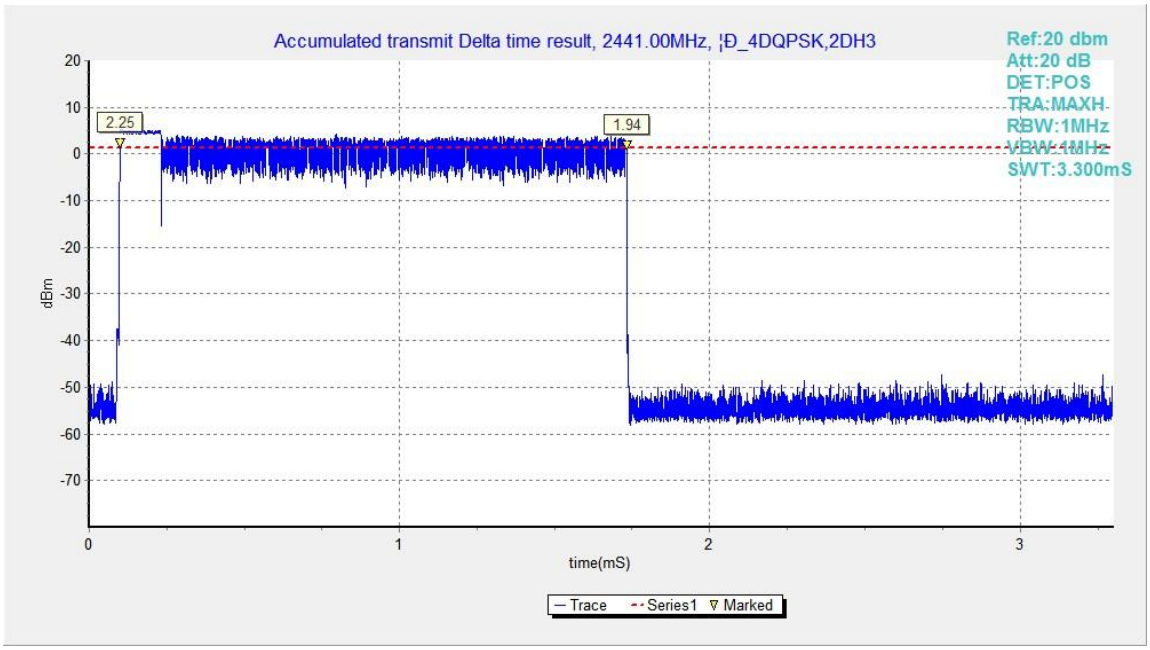

Fig.66. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3

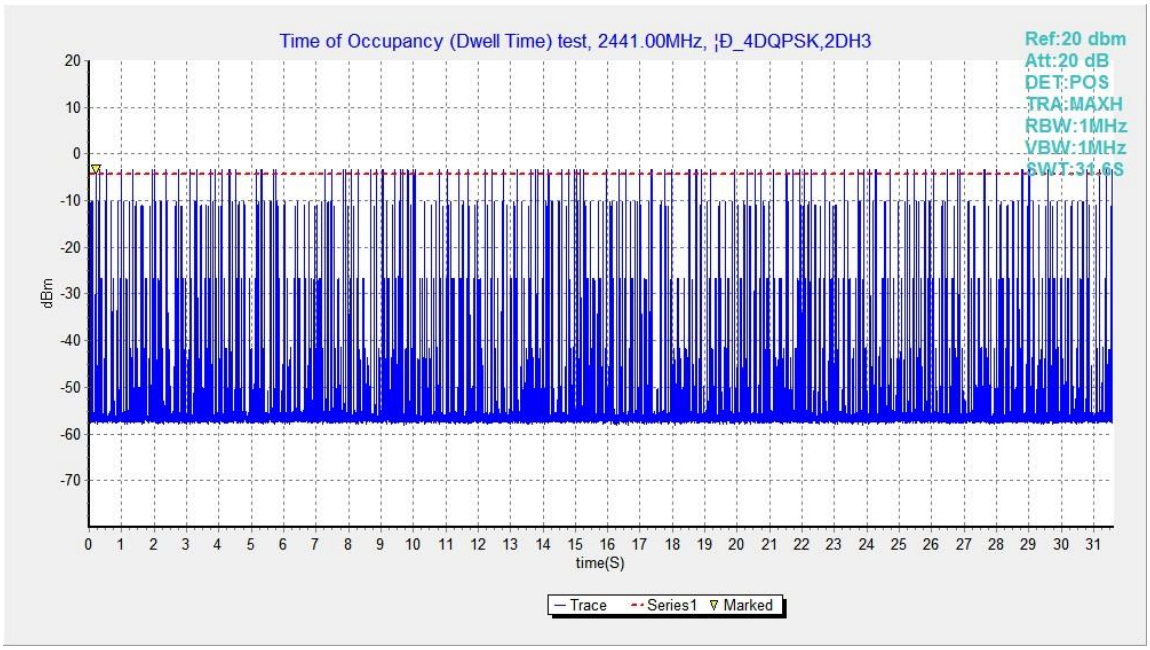

Fig.67. Number of Transmissions Measurement: Channel 39,Packet 2-DH3

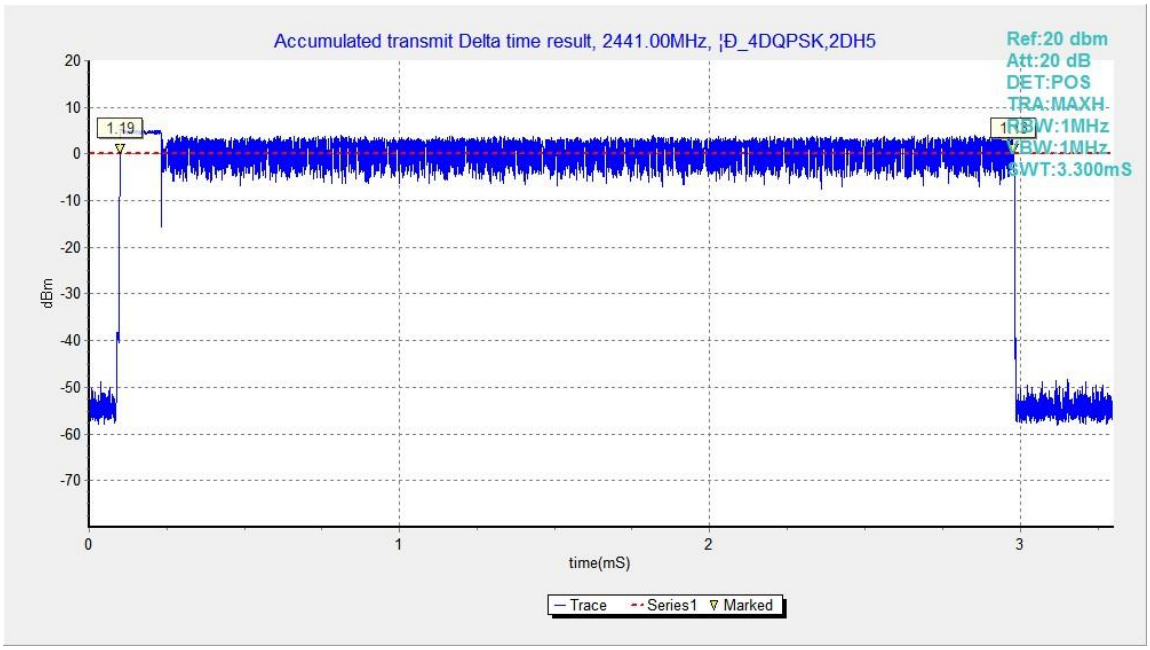

Fig.68. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5

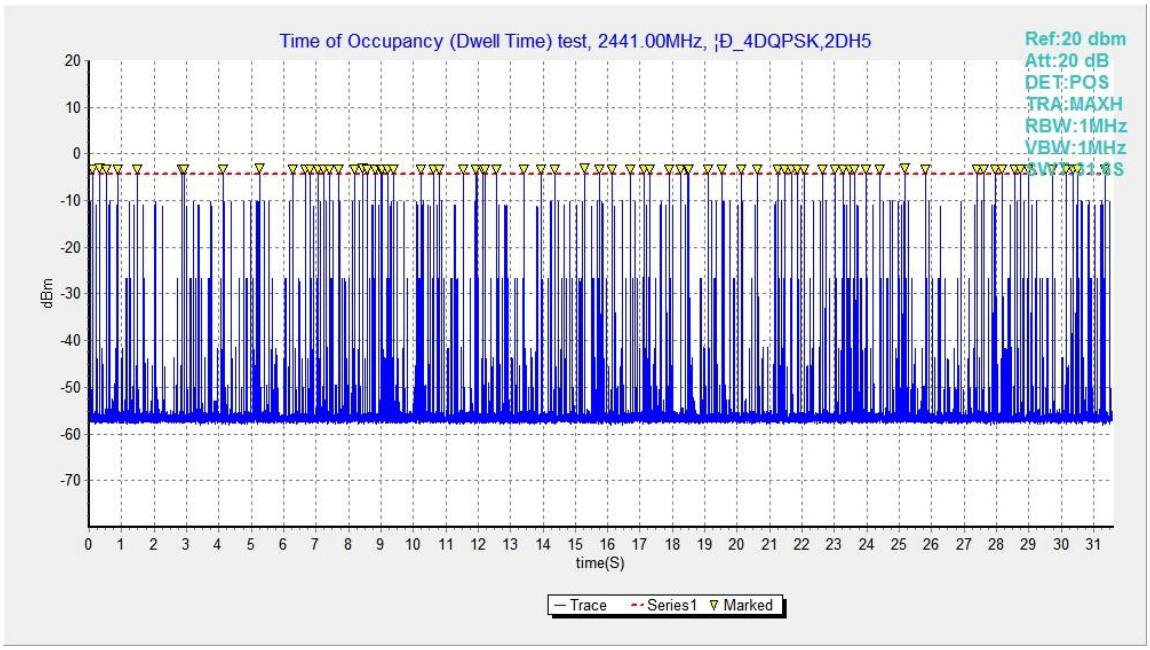

Fig.69. Number of Transmissions Measurement: Channel 39,Packet 2-DH5

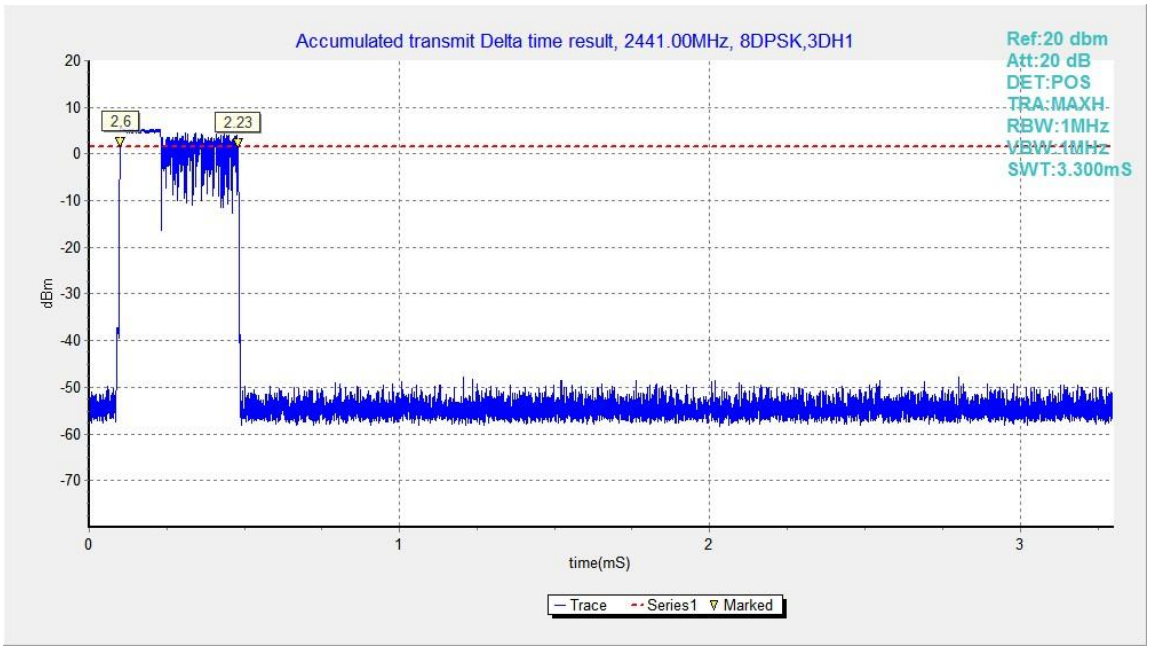

Fig.70. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1

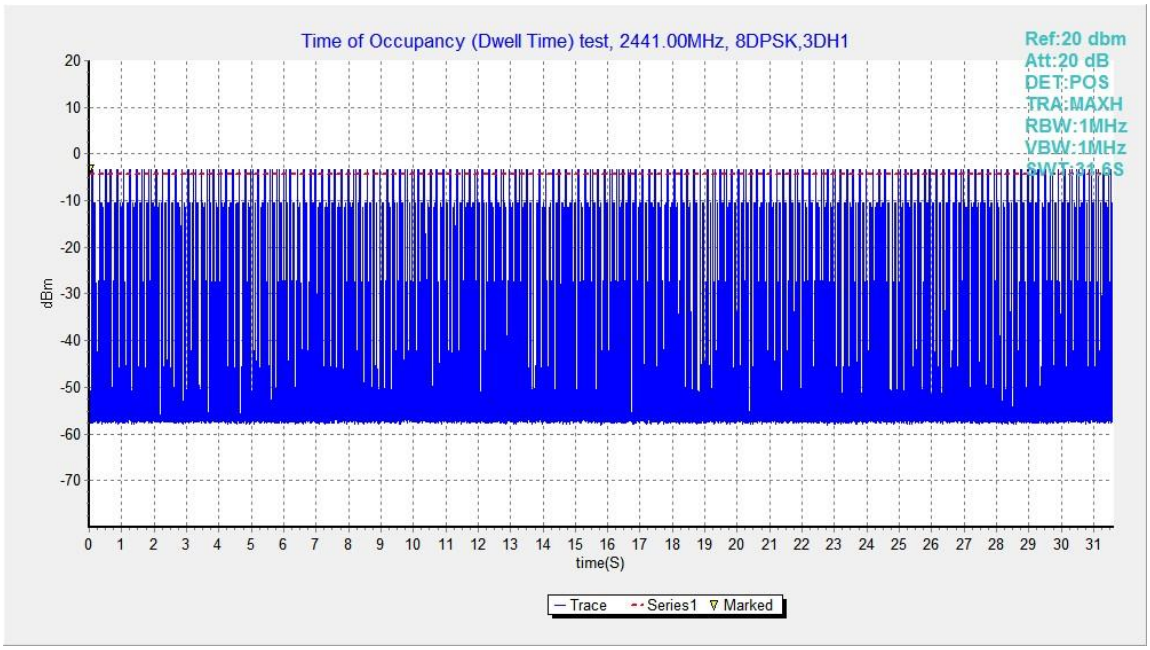

Fig.71. Number of Transmissions Measurement: Channel 39,Packet 3-DH1

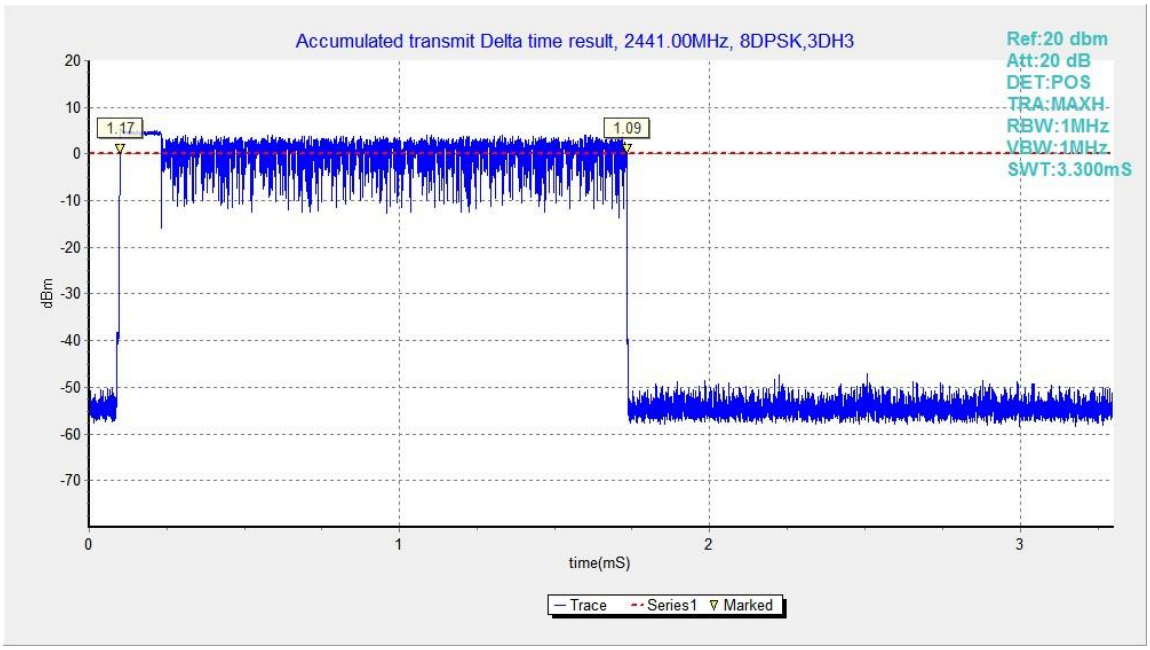

Fig.72. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3

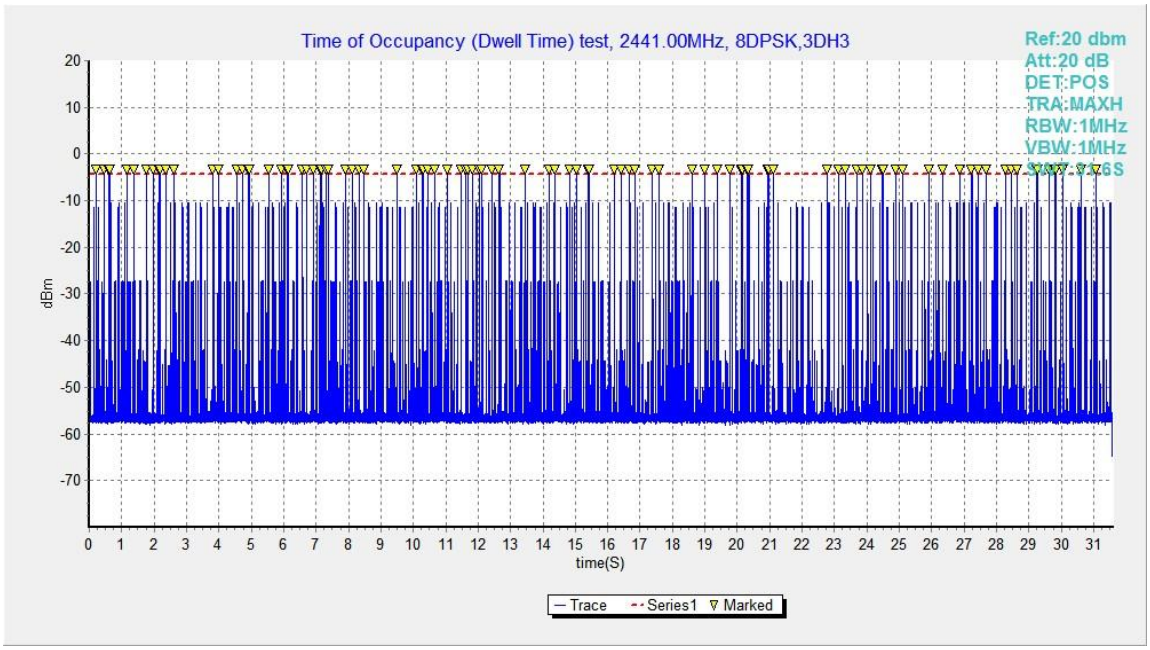

Fig.73. Number of Transmissions Measurement: Channel 39,Packet 3-DH3

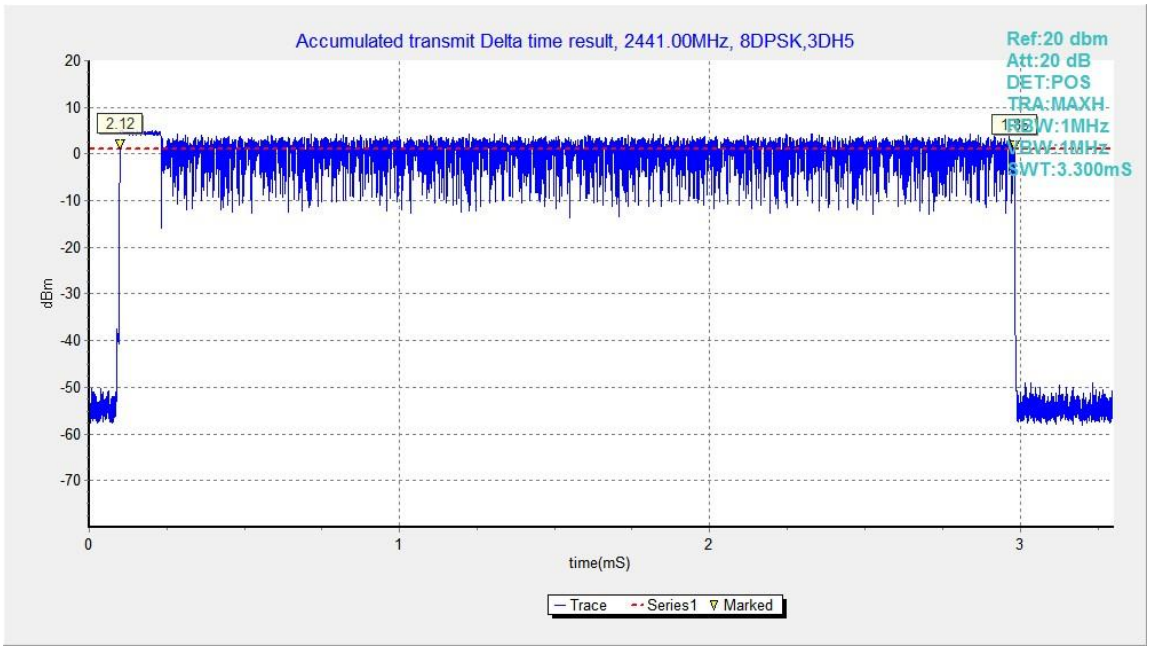

Fig.74. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5

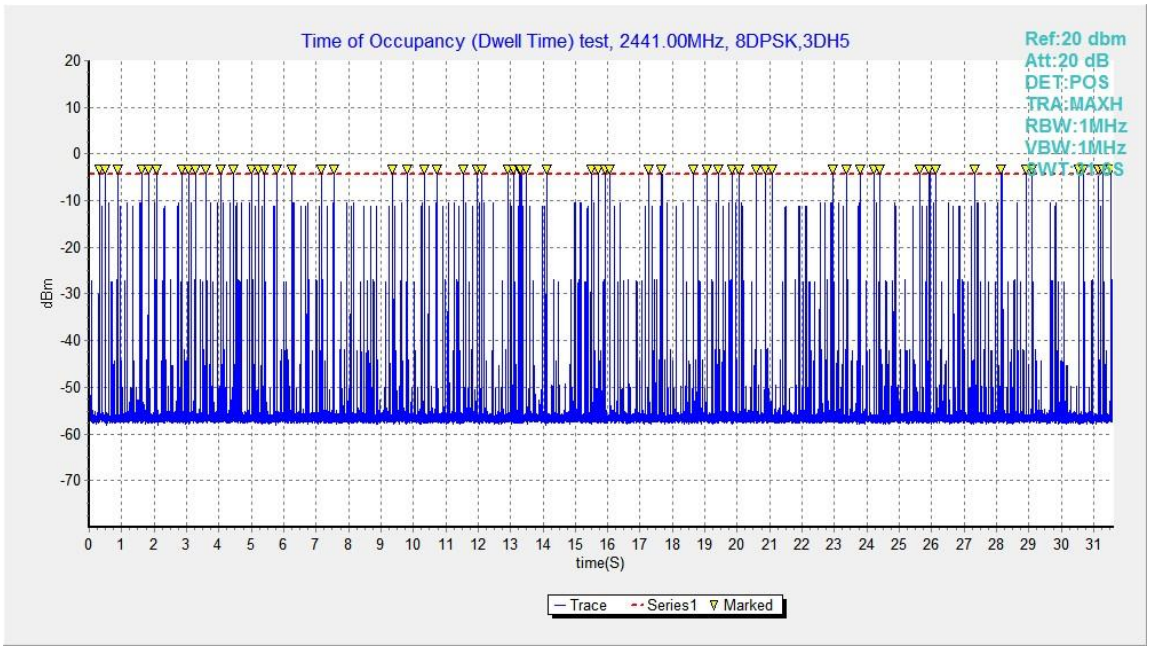

Fig.75. Number of Transmissions Measurement: Channel 39,Packet 3-DH5

B.6. 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.76	936.75	NA
39	Fig.77	942.75	NA
78	Fig.78	942.00	NA

For π/4 DQPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.79	1233.00	NA
39	Fig.80	1224.00	NA
78	Fig.81	1256.25	NA

For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.82	1202.25	NA
39	Fig.83	1260.75	NA
78	Fig.84	1260.00	NA

Conclusion: NA

Test graphs as below:

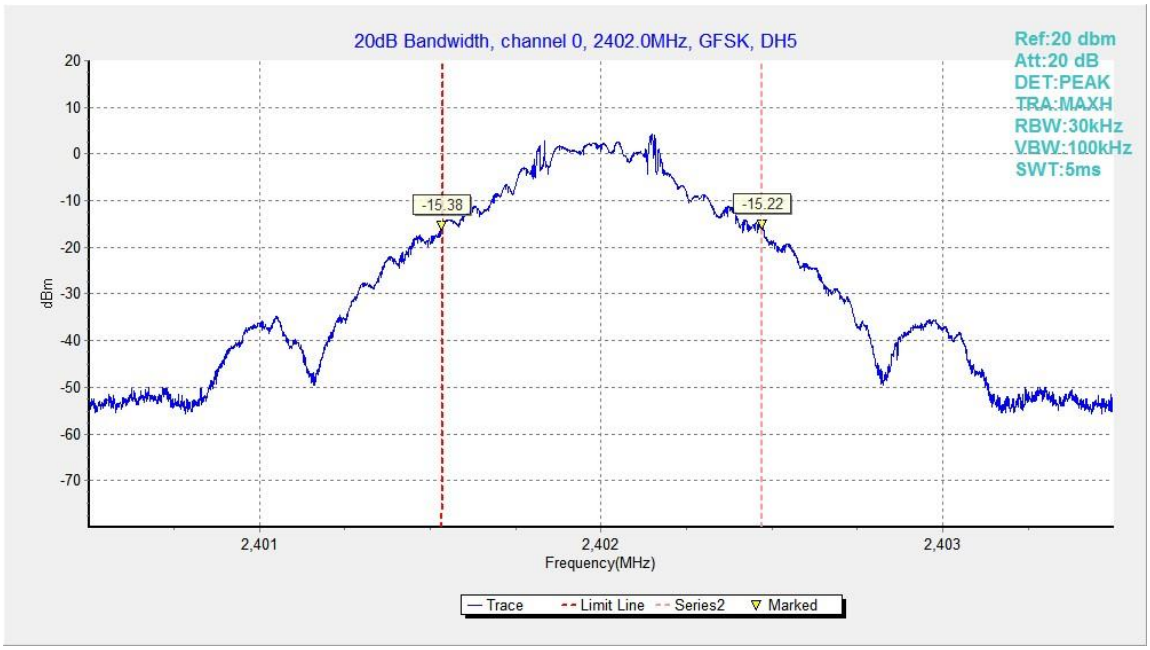

Fig.76. 20dB Bandwidth: GFSK, Channel 0

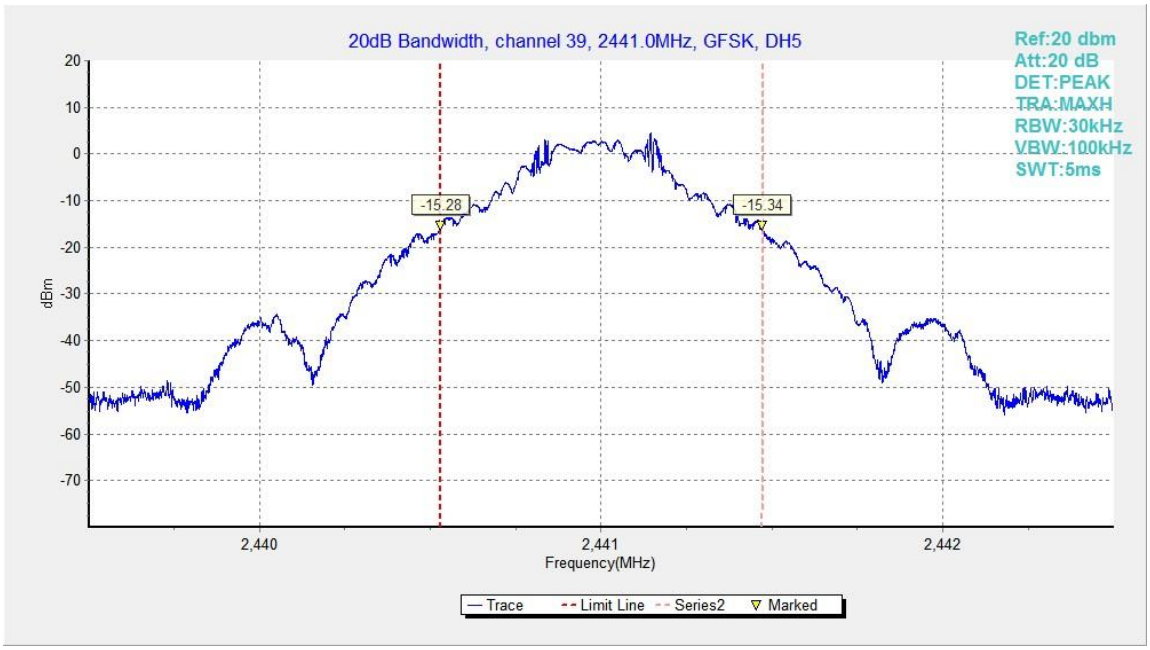

Fig.77. 20dB Bandwidth: GFSK, Channel 39

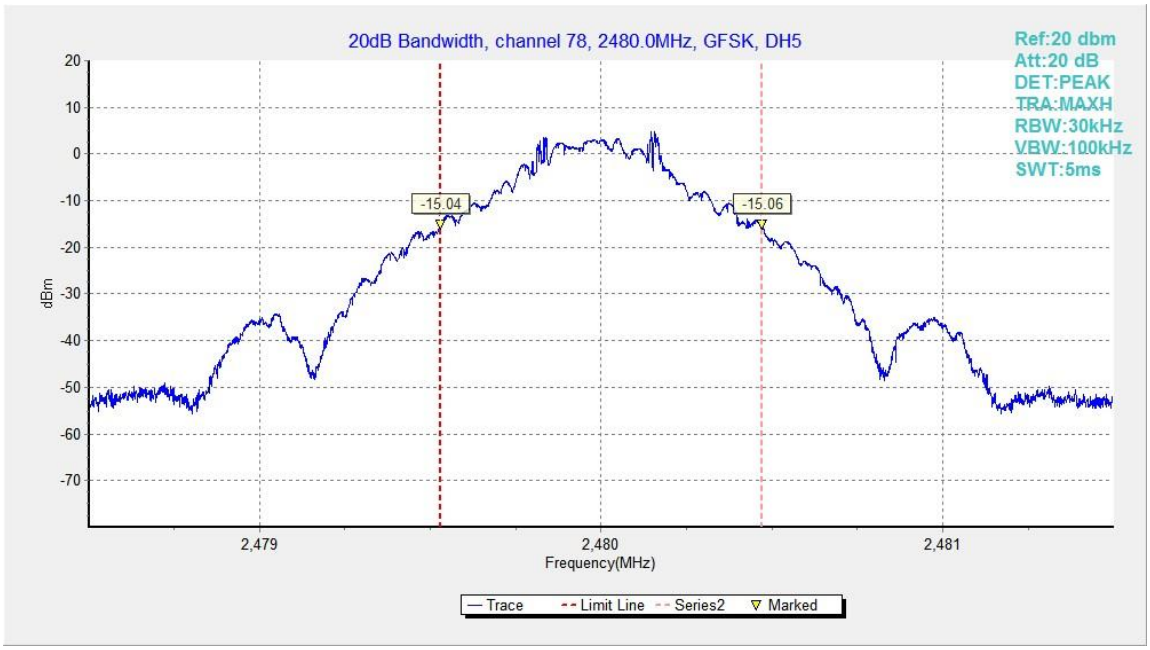

Fig.78. 20dB Bandwidth: GFSK, Channel 78

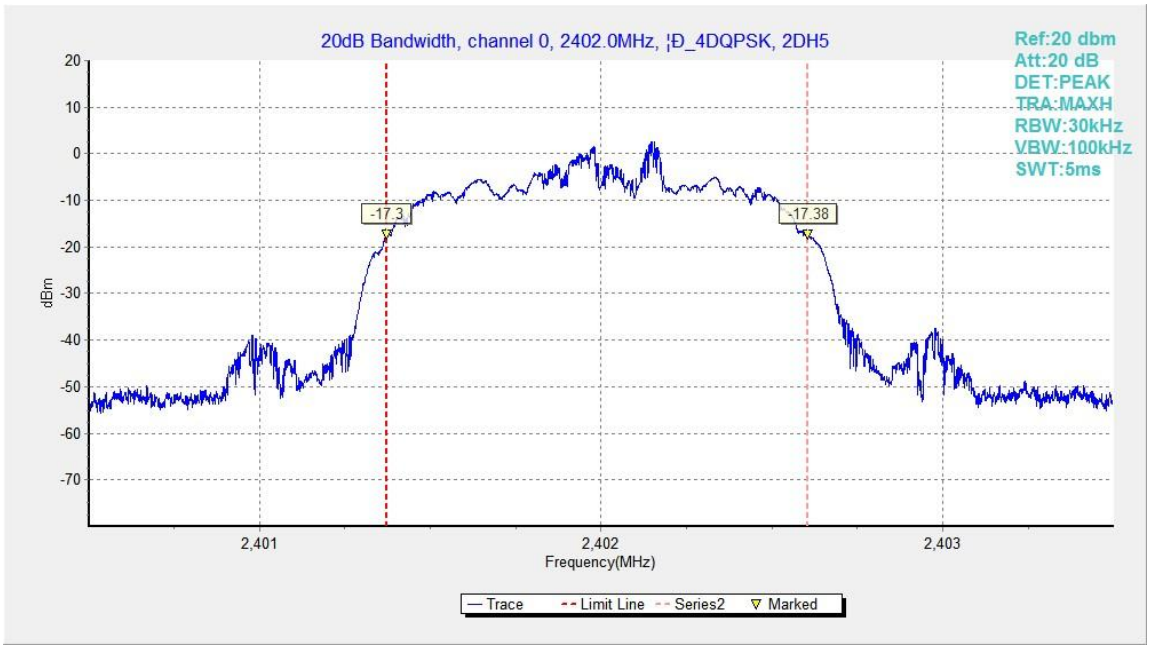

Fig.79. 20dB Bandwidth: π/4 DQPSK, Channel 0

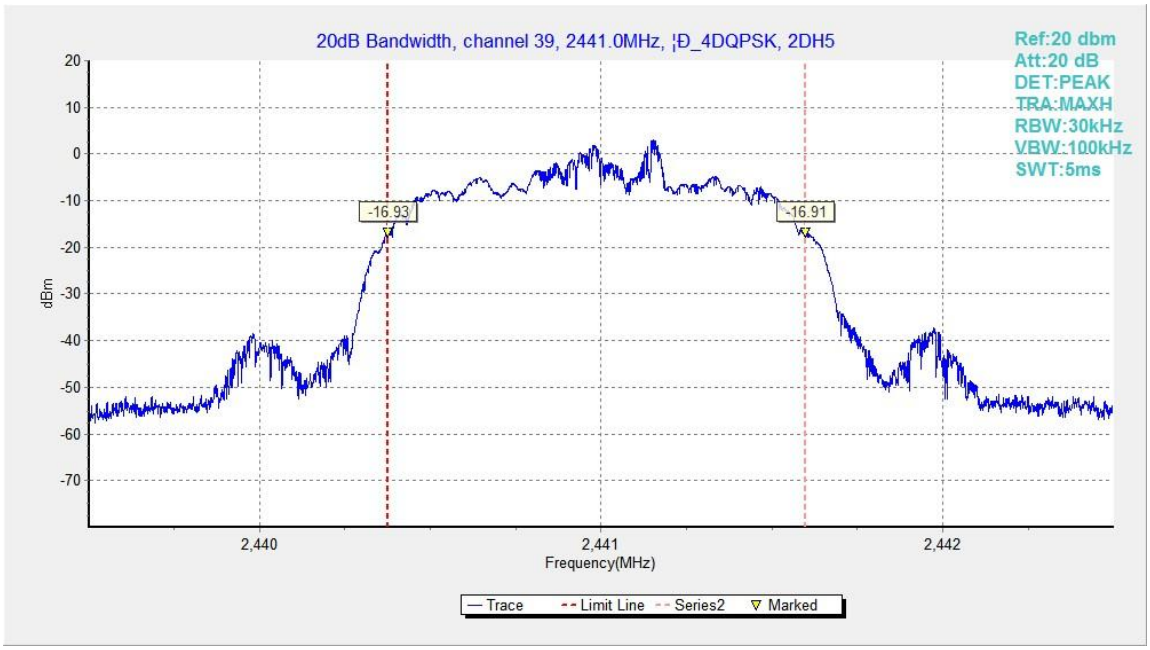

Fig.80. 20dB Bandwidth: π/4 DQPSK, Channel 39

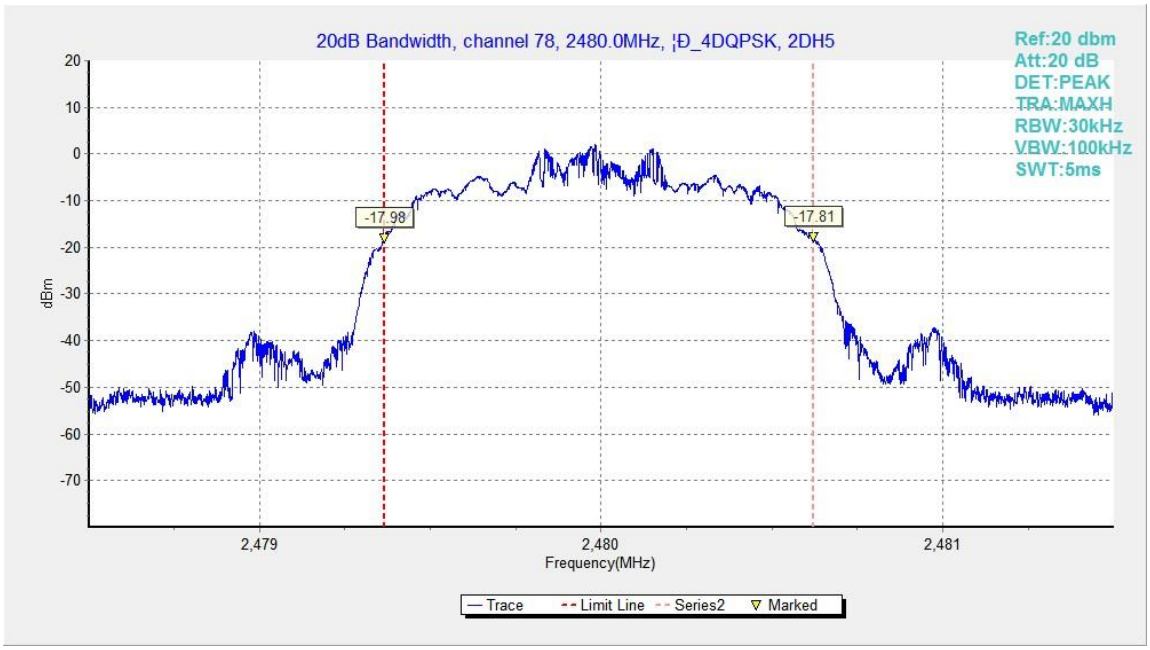

Fig.81. 20dB Bandwidth: π/4 DQPSK, Channel 78

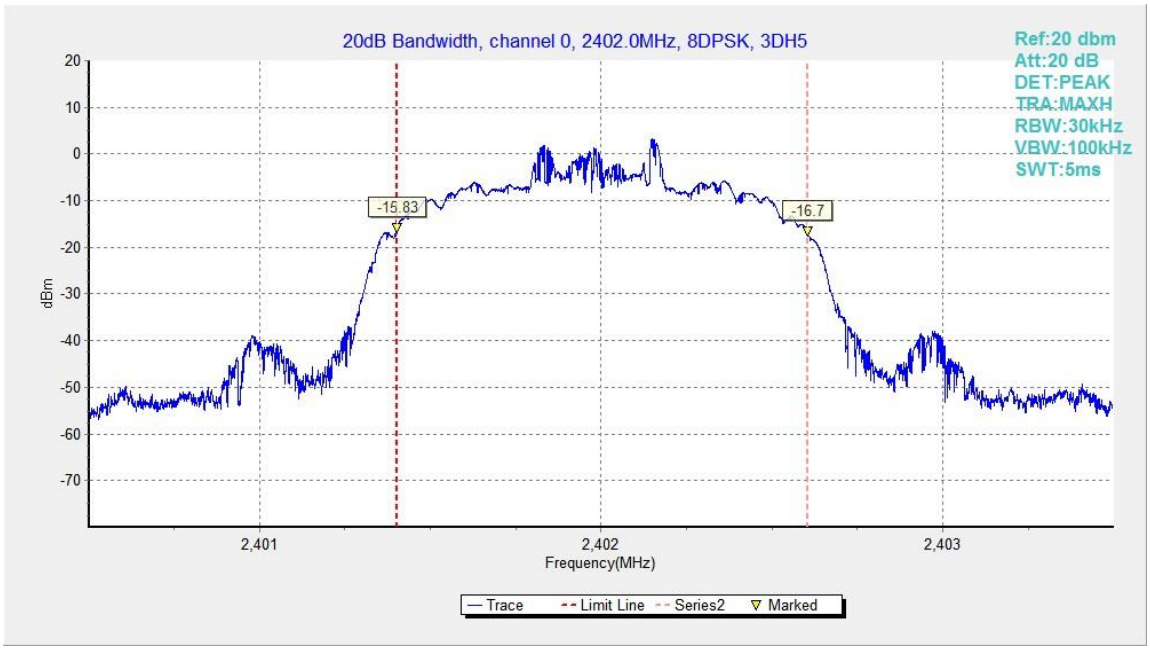

Fig.82. 20dB Bandwidth: 8DPSK, Channel 0

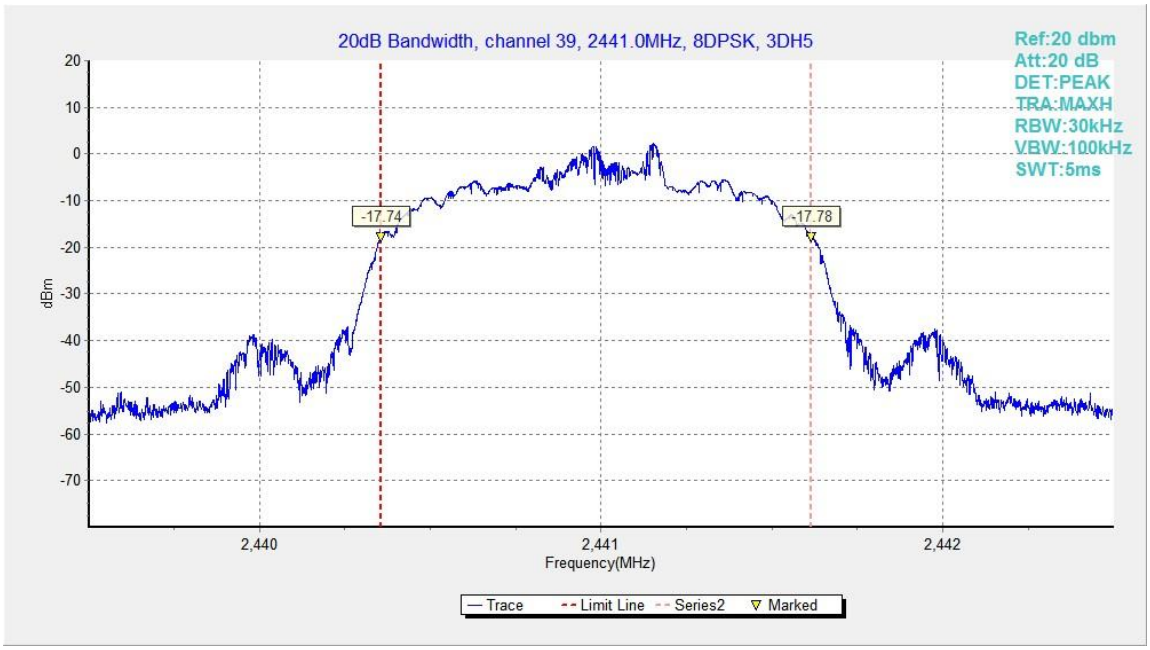

Fig.83. 20dB Bandwidth: 8DPSK, Channel 39

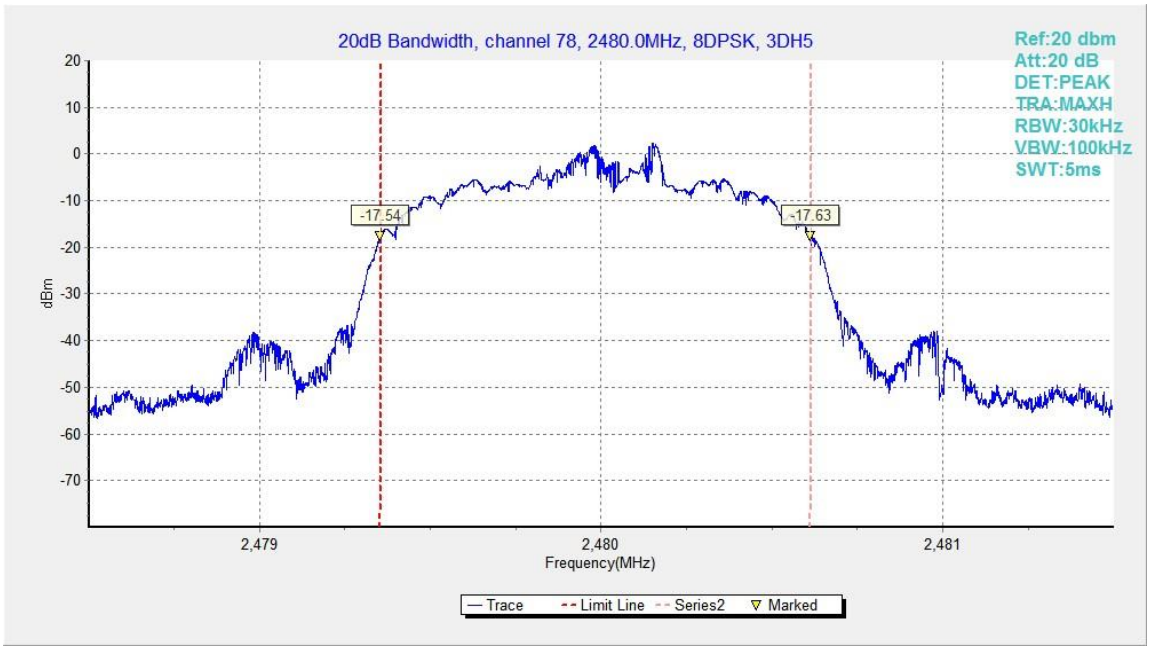

Fig.84. 20dB Bandwidth: 8DPSK, Channel 78

B.7. 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.85	1028.25	P

For π/4 DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.86	1140.00	P

For 8DPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.87	1148.25	P

Conclusion: PASS

Test graphs as below:

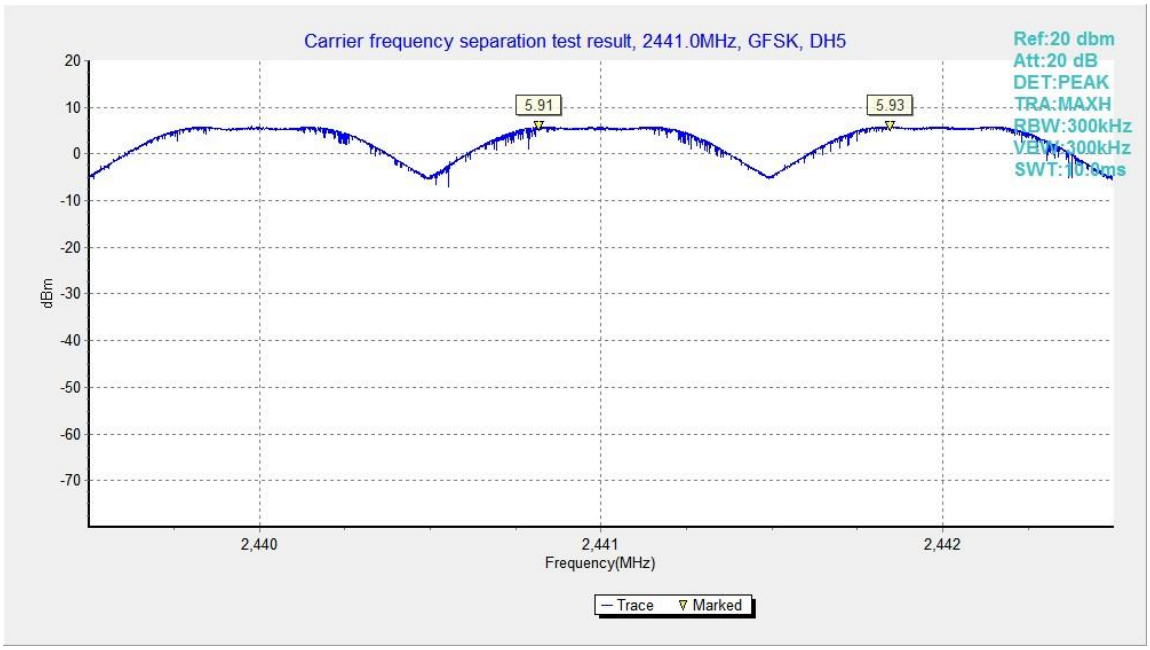

Fig.85. Carrier frequency separation measurement: GFSK, Channel 39

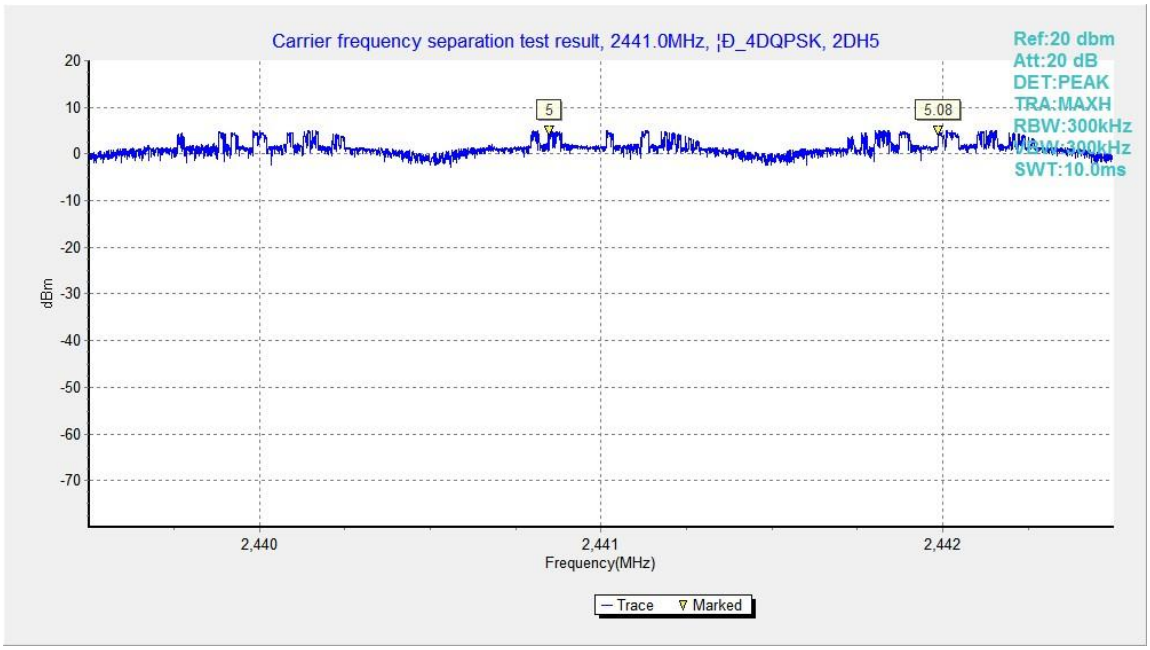

Fig.86. Carrier frequency separation measurement: π/4 DQPSK, Channel 39

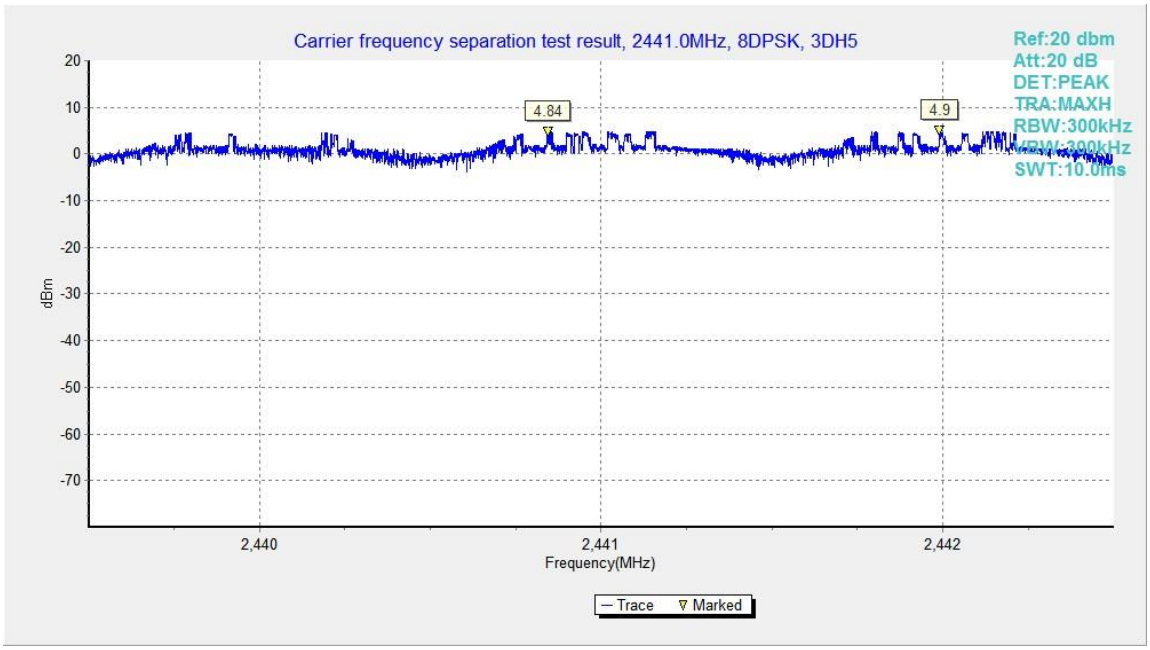

Fig.87. Carrier frequency separation measurement: 8DPSK, Channel 39

B.8. 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.88	79	P
40~78	Fig.89		

Forπ/4 DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.90	79	P
40~78	Fig.91		

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.92	79	P
40~78	Fig.93		

Conclusion: PASS

Test graphs as below:

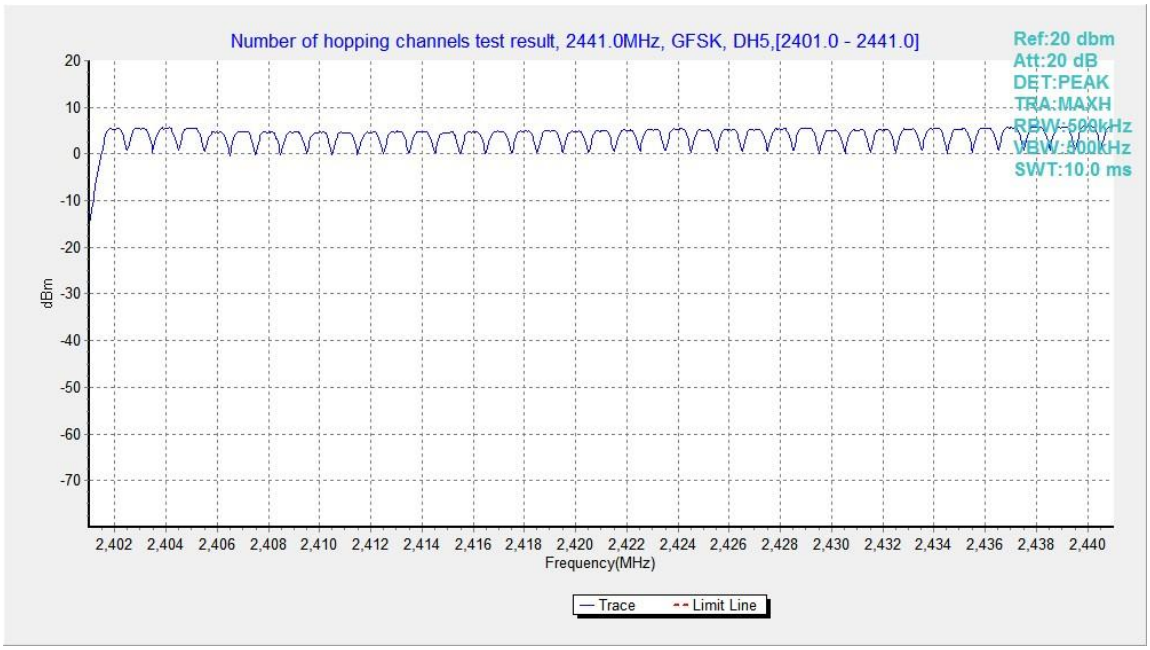

Fig.88. Number of hopping frequencies: GFSK, Channel 0 - 39

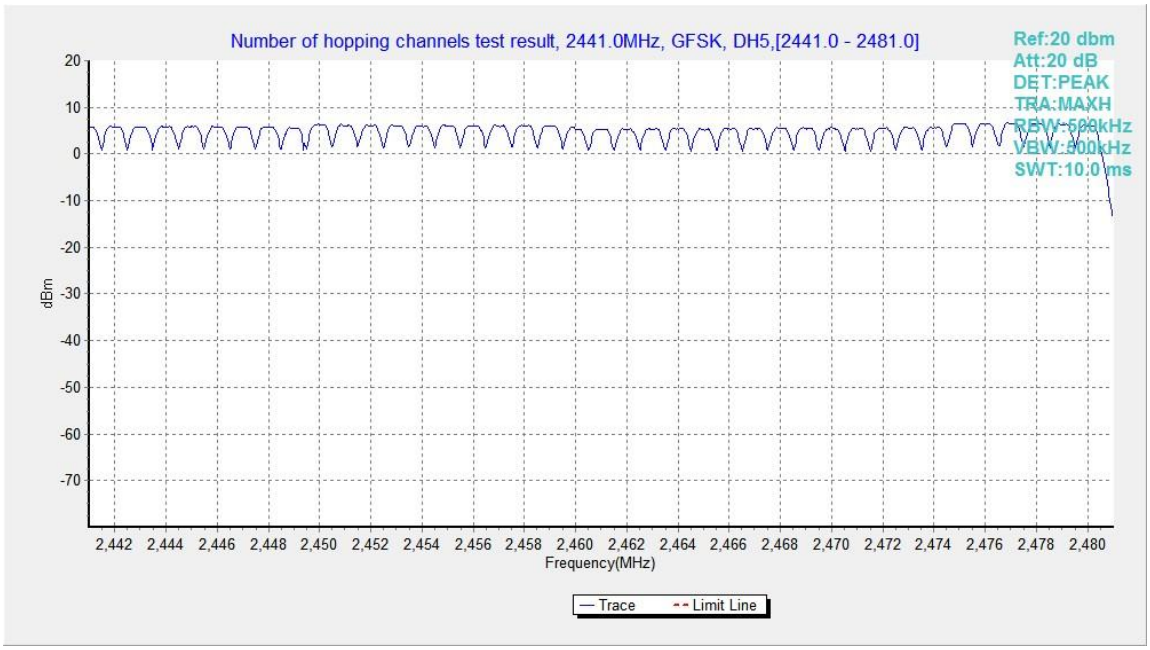

Fig.89. Number of hopping frequencies: GFSK, Channel 40 - 78

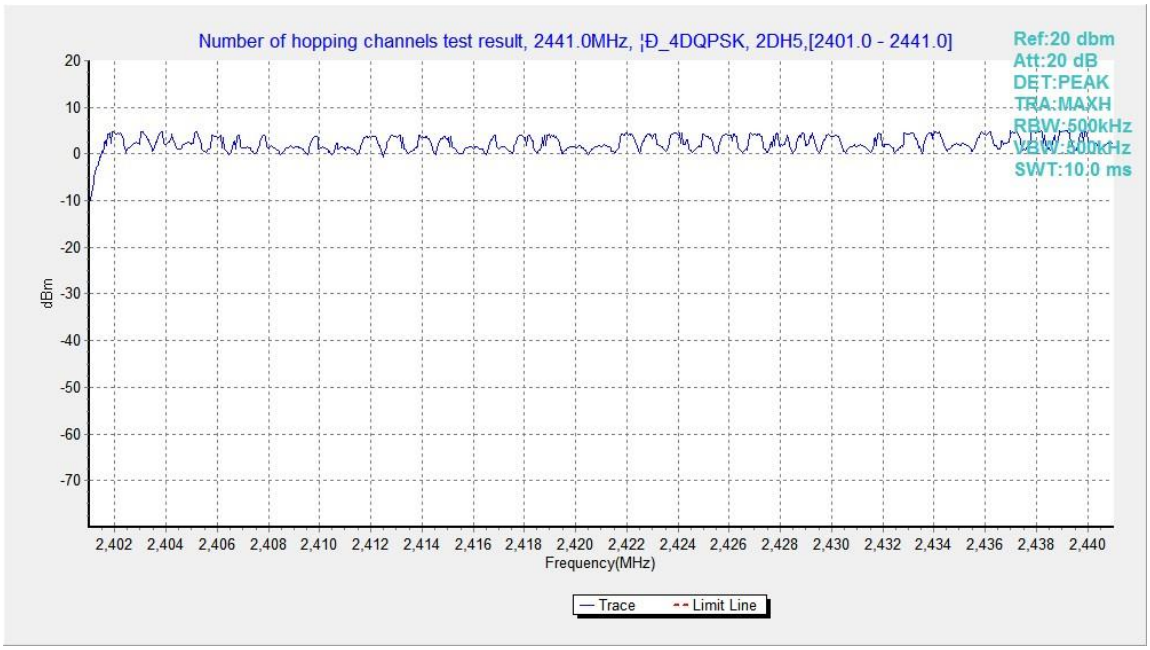

Fig.90. Number of hopping frequencies: π/4 DQPSK, Channel 0 - 39

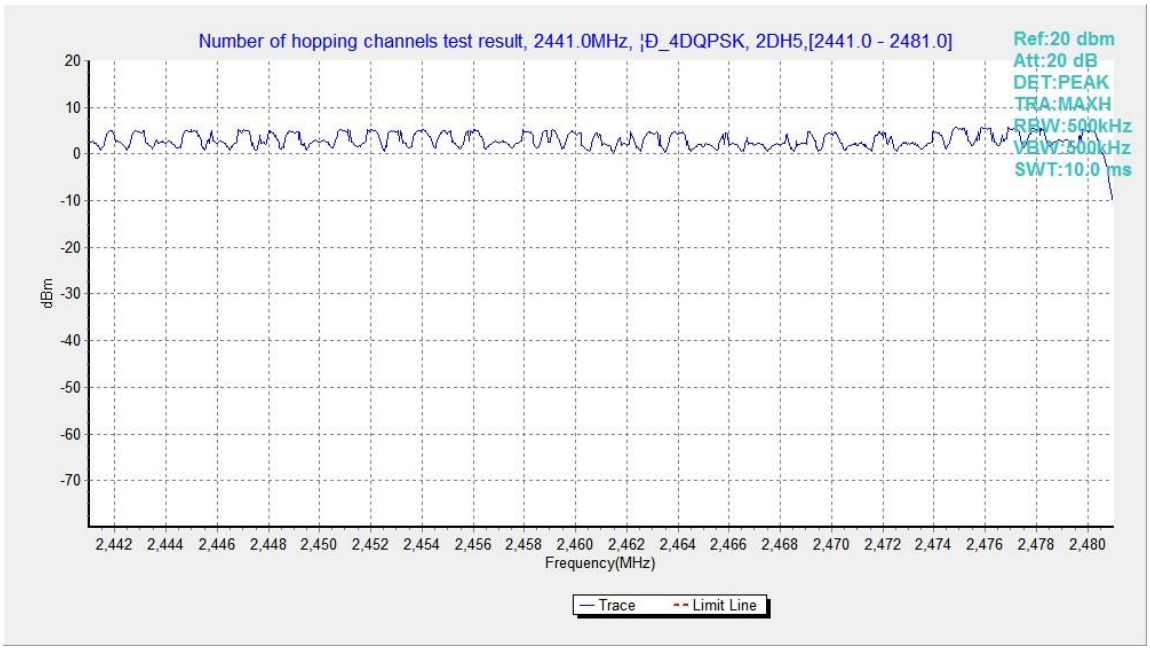

Fig.91. Number of hopping frequencies: π/4 DQPSK, Channel 40 - 78

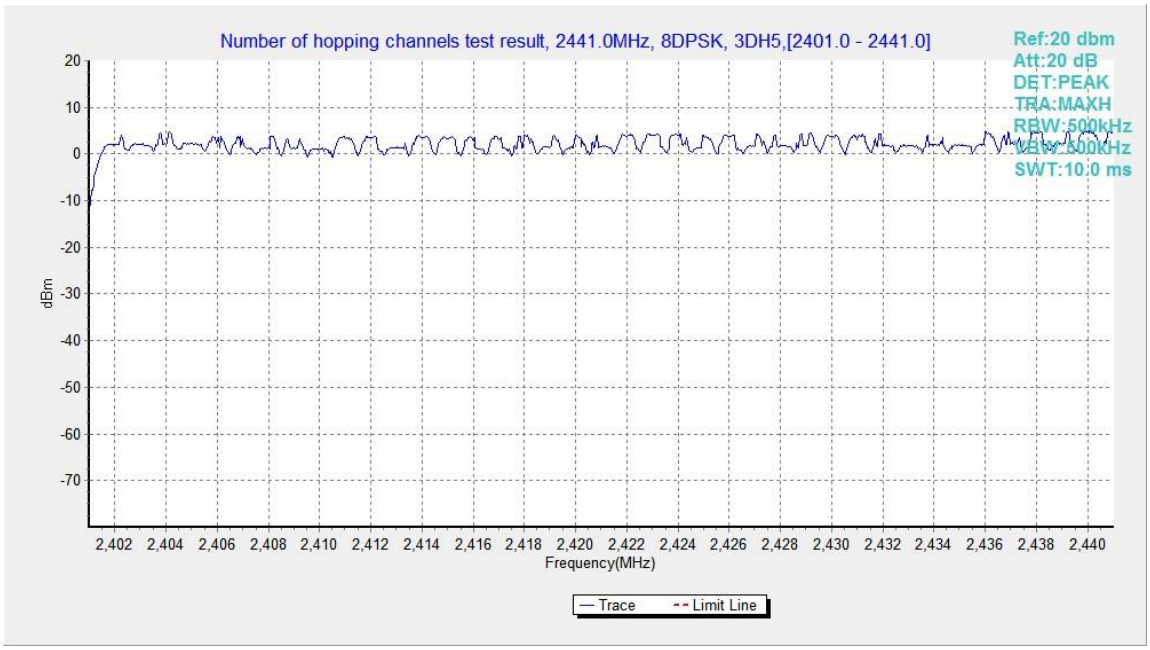

Fig.92. Number of hopping frequencies: 8DPSK, Channel 0 - 39

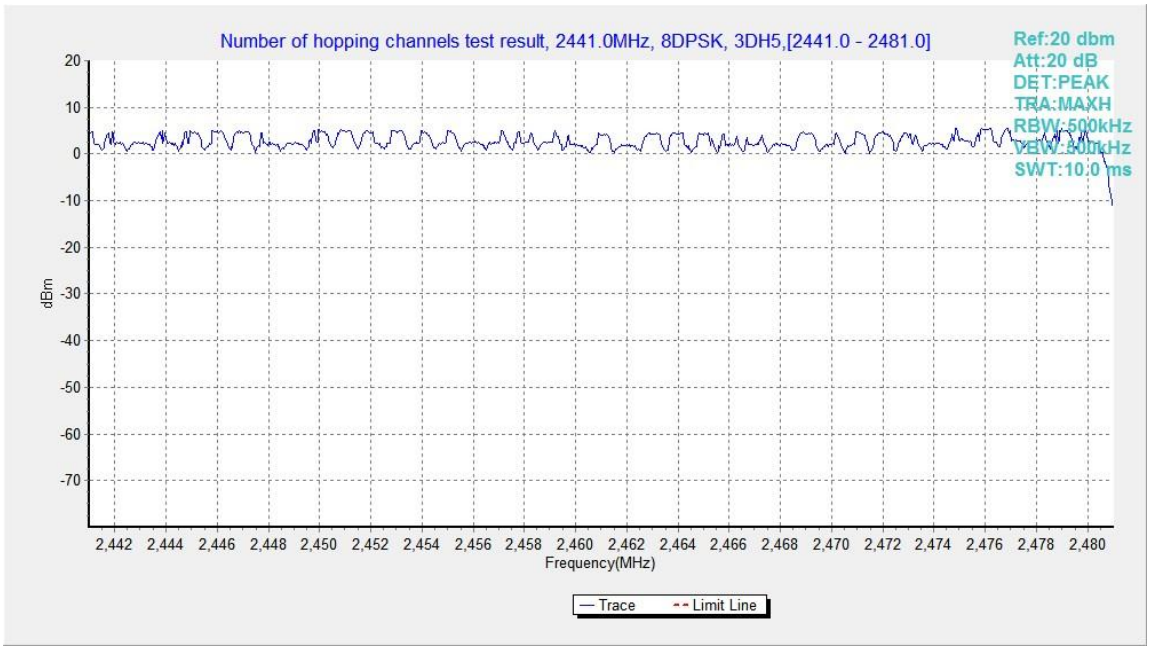

Fig.93. Number of hopping frequencies: 8DPSK, Channel 40 - 78

ANNEX C: Accreditation Certificate

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

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 17025:2017. 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).

2022-10-01 through 2023-09-30
Effective Dates

DEPARTMENT OF COMMERCE · UNITED STATES OF AMERICA

For the National Voluntary Laboratory Accreditation Program

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