

**$\pi/4$  DQPSK Ch 0 - Average**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2387.200	46.19	2.9	32.0	11.32	54.0	7.8	H	155	268
2390.000	46.18	2.9	32.0	11.34	54.0	7.8	H	155	290
4804.000	38.90	-32.9	34.5	37.26	54.0	15.1	H	155	312
7206.000	37.45	-31.6	36.1	32.98	54.0	16.6	H	155	46
9608.000	41.03	-30.0	37.0	34.08	54.0	13.0	H	155	70
12010.000	42.28	-29.8	39.3	32.81	54.0	11.7	H	155	92

**$\pi/4$  DQPSK Ch 39 - Average**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2436.800	46.55	2.9	32.0	11.64	54.0	7.5	H	155	192
2445.500	46.50	2.9	32.2	11.36	54.0	7.5	H	155	180
4882.000	42.03	-32.7	34.5	40.25	54.0	12.0	H	155	108
7323.000	38.54	-31.9	36.1	34.39	54.0	15.5	H	155	4
9764.000	39.18	-30.6	37.2	32.55	54.0	14.8	H	155	26
12205.000	44.19	-29.4	39.2	34.40	54.0	9.8	H	155	48

**$\pi/4$  DQPSK Ch 78 - Average**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.500	46.91	2.9	32.8	11.22	54.0	7.1	H	155	170
2483.700	46.63	2.9	32.8	10.94	54.0	7.4	H	155	150
4959.000	39.47	-33.4	34.5	38.33	54.0	14.5	H	155	20
7440.000	37.57	-31.8	36.0	33.31	54.0	16.4	H	155	180
9919.500	41.30	-29.9	37.4	33.82	54.0	12.7	H	155	202
12400.500	43.55	-29.5	39.1	33.92	54.0	10.5	H	155	8

**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)
2388.600	46.21	2.9	32.0	11.36	54.0	7.8	H	155	28
2390.000	46.15	2.9	32.0	11.30	54.0	7.9	H	155	48
4804.500	37.22	-32.8	34.5	35.57	54.0	16.8	H	155	8
7206.000	37.37	-31.6	36.1	32.90	54.0	16.6	H	155	16
9607.500	41.04	-30.0	37.0	34.09	54.0	13.0	H	155	228
12010.500	42.32	-29.8	39.3	32.85	54.0	11.7	H	155	92

**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)
2436.300	46.44	2.9	32.0	11.55	54.0	7.6	H	155	5
2445.600	46.51	2.9	32.2	11.36	54.0	7.5	H	155	25
4881.000	40.78	-32.7	34.5	39.00	54.0	13.2	H	155	356
7323.000	38.52	-31.9	36.1	34.37	54.0	15.5	H	155	350
9763.500	39.29	-30.6	37.2	32.67	54.0	14.7	H	155	185
12205.500	44.19	-29.4	39.2	34.40	54.0	9.8	H	155	187

**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	46.95	2.9	32.8	11.26	54.0	7.1	H	155	171
2483.800	46.67	2.9	32.8	10.98	54.0	7.3	H	155	79
4960.500	39.03	-33.4	34.5	37.91	54.0	15.0	H	155	4
7440.000	37.55	-31.8	36.0	33.29	54.0	16.5	H	155	62
9919.500	41.26	-29.9	37.4	33.79	54.0	12.7	H	155	135
12400.500	43.58	-29.5	39.1	33.95	54.0	10.4	H	155	94

**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)
2382.086	60.10	2.9	32.0	25.19	74.0	13.9	H	155	22
2389.394	59.62	2.9	32.0	24.77	74.0	14.4	H	155	44
4803.750	47.93	-32.9	34.5	46.28	74.0	26.1	V	155	242
7206.000	43.84	-31.6	36.1	39.37	74.0	30.2	H	155	176
9608.000	48.05	-30.0	37.0	41.09	74.0	26.0	V	155	88
12009.750	47.85	-29.8	39.3	38.38	74.0	26.2	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)
2374.600	48.93	-26.7	32.1	43.52	74.0	25.1	H	155	44
2502.600	47.92	-26.3	32.3	41.90	74.0	26.1	H	155	66
4881.750	50.86	-32.7	34.5	49.07	74.0	23.1	H	155	88
7323.000	45.68	-31.9	36.1	41.53	74.0	28.3	H	155	110
9764.250	44.47	-30.6	37.2	37.83	74.0	29.5	H	155	132
12204.750	48.56	-29.4	39.2	38.77	74.0	25.4	H	155	154

**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)
2483.710	60.40	2.9	32.8	24.72	74.0	13.6	H	155	198
2493.730	60.86	2.9	32.5	25.44	74.0	13.1	H	155	220
4959.750	49.66	-33.4	34.5	48.53	74.0	24.3	V	155	176
7440.000	44.94	-31.8	36.0	40.68	74.0	29.1	V	155	0
9920.250	47.80	-29.9	37.4	40.33	74.0	26.2	H	155	176
12399.750	48.12	-29.5	39.1	38.49	74.0	25.9	V	155	198

**$\pi/4$  DQPSK Ch 0 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2380.504	60.59	2.9	32.1	25.68	74.0	13.4	H	155	264
2384.620	60.20	2.9	32.0	25.31	74.0	13.8	H	155	286
4803.750	47.05	-32.9	34.5	45.40	74.0	27.0	V	155	308
7206.000	45.23	-31.6	36.1	40.76	74.0	28.8	H	155	44
9608.250	47.76	-30.0	37.0	40.80	74.0	26.2	H	155	66
12009.750	47.68	-29.8	39.3	38.21	74.0	26.3	V	155	88

**$\pi/4$  DQPSK Ch 39 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2375.400	48.13	-26.6	32.1	42.66	74.0	25.9	H	155	88
2508.600	48.31	-26.5	32.4	42.33	74.0	25.7	H	155	66
4882.500	51.01	-32.7	34.5	49.22	74.0	23.0	V	155	110
7323.000	45.59	-31.9	36.1	41.43	74.0	28.4	H	155	0
9764.250	45.46	-30.6	37.2	38.82	74.0	28.5	H	155	22
12204.750	48.43	-29.4	39.2	38.64	74.0	25.6	V	155	44

**$\pi/4$  DQPSK Ch 78 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.940	60.37	2.9	32.7	24.68	74.0	13.6	H	155	176
2497.010	60.46	2.9	32.4	25.14	74.0	13.5	H	155	154
4959.750	48.35	-33.4	34.5	47.22	74.0	25.6	V	155	22
7440.000	43.13	-31.8	36.0	38.87	74.0	30.9	V	155	176
9920.250	47.07	-29.9	37.4	39.60	74.0	26.9	H	155	198
12399.750	47.99	-29.5	39.1	38.36	74.0	26.0	H	155	0

**8DPSK Ch 0 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2388.834	60.41	2.9	32.0	25.56	74.0	13.6	H	155	22
2389.114	60.14	2.9	32.0	25.29	74.0	13.9	H	155	44
4803.750	45.48	-32.9	34.5	43.83	74.0	28.5	V	155	0
7206.000	43.51	-31.6	36.1	39.04	74.0	30.5	H	155	22
9608.250	47.10	-30.0	37.0	40.14	74.0	26.9	H	155	242
12009.750	48.68	-29.8	39.3	39.21	74.0	25.3	H	155	88

**8DPSK Ch 39 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2379.000	48.84	-26.4	32.1	43.14	74.0	25.2	H	155	0
2540.800	48.38	-26.8	33.0	42.23	74.0	25.6	H	155	22
4881.750	49.14	-32.7	34.5	47.35	74.0	24.9	H	155	352
7323.000	45.14	-31.9	36.1	40.99	74.0	28.9	V	155	352
9764.250	46.27	-30.6	37.2	39.64	74.0	27.7	V	155	176
12204.750	48.61	-29.4	39.2	38.82	74.0	25.4	V	155	176

**8DPSK Ch 78 - Peak**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2495.980	60.95	2.9	32.4	25.59	74.0	13.1	H	155	176
2498.520	60.60	2.9	32.3	25.31	74.0	13.4	V	155	88
4959.750	49.23	-33.4	34.5	48.10	74.0	24.8	V	155	0
7440.000	44.48	-31.8	36.0	40.22	74.0	29.5	H	155	66
9920.250	48.19	-29.9	37.4	40.72	74.0	25.8	H	155	132
12399.750	48.30	-29.5	39.1	38.67	74.0	25.7	V	155	88

**Conclusion: PASS**

Test graphs as below:

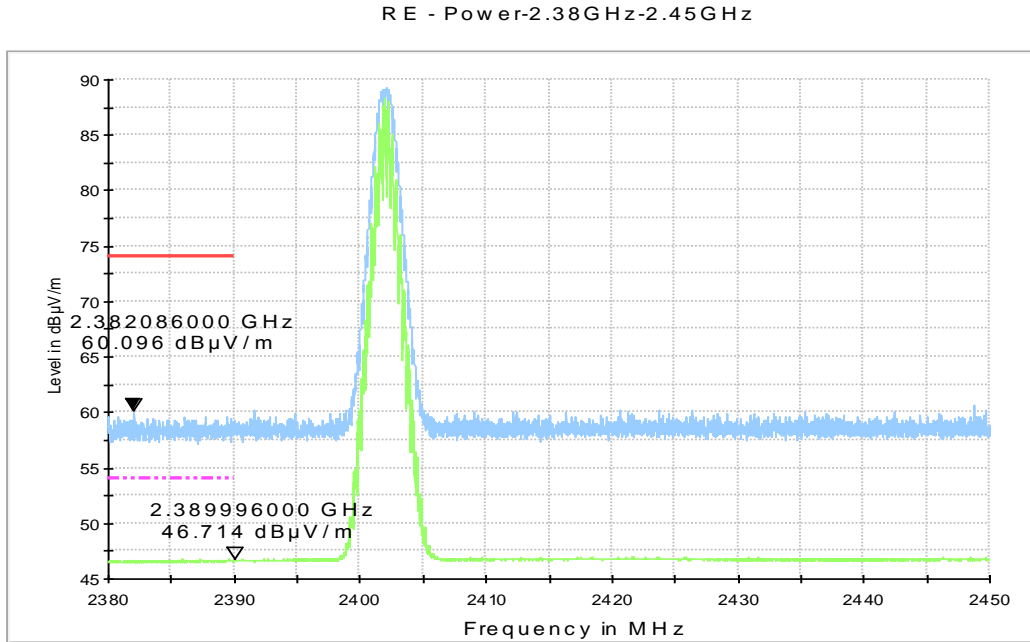


Fig.58. Radiated emission (Power): GFSK, low channel

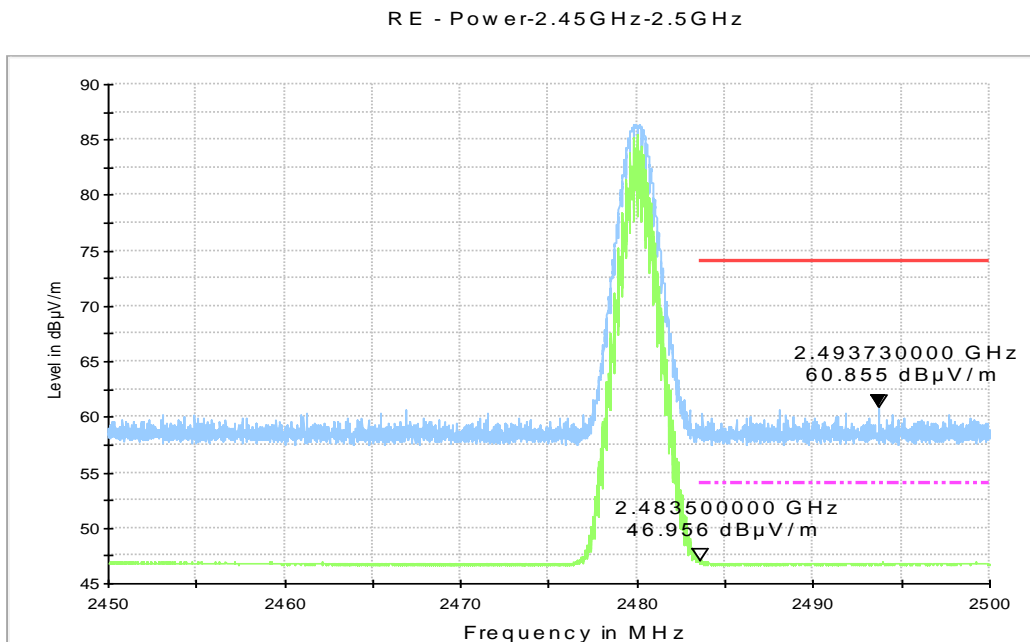


Fig.59. Radiated emission (Power) GFSK, high channel

RE - Power-2.38GHz-2.45GHz

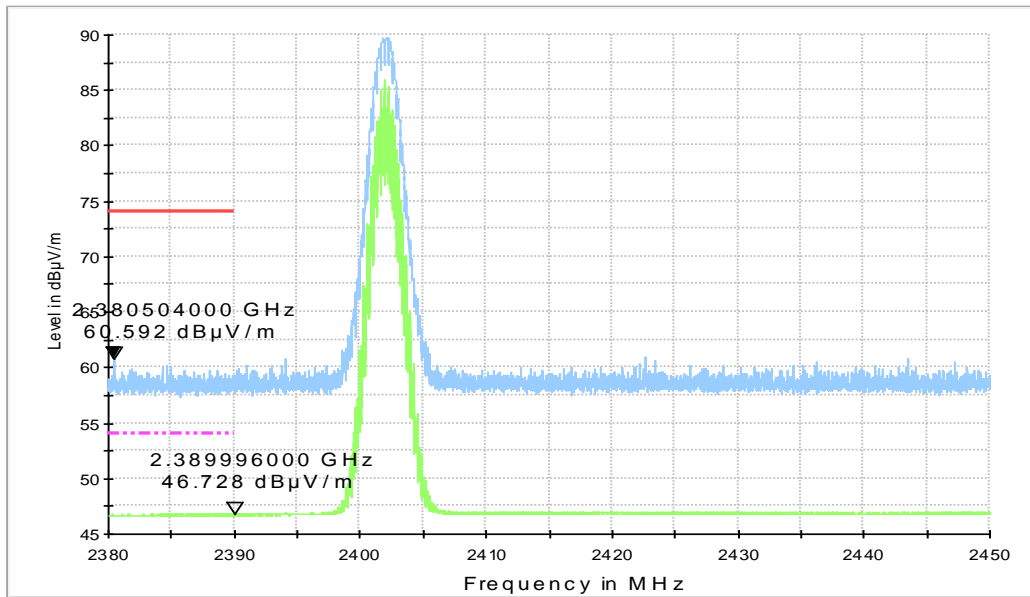


Fig.60. Radiated emission (Power):  $\pi/4$  DQPSK, low channel

RE - Power-2.45GHz-2.5GHz

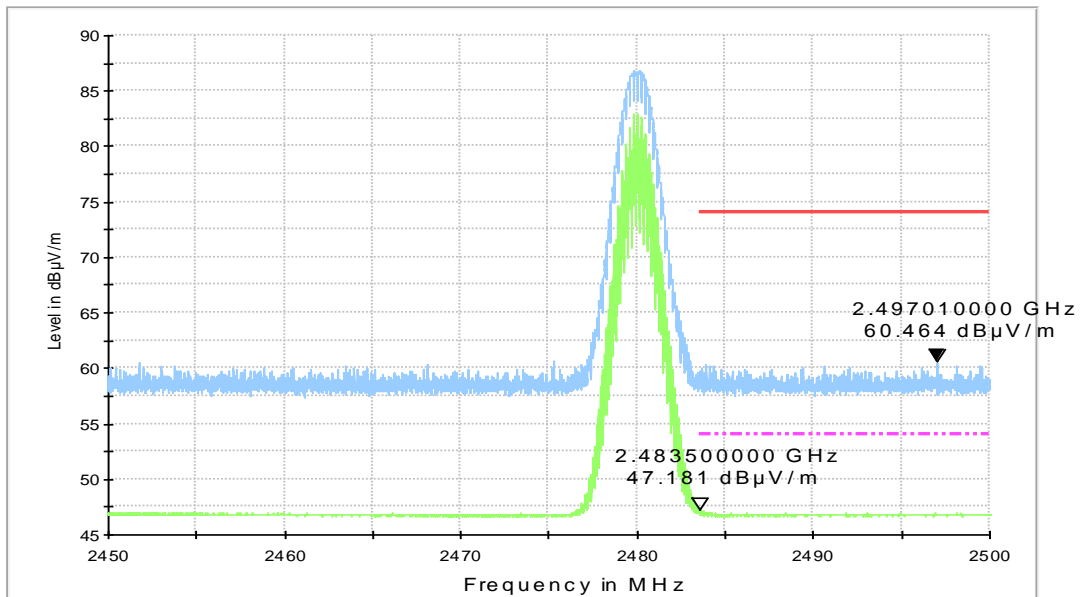


Fig.61. Radiated emission (Power):  $\pi/4$  DQPSK, high channel

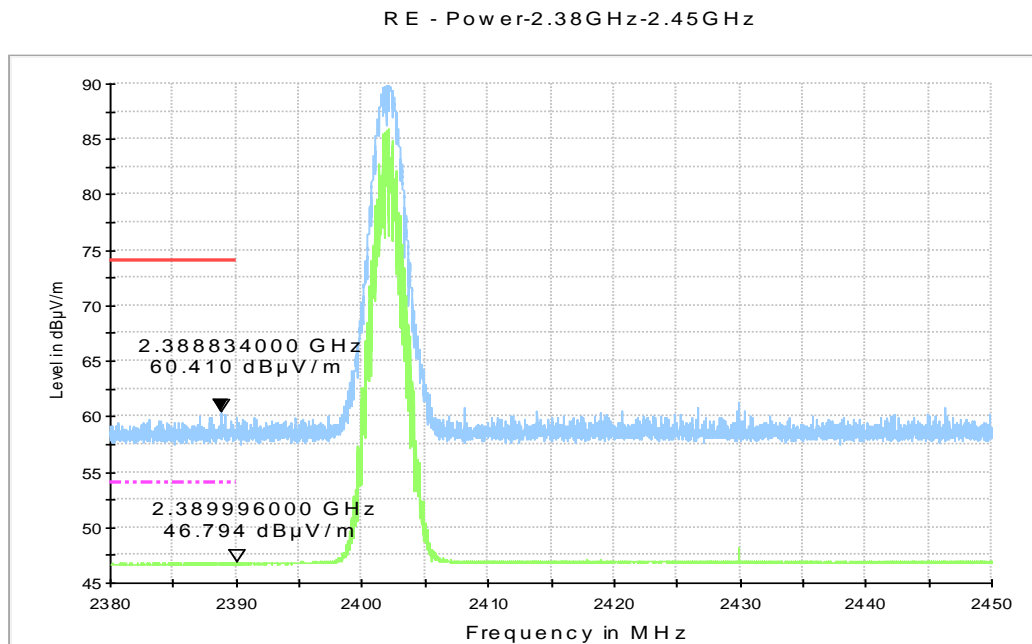


Fig.62. Radiated emission (Power): 8DPSK, low channel

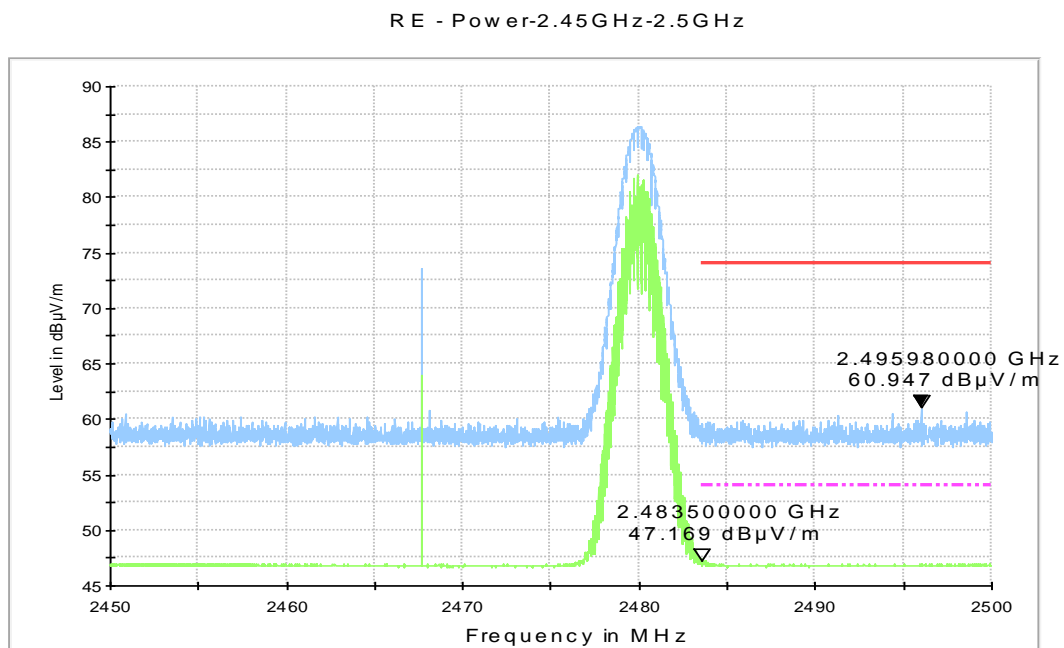


Fig.63. Radiated emission (Power): 8DPSK, high channel



### 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	120.77	P
		Fig.65		
	DH3	Fig.66	173.54	P
		Fig.67		
	DH5	Fig.68	167.34	P
		Fig.69		

**For  $\pi/4$  DQPSK**

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.70	123.04	P
		Fig.71		
	DH3	Fig.72	172.09	P
		Fig.73		
	DH5	Fig.74	207.86	P
		Fig.75		

**For 8DPSK**

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.76	122.99	P
		Fig.77		
	DH3	Fig.78	178.52	P

		Fig.79		
	DH5	Fig.80	173.34	P
		Fig.81		

**Conclusion: PASS**

**Test graphs as below:**

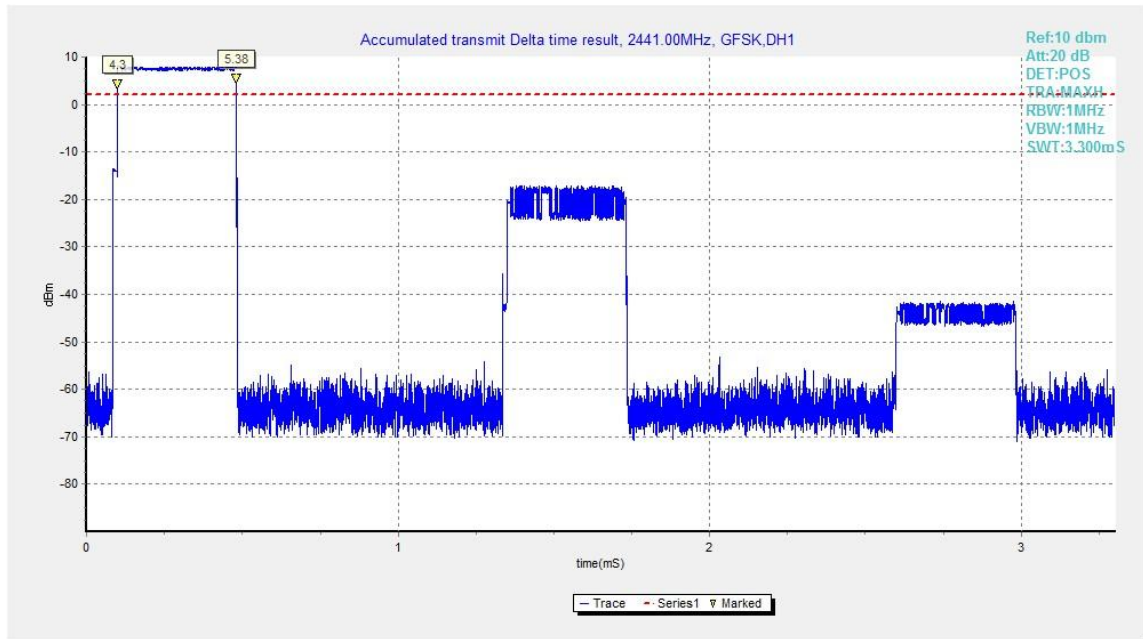


Fig.64. Time of occupancy (Dwell Time): Channel 39, Packet DH1

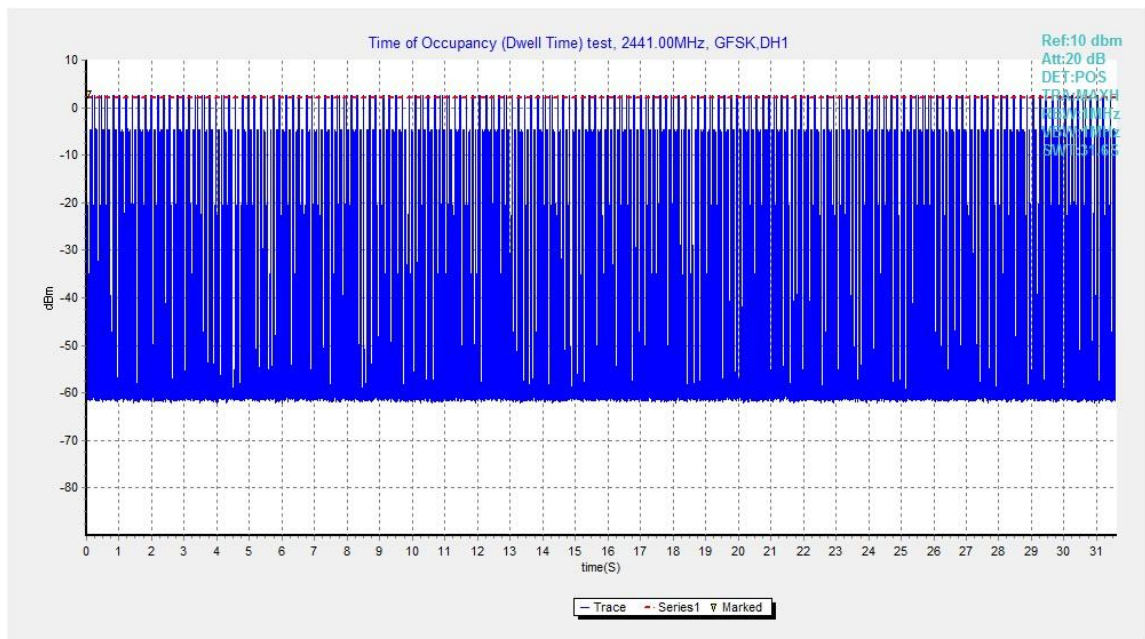


Fig.65. Number of Transmissions Measurement: Channel 39,Packet DH1

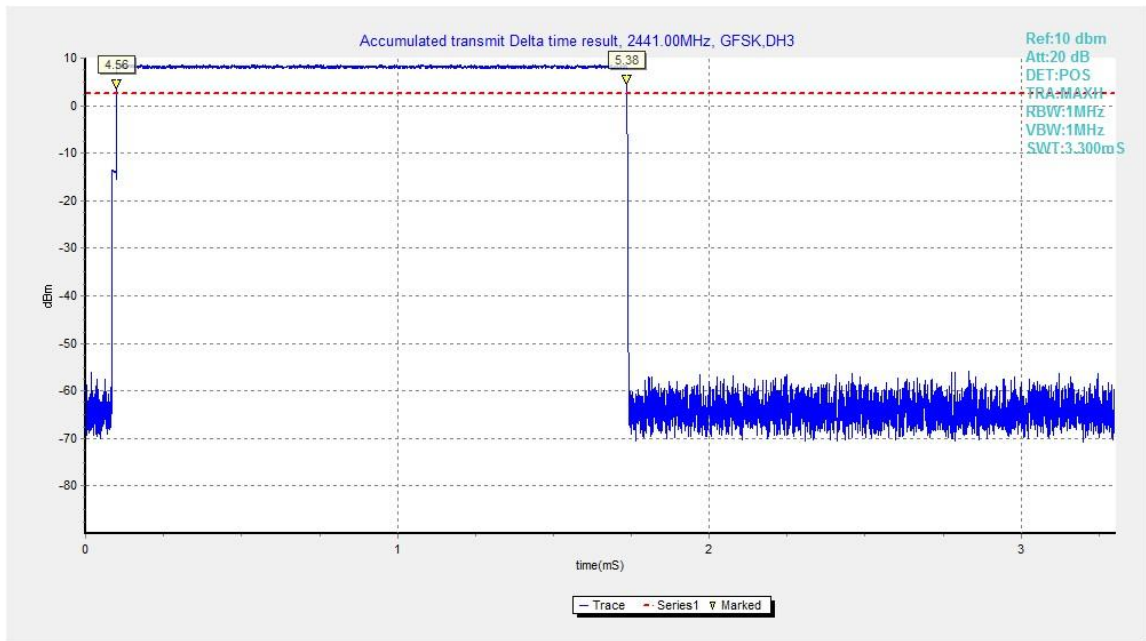


Fig.66. Time of occupancy (Dwell Time): Channel 39, Packet DH3

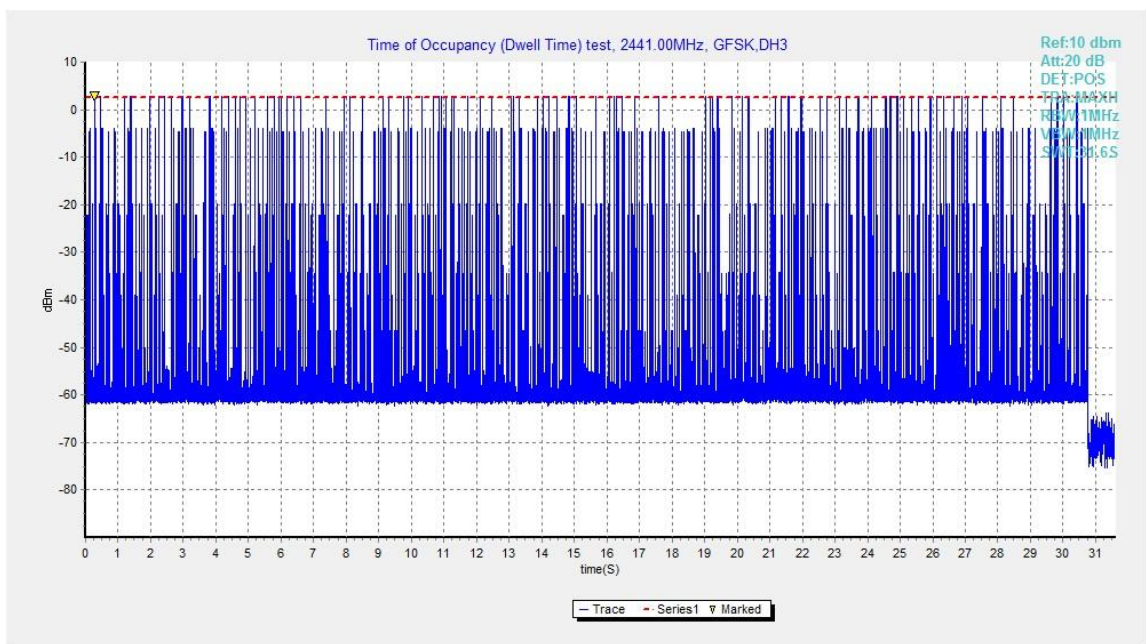


Fig.67. Number of Transmissions Measurement: Channel 39,Packet DH3

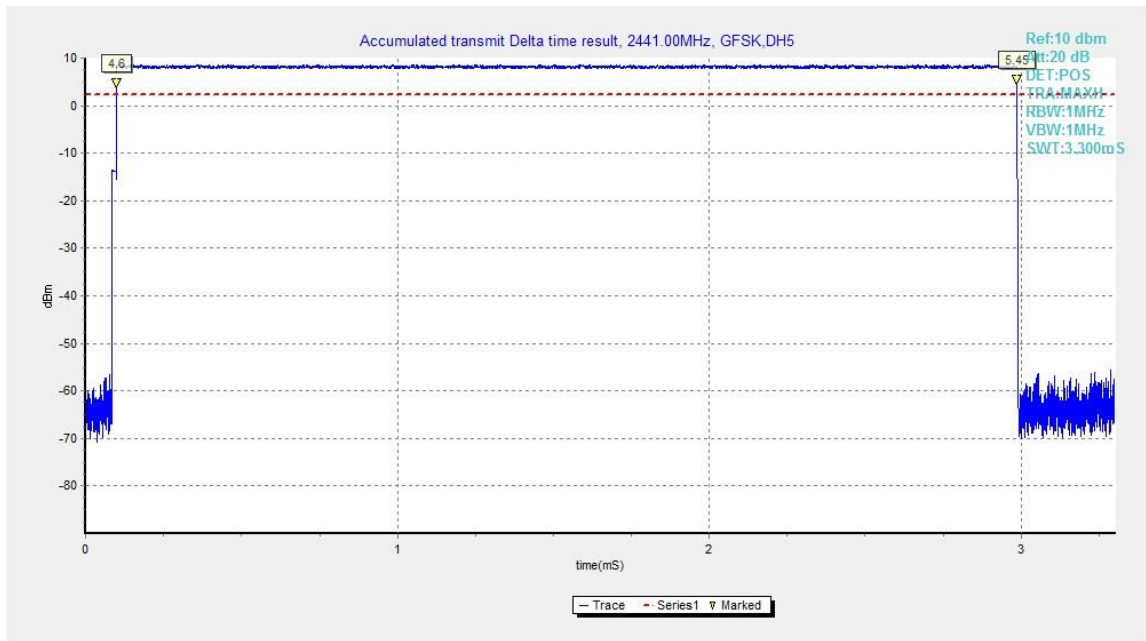


Fig.68. Time of occupancy (Dwell Time): Channel 39, Packet DH5

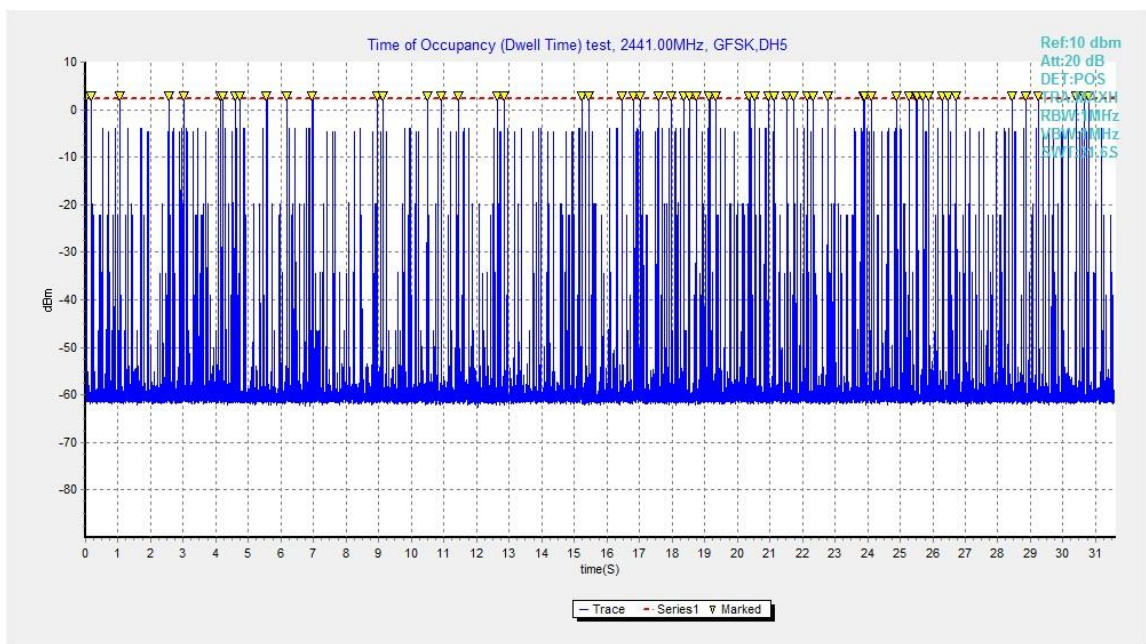


Fig.69. Number of Transmissions Measurement: Channel 39,Packet DH5



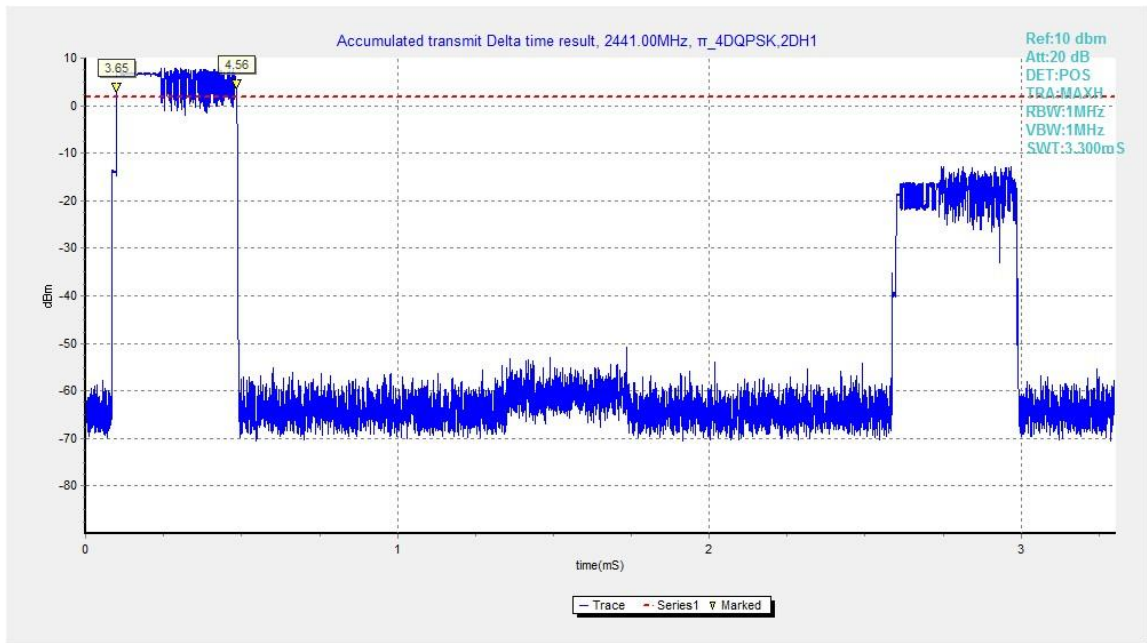


Fig.70. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1

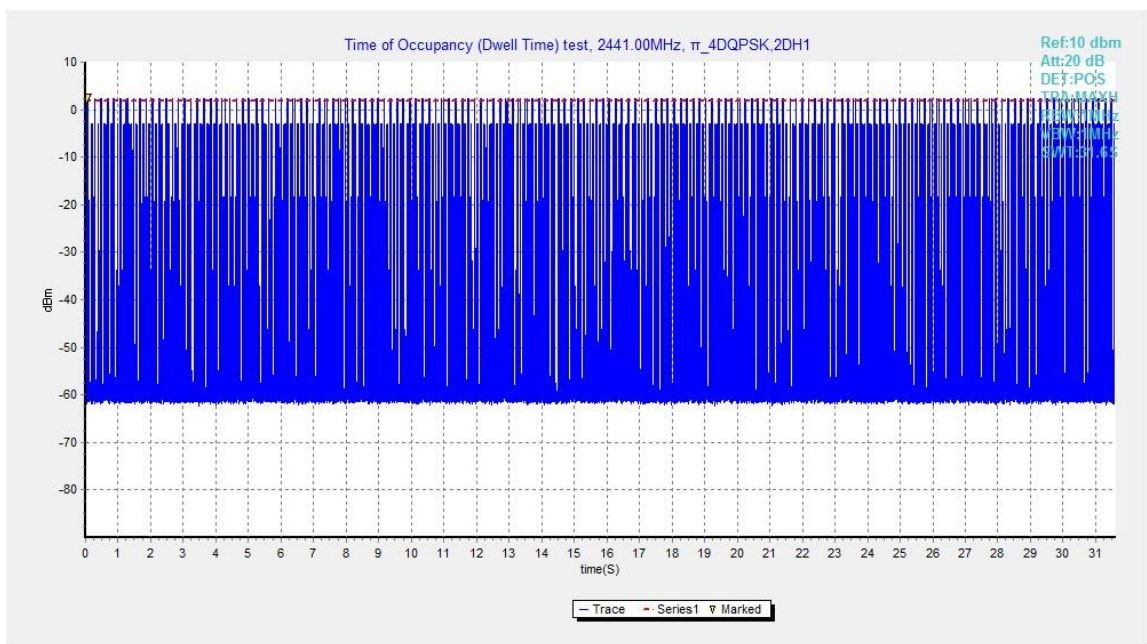


Fig.71. Number of Transmissions Measurement: Channel 39,Packet 2-DH1

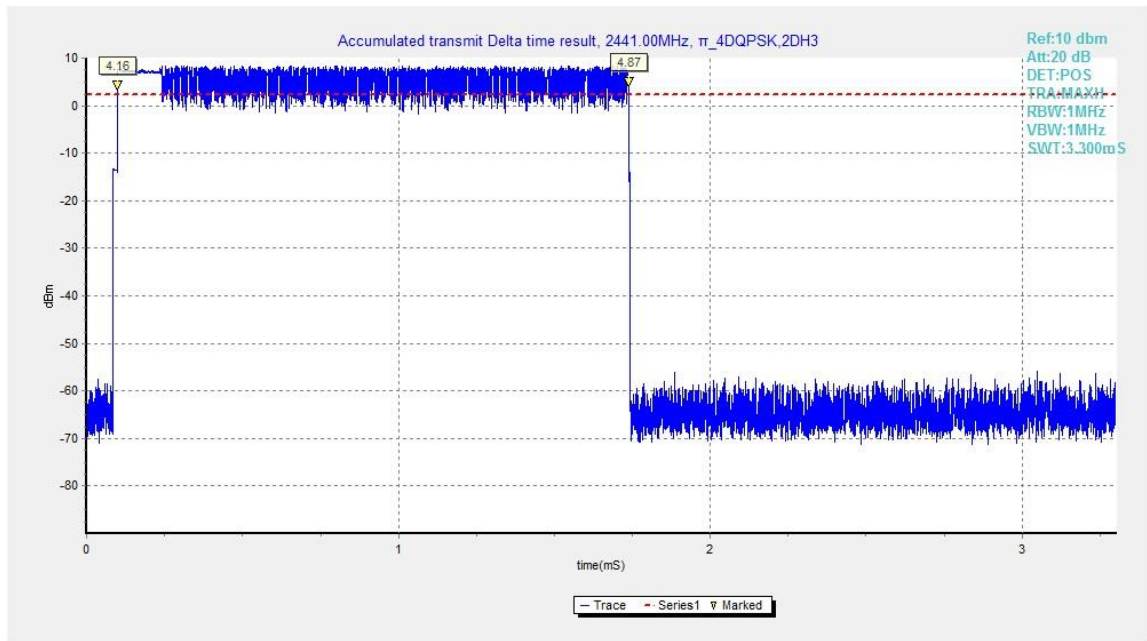


Fig.72. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3

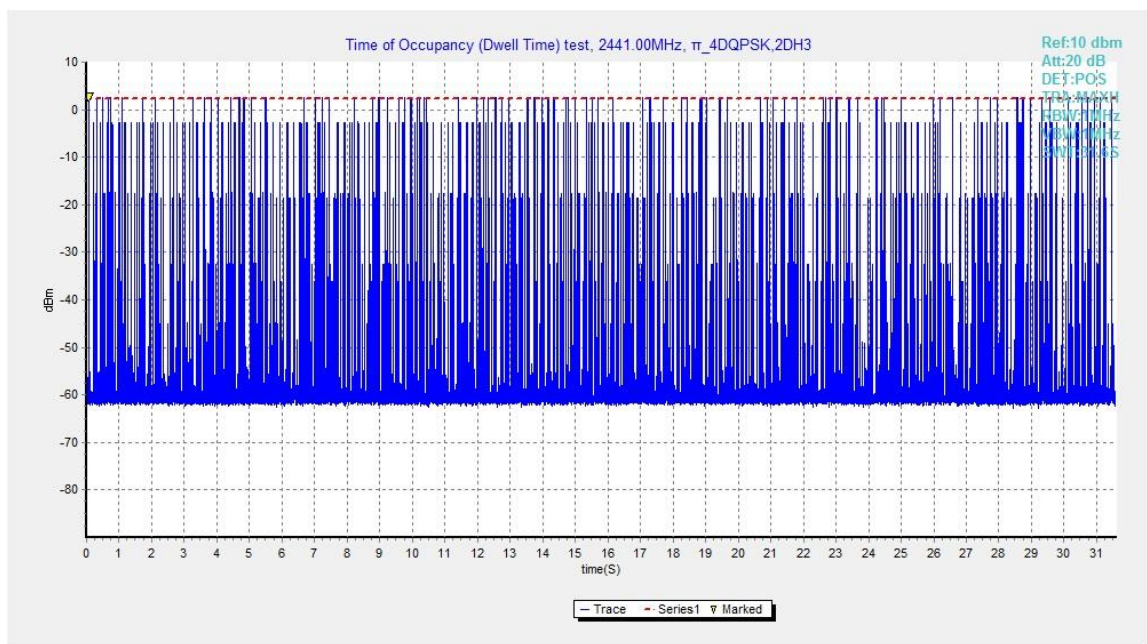


Fig.73. Number of Transmissions Measurement: Channel 39,Packet 2-DH3

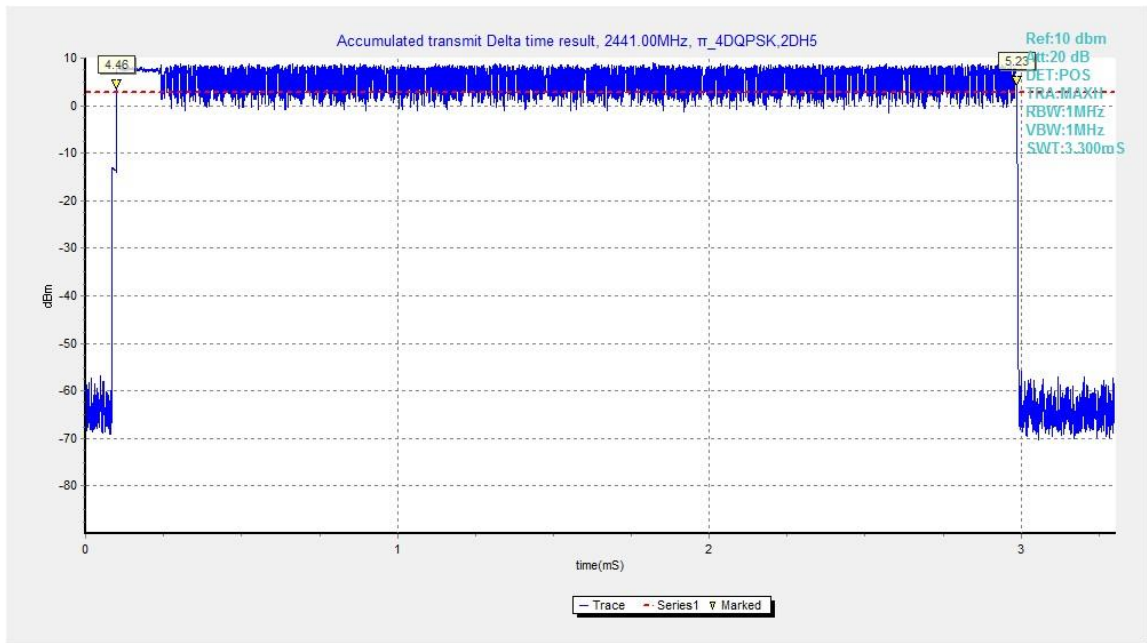


Fig.74. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5

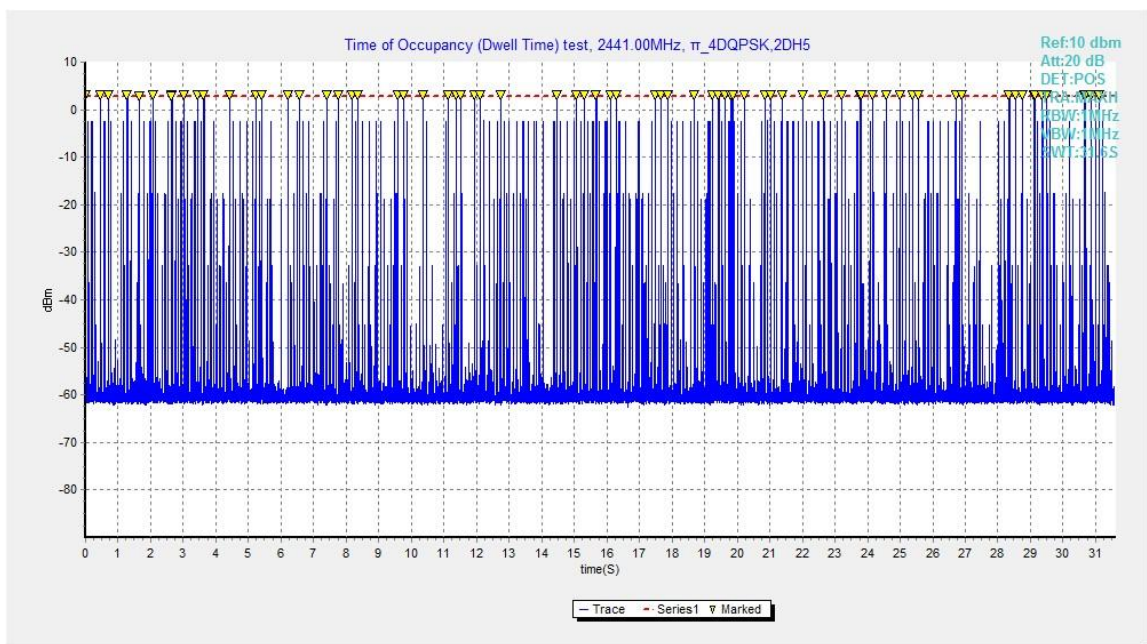


Fig.75. Number of Transmissions Measurement: Channel 39,Packet 2-DH5

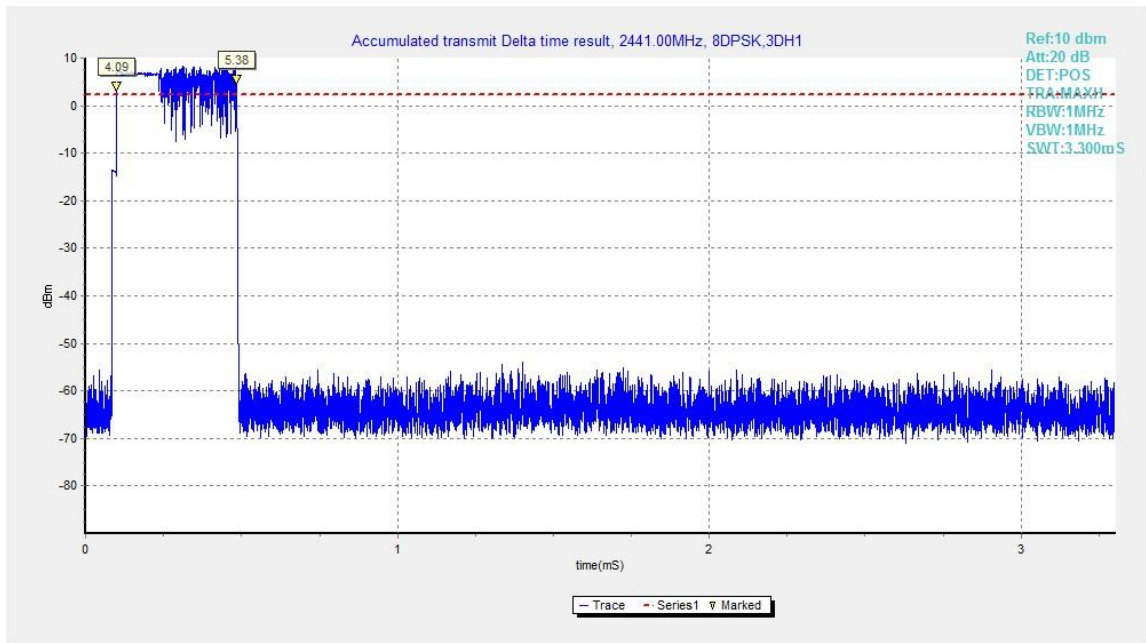


Fig.76. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1

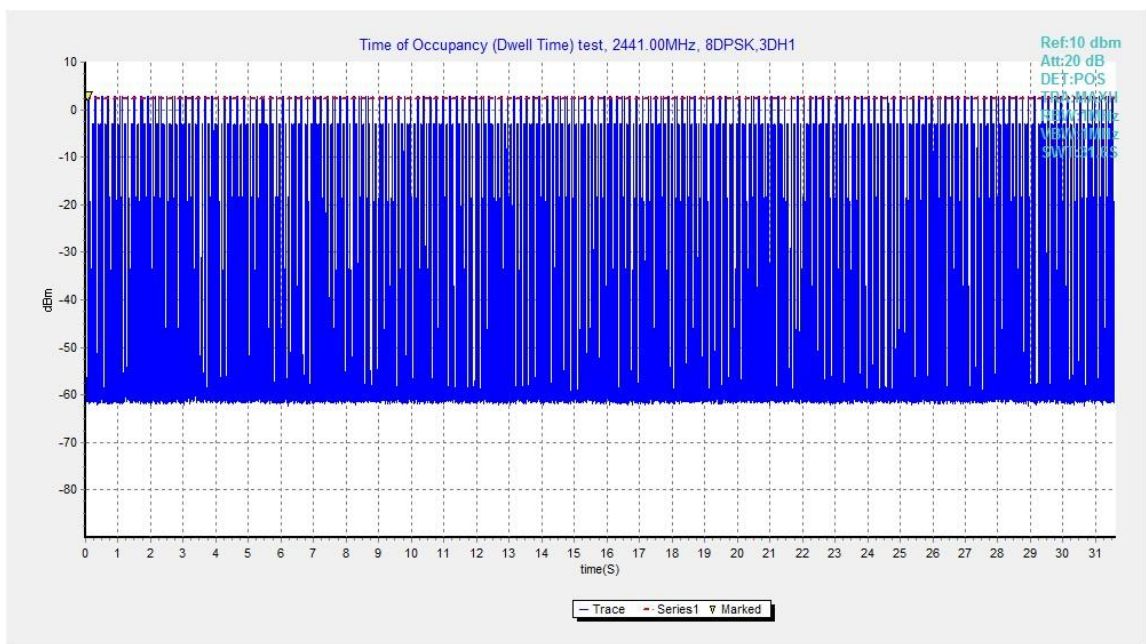


Fig.77. Number of Transmissions Measurement: Channel 39,Packet 3-DH1



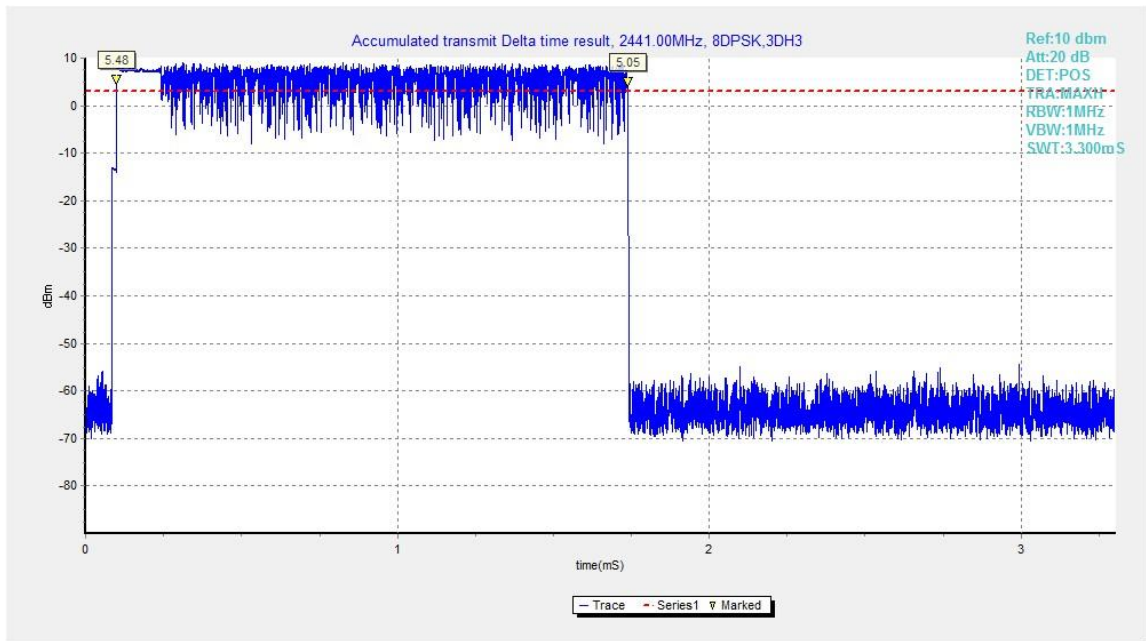


Fig.78. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3

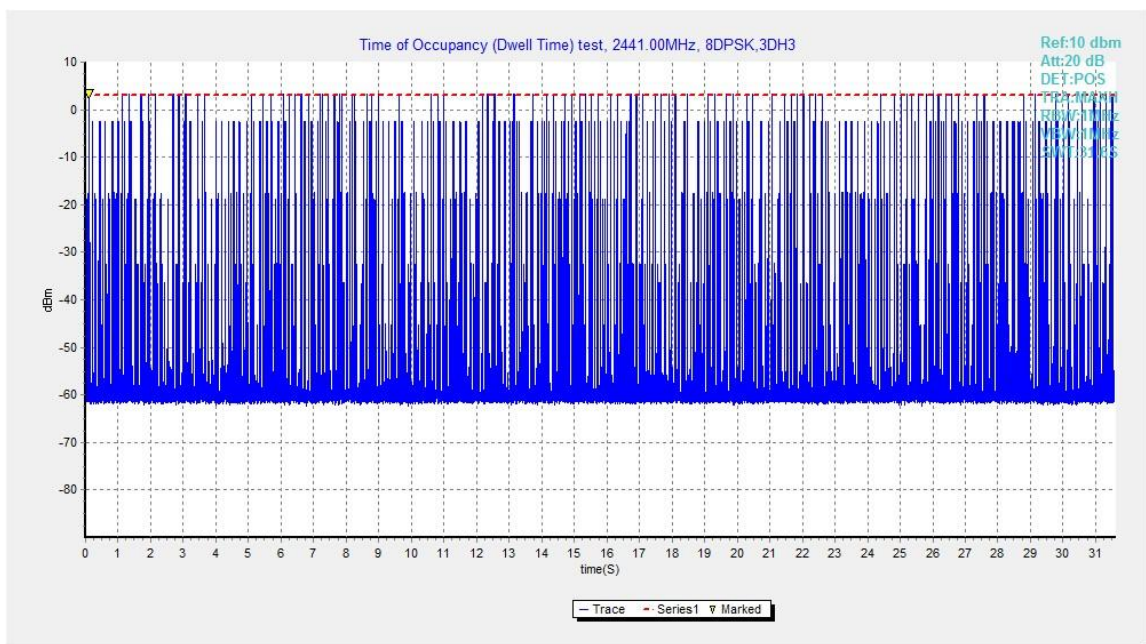


Fig.79. Number of Transmissions Measurement: Channel 39,Packet 3-DH3

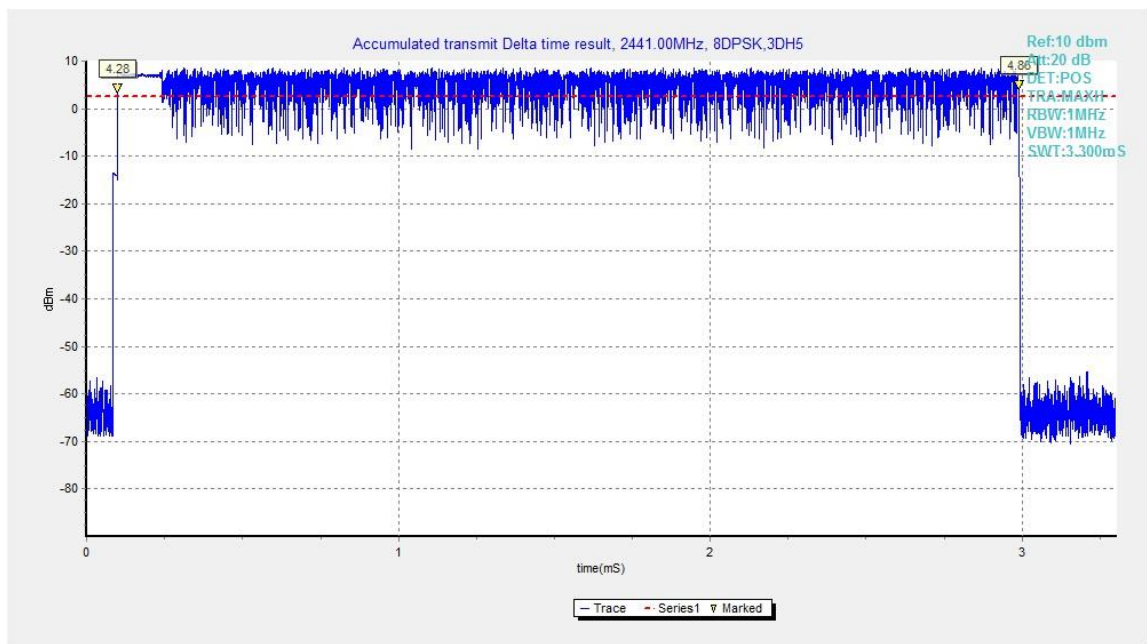


Fig.80. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5

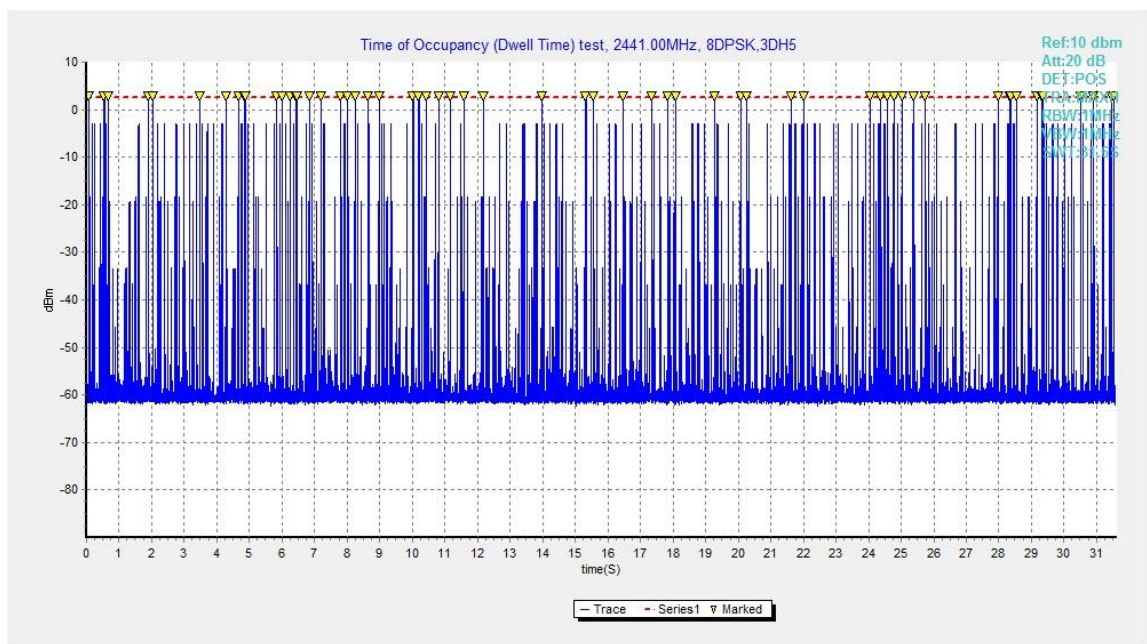


Fig.81. Number of Transmissions Measurement: Channel 39,Packet 3-DH5



### 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	940.50	NA
39	Fig.83	942.75	NA
78	Fig.84	938.25	NA

**For  $\pi/4$  DQPSK**

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.85	1311.00	NA
39	Fig.86	1281.00	NA
78	Fig.87	1313.25	NA

**For 8DPSK**

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.88	1272.00	NA
39	Fig.89	1293.75	NA
78	Fig.90	1296.00	NA

**Conclusion: NA**

**Test graphs as below:**

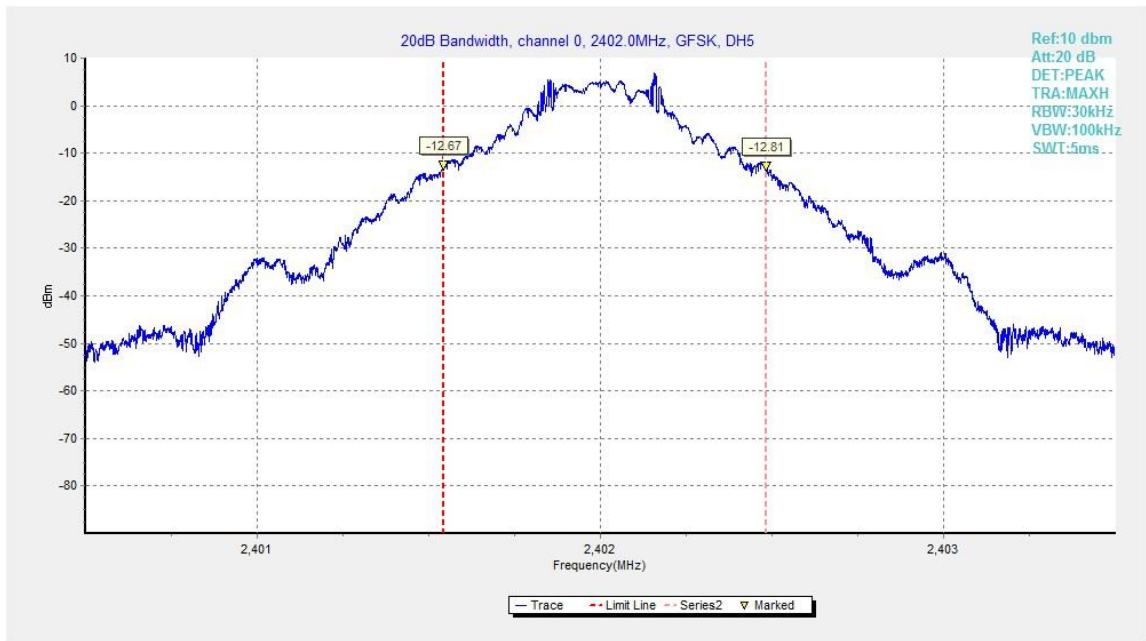


Fig.82. 20dB Bandwidth: GFSK, Channel 0

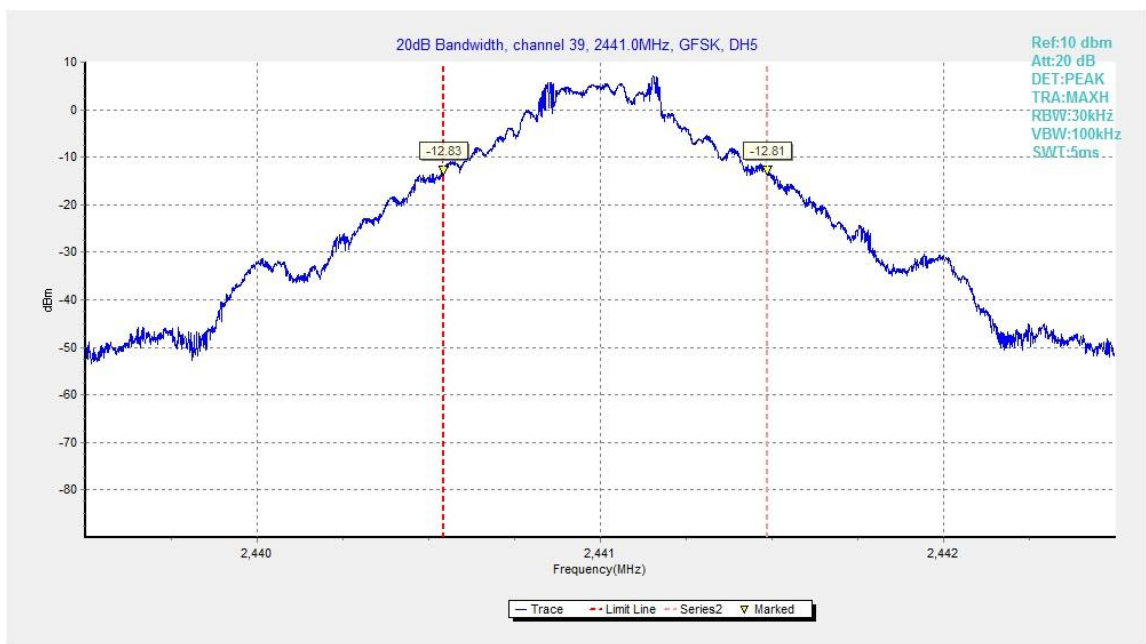


Fig.83. 20dB Bandwidth: GFSK, Channel 39

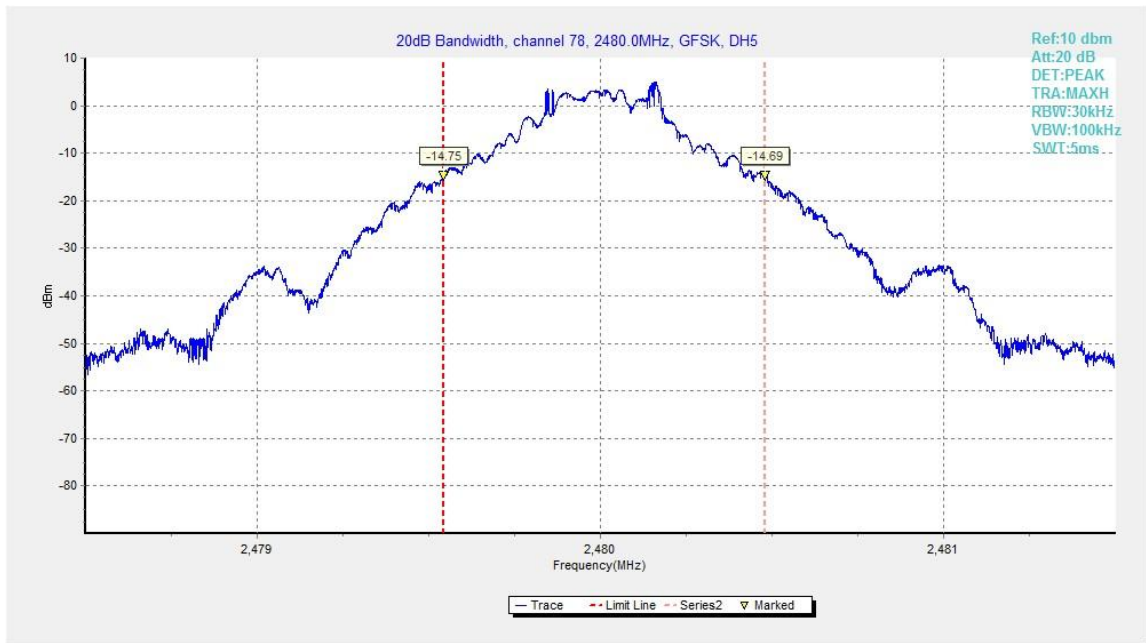


Fig.84. 20dB Bandwidth: GFSK, Channel 78

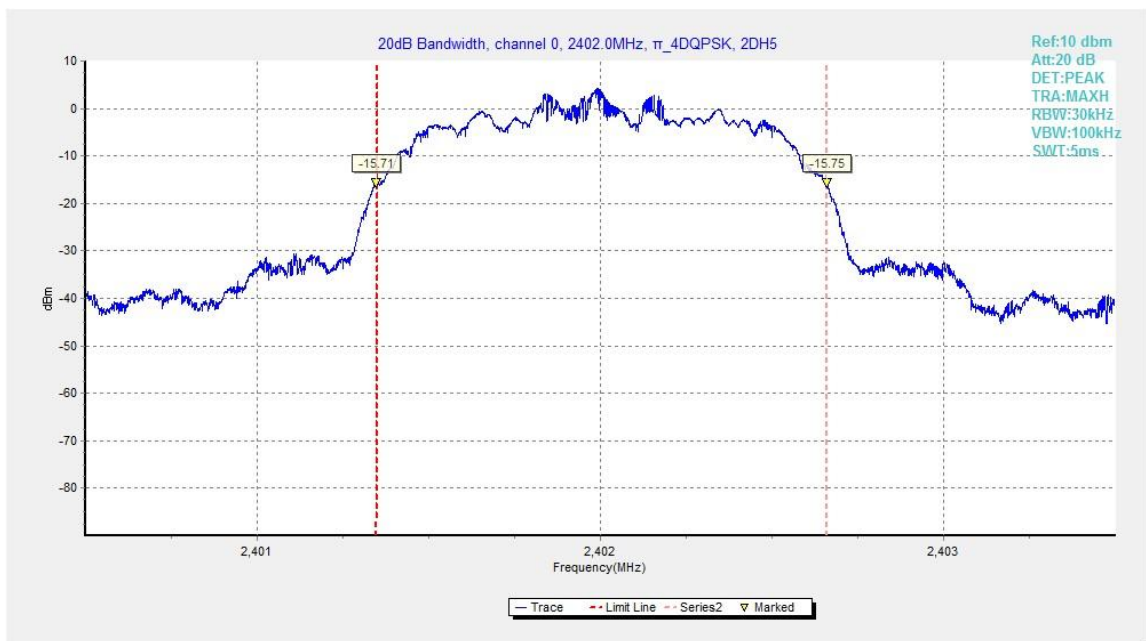


Fig.85. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 0



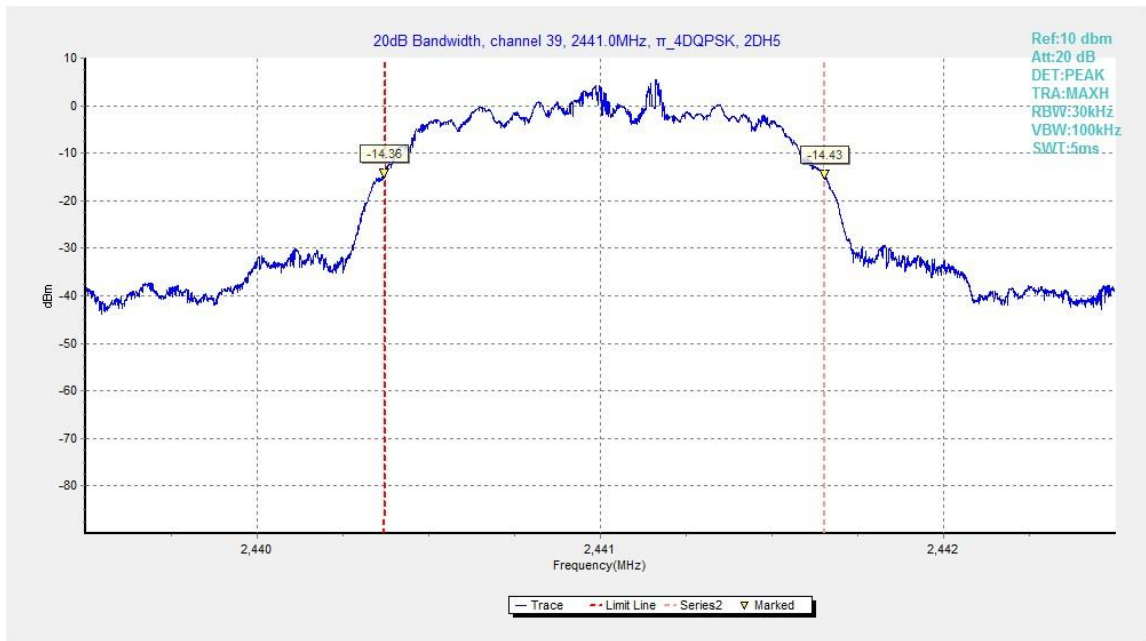


Fig.86. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 39

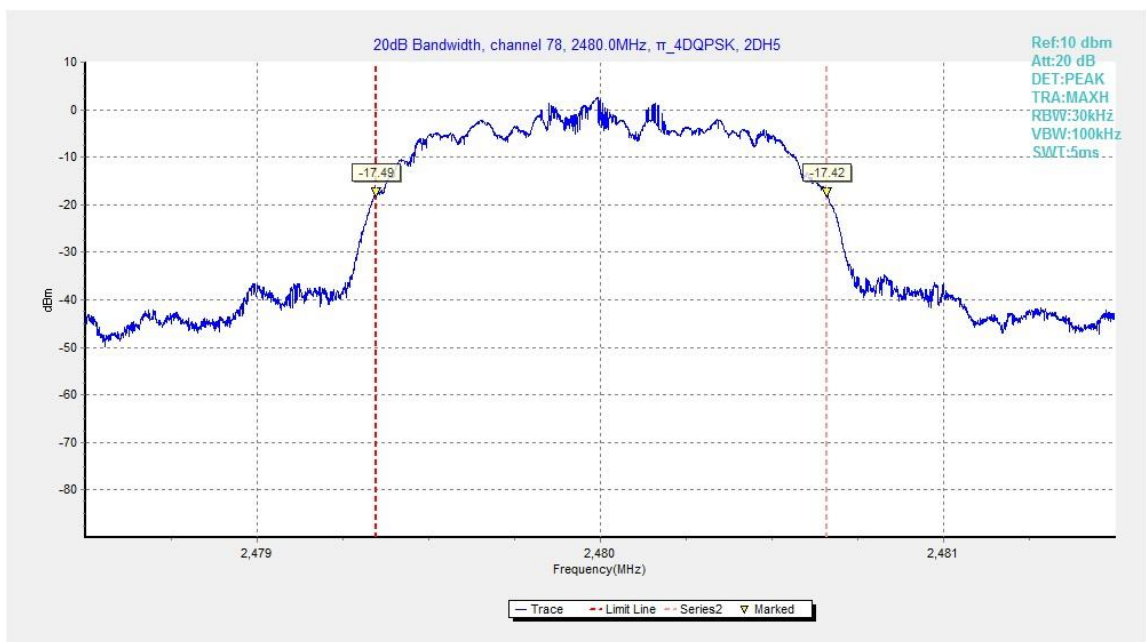


Fig.87. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 78

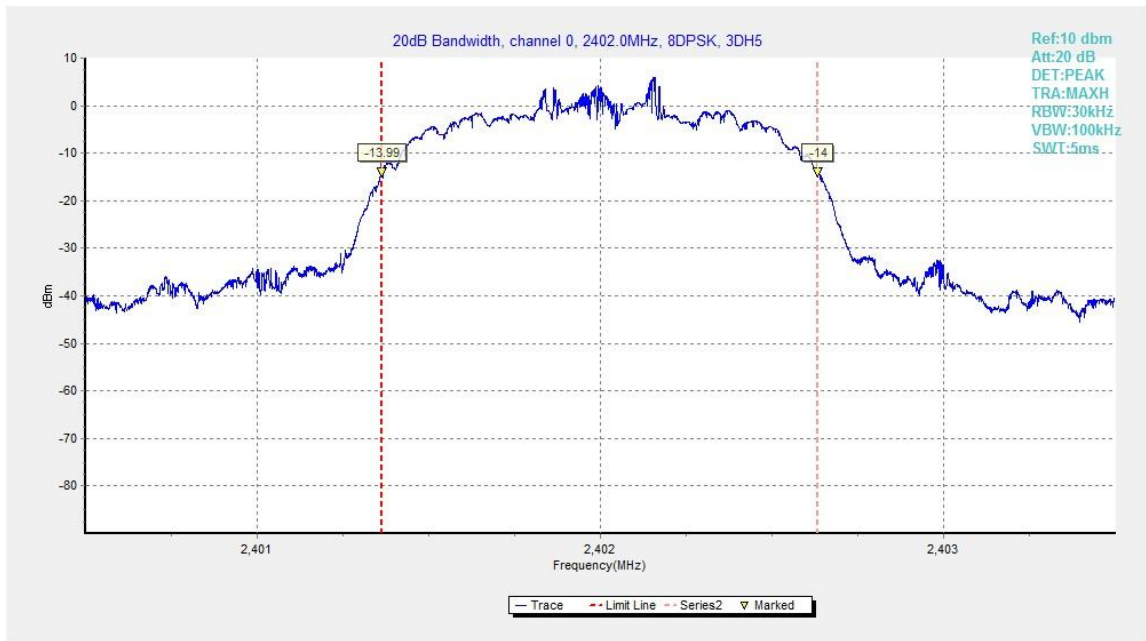


Fig.88. 20dB Bandwidth: 8DPSK, Channel 0

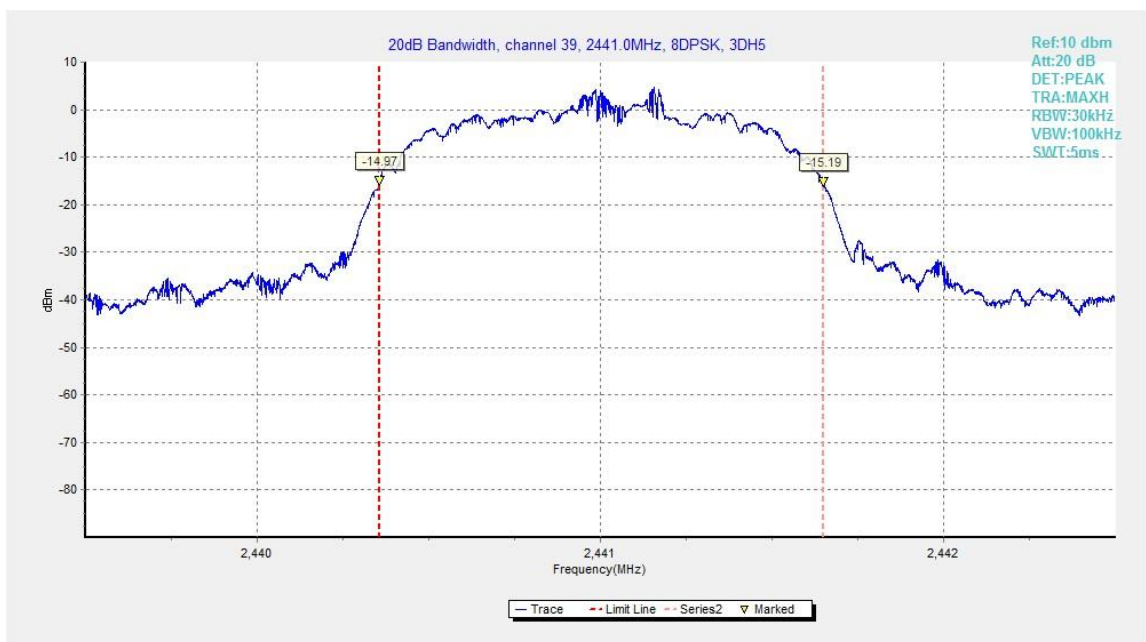


Fig.89. 20dB Bandwidth: 8DPSK, Channel 39

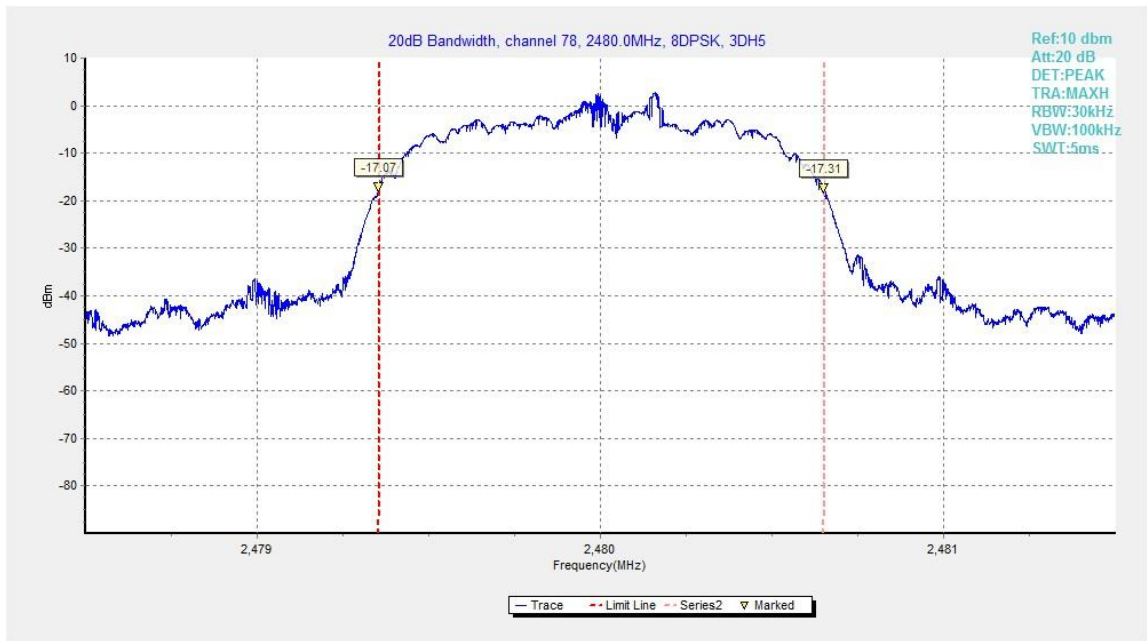


Fig.90. 20dB Bandwidth: 8DPSK, Channel 78





### 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	1011.00	P

**For  $\pi/4$  DQPSK**

Channel	Carrier frequency separation (kHz)	Conclusion	
39	Fig.92	983.25	P

**For 8DPSK**

Channel	Carrier frequency separation (kHz)	Conclusion	
39	Fig.93	1029.00	P

**Conclusion: PASS**

**Test graphs as below:**

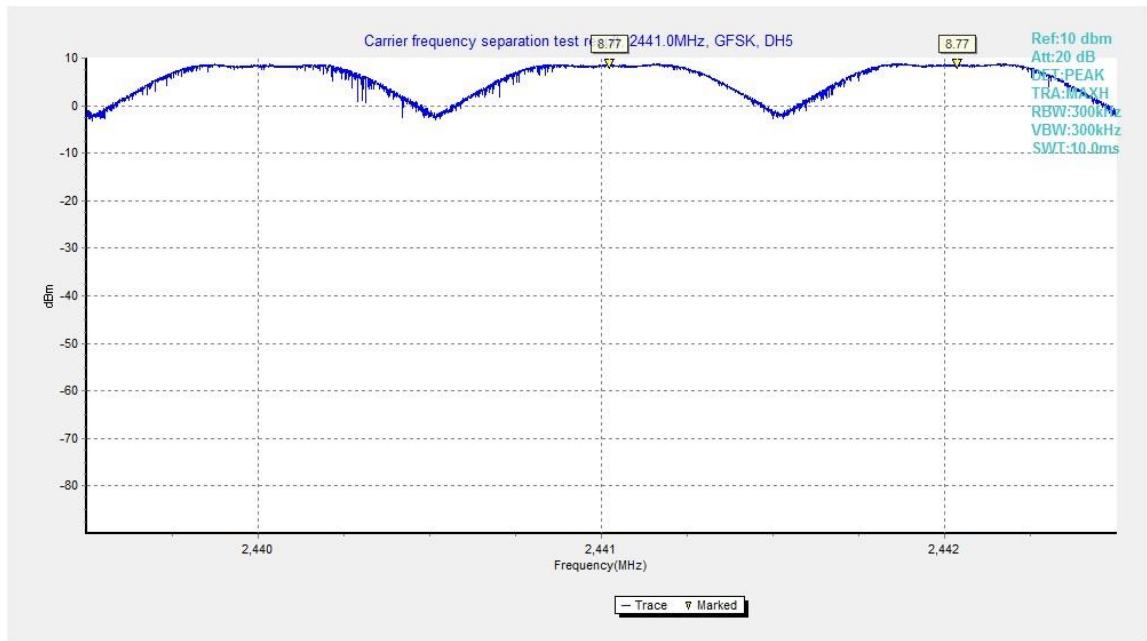


Fig.91. Carrier frequency separation measurement: GFSK, Channel 39

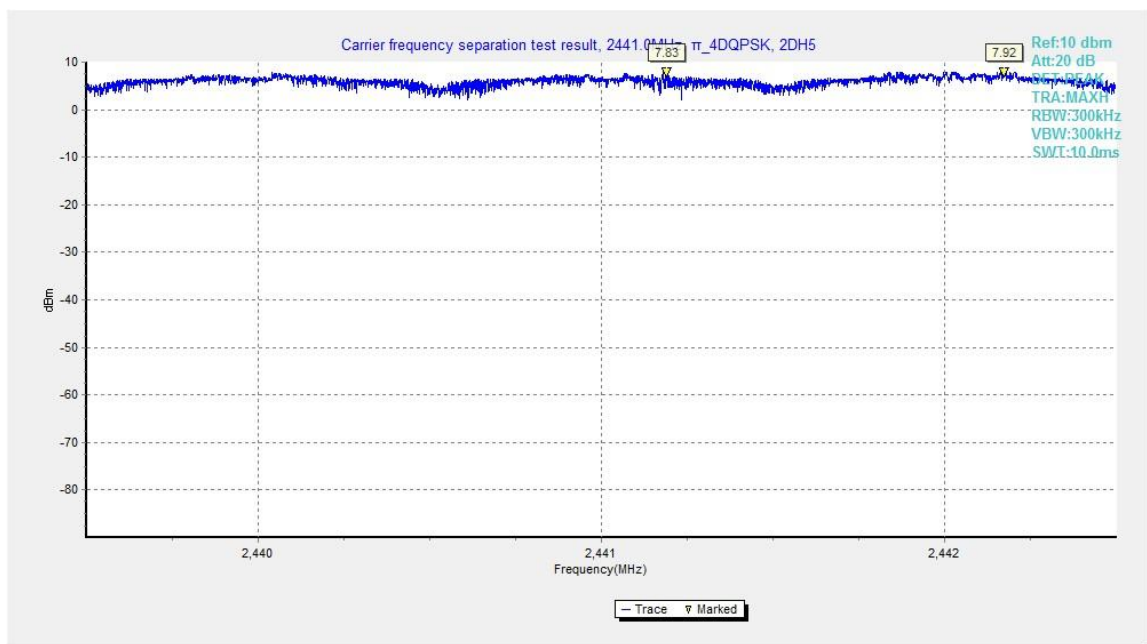


Fig.92. Carrier frequency separation measurement:  $\pi/4$  DQPSK, Channel 39

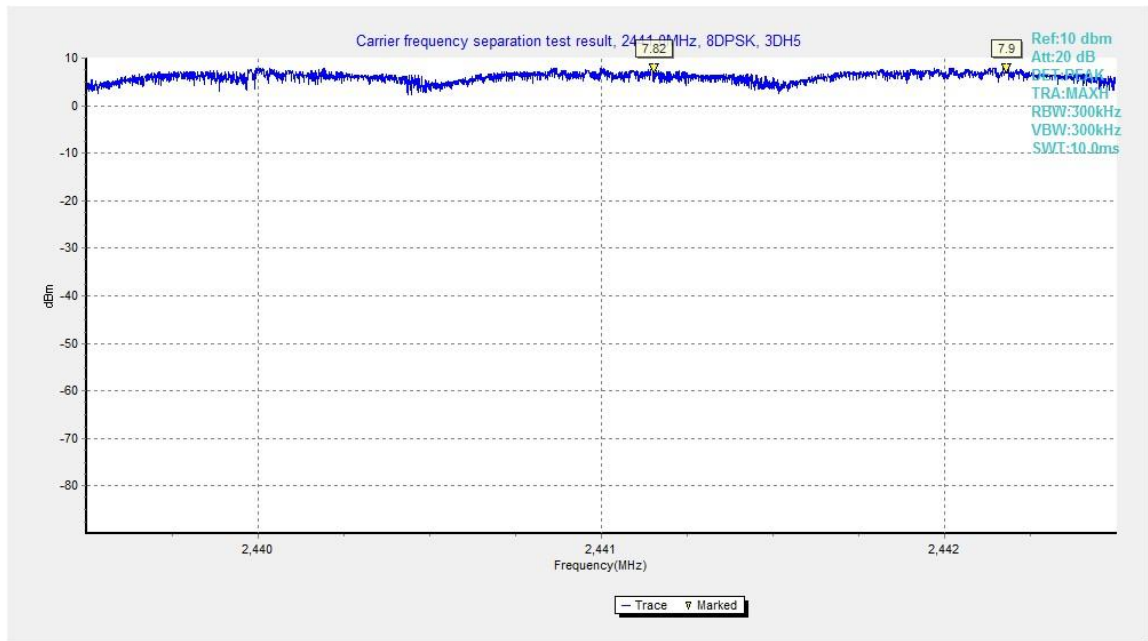


Fig.93. Carrier frequency separation measurement: 8DPSK, Channel 39

## 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:**

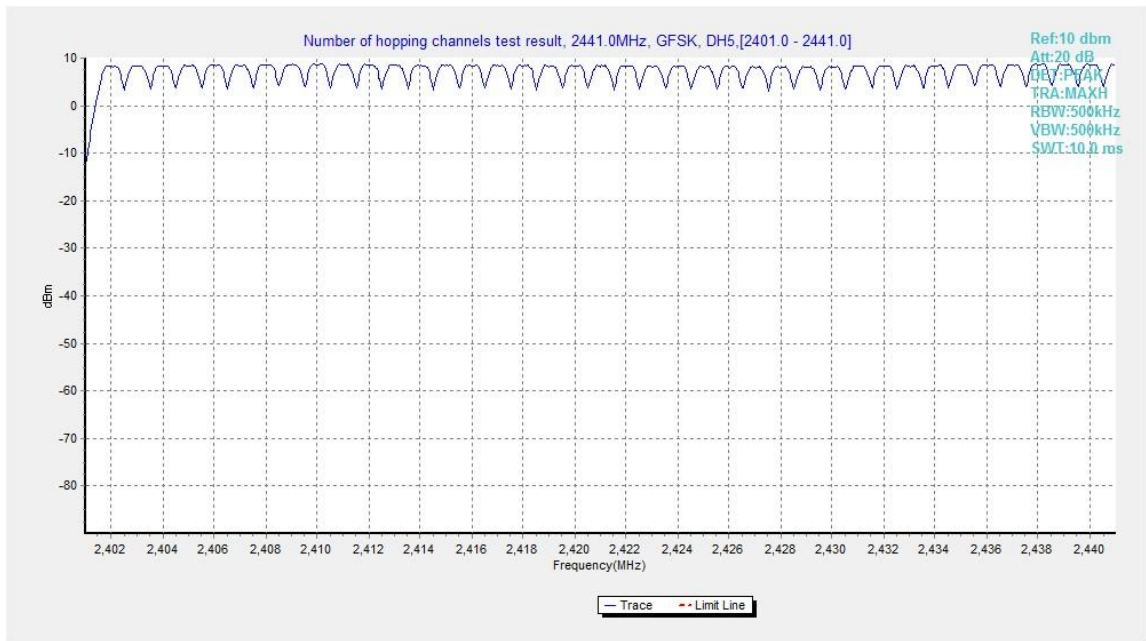


Fig.94. Number of hopping frequencies: GFSK, Channel 0 - 39

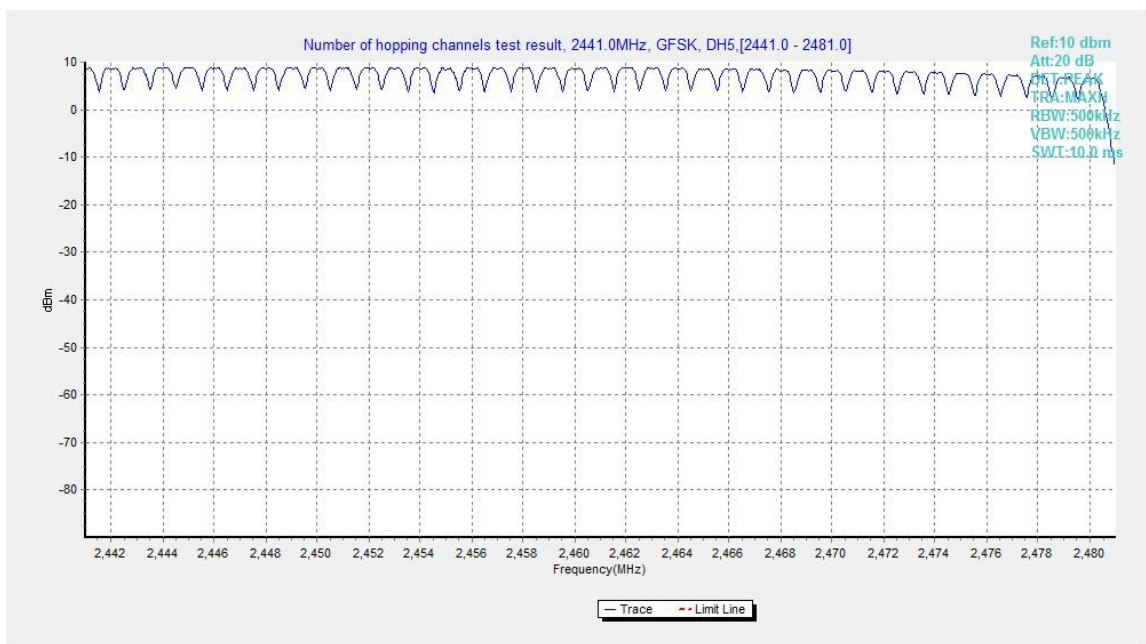


Fig.95. Number of hopping frequencies: GFSK, Channel 40 - 78



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



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



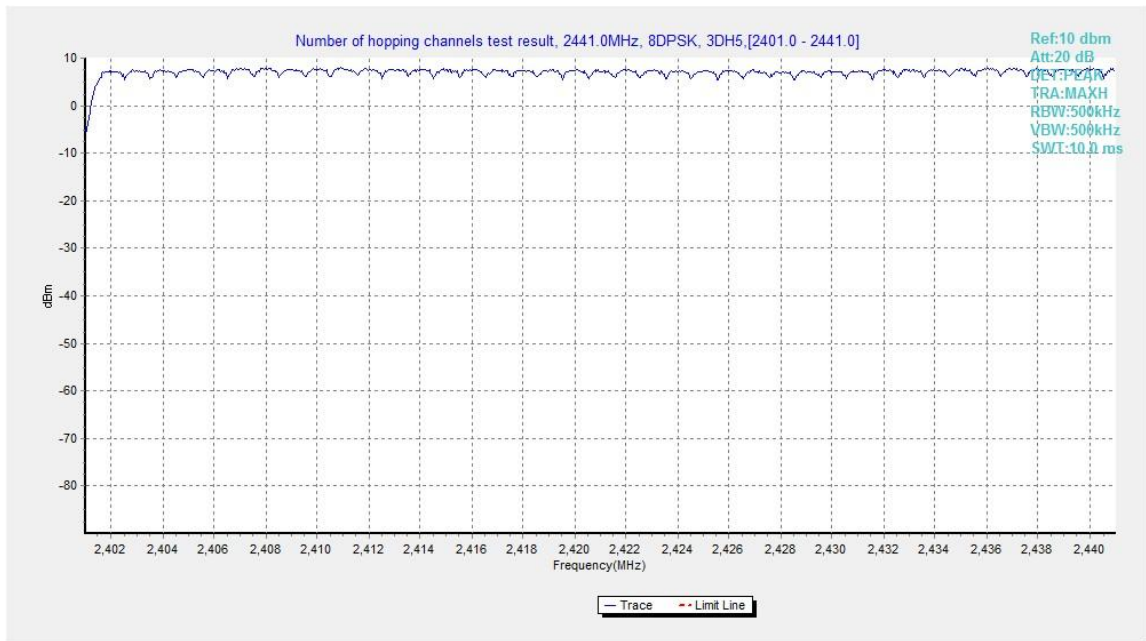


Fig.98. Number of hopping frequencies: 8DPSK, Channel 0 - 39

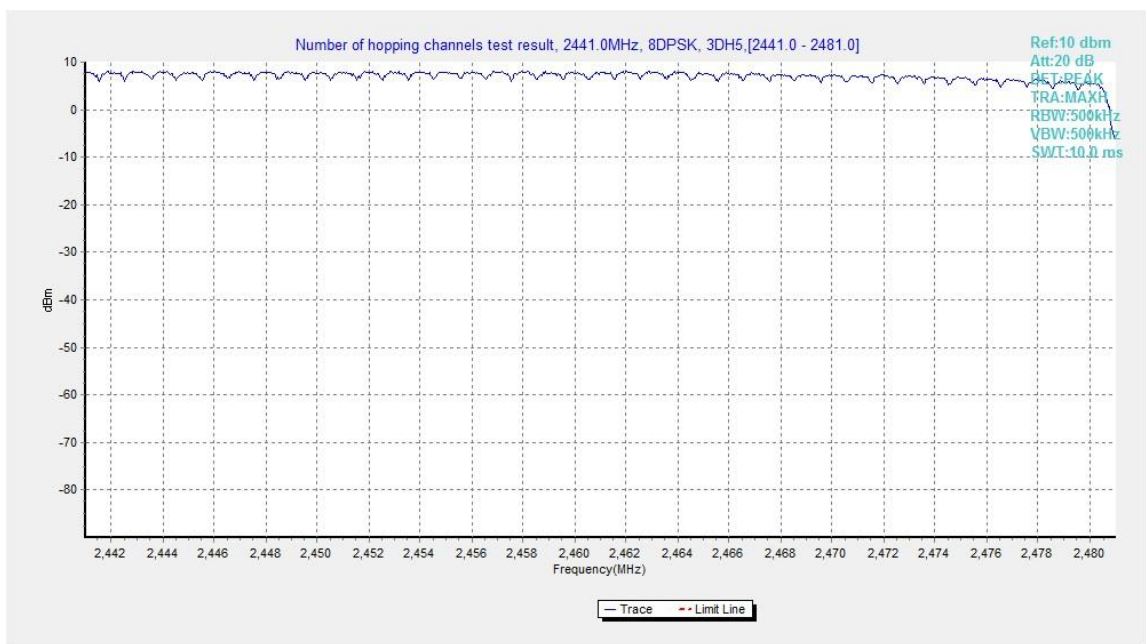


Fig.99. Number of hopping frequencies: 8DPSK, Channel 40 - 78

## 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.<sup>36</sup> 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 (dB $\mu$ V)	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 (dB $\mu$ V)	Conclusion
0.15 to 0.5	56 to 46	P
0.5 to 5	46	
5 to 30	50	

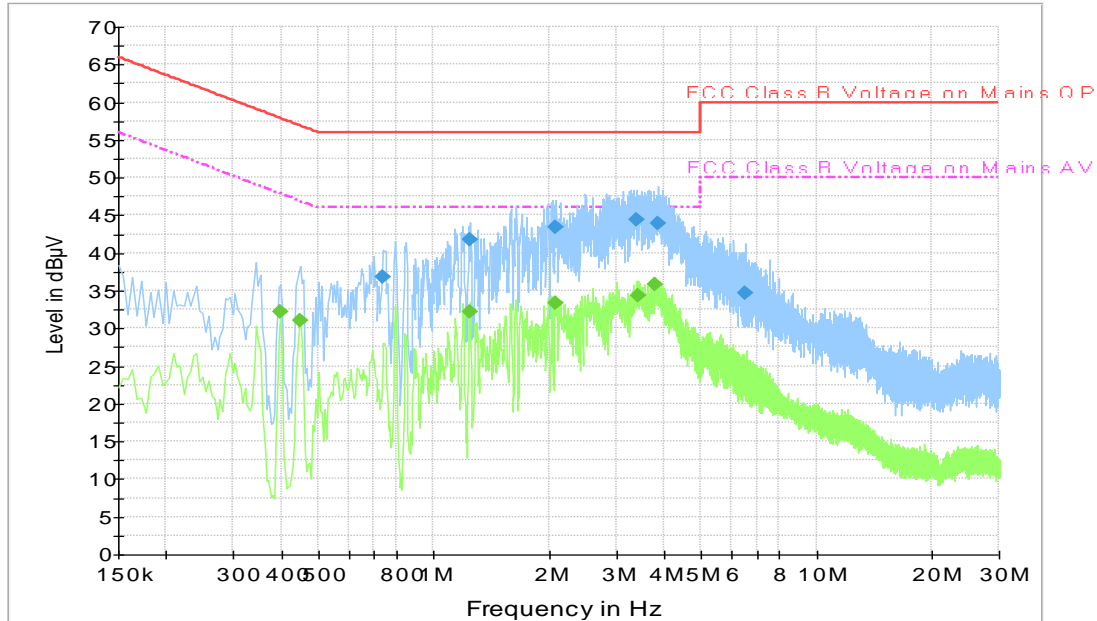
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to ANSI C63.10

**Conclusion: PASS**

**Test graphs as below:**

Traffic (with AE2) :



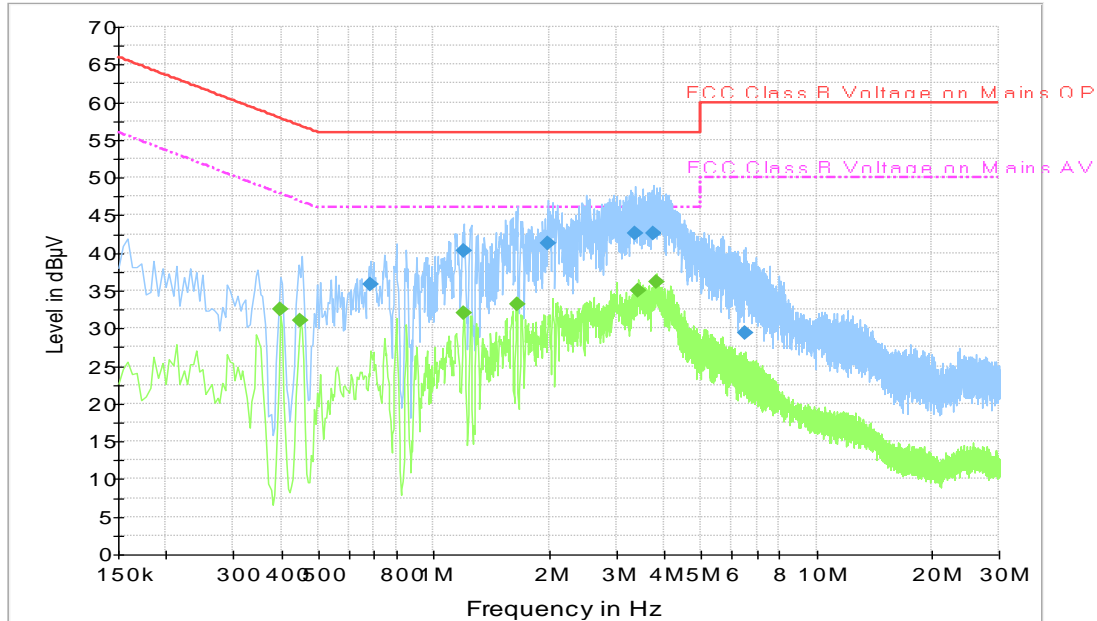
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.735000	36.8	2000.0	9.000	L1	19.8	19.2	56.0
1.243500	41.8	2000.0	9.000	L1	19.6	14.2	56.0
2.089500	43.4	2000.0	9.000	L1	19.7	12.6	56.0
3.390000	44.4	2000.0	9.000	L1	19.7	11.6	56.0
3.844500	43.9	2000.0	9.000	L1	19.6	12.1	56.0
6.522000	34.7	2000.0	9.000	L1	19.8	25.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.397500	32.3	2000.0	9.000	N	19.9	15.7	47.9
0.447000	31.0	2000.0	9.000	N	19.9	15.9	46.9
1.243500	32.3	2000.0	9.000	L1	19.6	13.7	46.0
2.080500	33.4	2000.0	9.000	L1	19.7	12.6	46.0
3.430500	34.3	2000.0	9.000	L1	19.7	11.7	46.0
3.795000	35.9	2000.0	9.000	L1	19.6	10.1	46.0

Idle (with AE2) :



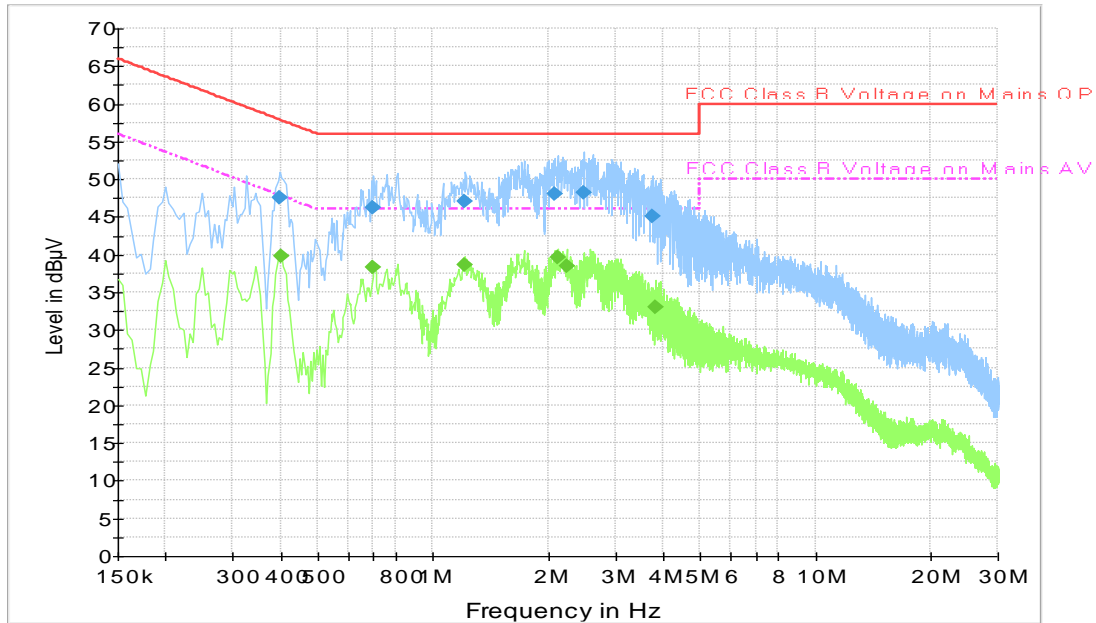
### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.685500	35.8	2000.0	9.000	L1	19.8	20.2	56.0
1.194000	40.3	2000.0	9.000	L1	19.6	15.7	56.0
1.990500	41.3	2000.0	9.000	L1	19.7	14.7	56.0
3.354000	42.7	2000.0	9.000	L1	19.7	13.3	56.0
3.768000	42.7	2000.0	9.000	L1	19.6	13.3	56.0
6.495000	29.5	2000.0	9.000	N	19.8	30.5	60.0

### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.397500	32.5	2000.0	9.000	N	19.9	15.4	47.9
0.447000	31.1	2000.0	9.000	N	19.9	15.9	46.9
1.194000	32.0	2000.0	9.000	L1	19.6	14.0	46.0
1.648500	33.1	2000.0	9.000	L1	19.7	12.9	46.0
3.412500	35.1	2000.0	9.000	L1	19.7	10.9	46.0
3.808500	36.2	2000.0	9.000	L1	19.6	9.8	46.0

Traffic (with AE3) :



### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.397500	47.6	2000.0	9.000	L1	19.9	10.3	57.9
0.699000	46.3	2000.0	9.000	L1	19.8	9.7	56.0
1.212000	47.0	2000.0	9.000	L1	19.6	9.0	56.0
2.076000	48.0	2000.0	9.000	L1	19.7	8.0	56.0
2.485500	48.2	2000.0	9.000	L1	19.7	7.8	56.0
3.768000	45.0	2000.0	9.000	L1	19.6	11.0	56.0

### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.402000	39.8	2000.0	9.000	L1	19.9	8.0	47.8
0.699000	38.2	2000.0	9.000	L1	19.8	7.8	46.0
1.212000	38.7	2000.0	9.000	L1	19.6	7.3	46.0
2.116500	39.6	2000.0	9.000	L1	19.7	6.4	46.0
2.233500	38.4	2000.0	9.000	L1	19.7	7.6	46.0
3.817500	33.0	2000.0	9.000	L1	19.6	13.0	46.0

## ANNEX E: Accreditation Certificate

United States Department of Commerce  
National Institute of Standards and Technology



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**Certificate of Accreditation to ISO/IEC 17025:2005**

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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).*

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2018-09-28 through 2019-09-30  
*Effective Dates*



  
*For the National Voluntary Laboratory Accreditation Program*

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