

Fig.30. Conducted spurious emission: $\pi/4$ DQPSK, Channel 0, 1GHz - 3GHz

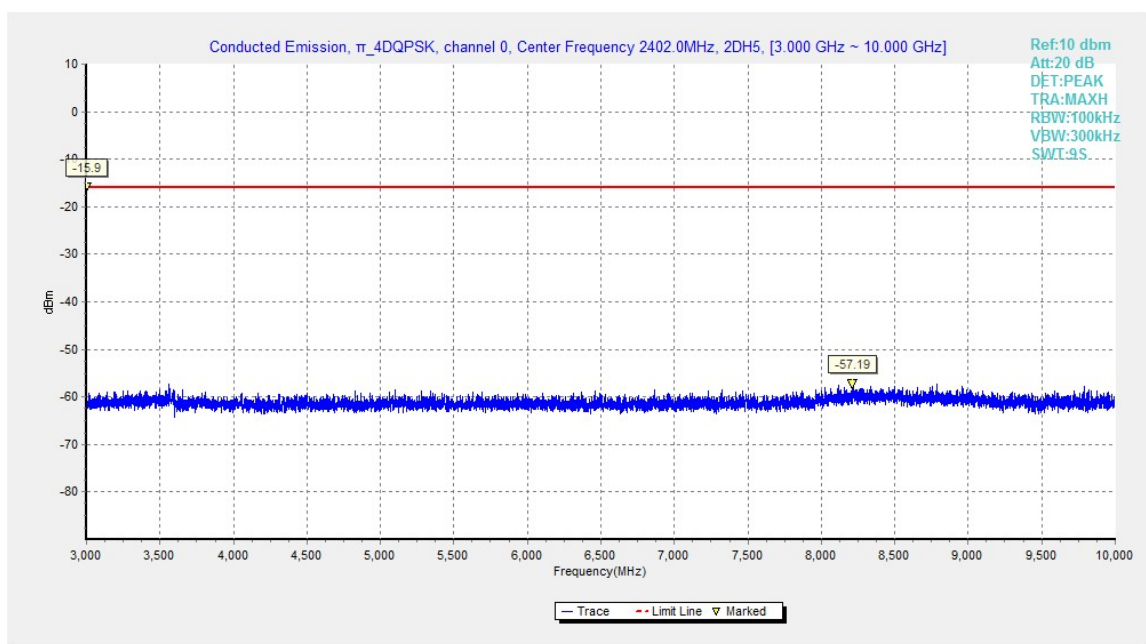


Fig.31. Conducted spurious emission: $\pi/4$ DQPSK, Channel 0, 3GHz - 10GHz

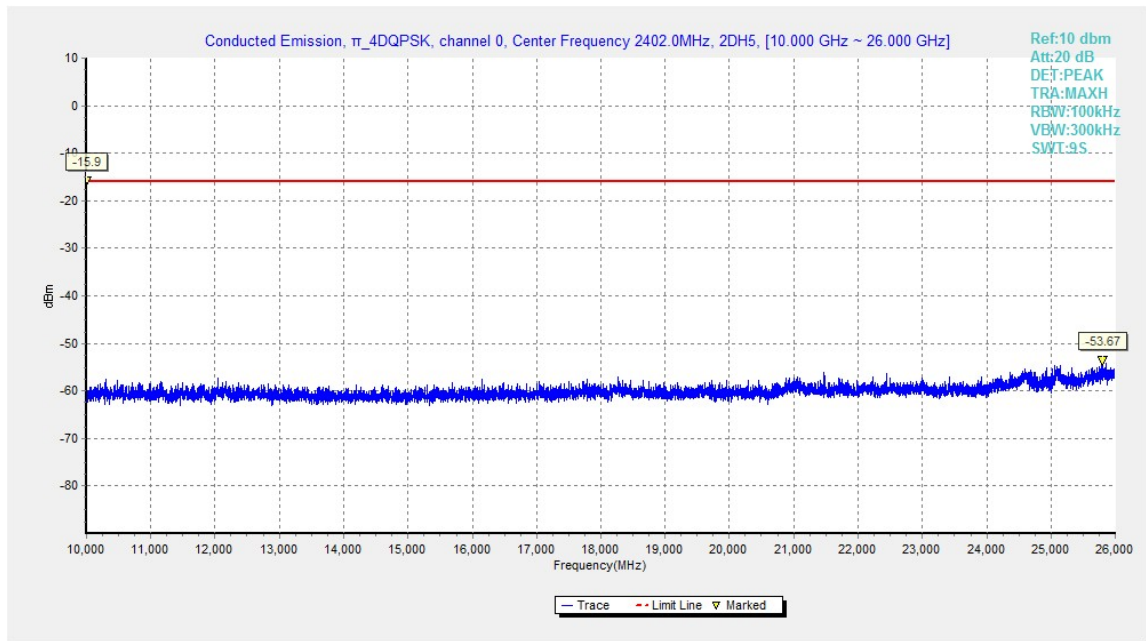


Fig.32. Conducted spurious emission: $\pi/4$ DQPSK, Channel 0, 10GHz - 26GHz

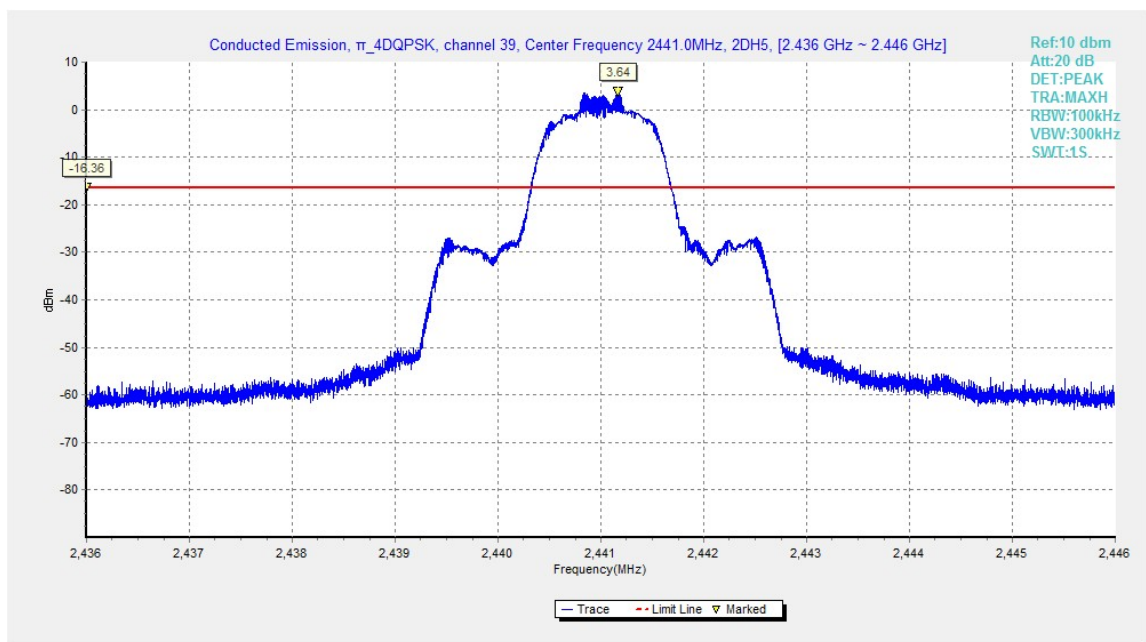


Fig.33. Conducted spurious emission: $\pi/4$ DQPSK, Channel 39, 2441MHz

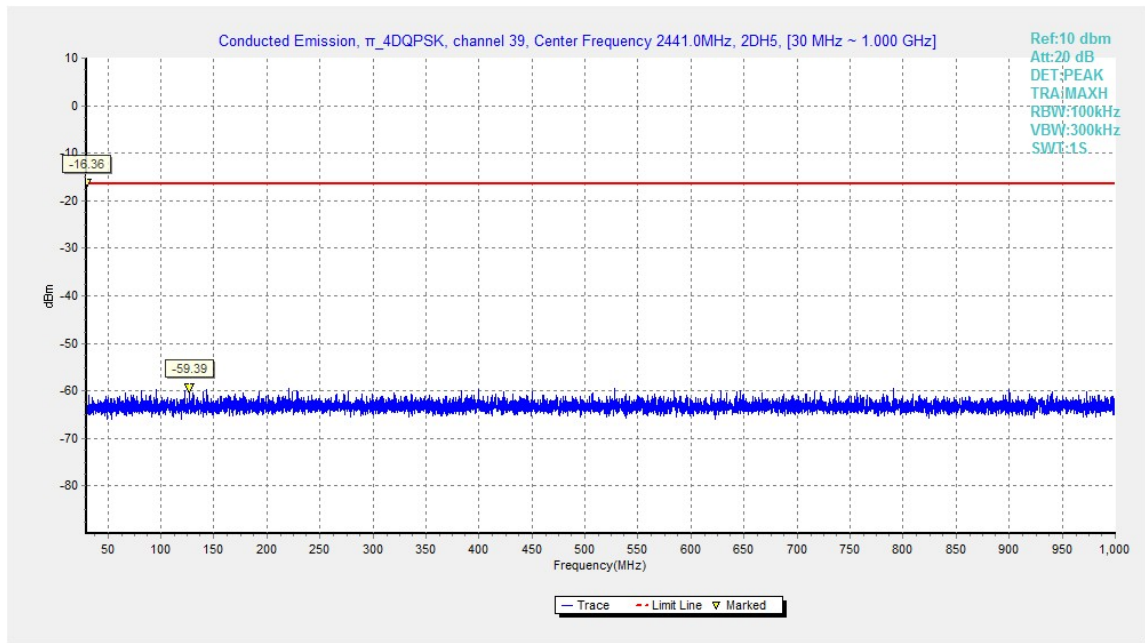


Fig.34. Conducted spurious emission: $\pi/4$ DQPSK, Channel 39, 30MHz - 1GHz

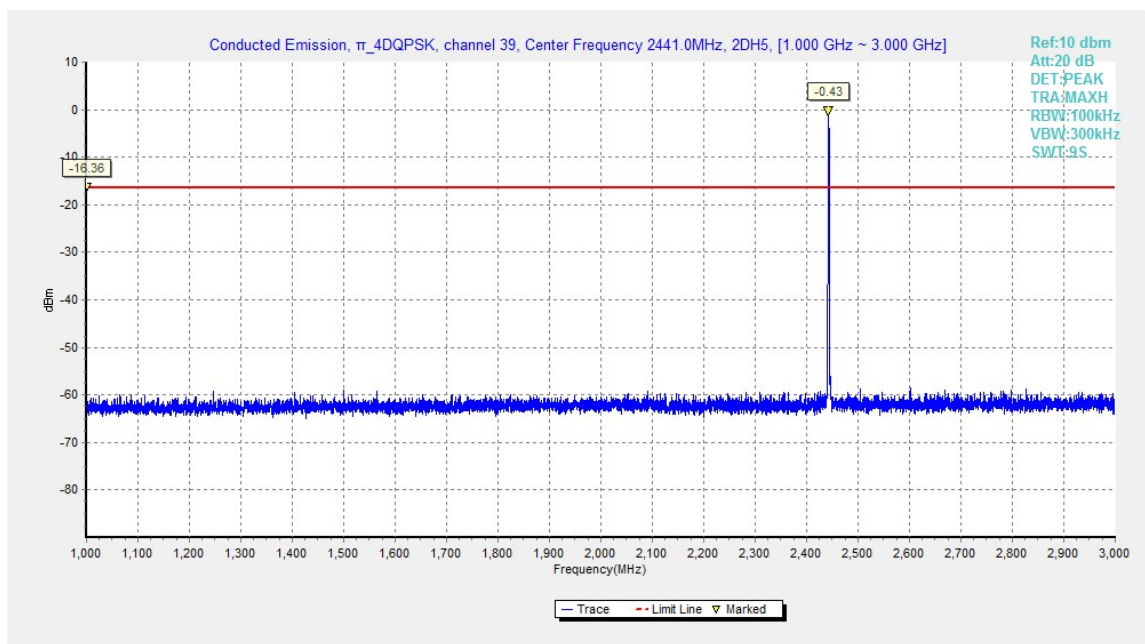


Fig.35. Conducted spurious emission: $\pi/4$ DQPSK, Channel 39, 1GHz - 3GHz

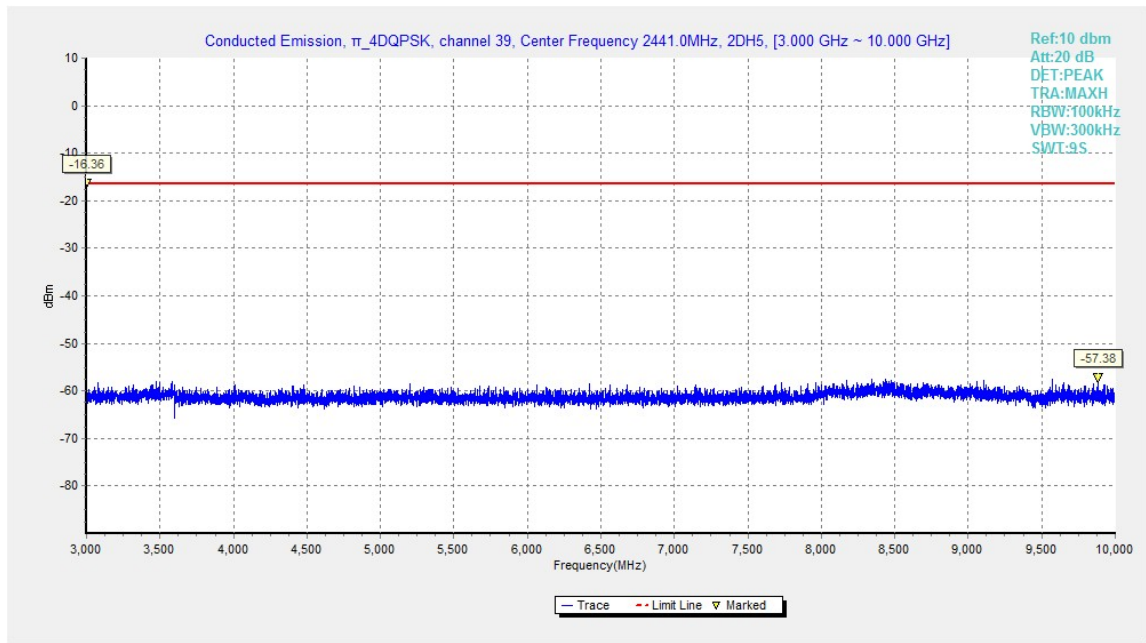


Fig.36. Conducted spurious emission: $\pi/4$ DQPSK, Channel 39, 3GHz - 10GHz

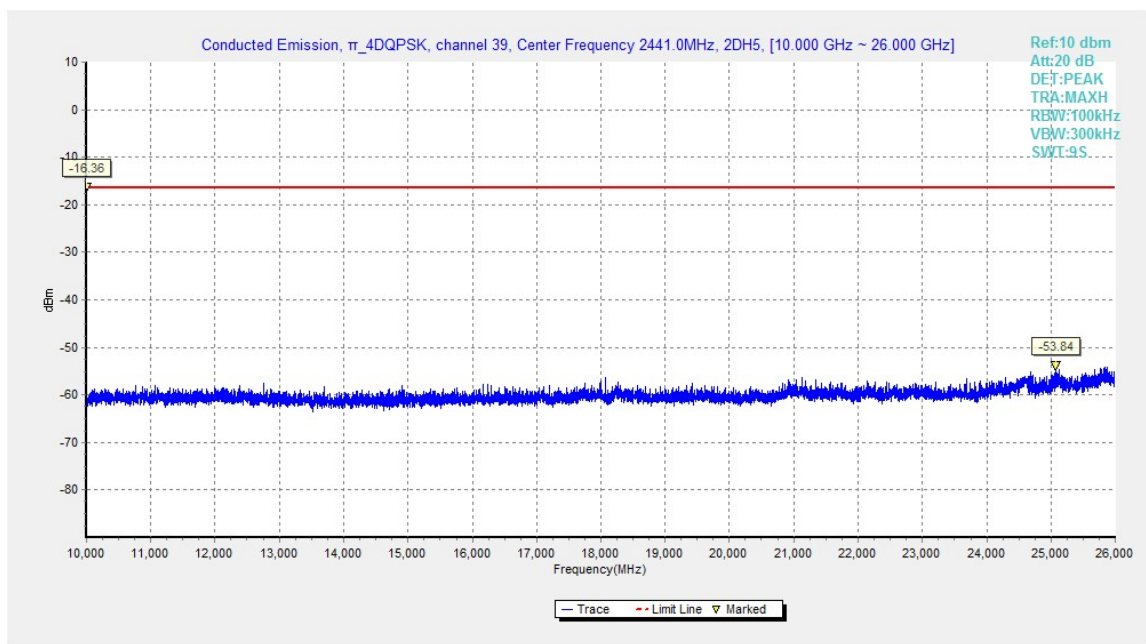


Fig.37. Conducted spurious emission: $\pi/4$ DQPSK, Channel 39, 10GHz – 26GHz

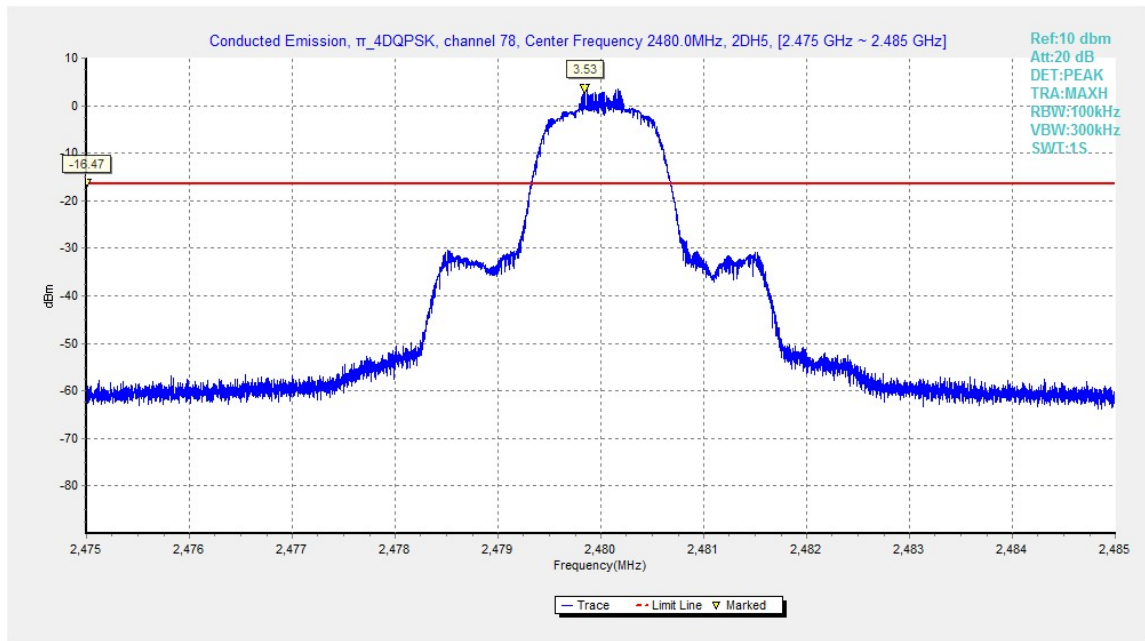


Fig.38. Conducted spurious emission: $\pi/4$ DQPSK, Channel 78, 2480MHz

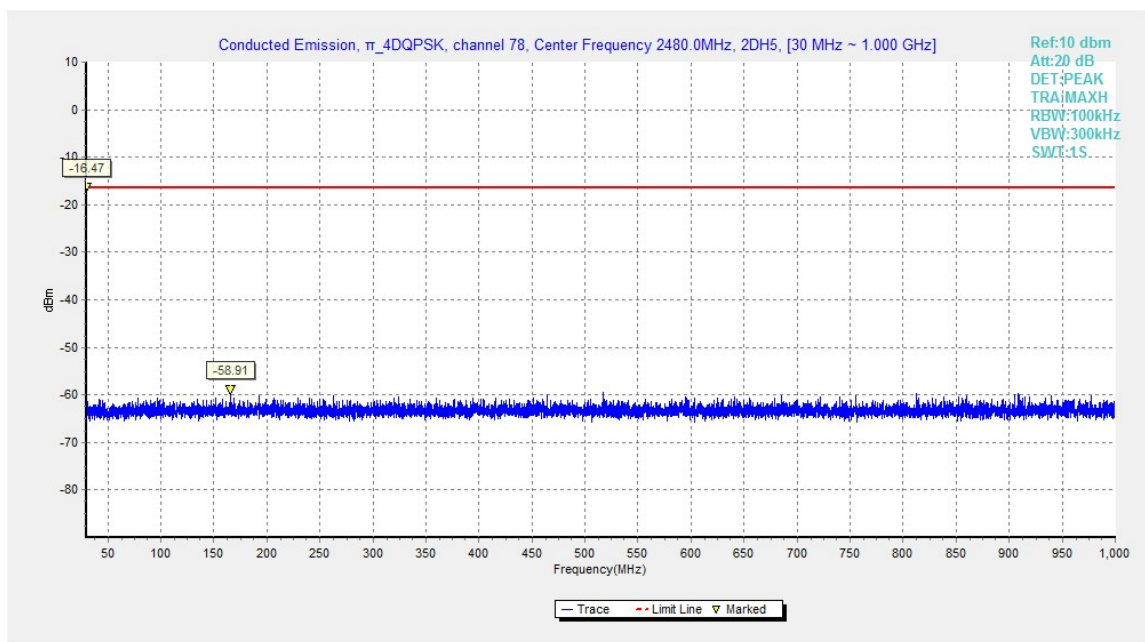


Fig.39. Conducted spurious emission: $\pi/4$ DQPSK, Channel 78, 30MHz - 1GHz

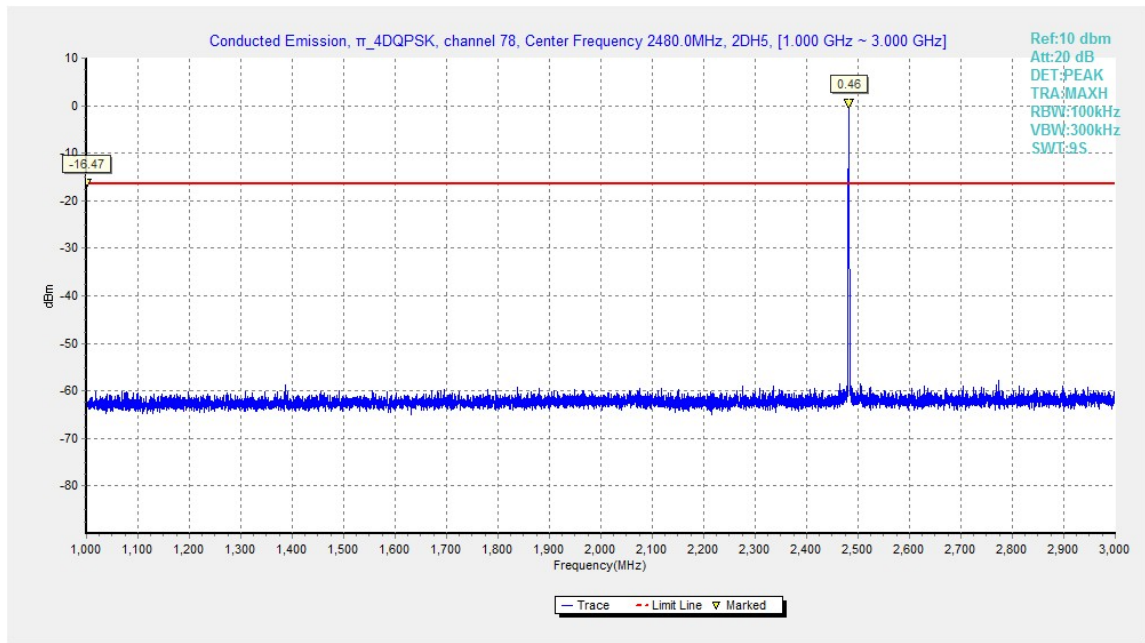


Fig.40. Conducted spurious emission: $\pi/4$ DQPSK, Channel 78, 1GHz - 3GHz

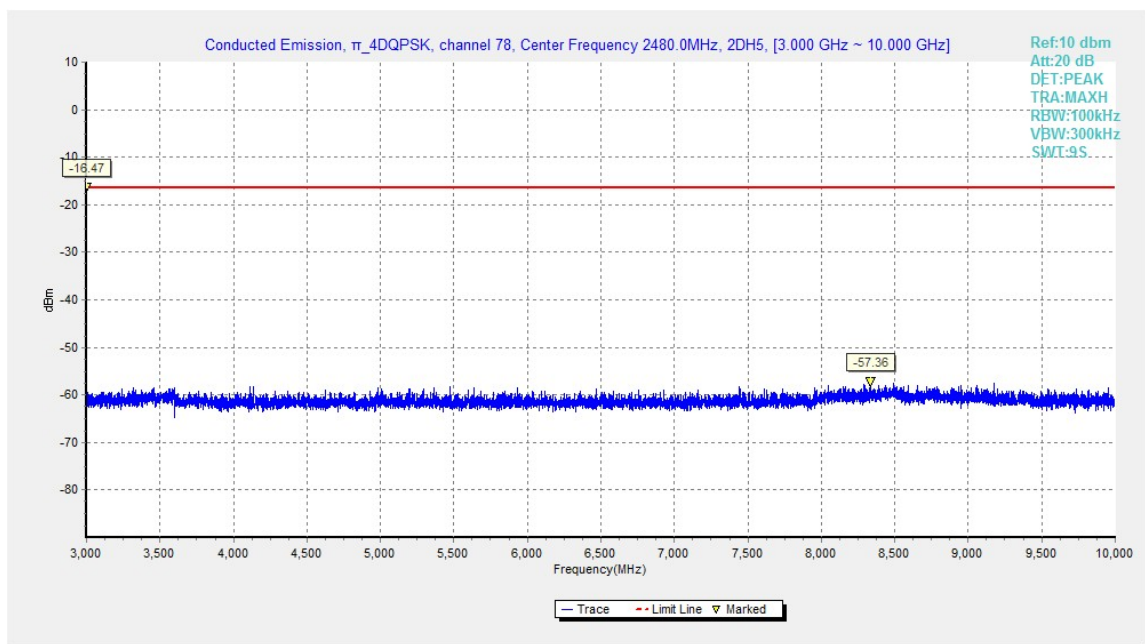


Fig.41. Conducted spurious emission: $\pi/4$ DQPSK, Channel 78, 3GHz - 10GHz

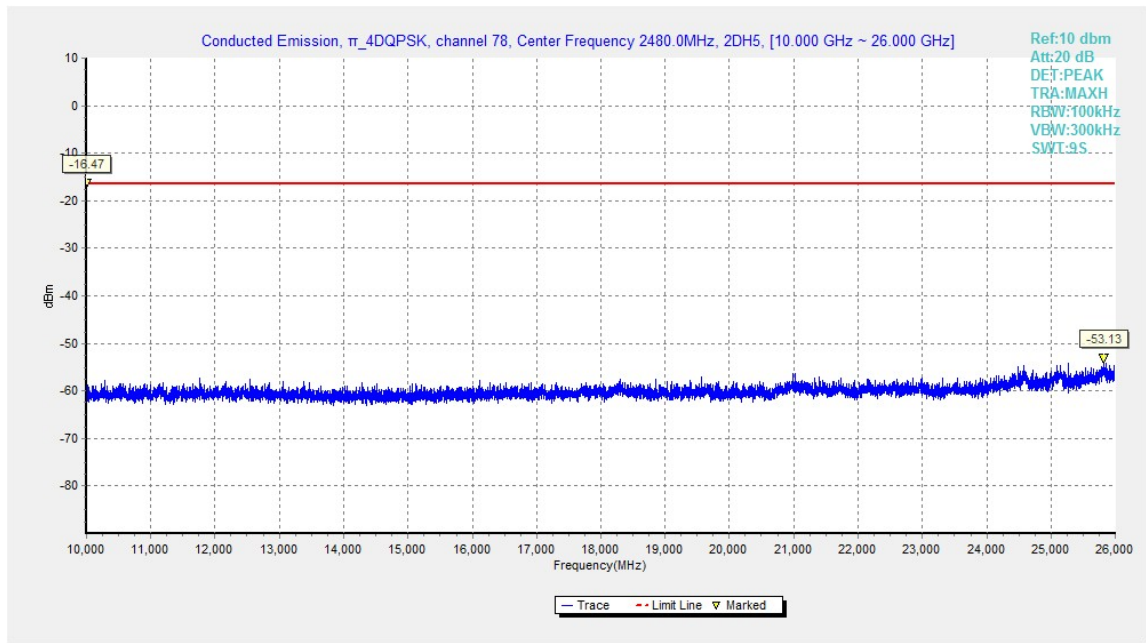


Fig.42. Conducted spurious emission: $\pi/4$ DQPSK, Channel 78, 10GHz - 26GHz

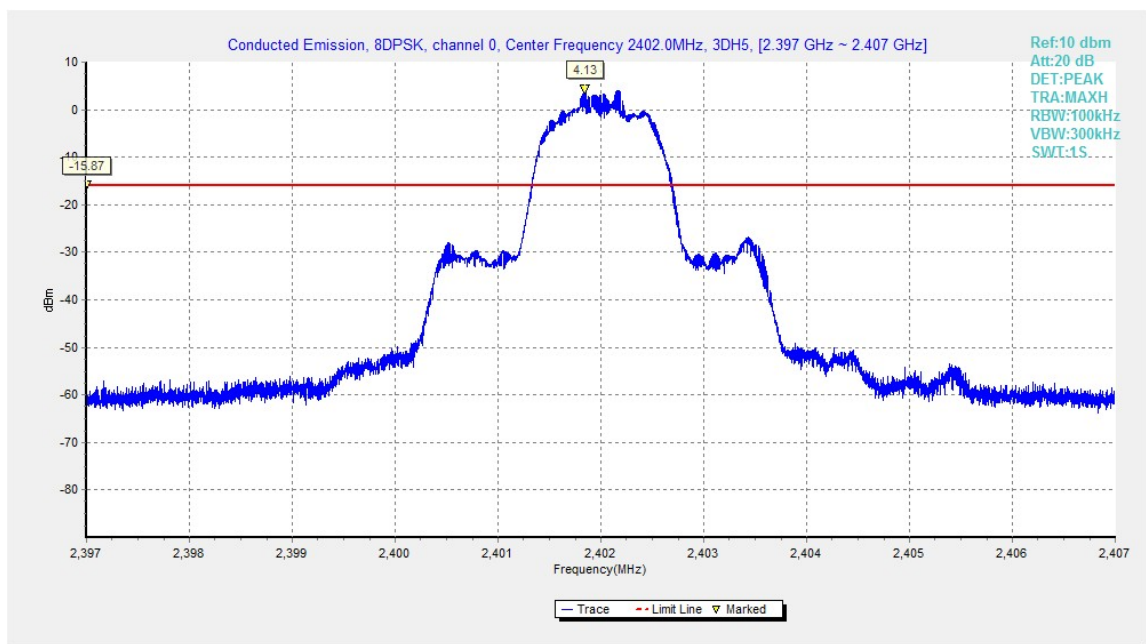


Fig.43. Conducted spurious emission: 8DPSK, Channel 0,2402MHz

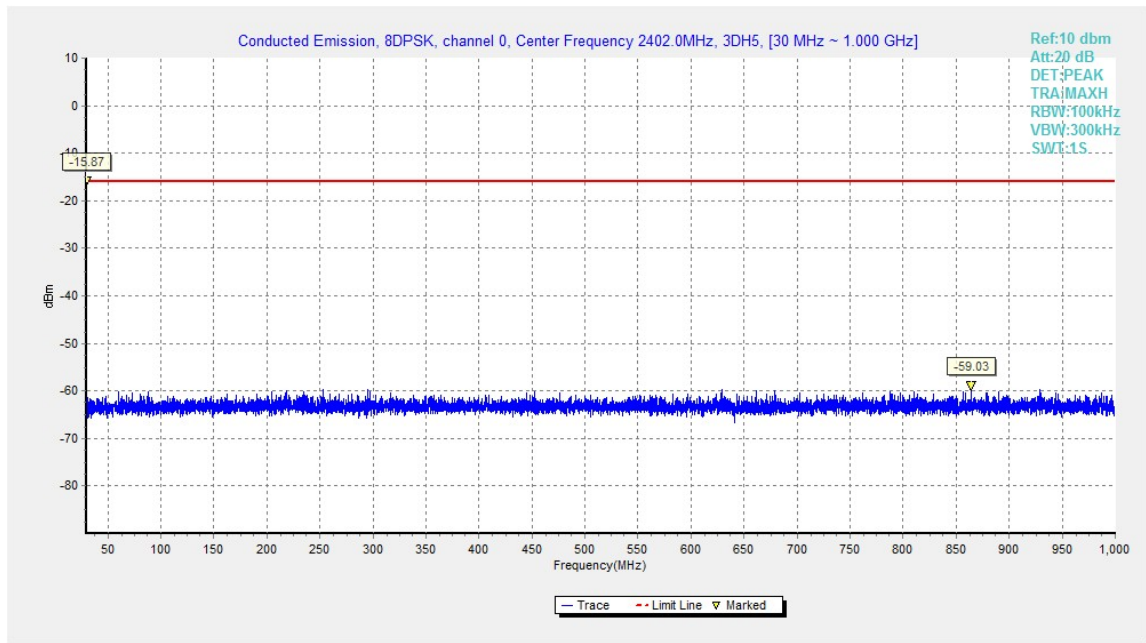


Fig.44. Conducted spurious emission: 8DPSK, Channel 0, 30MHz - 1GHz

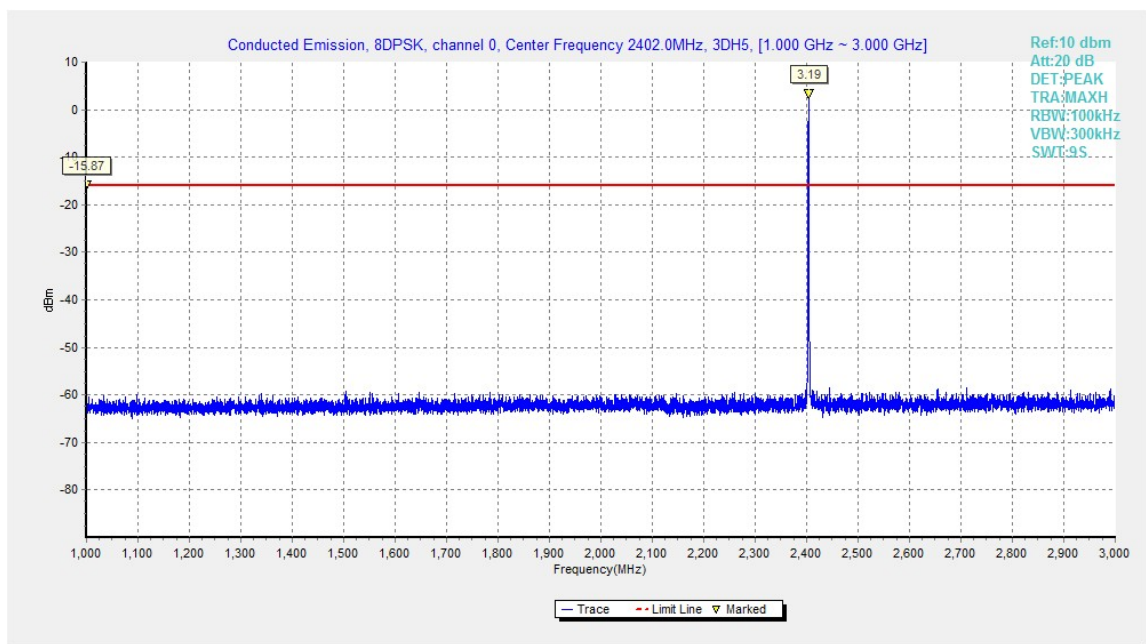


Fig.45. Conducted spurious emission: 8DPSK, Channel 0, 1GHz - 3GHz

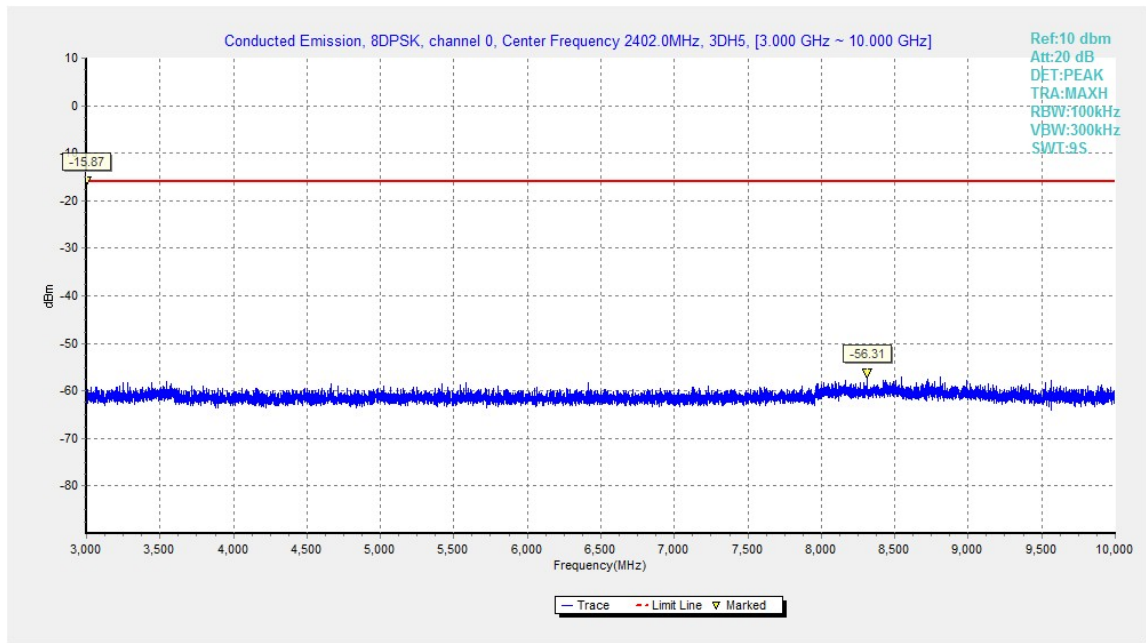


Fig.46. Conducted spurious emission: 8DPSK, Channel 0, 3GHz - 10GHz

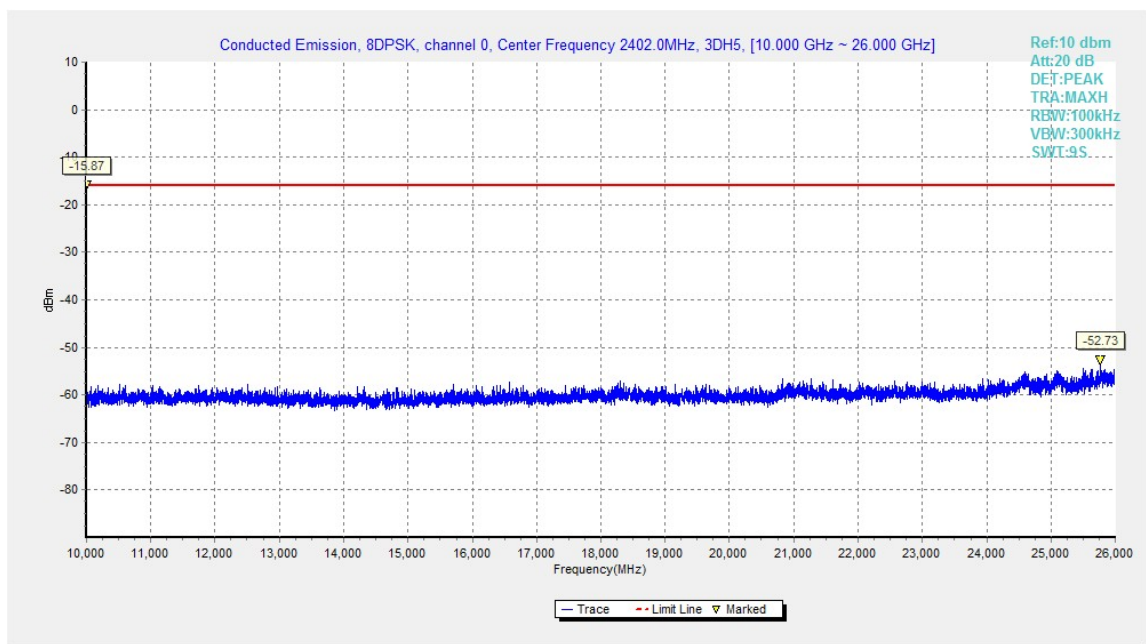


Fig.47. Conducted spurious emission: 8DPSK, Channel 0, 10GHz - 26GHz

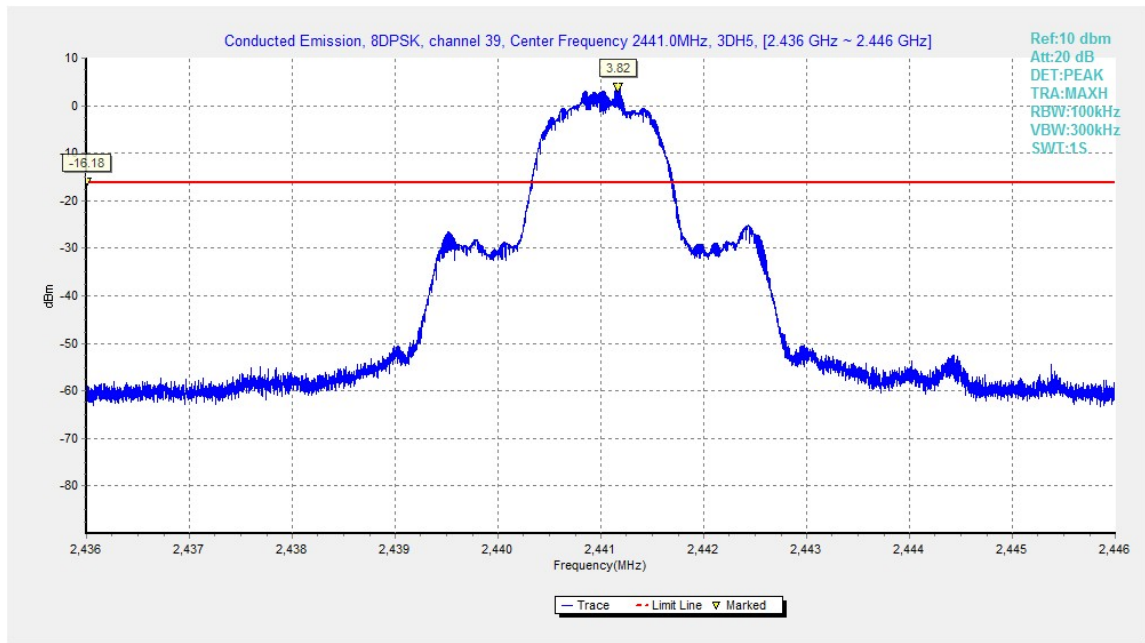


Fig.48. Conducted spurious emission: 8DPSK, Channel 39, 2441MHz

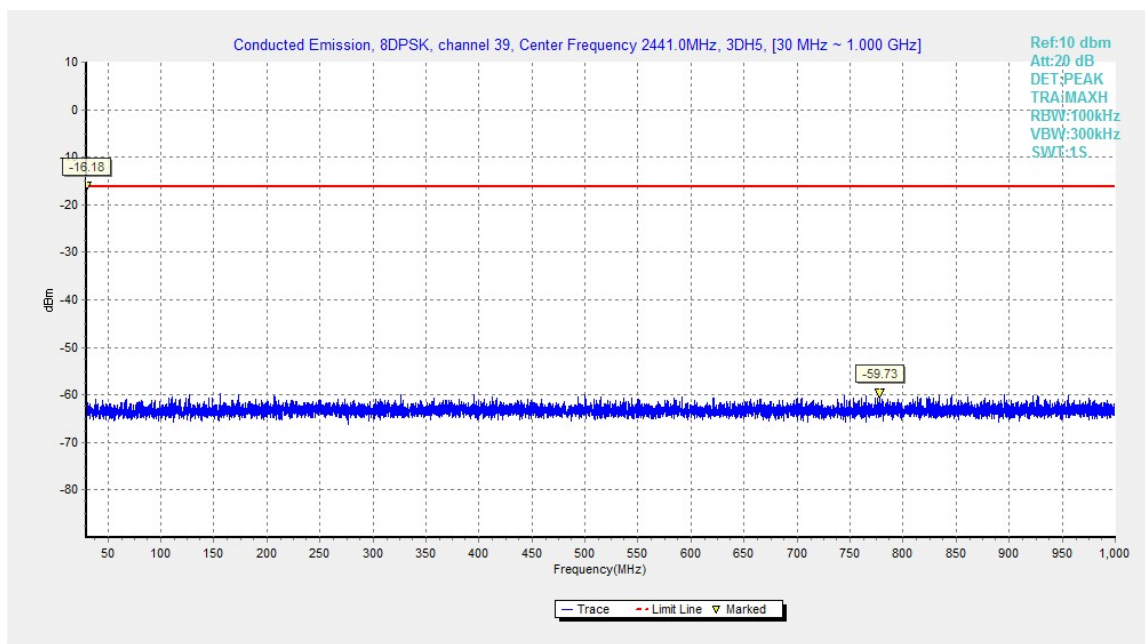


Fig.49. Conducted spurious emission: 8DPSK, Channel 39, 30MHz - 1GHz

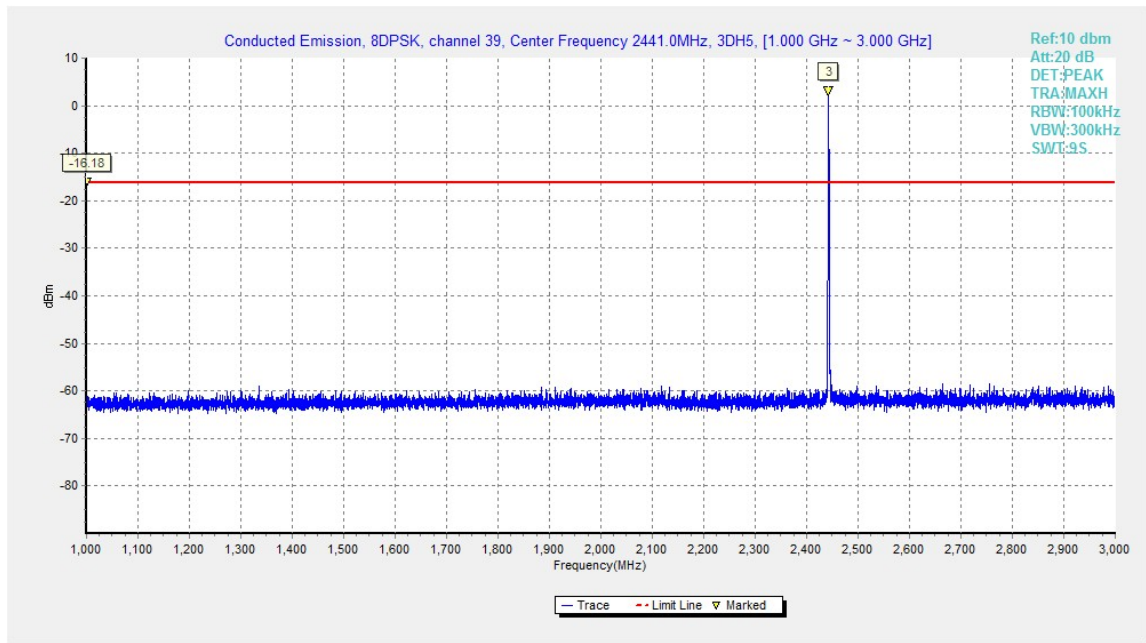


Fig.50. Conducted spurious emission: 8DPSK, Channel 39, 1GHz - 3GHz

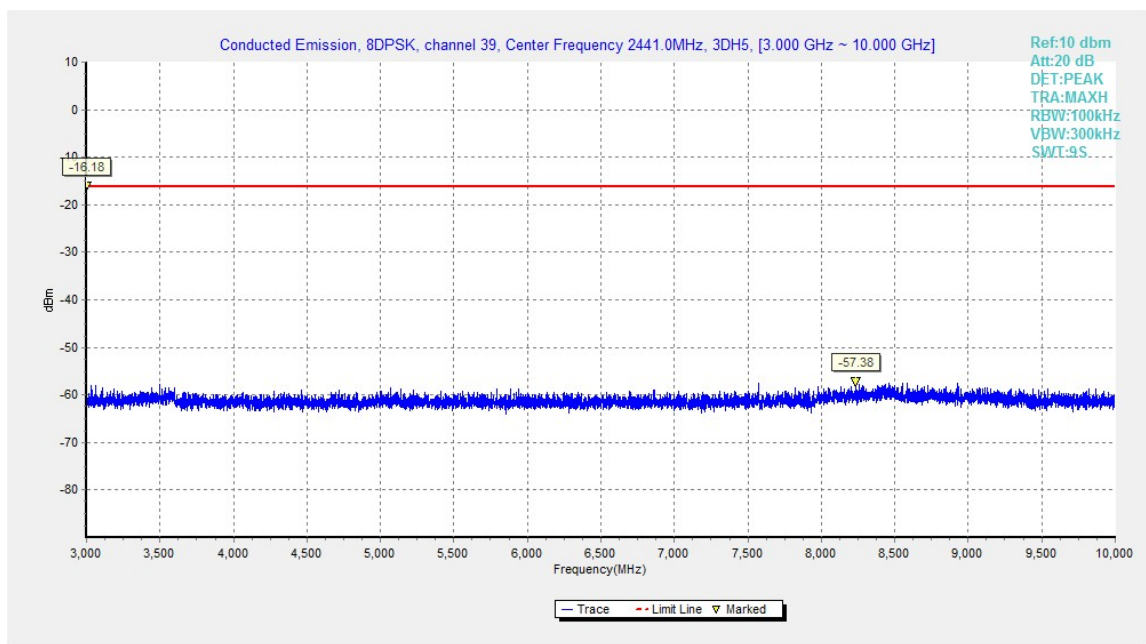


Fig.51. Conducted spurious emission: 8DPSK, Channel 39, 3GHz - 10GHz

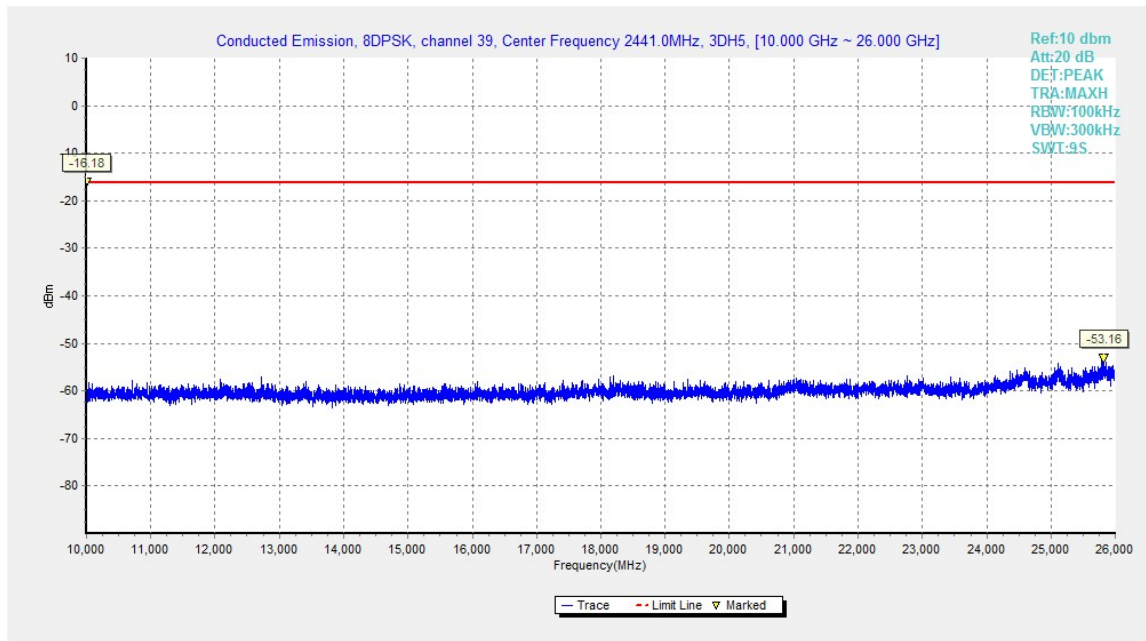


Fig.52. Conducted spurious emission: 8DPSK, Channel 39, 10GHz – 26GHz

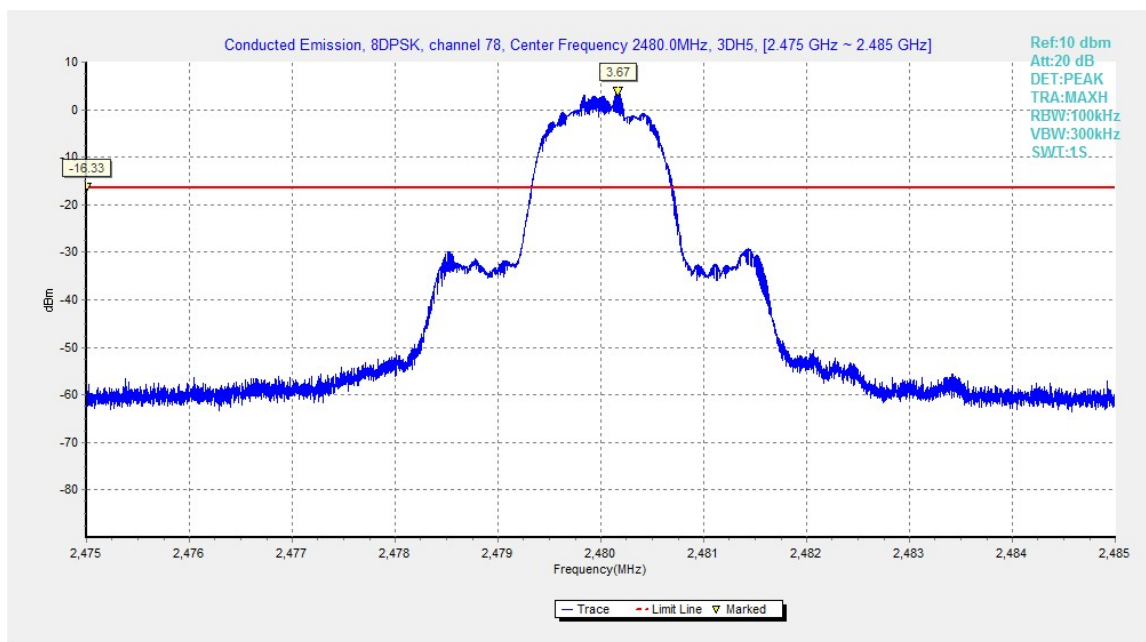


Fig.53. Conducted spurious emission: 8DPSK, Channel 78, 2480MHz

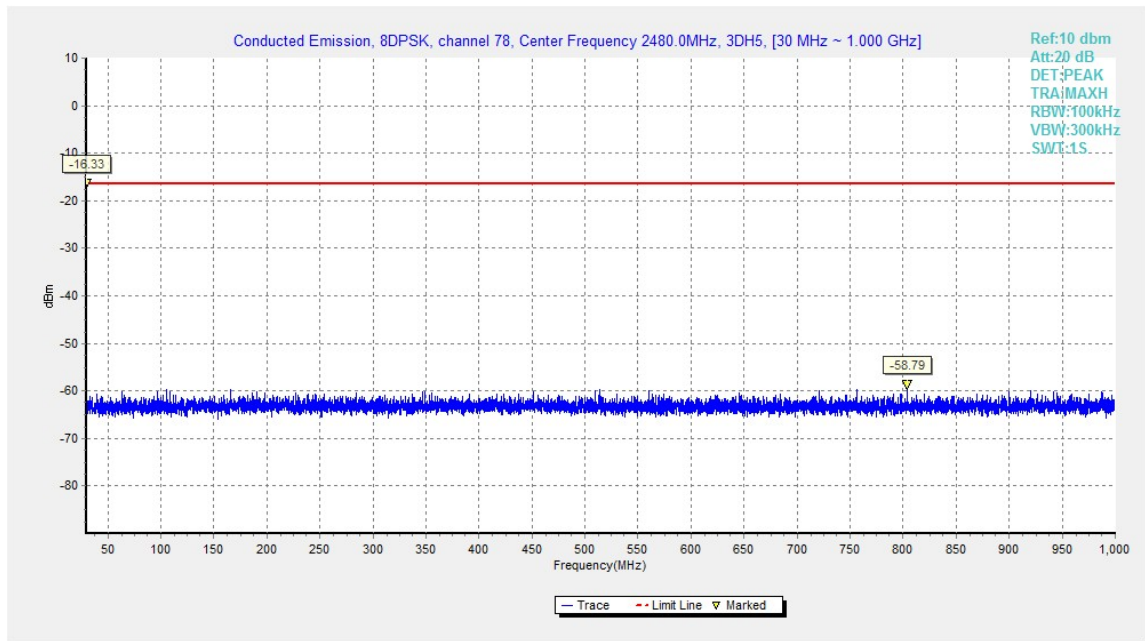


Fig.54. Conducted spurious emission: 8DPSK, Channel 78, 30MHz - 1GHz

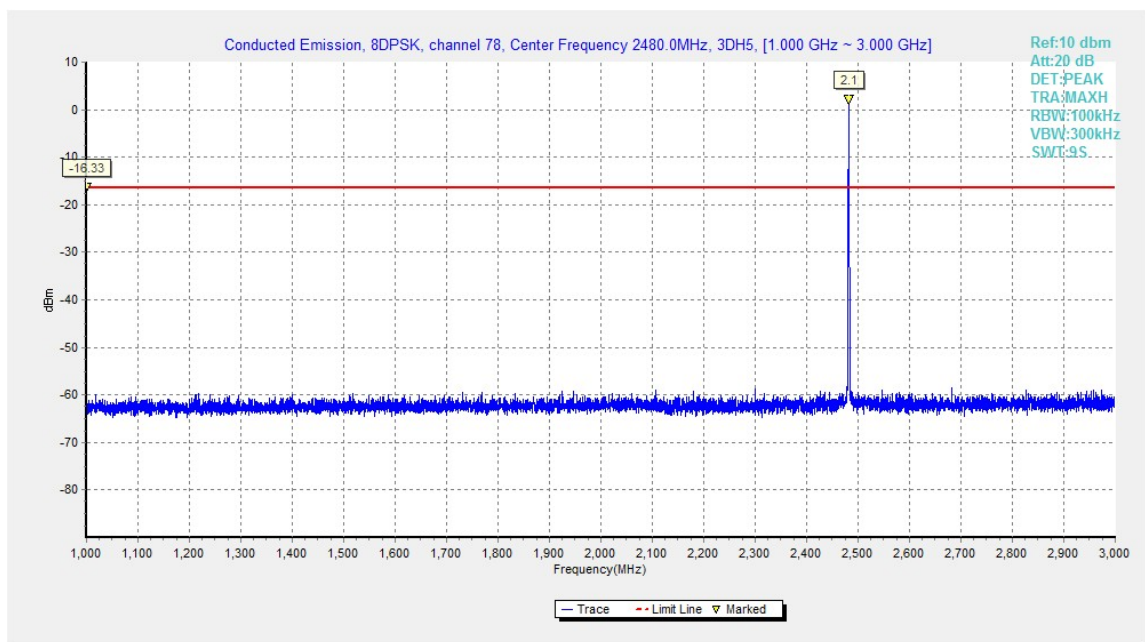


Fig.55. Conducted spurious emission: 8DPSK, Channel 78, 1GHz - 3GHz

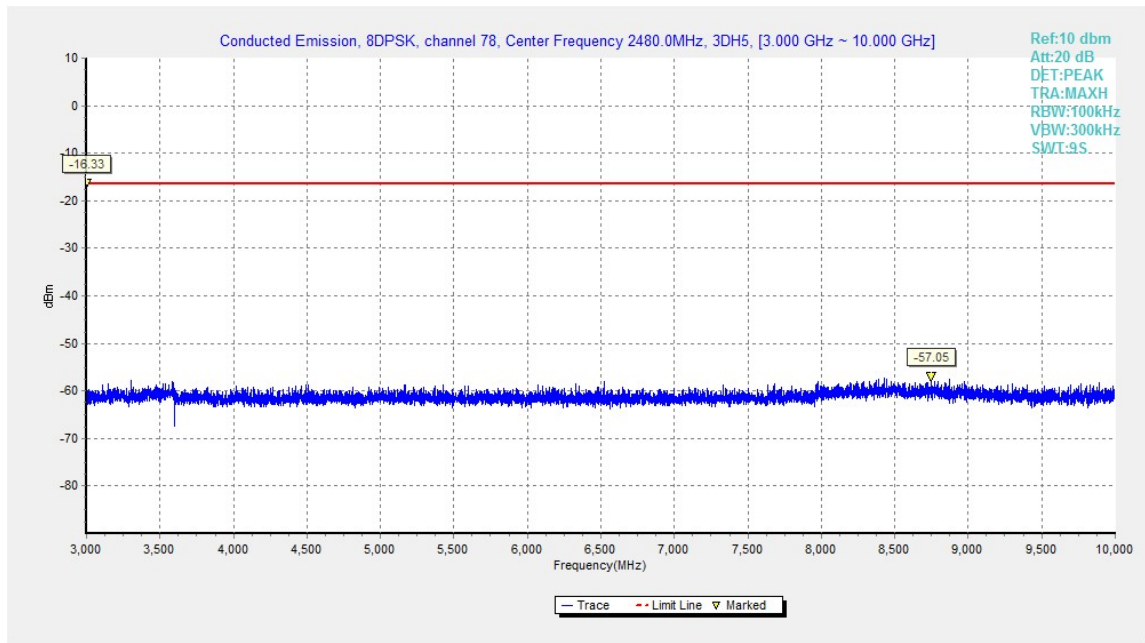


Fig.56. Conducted spurious emission: 8DPSK, Channel 78, 3GHz - 10GHz

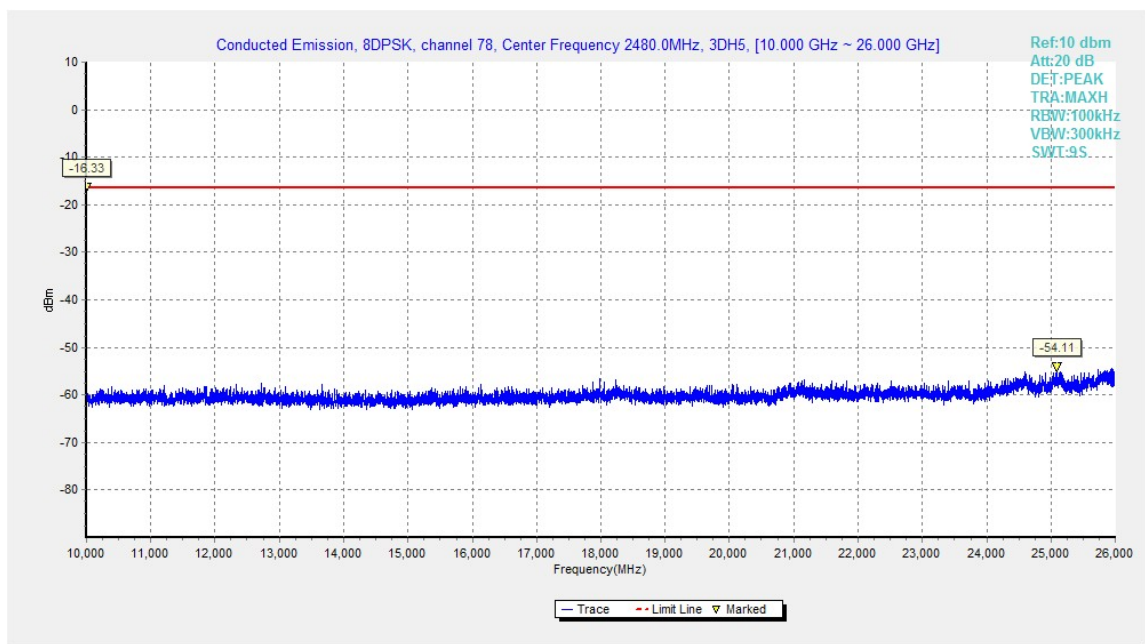


Fig.57. Conducted spurious emission: 8DPSK, Channel 78, 10GHz - 26GHz

A.5. Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

The measurement is made according to ANSI C63.10

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

Measurement Results:

$$\text{Result} = P_{\text{Mea}} + \text{ARPL}$$

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 39 2441 MHz	9 kHz ~ 30 MHz	/	P
	30 MHz ~ 1 GHz	/	P
	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 78 2480 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Power	2.38GHz~2.4GHz---L	Fig.58	P
Power	2.45GHz~2.5GHz---H	Fig.59	P

For all channels	18 GHz ~ 26 GHz	/	P
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Forπ/4 DQPSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	/	P
	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 78 2480 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Power	2.38GHz~2.4GHz---L	Fig.60	P
Power	2.45GHz~2.5GHz---H	Fig.61	P
For all channels	18 GHz ~ 26 GHz	/	P

For 8DPSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	/	P
	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Ch 78 2480 MHz	1 GHz ~ 3 GHz	/	P
	3 GHz ~ 18 GHz	/	P
Power	2.38GHz~2.4GHz---L	Fig.62	P
Power	2.45GHz~2.5GHz---H	Fig.63	P
For all channels	18 GHz ~ 26 GHz	/	P

GFSK Ch 0 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2386.500	46.27	2.9	32.0	11.45	H
2389.600	46.30	2.9	32.0	11.47	H
4804.500	33.41	-35.0	34.1	34.35	V
7206.000	37.28	-32.4	35.8	33.87	H
9607.500	40.94	-29.7	36.7	33.88	H
12010.500	42.21	-30.5	38.9	33.81	H

GFSK Ch 39 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2437.800	46.52	2.9	32.0	11.65	H
2445.000	46.42	2.9	32.0	11.53	H
4882.500	33.03	-35.5	34.1	34.47	V
7323.000	38.46	-31.3	35.8	33.98	H
9763.500	39.04	-31.4	36.9	33.52	H
12205.500	44.10	-28.9	39.0	33.97	H

GFSK Ch 78 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2483.800	47.01	2.9	32.0	12.08	H
2484.000	46.75	2.9	32.0	11.82	H
4960.500	33.64	-34.9	34.1	34.42	V
7440.000	37.35	-32.2	35.8	33.72	H
9919.500	41.19	-29.6	37.1	33.74	H
12400.500	43.46	-30.0	39.1	34.42	H

$\pi/4$ DQPSK Ch 0 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2387.700	46.24	2.9	32.0	11.42	H
2389.600	46.27	2.9	32.0	11.44	H
4804.500	33.42	-35.0	34.1	34.37	V
7206.000	37.28	-32.4	35.8	33.87	H
9607.500	40.82	-29.7	36.7	33.76	H
12010.500	42.17	-30.5	38.9	33.76	H

$\pi/4$ DQPSK Ch 39 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2438.000	46.53	2.9	32.0	11.65	H
2444.300	46.60	2.9	32.0	11.71	H
4882.500	44.14	-35.5	34.1	45.59	V
7323.000	39.11	-31.3	35.8	34.62	H
9763.500	38.44	-31.4	36.9	32.93	H
12205.500	33.02	-28.9	39.0	22.90	H

$\pi/4$ DQPSK Ch 78 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2483.600	47.15	2.9	32.0	12.22	H
2483.800	46.52	2.9	32.0	11.59	H
4960.500	33.57	-34.9	34.1	34.35	V
7440.000	37.45	-32.2	35.8	33.82	H
9919.500	41.16	-29.6	37.1	33.70	H
12400.500	43.41	-30.0	39.1	34.38	H

8DPSK Ch 0 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2387.500	46.35	2.9	32.0	11.53	H
2389.300	46.29	2.9	32.0	11.46	H
4804.500	33.40	-35.0	34.1	34.35	V
7206.000	37.29	-32.4	35.8	33.88	H
9607.500	40.95	-29.7	36.7	33.89	H
12010.500	42.15	-30.5	38.9	33.75	H

8DPSK Ch 39 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2437.600	46.43	2.9	32.0	11.56	H
2444.800	46.39	2.9	32.0	11.50	H
4882.500	33.00	-35.5	34.1	34.45	V
7323.000	38.51	-31.3	35.8	34.02	H
9763.500	39.15	-31.4	36.9	33.64	H
12205.500	44.05	-28.9	39.0	33.92	H

8DPSK Ch 78 - Average

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2483.500	47.08	2.9	32.0	12.16	H
2483.700	47.01	2.9	32.0	12.09	H
4960.500	33.72	-34.9	34.1	34.50	V
7440.000	37.42	-32.2	35.8	33.79	H
9919.500	41.23	-29.6	37.1	33.78	H
12400.500	43.48	-30.0	39.1	34.44	H

GFSK Ch 0 – Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2380.448	59.96	2.9	32.0	25.15	H
2387.224	60.30	2.9	32.0	25.48	H
4804.000	38.72	-35.0	34.1	39.65	V
7206.000	42.65	-32.4	35.8	39.25	H
9608.000	45.59	-29.7	36.7	38.52	H
12010.000	44.35	-30.5	38.9	35.94	H

GFSK Ch 39 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2362.600	48.33	-27.4	31.9	43.82	H
2509.800	48.52	-26.5	32.0	42.99	H
4882.000	39.55	-35.5	34.1	40.99	V
7323.000	44.18	-31.3	35.8	39.69	H
9764.000	43.60	-31.4	36.9	38.09	H
12205.000	46.74	-28.8	39.0	36.60	H

GFSK Ch 78 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2483.570	60.53	2.9	32.0	25.60	H
2490.820	60.46	2.9	32.0	25.53	H
4960.000	39.98	-34.9	34.1	40.76	V
7440.000	41.96	-32.2	35.8	38.34	H
9920.000	46.14	-29.7	37.1	38.69	H
12400.000	45.57	-30.0	39.1	36.55	H

π/4 DQPSK Ch 0 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2382.072	60.87	2.9	32.0	26.05	H
2386.818	60.45	2.9	32.0	25.62	H
4804.000	39.65	-35.0	34.1	40.59	V
7206.000	42.11	-32.4	35.8	38.70	H
9608.000	46.22	-29.7	36.7	39.15	H
12010.000	45.30	-30.5	38.9	36.89	H

$\pi/4$ DQPSK Ch 39 -Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2356.000	47.95	-27.7	31.9	43.72	H
2524.600	47.49	-26.8	32.0	42.28	H
4882.000	39.02	-35.5	34.1	40.47	V
7323.000	44.41	-31.3	35.8	39.92	H
9764.000	42.49	-31.4	36.9	36.98	H
12205.000	46.51	-28.8	39.0	36.37	H

$\pi/4$ DQPSK Ch 78 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2491.490	60.99	2.9	32.0	26.06	H
2495.310	60.79	2.9	32.0	25.85	H
4960.000	40.20	-34.9	34.1	40.98	V
7440.000	42.94	-32.2	35.8	39.31	H
9920.000	46.59	-29.7	37.1	39.14	H
12400.000	46.18	-30.0	39.1	37.16	H

8DPSK Ch 0 -Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2384.074	60.22	2.9	32.0	25.40	H
2386.090	60.18	2.9	32.0	25.36	H
4804.000	40.87	-35.0	34.1	41.81	V
7206.000	41.61	-32.4	35.8	38.21	H
9608.000	45.01	-29.7	36.7	37.93	H
12010.000	45.76	-30.5	38.9	37.35	H

8DPSK Ch 39 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dB μ V)	Polarization
2359.200	47.60	-27.6	31.9	43.3	H
2516.600	48.45	-26.6	32.0	43.1	H
4882.000	39.51	-35.5	34.1	40.95	V
7323.000	43.92	-31.3	35.8	39.44	H
9764.000	42.65	-31.4	36.9	37.13	H
12205.000	46.70	-28.8	39.0	36.56	H

8DPSK Ch 78 - Peak

Frequency(MHz)	Result (dBuV/m)	Cable Loss(dB)	Antenna Factor	Receiver Reading (dBμV)	Polarization
2486.790	60.54	2.9	32.0	25.61	H
2489.570	60.46	2.9	32.0	25.53	H
4960.000	40.07	-34.9	34.1	40.86	V
7440.000	43.81	-32.2	35.8	40.18	H
9920.000	46.17	-29.7	37.1	38.72	H
12400.000	46.82	-30.0	39.1	37.79	H

Conclusion: PASS

Test graphs as below:

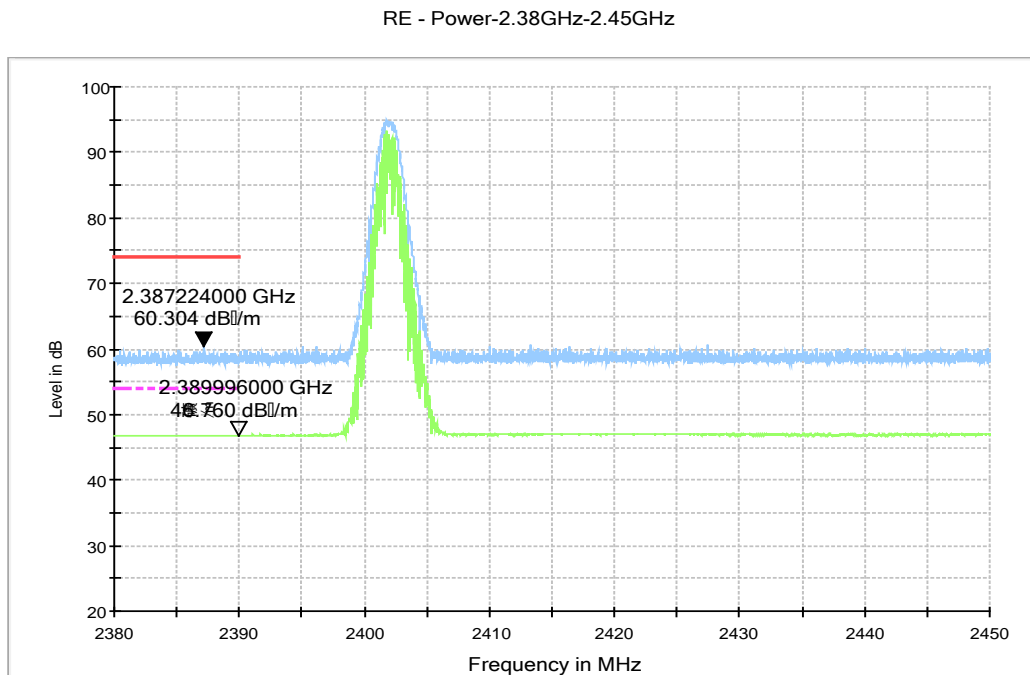


Fig.58. Radiated emission (Power): GFSK, low channel

RE - Power-2.45GHz-2.5GHz

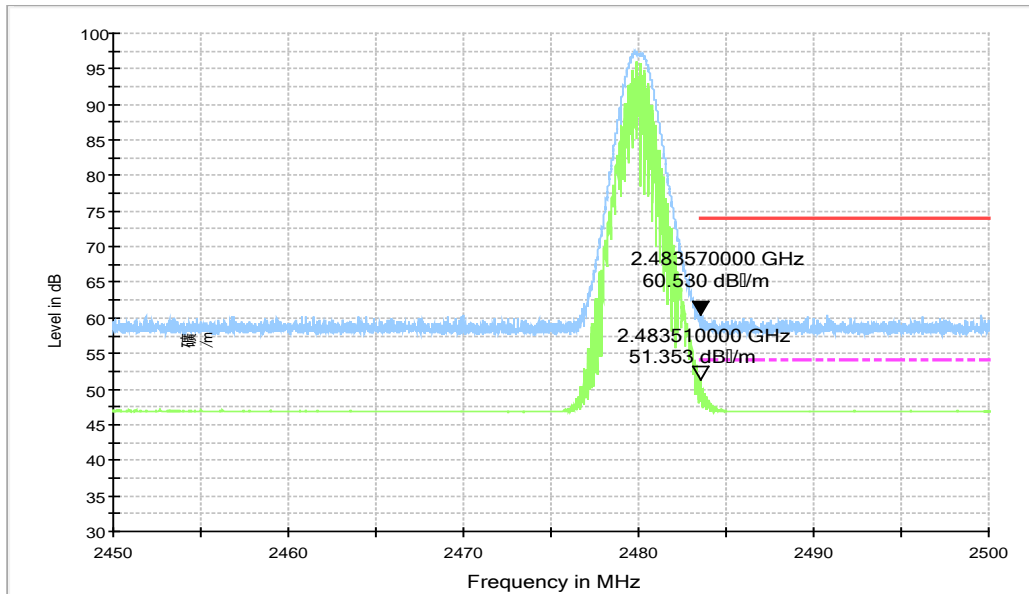


Fig.59. Radiated emission (Power) GFSK, high channel

RE - Power-2.38GHz-2.45GHz

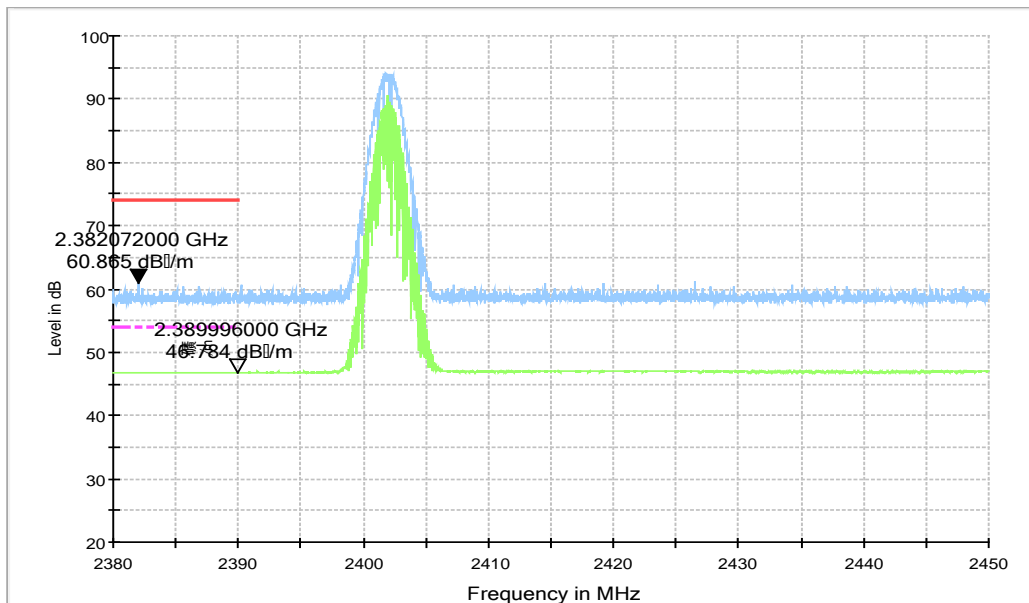


Fig.60. Radiated emission (Power): $\pi/4$ DQPSK, low channel

RE - Power-2.45GHz-2.5GHz

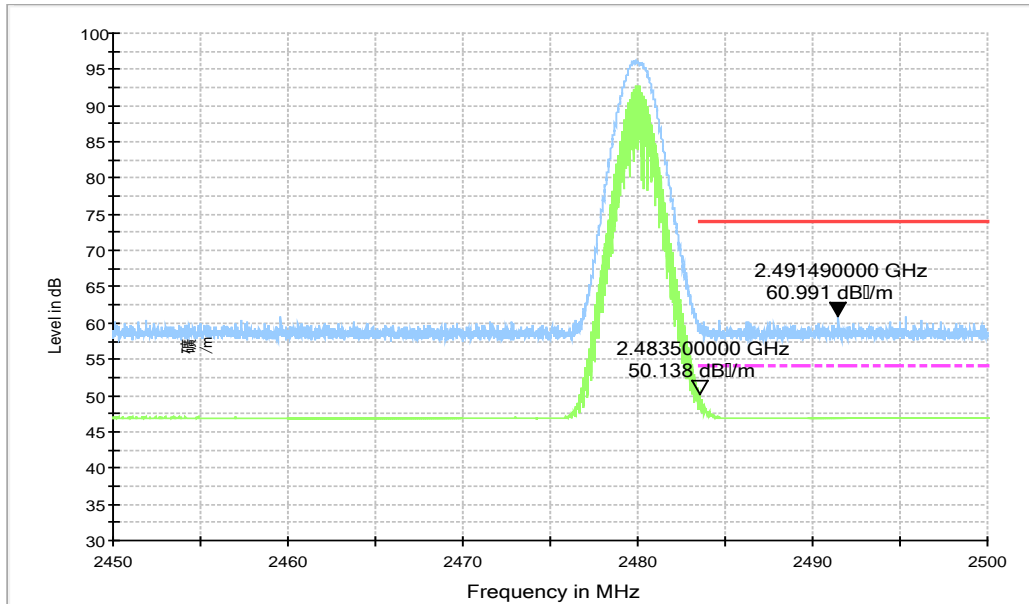


Fig.61. Radiated emission (Power): $\pi/4$ DQPSK, high channel

RE - Power-2.38GHz-2.45GHz

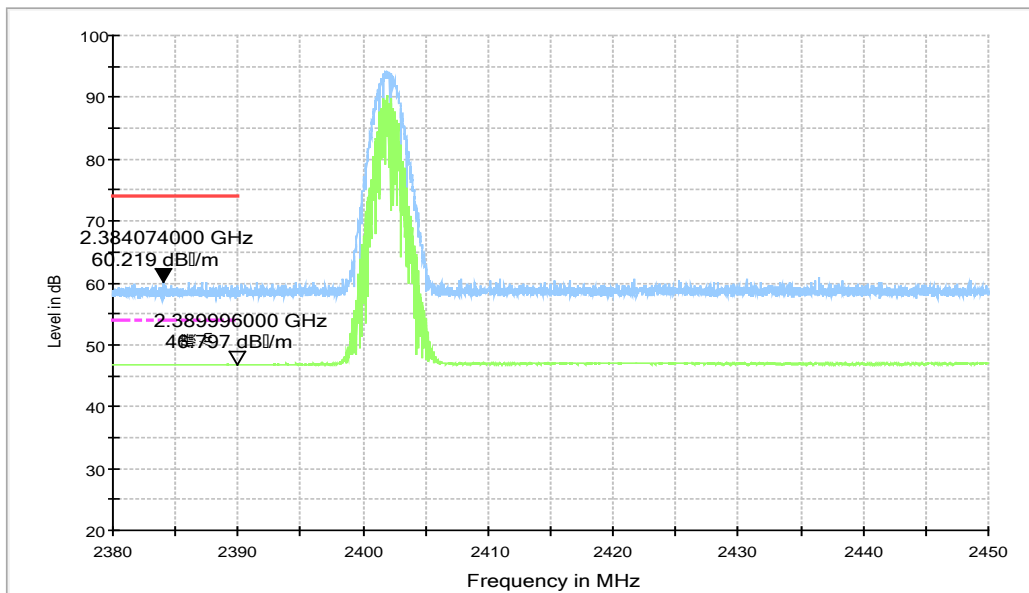


Fig.62. Radiated emission (Power): 8DPSK, low channel

RE - Power-2.45GHz-2.5GHz

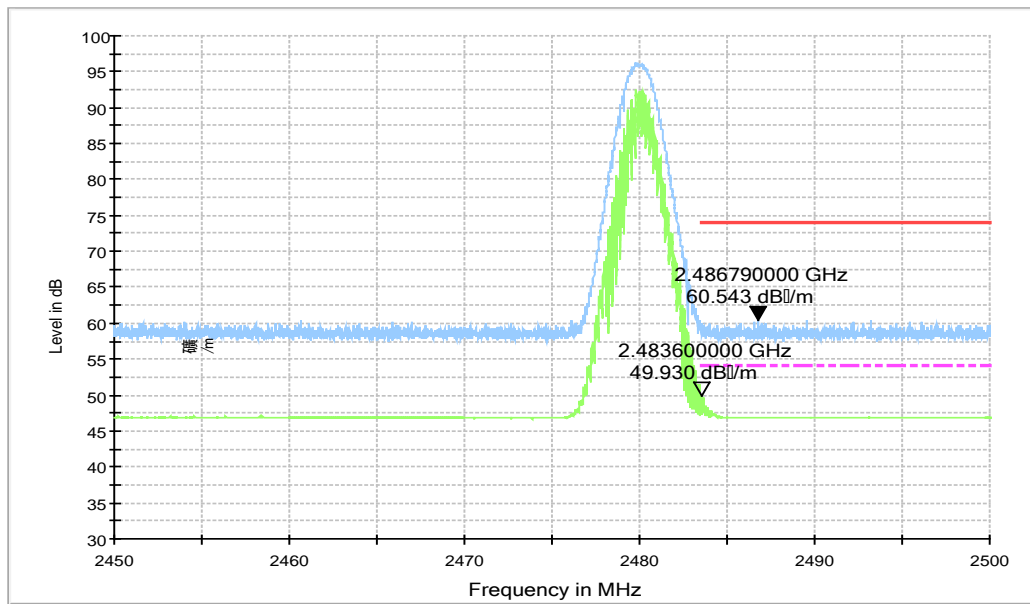


Fig.63. Radiated emission (Power): 8DPSK, high channel

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 = 500kHz(Dwell Time)/1 MHz(Number of Transmissions Measurement)
- 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	120.38	P
		Fig.65		
	DH3	Fig.66	181.34	P
		Fig.67		
	DH5	Fig.68	195.93	P
		Fig.69		

For $\pi/4$ DQPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.70	123.08	P
		Fig.71		
	DH3	Fig.72	171.85	P
		Fig.73		
	DH5	Fig.74	164.44	P
		Fig.75		

For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.76	123.78	P
		Fig.77		
	DH3	Fig.78	178.30	P