

Fig.20. Conducted spurious emission: GFSK, Channel 39, 1GHz – 3GHz

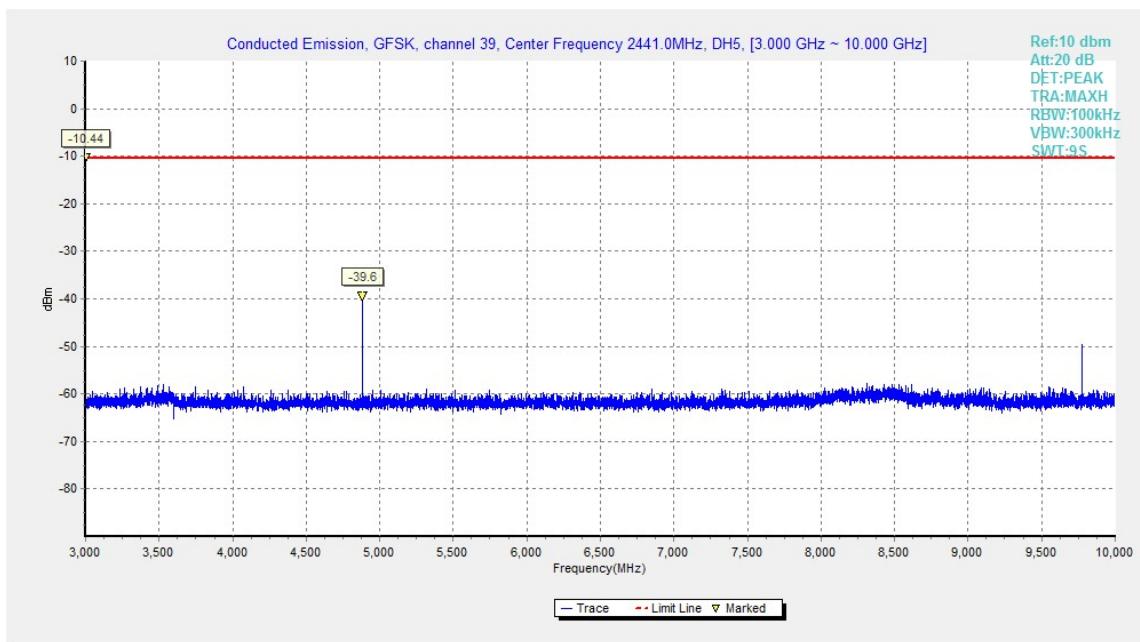


Fig.21. Conducted spurious emission: GFSK, Channel 39, 3GHz – 10GHz

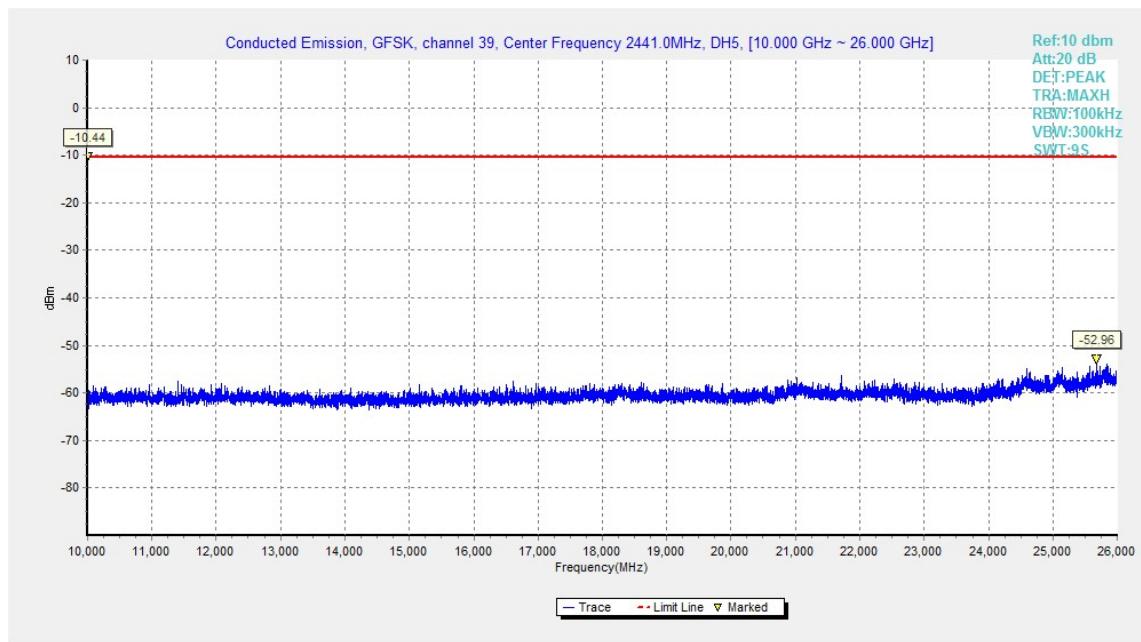


Fig.22. Conducted spurious emission: GFSK, Channel 39, 10GHz – 26GHz

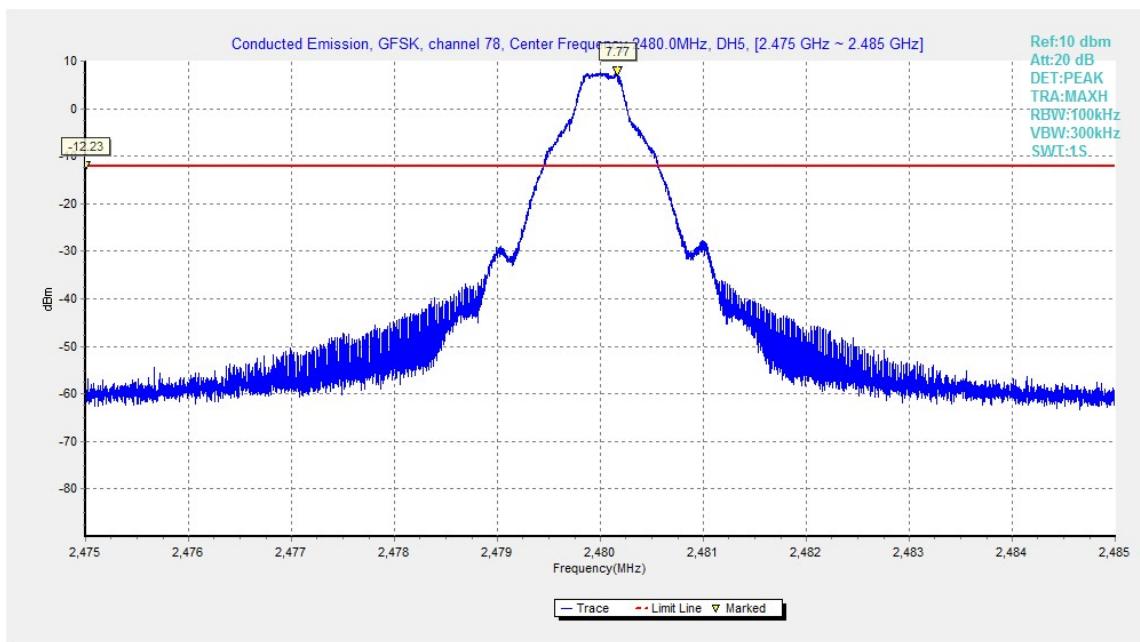


Fig.23. Conducted spurious emission: GFSK, Channel 78, 2480MHz

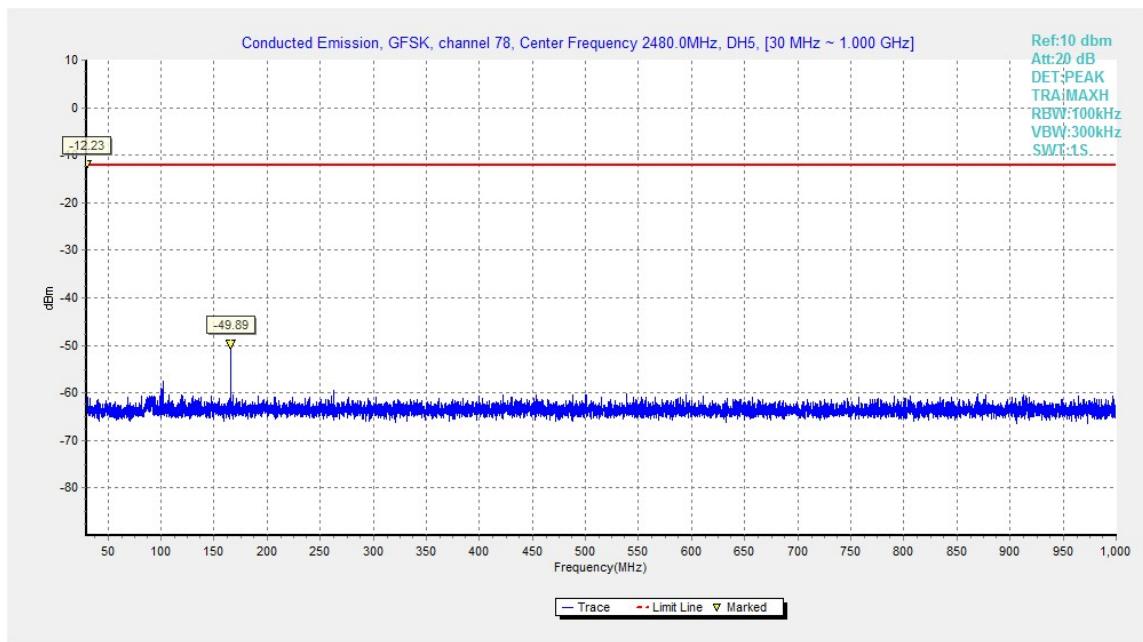


Fig.24. Conducted spurious emission: GFSK, Channel 78, 30MHz - 1GHz

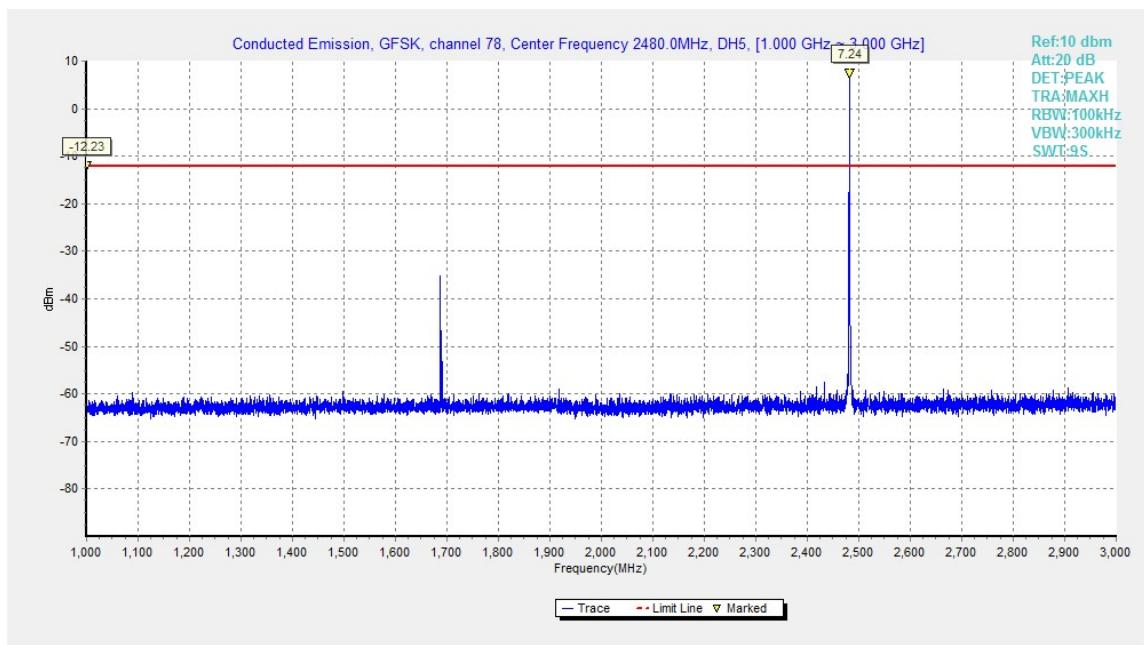


Fig.25. Conducted spurious emission: GFSK, Channel 78, 1GHz - 3GHz

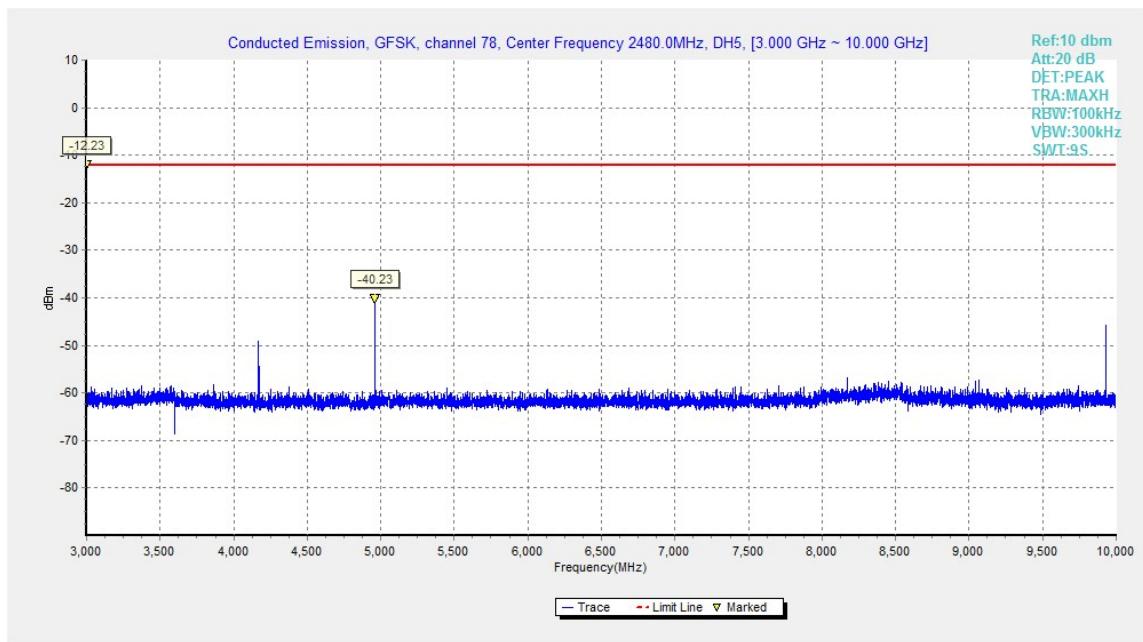


Fig.26. Conducted spurious emission: GFSK, Channel 78, 3GHz - 10GHz

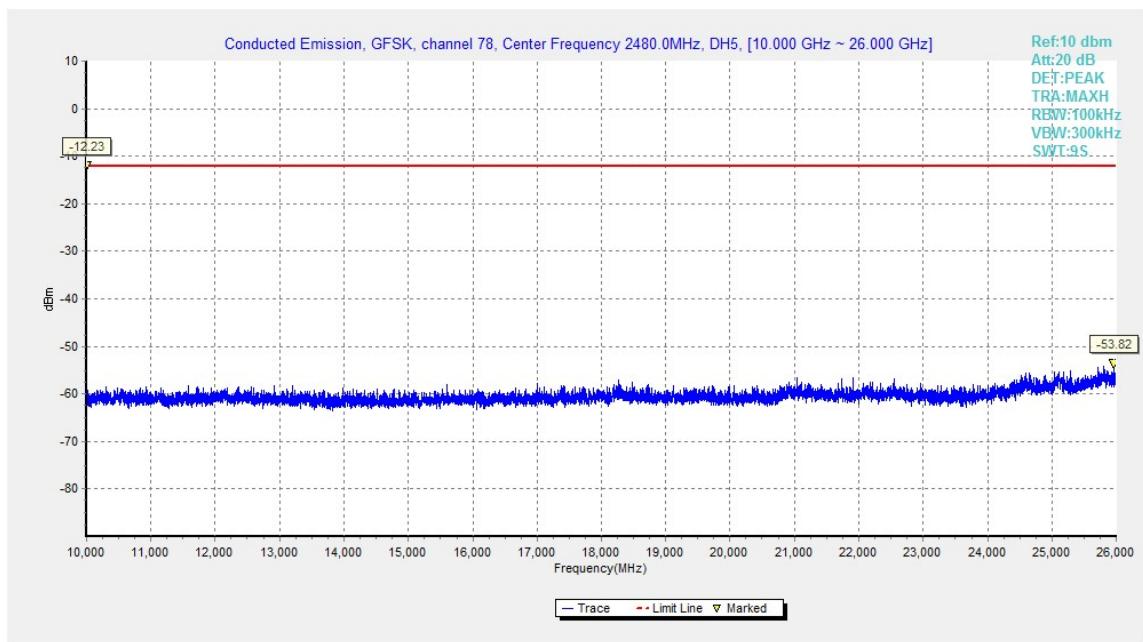


Fig.27. Conducted spurious emission: GFSK, Channel 78, 10GHz - 26GHz

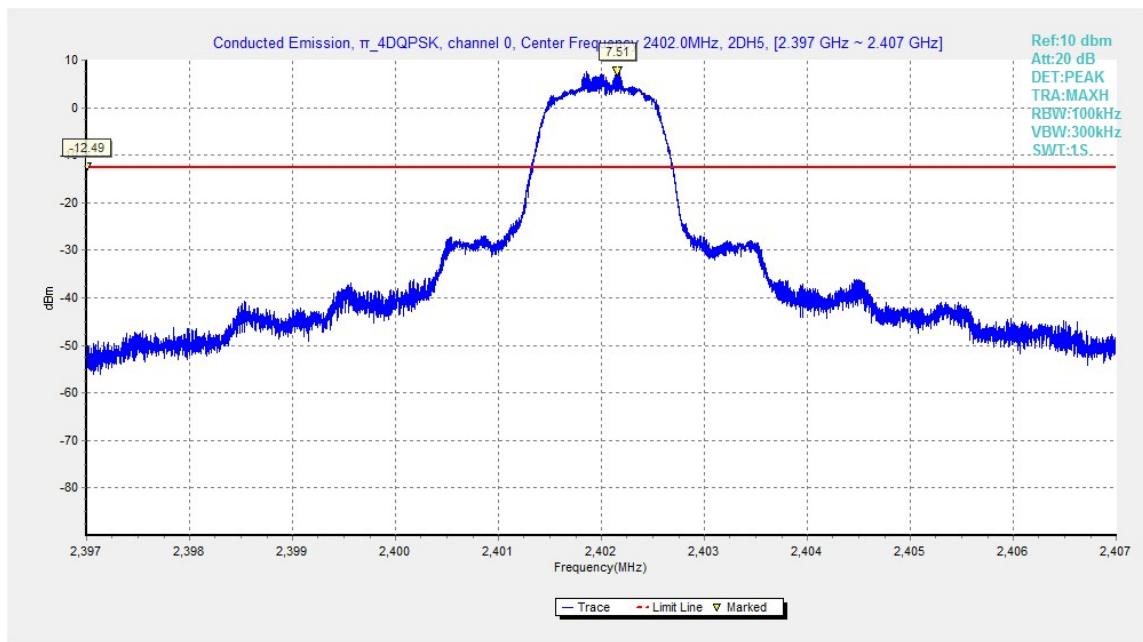


Fig.28. Conducted spurious emission: π/4 DQPSK, Channel 0, 2402MHz

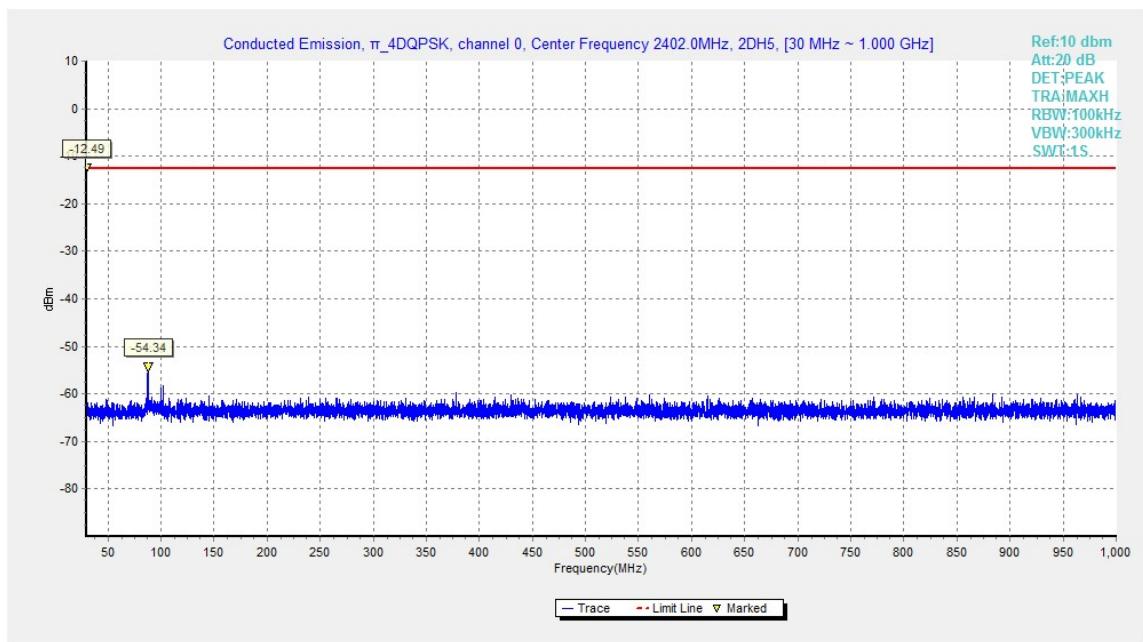


Fig.29. Conducted spurious emission: π/4 DQPSK, Channel 0, 30MHz - 1GHz

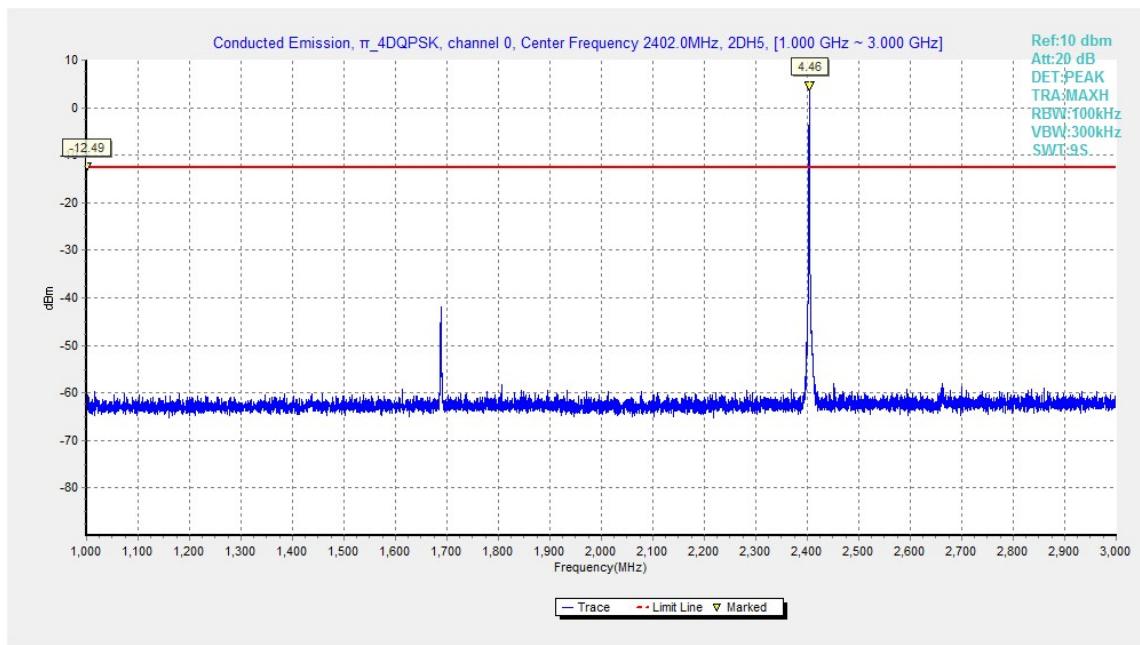


Fig.30. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 1GHz - 3GHz

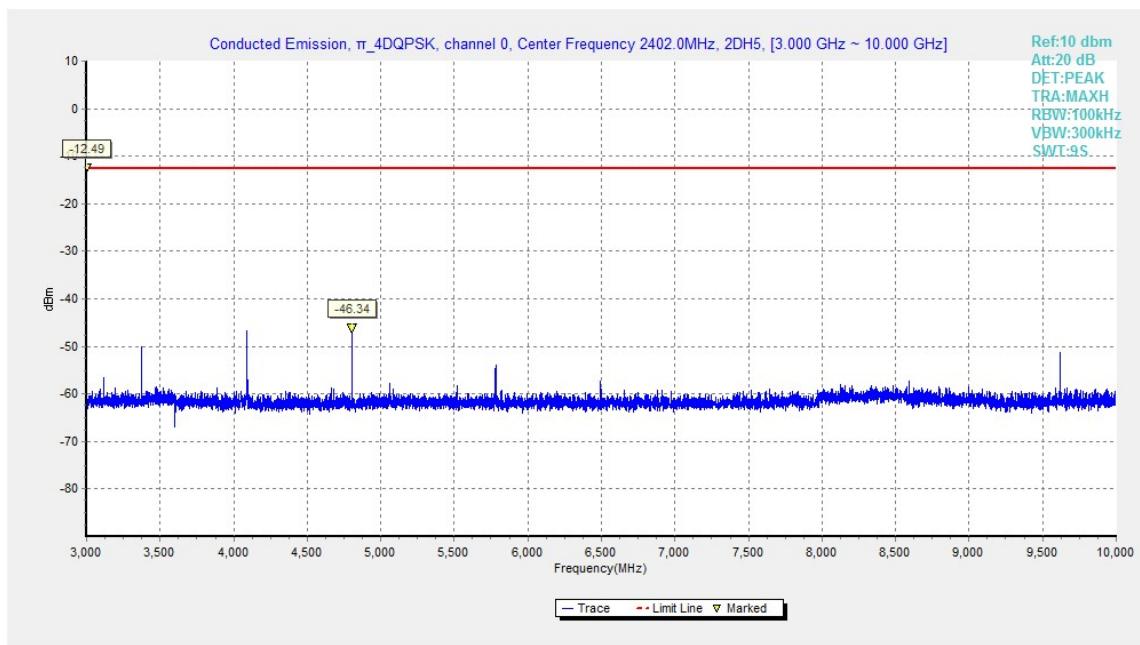


Fig.31. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 3GHz - 10GHz

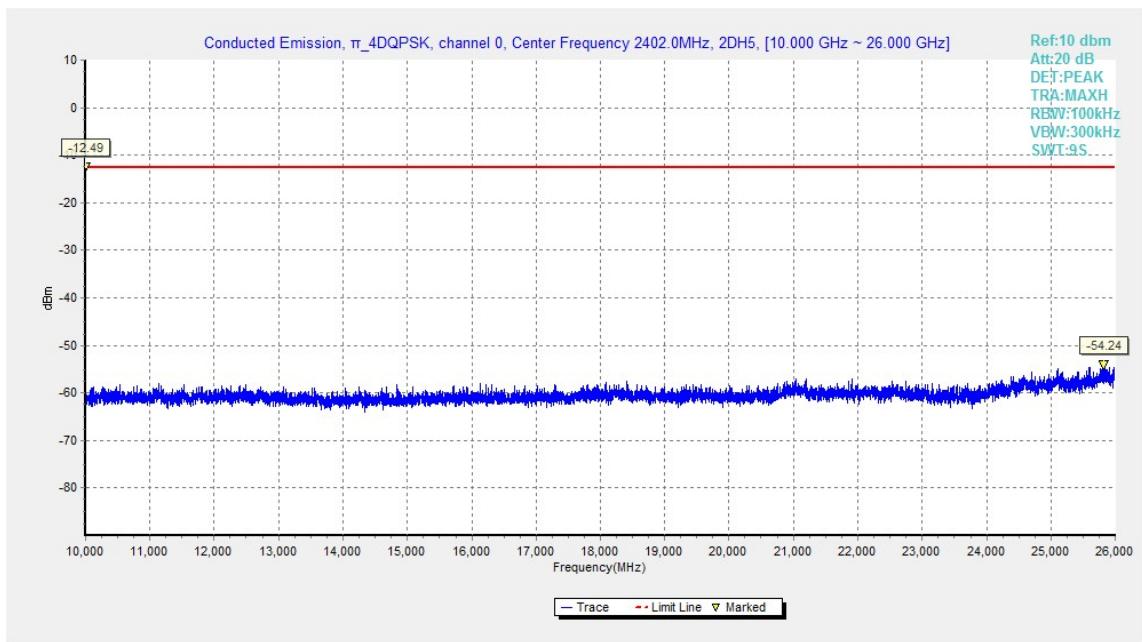


Fig.32. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 10GHz - 26GHz

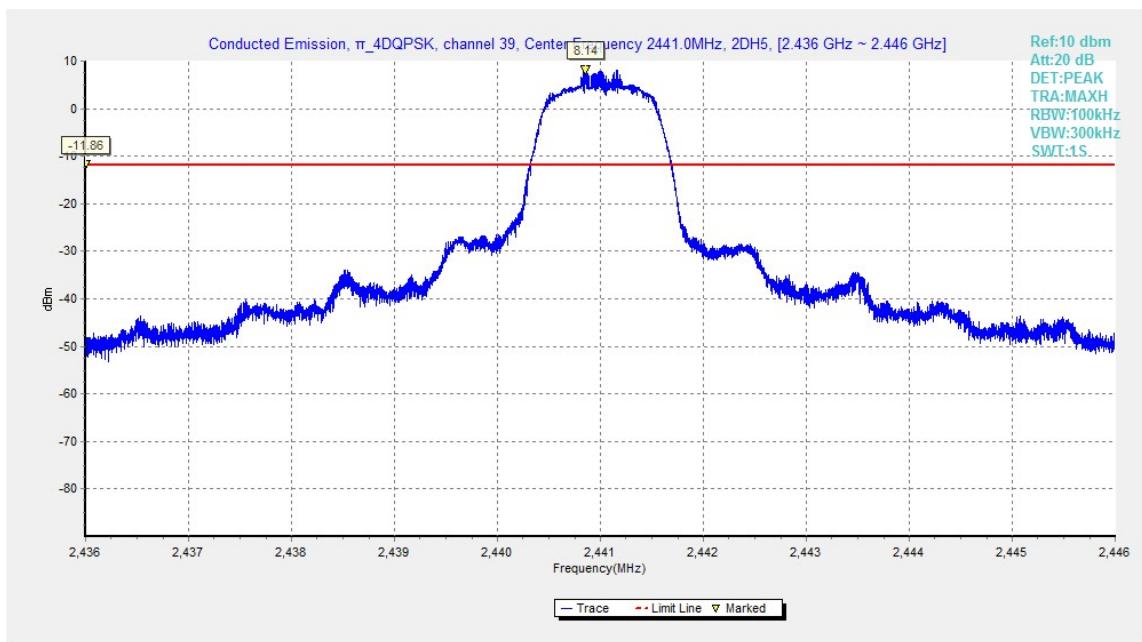


Fig.33. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 2441MHz

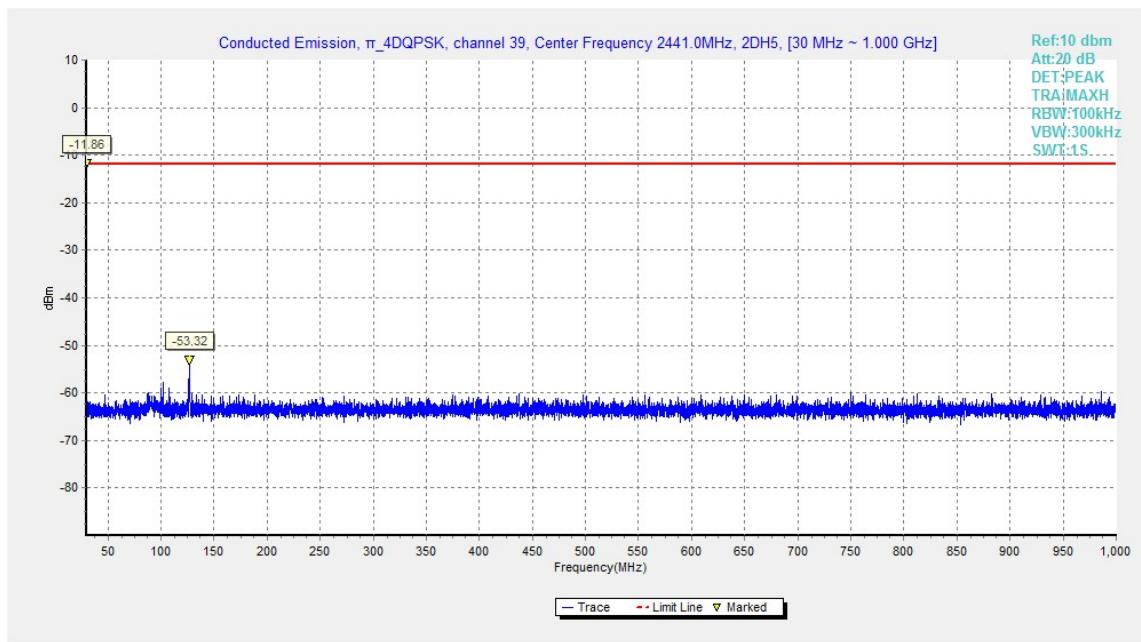


Fig.34. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 30MHz - 1GHz

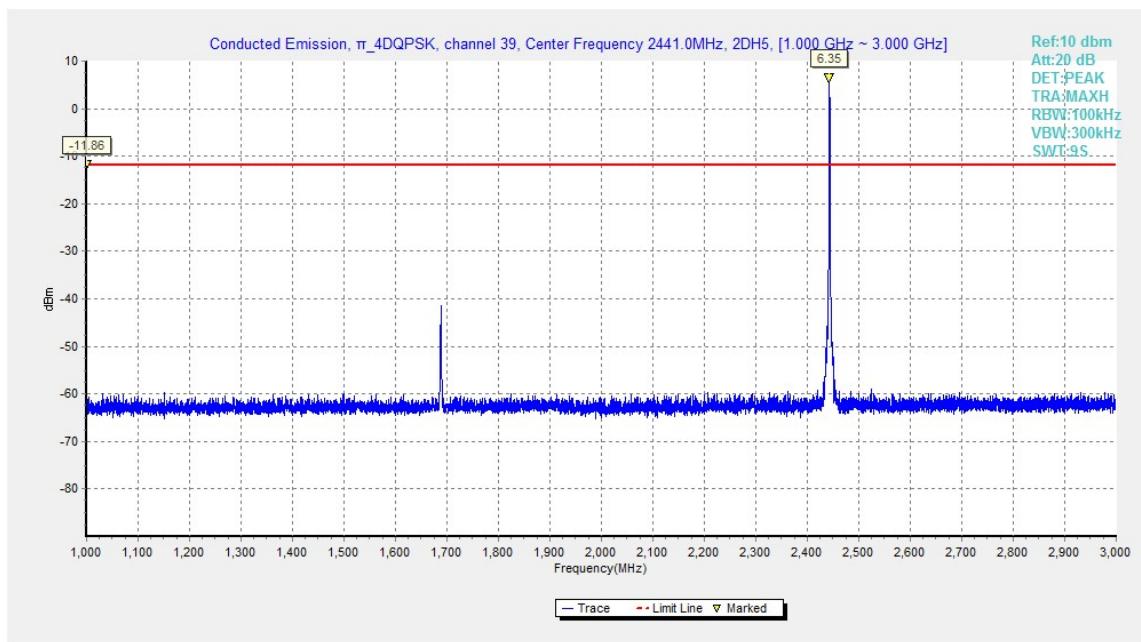


Fig.35. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 1GHz - 3GHz

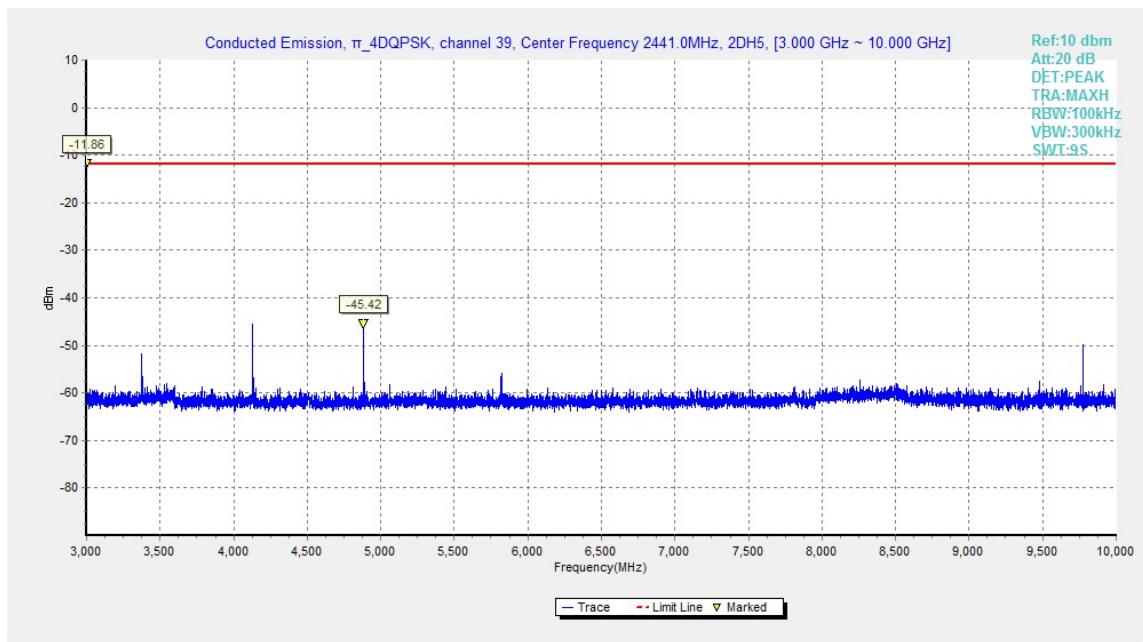


Fig.36. Conducted spurious emission: π/4 DQPSK, Channel 39, 3GHz - 10GHz

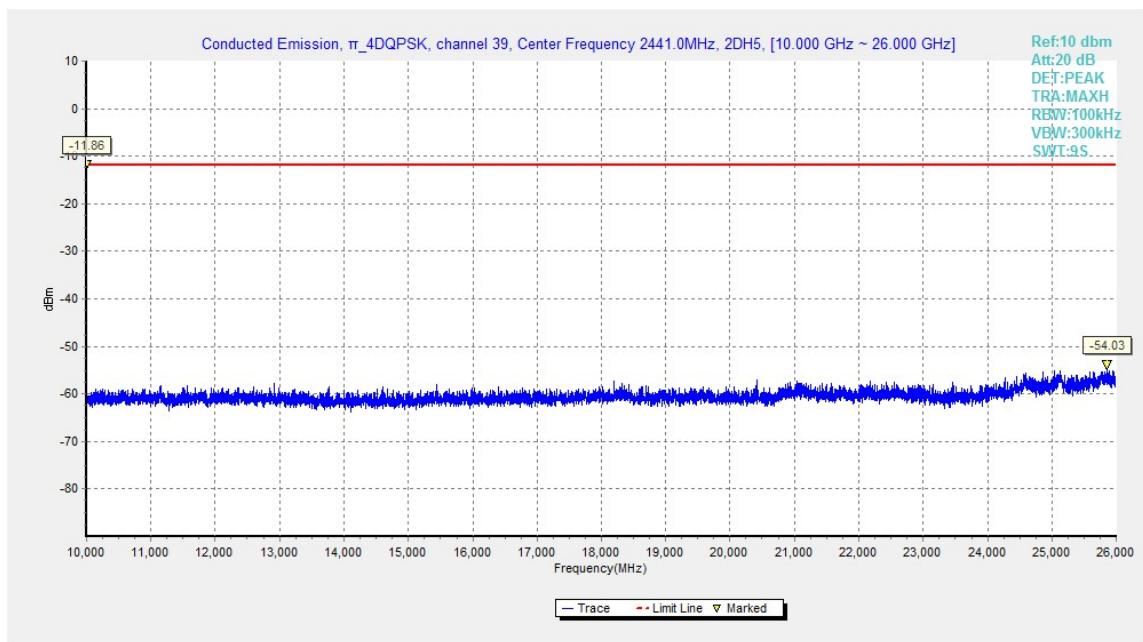


Fig.37. Conducted spurious emission: π/4 DQPSK, Channel 39, 10GHz – 26GHz

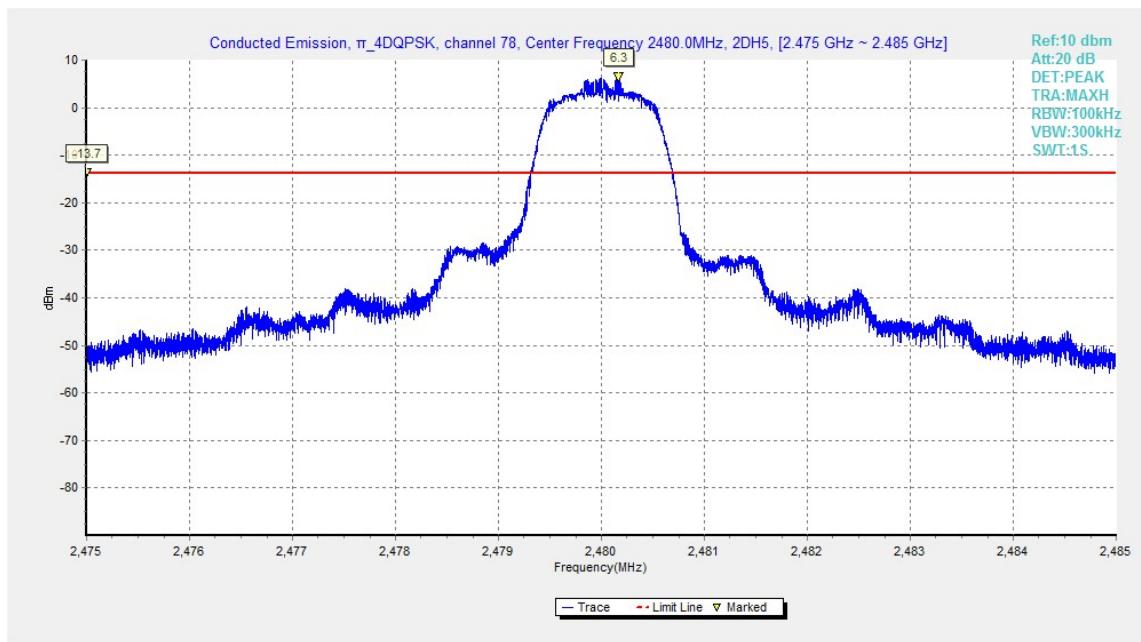


Fig.38. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 2480MHz

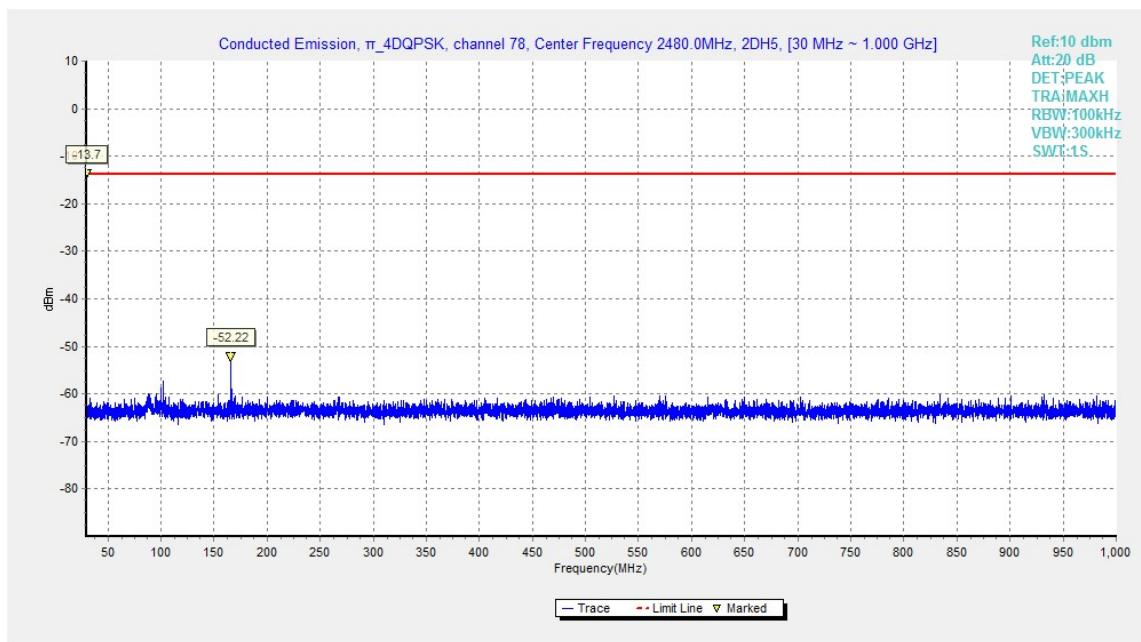


Fig.39. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 30MHz - 1GHz

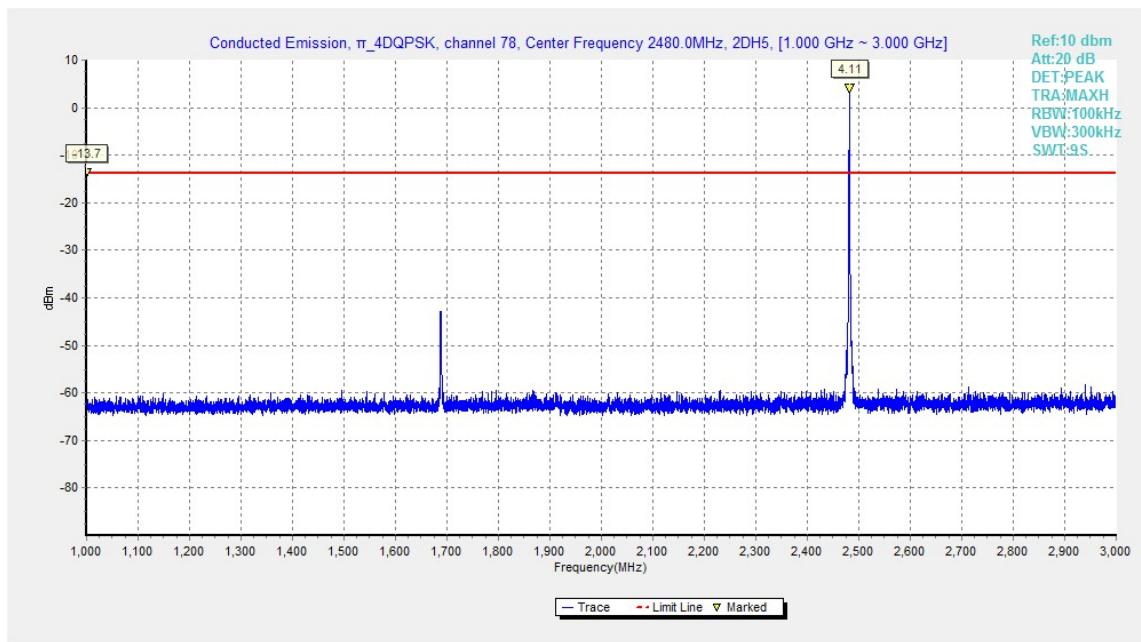


Fig.40. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 1GHz - 3GHz

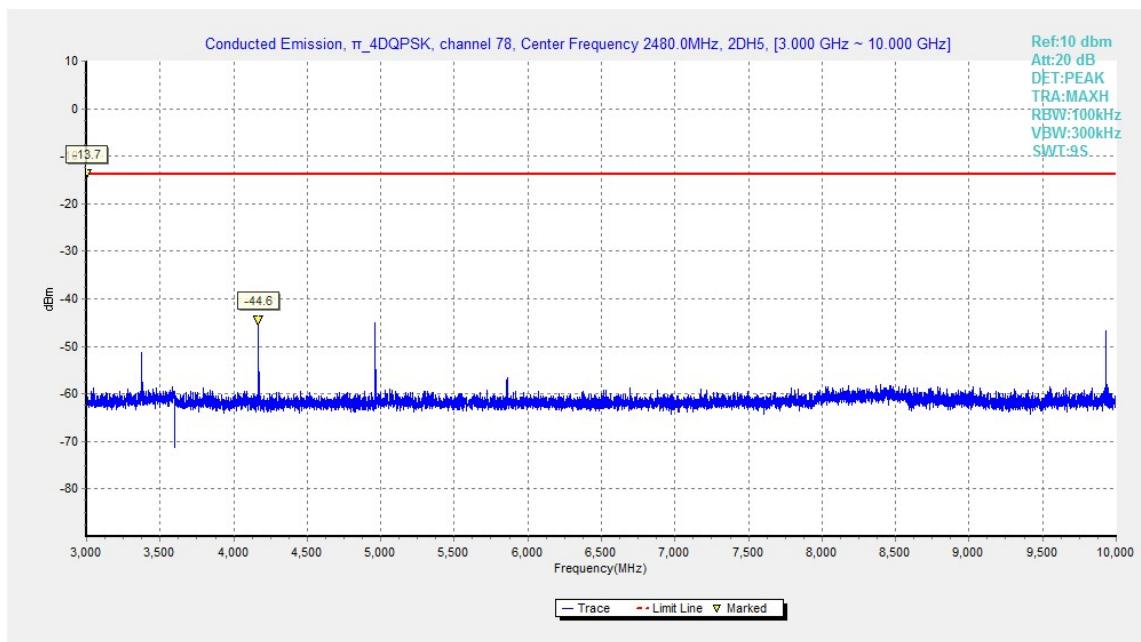


Fig.41. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 3GHz - 10GHz

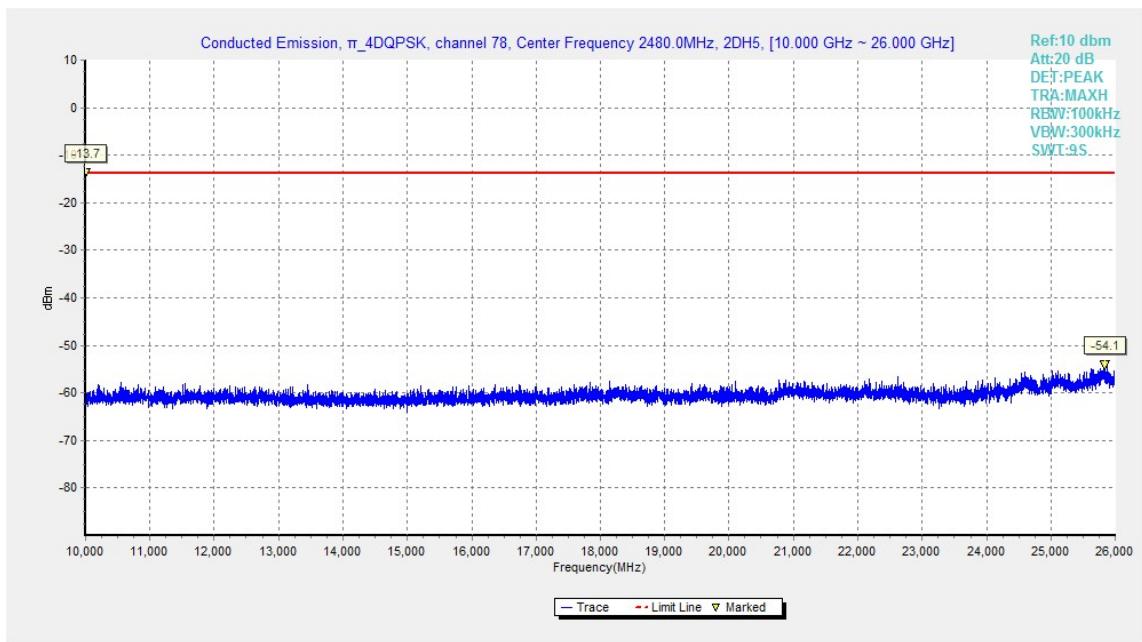


Fig.42. Fig.30 Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 10GHz - 26GHz

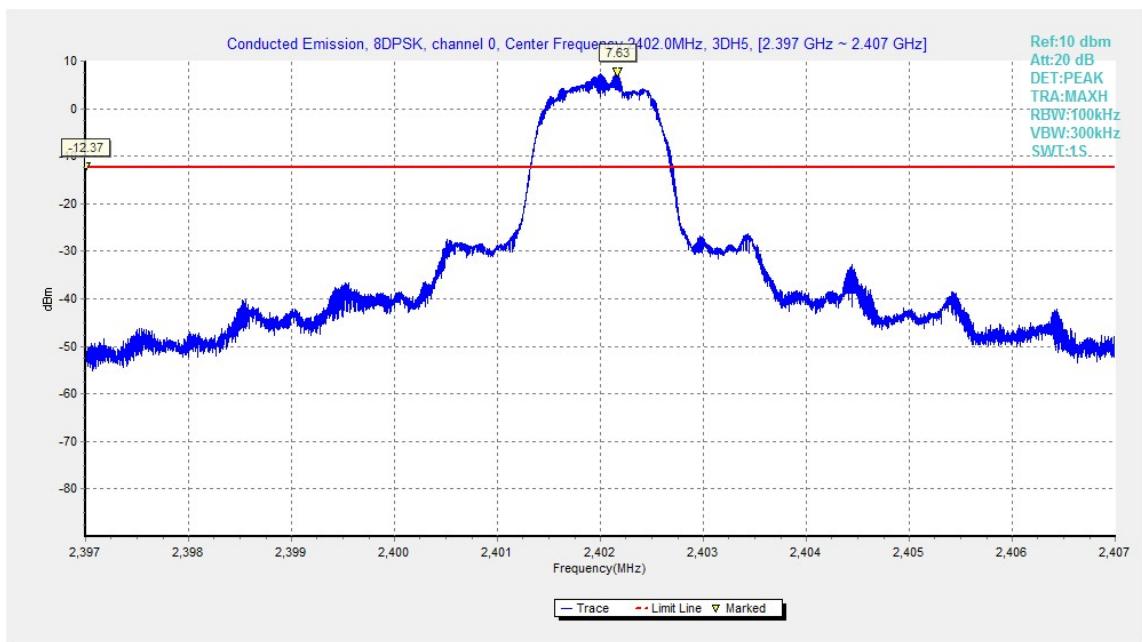


Fig.43. Conducted spurious emission: 8DPSK, Channel 0, 2402MHz

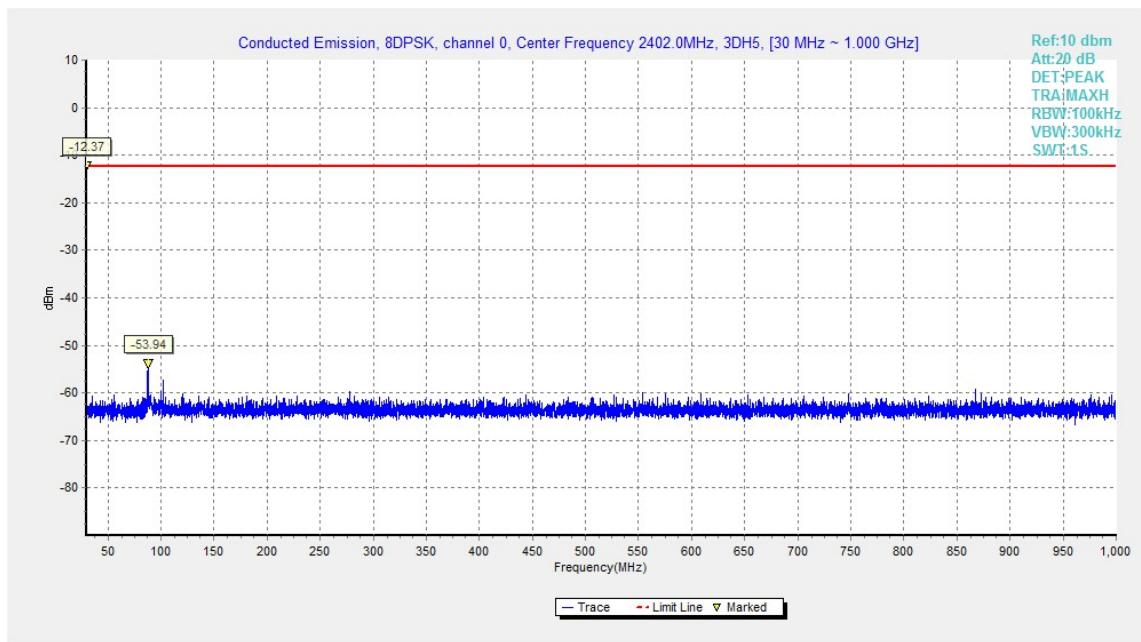


Fig.44. Conducted spurious emission: 8DPSK, Channel 0, 30MHz - 1GHz

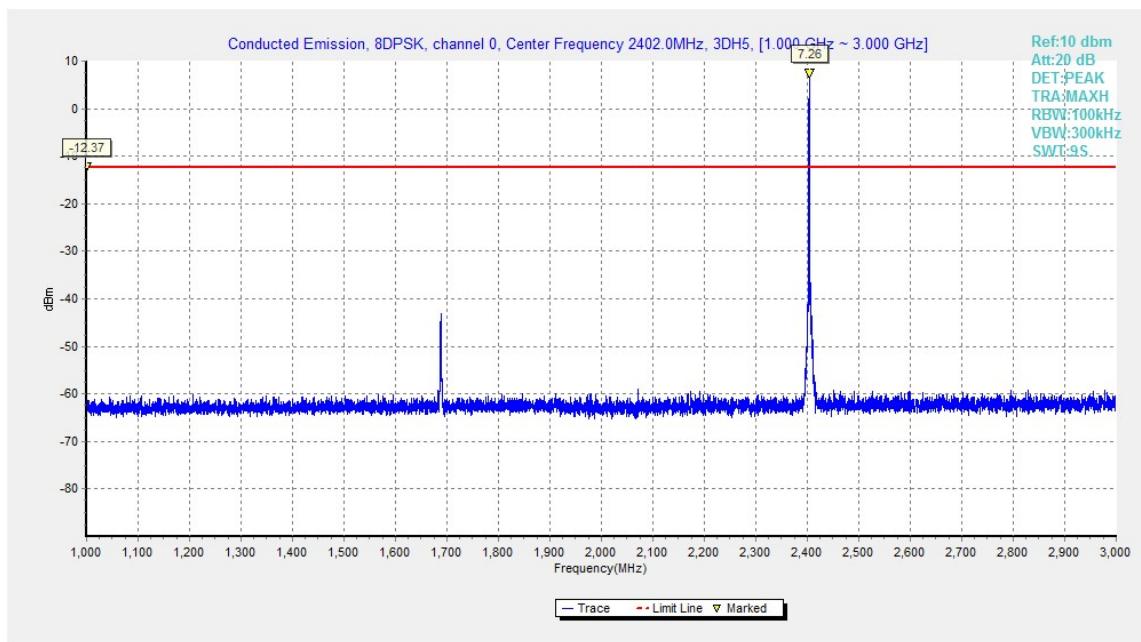


Fig.45. Conducted spurious emission: 8DPSK, Channel 0, 1GHz - 3GHz

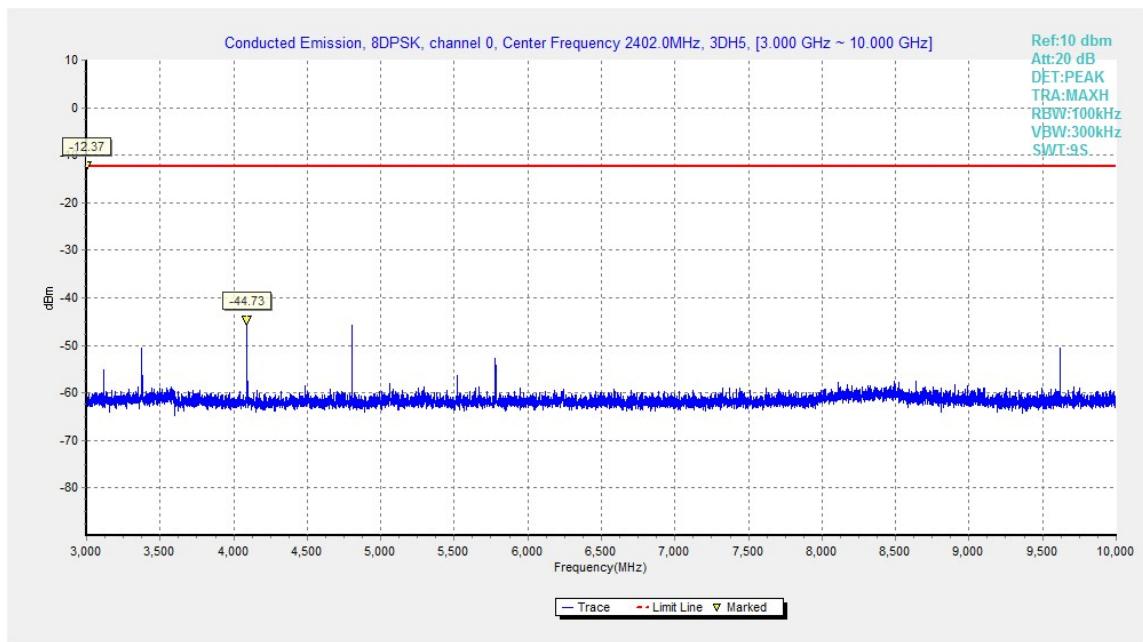


Fig.46. Conducted spurious emission: 8DPSK, Channel 0, 3GHz - 10GHz

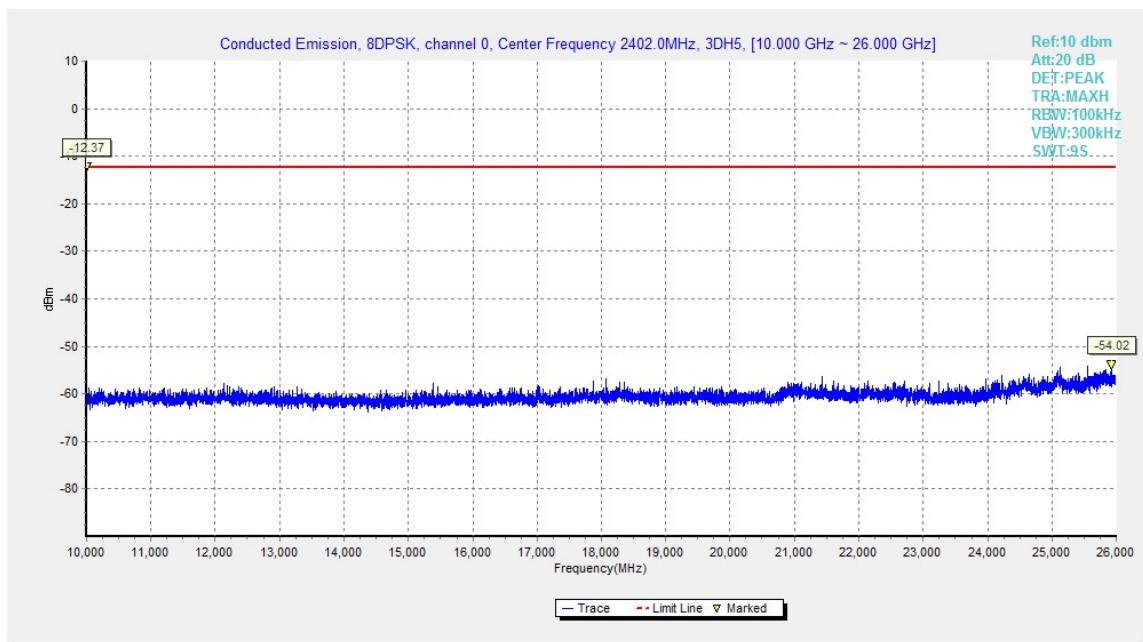


Fig.47. Conducted spurious emission: 8DPSK, Channel 0, 10GHz - 26GHz

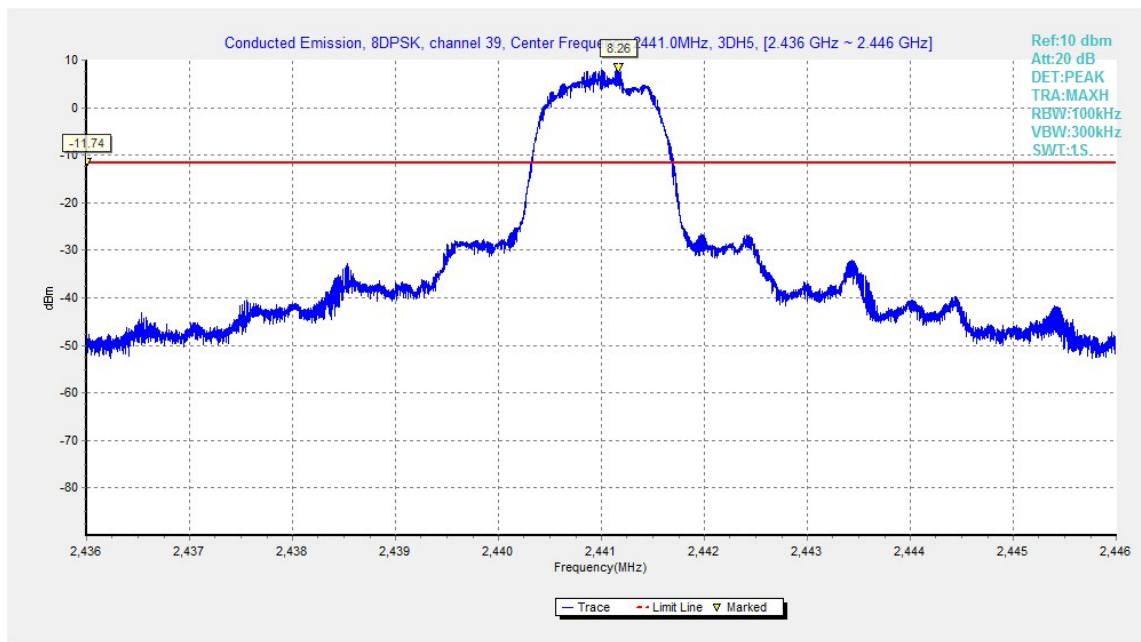


Fig.48. Conducted spurious emission: 8DPSK, Channel 39, 2441MHz

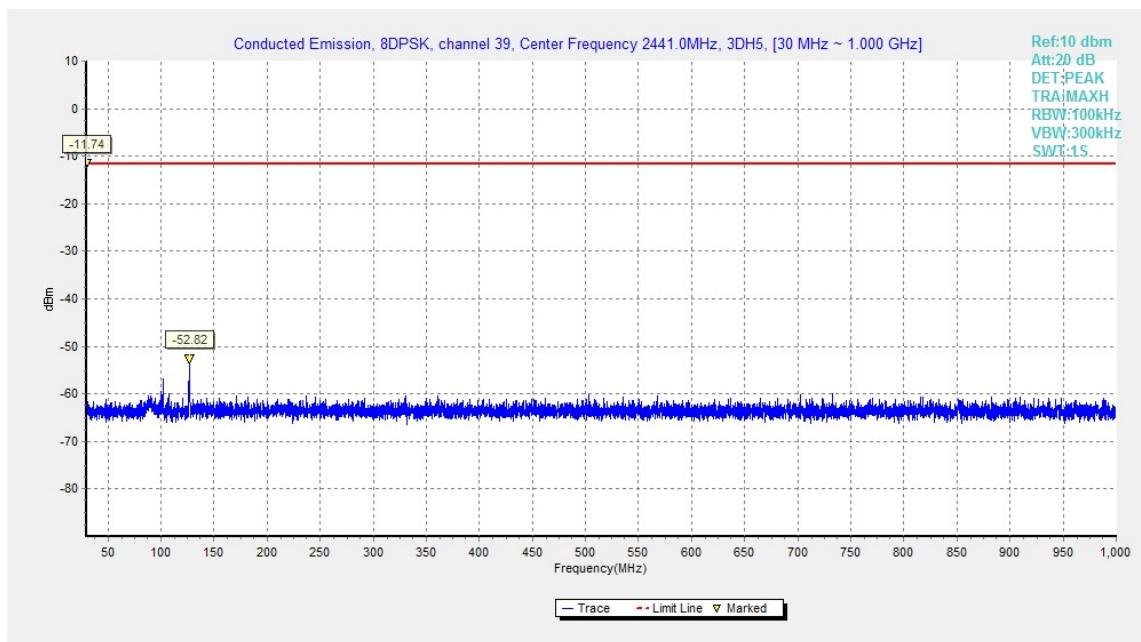


Fig.49. Conducted spurious emission: 8DPSK, Channel 39, 30MHz - 1GHz

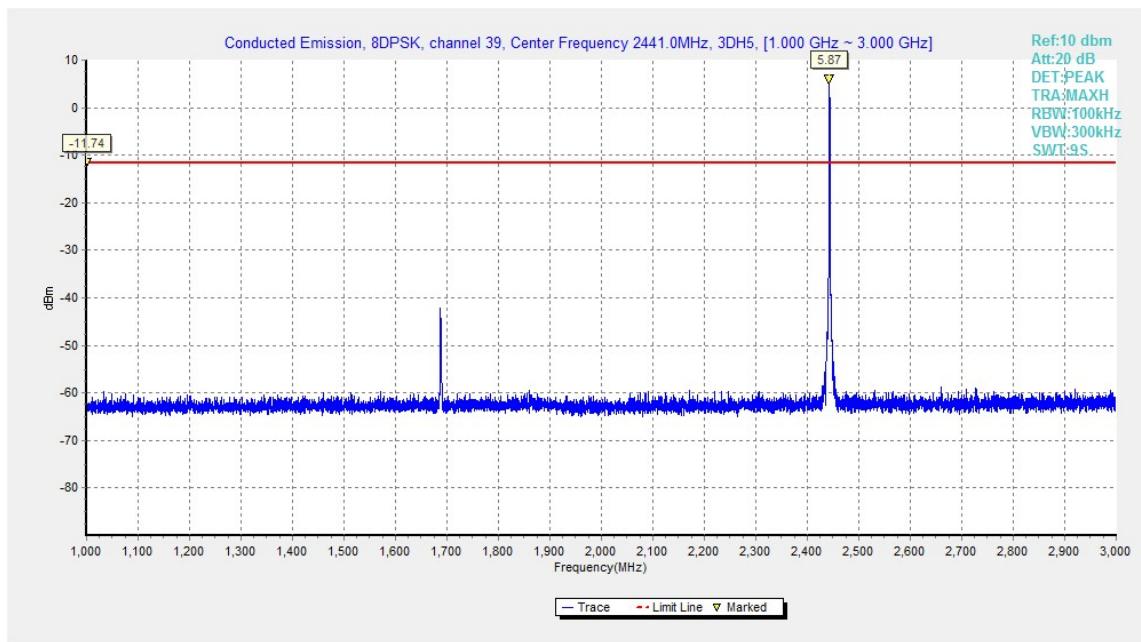


Fig.50. Conducted spurious emission: 8DPSK, Channel 39, 1GHz - 3GHz

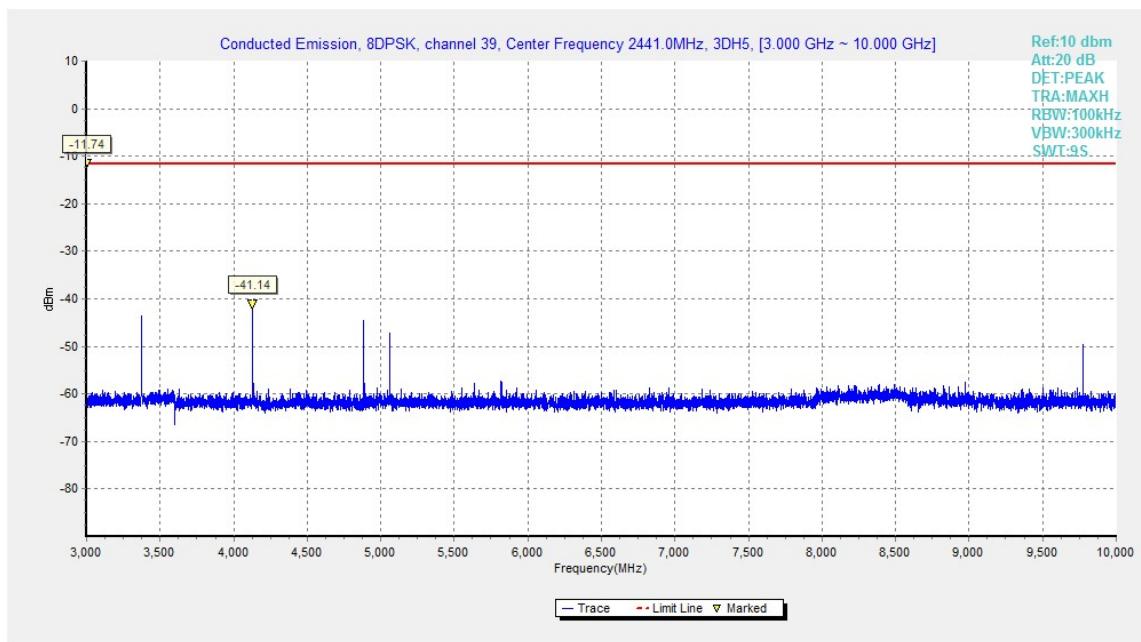


Fig.51. Conducted spurious emission: 8DPSK, Channel 39, 3GHz - 10GHz

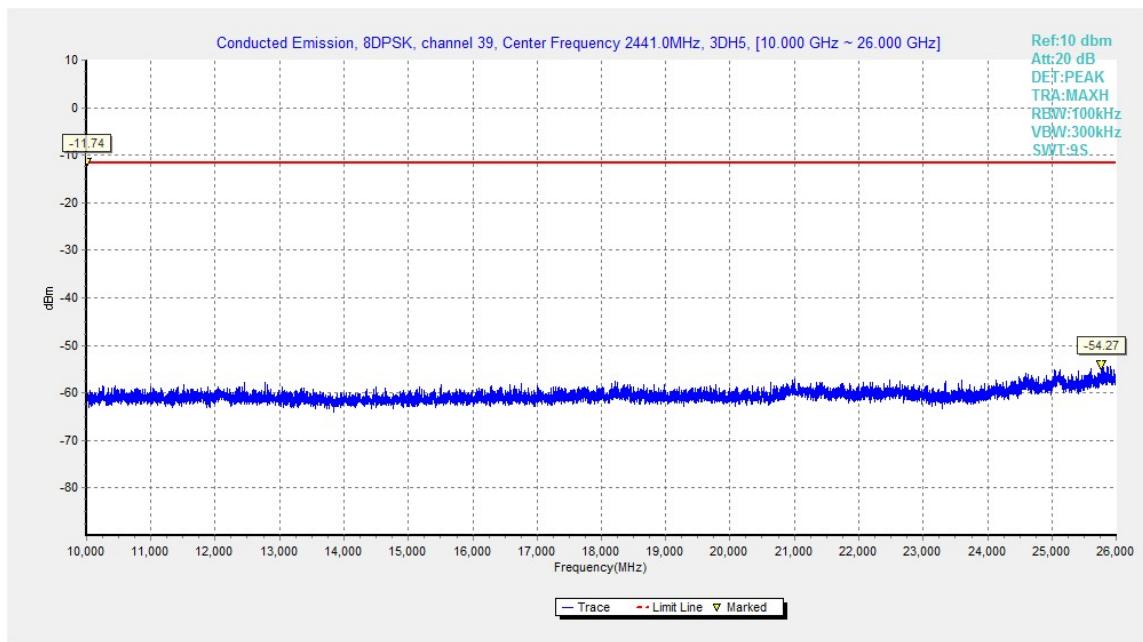


Fig.52. Conducted spurious emission: 8DPSK, Channel 39, 10GHz – 26GHz

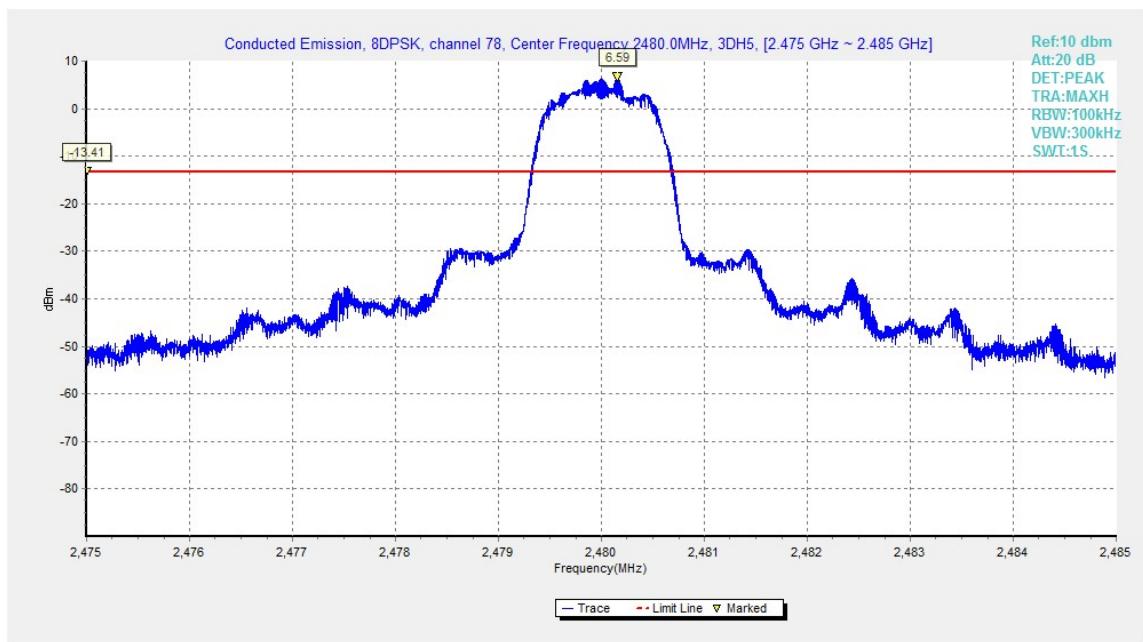


Fig.53. Conducted spurious emission: 8DPSK, Channel 78, 2480MHz

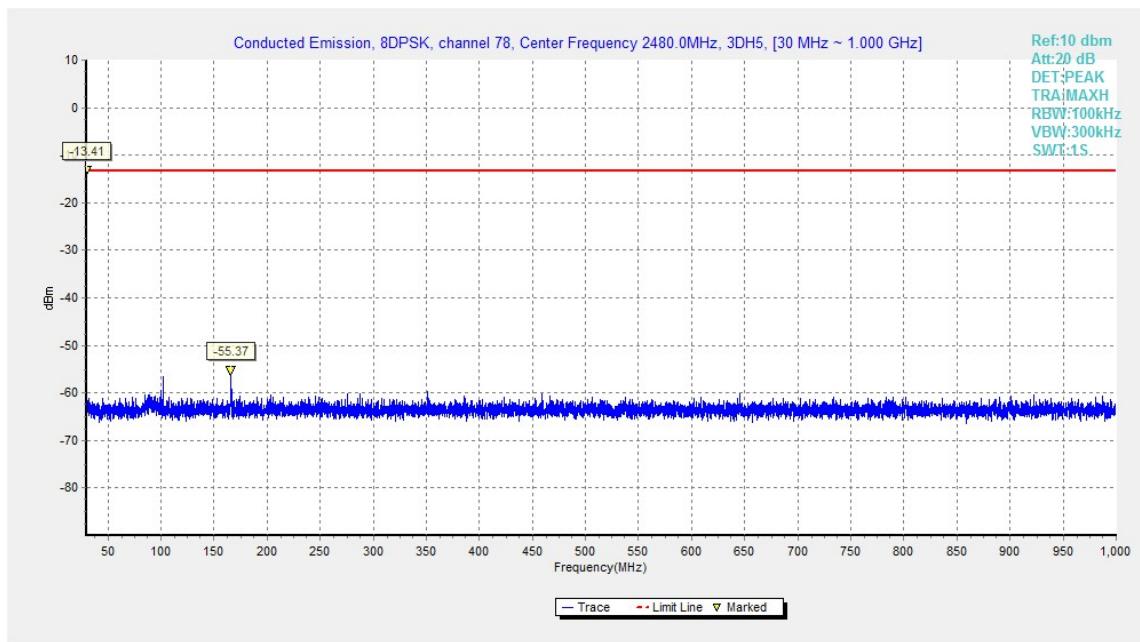


Fig.54. Conducted spurious emission: 8DPSK, Channel 78, 30MHz - 1GHz

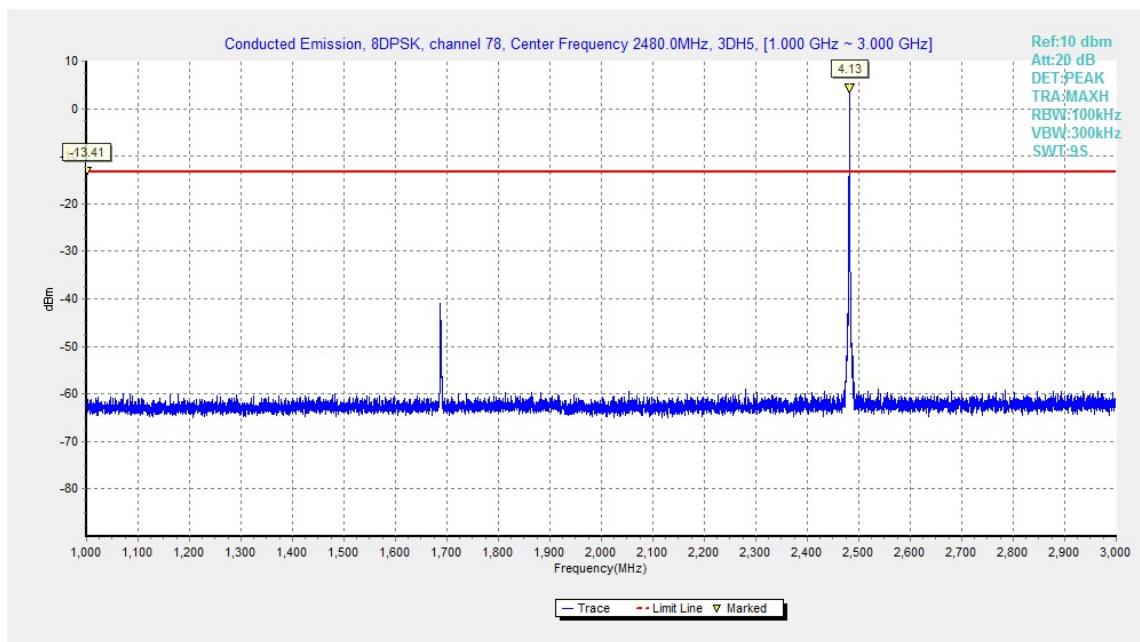


Fig.55. Conducted spurious emission: 8DPSK, Channel 78, 1GHz - 3GHz

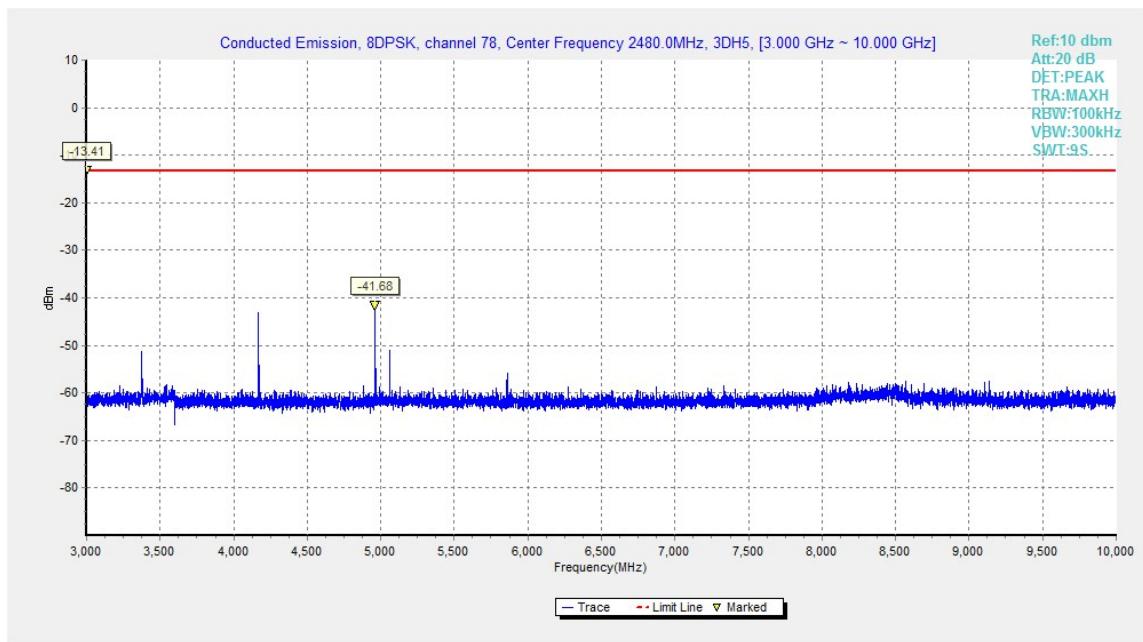


Fig.56. Conducted spurious emission: 8DPSK, Channel 78, 3GHz - 10GHz

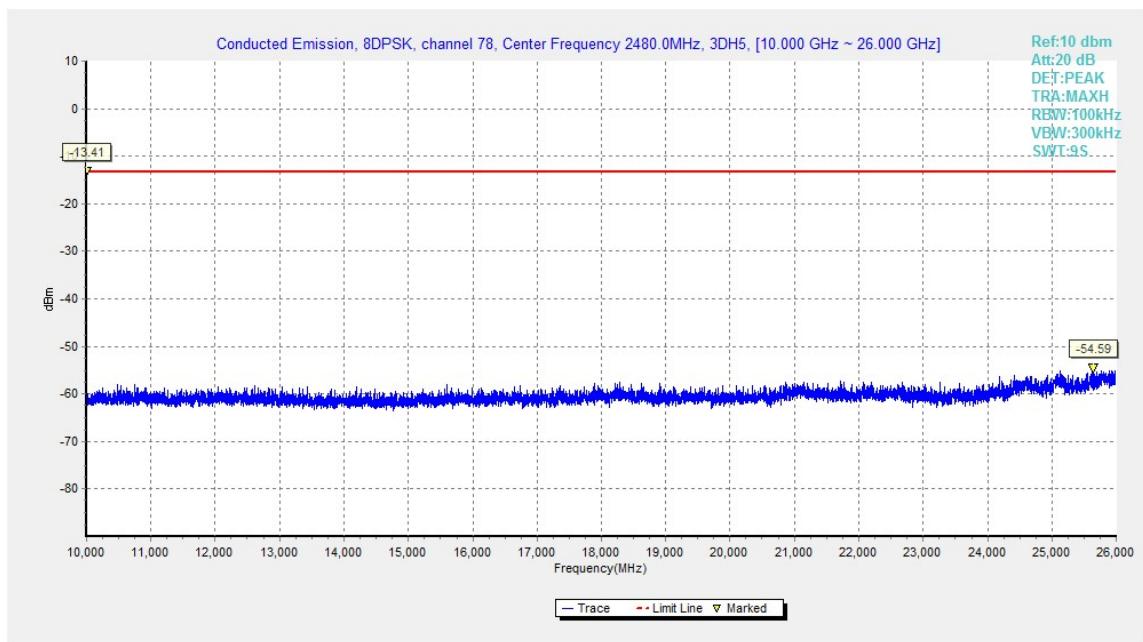


Fig.57. Conducted spurious emission: 8DPSK, Channel 78, 10GHz - 26GHz

## A.5. Radiated Emission

### 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)).

### 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:

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

### For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	1 GHz ~ 3 GHz	--	P
	3 GHz ~ 18 GHz	--	P
Ch 39 2440 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

**Form/4 DQPSK**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	1 GHz ~ 3 GHz	--	P
	3 GHz ~ 18 GHz	--	P
Ch 39 2440 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 2440 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)	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)
2384.300	46.4	2.9	32.0	11.49	54.0	7.6	V	155	151
2387.400	46.3	2.9	32.0	11.48	54.0	7.7	H	155	167
4804.500	28.6	-32.8	34.5	26.94	54.0	25.4	H	155	94
7206.000	30.4	-31.6	36.1	25.93	54.0	23.6	H	155	116
9607.500	33.0	-30.0	37.0	26.06	54.0	21.0	H	155	48
12010.500	35.3	-29.8	39.3	25.84	54.0	18.7	H	155	28

**GFSK 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)
2389.560	47.2	2.9	32.0	12.38	54.0	6.8	H	155	93
2486.800	47.3	2.9	32.7	11.70	54.0	6.7	V	155	84
4882.500	29.0	-32.7	34.5	27.26	54.0	25.0	H	155	42
7323.000	30.5	-31.9	36.1	26.31	54.0	23.5	H	155	0
9763.500	32.8	-30.6	37.2	26.14	54.0	21.2	H	155	356
12205.500	35.1	-29.4	39.2	25.35	54.0	18.9	H	155	26

**GFSK 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	48.2	2.9	32.8	12.50	54.0	5.8	V	155	28
2485.500	47.1	2.9	32.7	11.43	54.0	6.9	V	155	4
4960.500	28.1	-33.4	34.5	26.96	54.0	25.9	H	155	358
7440.000	30.4	-31.8	36.0	26.10	54.0	23.6	H	155	18
9919.500	33.8	-29.9	37.4	26.31	54.0	20.2	H	155	46
12400.500	34.5	-29.5	39.1	24.88	54.0	19.5	H	155	116

**GFSK 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)
2383.010	59.2	2.9	32.0	24.31	74.0	14.8	V	155	44
2389.632	59.2	2.9	32.0	24.35	74.0	14.8	V	155	325
4803.750	40.0	-32.9	34.5	38.31	74.0	34.0	V	155	88
7206.000	41.3	-31.6	36.1	36.80	74.0	32.7	H	155	110
9608.250	45.3	-30.0	37.0	38.36	74.0	28.7	V	155	44
12009.750	47.5	-29.8	39.3	38.04	74.0	26.5	H	155	22

**GFSK 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)
2352.200	50.1	-28.6	31.7	47.03	74.0	23.9	V	155	44
2561.600	51.8	-28.0	33.1	46.75	74.0	22.2	H	155	110
4881.750	39.9	-32.7	34.5	38.14	74.0	34.1	V	155	44
7323.000	42.5	-31.9	36.1	38.32	74.0	31.5	V	155	0
9764.250	44.5	-30.6	37.2	37.89	74.0	29.5	V	155	352
12204.750	47.5	-29.4	39.2	37.72	74.0	26.5	V	155	22

**GFSK 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)
2484.460	60.7	2.9	32.7	25.02	74.0	13.3	H	155	22
2491.420	60.2	2.9	32.5	24.69	74.0	13.8	H	155	0
4959.750	40.5	-33.4	34.5	39.32	74.0	33.6	V	155	352
7440.000	41.3	-31.8	36.0	37.08	74.0	32.7	H	155	22
9920.250	45.7	-29.9	37.4	38.19	74.0	28.3	V	155	44
12399.750	45.4	-29.5	39.1	35.73	74.0	28.6	V	155	110

**$\pi/4$  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)
2382.500	46.4	2.9	32.0	11.46	54.0	7.6	H	155	48
2387.300	46.3	2.9	32.0	11.46	54.0	7.7	H	155	28
4804.500	29.7	-32.8	34.5	28.07	54.0	24.3	H	155	94
7206.000	31.3	-31.6	36.1	26.85	54.0	22.7	H	155	112
9607.500	33.8	-30.0	37.0	26.81	54.0	20.2	H	155	4
12010.500	36.2	-29.8	39.3	26.71	54.0	17.8	H	155	28

 **$\pi/4$  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)
2385.422	46.5	2.9	32.0	11.64	54.0	7.5	H	155	38
2492.328	46.7	2.9	32.5	11.29	54.0	7.3	H	155	28
4882.500	30.1	-32.7	34.5	28.32	54.0	23.9	H	155	3
7323.000	31.5	-31.9	36.1	27.37	54.0	22.5	H	155	48
9763.500	33.5	-30.6	37.2	26.91	54.0	20.5	H	155	94
12205.500	36.1	-29.4	39.2	26.27	54.0	17.9	H	155	72

 **$\pi/4$  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)
2484.300	47.2	2.9	32.7	11.54	54.0	6.8	H	155	48
2492.500	46.9	2.9	32.5	11.46	54.0	7.1	H	155	5
4960.500	29.2	-33.4	34.5	28.10	54.0	24.8	H	155	28
7440.000	31.3	-31.8	36.0	27.08	54.0	22.7	H	155	138
9919.500	34.7	-29.9	37.4	27.21	54.0	19.3	H	155	108
12400.500	35.4	-29.5	39.1	25.74	54.0	18.6	H	155	248

**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)
2385.900	59.4	2.9	32.0	24.57	74.0	14.6	V	155	44
2387.672	59.3	2.9	32.0	24.47	74.0	14.7	V	155	22
4803.750	40.2	-32.9	34.5	38.51	74.0	33.8	H	155	88
7206.000	41.8	-31.6	36.1	37.30	74.0	32.2	H	155	110
9608.250	44.2	-30.0	37.0	37.27	74.0	29.8	V	155	0
12009.750	46.0	-29.8	39.3	36.54	74.0	28.0	H	155	22

**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)
2350.400	49.2	-28.6	31.7	46.11	74.0	24.8	H	155	44
2547.200	51.7	-27.9	33.1	46.54	74.0	22.3	V	155	22
4881.750	40.0	-32.7	34.5	38.25	74.0	34.0	V	155	0
7323.000	41.8	-31.9	36.1	37.60	74.0	32.2	H	155	44
9764.250	43.6	-30.6	37.2	36.98	74.0	30.4	V	155	88
12204.750	46.3	-29.4	39.2	36.56	74.0	27.7	H	155	66

**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)
2485.500	60.7	2.9	32.7	25.09	74.0	13.3	H	155	44
2488.250	60.5	2.9	32.6	24.93	74.0	13.5	V	155	0
4959.750	39.9	-33.4	34.5	38.80	74.0	34.1	V	155	22
7440.000	41.7	-31.8	36.0	37.44	74.0	32.3	H	155	132
9920.250	44.8	-29.9	37.4	37.32	74.0	29.2	V	155	110
12399.750	47.8	-29.5	39.1	38.12	74.0	26.2	H	155	352

**8DPSK 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)
2383.200	46.3	2.9	32.0	11.45	54.0	7.7	H	155	28
2388.000	46.3	2.9	32.0	11.49	54.0	7.7	H	155	48
4804.500	29.7	-32.8	34.5	28.01	54.0	24.3	H	155	82
7206.000	31.2	-31.6	36.1	26.73	54.0	22.8	H	155	3
9607.500	33.5	-30.0	37.0	26.60	54.0	20.5	H	155	25
12010.500	35.9	-29.8	39.3	26.47	54.0	18.1	H	155	115

**8DPSK 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)
2384.638	46.8	2.9	32.0	11.94	54.0	7.2	H	155	138
2492.327	47.2	2.9	32.5	11.77	54.0	6.8	H	155	3
4882.500	30.0	-32.7	34.5	28.19	54.0	24.0	H	155	28
7323.000	31.3	-31.9	36.1	27.14	54.0	22.7	H	155	48
9763.500	33.4	-30.6	37.2	26.81	54.0	20.6	H	155	92
12205.500	35.8	-29.4	39.2	25.99	54.0	18.2	H	155	249

**8DPSK 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	47.4	2.9	32.8	11.75	54.0	6.6	H	155	4
2487.200	47.1	2.9	32.7	11.48	54.0	6.9	H	155	28
4960.500	29.0	-33.4	34.5	27.92	54.0	25.0	H	155	48
7440.000	31.2	-31.8	36.0	26.97	54.0	22.8	H	155	108
9919.500	34.6	-29.9	37.4	27.10	54.0	19.4	H	155	138
12400.500	35.2	-29.5	39.1	25.59	54.0	18.8	H	155	92

**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)
2383.598	59.6	2.9	32.0	24.69	74.0	14.4	V	155	22
2387.602	59.2	2.9	32.0	24.34	74.0	14.8	V	155	44
4803.750	39.6	-32.9	34.5	37.98	74.0	34.4	V	155	88
7206.000	43.6	-31.6	36.1	39.09	74.0	30.4	H	155	0
9608.250	43.4	-30.0	37.0	36.44	74.0	30.6	V	155	22
12009.750	45.8	-29.8	39.3	36.32	74.0	28.2	V	155	110

**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)
2298.200	48.7	-28.9	31.0	46.60	74.0	25.3	H	155	132
2560.400	51.7	-28.0	33.1	46.66	74.0	22.3	H	155	0
4881.750	40.9	-32.7	34.5	39.12	74.0	33.1	V	155	22
7323.000	42.0	-31.9	36.1	37.85	74.0	32.0	V	155	44
9764.250	43.8	-30.6	37.2	37.17	74.0	30.2	H	155	88
12204.750	47.0	-29.4	39.2	37.18	74.0	27.0	H	155	246

**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)
2486.100	60.3	2.9	32.7	24.64	74.0	13.7	H	155	0
2489.510	60.1	2.9	32.6	24.58	74.0	13.9	H	155	22
4959.750	39.4	-33.4	34.5	38.31	74.0	34.6	H	155	44
7440.000	40.3	-31.8	36.0	36.07	74.0	33.7	V	155	110
9920.250	44.5	-29.9	37.4	36.98	74.0	29.5	V	155	132
12399.750	44.8	-29.5	39.1	35.22	74.0	29.2	H	155	88

**Conclusion: PASS**
**Test graphs as below for Set.10:**

RE - Power-2.38GHz-2.45GHz

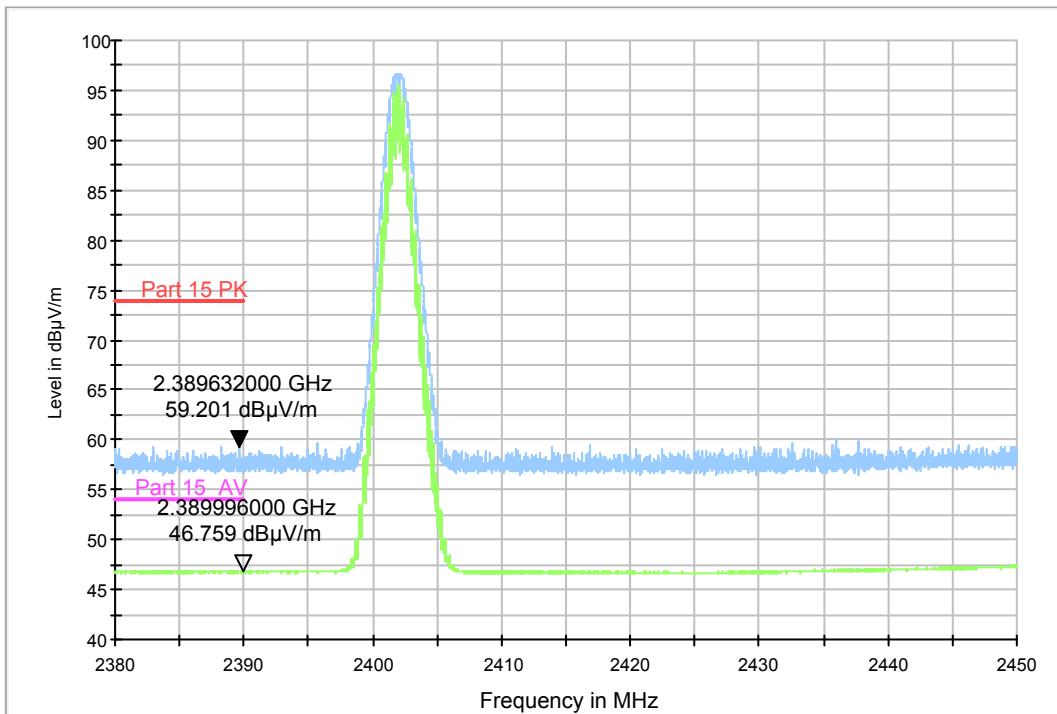


Fig.58. Radiated emission (Power): GFSK, low channel

RE - Power-2.45GHz-2.5GHz

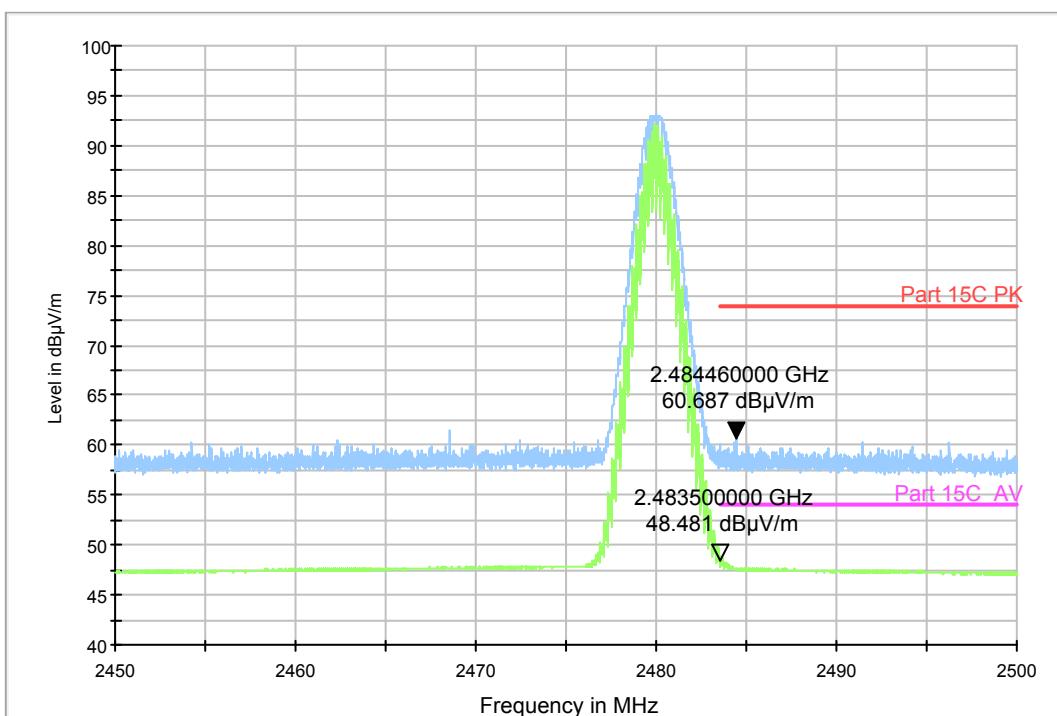


Fig.59. Radiated emission (Power) GFSK, high channel