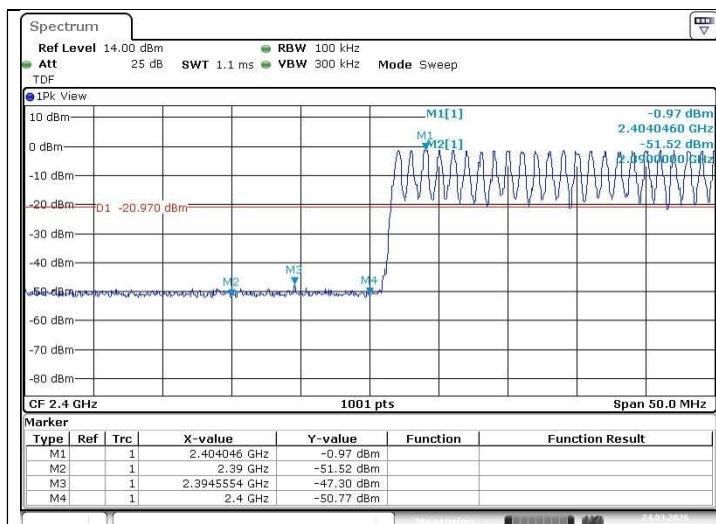


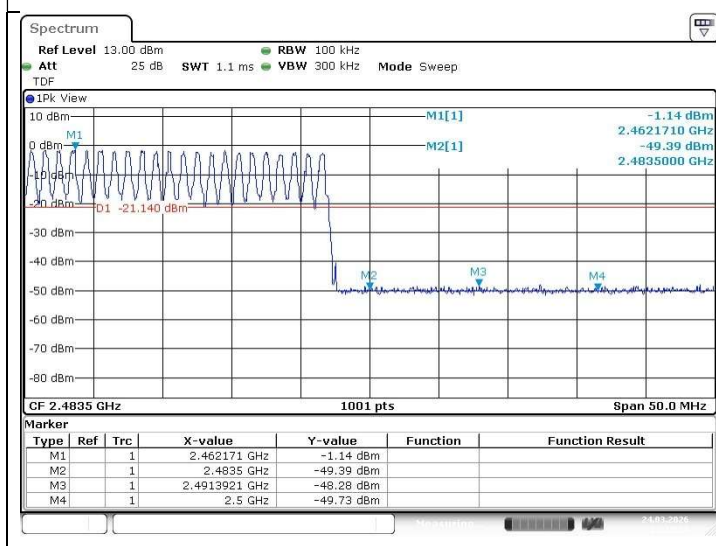
Mode: GFSK_hopping function turned on

Band edge compliance

Low Channel

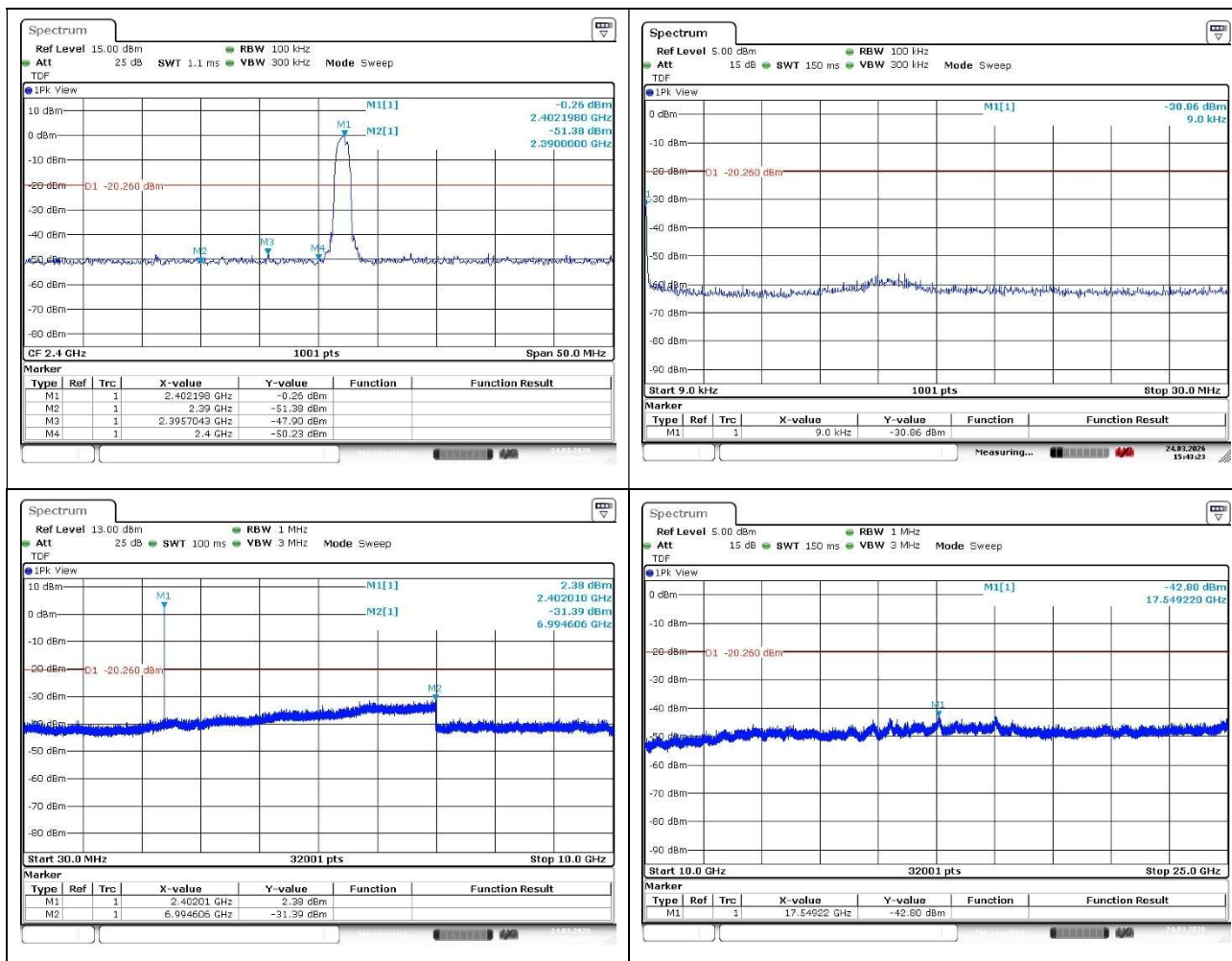


High Channel

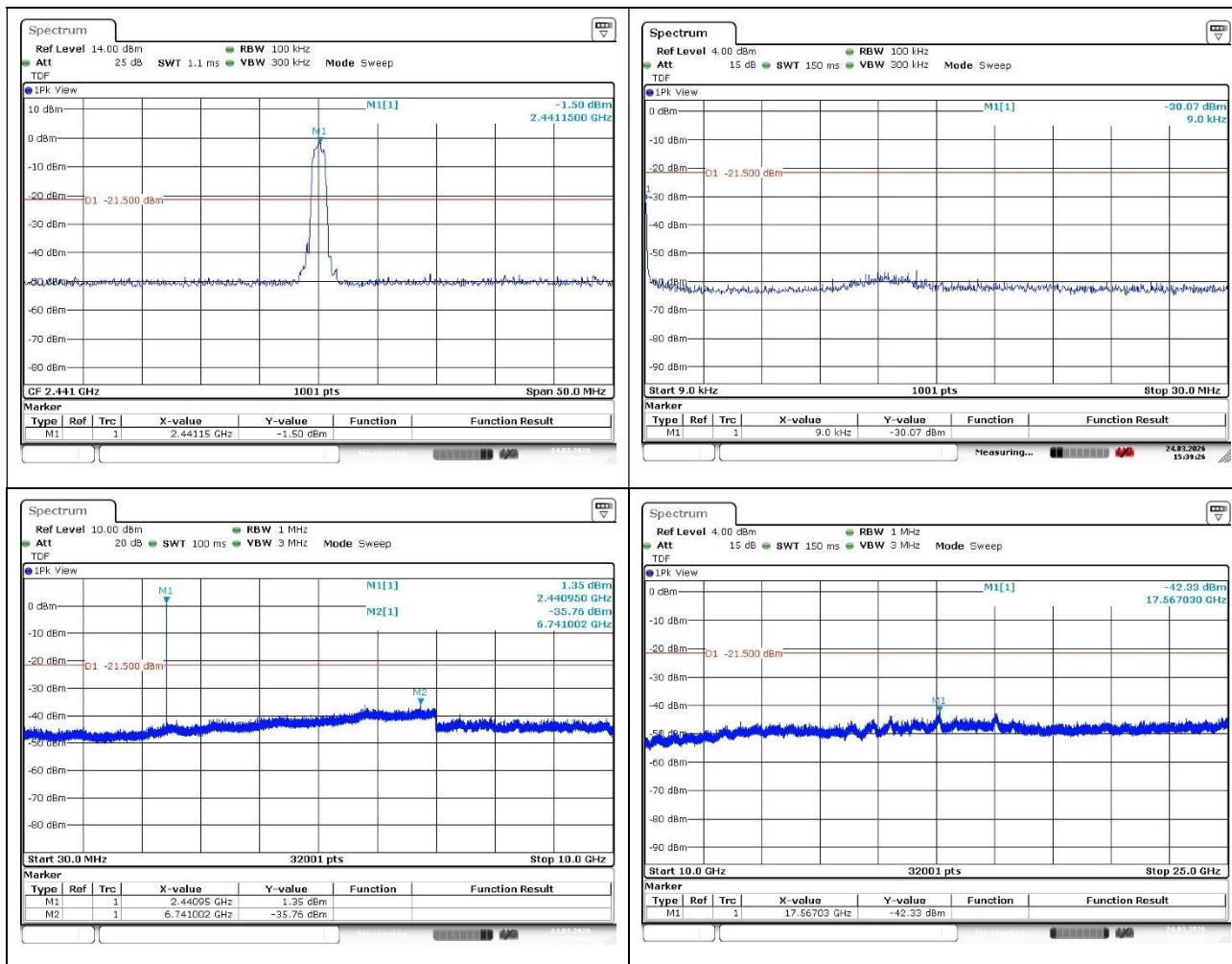


Mode: 8DPSK_hopping function turned off

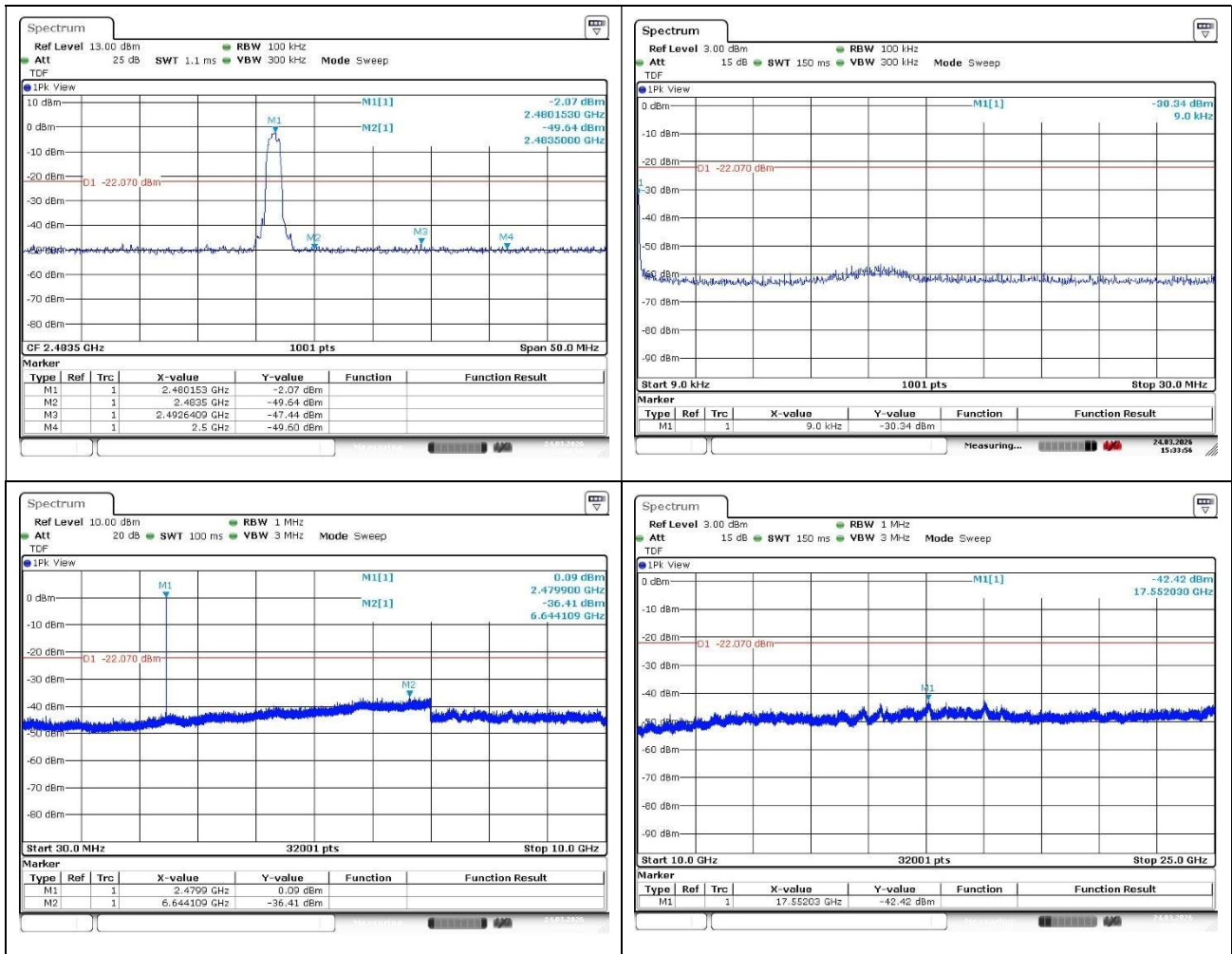
- Low Channel



- Middle Channel



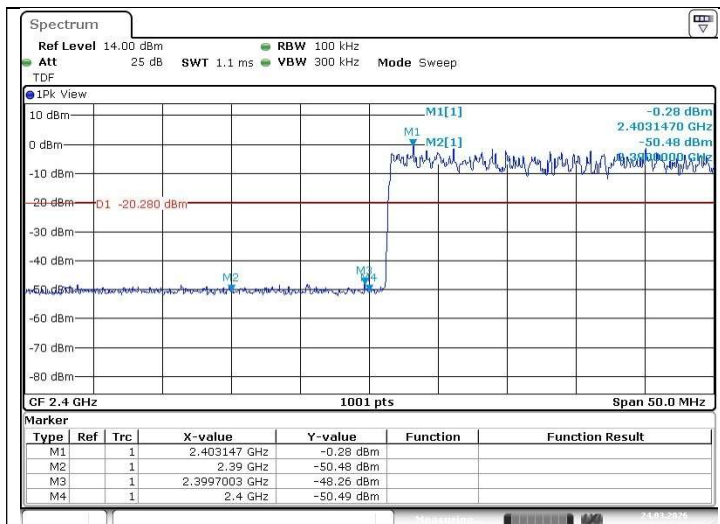
- High Channel



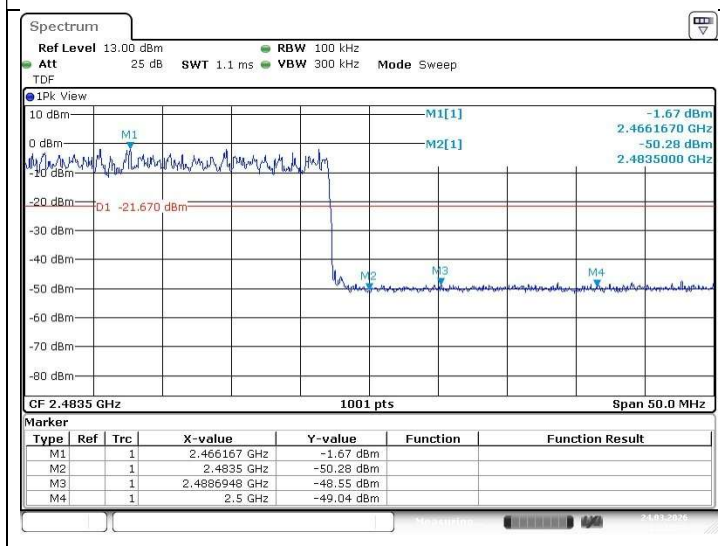
Mode: 8DPSK_hopping function turned on

Band edge compliance

Low channel



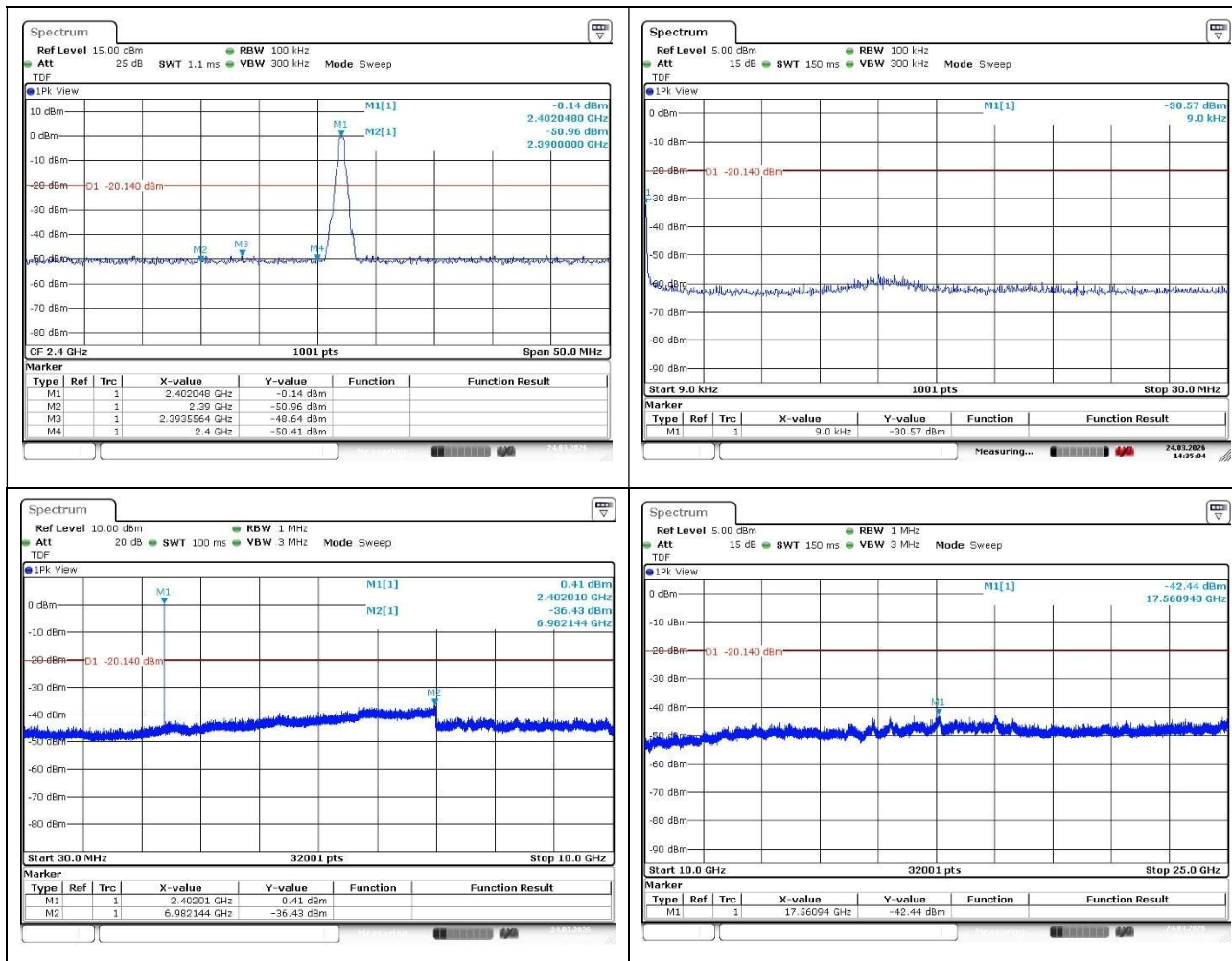
High channel



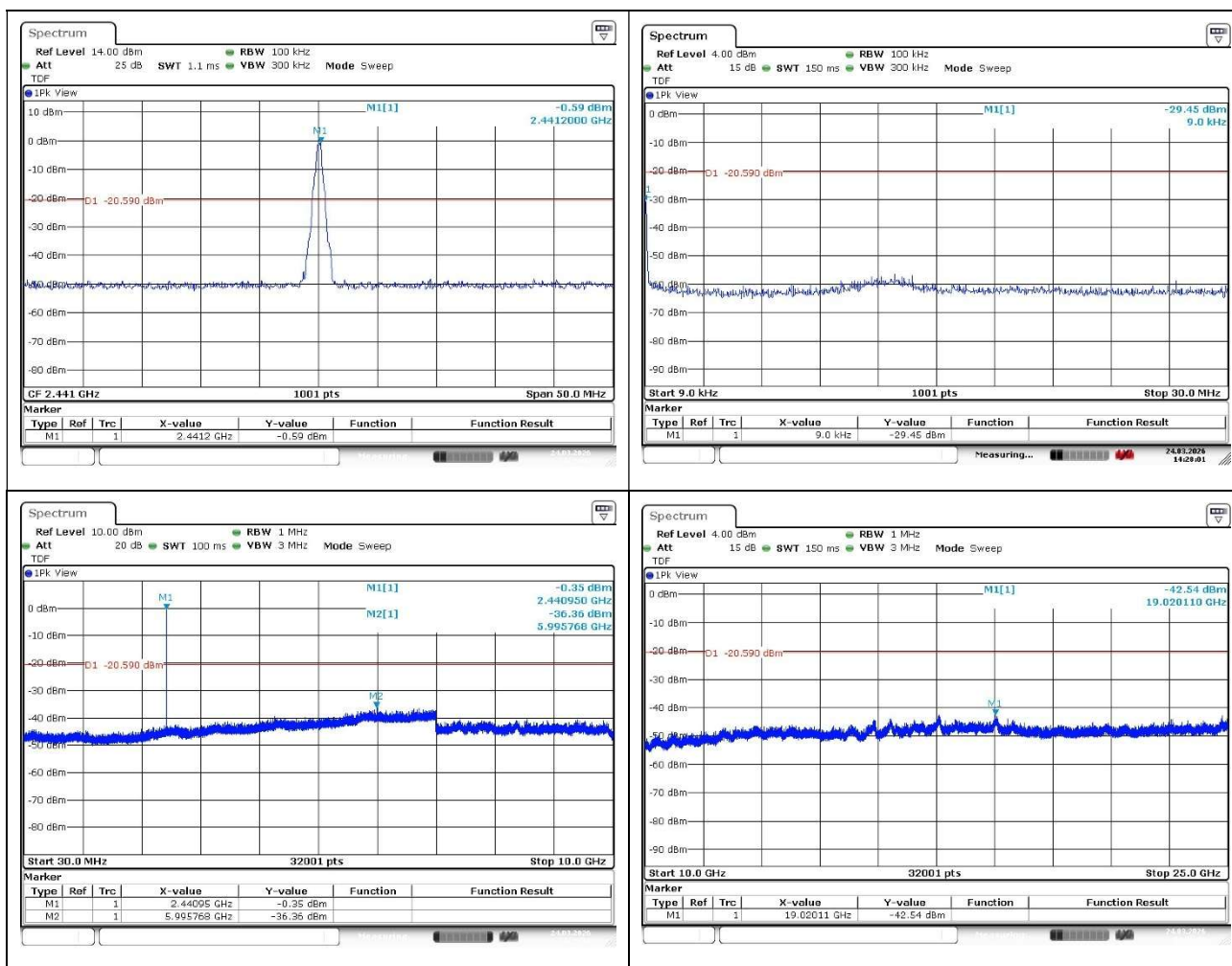
Ant. 2

Mode: GFSK_hopping function turned off

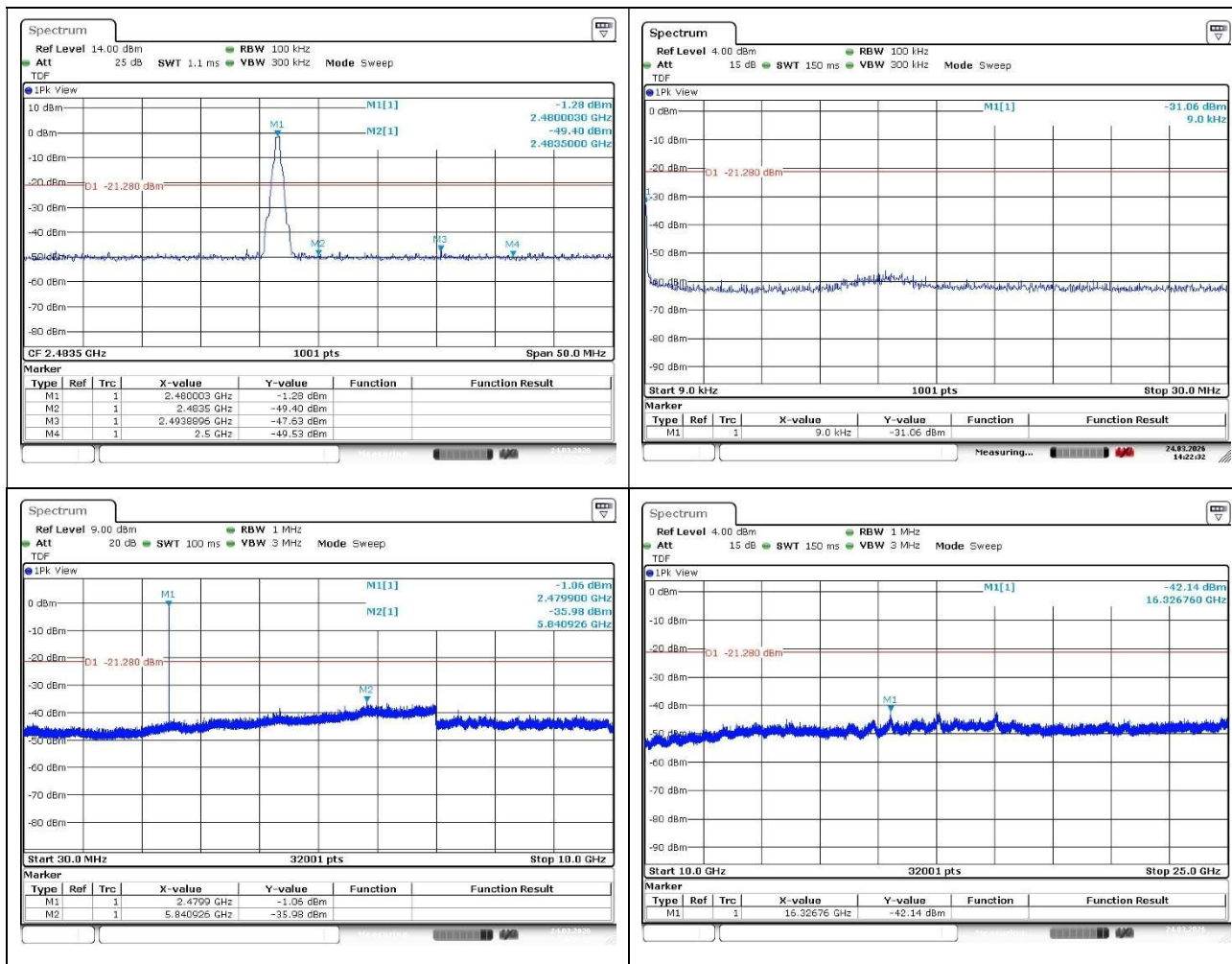
- Low Channel



- Middle Channel



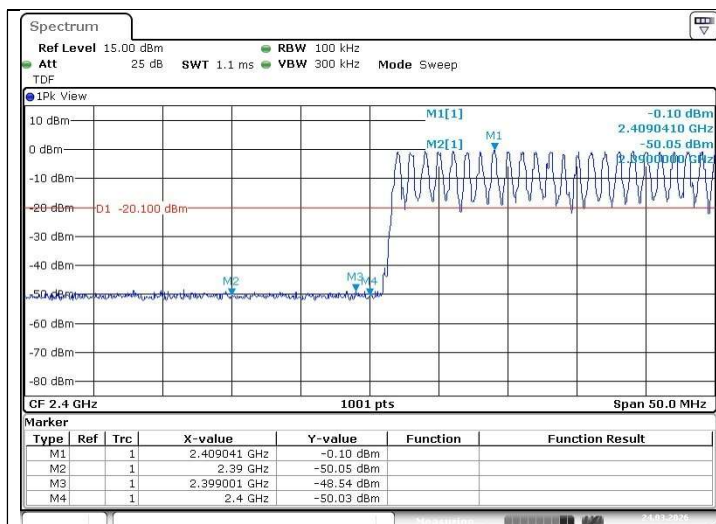
- High Channel



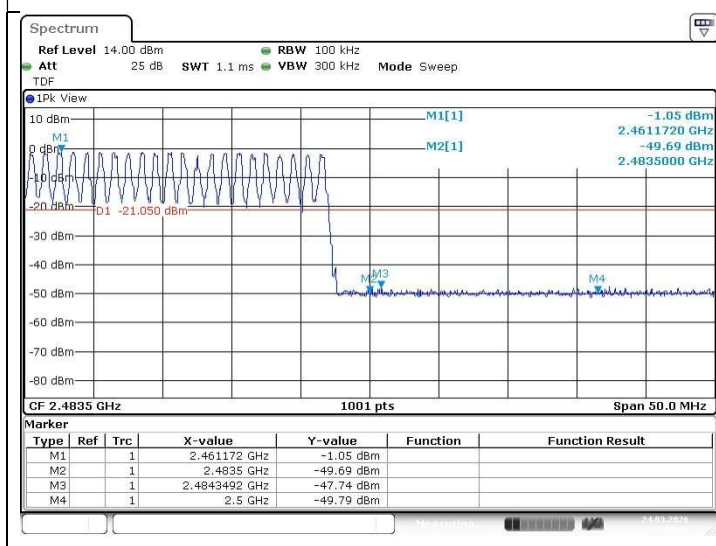
Mode: GFSK_hopping function turned on

Band edge compliance

Low Channel

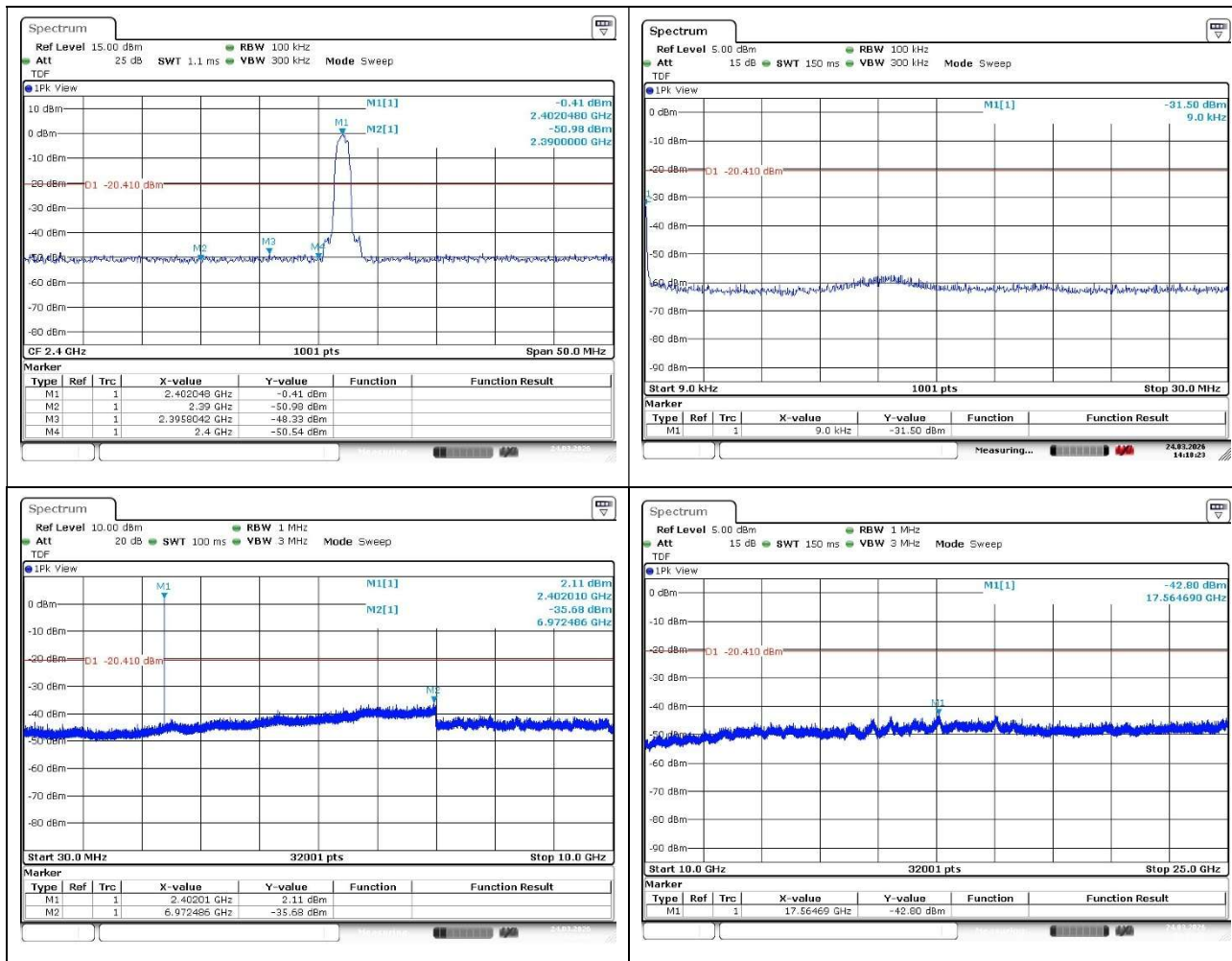


High Channel

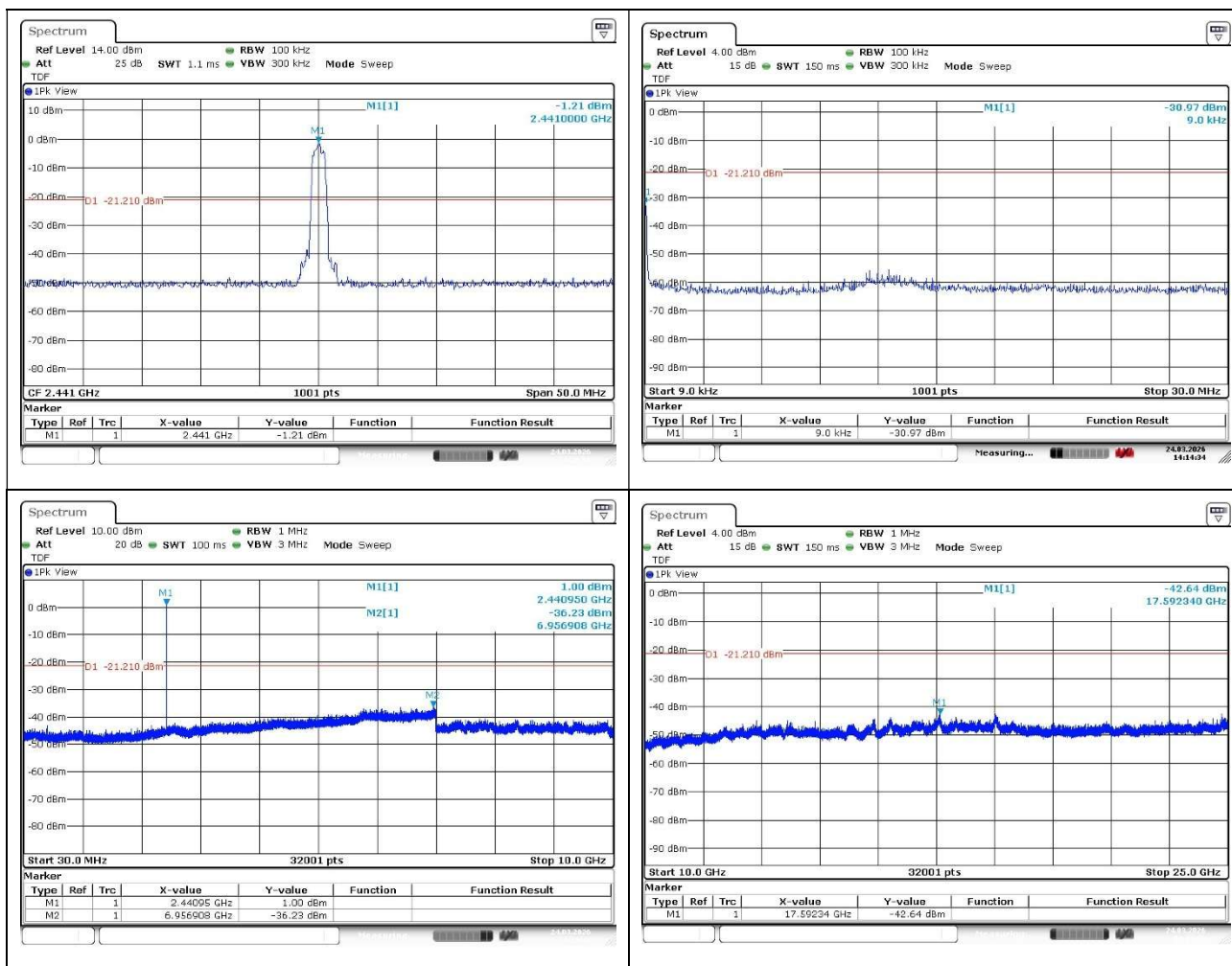


Mode: 8DPSK_hopping function turned off

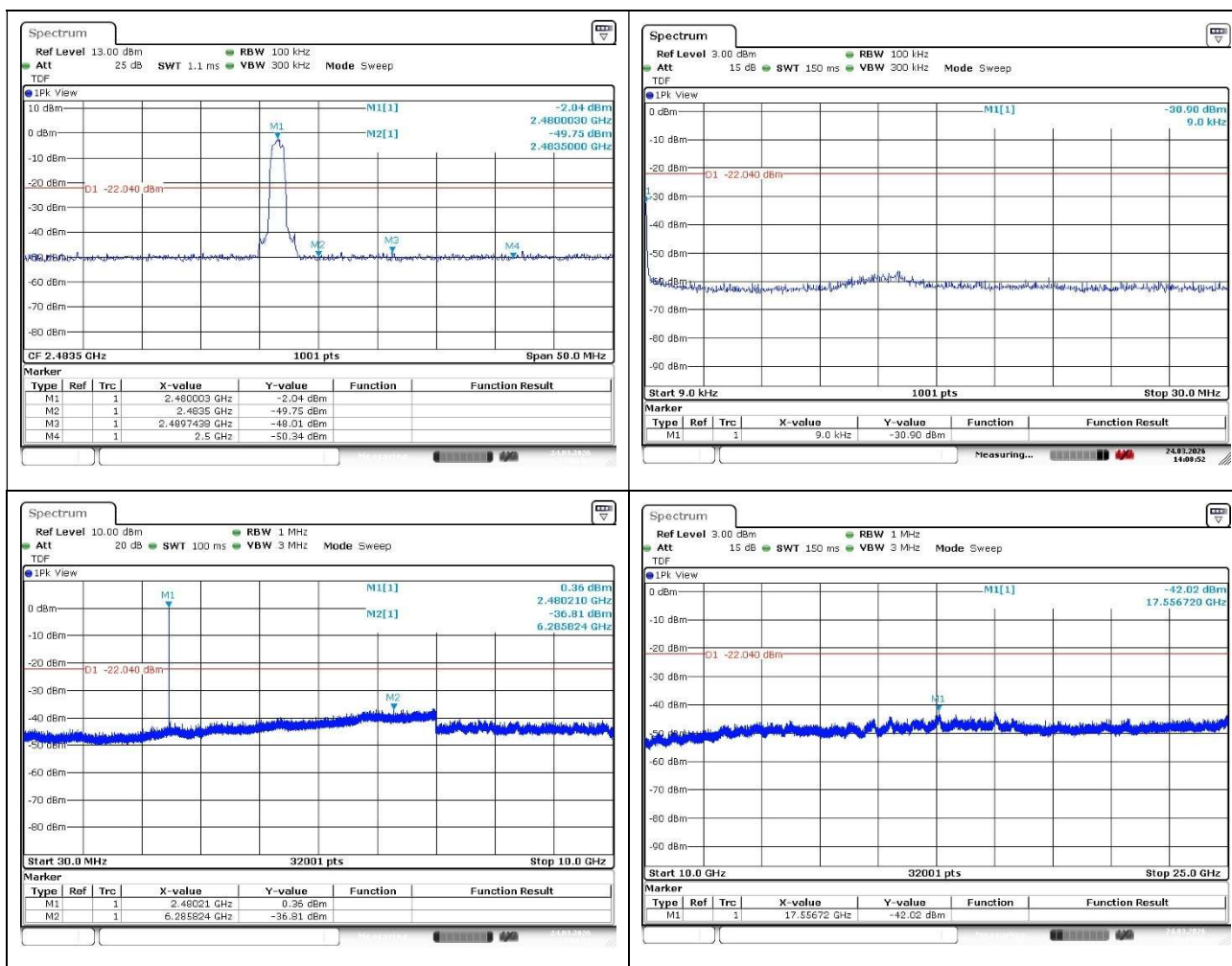
- Low Channel



- Middle Channel



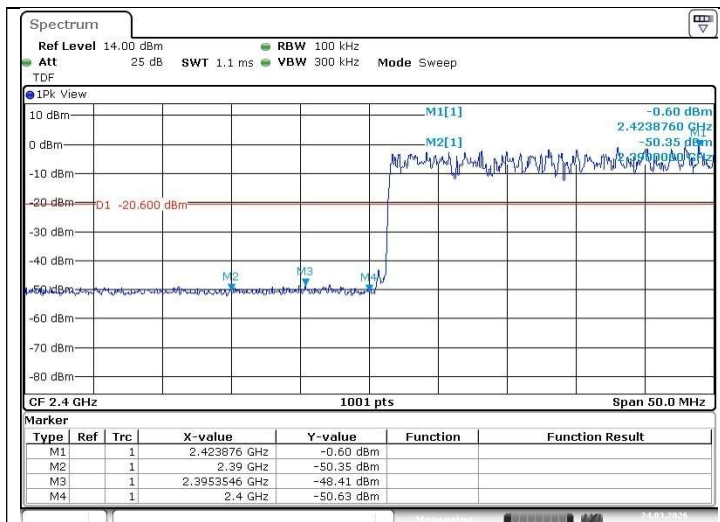
- High Channel



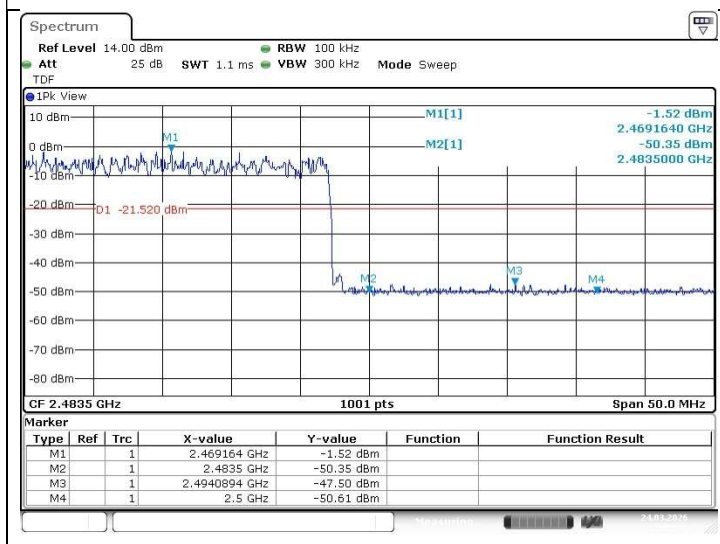
Mode: 8DPSK_hopping function turned on

Band edge compliance

Low channel

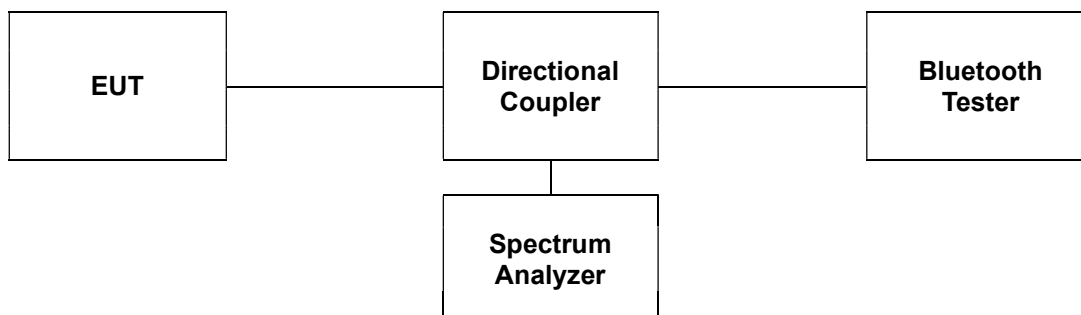


High channel



3. 20 dB Bandwidth and 99 % Bandwidth

3.1. Test Setup



3.2. Limit

Limit: Not Applicable

3.3. Test Procedure

3.3.1. 20 dB Bandwidth

The test follows ANSI C63.10-2020 (for FCC) and ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024 (for ISED).

The 20 dB bandwidth was measured with a spectrum analyzer connected to RF antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency.

Use the following spectrum analyzer setting:

1. Span = approximately 2 to 5 times the 20 dB bandwidth.
2. RBW = 1 % to 5 % of the 20 dB bandwidth.
3. VBW $\geq 3 \times$ RBW
4. Sweep = auto
5. Detector = peak
6. Trace = max hold

The marker-to-peak function to set the mark to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is 20 dB bandwidth of the emission.

3.3.2. 99 % Bandwidth

The test follows section 6.9.3 of ANSI C63.10-2020 (for FCC) and ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024 (for ISSED).

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.
 - 1) When measuring OBW for UWB, the VBW shall be set to three times the RBW or the maximum available VBW of the measuring instrument.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $10 \log (\text{OBW}/\text{RBW})$ below the reference level. Specific guidance is given in 4.1.6.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

3.4. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 %

Ant. 1

Mode	Data Rate (Mbps)	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
GFSK	1	Low	2 402	1.144	0.923
		Middle	2 441	1.144	0.926
		High	2 480	1.149	0.920
π/4DQPSK	2	Low	2 402	1.414	1.196
		Middle	2 441	1.409	1.196
		High	2 480	1.414	1.196
8DPSK	3	Low	2 402	1.409	1.187
		Middle	2 441	1.404	1.199
		High	2 480	1.414	1.202

Ant. 2

Mode	Data Rate (Mbps)	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99 % Bandwidth (MHz)
GFSK	1	Low	2 402	1.144	0.917
		Middle	2 441	1.149	0.920
		High	2 480	1.144	0.923
π/4DQPSK	2	Low	2 402	1.419	1.196
		Middle	2 441	1.414	1.196
		High	2 480	1.414	1.193
8DPSK	3	Low	2 402	1.409	1.199
		Middle	2 441	1.409	1.202
		High	2 480	1.409	1.202

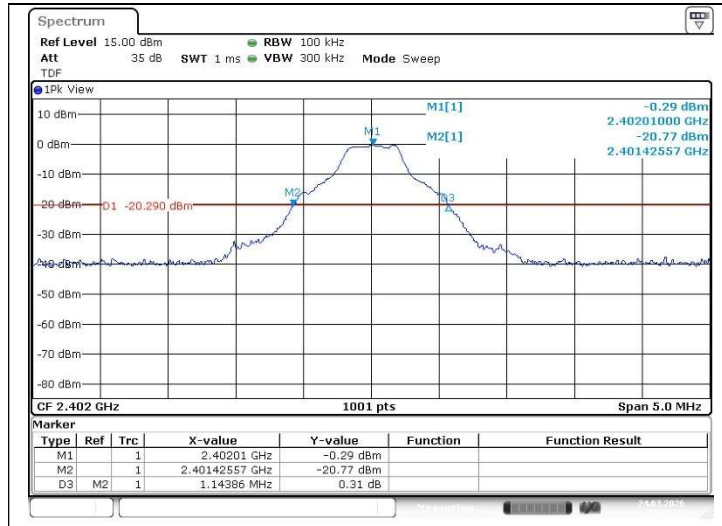
- Test plots

Ant. 1

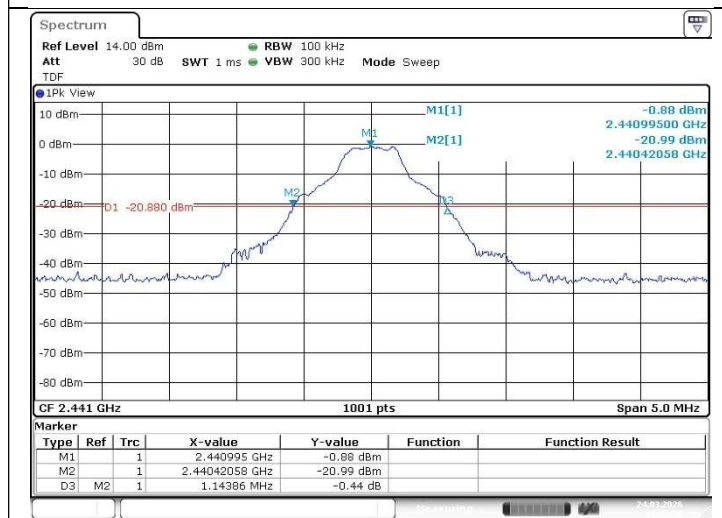
20 dB Bandwidth

Mode: GFSK

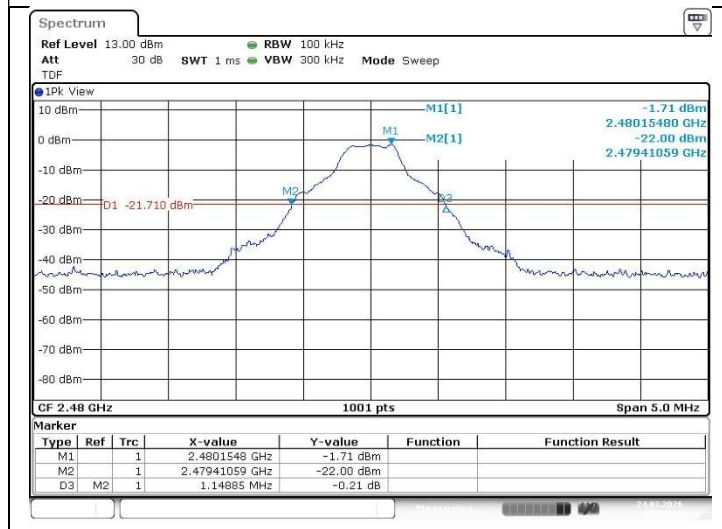
Low Channel



Middle Channel

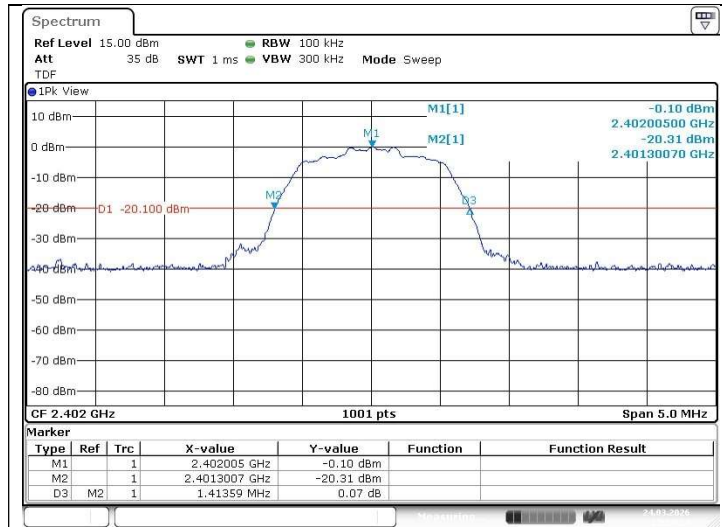


High Channel

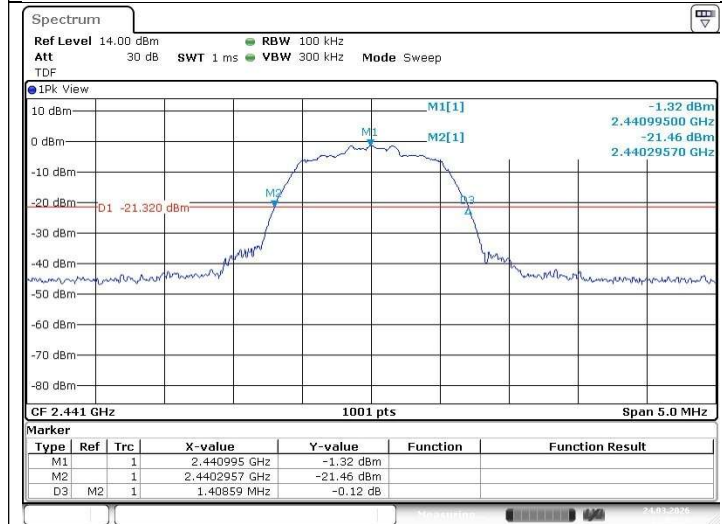


Mode: $\pi/4$ DQPSK

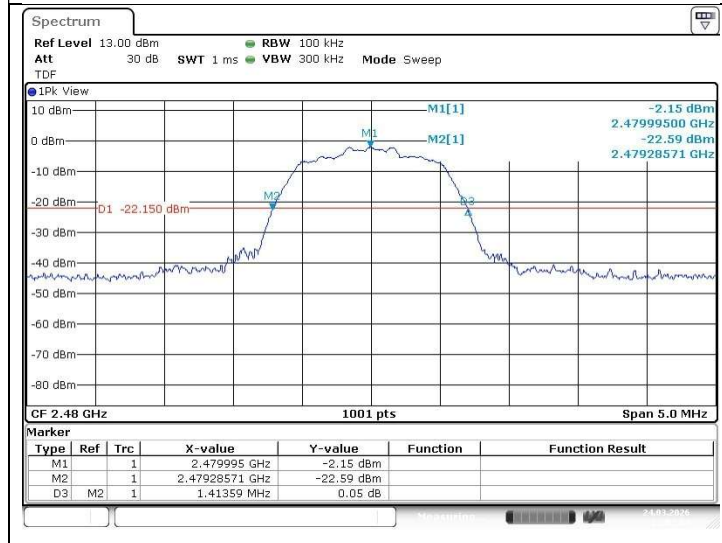
Low Channel



Middle Channel

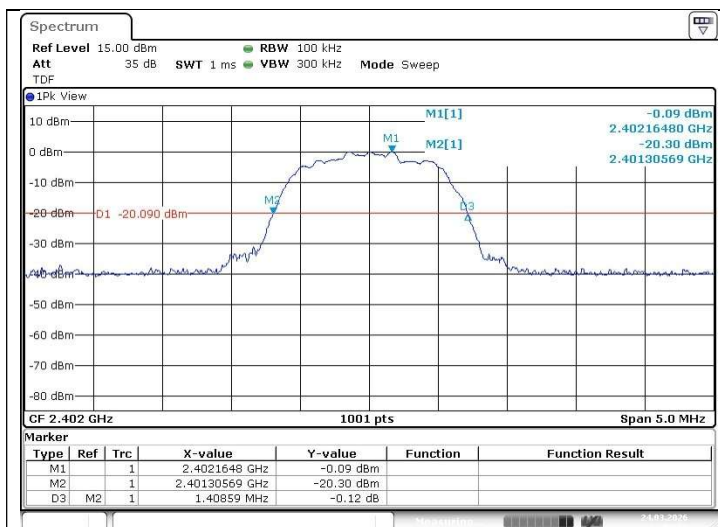


High Channel

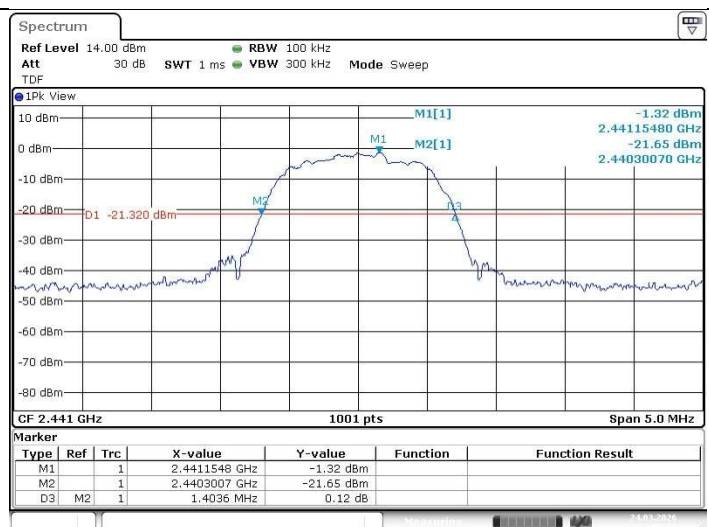


Mode: 8DPSK

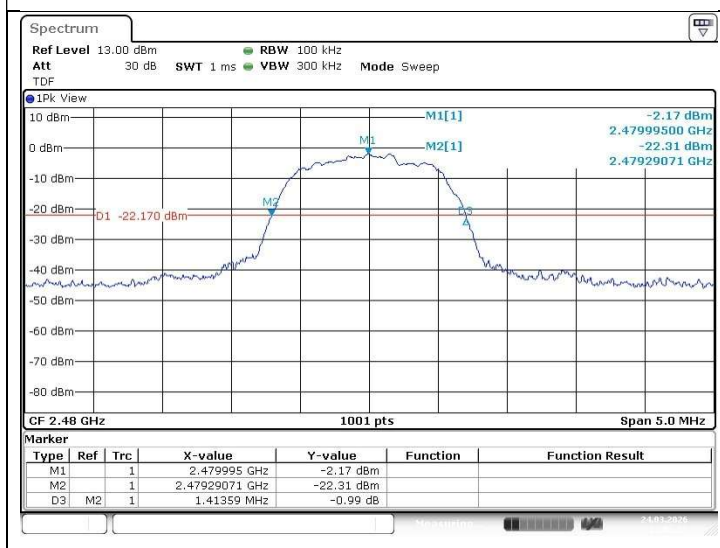
Low Channel



Middle Channel



High Channel

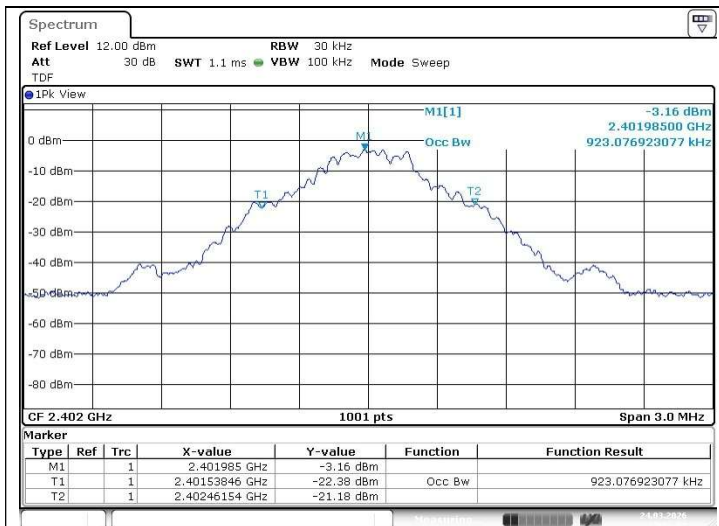


Ant. 1

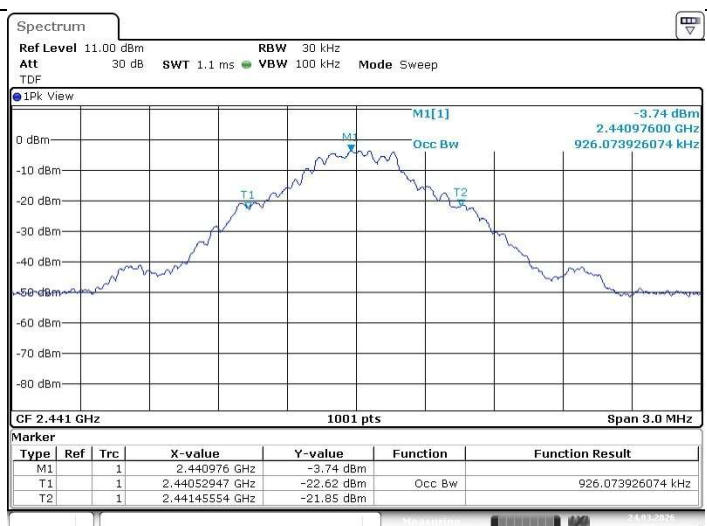
99 % Bandwidth

Mode: GFSK

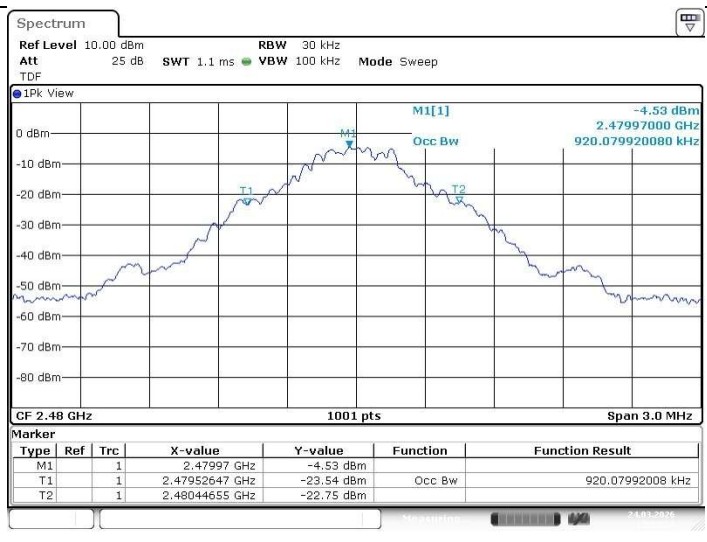
Low Channel



Middle Channel

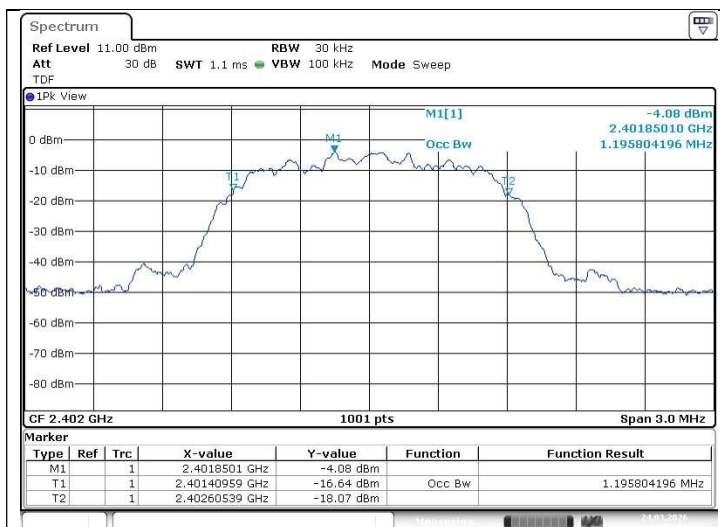


High Channel

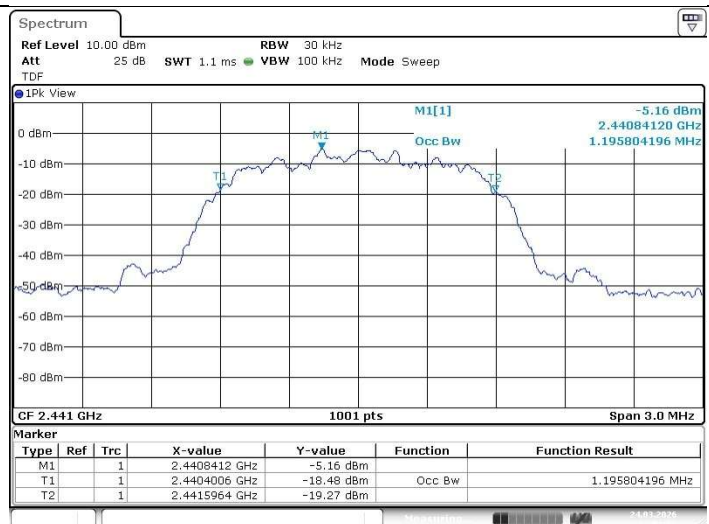


Mode: $\pi/4$ DQPSK

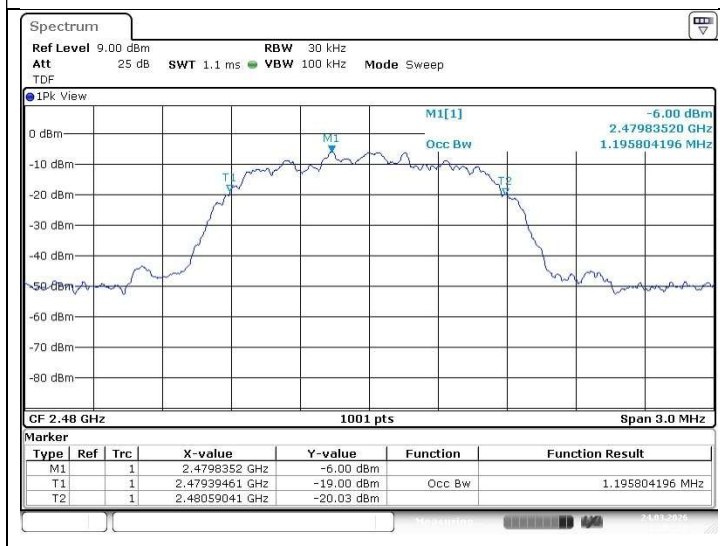
Low Channel



Middle Channel

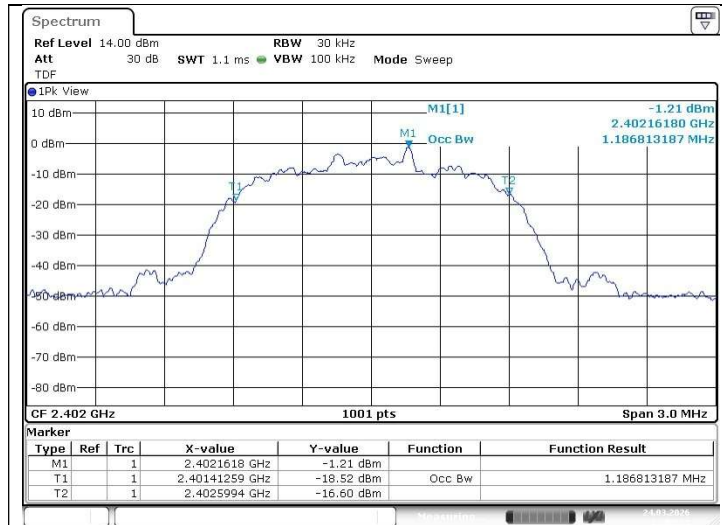


High Channel

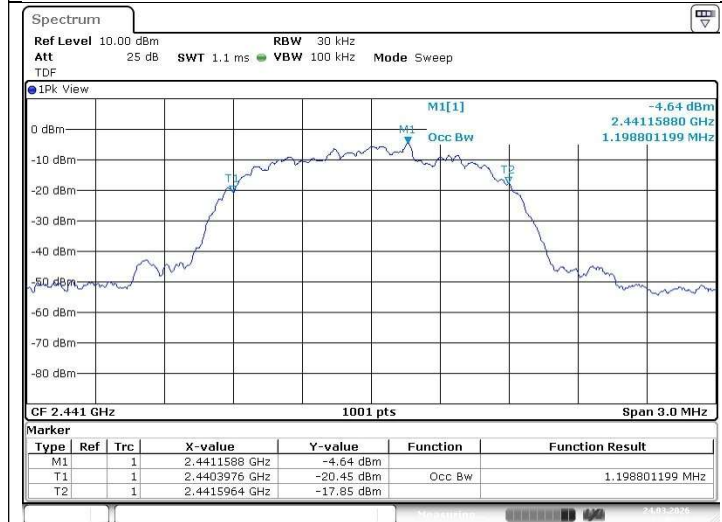


Mode: 8DPSK

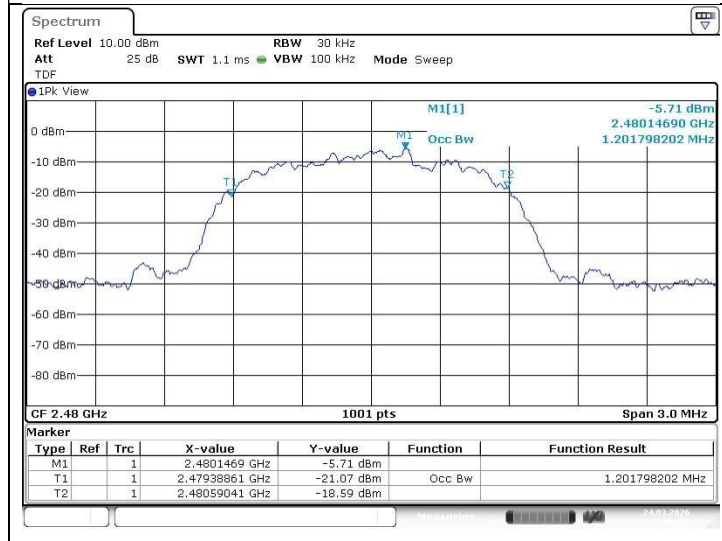
Low Channel



Middle Channel



High Channel



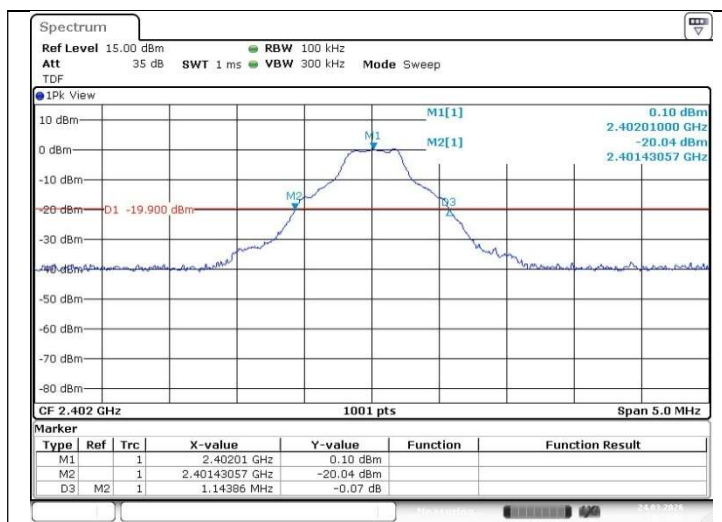
- Test plots

Ant. 2

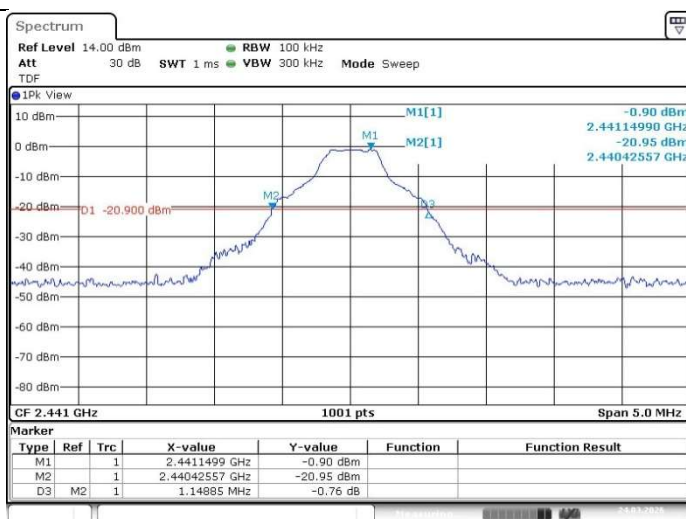
20 dB Bandwidth

Mode: GFSK

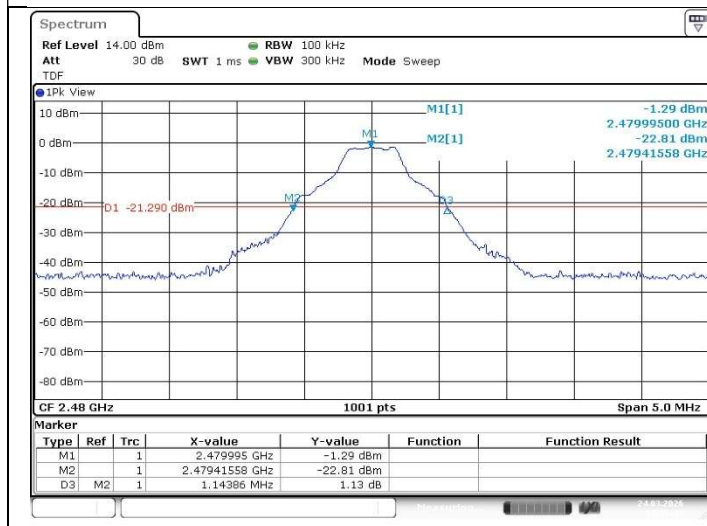
Low Channel



Middle Channel

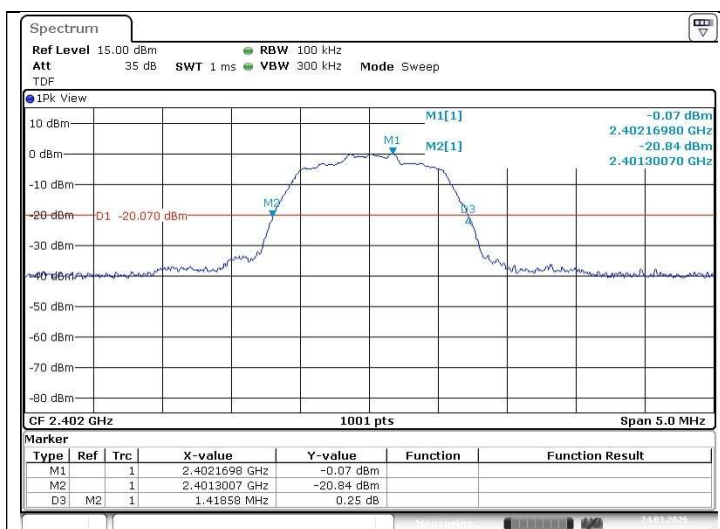


High Channel

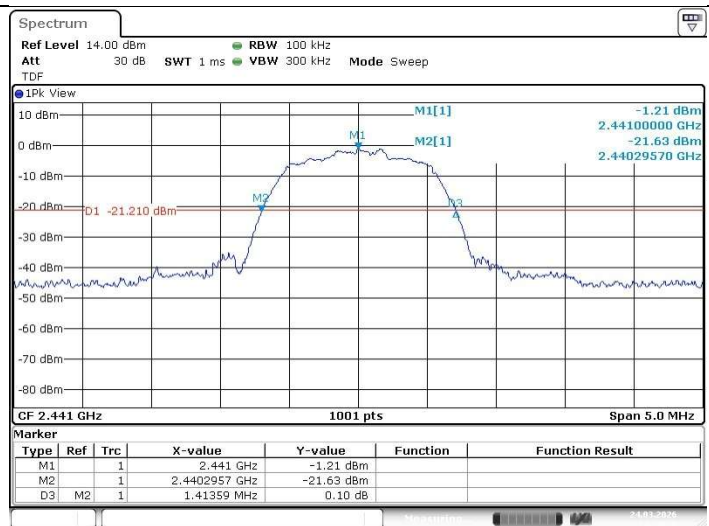


Mode: $\pi/4$ DQPSK

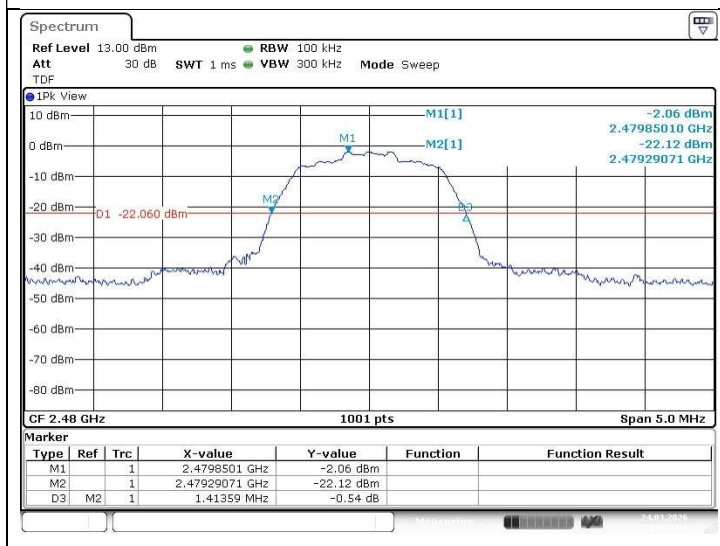
Low Channel



Middle Channel

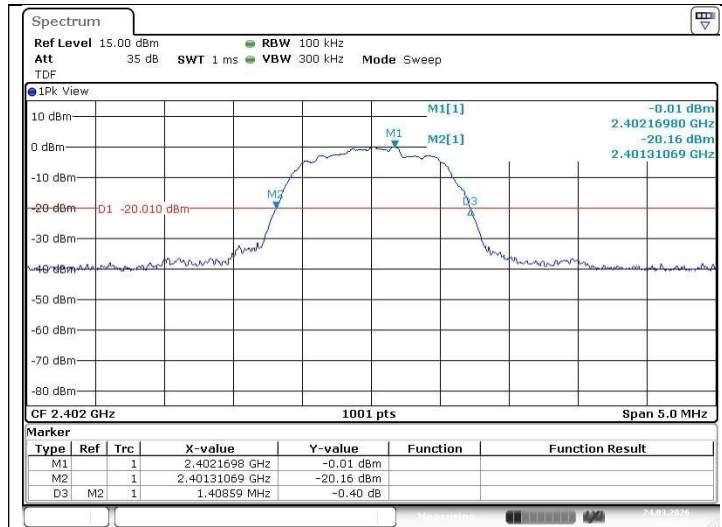


High Channel

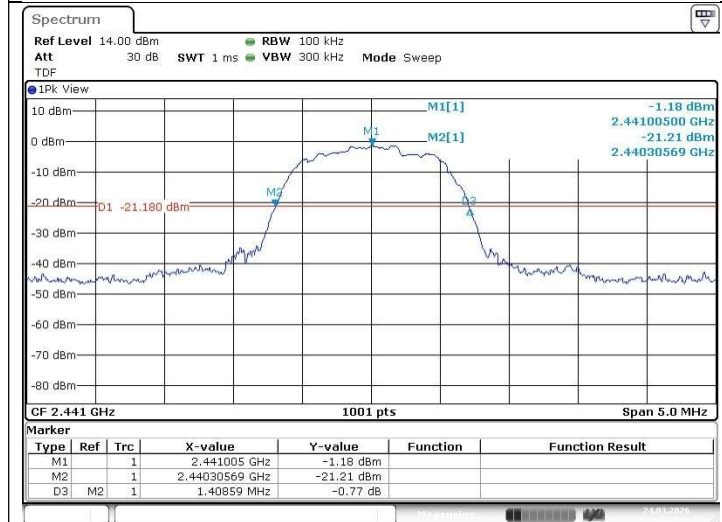


Mode: 8DPSK

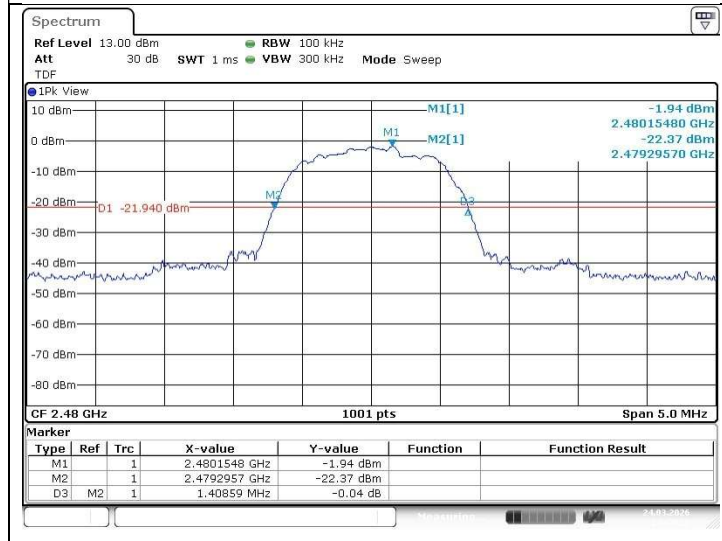
Low Channel



Middle Channel



High Channel

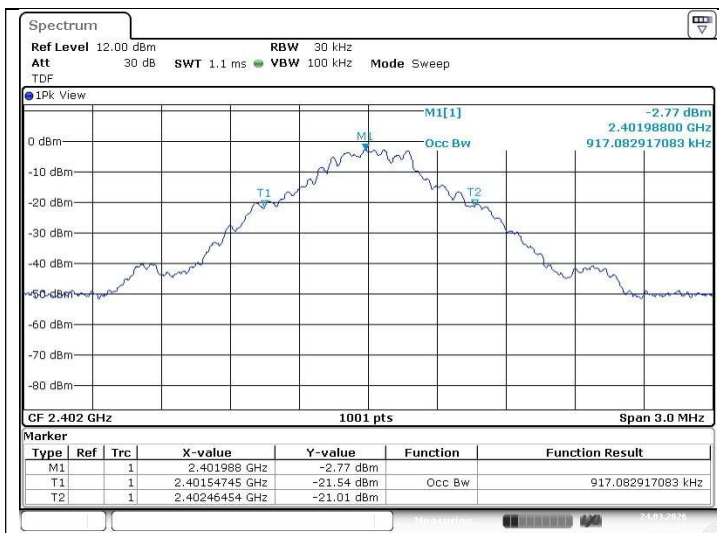


Ant. 2

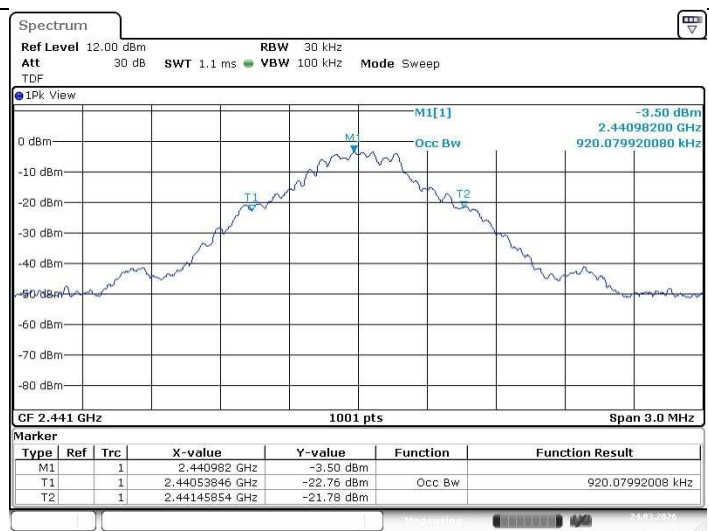
99 % Bandwidth

Mode: GFSK

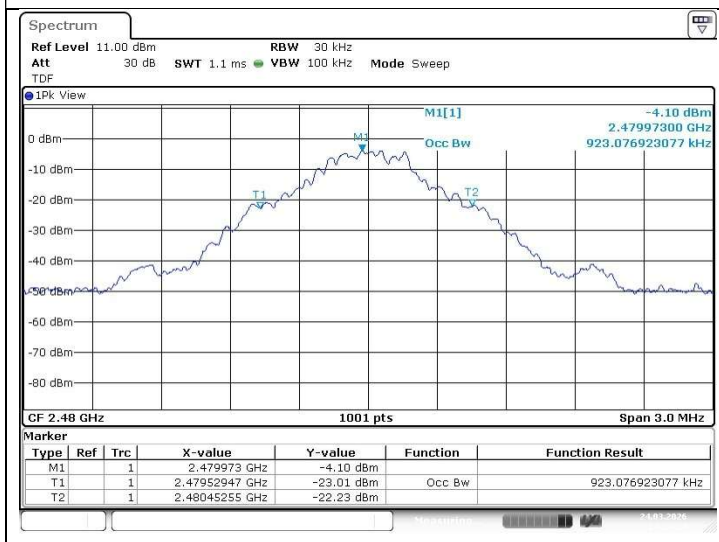
Low Channel



Middle Channel

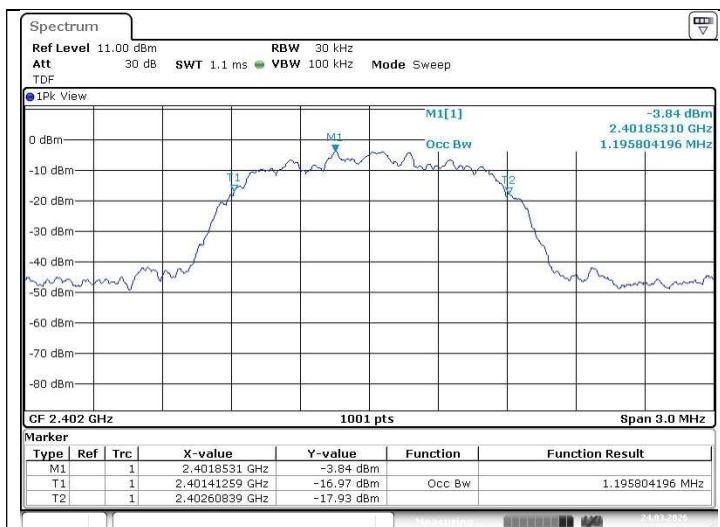


High Channel

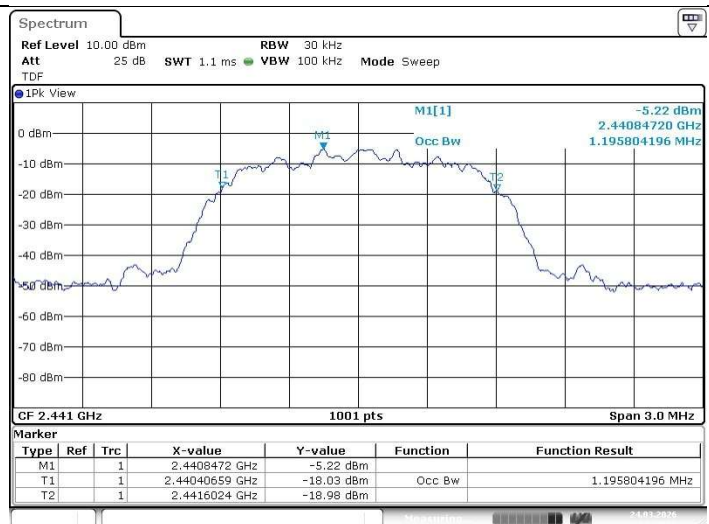


Mode: $\pi/4$ DQPSK

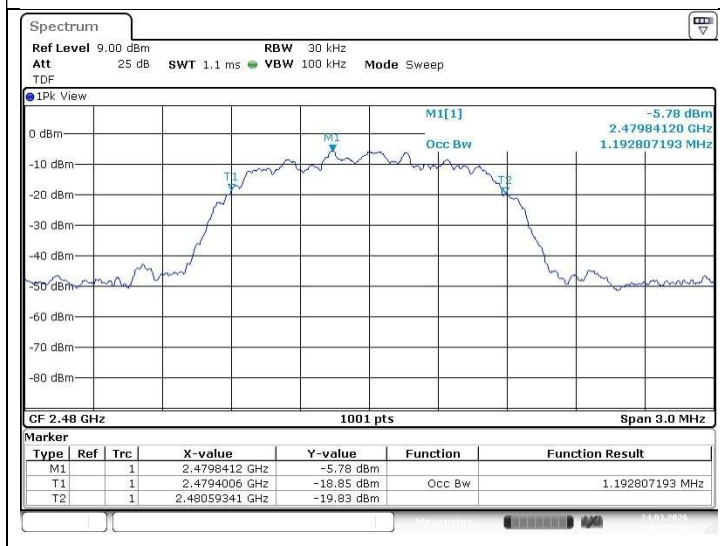
Low Channel



Middle Channel



High Channel

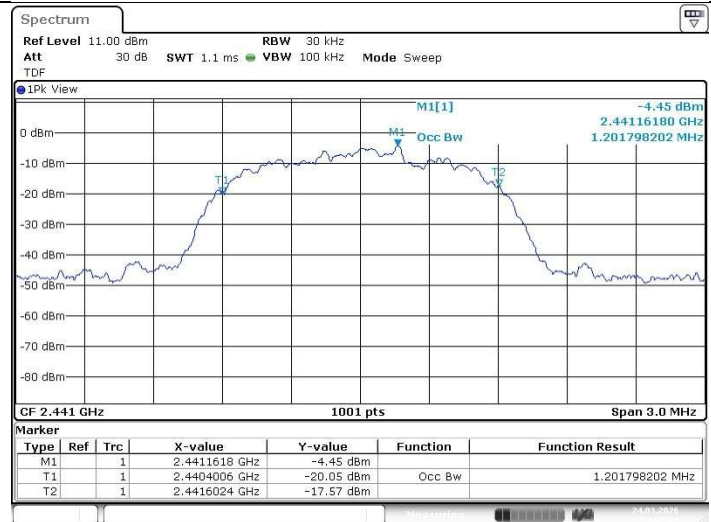


Mode: 8DPSK

Low Channel



Middle Channel



High Channel

