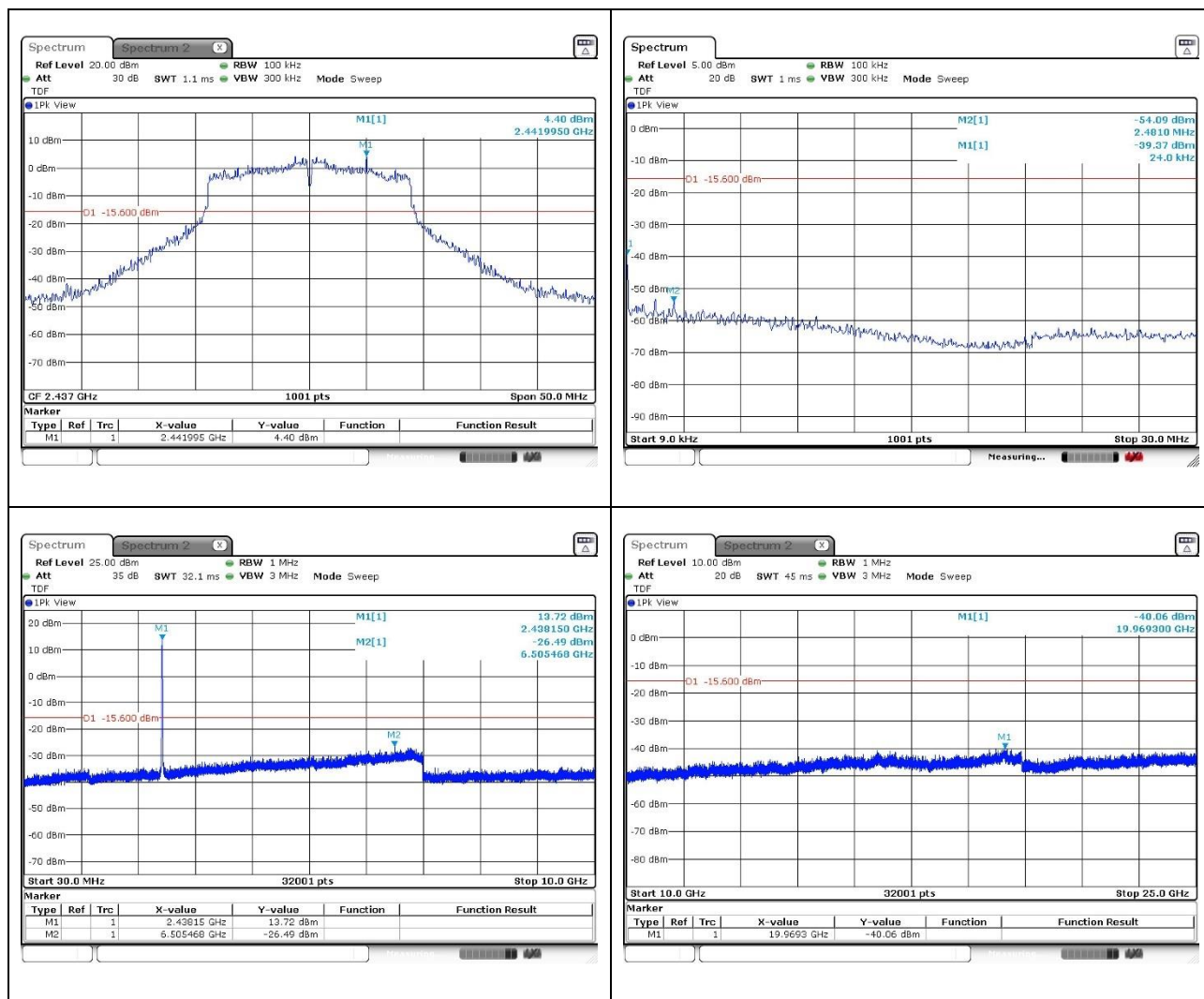
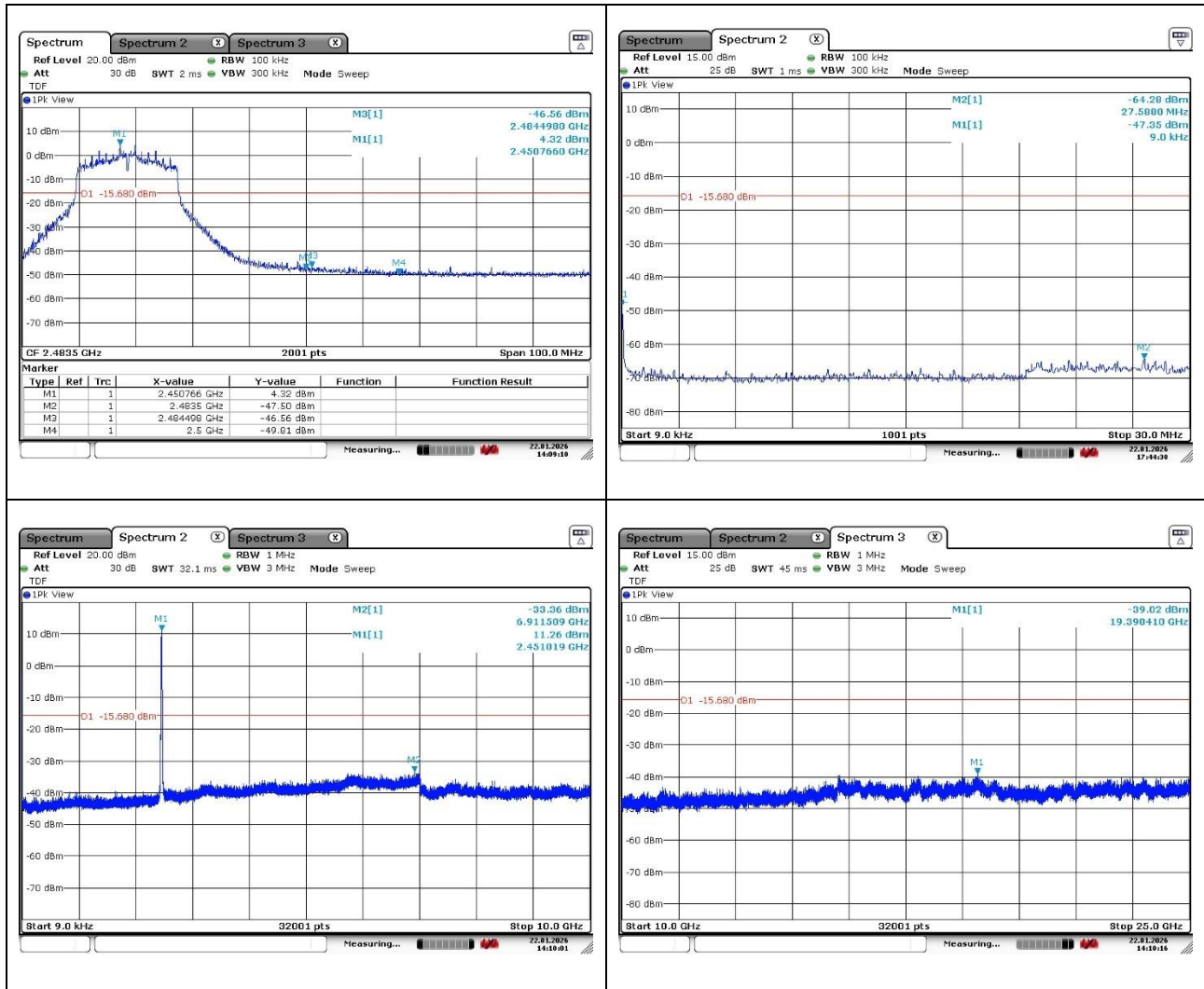


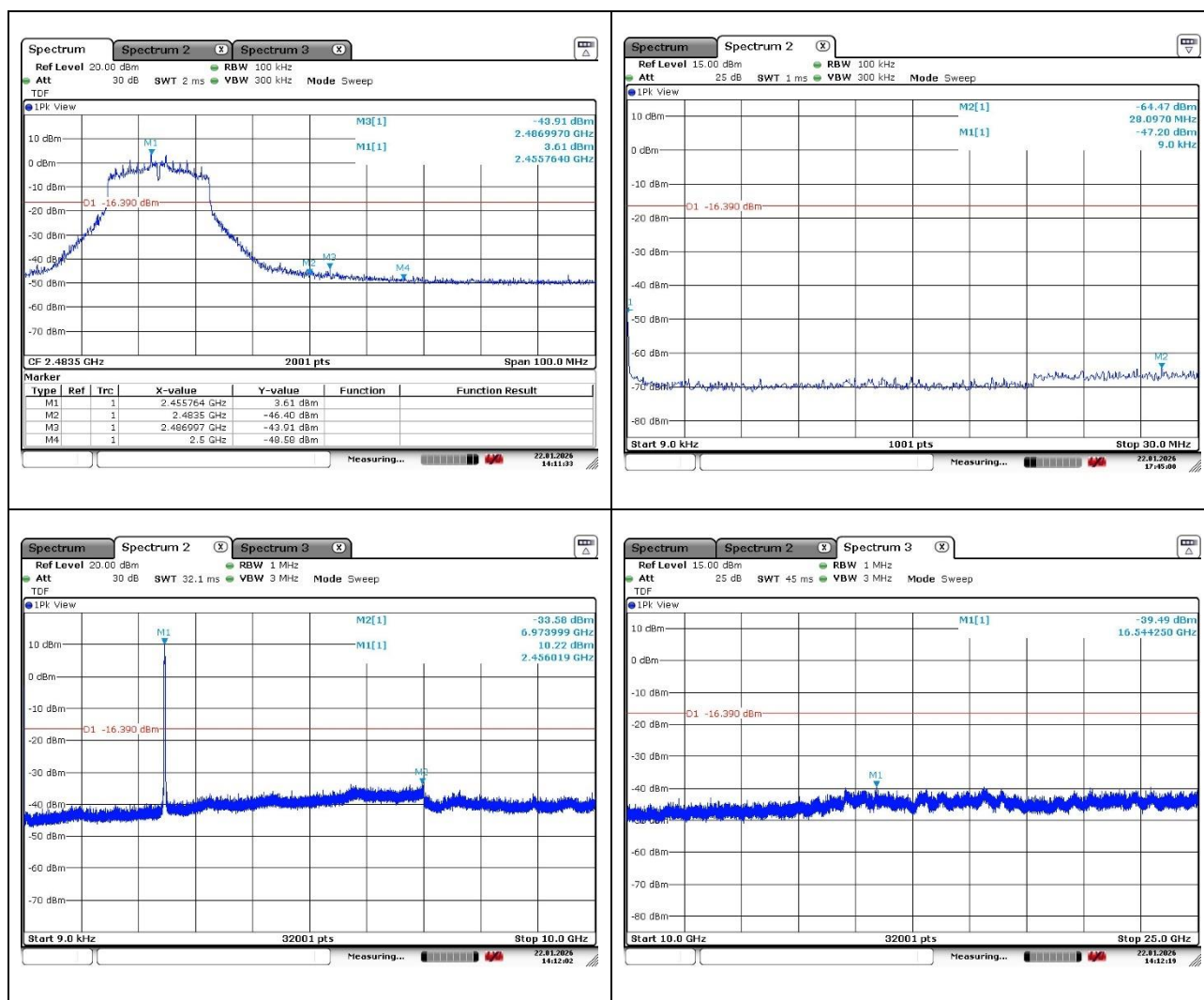
Middle Channel



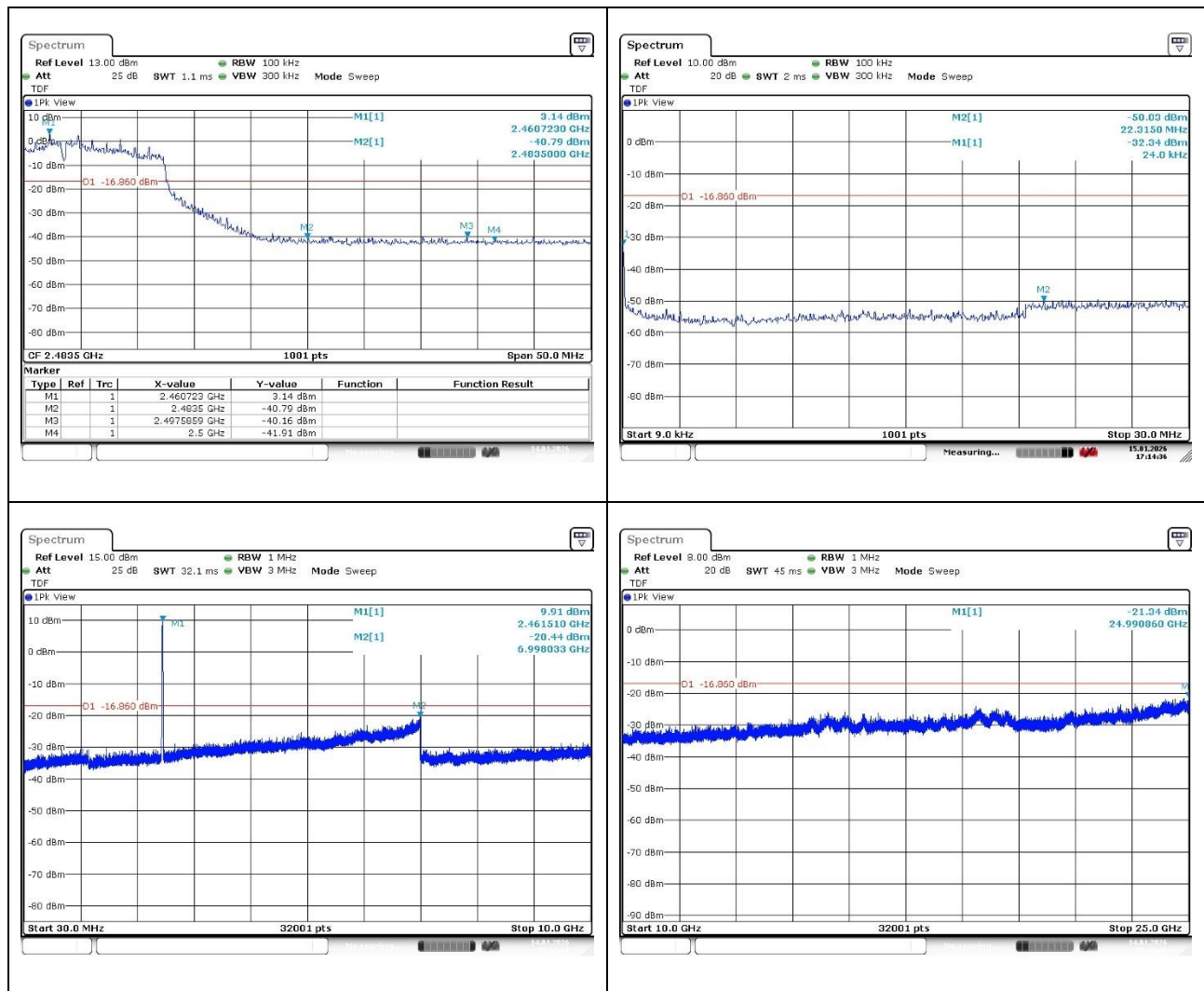
High Channel -1



High Channel -2



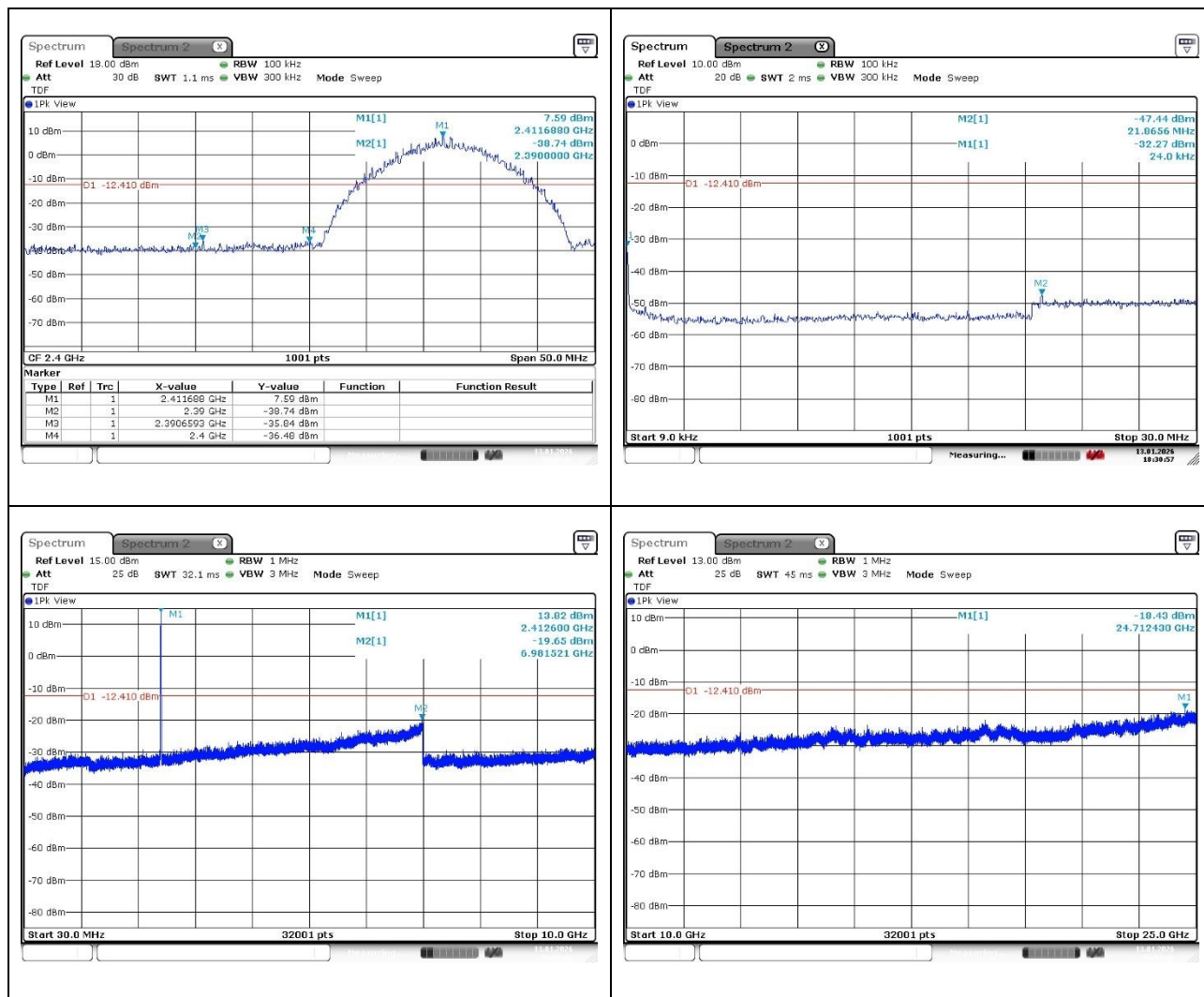
High Channel -3



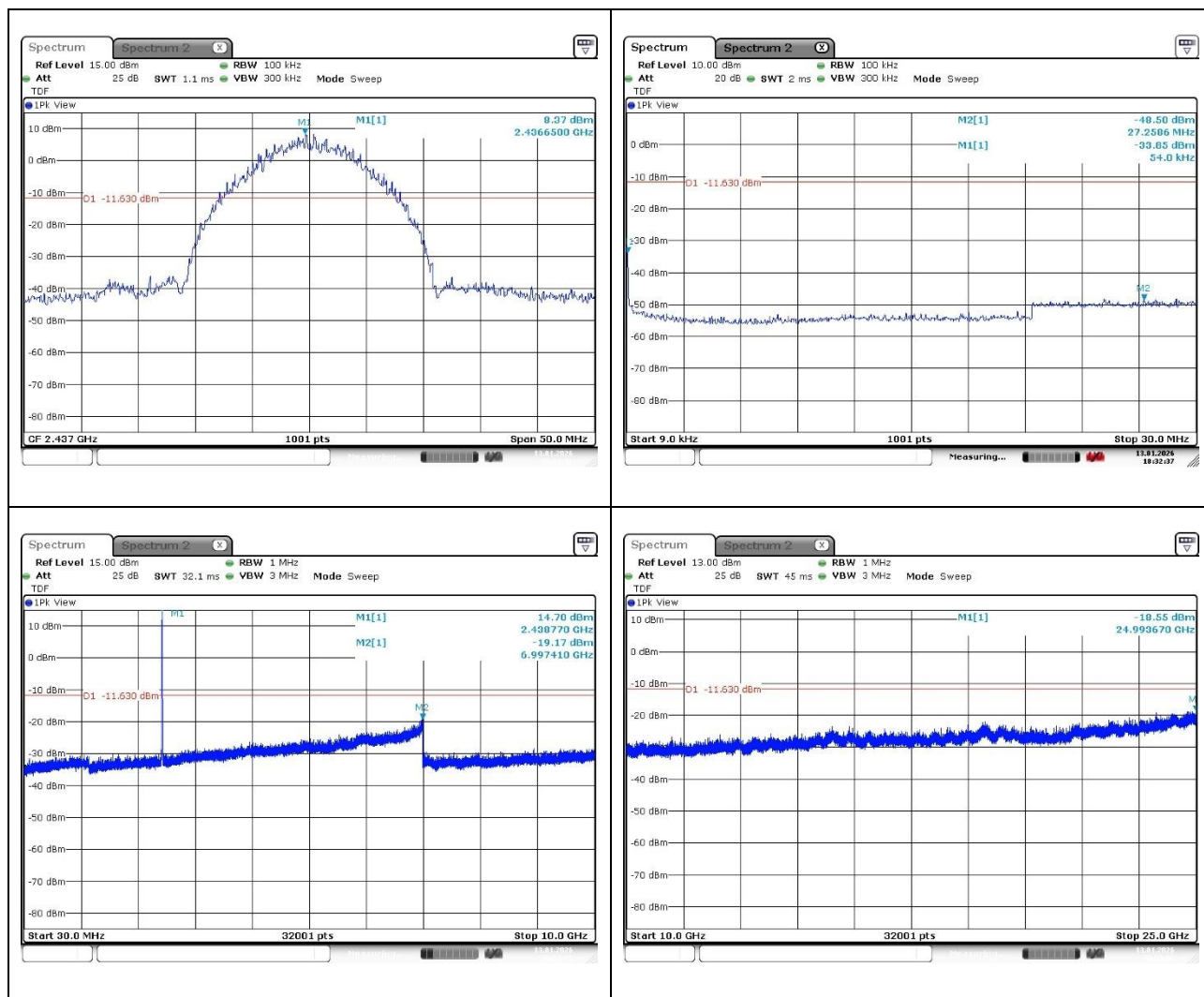
- Ant. 3

11b

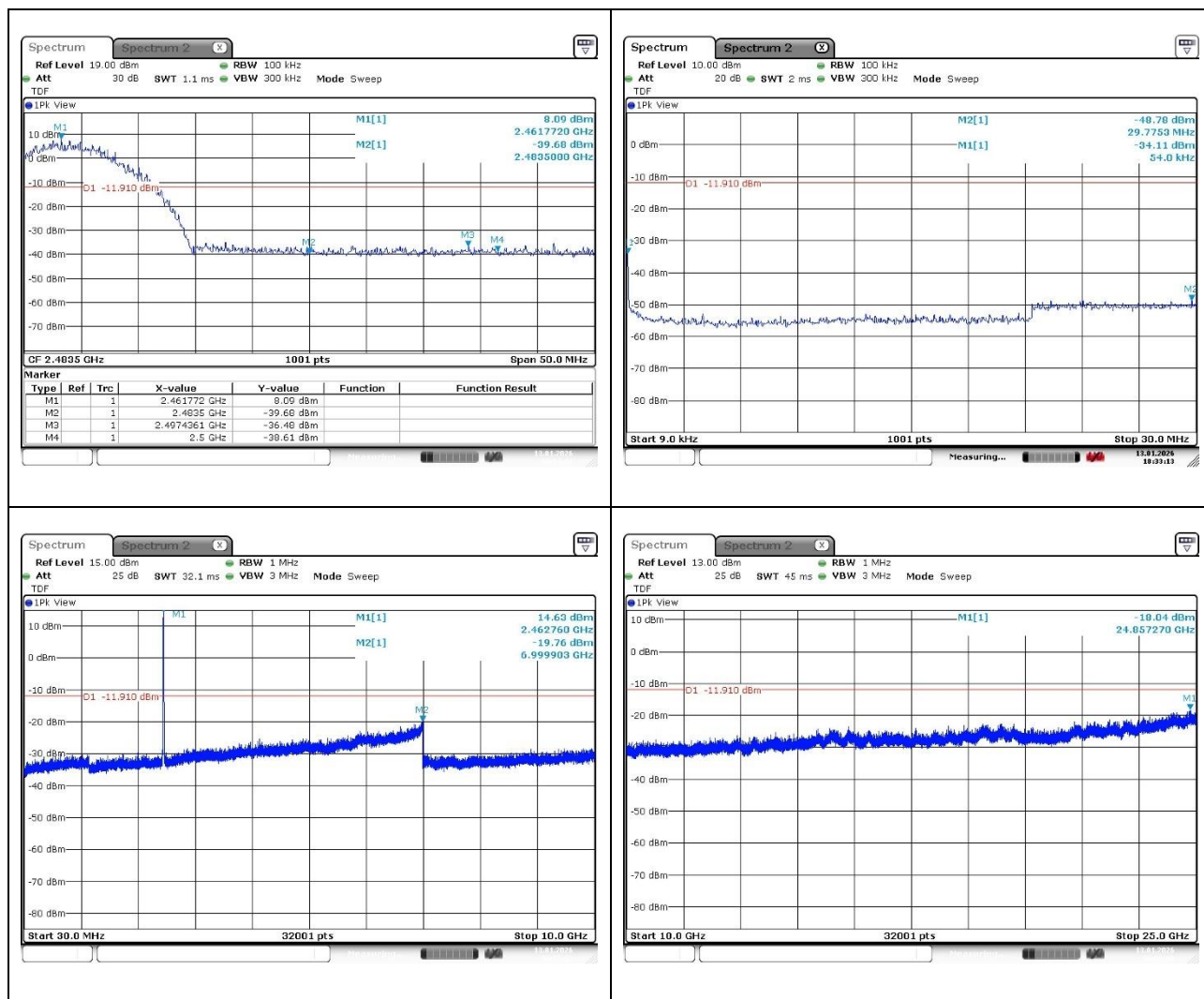
Low Channel



Middle Channel

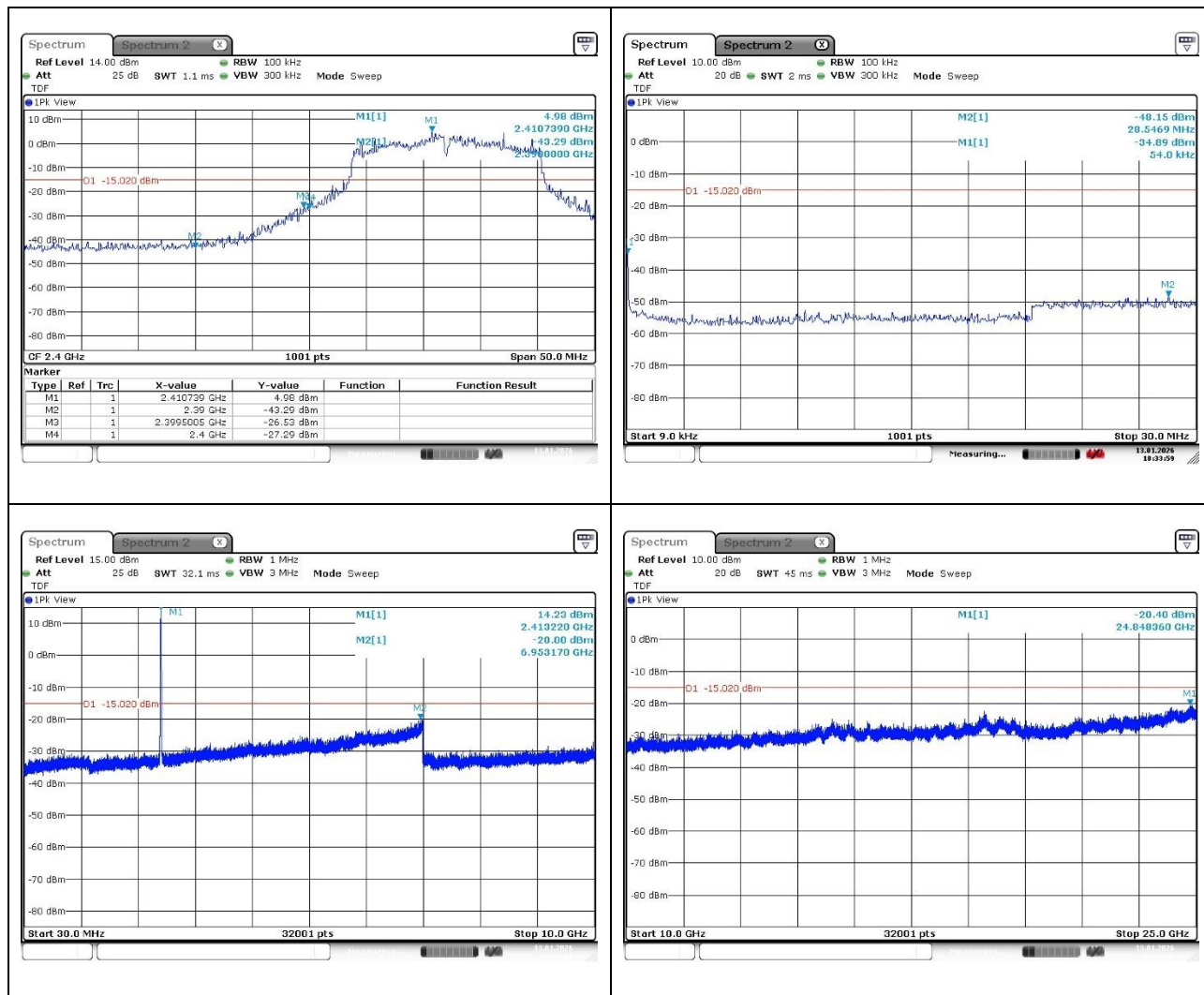


High Channel

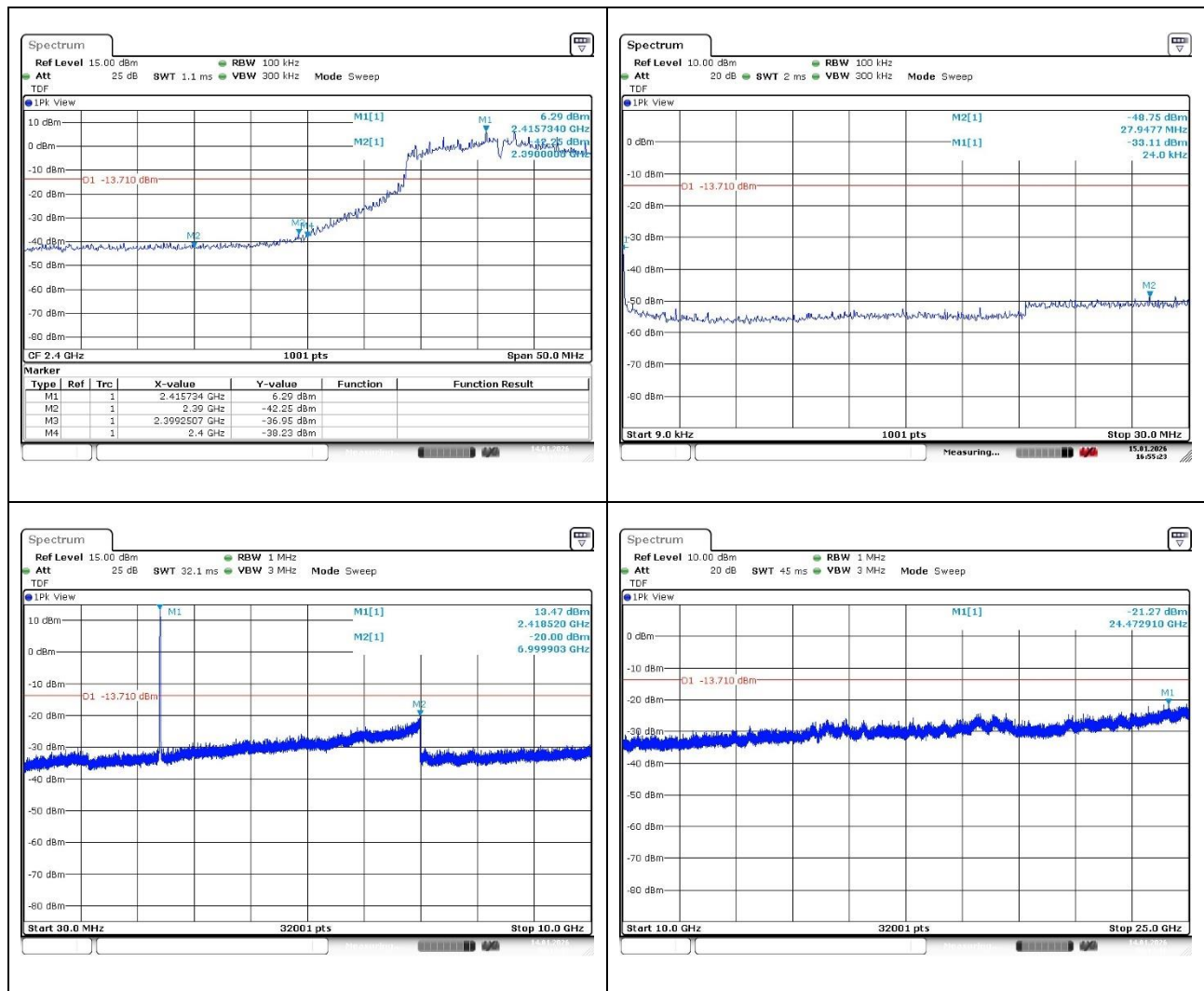


11g

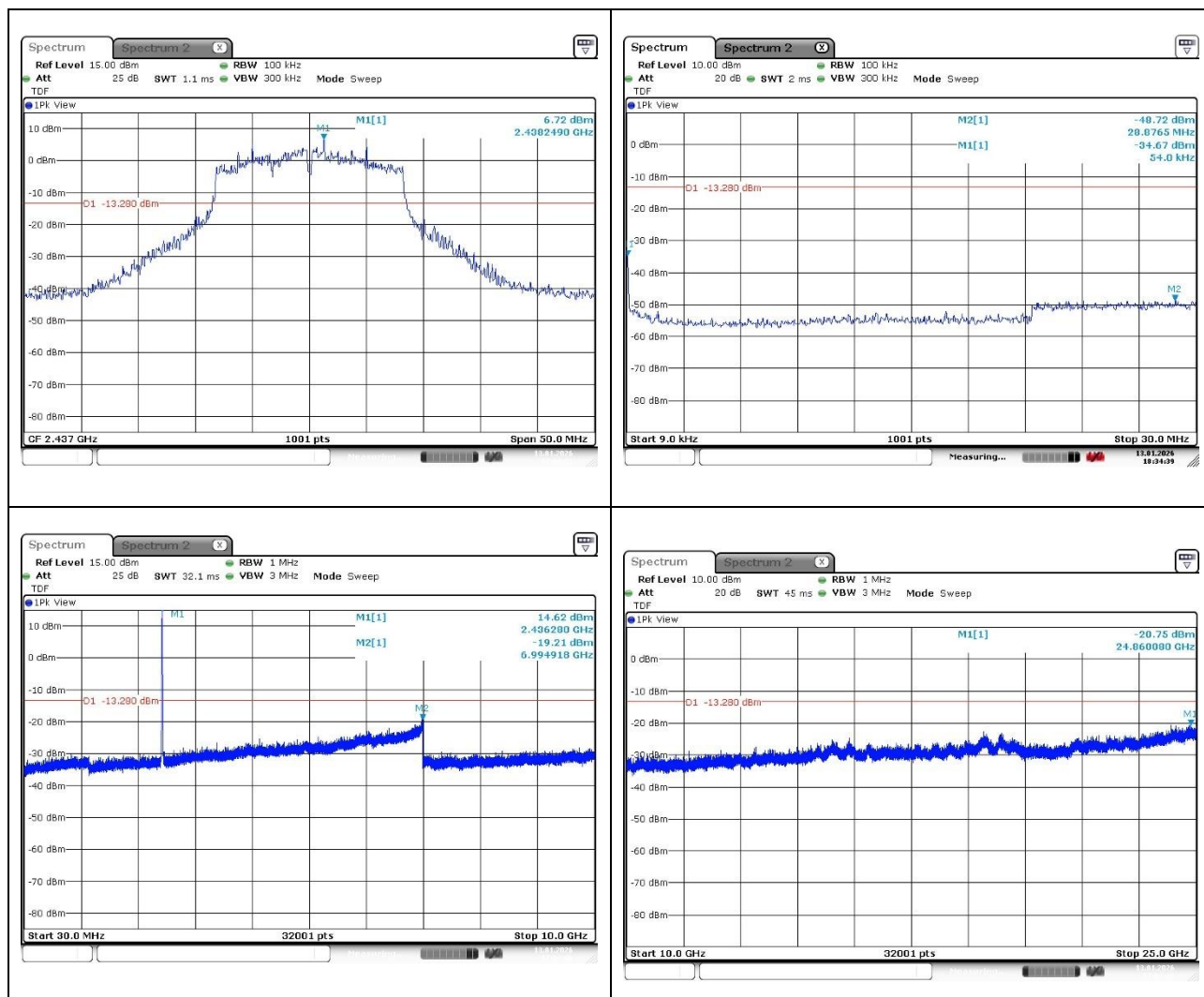
Low Channel -1



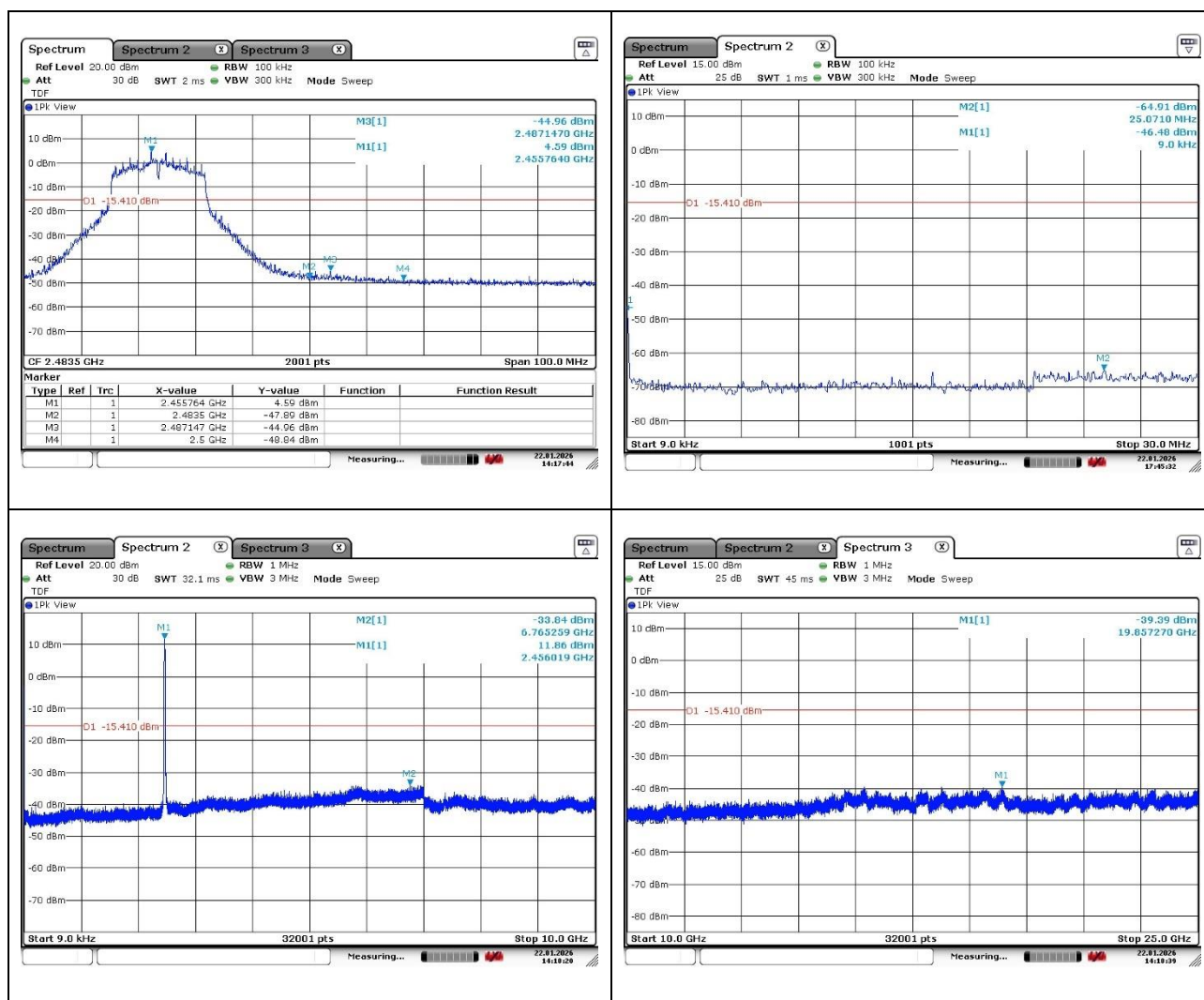
Low Channel -2



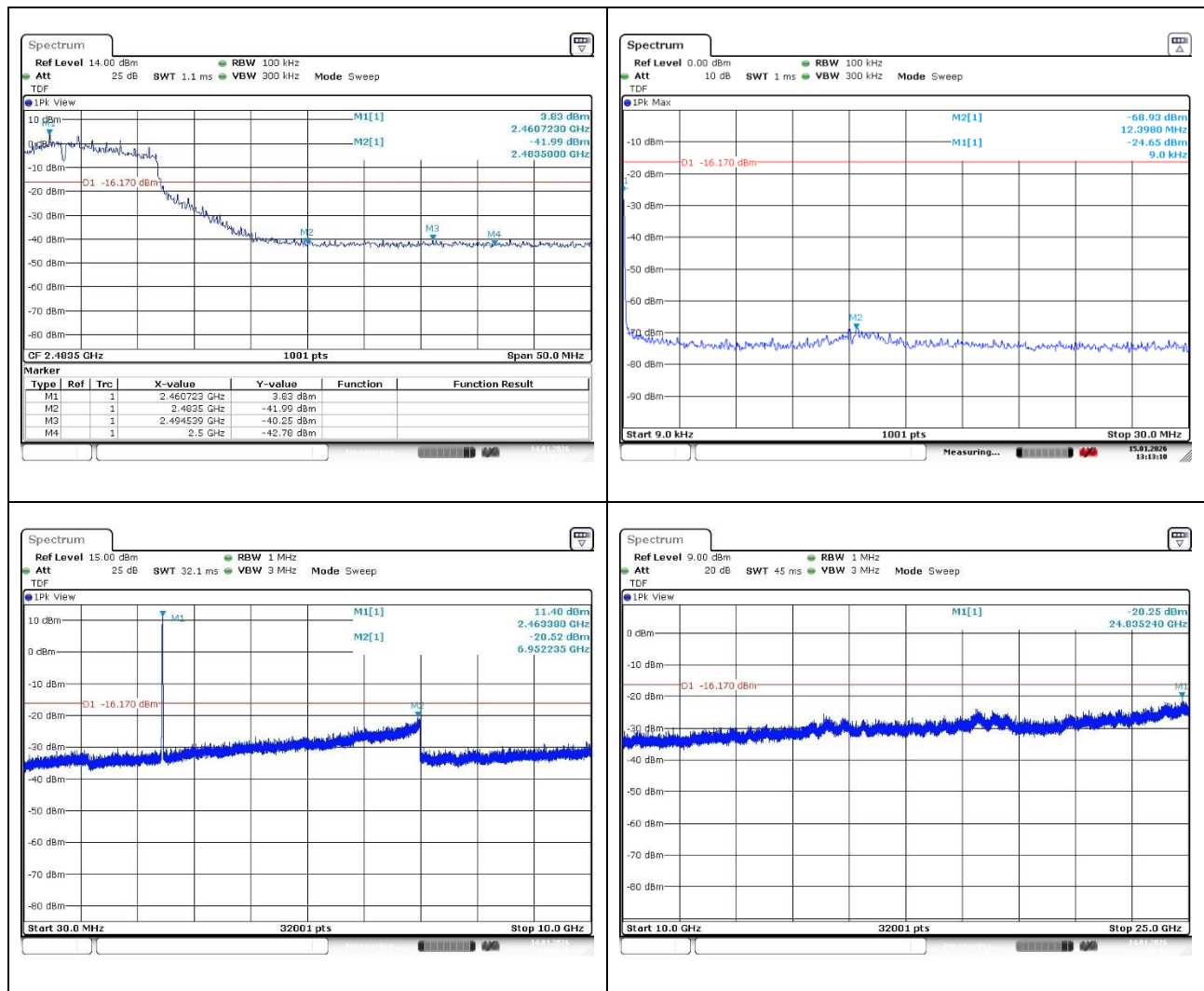
Middle Channel



High Channel -1

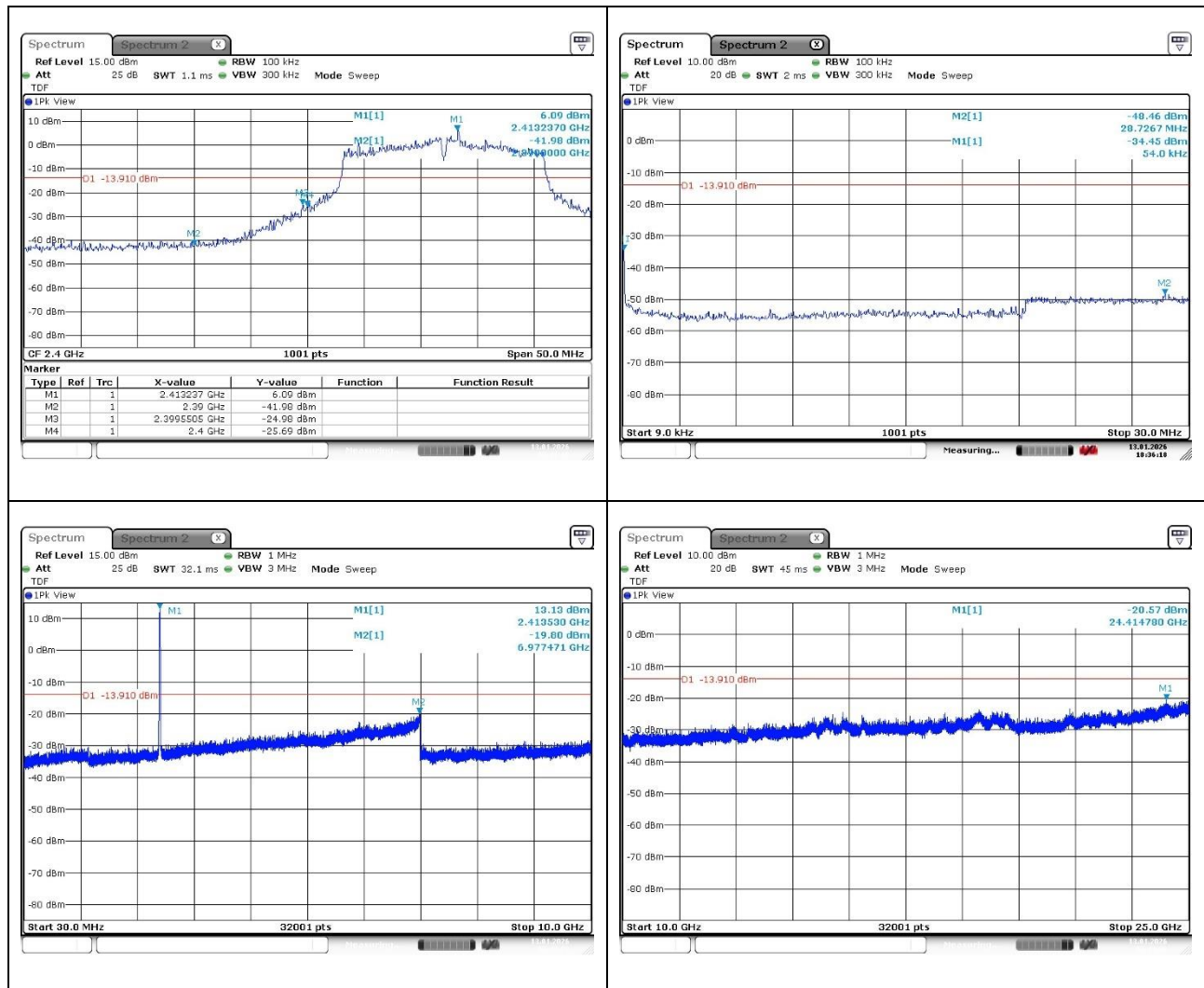


High Channel -2

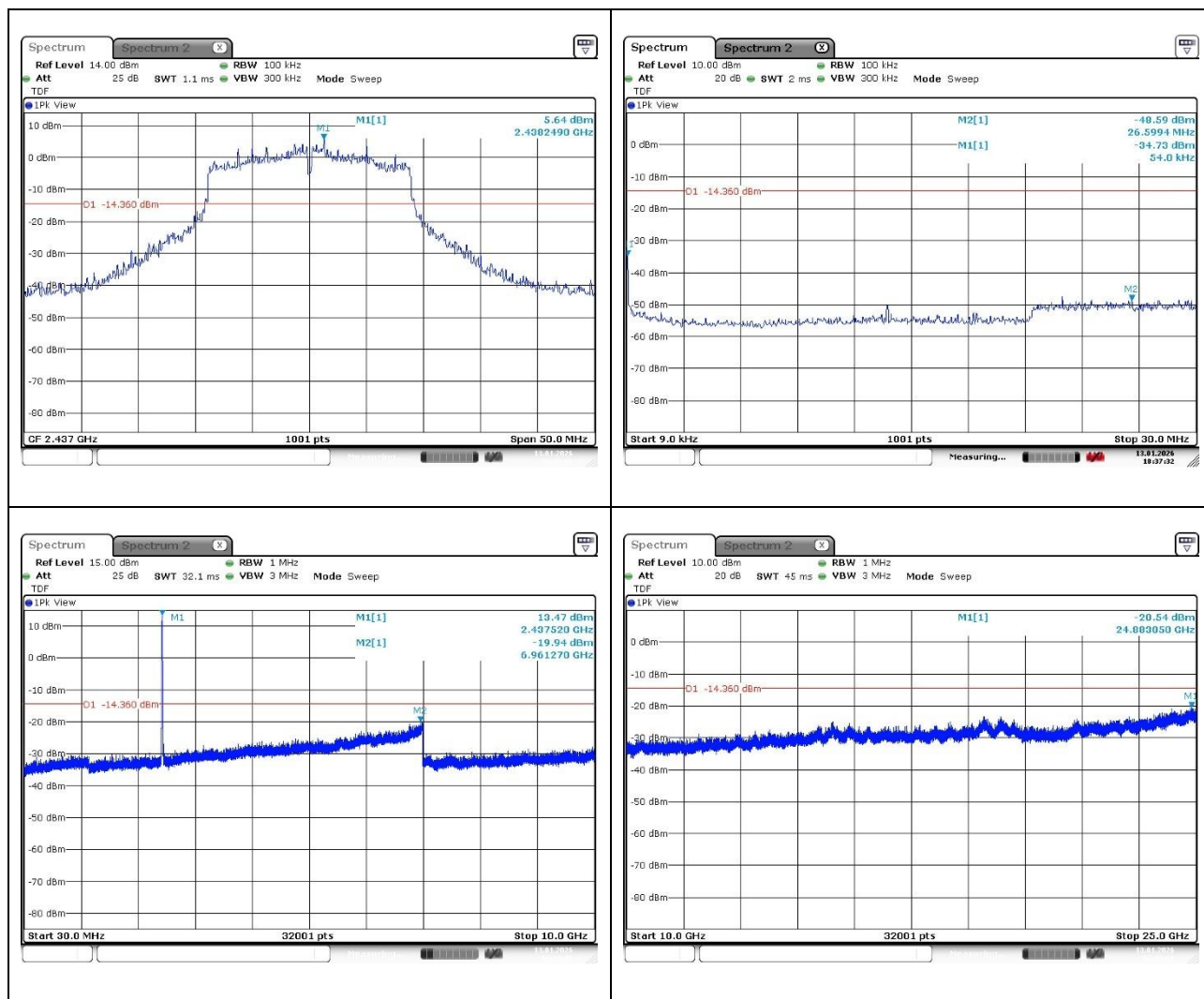


11n_HT20

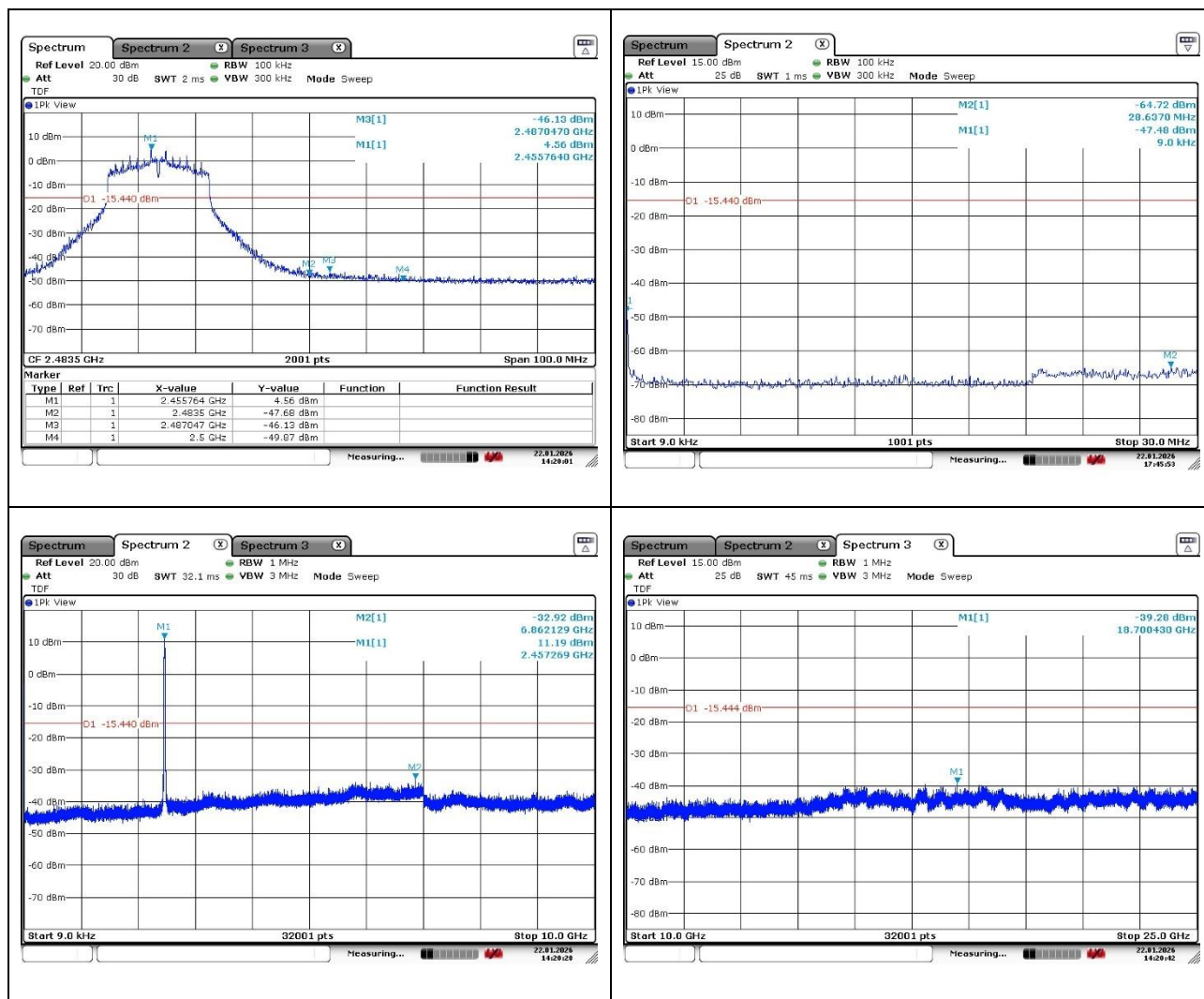
Low Channel



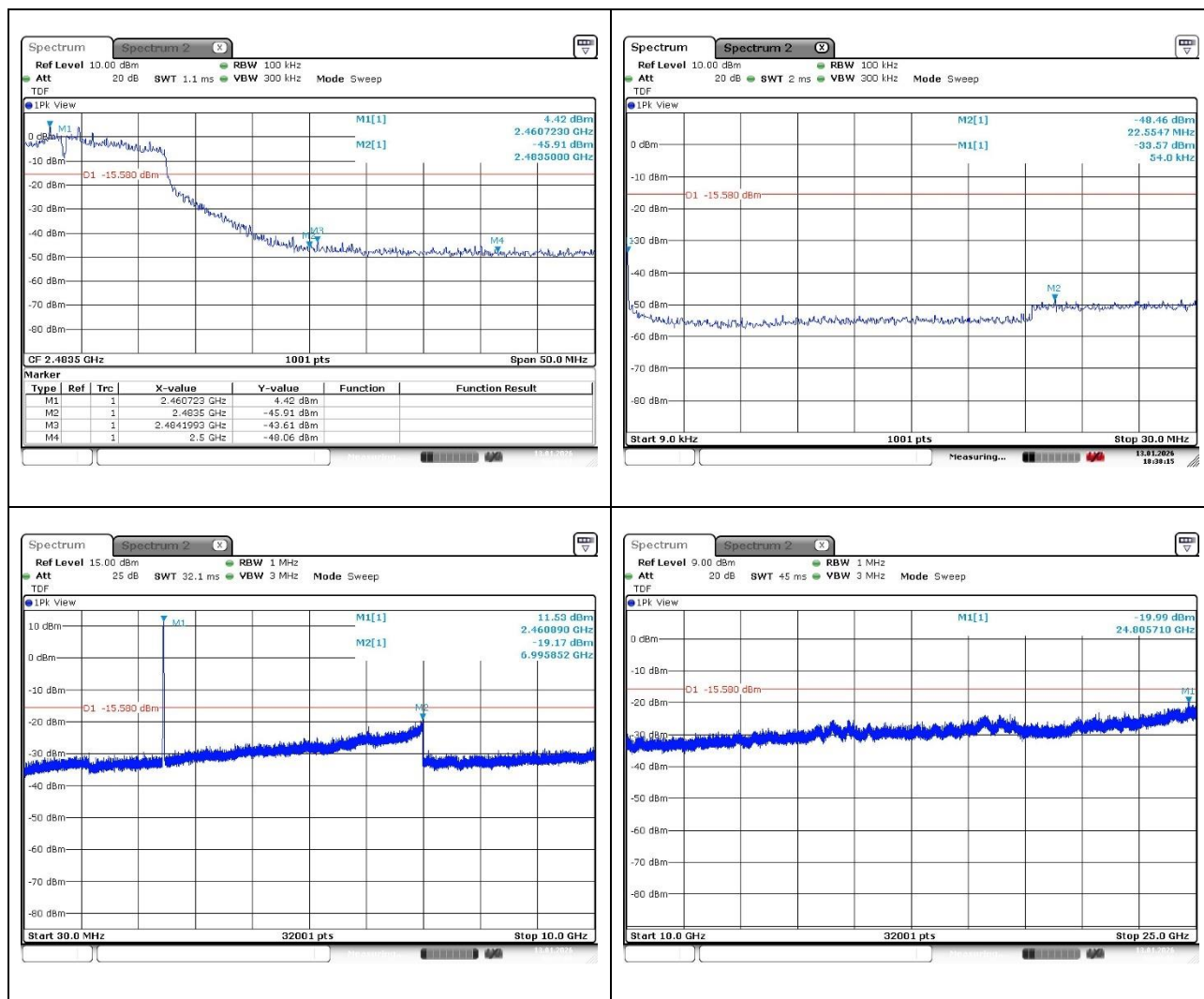
Middle Channel



High Channel -1

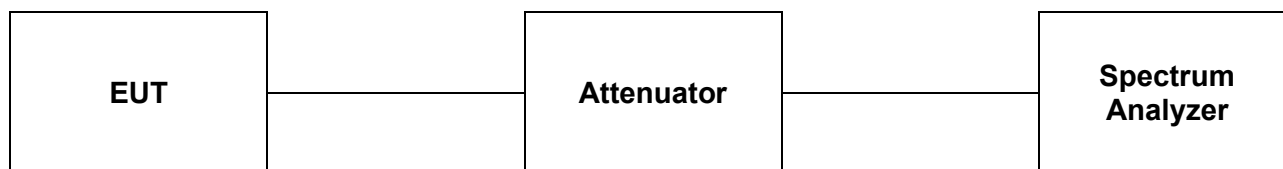


High Channel -2



3. 6 dB Bandwidth and 99 % Bandwidth

3.1. Test Setup



3.2. Limit

3.2.1. FCC

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902-928 MHz, 2 400-2 483.5 MHz, and 5 725-5 850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.2.2. IC

According to RSS-247 Issue 4, 6.3.1(a), the minimum 6 dB bandwidth shall be 500 kHz

3.3. Test Procedure

3.3.1. 6 dB Bandwidth

The test follows section 11.8 DTS bandwidth 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).

Tests performed using section 11.8.1 Option 1.

- Option 1:

1. Set RBW to = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
2. Set the VBW $\geq [3 \times \text{RBW}]$.
3. Detector = peak.
4. Trace mode = max hold.
5. Sweep = No faster than coupled (auto) time.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "-6 dB down amplitude". If a marker is below this "-6 dB down amplitude" value, then it shall be as close as possible to this value.

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 $[10 \log (OBW/RBW)]$ 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. 2

Operation Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Limit	99 % Bandwidth (MHz)	99% Bandwidth Minimum Limit (kHz)
11b	Low	2 412	7.988	-	14.877	500
	Middle	2 437	8.046		14.877	
	High	2 462	8.046		14.935	
11g	Low	2 412	15.977		16.729	
	Middle	2 437	15.977		16.729	
	High -1	2 452	15.977		16.787	
	High -2	2 457	15.919		16.845	
	High -3	2 462	15.340		17.019	
11n_HT20	Low	2 412	16.787		17.771	
	Middle	2 437	16.324		17.771	
	High -1	2 452	16.787		17.771	
	High -2	2 457	16.093		17.887	
	High -3	2 462	16.440		17.713	

- Ant. 3

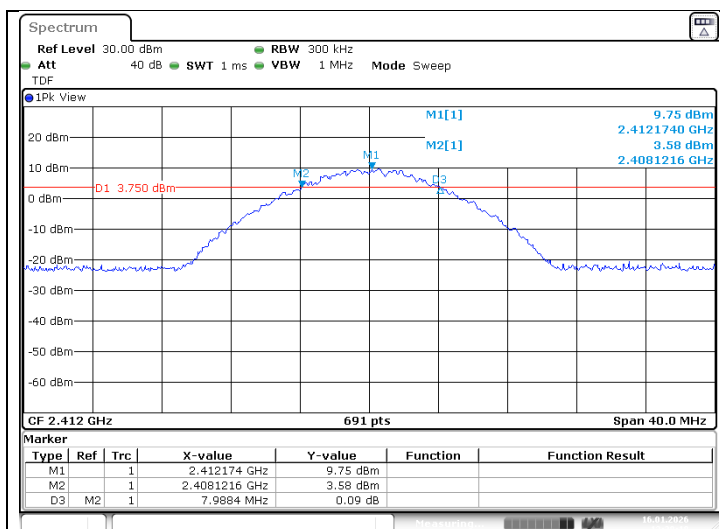
Operation Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Limit	99 % Bandwidth (MHz)	99% Bandwidth Minimum Limit (kHz)
11b	Low	2 412	7.988	-	14.761	500
	Middle	2 437	8.220		14.819	
	High	2 462	8.046		14.819	
11g	Low -1	2 412	14.819		16.903	
	Low -2	2 417	14.588		16.787	
	Middle	2 437	14.819		16.903	
	High -1	2 457	15.977		16.961	
	High -2	2 462	15.977		16.845	
11n_HT20	Low	2 412	16.093		17.771	
	Middle	2 437	16.845		17.713	
	High -1	2 457	16.093		17.945	
	High -2	2 462	16.498		17.887	

Test plots

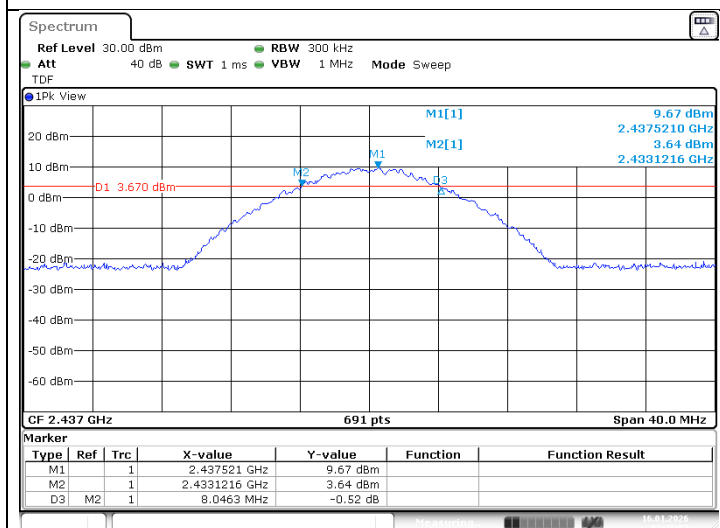
- Ant. 2_6 dB Bandwidth

11b

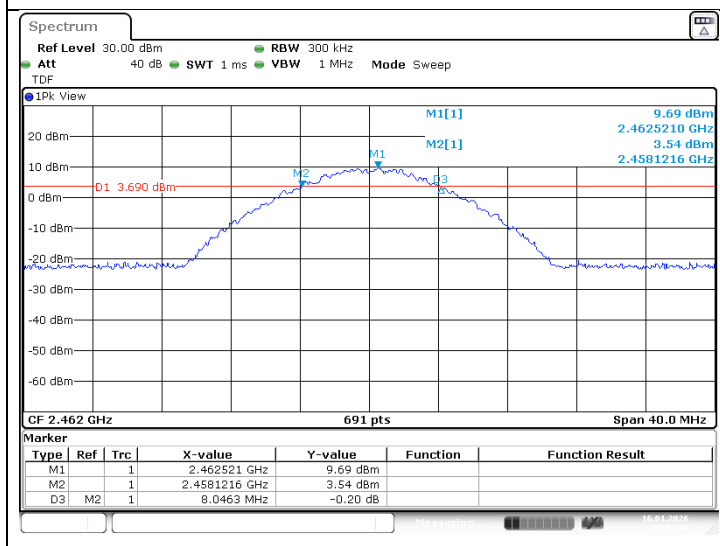
Low Channel



Middle Channel

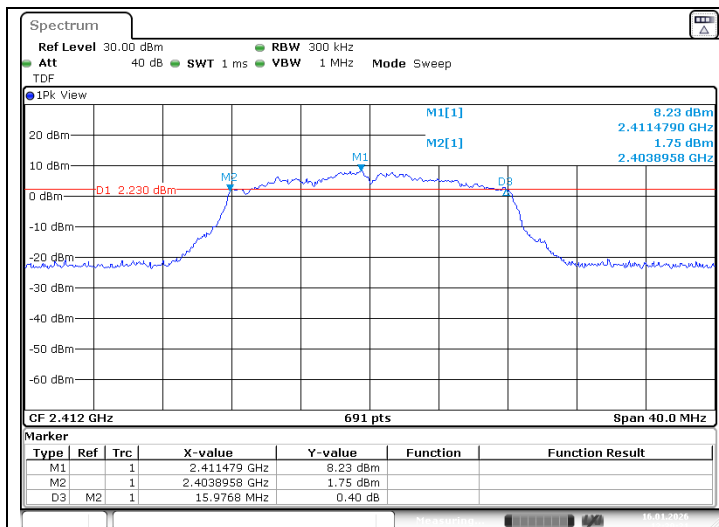


High Channel

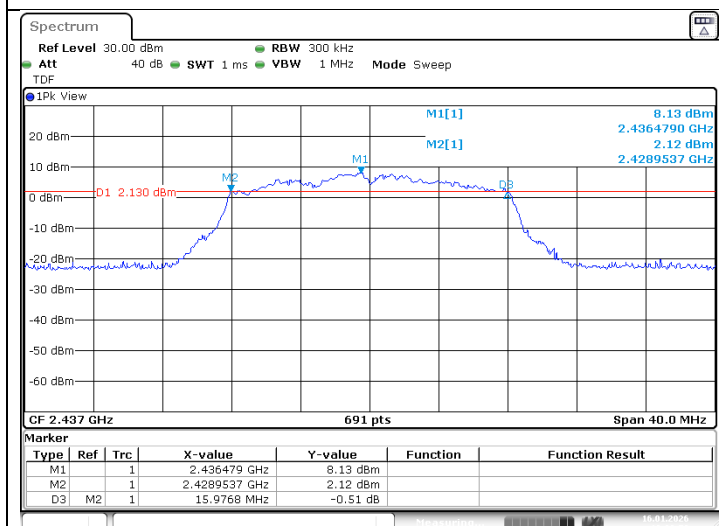


11g

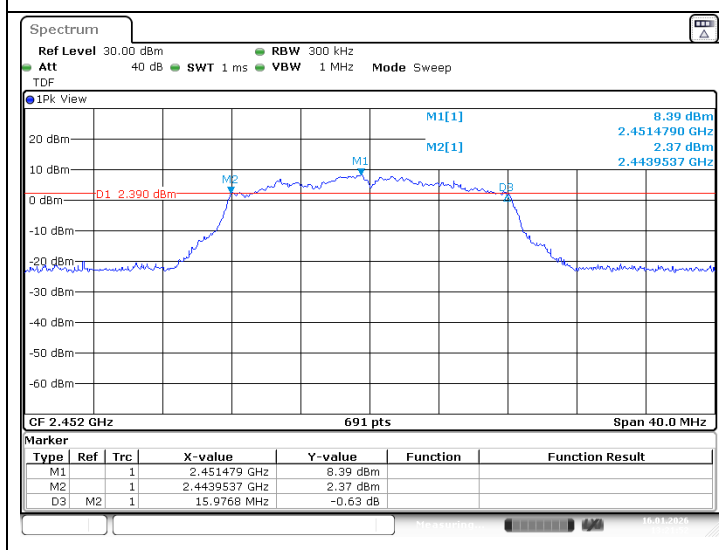
Low Channel



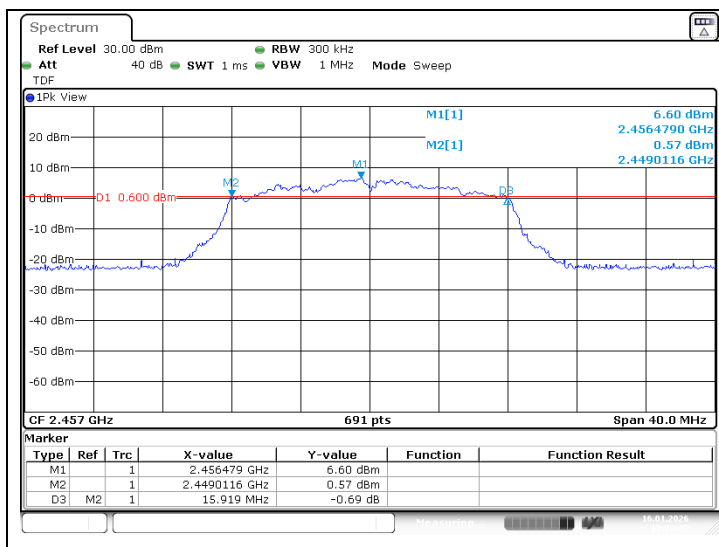
Middle Channel



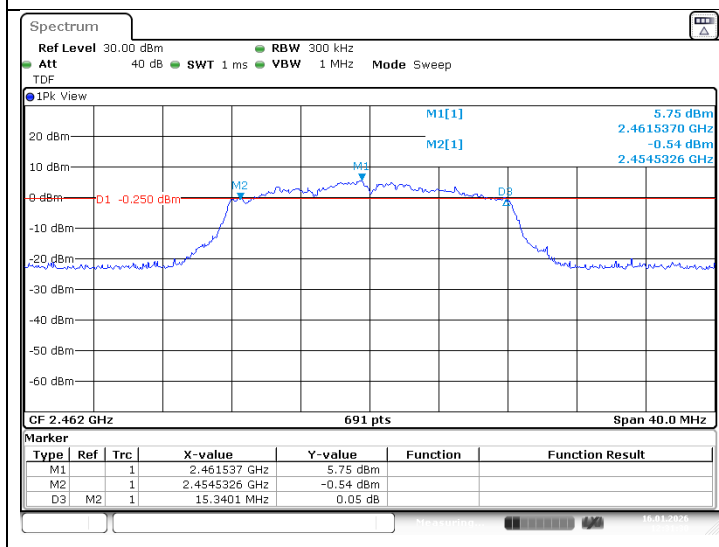
High Channel -1



High Channel -2

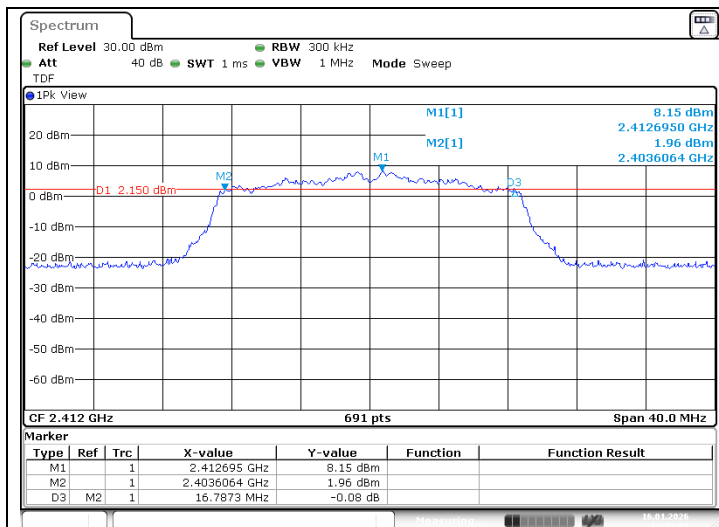


High Channel -3

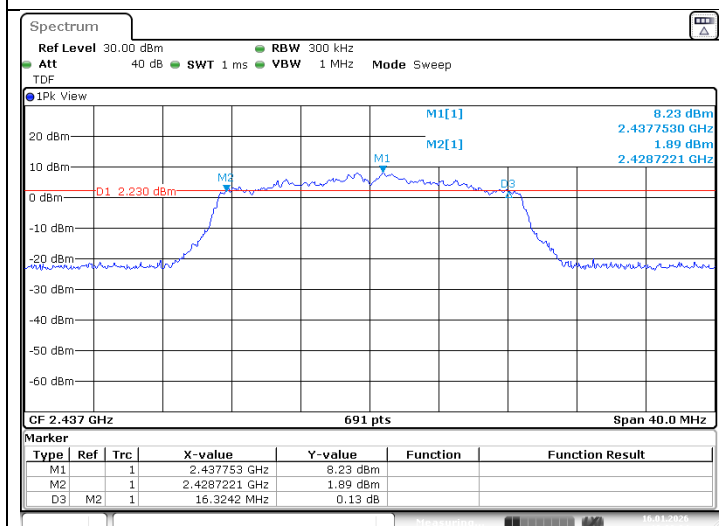


11n_HT20

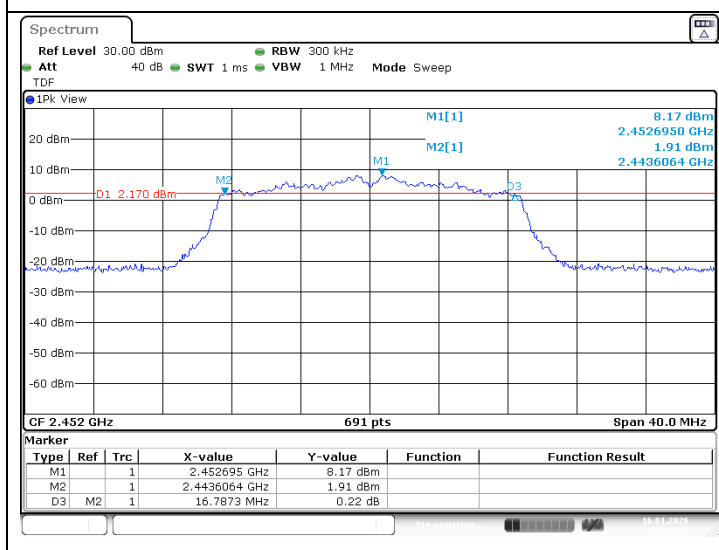
Low Channel



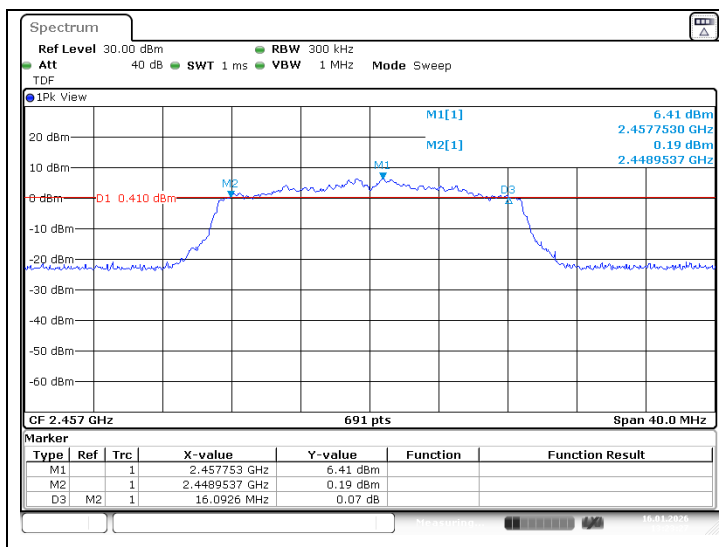
Middle Channel



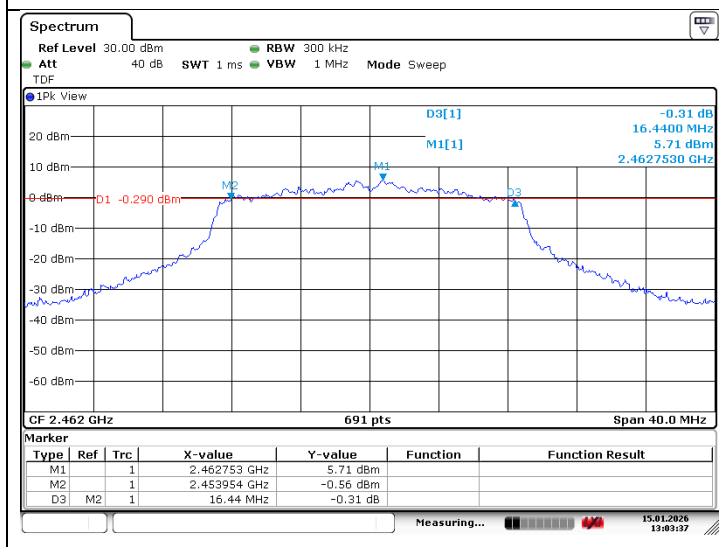
High Channel -1



High Channel -2



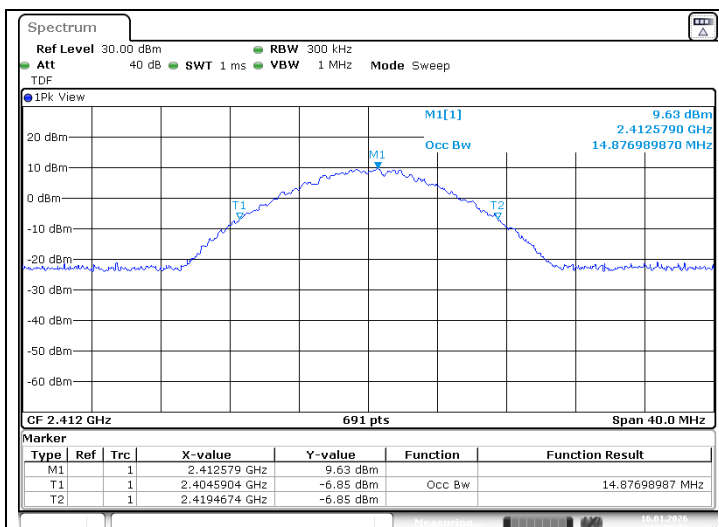
High Channel -3



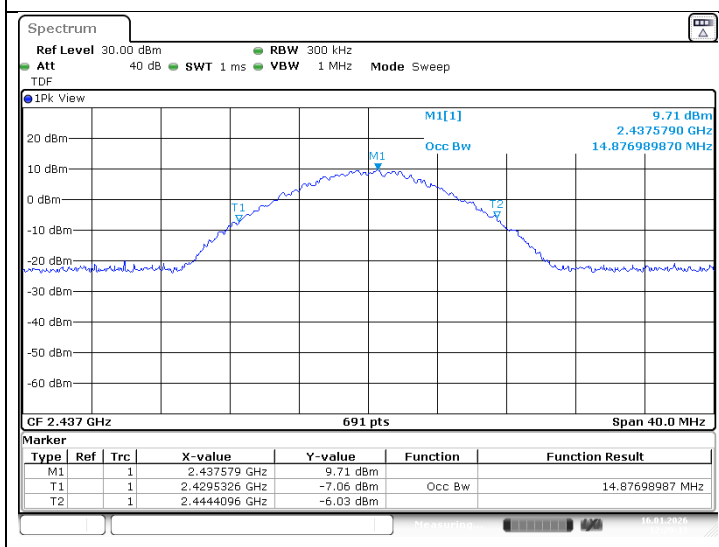
- Ant. 2_ 99 % Bandwidth

11b

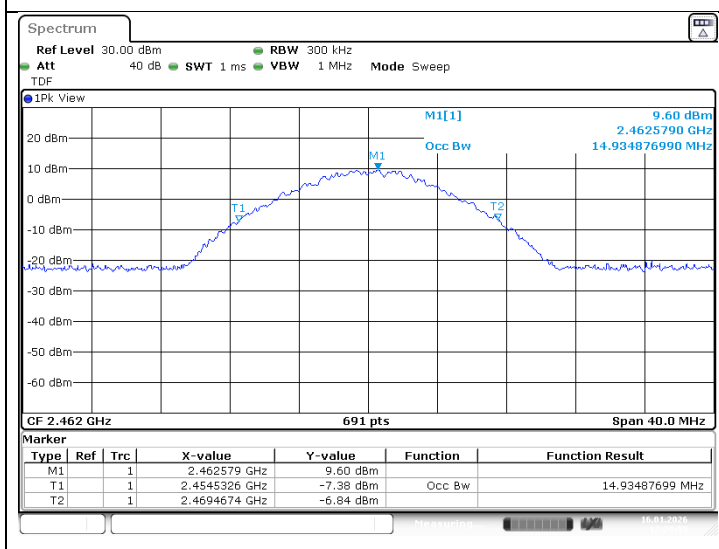
Low Channel



Middle Channel

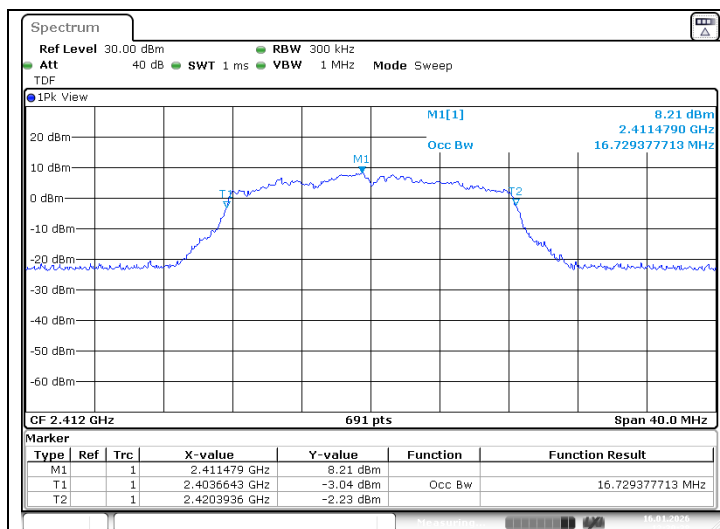


High Channel

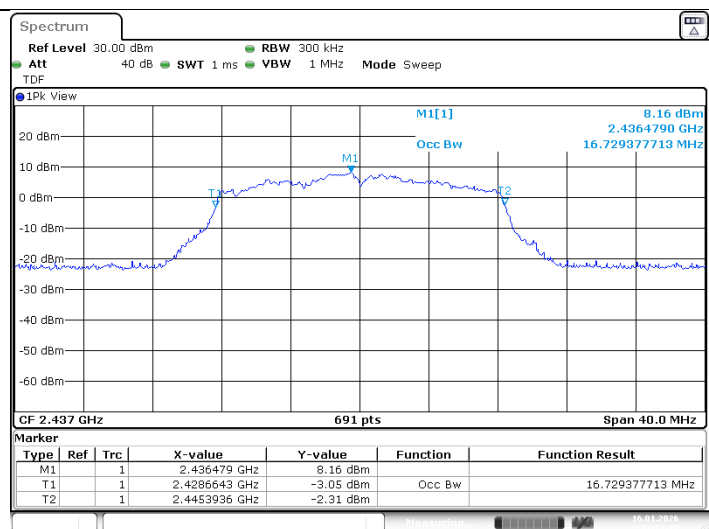


11g

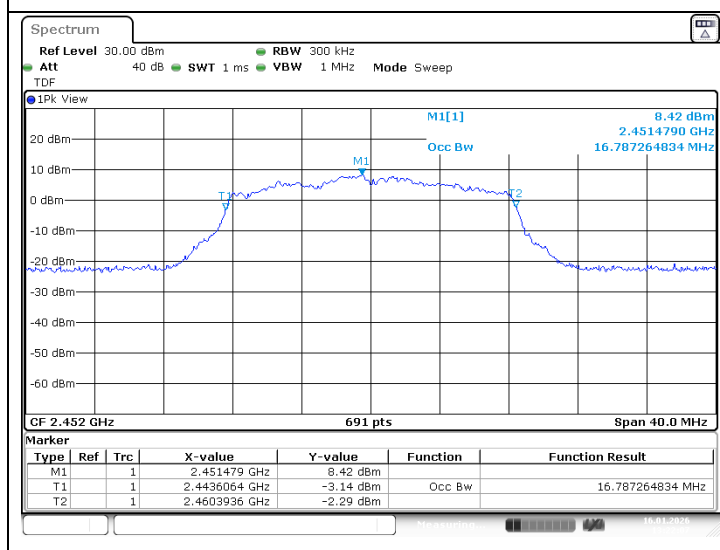
Low Channel



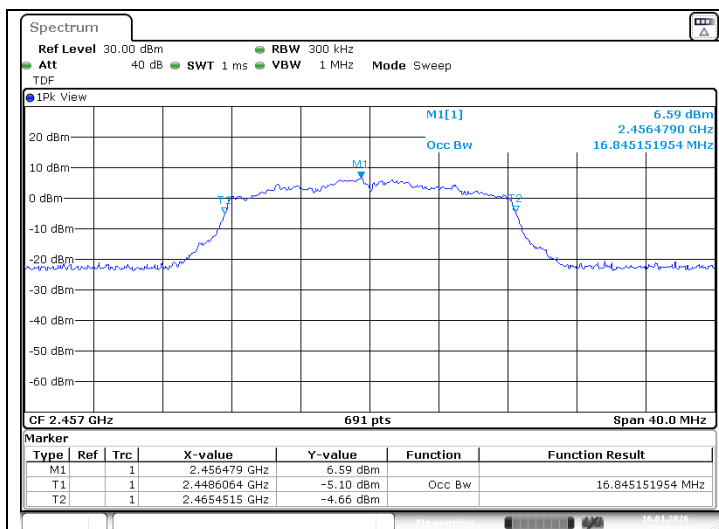
Middle Channel



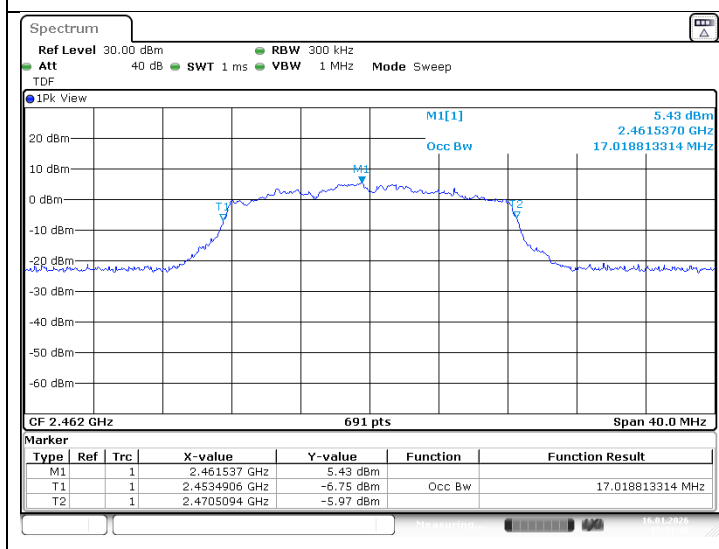
High Channel -1



High Channel -2

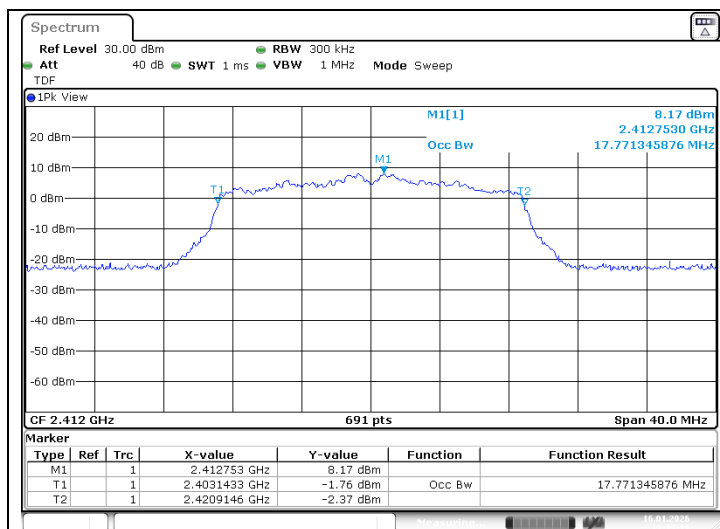


High Channel -3

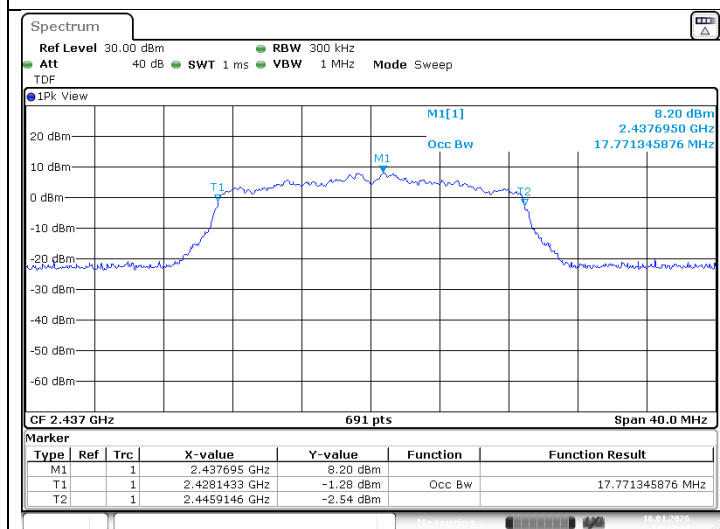


11n_HT20

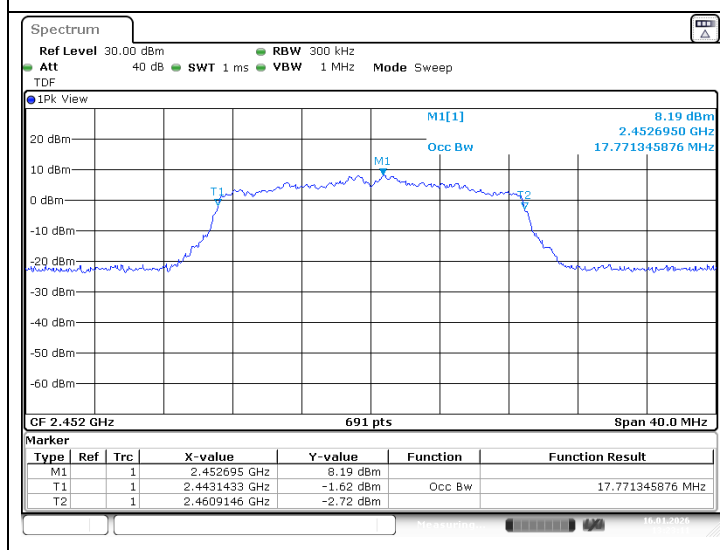
Low Channel



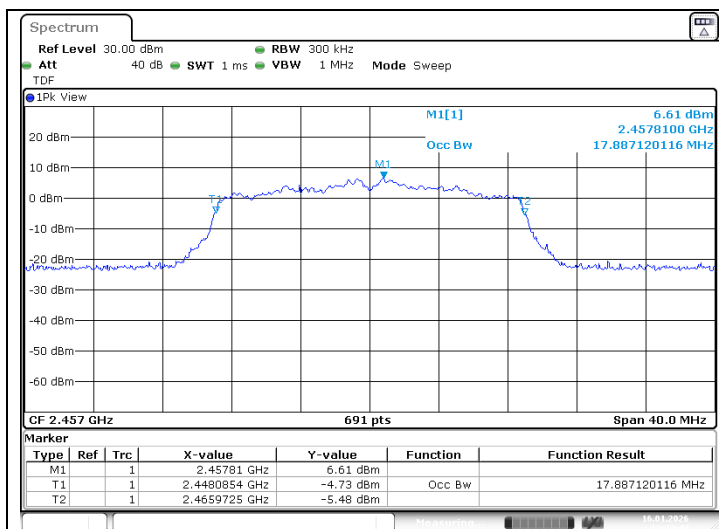
Middle Channel



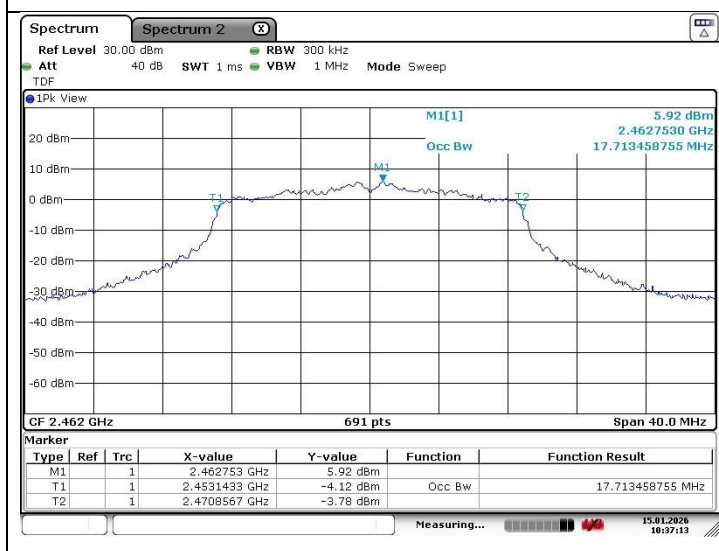
High Channel -1



High Channel -2



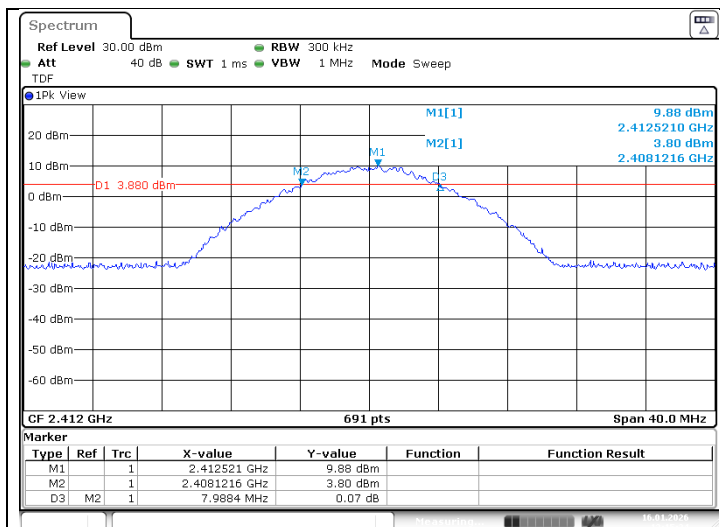
High Channel -3



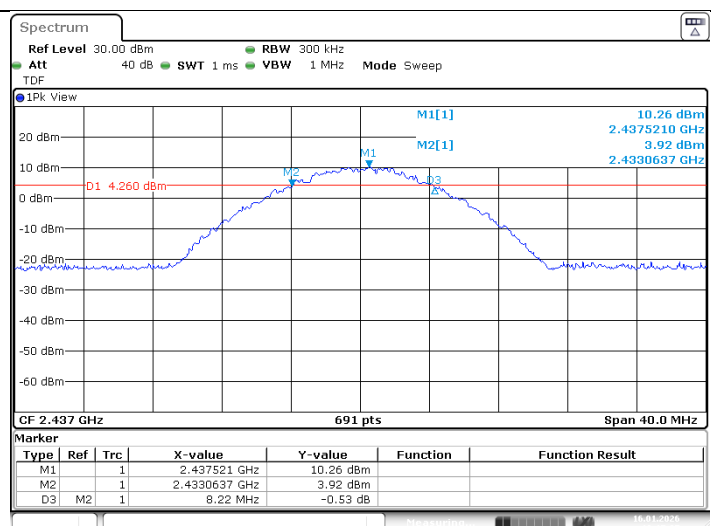
Ant. 3_6 dB Bandwidth

11b

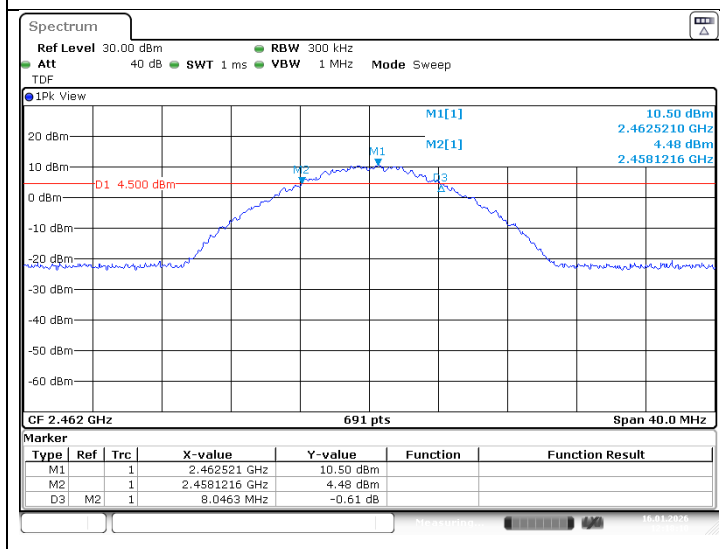
Low Channel



Middle Channel

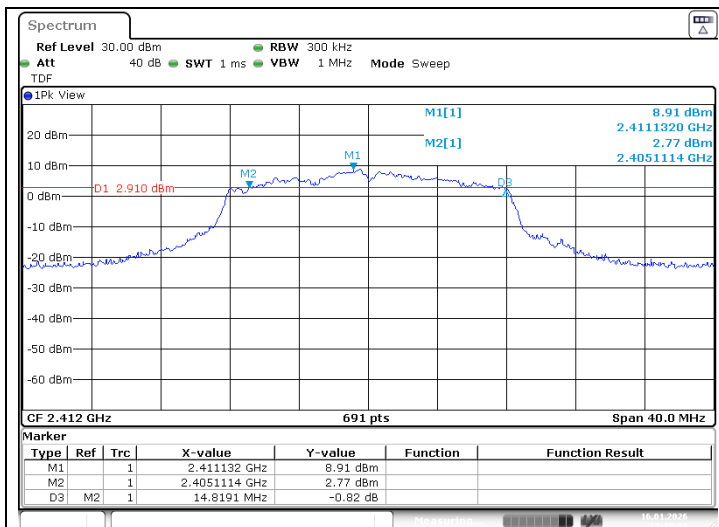


High Channel

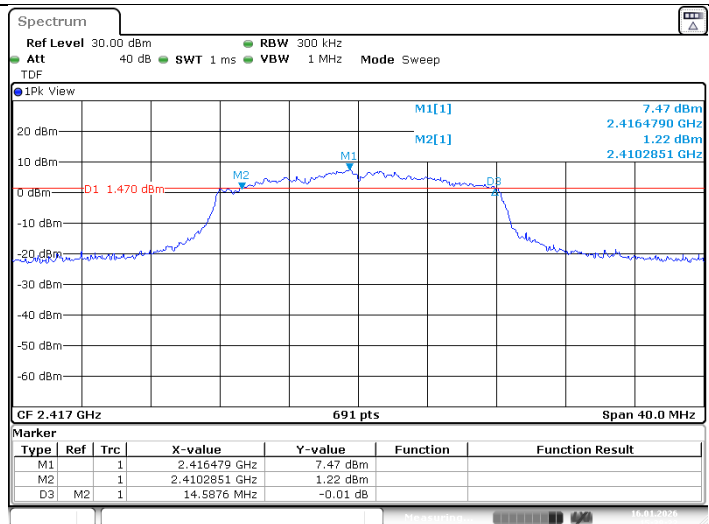


11g

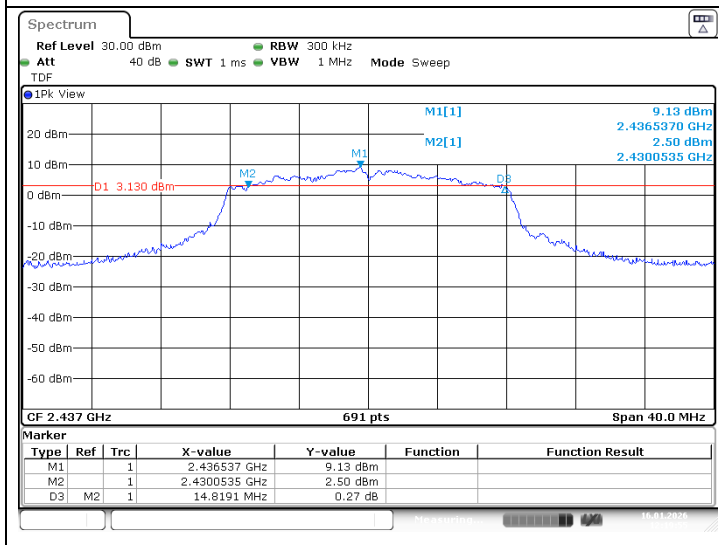
Low Channel -1



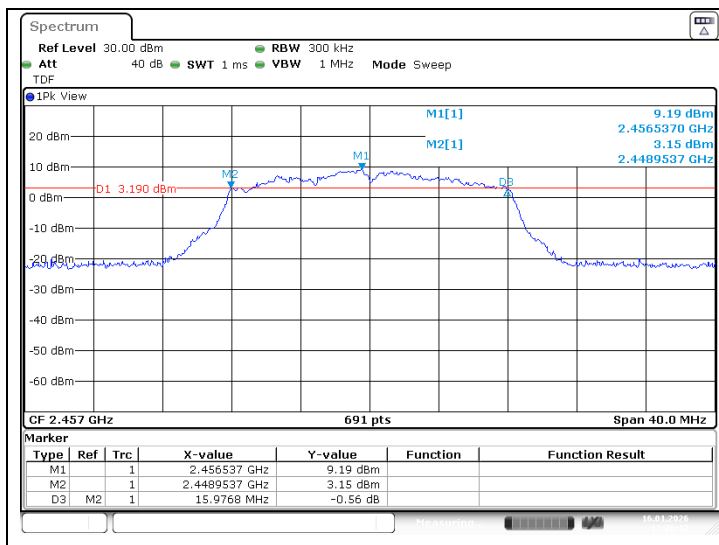
Low Channel -2



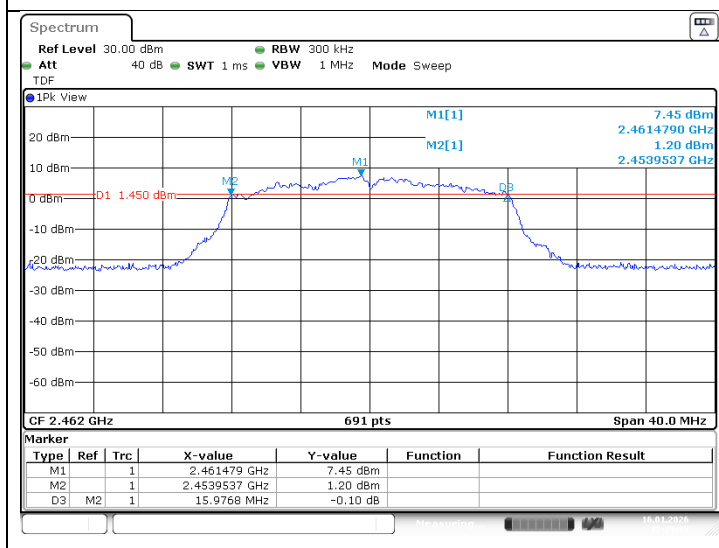
Middle Channel



High Channel -1

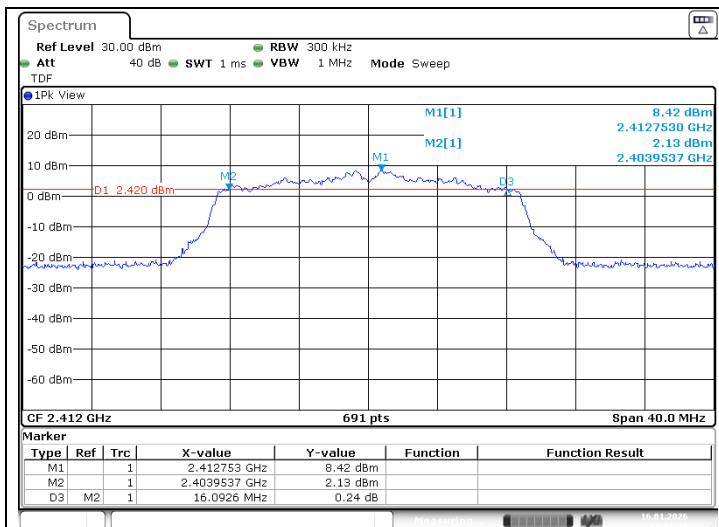


High Channel -2

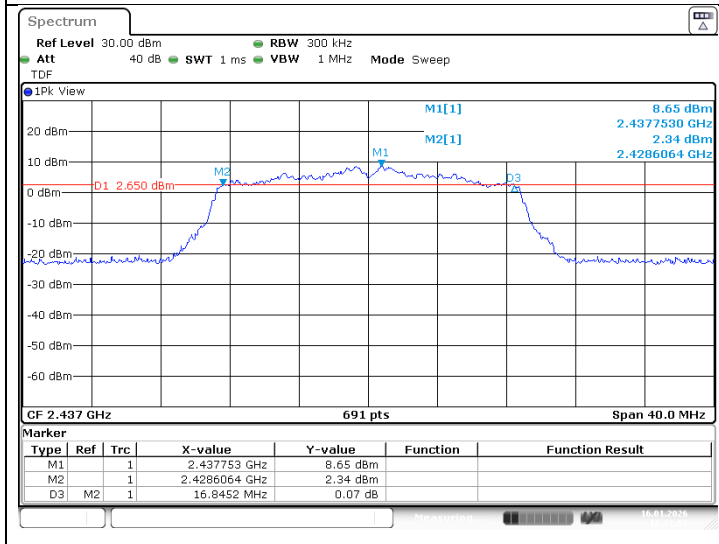


11n_HT20

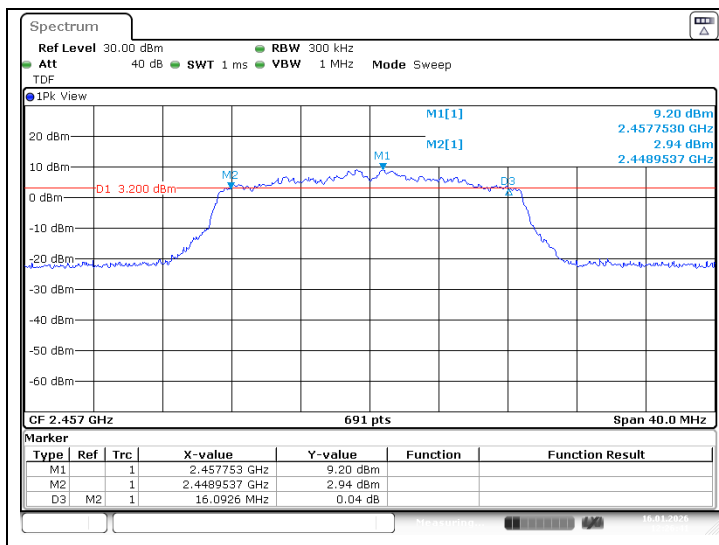
Low Channel



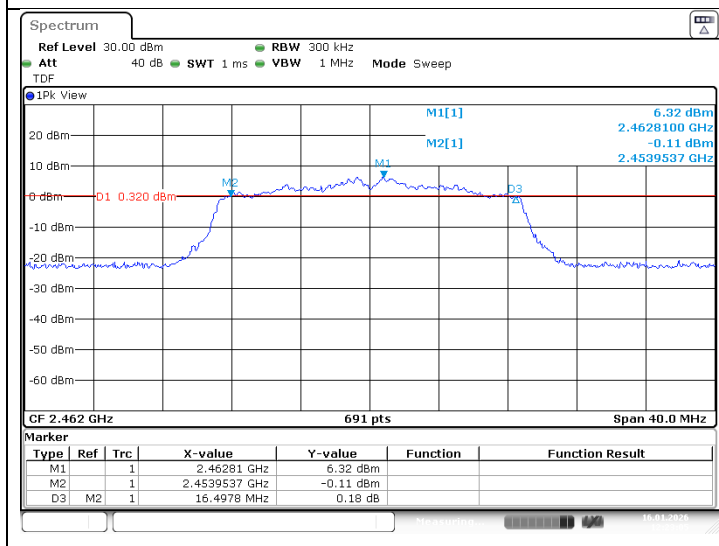
Middle Channel



High Channel -1



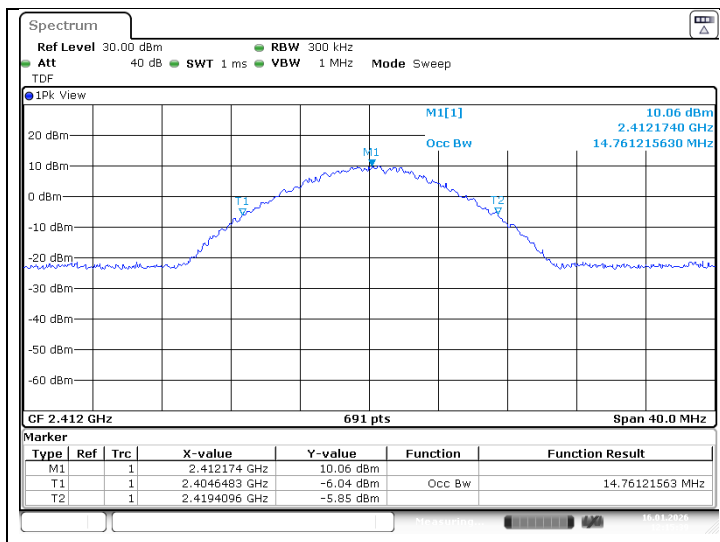
High Channel -2



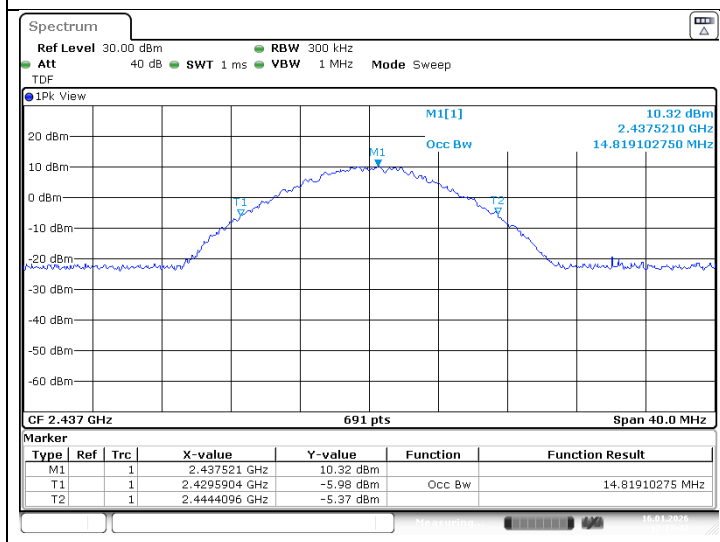
Ant. 3_ 99 % Bandwidth

11b

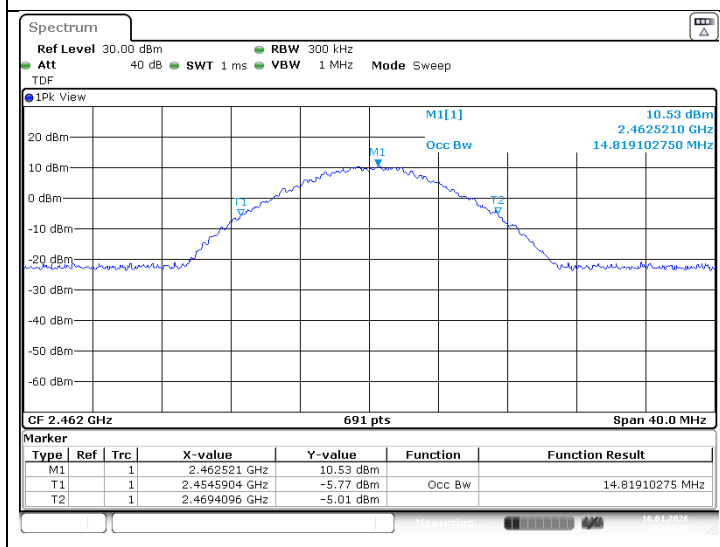
Low Channel



Middle Channel

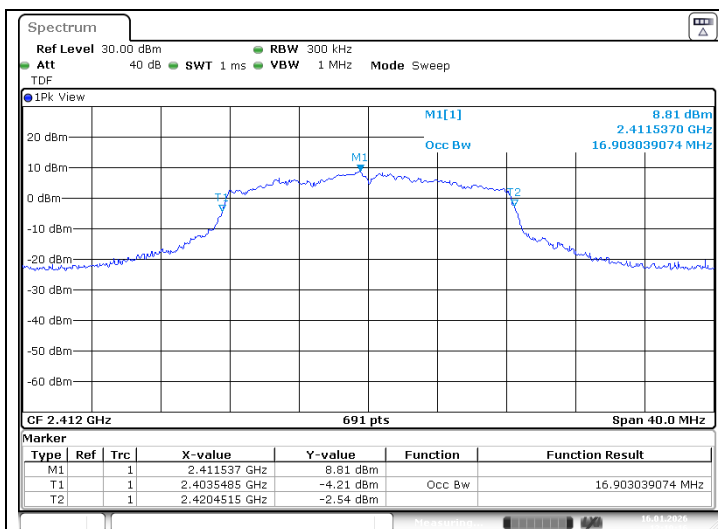


High Channel

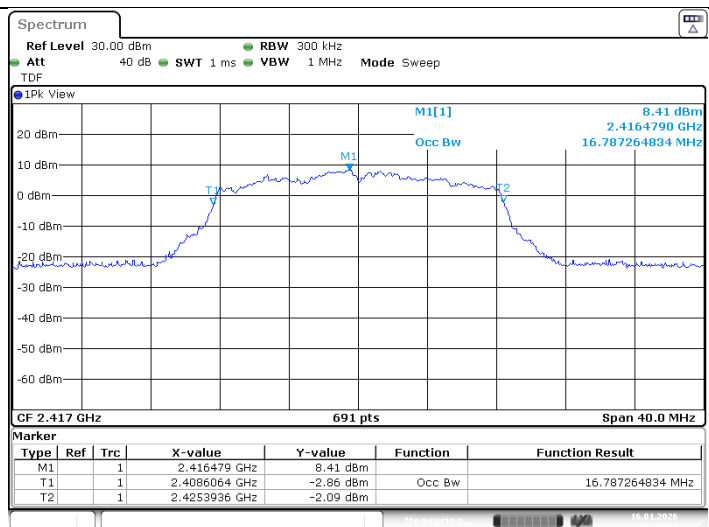


11g

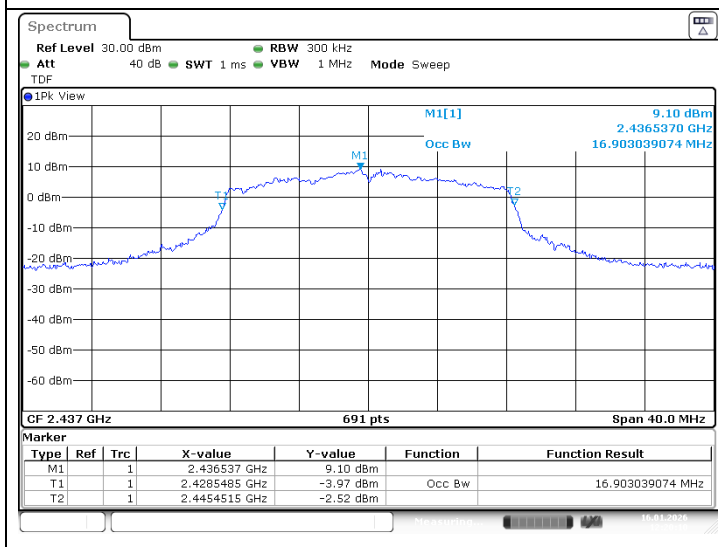
Low Channel -1



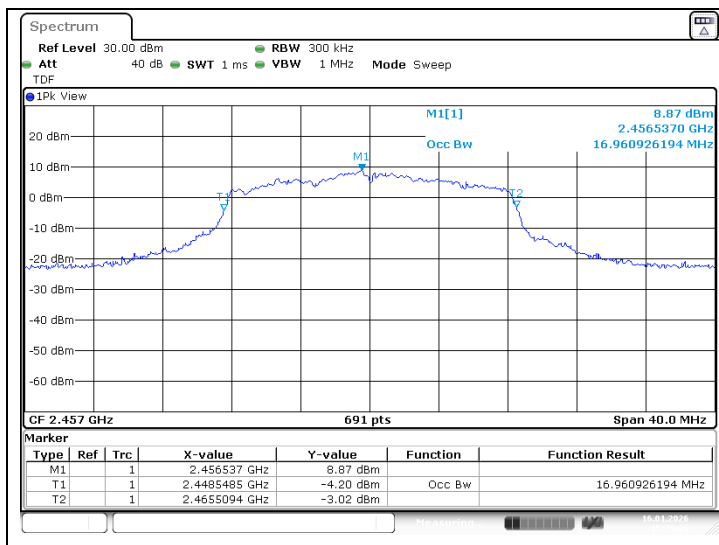
Low Channel -2



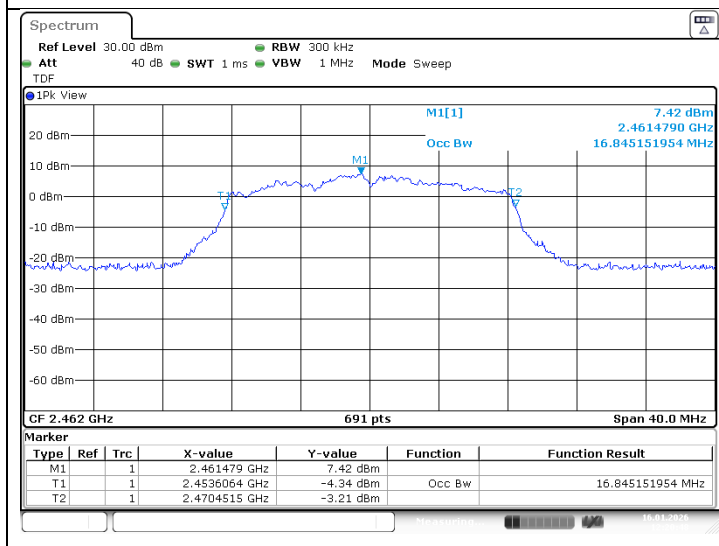
Middle Channel



High Channel -1

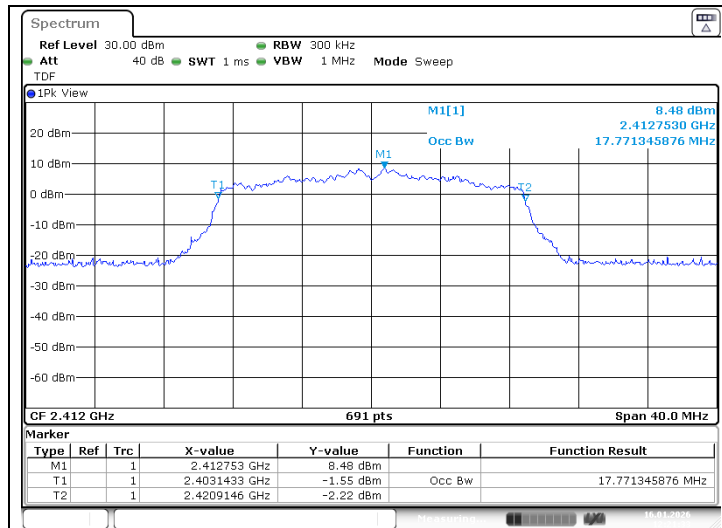


High Channel -2

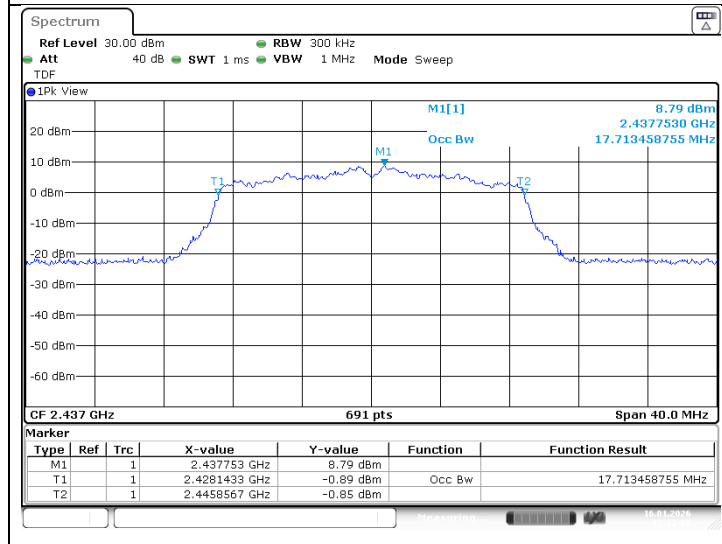


11n_HT20

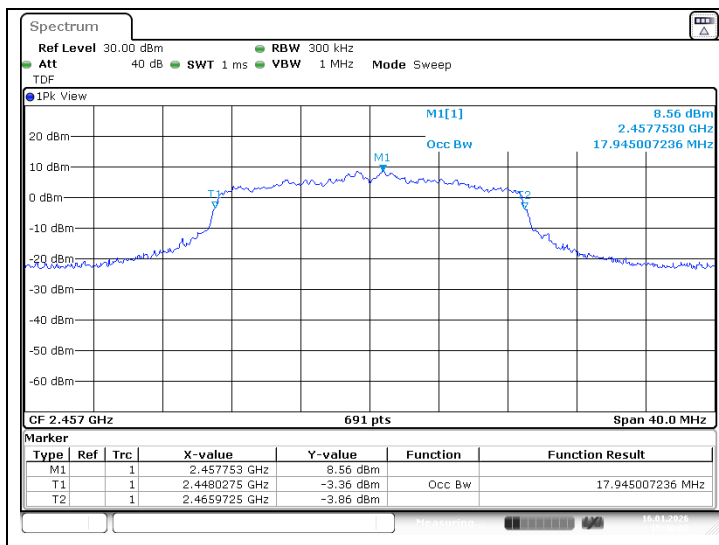
Low Channel



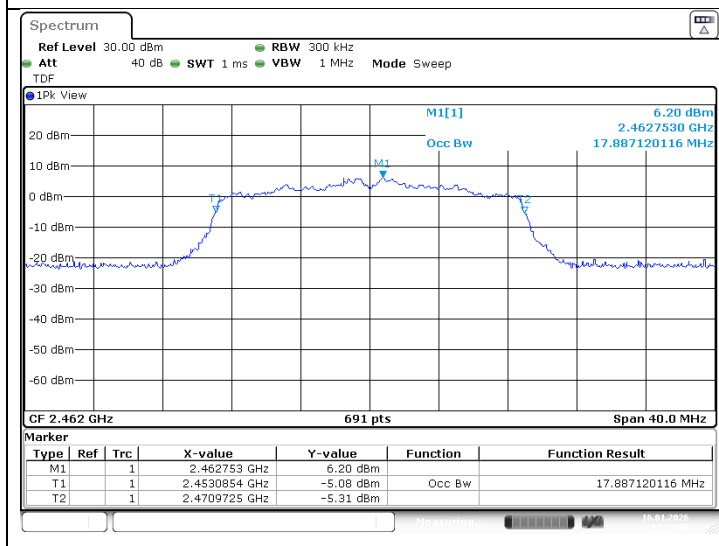
Middle Channel



High Channel -1

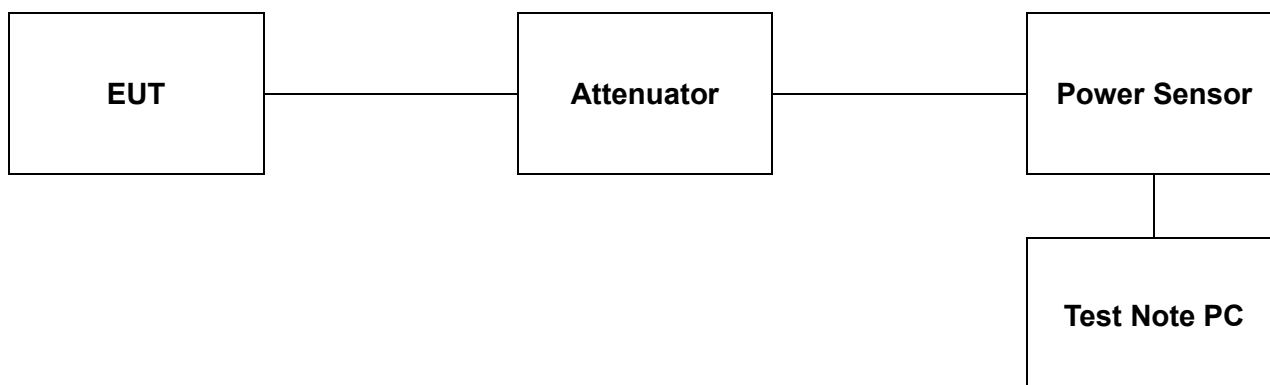


High Channel -2



4. Maximum Peak Conducted Output Power

4.1. Test Setup



4.2. Limit

4.2.1. FCC

According to §15.247(b)(3), for systems using digital modulation in the 902-928 MHz, 2 400-2 483.5 MHz, and 5 725-5 850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraph (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2.2. IC

According to RSS-247 Issue 4, 6.3.2, For DTS operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W.

For DTS operating in the band 2 400-2 483.5 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W, except as provided in section 6.5 a) and b).

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power.

4.3. Test Procedure

The test follows section 11.9.1.3 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).

PKPM1 Peak-reading power meter method

- The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The test follows section 11.9.2.3.2 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).

Method AVGP-M (Measurement using a gated RF average-reading power meter)

- Alternatively, measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

Gate triggering can be implemented in such a way that the sweep of the instrument is only active during the burst period of the device. Any Gate triggering shall be performed on the full power portion of the pulses and care must be taken to ensure that static portions of the pulse are not included in the measurement (ensuring that the trace is averaged over the entire symbol range). All Gate triggered measurements shall be accompanied by a Gate setup plot in the test report.

Test program: (S/W name: R&S Power Viewer, Version: 3.2.0)

1. Initially overall offset for attenuator and cable loss is measured per frequency.
2. Measured offset is inserted in test program in advance of measurement for output power.
3. Power for each frequency (channel) of device is investigated as final result.
4. Final result reported on this section from R&S power viewer program includes with several factors and test program shows only final result.

4.4. Test Results

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

- Ant. 2

Mode	Channel	Frequency (MHz)	Average Power Result (dB m)	Peak Power Result (dB m)	Limit (dB m)
11b	Low	2 412	14.41	17.09	30
	Middle	2 437	<u>14.72</u>	<u>17.76</u>	
	High	2 462	14.69	17.34	
11g	Low	2 412	14.78	19.53	
	Middle	2 437	<u>15.09</u>	<u>19.91</u>	
	High -1	2 452	15.07	19.79	
	High -2	2 457	13.25	18.01	
	High -3	2 462	12.19	16.98	
11n_HT20	Low	2 412	14.41	19.35	
	Middle	2 437	<u>14.88</u>	<u>19.81</u>	
	High -1	2 452	14.83	19.67	
	High -2	2 457	13.11	18.04	
	High -3	2 462	12.02	16.97	

- Ant. 3

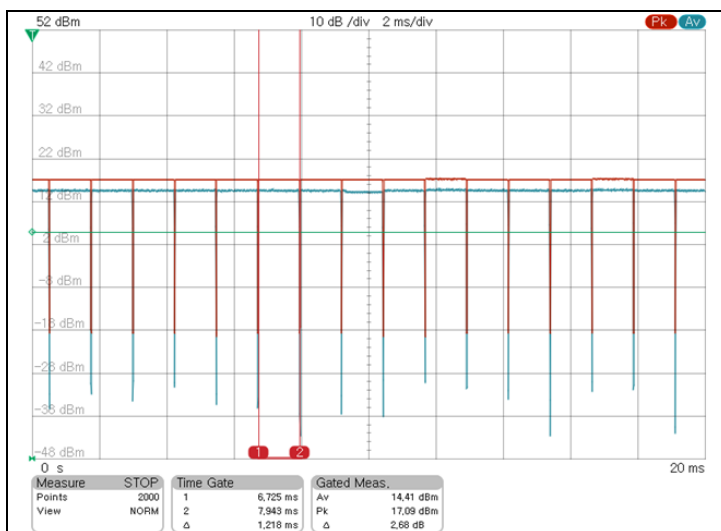
Mode	Channel	Frequency (MHz)	Average Power Result (dB m)	Peak Power Result (dB m)	Limit (dB m)
11b	Low	2 412	14.88	17.44	30
	Middle	2 437	15.20	17.92	
	High	2 462	<u>15.46</u>	<u>18.14</u>	
11g	Low -1	2 412	14.84	19.55	
	Low -2	2 417	14.94	19.67	
	Middle	2 437	15.16	19.91	
	High -1	2 457	<u>15.80</u>	<u>20.45</u>	
	High -2	2 462	12.70	17.66	
11n_HT20	Low	2 412	14.82	19.61	
	Middle	2 437	15.02	19.86	
	High -1	2 457	<u>15.58</u>	<u>20.43</u>	
	High -2	2 462	12.68	17.59	

Test plots

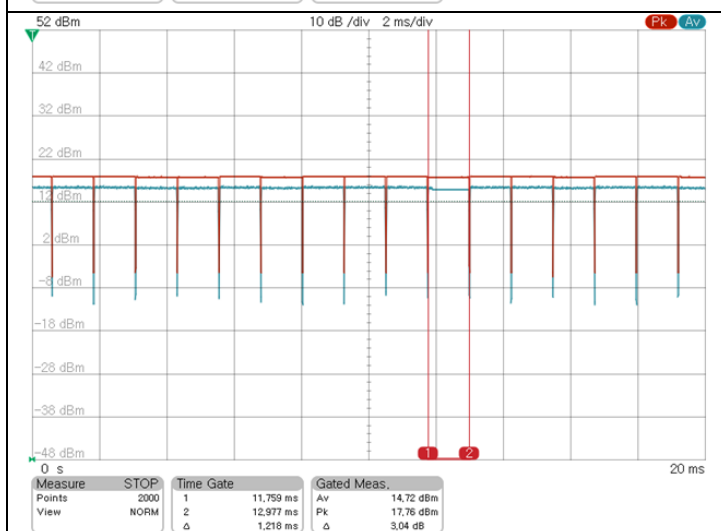
- Ant. 2

11b

Low Channel



Middle Channel



High Channel

