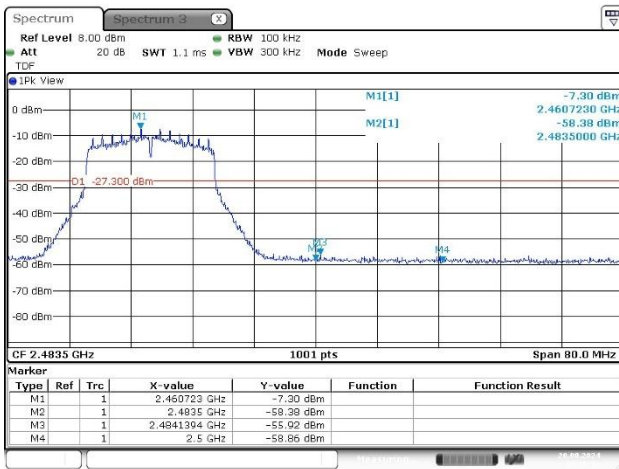
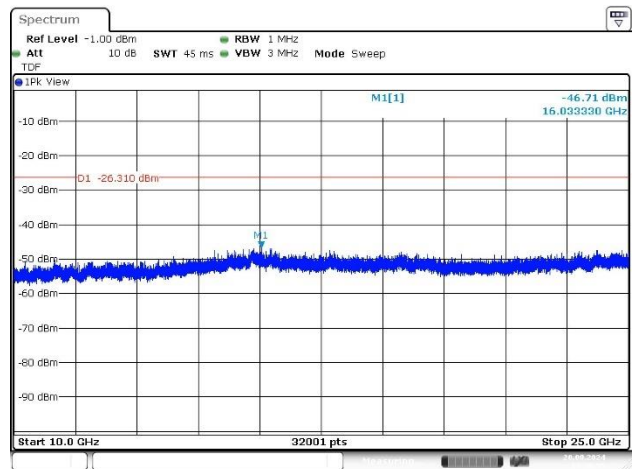
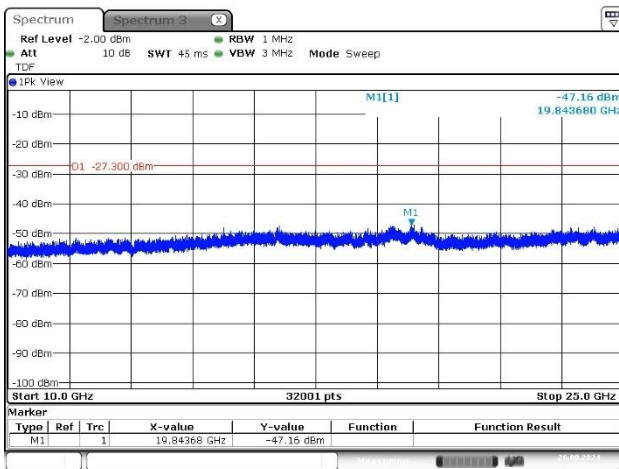
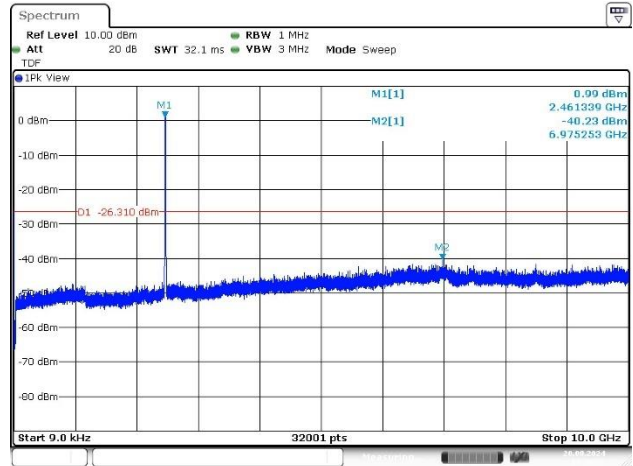
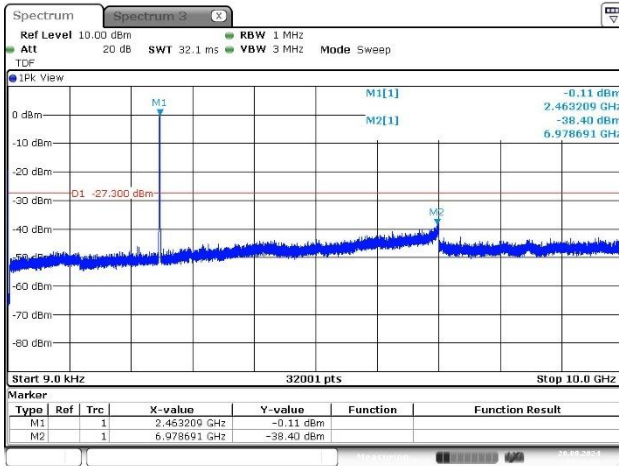
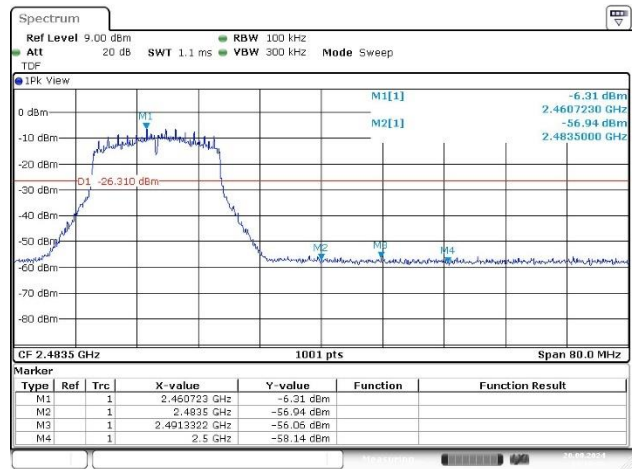


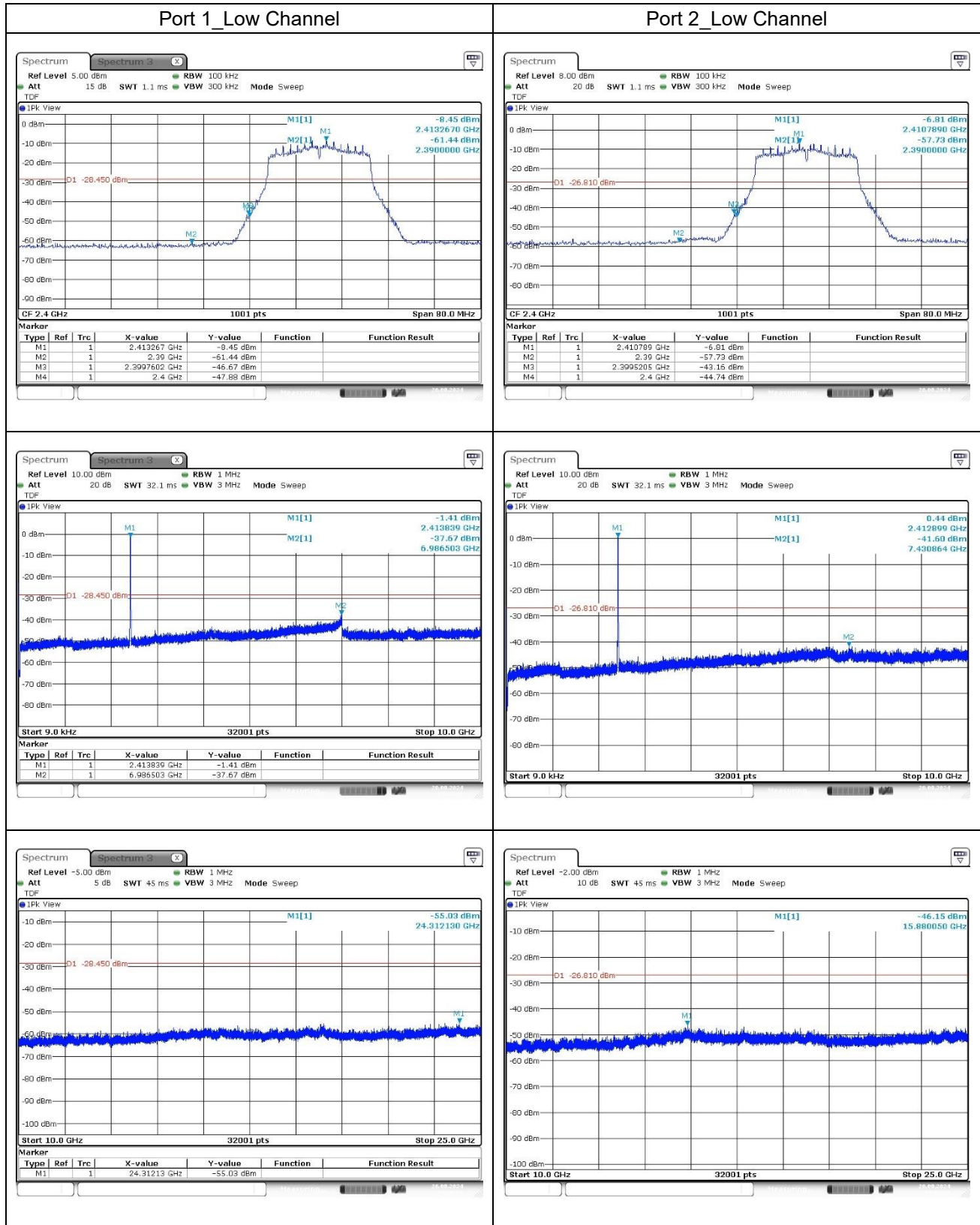
Port 1_High Channel



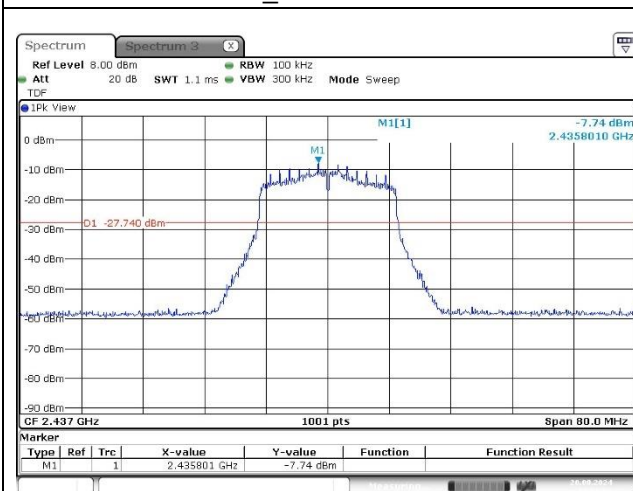
Port 2_High Channel



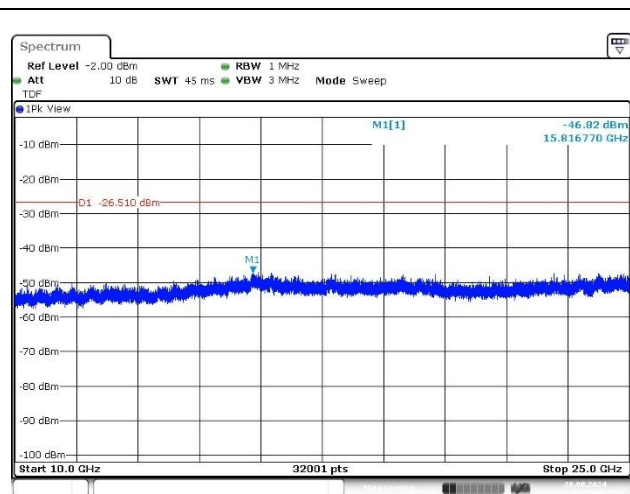
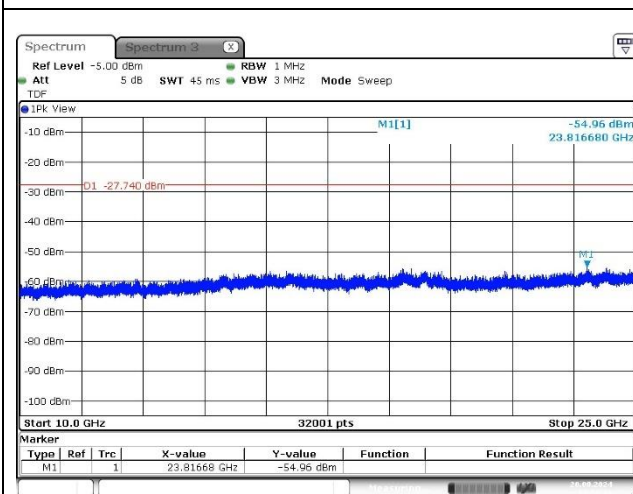
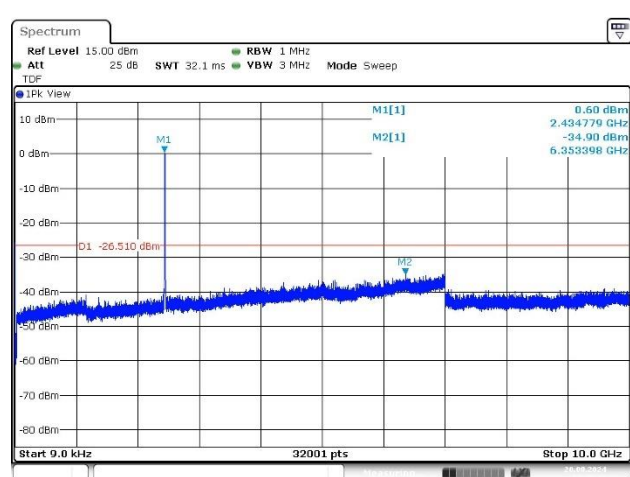
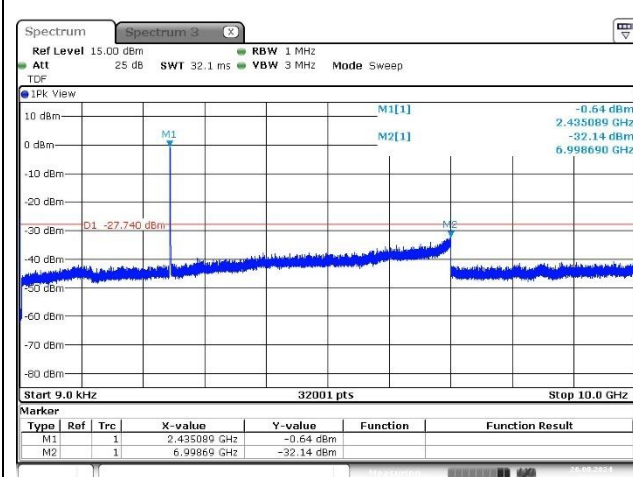
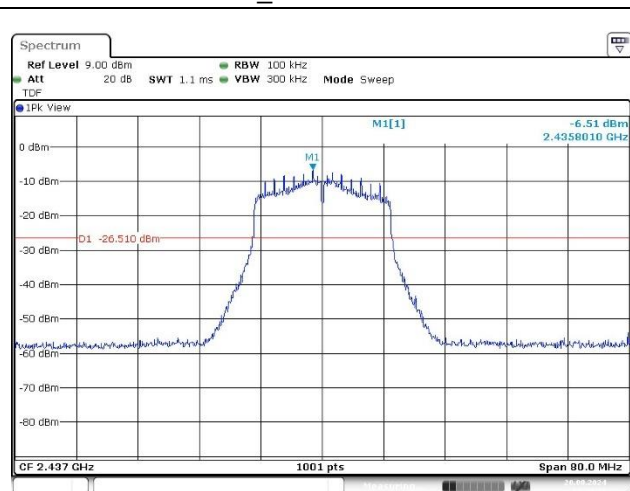
11n_HT20



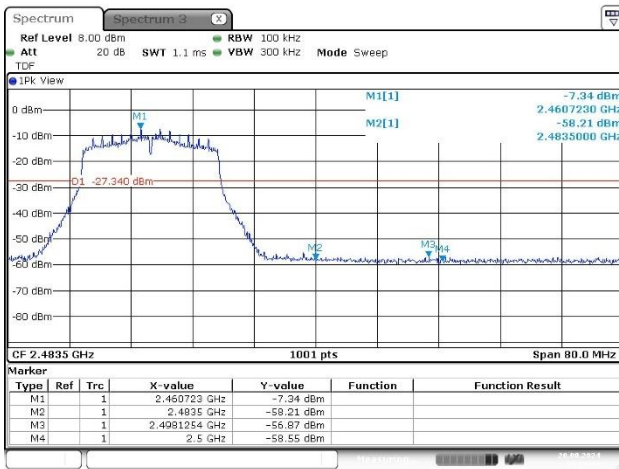
Port 1_Middle Channel



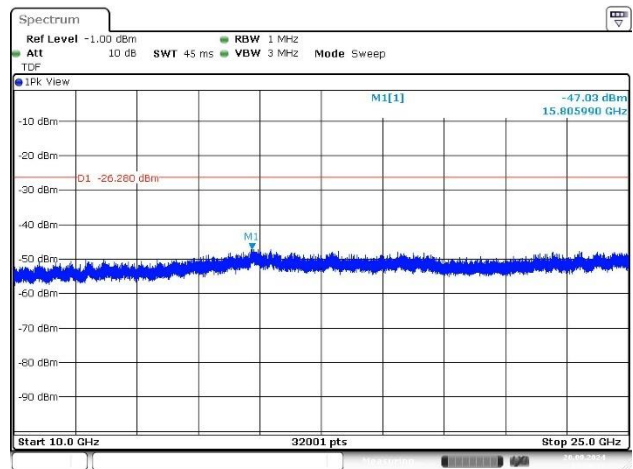
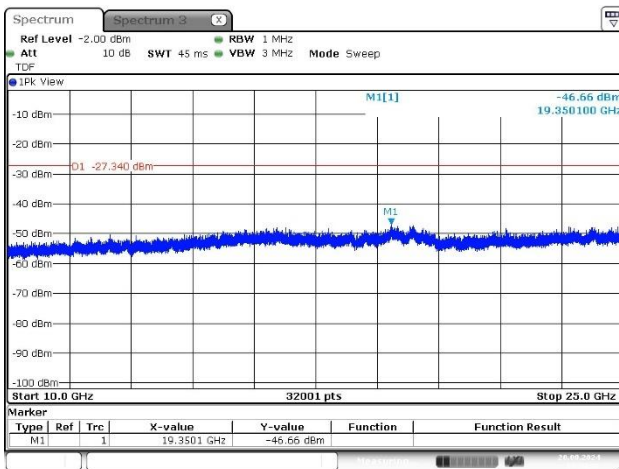
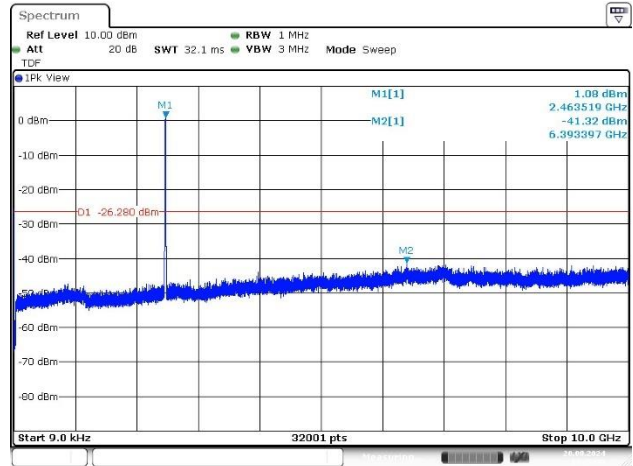
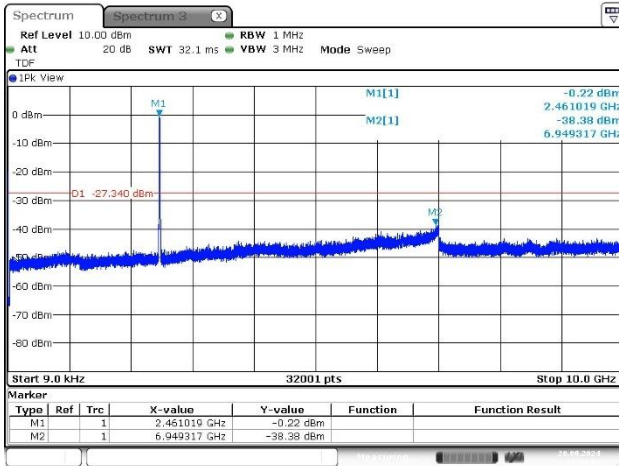
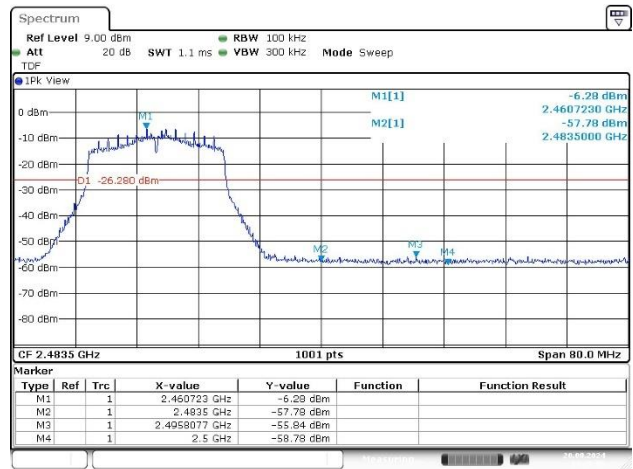
Port 2_Middle Channel



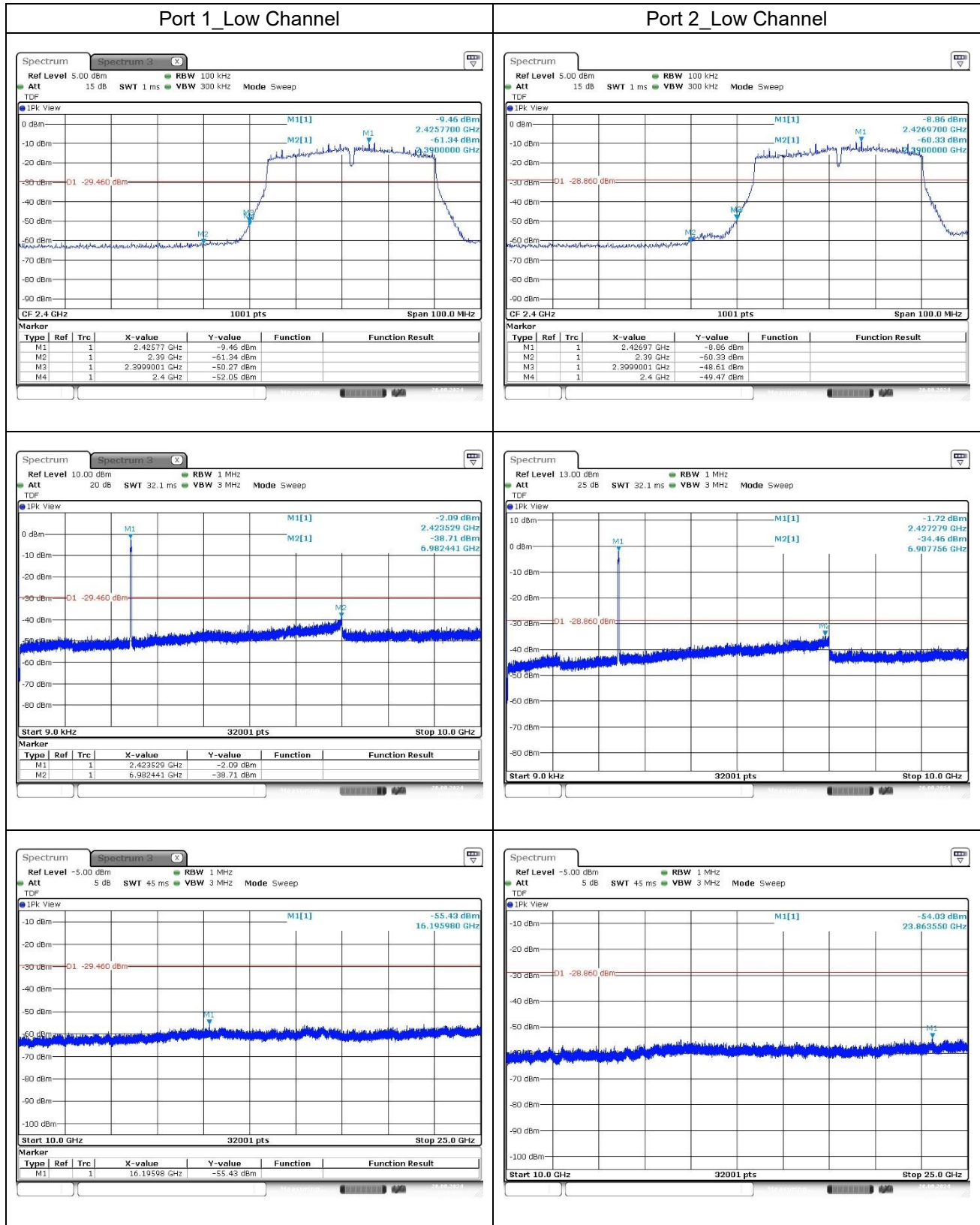
Port 1_High Channel



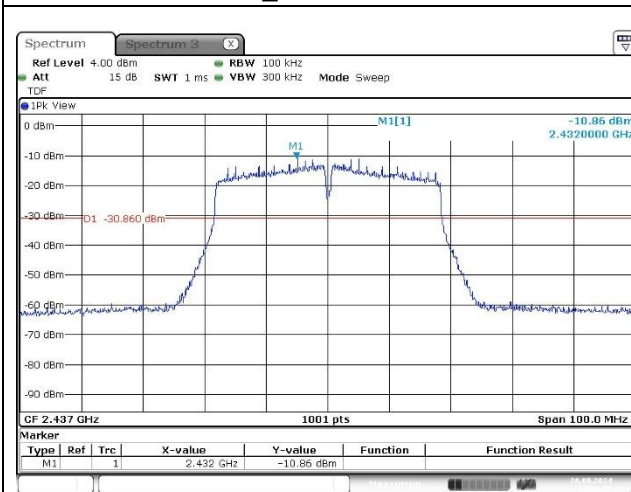
Port 2_High Channel



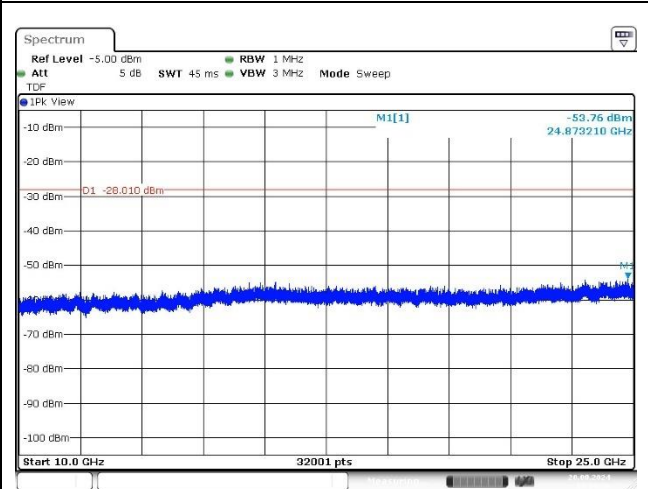
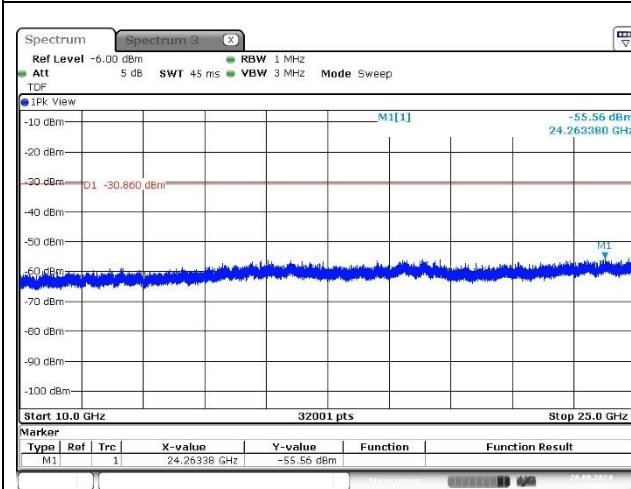
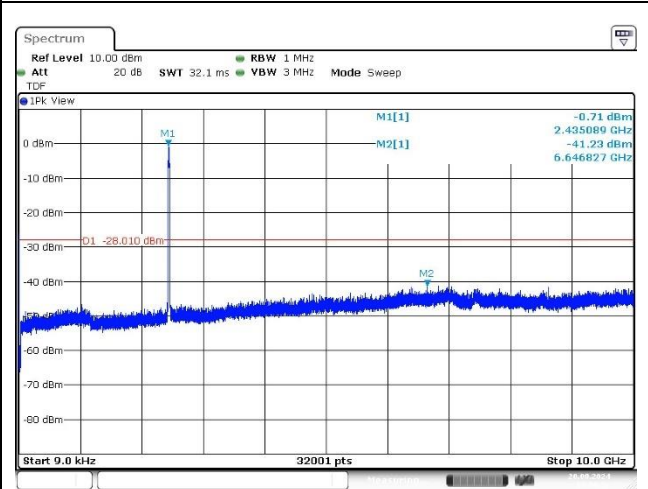
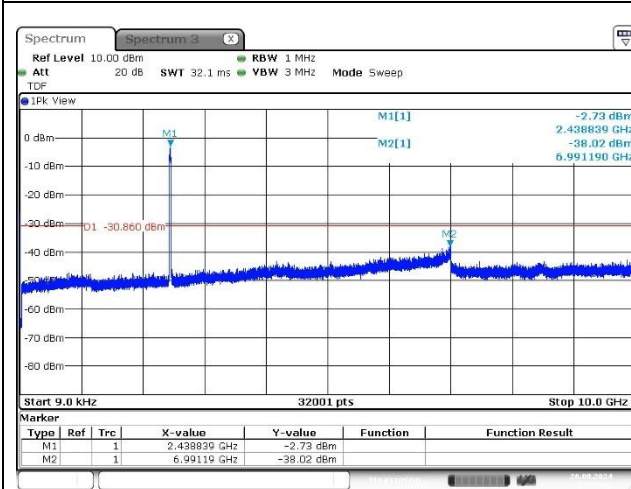
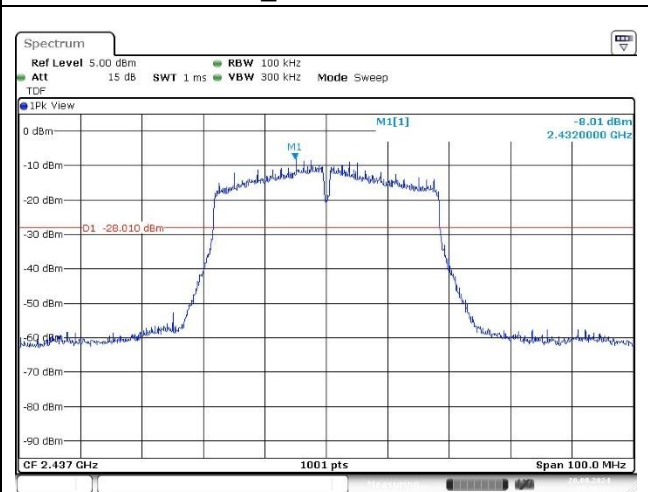
11n_HT40



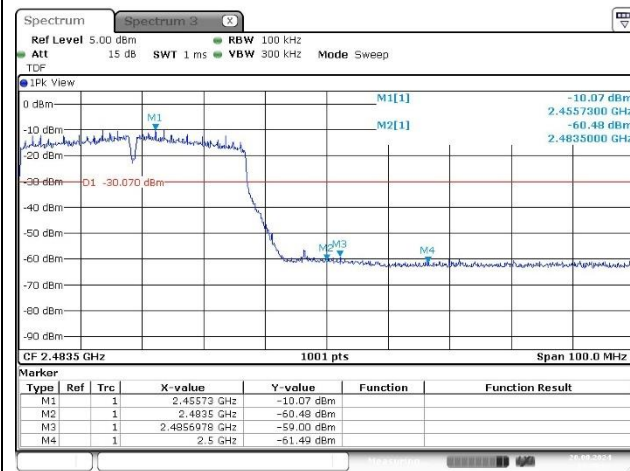
Port 1_Middle Channel



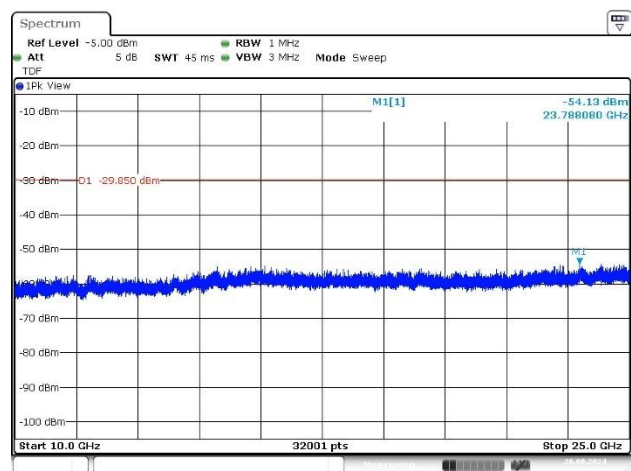
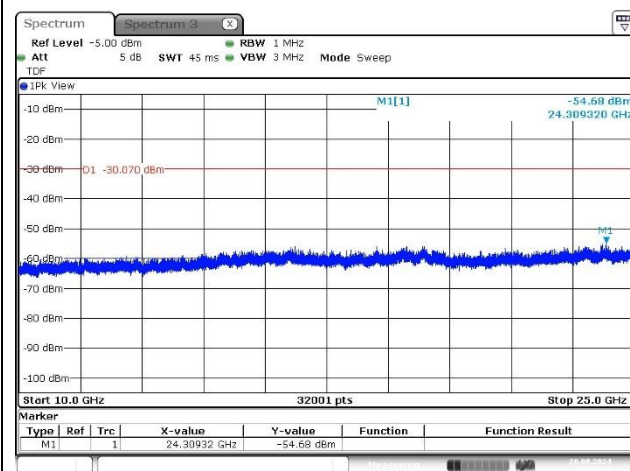
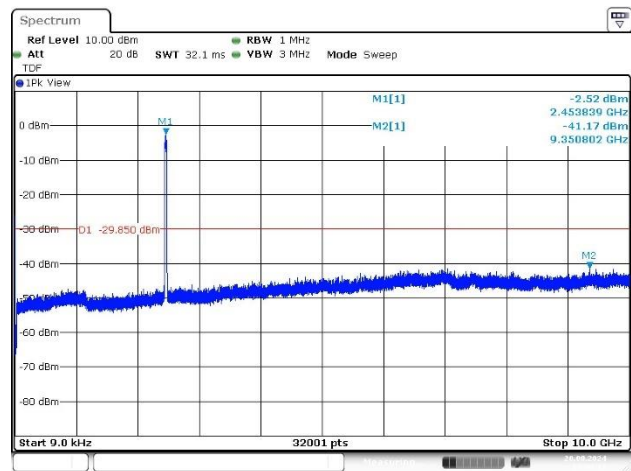
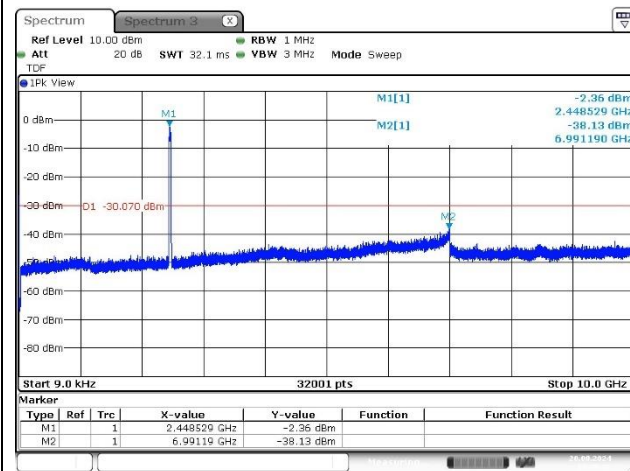
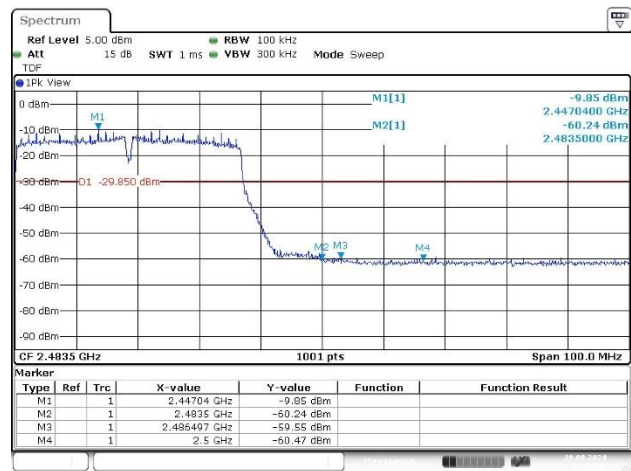
Port 2_Middle Channel



Port 1_High Channel

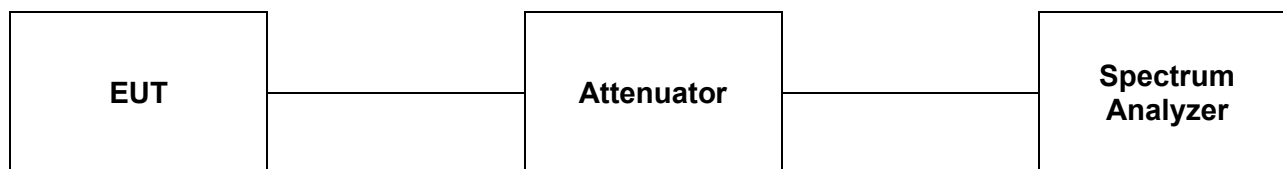


Port 2_High Channel



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 3, 5.2(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 C63.10-2013.

Tests performed using section 11.8.1 Option 1.

- Option 1:

1. Set RBW to = 100 kHz.
2. Set the VBW $\geq$ [3 x RBW].
3. Detector = peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.2. 99 % Bandwidth

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99 % emission bandwidth, the trace data points are recovered and directly summed in linear power level 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, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99 % emission bandwidth).

3.4. Test Results

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

Mode		Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	99 % Bandwidth (MHz)	Minimum Bandwidth (kHz)
SISO	11b	Low	2 412	7.193	13.866	500
		Middle	2 437	8.591	14.146	
		High	2 462	8.152	14.585	

Mode		Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		99 % Bandwidth (MHz)		Minimum Bandwidth (kHz)
				Port 1	Port 2	Port 1	Port 2	
MIMO (CDD)	11g	Low	2 412	15.185	15.185	16.304	16.503	-
		Middle	2 437	15.185	15.145	16.304	16.424	
		High	2 462	15.185	15.185	16.304	16.344	
	11n_HT20	Low	2 412	16.903	15.984	17.542	17.702	
		Middle	2 437	13.866	15.744	17.502	17.582	
		High	2 462	13.027	15.744	17.502	17.582	
	11n_HT40	Low	2 422	33.966	33.966	36.523	36.523	
		Middle	2 437	35.245	31.409	37.003	36.284	
		High	2 452	35.245	35.245	36.763	36.763	

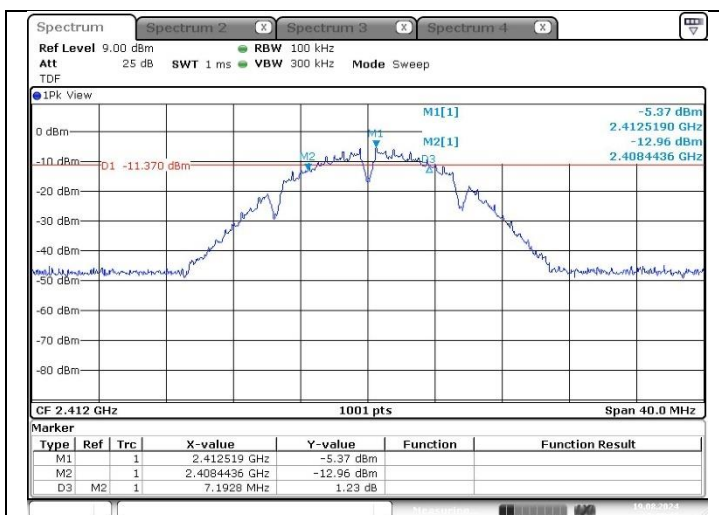
- Test plots

SISO

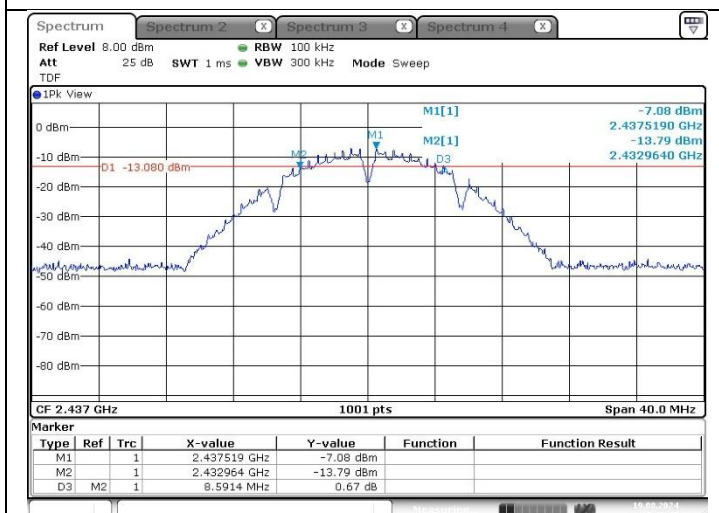
6 dB Bandwidth

11b

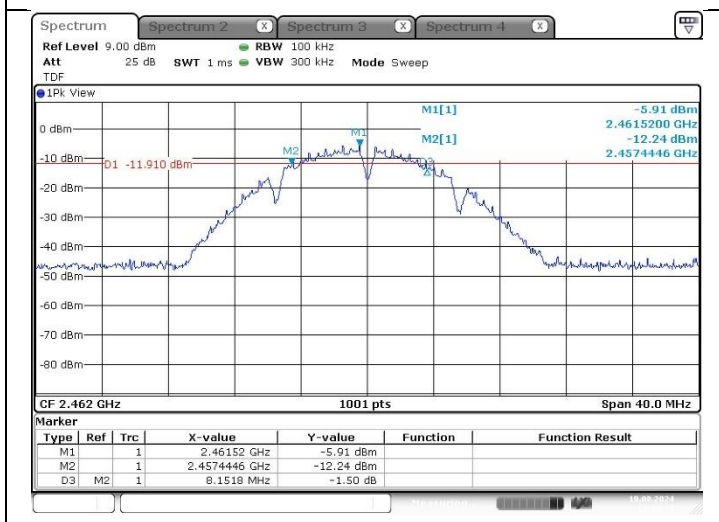
Low Channel



Middle Channel



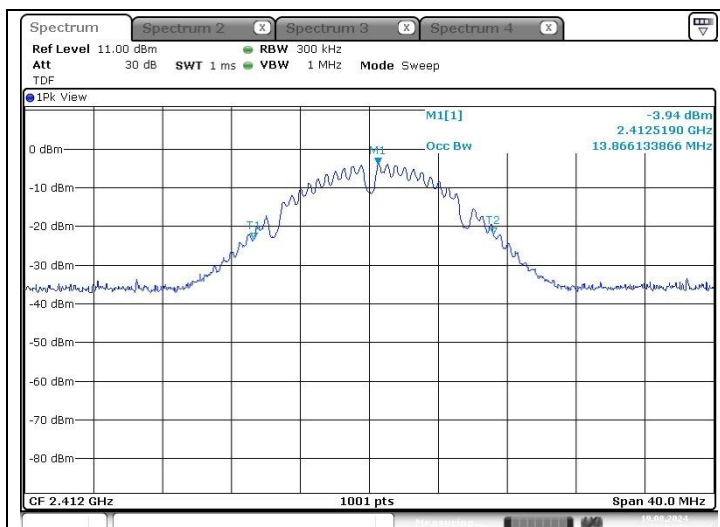
High Channel



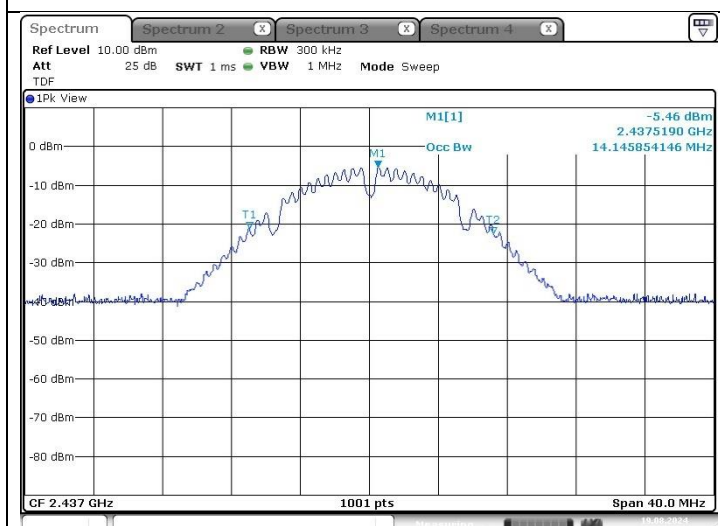
99 % Bandwidth

11b

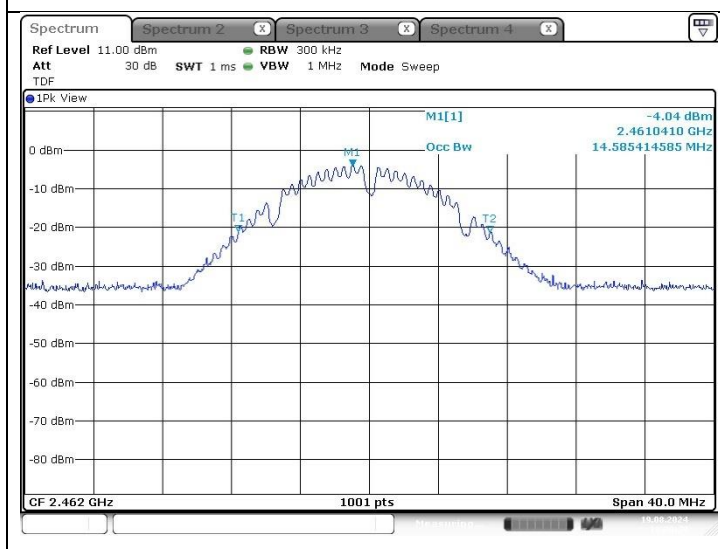
Low Channel



Middle Channel



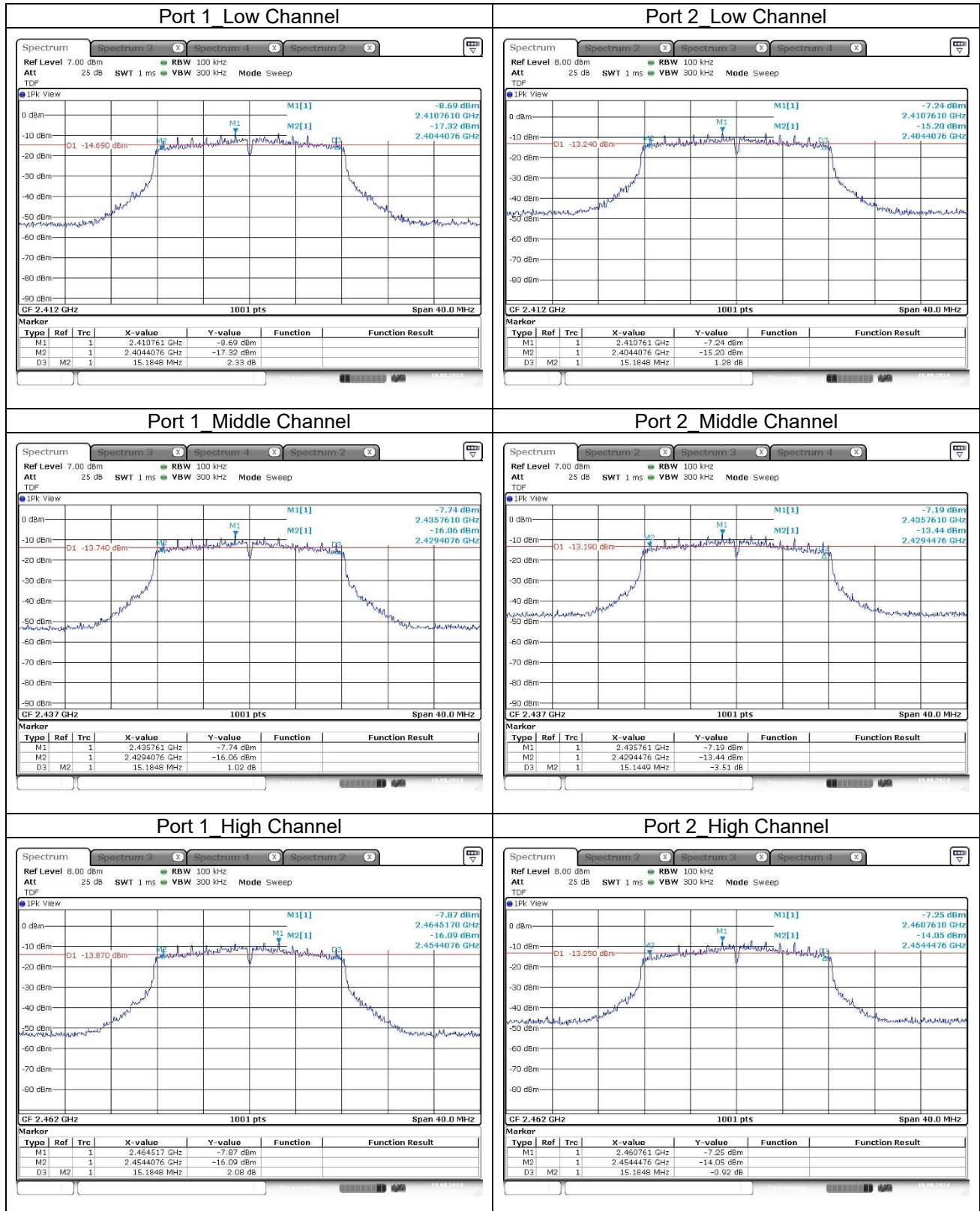
High Channel



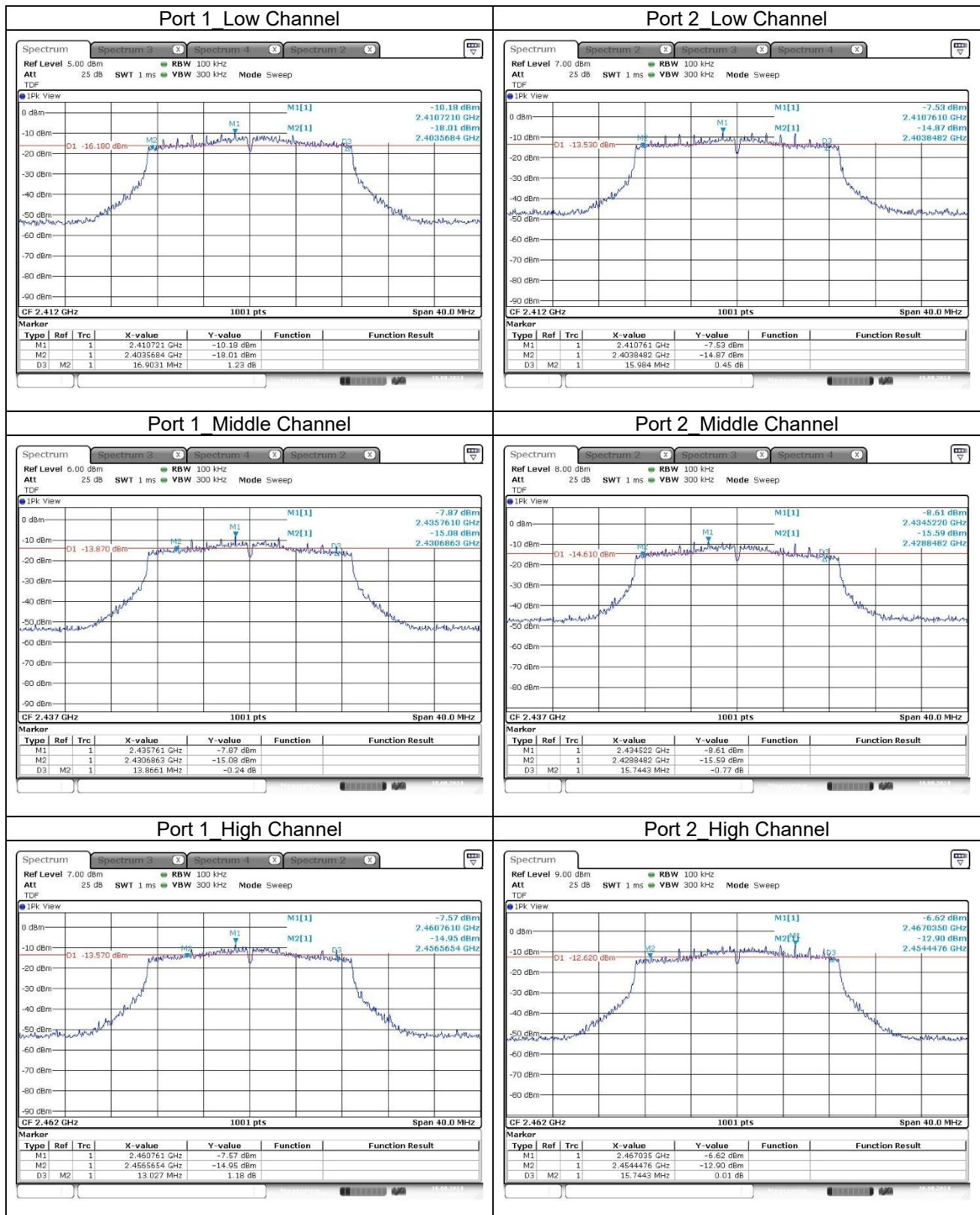
MIMO

6 dB Bandwidth

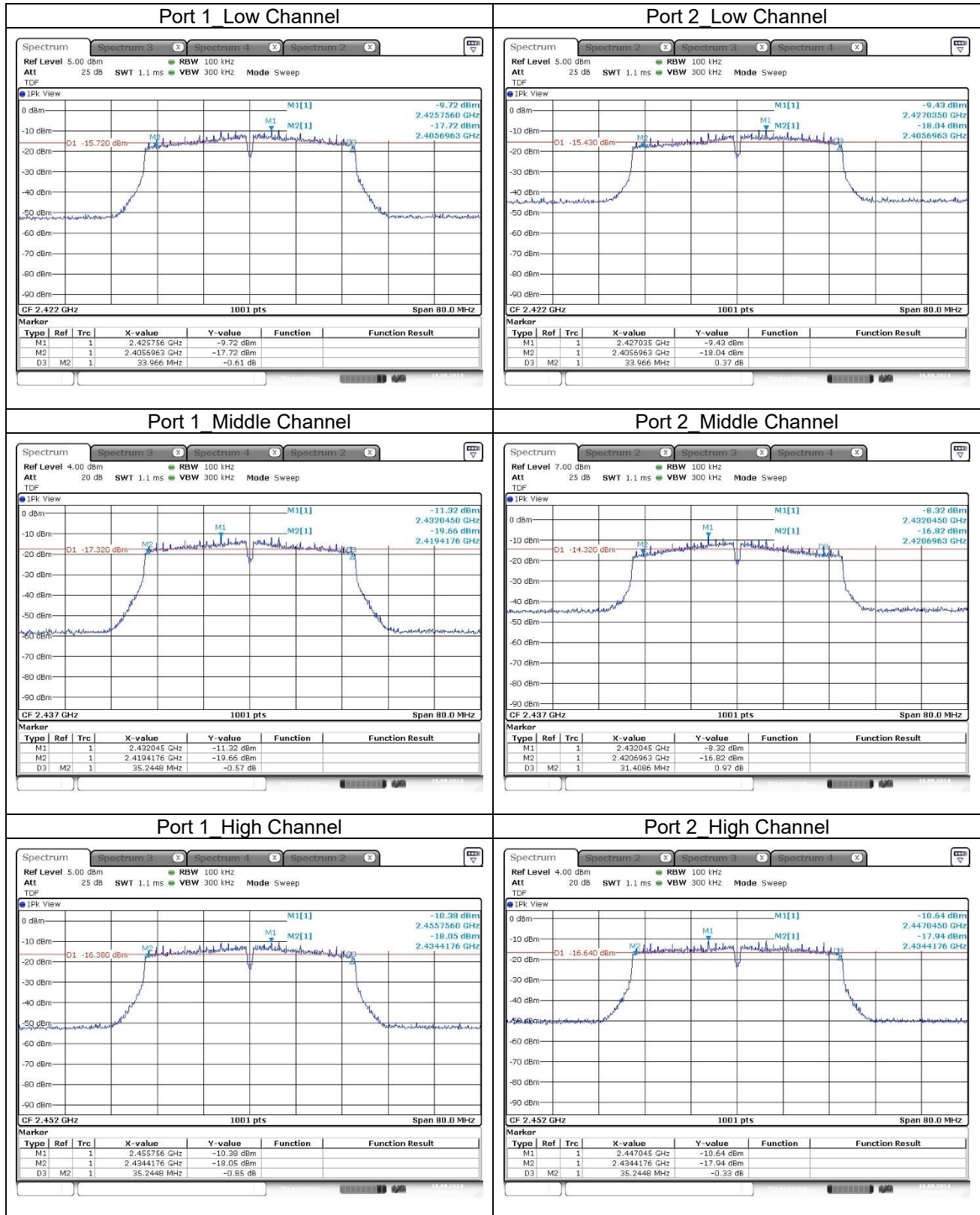
11g



11n_HT20

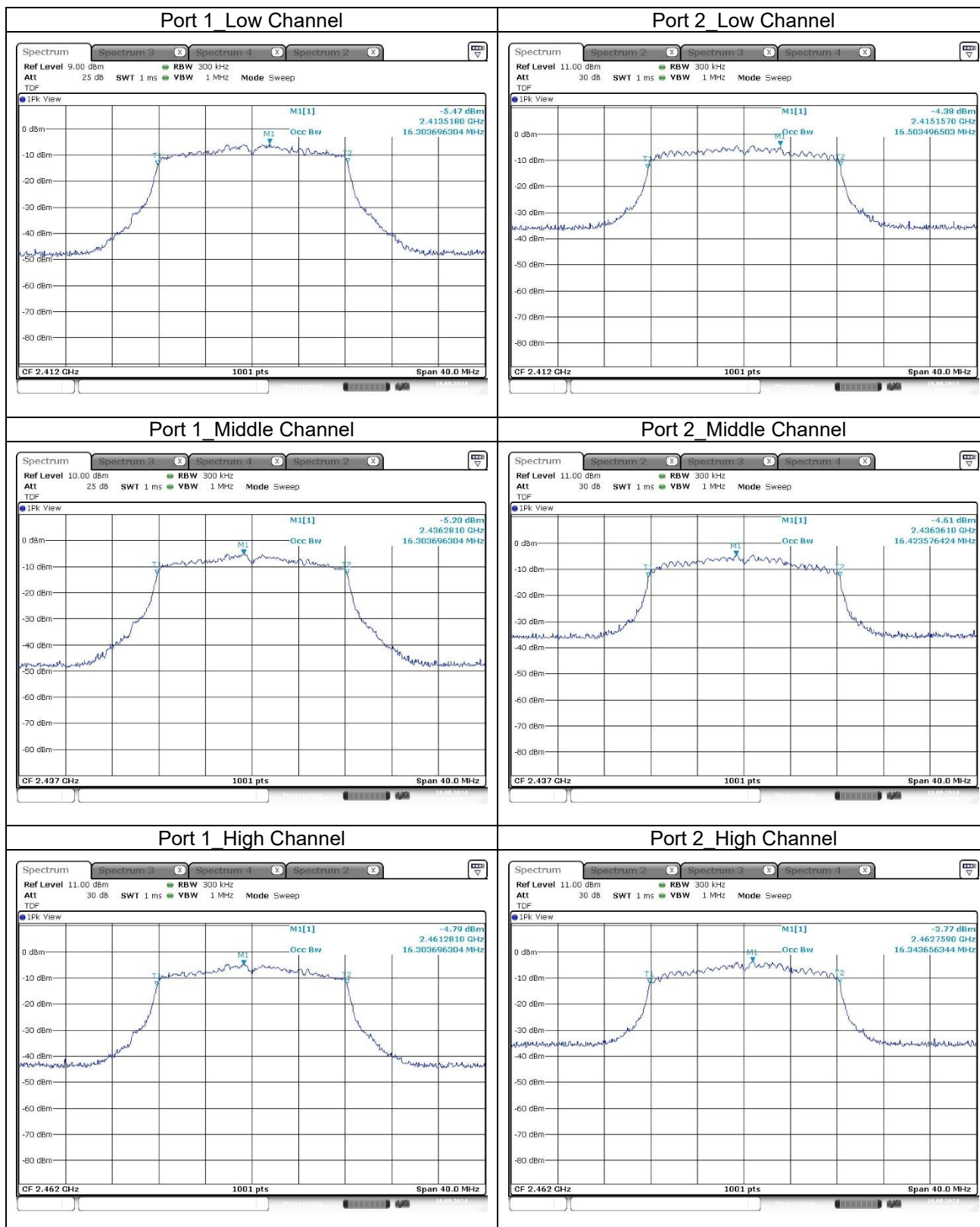


11n_HT40



99 % Bandwidth

11g



11n_HT20

