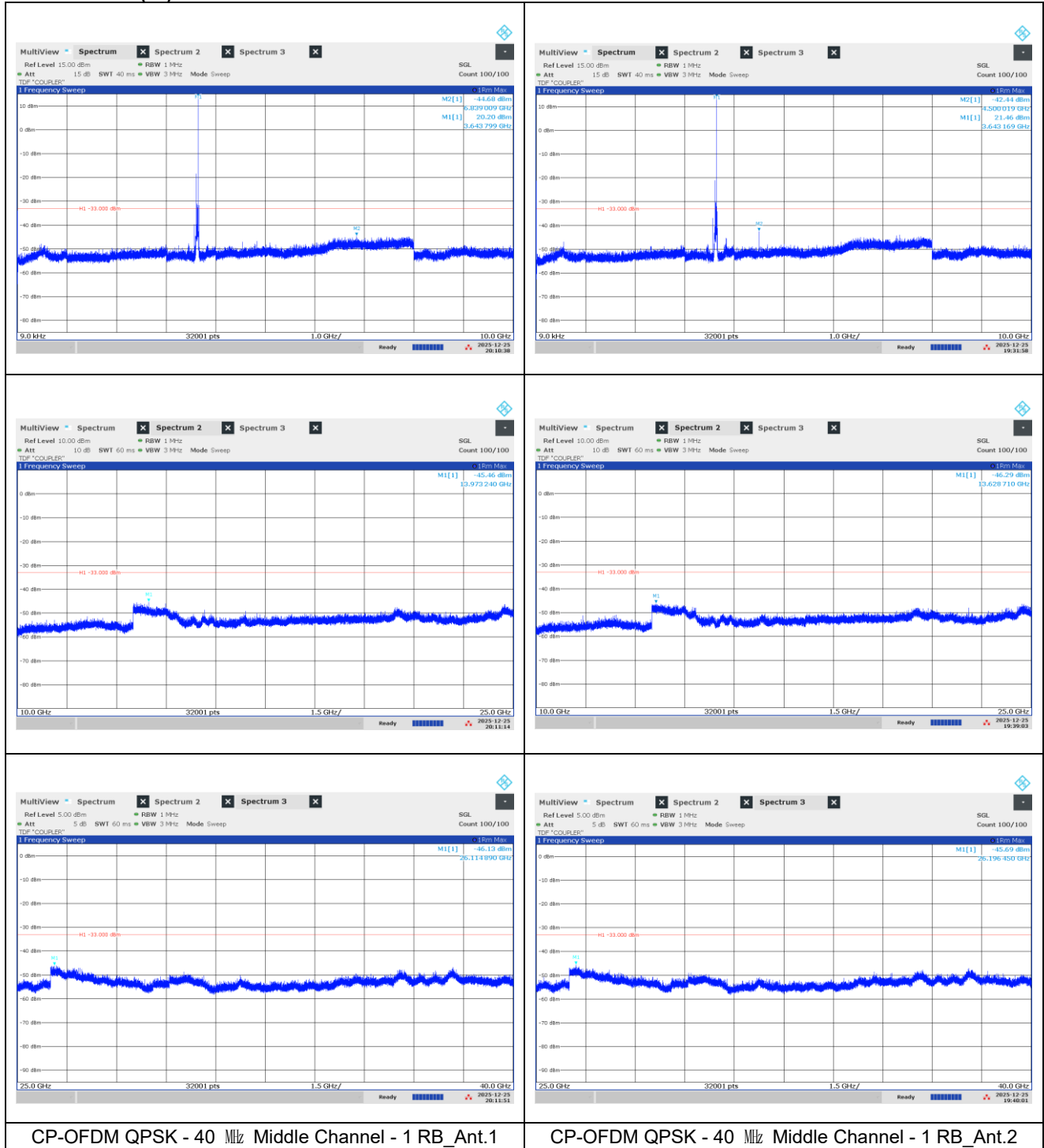
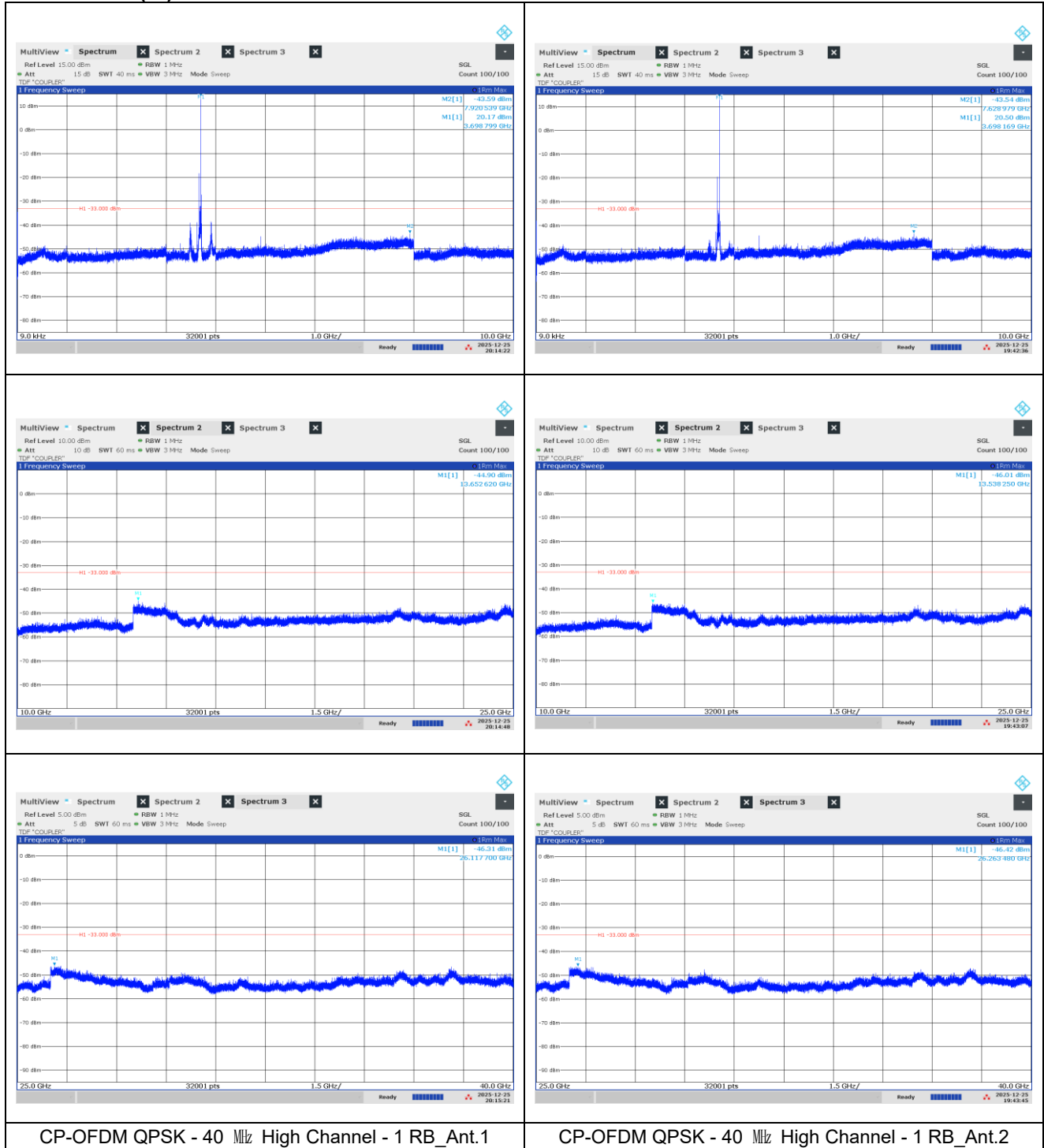


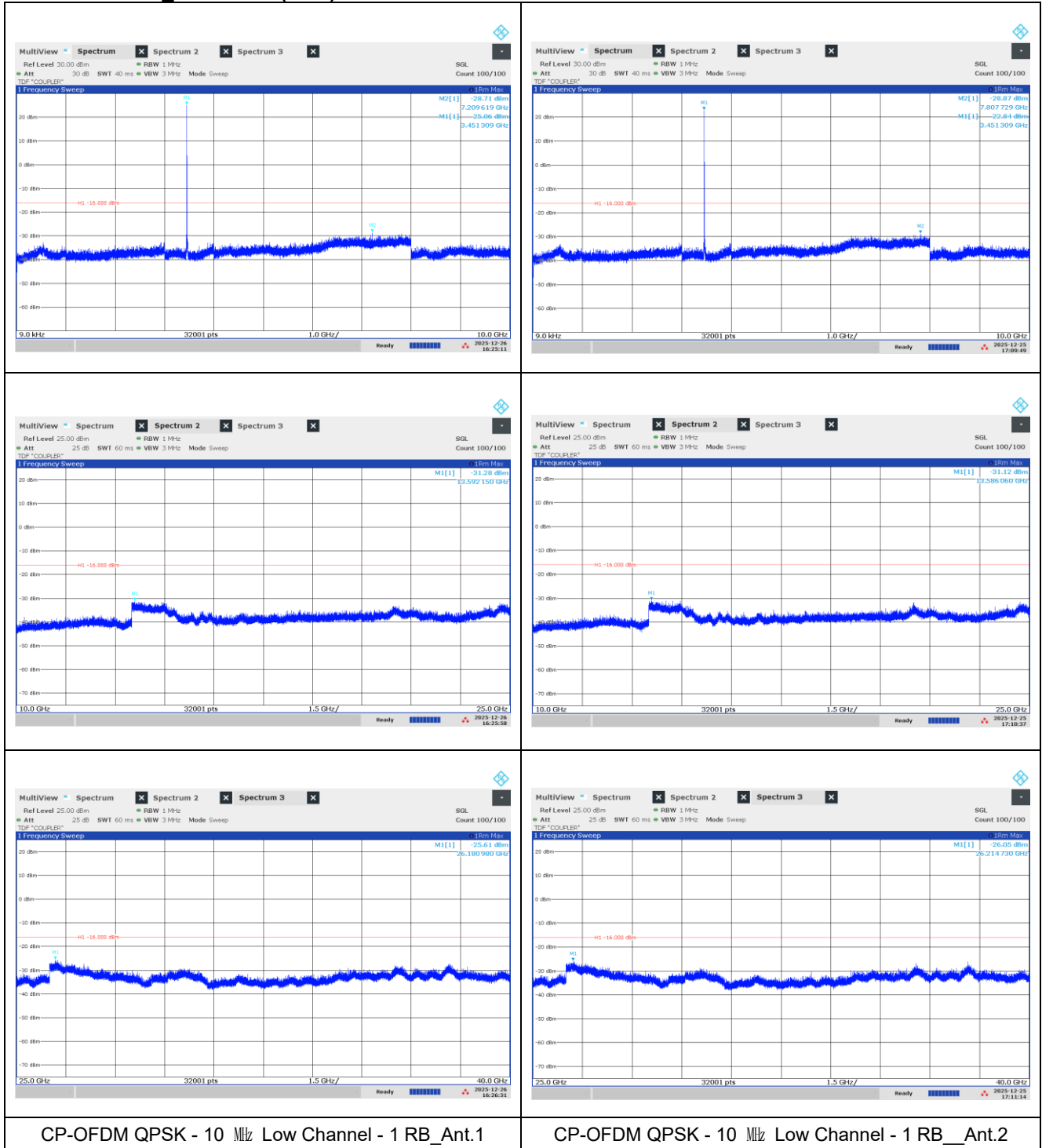
NR band 48 (IC)



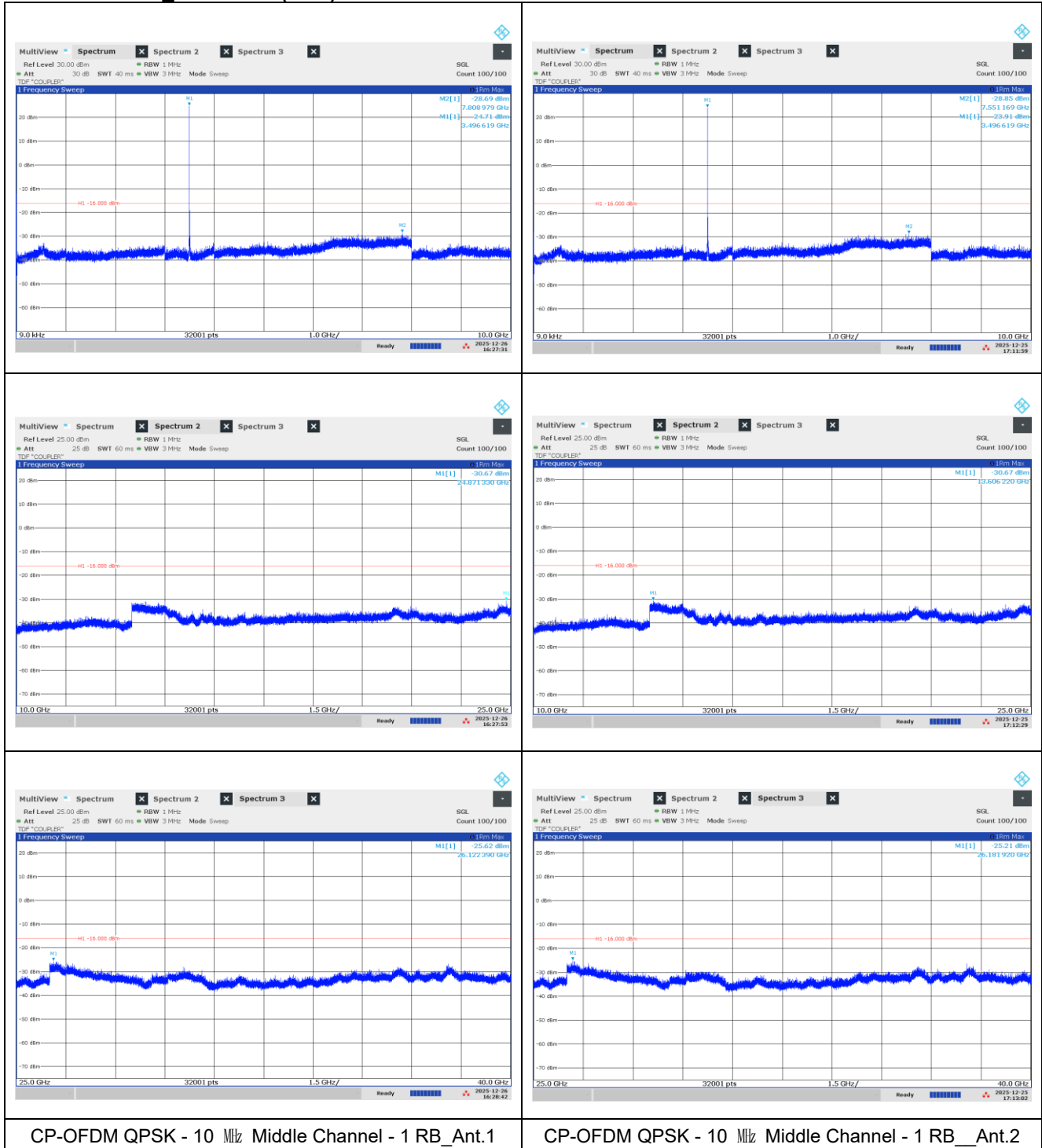
NR band 48 (IC)



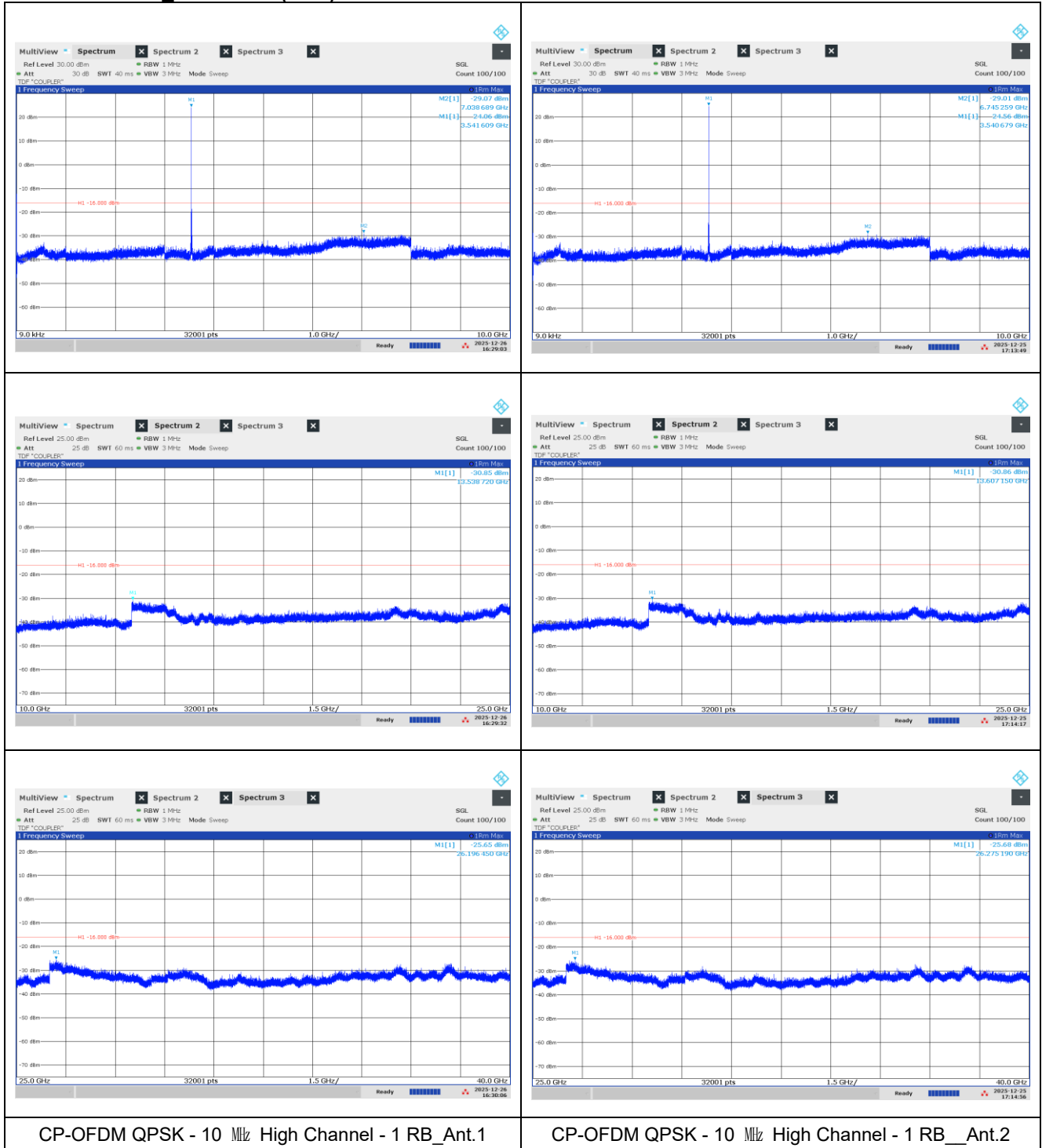
NR band 77/78 Low Band (FCC)



NR band 77/78 Low Band (FCC)



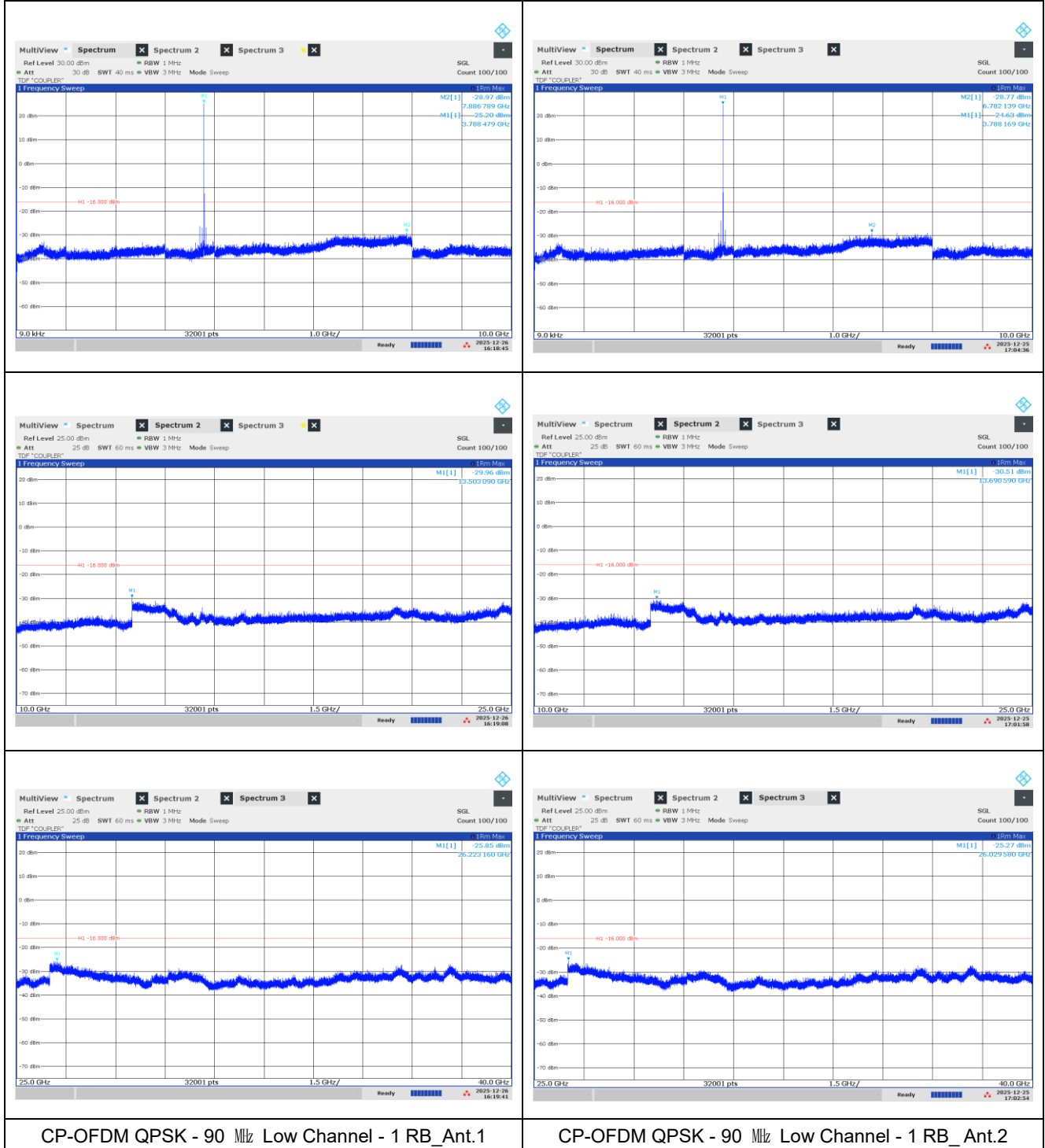
NR band 77/78 Low Band (FCC)



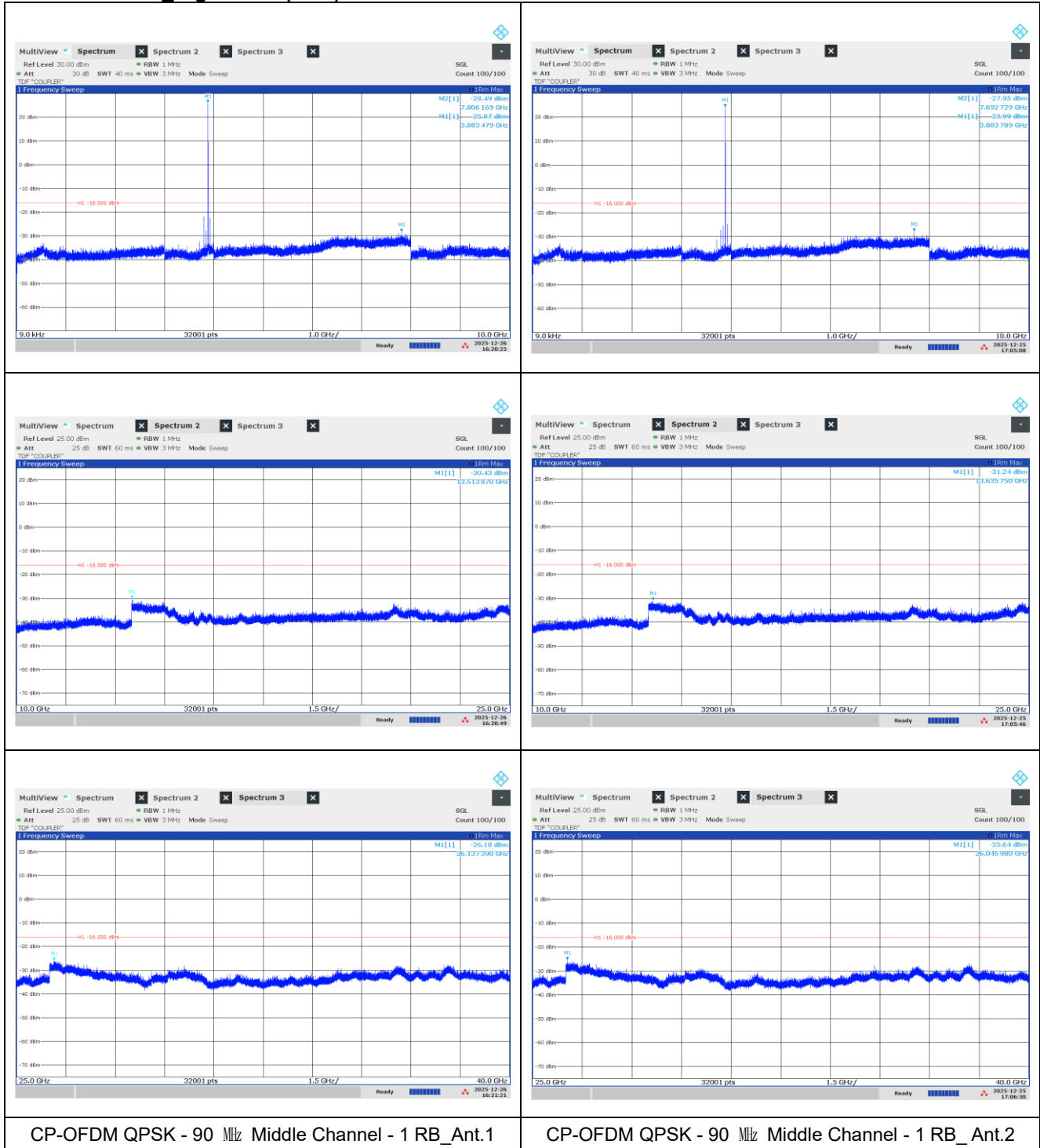
CP-OFDM QPSK - 10 MHz High Channel - 1 RB_Ant.1

CP-OFDM QPSK - 10 MHz High Channel - 1 RB_Ant.2

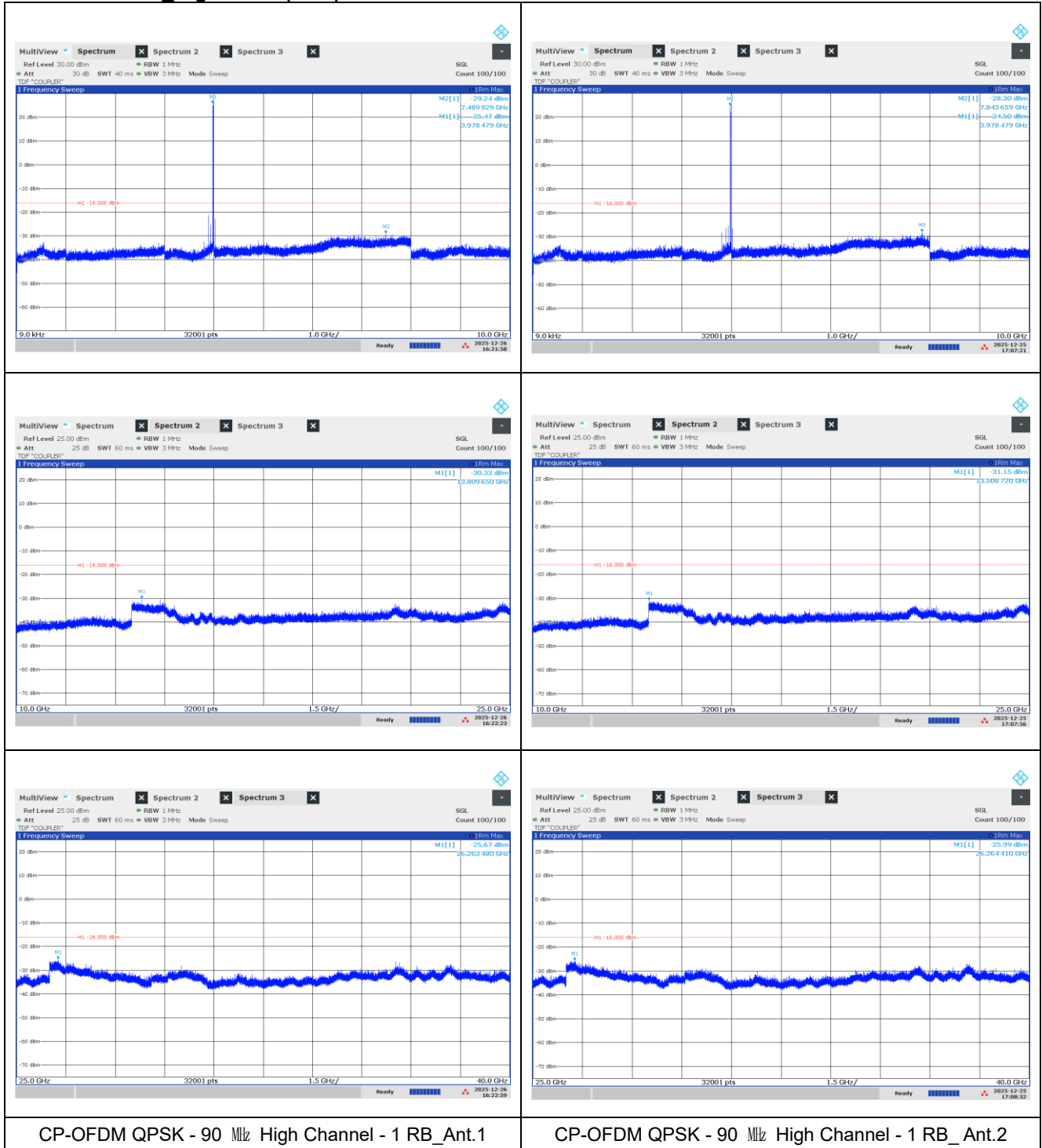
NR band 77/78_High Band (FCC)



NR band 77/78_High Band (FCC)



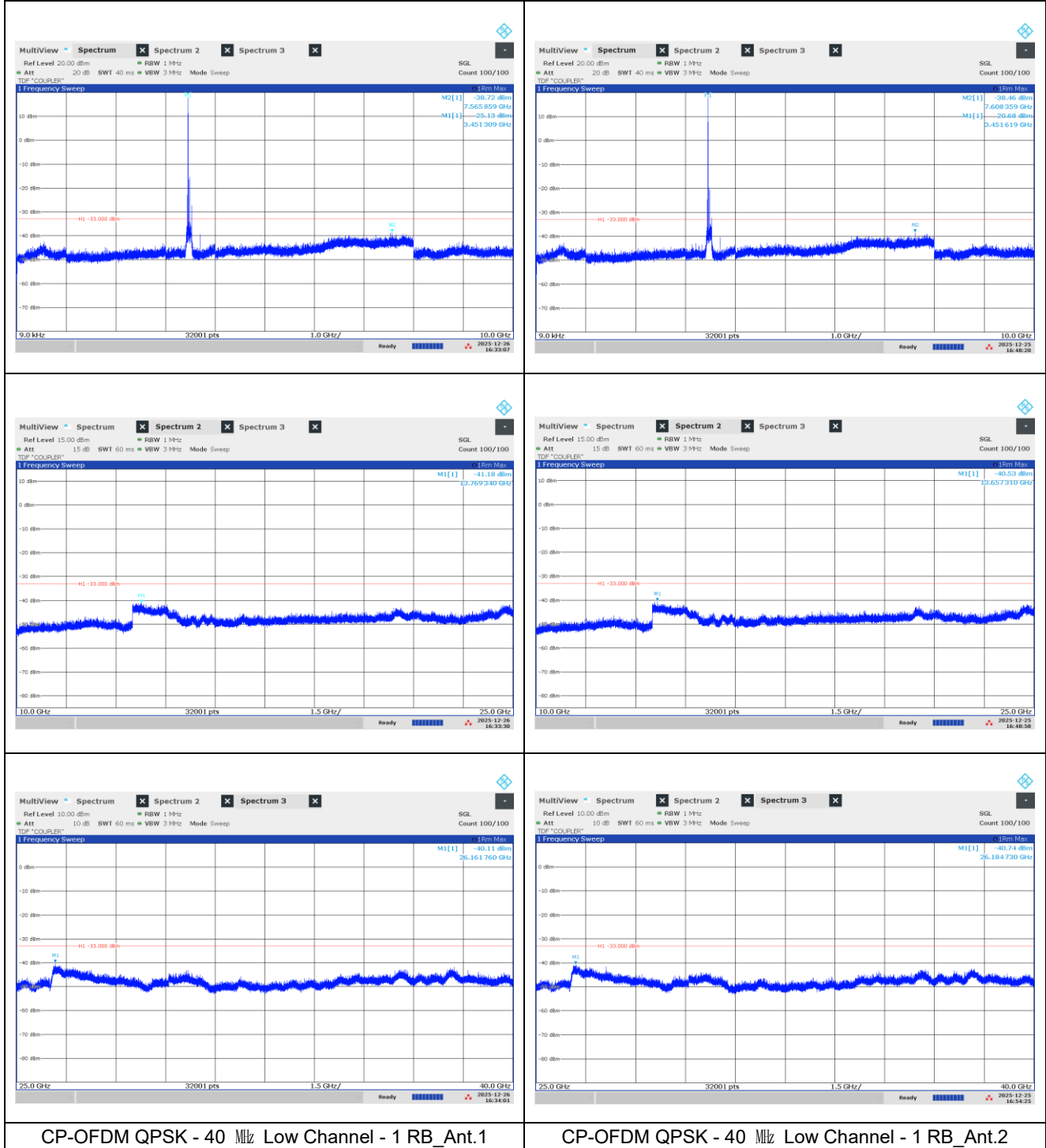
NR band 77/78_High Band (FCC)



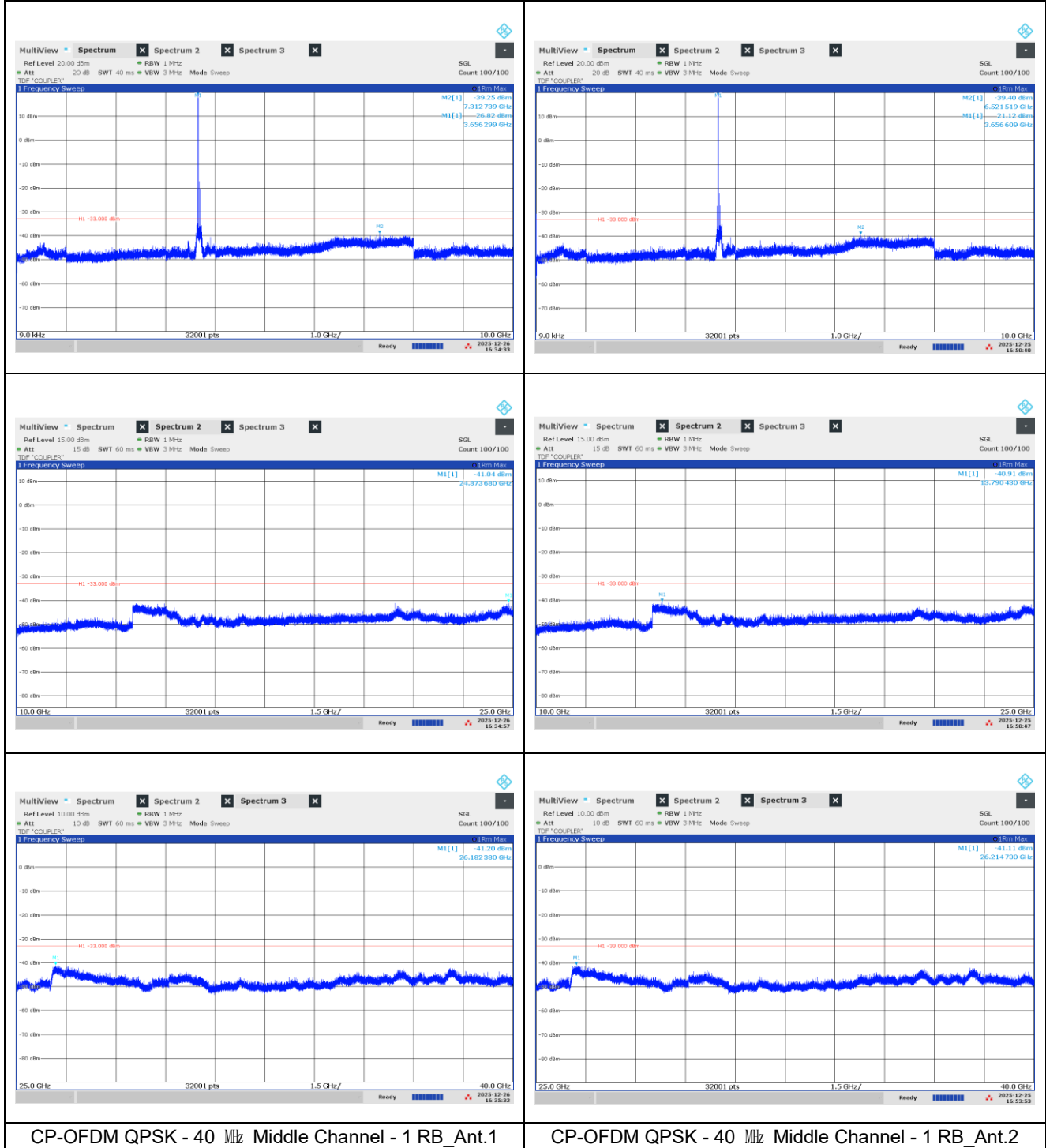
CP-OFDM QPSK - 90 MHz High Channel - 1 RB_Ant.1

CP-OFDM QPSK - 90 MHz High Channel - 1 RB_Ant.2

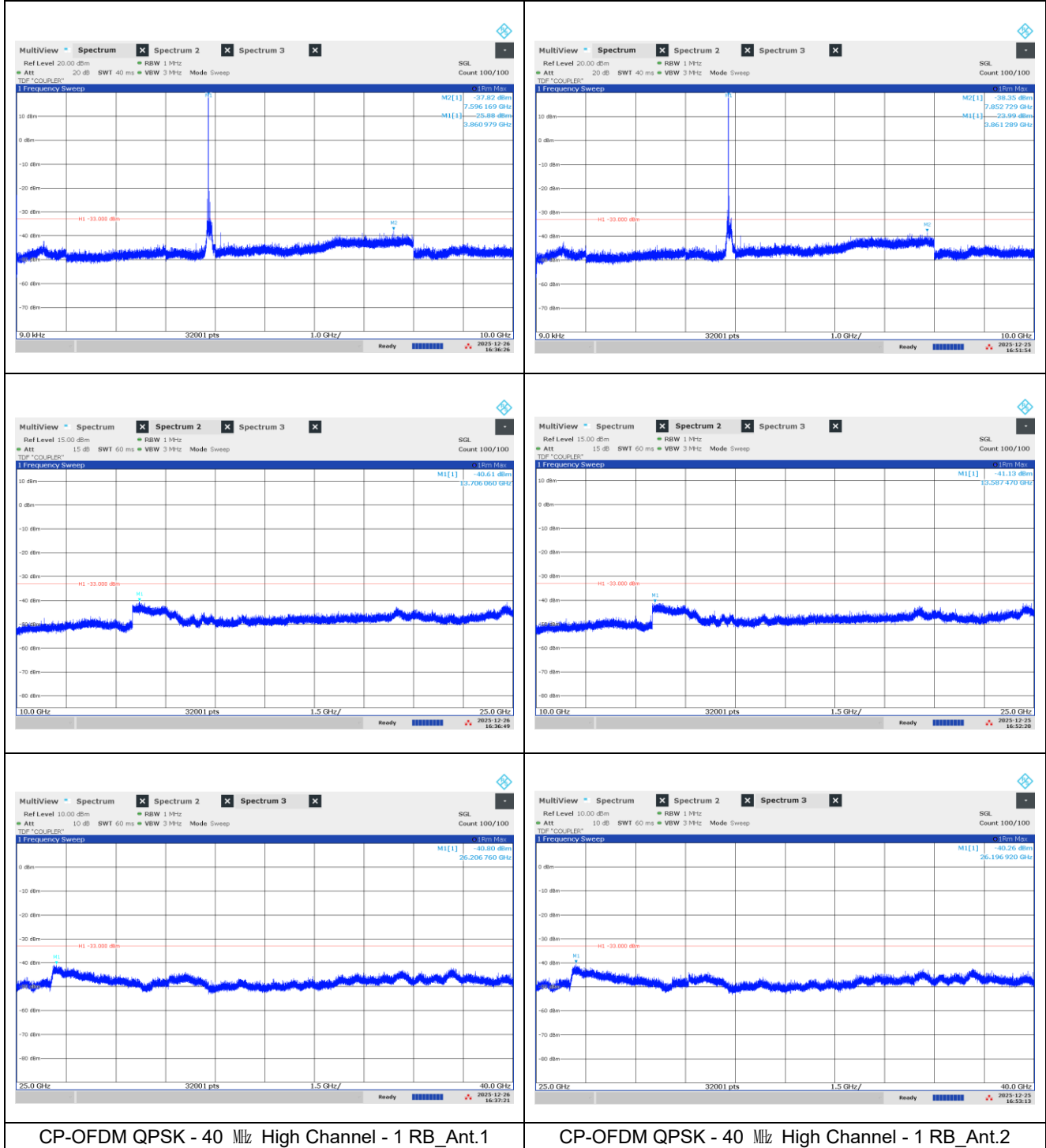
NR band 77/78 Low Band (IC)



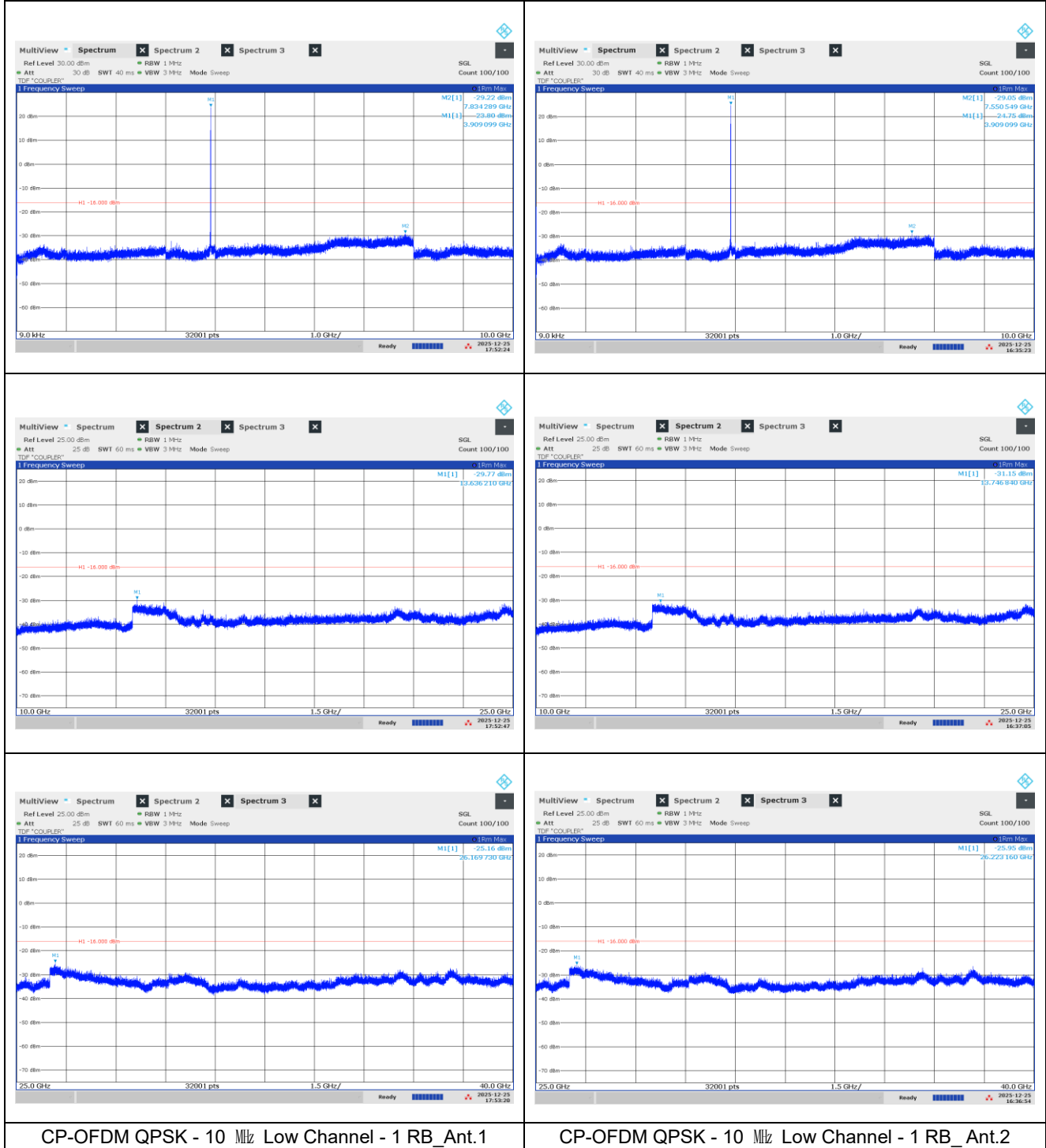
NR band 77/78_Low Band (IC)



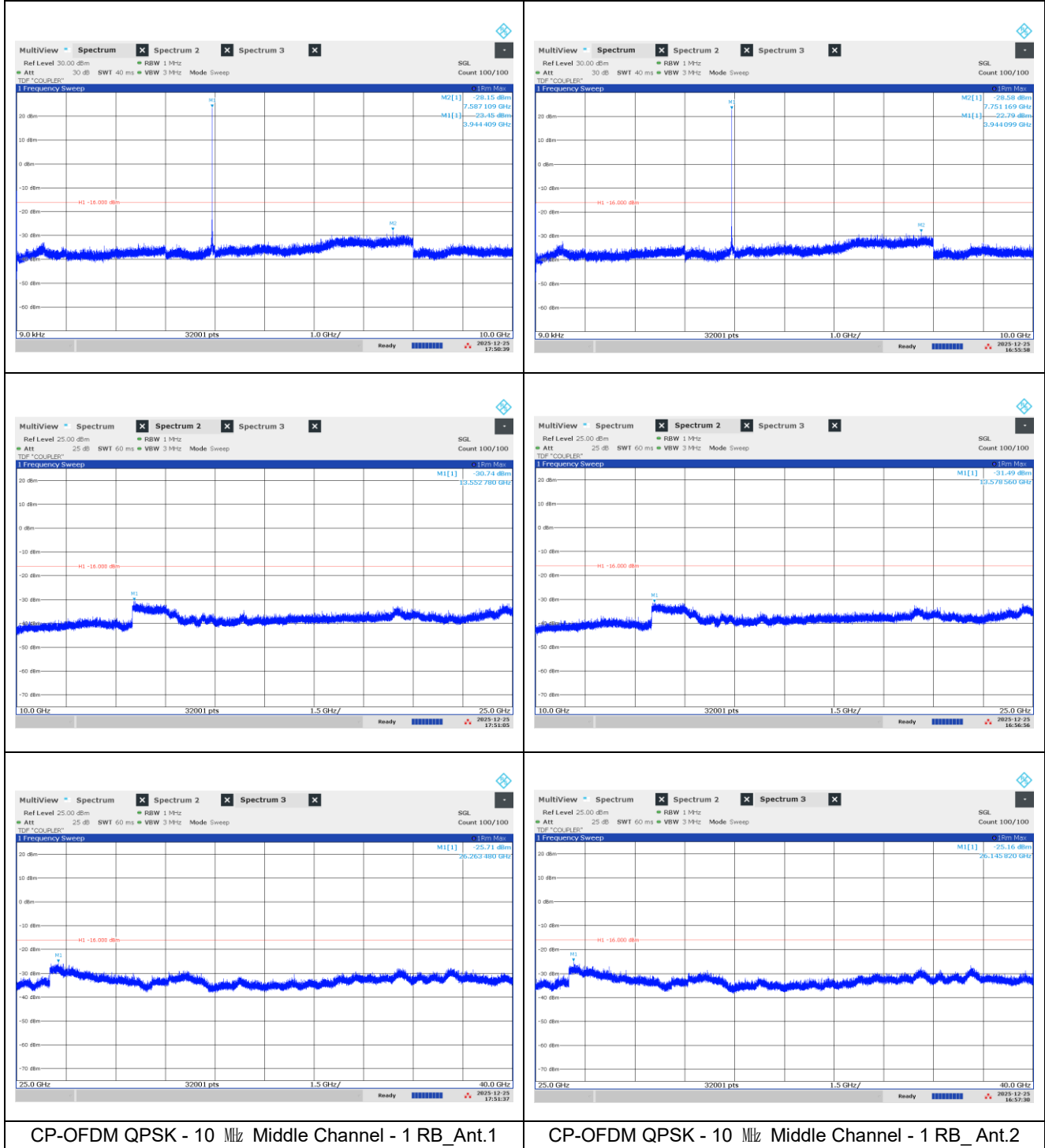
NR band 77/78 Low Band (IC)



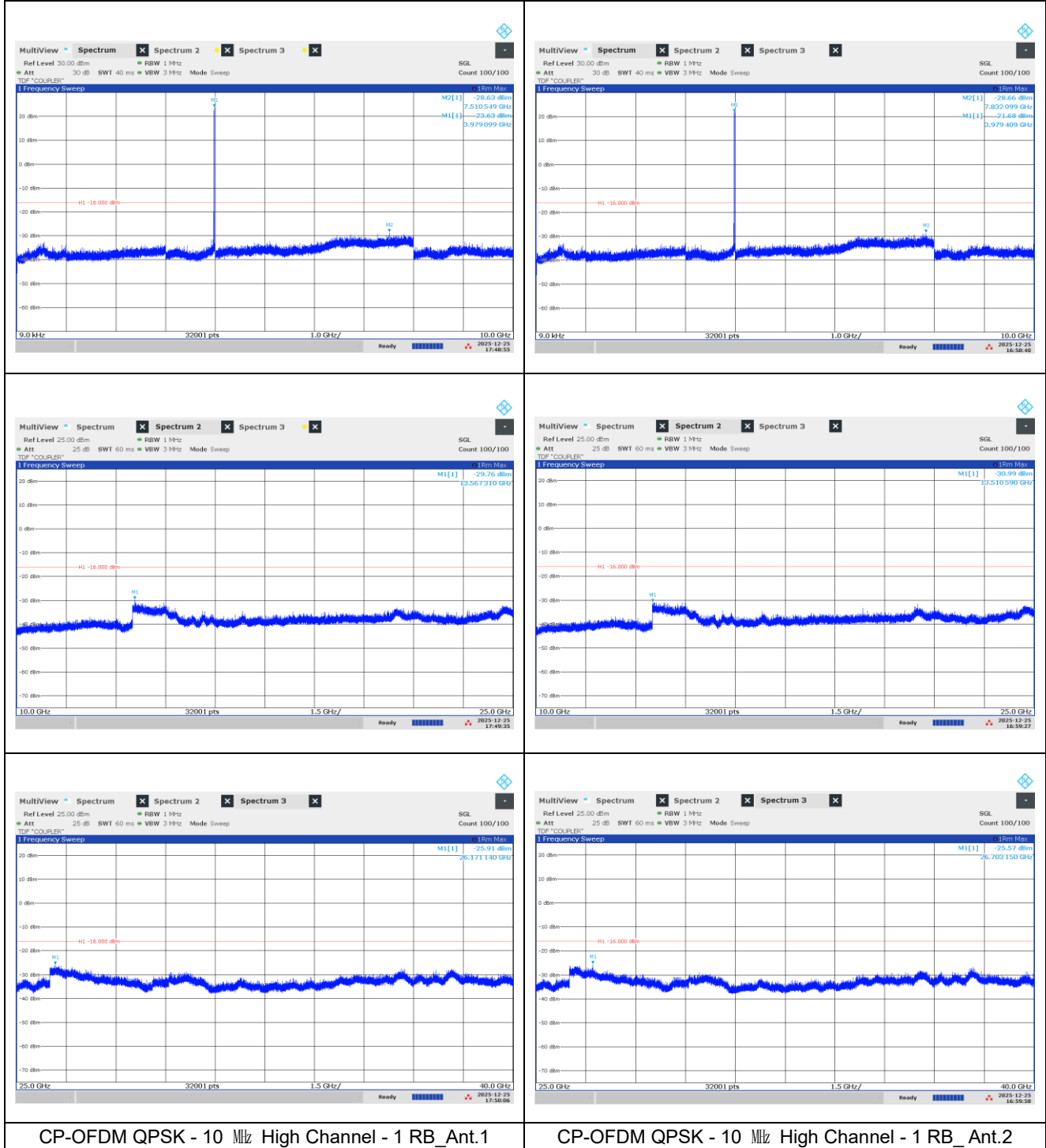
NR band 77_High Band (IC)



NR band 77_High Band (IC)



NR band 77_High Band (IC)



7. Band Edge and Emission Mask

7.1. Limit

FCC

- §27.53(l)(2), for mobile operations in the 3 700-3 980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

- §27.53(m)(4), for mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log_{10} (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log_{10} (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log_{10} (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log_{10} (P)$ dB on all frequencies between 2 490.5 MHz and 2 496 MHz and $55 + 10 \log_{10} (P)$ dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

- §27.53(n)(2), for mobile operations in the 3 450-3 550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

IC

- RSS-192 Issue 5

5.6, unwanted emissions shall be measured in terms of average values when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

If the transmitter is designed for multi-carrier operation, the tests shall be carried out using both the maximum and minimum number of carriers intended for the equipment.

5.6.3, subscriber equipment shall have the TRP or conducted power (per antenna), where applicable, of unwanted emission not exceeding the following:

a. the limits in table 6

b. a limit of -30 dBm/MHz in the frequency range greater than (B+5) MHz from the edge of the frequency band

Table 6: Unwanted emission limits for subscriber equipment

Frequency block group (B)	Offset frequency from the edge of the frequency block group (MHz)			
	0-1	1-5	5-B	>B
10 MHz, 20 MHz, 30 MHz and 40 MHz	-13 dBm/1% of B	-10 dBm/MHz	-13 dBm/MHz	-25 dBm/MHz
> 40 MHz	-13 dBm/400 kHz	-10 dBm/MHz	-13 dBm/MHz	-25 dBm/MHz

- RSS-198 Issue 1

5.6, unwanted emissions shall be measured in term of average value when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

5.6.1, the unwanted emission outside the frequency block group shall not exceed the TRP or total conducted power (sum of conducted power across all antenna connectors) limits as specified in table 2.

Table 2: Unwanted emission limits for all equipment

Offset frequency from the edge of the frequency block group (MHz)	Unwanted emission limits for all equipment
≤1	-13 dBm/1% OB*
>1	-13 dBm/MHz

*OB is the occupied bandwidth

- RSS-199 Issue 4

5.6, unwanted emissions shall be measured in terms of average values when the transmitter is operating at the manufacturer's rated power and modulated as specified in RSS-Gen.

Equipment shall meet the unwanted emission limits, specified below, outside each frequency block group. For each channel bandwidth supported by the equipment under test, the unwanted emissions shall be measured and reported for two channel frequencies: one located as close as possible to the low end and one located as close as possible to the high end of the equipment's operating frequency range.

For the unwanted emission limits, in the 1 MHz band immediately outside and adjacent to the frequency block group, the power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for fixed stations, base stations, and fixed subscriber equipment, and 2 % for subscriber equipment other than fixed subscriber equipment. Beyond this 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1 % or 2 % of the occupied bandwidth, as applicable.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors), where applicable, of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in the tables below.

Table 4: Unwanted emission limits for fixed station, base station and fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
≤1	-13 dB m/(1% of OB*)
>1	-13 dB m/MHz

* OB is the occupied bandwidth

Table 5: Unwanted emission limits for subscriber equipment other than fixed subscriber equipment

Offset from the edge of the frequency block or frequency block group (MHz)	Unwanted emission limit
0-1	-10 dB m/(2% of OB*)
1-5	-10 dB m/MHz
5-X**	-13 dB m/MHz
≥X	-25 dB m/MHz

* OB is the occupied bandwidth

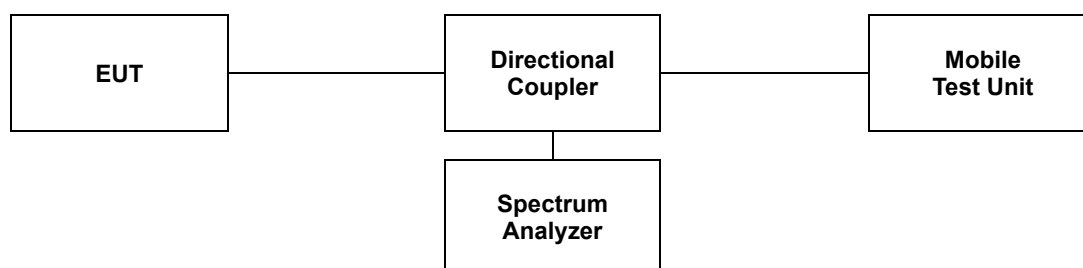
** X is 6 MHz or the equipment occupied bandwidth, whichever is greater

In addition to complying with the limits in table 5, subscriber equipment other than fixed subscriber equipment shall not exceed -13 dB m/MHz on all frequencies between 2 490.5 MHz and 2 496 MHz, and -25 dB m/MHz at or below 2 490.5 MHz.

7.2. Test Procedure

The test follows section 5.7 of ANSI C63.26-2015.

- Span was set large enough so as to capture all out of band emissions near the band edge.
- RBW $\geq 1\%$ of OBW
- VBW $\geq 3 \times$ RBW.
- Detector = RMS.
- Trace mode = Average.
- Sweep time = Auto.
- The trace was allowed to stabilize.
- All path loss of frequency range was investigated and compensated to spectrum analyzer as TDF function.



The limits were adjusted by a factor of $10 \cdot \log(2)$ dB to account for the device operation as a 2 port MIMO transmitter, as per KDB 622911. MIMO factor calculation as below:

$$\text{MIMO Factor} = 10 \cdot \log(2) = 3.01 \text{ dB}$$

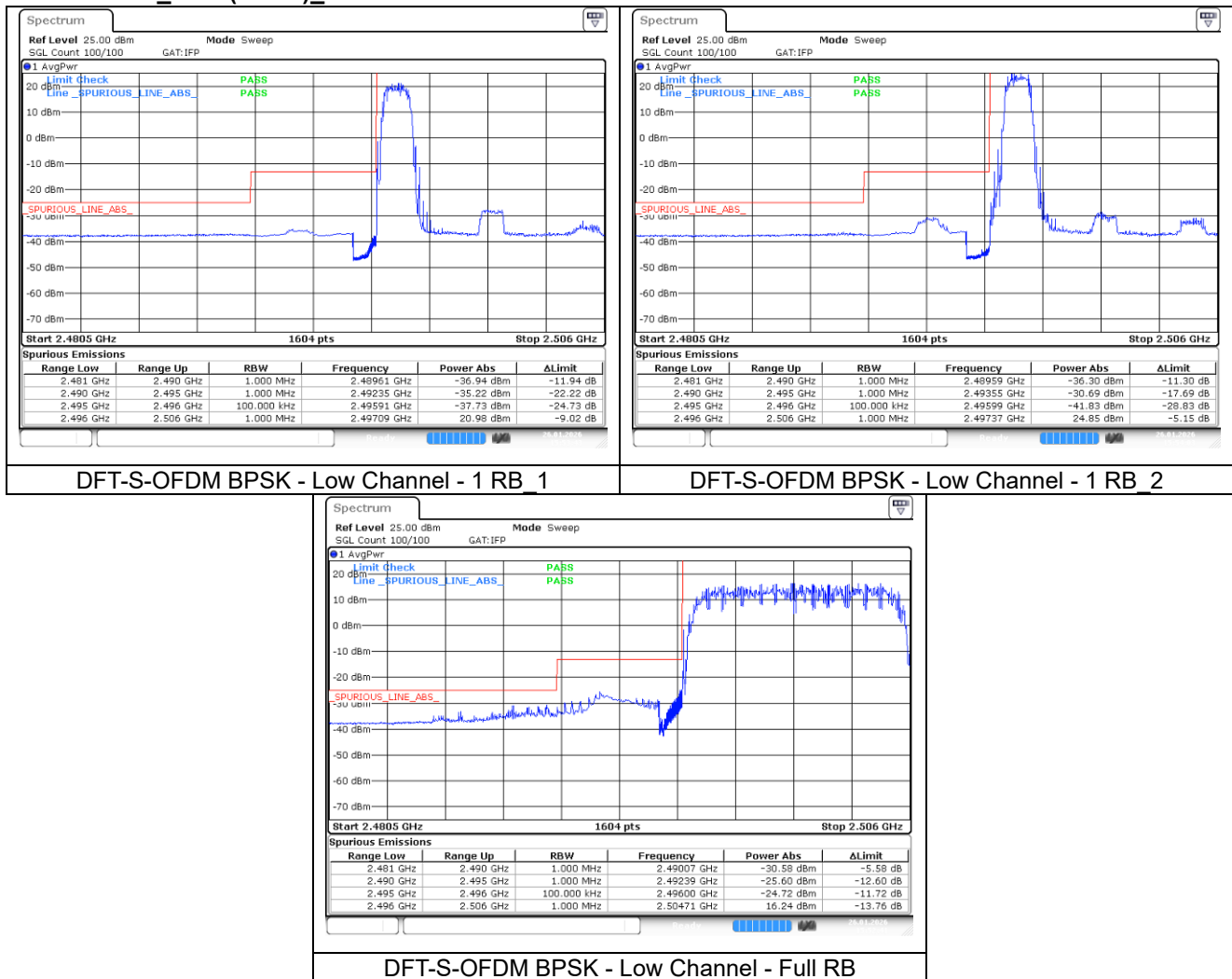
Frequency (MHz)	Basic Limit (dB m)	MIMO Factor (dB)	Adjusted Limit (dB m)
3 450 – 3 550 (FCC)	-13	3.01	-16.01
3 550 – 3 700 (FCC)	-13	3.01	-16.01
3 450 – 3 900 (IC)	-30	3.01	-33.01
3 900 – 3 980 (IC)	-13	3.01	-16.01

7.3. Test Results

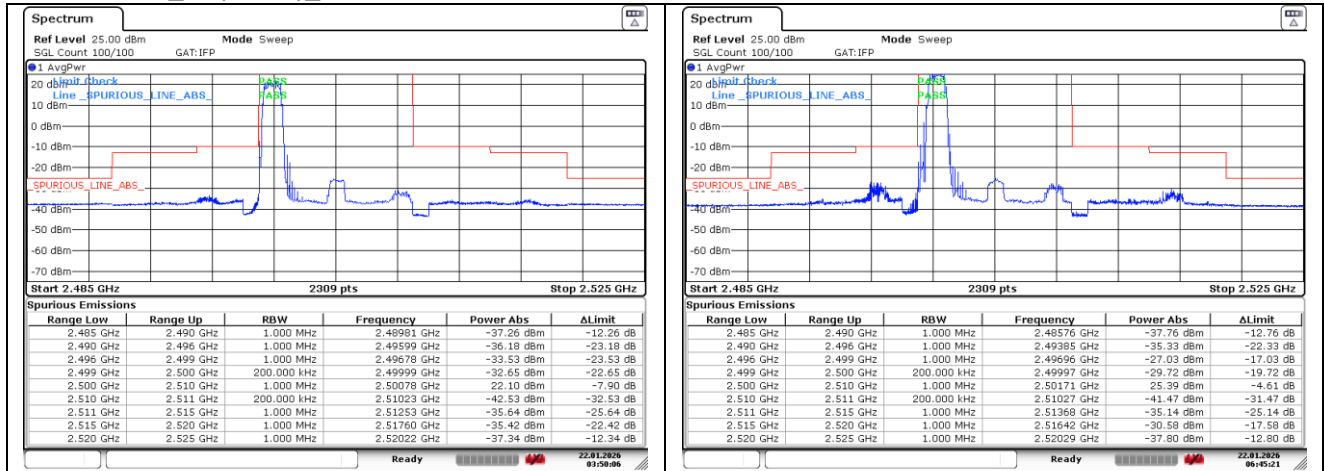
Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 %

- Test plots

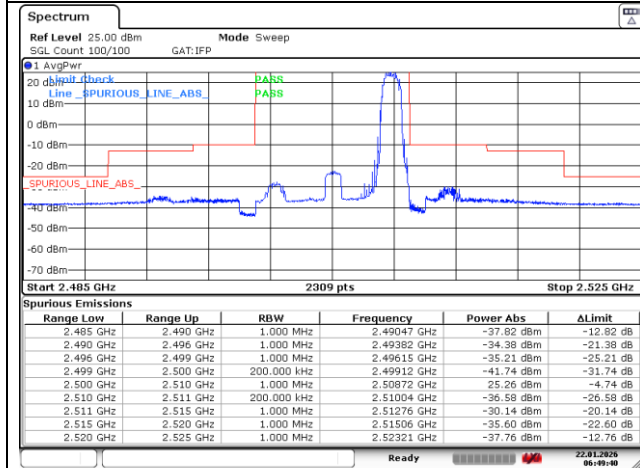
NR band 41_FCC (10 MHz)_SISO



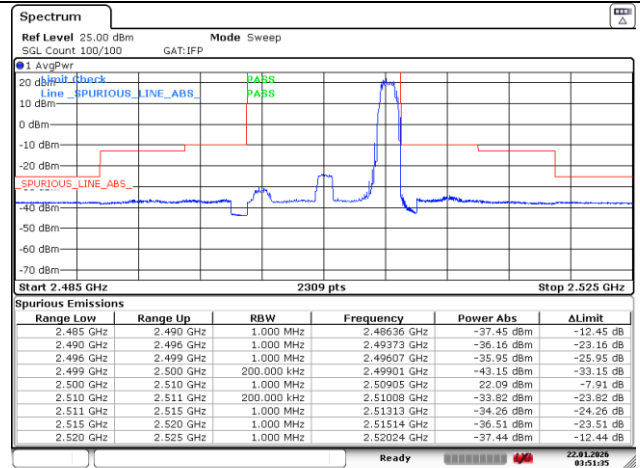
NR band 41_IC (10 MHz)_SISO



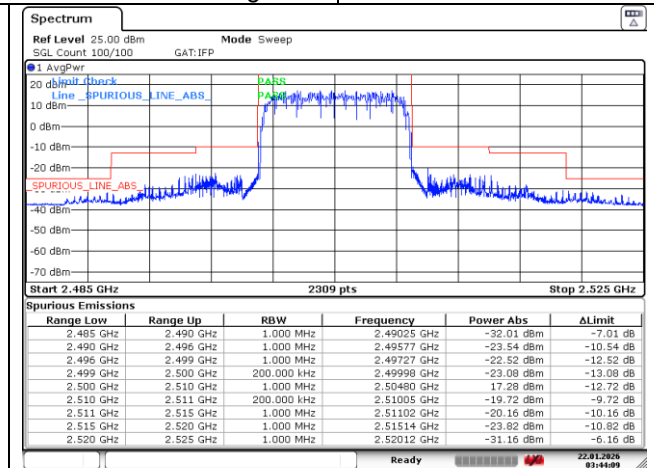
DFT-S-OFDM BPSK - Low Channel - 1 RB – Left 1



DFT-S-OFDM BPSK - Low Channel - 1 RB – Left 2



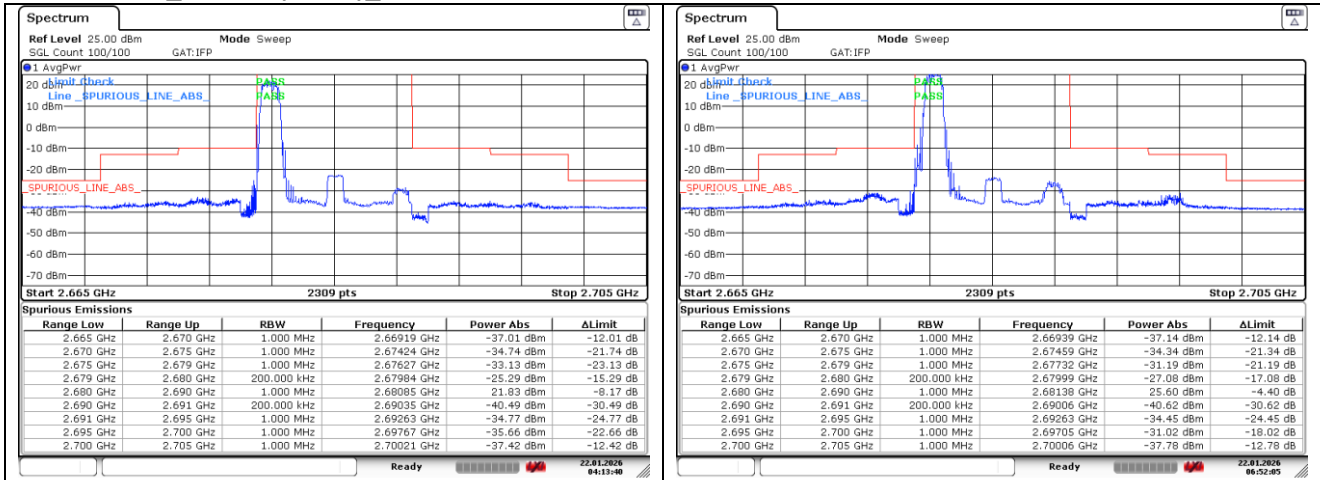
DFT-S-OFDM BPSK - Low Channel - 1 RB – Right 1



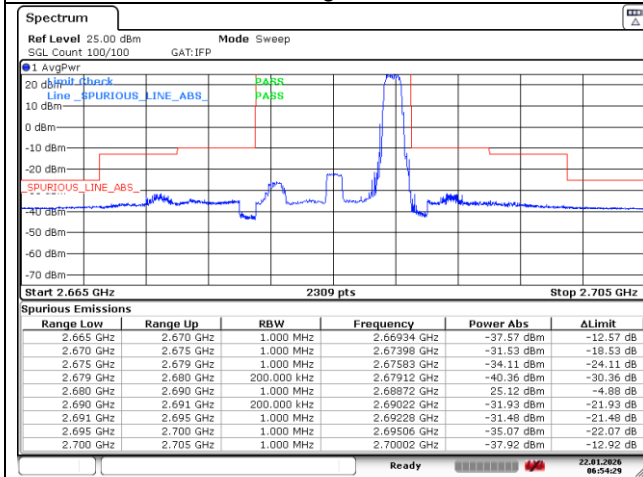
DFT-S-OFDM BPSK - Low Channel - 1 RB – Right 2

DFT-S-OFDM BPSK - Low Channel - Full RB

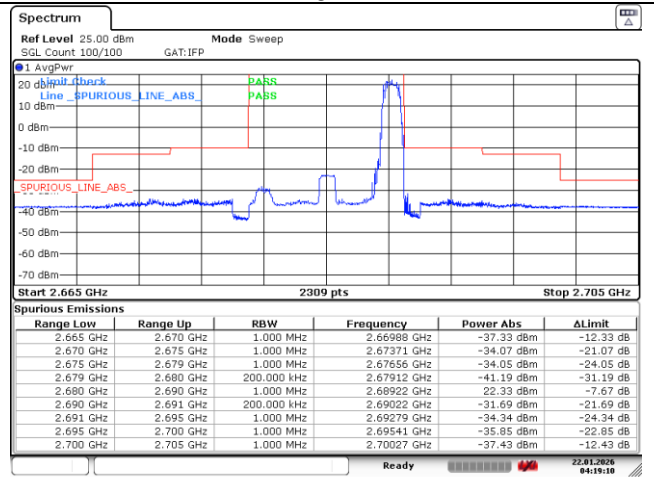
NR band 41_FCC/IC (10 MHz)_SISO



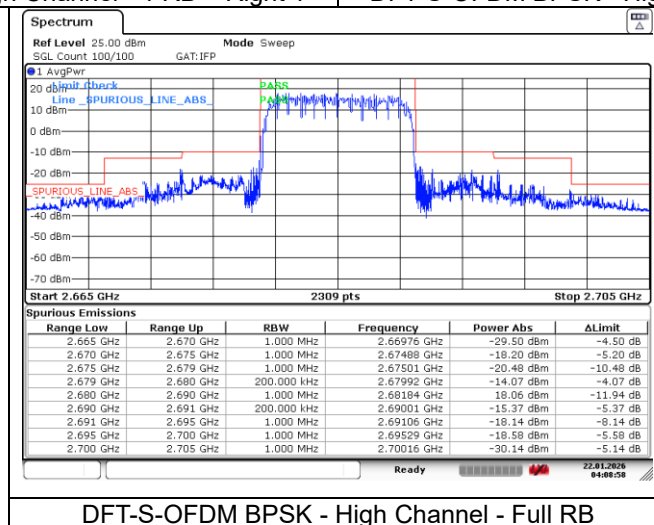
DFT-S-OFDM BPSK - High Channel - 1 RB – Left 1



DFT-S-OFDM BPSK - High Channel - 1 RB – Left 2



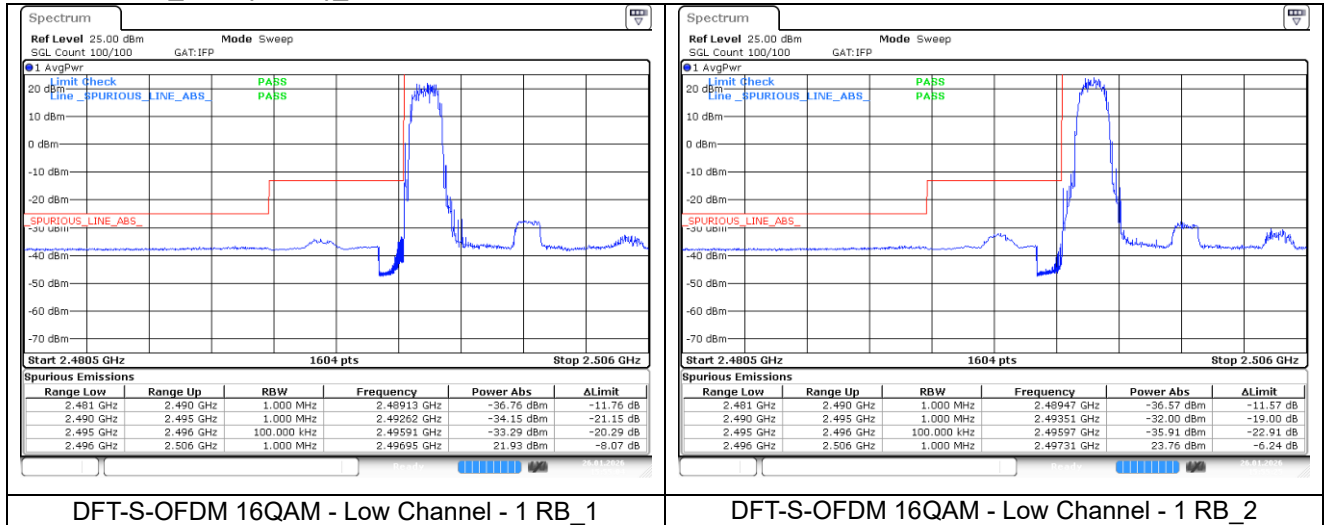
DFT-S-OFDM BPSK - High Channel - 1 RB – Right 1



DFT-S-OFDM BPSK - High Channel - 1 RB – Right 2

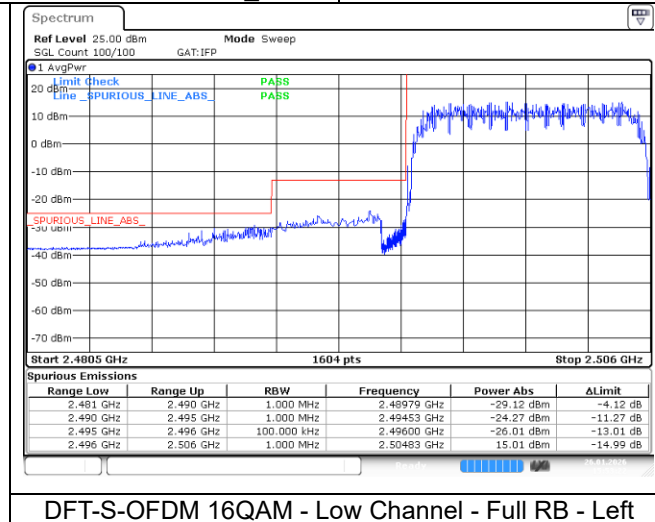
DFT-S-OFDM BPSK - High Channel - Full RB

NR band 41_FCC (10 MHz)_SISO



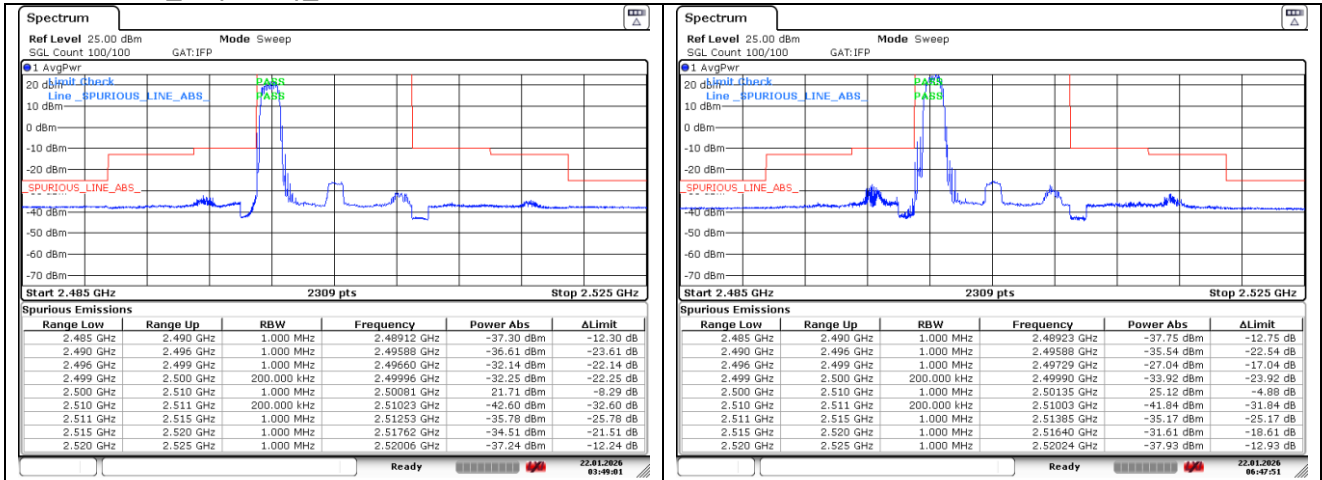
DFT-S-OFDM 16QAM - Low Channel - 1 RB_1

DFT-S-OFDM 16QAM - Low Channel - 1 RB_2

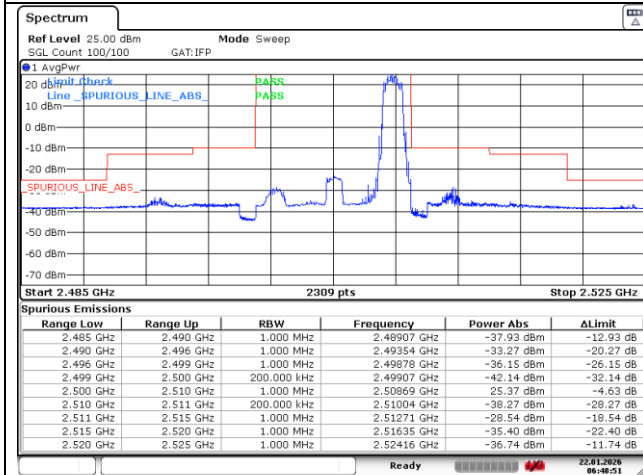


DFT-S-OFDM 16QAM - Low Channel - Full RB - Left

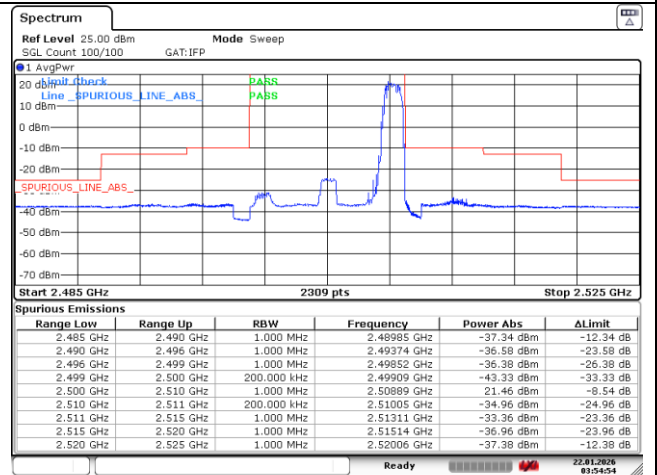
NR band 41_IC (10 MHz)_SISO



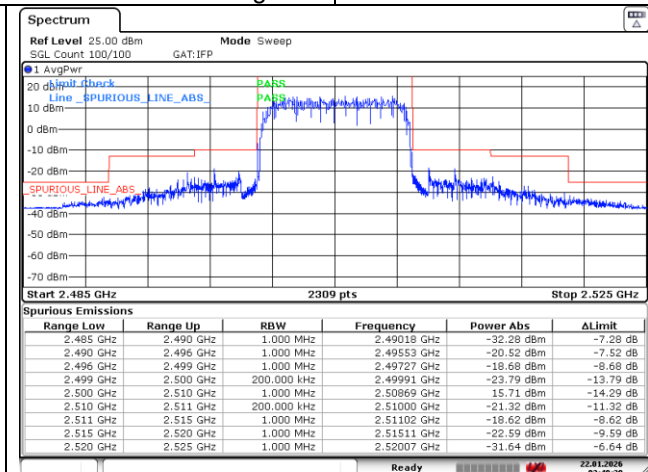
DFT-S-OFDM 16QAM - Low Channel - 1 RB – Left 1



DFT-S-OFDM 16QAM - Low Channel - 1 RB – Left 2

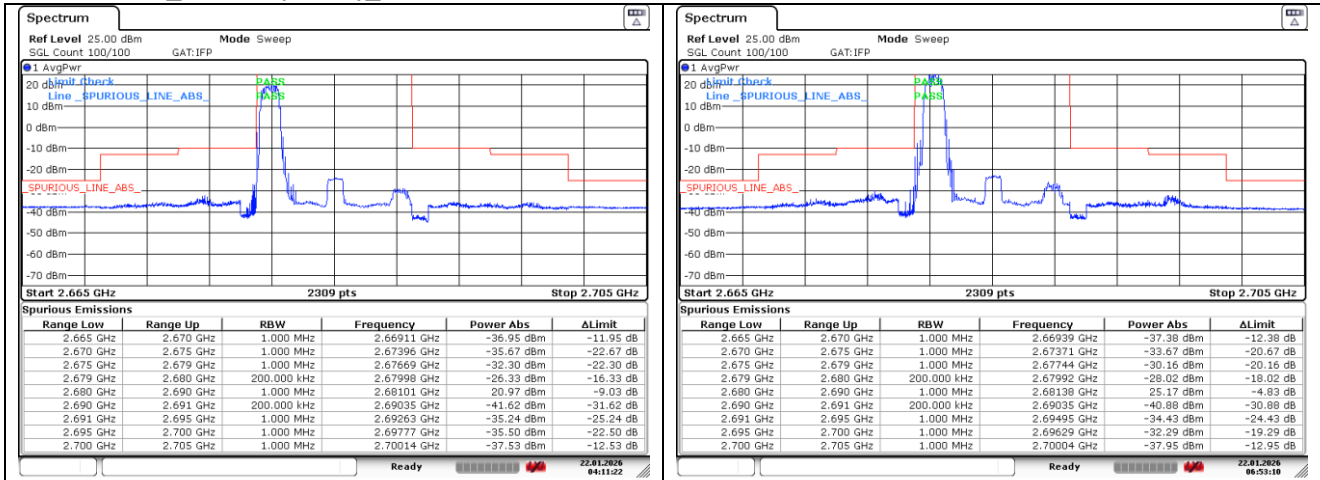


DFT-S-OFDM 16QAM - Low Channel - 1 RB – Right 1

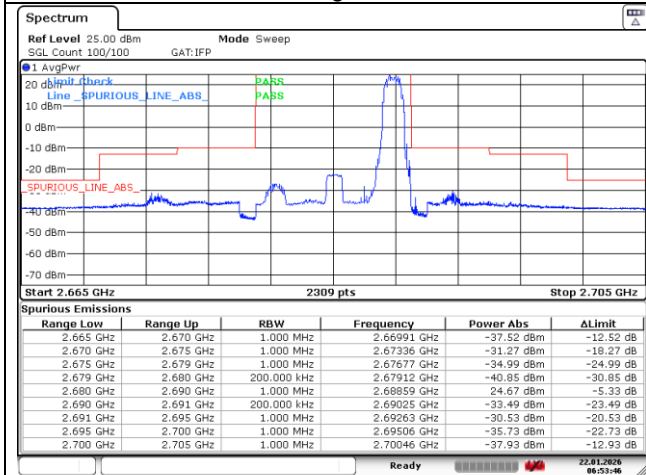


DFT-S-OFDM 16QAM - Low Channel - Full RB - Left

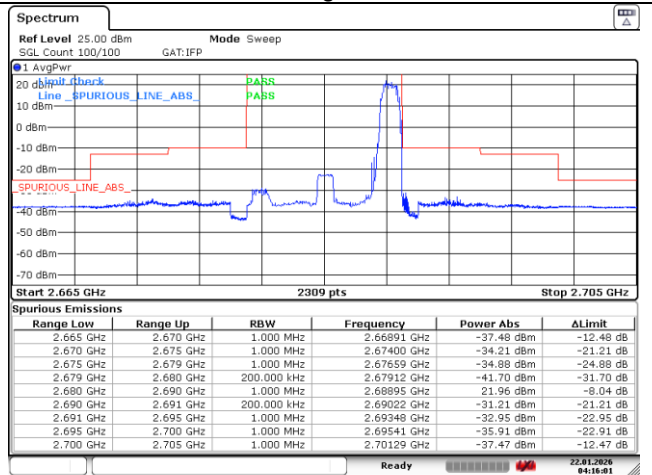
NR band 41_FCC/IC (10 MHz)_SISO



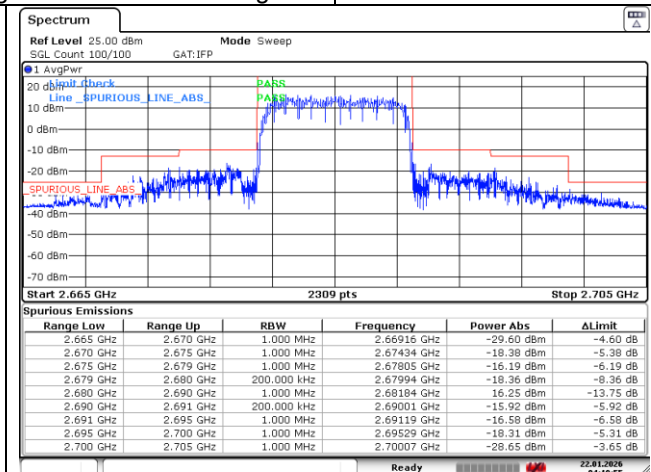
DFT-S-OFDM 16QAM - High Channel - 1 RB – Left 1



DFT-S-OFDM 16QAM - High Channel - 1 RB – Left 2

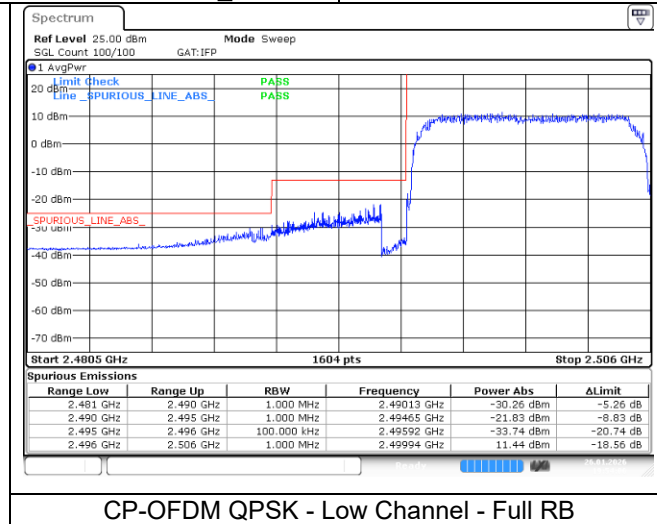
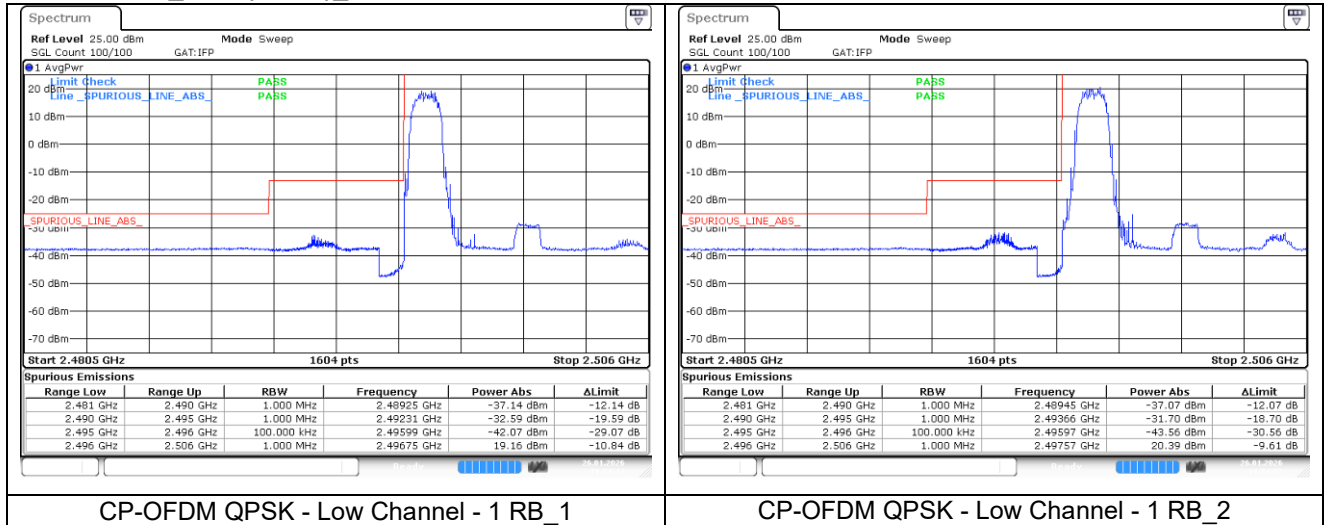


DFT-S-OFDM 16QAM - High Channel - 1 RB – Right 1

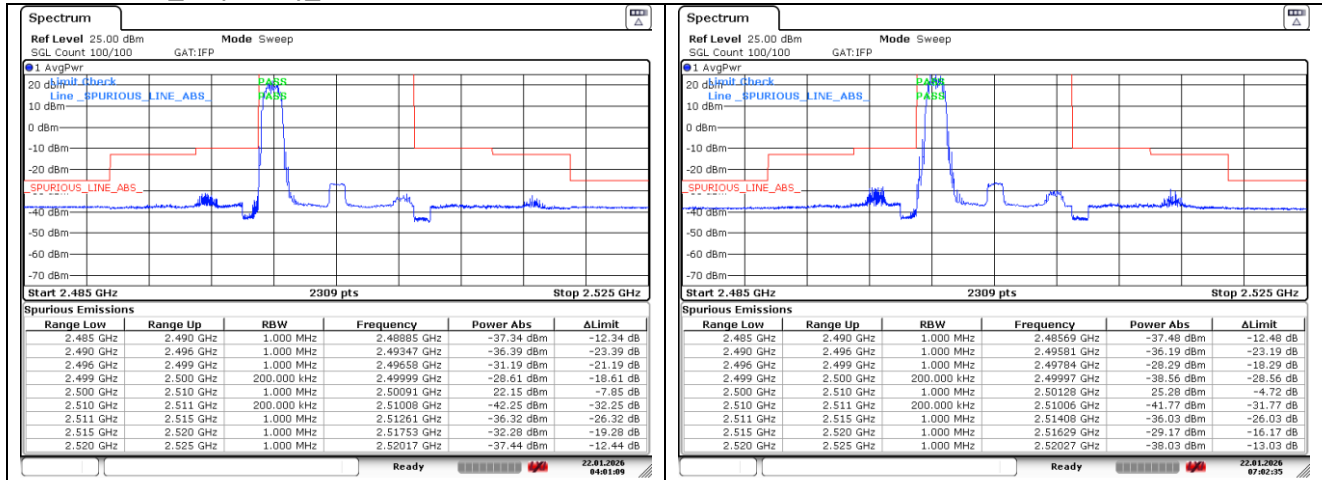


DFT-S-OFDM 16QAM - High Channel - Full RB

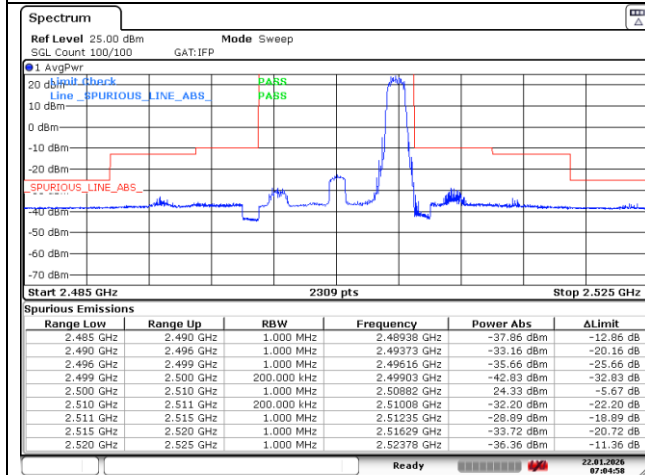
NR band 41_FCC (10 MHz)_SISO



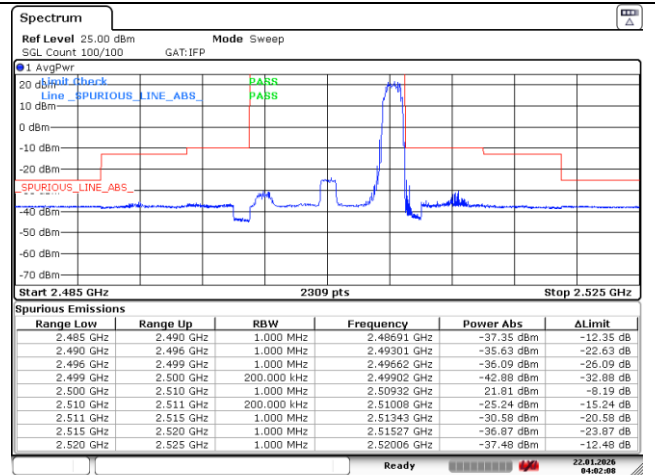
NR band 41_IC (10 MHz)_SISO



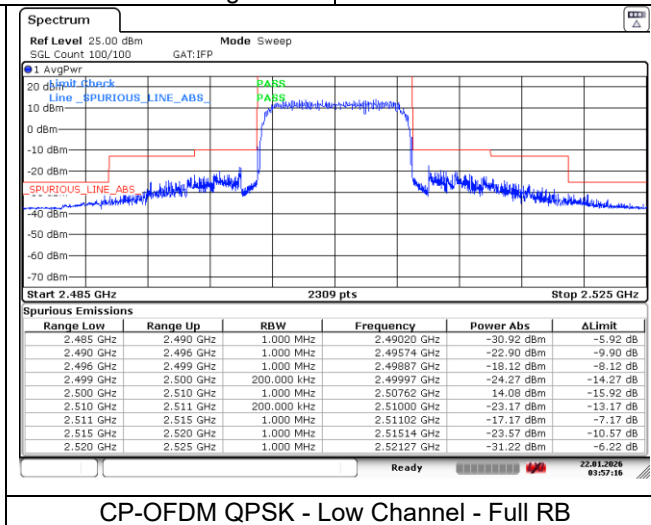
CP-OFDM QPSK - Low Channel - 1 RB – Left 1



CP-OFDM QPSK - Low Channel - 1 RB – Left 2



CP-OFDM QPSK - Low Channel - 1 RB – Right 1



CP-OFDM QPSK - Low Channel - Full RB