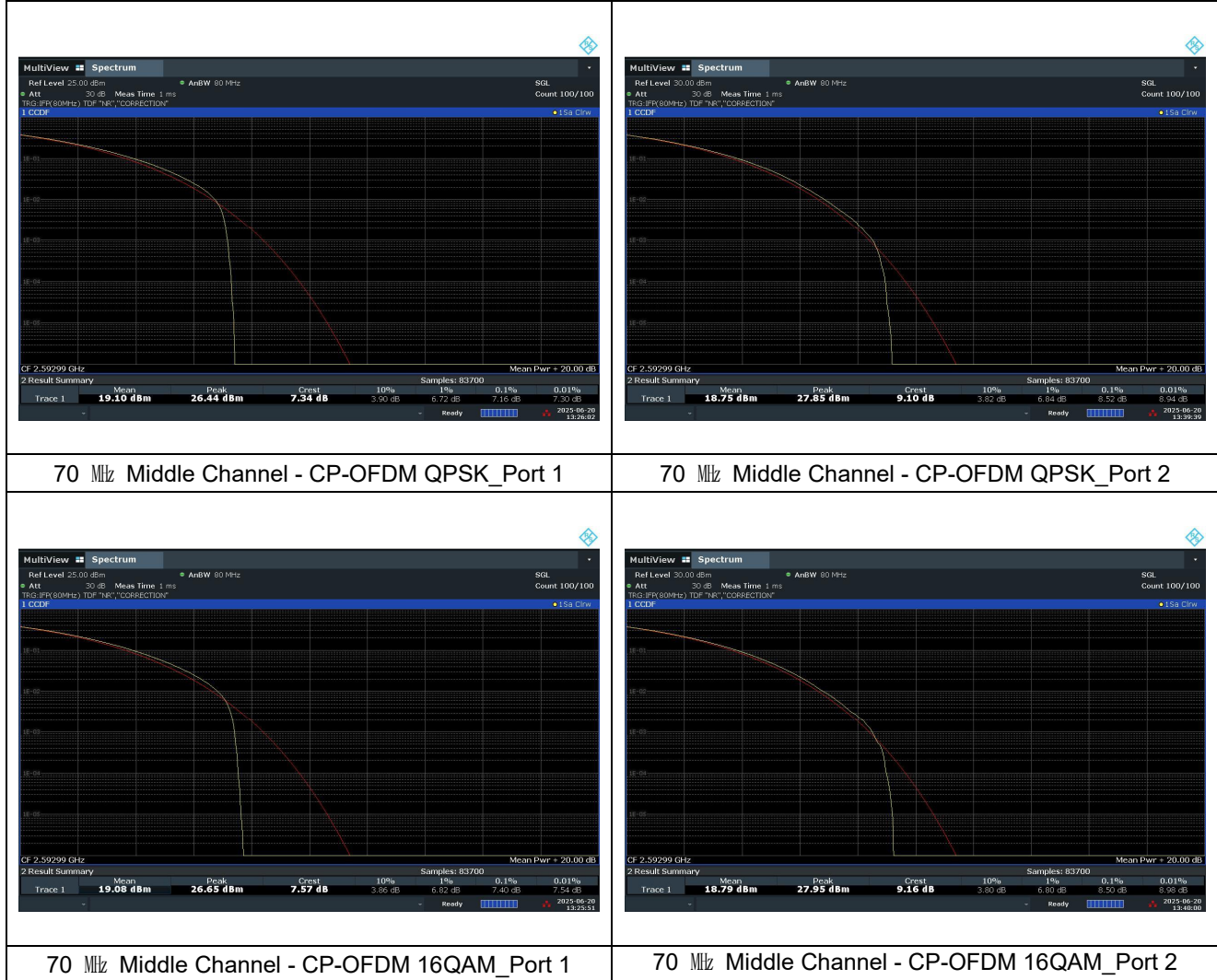
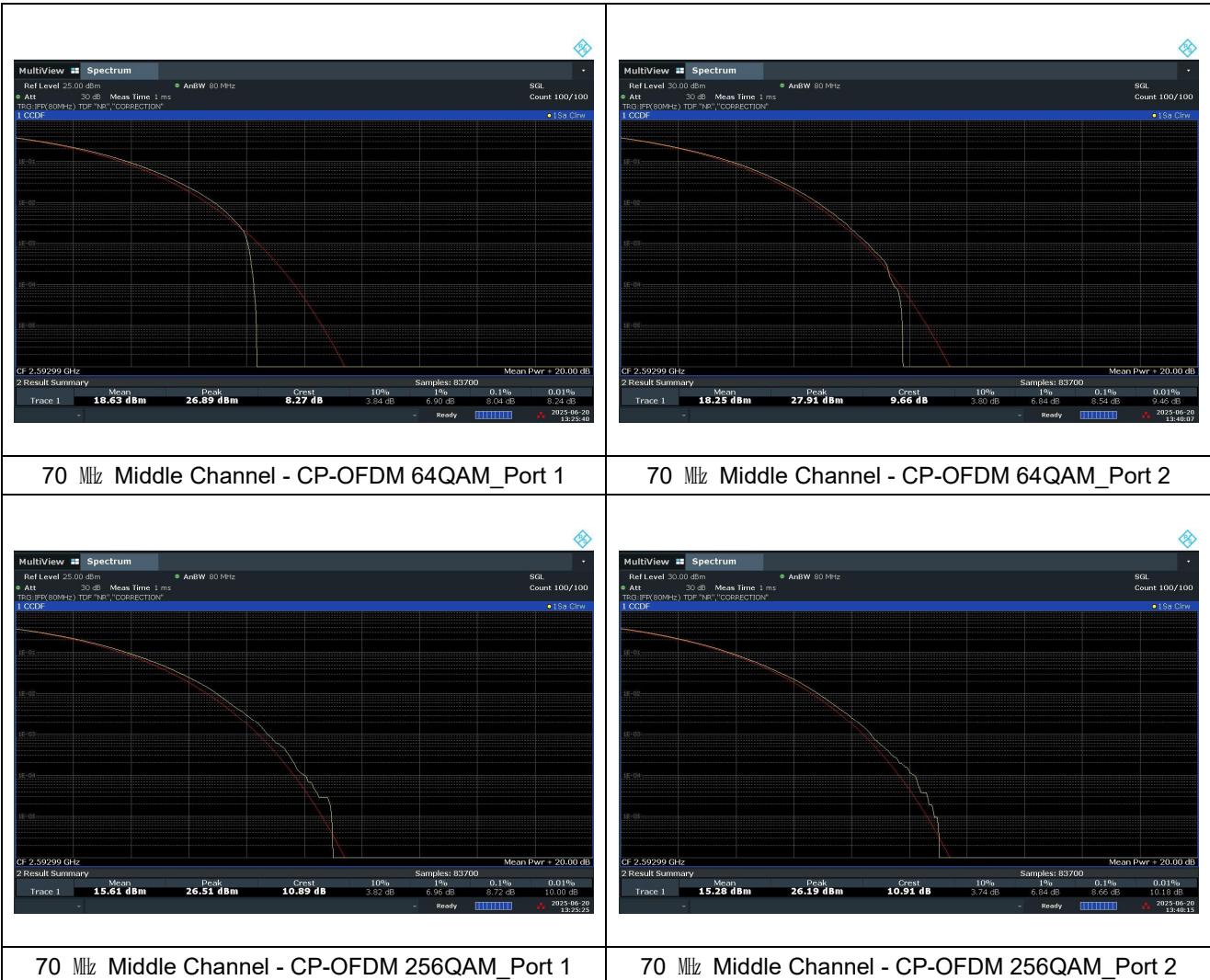


MIMO

NR band 41





5. Spurious Emissions at Antenna Terminal

5.1. Limit

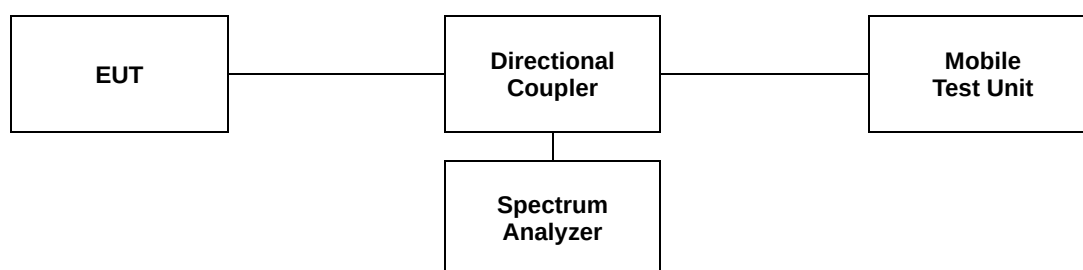
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

- §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.

5.2. Test Procedure

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

1. Start frequency was set to 9 kHz and stop frequency was set to at least 10* the fundamental frequency.
2. Detector = RMS.
3. Trace mode = Max hold.
4. Sweep time = Auto couple.
5. The trace was allowed to stabilize.
6. Please see notes below for RBW and VBW settings.
7. For plots showing conducted spurious emissions from 9 kHz to 10th harmonic of the fundamental frequency, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function.



Note;

1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two point, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

2. 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:

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

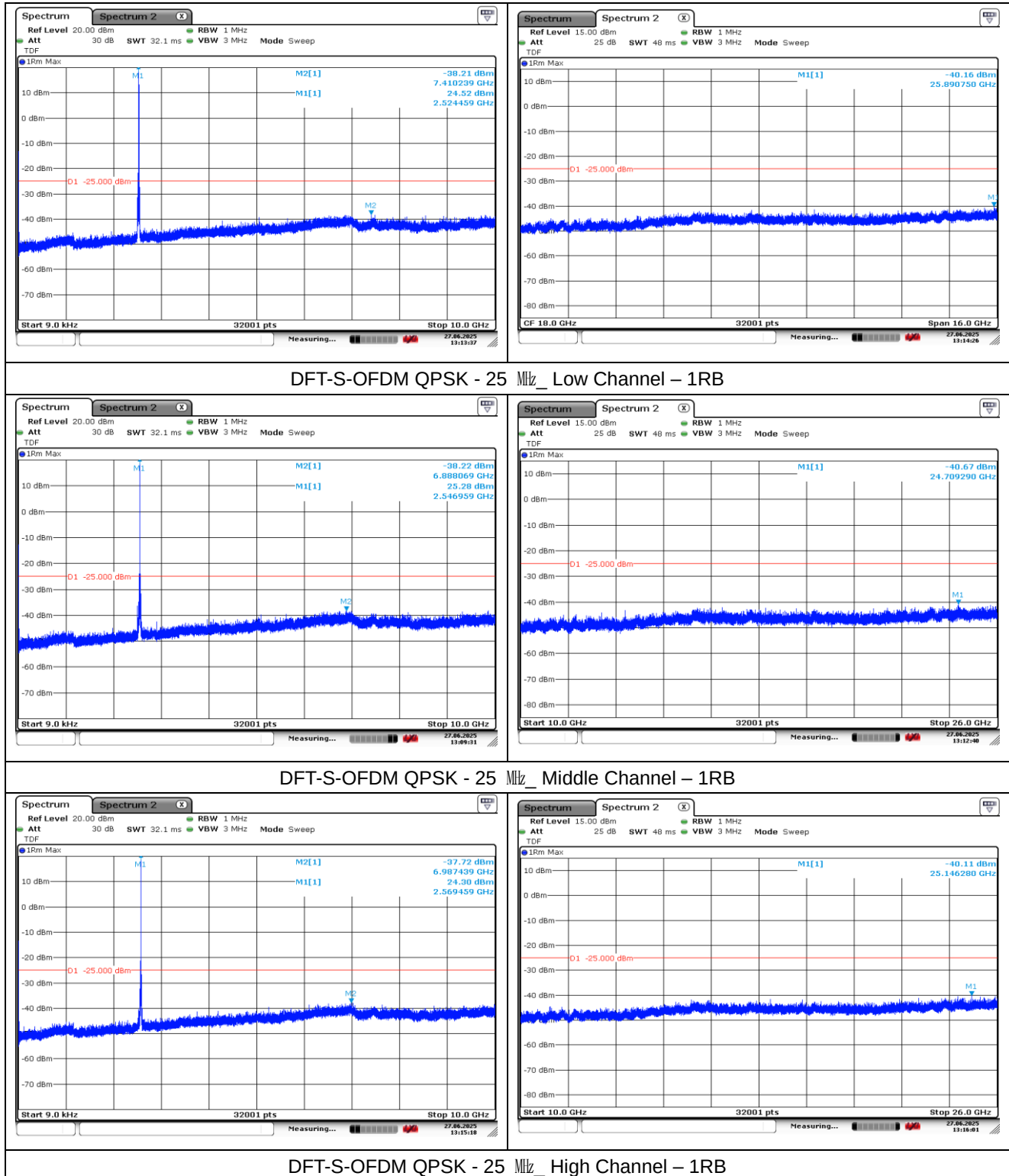
Frequency Range	Basic Limit (dB m)	MIMO Factor (dB)	Adjusted Limit (dB m)
Below 2 490.5 MHz and above X MHz from channel edges	-25	3.01	-28.01

5.3. Test Results

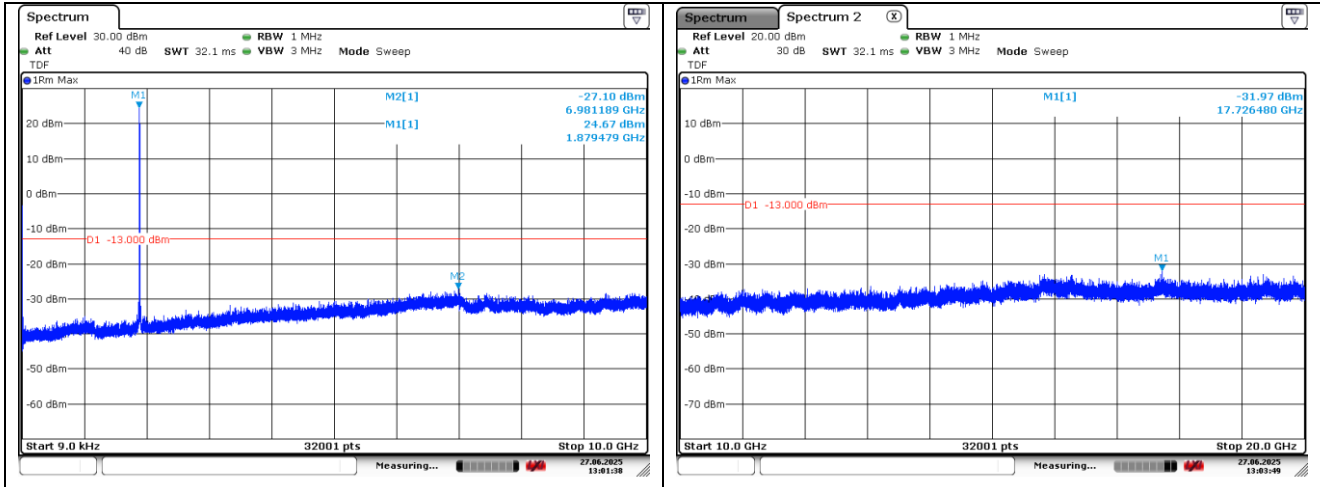
Ambient temperature : $(23 \pm 1) ^\circ\text{C}$
 Relative humidity : 47 % R.H.

- Test plots

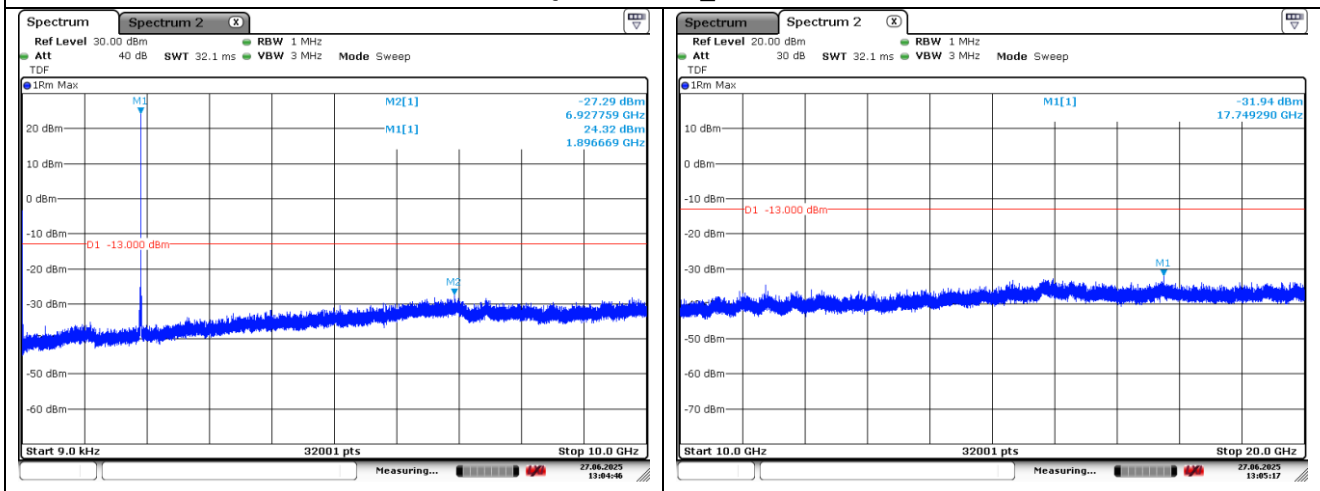
NR band 7



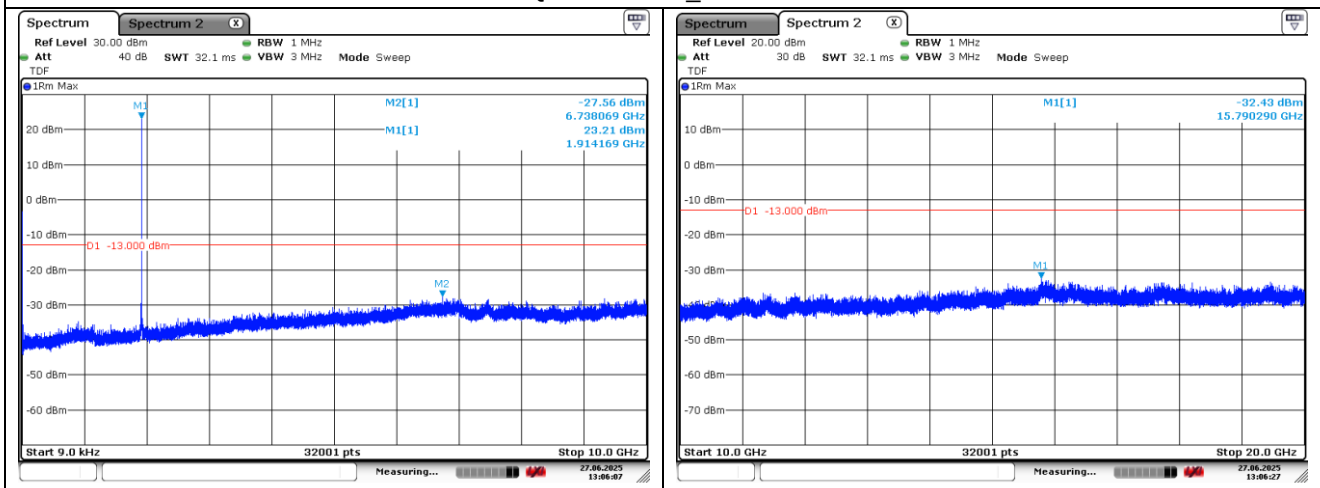
NR band 25



DFT-S-OFDM QPSK - 30 MHz Low Channel - 1RB

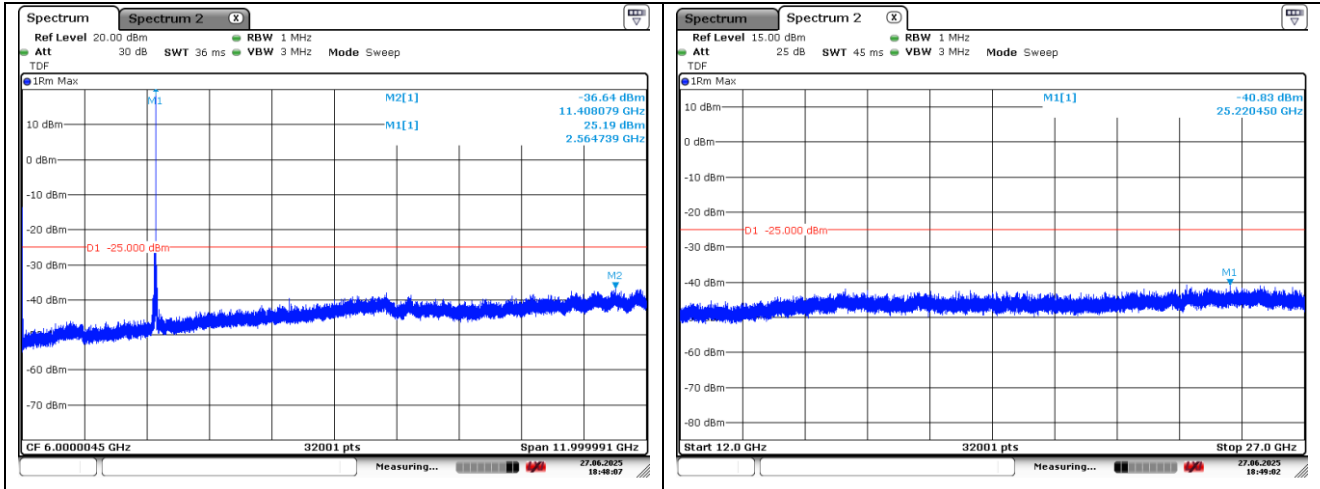


DFT-S-OFDM QPSK - 30 MHz Middle Channel - 1RB

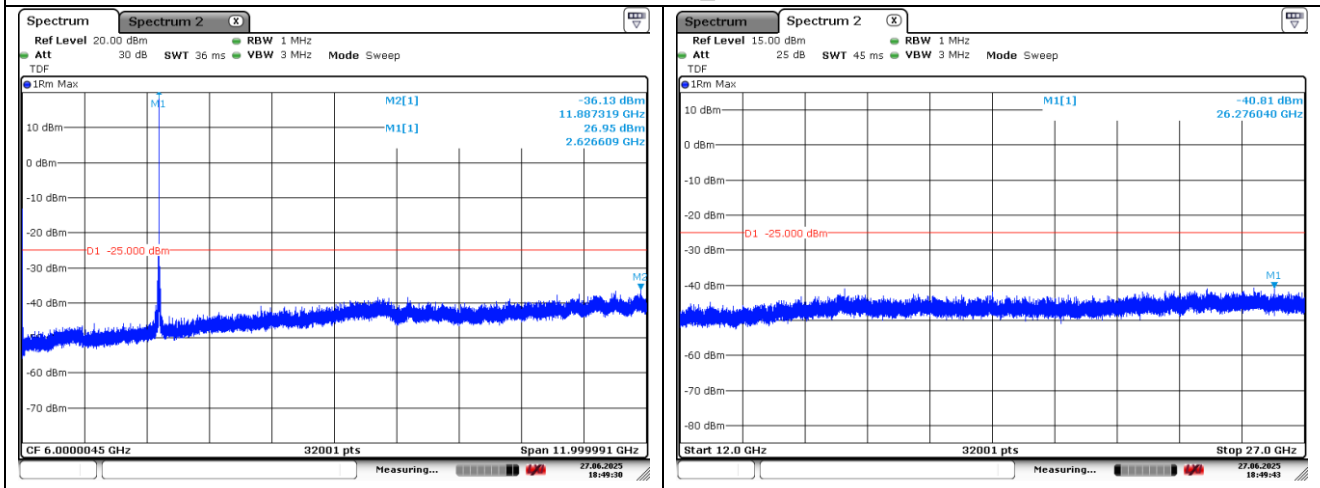


DFT-S-OFDM QPSK - 30 MHz High Channel - 1RB

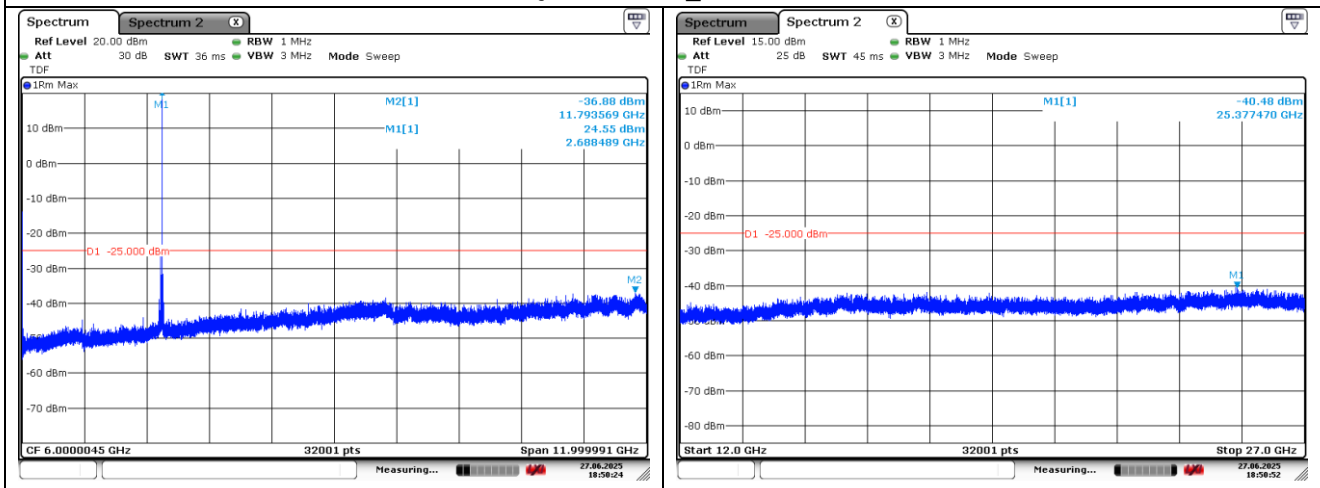
NR band 41



DFT-S-OFDM QPSK - 70 MHz Low Channel - 1RB



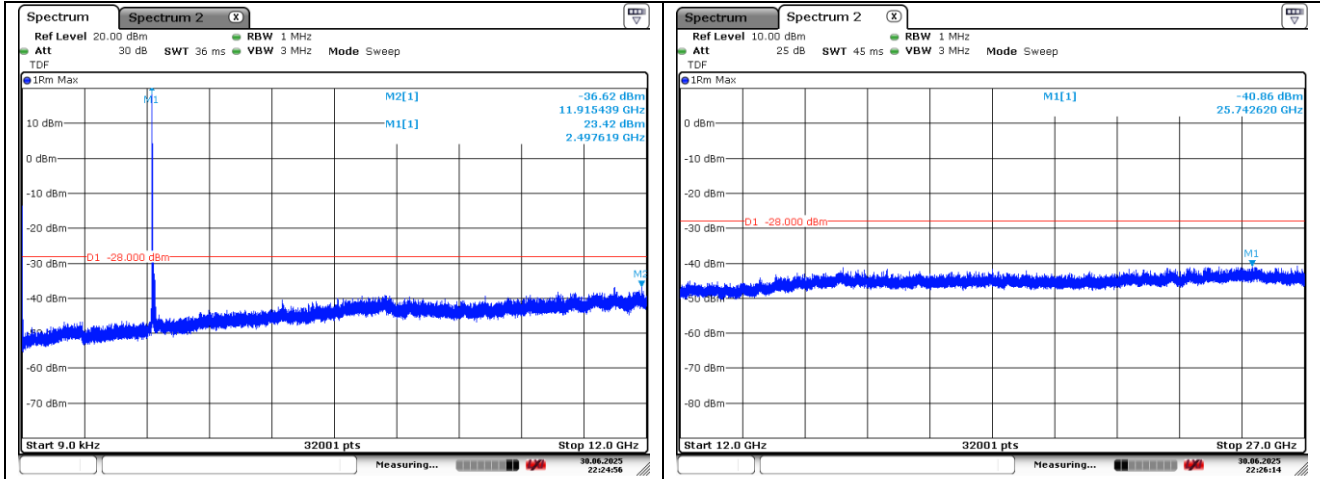
DFT-S-OFDM QPSK - 70 MHz Middle Channel - 1RB



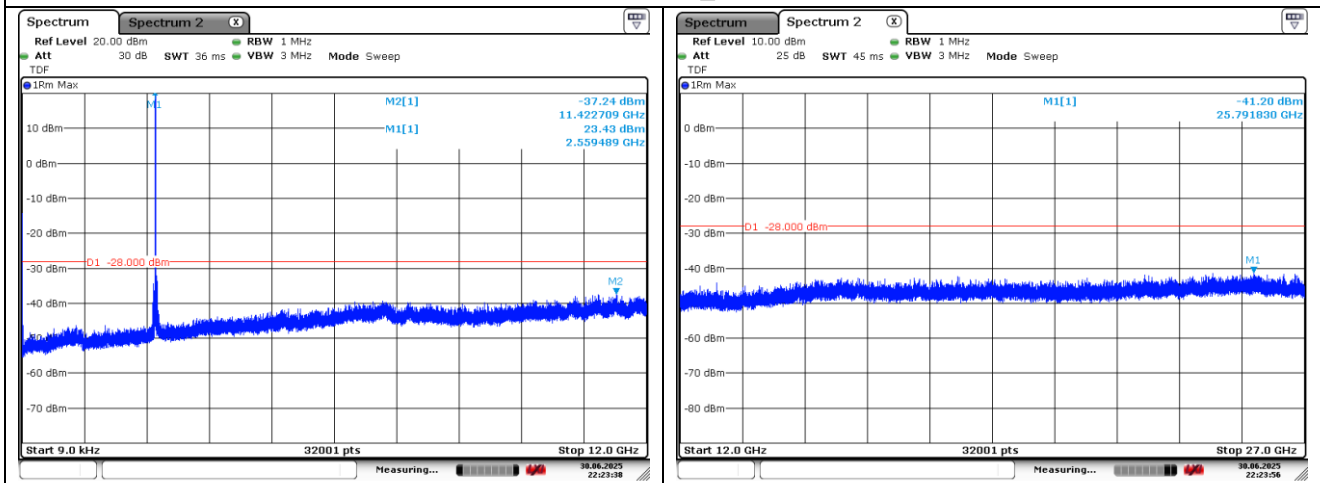
DFT-S-OFDM QPSK - 70 MHz High Channel - 1RB

MIMO

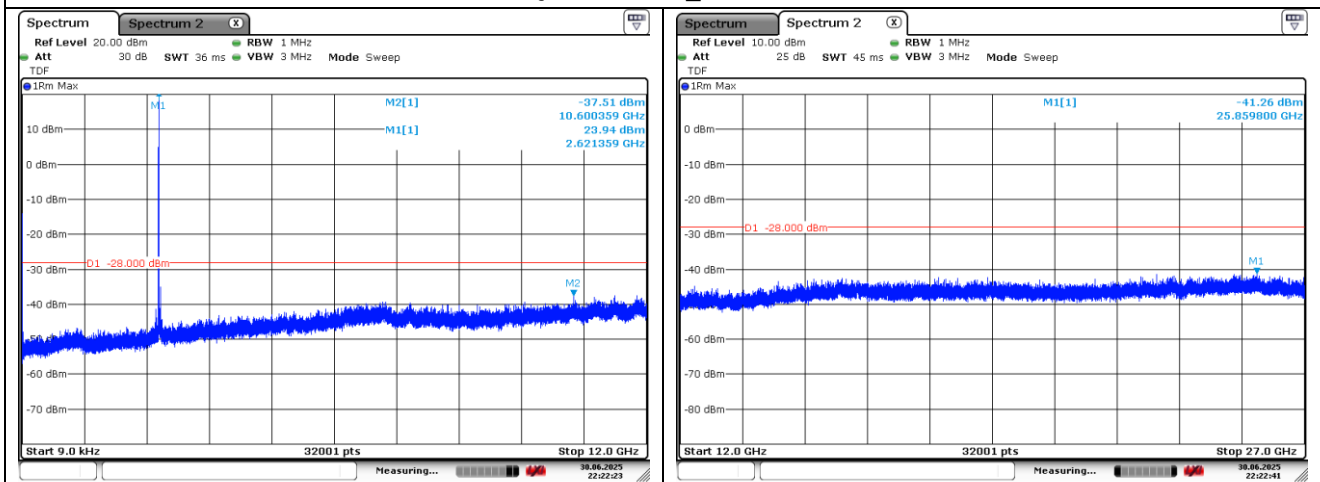
NR band 41 Port 1



DFT-S-OFDM QPSK - 70 MHz Low Channel - 1RB

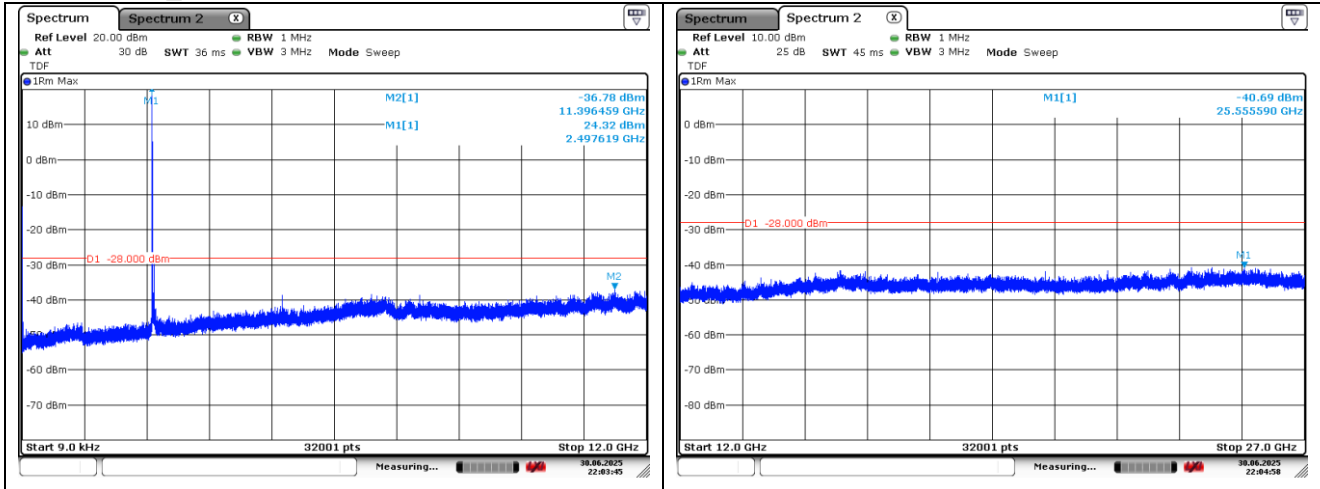


DFT-S-OFDM QPSK - 70 MHz Middle Channel - 1RB

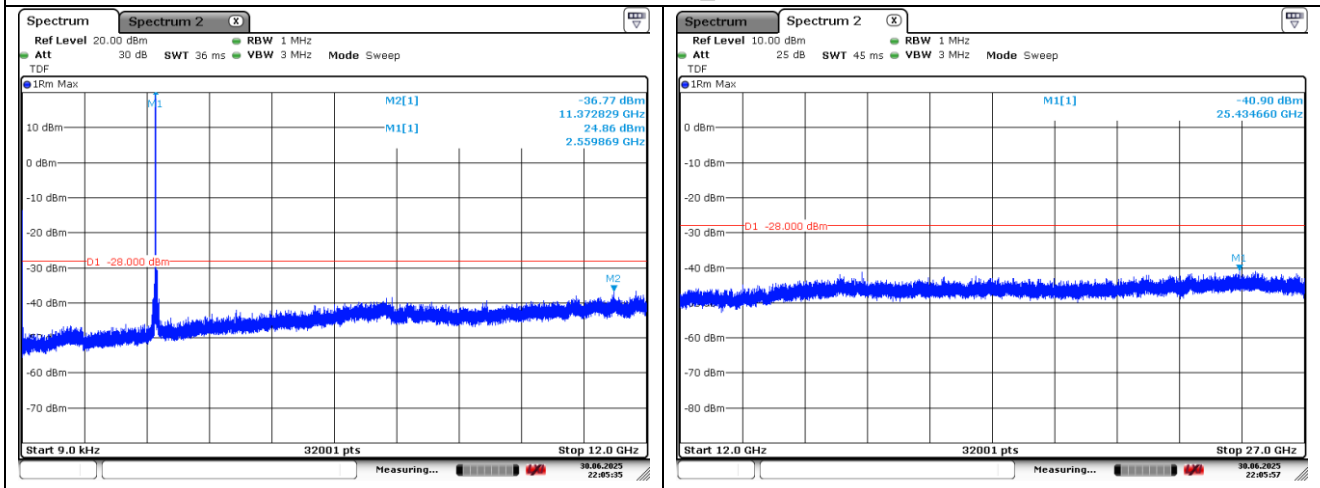


DFT-S-OFDM QPSK - 70 MHz High Channel - 1RB

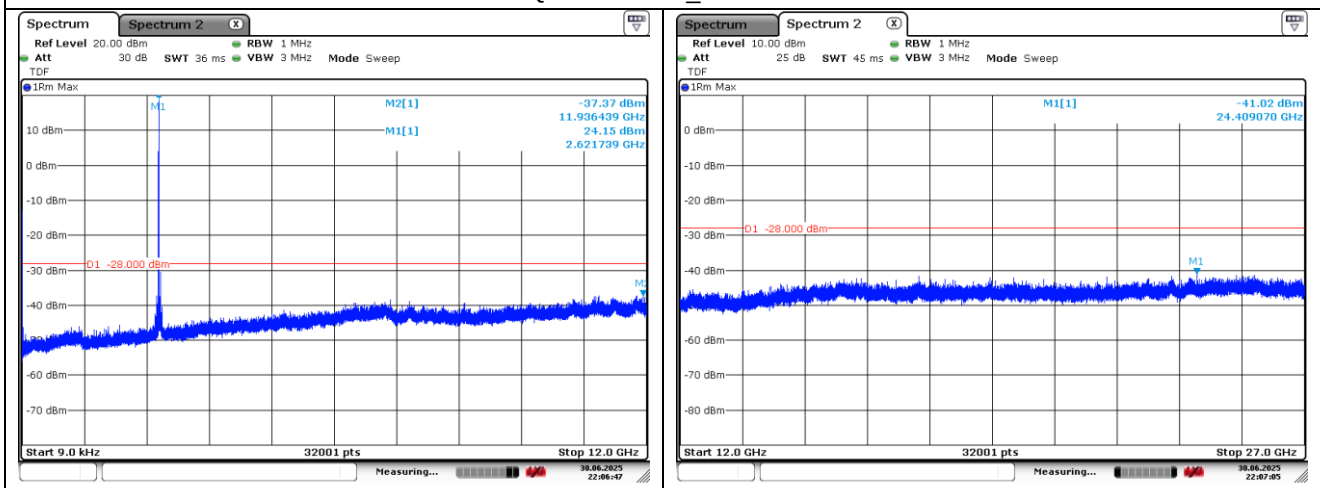
NR band 41 Port 2



DFT-S-OFDM QPSK - 70 MHz Low Channel - 1RB



DFT-S-OFDM QPSK - 70 MHz Middle Channel - 1RB



DFT-S-OFDM QPSK - 70 MHz High Channel - 1RB

6. Band Edge and Emission Mask

6.1. Limit

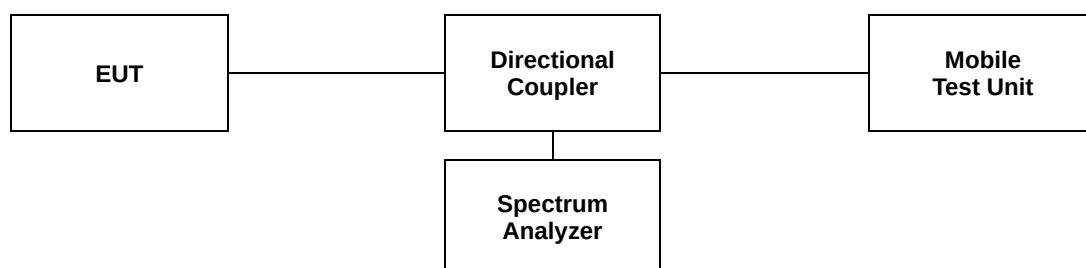
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

- §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.

6.2. 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.



Note;

1. In case of MIMO mode, 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:

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

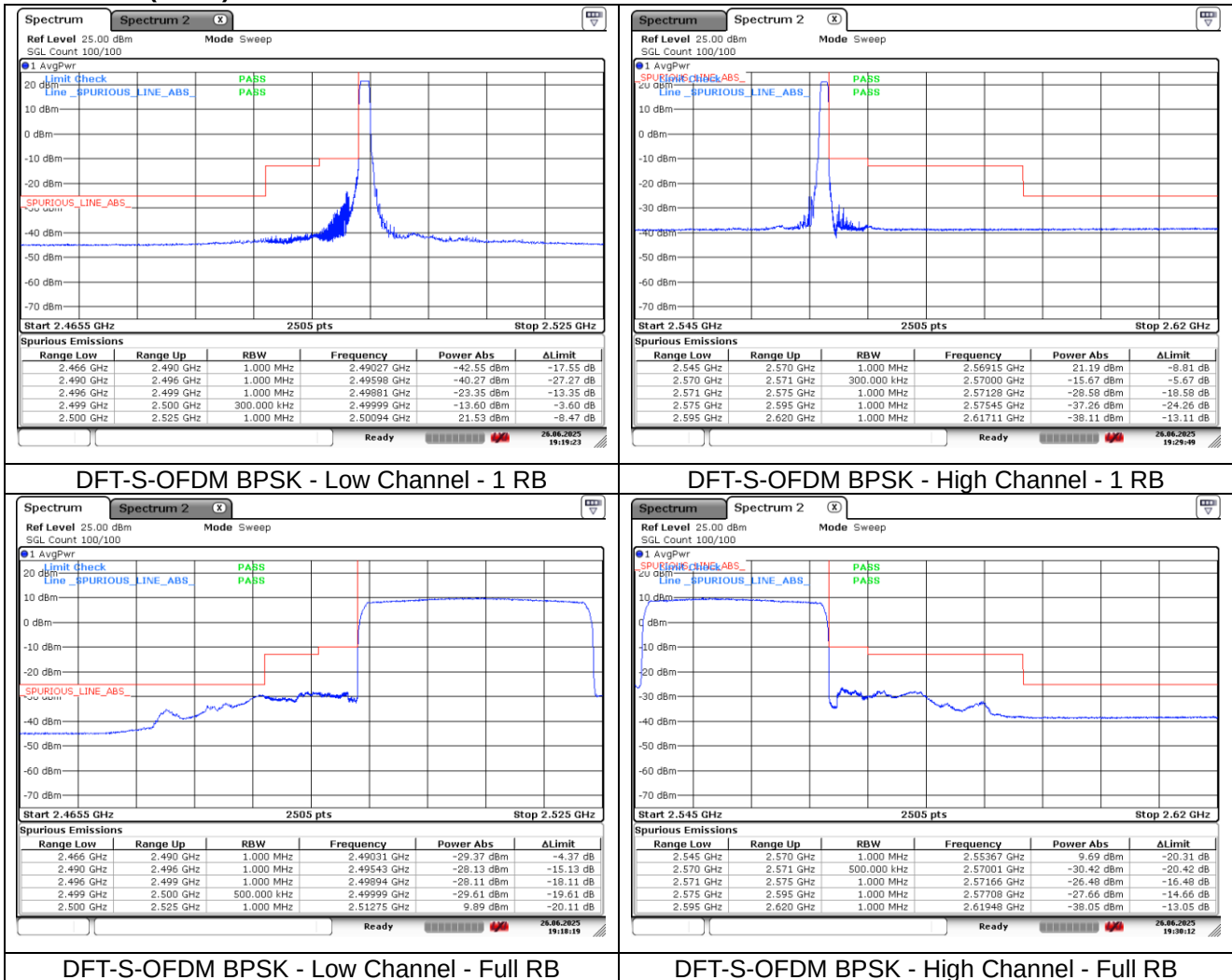
Offset from the edge of the frequency block or frequency block group (MHz)	Basic Limit (dB m/MHz)	MIMO Factor (dB)	Adjusted Limit (dB m/MHz)
0-1	-10	3.01	-13.01
1-5	-10	3.01	-13.01
5-X**	-13	3.01	-16.01
$\geq X$	-25	3.01	-28.01

6.3. Test Results

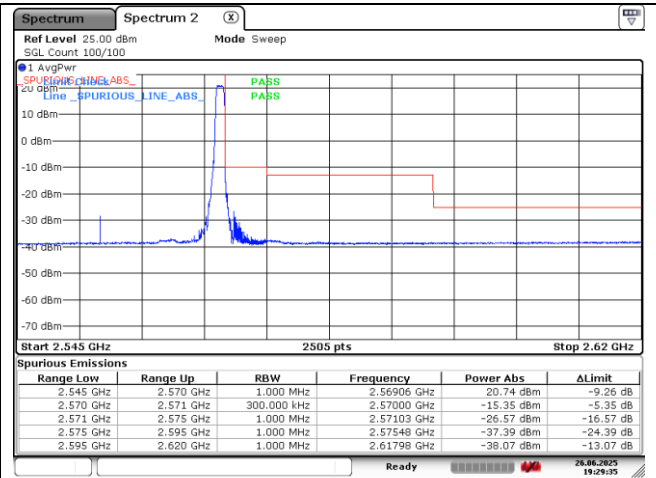
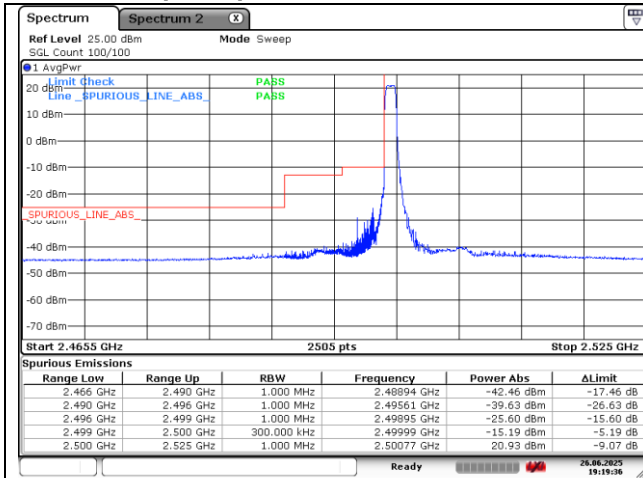
Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

- Test plots

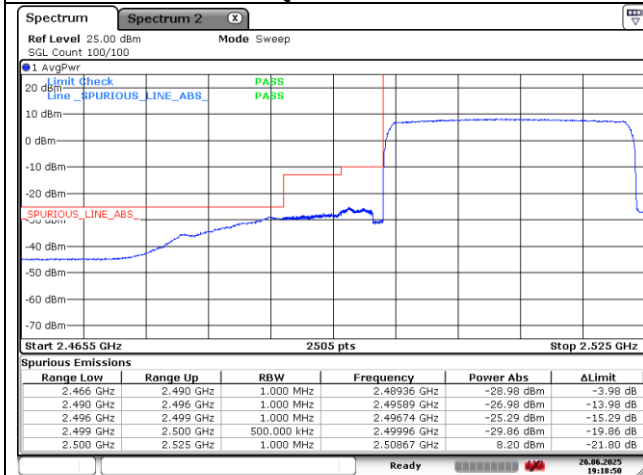
NR band 7 (25 MHz)



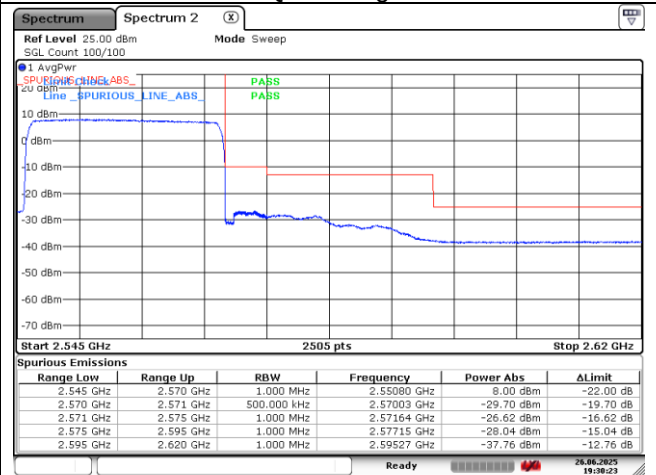
NR band 7 (25 MHz)



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



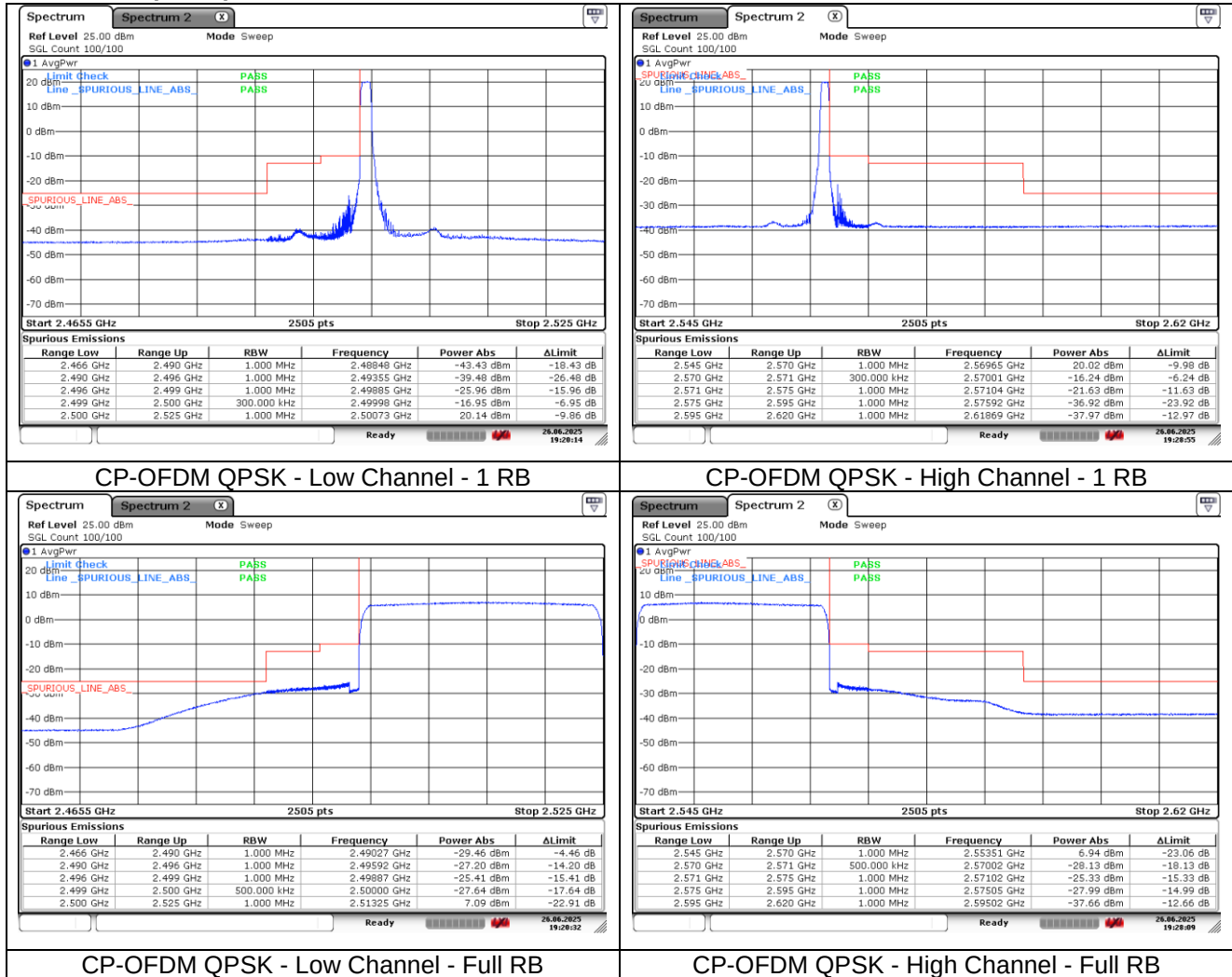
DFT-S-OFDM 16QAM - High Channel - 1 RB



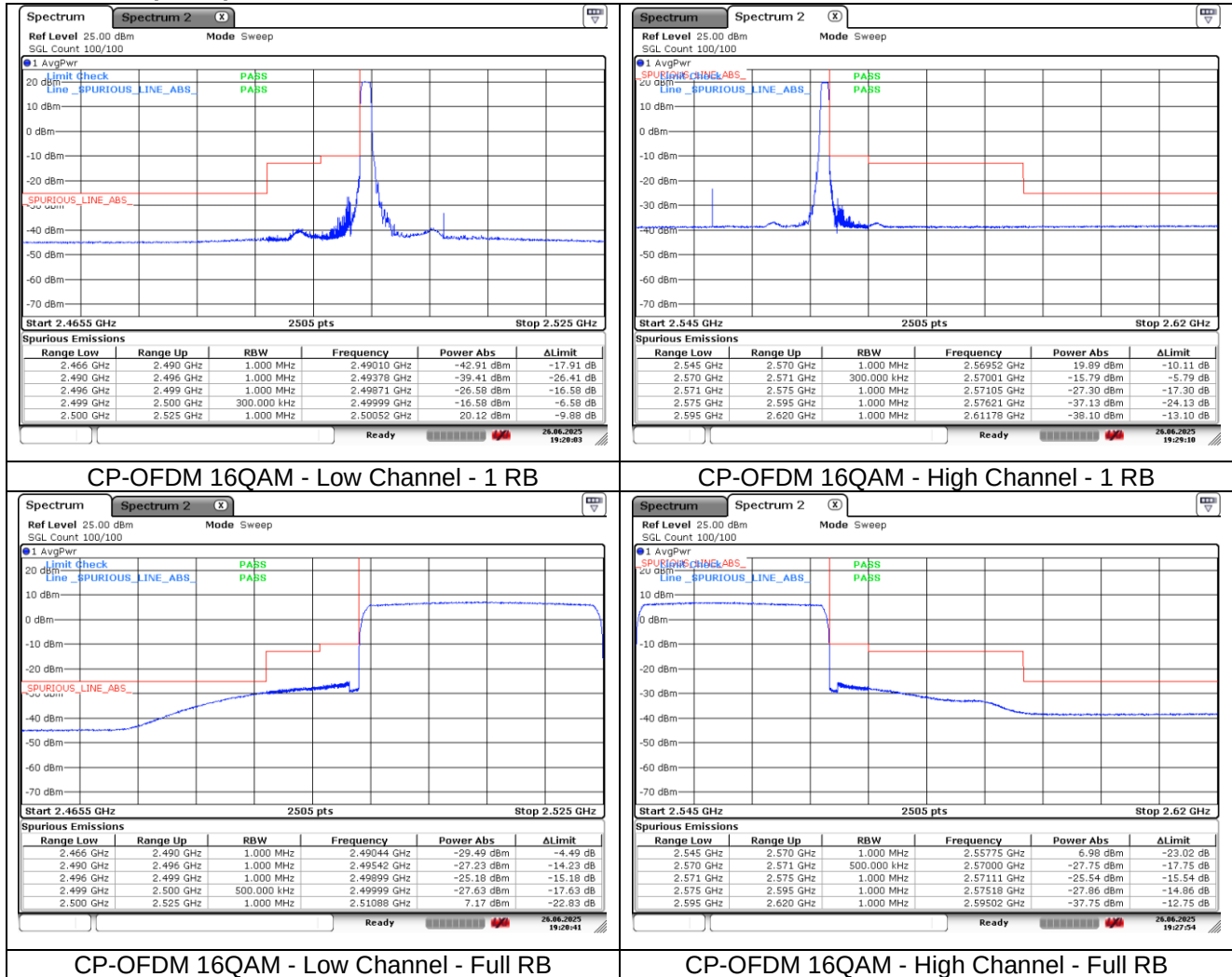
DFT-S-OFDM 16QAM - Low Channel - Full RB

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

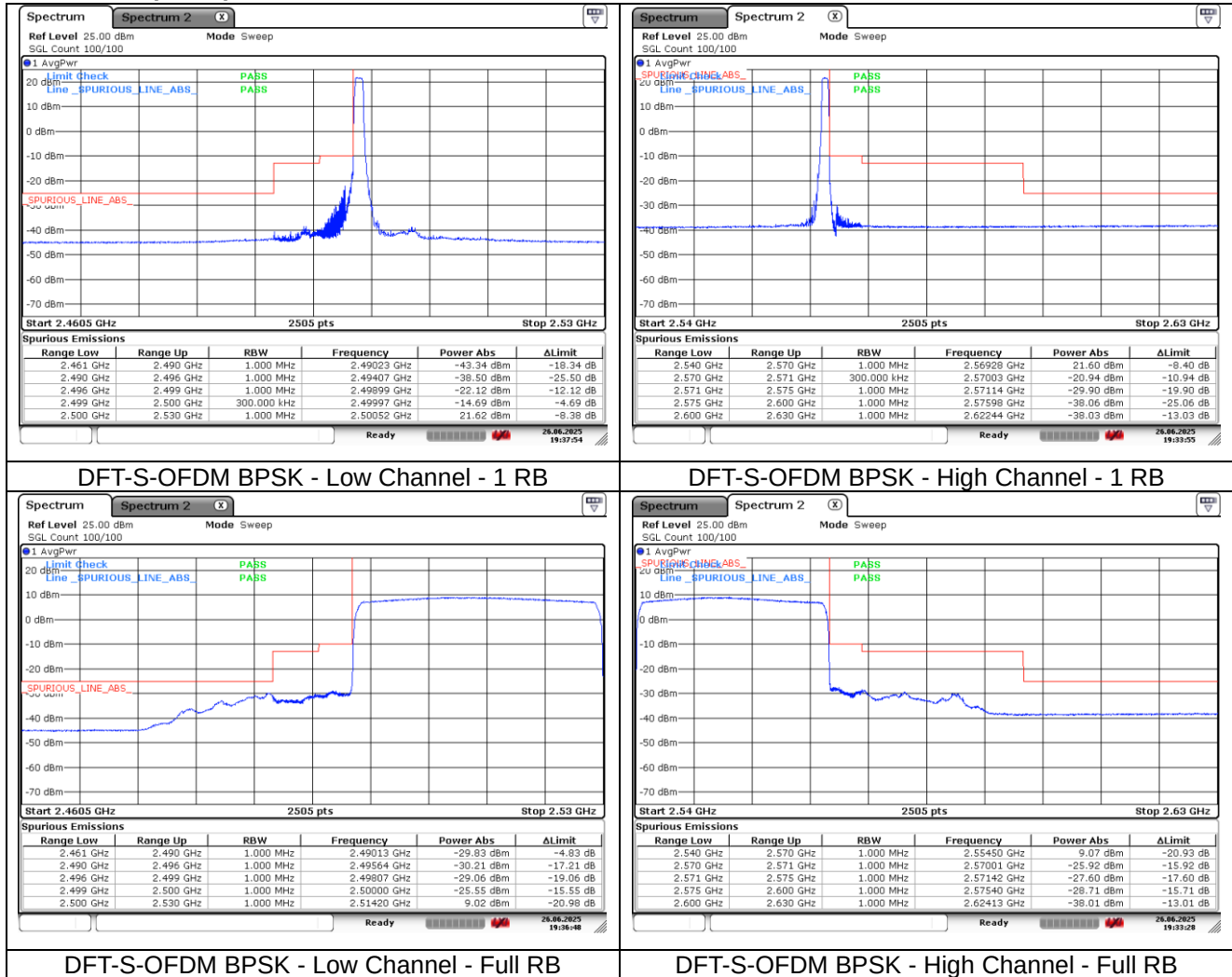
NR band 7 (25 MHz)



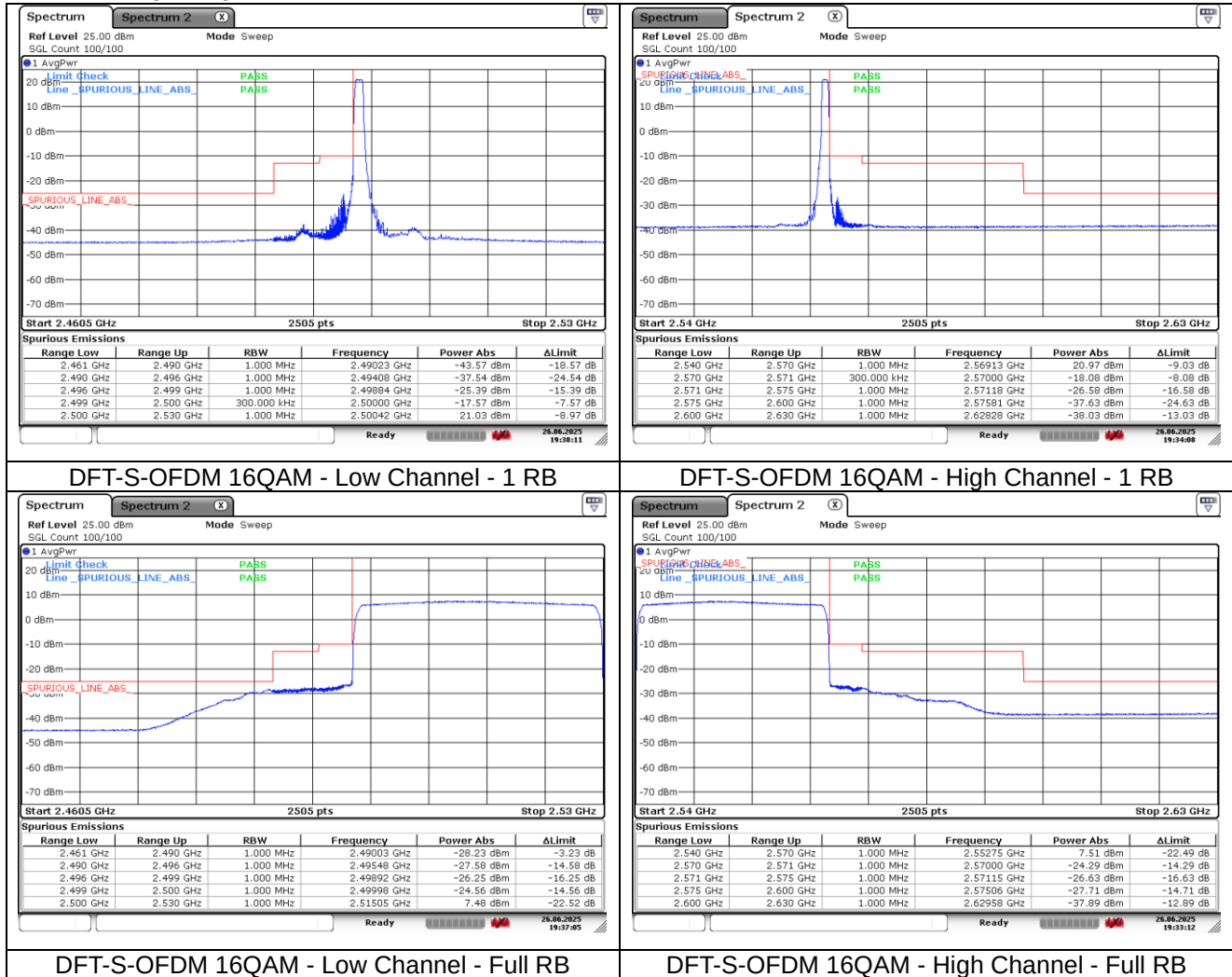
NR band 7 (25 MHz)



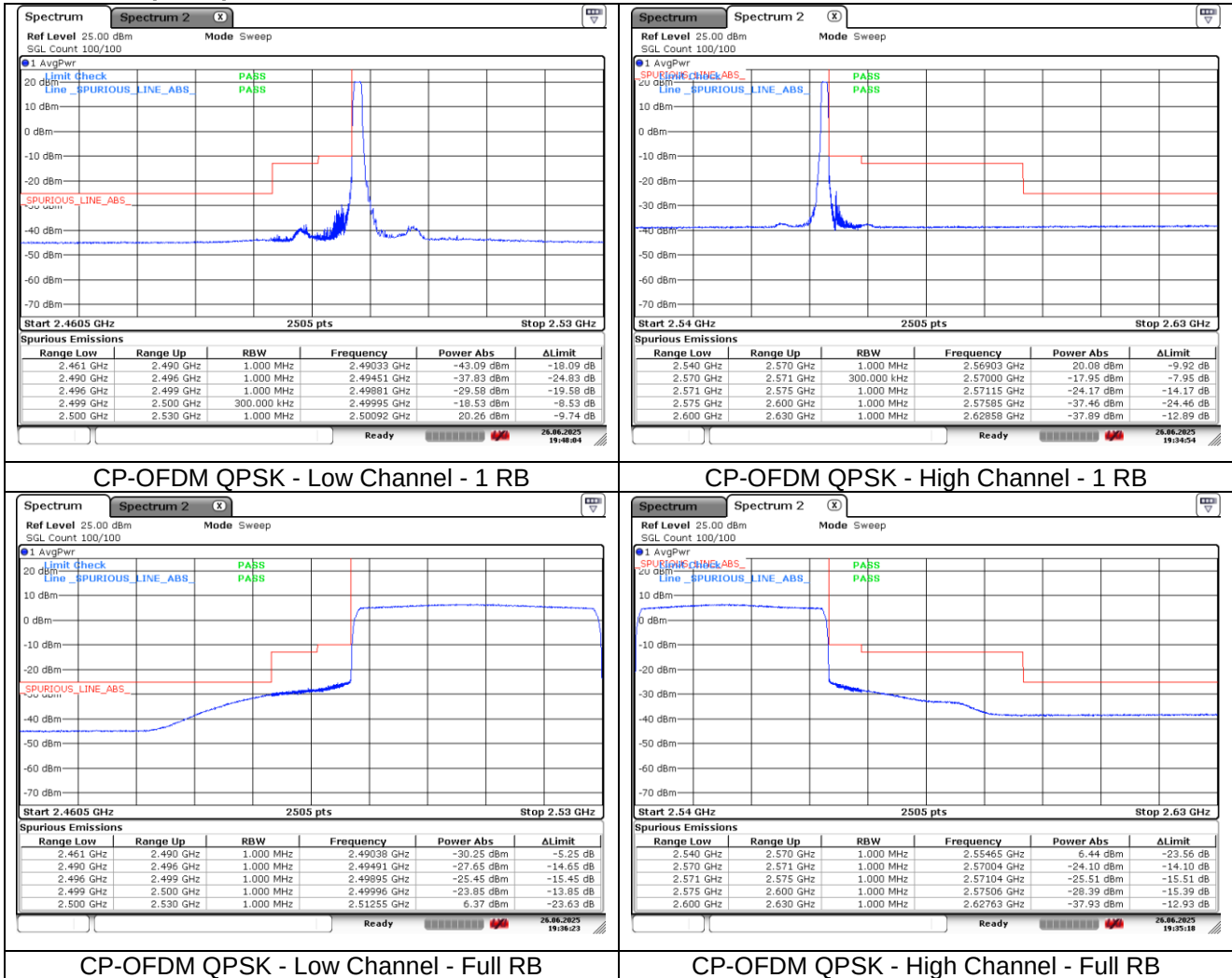
NR band 7 (30 MHz)



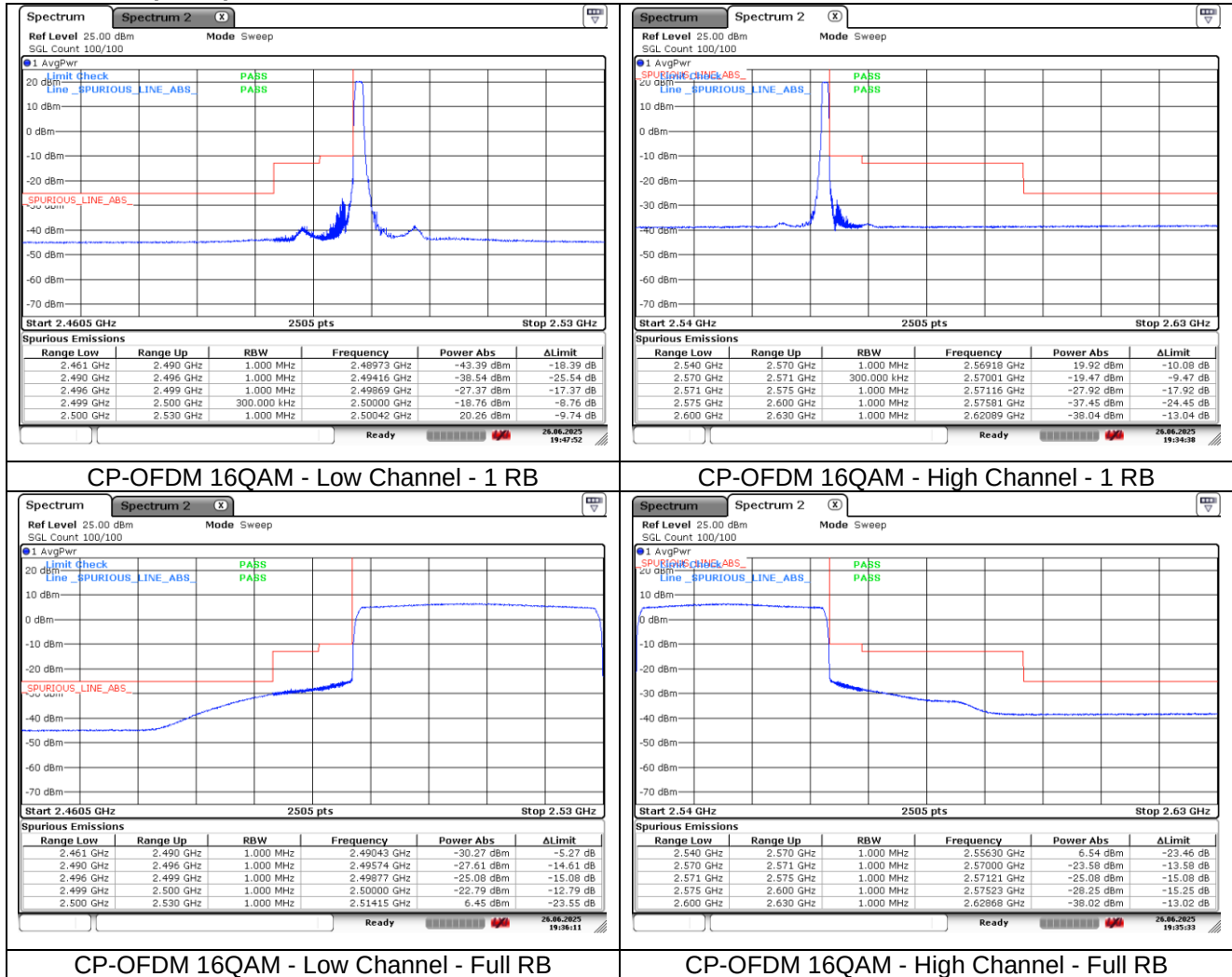
NR band 7 (30 MHz)



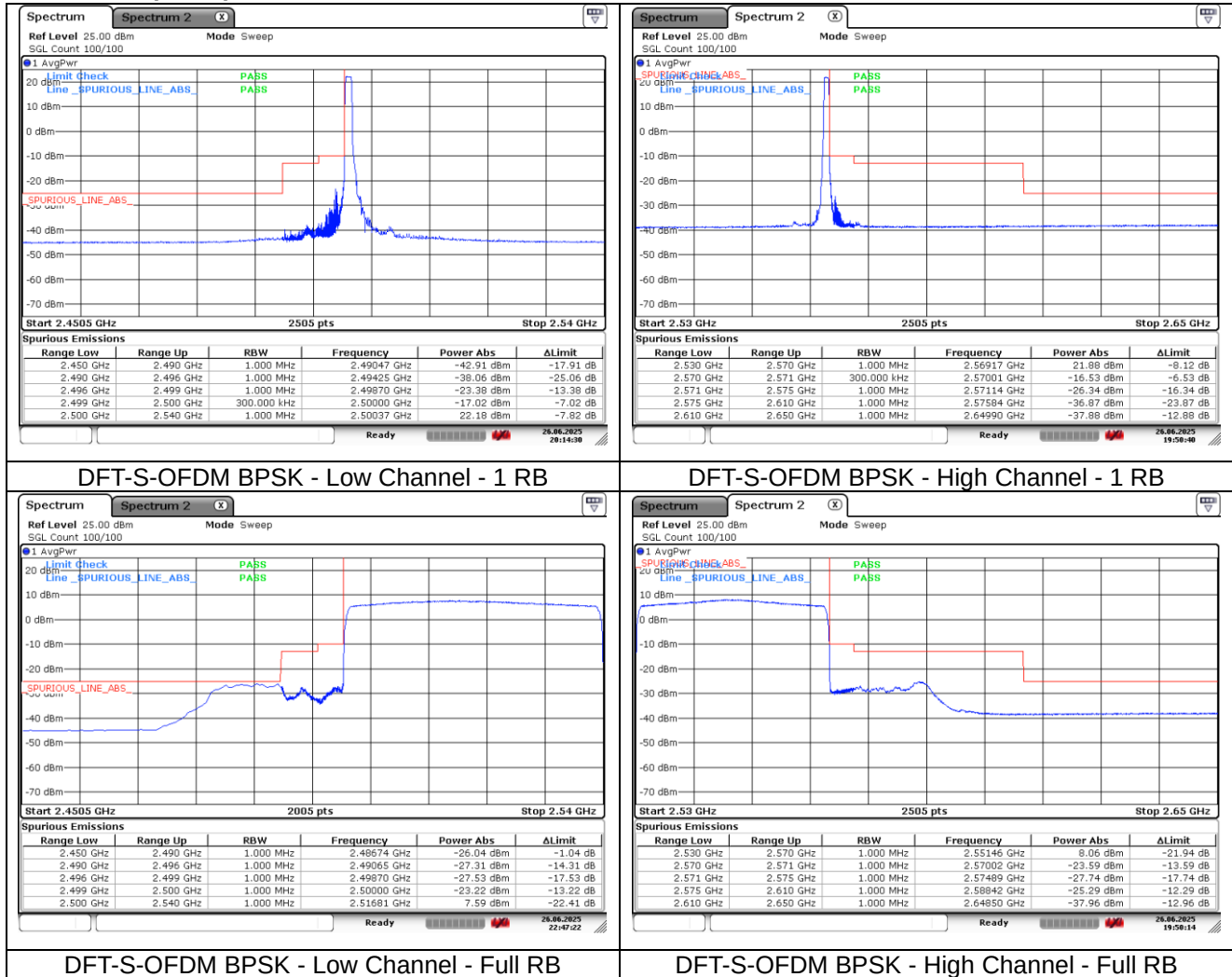
NR band 7 (30 MHz)



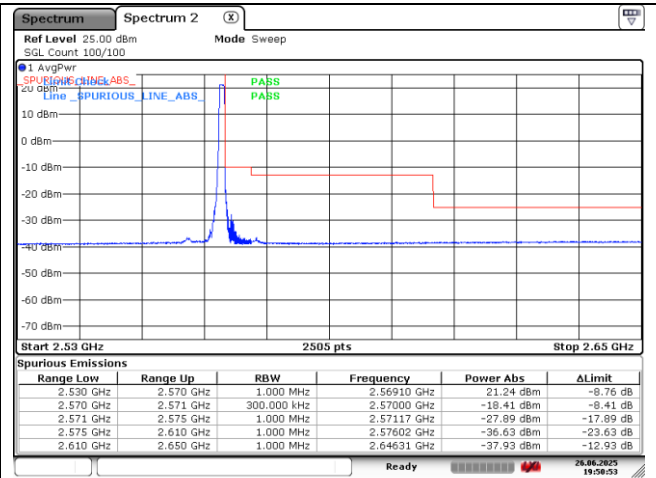
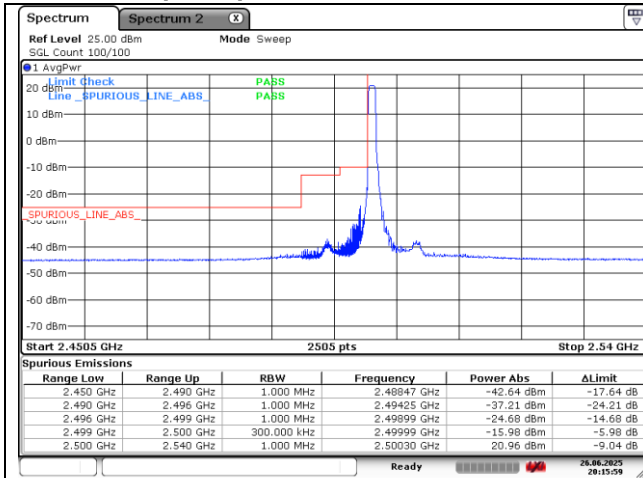
NR band 7 (30 MHz)



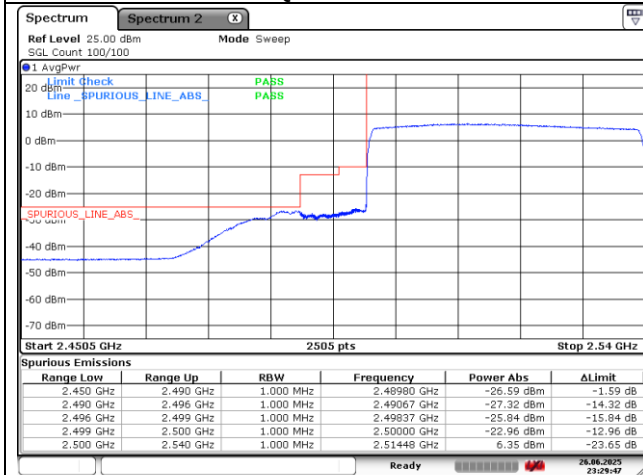
NR band 7 (40 MHz)



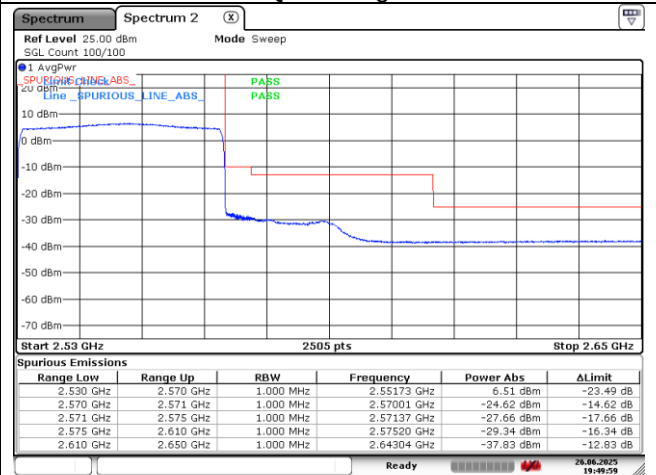
NR band 7 (40 MHz)



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



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



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

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

NR band 7 (40 MHz)

