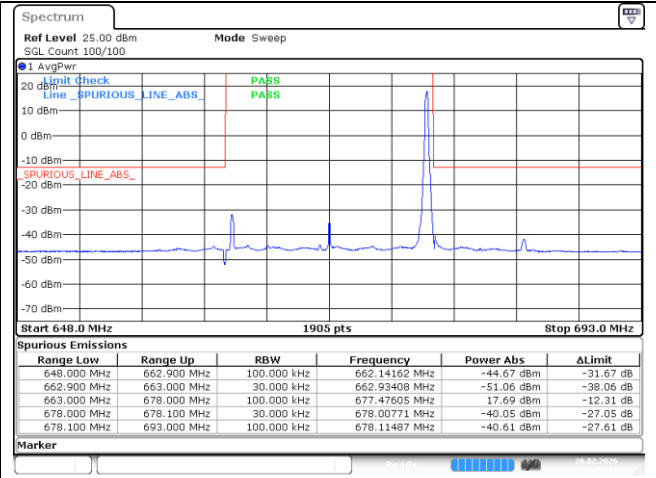
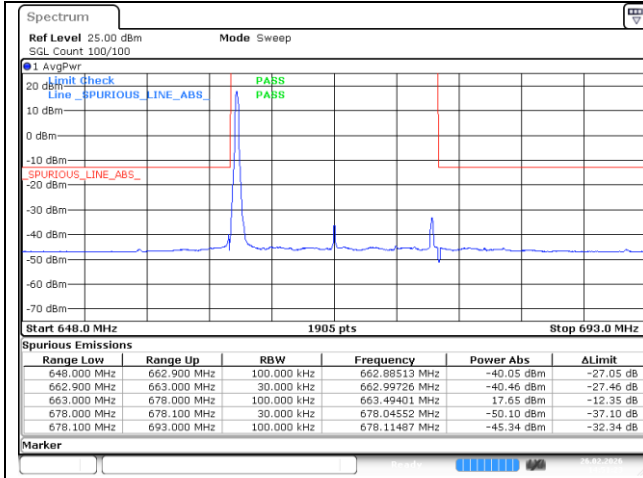
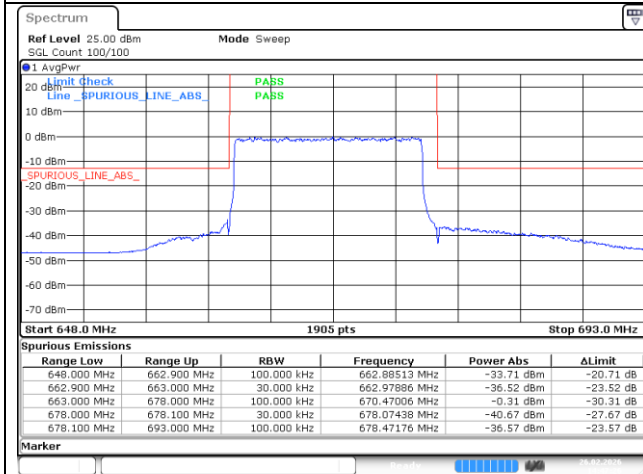


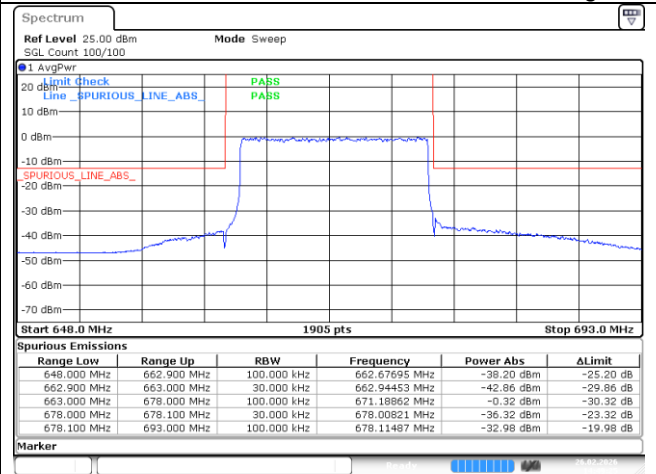
NR band 71 (15 MHz)



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



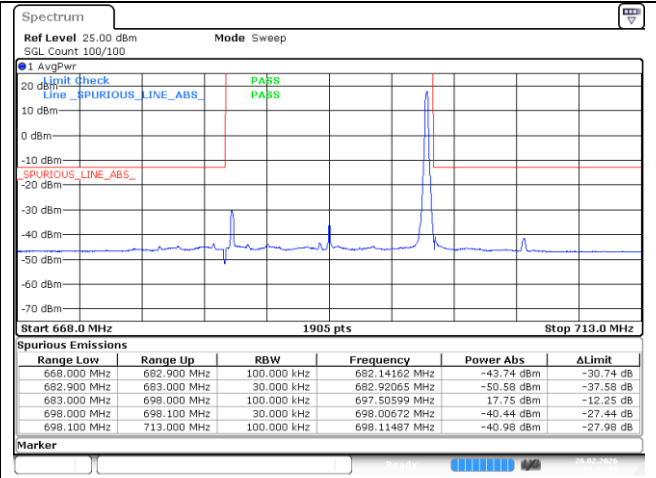
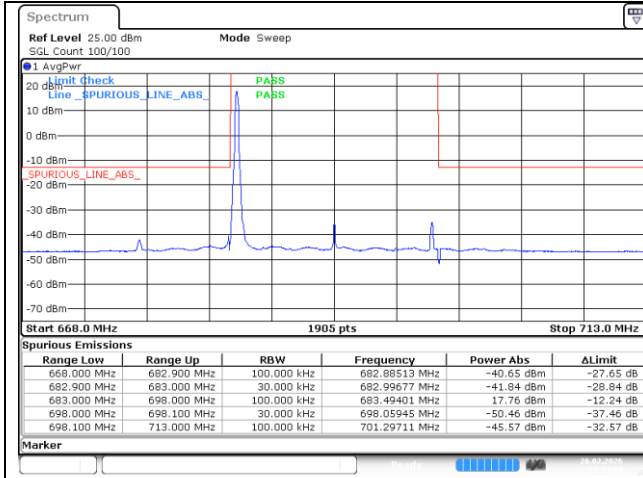
DFT-S-OFDM 16QAM - Low Channel - 1 RB - Right



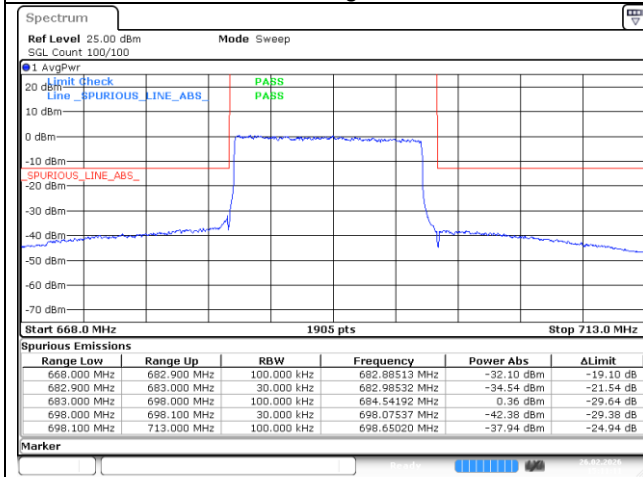
DFT-S-OFDM 16QAM - Low Channel - Full RB - Left

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

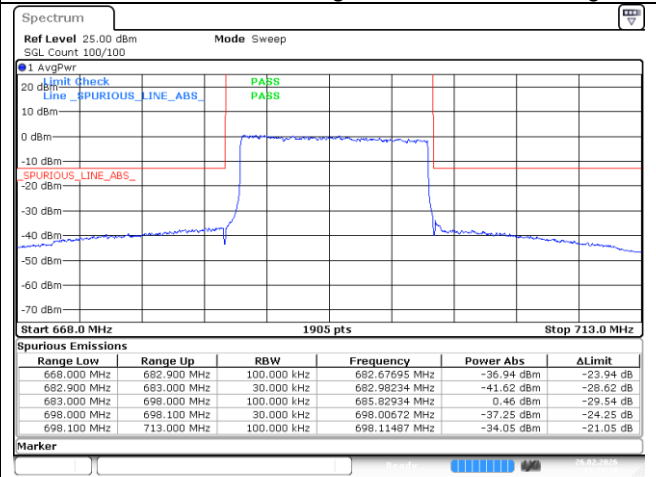
NR band 71 (15 MHz)



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



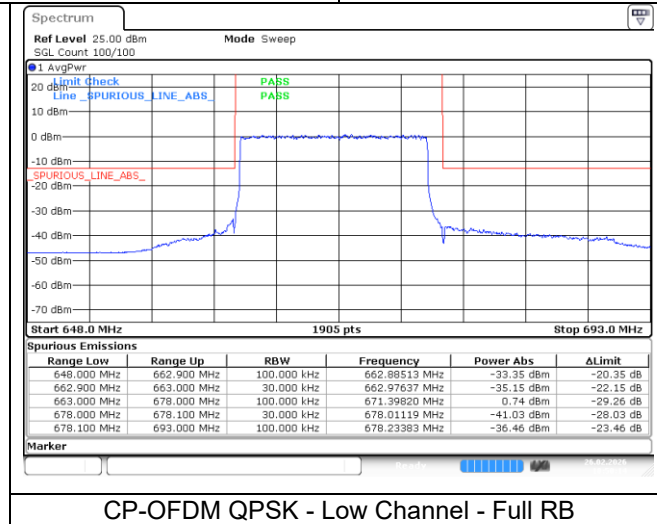
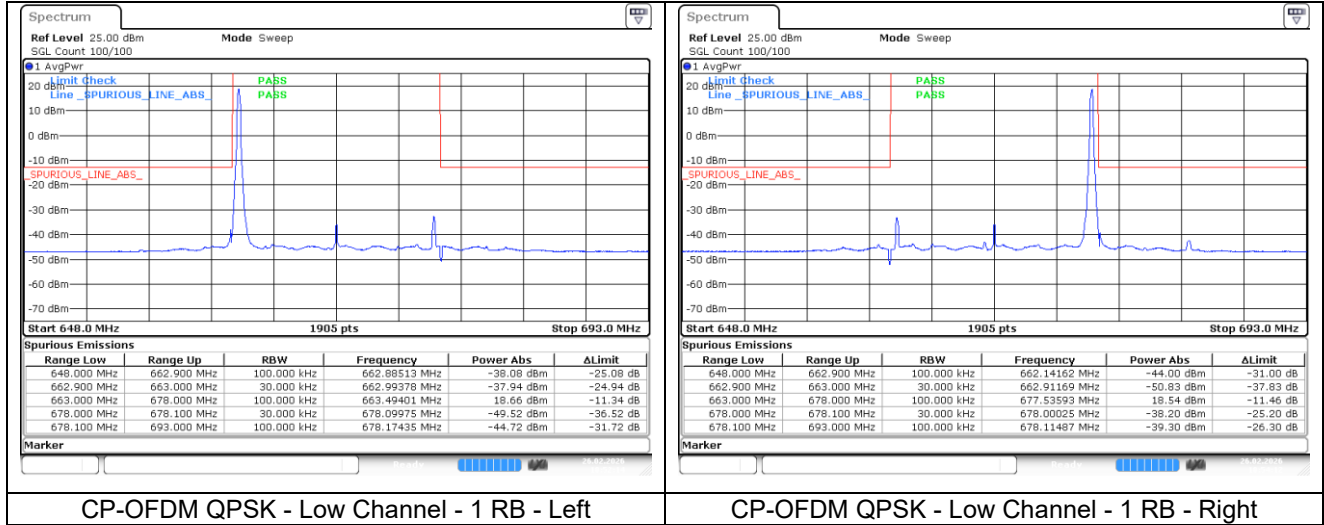
DFT-S-OFDM 16QAM - High Channel - 1 RB - Right



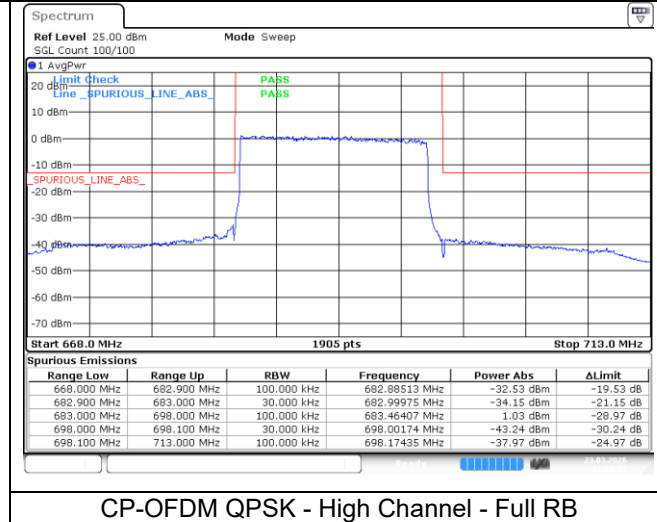
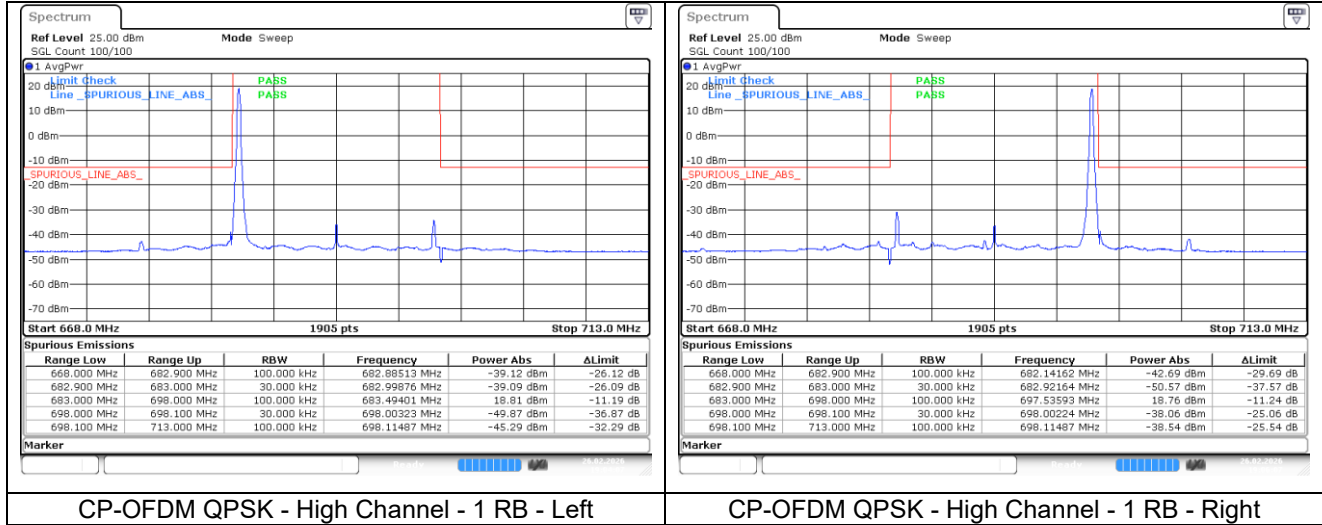
DFT-S-OFDM 16QAM - High Channel - Full RB - Left

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

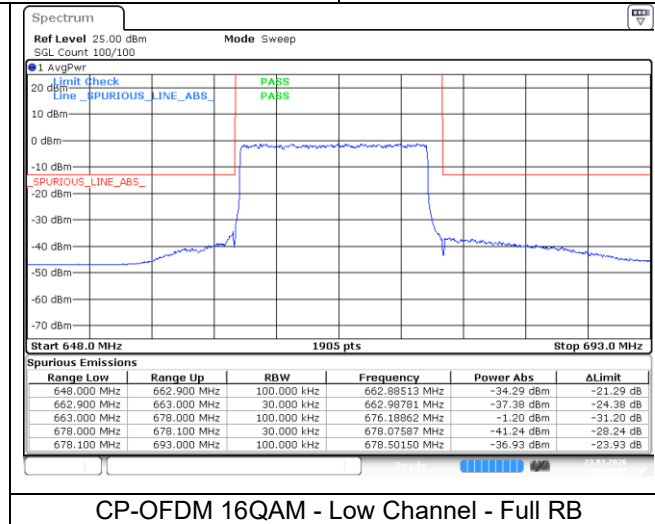
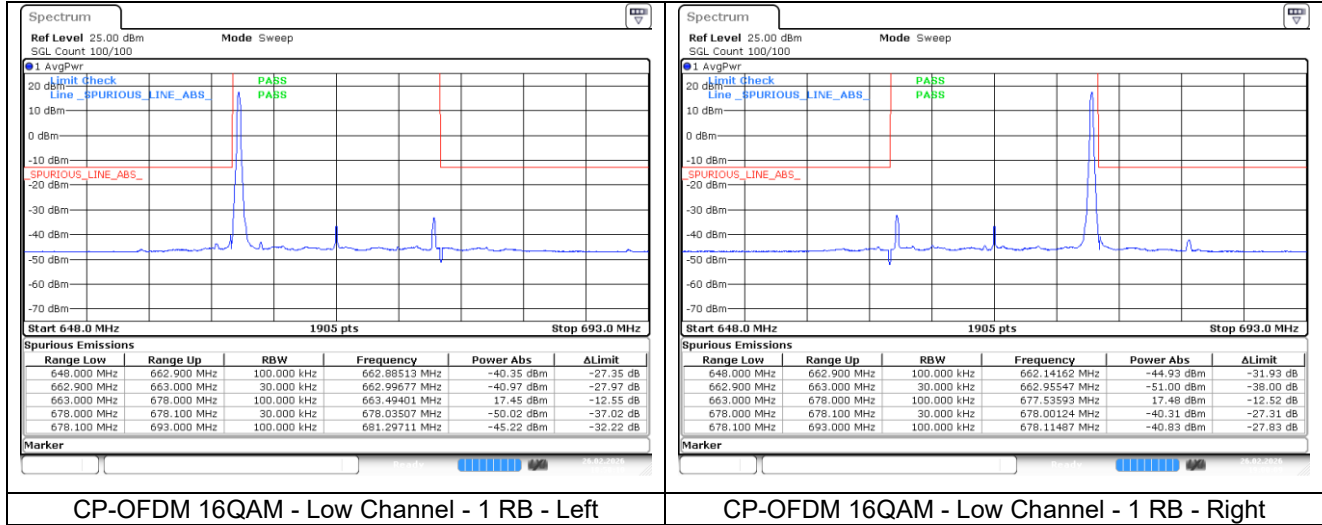
NR band 71 (15 MHz)



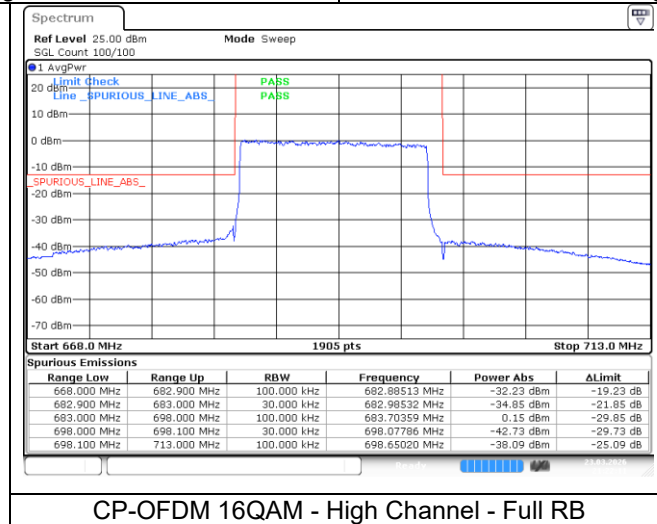
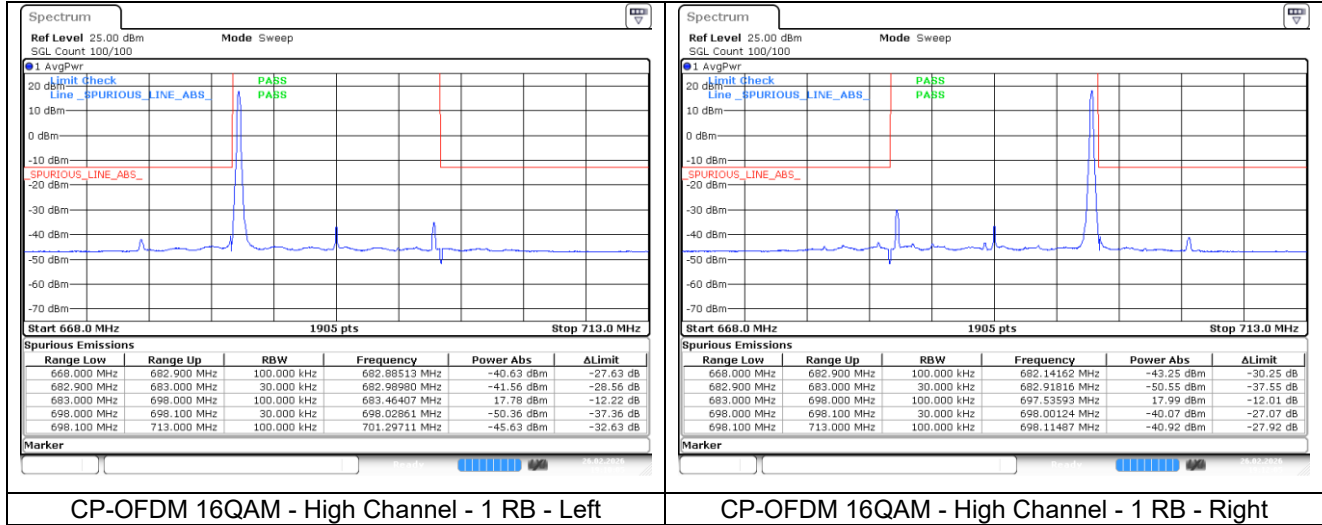
NR band 71 (15 MHz)



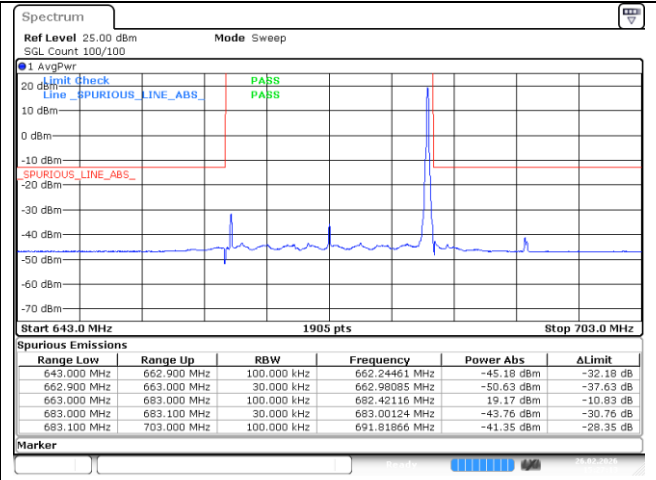
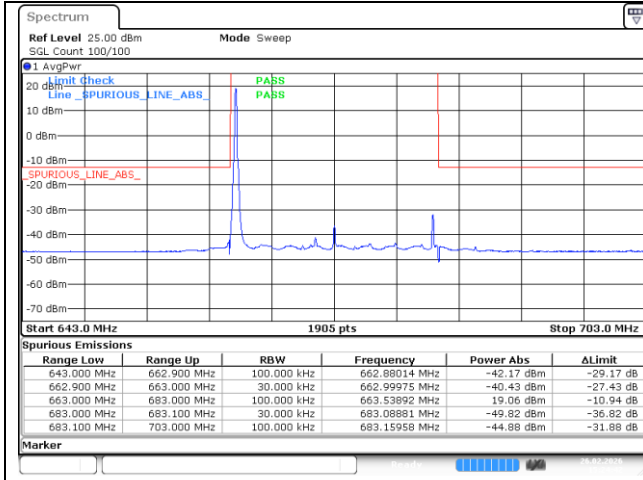
NR band 71 (15 MHz)



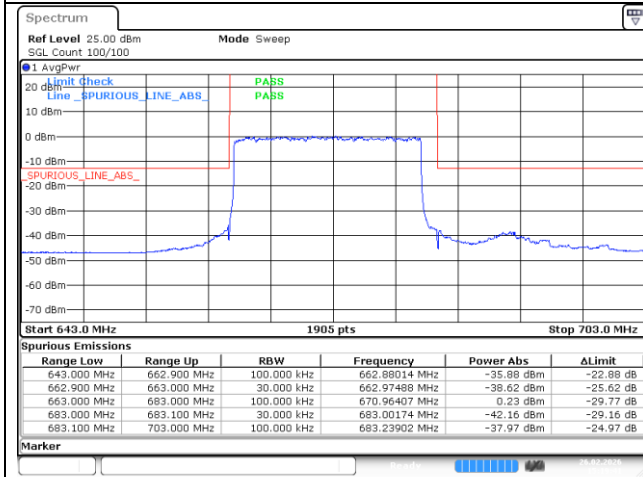
NR band 71 (15 MHz)



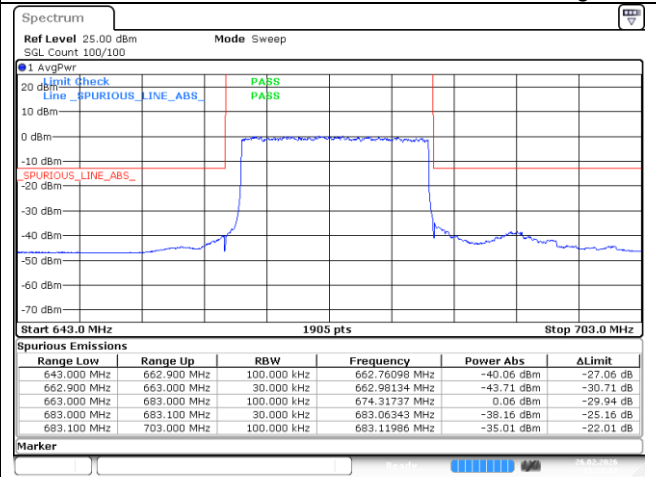
NR band 71 (20 MHz)



DFT-S-OFDM QPSK - Low Channel - 1 RB - Left



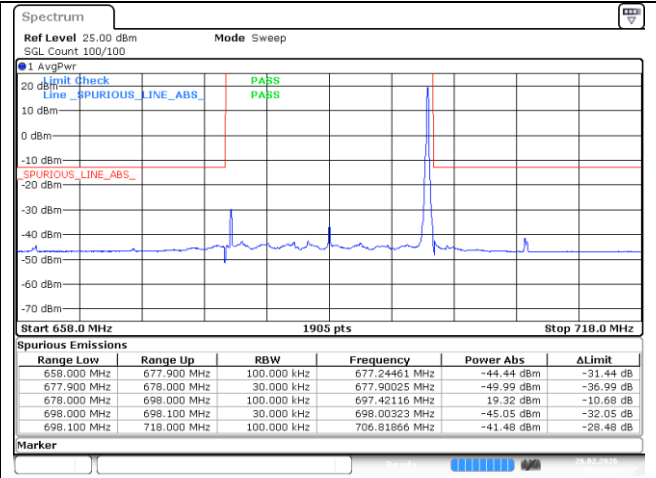
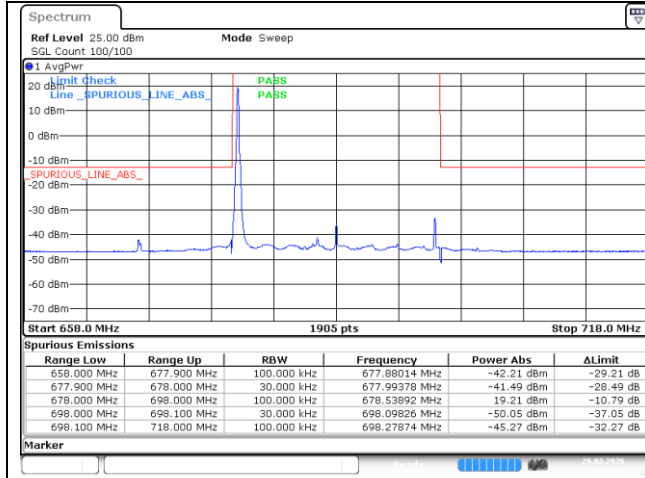
DFT-S-OFDM QPSK - Low Channel - 1 RB - Right



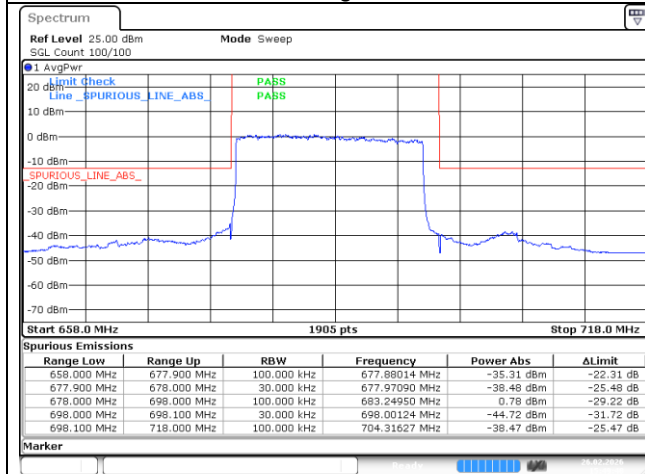
DFT-S-OFDM QPSK - Low Channel - Full RB - Left

DFT-S-OFDM QPSK - Low Channel - Full RB - Right

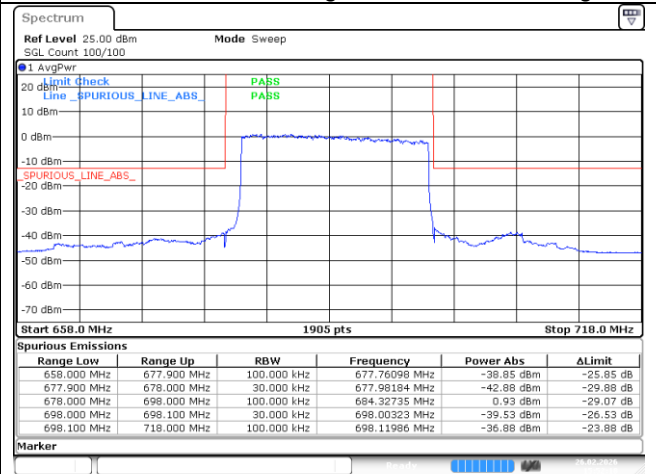
NR band 71 (20 MHz)



DFT-S-OFDM QPSK - High Channel - 1 RB - Left



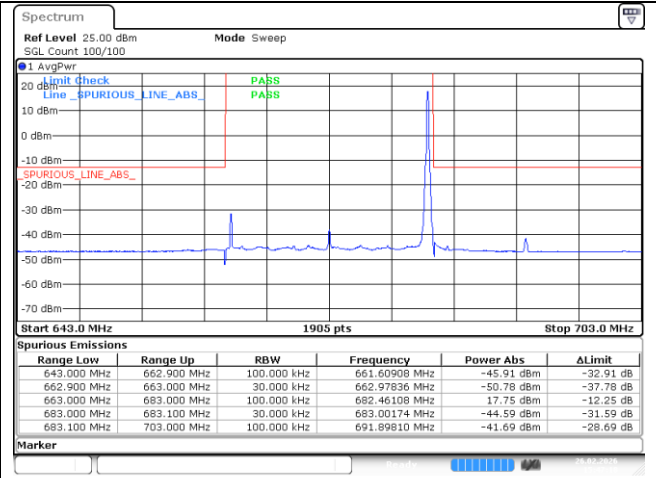
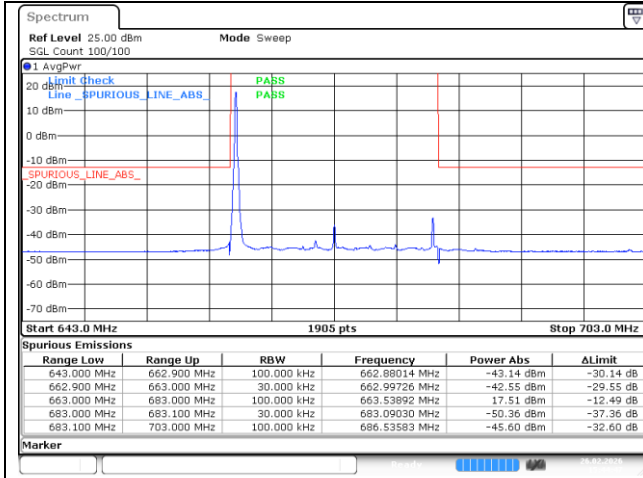
DFT-S-OFDM QPSK - High Channel - 1 RB - Right



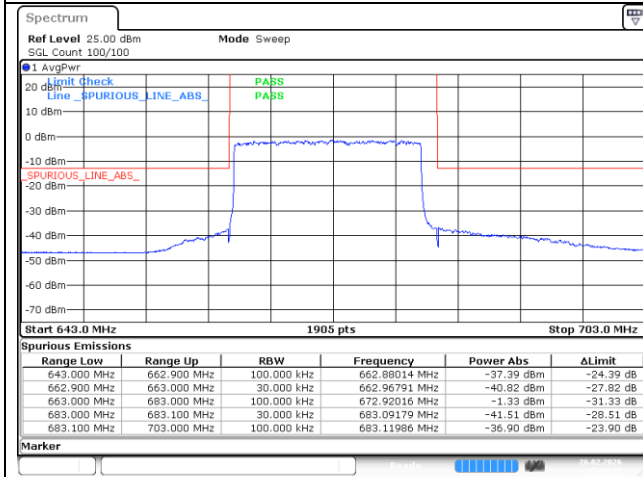
DFT-S-OFDM QPSK - High Channel - Full RB - Left

DFT-S-OFDM QPSK - High Channel - Full RB - Right

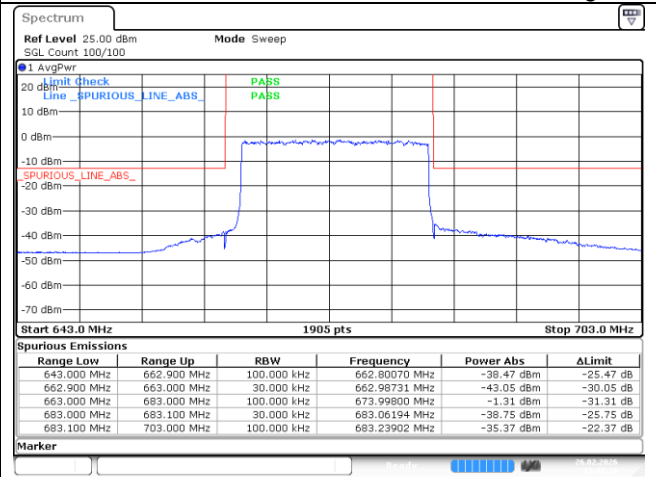
NR band 71 (20 MHz)



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



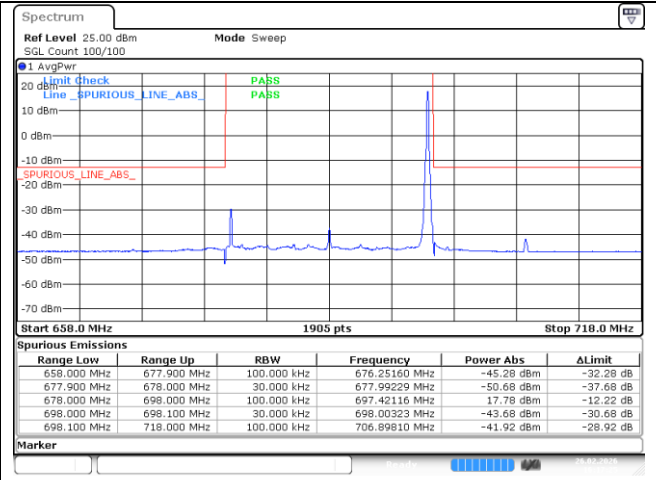
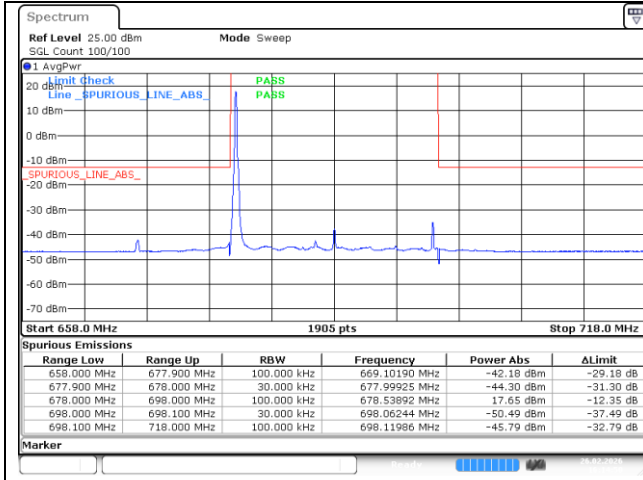
DFT-S-OFDM 16QAM - Low Channel - 1 RB - Right



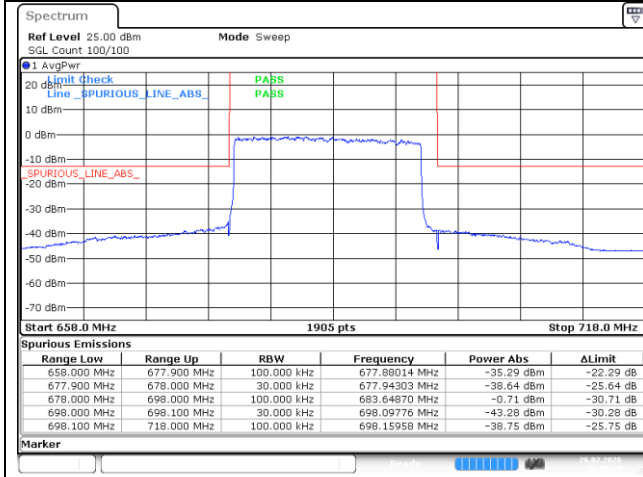
DFT-S-OFDM 16QAM - Low Channel - Full RB - Left

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

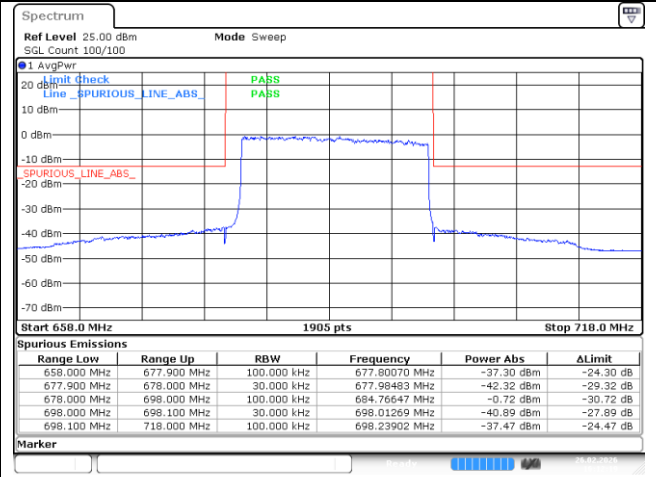
NR band 71 (20 MHz)



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



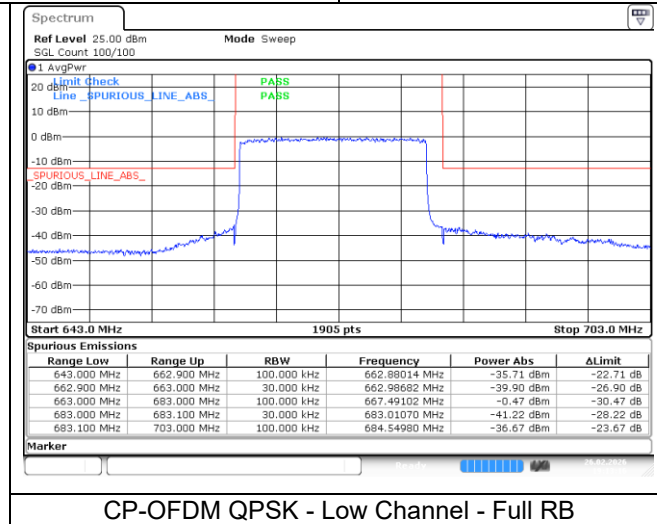
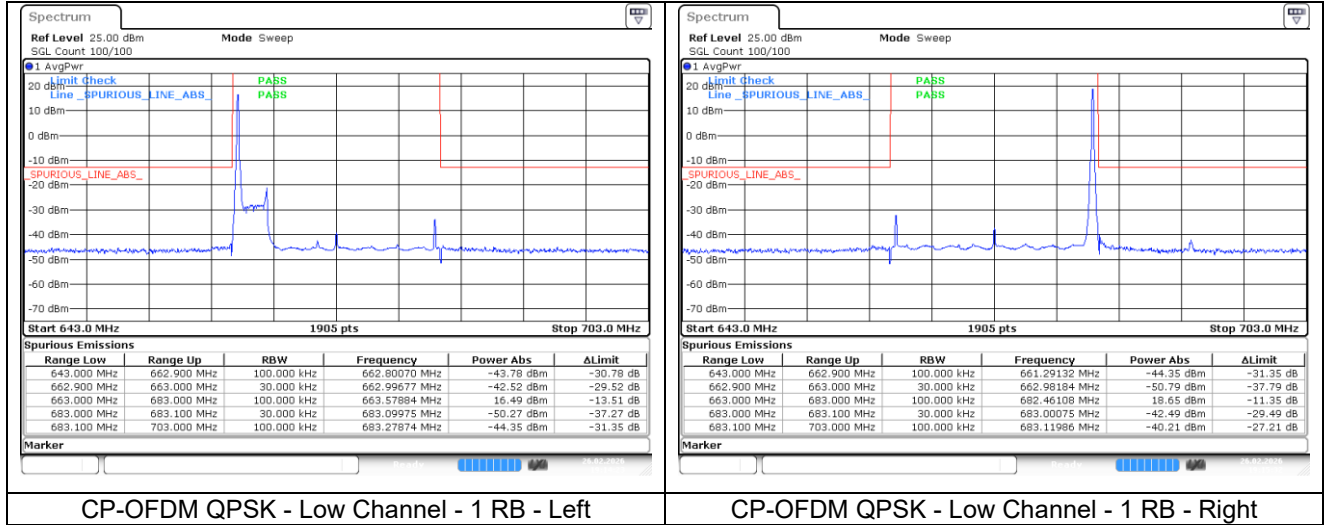
DFT-S-OFDM 16QAM - High Channel - 1 RB - Right



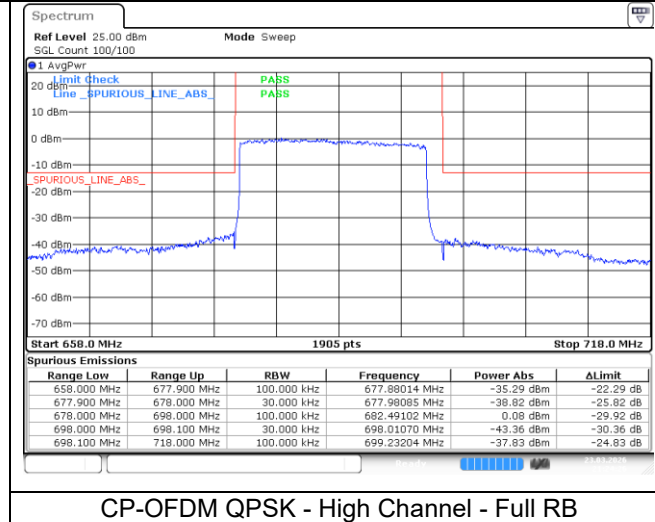
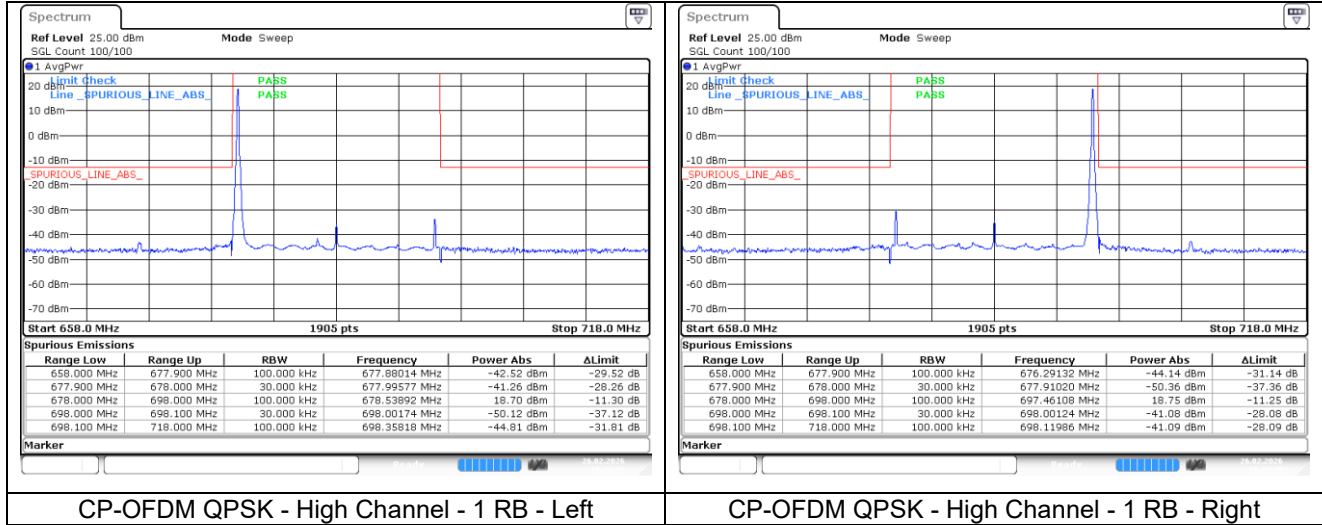
DFT-S-OFDM 16QAM - High Channel - Full RB - Left

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

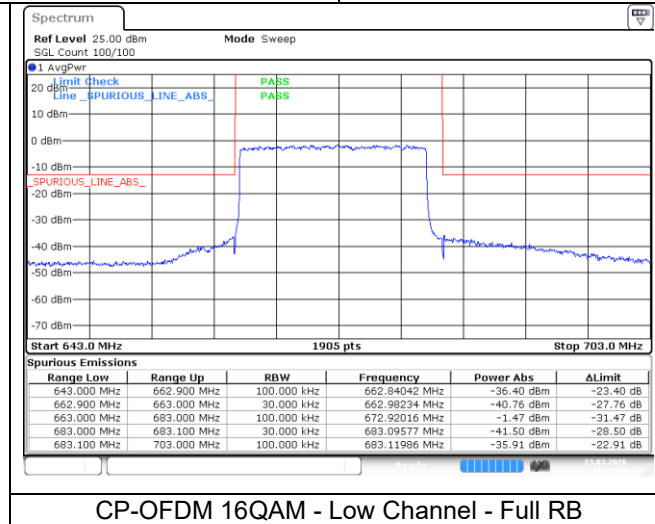
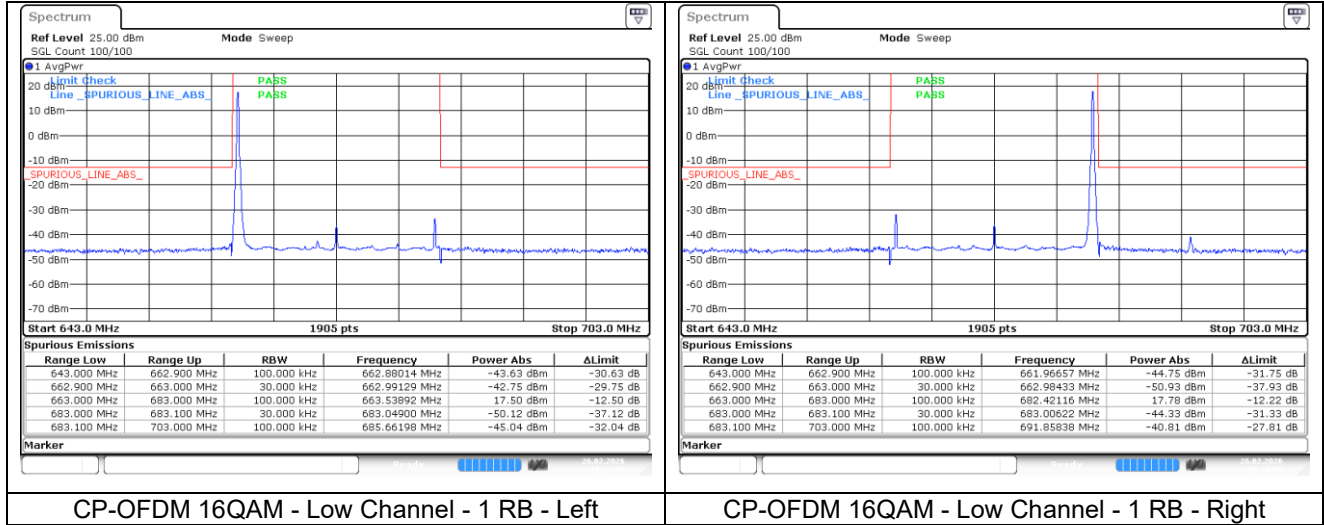
NR band 71 (20 MHz)



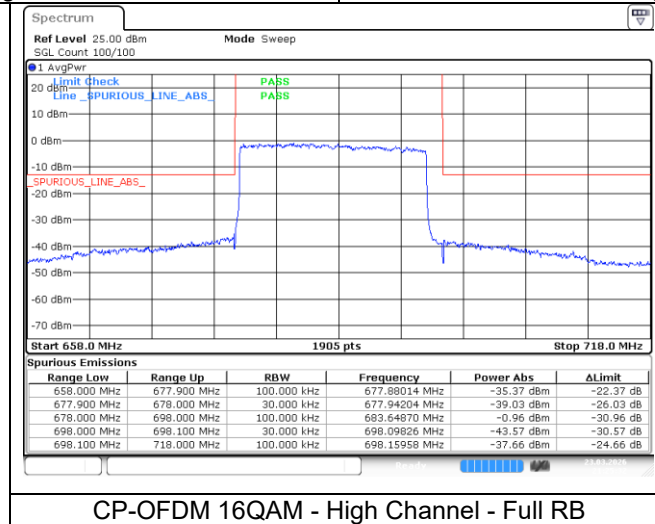
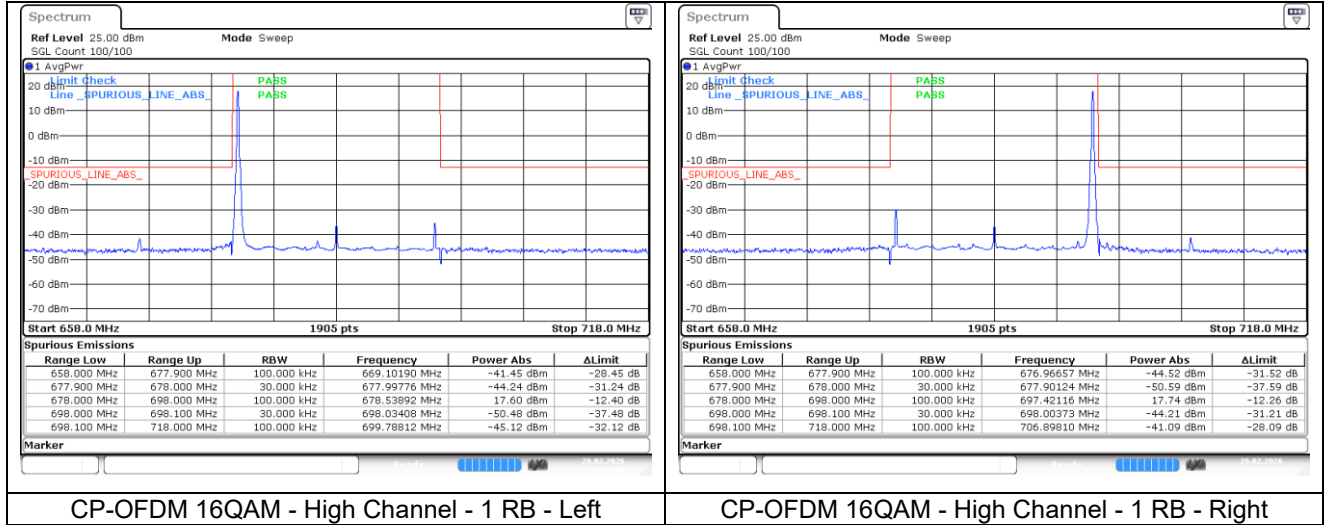
NR band 71 (20 MHz)



NR band 71 (20 MHz)



NR band 71 (20 MHz)



8. Frequency Stability

8.1. Limit

FCC

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

- §90.213, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

For Mobile devices operating in the 809 to 824 MHz band at a power level 2 Watts or less, the limit specified in Table is +/- 2.5 ppm.

IC

- RSS-Gen Issue 5

6.11, for licensed devices, the following measurement conditions apply:

a. at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage

- RSS-130 Issue 2

4.5, the transmitter frequency stability limit shall be determined as follows:

For equipment that is capable of transmitting numerous channels simultaneously for different applications (e.g. LTE and narrowband – internet of things (IoT)), the occupied bandwidth shall be the bandwidth representing the sum of the occupied bandwidths of these channels.

The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.

- RSS-132 Issue 4

5.3, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within each of the sub-bands when tested at the temperature and supply voltage variations specified in RSS-Gen.

- RSS-133 Issue 7

5.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

- RSS-139 Issue 4

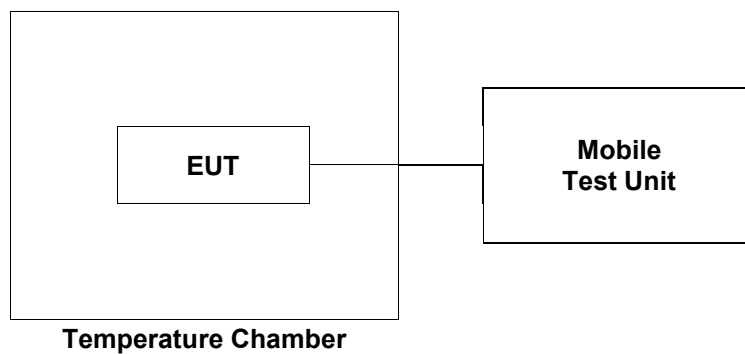
5.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

- RSS-199 Issue 4

5.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block or frequency block group when tested to the temperature and supply voltage variations specified in RSS-Gen.

8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



8.3. Test Results

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

NR band 7 at middle channel

Reference Frequency: 2 535.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	6.70	0.002 13
40		8.30	0.002 76
30		4.70	0.001 34
20(Ref.)		1.30	-
10		6.50	0.002 05
0		-3.20	-0.001 78
-10		10.30	0.003 55
-20		9.70	0.003 31
-30		13.50	0.004 81
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	2.30	0.000 39
	4.6 (115%)	-0.60	-0.000 75

NR band 12 at middle channel

Reference Frequency: 707.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	9.60	0.010 60
40		4.80	0.003 82
30		5.30	0.004 52
20(Ref.)		2.10	-
10		8.70	0.009 33
0		6.40	0.006 08
-10		5.80	0.005 23
-20		10.40	0.011 73
-30		11.20	0.012 86
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	3.50	0.001 98
	4.6 (115%)	1.80	-0.000 42

NR band 25/2 at middle channel

Reference Frequency: 1 882.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	10.60	0.004 25
40		8.40	0.003 08
30		4.10	0.000 80
20(Ref.)		2.60	-
10		8.40	0.003 08
0		11.50	0.004 73
-10		6.40	0.002 02
-20		3.80	0.000 64
-30		9.20	0.003 51
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	2.40	-0.000 1
	4.6 (115%)	0.80	-0.001 0

NR band 26/5_Part 22 at middle channel

Reference Frequency: 836.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	7.10	0.006 81
40		3.50	0.002 51
30		-1.50	-0.003 47
20(Ref.)		1.40	-
10		9.30	0.009 44
0		3.80	0.002 87
-10		4.20	0.003 35
-20		5.60	0.005 02
-30		5.40	0.004 78
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	-0.60	-0.002 39
	4.6 (115%)	2.60	0.001 43

NR band 26_Part 90 at middle channel

Reference Frequency: 819.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	7.30	0.004 40
40		5.10	0.001 71
30		2.60	-0.001 34
20(Ref.)		3.70	-
10		5.80	0.002 56
0		10.60	0.008 42
-10		8.40	0.005 74
-20		6.90	0.003 91
-30		11.50	0.009 52
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	-2.60	-0.007 69
	4.6 (115%)	1.80	-0.002 32

NR band 66 at middle channel

Reference Frequency: 1 745.0 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	3.50	0.001 55
40		5.30	0.002 58
30		2.70	0.001 09
20(Ref.)		0.80	-
10		6.50	0.003 27
0		-3.20	-0.002 29
-10		9.40	0.004 93
-20		11.80	0.006 30
-30		6.80	0.003 44
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	2.40	0.000 92
	4.6 (115%)	3.30	0.001 43

NR band 71 at middle channel

Reference Frequency: 680.5 MHz			
Frequency Stability versus Temperature			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	4.0	6.10	0.010 58
40		3.20	0.006 32
30		0.90	0.002 94
20(Ref.)		-1.10	-
10		1.90	0.004 41
0		-7.30	-0.009 11
-10		5.40	0.009 55
-20		10.30	0.016 75
-30		8.70	0.014 40
Frequency Stability versus Power Supply			
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
20	3.4 (85%)	-0.80	0.000 44
	4.6 (115%)	-0.30	0.001 18

- End of the Test Report -