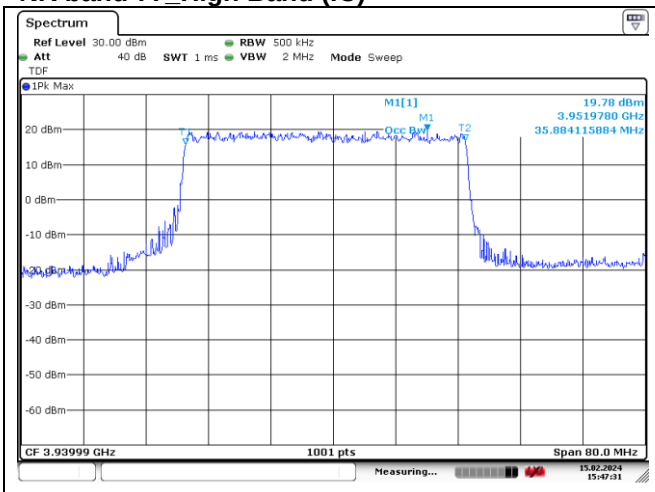
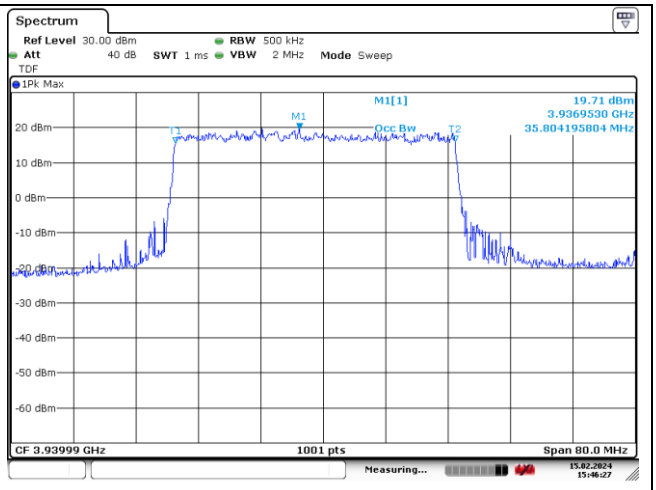
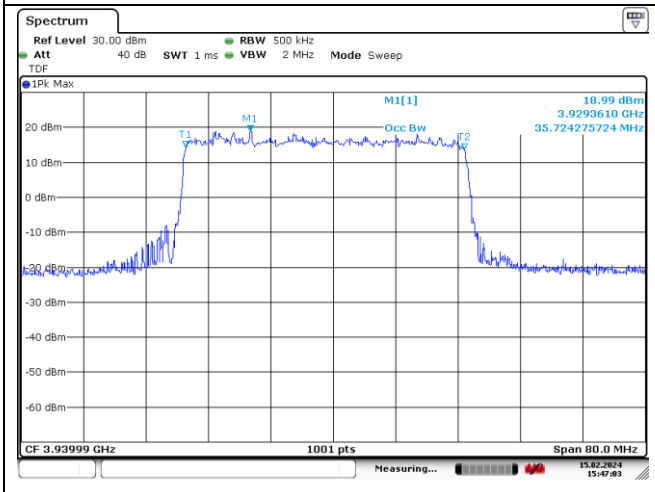
NR band 77_High Band (IC)



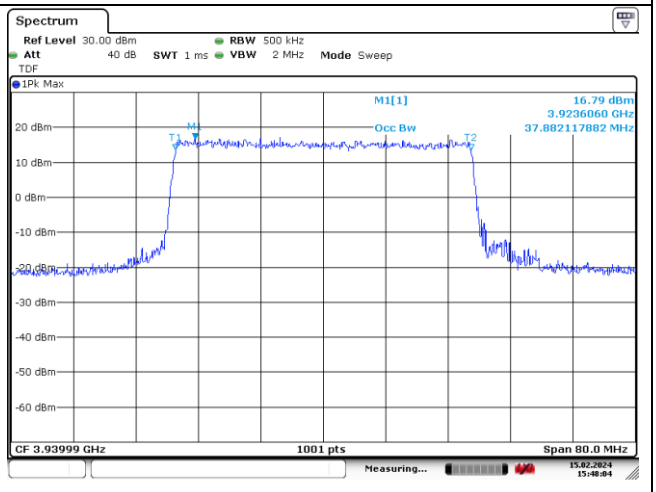
40 ㎒ DFT-S-OFDM BPSK



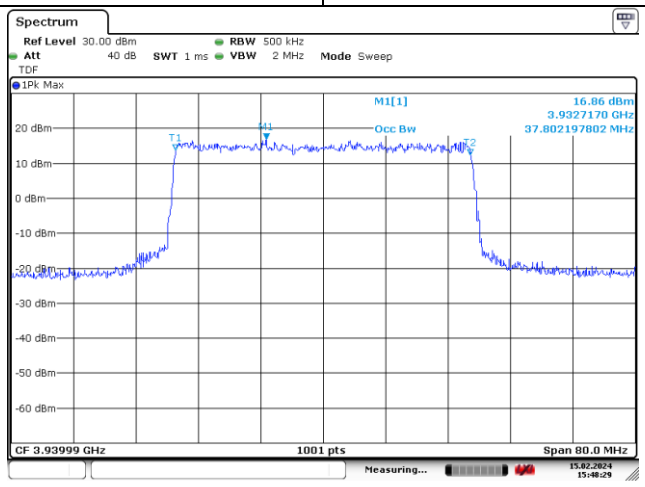
40 ㎒ DFT-S-OFDM QPSK



40 ㎒ DFT-S-OFDM 16QAM

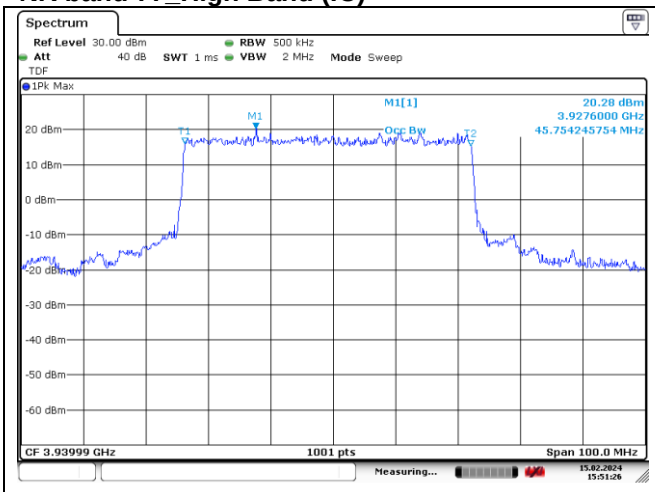


40 ㎒ CP-OFDM QPSK

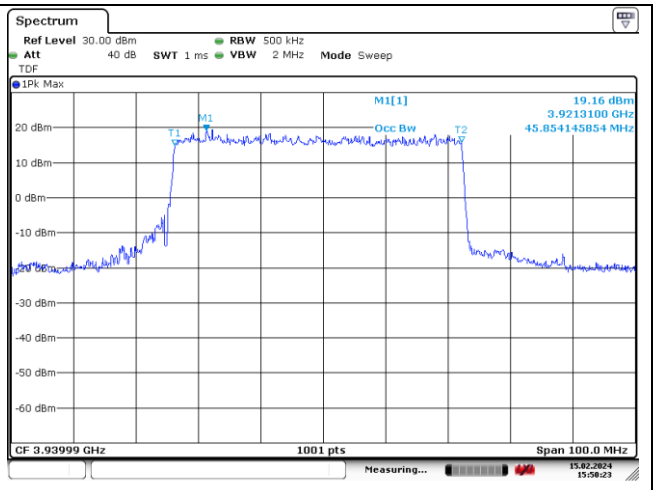


40 ㎒ CP-OFDM 16QAM

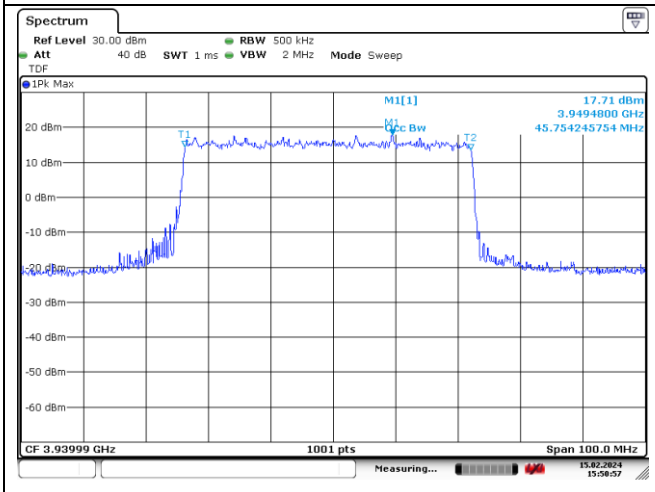
NR band 77_High Band (IC)



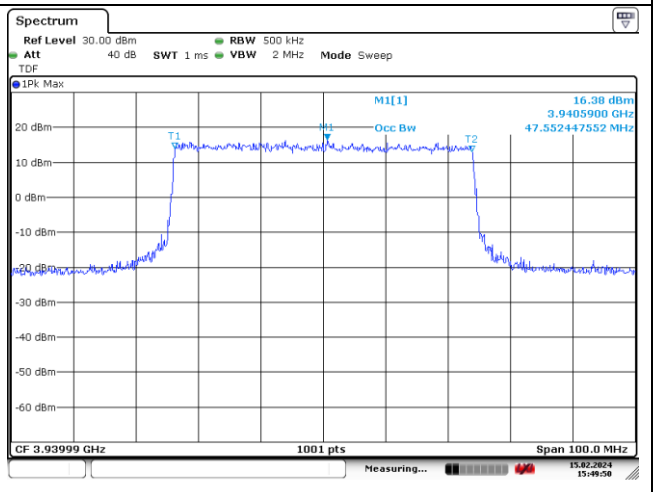
50 ㎒ DFT-S-OFDM BPSK



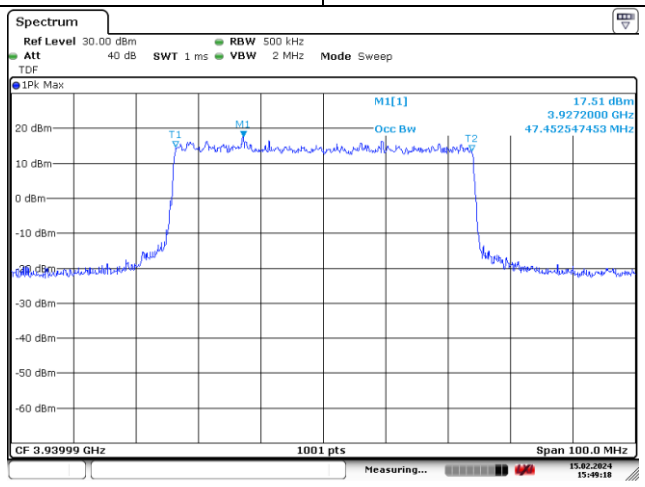
50 ㎒ DFT-S-OFDM QPSK



50 ㎒ DFT-S-OFDM 16QAM

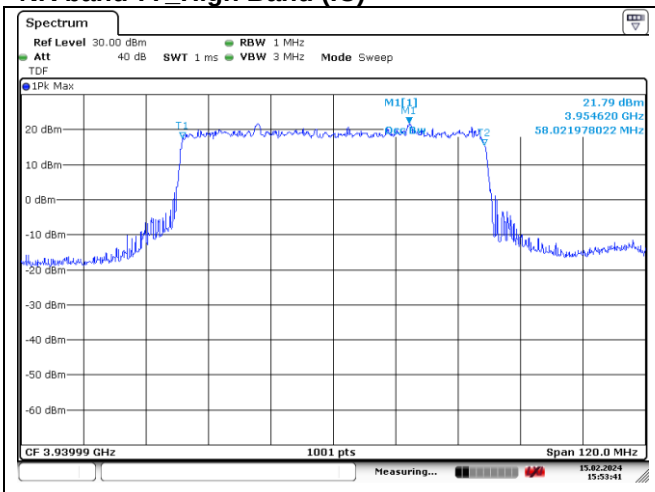


50 ㎒ CP-OFDM QPSK

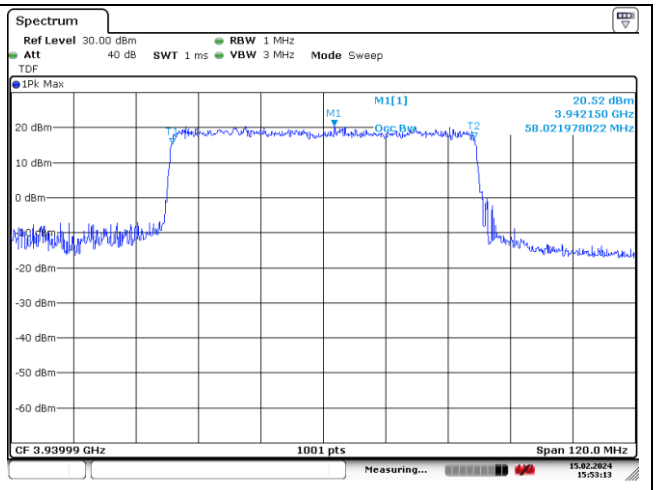


50 ㎒ CP-OFDM 16QAM

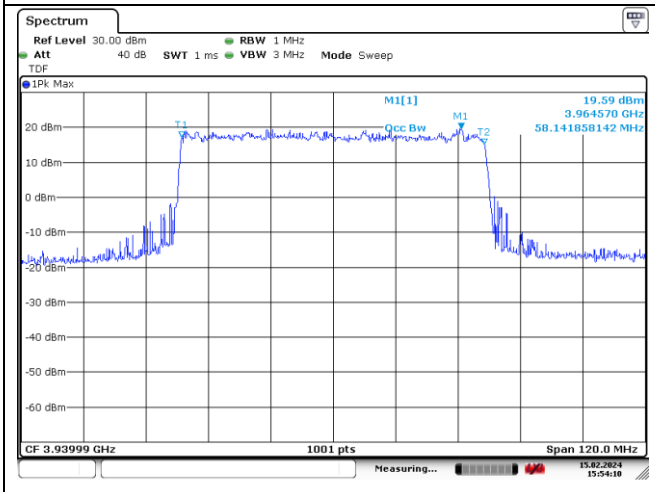
NR band 77_High Band (IC)



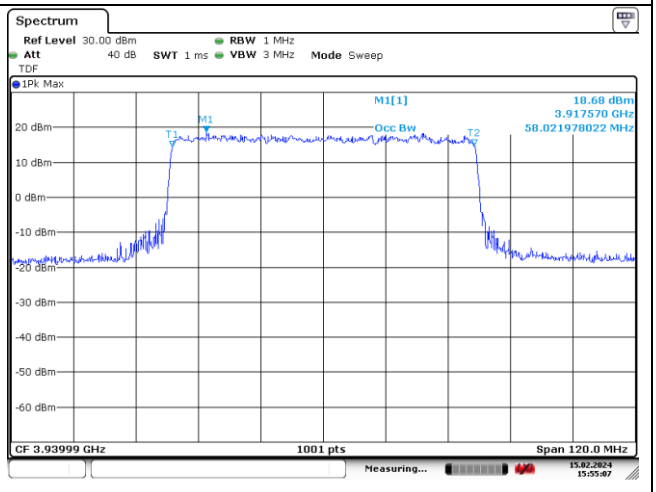
60 ㎒ DFT-S-OFDM BPSK



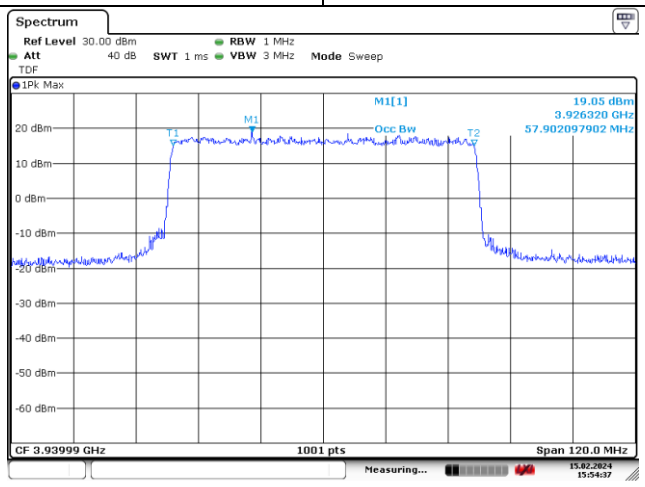
60 ㎒ DFT-S-OFDM QPSK



60 ㎒ DFT-S-OFDM 16QAM

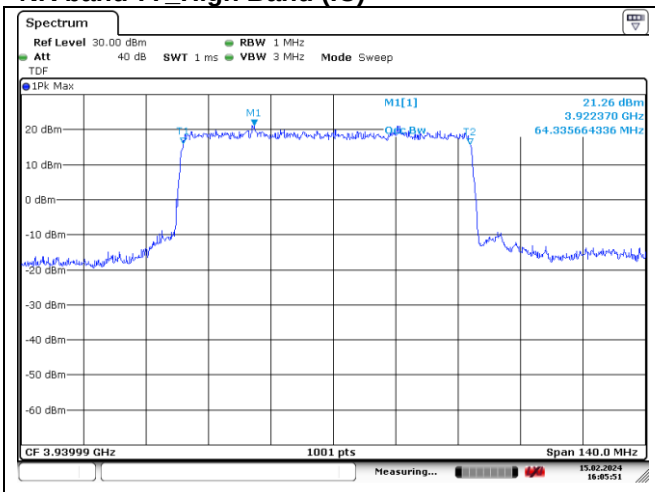


60 ㎒ CP-OFDM QPSK

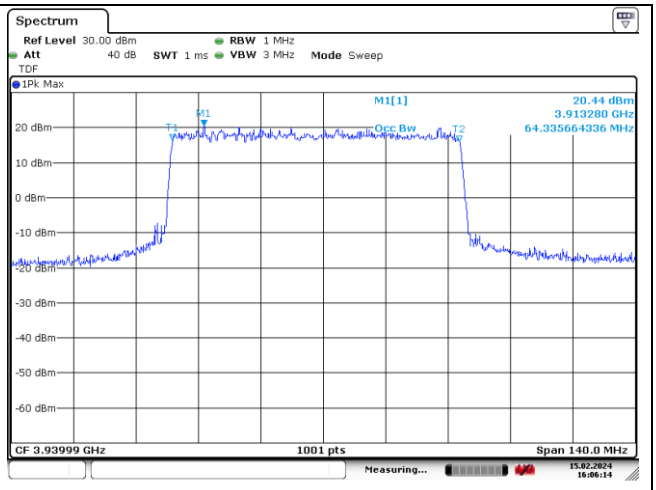


60 ㎒ CP-OFDM 16QAM

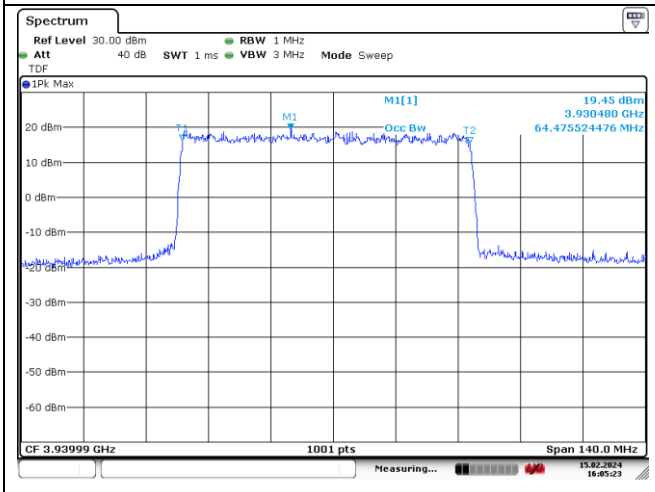
NR band 77_High Band (IC)



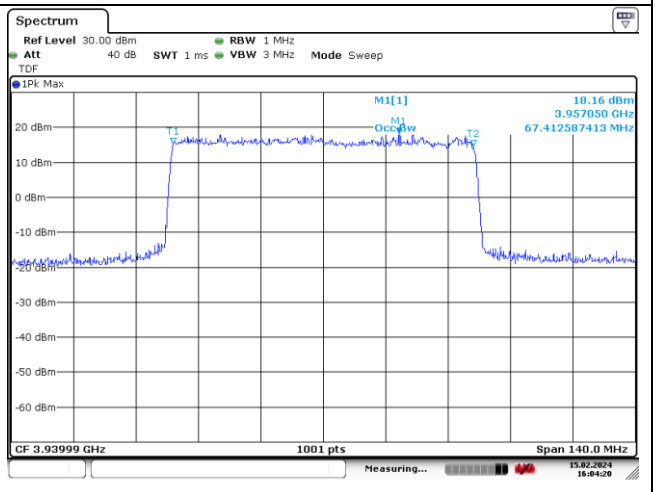
70 ㎒ DFT-S-OFDM BPSK



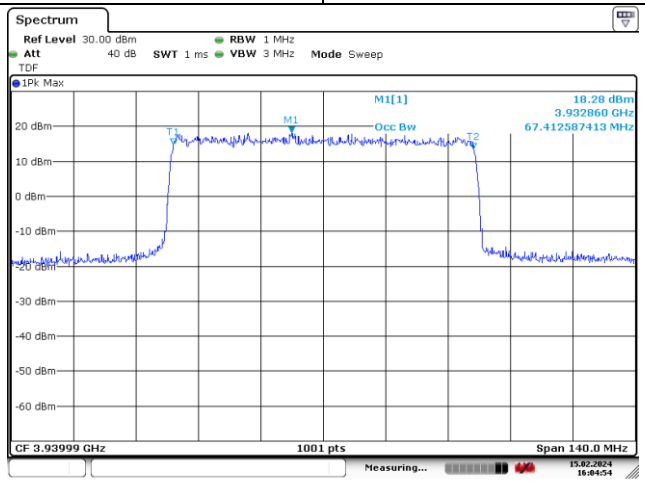
70 ㎒ DFT-S-OFDM QPSK



70 ㎒ DFT-S-OFDM 16QAM

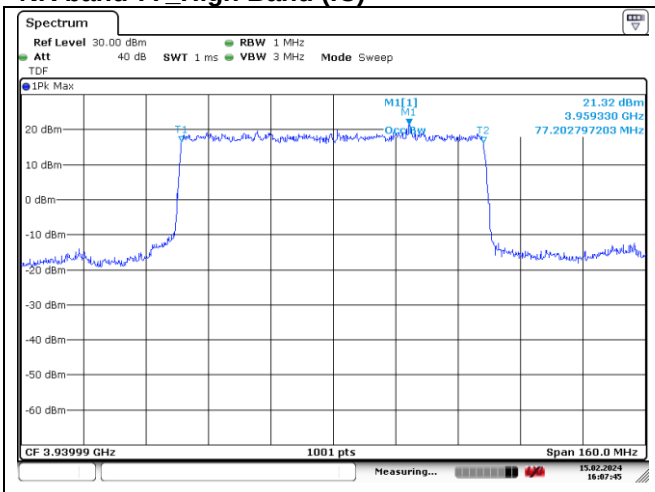


70 ㎒ CP-OFDM QPSK

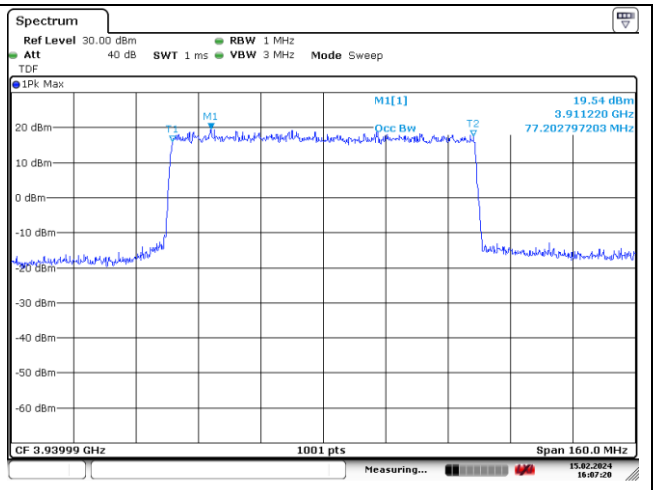


70 ㎒ CP-OFDM 16QAM

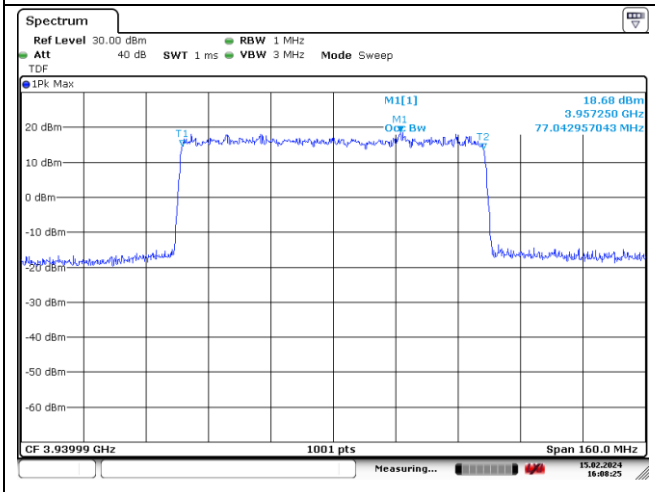
NR band 77_High Band (IC)



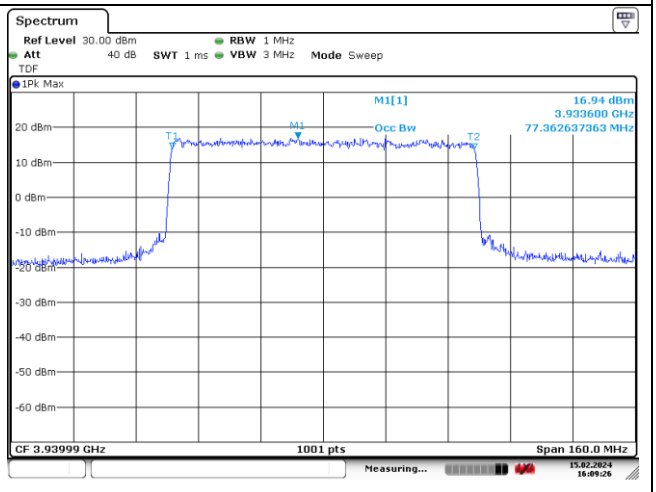
80 ㎒ DFT-S-OFDM BPSK



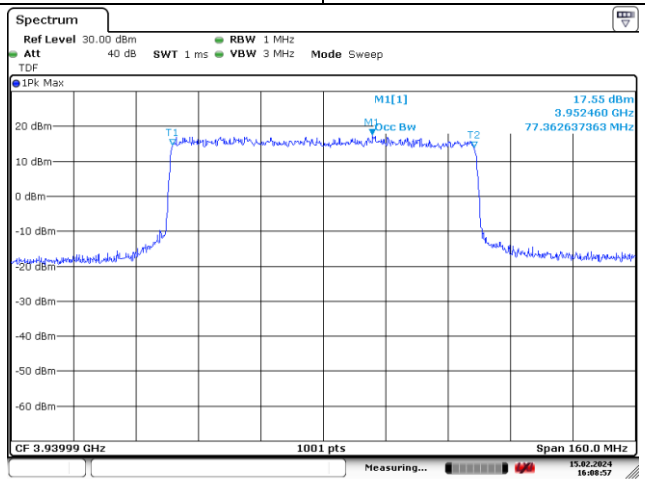
80 ㎒ DFT-S-OFDM QPSK



80 ㎒ DFT-S-OFDM 16QAM



80 ㎒ CP-OFDM QPSK



80 ㎒ CP-OFDM 16QAM

5. Peak-Average Ratio

5.1. Limit

FCC

- §27.50(j)(4), Equipment employed must be authorized in accordance with the provisions of § 27.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (j)(5) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 ㏈.

- §27.50(k)(4), Equipment employed must be authorized in accordance with the provisions of § 27.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (k)(5) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 ㏈.

IC

- RSS-192 Issue 5

5.5, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 ㏈ for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission

- RSS-198 Issue 1

5.5, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 ㏈ for more than 0.1% of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

- RSS-199 Issue 4

5.5, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 ㏈ for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

5.2. Test Procedure

The test follows section 5.2.3.4 of ANSI C63.26-2015.

See instrumentation-specific application literature for further guidance regarding use of the CCDF capability. The following guidelines are offered for performing a CCDF measurement.

a. Set resolution/measurement bandwidth ≥ OBW or specified reference bandwidth.

b. Set the number of counts to a value that stabilizes the measured CCDF curve.

c. Set the measurement interval as follows:

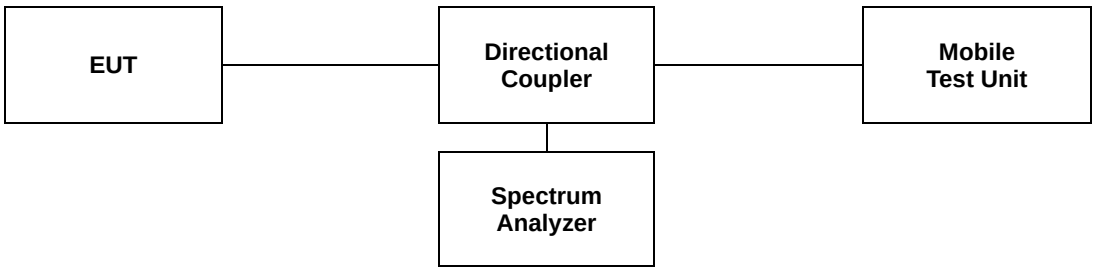
1) For continuous transmissions, set to greater of [10 x (number of points in sweep) x (transmission symbol period)] or 1 ㎳.

2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration.

3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers.

d. Record the maximum PAPR level associated with a probability of 0.1 %.

e. The peak power level is calculated form the sum of the PAPR value from step d) to the measured average power.



5.3 Test Results

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

Band	SCS (㎑)	BW (㎒)	Mode	Frequency (㎒)	PAR (dB)	
					DFT-S-OFDM	CP-OFDM
41 (FCC)	730	20	256QAM	2 506.02	6.67	8.75
				2 592.99	6.58	8.78
				2 679.99	6.55	8.72
		30	256QAM	2 511.00	6.67	8.67
				2 592.99	6.70	8.64
				2 674.98	6.64	8.67
		40	256QAM	2 516.01	6.67	8.87
				2 592.99	6.64	8.72
				2 670.00	6.67	8.64
		50	256QAM	2 521.02	6.60	8.80
				2 592.99	6.64	8.80
				2 664.99	6.60	8.72
		60	256QAM	2 526.00	6.72	8.46
				2 592.99	6.62	8.46
				2 659.98	6.60	8.54
		70	256QAM	2 531.01	6.48	8.72
				2 592.99	6.56	8.54
				2 655.00	6.58	8.68
		80	256QAM	2 536.02	6.68	8.32
				2 592.99	6.52	8.44
				2 649.99	6.62	8.42
		90	256QAM	2 541.00	6.74	8.50
				2 592.99	8.52	6.54
				2 644.98	6.74	8.52
		100	256QAM	2 546.01	6.70	8.50
				2 592.99	6.62	8.66
				2 640.00	6.74	8.52

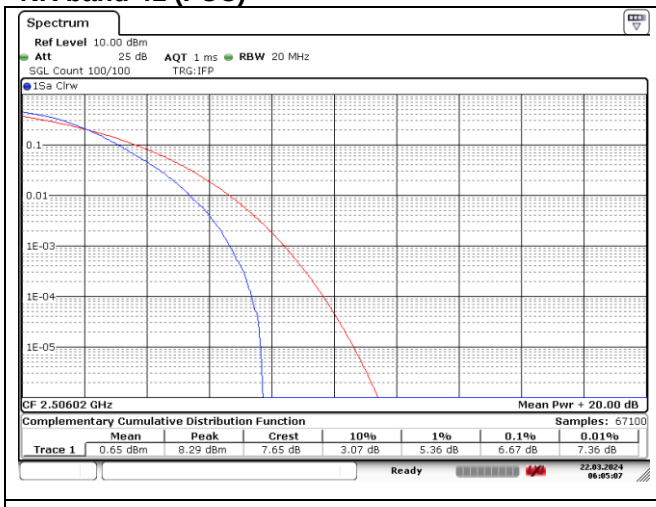
Band	SCS (㎑)	BW (㎒)	Mode	Frequency (㎒)	PAR (㏈)	
					DFT-S-OFDM	CP-OFDM
41 (IC)	30	20	256QAM	2 510.01	6.61	8.81
				2 595.00	6.52	8.75
				2 679.99	6.55	8.75
		30	256QAM	2 515.02	6.72	8.67
				2 595.00	6.67	8.81
				2 674.98	6.70	8.75
		40	256QAM	2 520.00	6.64	8.81
				2 595.00	6.70	8.64
				2 670.00	6.67	8.61
		50	256QAM	2 525.01	6.64	8.74
				2 595.00	6.62	8.78
				2 664.99	6.64	8.68
		60	256QAM	2 530.02	6.82	8.40
				2 595.00	6.60	8.44
				2 659.98	6.60	8.38
		70	256QAM	2 535.00	6.54	8.58
				2 595.00	6.56	8.66
				2 655.00	6.58	8.60
		80	256QAM	2 540.01	6.72	8.44
				2 595.00	6.56	8.52
				2 649.99	6.58	8.44
		90	256QAM	2 545.02	6.78	8.54
				2 595.00	6.50	8.52
				2 644.98	6.70	8.50
		100	256QAM	2 550.00	6.78	8.64
				2 595.00	6.70	8.60
				2 640.00	6.74	8.64
48 (IC)	30	20	256QAM	3 560.01	6.52	8.70
				3 624.99	6.55	8.67
				3 690.00	6.55	8.72
		30	256QAM	3 565.02	6.70	8.78
				3 624.99	6.72	8.67
				3 684.99	6.70	8.67
		40	256QAM	3 570.00	6.64	8.67
				3 624.99	6.70	8.64
				3 679.98	6.67	8.61

Band	SCS (㎑)	BW (㎒)	Mode	Frequency (㎒)	PAR (dB)	
					DFT-S-OFDM	CP-OFDM
n77/78 Low Band (FCC)	30	20	64QAM	3 460.02	6.36	8.32
				3 500.01	6.34	8.66
				3 540.00	6.38	8.64
		30	64QAM	3 465.00	6.60	8.58
				3 500.01	6.68	8.64
				3 534.99	6.60	8.56
		40	64QAM	3 470.01	6.76	8.54
				3 500.01	6.70	8.40
				3 529.98	6.80	8.42
		50	64QAM	3 475.02	6.60	8.54
				3 500.01	6.58	8.56
				3 525.00	6.56	8.50
		60	64QAM	3 480.00	6.54	8.36
				3 500.01	6.58	8.44
				3 519.99	6.62	8.42
		70	64QAM	3 485.01	6.52	8.60
				3 500.01	6.52	8.46
				3 514.98	6.48	8.54
		80	64QAM	3 490.02	6.46	8.42
				3 500.01	6.48	8.36
				3 510.00	6.48	8.34
		90	64QAM	3 495.00	6.54	8.50
				3 500.01	6.48	8.40
				3 504.99	6.54	8.42
		100	64QAM	3 500.01	6.46	8.40
n77/78 High Band (FCC)	30	20	64QAM	3 710.01	6.44	8.74
				3 840.00	6.34	8.46
				3 969.99	6.18	8.58
		30	64QAM	3 715.02	6.80	8.68
				3 840.00	6.76	8.54
				3 964.98	6.40	8.20
		40	64QAM	3 720.00	6.80	8.66
				3 840.00	6.88	8.78
				3 960.00	6.76	8.72
		50	64QAM	3 725.01	6.78	8.76
				3 840.00	6.62	8.68
				3 954.99	6.70	8.84
		60	64QAM	3 730.02	6.72	8.38
				3 840.00	6.64	8.48
				3 949.98	6.68	8.40
		70	64QAM	3 735.00	6.68	8.68
				3 840.00	6.70	8.72
				3 945.00	6.54	8.66
		80	64QAM	3 740.01	6.68	8.42
				3 840.00	6.58	8.58
				3 939.99	6.64	8.56
		90	64QAM	3 745.02	6.72	8.64
				3 840.00	6.72	8.56
				3 934.98	6.62	8.62
		100	64QAM	3 750.00	6.68	8.70
				3 840.00	6.72	8.58
				3 930.00	6.64	8.34

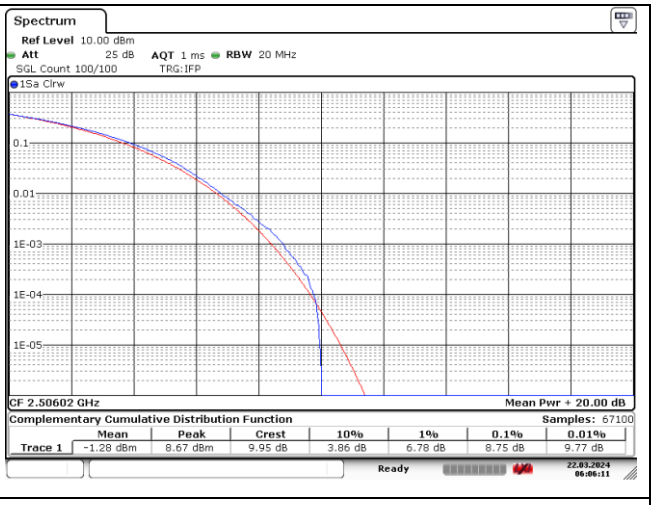
Band	SCS (㎑)	BW (㎒)	Mode	Frequency (㎒)	PAR (㏈)	
					DFT-S-OFDM	CP-OFDM
n77/78 Low Band (IC)	30	20	64QAM	3 460.02	6.40	8.60
				3 675.00	6.52	8.70
				3 889.98	6.38	8.58
		30	64QAM	3 465.00	6.66	8.58
				3 675.00	6.60	8.72
				3 885.00	6.78	8.58
		40	64QAM	3 470.01	6.72	8.50
				3 675.00	7.02	8.70
				3 879.99	6.74	8.56
		50	64QAM	3 475.02	6.64	8.64
				3 675.00	6.48	8.48
				3 874.98	6.50	8.50
		60	64QAM	3 480.00	6.52	8.26
				3 675.00	6.58	8.30
				3 870.00	6.54	8.24
		70	64QAM	3 485.01	6.50	8.44
				3 675.00	6.44	8.68
				3 864.99	6.44	8.36
		80	64QAM	3 490.02	6.48	8.38
				3 675.00	6.24	8.36
				3 859.98	6.40	8.32
		90	64QAM	3 495.00	6.52	8.46
				3 675.00	6.56	8.54
				3 855.00	6.52	8.32
		100	64QAM	3 500.01	6.54	8.48
				3 675.00	6.28	8.60
				3 849.99	6.54	8.36
n77 High Band (IC)	30	20	64QAM	3 910.02	6.40	8.74
				3 939.99	6.46	8.58
				3 969.99	6.20	8.92
		30	64QAM	3 915.00	6.76	8.68
				3 939.99	6.78	8.48
				3 964.98	6.12	8.16
		40	64QAM	3 920.01	6.74	8.52
				3 939.99	6.84	8.54
				3 960.00	6.60	8.58
		50	64QAM	3 925.02	6.50	8.52
				3 939.99	6.48	8.44
				3 954.99	6.82	8.68
		60	64QAM	3 930.00	6.50	8.20
				3 939.99	6.52	8.24
				3 949.98	6.54	8.18
		70	64QAM	3 935.01	6.42	8.40
				3 939.99	6.42	8.38
				3 945.00	6.44	8.38
		80	64QAM	3 939.99	6.40	8.16

- Test plots

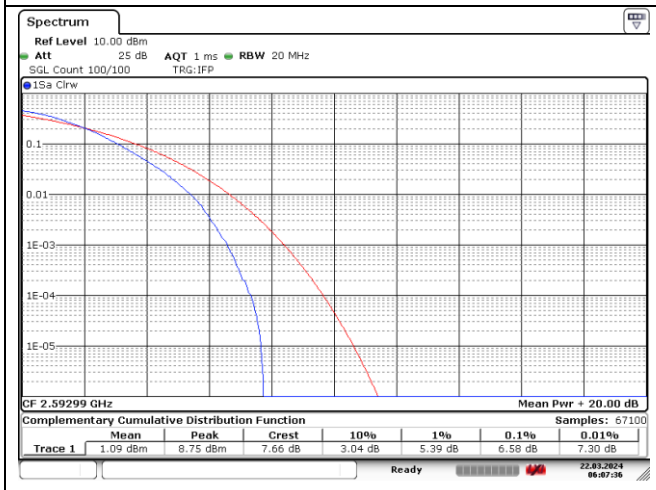
NR band 41 (FCC)



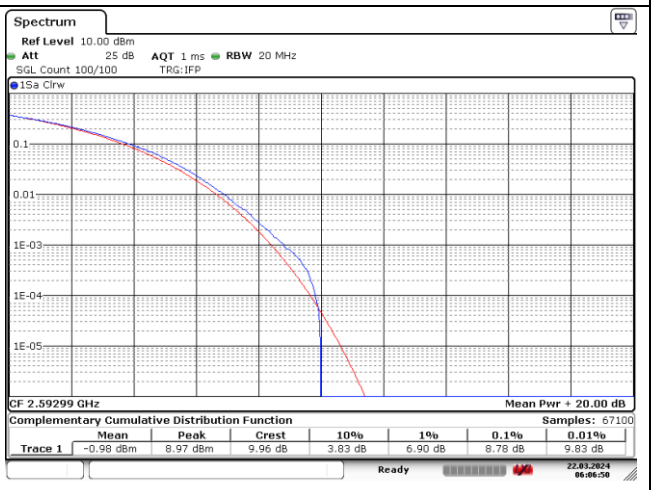
20 ㎒ Low Channel - Full RB - DFT-S-OFDM



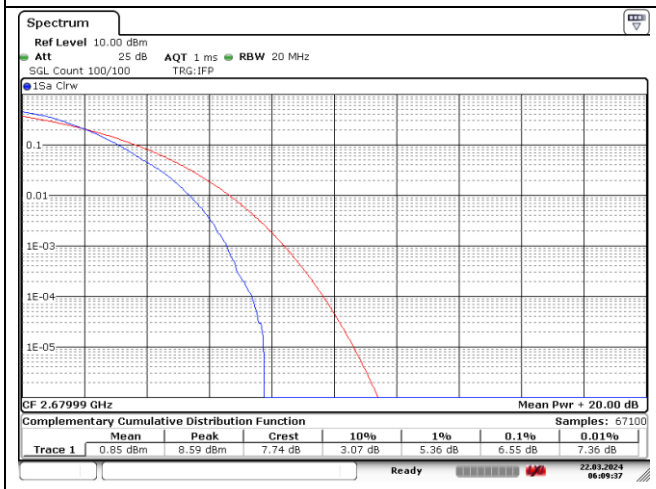
20 ㎒ Low Channel - Full RB - CP-OFDM



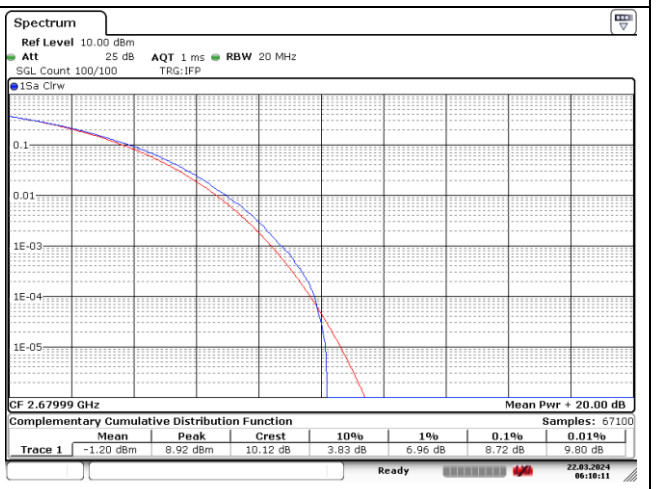
20 ㎒ Middle Channel - Full RB - DFT-S-OFDM



20 ㎒ Middle Channel - Full RB - CP-OFDM

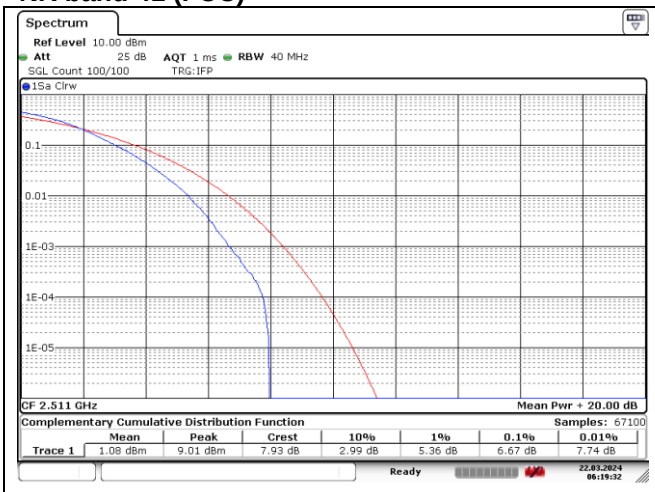


20 ㎒ High Channel - Full RB - DFT-S-OFDM

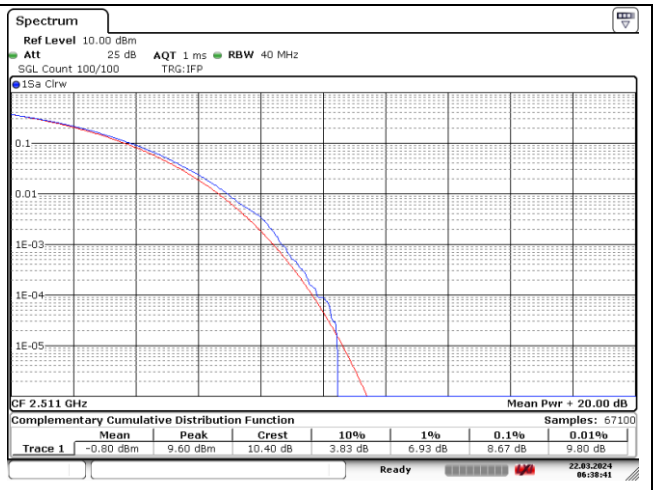


20 ㎒ High Channel - Full RB - CP-OFDM

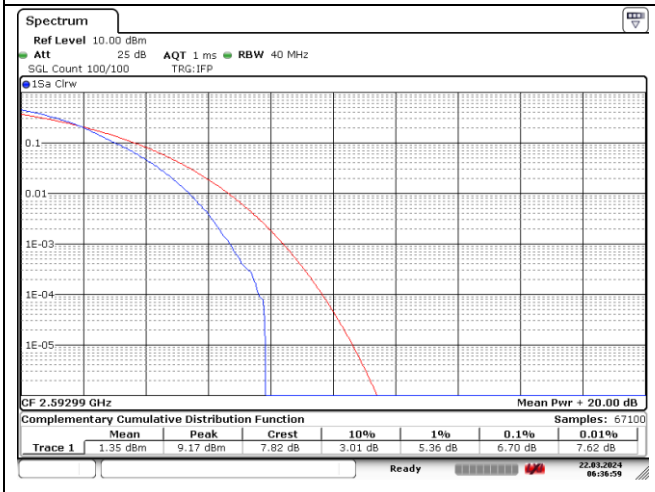
NR band 41 (FCC)



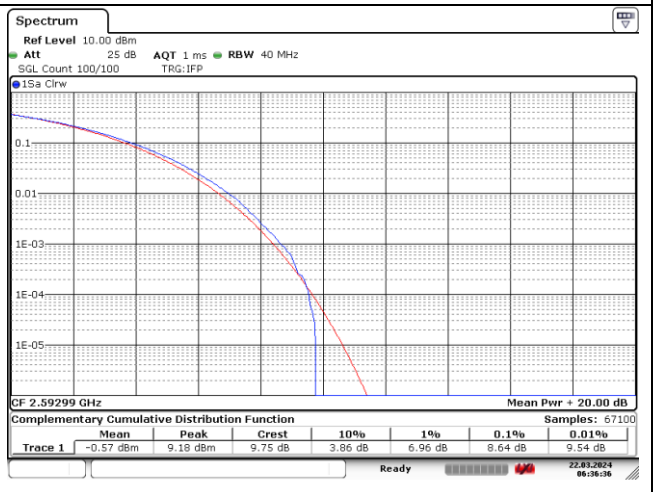
30 ㎒ Low Channel - Full RB - DFT-S-OFDM



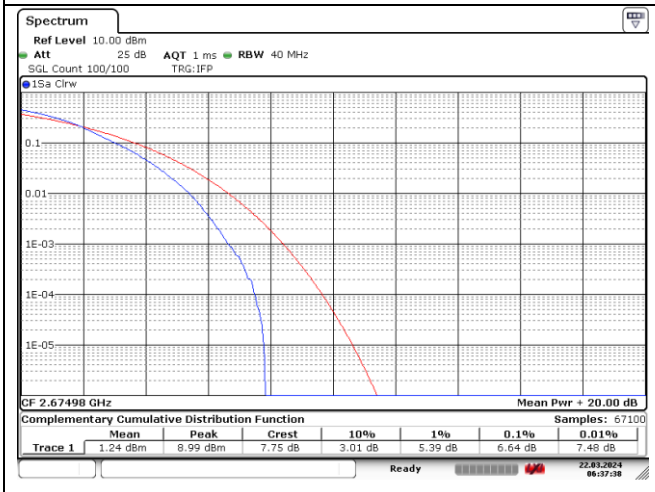
30 ㎒ Low Channel - Full RB - CP-OFDM



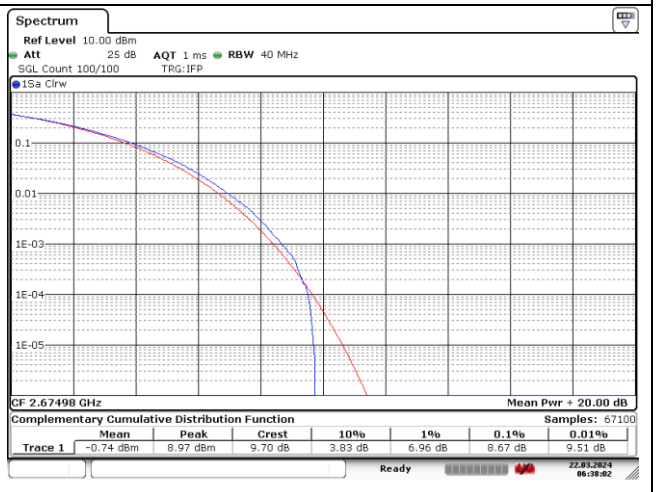
30 ㎒ Middle Channel - Full RB - DFT-S-OFDM



30 ㎒ Middle Channel - Full RB - CP-OFDM

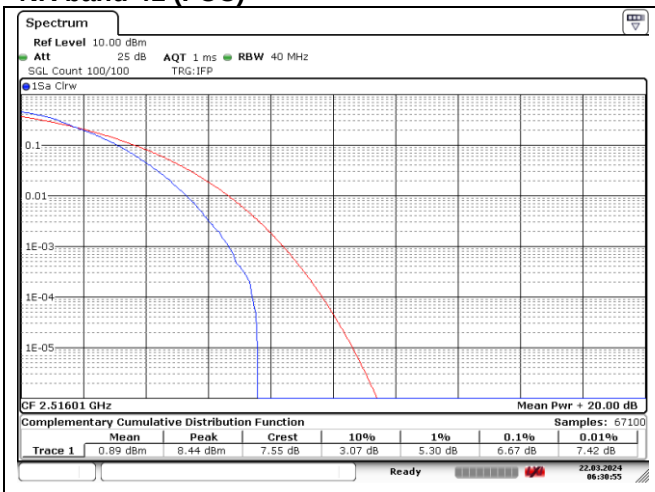


30 ㎒ High Channel - Full RB - DFT-S-OFDM

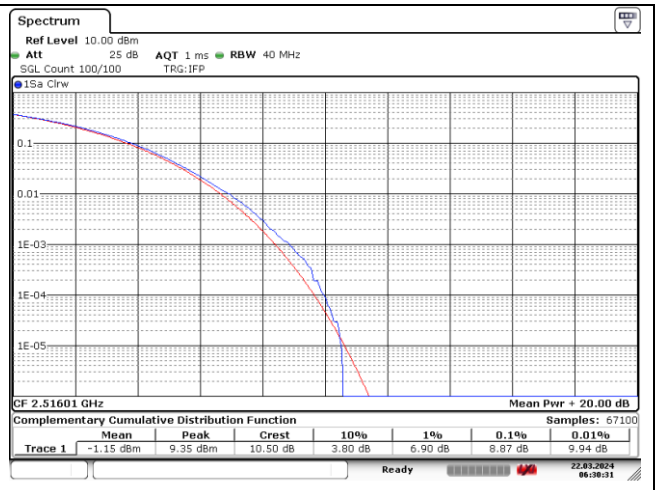


30 ㎒ High Channel - Full RB - CP-OFDM

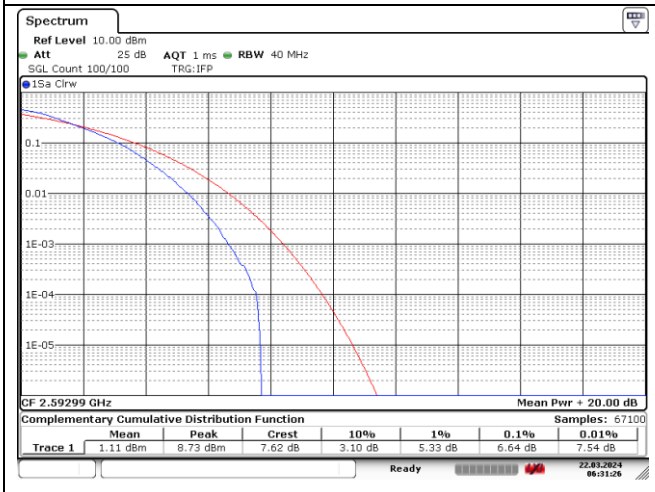
NR band 41 (FCC)



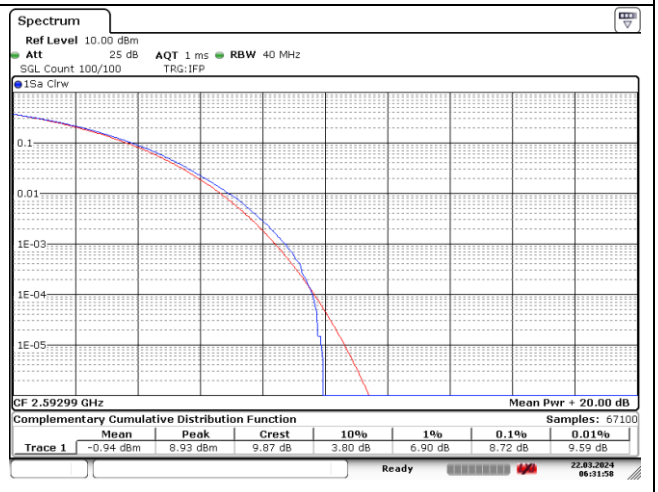
40 ㎒ Low Channel - Full RB - DFT-S-OFDM



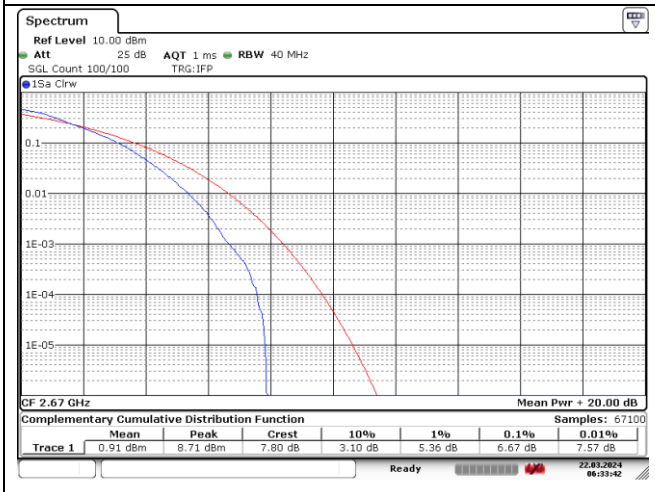
40 ㎒ Low Channel - Full RB - CP-OFDM



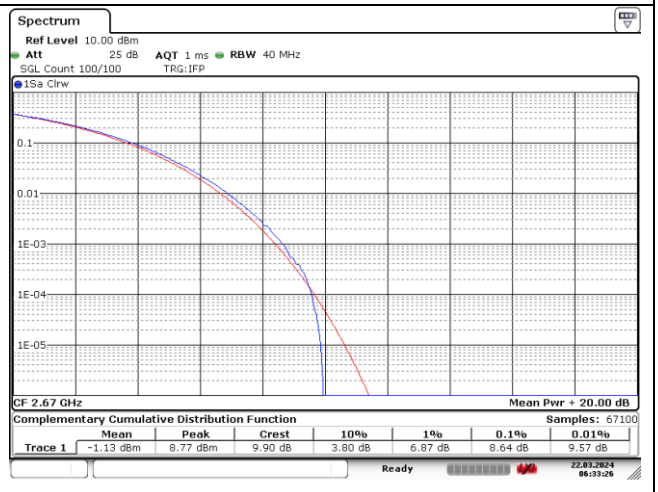
40 ㎒ Middle Channel - Full RB - DFT-S-OFDM



40 ㎒ Middle Channel - Full RB - CP-OFDM

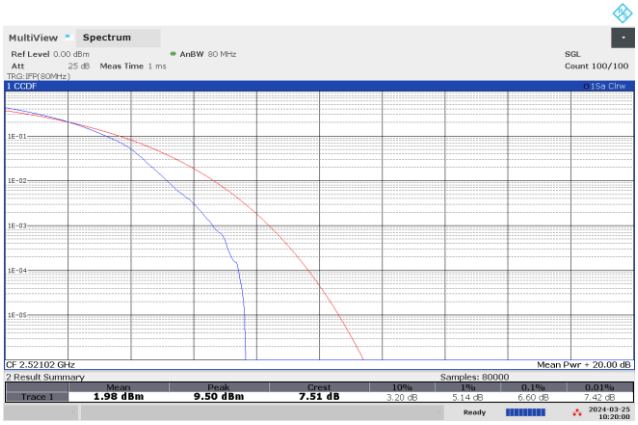


40 ㎒ High Channel - Full RB - DFT-S-OFDM



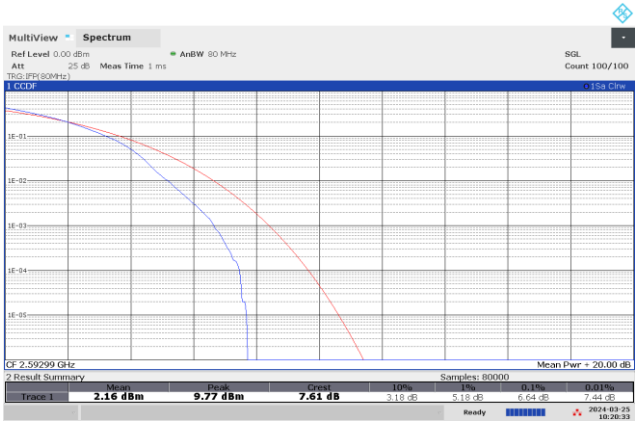
40 ㎒ High Channel - Full RB - CP-OFDM

NR band 41 (FCC)

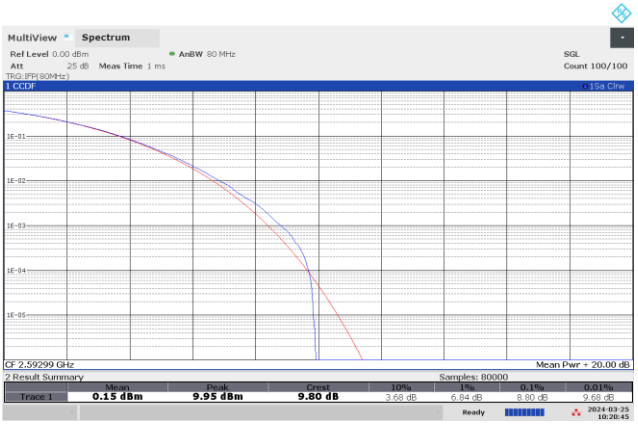


50 ㎒ Low Channel - Full RB - DFT-S-OFDM

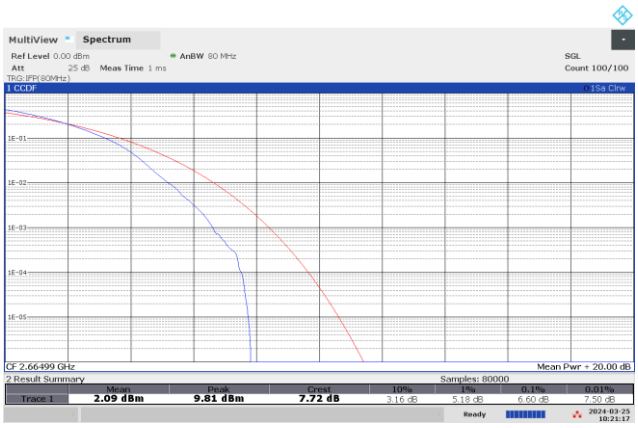
50 ㎒ Low Channel - Full RB - CP-OFDM



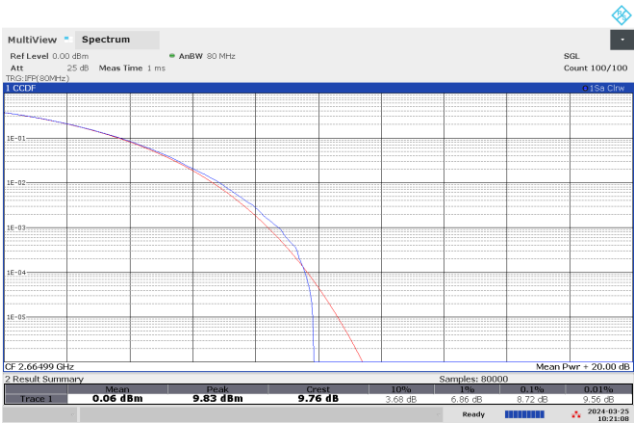
50 ㎒ Middle Channel - Full RB - DFT-S-OFDM



50 ㎒ Middle Channel - Full RB - CP-OFDM



50 ㎒ High Channel - Full RB - DFT-S-OFDM

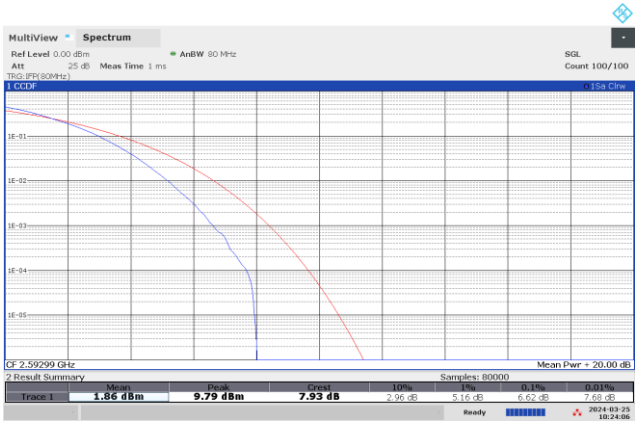


50 ㎒ High Channel - Full RB - CP-OFDM

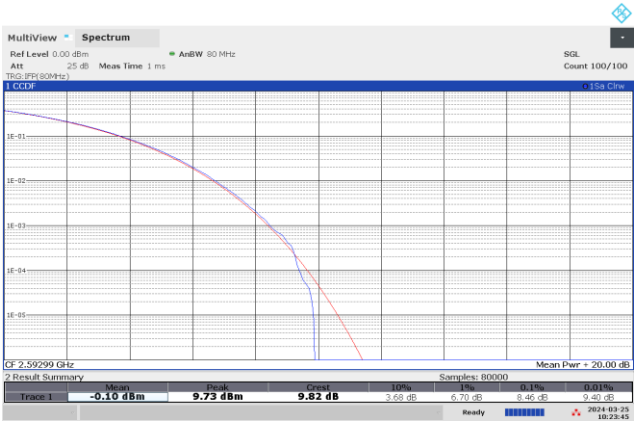
NR band 41 (FCC)

60 ㎒ Low Channel - Full RB - DFT-S-OFDM

60 ㎒ Low Channel - Full RB - CP-OFDM

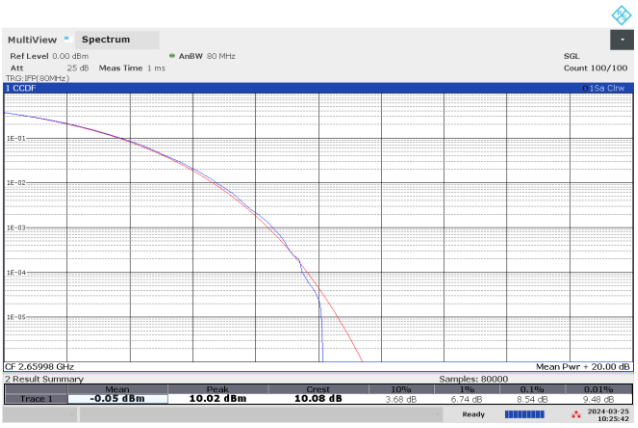


60 ㎒ Middle Channel - Full RB - DFT-S-OFDM



60 ㎒ Middle Channel - Full RB - CP-OFDM

60 ㎒ High Channel - Full RB - DFT-S-OFDM



60 ㎒ High Channel - Full RB - CP-OFDM

NR band 41 (FCC)

70 ㎒ Low Channel - Full RB - DFT-S-OFDM

70 ㎒ Low Channel - Full RB - CP-OFDM

70 ㎒ Middle Channel - Full RB - DFT-S-OFDM

70 ㎒ Middle Channel - Full RB - CP-OFDM

70 ㎒ High Channel - Full RB - DFT-S-OFDM

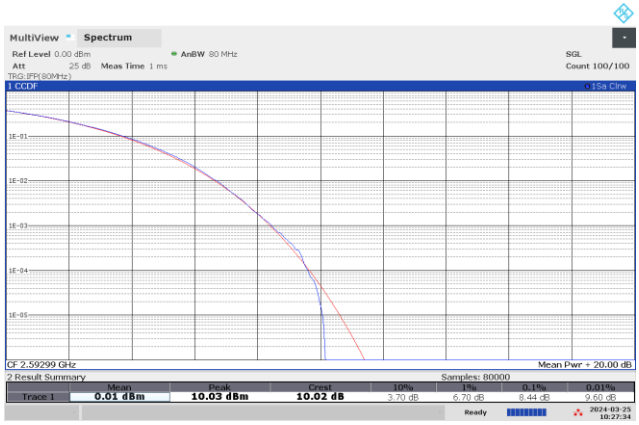
70 ㎒ High Channel - Full RB - CP-OFDM

NR band 41 (FCC)

80 ㎒ Low Channel - Full RB - DFT-S-OFDM

80 ㎒ Low Channel - Full RB - CP-OFDM

80 ㎒ Middle Channel - Full RB - DFT-S-OFDM



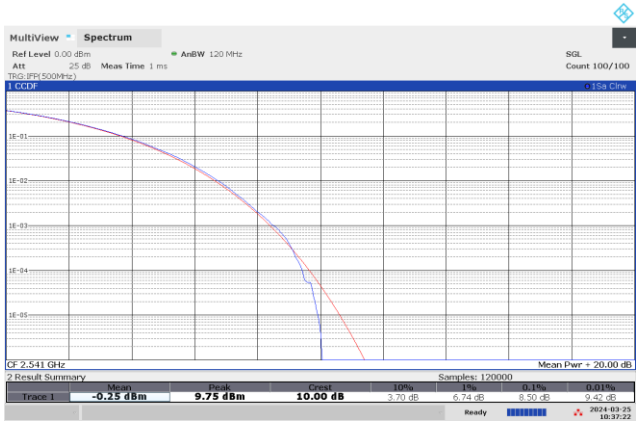
80 ㎒ Middle Channel - Full RB - CP-OFDM

80 ㎒ High Channel - Full RB - DFT-S-OFDM

80 ㎒ High Channel - Full RB - CP-OFDM

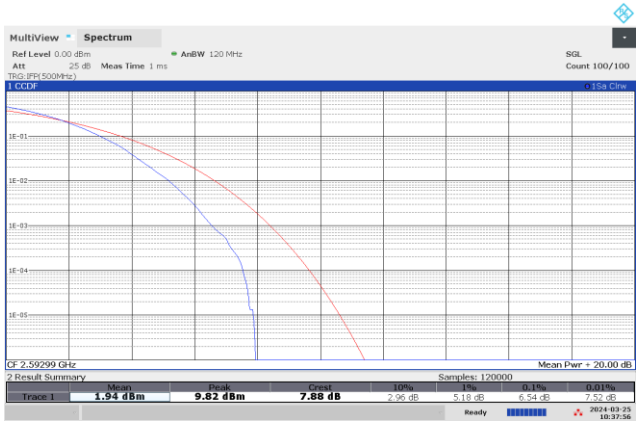
NR band 41 (FCC)

90 ㎒ Low Channel - Full RB - DFT-S-OFDM



90 ㎒ Low Channel - Full RB - CP-OFDM

90 ㎒ Middle Channel - Full RB - DFT-S-OFDM

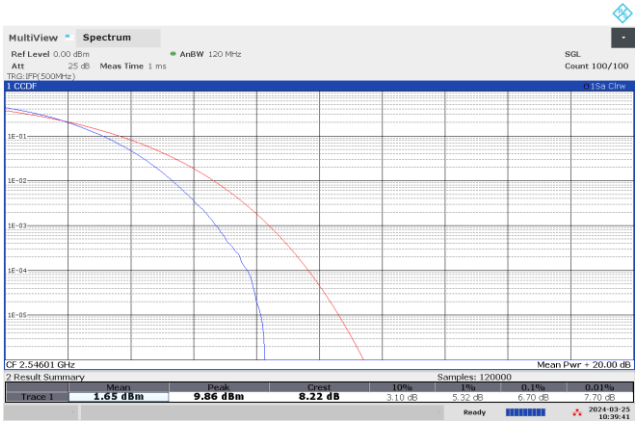


90 ㎒ Middle Channel - Full RB - CP-OFDM

90 ㎒ High Channel - Full RB - DFT-S-OFDM

90 ㎒ High Channel - Full RB - CP-OFDM

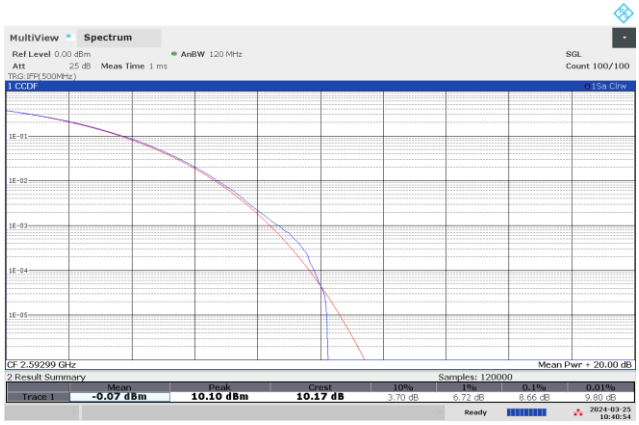
NR band 41 (FCC)



100 ㎒ Low Channel - Full RB - DFT-S-OFDM

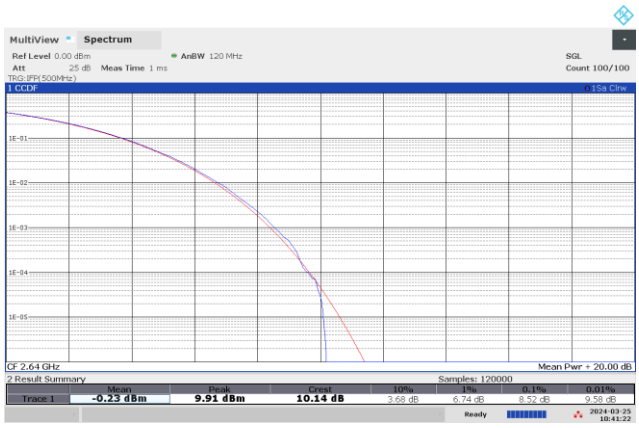
100 ㎒ Low Channel - Full RB - CP-OFDM

100 ㎒ Middle Channel - Full RB - DFT-S-OFDM



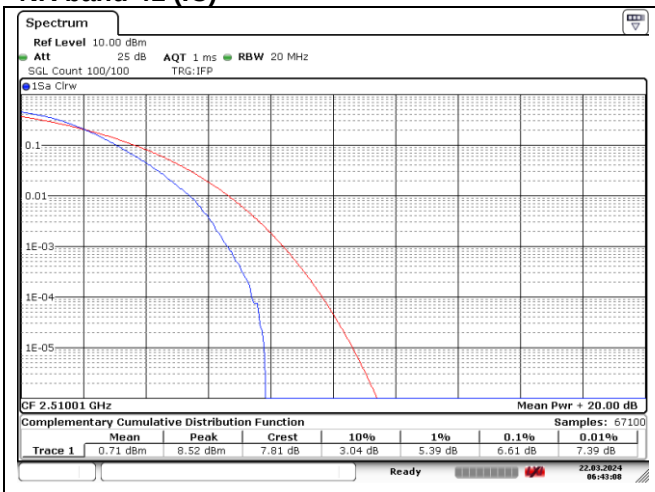
100 ㎒ Middle Channel - Full RB - CP-OFDM

100 ㎒ High Channel - Full RB - DFT-S-OFDM

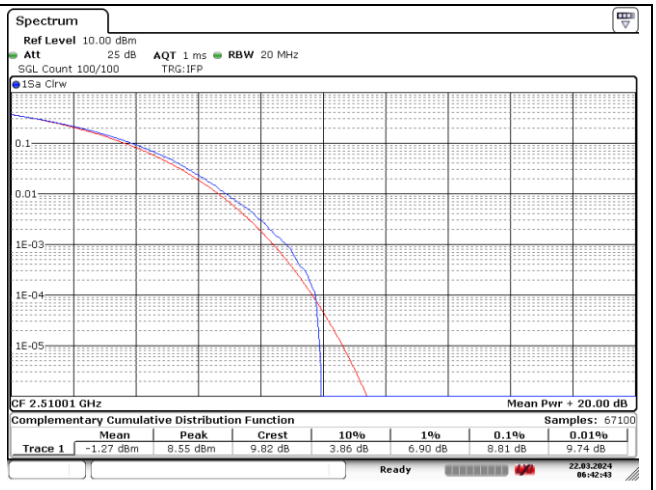


100 ㎒ High Channel - Full RB - CP-OFDM

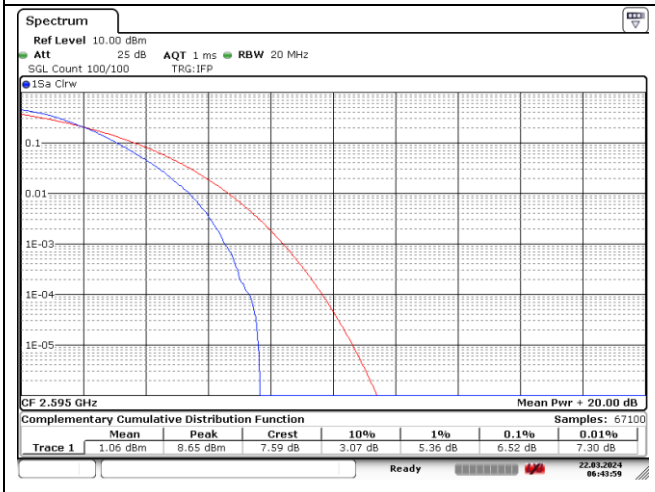
NR band 41 (IC)



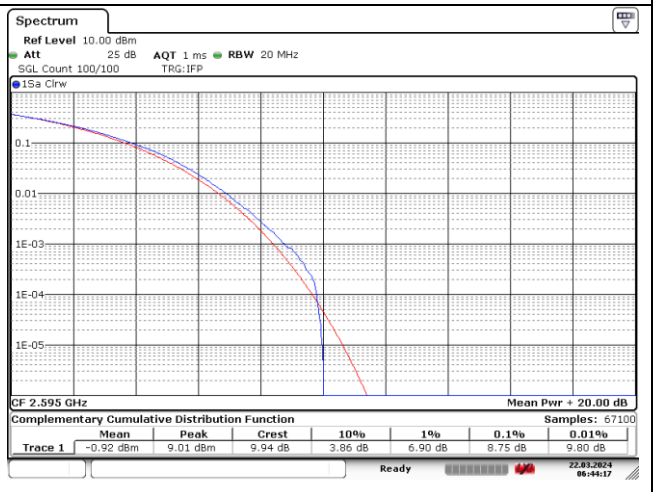
20 ㎒ Low Channel - Full RB - DFT-S-OFDM



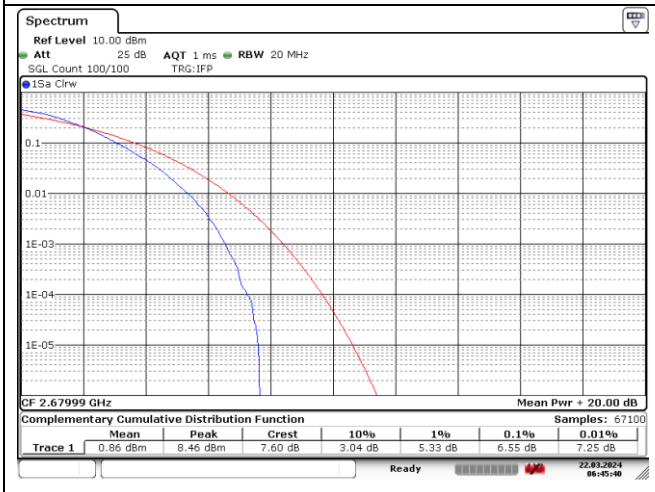
20 ㎒ Low Channel - Full RB - CP-OFDM



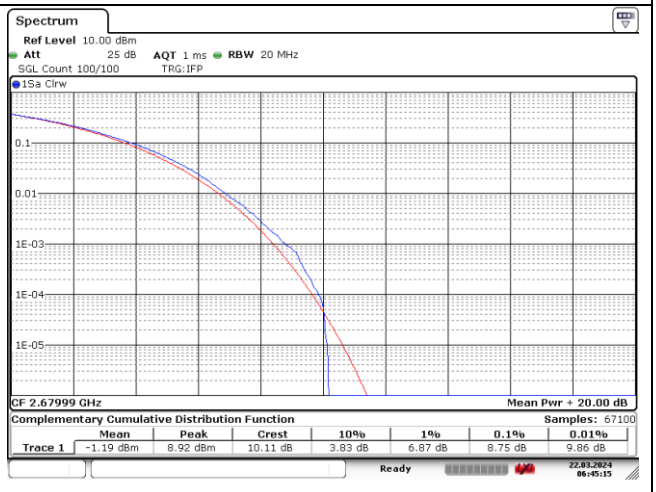
20 ㎒ Middle Channel - Full RB - DFT-S-OFDM



20 ㎒ Middle Channel - Full RB - CP-OFDM

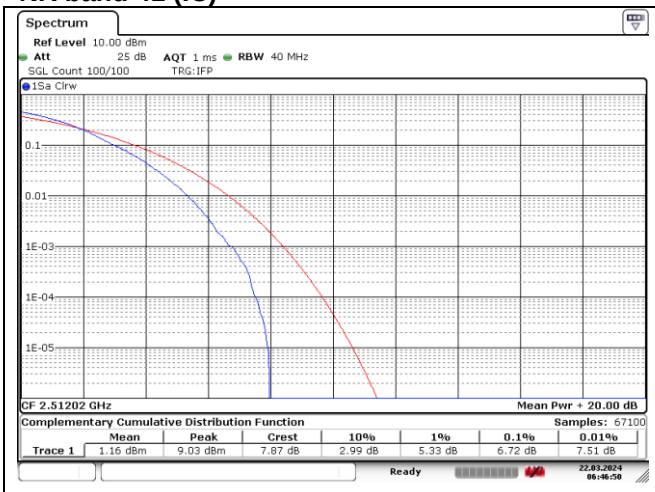


20 ㎒ High Channel - Full RB - DFT-S-OFDM

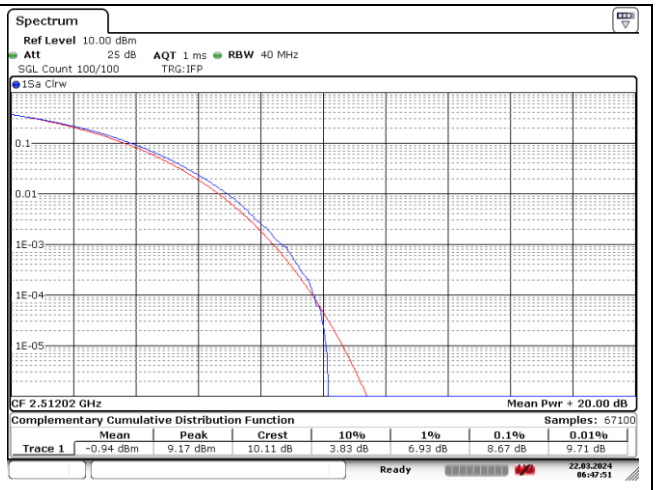


20 ㎒ High Channel - Full RB - CP-OFDM

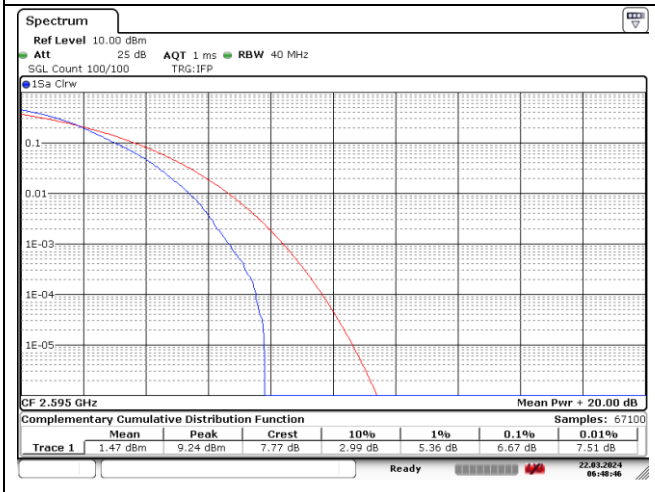
NR band 41 (IC)



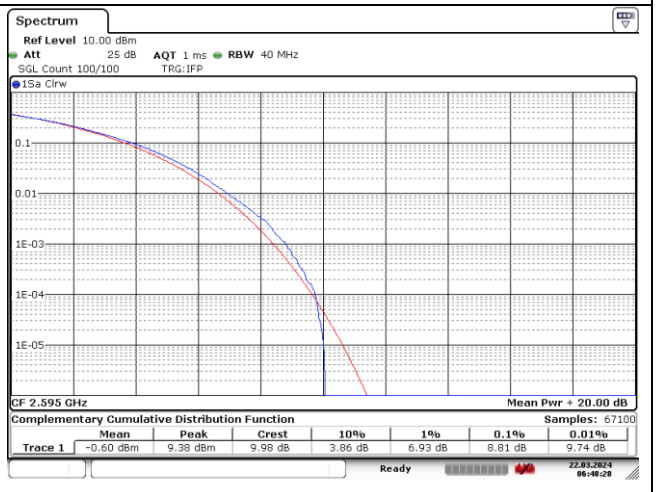
30 ㎒ Low Channel - Full RB - DFT-S-OFDM



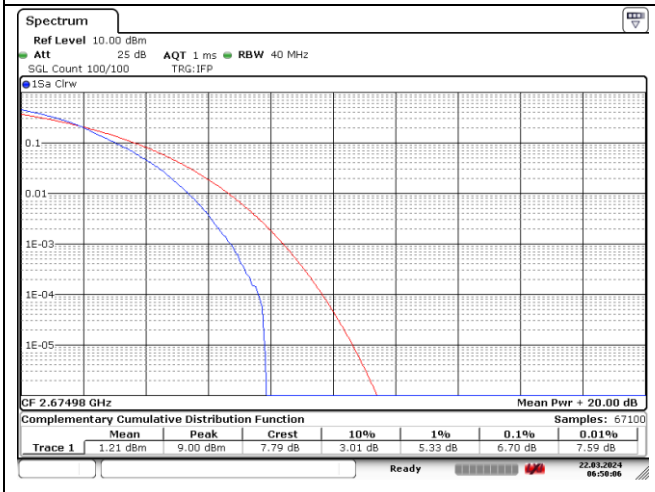
30 ㎒ Low Channel - Full RB - CP-OFDM



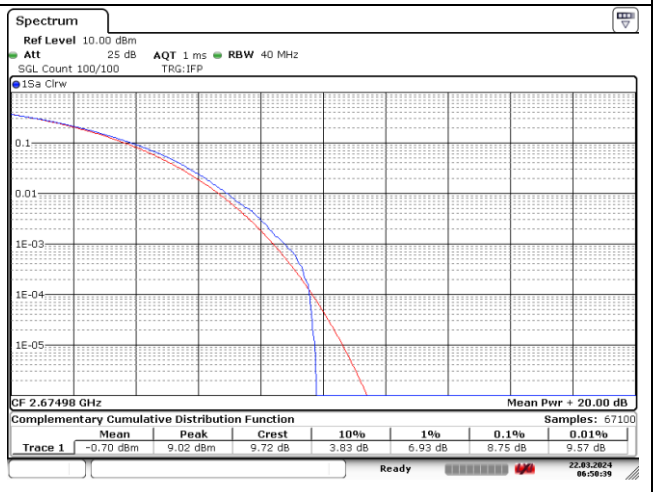
30 ㎒ Middle Channel - Full RB - DFT-S-OFDM



30 ㎒ Middle Channel - Full RB - CP-OFDM



30 ㎒ High Channel - Full RB - DFT-S-OFDM



30 ㎒ High Channel - Full RB - CP-OFDM