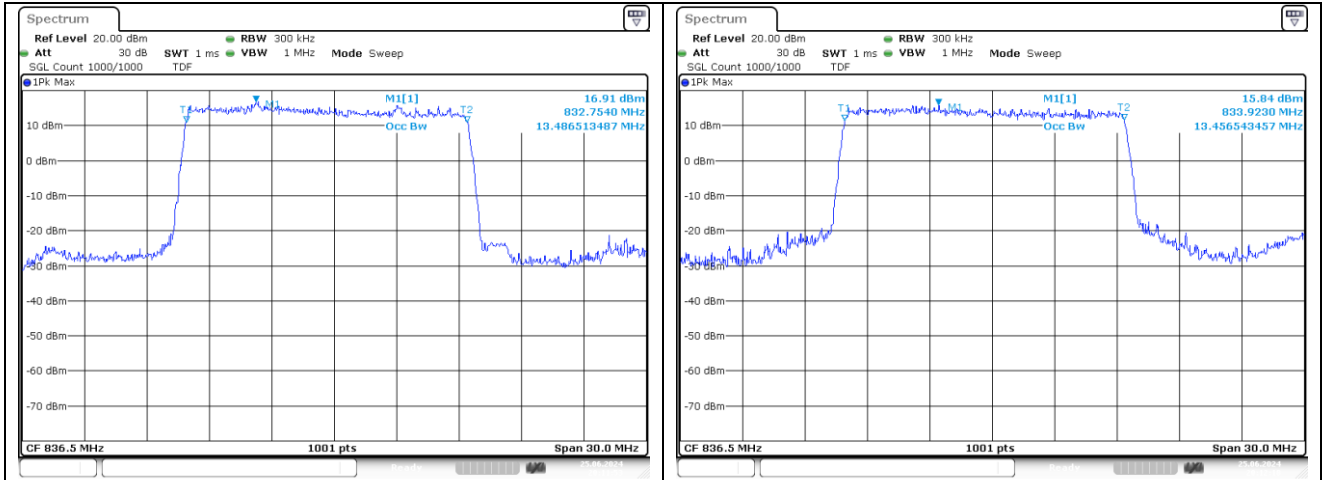
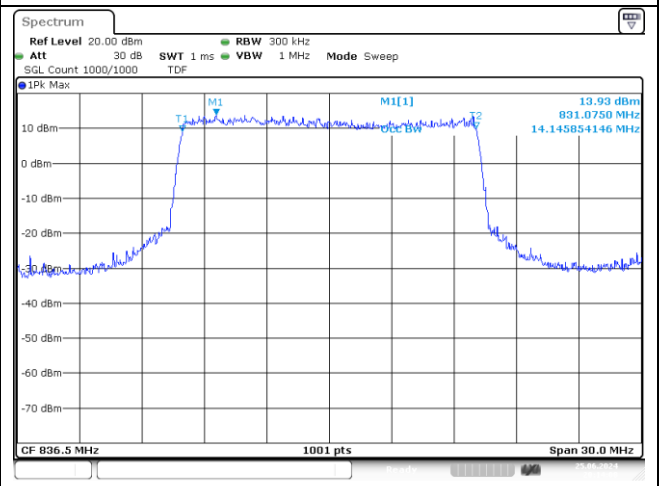
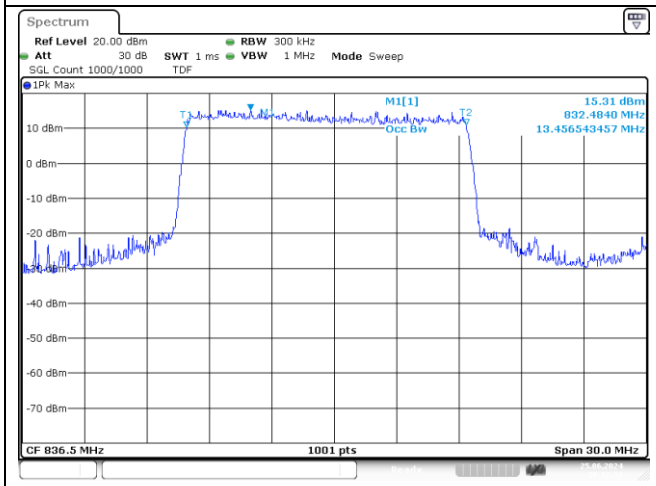


**NR band 5**



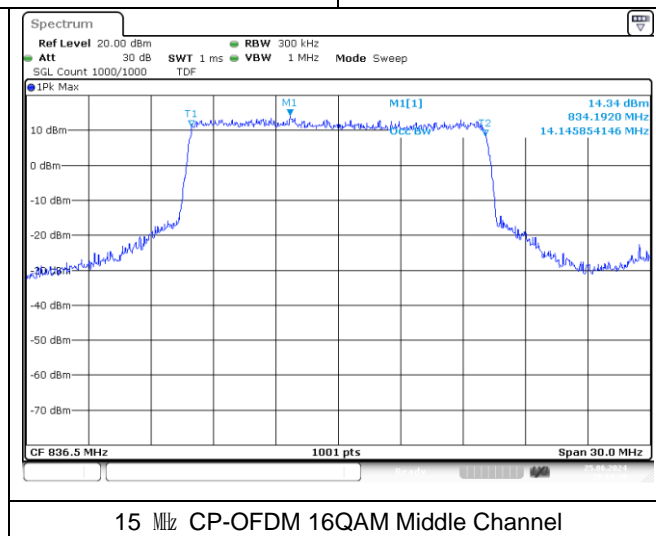
15 MHz DFT-S-OFDM BPSK Middle Channel

15 MHz DFT-S-OFDM QPSK Middle Channel



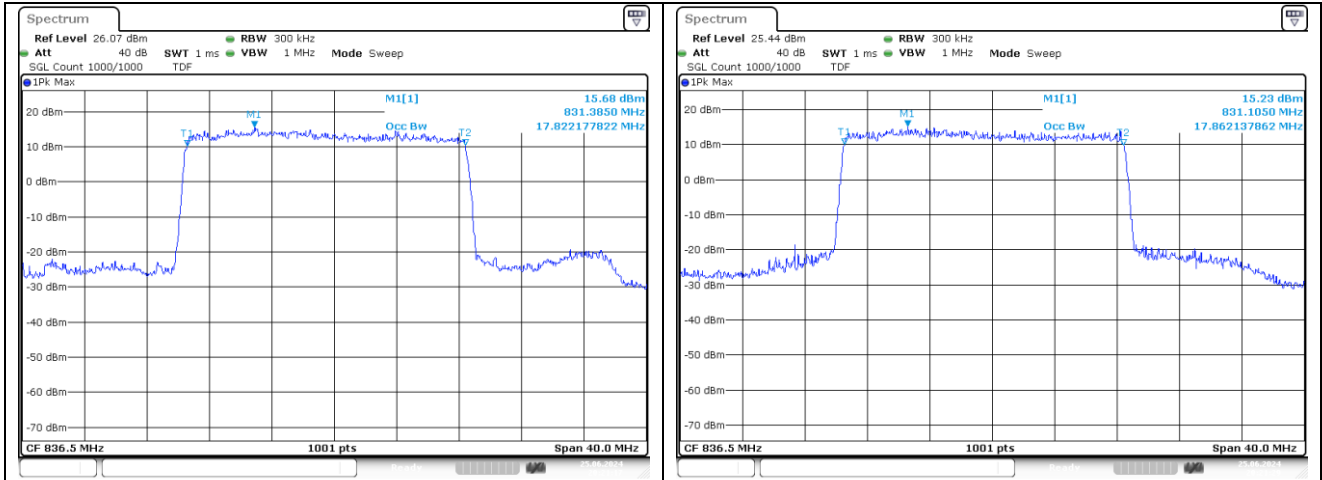
15 MHz DFT-S-OFDM 16QAM Middle Channel

15 MHz CP-OFDM QPSK Middle Channel



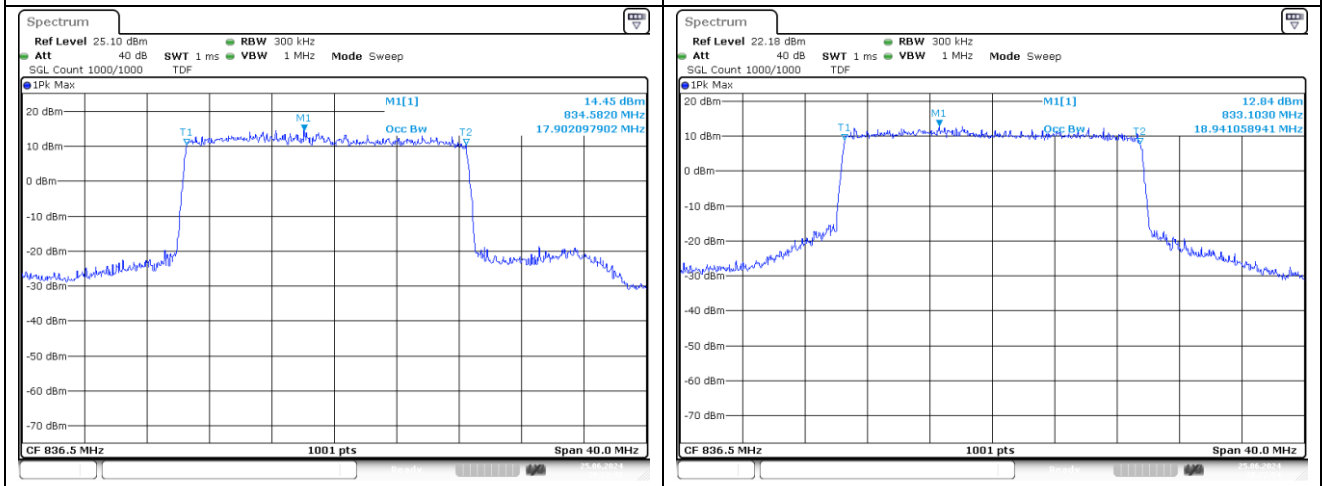
15 MHz CP-OFDM 16QAM Middle Channel

**NR band 5**



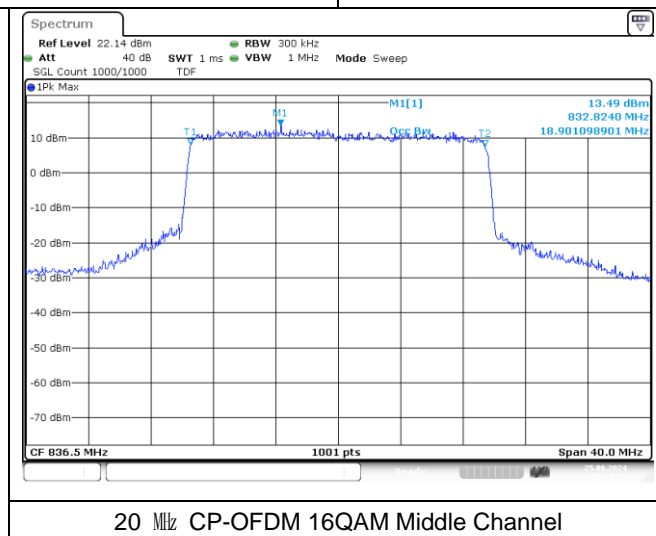
20 MHz DFT-S-OFDM BPSK Middle Channel

20 MHz DFT-S-OFDM QPSK Middle Channel



20 MHz DFT-S-OFDM 16QAM Middle Channel

20 MHz CP-OFDM QPSK Middle Channel



20 MHz CP-OFDM 16QAM Middle Channel

## 5. Peak-Average Ratio

### 5.1. Limit

#### FCC

- §22.913(d) measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

- §24.232(d), 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 (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

#### IC

- RSS-132 Issue 4

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

- RSS-133 Issue 6

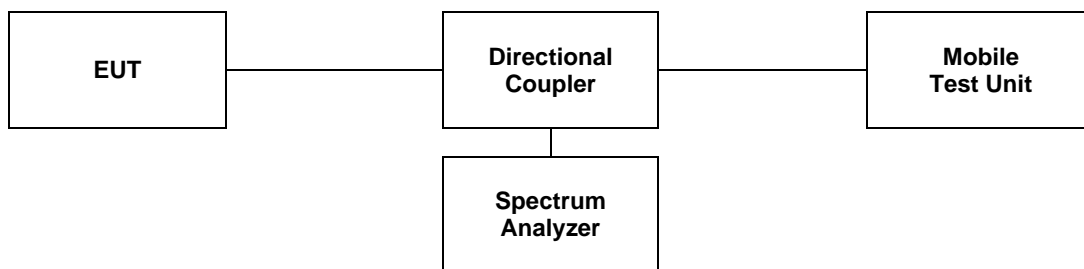
6.4, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

## 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  $\geq$  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  $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$  or 1 ms.
  - 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 from the sum of the PAPR value from step d) to the measured average power.



### 5.3 Test Results

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

#### SIM 1

Band	SCS (kHz)	BW (MHz)	Frequency (MHz)	PAR (dB)								
				DFT-S-OFDM					CP-OFDM			
				BPSK	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
2	15	5	1 852.5	3.33	4.29	5.74	6.14	6.64	6.78	6.78	7.30	8.84
			1 880.0	3.36	4.26	5.51	5.97	6.49	6.67	6.84	7.19	8.41
			1 907.5	3.39	4.29	5.65	5.91	6.81	6.75	6.87	7.33	8.78
		10	1 855.0	3.51	4.35	5.36	6.03	6.58	6.87	6.84	7.28	8.72
			1 880.0	3.42	4.38	5.57	6.06	6.58	6.84	6.87	7.25	8.75
			1 905.0	3.42	4.41	5.54	5.94	6.75	6.93	6.87	7.28	8.72
		15	1 857.5	3.77	4.41	5.48	6.03	6.49	6.72	6.78	7.33	8.72
			1 880.0	3.88	4.43	5.45	5.97	6.72	6.70	6.67	7.22	9.04
			1 902.5	3.65	4.41	5.42	6.00	6.75	6.67	6.70	7.30	8.72
		20	1 860.0	3.42	4.26	5.48	5.94	6.55	6.72	6.84	7.13	8.93
			1 880.0	3.65	4.29	5.45	6.00	6.43	6.72	6.72	7.16	8.70
			1 900.0	3.33	4.23	5.39	5.88	6.70	6.72	6.67	7.16	8.75
Band	SCS (kHz)	BW (MHz)	Frequency (MHz)	PAR (dB)								
				DFT-S-OFDM					CP-OFDM			
				BPSK	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
5	15	5	826.5	3.36	4.29	5.57	5.83	6.78	6.67	6.84	7.07	8.70
			836.5	3.39	4.26	5.54	5.83	6.41	6.81	6.81	7.22	8.84
			846.5	3.36	4.29	5.57	6.00	6.46	6.67	6.84	7.13	8.58
		10	829.0	3.42	4.38	5.54	6.00	6.52	6.84	6.75	7.22	8.55
			836.5	3.45	4.35	5.48	6.06	6.46	6.84	6.84	7.25	8.55
			844.0	3.45	4.46	5.42	5.97	6.46	6.81	6.84	7.16	8.41
		15	831.5	3.57	4.43	5.42	5.88	6.58	6.70	6.67	7.22	8.61
			836.5	3.54	4.43	5.42	5.94	6.43	6.67	6.75	7.28	8.35
			841.5	3.74	4.55	5.51	6.03	6.43	6.81	6.90	7.45	8.55
		20	834.0	3.33	4.29	5.42	5.94	6.52	6.84	6.81	7.22	8.67
			836.5	3.36	4.32	5.51	6.00	6.35	6.87	6.87	7.16	8.58
			839.0	3.30	4.46	5.54	5.91	6.43	7.01	6.93	7.28	8.72

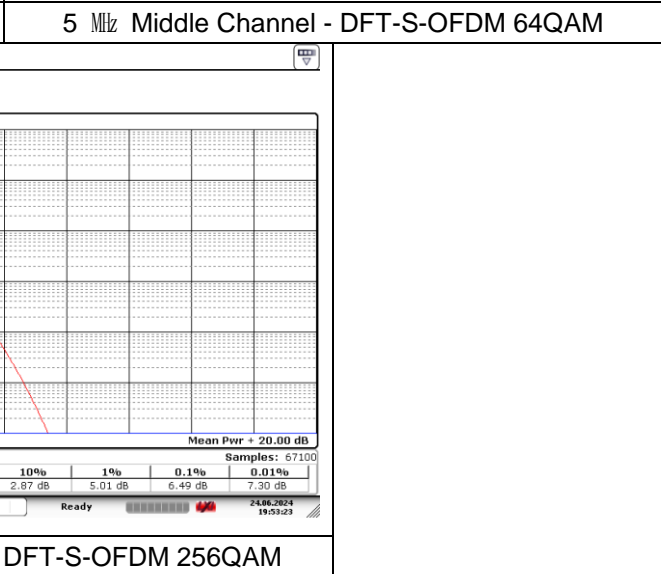
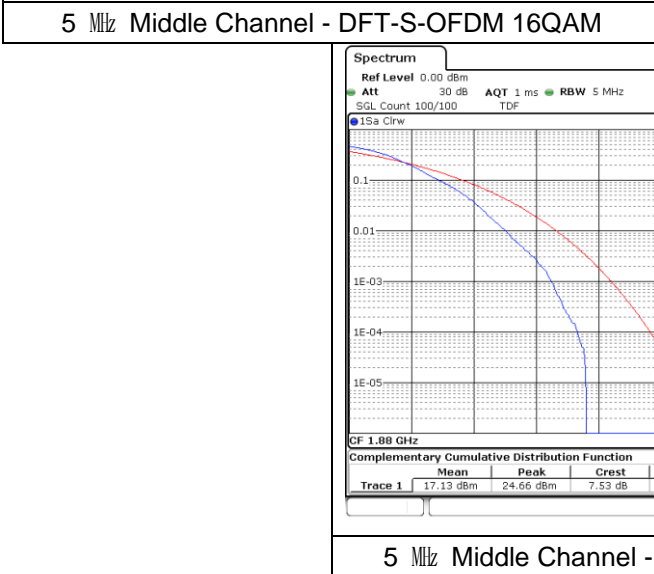
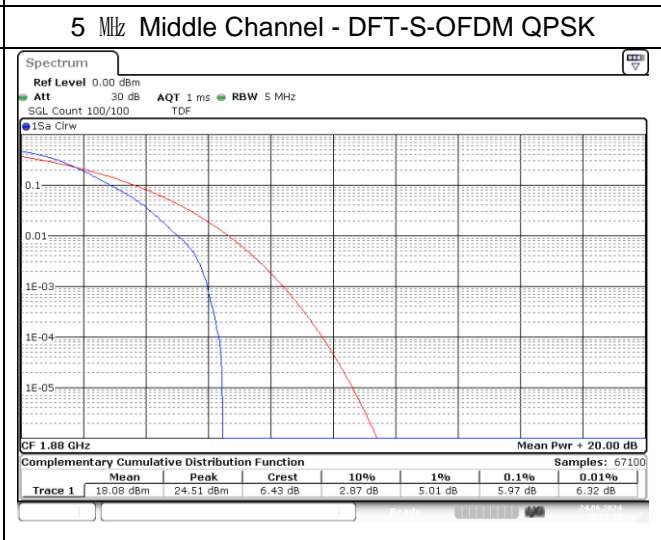
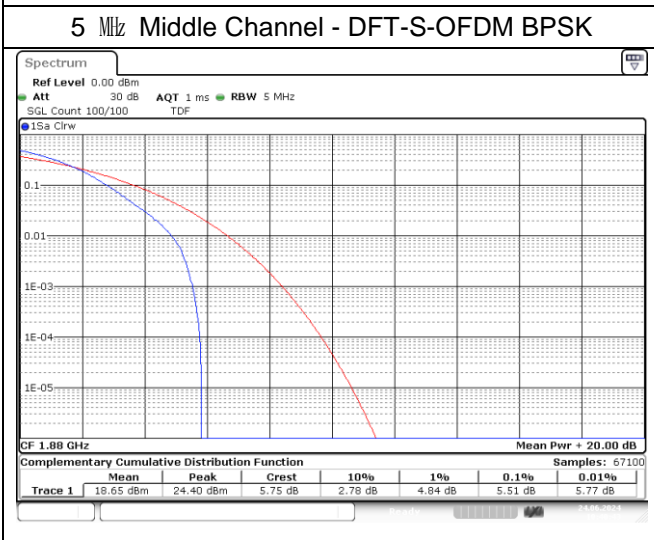
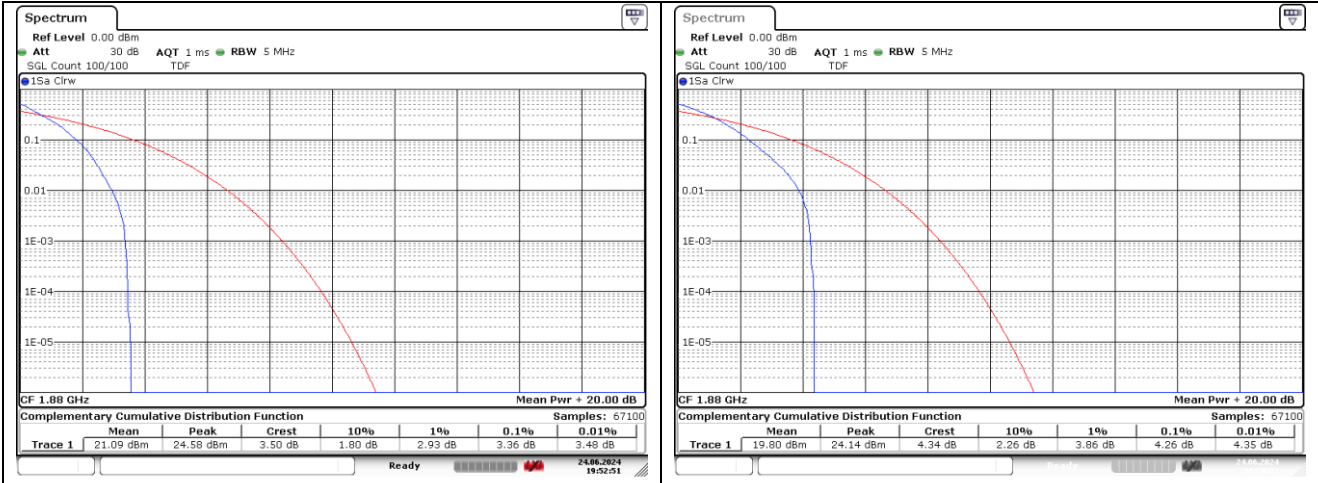
**SIM 2**

Band	SCS (kHz)	BW (MHz)	Frequency (MHz)	PAR (dB)						
				DFT-S-OFDM				CP-OFDM		
				BPSK	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
2	15	5	1 852.5	3.36	4.29	5.54	6.03	6.81	6.96	7.22
			1 880.0	3.36	4.29	5.59	6.06	6.70	6.93	7.33
			1 907.5	3.39	4.26	5.54	6.00	6.70	6.81	7.28
		10	1 855.0	3.51	4.32	5.57	6.06	6.78	6.84	7.39
			1 880.0	3.42	4.35	5.54	6.03	6.81	6.90	7.30
			1 905.0	3.48	4.38	5.57	6.09	6.93	6.84	7.28
		15	1 857.5	3.57	4.38	5.51	6.03	6.72	6.72	7.30
			1 880.0	3.94	4.46	5.48	6.00	6.67	6.64	7.30
			1 902.5	3.74	4.49	5.45	6.06	6.67	6.64	7.25
		20	1 860.0	3.28	4.17	5.48	5.94	6.75	6.81	7.13
			1 880.0	3.74	4.32	5.51	6.00	6.67	6.70	7.01
					1 900.0	3.36	4.23	5.42	5.94	6.72
Band	SCS (kHz)	BW (MHz)	Frequency (MHz)	PAR (dB)						
				DFT-S-OFDM				CP-OFDM		
				BPSK	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5	15	5	826.5	3.39	4.29	5.57	5.86	6.64	6.87	7.22
			836.5	3.39	4.29	5.57	5.86	6.75	6.87	7.28
			846.5	3.39	4.29	5.59	5.94	6.70	6.84	7.16
		10	829.0	3.45	4.35	5.51	6.00	6.78	6.81	7.19
			836.5	3.45	4.35	5.42	6.00	6.78	6.81	7.30
			844.0	3.57	4.41	5.51	5.97	6.96	6.84	7.36
		15	831.5	3.39	4.38	5.39	5.91	6.75	6.70	7.33
			836.5	3.91	4.52	5.48	6.03	6.75	6.70	7.36
			841.5	3.77	4.84	5.65	6.09	6.99	6.87	7.45
		20	834.0	3.51	4.29	5.39	5.91	6.72	6.84	7.16
			836.5	3.48	4.46	5.51	5.97	6.84	6.87	7.19
					839.0	3.54	4.61	5.74	6.14	7.07

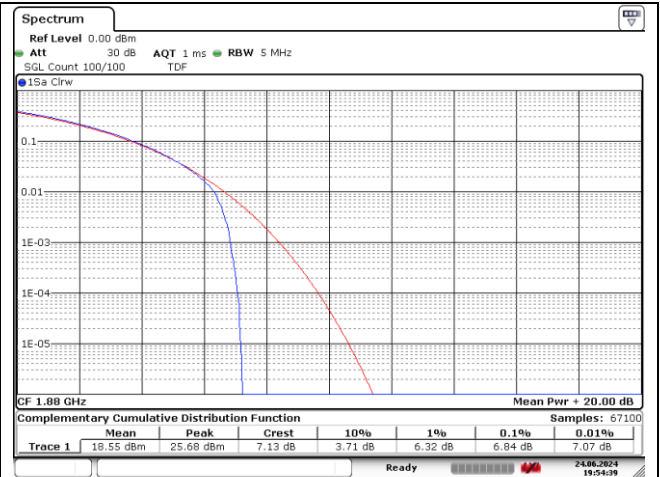
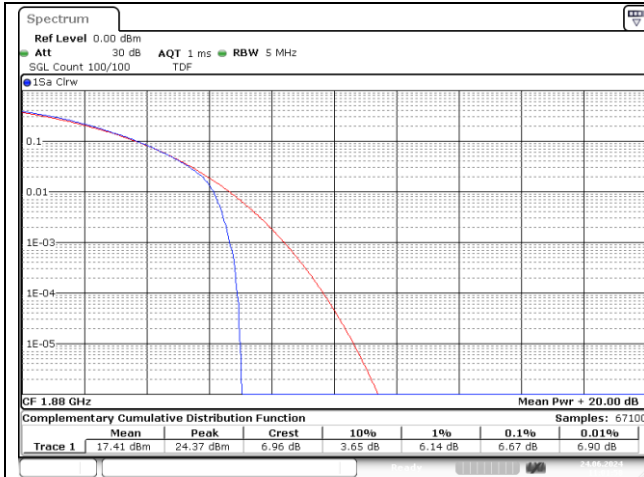
**- Test plots**

**SIM 1**

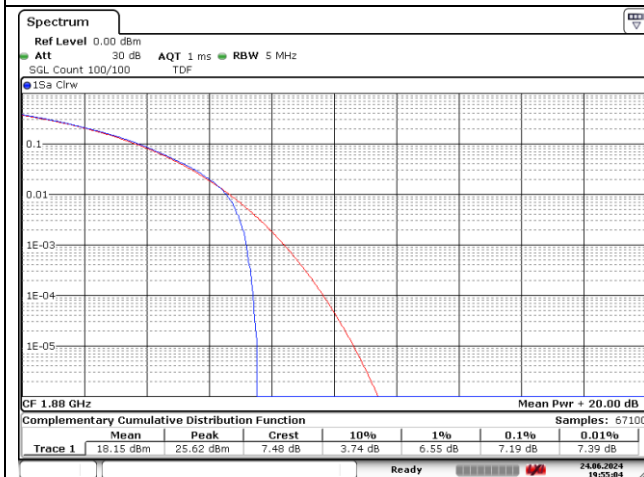
**NR band 2**



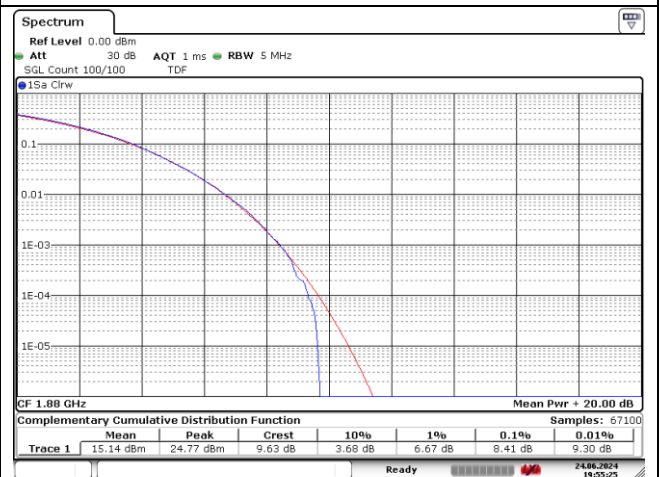
**NR band 2**



**5 MHz Middle Channel - CP-OFDM QPSK**



**5 MHz Middle Channel - CP-OFDM 16QAM**

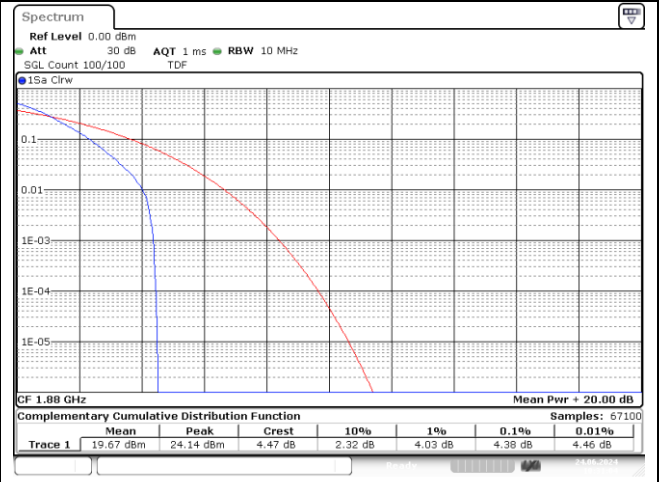
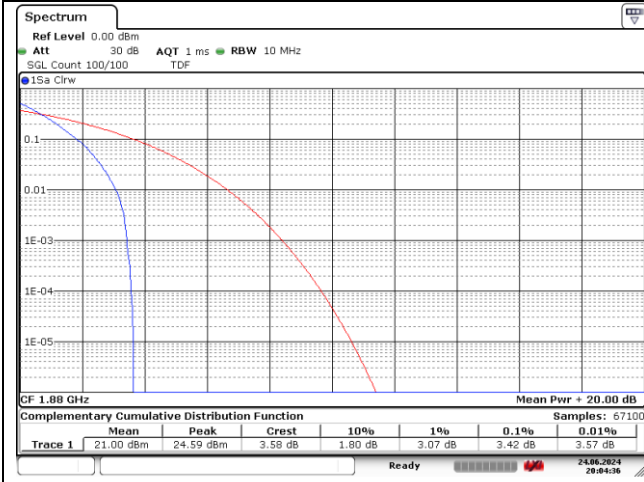


**5 MHz Middle Channel - CP-OFDM 64QAM**

**5 MHz Middle Channel - CP-OFDM 256QAM**

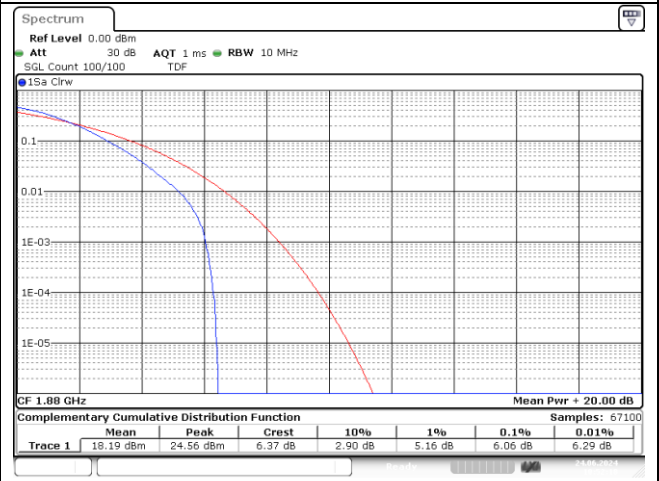
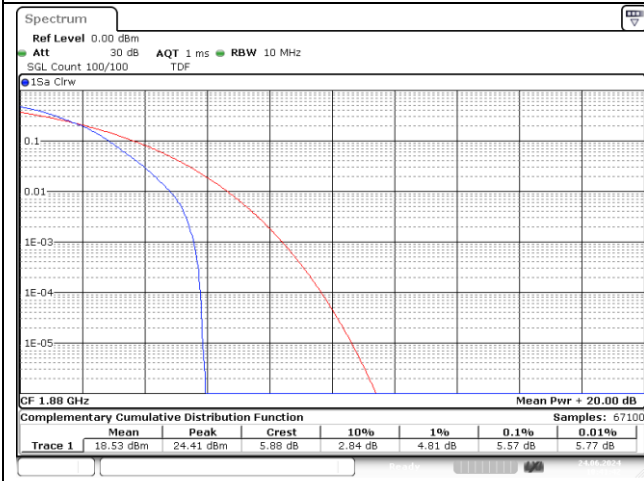


**NR band 2**



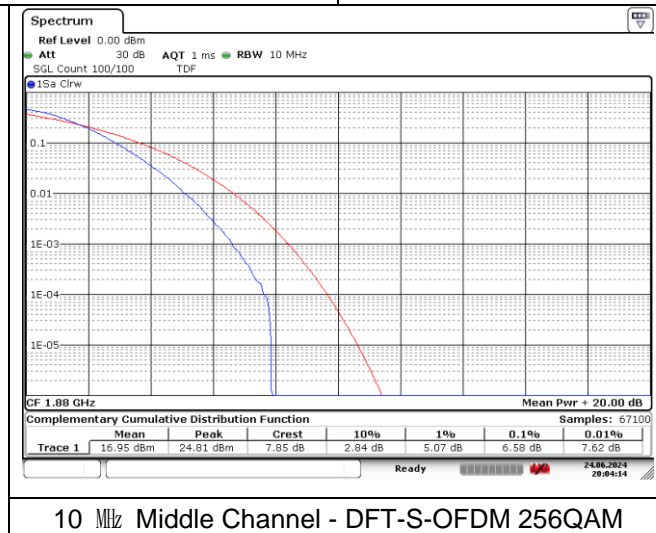
10 MHz Middle Channel - DFT-S-OFDM BPSK

10 MHz Middle Channel - DFT-S-OFDM QPSK



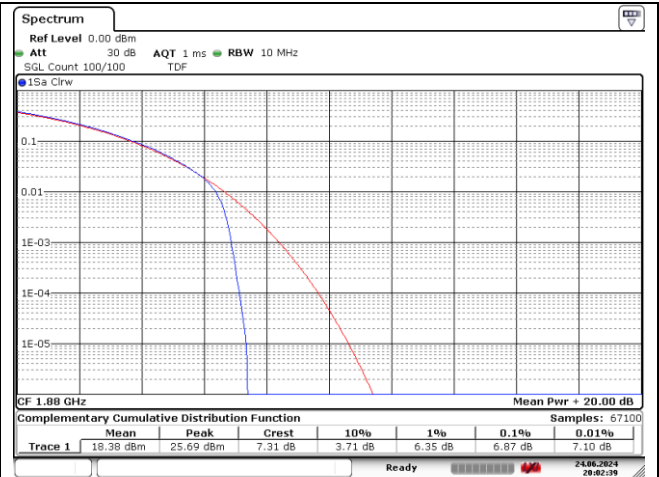
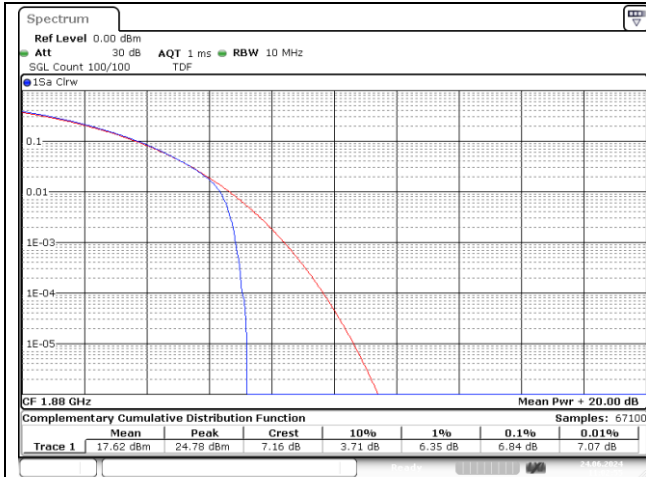
10 MHz Middle Channel - DFT-S-OFDM 16QAM

10 MHz Middle Channel - DFT-S-OFDM 64QAM



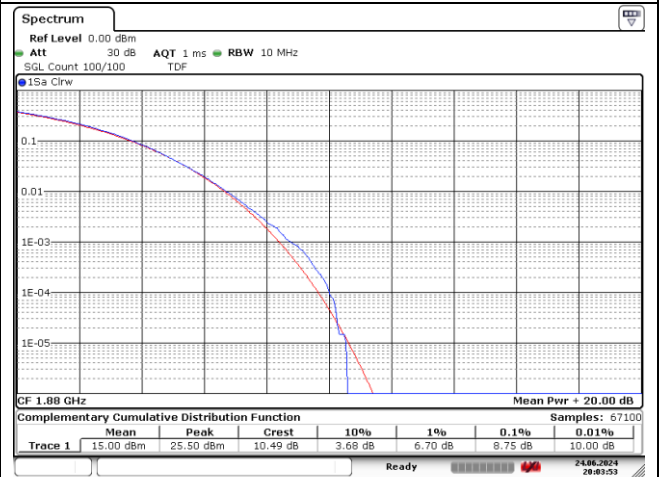
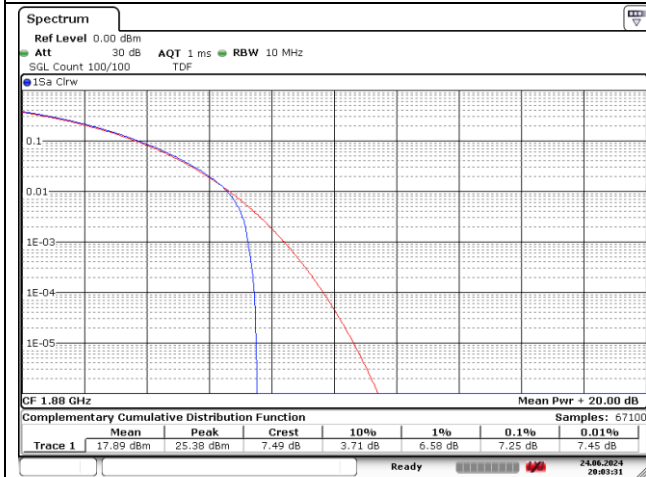
10 MHz Middle Channel - DFT-S-OFDM 256QAM

**NR band 2**



**10 MHz Middle Channel - CP-OFDM QPSK**

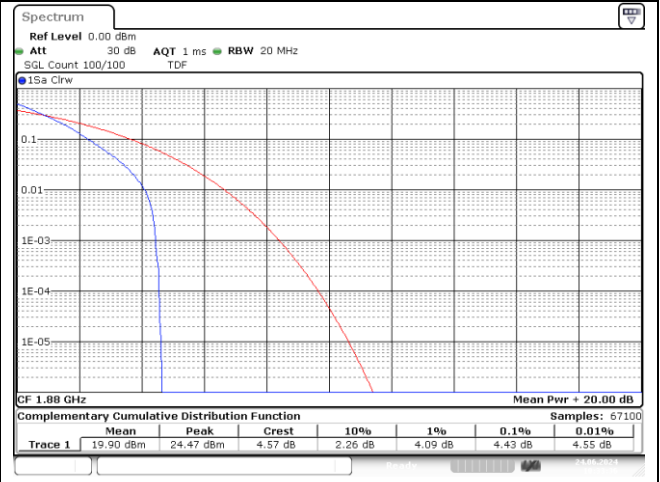
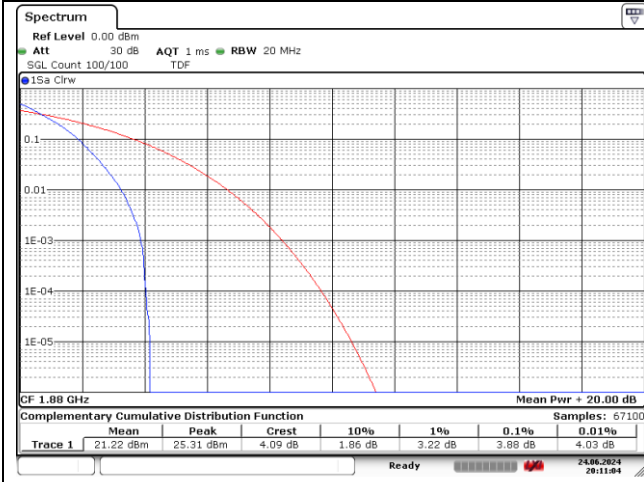
**10 MHz Middle Channel - CP-OFDM 16QAM**



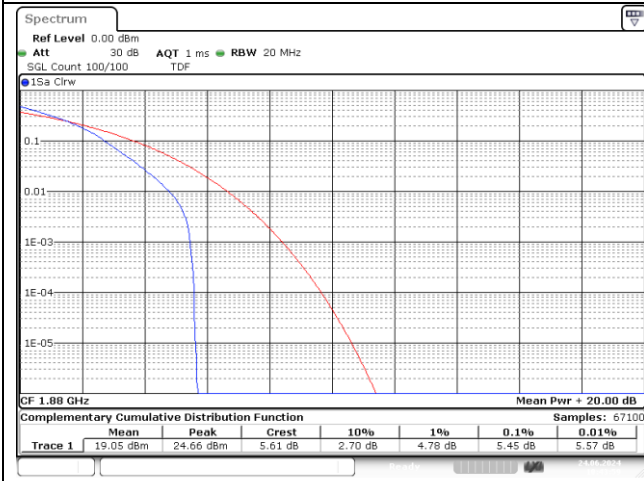
**10 MHz Middle Channel - CP-OFDM 64QAM**

**10 MHz Middle Channel - CP-OFDM 256QAM**

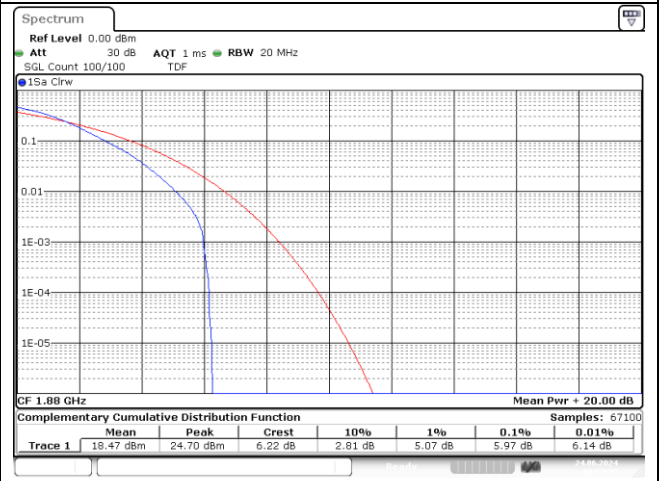
**NR band 2**



**15 MHz Middle Channel - DFT-S-OFDM BPSK**

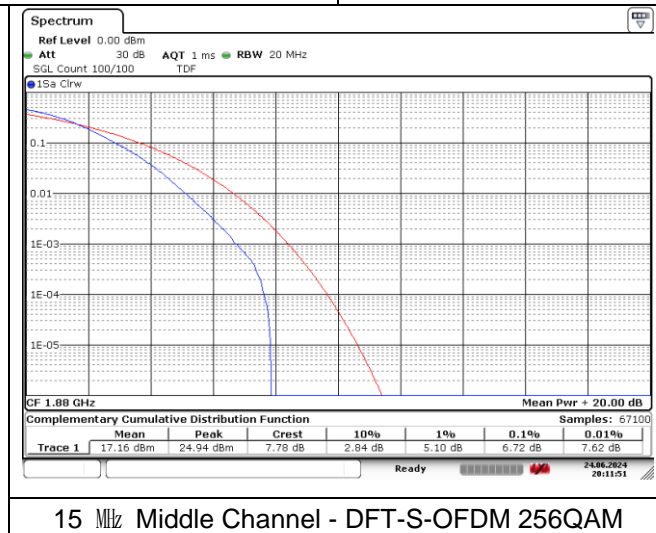


**15 MHz Middle Channel - DFT-S-OFDM QPSK**



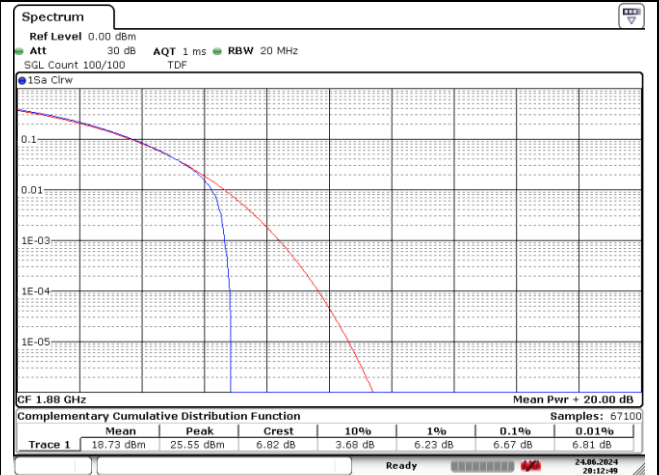
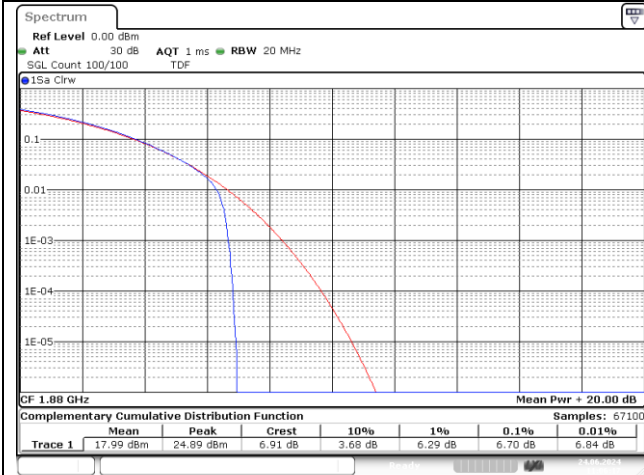
**15 MHz Middle Channel - DFT-S-OFDM 16QAM**

**15 MHz Middle Channel - DFT-S-OFDM 64QAM**

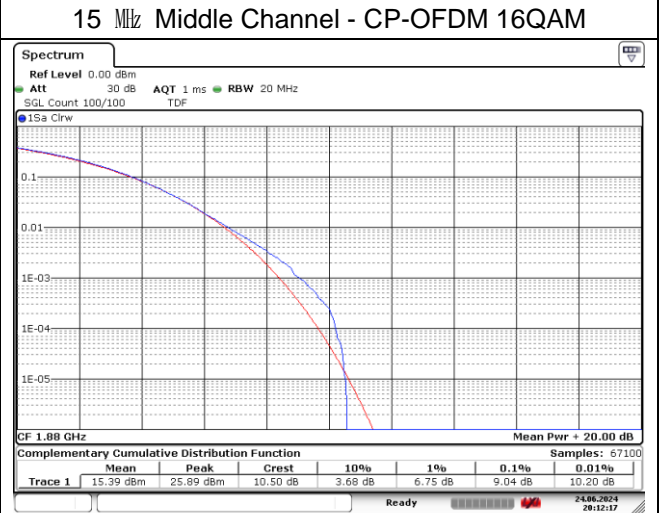
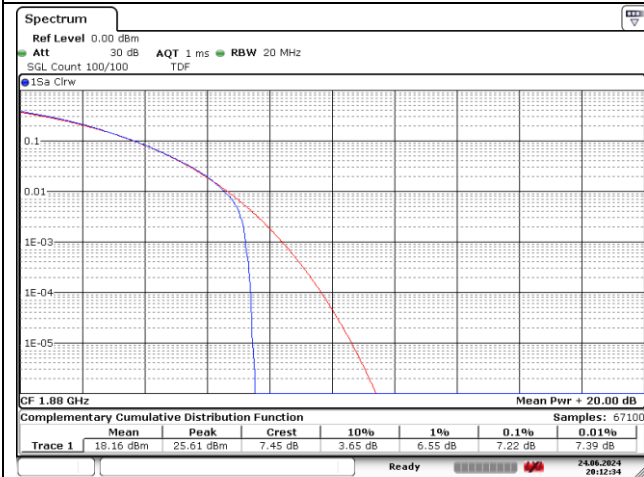


**15 MHz Middle Channel - DFT-S-OFDM 256QAM**

**NR band 2**



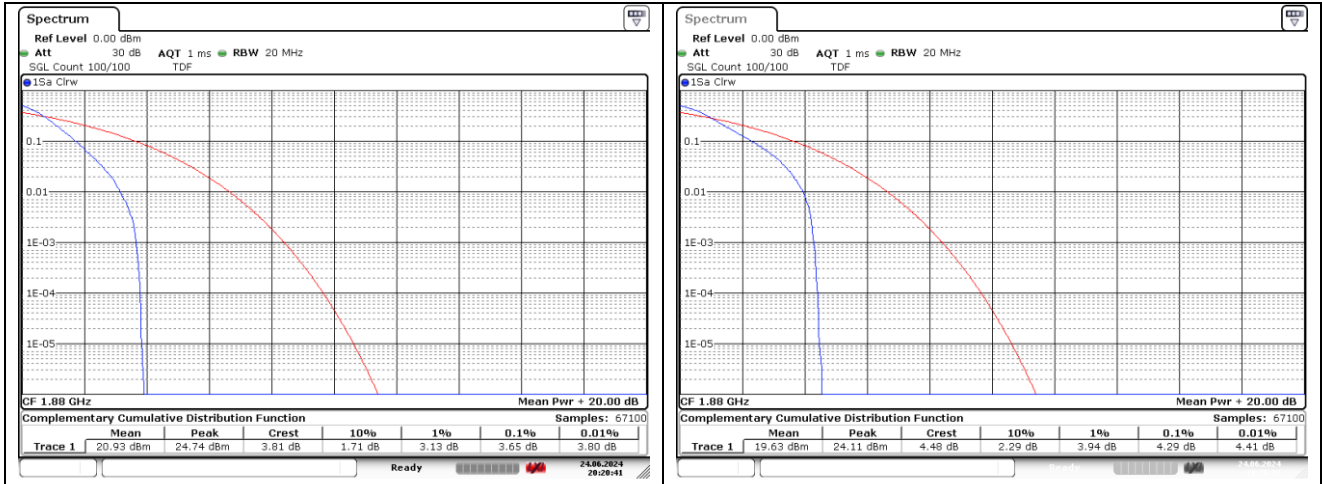
**15 MHz Middle Channel - CP-OFDM QPSK**



**15 MHz Middle Channel - CP-OFDM 64QAM**

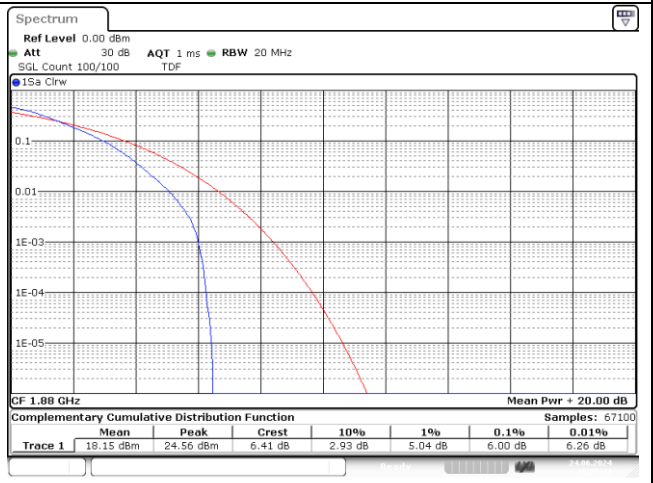
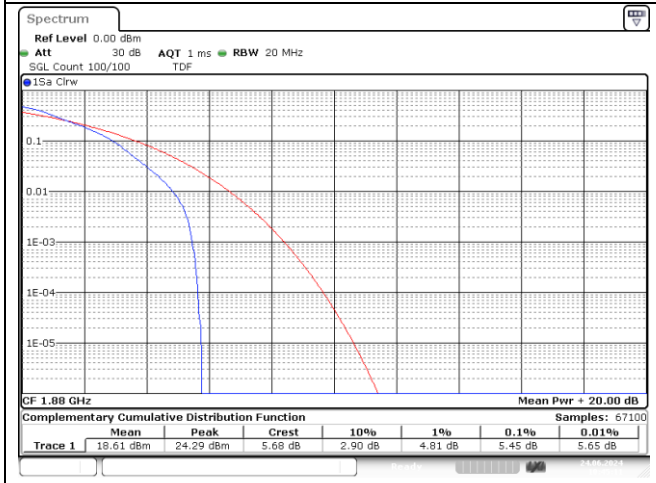
**15 MHz Middle Channel - CP-OFDM 256QAM**

**NR band 2**



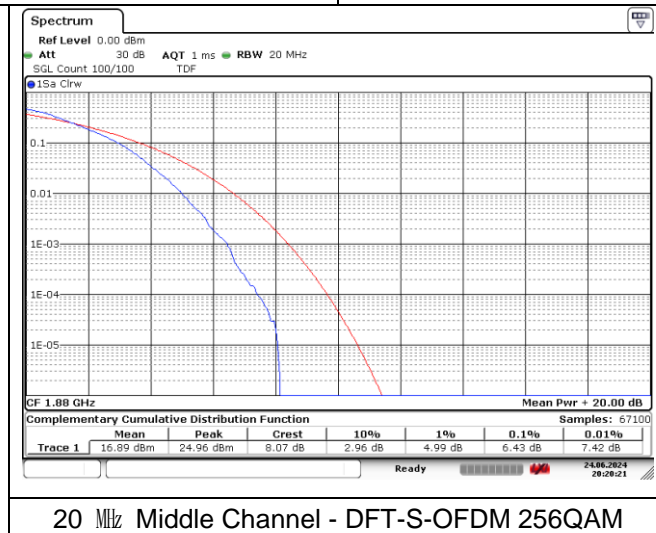
20 MHz Middle Channel - DFT-S-OFDM BPSK

20 MHz Middle Channel - DFT-S-OFDM QPSK



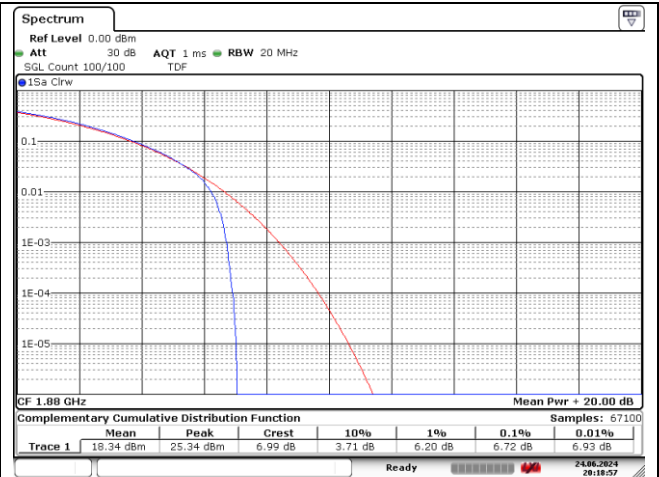
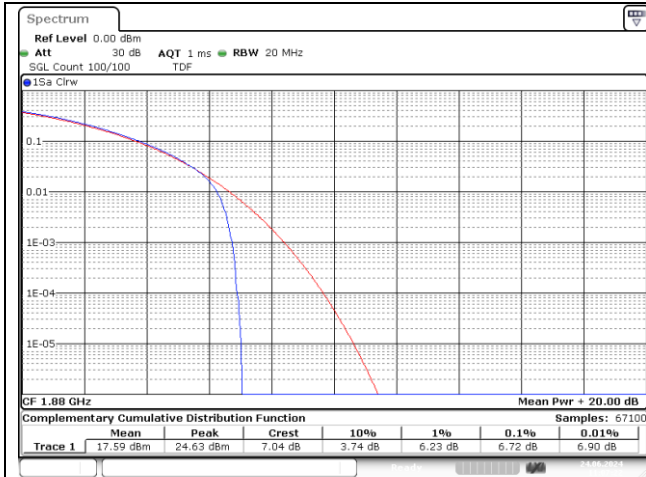
20 MHz Middle Channel - DFT-S-OFDM 16QAM

20 MHz Middle Channel - DFT-S-OFDM 64QAM

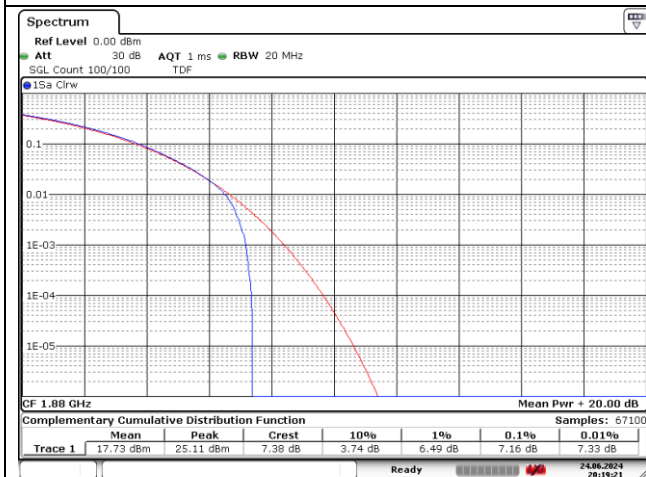


20 MHz Middle Channel - DFT-S-OFDM 256QAM

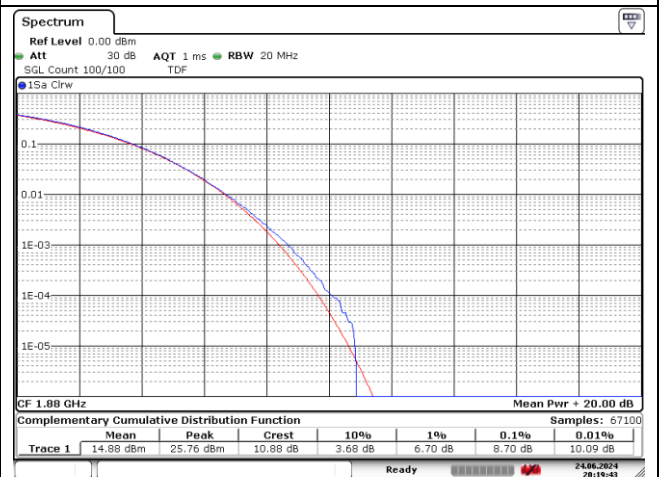
**NR band 2**



**20 MHz Middle Channel - CP-OFDM QPSK**



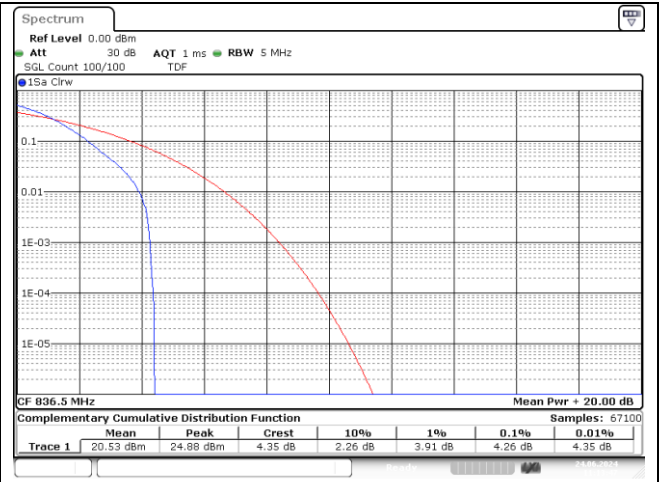
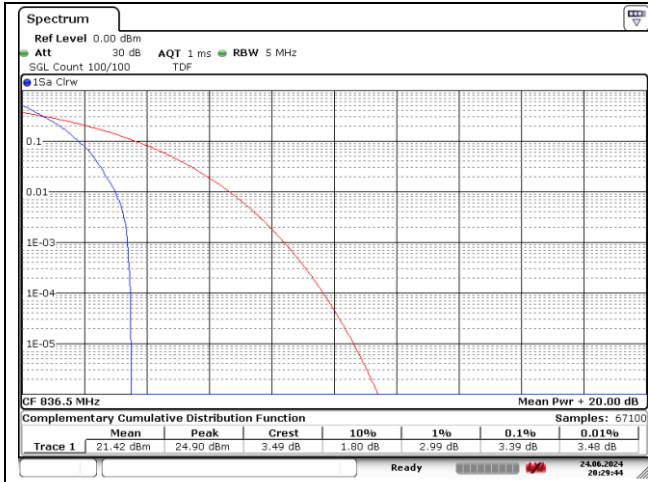
**20 MHz Middle Channel - CP-OFDM 16QAM**



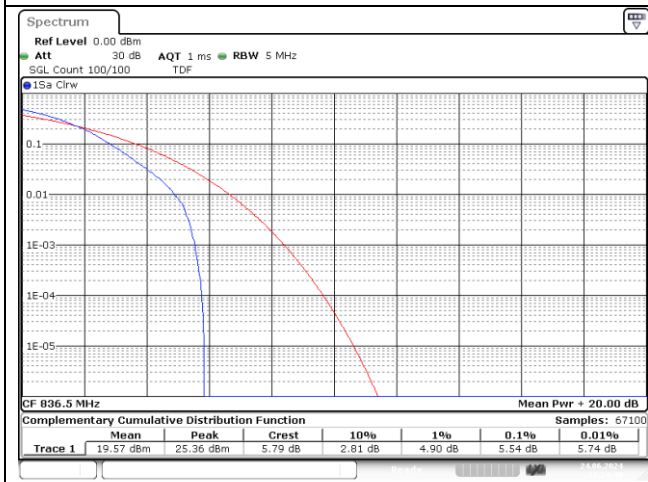
**20 MHz Middle Channel - CP-OFDM 64QAM**

**20 Middle Channel - CP-OFDM 256QAM**

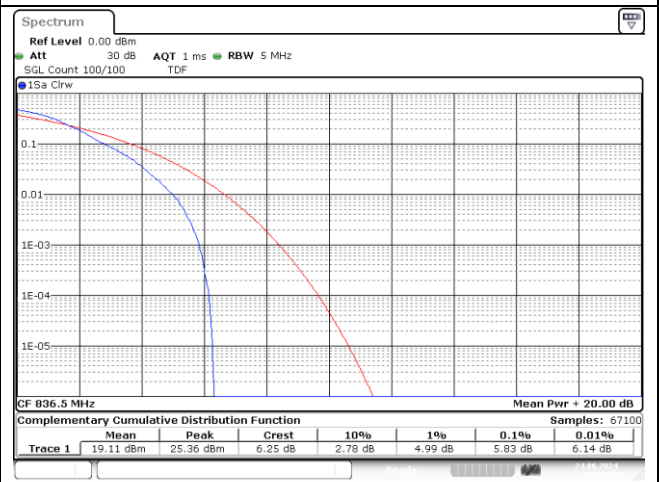
**NR band 5**



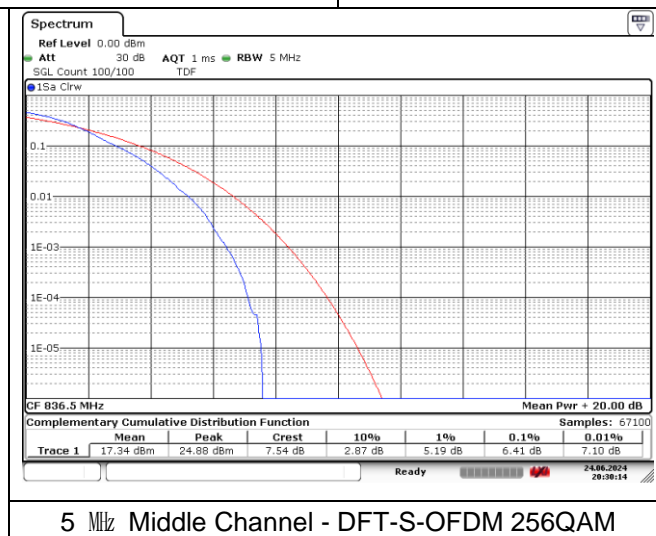
**5 MHz Middle Channel - DFT-S-OFDM BPSK**



**5 MHz Middle Channel - DFT-S-OFDM QPSK**



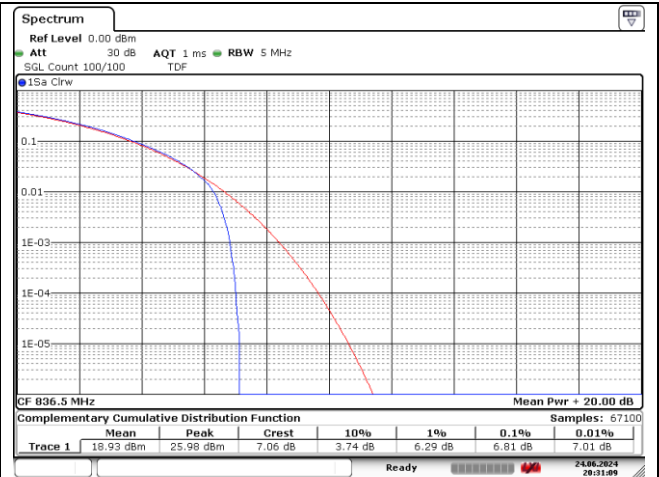
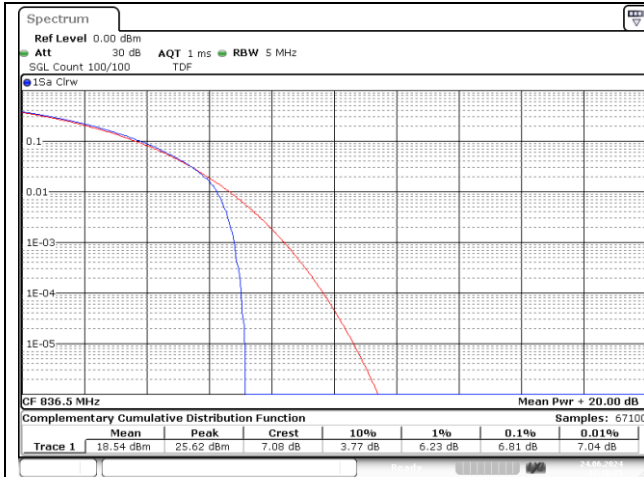
**5 MHz Middle Channel - DFT-S-OFDM 16QAM**



**5 MHz Middle Channel - DFT-S-OFDM 64QAM**

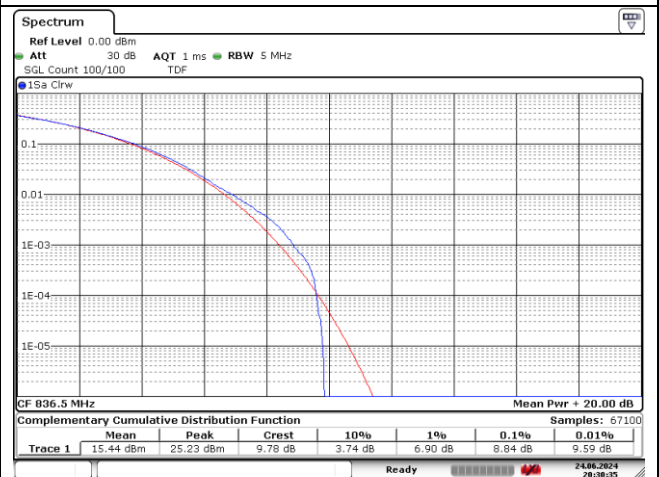
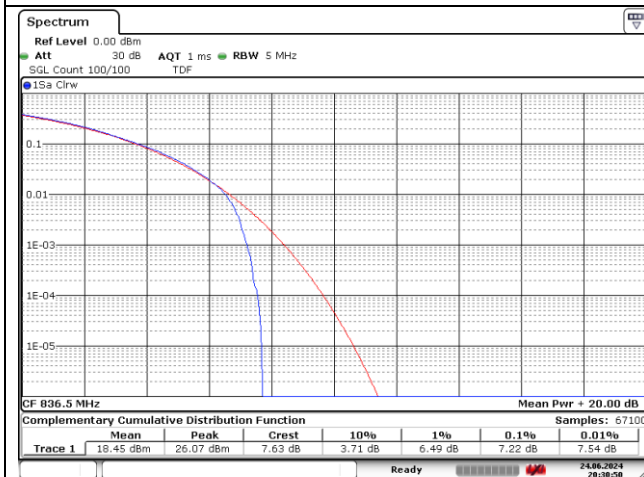
**5 MHz Middle Channel - DFT-S-OFDM 256QAM**

**NR band 5**



**5 MHz Middle Channel - CP-OFDM QPSK**

**5 MHz Middle Channel - CP-OFDM 16QAM**

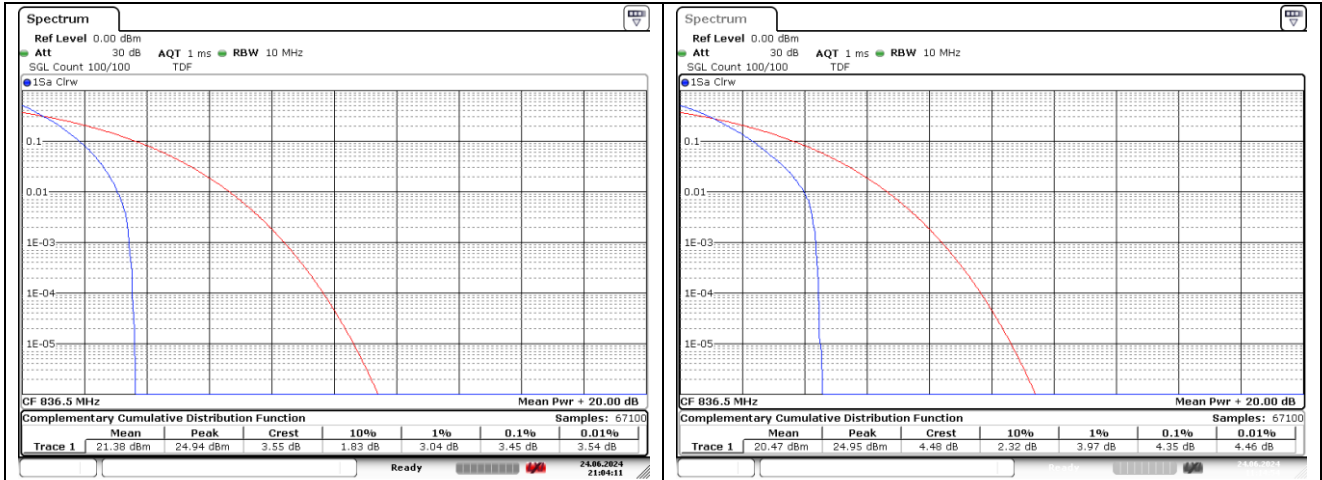


**5 MHz Middle Channel - CP-OFDM 64QAM**

**5 MHz Middle Channel - CP-OFDM 256QAM**

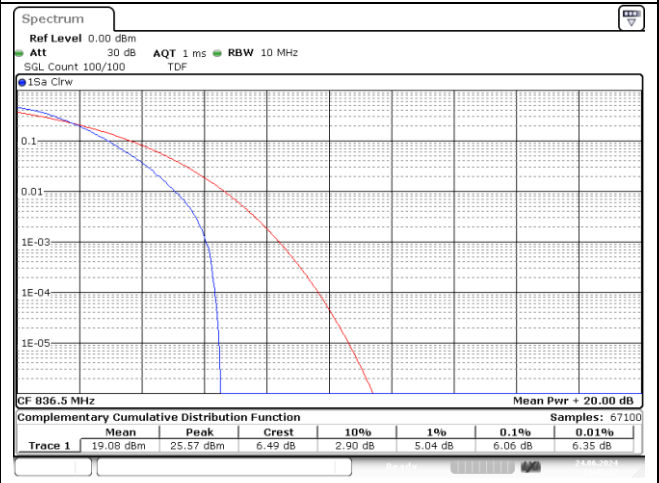
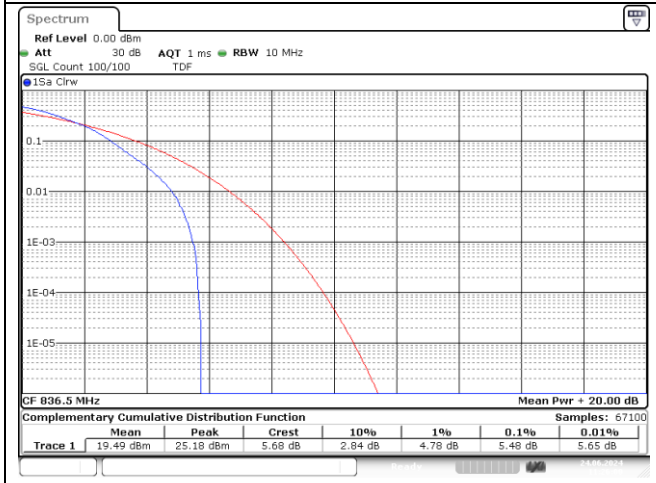


**NR band 5**



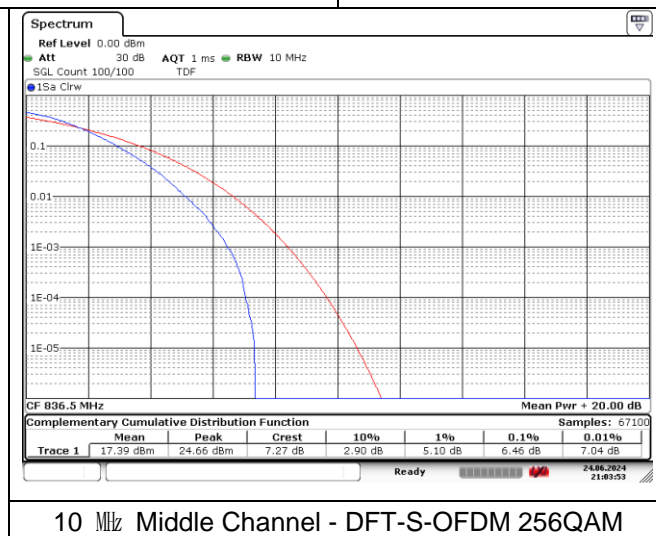
10 MHz Middle Channel - DFT-S-OFDM BPSK

10 MHz Middle Channel - DFT-S-OFDM QPSK



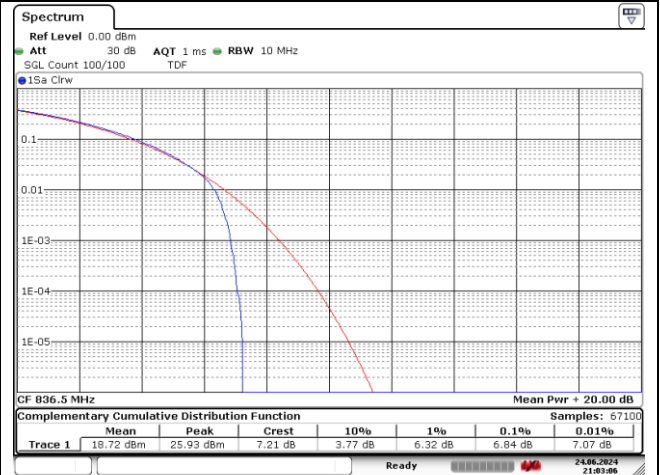
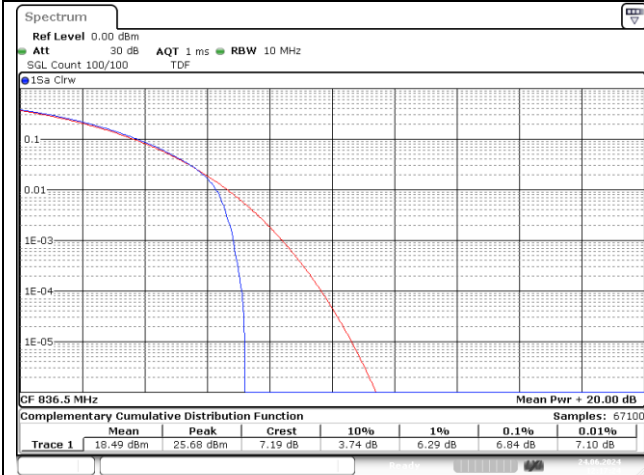
10 MHz Middle Channel - DFT-S-OFDM 16QAM

10 MHz Middle Channel - DFT-S-OFDM 64QAM



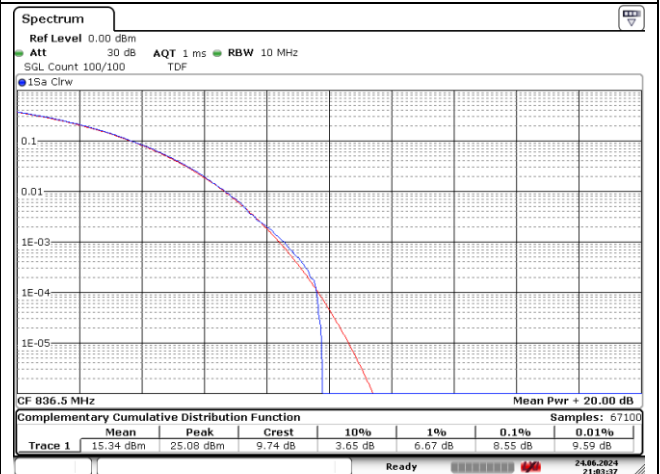
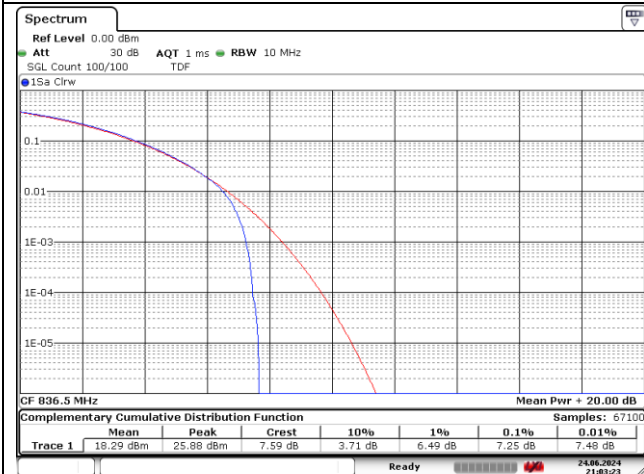
10 MHz Middle Channel - DFT-S-OFDM 256QAM

**NR band 5**



**10 MHz Middle Channel - CP-OFDM QPSK**

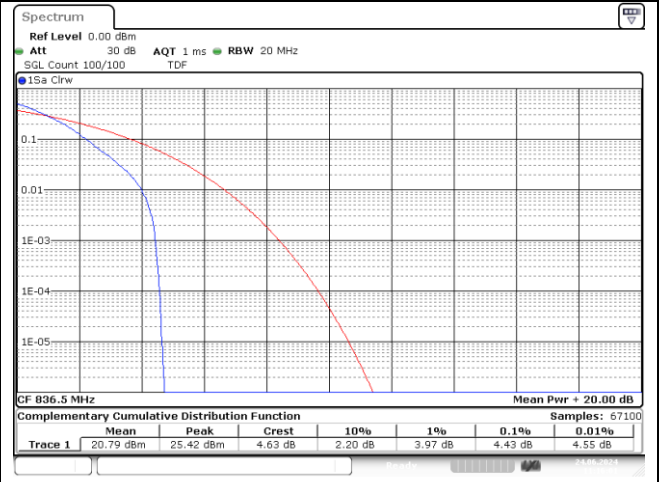
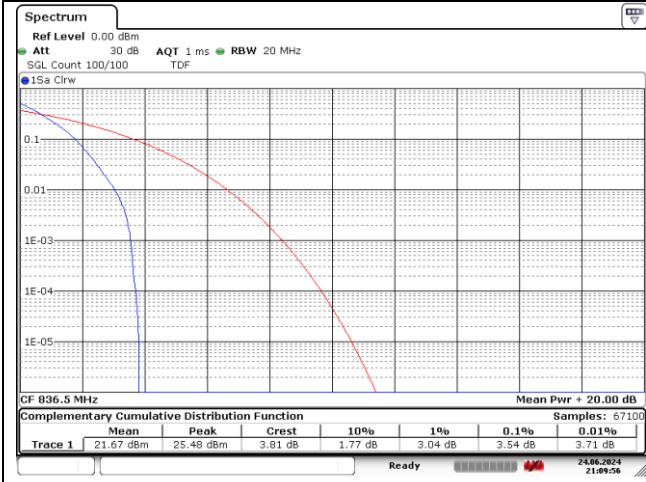
**10 MHz Middle Channel - CP-OFDM 16QAM**



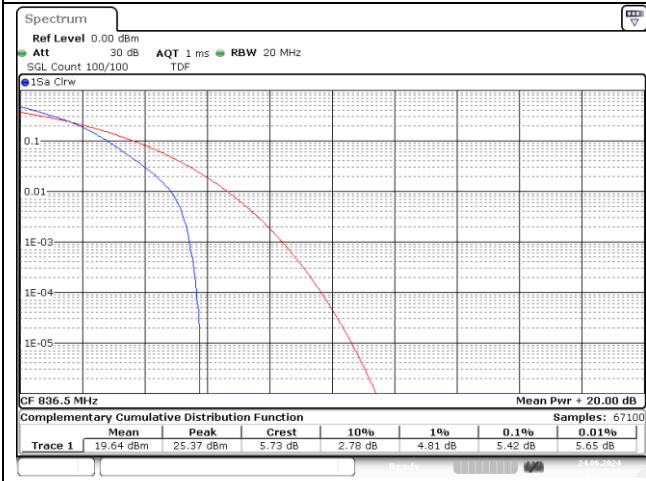
**10 MHz Middle Channel - CP-OFDM 64QAM**

**10 MHz Middle Channel - CP-OFDM 256QAM**

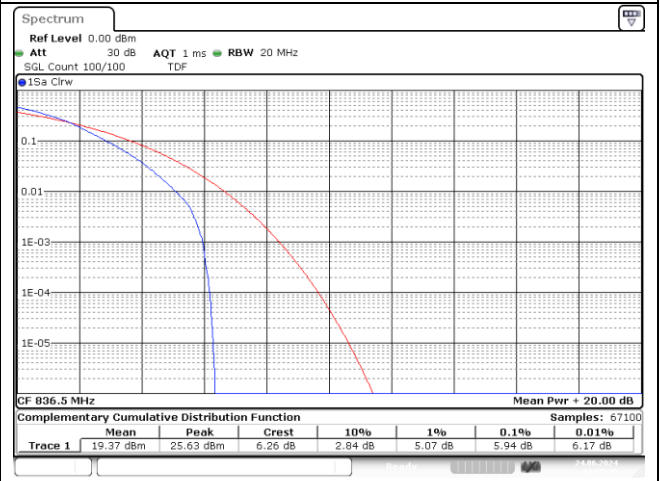
**NR band 5**



**15 MHz Middle Channel - DFT-S-OFDM BPSK**

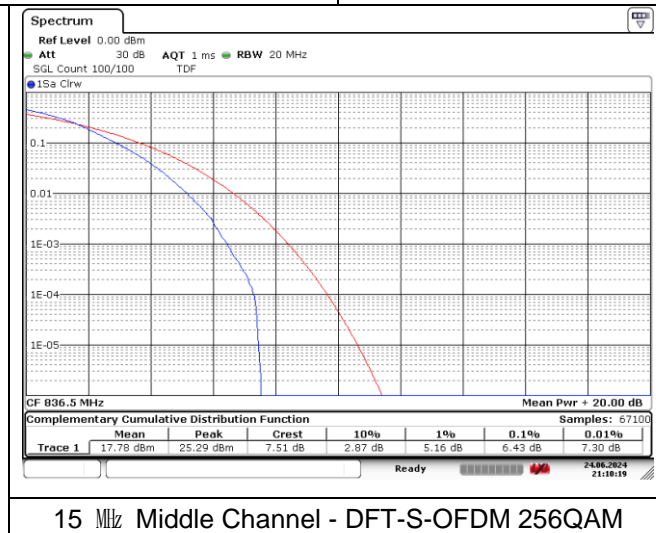


**15 MHz Middle Channel - DFT-S-OFDM QPSK**



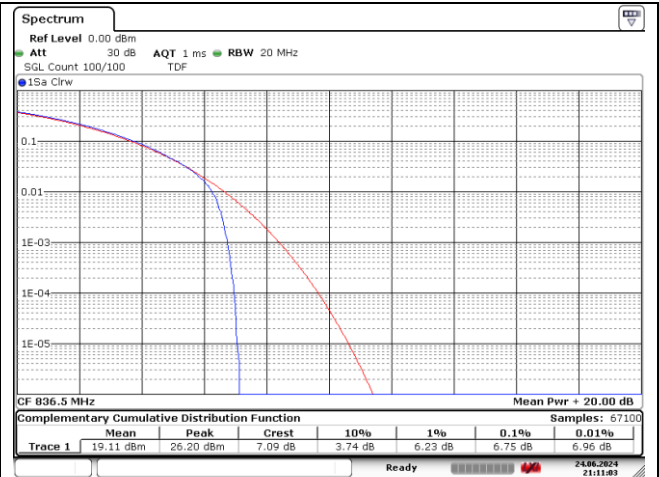
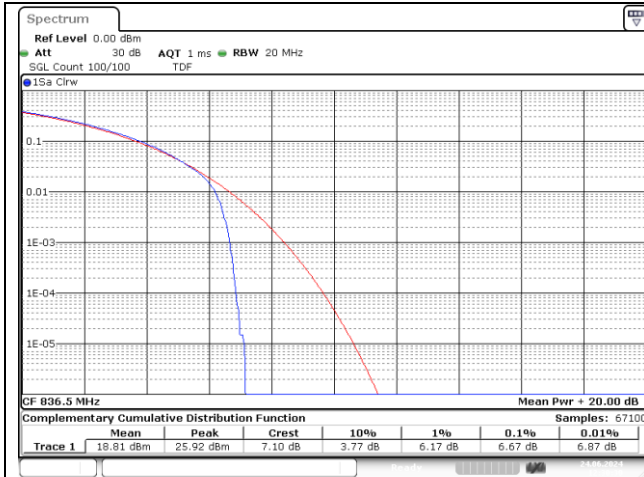
**15 MHz Middle Channel - DFT-S-OFDM 16QAM**

**15 MHz Middle Channel - DFT-S-OFDM 64QAM**

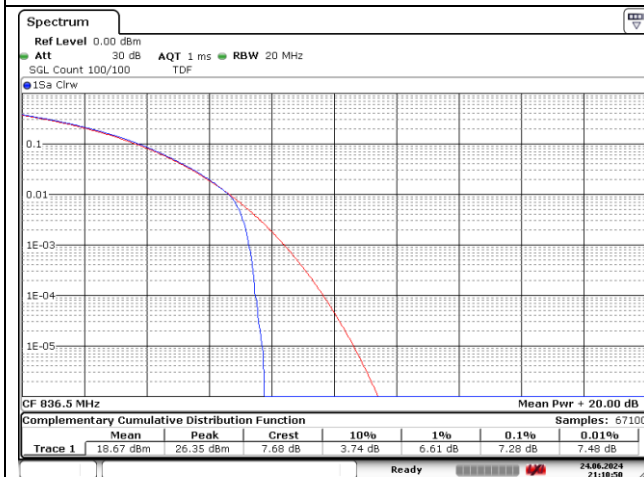


**15 MHz Middle Channel - DFT-S-OFDM 256QAM**

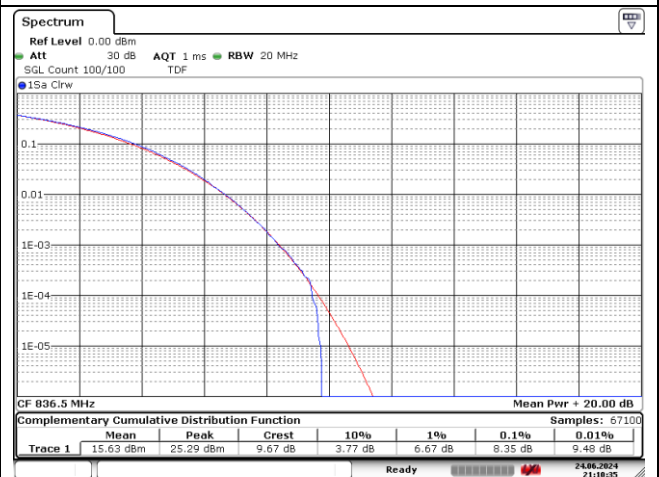
**NR band 5**



**15 MHz Middle Channel - CP-OFDM QPSK**



**15 MHz Middle Channel - CP-OFDM 16QAM**



**15 MHz Middle Channel - CP-OFDM 64QAM**

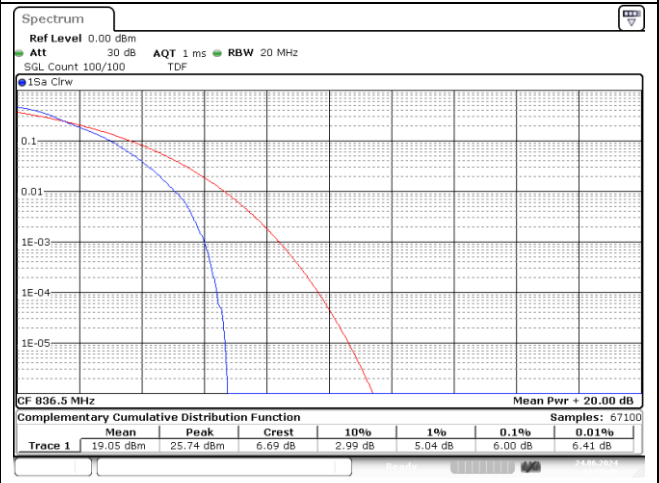
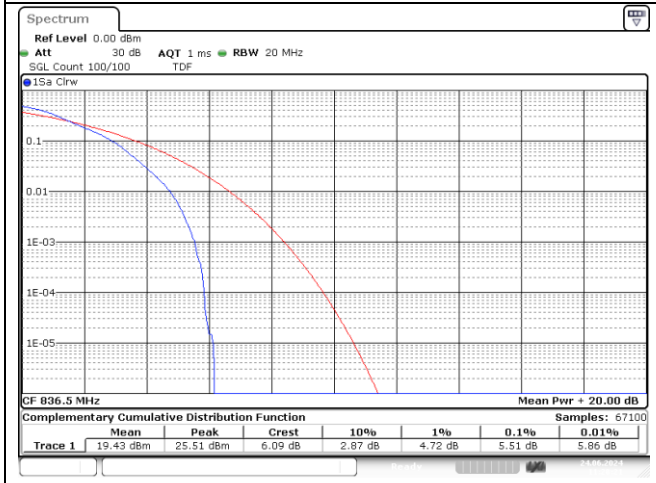
**15 MHz Middle Channel - CP-OFDM 256QAM**

**NR band 5**



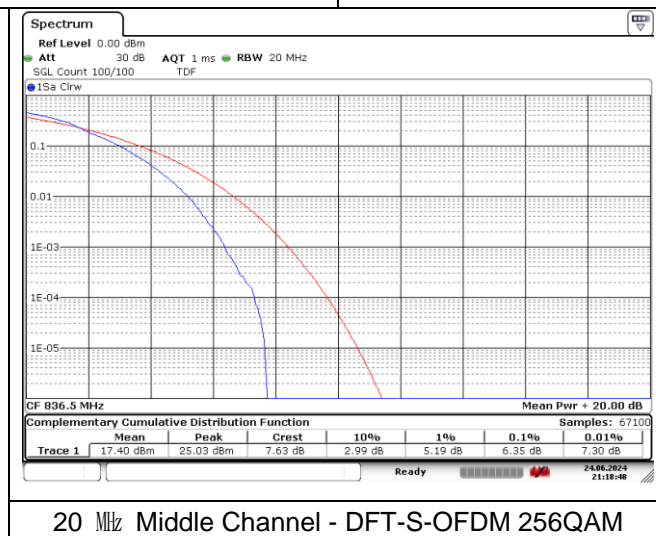
20 MHz Middle Channel - DFT-S-OFDM BPSK

20 MHz Middle Channel - DFT-S-OFDM QPSK



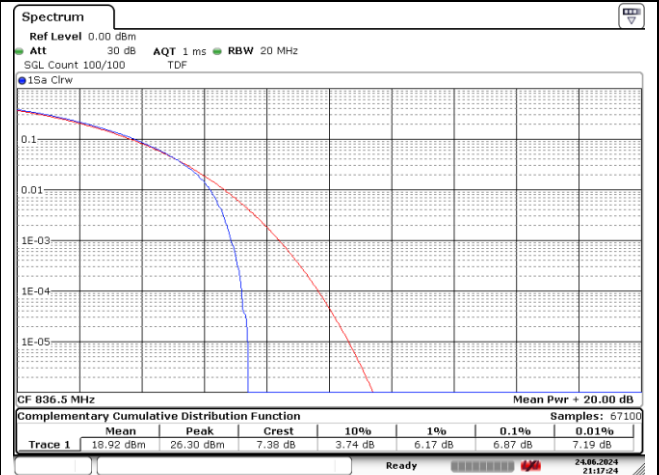
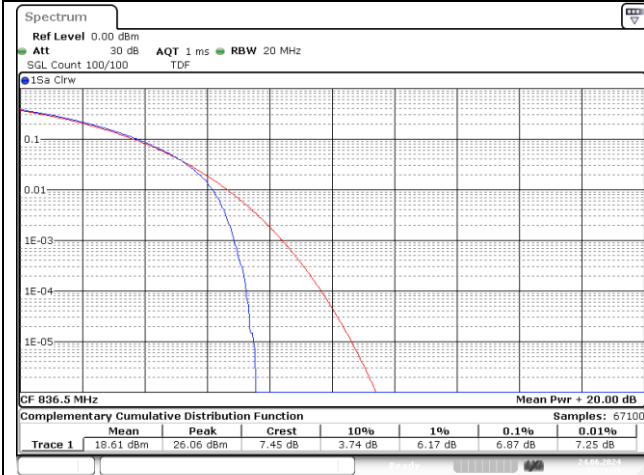
20 MHz Middle Channel - DFT-S-OFDM 16QAM

20 MHz Middle Channel - DFT-S-OFDM 64QAM

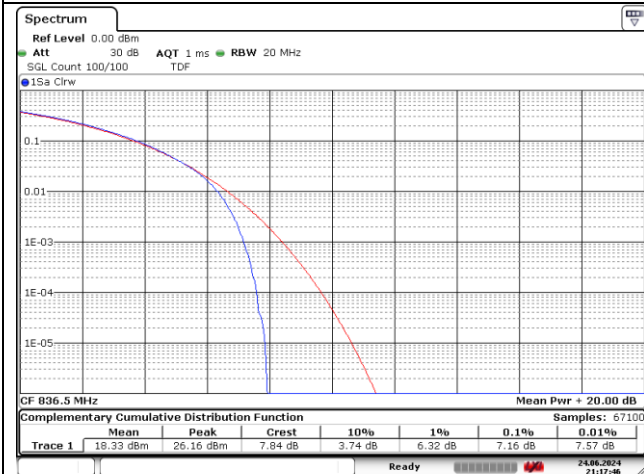


20 MHz Middle Channel - DFT-S-OFDM 256QAM

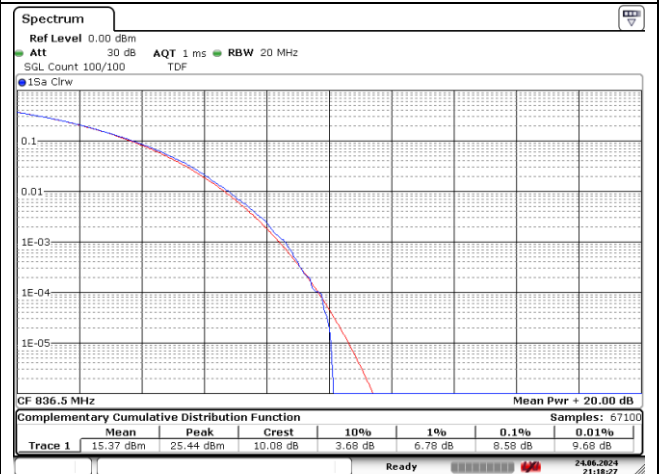
**NR band 5**



**20 MHz Middle Channel - CP-OFDM QPSK**



**20 MHz Middle Channel - CP-OFDM 16QAM**



**20 MHz Middle Channel - CP-OFDM 64QAM**

**20 Middle Channel - CP-OFDM 256QAM**