Appendix for 5G NR N38

Model: VNE-N41

BTL-FCCP-9-2204C233

CONTENT

1 Appendix A: Effective (Isotropic) Radiated Power of Transmitter 3
1.1 Test Result for SA 3
2 Appendix B: Peak-Average Ratio 4
2.1 Test Result for SA 4
3 Appendix C: Modulation Characteristics 5
3.1 Test Result for SA 5
3.2 Test Plots for SA 6
Channel bandwidth=20MHz 6
4 Appendix D: Occupied Bandwidth 8
4.1 Test Result for SA 8
4.2 Test Plots for SA 9
Channel bandwidth=20MHz 9
5 Appendix E: Band Edges Compliance 14
5.1 Test Result for SA 14
5.2 Test Plots for SA 16
Channel bandwidth=20MHz 16
6 Appendix F: Spurious Emission at Antenna Terminals 25
6.1 Test Result for SA 25
6.2 Test Plots for SA 26
Channel bandwidth=20MHz 26
7 Appendix G: Frequency Stability 35
7.1 Test Result for SA 35

1 Appendix A: Effective (Isotropic) Radiated Power of Transmitter

1.1 Test Result for SA

NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB Config	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
N38	30	20	L	2580	DFT-PI/2BPSK	Inner_Full	23.12	25.02	<33	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Inner_1RB_Left	23.00	24.9	<33	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Inner_1RB_Right	22.99	24.89	<33	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Outer_Full	22.99	24.89	<33	PASS
N38	30	20	L	2580	DFT-QPSK	Inner_Full	22.98	24.88	<33	PASS
N38	30	20	L	2580	DFT-QPSK	Inner_1RB_Left	22.99	24.89	<33	PASS
N38	30	20	L	2580	DFT-QPSK	Inner_1RB_Right	22.98	24.88	<33	PASS
N38	30	20	L	2580	DFT-QPSK	Outer_Full	22.99	24.89	<33	PASS
N38	30	20	L	2580	DFT-16QAM	Inner_Full	22.98	24.88	<33	PASS
N38	30	20	L	2580	DFT-16QAM	Inner_1RB_Left	22.97	24.87	<33	PASS
N38	30	20	L	2580	DFT-16QAM	Inner_1RB_Right	22.99	24.89	<33	PASS
N38	30	20	L	2580	DFT-16QAM	Outer_Full	22.98	24.88	<33	PASS
N38	30	20	M	2595	DFT-PI/2BPSK	Inner_Full	23.18	25.08	<33	PASS
N38	30	20	M	2595	DFT-PI/2BPSK	Inner_1RB_Left	23.04	24.94	<33	PASS
N38	30	20	M	2595	DFT-PI/2BPSK	Inner_1RB_Right	23.03	24.93	<33	PASS
N38	30	20	M	2595	DFT-PI/2BPSK	Outer_Full	23.03	24.93	<33	PASS
N38	30	20	M	2595	DFT-QPSK	Inner_Full	23.04	24.94	<33	PASS
N38	30	20	M	2595	DFT-QPSK	Inner_1RB_Left	23.03	24.93	<33	PASS
N38	30	20	M	2595	DFT-QPSK	Inner_1RB_Right	23.04	24.94	<33	PASS
N38	30	20	M	2595	DFT-QPSK	Outer_Full	23.02	24.92	<33	PASS
N38	30	20	M	2595	DFT-16QAM	Inner_Full	23.03	24.93	<33	PASS
N38	30	20	M	2595	DFT-16QAM	Inner_1RB_Left	23.02	24.92	<33	PASS
N38	30	20	M	2595	DFT-16QAM	Inner_1RB_Right	23.02	24.92	<33	PASS
N38	30	20	M	2595	DFT-16QAM	Outer_Full	23.02	24.92	<33	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Inner_Full	23.37	25.27	<33	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Inner_1RB_Left	23.29	25.19	<33	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Inner_1RB_Right	23.30	25.2	<33	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Outer_Full	23.23	25.13	<33	PASS
N38	30	20	H	2610	DFT-QPSK	Inner_Full	23.27	25.17	<33	PASS
N38	30	20	H	2610	DFT-QPSK	Inner_1RB_Left	23.25	25.15	<33	PASS
N38	30	20	H	2610	DFT-QPSK	Inner_1RB_Right	23.22	25.12	<33	PASS
N38	30	20	H	2610	DFT-QPSK	Outer_Full	22.63	24.53	<33	PASS
N38	30	20	H	2610	DFT-16QAM	Inner_Full	22.65	24.55	<33	PASS
N38	30	20	H	2610	DFT-16QAM	Inner_1RB_Left	22.96	24.86	<33	PASS
N38	30	20	H	2610	DFT-16QAM	Inner_1RB_Right	22.96	24.86	<33	PASS
N38	30	20	H	2610	DFT-16QAM	Outer_Full	21.73	23.63	<33	PASS

2 Appendix B: Peak-Average Ratio

2.1 Test Result for SA

NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB Config	Measured [dBm]	Limit [dBm]	Verdict
N38	30	20	M	2595	DFT-PI/2BPSK	Outer_Full	9.96	≤13	PASS
N38	30	20	M	2595	DFT-QPSK	Outer_Full	8.83	≤13	PASS
N38	30	20	M	2595	DFT-16QAM	Outer_Full	8.15	≤13	PASS
N38	30	20	M	2595	DFT-64QAM	Outer_Full	8.63	≤13	PASS
N38	30	20	M	2595	DFT-256QAM	Outer_Full	8.45	≤13	PASS
N38	30	20	M	2595	CP-QPSK	Outer_Full	9.01	≤13	PASS
N38	30	20	M	2595	CP-16QAM	Outer_Full	8.82	≤13	PASS
N38	30	20	M	2595	CP-64QAM	Outer_Full	9.38	≤13	PASS
N38	30	20	M	2595	CP-256QAM	Outer_Full	8.82	≤13	PASS

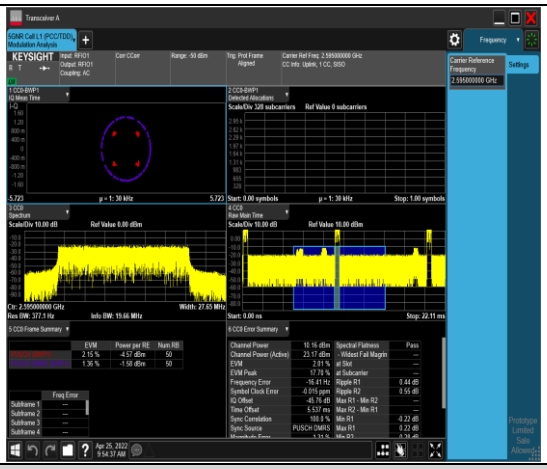
3 Appendix C: Modulation Characteristics

3.1 Test Result for SA

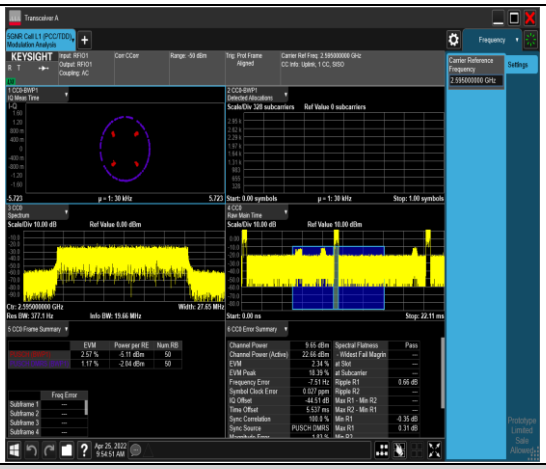
NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB config	Verdict
N38	30	20	M	2595	DFT-PI/2BPSK	Outer_Full	PASS
N38	30	20	M	2595	DFT-QPSK	Outer_Full	PASS
N38	30	20	M	2595	DFT-16QAM	Outer_Full	PASS
N38	30	20	M	2595	DFT-64QAM	Outer_Full	PASS
N38	30	20	M	2595	DFT-256QAM	Outer_Full	PASS
N38	30	20	M	2595	CP-QPSK	Outer_Full	PASS
N38	30	20	M	2595	CP-16QAM	Outer_Full	PASS
N38	30	20	M	2595	CP-64QAM	Outer_Full	PASS
N38	30	20	M	2595	CP-256QAM	Outer_Full	PASS

3.2 Test Plots for SA

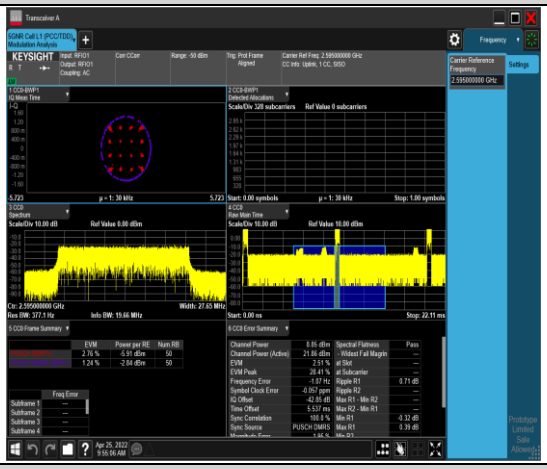
Channel bandwidth=20MHz



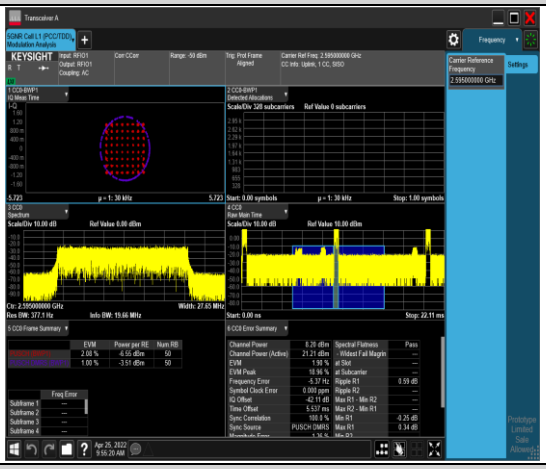
1-N38-PC3-30-20-M-1-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-see graph-PASS



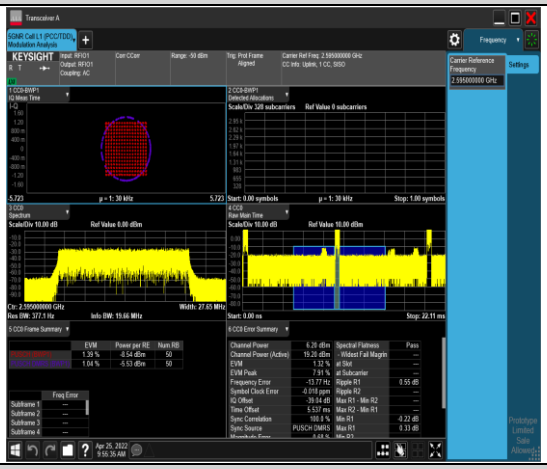
1-N38-PC3-30-20-M-2-DFT-QPSK-Outer_Full-50@0-Ant1-see graph-PASS



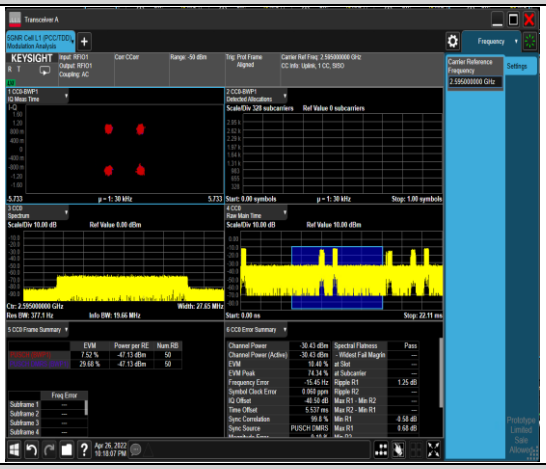
1-N38-PC3-30-20-M-3-DFT-16QAM-Outer_Full-50@0-Ant1-see graph-PASS



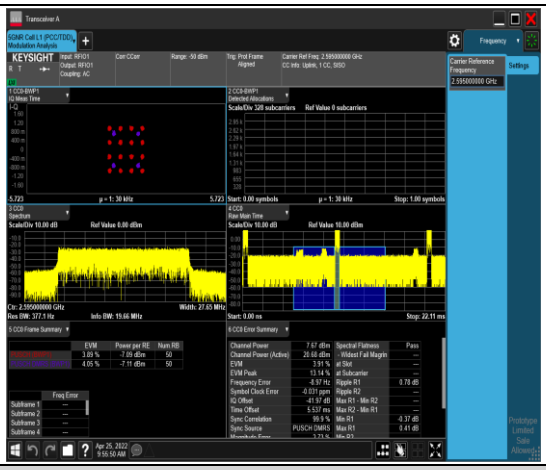
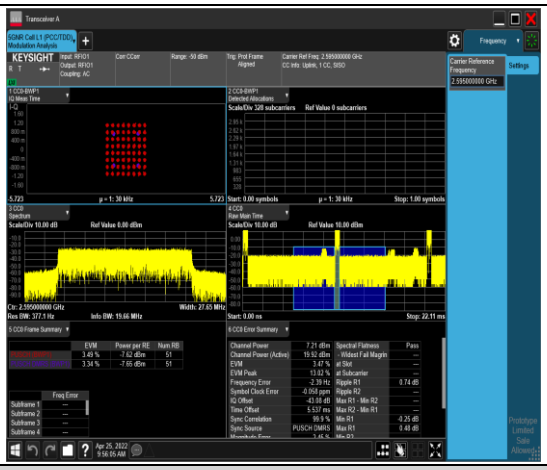
1-N38-PC3-30-20-M-4-DFT-64QAM-Outer_Full-50@0-Ant1-see graph-PASS



1-N38-PC3-30-20-M-5-DFT-256QAM-Outer_Full-50@0-Ant1-see graph-PASS



1-N38-PC3-30-20-M-6-CP-QPSK-Outer_Full-51@0-Ant1-see graph-PASS

	
1-N38-PC3-30-20-M-7-CP-16QAM-Outer_Full-51@0-Ant1-see graph-PASS	1-N38-PC3-30-20-M-8-CP-64QAM-Outer_Full-51@0-Ant1-see graph-PASS
	-
1-N38-PC3-30-20-M-9-CP-256QAM-Outer_Full-51@0-Ant1-see graph-PASS	-

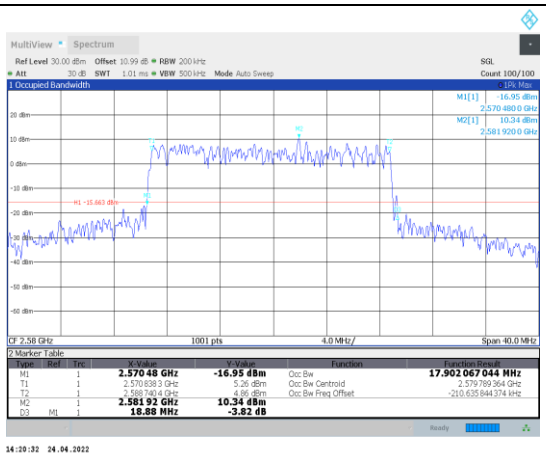
4 Appendix D: Occupied Bandwidth

4.1 Test Result for SA

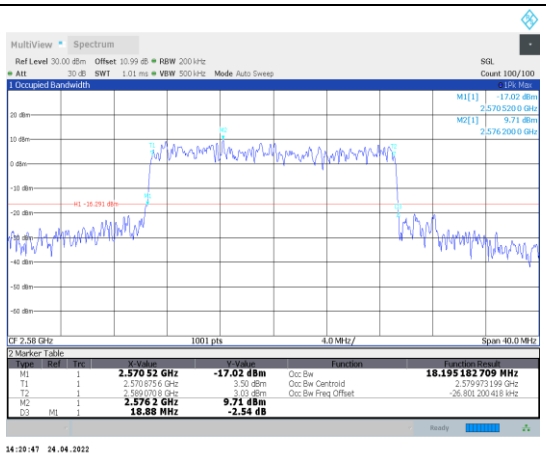
NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB config	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
N38	30	20	L	2580	CP-QPSK	Outer_Full	17.902	18.880	PASS
N38	30	20	L	2580	CP-16QAM	Outer_Full	18.195	18.880	PASS
N38	30	20	L	2580	CP-64QAM	Outer_Full	18.235	18.960	PASS
N38	30	20	L	2580	CP-256QAM	Outer_Full	18.33	19.120	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Outer_Full	17.84	18.920	PASS
N38	30	20	L	2580	DFT-QPSK	Outer_Full	17.792	18.600	PASS
N38	30	20	L	2580	DFT-16QAM	Outer_Full	17.89	18.520	PASS
N38	30	20	L	2580	DFT-64QAM	Outer_Full	17.82	18.520	PASS
N38	30	20	L	2580	DFT-256QAM	Outer_Full	17.809	18.520	PASS
N38	30	20	M	2595	CP-QPSK	Outer_Full	17.843	18.760	PASS
N38	30	20	M	2595	CP-16QAM	Outer_Full	18.233	18.880	PASS
N38	30	20	M	2595	CP-64QAM	Outer_Full	18.131	19.080	PASS
N38	30	20	M	2595	CP-256QAM	Outer_Full	18.149	19.080	PASS
N38	30	20	M	2595	DFT-PI/2BPSK	Outer_Full	17.864	18.800	PASS
N38	30	20	M	2595	DFT-QPSK	Outer_Full	17.704	18.600	PASS
N38	30	20	M	2595	DFT-16QAM	Outer_Full	17.814	18.720	PASS
N38	30	20	M	2595	DFT-64QAM	Outer_Full	17.825	18.640	PASS
N38	30	20	M	2595	DFT-256QAM	Outer_Full	17.793	18.560	PASS
N38	30	20	H	2610	CP-QPSK	Outer_Full	17.969	18.800	PASS
N38	30	20	H	2610	CP-16QAM	Outer_Full	18.186	19.160	PASS
N38	30	20	H	2610	CP-64QAM	Outer_Full	18.203	18.960	PASS
N38	30	20	H	2610	CP-256QAM	Outer_Full	18.259	19.080	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Outer_Full	17.818	18.520	PASS
N38	30	20	H	2610	DFT-QPSK	Outer_Full	17.788	18.480	PASS
N38	30	20	H	2610	DFT-16QAM	Outer_Full	17.851	18.600	PASS
N38	30	20	H	2610	DFT-64QAM	Outer_Full	17.571	18.600	PASS
N38	30	20	H	2610	DFT-256QAM	Outer_Full	17.899	18.600	PASS

4.2 Test Plots for SA

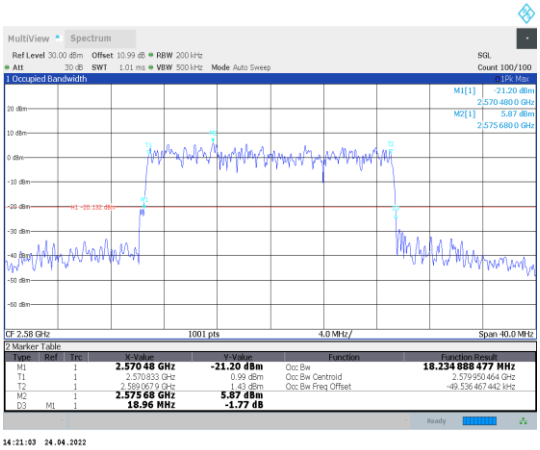
Channel bandwidth=20MHz



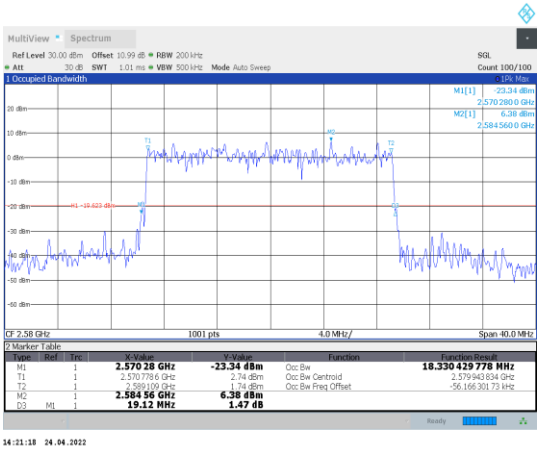
1-N38-PC3-30-20-L-1-CP-QPSK-Outer_Full-51@0-Ant1-17.902-18.880-≤20-PASS



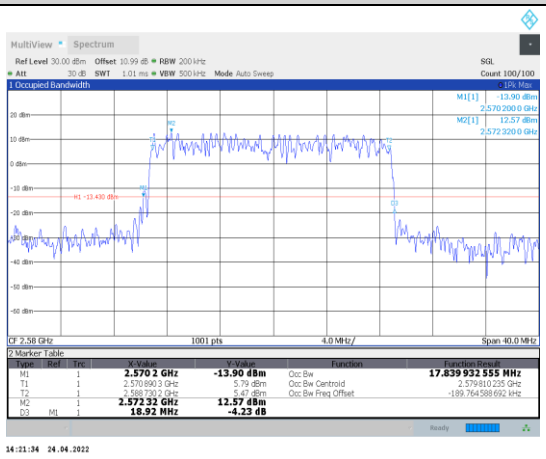
1-N38-PC3-30-20-L-2-CP-16QAM-Outer_Full-51@0-Ant1-18.195-18.880-≤20-PASS



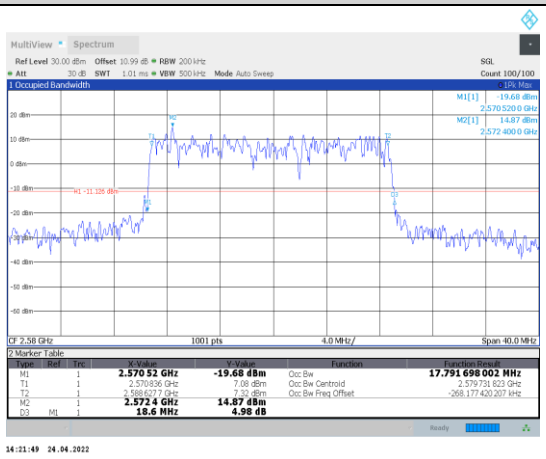
1-N38-PC3-30-20-L-3-CP-64QAM-Outer_Full-51@0-Ant1-18.235-18.960-≤20-PASS



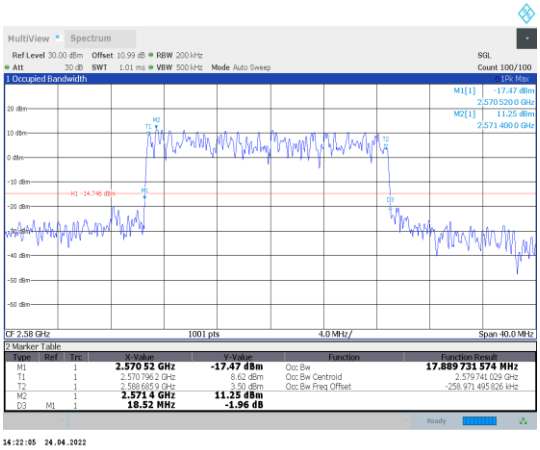
1-N38-PC3-30-20-L-4-CP-256QAM-Outer_Full-51@0-Ant1-18.33-19.120-≤20-PASS



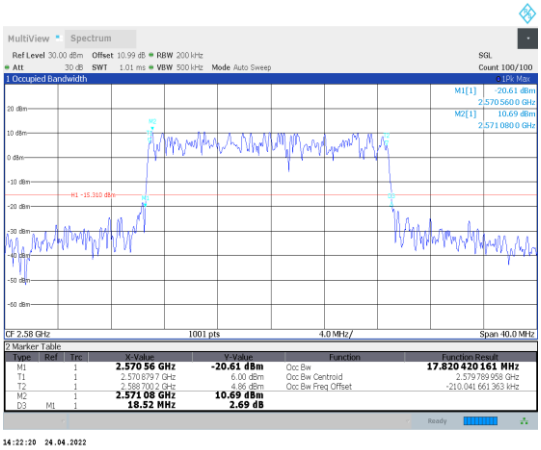
1-N38-PC3-30-20-L-5-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-17.84-18.920-≤20-PASS



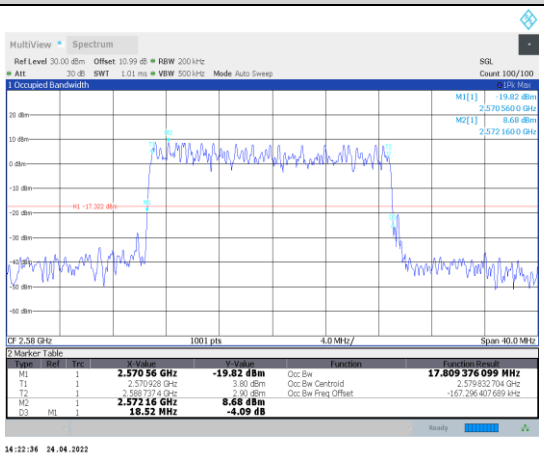
1-N38-PC3-30-20-L-6-DFT-QPSK-Outer_Full-50@0-Ant1-17.792-18.600-≤20-PASS



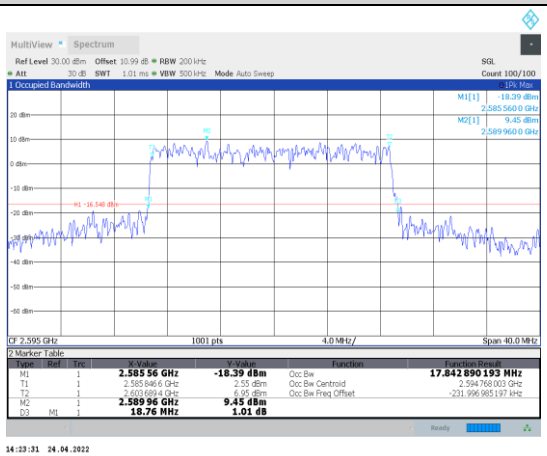
1-N38-PC3-30-20-L-7-DFT-16QAM-Outer_Full-50@0-Ant1-17.89-18.520-≤20-PASS



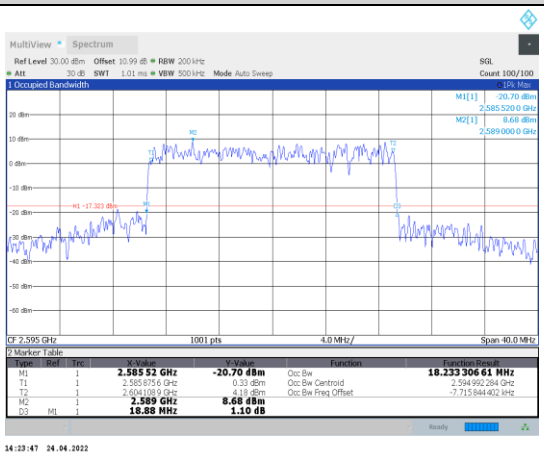
1-N38-PC3-30-20-L-8-DFT-64QAM-Outer_Full-50@0-Ant1-17.82-18.520-≤20-PASS



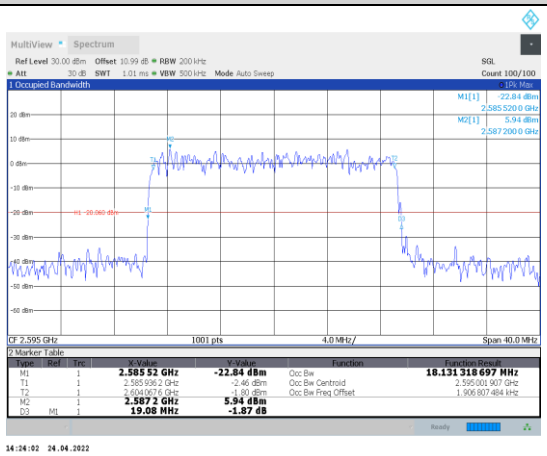
1-N38-PC3-30-20-L-9-DFT-256QAM-Outer_Full-50@0-Ant1-17.809-18.520-≤20-PASS



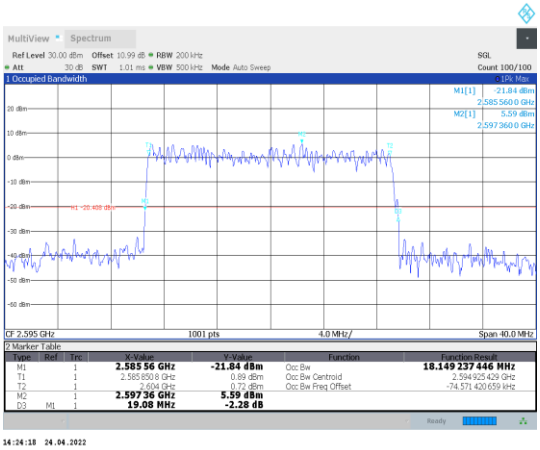
1-N38-PC3-30-20-M-1-CP-QPSK-Outer_Full-51@0-Ant1-17.843-18.760-≤20-PASS



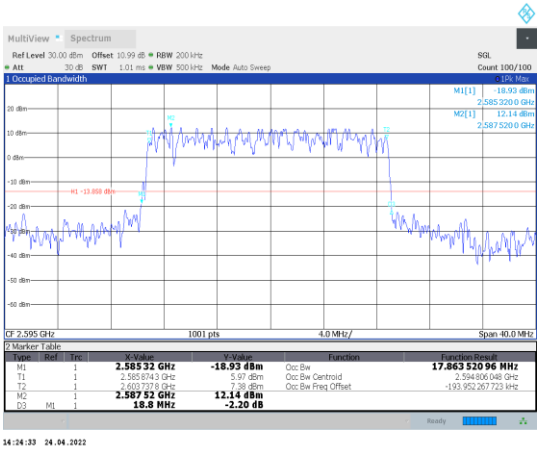
1-N38-PC3-30-20-M-2-CP-16QAM-Outer_Full-51@0-Ant1-18.233-18.880-≤20-PASS



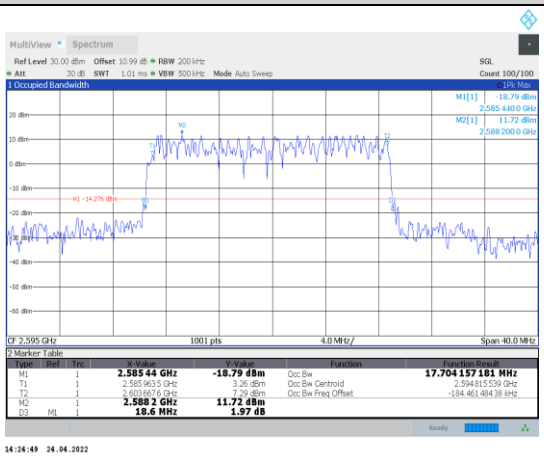
1-N38-PC3-30-20-M-3-CP-64QAM-Outer_Full-51@0-Ant1-18.131-19.080-≤20-PASS



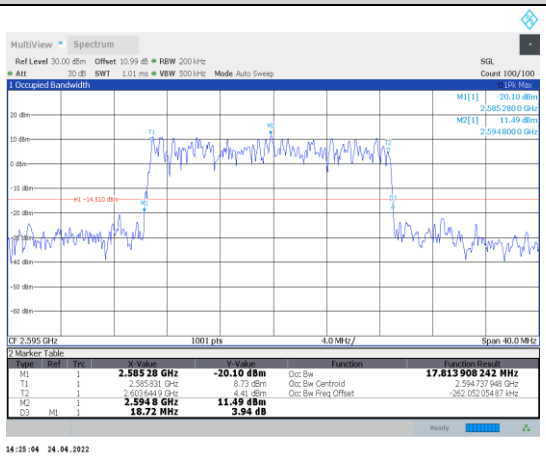
1-N38-PC3-30-20-M-4-CP-256QAM-Outer_Full-51@0-Ant1-18.149-19.080-≤20-PASS



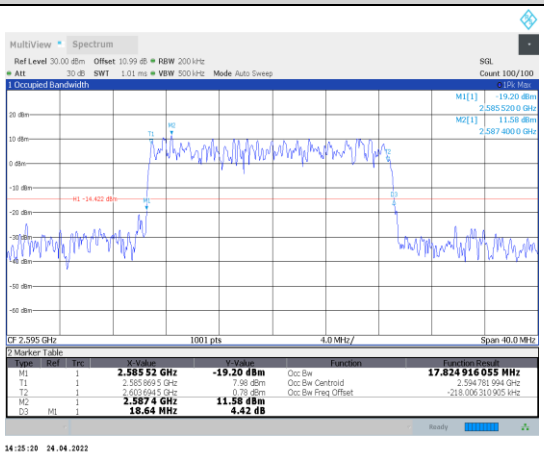
1-N38-PC3-30-20-M-5-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-17.864-18.800-≤20-PASS



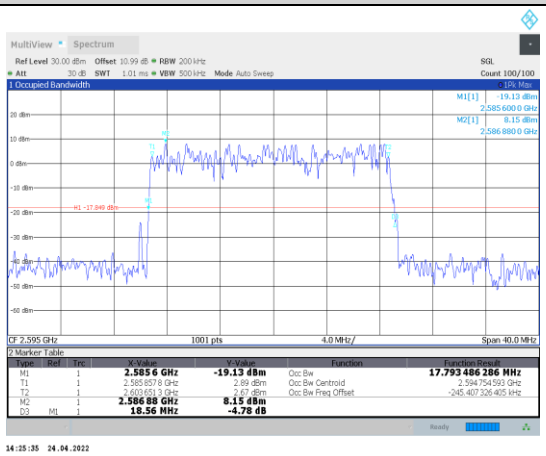
1-N38-PC3-30-20-M-6-DFT-QPSK-Outer_Full-50@0-Ant1-17.704-18.600-≤20-PASS



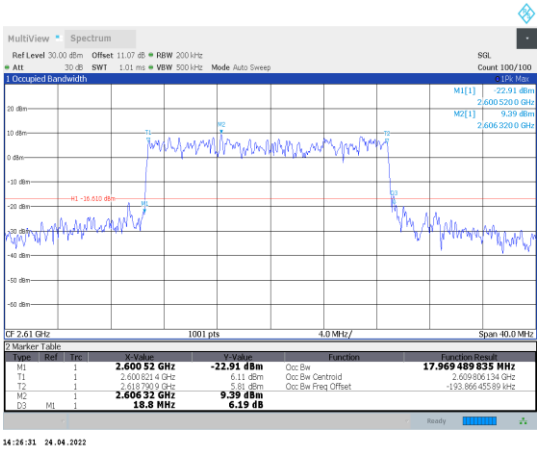
1-N38-PC3-30-20-M-7-DFT-16QAM-Outer_Full-50@0-Ant1-17.814-18.720-≤20-PASS



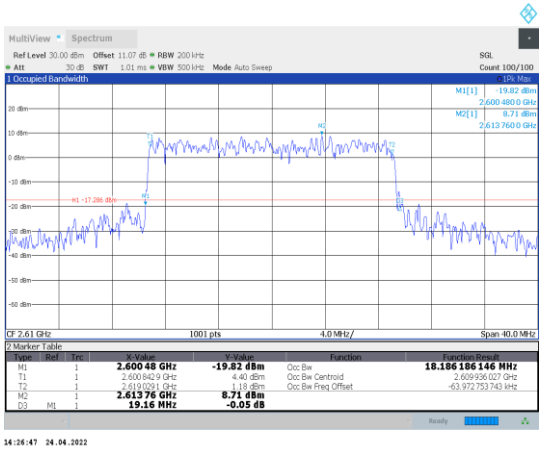
1-N38-PC3-30-20-M-8-DFT-64QAM-Outer_Full-50@0-Ant1-17.825-18.640-≤20-PASS



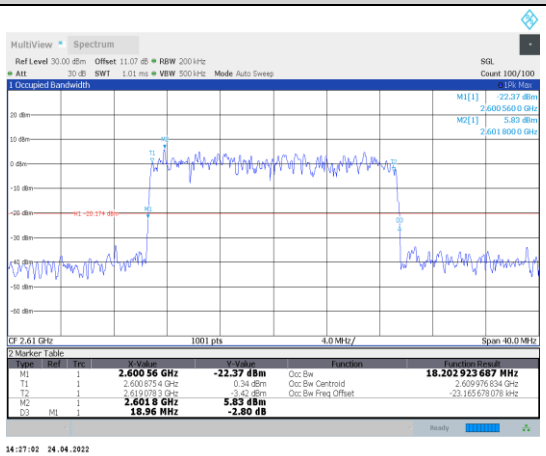
1-N38-PC3-30-20-M-9-DFT-256QAM-Outer_Full-50@0-Ant1-17.793-18.560-≤20-PASS



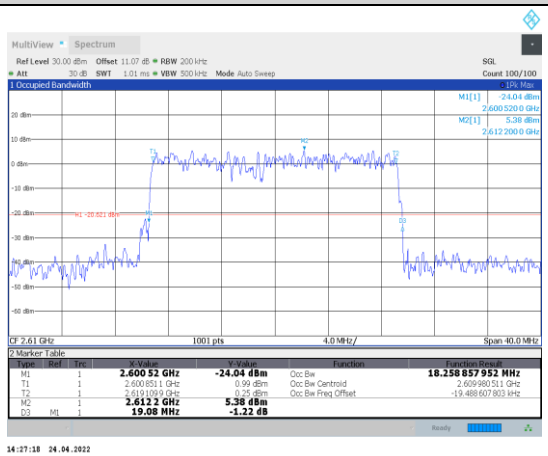
1-N38-PC3-30-20-H-1-CP-QPSK-Outer_Full-51@0-Ant1-17.969-18.800-≤20-PASS



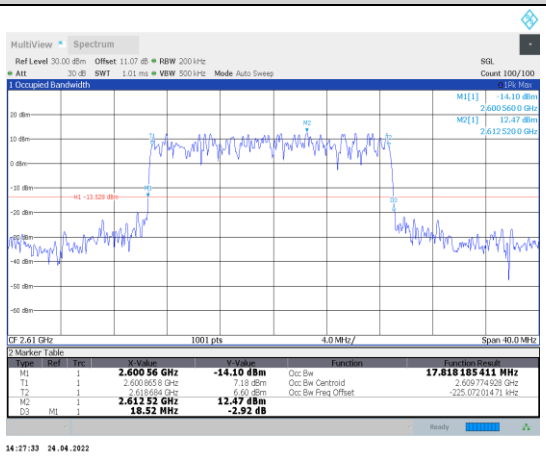
1-N38-PC3-30-20-H-2-CP-16QAM-Outer_Full-51@0-Ant1-18.186-19.160-≤20-PASS



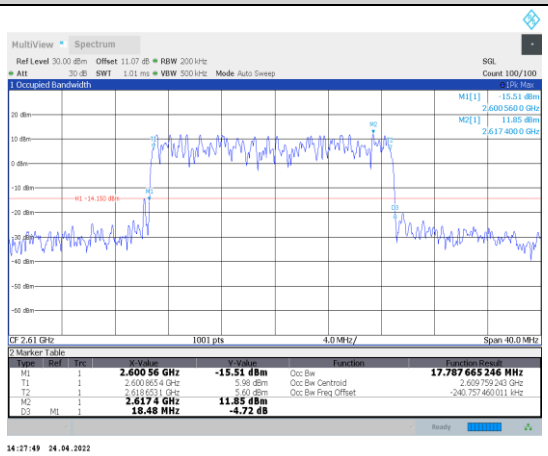
1-N38-PC3-30-20-H-3-CP-64QAM-Outer_Full-51@0-Ant1-18.203-18.960-≤20-PASS



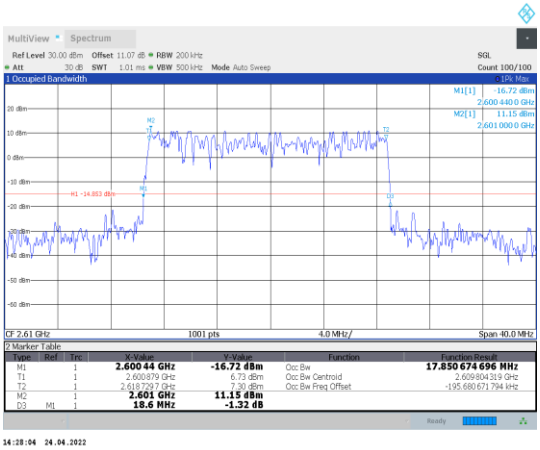
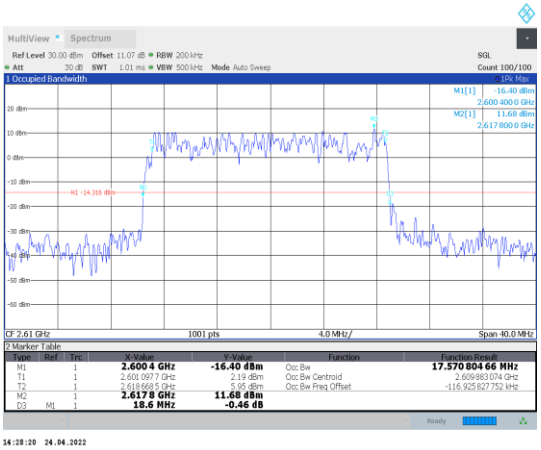
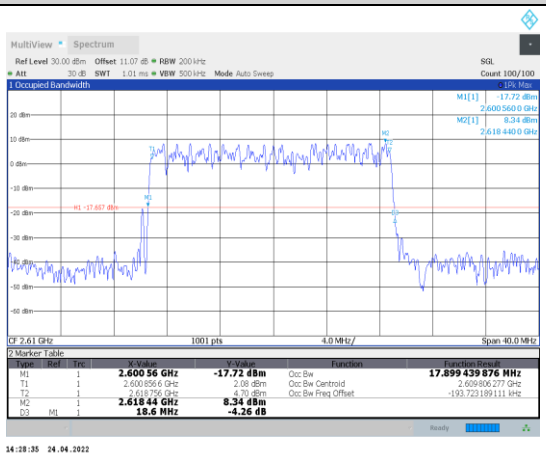
1-N38-PC3-30-20-H-4-CP-256QAM-Outer_Full-51@0-Ant1-18.259-19.080-≤20-PASS



1-N38-PC3-30-20-H-5-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-17.818-18.520-≤20-PASS



1-N38-PC3-30-20-H-6-DFT-QPSK-Outer_Full-50@0-Ant1-17.788-18.480-≤20-PASS

	
1-N38-PC3-30-20-H-7-DFT-16QAM-Outer_Full-50@0-Ant1-17.851-18.600-≤20-PASS	1-N38-PC3-30-20-H-8-DFT-64QAM-Outer_Full-50@0-Ant1-17.571-18.600-≤20-PASS
	-
1-N38-PC3-30-20-H-9-DFT-256QAM-Outer_Full-50@0-Ant1-17.899-18.600-≤20-PASS	-

5 Appendix E: Band Edges Compliance

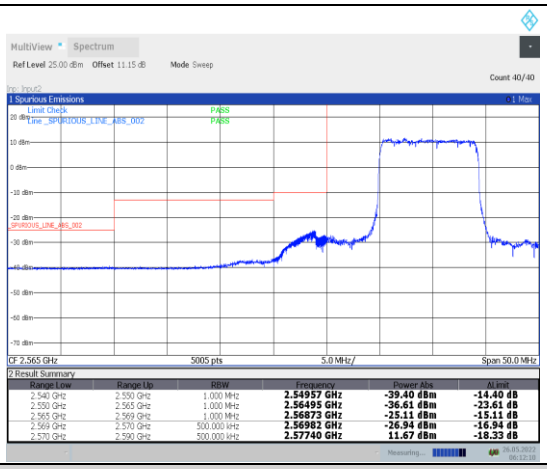
5.1 Test Result for SA

NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB config	Verdict
N38	30	20	L	2580	DFT-PI/2BPSK	Inner_Full	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Edge_1RB_Left	PASS
N38	30	20	L	2580	DFT-PI/2BPSK	Outer_Full	PASS
N38	30	20	L	2580	DFT-QPSK	Edge_1RB_Left	PASS
N38	30	20	L	2580	DFT-QPSK	Outer_Full	PASS
N38	30	20	L	2580	DFT-QPSK	Inner_Full	PASS
N38	30	20	L	2580	DFT-16QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	DFT-16QAM	Outer_Full	PASS
N38	30	20	L	2580	DFT-16QAM	Inner_Full	PASS
N38	30	20	L	2580	DFT-64QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	DFT-64QAM	Outer_Full	PASS
N38	30	20	L	2580	DFT-64QAM	Inner_Full	PASS
N38	30	20	L	2580	DFT-256QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	DFT-256QAM	Outer_Full	PASS
N38	30	20	L	2580	DFT-256QAM	Inner_Full	PASS
N38	30	20	L	2580	CP-QPSK	Edge_1RB_Left	PASS
N38	30	20	L	2580	CP-QPSK	Outer_Full	PASS
N38	30	20	L	2580	CP-QPSK	Inner_Full	PASS
N38	30	20	L	2580	CP-16QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	CP-16QAM	Outer_Full	PASS
N38	30	20	L	2580	CP-16QAM	Inner_Full	PASS
N38	30	20	L	2580	CP-64QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	CP-64QAM	Outer_Full	PASS
N38	30	20	L	2580	CP-64QAM	Inner_Full	PASS
N38	30	20	L	2580	CP-256QAM	Edge_1RB_Left	PASS
N38	30	20	L	2580	CP-256QAM	Outer_Full	PASS
N38	30	20	L	2580	CP-256QAM	Inner_Full	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Inner_Full	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Edge_1RB_Right	PASS
N38	30	20	H	2610	DFT-PI/2BPSK	Outer_Full	PASS
N38	30	20	H	2610	DFT-QPSK	Edge_1RB_Right	PASS
N38	30	20	H	2610	DFT-QPSK	Outer_Full	PASS
N38	30	20	H	2610	DFT-QPSK	Inner_Full	PASS
N38	30	20	H	2610	DFT-16QAM	Edge_1RB_Right	PASS
N38	30	20	H	2610	DFT-16QAM	Outer_Full	PASS
N38	30	20	H	2610	DFT-16QAM	Inner_Full	PASS
N38	30	20	H	2610	DFT-64QAM	Edge_1RB_Right	PASS

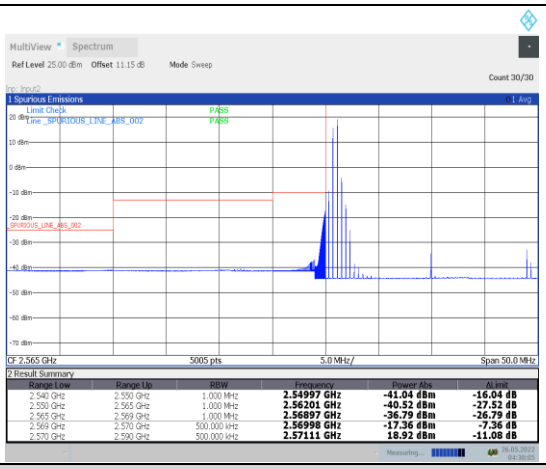
NR Band	SCS [kHz]	BW [MHz]	Channel	Freq [MHz]	Modulation	RB config	Verdict
N38	30	20	H	2610	DFT-64QAM	Outer_Full	PASS
N38	30	20	H	2610	DFT-64QAM	Inner_Full	PASS
N38	30	20	H	2610	DFT-256QAM	Edge_1RB_Right	PASS
N38	30	20	H	2610	DFT-256QAM	Outer_Full	PASS
N38	30	20	H	2610	DFT-256QAM	Inner_Full	PASS
N38	30	20	H	2610	CP-QPSK	Edge_1RB_Right	PASS
N38	30	20	H	2610	CP-QPSK	Outer_Full	PASS
N38	30	20	H	2610	CP-QPSK	Inner_Full	PASS
N38	30	20	H	2610	CP-16QAM	Edge_1RB_Right	PASS
N38	30	20	H	2610	CP-16QAM	Outer_Full	PASS
N38	30	20	H	2610	CP-16QAM	Inner_Full	PASS
N38	30	20	H	2610	CP-64QAM	Edge_1RB_Right	PASS
N38	30	20	H	2610	CP-64QAM	Outer_Full	PASS
N38	30	20	H	2610	CP-64QAM	Inner_Full	PASS
N38	30	20	H	2610	CP-256QAM	Edge_1RB_Right	PASS
N38	30	20	H	2610	CP-256QAM	Outer_Full	PASS
N38	30	20	H	2610	CP-256QAM	Inner_Full	PASS

5.2 Test Plots for SA

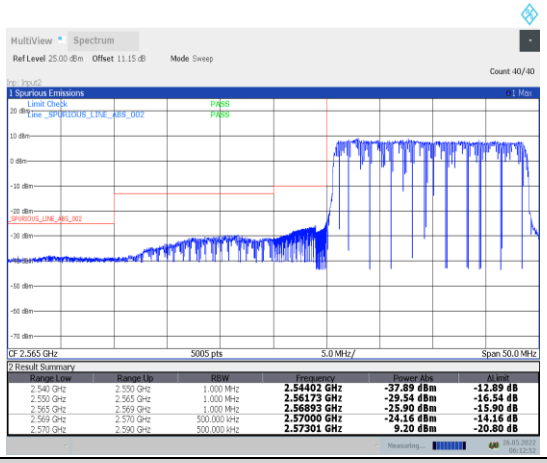
Channel bandwidth=20MHz



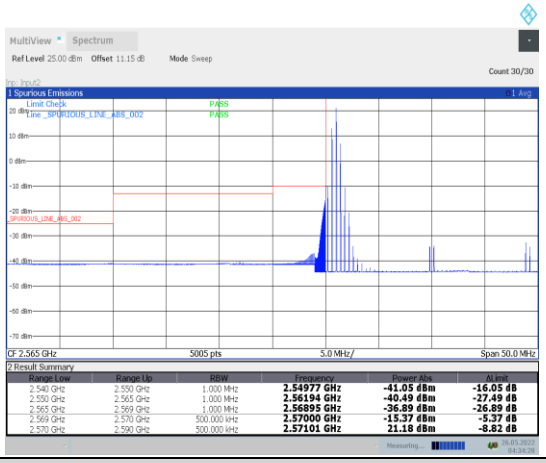
1-N38-PC3-30-20-L-1-DFT-PI/2BPSK-Inner_Full-25@12-Ant1-PASS-see graph



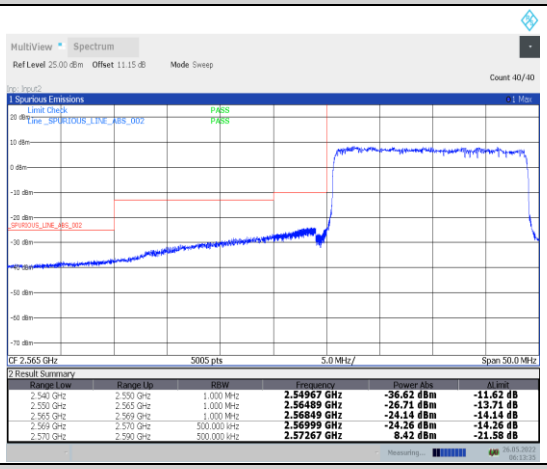
1-N38-PC3-30-20-L-2-DFT-PI/2BPSK-Edge_1RB_Left-1@0-Ant1-PASS-see graph



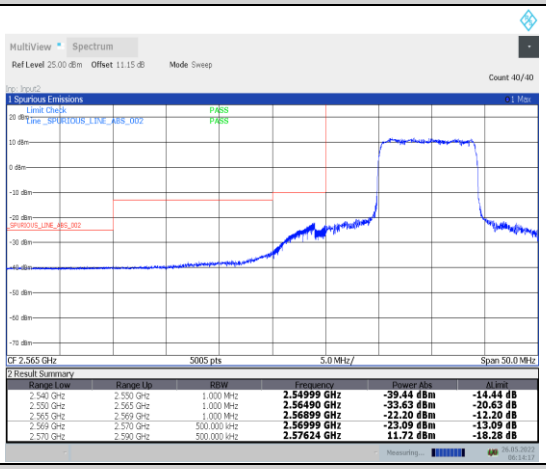
1-N38-PC3-30-20-L-4-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-PASS-see graph



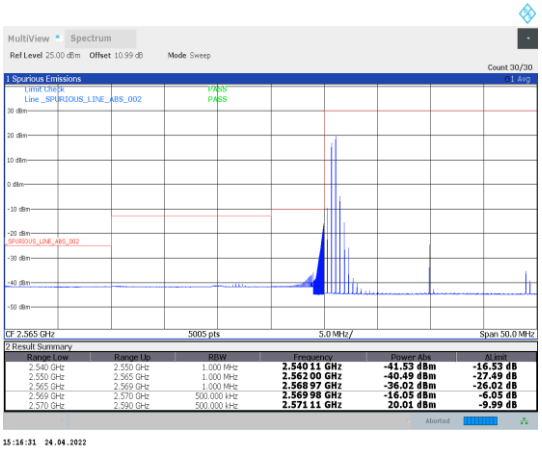
1-N38-PC3-30-20-L-5-DFT-QPSK-Edge_1RB_Left-1@0-Ant1-PASS-see graph



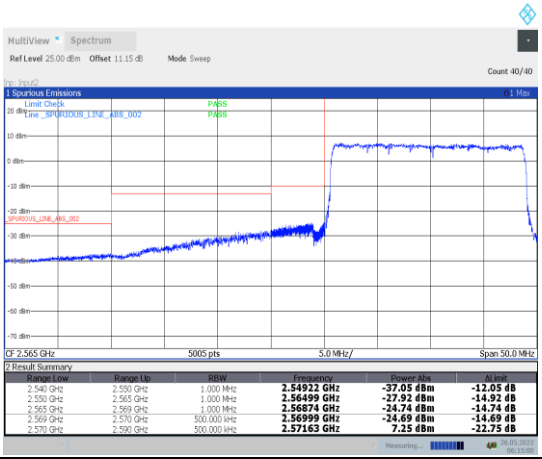
1-N38-PC3-30-20-L-7-DFT-QPSK-Outer_Full-50@0-Ant1-PASS-see graph



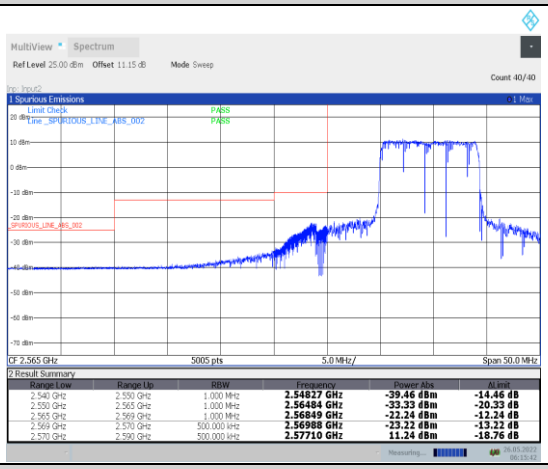
1-N38-PC3-30-20-L-8-DFT-QPSK-Inner_Full-25@12-Ant1-PASS-see graph



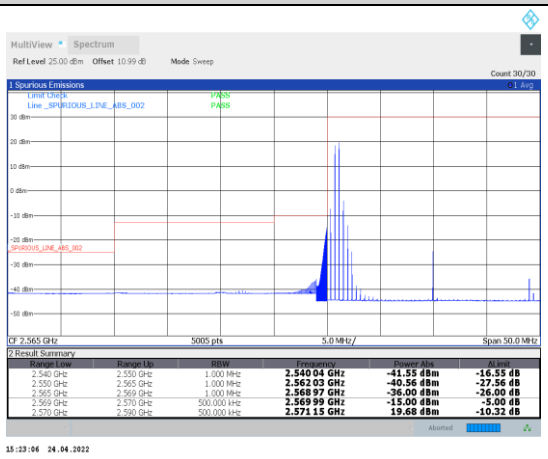
1-N38-PC3-30-20-L-9-DFT-16QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



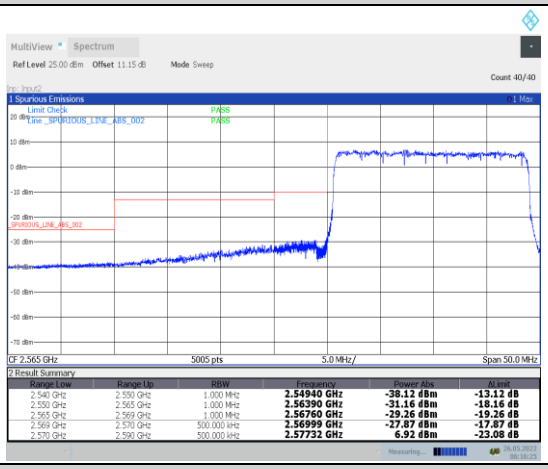
1-N38-PC3-30-20-L-11-DFT-16QAM-Outer_Full-50@0-Ant1-PASS-see graph



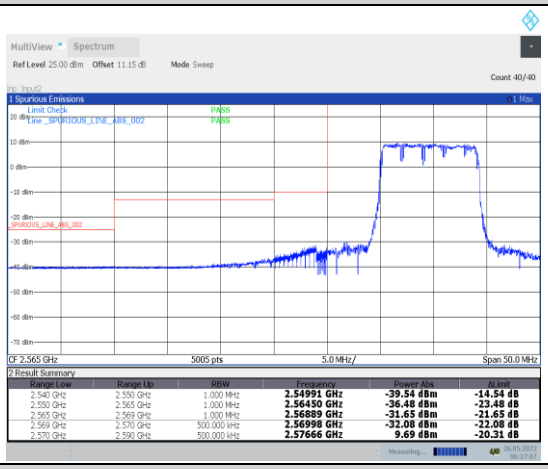
1-N38-PC3-30-20-L-12-DFT-16QAM-Inner_Full-25@12-Ant1-PASS-see graph



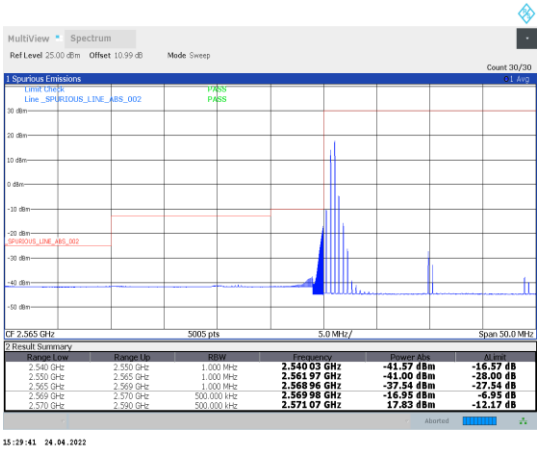
1-N38-PC3-30-20-L-13-DFT-64QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



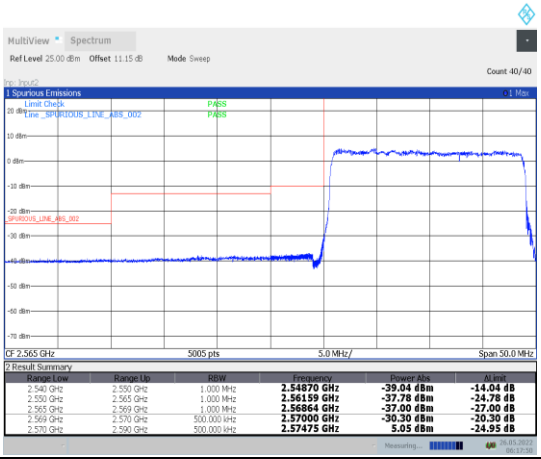
1-N38-PC3-30-20-L-15-DFT-64QAM-Outer_Full-50@0-Ant1-PASS-see graph



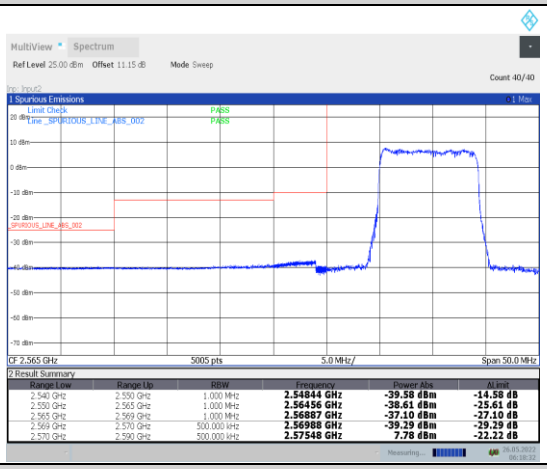
1-N38-PC3-30-20-L-16-DFT-64QAM-Inner_Full-25@12-Ant1-PASS-see graph



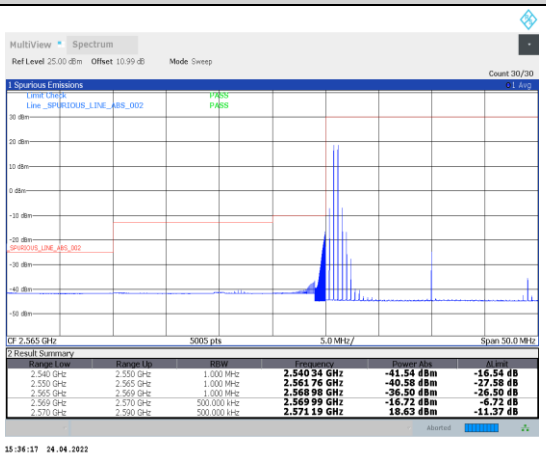
1-N38-PC3-30-20-L-17-DFT-256QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



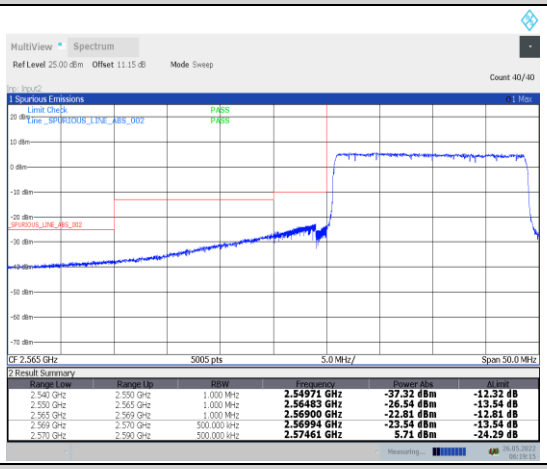
1-N38-PC3-30-20-L-19-DFT-256QAM-Outer_Full-50@0-Ant1-PASS-see graph



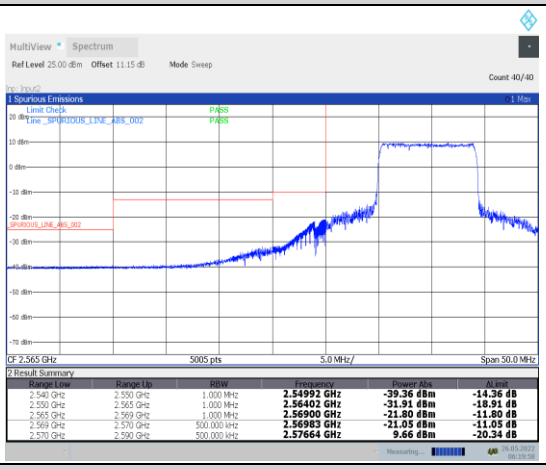
1-N38-PC3-30-20-L-20-DFT-256QAM-Inner_Full-25@12-Ant1-PASS-see graph



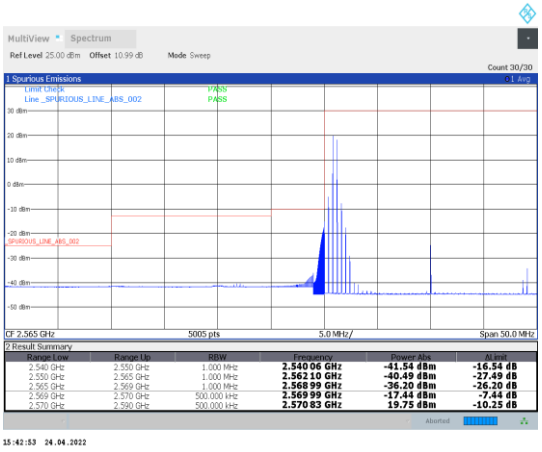
1-N38-PC3-30-20-L-21-CP-QPSK-Edge_1RB_Left-1@0-Ant1-PASS-see graph



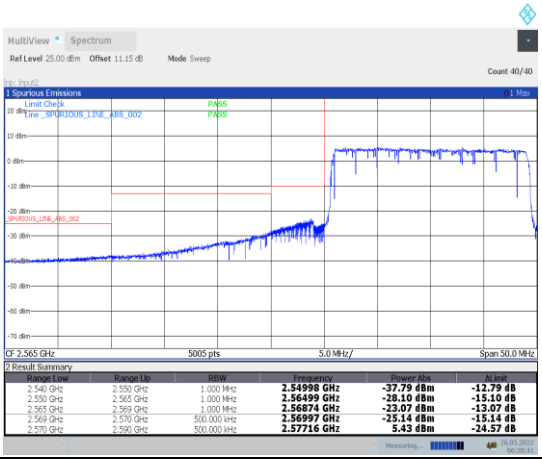
1-N38-PC3-30-20-L-23-CP-QPSK-Outer_Full-51@0-Ant1-PASS-see graph



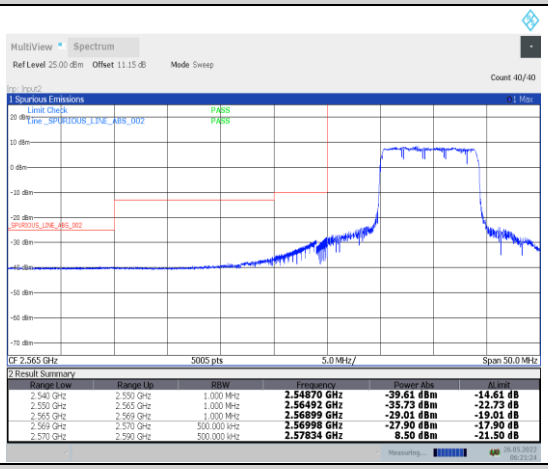
1-N38-PC3-30-20-L-24-CP-QPSK-Inner_Full-25@12-Ant1-PASS-see graph



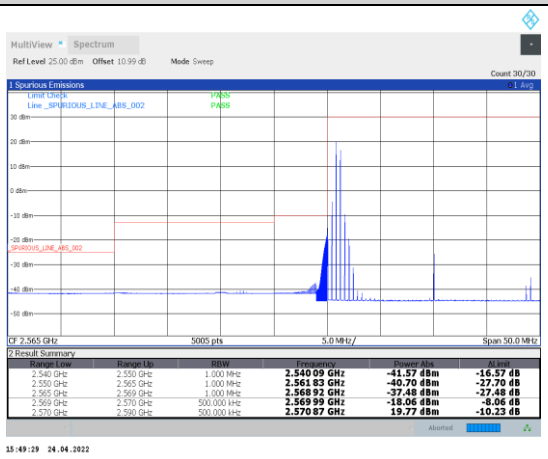
1-N38-PC3-30-20-L-25-CP-16QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



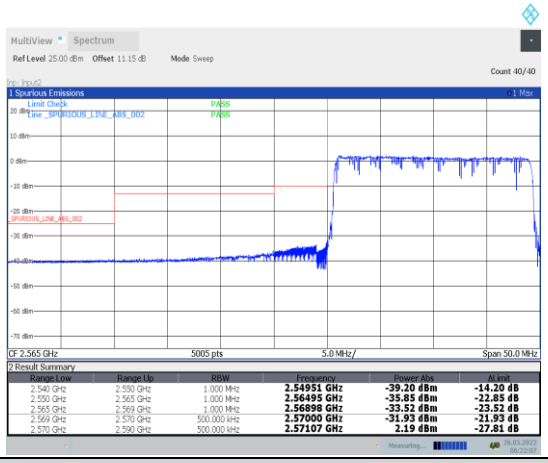
1-N38-PC3-30-20-L-27-CP-16QAM-Outer_Full-51@0-Ant1-PASS-see graph



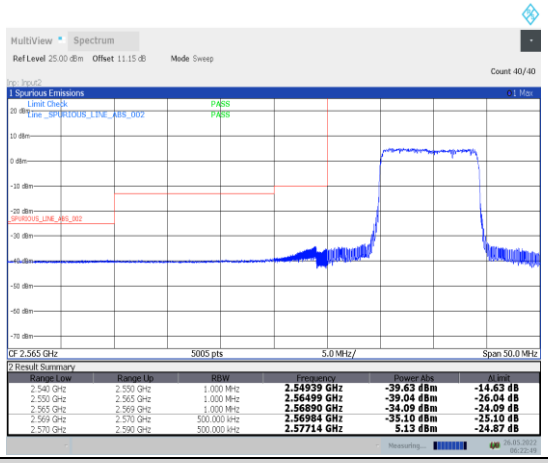
1-N38-PC3-30-20-L-28-CP-16QAM-Inner_Full-25@12-Ant1-PASS-see graph



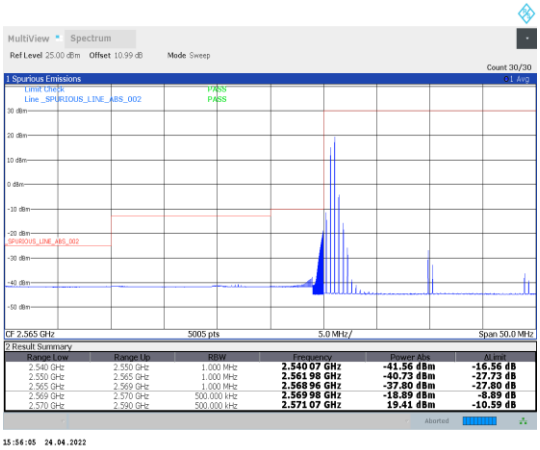
1-N38-PC3-30-20-L-29-CP-64QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



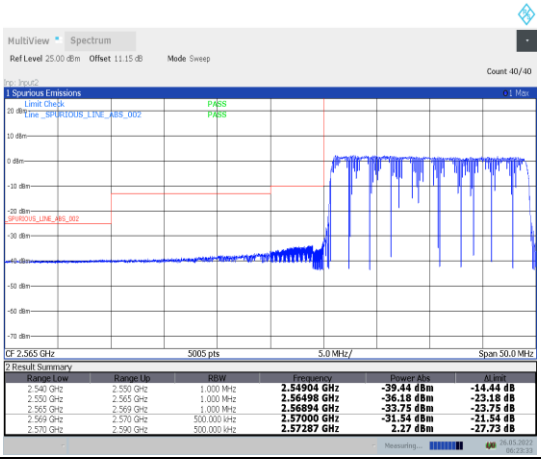
1-N38-PC3-30-20-L-31-CP-64QAM-Outer_Full-51@0-Ant1-PASS-see graph



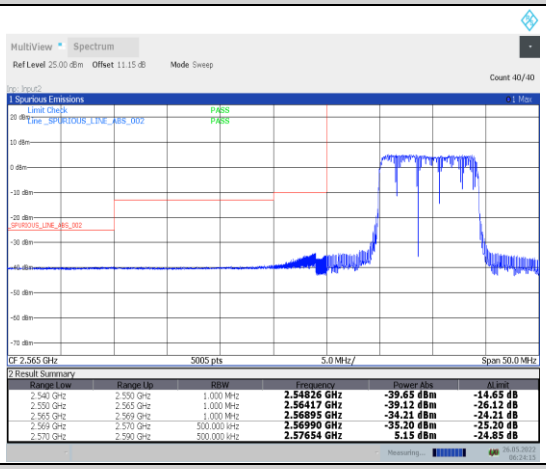
1-N38-PC3-30-20-L-32-CP-64QAM-Inner_Full-25@12-Ant1-PASS-see graph



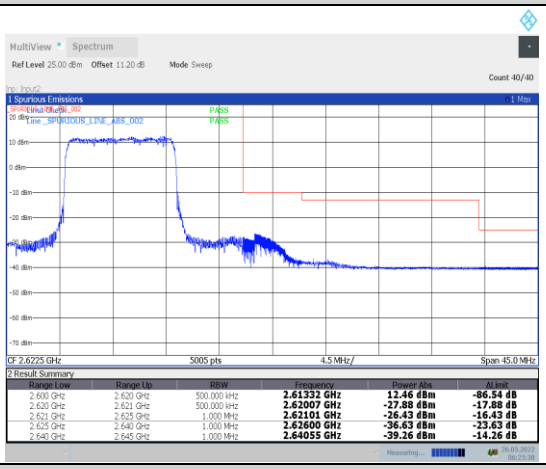
1-N38-PC3-30-20-L-33-CP-256QAM-Edge_1RB_Left-1@0-Ant1-PASS-see graph



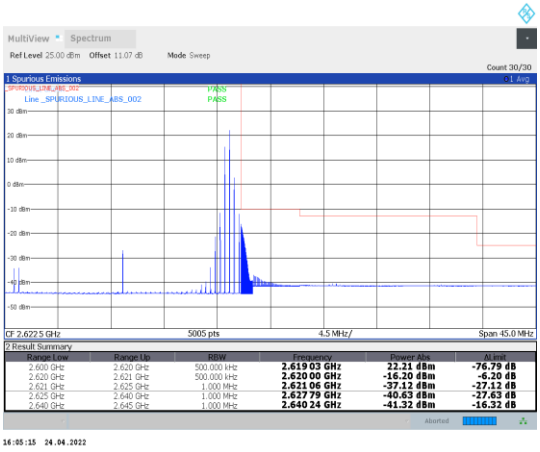
1-N38-PC3-30-20-L-35-CP-256QAM-Outer_Full-51@0-Ant1-PASS-see graph



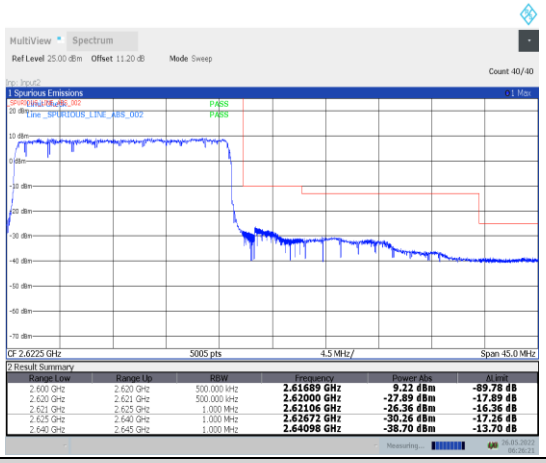
1-N38-PC3-30-20-L-36-CP-256QAM-Inner_Full-25@12-Ant1-PASS-see graph



1-N38-PC3-30-20-H-1-DFT-PI/2BPSK-Inner_Full-25@12-Ant1-PASS-see graph



1-N38-PC3-30-20-H-3-DFT-PI/2BPSK-Edge_1RB_Right-1@50-Ant1-PASS-see graph



1-N38-PC3-30-20-H-4-DFT-PI/2BPSK-Outer_Full-50@0-Ant1-PASS-see graph