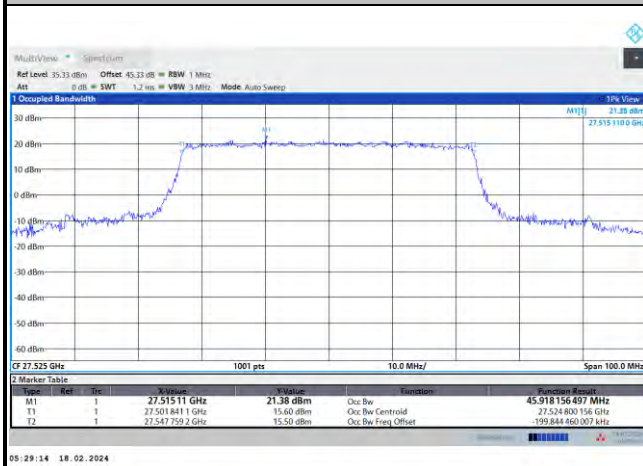




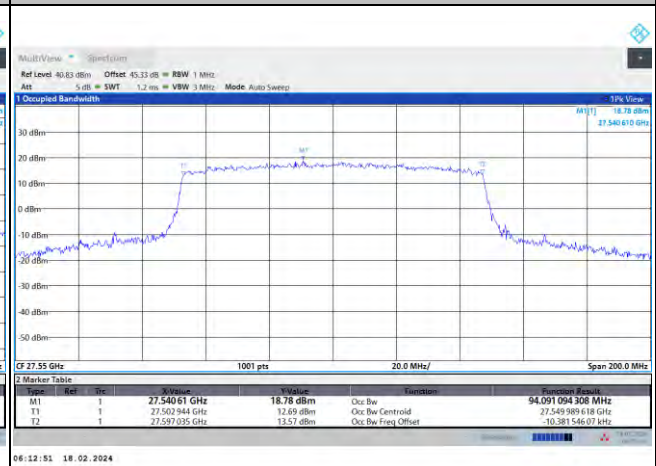
CP-OFDM Module B

NR Band n261

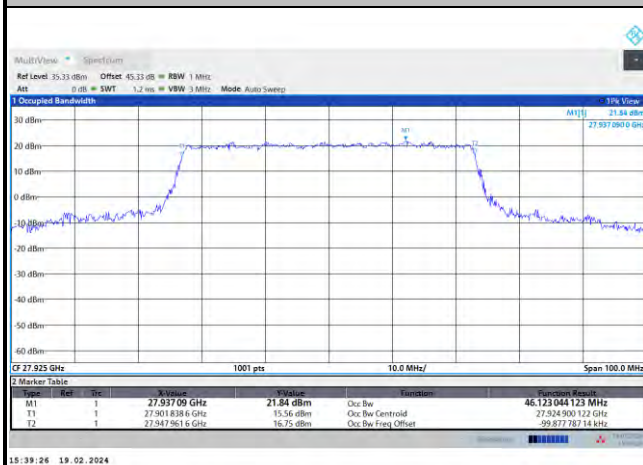
Lowest Channel / 50MHz / QPSK



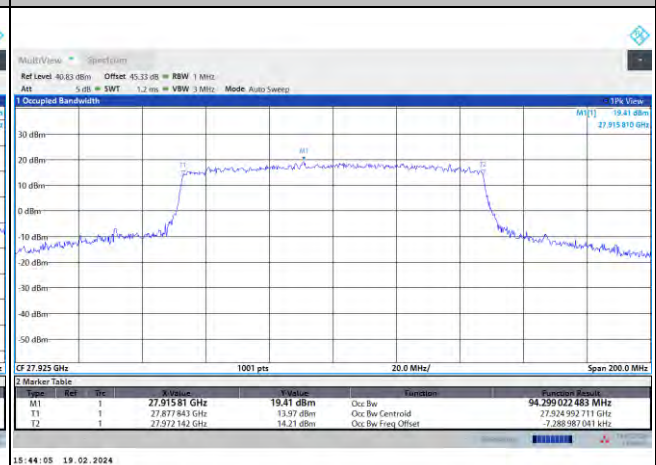
Lowest Channel / 100MHz / QPSK



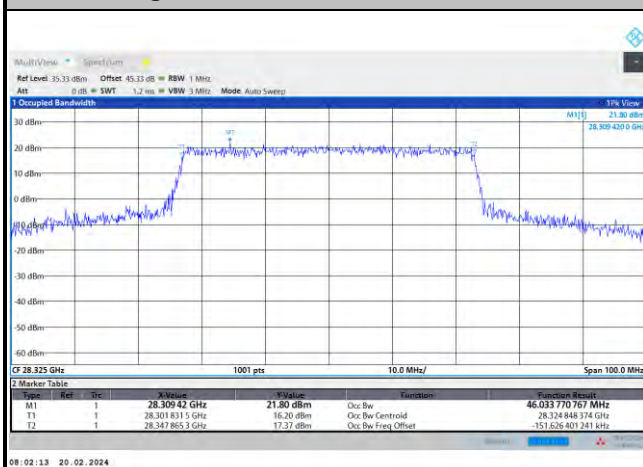
Middle Channel / 50MHz / QPSK



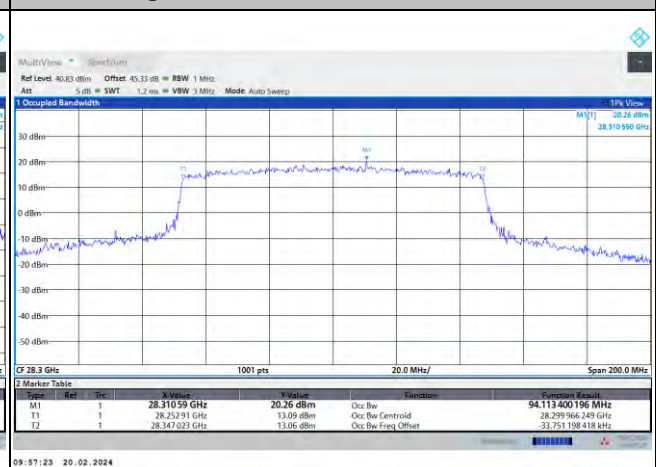
Middle Channel / 100MHz / QPSK



Highest Channel / 50MHz / QPSK



Highest Channel / 100MHz / QPSK

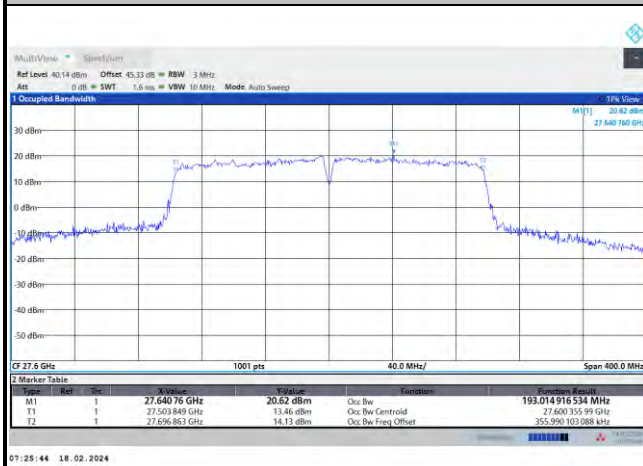




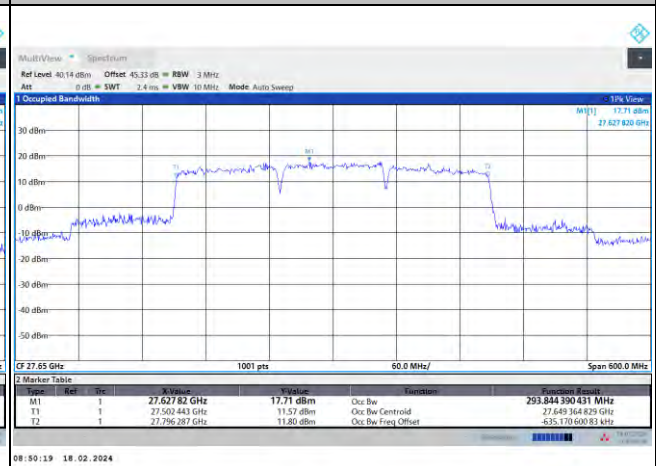
CP-OFDM Module B

NR Band n261

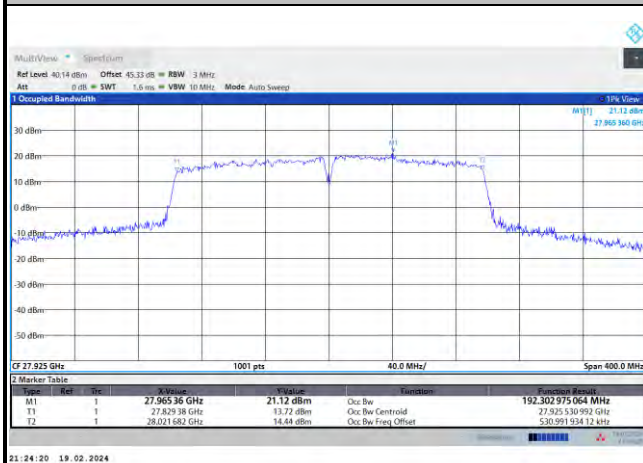
Lowest Channel / 200MHz / QPSK



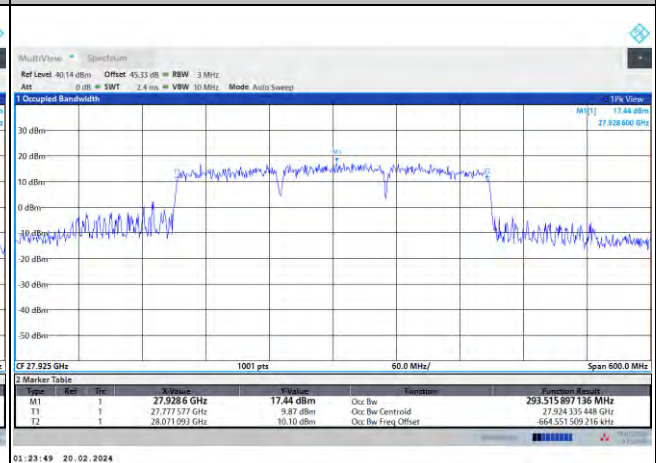
Lowest Channel / 300MHz / QPSK



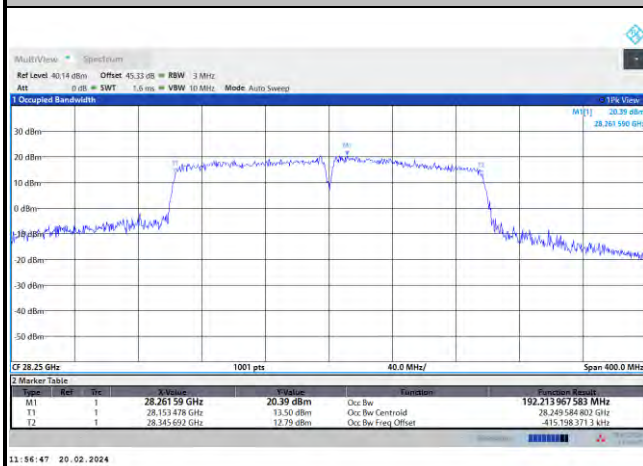
Middle Channel / 200MHz / QPSK



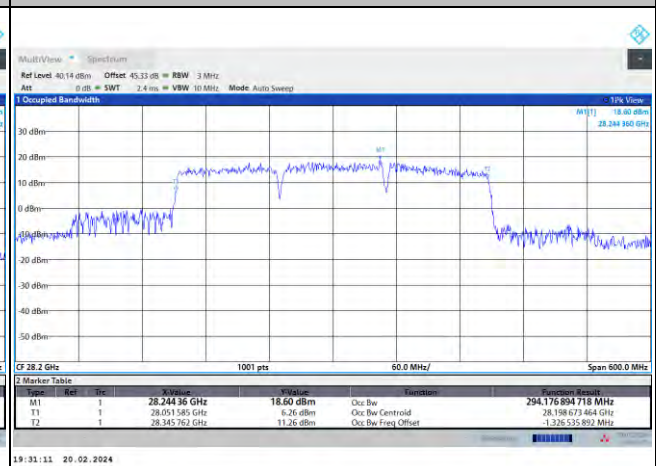
Middle Channel / 300MHz / QPSK



Highest Channel / 200MHz / QPSK



Highest Channel / 300MHz / QPSK

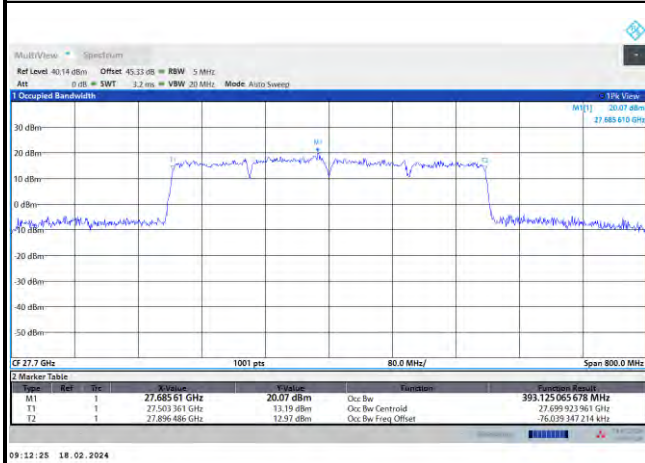




CP-OFDM Module B

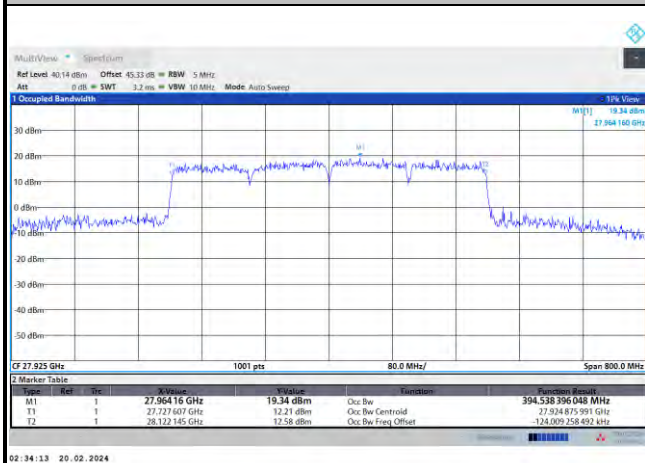
NR Band n261

Lowest Channel / 400MHz / QPSK



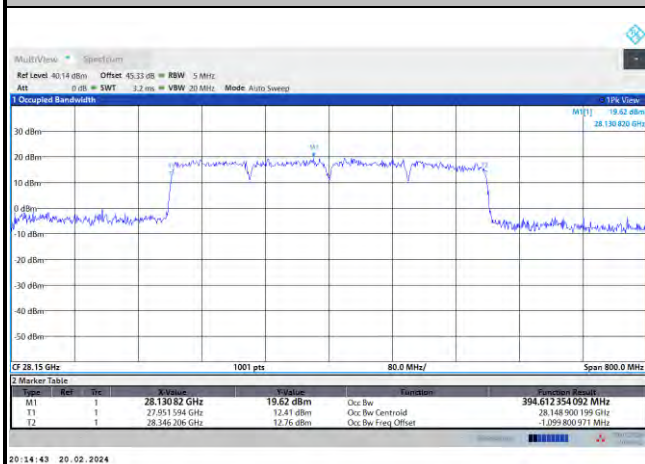
intentionally blank

Middle Channel / 400MHz / QPSK



intentionally blank

Highest Channel / 400MHz / QPSK



intentionally blank

Radiated Out of Band Emissions

Mode			DFT-s-OFDM Module B NR Band n261 : BE (dBm) 1 RB								
BW			50MHz			100MHz			200MHz		
Limit (dBm)			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Low CH	0~10%OB	≤ -5	-18.899	-16.493	-21.428	-21.444	-21.769	-23.242	-28.204	-15.60	-14.70
	>10%OB	≤ -13	-23.076	-24.127	-24.993	-23.330	-24.556	-24.930	-23.607	-15.25	-16.66
High CH	0~10%OB	≤ -5	-19.291	-22.256	-5.31	-6.10	-8.00	-8.98	-13.21	-15.66	-16.61
	>10%OB	≤ -13	-28.444	-28.655	-22.25	-23.08	-24.41	-26.13	-14.57	-16.68	-19.10
Result			Compliance								

Mode			DFT-s-OFDM Module B NR Band n261 : BE (dBm) 1 RB					
BW			300MHz			400MHz		
Limit (dBm)			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Low CH	0~10%OB	≤ -5	-29.461	-31.091	-18.44	-29.786	-17.55	-17.85
	>10%OB	≤ -13	-18.395	-22.985	-18.28	-20.755	-13.59	-17.63
High CH	0~10%OB	≤ -5	-29.358	-30.368	-16.86	-29.579	-30.556	-18.81
	>10%OB	≤ -13	-17.382	-21.482	-15.53	-18.523	-20.268	-15.35
Result			Compliance					

Mode			CP-OFDM Module B NR Band n261 : BE (dBm) 1 RB		
BW			50MHz	100MHz	200MHz
Limit (dBm)			QPSK	QPSK	QPSK
Low CH	0~10%OB	≤ -5	-19.199	-22.779	-27.211
	>10%OB	≤ -13	-24.342	-24.733	-20.461
High CH	0~10%OB	≤ -5	-22.000	-7.28	-12.01
	>10%OB	≤ -13	-28.649	-24.62	-13.97
Result			Compliance		

Mode			CP-OFDM Module B NR Band n261 : BE (dBm) 1 RB	
BW			300MHz	400MHz
Limit (dBm)			QPSK	QPSK
Low CH	0~10%OB	≤ -5	-29.908	-29.519
	>10%OB	≤ -13	-17.279	-19.357
High CH	0~10%OB	≤ -5	-29.154	-29.636
	>10%OB	≤ -13	-18.301	-18.283
Result			Compliance	

Mode			DFT-s-OFDM Module B NR Band n261 : BE (dBm) Full RB								
BW			50MHz			100MHz			200MHz		
Limit (dBm)			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Low CH	0~10%OB	≤ -5	-9.18	-11.59	-15.66	-14.89	-16.32	-18.72	-21.84	-22.76	-27.00
	>10%OB	≤ -13	-16.22	-19.36	-23.98	-19.76	-22.25	-26.26	-25.71	-28.87	-33.03
High CH	0~10%OB	≤ -5	-9.61	-13.38	-14.71	-16.69	-19.35	-22.37	-24.92	-27.08	-29.65
	>10%OB	≤ -13	-14.82	-17.80	-22.50	-18.77	-20.89	-25.70	-26.22	-28.84	-32.45
Result			Compliance								

Mode			DFT-s-OFDM Module B NR Band n261 : BE (dBm) Full RB					
BW			300MHz			400MHz		
Limit (dBm)			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
Low CH	0~10%OB	≤ -5	-22.44	-24.17	-29.78	-23.67	-25.45	-28.26
	>10%OB	≤ -13	-22.79	-27.02	-33.04	-24.86	-28.18	-33.70
High CH	0~10%OB	≤ -5	-22.92	-26.03	-30.18	-21.99	-25.14	-30.22
	>10%OB	≤ -13	-22.35	-26.49	-31.96	-21.55	-24.88	-31.33
Result			Compliance					

Mode			CP-OFDM Module B NR Band n261 : BE (dBm) Full RB		
BW			50MHz	100MHz	200MHz
Limit (dBm)			QPSK	QPSK	QPSK
Low CH	0~10%OB	≤ -5	-12.33	-16.04	-21.25
	>10%OB	≤ -13	-17.47	-20.75	-23.80
High CH	0~10%OB	≤ -5	-11.74	-15.35	-19.13
	>10%OB	≤ -13	-13.12	-19.36	-23.13
Result			Compliance		

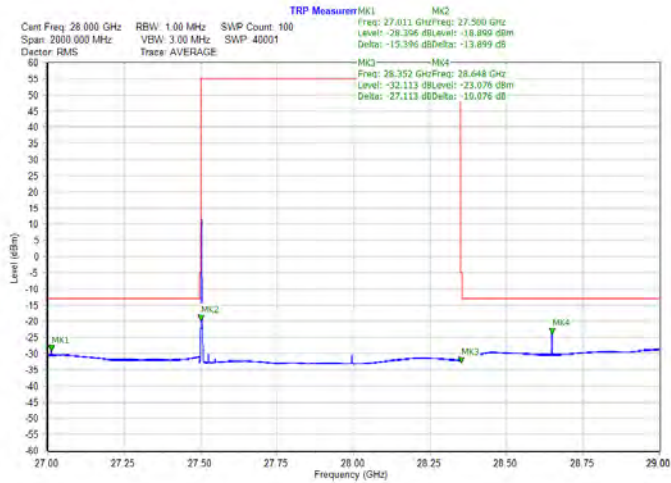
Mode			CP-OFDM Module B NR Band n261 : BE (dBm) Full RB	
BW			300MHz	400MHz
Limit (dBm)			QPSK	QPSK
Low CH	0~10%OB	≤ -5	-20.76	-22.98
	>10%OB	≤ -13	-21.19	-24.02
High CH	0~10%OB	≤ -5	-20.44	-19.90
	>10%OB	≤ -13	-22.02	-20.83
Result			Compliance	



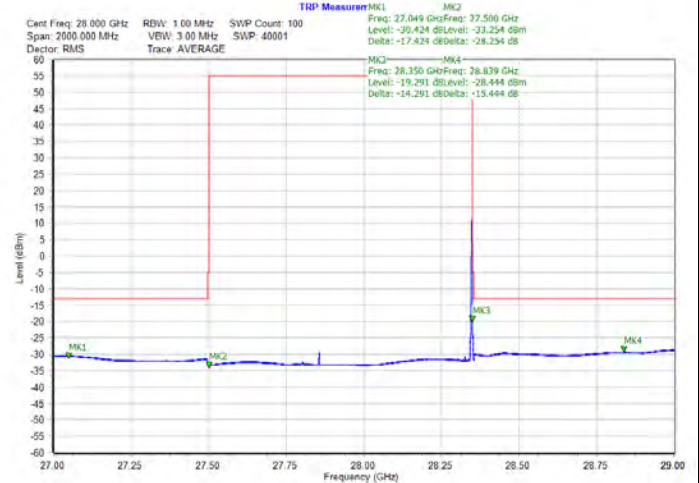
DFT-s-OFDM Module B

NR Band n261 / 50MHz / QPSK

Lowest Band Edge / 1 RB

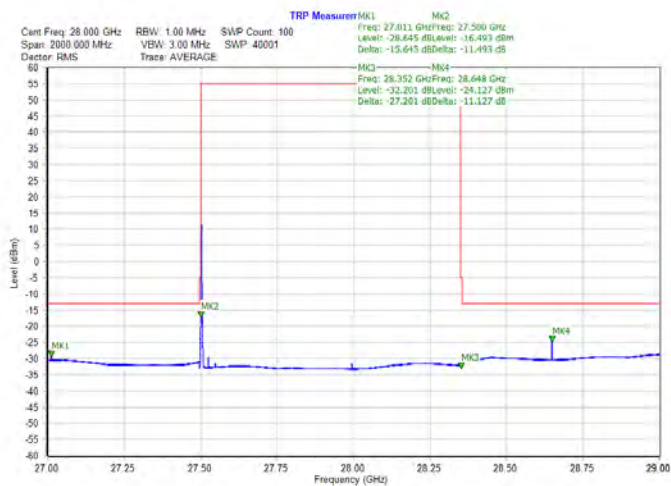


Highest Band Edge / 1 RB

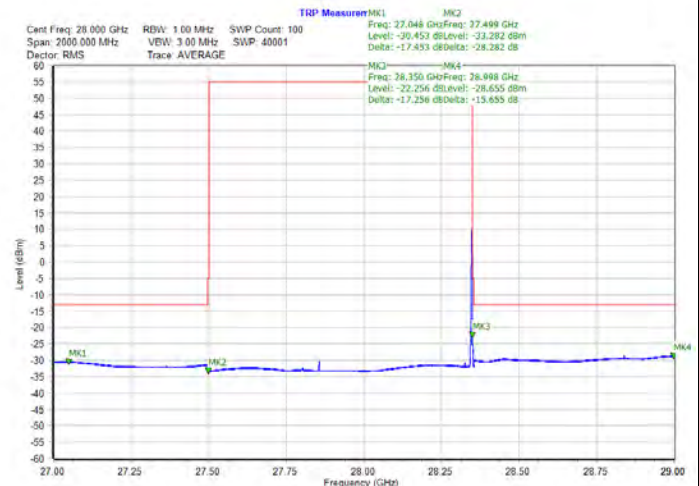


NR Band n261 / 50MHz / 16QAM

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB

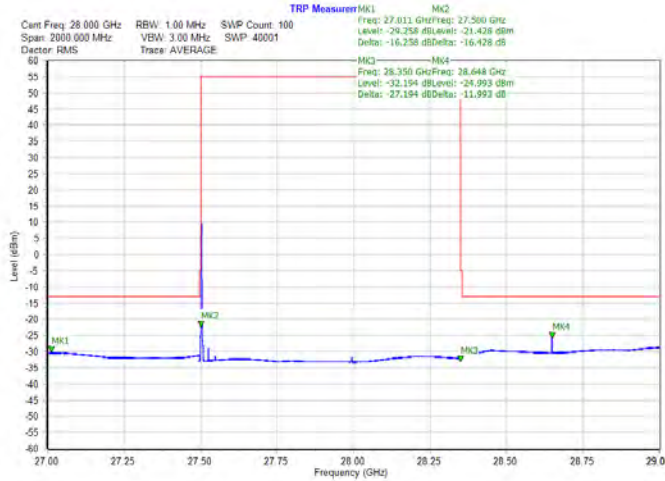




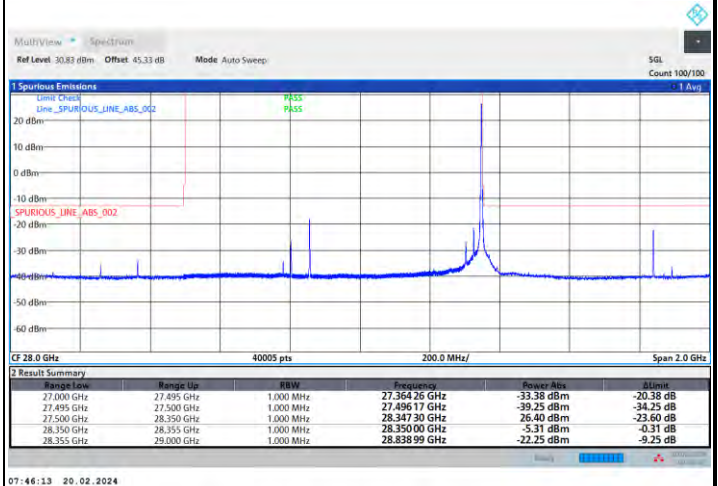
DFT-s-OFDM Module B

NR Band n261 / 50MHz / 64QAM

Lowest Band Edge / 1 RB

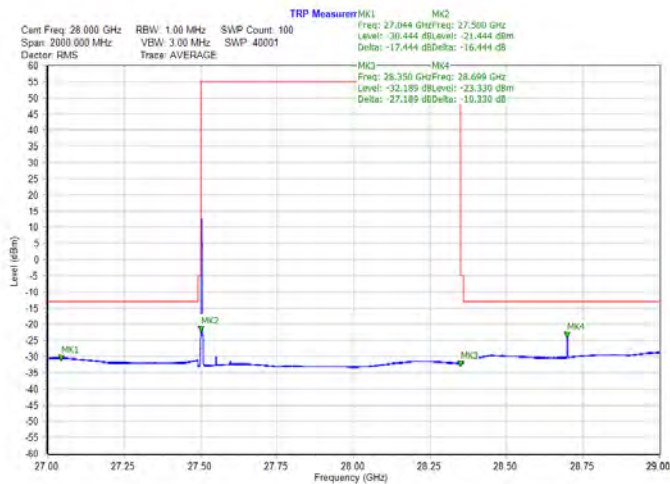


Highest Band Edge / 1 RB

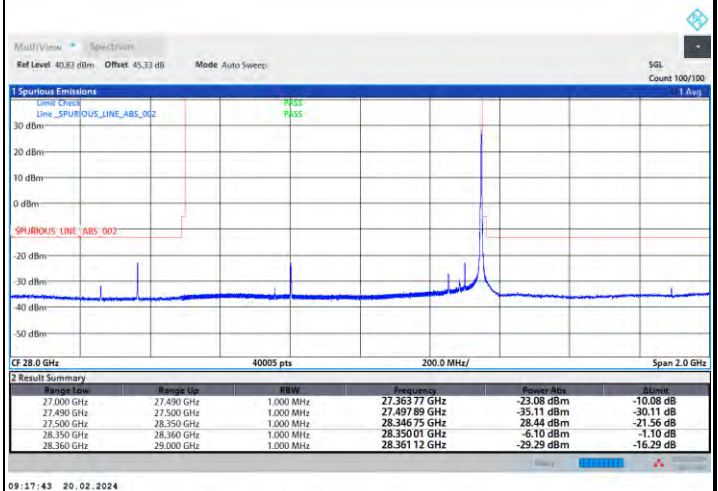


NR Band n261 / 100MHz / QPSK

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB



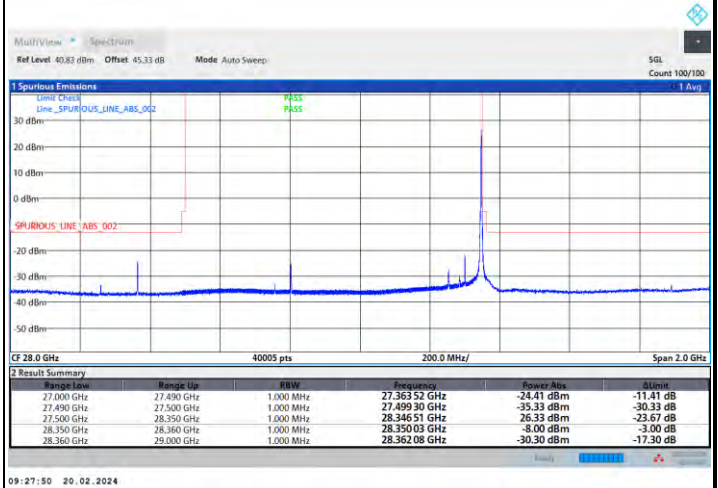
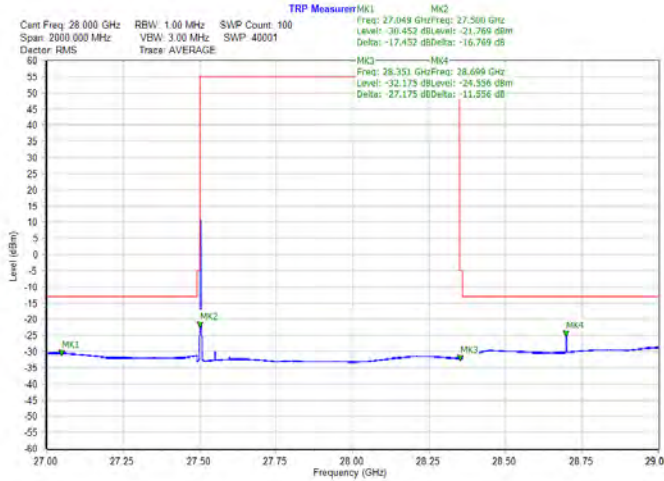


DFT-s-OFDM Module B

NR Band n261 / 100MHz / 16QAM

Lowest Band Edge / 1 RB

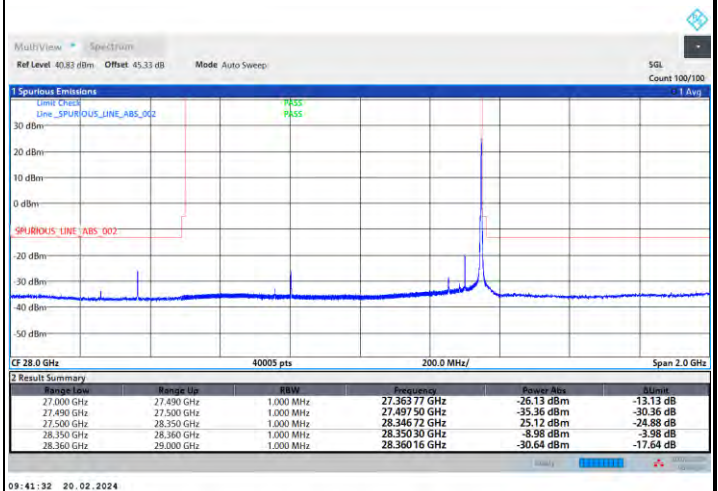
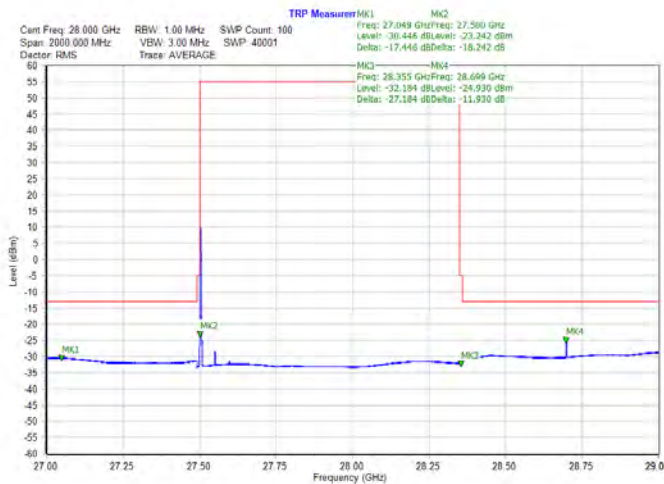
Highest Band Edge / 1 RB



NR Band n261 / 100MHz / 64QAM

Lowest Band Edge / 1 RB

Highest Band Edge / 1 RB



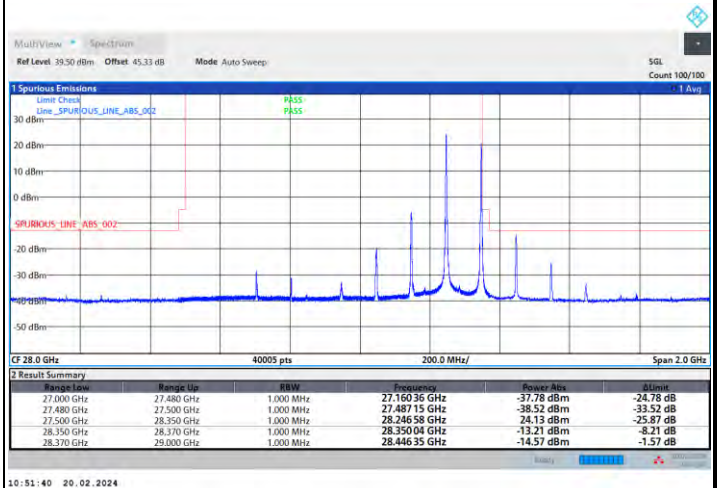
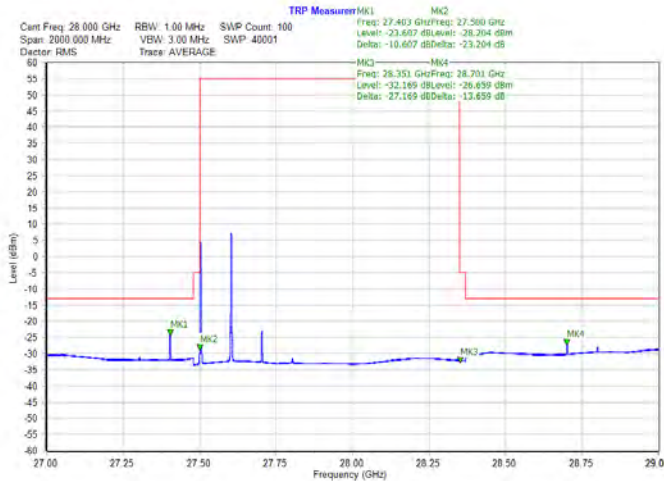


DFT-s-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / 1 RB

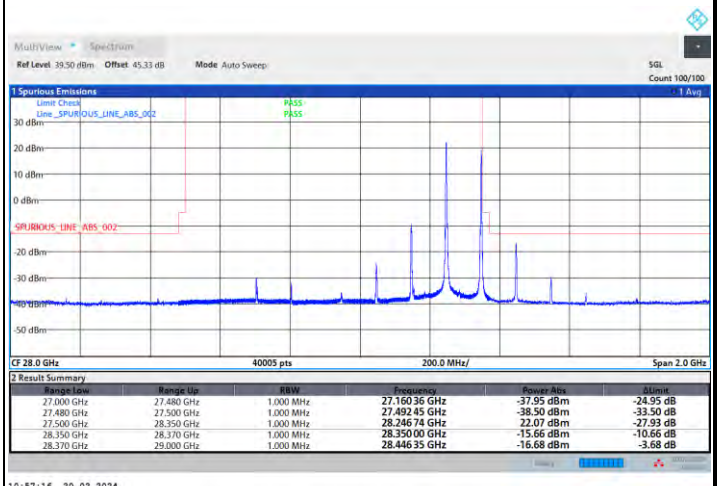
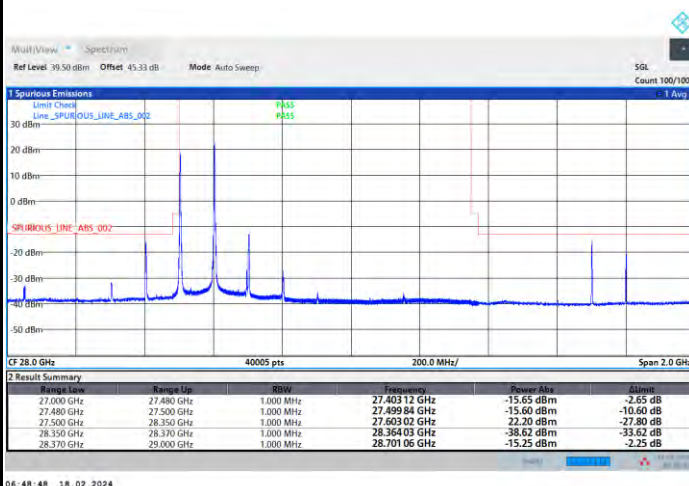
Highest Band Edge / 1 RB



NR Band n261 / 200MHz / 16QAM

Lowest Band Edge / 1 RB

Highest Band Edge / 1 RB

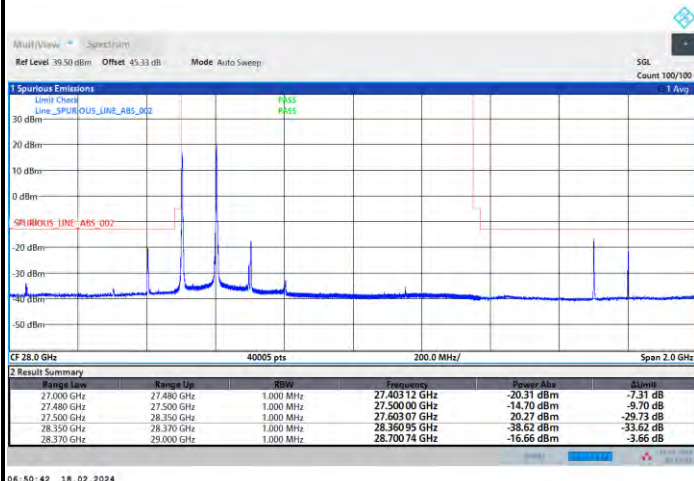




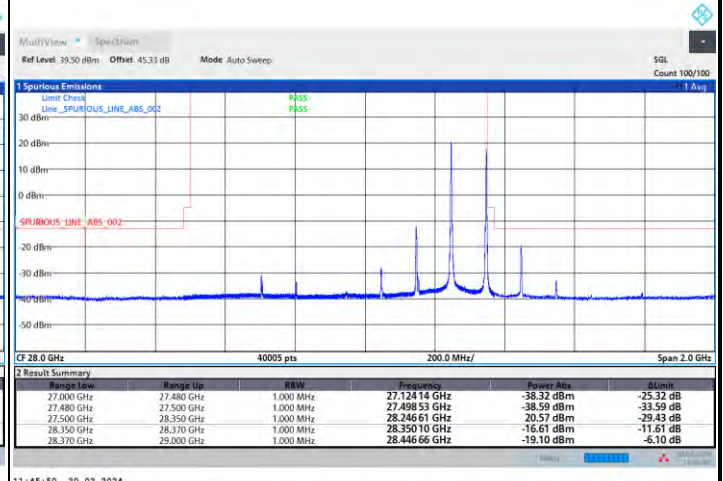
DFT-s-OFDM Module B

NR Band n261 / 200MHz / 64QAM

Lowest Band Edge / 1 RB

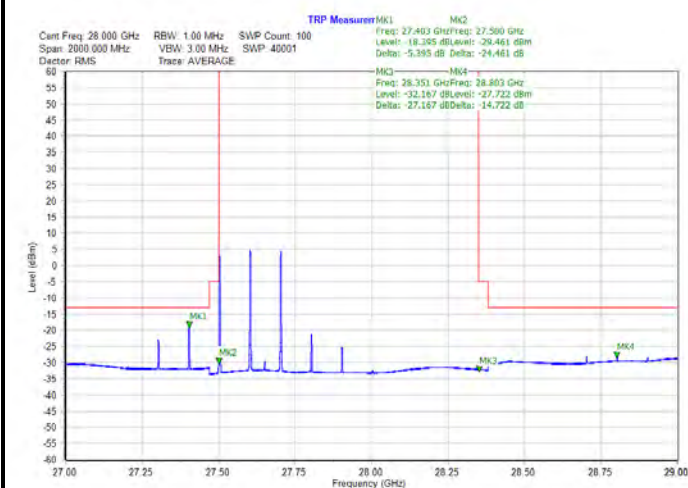


Highest Band Edge / 1 RB

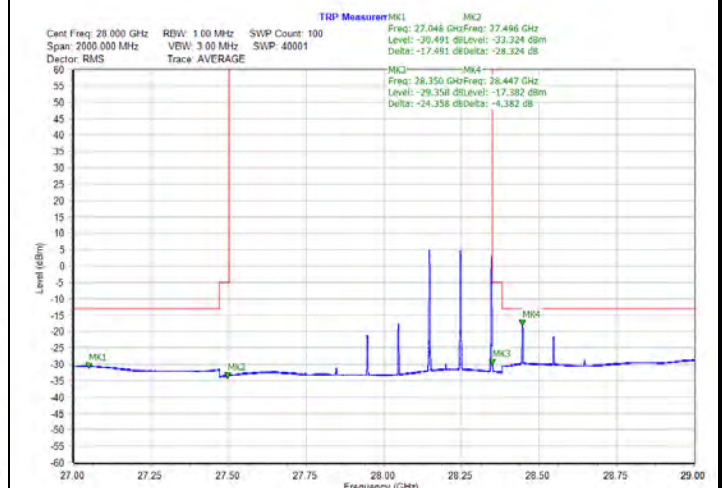


NR Band n261 / 300MHz / QPSK

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB

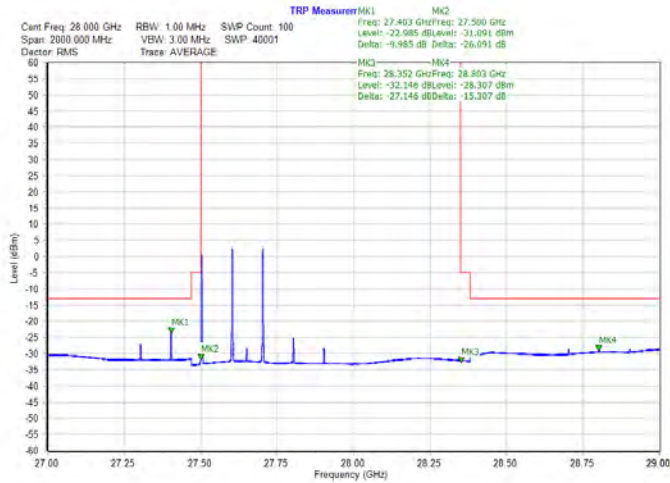




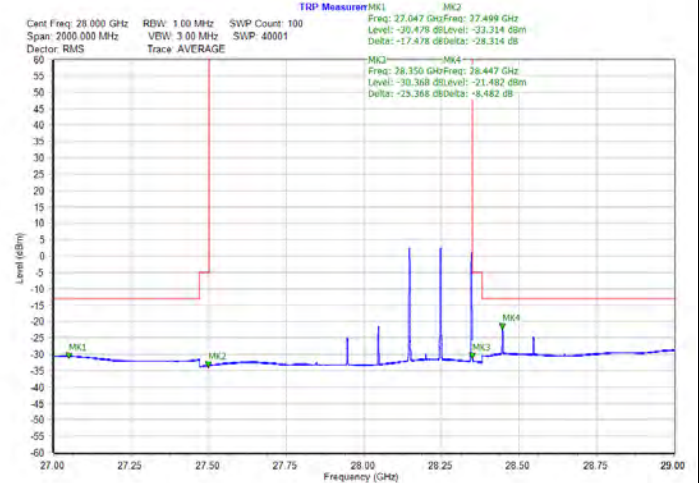
DFT-s-OFDM Module B

NR Band n261 / 300MHz / 16QAM

Lowest Band Edge / 1 RB

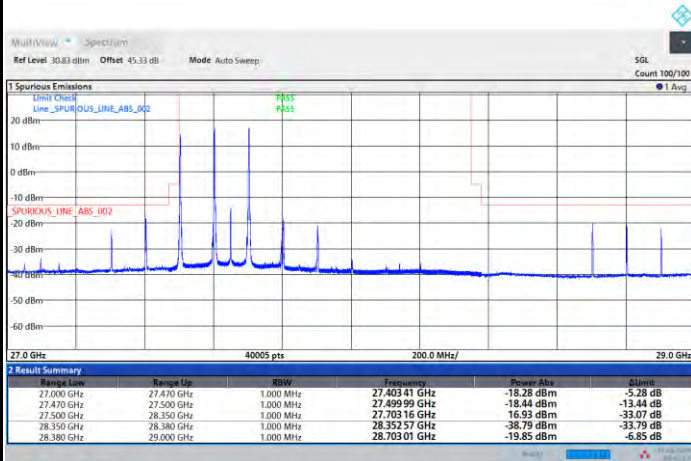


Highest Band Edge / 1 RB

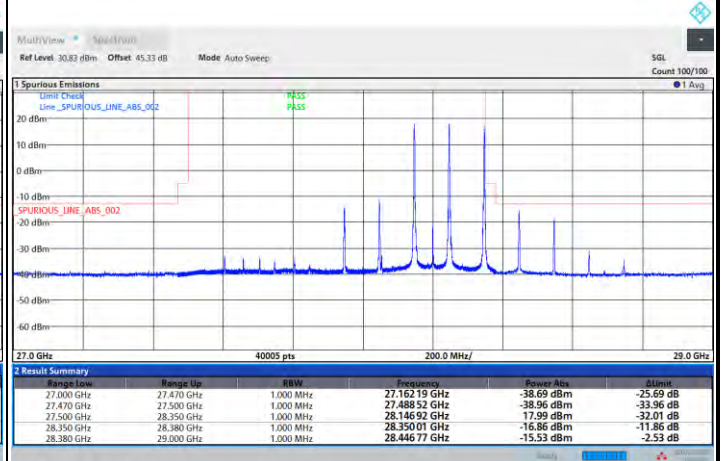


NR Band n261 / 300MHz / 64QAM

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB



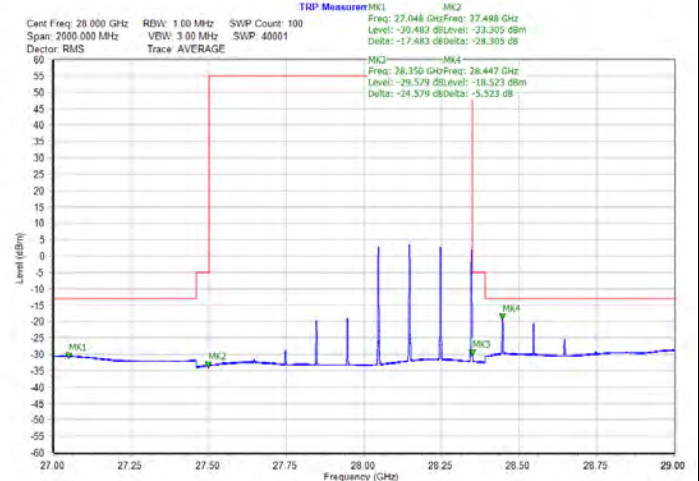
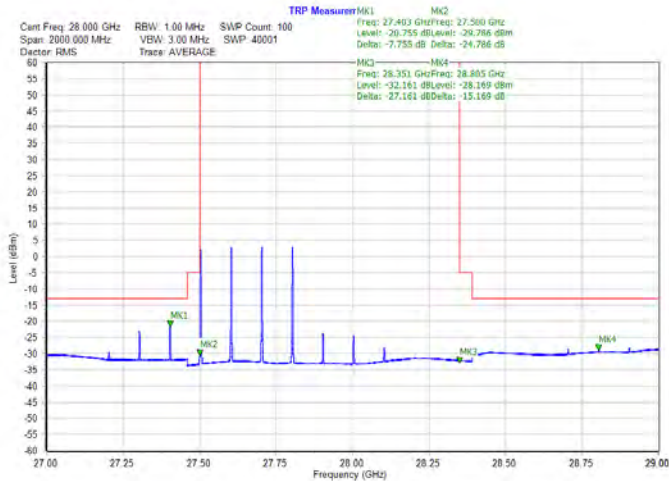


DFT-s-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / 1 RB

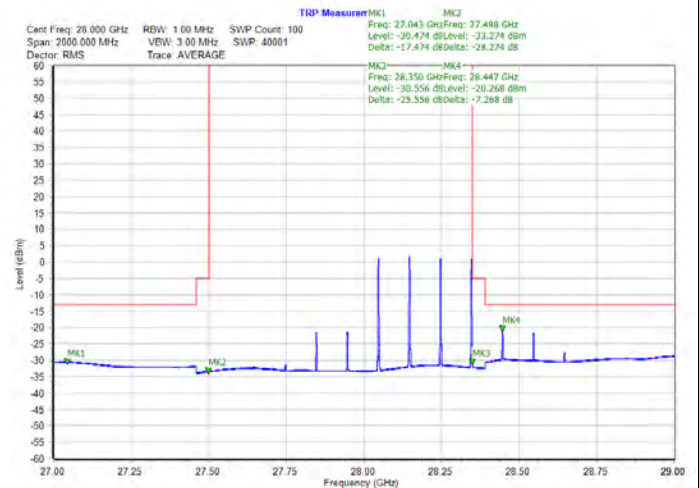
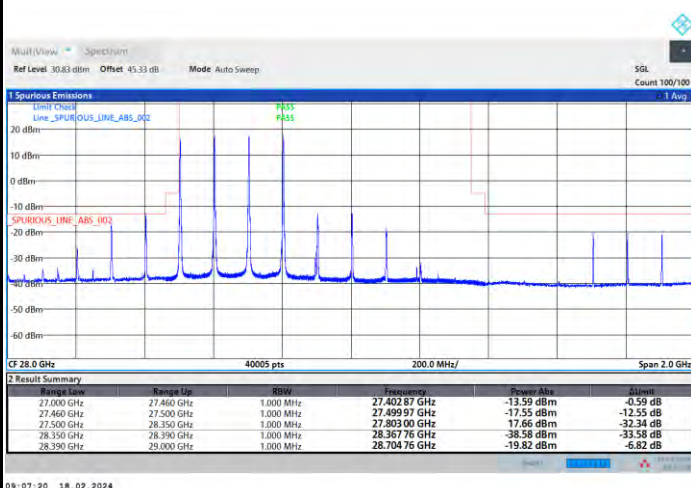
Highest Band Edge / 1 RB



NR Band n261 / 400MHz / 16QAM

Lowest Band Edge / 1 RB

Highest Band Edge / 1 RB

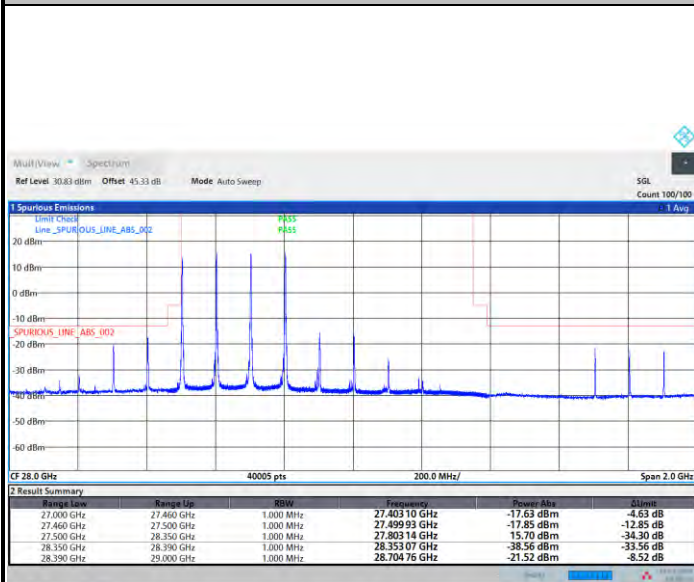




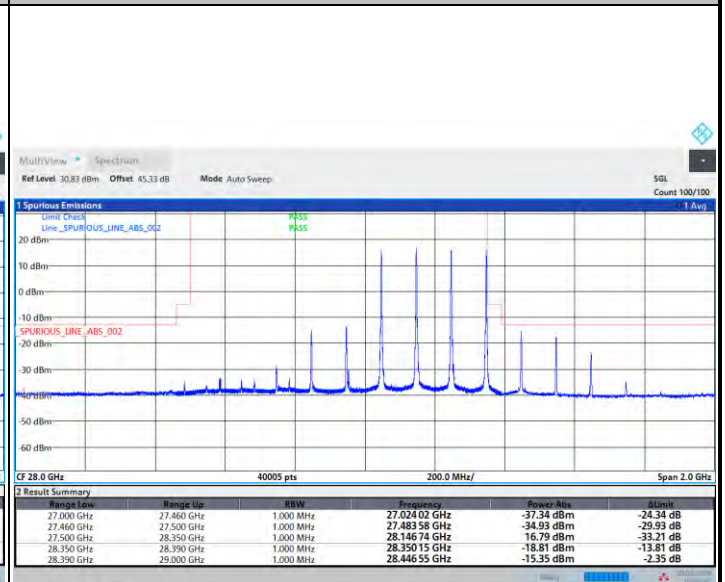
DFT-s-OFDM Module B

NR Band n261 / 400MHz / 64QAM

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB

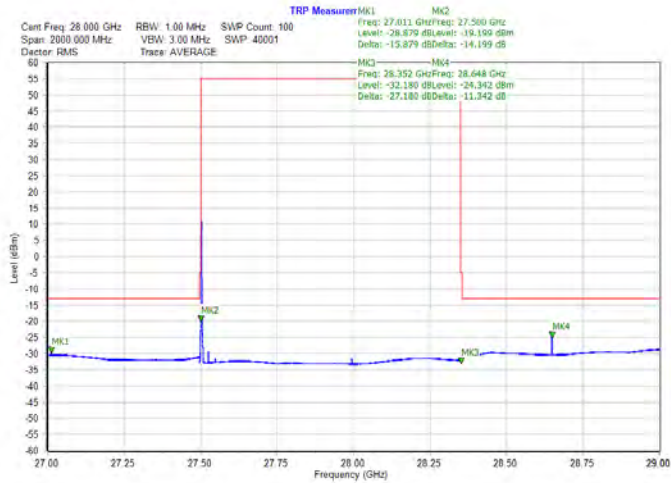




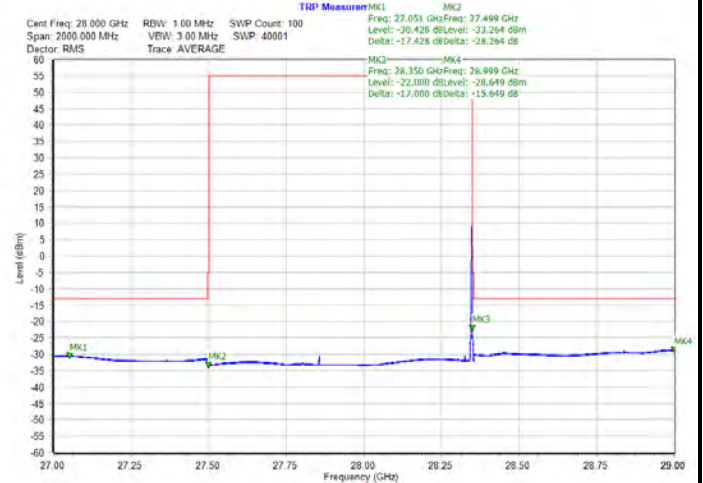
CP-OFDM Module B

NR Band n261 / 50MHz / QPSK

Lowest Band Edge / 1 RB

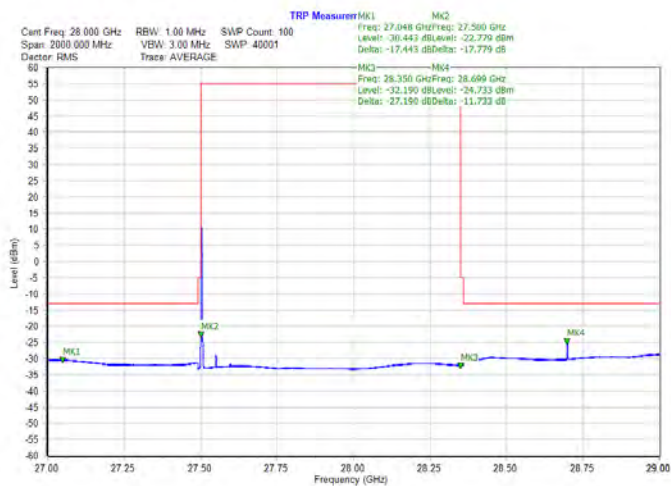


Highest Band Edge / 1 RB

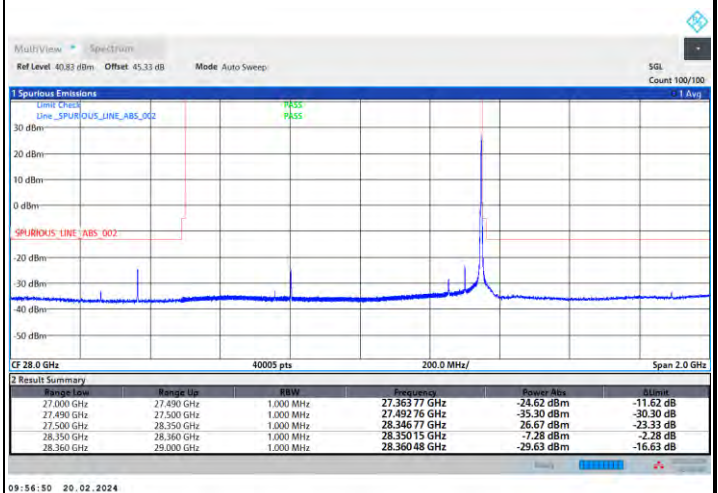


NR Band n261 / 100MHz / QPSK

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB

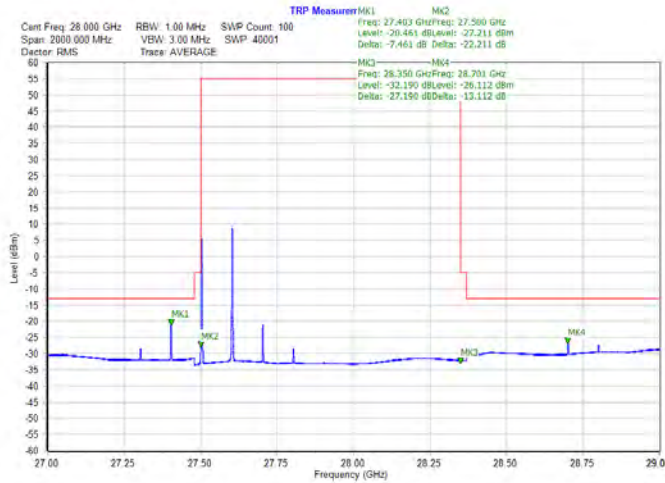




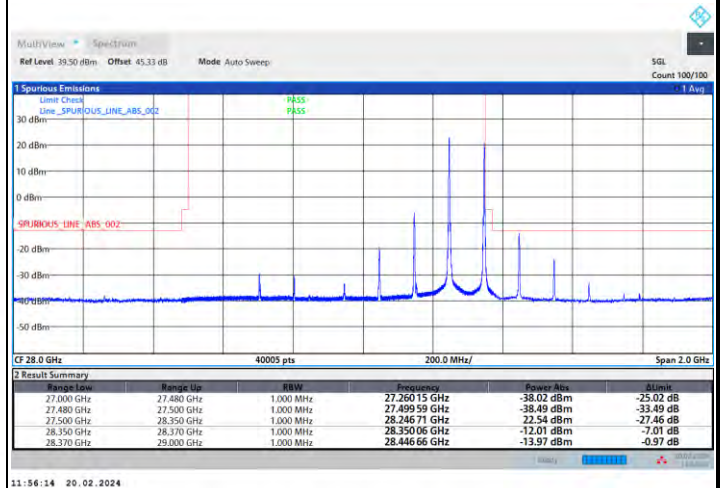
CP-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / 1 RB

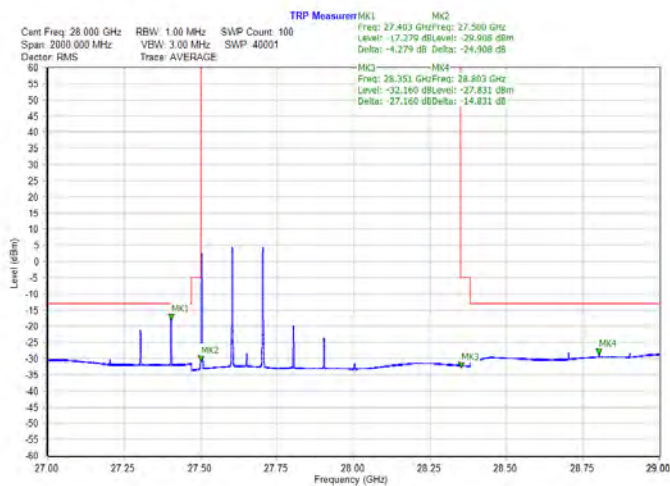


Highest Band Edge / 1 RB

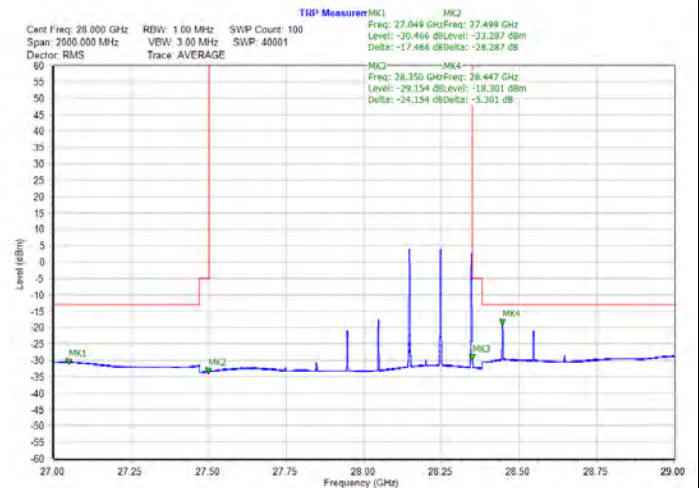


NR Band n261 / 300MHz / QPSK

Lowest Band Edge / 1 RB



Highest Band Edge / 1 RB



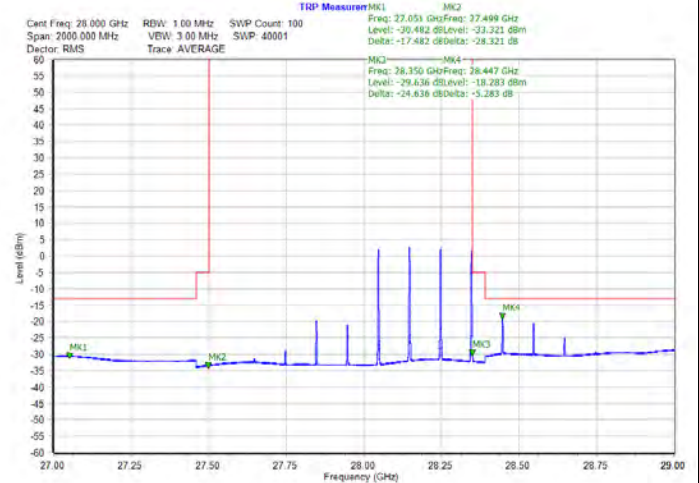
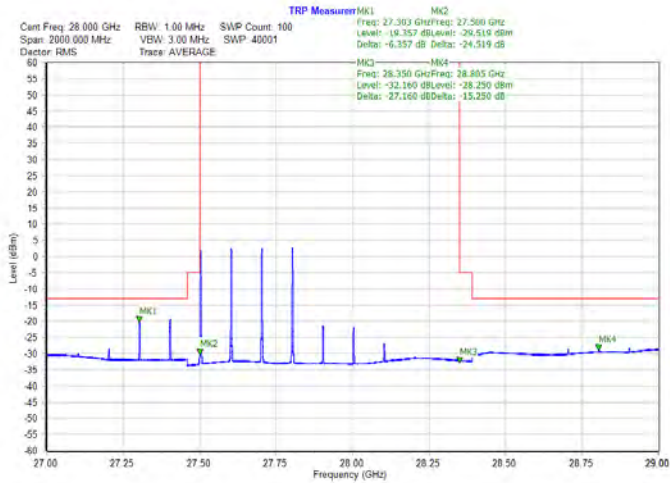


CP-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / 1 RB

Highest Band Edge / 1 RB

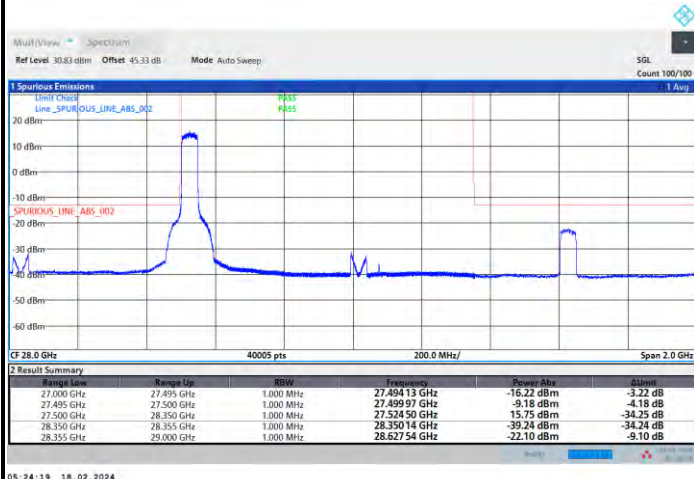




DFT-s-OFDM Module B

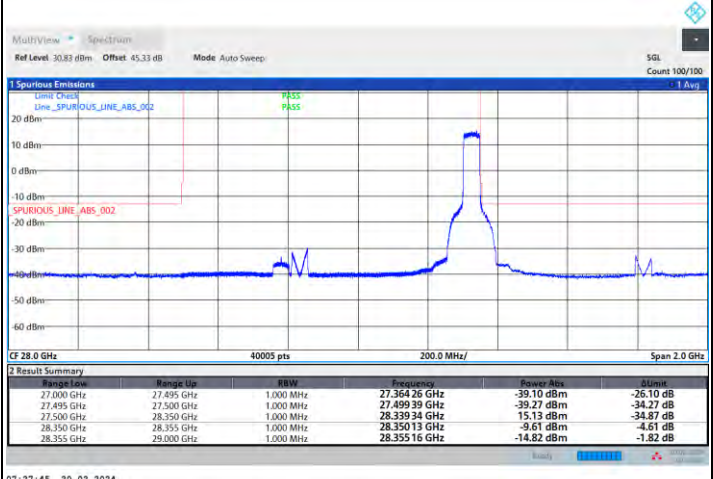
NR Band n261 / 50MHz / QPSK

Lowest Band Edge / Full RB



05:24:19 18.02.2024

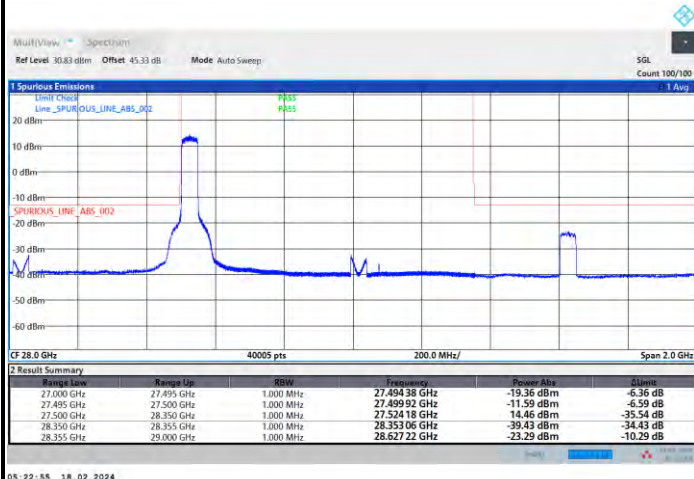
Highest Band Edge / Full RB



07:27:45 20.02.2024

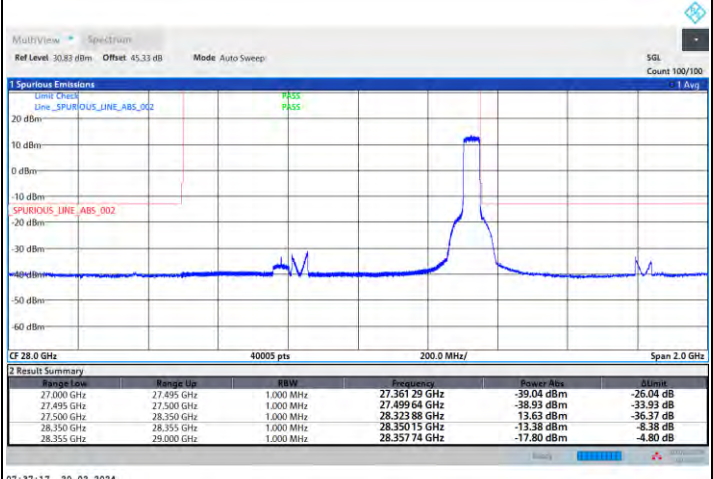
NR Band n261 / 50MHz / 16QAM

Lowest Band Edge / Full RB



05:22:55 18.02.2024

Highest Band Edge / Full RB



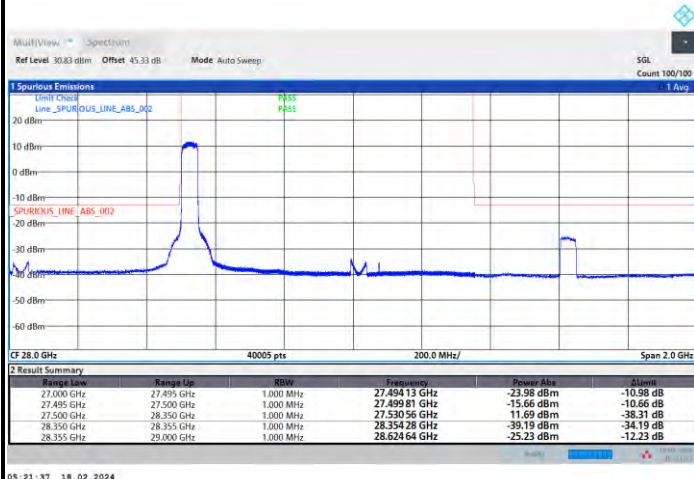
07:37:17 20.02.2024



DFT-s-OFDM Module B

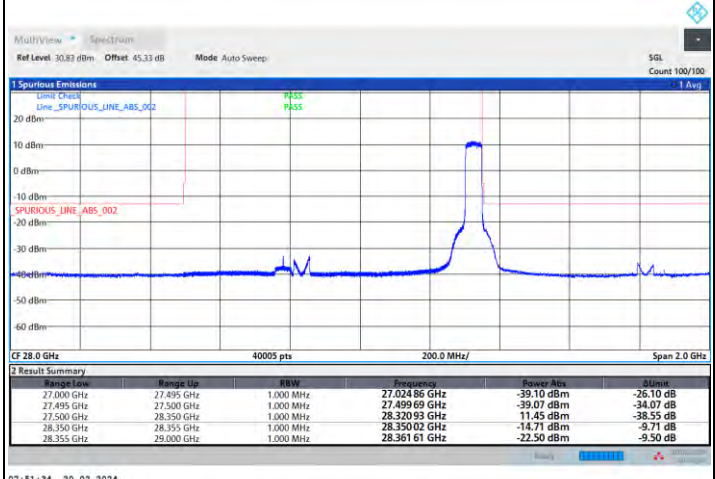
NR Band n261 / 50MHz / 64QAM

Lowest Band Edge / Full RB



05:21:37 18.02.2024

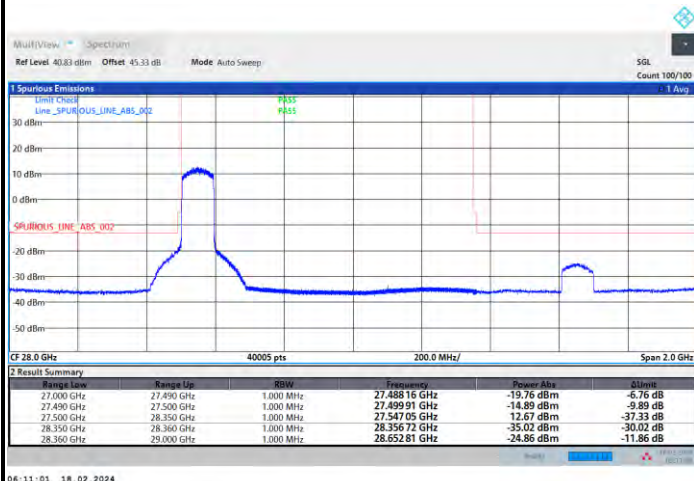
Highest Band Edge / Full RB



07:51:34 20.02.2024

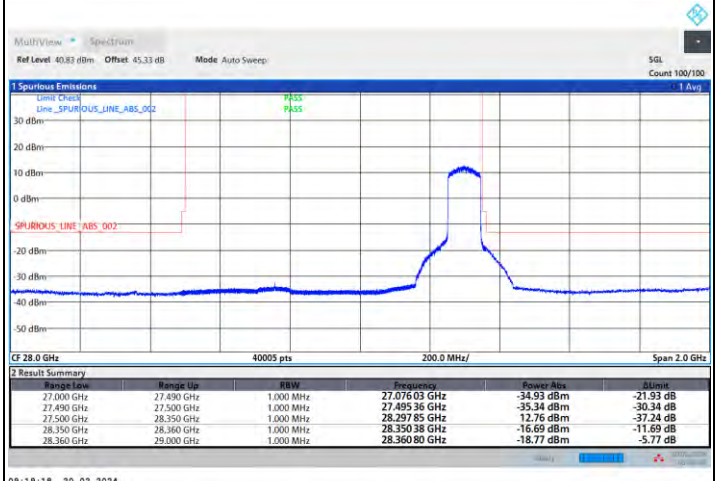
NR Band n261 / 100MHz / QPSK

Lowest Band Edge / Full RB



06:11:01 18.02.2024

Highest Band Edge / Full RB



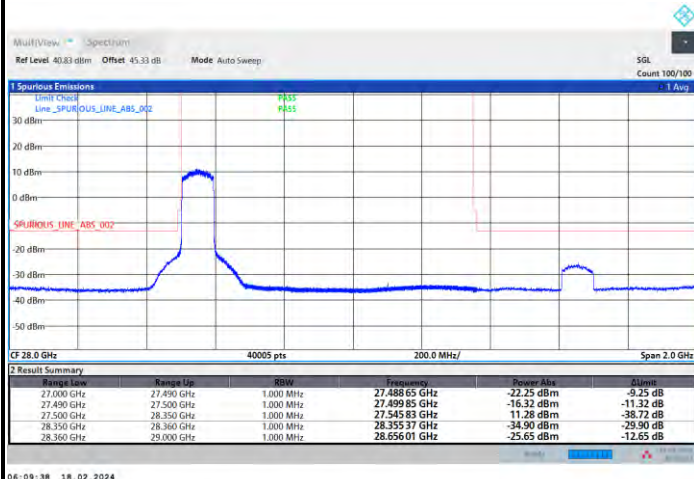
09:19:18 20.02.2024



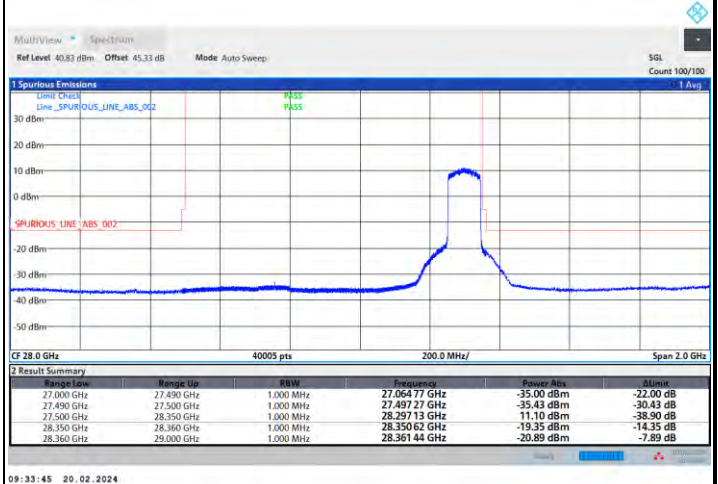
DFT-s-OFDM Module B

NR Band n261 / 100MHz / 16QAM

Lowest Band Edge / Full RB

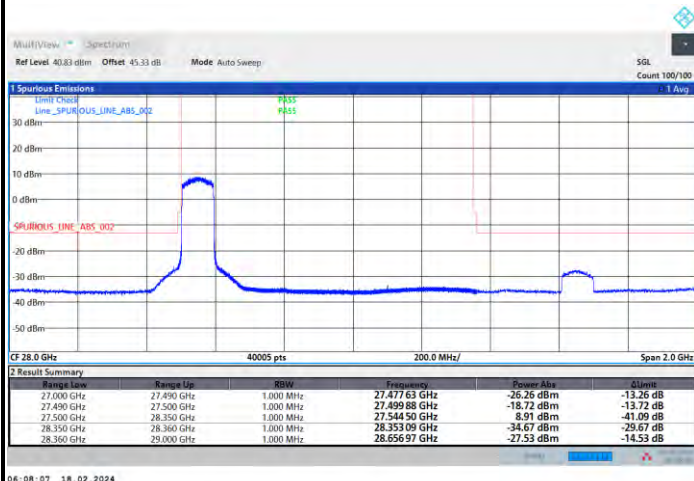


Highest Band Edge / Full RB

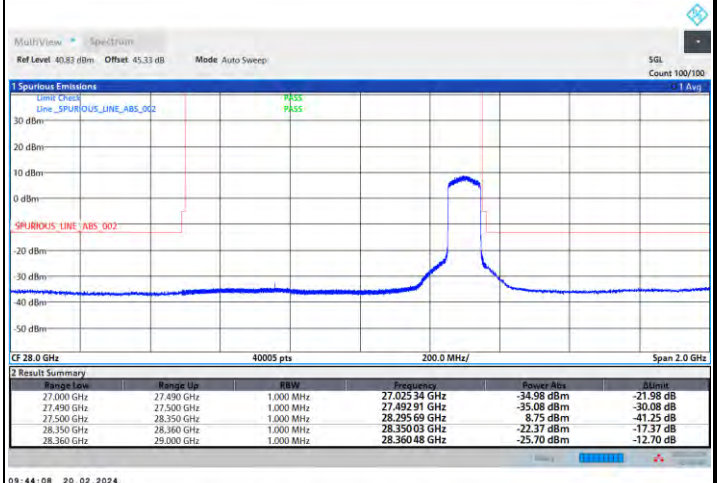


NR Band n261 / 100MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

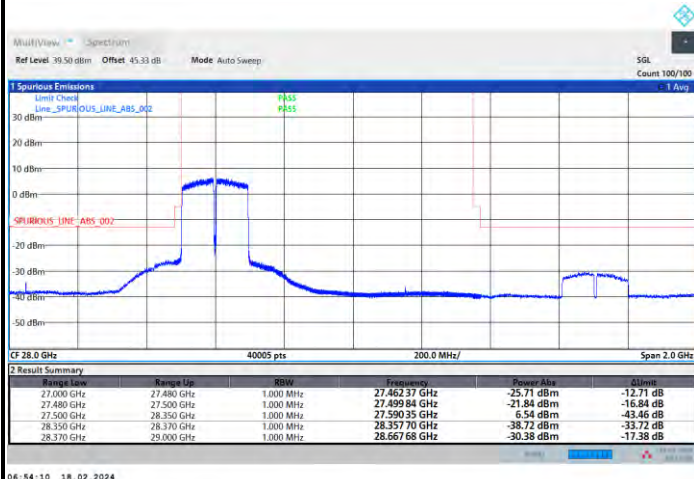




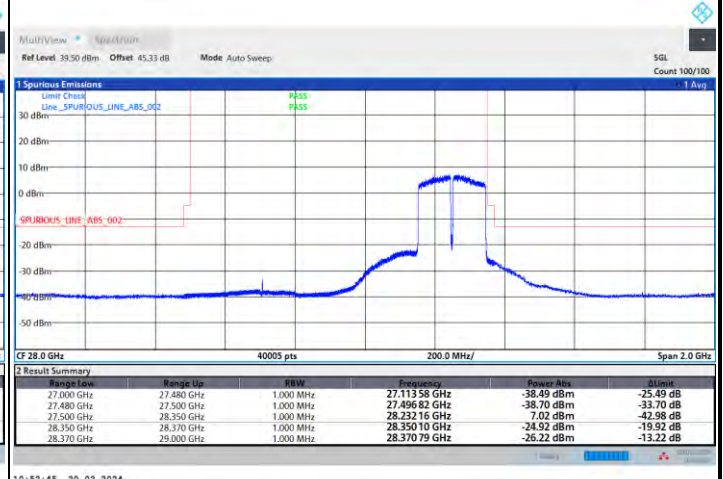
DFT-s-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / Full RB

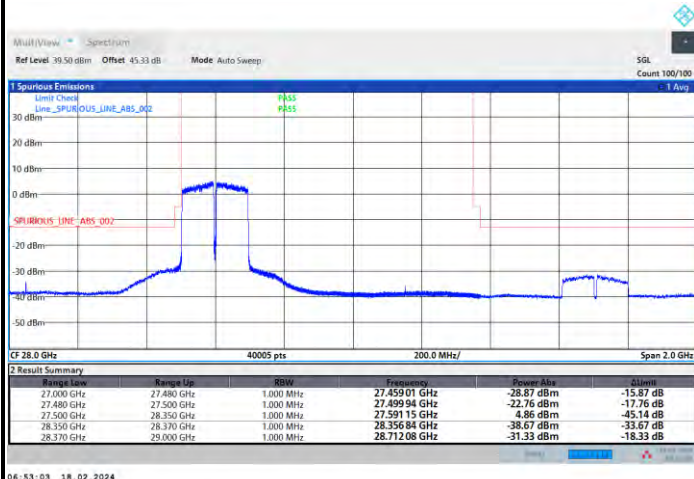


Highest Band Edge / Full RB



NR Band n261 / 200MHz / 16QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

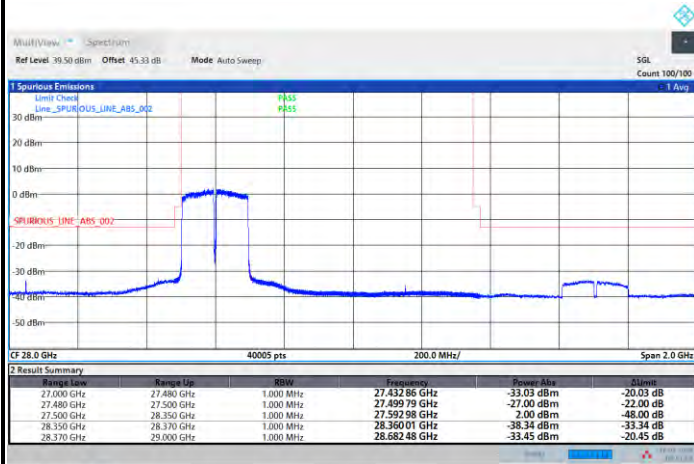




DFT-s-OFDM Module B

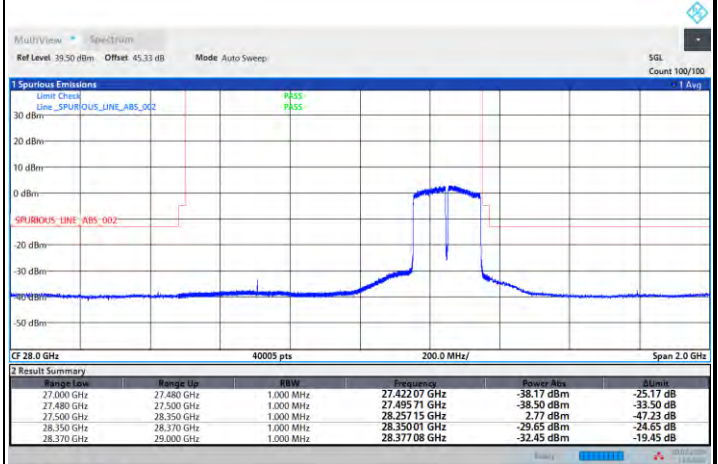
NR Band n261 / 200MHz / 64QAM

Lowest Band Edge / Full RB



06:51:54 18.02.2024

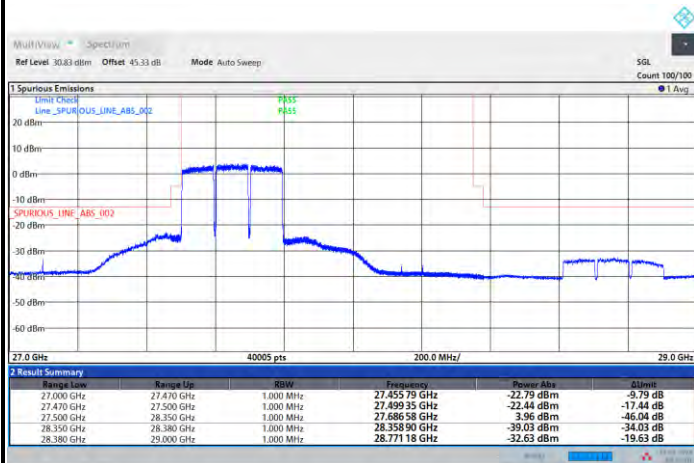
Highest Band Edge / Full RB



11:50:03 20.02.2024

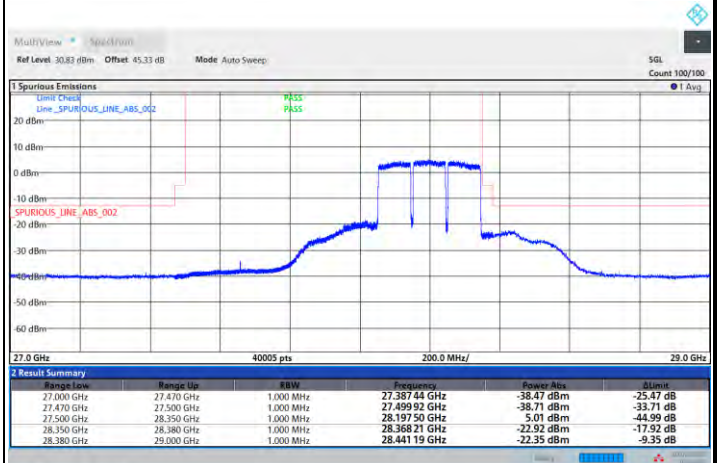
NR Band n261 / 300MHz / QPSK

Lowest Band Edge / Full RB



08:49:02 18.02.2024

Highest Band Edge / Full RB



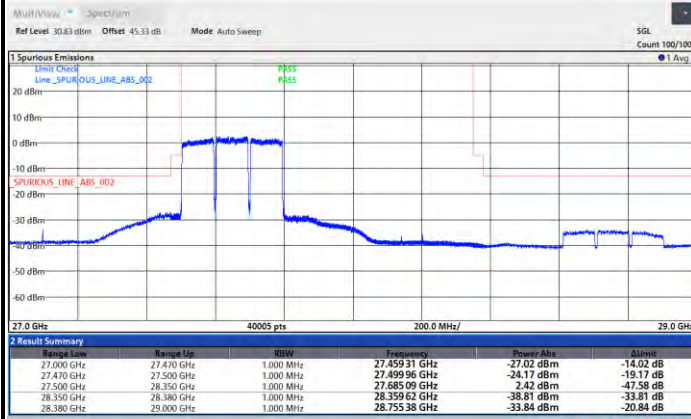
20:06:25 20.02.2024



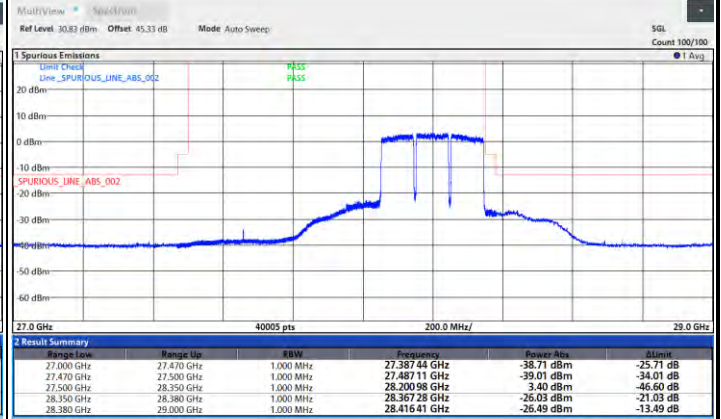
DFT-s-OFDM Module B

NR Band n261 / 300MHz / 16QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

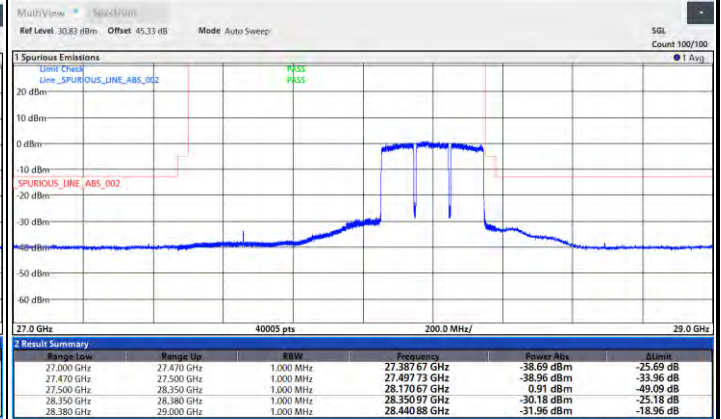


NR Band n261 / 300MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB





DFT-s-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / Full RB



09:11:14 18.02.2024

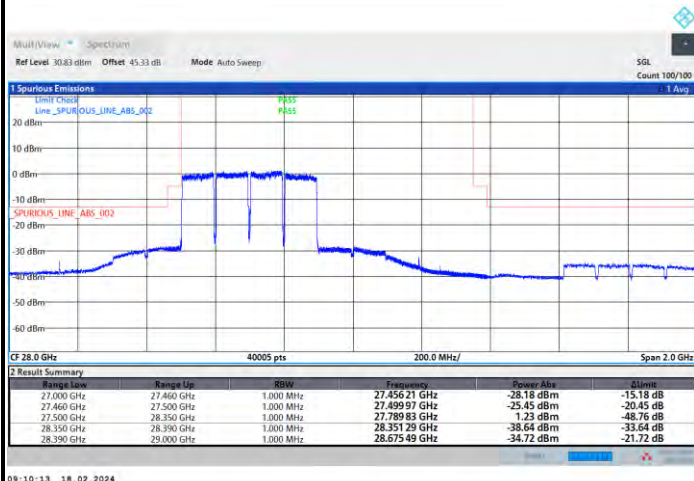
Highest Band Edge / Full RB



20:11:03 20.02.2024

NR Band n261 / 400MHz / 16QAM

Lowest Band Edge / Full RB



09:10:13 18.02.2024

Highest Band Edge / Full RB



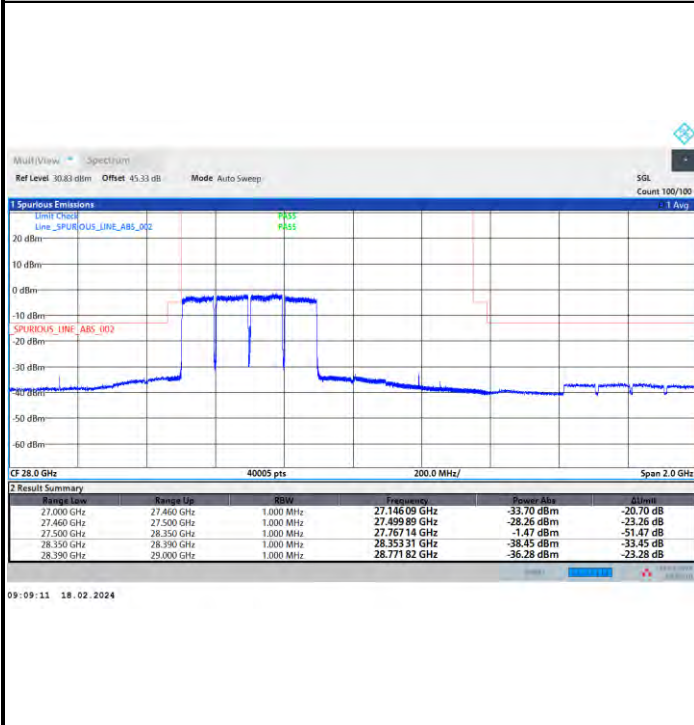
20:12:38 20.02.2024



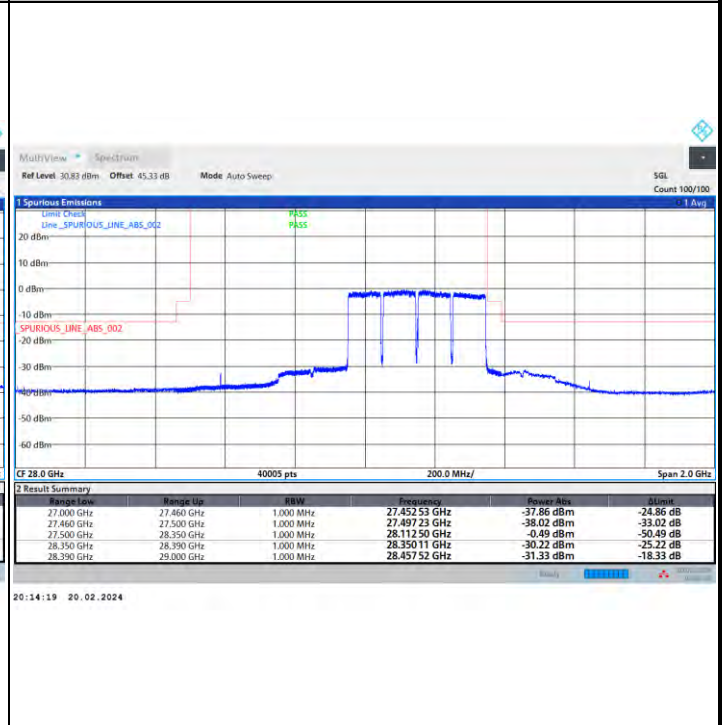
DFT-s-OFDM Module B

NR Band n261 / 400MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

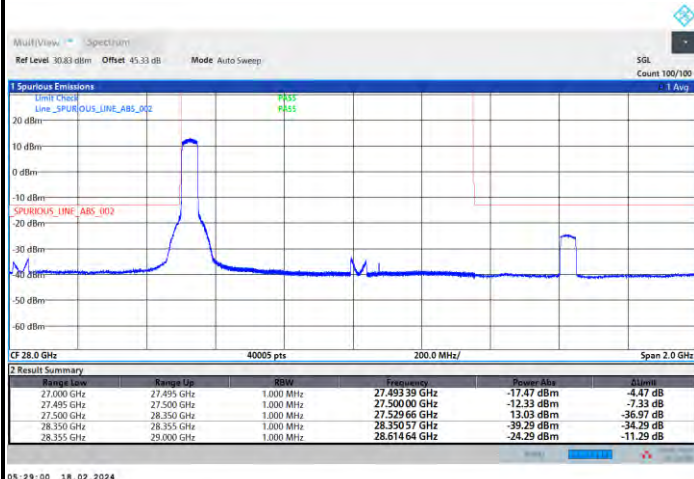




CP-OFDM Module B

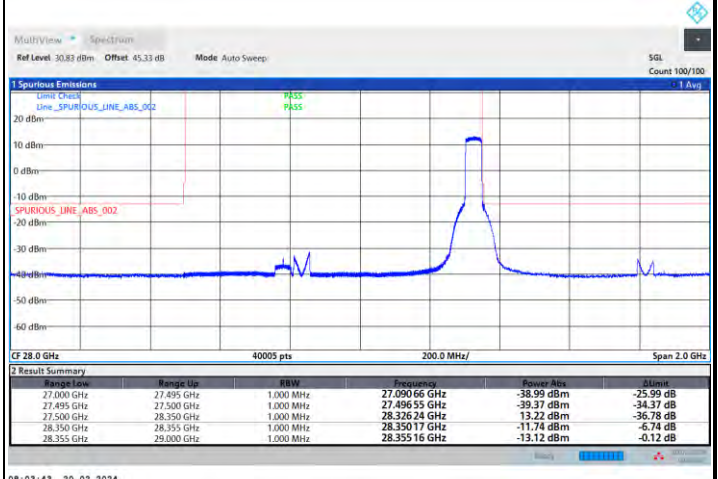
NR Band n261 / 50MHz / QPSK

Lowest Band Edge / Full RB



05:29:00 18.02.2024

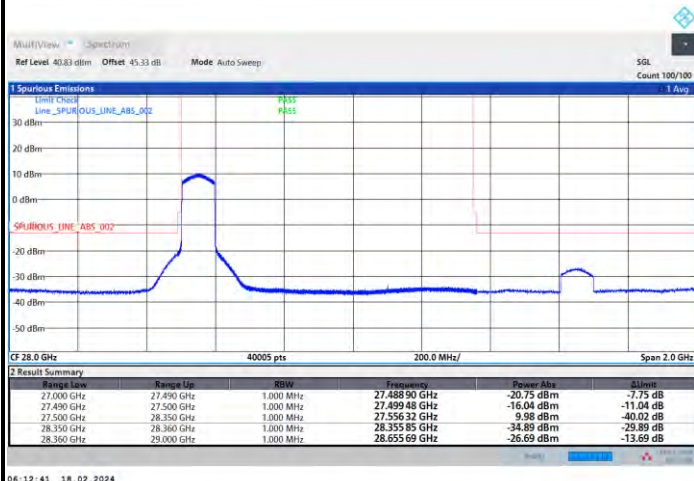
Highest Band Edge / Full RB



08:03:43 20.02.2024

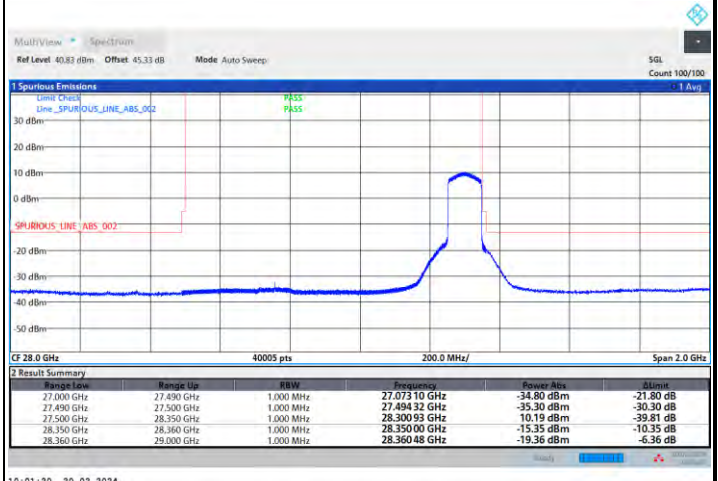
NR Band n261 / 100MHz / QPSK

Lowest Band Edge / Full RB



06:12:41 18.02.2024

Highest Band Edge / Full RB



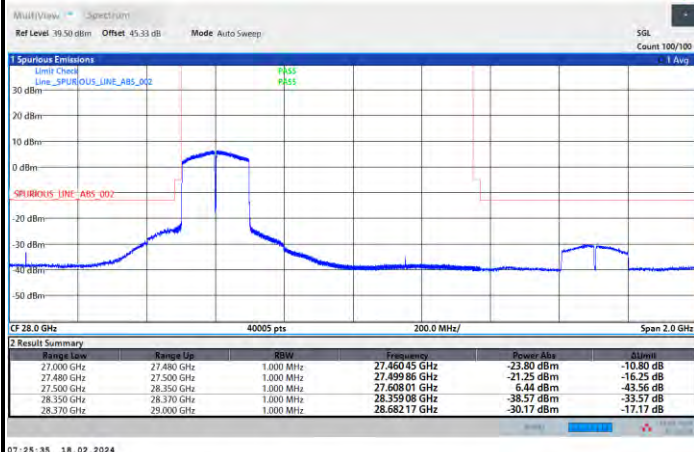
10:01:20 20.02.2024



CP-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

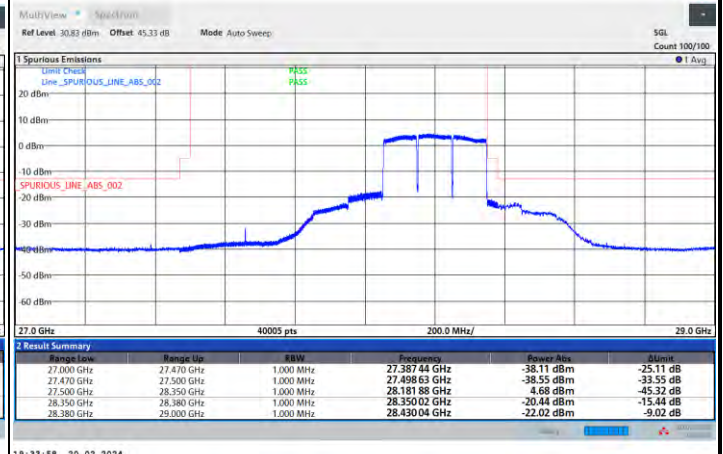


NR Band n261 / 300MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

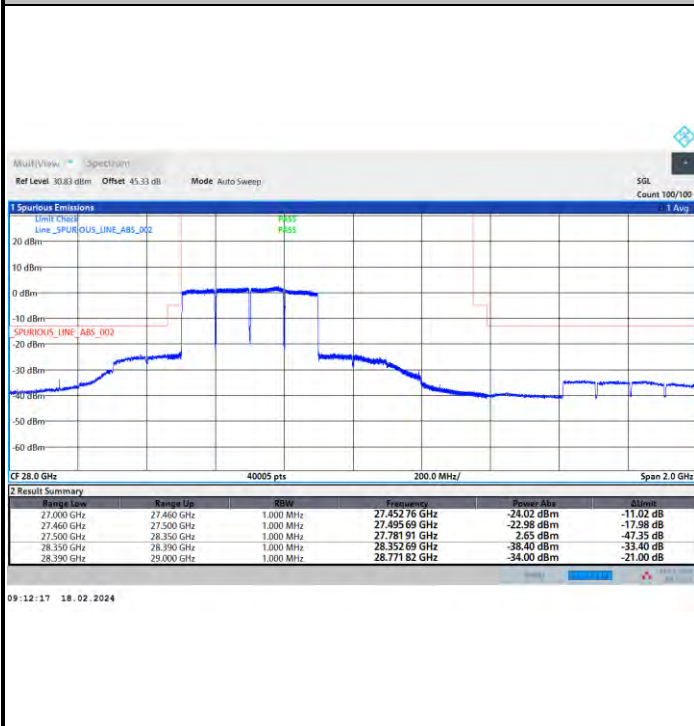




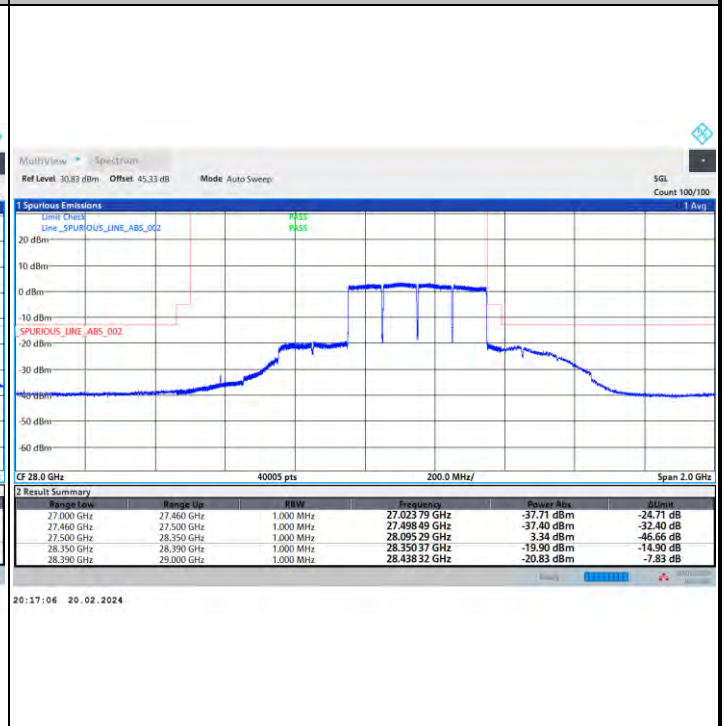
CP-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB





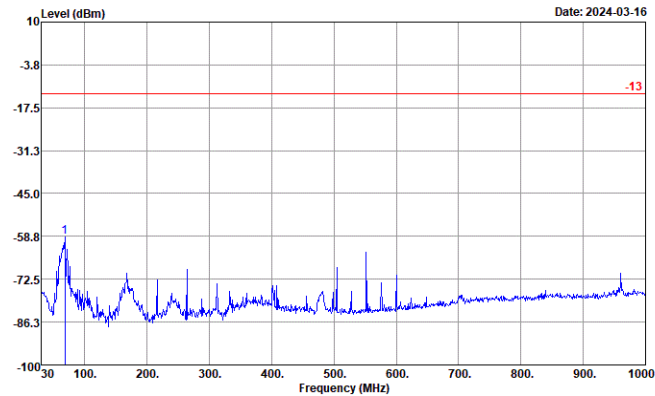
Spurious Emission

There is no significant spurious emission signal found for frequency started from 30MHz up to 18GHz.

Only the noise floor is reported.

NR Band n261 (30MHz-1GHz)

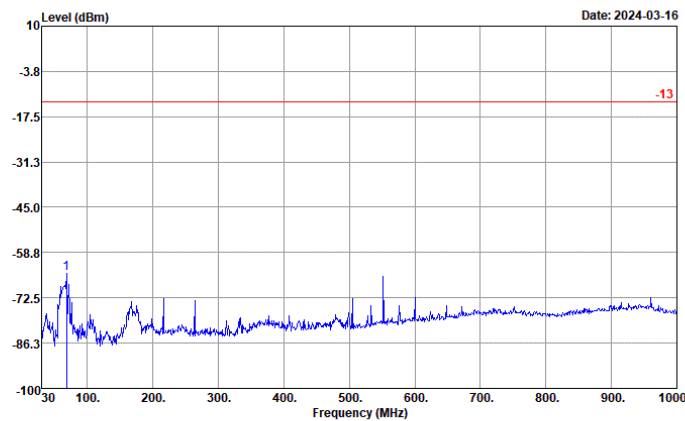
Horizontal



Site : 03CH10-HY
Condition : -13 EIRP_WO HORIZONTAL
Project : 3N2326
 : n261 MB

Freq	Level	Over	Limit
MHz	dBm	Limit	Line
		dB	dBm
1	67.83 -58.92	-45.92	-13.00

Vertical



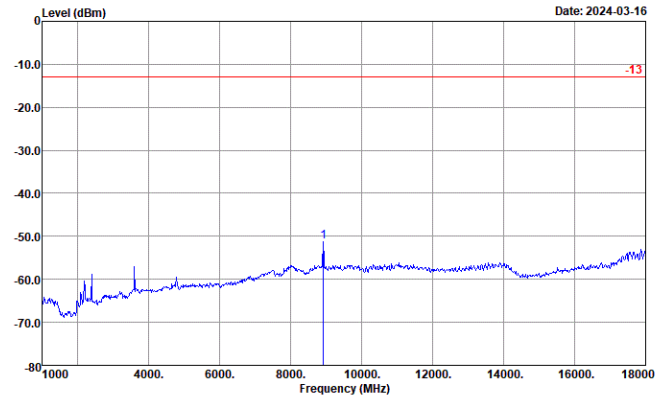
Site : 03CH10-HY
Condition : -13 EIRP_WO VERTICAL
Project : 3N2326
 : n261 MB

Freq	Level	Over	Limit
MHz	dBm	Limit	Line
		dB	dBm
1	67.83 -65.10	-52.10	-13.00



NR Band n261 (1GHz-18GHz)

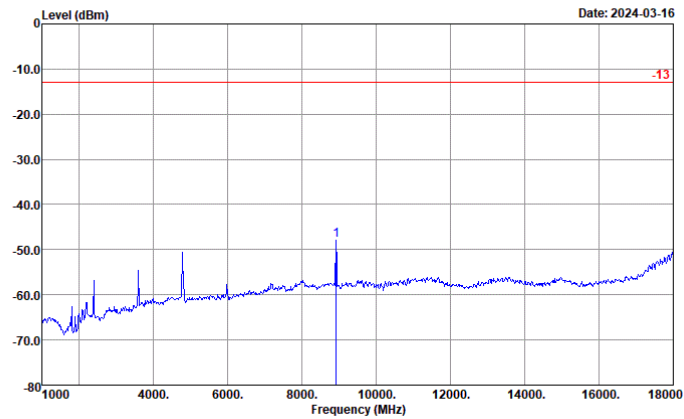
Horizontal



Site : 03CH10-HY
Condition : -13 EIRP_WO HORIZONTAL
Project : 3N2325
: n261 MB

Freq	Level	Over	Limit
MHz	dBm	dB	dBm
1	8922.00	-51.28	-38.28 -13.00

Vertical



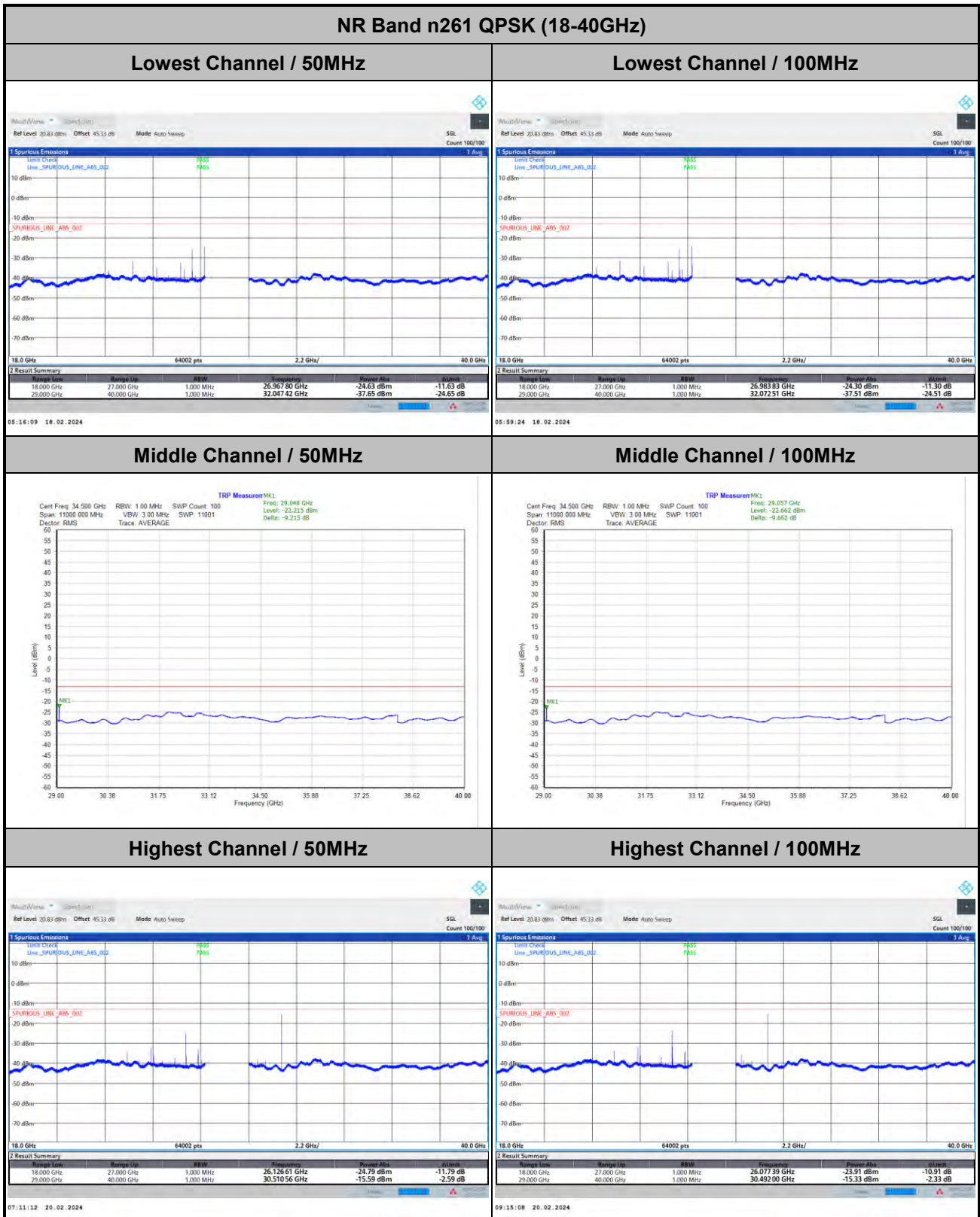
Site : 03CH10-HY
Condition : -13 EIRP_WO VERTICAL
Project : 3N2325
: n261 MB

Freq	Level	Over	Limit
MHz	dBm	dB	dBm
1	8922.00	-47.89	-34.89 -13.00



Spurious emission between 18GHz to 40GHz worst case plot is reported as following.

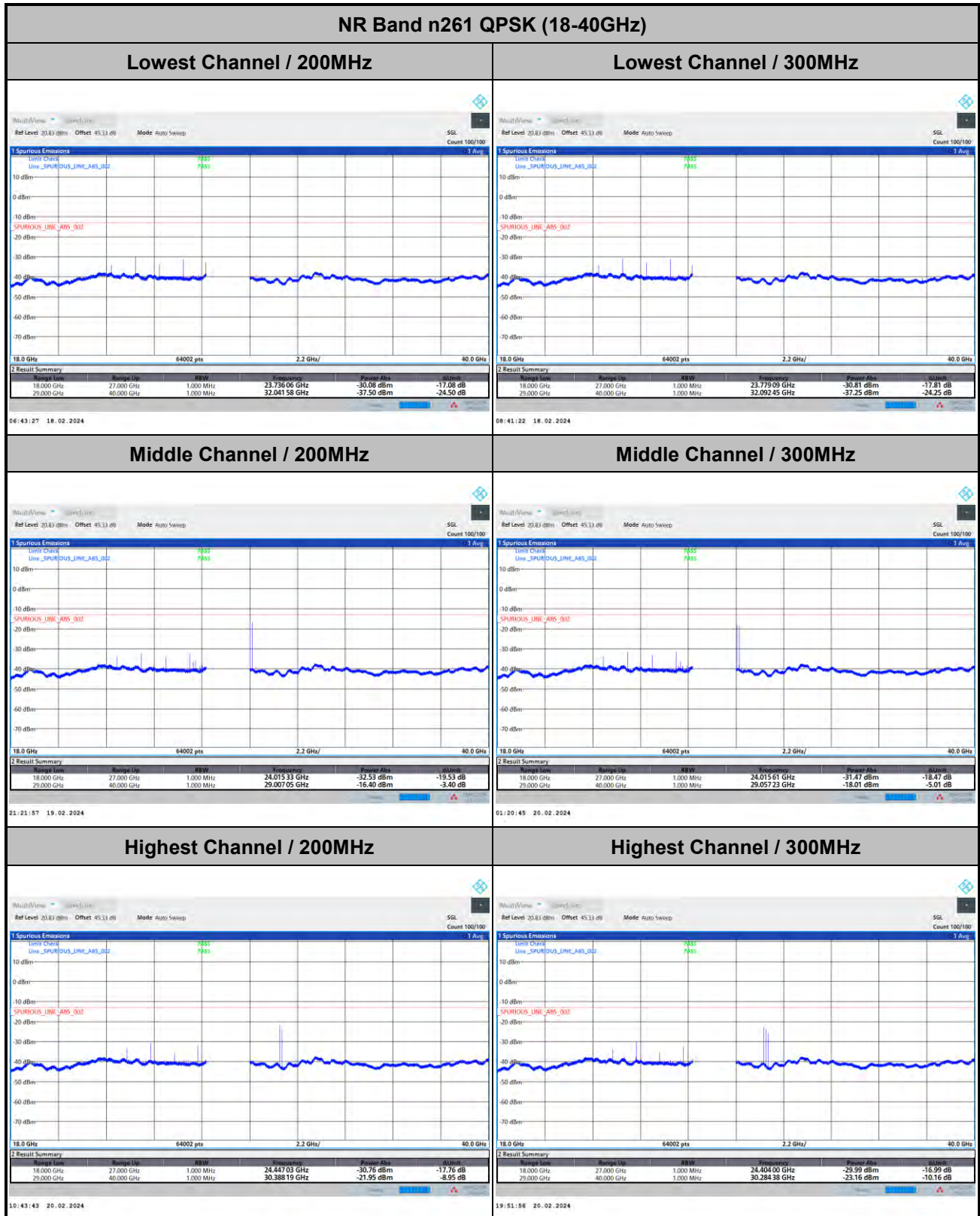
DFT-s-OFDM Module B



Remark: In band and out of band frequencies are omitted.



DFT-s-OFDM Module B



Remark: In band and out of band frequencies are omitted.



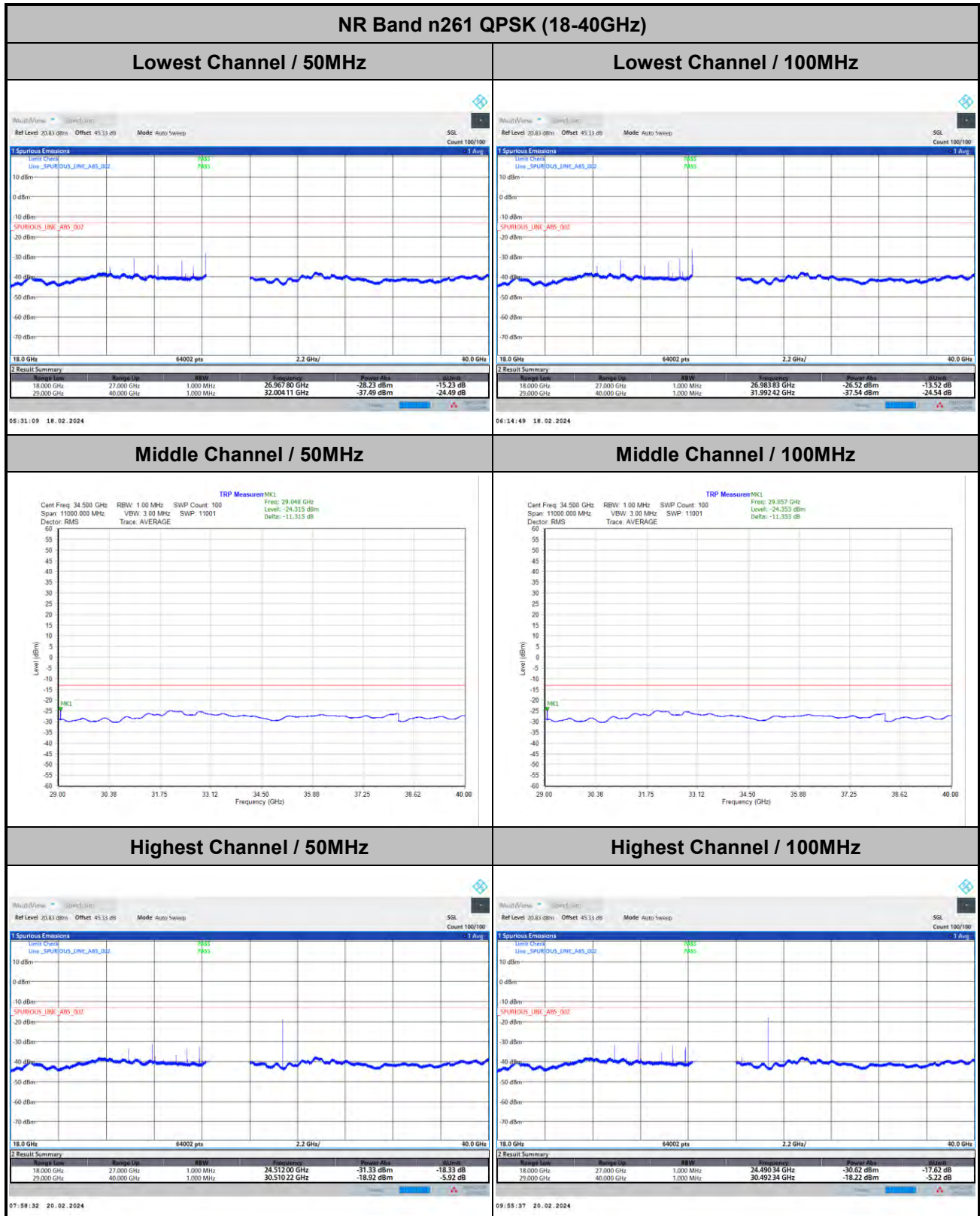
DFT-s-OFDM Module B

NR Band n261 QPSK (18-40GHz)																			
Lowest Channel / 400MHz																			
MultiView Trace1: On Ref Level: -20.83 dBm Offset: 45.33 dB Mode: Auto Sweep SQL Count: 100/100 Spurious Emissions Limit Chart Line: SPURIOUS_LINE_ABS_002 7 PASS 7 PASS 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 18.0 GHz 64002 pts 2.2 GHz/ 40.0 GHz Result Summary <table><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>Altitude</th></tr><tr><td>18.000 GHz</td><td>27.000 GHz</td><td>1.000 MHz</td><td>23.821 83 GHz</td><td>-29.83 dBm</td><td>-16.83 dB</td></tr><tr><td>29.000 GHz</td><td>40.000 GHz</td><td>1.000 MHz</td><td>32.018 55 GHz</td><td>-37.41 dBm</td><td>-24.41 dB</td></tr></table> 09:05:32 18.02.2024	Range Low	Range Up	RBW	Frequency	Power Abs	Altitude	18.000 GHz	27.000 GHz	1.000 MHz	23.821 83 GHz	-29.83 dBm	-16.83 dB	29.000 GHz	40.000 GHz	1.000 MHz	32.018 55 GHz	-37.41 dBm	-24.41 dB	intentionally blank
Range Low	Range Up	RBW	Frequency	Power Abs	Altitude														
18.000 GHz	27.000 GHz	1.000 MHz	23.821 83 GHz	-29.83 dBm	-16.83 dB														
29.000 GHz	40.000 GHz	1.000 MHz	32.018 55 GHz	-37.41 dBm	-24.41 dB														
Middle Channel / 400MHz																			
MultiView Trace1: On Ref Level: -20.83 dBm Offset: 45.33 dB Mode: Auto Sweep SQL Count: 100/100 Spurious Emissions Limit Chart Line: SPURIOUS_LINE_ABS_002 7 PASS 7 PASS 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 18.0 GHz 64002 pts 2.2 GHz/ 40.0 GHz Result Summary <table><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>Altitude</th></tr><tr><td>18.000 GHz</td><td>27.000 GHz</td><td>1.000 MHz</td><td>24.015 61 GHz</td><td>-31.35 dBm</td><td>-18.35 dB</td></tr><tr><td>29.000 GHz</td><td>40.000 GHz</td><td>1.000 MHz</td><td>29.107 42 GHz</td><td>-19.02 dBm</td><td>-6.02 dB</td></tr></table> 02:31:20 20.02.2024	Range Low	Range Up	RBW	Frequency	Power Abs	Altitude	18.000 GHz	27.000 GHz	1.000 MHz	24.015 61 GHz	-31.35 dBm	-18.35 dB	29.000 GHz	40.000 GHz	1.000 MHz	29.107 42 GHz	-19.02 dBm	-6.02 dB	intentionally blank
Range Low	Range Up	RBW	Frequency	Power Abs	Altitude														
18.000 GHz	27.000 GHz	1.000 MHz	24.015 61 GHz	-31.35 dBm	-18.35 dB														
29.000 GHz	40.000 GHz	1.000 MHz	29.107 42 GHz	-19.02 dBm	-6.02 dB														
Highest Channel / 400MHz																			
MultiView Trace1: On Ref Level: -20.83 dBm Offset: 45.33 dB Mode: Auto Sweep SQL Count: 100/100 Spurious Emissions Limit Chart Line: SPURIOUS_LINE_ABS_002 7 PASS 7 PASS 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm 18.0 GHz 64002 pts 2.2 GHz/ 40.0 GHz Result Summary <table><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>Altitude</th></tr><tr><td>18.000 GHz</td><td>27.000 GHz</td><td>1.000 MHz</td><td>26.461 00 GHz</td><td>-32.18 dBm</td><td>-19.18 dB</td></tr><tr><td>29.000 GHz</td><td>40.000 GHz</td><td>1.000 MHz</td><td>29.241 13 GHz</td><td>-18.31 dBm</td><td>-5.31 dB</td></tr></table> 20:40:12 20.02.2024	Range Low	Range Up	RBW	Frequency	Power Abs	Altitude	18.000 GHz	27.000 GHz	1.000 MHz	26.461 00 GHz	-32.18 dBm	-19.18 dB	29.000 GHz	40.000 GHz	1.000 MHz	29.241 13 GHz	-18.31 dBm	-5.31 dB	intentionally blank
Range Low	Range Up	RBW	Frequency	Power Abs	Altitude														
18.000 GHz	27.000 GHz	1.000 MHz	26.461 00 GHz	-32.18 dBm	-19.18 dB														
29.000 GHz	40.000 GHz	1.000 MHz	29.241 13 GHz	-18.31 dBm	-5.31 dB														

Remark: In band and out of band frequencies are omitted.



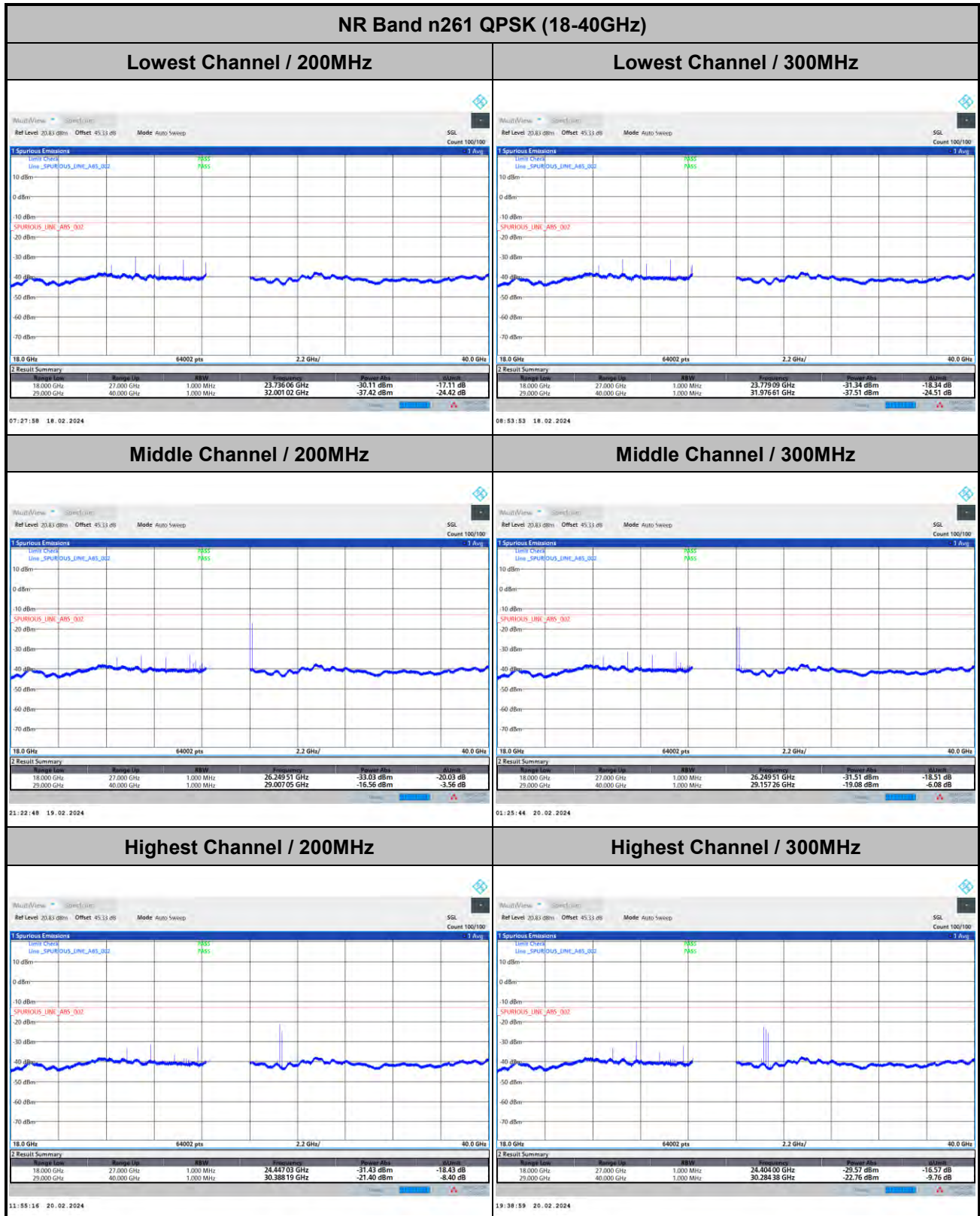
CP-OFDM Module B



Remark: In band and out of band frequencies are omitted.



CP-OFDM Module B



Remark: In band and out of band frequencies are omitted.



CP-OFDM Module B

NR Band n261 QPSK (18-40GHz)

Lowest Channel / 400MHz



intentionally blank

Middle Channel / 400MHz



intentionally blank

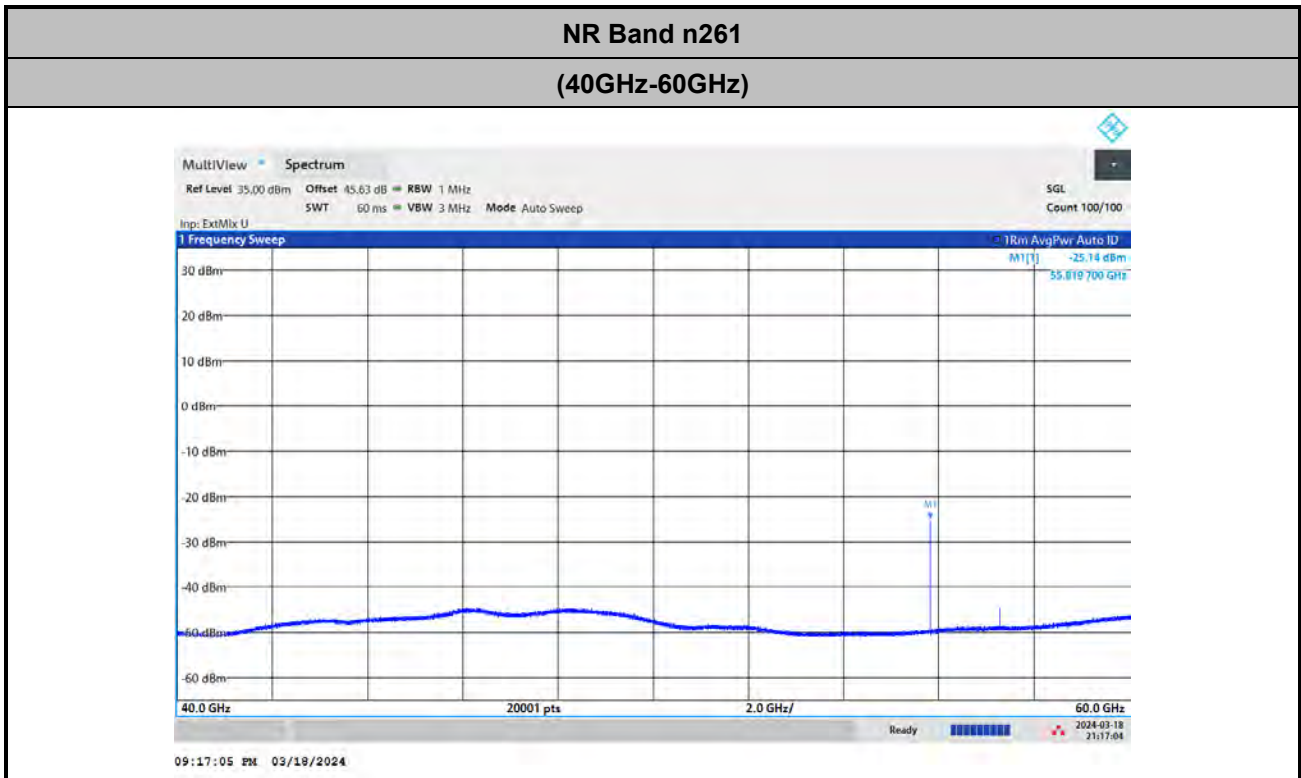
Highest Channel / 400MHz



intentionally blank

Remark: In band and out of band frequencies are omitted.

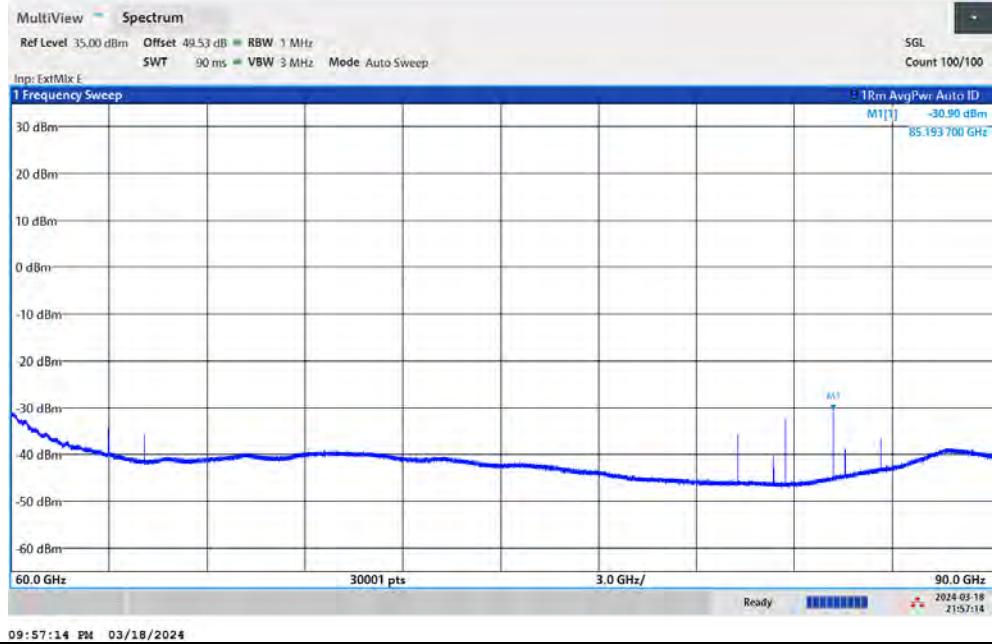
There is no significant spurious emission signal found for frequency started from 40GHz up to 200GHz.
Only the noise floor is reported.



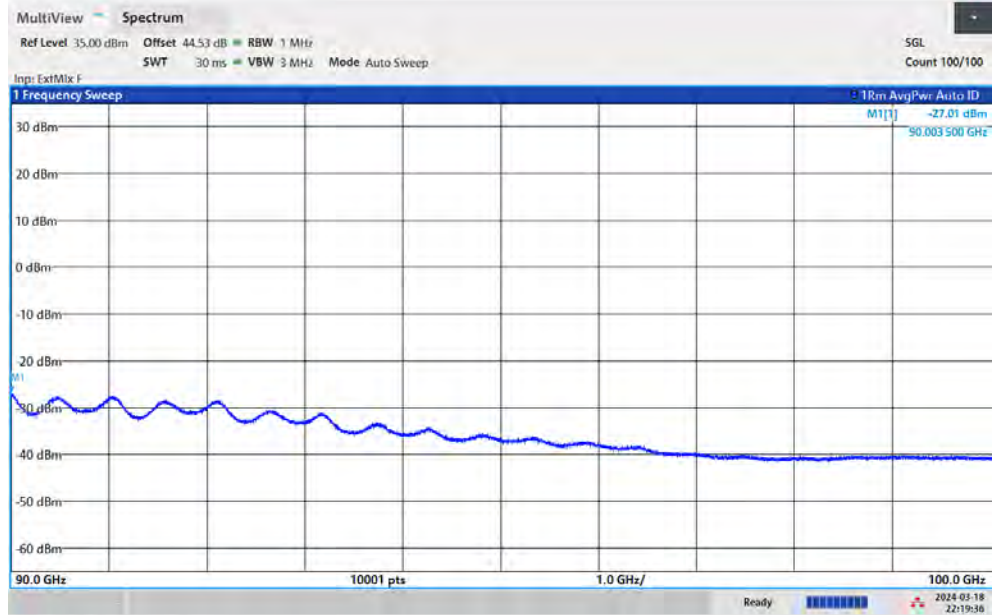
$$\begin{aligned} \text{Offset} &= \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8 \\ &= 43 + 0.43 + 107 + 20\log(1) - 104.8 = 45.63(\text{dB}) \end{aligned}$$

NR Band n261

(60GHz-90GHz)



$$\begin{aligned} \text{Offset} &= \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8 \\ &= 46.9 + 0.43 + 107 + 20\log(1) - 104.8 = 49.53 \text{ (dB)} \end{aligned}$$

NR Band n261
(90GHz-100GHz)


$$\begin{aligned} \text{Offset} &= \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8 \\ &= 47.92 + 0.43 + 107 + 20\log(0.5) - 104.8 = 44.53 \text{ (dB)} \end{aligned}$$

Frequency Stability

Test Conditions		NR Band n261 / Middle Channel			Limit
Temperature (°C)	Voltage (Volt)	CW tone			Note 2.
		Frequency (GHz)	Deviation (kHz)	Deviation (ppm)	Result
50	Normal Voltage	27.9249101	125.900	4.509	Pass
40	Normal Voltage	27.9249341	101.900	3.649	
30	Normal Voltage	27.924994	42.000	1.504	
20(Ref.)	Normal Voltage	27.925036	0.000	0.000	
10	Normal Voltage	27.92505	-14.000	0.501	
0	Normal Voltage	27.9251129	-76.900	2.754	
-10	Normal Voltage	27.9251402	-104.200	3.731	
-20	Normal Voltage	27.9251608	-124.800	4.469	
-30	Normal Voltage	27.9251812	-145.200	5.200	
20	Maximum Voltage	27.925028	8.000	0.286	
20	Normal Voltage	27.92503	6.000	0.215	
20	Battery End Point	27.925025	11.000	0.394	

Note:

1. Normal Voltage = 3.89 V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage = 4.4 V.
2. The frequency fundamental emissions stay within the operation band.



Appendix B. R&S Mixer and Horn Antenna Calibration Reports

Calibration Laboratory of Microwave Measuring Equipment
of MWMLab



Calibration certificate

ISO 17025
ACCREDITED LABORATORY



Accreditation certificate No. № BY/112 5.0065 of 09.01.2015

Certificate number 36-21 Date when calibrated 06.07.2021 Page 1 of 2

Item calibrated Antenna QWH-UPRR00 # 1410300003

Customer Sporton International Inc.

Method of calibration GOST 20271.1, MK KL 8.2-16

All measurements are traceable to the SI units which are realized by national measurement standards of NMI and state standards of RF. Gain measurements above 178 GHz are to confirm operation functionality and traceable only to MWMLab standards and OML. This certificate shall not be reproduced, except in full. Any publication extracts from the calibration certificate requires written permission of the issuing calibration laboratory of microwave measuring equipment.

Authorising
signature



/ Technical manager Date of issue 06.07.2021

Calibration Certificate

Certificate number **36-21**

Page 2 of 2

Calibration is performed by using

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M1-11	Calibrator of power with wattmeter M3-22A	841202/037410	08 December 2021	3882-43	RF Power
M 568	Reference power meter	164	24 March 2022	1/111-175-20	RF Power
G4-161	Signal generator	3	12 October 2021	20-20	RF Power
MG3694C	Signal generator	133805	11 September 2021	2726-43	RF Power Frequency
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
P6-133	Horn antenna	15005	23 September 2021	2374-43	Gain
P6-11B	Measuring horn antenna	08051	23 September 2021	2370-43	Gain

Calibration conditions

Temperature: 23.8 °C.

Humidity: 43.2 %.

Pressure: 100.1 kPa.

Calibration results are given in the measurement report # 36-21

#	Parameter	Specifications required	Specifications tested and measured
1	Frequency range	40 – 60 GHz	Corresponds
2	Antenna Gain	22.5* dBi	Corresponds (Table 1)
3	Antenna Factor	42 dB/m	Corresponds (Table 1)

* – Expanded uncertainty of measurements 2.0 dB.

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of $k=2$ for a normal distribution.

Signature of the person who has performed calibration

 / Engineer

**Calibration Laboratory of
Microwave Measuring Equipment**

Accreditation certificate

No. BY/112 5.0065

Address: 6, P. Brovki str., Minsk
220013, Belarus

Phone/Fax: +375 17 2938496



Technical Manager

July 6, 2021

MEASUREMENT REPORT # 36-21

July 6, 2021

Customer:	Sporton International Inc.
Item calibrated:	Antenna QWH-UPRR00 # 1410300003
Method of calibration:	GOST 20271.1, MK KL 8.2-16
Number of samples:	One
Delivery date of the sample:	21.06.2021
Date of calibration:	From 21.06.2021 to 06.07.2021

MEASUREMENT CONDITIONS

Temperature: 23.8 °C	Humidity: 43.2 %	Pressure: 100.1 kPa
----------------------	------------------	---------------------

MEASUREMENT EQUIPMENT

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M1-11	Calibrator of power with wattmeter M3-22A	841202/037410	08 December 2021	3882-43	RF Power
M 568	Reference power meter	164	24 March 2022	1/111-175-20	RF Power
G4-161	Signal generator	3	12 October 2021	20-20	RF Power
MG3694C	Signal generator	133805	11 September 2021	2726-43	RF Power Frequency
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
P6-133	Horn antenna	15005	23 September 2021	2374-43	Gain
P6-11B	Measuring horn antenna	08051	23 September 2021	2370-43	Gain

MEASUREMENT RESULTS

Distance between tested and generating antenna 2.0 m.

Table 1

Frequency, GHz	40	50	60
Power density of electromagnetic field, W/m ²	0.050	0.070	0.070
Maximum level of measured power, dBm	-14.3	-14.2	-15.8
Gain, dBi	22.3	22.8	22.8
Expanded uncertainty, dB	2.0	2.0	2.0
Antenna Factor, dB/m	40.0	41.5	43.0

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of $k=2$ for a normal distribution.

Engineer



This measurement report issued in duplicate and sent to:

1. Sporton International Inc.
2. Calibration Laboratory of Microwave Measuring Equipment

Duplication of Measurement report (complete or partial) must be authorized by the laboratory.