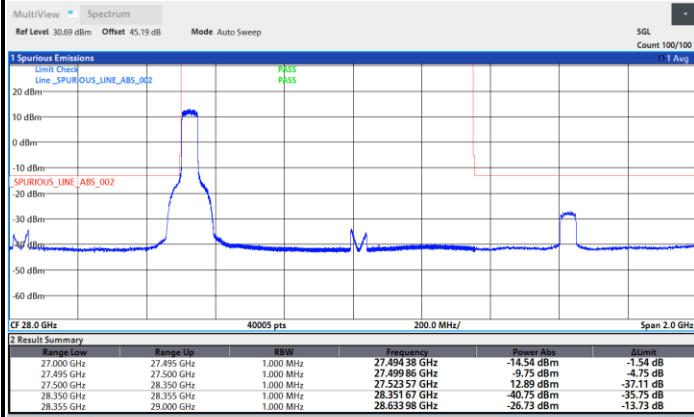




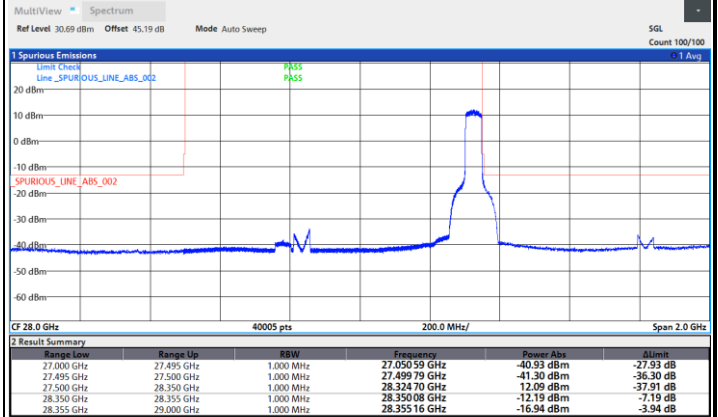
DFT-s-OFDM Module B

NR Band n261 / 50MHz / QPSK

Lowest Band Edge / Full RB

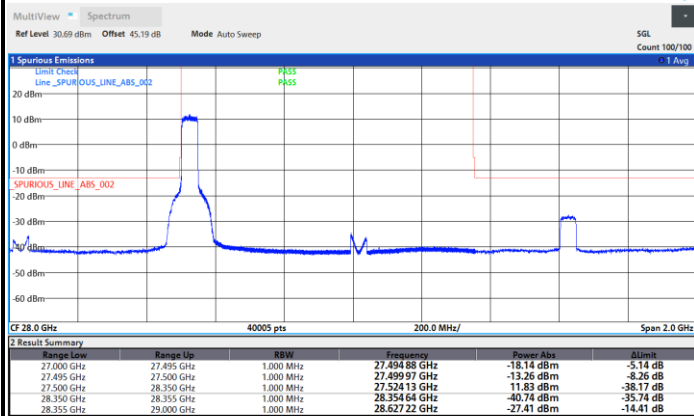


Highest Band Edge / Full RB

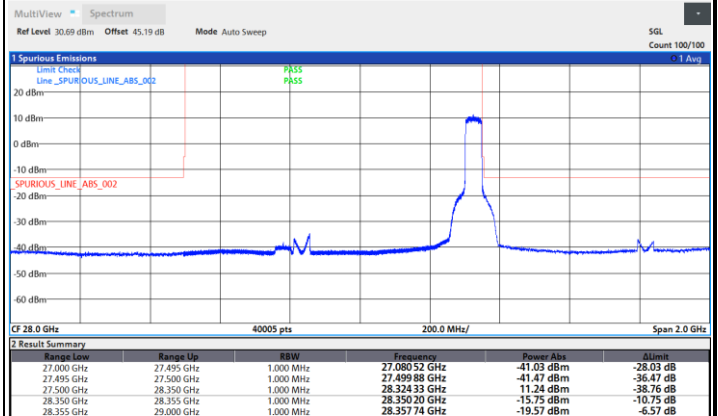


NR Band n261 / 50MHz / 16QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

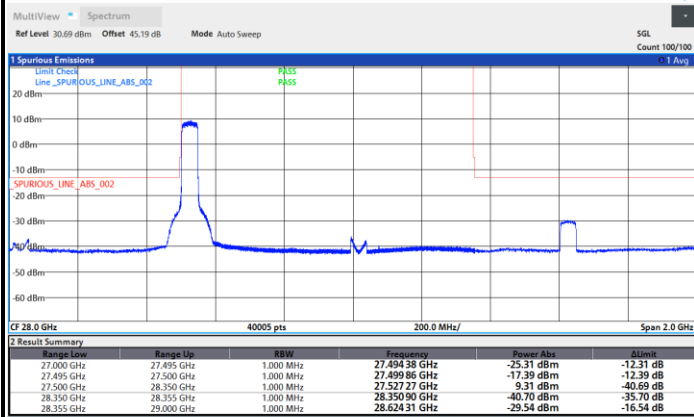




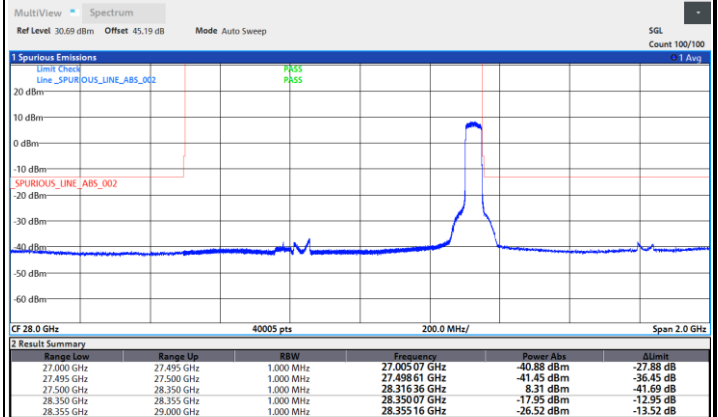
DFT-s-OFDM Module B

NR Band n261 / 50MHz / 64QAM

Lowest Band Edge / Full RB

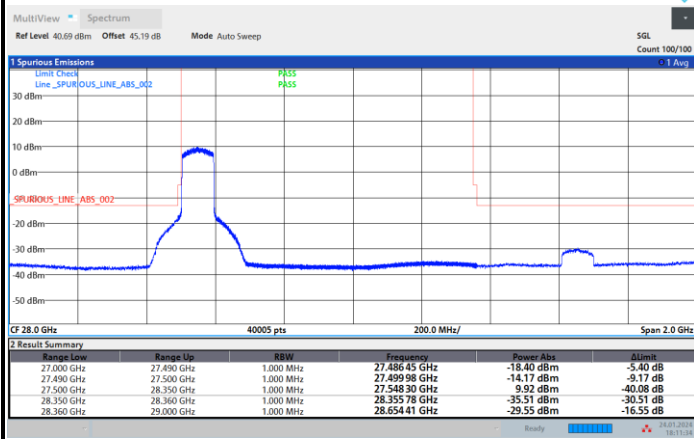


Highest Band Edge / Full RB

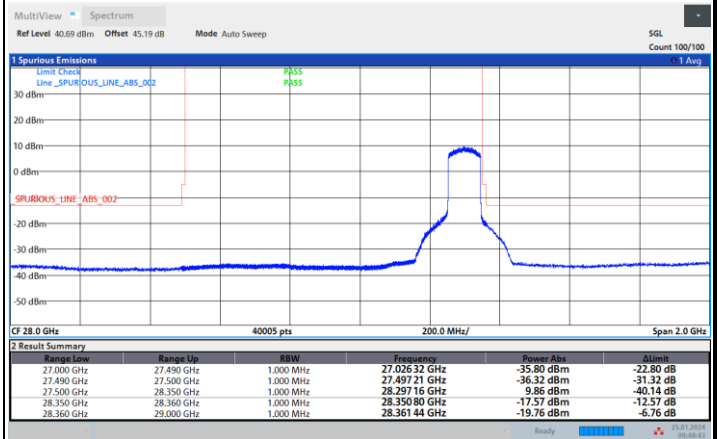


NR Band n261 / 100MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

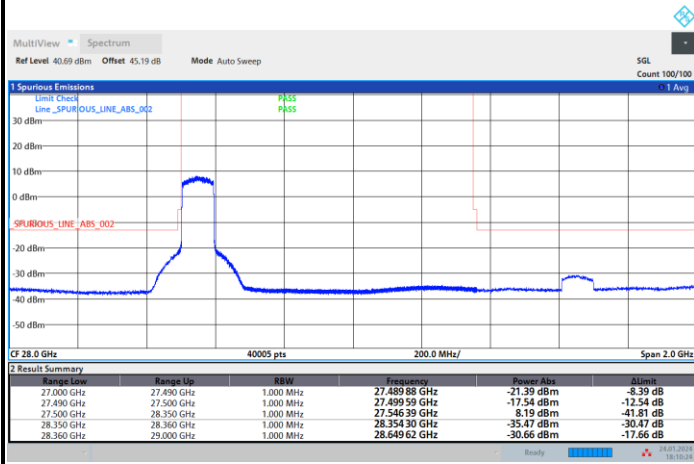




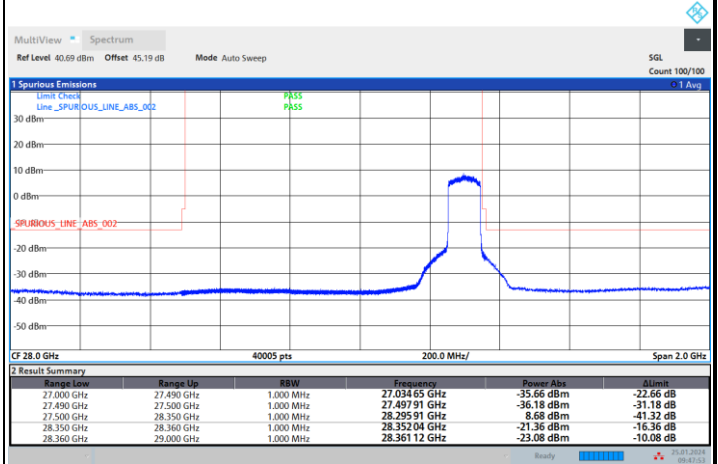
DFT-s-OFDM Module B

NR Band n261 / 100MHz / 16QAM

Lowest Band Edge / Full RB

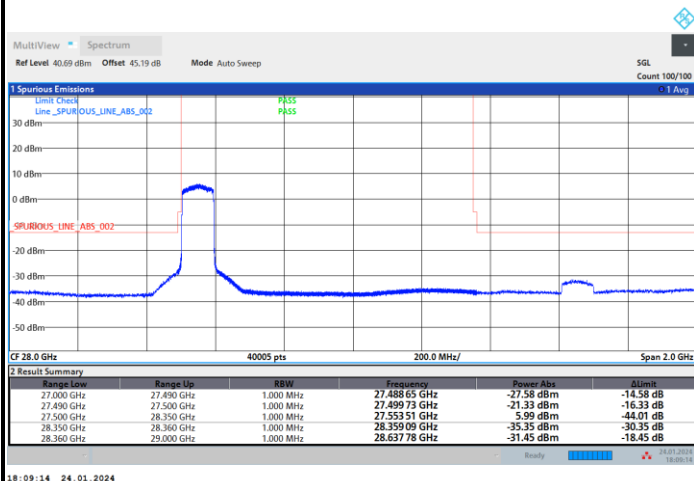


Highest Band Edge / Full RB

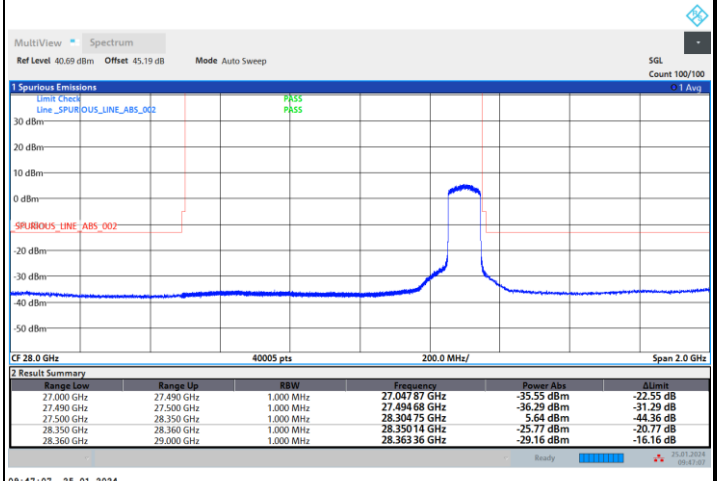


NR Band n261 / 100MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

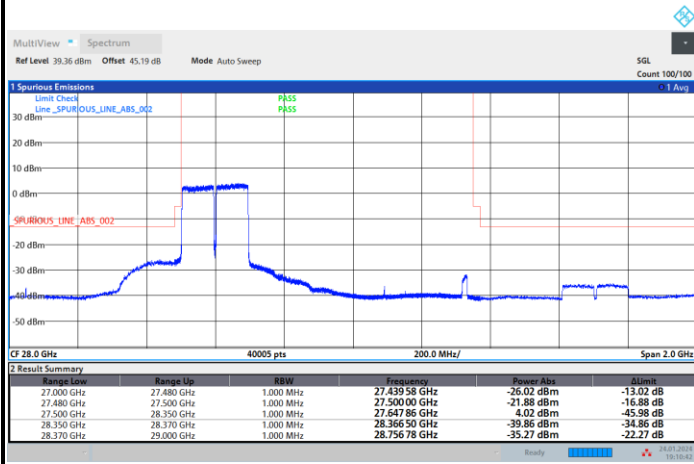




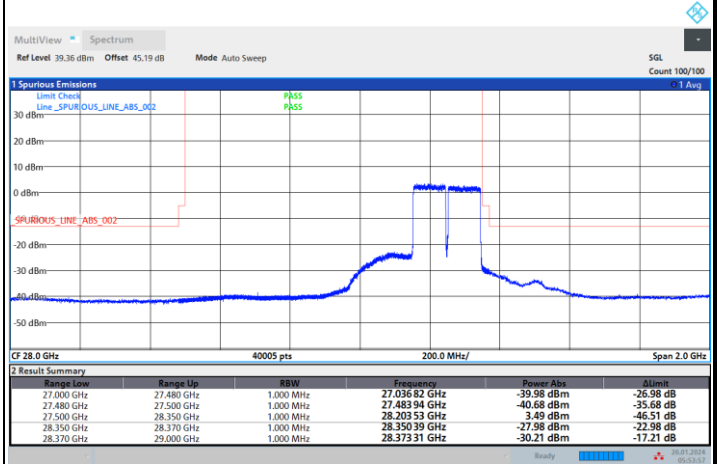
DFT-s-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / Full RB

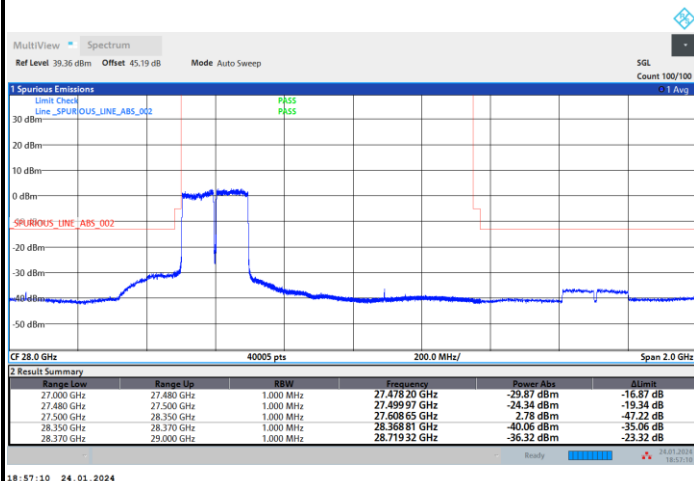


Highest Band Edge / Full RB

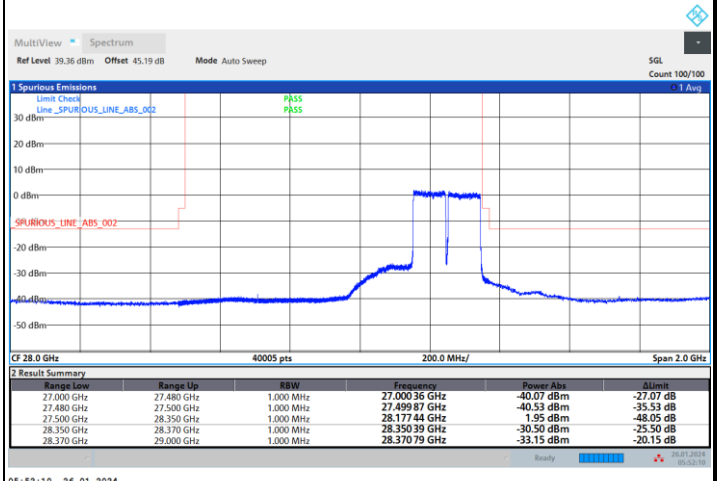


NR Band n261 / 200MHz / 16QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

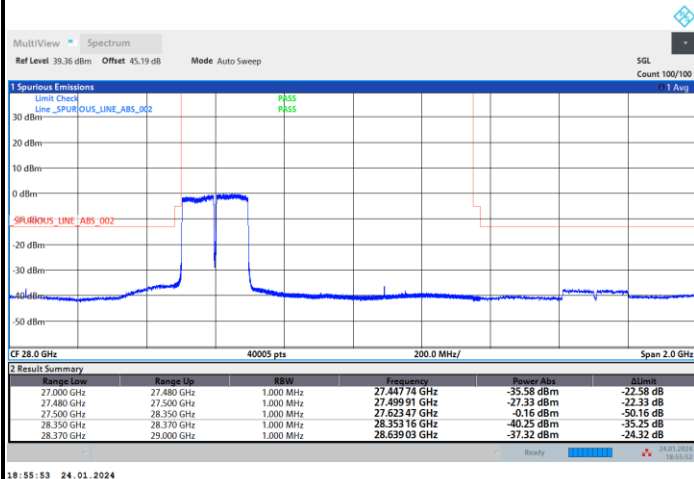




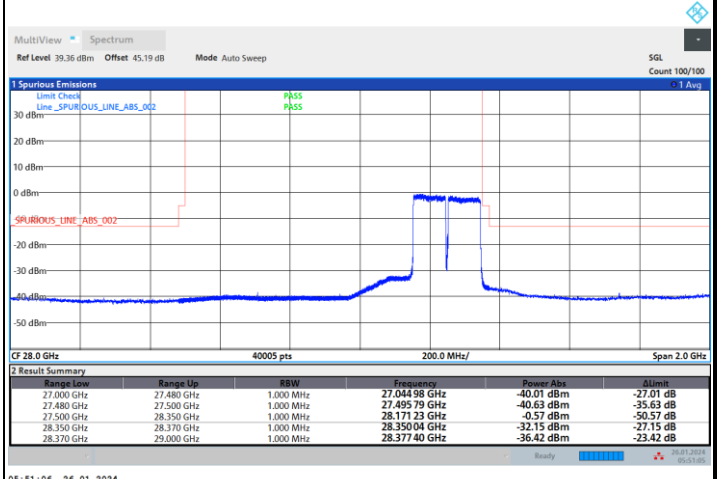
DFT-s-OFDM Module B

NR Band n261 / 200MHz / 64QAM

Lowest Band Edge / Full RB

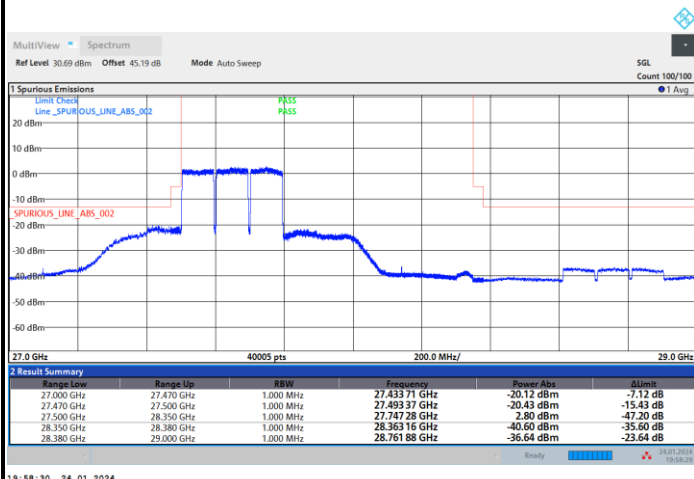


Highest Band Edge / Full RB

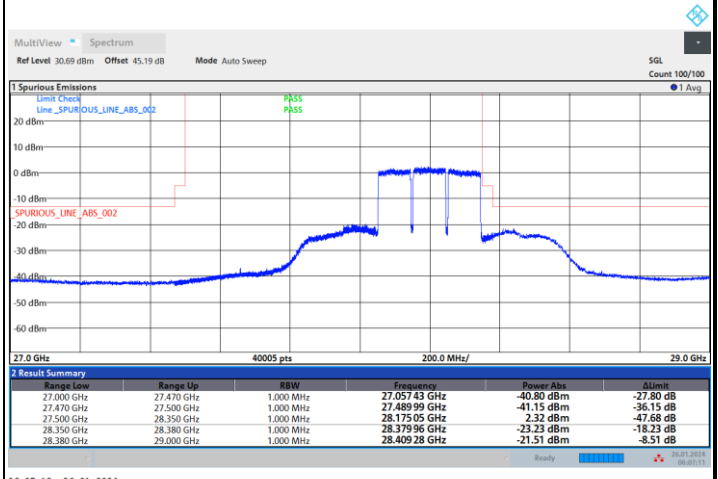


NR Band n261 / 300MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

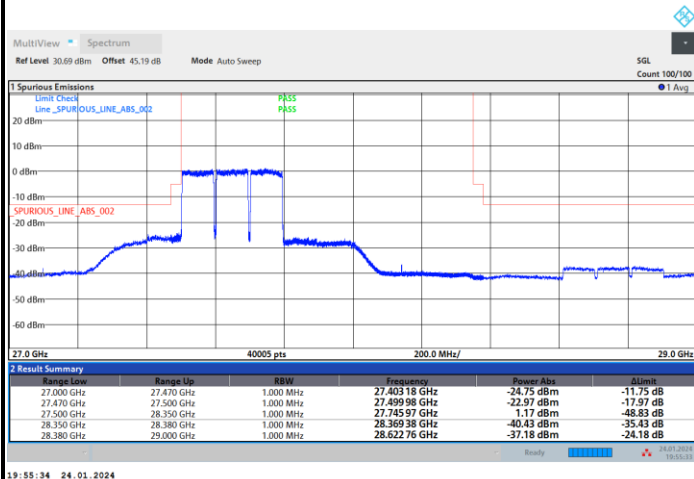




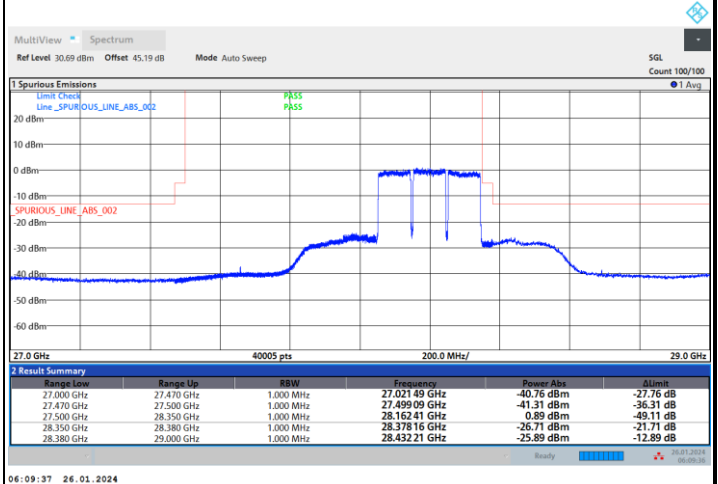
DFT-s-OFDM Module B

NR Band n261 / 300MHz / 16QAM

Lowest Band Edge / Full RB

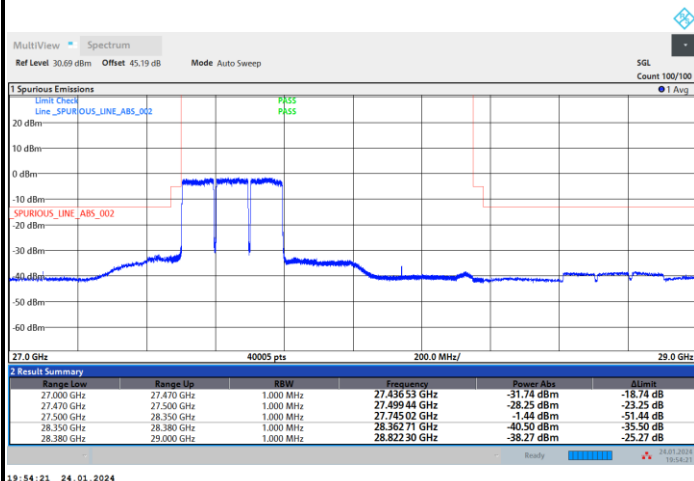


Highest Band Edge / Full RB

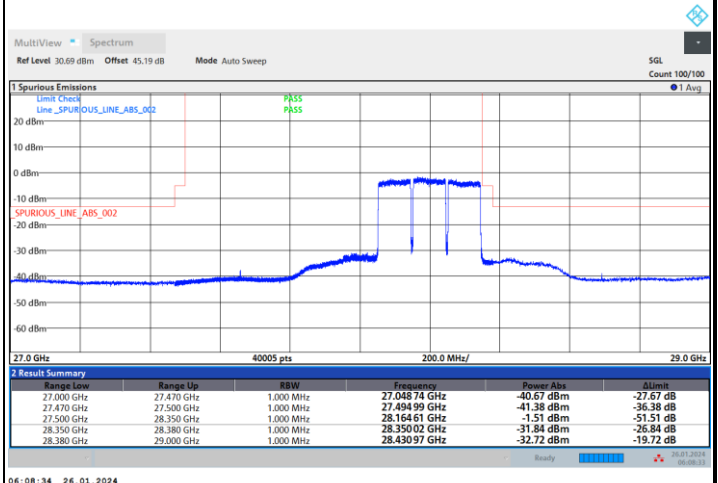


NR Band n261 / 300MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

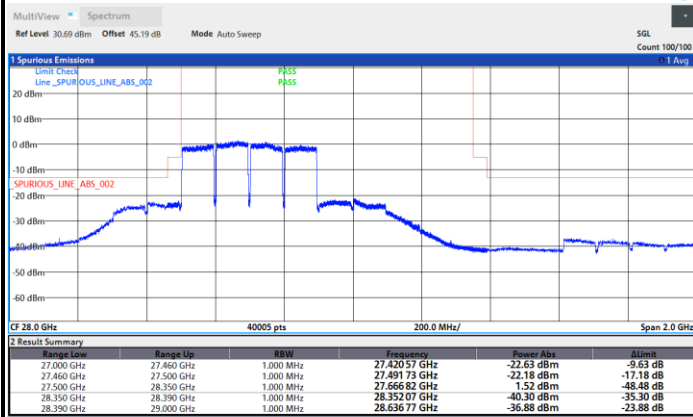




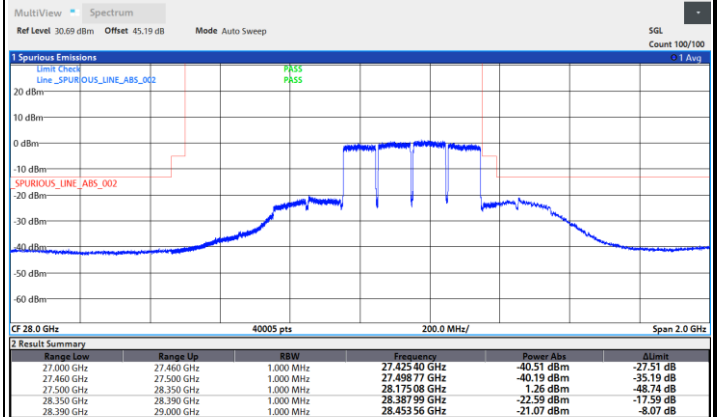
DFT-s-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / Full RB

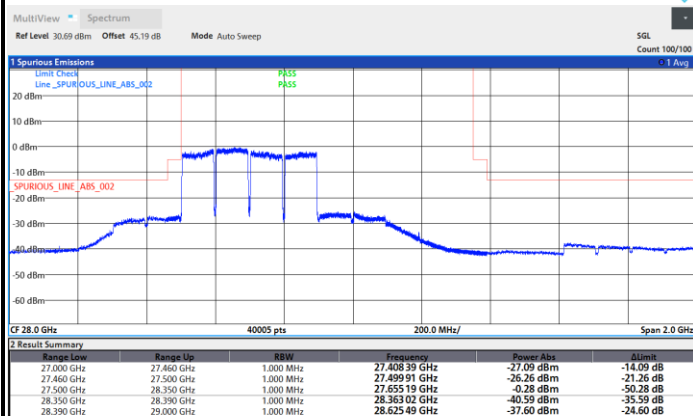


Highest Band Edge / Full RB

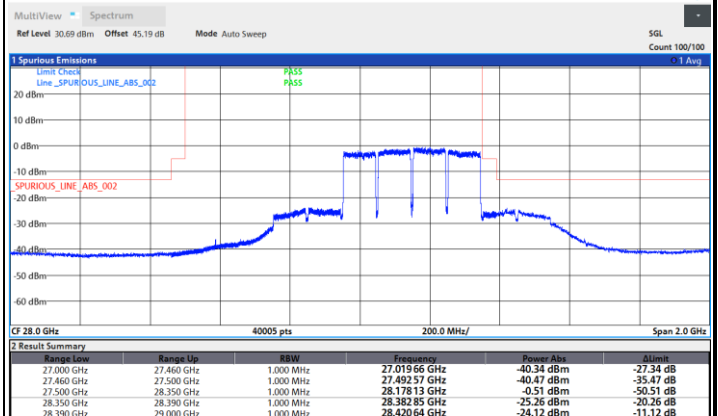


NR Band n261 / 400MHz / 16QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

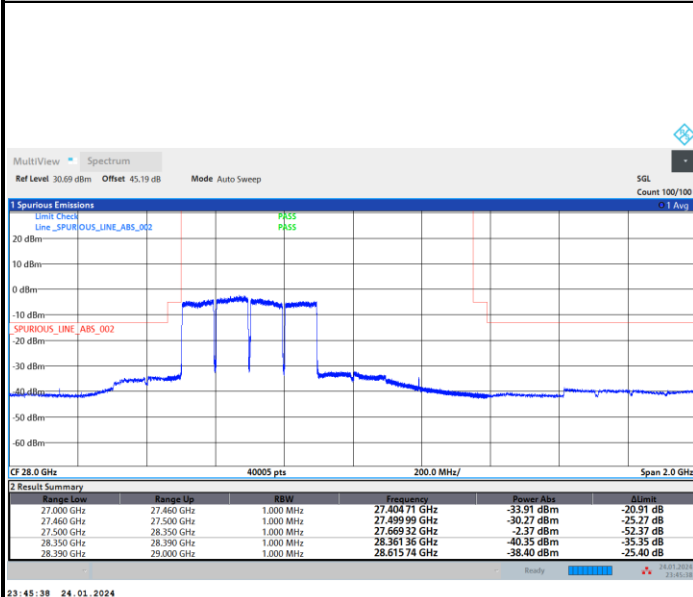




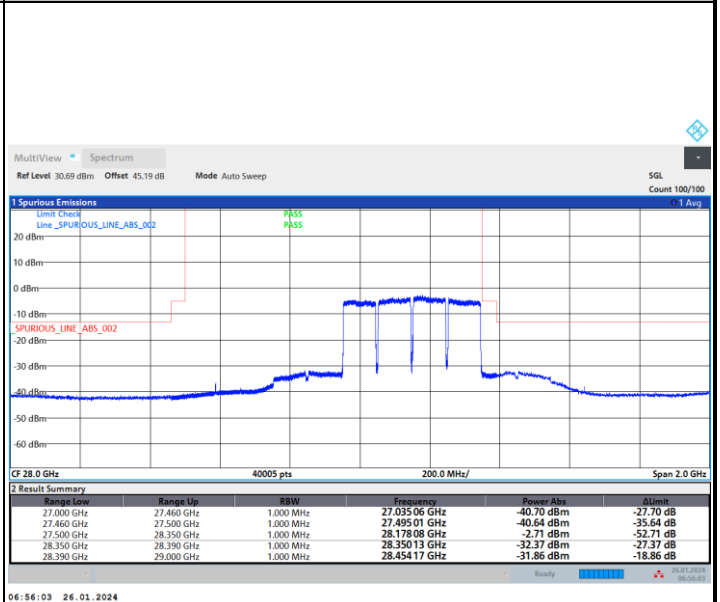
DFT-s-OFDM Module B

NR Band n261 / 400MHz / 64QAM

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

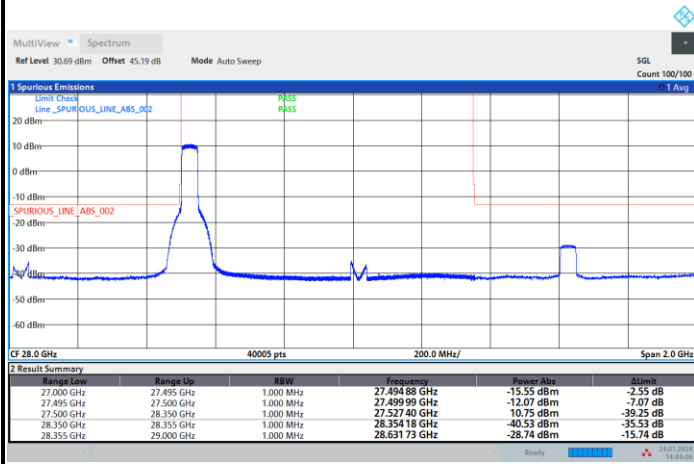




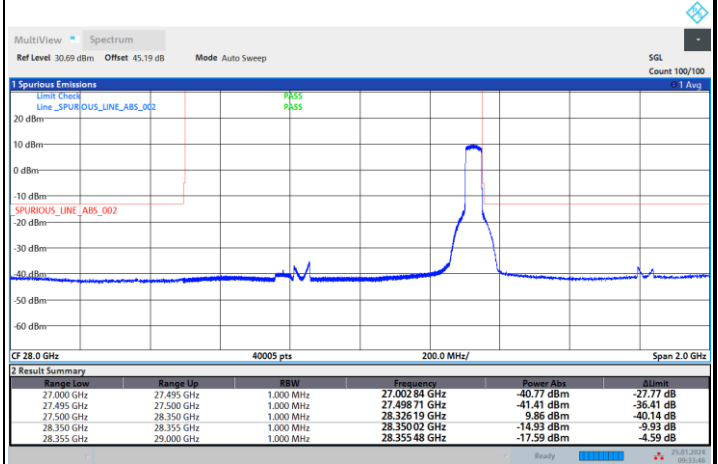
CP-OFDM Module B

NR Band n261 / 50MHz / QPSK

Lowest Band Edge / Full RB

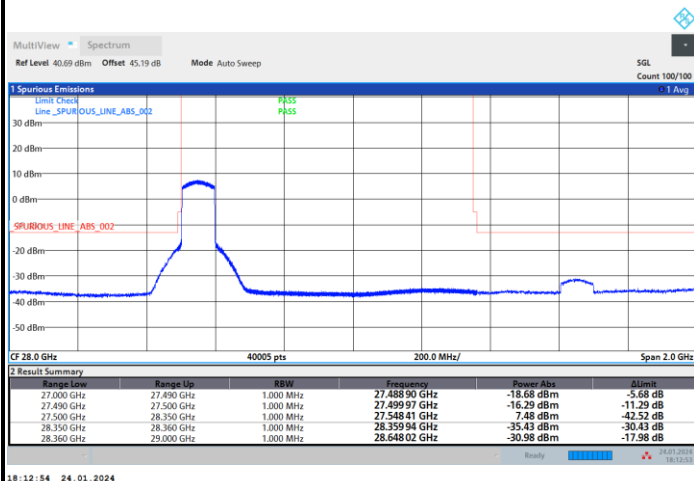


Highest Band Edge / Full RB

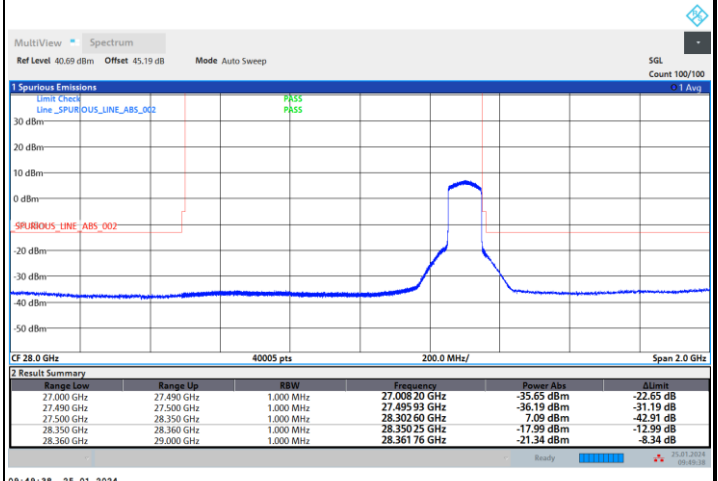


NR Band n261 / 100MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB

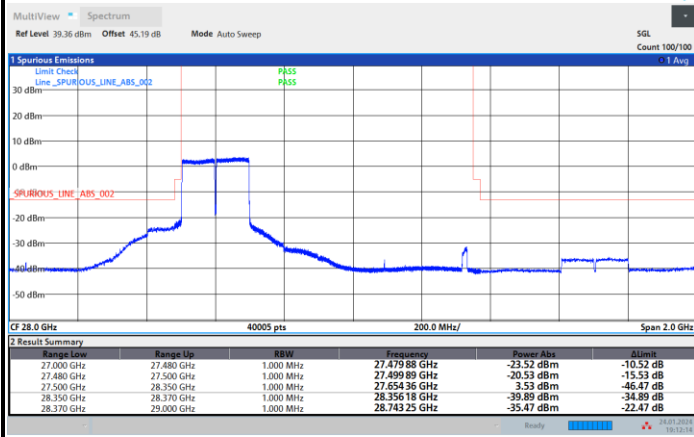




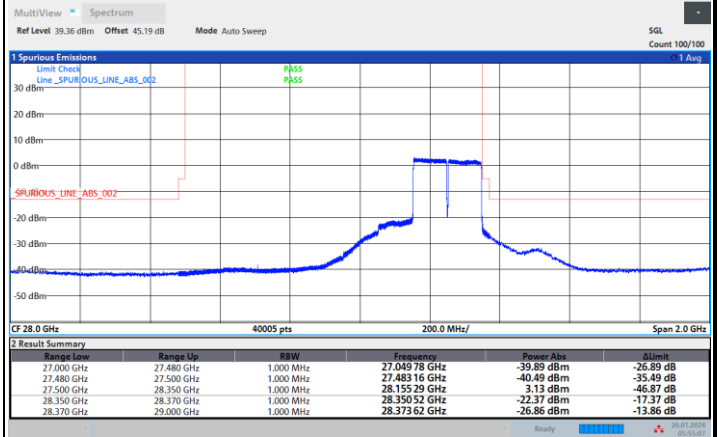
CP-OFDM Module B

NR Band n261 / 200MHz / QPSK

Lowest Band Edge / Full RB

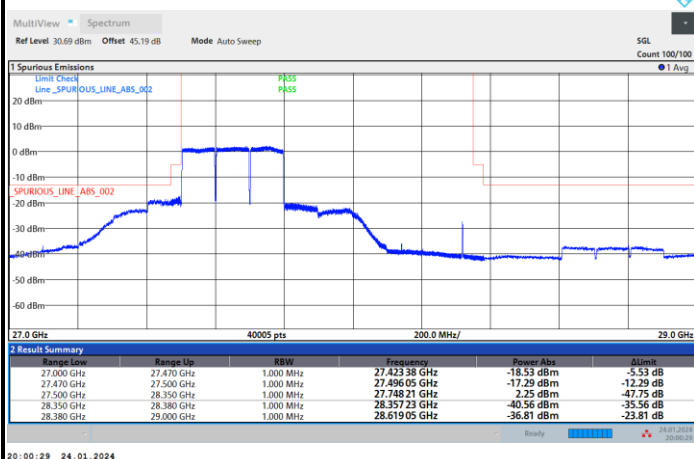


Highest Band Edge / Full RB

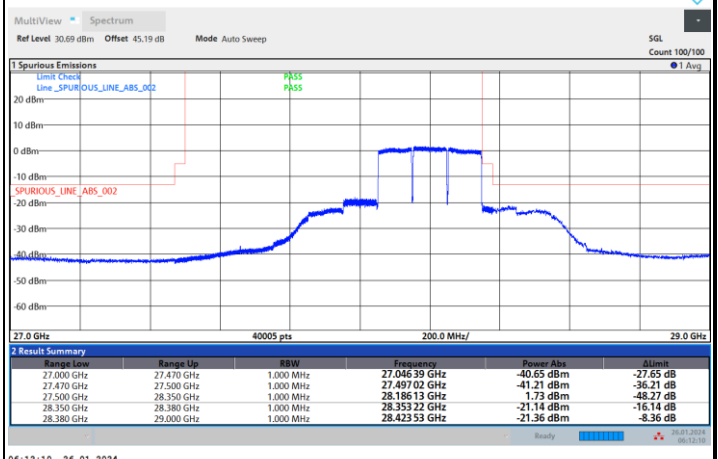


NR Band n261 / 300MHz / QPSK

Lowest Band Edge / Full RB



Highest Band Edge / Full RB



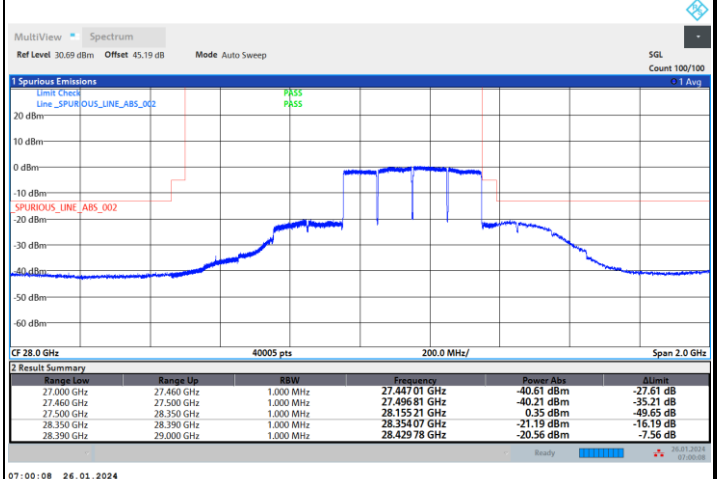
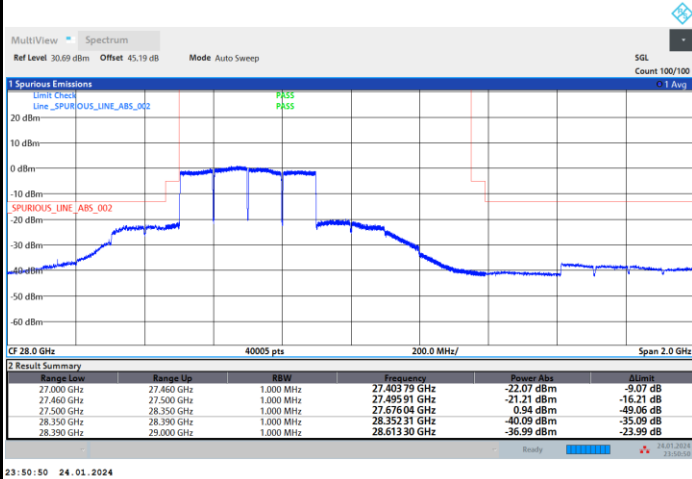


CP-OFDM Module B

NR Band n261 / 400MHz / QPSK

Lowest Band Edge / Full RB

Highest Band Edge / Full RB



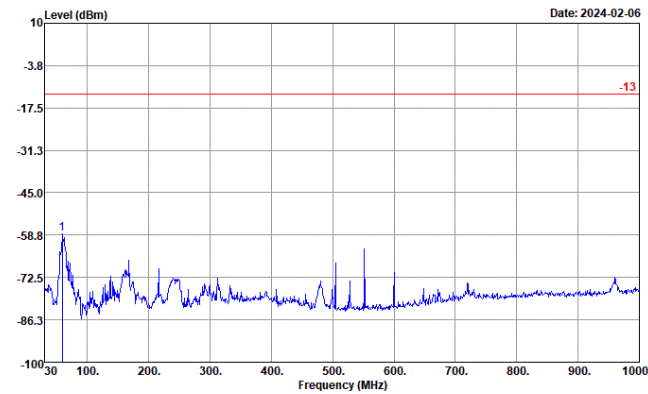
Spurious Emission

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)

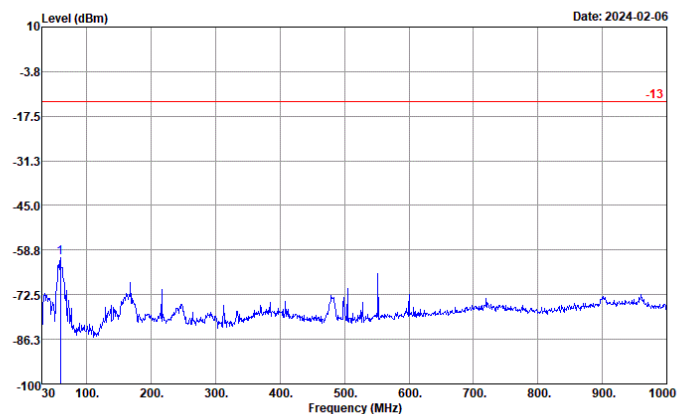
Horizontal



Site : 03CH10-HY
Condition : -13 EIRP_WO HORIZONTAL
Project : 3D2001
: n261 MB

Freq	Level	Over	Limit
MHz	dBm	Limit	Line
1	59.10 -58.43	-45.43	-13.00

Vertical



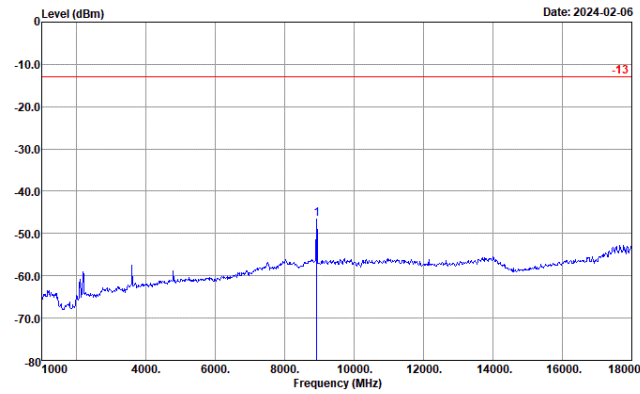
Site : 03CH10-HY
Condition : -13 EIRP_WO VERTICAL
Project : 3D2001
: n261 MB

Freq	Level	Over	Limit
MHz	dBm	Limit	Line
1	59.10 -61.05	-48.05	-13.00



NR Band n261 (1GHz-18GHz)

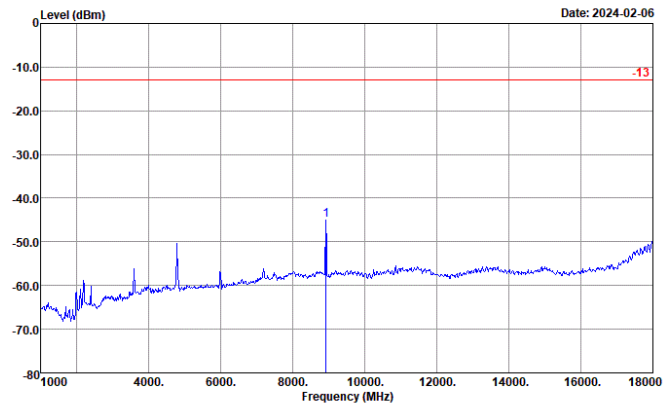
Horizontal



Site : 03CH10-HY
Condition : -13 EIRP_WO HORIZONTAL
Project : 3D2001
: n261 MB

Freq	Level	Over	Limit	Line
		Limit		
MHz	dBm	dB	dBm	
1	8922.00	-46.57	-33.57	-13.00

Vertical

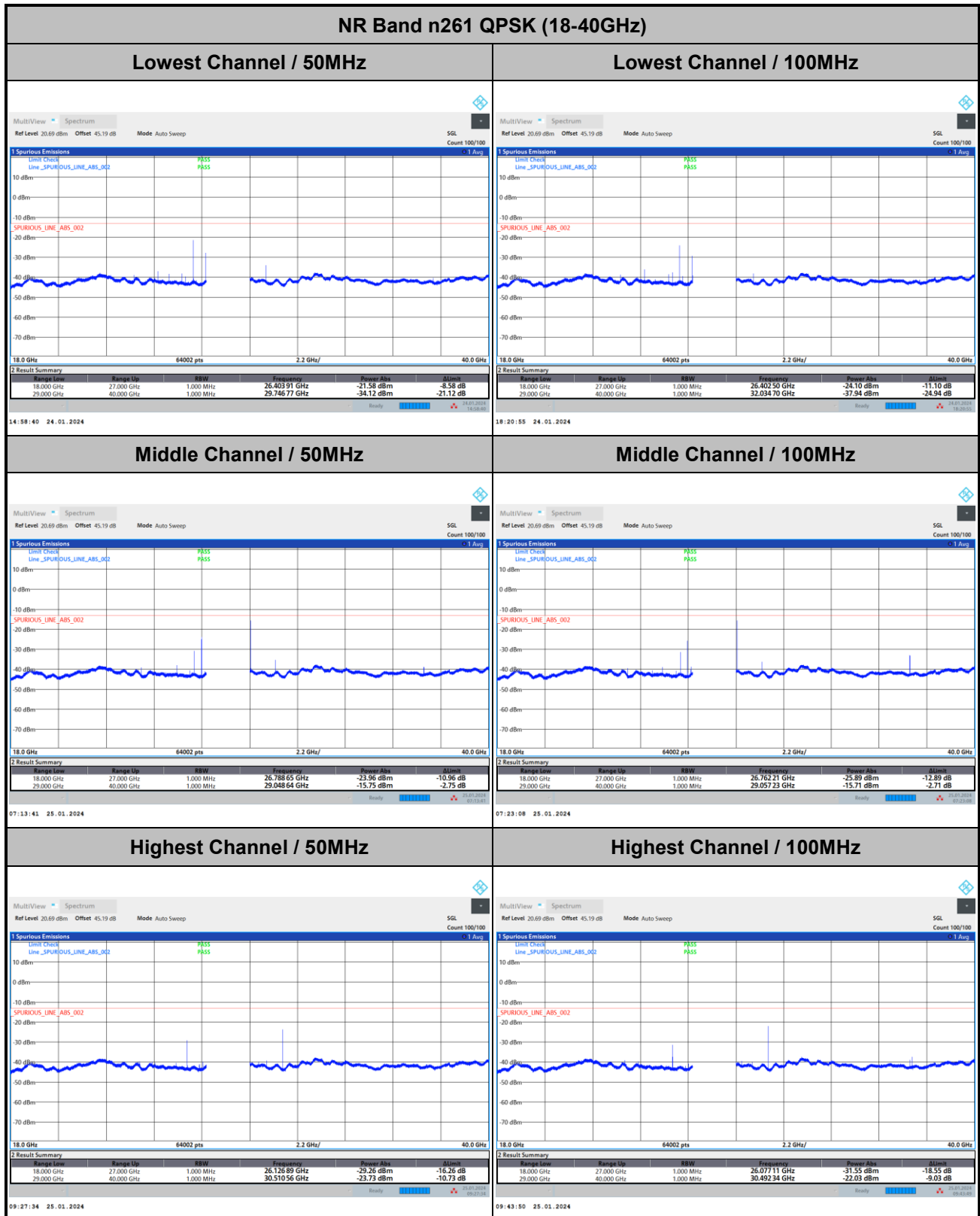


Site : 03CH10-HY
Condition : -13 EIRP_WO VERTICAL
Project : 3D2001
: n261 MB

Freq	Level	Over	Limit	Line
		Limit		
MHz	dBm	dB	dBm	
1	8922.00	-44.94	-31.94	-13.00



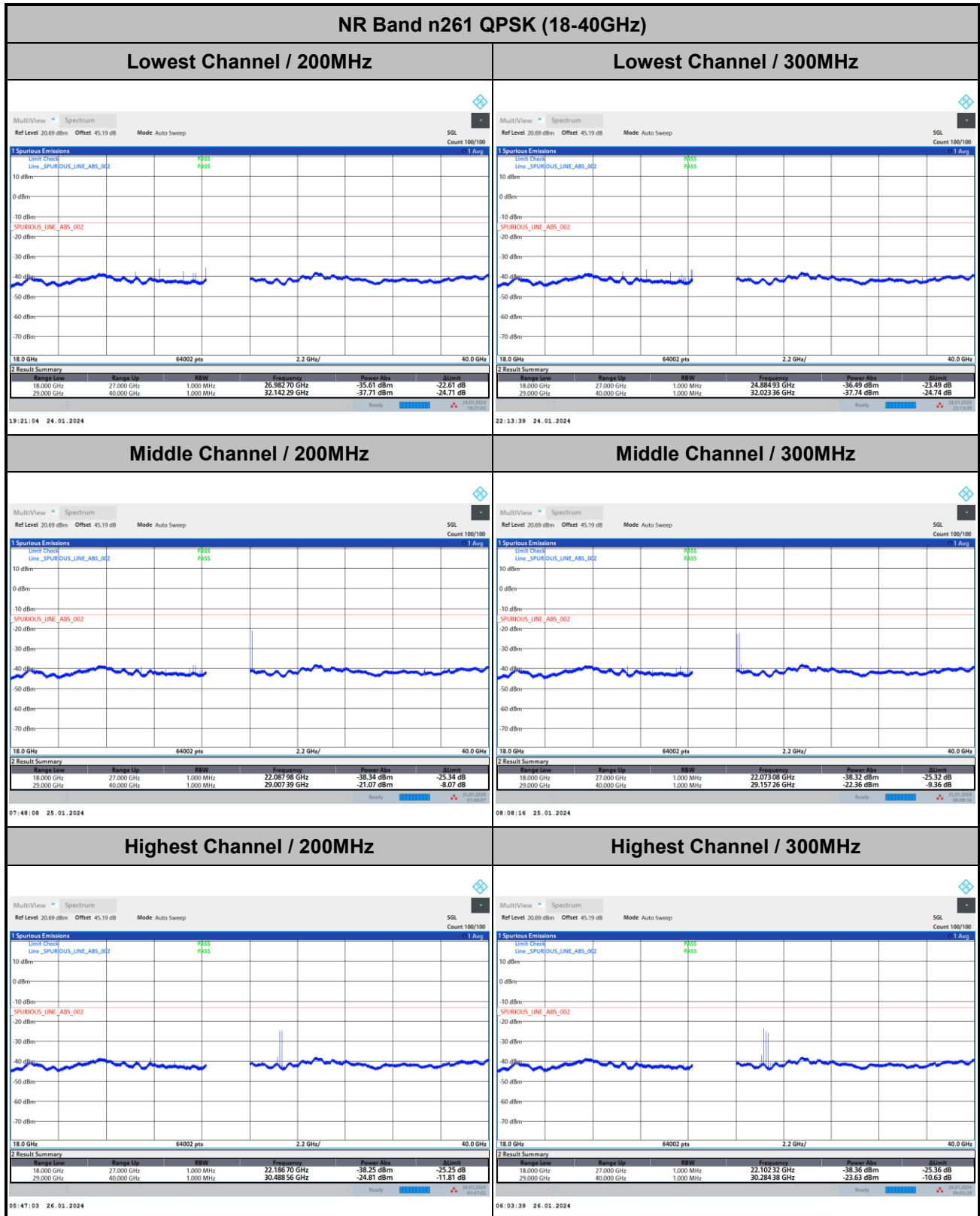
Spurious emission between 18GHz to 40GHz worst case plot is reported as following.

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.



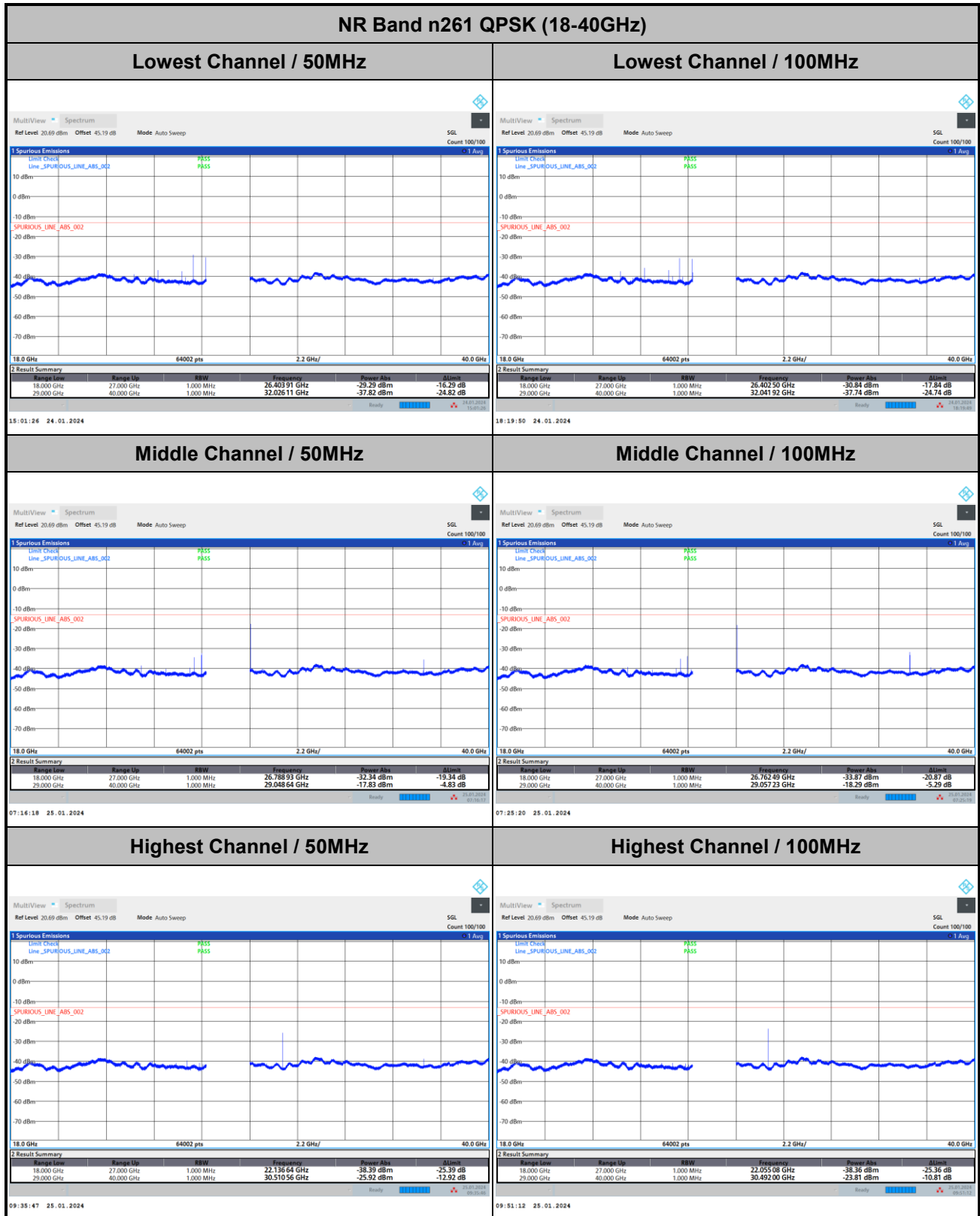
DFT-s-OFDM Module B

NR Band n261 QPSK (18-40GHz)																									
Lowest Channel / 400MHz																									
MultiView Spectrum Ref Level 20.69 dBm Offset 45.19 dB Mode Auto Sweep SGL Count 100/100 1 Spurious Emissions Line Check Line_SPURIOUS_LINE_ABS_002 PASS PASS <table><tr><th colspan="6">Result Summary</th></tr><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>ΔLimit</th></tr><tr><td>18,000 GHz</td><td>27,000 GHz</td><td>1,000 MHz</td><td>24,929 92 GHz</td><td>-36.77 dBm</td><td>-23.77 dB</td></tr><tr><td>29,000 GHz</td><td>40,000 GHz</td><td>1,000 MHz</td><td>32,056 01 GHz</td><td>-37.71 dBm</td><td>-24.71 dB</td></tr></table> 23:56:32 24. 01. 2024	Result Summary						Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit	18,000 GHz	27,000 GHz	1,000 MHz	24,929 92 GHz	-36.77 dBm	-23.77 dB	29,000 GHz	40,000 GHz	1,000 MHz	32,056 01 GHz	-37.71 dBm	-24.71 dB	intentionally blank
Result Summary																									
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit																				
18,000 GHz	27,000 GHz	1,000 MHz	24,929 92 GHz	-36.77 dBm	-23.77 dB																				
29,000 GHz	40,000 GHz	1,000 MHz	32,056 01 GHz	-37.71 dBm	-24.71 dB																				
Middle Channel / 400MHz																									
MultiView Spectrum Ref Level 20.69 dBm Offset 45.19 dB Mode Auto Sweep SGL Count 100/100 1 Spurious Emissions Line Check Line_SPURIOUS_LINE_ABS_002 PASS PASS <table><tr><th colspan="6">Result Summary</th></tr><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>ΔLimit</th></tr><tr><td>18,000 GHz</td><td>27,000 GHz</td><td>1,000 MHz</td><td>22,081 23 GHz</td><td>-38.32 dBm</td><td>-25.32 dB</td></tr><tr><td>29,000 GHz</td><td>40,000 GHz</td><td>1,000 MHz</td><td>29,007 05 GHz</td><td>-23.34 dBm</td><td>-10.34 dB</td></tr></table> 08:20:24 25. 01. 2024	Result Summary						Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit	18,000 GHz	27,000 GHz	1,000 MHz	22,081 23 GHz	-38.32 dBm	-25.32 dB	29,000 GHz	40,000 GHz	1,000 MHz	29,007 05 GHz	-23.34 dBm	-10.34 dB	intentionally blank
Result Summary																									
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Highest Channel / 400MHz																									
MultiView Spectrum Ref Level 20.69 dBm Offset 45.19 dB Mode Auto Sweep SGL Count 100/100 1 Spurious Emissions Line Check Line_SPURIOUS_LINE_ABS_002 PASS PASS <table><tr><th colspan="6">Result Summary</th></tr><tr><th>Range Low</th><th>Range Up</th><th>RBW</th><th>Frequency</th><th>Power Abs</th><th>ΔLimit</th></tr><tr><td>18,000 GHz</td><td>27,000 GHz</td><td>1,000 MHz</td><td>22,169 54 GHz</td><td>-38.39 dBm</td><td>-25.39 dB</td></tr><tr><td>29,000 GHz</td><td>40,000 GHz</td><td>1,000 MHz</td><td>29,341 16 GHz</td><td>-21.50 dBm</td><td>-8.50 dB</td></tr></table> 06:50:54 26. 01. 2024	Result Summary						Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit	18,000 GHz	27,000 GHz	1,000 MHz	22,169 54 GHz	-38.39 dBm	-25.39 dB	29,000 GHz	40,000 GHz	1,000 MHz	29,341 16 GHz	-21.50 dBm	-8.50 dB	intentionally blank
Result Summary																									
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit																				
18,000 GHz	27,000 GHz	1,000 MHz	22,169 54 GHz	-38.39 dBm	-25.39 dB																				
29,000 GHz	40,000 GHz	1,000 MHz	29,341 16 GHz	-21.50 dBm	-8.50 dB																				

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



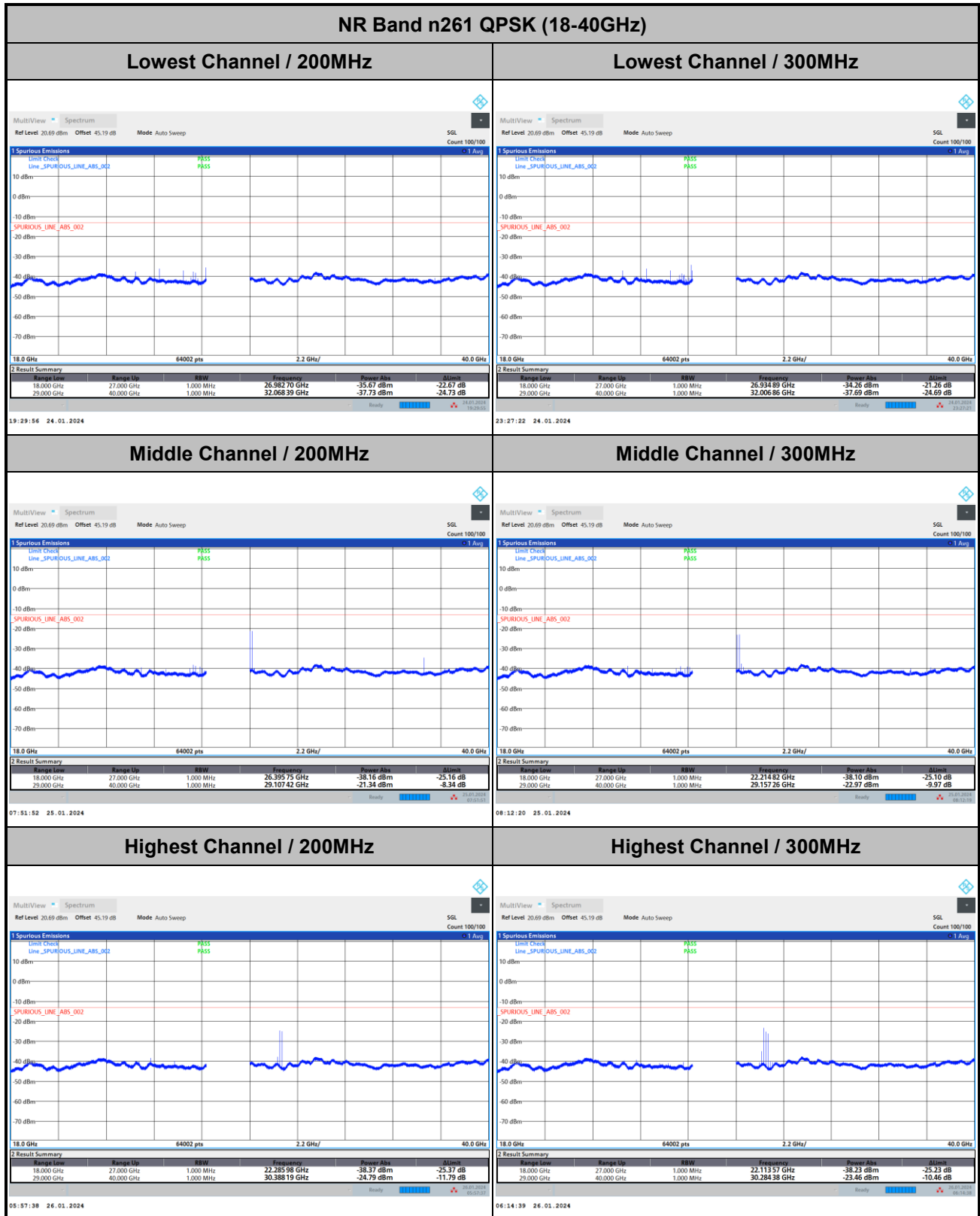
CP-OFDM Module B



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

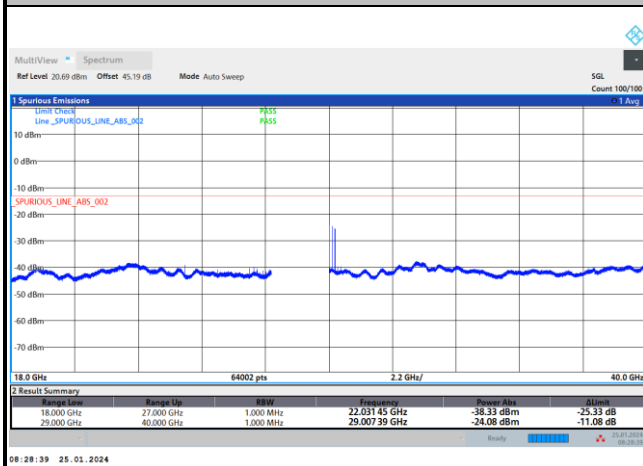
NR Band n261 QPSK (18-40GHz)

Lowest Channel / 400MHz



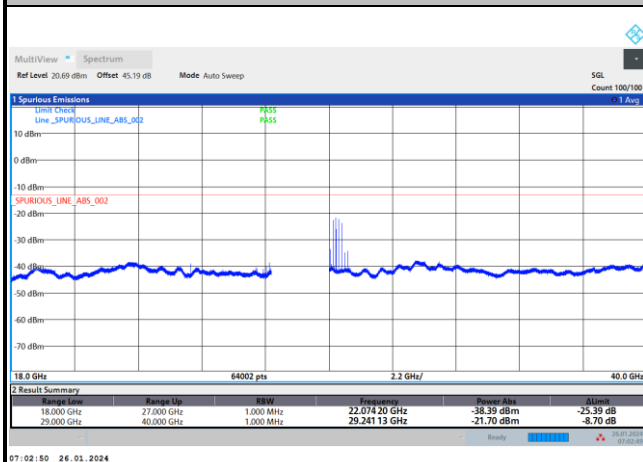
intentionally blank

Middle Channel / 400MHz



intentionally blank

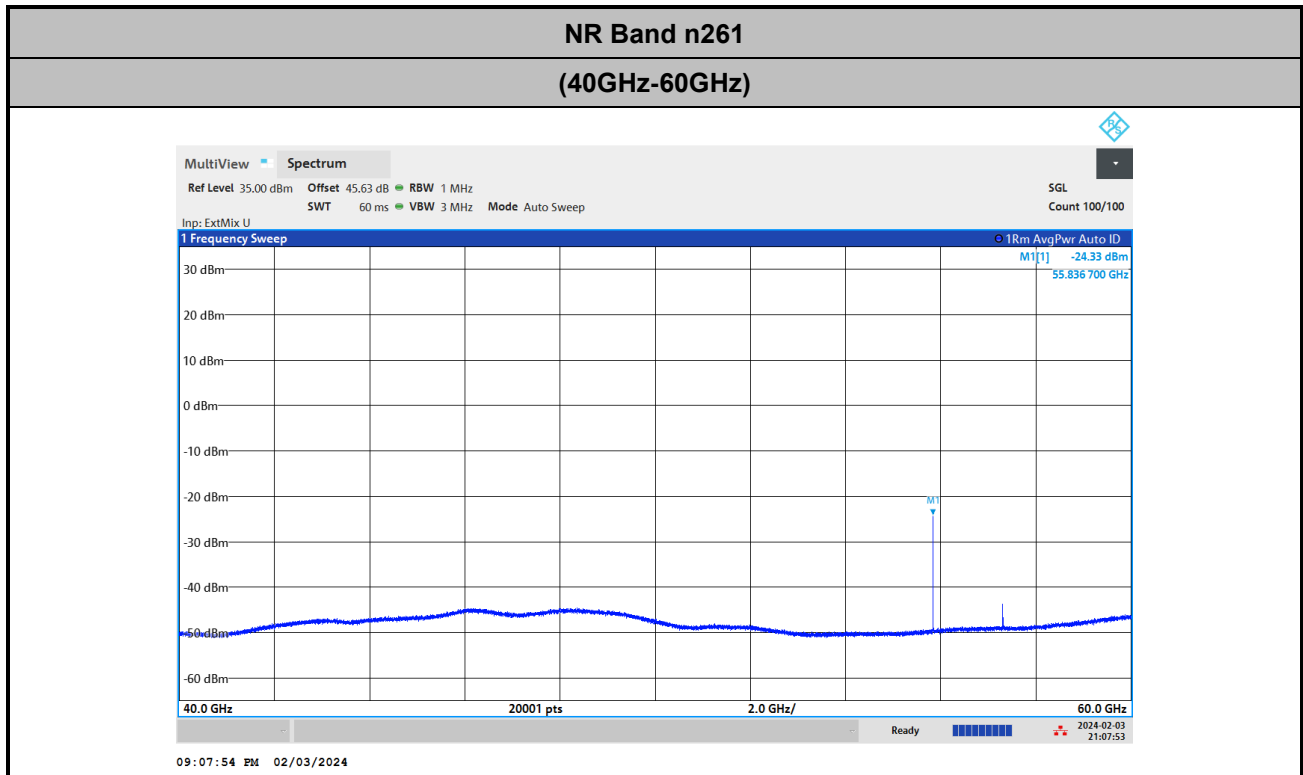
Highest Channel / 400MHz



intentionally blank

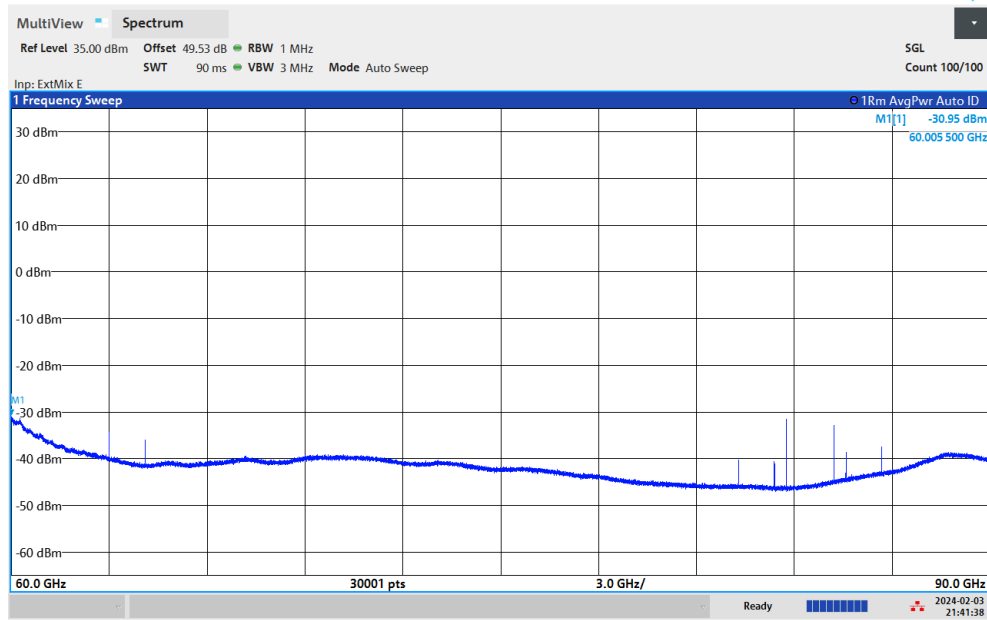
Remark: In band and out of band frequencies are omitted.

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



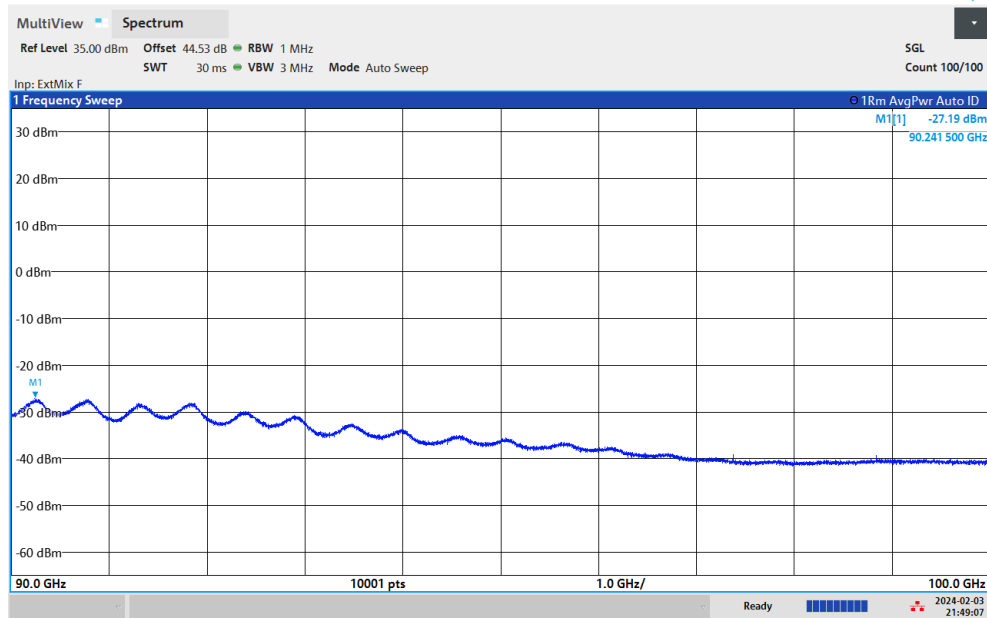
$$\text{Offset} = \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8$$

$$= 43 + 0.43 + 107 + 20\log(1) - 104.8 = 45.63(\text{dB})$$

NR Band n261
(60GHz-90GHz)


$$\text{Offset} = \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8$$

$$= 46.9 + 0.43 + 107 + 20\log(1) - 104.8 = 49.53 \text{ (dB)}$$

NR Band n261
(90GHz-100GHz)


$$\text{Offset} = \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + 107 + 20\log(D) - 104.8$$

$$= 47.92 + 0.43 + 107 + 20\log(0.5) - 104.8 = 44.53 \text{ (dB)}$$

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	27.9249161	138.800	4.970	Pass
40	Normal Voltage	27.9249391	115.800	4.147	
30	Normal Voltage	27.925006	48.900	1.751	
20(Ref.)	Normal Voltage	27.9250549	0.000	0.000	
10	Normal Voltage	27.925045	9.900	0.355	
0	Normal Voltage	27.9250879	-33.000	1.182	
-10	Normal Voltage	27.9251449	-90.000	3.223	
-20	Normal Voltage	27.9251419	-87.000	3.115	
-30	Normal Voltage	27.9250809	-26.000	0.931	
20	Maximum Voltage	27.925045	9.900	0.355	
20	Normal Voltage	27.925049	5.900	0.211	
20	Battery End Point	27.92504	14.900	0.534	

Note:

1. Normal Voltage = 3.89 V. ; Battery End Point (BEP) = 3.6 V. ; Maximum Voltage = 4.5 V.
2. The frequency fundamental emissions stay within the operation band.



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



CALIBRATION CERTIFICATE



Kalibrierschein

Certificate Number
Zertifikatsnummer

0001A300718726

General Data	
Item Gegenstand	FS-Z60 HARMONIC MIXER 40-60GHZ
Manufacturer Hersteller	ROHDE & SCHWARZ
Type Typ	FS-Z60
Material Number Materialnummer	1048.0171.02
Serial Number Seriennummer	100986
Order Number Bestellnummer	Q786007
Asset Number Inventarnummer	
Customer Auftraggeber	Sporton International Inc. 6F., Sec. 1, Hsin Tai Wu Rd 106 221 New Taipei City TW
Performance	
Place and Date of Calibration Ort und Datum der Kalibrierung	87700 Memmingen, Rohde-und-Schwarz-Str. 1 2023-10-31
Statement of Compliance (Incoming) Konformitätsaussage (Anlieferung)	All measured values are within the data sheet specifications.
Statement of Compliance (Outgoing) Konformitätsaussage (Auslieferung)	All measured values are within the data sheet specifications.
Customers due Interval Kalibrierintervall des Kunden	
Extent of Calibration Document Umfang des Kalibrierdokuments	3 Pages Certificate 6 Pages Outgoing Results 6 Pages Incoming Results
Date of Issue Ausstellungsdatum	Approval of the certificate by Freigabe des Kalibrierscheins durch
2023-11-08	Dr. Gerhard Rösel Johannes Negele
Laboratory management Labormanagement	Person responsible Bearbeiter

Calibration Mark Kalibrierzeichen

300718726

D-K-
15195-01-00

2023-10

Member of Deutscher Kalibrierdienst
Mitglied im Deutschen Kalibrierdienst



This calibration certificate documents the metrological traceability to national standards, which realize the units of measurement according to the International System of Units (SI). The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates. The user is obliged to have the object recalibrated at appropriate intervals. This calibration certificate may not be reproduced other than in full except with the permission of the issuing laboratory. Calibration certificates with the full name of the approval responsible person are valid without signature.

Dieser Kalibrierschein dokumentiert die metrologische Rückführbarkeit auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European cooperation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich. Dieser Kalibrierschein darf nur vollständig weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine sind bei Nennung des für die Freigabe Verantwortlichen in Klarschrift auch ohne Unterschrift gültig.



Material No 1048.0171.02 **Serial No** 100986 **Certificate** 0001A300718726
Page 2/3 **Number**

Calibration Procedure

The measuring object is an RF harmonic mixer, which converts an RF signal at one frequency into a signal at another frequency (here: IF). The conversion loss was measured using a vector network analyzer. The RF output power as well as the IF input power of the corresponding ports of the VNA were traced back to a power sensor. The conversion loss is defined as the ratio of the power at the IF frequency to the power at the RF frequency with a given LO power. (IF: Intermediate frequency; LO: Local Oscillator)
 The traceability is represented in the table Working Standards used.

Working Standards used

Item	Type	Serial Number	Calibration Certificate Number	Cal. Due
Therm.Power Sensor DC-40GHz	NRP-Z55	130179	0001A300682928	2025-01-31
Thermal Power Sensor	NRP67T	100977	0001A300658977	2025-07-31
Vector Network Analyzer 4 Port	ZVA67	101100	0001A300698540	2024-05-31

Remarks

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