



FCC RADIO TEST REPORT

FCC ID : RI7FE990B40NA
Equipment : 5G NR Module
Brand Name : 
Model Name : FE990B40-NA, FE990B40-NAD
Marketing Name : FE990B40-NA, FE990B40-NAD
Applicant : Telit Communications S.p.A.
Via Stazione Di Prosecco 5/B, Trieste 34010, Italy
Manufacturer : Telit Communications S.p.A.
Via Stazione Di Prosecco 5/B, Trieste 34010, Italy
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27D, Part 90(R), Part 90(S)

The product was received on Sep. 23, 2025 and testing was performed from Sep. 24, 2025 to Oct. 21, 2025. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FG492402-01B	01	Initial issue of report	Nov. 07, 2025



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Pass	-
	§22.913 (a)(5) §90.635	Effective Radiated Power (n5) (n26)	Pass	
	§27.50 (b)(10) §27.50 (c)(10)	Effective Radiated Power (n12) (n13) (n71)		
	§24.232 (c) §27.50 (h)(2)	Equivalent Isotropic Radiated Power (n2) (n25) (n7) (n38) (n41)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (n66) (n70)		
	§27.50 (a)(3)	Equivalent Isotropic Radiated Power (n30)		
	§90.542 (a)(7)	Effective Radiated Power (n14)		
	§27.50 (j)(3)	Equivalent Isotropic Radiated Power (n77) (n78)		
	§27.50 (k)(3)	Equivalent Isotropic Radiated Power (n77) (n78)		
3.3	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Pass	-
3.4	§2.1049	Occupied Bandwidth	Pass	-
3.5	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (n2) (n5) (n12) (n13) (n25) (n26) (n66) (n70) (n71)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (n7) (n38) (n41)		
	§2.1051 §27.53 (a)(4)	Conducted Band Edge Measurement (n30)		
	§2.1051 §90.543 (e)(2)	Conducted Band Edge Measuremen (n14)		
	§2.1051 §27.53 (l)(2)	Conducted Band Edge Measurement (n77) (n78)		
	§2.1051 §27.53 (n)(2)	Conducted Band Edge Measurement (n77) (n78)		
3.6	§2.1051 §90.210 (n)	Emission Mask (n14)	Pass	-
	§2.1051 §90.691	Emission masks (n26)		



Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.7	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (g) §27.53 (h) §90.691	Conducted Spurious Emission (n2) (n5) (n12) (n13) (n25) (n26) (n66) (n71)	Pass	-
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (n7) (n38) (n41)		
	§2.1051 §27.53 (a)(4)	Conducted Spurious Emission (n30)		
	§2.1051 §90.543 (e)(3)	Conducted Spurious Emission (n14)		
	§2.1051 §27.53 (l)(2)	Conducted Spurious Emission (n77) (n78)		
	§2.1051 §27.53 (n)(2)	Conducted Spurious Emission (n77) (n78)		
	§2.1055 §22.355 §24.235 §27.54 §90.539 (e) §90.213	Frequency Stability Temperature & Voltage	Pass	-



Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (f) §27.53 (g) §27.53 (h)§90.691	Radiated Spurious Emission (n2) (n5) (n12) (n13) (n25) (n26) (n66) (n71)	Pass	-
	§2.1053 §27.53 (m)(4)	Radiated Spurious Emission (n7) (n38) (n41)		
	§2.1053 §27.53 (a)(4)	Radiated Spurious Emission (n30)		
	§2.1053 §90.543 (e)(3) §90.543 (f)	Radiated Spurious Emission (n14)		
	§2.1053 §27.53 (l)(2)	Radiated Spurious Emission (n77) (n78)		
	§2.1053 §27.53 (n)(2)	Radiated Spurious Emission (n77) (n78)		
Remark: This is a variant report by add 5G NR n7/41/66/71 new Bandwidth.				

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

1. The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.
2. The purpose of different model name is for marketing segmentation.

Reviewed by: Keven Cheng**Report Producer: Freda Wu**



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs	LTE/5G NR and GNSS.
Antenna Type	Monopole Antenna

Support band and evaluated information	
Supported band	n2, n5, n7, n12, n13, n14,n25, n26, n30, n38, n41 ,n66, n70,n71,n77,n78
Evaluated and Tested band	n7,n41,n66,n71

FDD/TDD band Power Class					
	SISO PC3	SISO PC2	MIMO PC3	MIMO PC2	MIMO PC1.5
N7	√		√		
N41	√	√	√	√	√
N66	√		√	√	
N71	√		√	√	

RF Exposure Max Antenna Gain(dBi)				
Band	Ant0	Ant2	Main Ant. #	MIMO Main Ant. #
N7		8.5	-	-
N7_MIMO	8.5	8.5	-	2&0
N41(PC3)		8.5	2	-
N41(PC2)		5.5	2	-
N41_MIMO(PC3)	8.5	8.5	-	2&0
N41_MIMO(PC2)	5.5	5.5	-	2&0
N41_MIMO(PC1.5)	3	3	-	2&0
N66		4.5	2	-
N66_MIMO(PC3)	4.5	4.5	-	2&0
N66_MIMO(PC2)	1.5	1.5	-	2&0
N71		8.4	2	-
N71_MIMO(PC3)	8.4	8.4	-	2&0
N71_MIMO(PC2)	5.4	5.4	-	2&0

Remark: The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

No modifications made to the EUT during the testing.



1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No.
	TH03-HY (TAF Code: 1190)
Test Engineer	Hank Chen
Temperature (°C)	20.5~22.3
Relative Humidity (%)	50.3~55.4

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
	03CH12-HY
Test Engineer	Gerry Wei, Tim Lee and Wilson Wu
Temperature (°C)	20.0~25.0
Relative Humidity (%)	50.0~60.0
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786



1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 27D, Part 90(R), Part 90(S)
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in two config (Degree 0 and Degree 90), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

5G NR N7/N41/N66/N71 SISO Mode

Modulation Type	Modulation	Modulation Type	Modulation
A	DFT-s-OFDM pi/2 BPSK	N/A	N/A
B	DFT-s-OFDM QPSK	F	CP-OFDM QPSK
C	DFT-s-OFDM 16QAM	G	CP-OFDM 16QAM
D	DFT-s-OFDM 64QAM	H	CP-OFDM 64QAM
E	DFT-s-OFDM 256QAM	I	CP-OFDM 256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B, C, D, E	New BW	1, Half, Full	L, M, H
EIRP	A, B, C, D, E	New BW	1, Half, Full	L, M, H
PAR	A, B, C, D, E	New BW	Outer_Full	M
Bandwidth	A,F,G,H,I	New BW	Outer_Full	M
CBE	A, B, C, D, E,F	New BW	Outer_1RB Outer_Full	L, H
CSE	B	New BW	Inner_1RB	L, M, H
Frequency Stability	A	New BW	Outer_Full	M
RSE	A	New BW	Inner_1RB	L, M, H

Remark:

1. This is a C2PC assessment. The changes are add new Bandwidth.
2. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
4. One representative bandwidth is selected to perform PAR& frequency stability.
5. For 5G NR N41 support SISO Mode Antenna 2 (Main Ant.) and Antenna 0&1&3(SRS Ant.),Radiated Spurious Emission is full test. Conducted test items are verified and the worst case is Antenna 2, Therefore, the report only performed Antenna 2 test results.
6. For 5G NR N41 support PC2&PC3 ,The PC2&PC3 have the same modulation, EIRP power and BW. Therefore, the report only performed Higher Conducted power (PC2) test results.
7. For 5G NR All Band SISO Mode support support CP-OFDM & DFT-s-OFDM,Therefore,the report only performed Higher Conducted power (DFT-s-OFDM) test results.
8. For 5G NR N41 the test country code is set to MCC 310

5G NR N7 MIMO Mode

Modulation Type	Modulation	Modulation Type	Modulation
A	DFT-s-OFDM pi/2 BPSK	N/A	N/A
B	DFT-s-OFDM QPSK	F	CP-OFDM QPSK
C	DFT-s-OFDM 16QAM	G	CP-OFDM 16QAM
D	DFT-s-OFDM 64QAM	H	CP-OFDM 64QAM
E	DFT-s-OFDM 256QAM	I	CP-OFDM 256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	F,G,H,I	New BW	1, Half, Full	L, M, H
EIRP	F,G,H,I	New BW	1, Half, Full	L, M, H
PAR	F,G,H,I	New BW	Outer_Full	M
Bandwidth	F,G,H,I	New BW	Outer_Full	M
CBE	F,G,H,I	New BW	Outer_1RB Outer_Full	L, H
CSE	F	New BW	Inner_1RB	L, M, H
Frequency Stability	F	New BW	Outer_Full	M
RSE	F	New BW	Inner_1RB	L, M, H

Remark:

1. This is a C2PC assessment. The changes are add new Bandwidth.
2. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
4. One representative bandwidth is selected to perform PAR& frequency stability.

5G NR N66/N71 MIMO Mode

Modulation Type	Modulation	Modulation Type	Modulation
A	DFT-s-OFDM pi/2 BPSK	N/A	N/A
B	DFT-s-OFDM QPSK	F	CP-OFDM QPSK
C	DFT-s-OFDM 16QAM	G	CP-OFDM 16QAM
D	DFT-s-OFDM 64QAM	H	CP-OFDM 64QAM
E	DFT-s-OFDM 256QAM	I	CP-OFDM 256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B, C, D, E	New BW	1, Half, Full	L, M, H
EIRP	A, B, C, D, E	New BW	1, Half, Full	L, M, H
PAR	A, B, C, D, E	New BW	Outer_Full	M
Bandwidth	A,F,G,H,I	New BW	Outer_Full	M
CBE	A, B, C, D, E,F	New BW	Outer_1RB Outer_Full	L, H
CSE	B	New BW	Inner_1RB	L, M, H
Frequency Stability	A	New BW	Outer_Full	M
RSE	A	New BW	Inner_1RB	L, M, H

Remark:

1. This is a C2PC assessment. The changes are add new Bandwidth.
2. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
4. One representative bandwidth is selected to perform PAR& frequency stability.
5. For 5G NR N2/N25/N66/N71 support PC2&PC3, have the same modulation, EIRP power and BW. Therefore, the report only performed Higher Conducted power (PC2) test results.
6. For 5G NR N66/N71 MIMO Mode Modulation support CP-OFDM & DFT-s-OFDM, Therefore, the report only performed Higher Conducted power (DFT-s-OFDM) test results.

5G NR N41 MIMO Mode

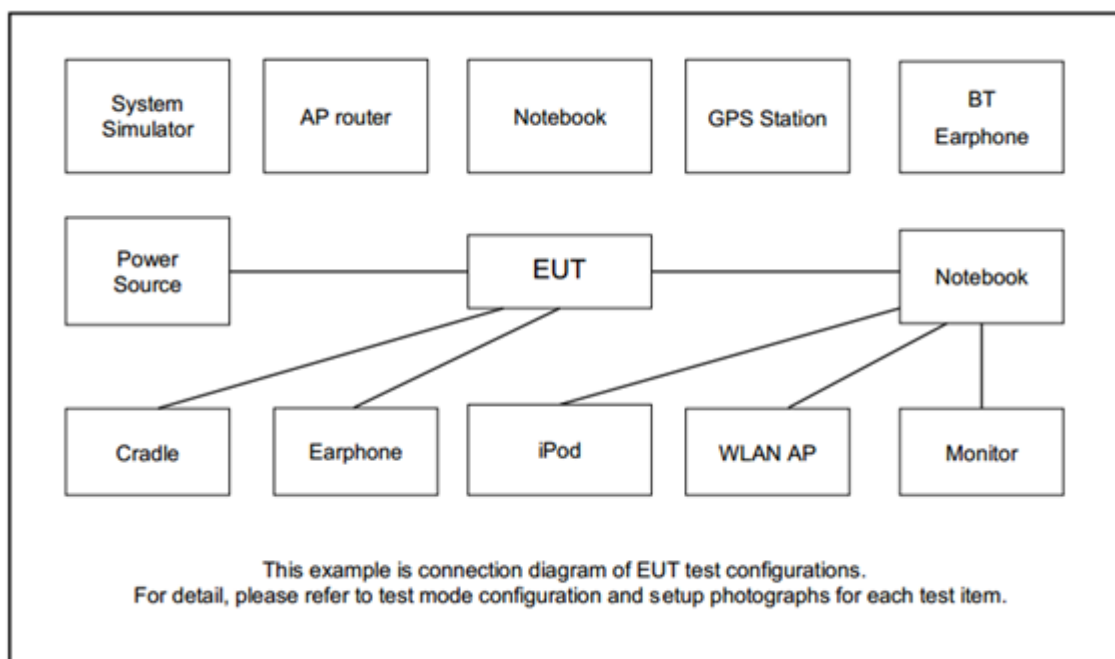
Modulation Type	Modulation	Modulation Type	Modulation
A	DFT-s-OFDM pi/2 BPSK	N/A	N/A
B	DFT-s-OFDM QPSK	F	CP-OFDM QPSK
C	DFT-s-OFDM 16QAM	G	CP-OFDM 16QAM
D	DFT-s-OFDM 64QAM	H	CP-OFDM 64QAM
E	DFT-s-OFDM 256QAM	I	CP-OFDM 256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B, C, D, E	New BW	1, Half, Full	L, M, H
EIRP	A, B, C, D, E	New BW	1, Half, Full	L, M, H
PAR	A, B, C, D, E	New BW	Outer_Full	M
Bandwidth	A,F,G,H,I	New BW	Outer_Full	M
CBE	A, B, C, D, E,F	New BW	Outer_1RB Outer_Full	L, H
CSE	B	New BW	Inner_1RB	L, M, H
Frequency Stability	A	New BW	Outer_Full	M
RSE	A	New BW	Inner_1RB	L, M, H

Remark:

1. This is a C2PC assessment. The changes are add new Bandwidth.
2. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.
4. One representative bandwidth is selected to perform PAR& frequency stability.
5. For 5G NR N41 support MIMO Mode Antenna 2+0 (Main Ant.) and Antenna 2+1&3+0&3+1(SRS Ant.);Radiated Spurious Emission is full test. Conducted test items are verified and the worst case is Antenna 2+0 ,Therefore, the report only performed Antenna 2+0 test results.
6. For 5G NR N41 support PC2&PC3&PC1.5,have the same modulation, EIRP power and BW. Therefore, the report only performed Higher Conducted power (PC1.5) test results.
7. For 5G NR N41 MIMO Mode Modulation support CP-OFDM & DFT-s-OFDM, Therefore,the report only performed Higher Conducted power (DFT-s-OFDM) test results.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$



2.5 Frequency List of Low/Middle/High Channels

5G NR n2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	374000	376000	376578
	Frequency	1870	1880	1890
35	Channel	373500	376000	378500
	Frequency	1867.5	1880	1892.5
30	Channel	373000	376000	379000
	Frequency	1865	1880	1895
25	Channel	372500	376000	379500
	Frequency	1862.5	1880	1897.5
20	Channel	372000	376000	380000
	Frequency	1860	1880	1900
15	Channel	371500	376000	380500
	Frequency	1857.5	1880	1902.5
10	Channel	371000	376000	381000
	Frequency	1855	1880	1905
5	Channel	370500	376000	381500
	Frequency	1852.5	1880	1907.5

5G NR n5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	166800	167300	167800
	Frequency	834	836.5	839
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5



5G NR n7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
50	Channel	505000	507000	509000
	Frequency	2525	2535	2545
40	Channel	504000	507000	510000
	Frequency	2520	2535	2550
35	Channel	503500	507000	510500
	Frequency	2517.5	2535	2552.5
30	Channel	503000	507000	511000
	Frequency	2515	2535	2555
25	Channel	502500	507000	511500
	Frequency	2512.5	2535	2557.5
20	Channel	502000	507000	512000
	Frequency	2510	2535	2560
15	Channel	501500	507000	512500
	Frequency	2507.5	2535	2562.5
10	Channel	501000	507000	513000
	Frequency	2505	2535	2565
5	Channel	500500	507000	513500
	Frequency	2502.5	2535	2567.5

5G NR n12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	141300	141500	141700
	Frequency	706.5	707.5	708.5
10	Channel	140800	141500	142200
	Frequency	704	707.5	711
5	Channel	140300	141500	142700
	Frequency	701.5	707.5	713.5

5G NR n13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	156400	-
	Frequency	-	782	-
5	Channel	155900	156400	156900
	Frequency	779.5	782	784.5



5G NR n14 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	158600	-
	Frequency	-	793	-
5	Channel	158100	158600	159100
	Frequency	790.5	793	795.5

5G NR n25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	374000	376500	379000
	Frequency	1870	1882.5	1895
30	Channel	373000	376500	380000
	Frequency	1865	1882.5	1900
25	Channel	372500	376500	380500
	Frequency	1862.5	1882.5	1902.5
20	Channel	372000	376500	381000
	Frequency	1860	1882.5	1905
15	Channel	371500	376500	381500
	Frequency	1857.5	1882.5	1907.5
10	Channel	371000	376500	382000
	Frequency	1855	1882.5	1910
5	Channel	370500	376500	382500
	Frequency	1852.5	1882.5	1912.5



5G NR n26 Channel and Frequency List (Part22H)				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	166800	167300	167800
	Frequency	834	836.5	839
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5

5G NR n26 Channel and Frequency List (Part90S)				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	163800	-
	Frequency	-	819	-
5	Channel	163300	163800	164300
	Frequency	816.5	819	821.5

5G NR n26 Straddle Channel and Frequency List (Part 90S)				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	-	164800	-
	Frequency	-	824	-
15	Channel	-	164800	-
	Frequency	-	824	-
10	Channel	-	164800	-
	Frequency	-	824	-
5	Channel	-	164800	-
	Frequency	-	824	-

5G NR n30 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	27710	-
	Frequency	-	2310	-
5	Channel	27685	27710	27735
	Frequency	2307.5	2310	2312.5



5G NR n38 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	518000	519000	520000
	Frequency	2590	2595	2600
30	Channel	517000	519000	521000
	Frequency	2585	2595	2605
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610
15	Channel	515500	519000	522500
	Frequency	2577.5	2595	2612.5
10	Channel	515000	519000	523000
	Frequency	2575	2595	2615



5G NR n41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
70	Channel	506202	518598	531000
	Frequency	2531.01	2592.99	2655
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
45	Channel	503700	518598	533496
	Frequency	2518.5	2592.99	2667.48
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
35	Channel	502704	518598	534498
	Frequency	2513.52	2592.99	2672.49
30	Channel	502200	518598	534996
	Frequency	2511	2592.99	2674.98
25	Channel	501702	518598	535500
	Frequency	2508.51	2592.99	2677.5
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99
15	Channel	500700	518598	536496
	Frequency	2503.5	2592.99	2682.48
10	Channel	500202	518598	537000
	Frequency	2501.01	2592.99	2685



5G NR n66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
45	Channel	346500	349000	351500
	Frequency	1732.5	1745	1757.5
40	Channel	346000	349000	352000
	Frequency	1730	1745	1760
30	Channel	345000	349000	353000
	Frequency	1725	1745	1765
20	Channel	344000	349000	354000
	Frequency	1720	1745	1770
15	Channel	343500	349000	354500
	Frequency	1717.5	1745	1772.5
10	Channel	343000	349000	355000
	Frequency	1715	1745	1775
5	Channel	342500	349000	355500
	Frequency	1712.5	1745	1777.5

G NR n70 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
15	Channel	-	340500	-
	Frequency	-	1702.5	-
10	Channel	340000	340500	341000
	Frequency	1700	1702.5	1705
5	Channel	339500	340500	341500
	Frequency	1697.5	1702.5	1707.5



5G NR n71 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
35	Channel	-	136100	-
	Frequency	-	680.5	-
30	Channel	135600	136100	136600
	Frequency	678	680.5	683
25	Channel	135100	136100	137100
	Frequency	675.5	680.5	685.5
20	Channel	134600	136100	137600
	Frequency	673	680.5	688
15	Channel	134100	136100	138100
	Frequency	670.5	680.5	690.5
10	Channel	133600	136100	138600
	Frequency	668	680.5	693
5	Channel	133100	136100	139100
	Frequency	665.5	680.5	695.5



5G NR Band n77 (Part270) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930
90	Channel	649668	656000	662332
	Frequency	3745.02	3840	3934.98
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
70	Channel	649000	656000	663000
	Frequency	3735	3840	3945
60	Channel	648668	656000	663332
	Frequency	3730.02	3840	3949.98
50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
30	Channel	647668	656000	664332
	Frequency	3715.02	3840	3965
25	Channel	647500	656000	664500
	Frequency	3712.5	3840	3967.5
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647168	656000	664832
	Frequency	3707.52	3840	3972.48
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975



5G NR n78 (Part27O) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	650000	-
	Frequency	-	3750	-
90	Channel	649668	650000	650332
	Frequency	3745.02	3750	3754.98
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
70	Channel	649000	650000	651000
	Frequency	3735	6750	3765
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
30	Channel	647668	650000	652332
	Frequency	3715.02	3750	3784.98
25	Channel	647500	650000	652500
	Frequency	3712.5	3750	3787.5
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647168	650000	652832
	Frequency	3707.52	3750	3792.48
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795



5G NR Band n77 (Part27Q) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
25	Channel	630834	633334	635832
	Frequency	3462.51	3500.01	3537.48
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540
15	Channel	630500	633334	636166
	Frequency	3457.5	3500.01	3542.49
10	Channel	630334	633334	636332
	Frequency	3455.01	3500.01	3544.98



5G NR n78 (Part27Q) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
25	Channel	630834	633334	635832
	Frequency	3462.51	3500.01	3537.48
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540
15	Channel	630500	633334	636166
	Frequency	3457.5	3500.01	3542.49
10	Channel	630334	633334	636332
	Frequency	3455.01	3500.01	3544.98

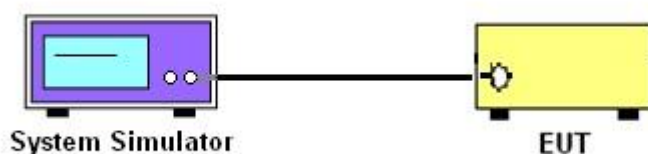
3 Conducted Test Items

3.1 Measuring Instruments

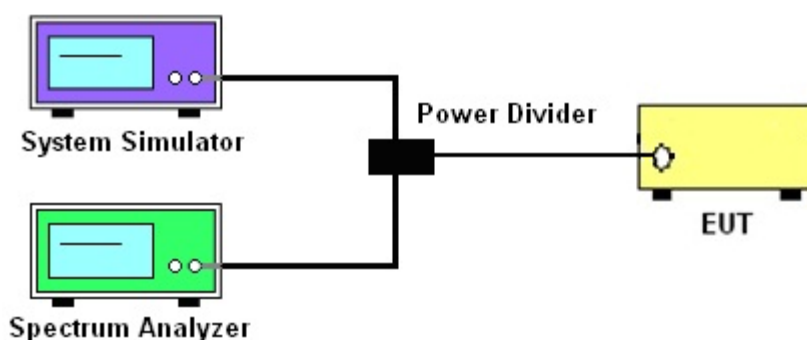
See list of measuring instruments of this test report.

3.1.1 Test Setup

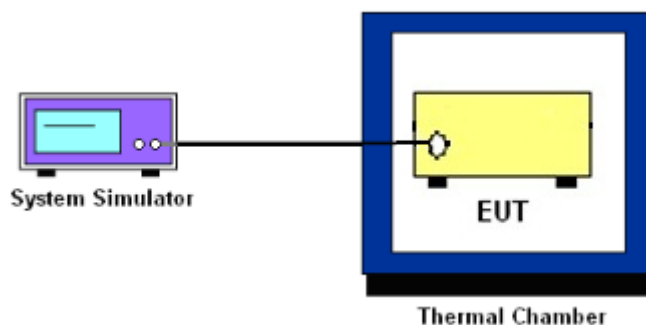
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge, Emission Mask and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power and ERP/EIRP

3.2.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of mobile transmitters must not exceed 7 Watts for 5G NR n5, n26 (Part 22H)

The power of mobile transmitters must not exceed 100 Watts for 5G NR n26 (Part 90S)

The ERP of mobile transmitters must not exceed 3 Watts for 5G NR n12, n13, n14, n71

The EIRP of mobile transmitters must not exceed 2 Watts for 5G NR n2, n25, n7, n38, n41

The EIRP of mobile transmitters must not exceed 1 Watts for 5G NR n66

The EIRP of mobile transmitters must not exceed 250mW/5MHz for 5G NR n30

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.
5. The MIMO mode is completely uncorrelated, so the directional gain is selected the maximum gain among all antennas.



3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

3.3.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.2.6

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (c)

For operations in the 776-788 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100 kHz bandwidth. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least $65 + 10 \log_{10} p(\text{watts})$, dB, for mobile and portable equipment.

27.53 (g)

For operations in the 600MHz band and 698-746 MHz band, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

27.53 (h)

For operations in the 1710 – 1755 MHz band, 1755-1780 MHz, the FCC limit is $43 + 10\log_{10}(P[\text{Watts}])$ dB below the transmitter power $P(\text{Watts})$ in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53(m)(4)

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

27.53 (a)(4)

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

- (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz.
- (ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz.
- (iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

27.53 (l)(2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

27.53 (n)(2)

For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

90.543(e)

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.



3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW $\geq$ 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For 5G NR n7, n38, n41

The other 40 dB, and 55 dB have additionally applied same calculation above.

8. For MIMO mode, add additional MIMO factor $10\log(\text{NTX}=2) = 3.01$ dB into the spectrum analyzer offset.



3.6 Emission Mask

3.6.1 Description of Emissions Mask Measurement

For 5G NR n14

Transmitters designed must meet the emission mask comply with the emission mask provisions of FCC Part 90.210(n).

For 5G NR n26

Equipment used in this licensed to EA or non-EA systems shall comply with the emission mask provisions of FCC Part 90.691

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.



3.6.2 Test Procedures

For 5G NR n14

The testing follows FCC KDB 971168 D01 v03r01 Section 6.0.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The power of the modulated signal was measured on a spectrum analyzer using an RMS and 10 second sweep time in order to maximize the level.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

For 5G NR n26

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The emissions mask of low and high channels for the highest RF powers were measured.
3. Set RBW and VBW 3 times of RBW to make the measurement with the spectrum analyzer's, and according to KDB 971168 D02 Misc Rev Approve License Devices v02r01 standards, set RBW = 300 Hz to make offsets less than 37.5 kHz from a channel edge , RBW = 100 kHz to make offsets greater than 37.5 kHz, that is allowed.
4. The test results were shown below plots with a correction offset factor including cable loss, insertion loss of power divider.



3.7 Conducted Spurious Emission

3.7.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For 5G NR n30

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $70 + 10 \log (P)$ dB.

For 5G NR n7, n38, n41

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The conducted spurious emission for the whole frequency range was taken.
4. Make the measurement with the spectrum analyzer's RBW = 100 kHz if the authorized frequency band/block is at or below 1 GHz and 1 MHz if the authorized frequency band/block is above 1 GH, VBW = 3 * RBW.
5. Set spectrum analyzer with RMS detector.
6. Taking the record of maximum spurious emission.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
For 5G NR n30
The limit line is derived from $70 + 10\log(P)$ dB below the transmitter power P(Watts)
For 5G NR n7, n38, n41
The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)
9. For MIMO mode, add additional MIMO factor $10\log(NTX=2) = 3.01$ dB into the spectrum analyzer offset.



3.8 Frequency Stability

3.8.1 Description of Frequency Stability Measurement

22.355

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

24.235 & 27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The frequency variation is sufficient to ensure that the occupied bandwidth of all operation channels stay within the operating frequency block or frequency block group.

3.8.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.8.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at $20\pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

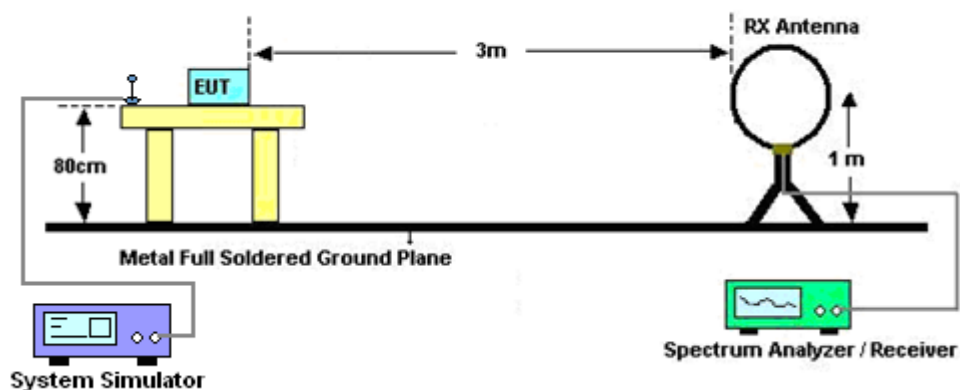
4 Radiated Test Items

4.1 Measuring Instruments

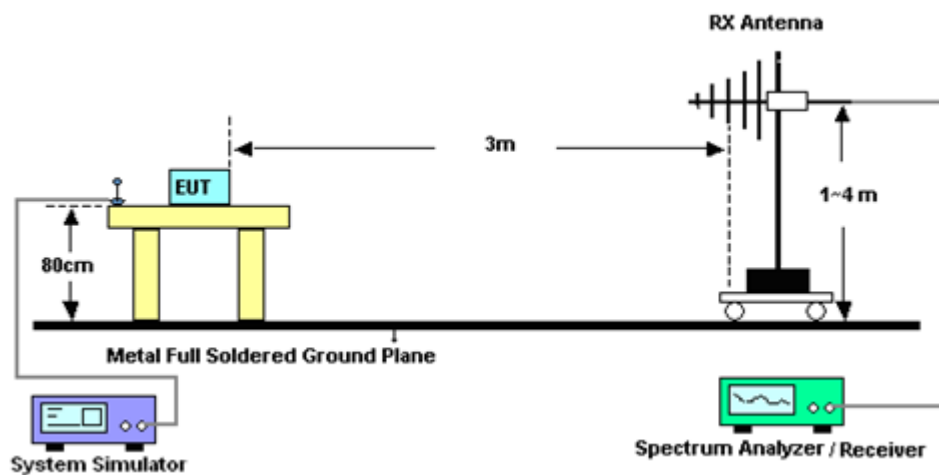
See list of measuring instruments of this test report.

4.1.1 Test Setup

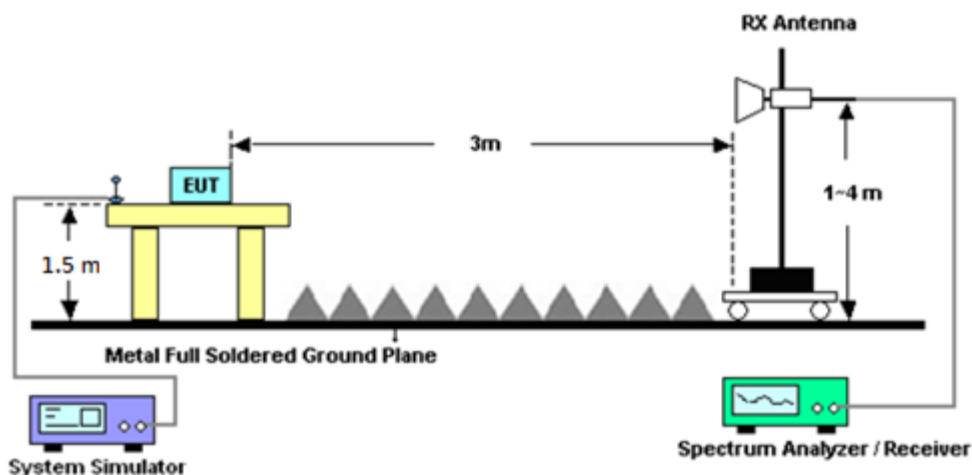
For radiated test below 30MHz



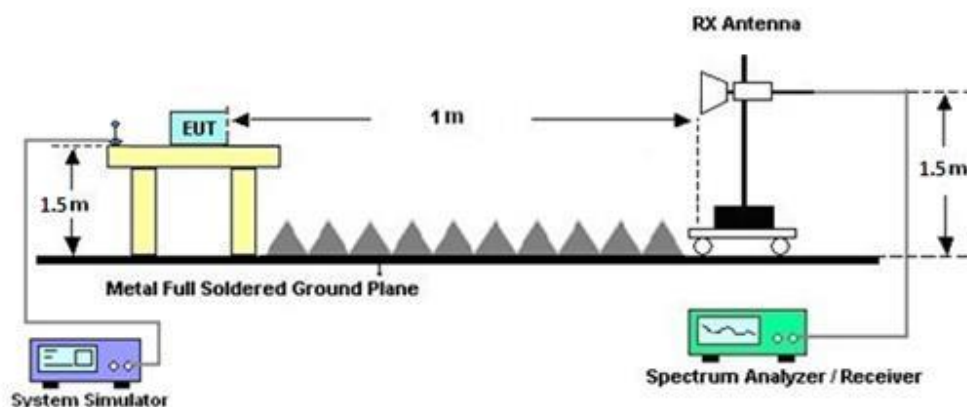
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



4.2 Radiated Spurious Emission Measurement

4.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB

For 5G NR n7, n38, n41

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

For 5G NR n13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

For 5G NR n30

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $70 + 10 \log (P)$ dB.

For 5G NR n14

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.



4.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI C63.26-2015 section 5.5.4 Radiated measurement using the field strength method.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. To convert spectrum reading E(dBuV/m) to EIRP(dBm)

$$\text{EIRP(dBm)} = \text{Level (dBuV/m)} + 20\log(d) - 104.77,$$

where d is the distance at which field strength limit is specified in the rules

7. Field Strength Level (dBm) = Spectrum Reading (dBm) + Antenna Factor + Cable Loss + Read Level - Preamp Factor.
8. ERP (dBm) = EIRP (dBm) - 2.15
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For 5G NR n30

The limit line is derived from $70 + 10\log(P)$ dB below the transmitter power P(Watts)

For 5G NR n7, n38, n41

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2E	101108	9 kHz~30 MHz	Dec. 18, 2024	Oct. 13, 2025~ Oct. 21, 2025	Dec. 17, 2025	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Nov. 27, 2024	Oct. 13, 2025~ Oct. 21, 2025	Nov. 26, 2025	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02114	1GHz~18GHz	Jul. 02, 2025	Oct. 13, 2025~ Oct. 21, 2025	Jul. 01, 2026	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1223	18GHz~40GHz	Jul. 02, 2025	Oct. 13, 2025~ Oct. 21, 2025	Jul. 01, 2026	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 19, 2025	Oct. 13, 2025~ Oct. 21, 2025	Mar. 18, 2026	Radiation (03CH12-HY)
Preamplifier	Agilent	8449B	3008A02375	1GHz~26.5GHz	Feb. 07, 2025	Oct. 13, 2025~ Oct. 21, 2025	Feb. 06, 2026	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M- 18G-56-01-A70	EC1900269	1GHz-18GHz	Dec. 19, 2024	Oct. 13, 2025~ Oct. 21, 2025	Dec. 18, 2025	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 02, 2024	Oct. 13, 2025~ Oct. 21, 2025	Dec. 01, 2025	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Sep. 09, 2025	Oct. 13, 2025~ Oct. 21, 2025	Sep. 08, 2026	Radiation (03CH12-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Sep. 08, 2025	Oct. 13, 2025~ Oct. 21, 2025	Sep. 07, 2026	Radiation (03CH12-HY)
Notch Filter	Wainwright	WLKS1200- 12SS	SN2	1.2GHz Low Pass Filter	Mar. 12, 2025	Oct. 13, 2025~ Oct. 21, 2025	Mar. 11, 2026	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX8- 5872.5-6750- 18000-40ST	SN2	6.75GHz High Pass Filter	Mar. 12, 2025	Oct. 13, 2025~ Oct. 21, 2025	Mar. 11, 2026	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX12- 2700-3000- 18000-60ST	SN2	3GHz High Pass Filter	Mar. 12, 2025	Oct. 13, 2025~ Oct. 21, 2025	Mar. 11, 2026	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 19, 2024	Oct. 13, 2025~ Oct. 21, 2025	Dec. 18, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803955/2	30MHz~40GHz	Nov. 01, 2024	Oct. 13, 2025~ Oct. 21, 2025	Oct. 31, 2025	Radiation (03CH12-HY)
RF Cable	EMCI	EMC101Y-KM- KM-100	240907	30MHz~40GHz	Nov. 14, 2024	Oct. 13, 2025~ Oct. 21, 2025	Nov. 13, 2025	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP210090	N/A	Aug. 26, 2025	Oct. 13, 2025~ Oct. 21, 2025	Aug. 25, 2026	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Oct. 13, 2025~ Oct. 21, 2025	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Oct. 13, 2025~ Oct. 21, 2025	N/A	Radiation (03CH12-HY)
5G Wireless Test Platform	Anritsu	MT8000A	6262134933	FR1	Jul. 18, 2025	Oct. 13, 2025~ Oct. 21, 2025	Jul. 17, 2026	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Oct. 13, 2025~ Oct. 21, 2025	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8- 24	RK-000989	N/A	N/A	Oct. 13, 2025~ Oct. 21, 2025	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
DC Power Supply	GW Instek	GPE2323	GET910896	0V~64V ;0A~6A	Nov. 26, 2024	Sep. 24, 2025~ Oct. 21, 2025	Nov. 25, 2025	Conducted (TH03-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101049	10Hz~44GHz	Jul. 04, 2025	Sep. 24, 2025~ Oct. 21, 2025	Jul. 03, 2026	Conducted (TH03-HY)
Temperature Chamber	ESPEC	LHU-113	1012005860	-20℃ ~85℃	Dec. 10, 2024	Sep. 24, 2025~ Oct. 21, 2025	Dec. 09, 2025	Conducted (TH03-HY)
Hygrometer	Testo	608-H1	34893241	NA	Mar. 03, 2025	Sep. 24, 2025~ Oct. 21, 2025	Mar. 02, 2026	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8000A	6261940327	FR1	Nov. 28, 2024	Sep. 24, 2025~ Oct. 21, 2025	Nov. 27, 2025	Conducted (TH03-HY)
Power divider	Anritsu	K241C	2143398	9KHz~40GHz	Jun. 13, 2025	Sep. 24, 2025~ Oct. 21, 2025	Jun. 12, 2026	Conducted (TH03-HY)
RF Cable	MVE	MCBL-LL403P.50	E80002C	9KHz~40GHz	Aug. 01, 2025	Sep. 24, 2025~ Oct. 21, 2025	Jul. 31, 2026	Conducted (TH03-HY)
Software 1	Sporton	FCC 5GNR_FSV30 44_20231106	N/A	CSE	N/A	Sep. 24, 2025~ Oct. 21, 2025	N/A	Conducted (TH03-HY)



6 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.3 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 6 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7 dB
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Uncertainty of Radiated Emission Measurement (6 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power (Average power and ERI/EIRP)

<SISO Mode>

NR n7 Maximum Average Power [dBm] (GT - LC = 8.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
50	1	1	PI/2 BPSK	23.14	23.23	23.43	31.98	1.5776		
50	1	268		23.33	23.15	23.14				
50	135	67		23.35	23.48	23.41				
50	1	0		22.59	22.70	22.84				
50	1	269		22.75	22.71	22.62				
50	270	0		22.76	22.80	22.69				
50	1	1	QPSK	23.16	23.13	23.41				
50	1	268		23.26	23.14	23.11				
50	135	67		23.37	23.37	23.31				
50	1	0		22.10	22.25	22.34				
50	1	269		22.29	22.11	22.19				
50	270	0		22.35	22.24	22.25				
50	1	1	16-QAM	22.03	22.17	22.44	30.94	1.2417		
50	1	1	64-QAM	20.90	20.89	21.00				
50	1	1	256-QAM	18.14	18.16	18.32				
Limit	EIRP < 2W			Result			Pass			

NR n41 PC2 Maximum Average Power [dBm] (GT - LC = 5.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
35	1	1	PI/2 BPSK	26.30	26.24	26.47	32.07	1.6106		
35	1	90		26.50	26.32	26.07				
35	45	22		26.57	26.54	26.40				
35	1	0		22.74	22.73	22.99				
35	1	91		23.00	22.82	22.49				
35	90	0		25.95	25.96	25.82				
35	1	1	QPSK	26.28	26.17	26.41				
35	1	90		26.46	26.28	26.03				
35	45	22		26.51	26.49	26.38				
35	1	0		22.85	22.78	23.00				
35	1	91		22.99	22.83	22.55				
35	90	0		25.49	25.44	25.33				
35	1	1	16-QAM	25.30	25.24	25.58	31.08	1.2823		
35	1	1	64-QAM	23.93	23.88	24.06				
35	1	1	256-QAM	21.60	21.67	21.86				
Limit	EIRP < 2W			Result			Pass			

NR n41 PC2 Maximum Average Power [dBm] (GT - LC = 5.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
45	1	1	PI/2 BPSK	26.27	26.27	26.49	32.15	1.6406		
45	1	117		26.65	26.39	26.21				
45	54	27		26.55	26.51	26.36				
45	1	0		22.89	22.79	23.01				
45	1	118		23.15	23.00	22.70				
45	108	0		26.06	25.97	25.90				
45	1	1	QPSK	26.27	26.27	26.49				
45	1	117		26.55	26.41	26.18				
45	54	27		26.50	26.48	26.33				
45	1	0		22.82	22.80	23.04				
45	1	118		23.04	22.92	22.68				
45	108	0		25.58	25.46	25.40				
45	1	1	16-QAM	25.40	25.43	25.70	31.20	1.3183		
45	1	1	64-QAM	23.88	23.86	24.09				
45	1	1	256-QAM	21.59	21.61	21.88				
Limit	EIRP < 2W			Result			Pass			

NR n66 Maximum Average Power [dBm] (GT - LC = 4.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
45	1	1	PI/2 BPSK	23.64	23.87	23.97	28.48	0.7047		
45	1	239		23.86	23.83	23.97				
45	120	60		23.62	23.66	23.65				
45	1	0		23.09	23.31	23.48				
45	1	238		23.89	23.87	23.89				
45	240	0		23.10	23.30	23.28				
45	1	1	QPSK	23.59	23.73	23.98				
45	1	239		23.96	23.91	23.96				
45	120	60		23.55	23.72	23.72				
45	1	0		22.70	22.75	22.99				
45	1	238		23.94	23.92	23.91				
45	240	0		22.50	22.66	22.76				
45	1	1	16-QAM	22.54	22.91	22.97	27.47	0.5585		
45	1	1	64-QAM	21.29	21.61	21.66				
45	1	1	256-QAM	18.62	18.77	18.91				
Limit	EIRP < 1W			Result			Pass			

NR n71 Maximum Average Power [dBm] (GT - LC = 8.4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
25	1	1	PI/2 BPSK	23.31	23.35	23.35	29.61	0.9141		
25	1	131		23.11	23.19	23.12				
25	64	32		23.26	23.35	23.34				
25	1	0		22.78	22.79	22.93				
25	1	132		22.70	22.58	22.62				
25	128	0		22.78	22.76	22.73				
25	1	1	QPSK	23.36	23.33	23.34				
25	1	131		23.17	23.21	23.18				
25	64	32		23.36	23.30	23.25				
25	1	0		22.47	22.34	22.39				
25	1	132		22.10	22.17	22.16				
25	128	0		22.28	22.29	22.24				
25	1	1	16-QAM	22.26	22.24	22.24	28.51	0.7096		
25	1	1	64-QAM	21.10	21.04	21.25				
25	1	1	256-QAM	18.49	18.46	18.50				
Limit	ERP < 3W			Result			Pass			

NR n71 Maximum Average Power [dBm] (GT - LC = 8.4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
30	1	1	PI/2 BPSK	23.34	23.35	23.31	29.62	0.9162		
30	1	158		23.11	23.18	23.04				
30	80	40		23.36	23.36	23.34				
30	1	0		22.92	22.85	22.87				
30	1	159		22.68	22.66	22.61				
30	160	0		22.85	22.76	22.77				
30	1	1	QPSK	23.32	23.37	23.36				
30	1	158		23.23	23.20	23.08				
30	80	40		23.31	23.35	23.32				
30	1	0		22.34	22.37	22.43				
30	1	159		22.24	22.20	22.12				
30	160	0		22.21	22.31	22.26				
30	1	1	16-QAM	22.39	22.30	22.26	28.64	0.7311		
30	1	1	64-QAM	21.13	21.11	21.12				
30	1	1	256-QAM	18.55	18.55	18.54				
Limit	ERP < 3W			Result			Pass			

NR n71 Maximum Average Power [dBm] (GT - LC = 8.4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
35	1	1	PI/2 BPSK	-	23.30	-	29.61	0.9141		
35	1	186		-	23.01	-				
35	90	45		-	23.36	-				
35	1	0		-	22.88	-				
35	1	187		-	22.59	-				
35	180	0		-	22.84	-				
35	1	1	QPSK	-	23.36	-			28.72	0.7447
35	1	186		-	23.15	-				
35	90	45		-	23.36	-				
35	1	0		-	22.35	-				
35	1	187		-	22.13	-				
35	180	0		-	22.44	-				
35	1	1	16-QAM	-	22.47	-	28.72	0.7447		
35	1	1	64-QAM	-	21.06	-				
35	1	1	256-QAM	-	18.42	-				
Limit	ERP < 3W			Result			Pass			

<MIMO Mode>

NR n7 Maximum Average Power [dBm] (GT - LC = 8.5 dB)														
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
50	1	1	QPSK	19.14	19.39	19.39	19.04	19.11	19.34	22.10	22.26	22.38	30.97	1.2503
50	1	268		19.28	19.19	19.12	19.37	19.15	19.03	22.34	22.18	22.09		
50	135	67		19.49	19.45	19.31	19.34	19.46	19.36	22.43	22.47	22.35		
50	1	0		17.61	17.76	17.94	17.71	17.70	17.85	20.67	20.74	20.91		
50	1	269		17.74	17.57	17.59	17.93	17.72	17.69	20.85	20.66	20.65		
50	270	0		17.86	17.78	17.71	17.79	17.77	17.77	20.84	20.79	20.75		
50	1	1	16-QAM	18.62	18.69	18.80	18.44	18.61	18.74	21.54	21.66	21.78	30.28	1.0666
50	1	1	64-QAM	17.33	17.51	17.56	16.92	16.96	17.23	20.14	20.25	20.41		
50	1	1	256-QAM	14.05	14.17	14.28	14.00	14.10	14.34	17.04	17.15	17.32		
Limit	EIRP < 2W			Result									Pass	

NR n41 PC1.5 Maximum Average Power [dBm] (GT - LC = 3 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			EIRP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
35	1	1	PI/2 BPSK	25.19	25.17	25.34	25.13	25.08	25.46	28.17	28.14	28.41	31.63	1.4555		
35	1	90		25.55	25.26	24.97	25.68	25.36	25.05	28.63	28.32	28.02				
35	45	22		25.54	25.51	25.28	25.52	25.62	25.48	28.54	28.58	28.39				
35	1	0		19.34	19.28	18.69	19.22	19.31	18.68	22.29	22.31	21.70				
35	1	91		19.74	19.39	19.19	19.86	19.59	19.25	22.81	22.50	22.23				
35	90	0		24.07	23.88	23.82	24.00	24.01	23.89	27.05	26.96	26.87				
35	1	1	QPSK	25.14	25.09	25.31	25.13	25.05	25.42	28.15	28.08	28.38			31.63	1.4555
35	1	90		25.49	25.25	24.93	25.62	25.36	25.05	28.57	28.32	28.00				
35	45	22		25.47	25.40	25.24	25.46	25.54	25.44	28.48	28.48	28.35				
35	1	0		18.80	18.80	19.07	18.62	18.75	19.14	21.72	21.79	22.12				
35	1	91		19.13	18.95	18.75	19.34	19.04	18.70	22.25	22.01	21.74				
35	90	0		23.58	23.40	23.25	23.45	23.51	23.37	26.53	26.47	26.32				
35	1	1	16-QAM	24.39	24.36	24.59	24.35	24.27	24.63	27.38	27.33	27.62	30.62	1.1535		
35	1	1	64-QAM	22.37	22.29	22.55	22.31	22.30	22.62	25.35	25.31	25.60				
35	1	1	256-QAM	19.50	19.60	19.79	19.53	19.50	19.90	22.53	22.56	22.86				
Limit	EIRP < 2W			Result									Pass			

NR n41 PC1.5 Maximum Average Power [dBm] (GT - LC = 3 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			EIRP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
45	1	1	PI/2 BPSK	25.28	25.23	25.59	25.23	25.14	25.37	28.27	28.20	28.49	31.75	1.4962		
45	1	117		25.64	25.40	25.05	25.83	25.50	25.14	28.75	28.46	28.11				
45	54	27		25.58	25.39	25.37	25.49	25.65	25.43	28.55	28.53	28.41				
45	1	0		19.48	19.44	18.25	19.45	19.30	18.17	22.48	22.38	21.22				
45	1	118		19.70	19.64	19.37	20.06	19.65	19.30	22.89	22.66	22.35				
45	108	0		24.19	24.03	24.04	24.06	24.04	23.97	27.14	27.05	27.02				
45	1	1	QPSK	25.29	25.19	25.47	25.21	25.09	25.35	28.26	28.15	28.42				
45	1	117		25.52	25.30	25.01	25.75	25.49	25.11	28.65	28.41	28.07				
45	54	27		25.54	25.35	25.35	25.50	25.62	25.41	28.53	28.50	28.39				
45	1	0		18.95	18.87	19.26	18.85	18.75	19.06	21.91	21.82	22.17				
45	1	118		19.22	19.13	18.80	19.51	19.27	18.81	22.38	22.21	21.82				
45	108	0		23.73	23.53	23.51	23.55	23.61	23.47	26.65	26.58	26.50				
45	1	1	16-QAM	24.53	24.42	24.66	24.56	24.33	24.58	27.56	27.39	27.63	30.63	1.1561		
45	1	1	64-QAM	22.46	22.48	22.62	22.37	22.23	22.62	25.43	25.37	25.63				
45	1	1	256-QAM	19.66	19.66	19.97	19.65	19.54	19.89	22.67	22.61	22.94				
Limit	EIRP < 2W			Result									Pass			

NR n66 PC2 Maximum Average Power [dBm] (GT - LC = 1.5 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			EIRP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
45	1	1	PI/2 BPSK	23.58	23.77	23.91	23.89	23.94	23.92	26.75	26.87	26.93	28.44	0.6982		
45	1	239		23.83	23.82	23.84	23.85	23.89	24.02	26.85	26.87	26.94				
45	120	60		23.52	23.63	23.59	23.56	23.70	23.68	26.55	26.68	26.65				
45	1	0		20.19	20.24	20.41	20.44	20.57	20.49	23.33	23.42	23.46				
45	1	238		23.88	23.83	23.82	23.79	23.83	24.01	26.85	26.84	26.93				
45	240	0		22.59	22.59	22.60	22.63	22.62	22.66	25.62	25.62	25.64				
45	1	1	QPSK	23.09	23.30	23.39	23.44	23.49	23.46	26.28	26.41	26.44				
45	1	239		23.35	23.32	23.41	23.40	23.34	23.53	26.39	26.34	26.48				
45	120	60		22.96	23.09	23.13	23.10	23.12	23.18	26.04	26.12	26.17				
45	1	0		20.12	20.38	20.44	20.48	20.56	20.49	23.31	23.48	23.48				
45	1	238		23.35	23.29	23.33	23.35	23.33	23.61	26.36	26.32	26.48				
45	240	0		21.45	21.62	21.60	21.61	21.63	21.67	24.54	24.64	24.65				
45	1	1	16-QAM	22.11	22.23	22.42	22.42	22.48	22.52	25.28	25.37	25.48	26.98	0.4989		
45	1	1	64-QAM	20.75	20.88	21.09	20.97	21.19	21.14	23.87	24.05	24.13				
45	1	1	256-QAM	17.45	17.75	17.89	17.81	17.87	17.95	20.64	20.82	20.93				
Limit	EIRP < 1W			Result									Pass			

NR n71 PC2 Maximum Average Power [dBm] (GT - LC = 5.4 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			ERP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
25	1	1	PI/2 BPSK	23.33	23.25	23.39	23.40	23.51	23.65	26.38	26.39	26.53	29.80	0.9550		
25	1	131		23.06	23.06	23.15	23.49	23.59	23.61	26.29	26.34	26.40				
25	64	32		23.38	23.25	23.33	23.69	23.76	23.71	26.55	26.52	26.53				
25	1	0		21.00	20.76	20.92	20.59	20.99	21.06	23.81	23.89	24.00				
25	1	132		20.79	20.67	20.67	20.79	21.06	21.03	23.80	23.88	23.86				
25	128	0		22.71	22.67	22.77	23.06	23.11	23.24	25.90	25.91	26.02				
25	1	1	QPSK	23.41	23.27	23.26	23.46	23.48	23.59	26.45	26.39	26.44			29.80	0.9550
25	1	131		23.19	23.09	23.11	23.64	23.62	23.53	26.43	26.37	26.34				
25	64	32		23.36	23.22	23.27	23.65	23.67	23.72	26.52	26.46	26.51				
25	1	0		21.03	20.90	21.01	21.00	21.03	21.16	24.03	23.98	24.10				
25	1	132		20.83	20.74	20.83	21.13	21.18	21.18	23.99	23.98	24.02				
25	128	0		22.26	22.18	22.27	22.51	22.65	22.73	25.40	25.43	25.52				
25	1	1	16-QAM	22.35	22.16	22.18	22.40	22.38	22.60	25.39	25.28	25.41	28.66	0.7345		
25	1	1	64-QAM	21.11	21.04	21.14	21.09	21.09	21.31	24.11	24.08	24.24				
25	1	1	256-QAM	18.52	18.47	18.53	18.56	18.61	18.86	21.55	21.55	21.71				
Limit	ERP < 3W			Result									Pass			

NR n71 PC2 Maximum Average Power [dBm] (GT - LC = 5.4 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			ERP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
30	1	1	PI/2 BPSK	23.40	23.34	23.32	23.41	23.40	23.50	26.42	26.38	26.42	29.79	0.9528		
30	1	158		23.10	23.02	23.17	23.60	23.52	23.58	26.37	26.29	26.39				
30	80	40		23.31	23.34	23.31	23.74	23.70	23.73	26.54	26.53	26.54				
30	1	0		20.86	20.95	20.96	20.99	21.05	21.03	23.94	24.01	24.01				
30	1	159		20.65	20.81	20.74	21.13	21.16	21.12	23.91	24.00	23.94				
30	160	0		22.78	22.72	22.68	23.12	23.08	23.14	25.96	25.91	25.93				
30	1	1	QPSK	23.37	23.34	23.35	23.48	23.52	23.47	26.44	26.44	26.42			29.79	0.9528
30	1	158		23.17	23.15	23.15	23.71	23.71	23.56	26.46	26.45	26.37				
30	80	40		23.26	23.27	23.25	23.70	23.72	23.74	26.50	26.51	26.51				
30	1	0		21.09	20.90	20.89	21.01	21.02	20.92	24.06	23.97	23.92				
30	1	159		20.78	20.71	20.72	21.17	21.22	21.01	23.99	23.98	23.88				
30	160	0		22.29	22.25	22.21	22.65	22.61	22.66	25.48	25.44	25.45				
30	1	1	16-QAM	22.30	22.20	22.23	22.39	22.38	22.41	25.36	25.30	25.33	28.61	0.7261		
30	1	1	64-QAM	21.10	21.07	21.13	21.19	21.16	21.18	24.16	24.13	24.17				
30	1	1	256-QAM	18.50	18.39	18.46	18.57	18.58	18.58	21.55	21.50	21.53				
Limit	ERP < 3W			Result									Pass			

NR n71 PC2 Maximum Average Power [dBm] (GT - LC = 5.4 dB)																
BW	RB	RB	Mod	Antenna 2			Antenna 0			Combine			ERP	EIRP		
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)		
35	1	1	PI/2 BPSK	-	23.35	-	-	23.40	-	-	26.39	-	29.79	0.9528		
35	1	186		-	23.01	-	-	23.42	-	-	26.23	-				
35	90	45		-	23.25	-	-	23.79	-	-	26.54	-				
35	1	0		-	20.91	-	-	20.84	-	-	23.89	-				
35	1	187		-	20.63	-	-	20.93	-	-	23.79	-				
35	180	0		-	22.81	-	-	23.33	-	-	26.09	-				
35	1	1	QPSK	-	23.37	-	-	23.40	-	-	26.40	-			29.79	0.9528
35	1	186		-	23.14	-	-	23.54	-	-	26.35	-				
35	90	45		-	23.29	-	-	23.75	-	-	26.54	-				
35	1	0		-	21.01	-	-	20.95	-	-	23.99	-				
35	1	187		-	20.73	-	-	21.08	-	-	23.92	-				
35	180	0		-	22.27	-	-	22.57	-	-	25.43	-				
35	1	1	16-QAM	-	22.20	-	-	22.33	-	-	25.28	-	28.53	0.7129		
35	1	1	64-QAM	-	21.01	-	-	21.14	-	-	24.09	-				
35	1	1	256-QAM	-	18.41	-	-	18.60	-	-	21.52	-				
Limit	ERP < 3W			Result									Pass			

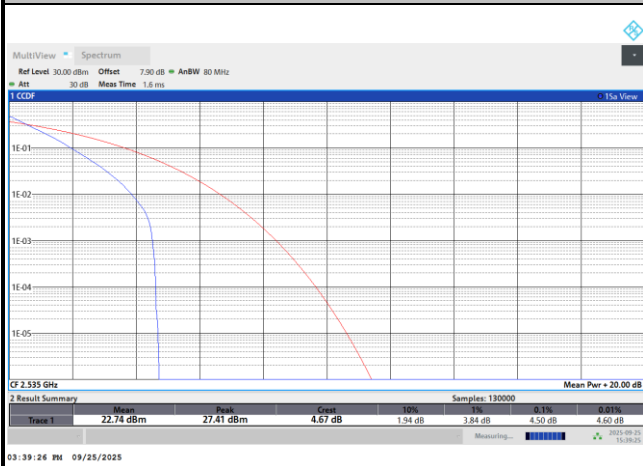
**FR1 n7****<SISO Mode>****Peak-to-Average Ratio**

Mode	FR1 n7 / 50MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	QPSK	16QAM	64QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.50	4.98	5.46	5.96	PASS
Mode	FR1 n7 / 50MHz / DFT-S OFDM				
Mod.	256QAM				Limit: 13dB
RB Size	Full RB				Result
Middle CH	6.70				PASS

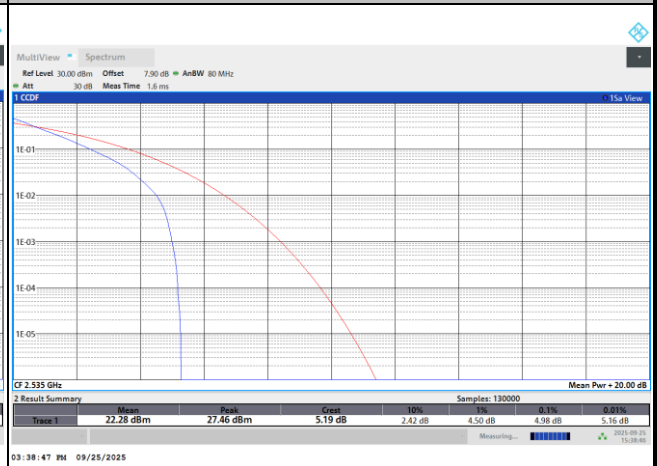


FR1 n7 / 50MHz / DFT-S OFDM / Middle Channel / Full RB

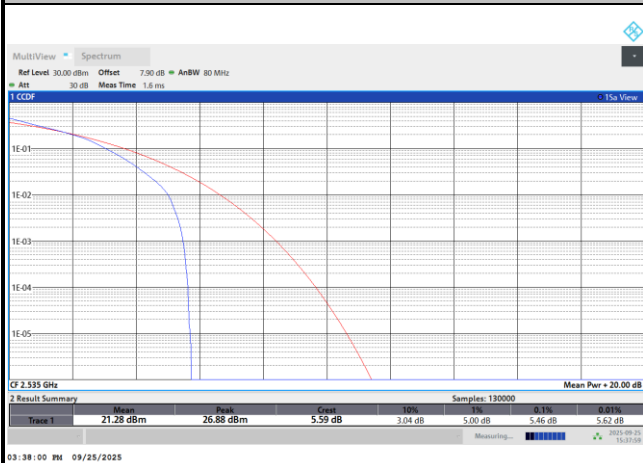
PI/2 BPSK



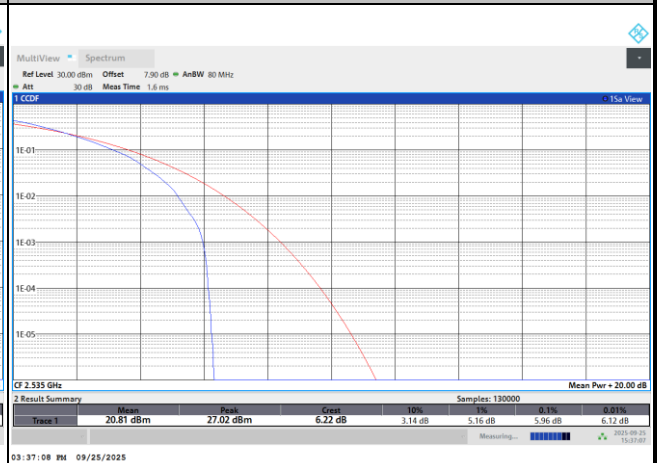
QPSK



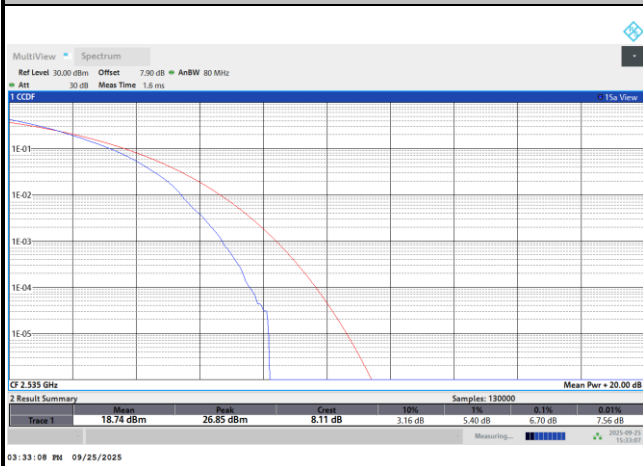
16QAM



64QAM



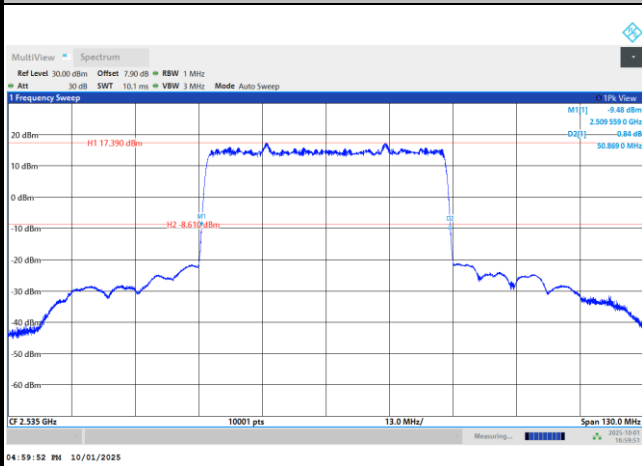
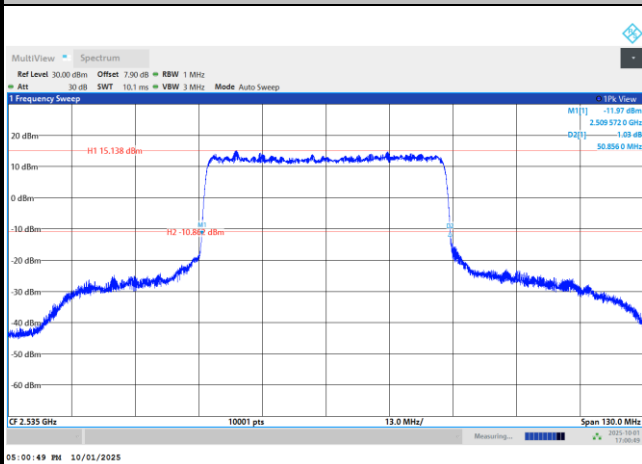
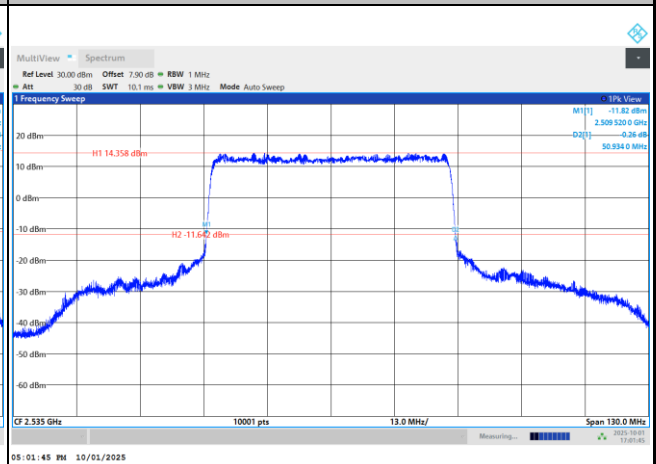
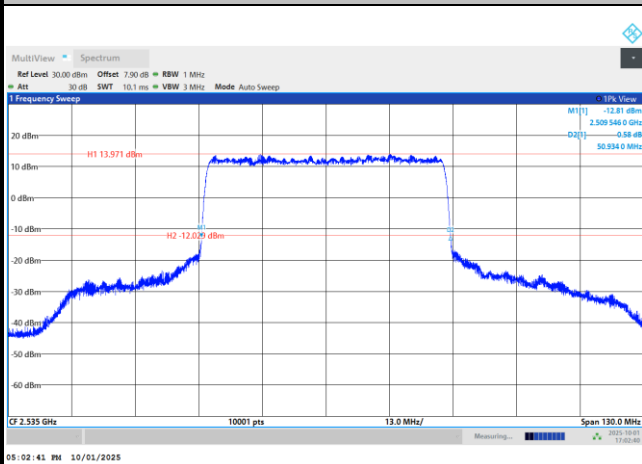
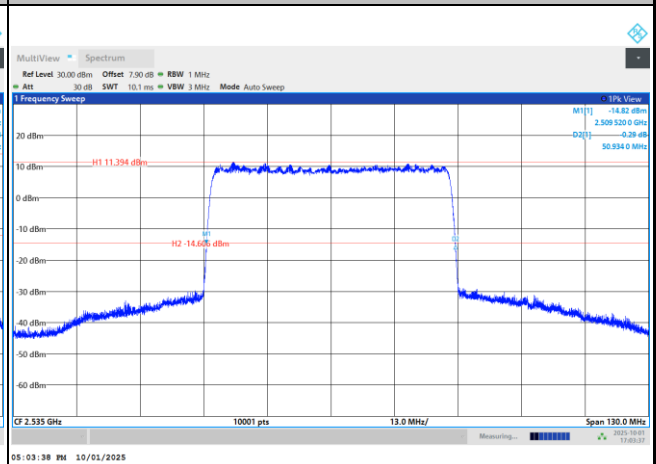
256QAM



**26dB Bandwidth**

Mode	FR1 n7 : 26dB BW(MHz) / DFT-S OFDM							
BW	50MHz							
Mod.	PI/2 BPSK							
Middle CH	50.86							

Mode	FR1 n7 : 26dB BW(MHz) / CP OFDM							
BW	5MHz		10MHz		15MHz		20MHz	
BW	50MHz							
Mod.	QPSK	16QAM						
Middle CH	50.85	50.93						
Mod.	64QAM	256QAM						
Middle CH	50.93	50.93						

FR1 n7 / 50MHz / DFT-S OFDM / Middle Channel / Full RB
PI/2 BPSK

FR1 n7 / 50MHz / CP OFDM / Middle Channel / Full RB
QPSK

16QAM

64QAM

256QAM


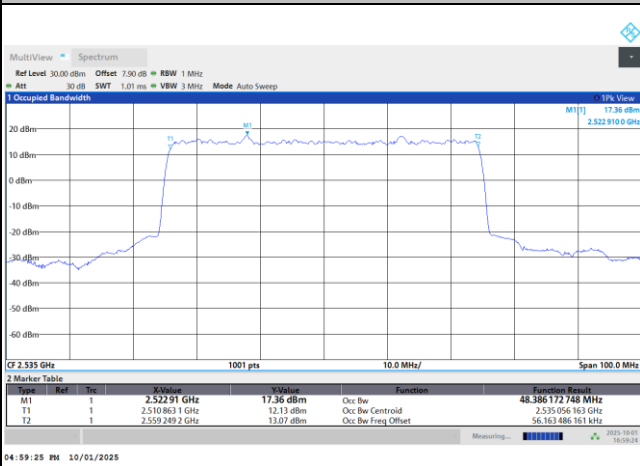
**Occupied Bandwidth**

Mode	FR1 n7 : OB BW(MHz) / DFT-S OFDM							
BW	50MHz							
Mod.	PI/2 BPSK							
Middle CH	48.38							

Mode	FR1 n7 : OB BW(MHz) / CP OFDM							
BW	50MHz							
Mod.	QPSK	16QAM						
Middle CH	48.35	48.40						
Mod.	64QAM	256QAM						
Middle CH	48.33	48.31						

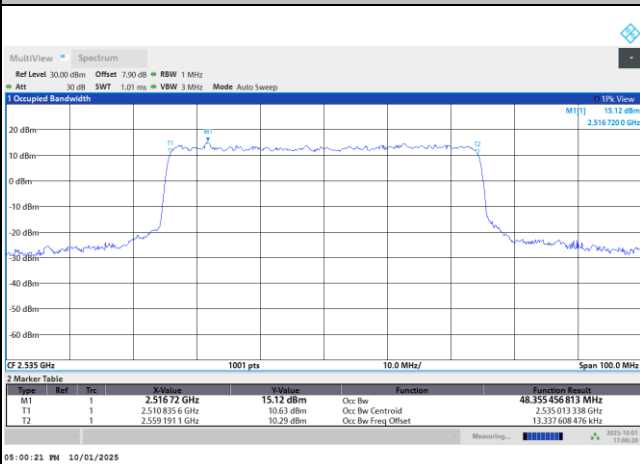
FR1 n7 / 50MHz / DFT-S OFDM / Middle Channel / Full RB

PI/2 BPSK

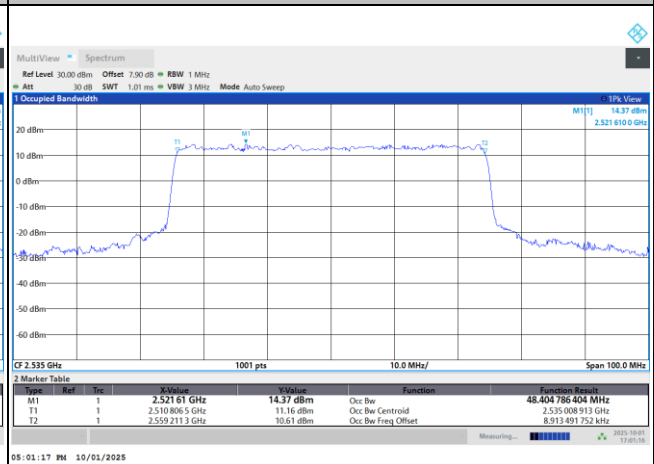


FR1 n7 / 50MHz / CP OFDM / Middle Channel / Full RB

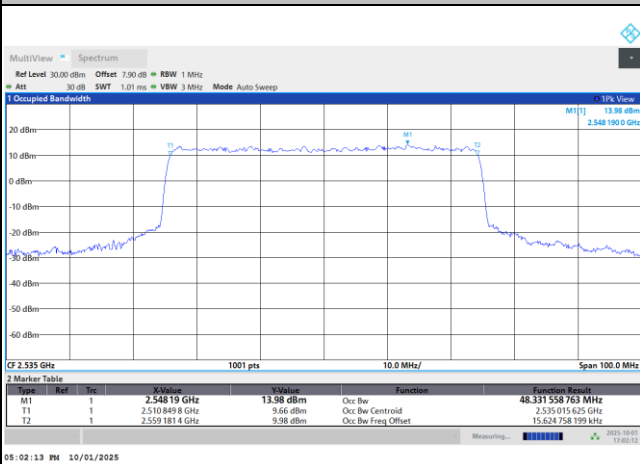
QPSK



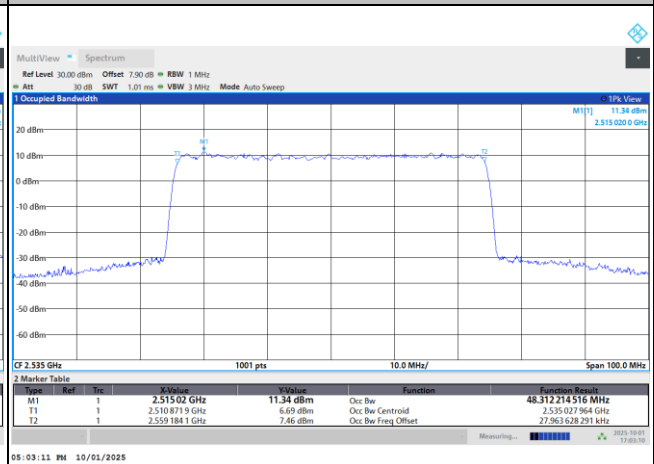
16QAM



64QAM

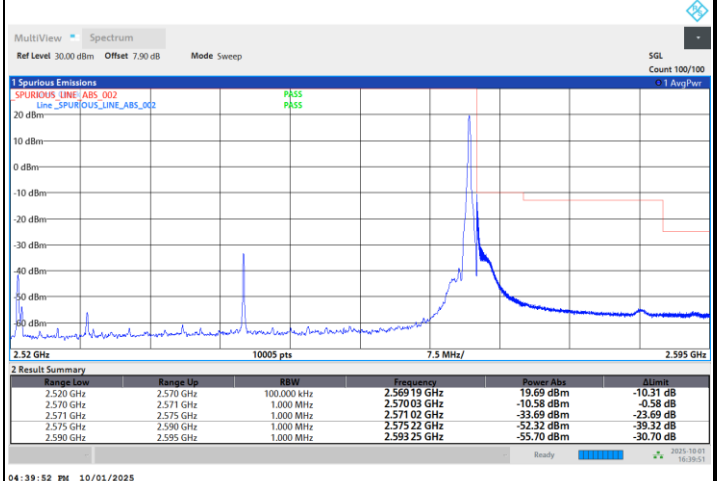
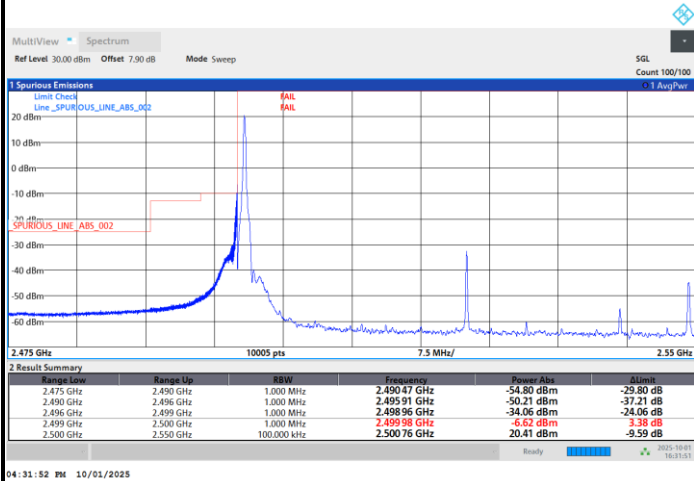


256QAM



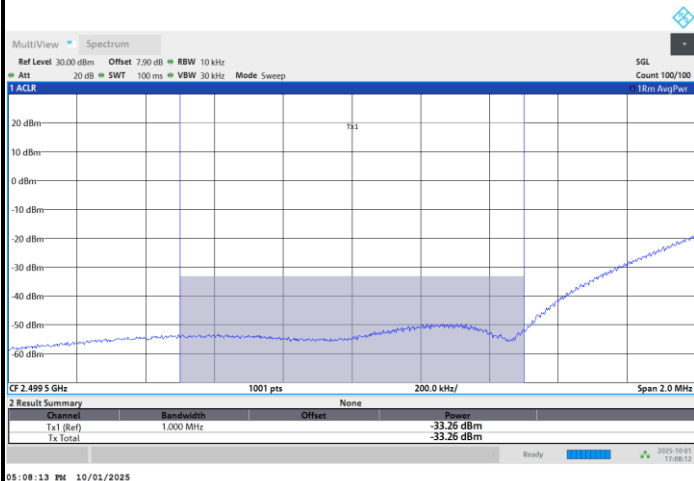
**Conducted Band Edge**

FR1 n7 / 50MHz / DFT-S OFDM / PI/2 BPSK

Lowest Band Edge / 1RB0**Highest Band Edge / 1RBmax****Lowest Channel 1RB0**

Channel power -13dBm > -33.26dBm (PASS)

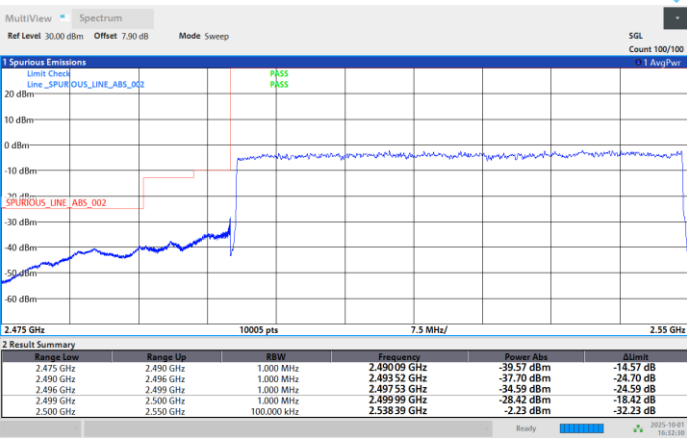
NA



NA

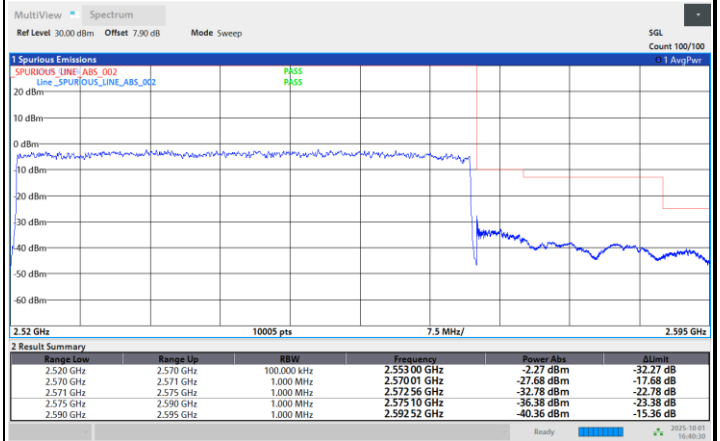


Lowest Band Edge / Full RB



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Highest Band Edge / Full RB



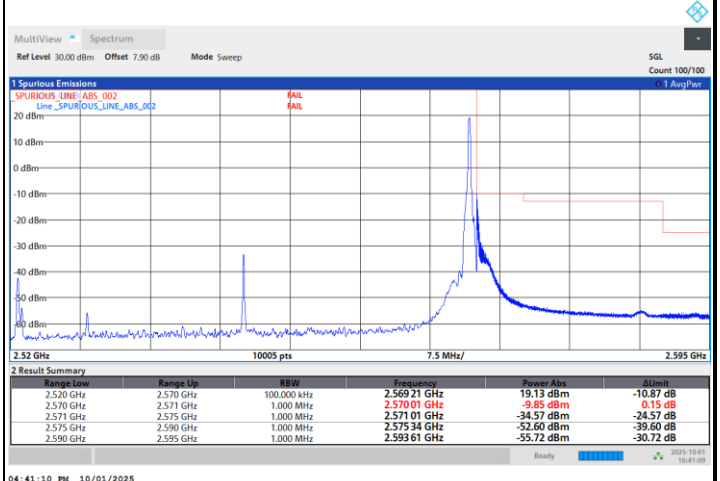
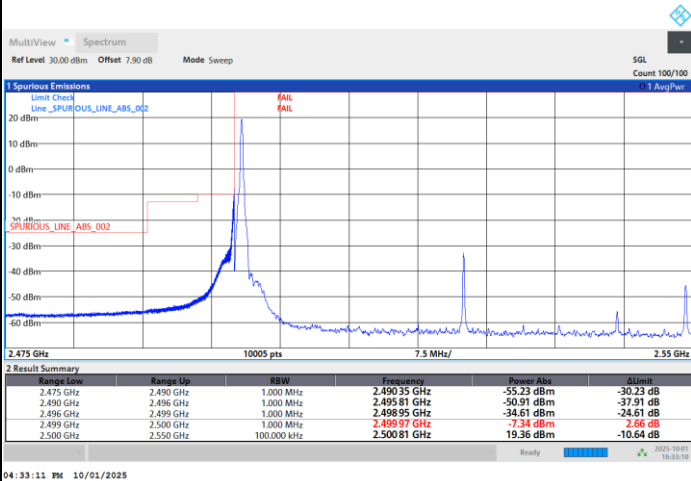
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FR1 n7 / 50MHz / DFT-S OFDM / QPSK

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax

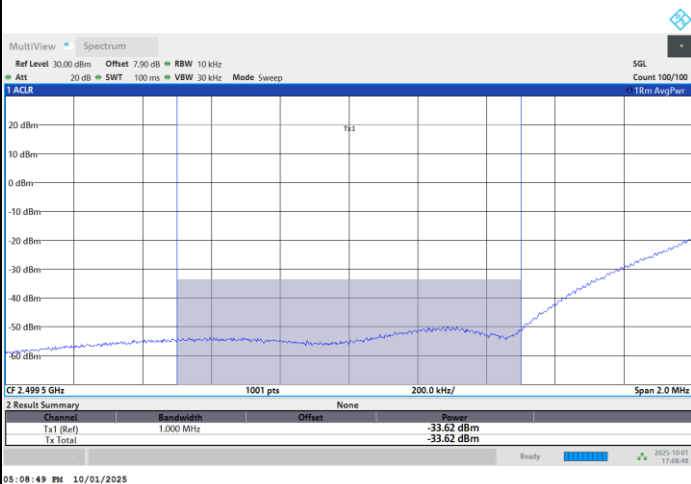


Lowest Channel 1RB0

Channel power -13dBm > -33.62dBm (PASS)

Highest Channel 1RBmax

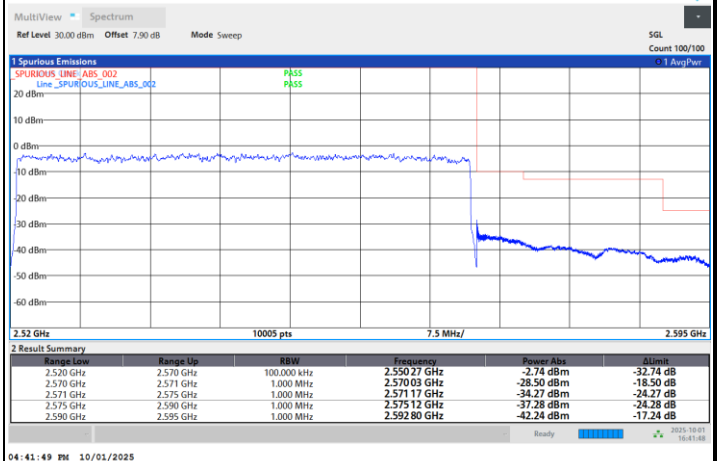
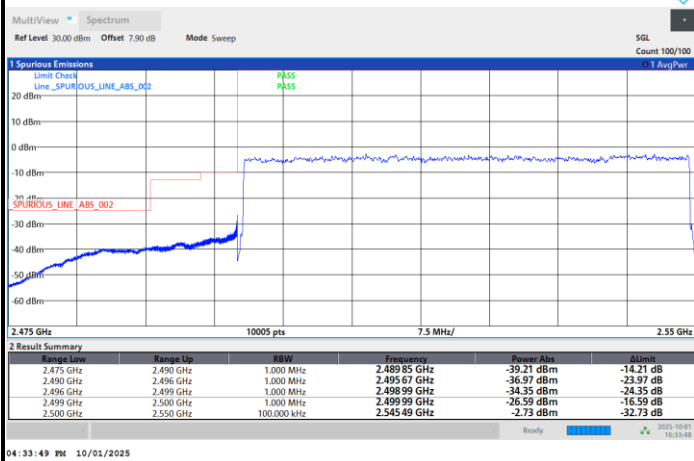
Channel power -13dBm > -34.10dBm (PASS)





Lowest Band Edge / Full RB

Highest Band Edge / Full RB

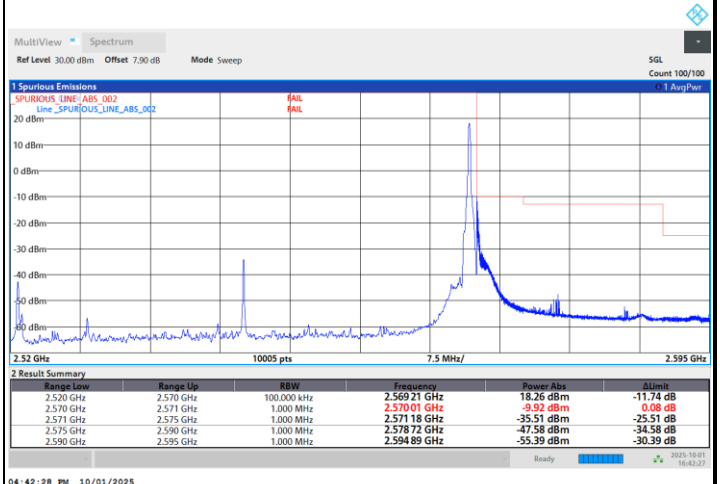
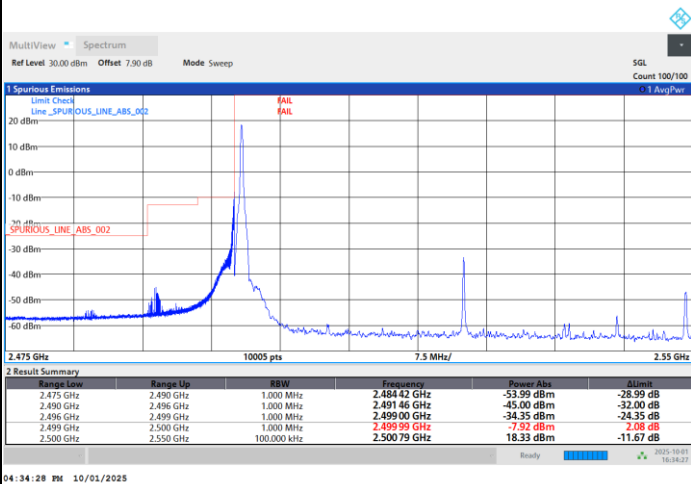




FR1 n7 / 50MHz / DFT-S OFDM / 16QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax

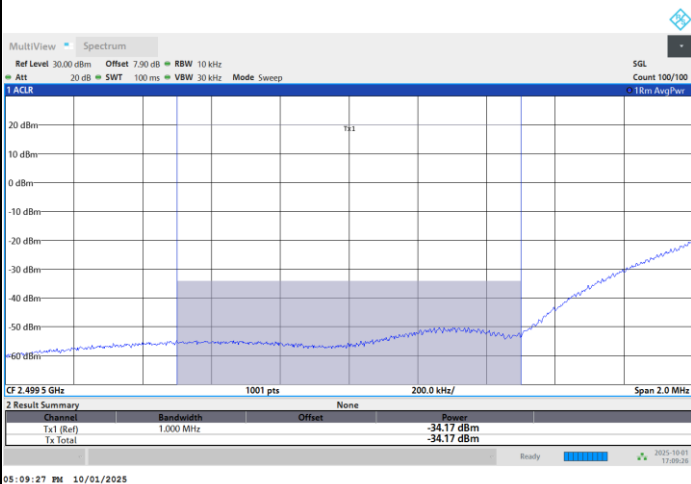


Lowest Channel 1RB0

Channel power -13dBm > -34.17dBm (PASS)

Highest Channel 1RBmax

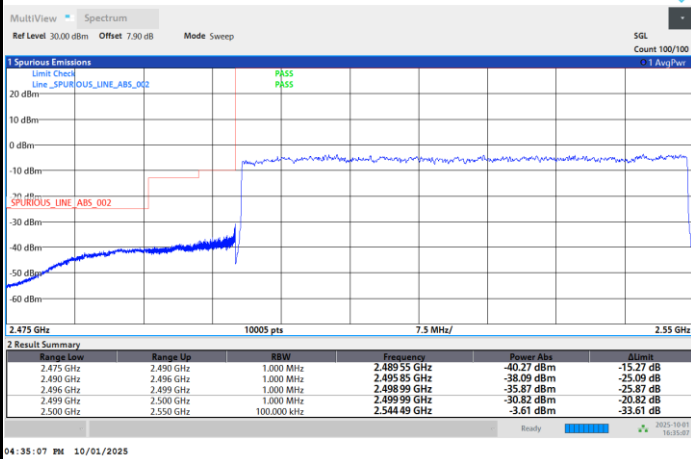
Channel power -13dBm > -34.77dBm (PASS)



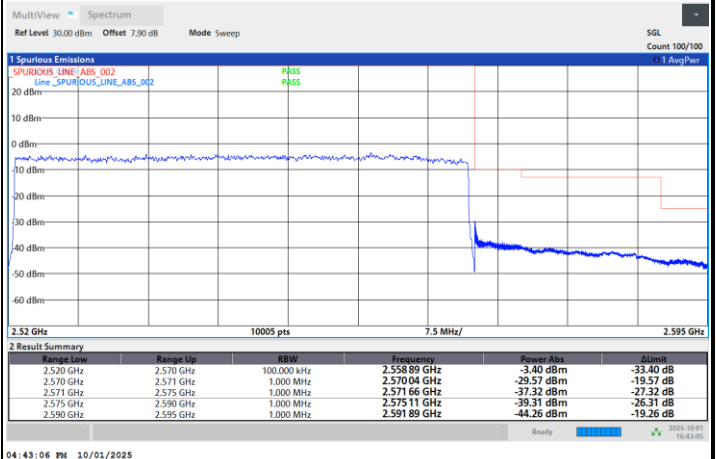


Lowest Band Edge / Full RB

Highest Band Edge / Full RB



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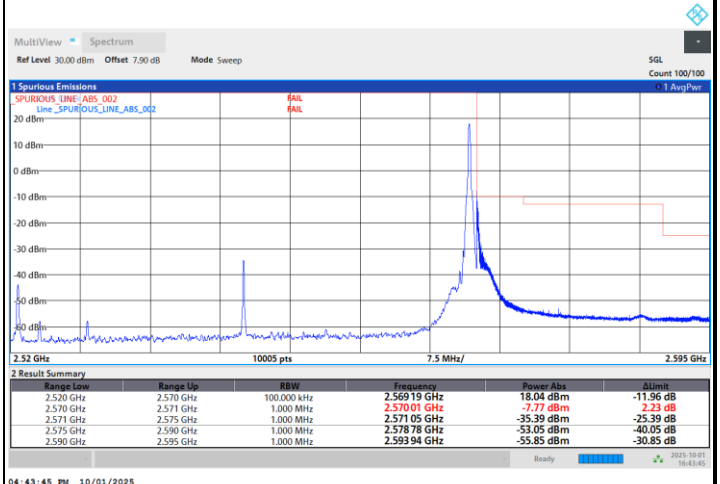
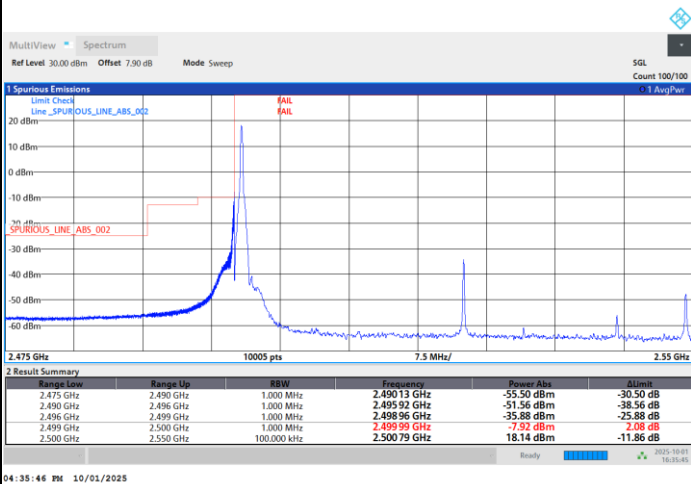
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FR1 n7 / 50MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax

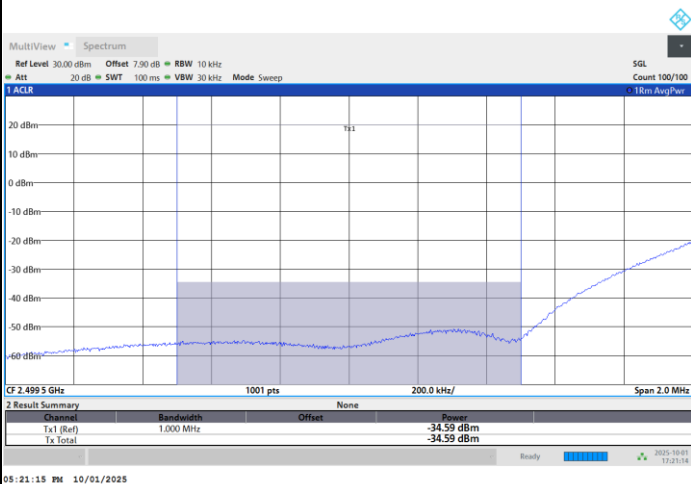


Lowest Channel 1RB0

Channel power -13dBm > -34.59dBm (PASS)

Highest Channel 1RBmax

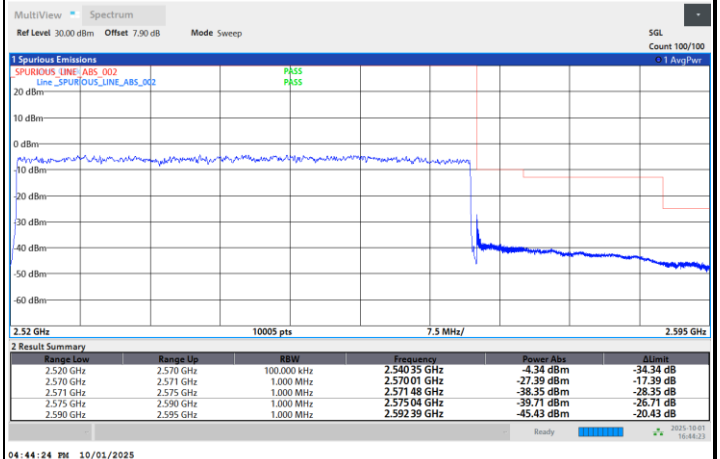
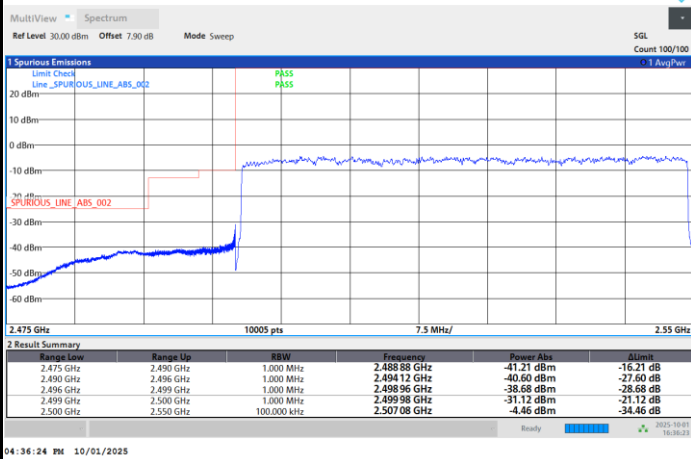
Channel power -13dBm > -34.43dBm (PASS)





Lowest Band Edge / Full RB

Highest Band Edge / Full RB

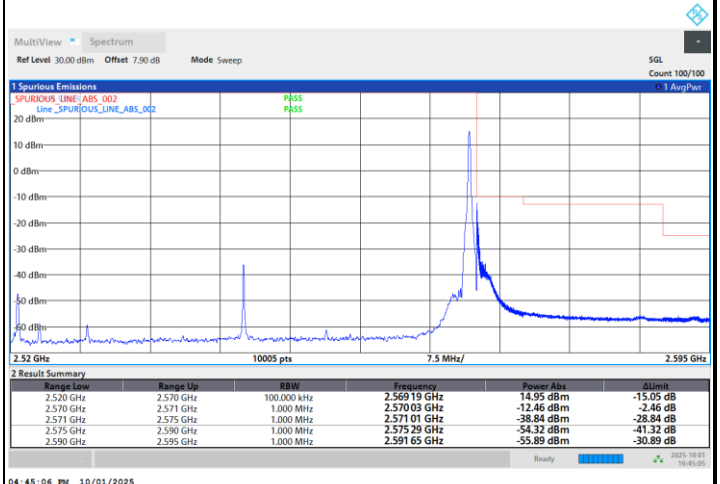
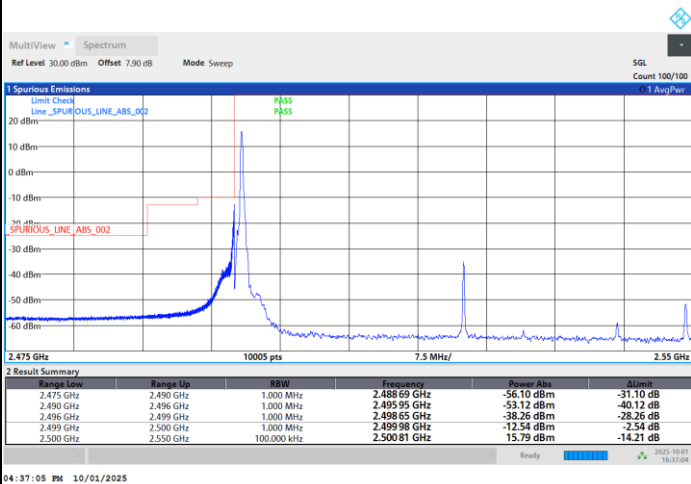




FR1 n7 / 50MHz / DFT-S OFDM / 256QAM

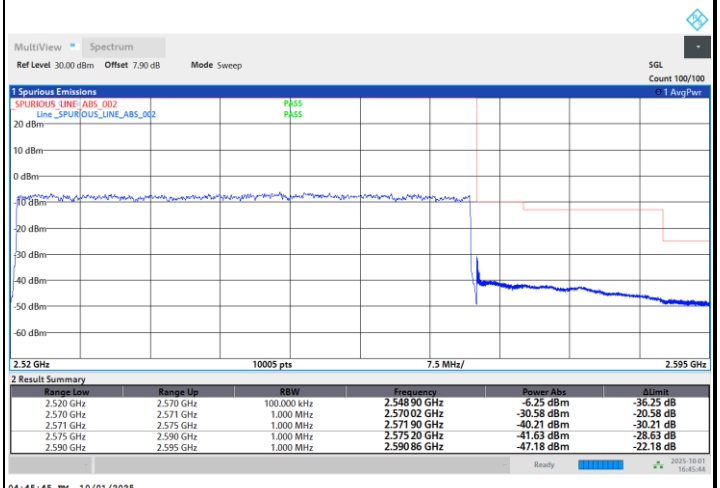
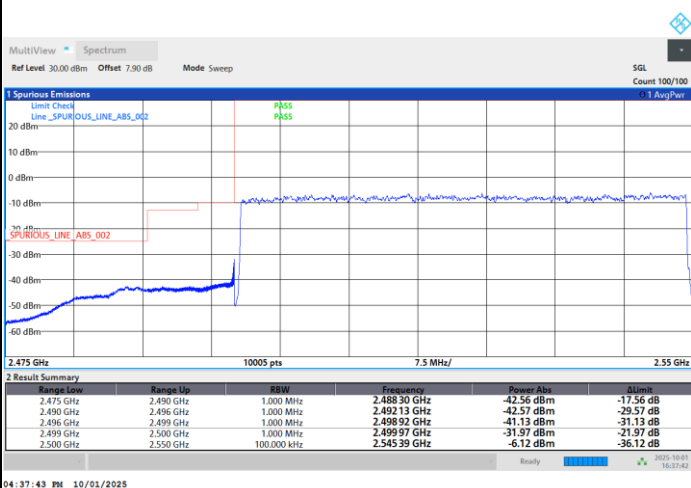
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

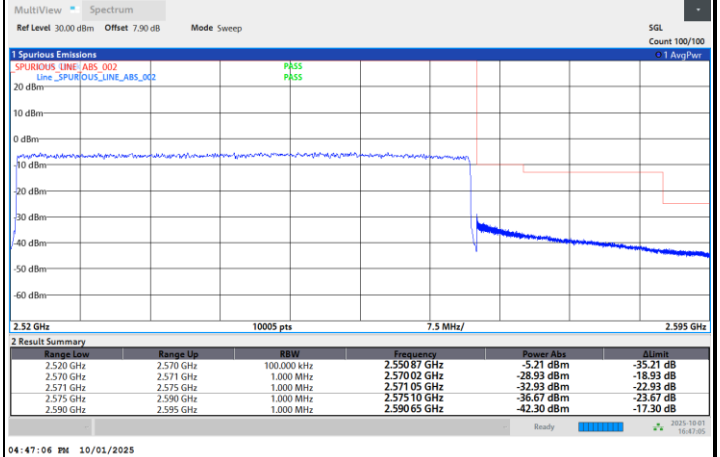
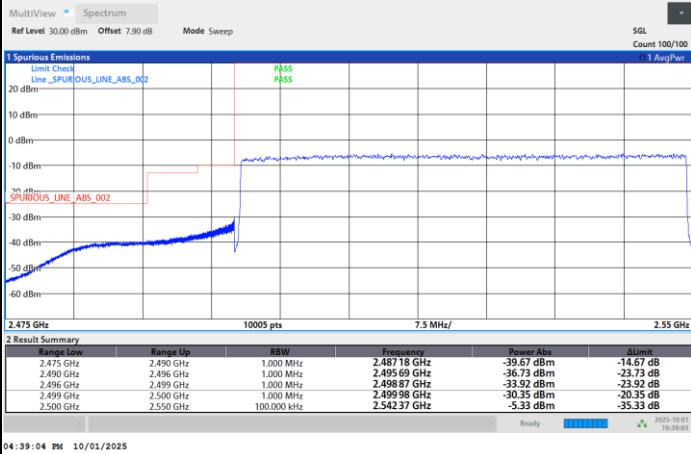




FR1 n7 / 50MHz / CP OFDM / QPSK

Lowest Band Edge / Full RB

Highest Band Edge / Full RB

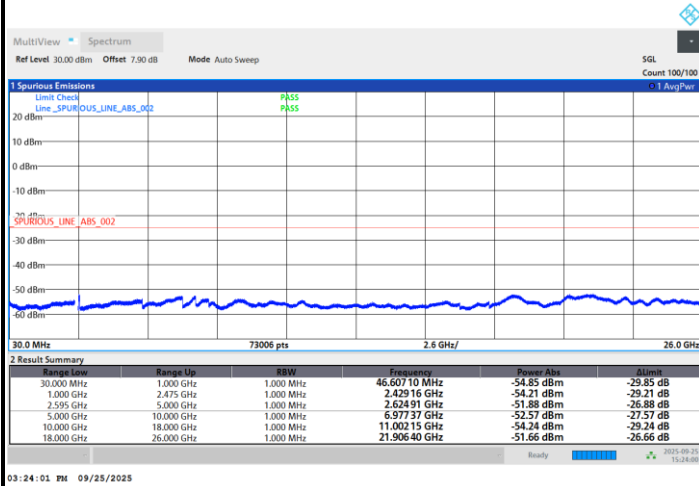




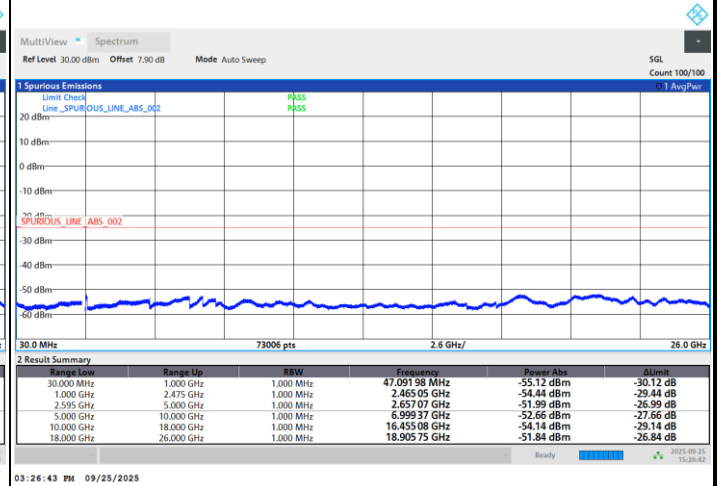
Conducted Spurious Emission

FR1 n7 / 50MHz / DFT-S OFDM / QPSK / 1RB1

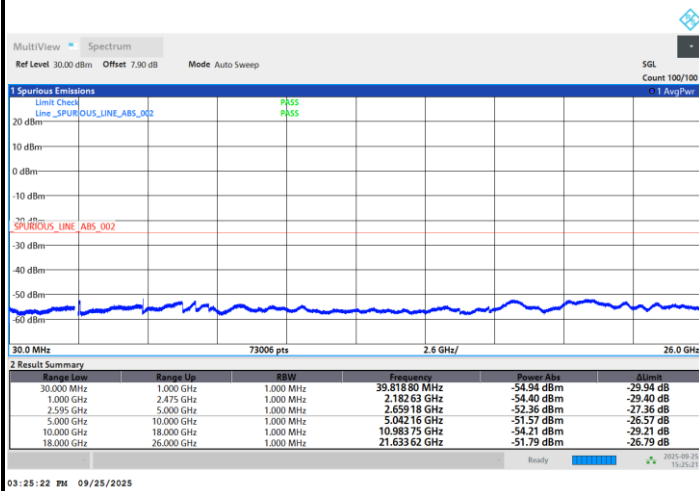
Lowest Channel



Middle Channel



Highest Channel



**Frequency Stability**

Test Conditions		FR1 n7 (BPSK) / Middle Channel 50M			
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Frequency Offset (Δf) (Hz)	Within Authorized Frequency Block(Hz)	Result
50	Normal Voltage	0.0031	-7.9	Yes	PASS
40	Normal Voltage	0.0028	7.2	Yes	
30	Normal Voltage	0.0010	-2.5	Yes	
20(Ref.)	Normal Voltage	0.0000	0	Yes	
10	Normal Voltage	0.0017	4.2	Yes	
0	Normal Voltage	0.0017	4.3	Yes	
-10	Normal Voltage	0.0017	4.3	Yes	
-20	Normal Voltage	0.0015	3.8	Yes	
-30	Normal Voltage	0.0044	-11.1	Yes	
20	Maximum Voltage	0.0030	7.5	Yes	
20	Normal Voltage	0.0024	6.1	Yes	
20	Minimum Voltage	0.0036	-9.1	Yes	

Note:

1. Normal Voltage = 3.8 V. ; Minimum Voltage = 3.4 V. ; Maximum Voltage = 4.2 V.
2. The frequency fundamental emissions stay within the authorized frequency block.
3. The frequency variation is sufficient to ensure that the occupied bandwidth of all operation channels stay within the operating frequency block or frequency block group.

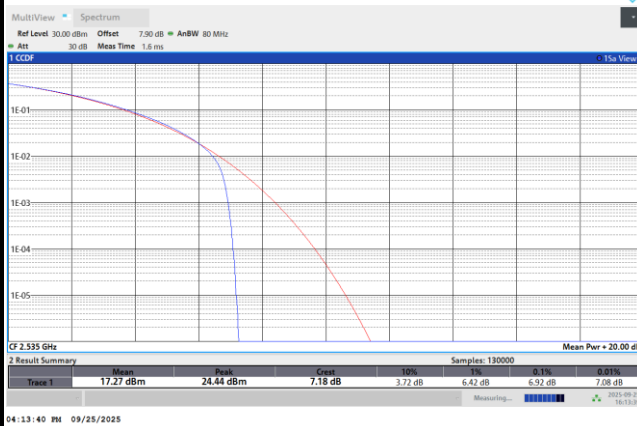
**FR1 n7****MIMO <Ant. 2+0> (Ant. 2)****Peak-to-Average Ratio**

Mode	FR1 n7 / 50MHz / CP OFDM				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	6.92	7.10	7.54	8.64	PASS

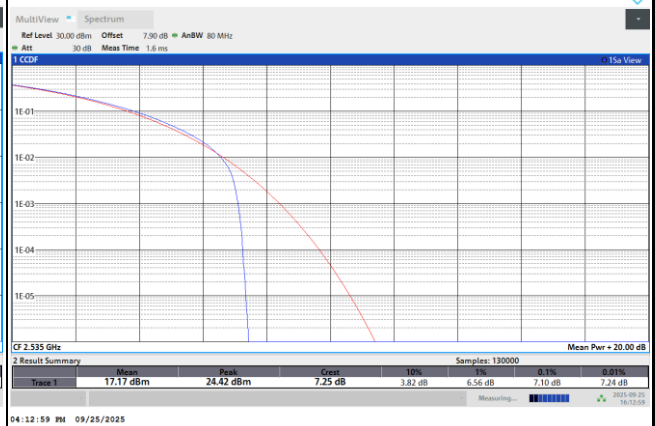


FR1 n7 / 50MHz / CP OFDM / Middle Channel / Full RB

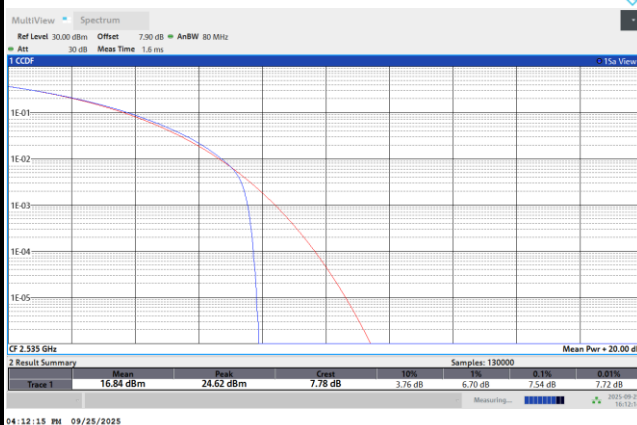
QPSK



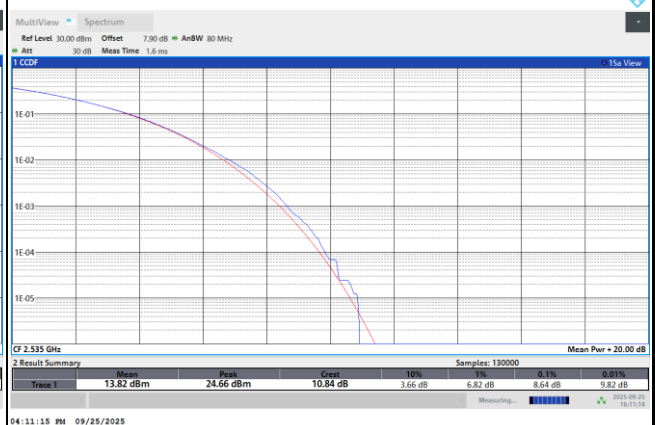
16QAM



64QAM



256QAM



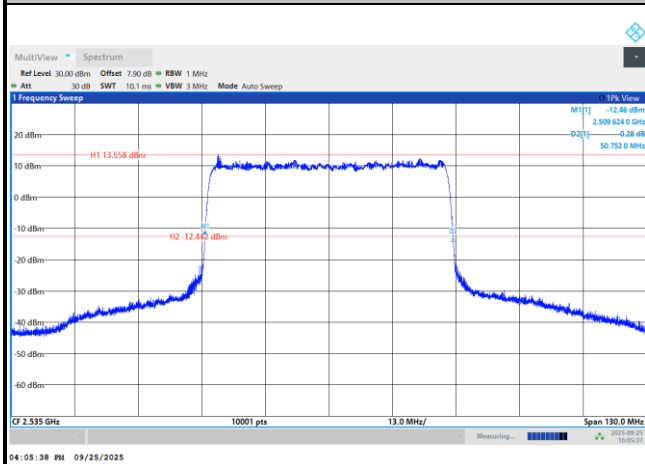
**26dB Bandwidth**

Mode	FR1 n7 : 26dB BW(MHz) / CP OFDM							
BW	50MHz							
Mod.	QPSK	16QAM						
Middle CH	50.75	50.84						
Mod.	64QAM	256QAM						
Middle CH	50.86	50.88						



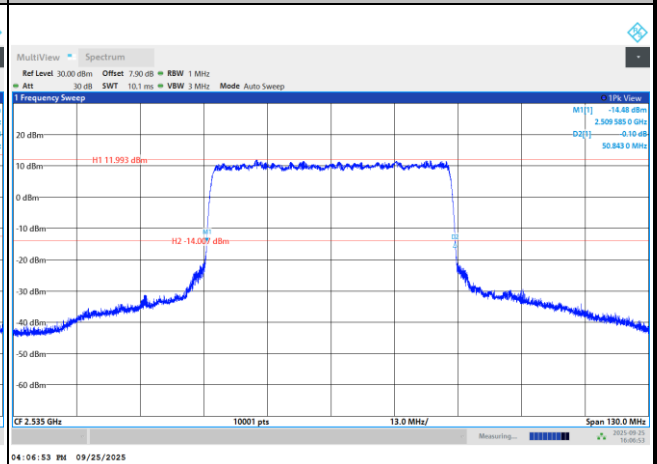
FR1 n7 / 50MHz / CP OFDM / Middle Channel / Full RB

QPSK



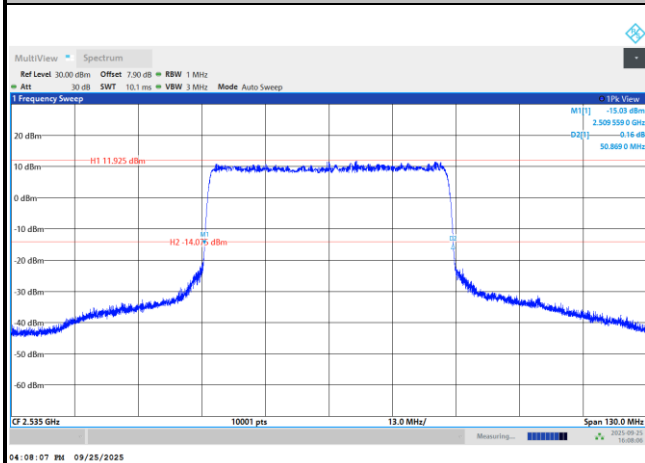
04:05:38 PM 09/25/2025

16QAM



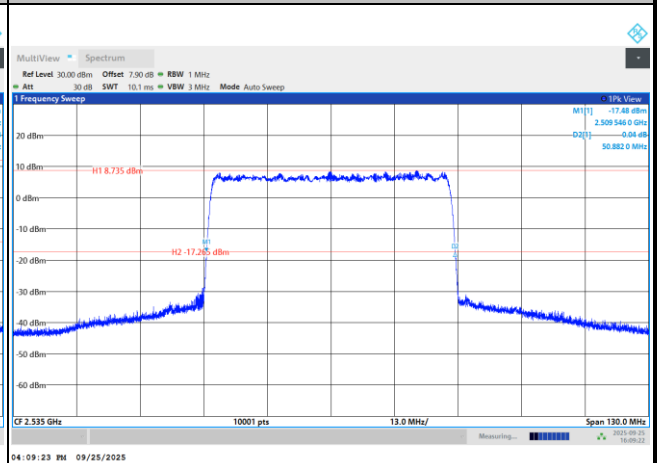
04:06:53 PM 09/25/2025

64QAM



04:08:07 PM 09/25/2025

256QAM



04:09:23 PM 09/25/2025

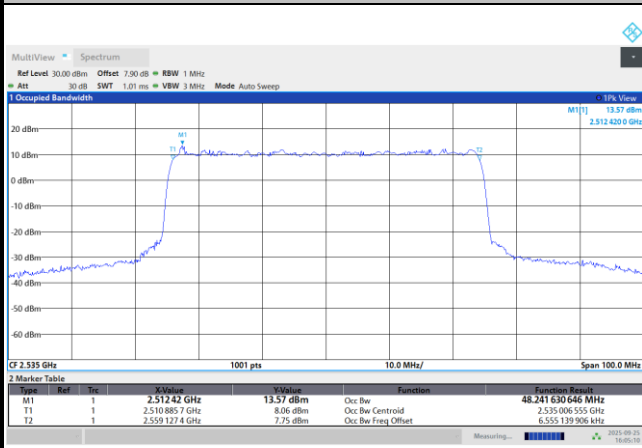
**Occupied Bandwidth**

Mode	FR1 n7 : OB BW(MHz) / CP OFDM							
BW	50MHz							
Mod.	QPSK	16QAM						
Middle CH	48.24	48.39						
Mod.	64QAM	256QAM						
Middle CH	48.37	48.35						

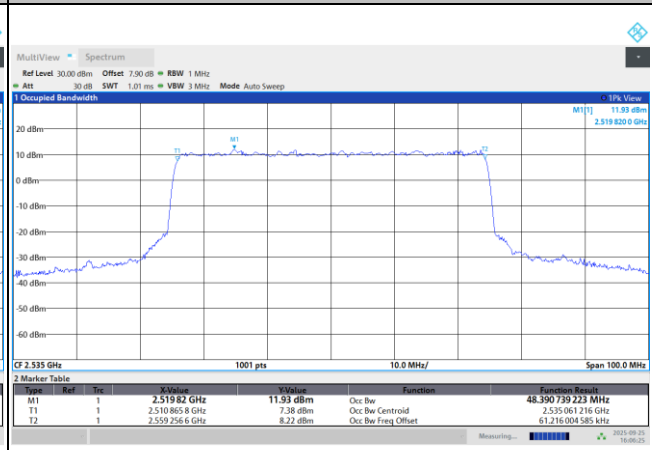


FR1 n7 / 50MHz / CP OFDM / Middle Channel / Full RB

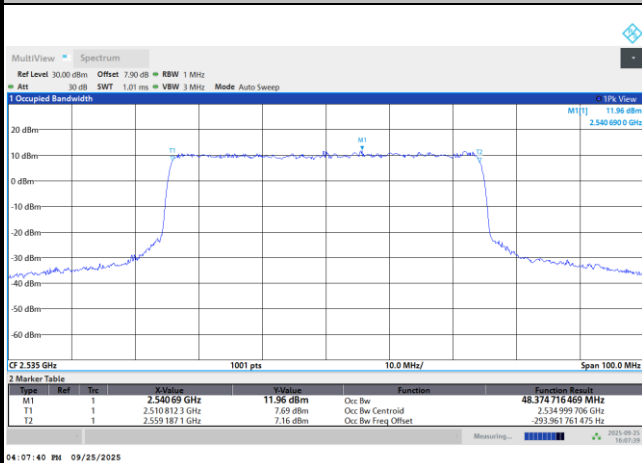
QPSK



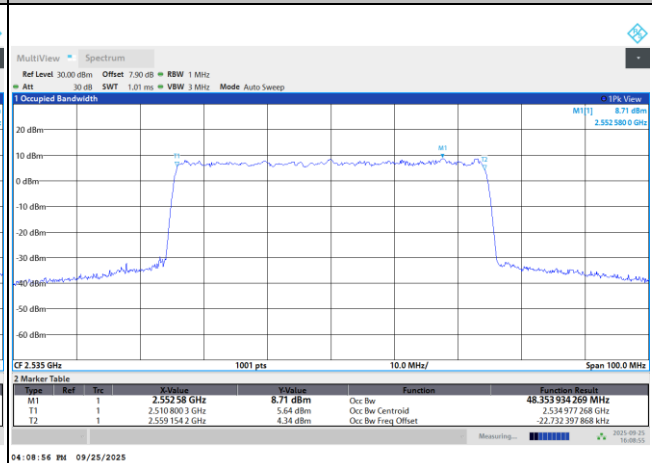
16QAM



64QAM



256QAM



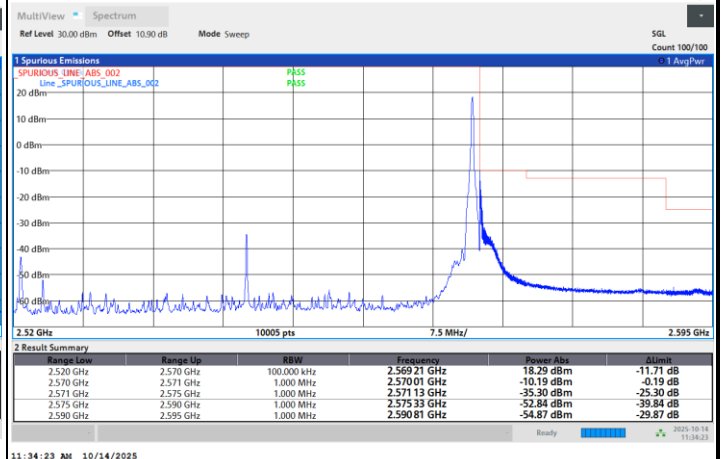
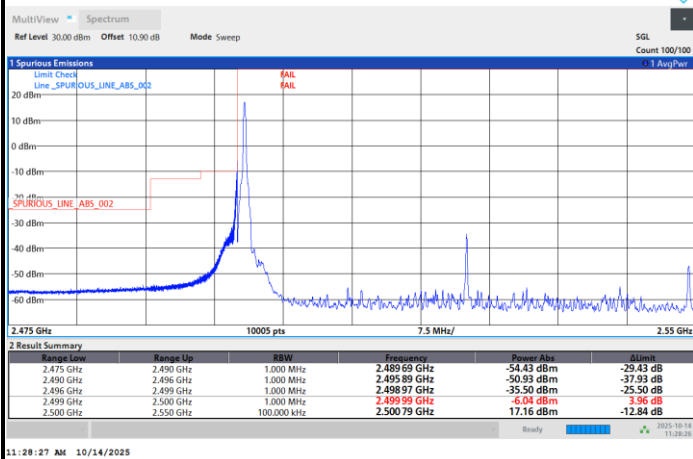


Conducted Band Edge

FR1 n7 / 50MHz / CP OFDM / QPSK

Lowest Band Edge / 1RB0

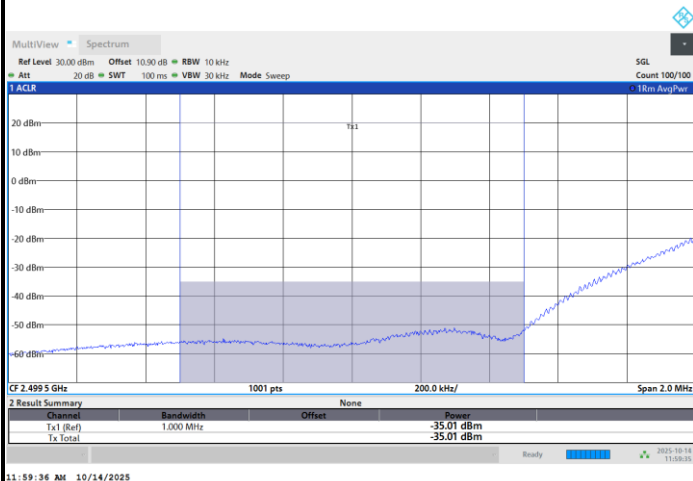
Highest Band Edge / 1RBmax



Lowest Channel 1RB0

Channel power -13dBm > -35.01dBm (PASS)

NA

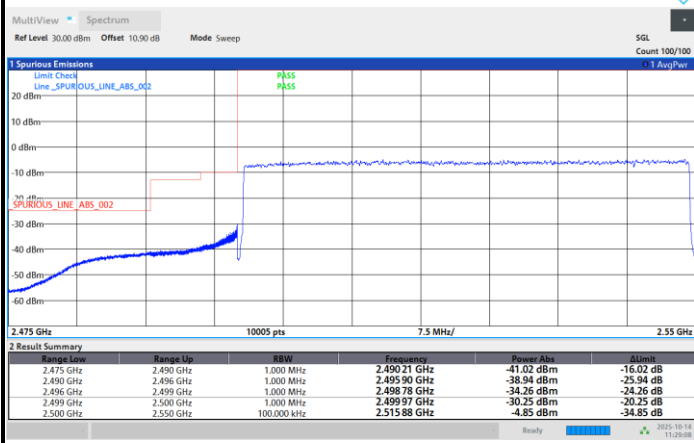


NA

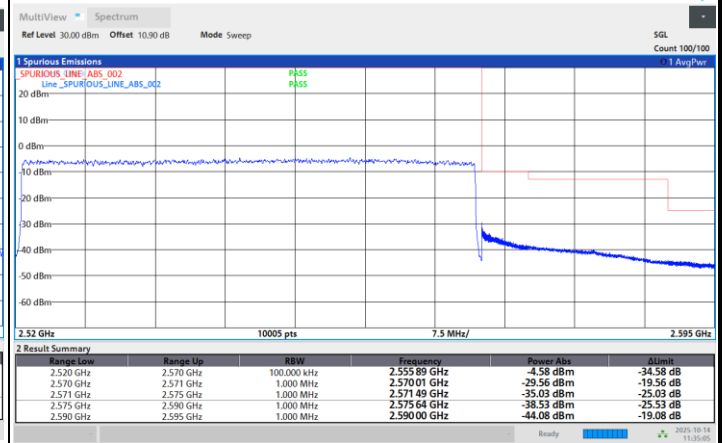


Lowest Band Edge / Full RB

Highest Band Edge / Full RB



11:29:09 AM 10/14/2025



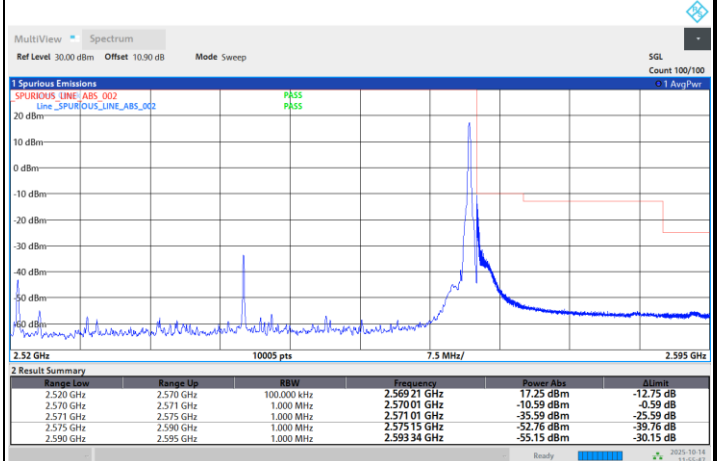
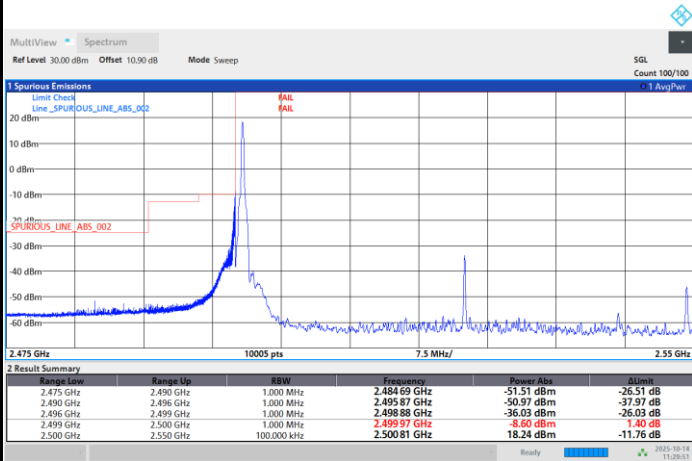
11:30:06 AM 10/14/2025



FR1 n7 / 50MHz / CP OFDM / 16QAM

Lowest Band Edge / 1RB0

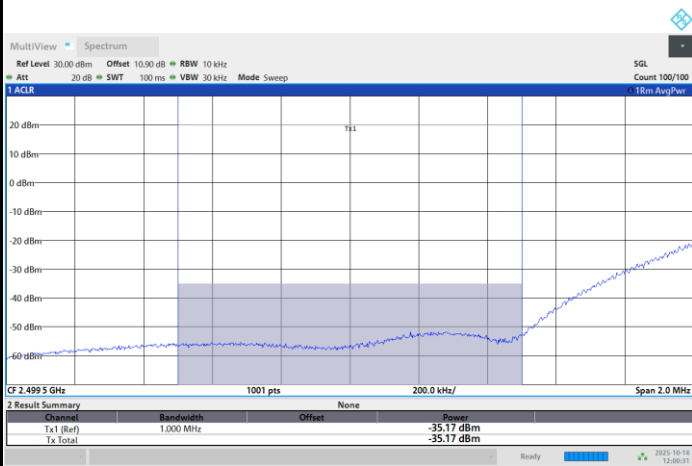
Highest Band Edge / 1RBmax



Lowest Channel 1RB0

Channel power -13dBm > -35.17dBm (PASS)

NA

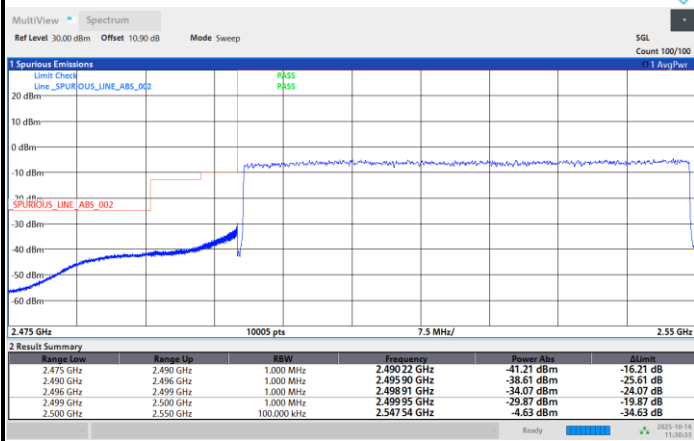


NA

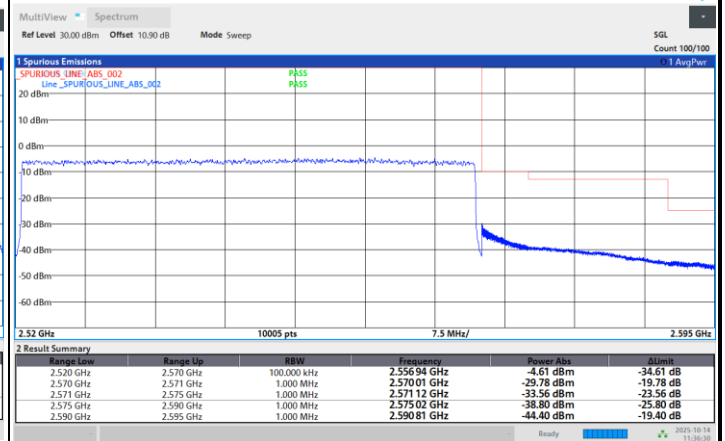


Lowest Band Edge / Full RB

Highest Band Edge / Full RB



11:30:34 AM 10/14/2025



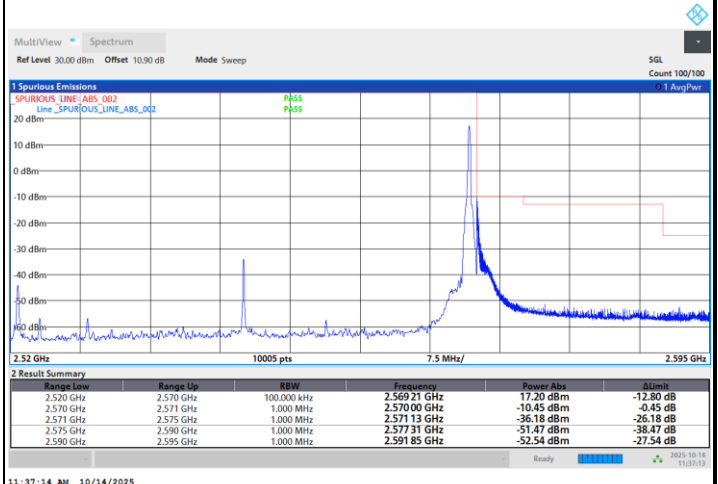
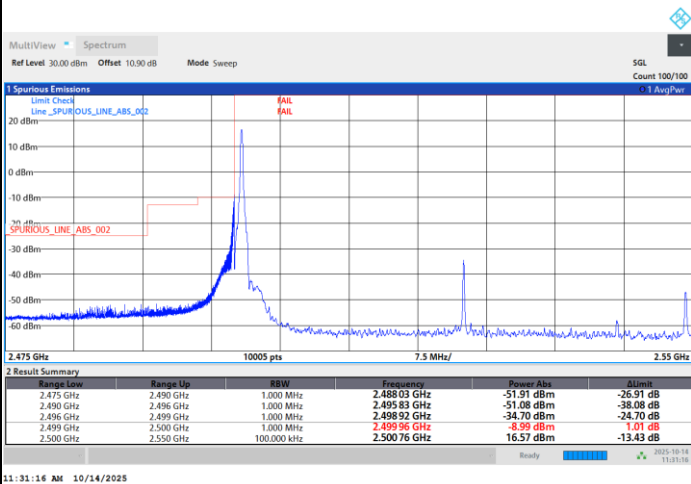
11:36:31 AM 10/14/2025



FR1 n7 / 50MHz / CP OFDM / 64QAM

Lowest Band Edge / 1RB0

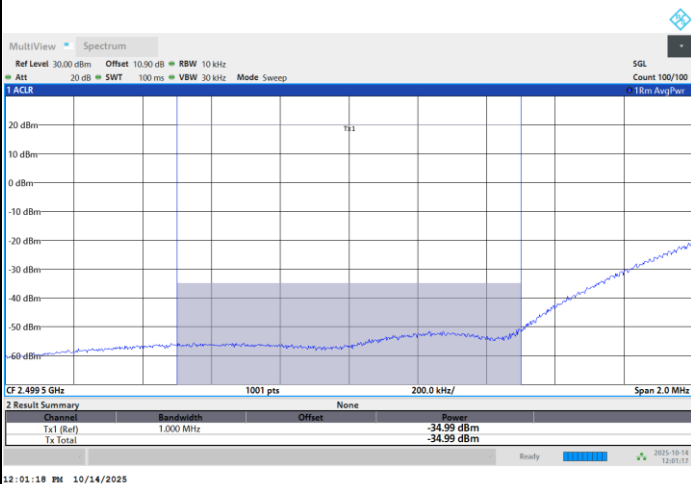
Highest Band Edge / 1RBmax



Lowest Channel 1RB0

Channel power -13dBm > -34.99dBm (PASS)

NA



NA