Testing Laboratory 3787

RADIO TEST REPORT

FCC ID	:	NKR-R2210-048L
Equipment	:	Indoor O-RAN Radio Unit
Brand Name	:	WNC
Model Name	:	R2210-048L
Applicant	:	Wistron NeWeb Corporation 20 Park Avenue II, Hsinchu Science Park, Hsinchu, 308 Taiwan
Manufacturer	:	Wistron NeWeb Corporation 20 Park Avenue II, Hsinchu Science Park, Hsinchu, 308 Taiwan
Standard	:	47 CFR FCC Part 96

The product was received on Aug. 14, 2024, and testing was started from Aug. 21, 2024 and completed on Sep. 03, 2024. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Rex Liao

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History of this test report

Report No.	Version	Description	Issued Date
FG460628-01AB	01	Initial issue of report	Sep. 16, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	2.1046	Conducted Output Power	Reporting only	-
	96.41	Maximum Effective Isotropic Radiated Power	PASS	-
3.2	96.41	Maximum Power Spectral Density (PSD)	PASS	-
3.3	96.41	Peak-to-Average Ratio	PASS	-
3.4	2.1049 / 96.41	Occupied Bandwidth	Reporting only	-
3.5	2.1051 / 96.41	Conducted Band Edge	PASS	-
3.6	2.1051 / 96.41	Conducted Spurious Emission	PASS	-
3.7	2.1051 / 96.41	Radiated Spurious Emission	PASS	-
3.8	2.1055	Frequency Stability for Temperature & Voltage	PASS	-

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/manufacturer 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 chapter "Measurement Uncertainty".

Disclaimer:

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.

Reviewed by: Sam Chen

Report Producer: Cathy Chiu

1 General Description

1.1 Product Feature of Equipment Under Test

Items	Description
EUT Type	☒ CBSD ☐ CPE-CBSD ☐ EUD
Power Type	From power adapter or PoE
Category of EUT	☒ Category A ☐ Category B
Professional Installation	☒ Yes ☐ No
Multi-carrier and/or CA	☐ Yes ☒ No
RF Test Tool Software of EUT	Tera Term 4.75
Uplink (UL) operating band	5G NR Band n48: 3550 ~ 3700 MHz
Downlink (DL) operating band	5G NR Band n48: 3550 ~ 3700 MHz
Bandwidth (MHz)	20
Type of Modulation	CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)

Note: The above information was declared by manufacturer.

1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	3	WNC	XKAC-T57_Ant3	PCB Antenna	I-PEX	6.36
2	4	WNC	XKAC-T57_Ant1	PCB Antenna	I-PEX	5.97
3	1	WNC	XKAC-T57_Ant2	PCB Antenna	I-PEX	6.12
4	2	WNC	XKAC-T57_Ant4	PCB Antenna	I-PEX	6.05

Note 1: The above information was declared by manufacturer.

Note 2:

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting/receiving antenna.
Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

Note 3: Directional gain information

Type	Maximum Output Power	Power Spectral Density
Non-BF	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$
BF	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

Ex.

Directional Gain (NSS1) formula : $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

NSS1(g1,1) = $10^{G1/20}$; NSS1(g1,2)= $10^{G2/20}$; NSS1(g1,2)= $10^{G3/20}$; NSS1(g1,2)= $10^{G4/20}$

gj,k =$(Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))^2$

DG = 10 log[$(Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))^2$ / N_{ANT}] => 10 log[$(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2$ / N_{ANT}]

Where ;

G1= 5.95 dBi ; G2= 6.12 dBi ; G3= 6.36 dBi ; G4= 6.05 dBi ;DG= 12.15dBi

1.3 Maximum EIRP Power and Emission Designator

Bandwidth	TX Frequency (MHz)	Type of Modulation	Max. Conducted Power		Maximum EIRP		99% Occupied Bandwidth (MHz)	Emission Designator
			(dBm)	(W)	(dBm)	(W)		
20MHz	3560 ~ 3690	QPSK	20.09	0.102	32.24	1.675	18.26	18M3G7D
		16QAM	19.07	0.081	31.22	1.324	18.27	18M3W7D
		64QAM	20.09	0.102	32.24	1.675	18.226	18M2W7D
		256 QAM	20.15	0.104	32.30	1.698	18.193	18M2W7D

1.4 Applicable Standards

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

- 47 CFR FCC Part 96
- ANSI / TIA-603-E-2016
- ANSI C63.26-2015
- FCC KDB 971168 D01 v03r01
- FCC KDB 940660 D01 v02

The following reference test guidance is not within the scope of accreditation of TAF.

- 47 CFR FCC Part 2
- FCC KDB 412172 D01 v01r01
- FCC KDB 662911 D01 v02r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.5 Testing Location

Testing Location Information		
Test Lab.：Sporton International Inc. Hsinchu Laboratory		
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)	
	TEL: 886-3-656-9065	FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.	
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.	

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Jay Lo	23.6-24.1 / 66-67	Aug. 21, 2024~ Aug. 22, 2024
Radiated	03CH03-CB	Eason Chen	21.7-22.5 / 54-58	Sep. 03, 2024

1.6 Measurement Uncertainty

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.0 dB	Confidence levels of 95%
Conducted Emission	3.1 dB	Confidence levels of 95%

2 Test Configuration of Equipment Under Test

2.1 Test Channel Mode

Mode
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX
3560MHz
3625MHz
3690MHz
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX
3560MHz
3625MHz
3690MHz
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX
3560MHz
3625MHz
3690MHz
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX
3560MHz
3625MHz
3690MHz

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Conducted Output Power Maximum Effective Isotropic Radiated Power Maximum Power Spectral Density Peak-to-Average Ratio Occupied Bandwidth Conducted Band Edge Measurement Conducted Spurious Emission Frequency Stability for Temperature & Voltage
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Radiated Spurious Emission
Test Condition	Radiated measurement
Operating Mode < 1GHz	CTX
	"EUT in Y axis" generated the worst case at Radiated Spurious Emission > 1GHz. Consequently, the measurement will follow this same test mode.
1	EUT in Y axis + Adapter
2	EUT in Y axis + PoE
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
	After evaluating, EUT in Y axis was the worst case, so the measurement will follow this same test configuration.
1	EUT in Y axis

Note: The Poe was for measurement only and would not be marketed.

Its information is shown as below:

Equipment	Brand Name	Model Name
PoE	PHIHONG	POE60U-BTA

2.3 Accessories

Accessories				
Equipment Name	**Brand Name**	**Model Name**	**Rating**	**Remark**
Adapter	FSP	FSP075-DHAN3	INPUT: 100-240V~, 1.2A, 50/60Hz OUTPUT: 12.0V, 6.25A, 75.0W	DC cable, non-shielded, 1.65m
Others				
Power cable*1, non-shielded, 1.8m				

2.4 Support Equipment

For RF Conducted:

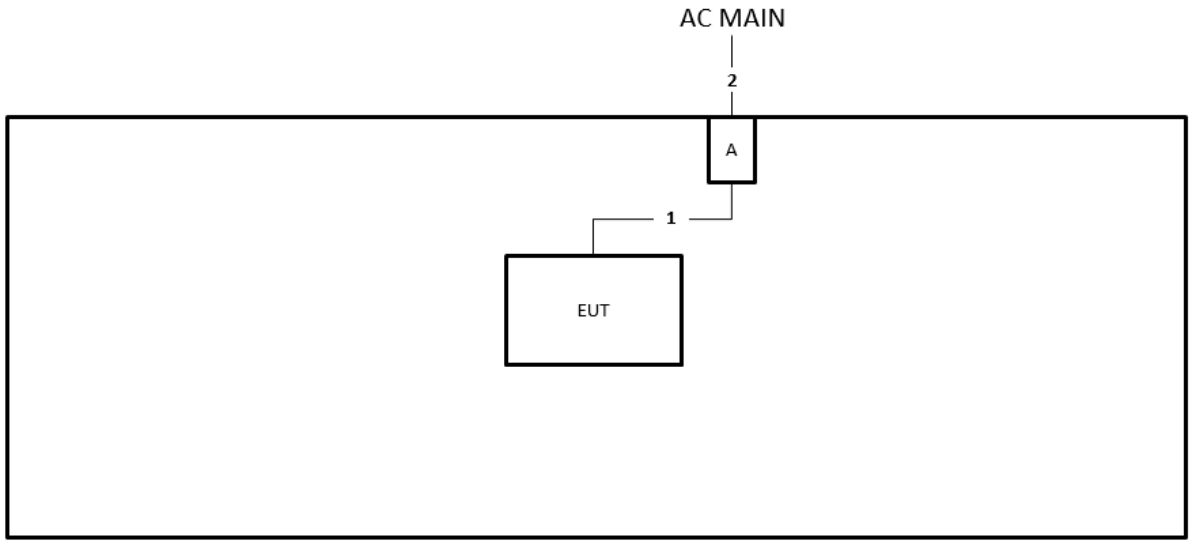
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Notebook	DELL	E4300	N/A

For Radiated:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	PoE	PHIHONG	POE60U-BTA	N/A

2.5 Test Setup Diagram

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	RJ-45 cable	No	1.5m
2	Power cable	No	1.8m

2.6 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.

Following shows an offset computation example with cable loss 6.0 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 6.0 (dB)

3 Test Result

3.1 Conducted Output Power and Maximum Effective Isotropic Radiated Power

3.1.1 Description of the Conducted Output Power 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.

3.1.2 Description of the Maximum Effective Isotropic Radiated Power measurement

Device	Maximum EIRP (dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.1.3 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.4 Test Procedures

For Conducted Output Power

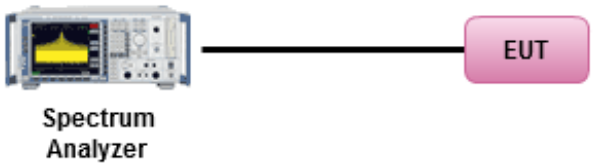
1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

For Maximum Effective Isotropic Radiated Power

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 2 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW ≥ 3 × RBW.

5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.
11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

3.1.5 Test Setup

Conducted Output Power/EIRP


3.1.6 Test Result of Conducted Output Power and Maximum Effective Isotropic Radiated Power.

Refer as Appendix A

3.2 Maximum Power Spectral Density

3.2.1 Description of the Maximum Powe Spectral Density Measurement

Device	Maximum PSD (EIRP) (dBm/MHz)
End User Device	N/A
Category A CBSD	20
Category B CBSD	37

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

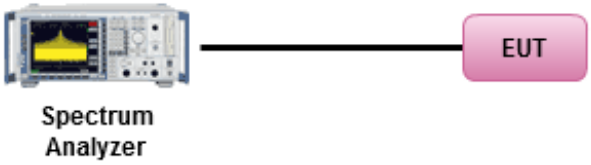
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 2 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW ≥ 3 × RBW.
5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.
11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

3.2.4 Test Setup

Maximum Powe Spectral Density


3.2.5 Test Result of Maximum Powe Spectral Density

Refer as Appendix B

3.3 Peak-to-Average Ratio

3.3.1 Description of the Peak-to-Average Ratio 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 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

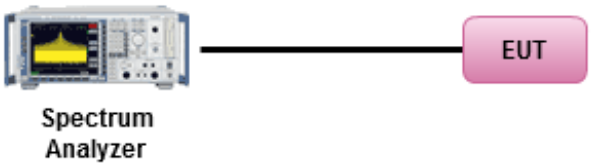
3.3.3 Test Procedures

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

3.3.4 Test Setup

Peak-to-Average Ratio



3.3.5 Test Result of Peak-to-Average Ratio

Refer as Appendix C

3.4 Occupied Bandwidth

3.4.1 Description of the 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 Measuring Instruments

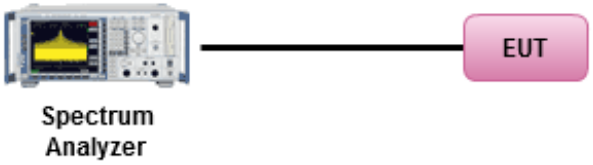
The measuring equipment is listed in the section 4 of this test report.

3.4.3 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.

3.4.4 Test Setup

Occupied Bandwidth


3.4.5 Test Result of Occupied Bandwidth

Refer as Appendix D

3.5 Conducted Band Edge

3.5.1 Description of the Conducted Band Edge Measurement

Part 96.41 (e) (1) (i)

For CBSD the emission limits outside the fundamental are as follows:

Within 0 MHz to 10 MHz above and below the assigned channel ≤ −13 dBm/MHz

Greater than 10 MHz above and below the assigned channel ≤ −25 dBm/MHz

Part 96.41 (e) (1) (ii)

For End User Devices the emission limits outside the fundamental are as follows:

Within 0 MHz to B MHz above and below the assigned channel ≤ −13 dBm/MHz

Greater than B MHz above and below the assigned channel ≤ −25 dBm/MHz

where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device.

Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Part 96.41 (e) (2)

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz

3.5.2 Measuring Instruments

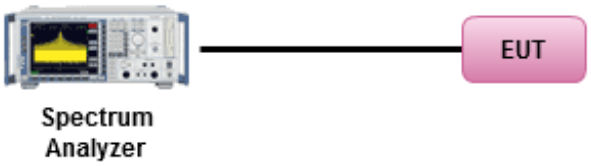
The measuring equipment is listed in the section 4 of this test report.

3.5.3 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 >= 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. Offset has included the duty factor for LTE Band 48. Duty factor =10 log (1/x), where x is the measured duty cycle.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.5.4 Test Setup

Conducted Band Edge


3.5.5 Test Result of Conducted Band Edge

Refer as Appendix E

3.6 Conducted Spurious Emission

3.6.1 Description of the Conducted Spurious Emission Measurement

96.41 (e)(2)

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

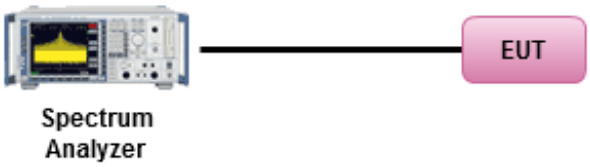
3.6.3 Test Procedures

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 middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is −40dBm/MHz.

3.6.4 Test Setup

Conducted Spurious Emission



3.6.5 Test Result of Conducted Spurious Emission

Refer as Appendix E

3.7 Radiated Spurious Emission

3.7.1 Description of the 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 -40dBm / MHz.

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

3.7.2 Measuring Instruments

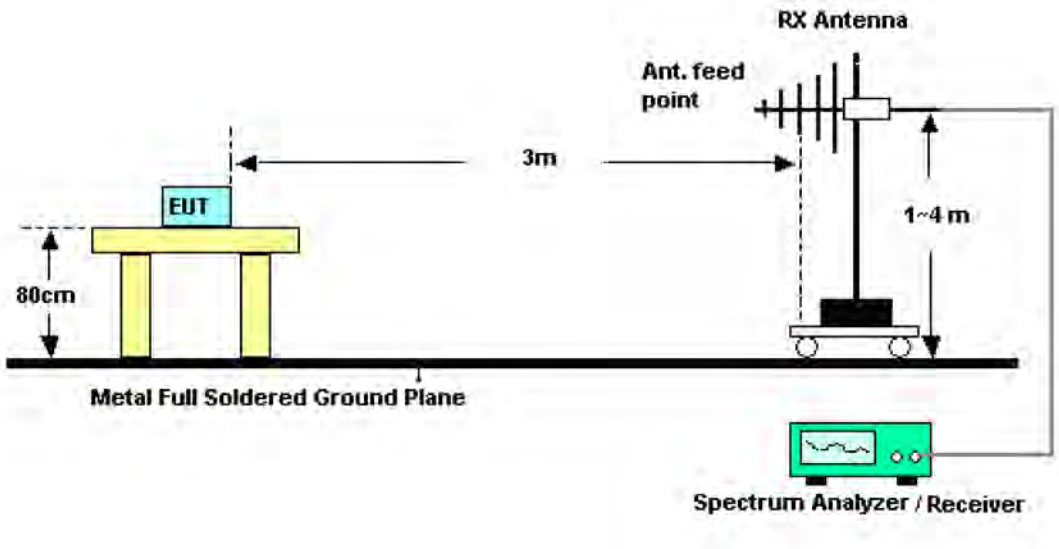
The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedures

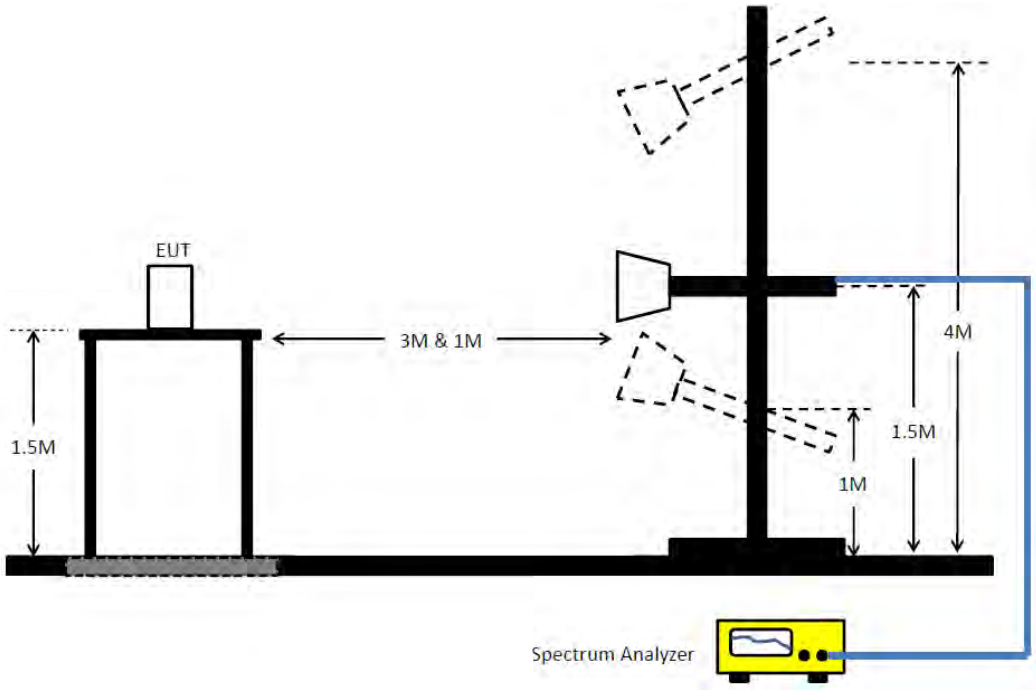
1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
   EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
   ERP (dBm) = EIRP - 2.15
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
   The limit line is −40dBm/MHz

3.7.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.7.5 Test Result of Radiated Spurious Emission

Refer as Appendix F

3.8 Frequency Stability for Temperature & Voltage

3.8.1 Description of the Frequency Stability for Temperature & Voltage Measurement

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 ±0.00025% (±2.5ppm) of the center frequency

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.8.3 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 to the spectrum analyzer.
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 -30°C steps 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.

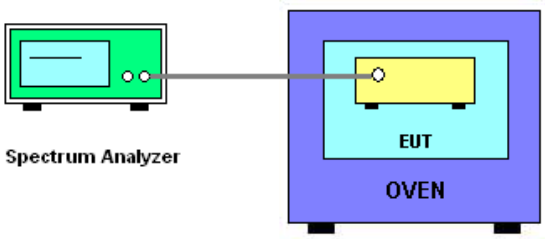
3.8.4 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 25±5° C and connected to the spectrum analyzer.
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.

3.8.5 Test Setup

Frequency Stability



3.8.6 Test Result of Temperature and Voltage Variation

Refer as Appendix G

4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH03-CB	30 MHz ~ 1 GHz	Jan. 18, 2024	Jan. 17, 2025	Radiation (03CH03-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH03-CB	1GHz ~18GHz 3m	May 03, 2024	May 02, 2025	Radiation (03CH03-CB)
Bilog Antenna with 6dB Attenator	Schaffner & EMCI	CBL6112B& N-6-06	2888&AT-N06 05	30MHz ~ 1GHz	Jan. 18, 2024	Jan. 17, 2025	Radiation (03CH03-CB)
Horn Antenna	ETS·Lindgren	3115	6821	750MHz~18GHz	Jan. 24, 2024	Jan. 23, 2025	Radiation (03CH03-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Radiation (03CH03-CB)
Amplifier	SGH	SGH301	20240606-1	30MHz ~ 1GHz	Jun. 04, 2024	Jun. 03, 2025	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz ~ 26.5GHz	Jun. 29, 2024	Jun. 28, 2025	Radiation (03CH03-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 24, 2023	Nov. 23, 2024	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 11, 2024	Jun. 10, 2025	Radiation (03CH03-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 20, 2023	Oct. 19, 2024	Radiation (03CH03-CB)
RF Cable-low	Woken	RG402	Low Cable-02+29	30MHz ~ 1GHz	Aug. 23, 2024	Aug. 22, 2025	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-20+29	1GHz ~ 18GHz	Feb. 29, 2024	Feb. 28, 2025	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-29	1GHz ~ 18GHz	Feb. 29, 2024	Feb. 28, 2025	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Jan. 11, 2024	Jan. 10, 2025	Radiation (03CH03-CB)
Test Software	SPORTON	SENSE-FCC_ 2G-4G	V6.1.7	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH03-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 27, 2024	May 26, 2025	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	May 20, 2024	May 19, 2025	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1~26.5 GHz	Oct. 03, 2023	Oct. 02, 2024	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-30	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
Cable	Woken	RG402	low Cable-30	9 kHz –1 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Mar. 01, 2024	Feb. 28, 2025	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	MY45100745	50MHz~18GHz	Jul. 12, 2024	Jul. 11, 2025	Conducted (TH01-CB)
MW Analog Signal Generator	Keysight	N5183A	MY50142965	100kHz~20GHz	Nov. 17, 2023	Nov. 16, 2024	Conducted (TH01-CB)
Signal analyzer	Keysight	N9020A	MY55400138	10 Hz to 26.5 GHz	Feb. 27, 2024	Feb. 26, 2025	Conducted (TH01-CB)
Test Software	SPORTON	SENSE-FCC_ 2G-4G	V6.1.7	30MHz-40GHz	N.C.R.	N.C.R.	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.
N.C.R. means Non-Calibration required.

Summary

Mode	Power (dBm)	Power (W)	EIRP (dBm)	EIRP (W)
Band n48	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	20.09	0.102	32.24	1.675
NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	19.07	0.081	31.22	1.324
NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	20.09	0.102	32.24	1.675
NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	20.15	0.104	32.30	1.698

DG = Directional Gain; Port n = Port n output power

Result

Mode	Result	DG (dBi)	Power (dBm)	Power (W)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	EIRP (dBm)	EIRP (W)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	20.09	0.102	14.23	14.17	13.70	14.16	32.24	1.675
3625MHz_Outer_Full	Pass	12.15	20.04	0.101	14.19	14.10	13.83	13.95	32.19	1.656
3690MHz_Outer_Full	Pass	12.15	20.06	0.101	14.24	14.12	13.69	14.08	32.21	1.663
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	19.07	0.081	13.22	13.17	12.63	13.16	31.22	1.324
3625MHz_Outer_Full	Pass	12.15	19.02	0.080	13.16	13.12	12.78	12.91	31.17	1.309
3690MHz_Outer_Full	Pass	12.15	19.00	0.079	13.16	13.06	12.67	13.02	31.15	1.303
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	20.09	0.102	14.23	14.14	13.72	14.18	32.24	1.675
3625MHz_Outer_Full	Pass	12.15	20.09	0.102	14.21	14.17	13.89	13.99	32.24	1.675
3690MHz_Outer_Full	Pass	12.15	20.02	0.100	14.22	14.11	13.60	14.06	32.17	1.648
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	20.15	0.104	14.27	14.23	13.74	14.24	32.30	1.698
3625MHz_Outer_Full	Pass	12.15	20.10	0.102	14.23	14.18	13.90	14.01	32.25	1.679
3690MHz_Outer_Full	Pass	12.15	20.08	0.102	14.25	14.15	13.72	14.09	32.23	1.671

DG = Directional Gain; Port n = Port n output power

Summary

Mode	Power (dBm/10MHz)	EIRP (dBm/10MHz)
Band n48	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	17.40	29.55
NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	16.56	28.71
NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	17.48	29.63
NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	17.53	29.68

DG = Directional Gain;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

Result

Mode	Result	EIRP (dBm/10MHz)	EIRP Limit (dBm/10MHz)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-
3560MHz_Outer_Full	Pass	29.53	30.00
3625MHz_Outer_Full	Pass	29.54	30.00
3690MHz_Outer_Full	Pass	29.55	30.00
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	-	-	-
3560MHz_Outer_Full	Pass	28.71	30.00
3625MHz_Outer_Full	Pass	28.70	30.00
3690MHz_Outer_Full	Pass	28.66	30.00
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	-	-	-
3560MHz_Outer_Full	Pass	29.60	30.00
3625MHz_Outer_Full	Pass	29.63	30.00
3690MHz_Outer_Full	Pass	29.60	30.00
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	-	-	-
3560MHz_Outer_Full	Pass	29.68	30.00
3625MHz_Outer_Full	Pass	29.63	30.00
3690MHz_Outer_Full	Pass	29.59	30.00

DG = Directional Gain;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

Summary

Mode	PD (dBm/MHz)	EIRP PD (dBm/MHz)
Band n48	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	6.48	18.63
NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	7.08	19.23
NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	6.55	18.70
NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	6.72	18.87

DG = Directional Gain;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

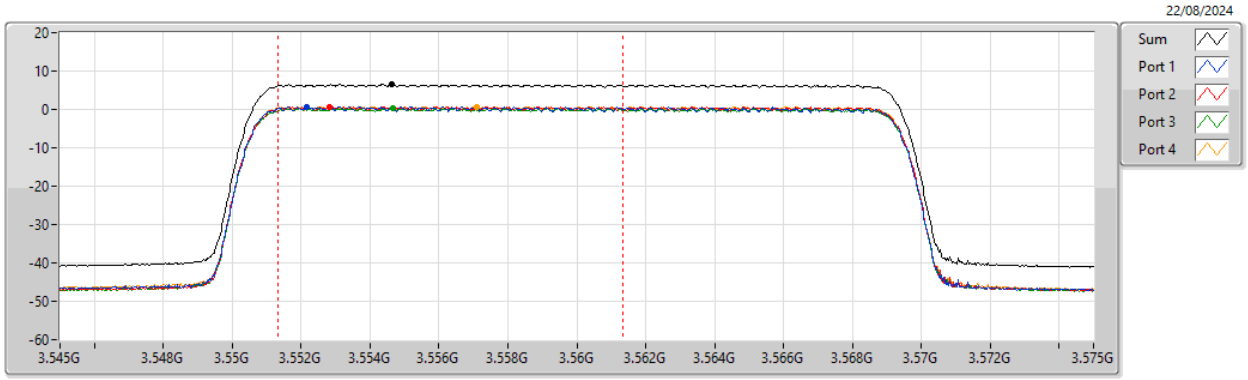
Result

Mode	Result	DG (dBi)	Port 1 (dBm/MHz)	Port 2 (dBm/MHz)	Port 3 (dBm/MHz)	Port 4 (dBm/MHz)	Sum (dBm/MHz)	PD (dBm/MHz)	EIRP PD (dBm/MHz)	EIRP PD Limit (dBm/MHz)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	0.67	0.67	0.23	0.67	6.45	6.45	18.60	20.00
3625MHz_Outer_Full	Pass	12.15	0.77	0.65	0.40	0.50	6.48	6.48	18.63	20.00
3690MHz_Outer_Full	Pass	12.15	0.80	0.79	0.32	0.66	6.45	6.45	18.60	20.00
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	1.46	1.26	0.95	1.17	7.08	7.08	19.23	20.00
3625MHz_Outer_Full	Pass	12.15	1.18	1.13	0.91	1.23	7.03	7.03	19.18	20.00
3690MHz_Outer_Full	Pass	12.15	1.13	1.12	1.08	1.25	7.01	7.01	19.16	20.00
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	0.79	0.77	0.28	0.65	6.50	6.50	18.65	20.00
3625MHz_Outer_Full	Pass	12.15	0.89	0.88	0.51	0.81	6.52	6.52	18.67	20.00
3690MHz_Outer_Full	Pass	12.15	0.96	0.78	0.40	0.84	6.55	6.55	18.70	20.00
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	12.15	1.02	0.80	0.43	0.83	6.72	6.72	18.87	20.00
3625MHz_Outer_Full	Pass	12.15	0.95	0.91	0.65	0.71	6.57	6.57	18.72	20.00
3690MHz_Outer_Full	Pass	12.15	1.03	0.80	0.32	0.80	6.59	6.59	18.74	20.00

DG = Directional Gain;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PSD**

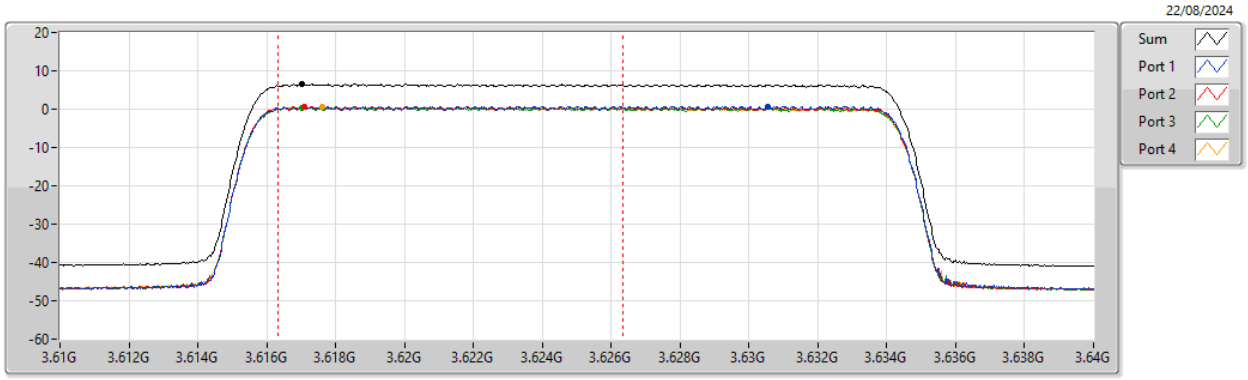
3560MHz_CP-OFDM_QPSK_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.67	3.56G	30M	1M	3M	100m	RMS	1
0.67	3.56G	30M	1M	3M	100m	RMS	2
0.23	3.56G	30M	1M	3M	100m	RMS	3
0.67	3.56G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.45	17.38						

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PSD**

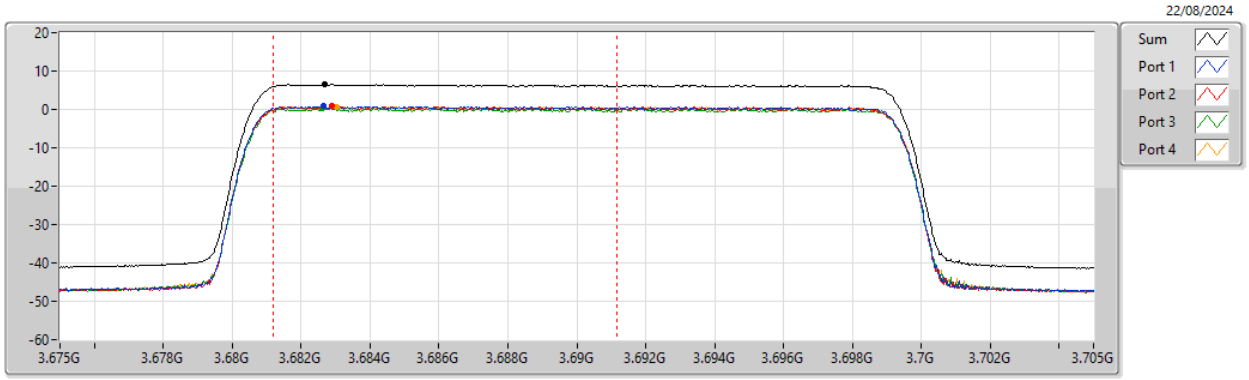
3625MHz_CP-OFDM_QPSK_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.77	3.625G	30M	1M	3M	100m	RMS	1
0.65	3.625G	30M	1M	3M	100m	RMS	2
0.40	3.625G	30M	1M	3M	100m	RMS	3
0.50	3.625G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.48	17.39						

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PSD**

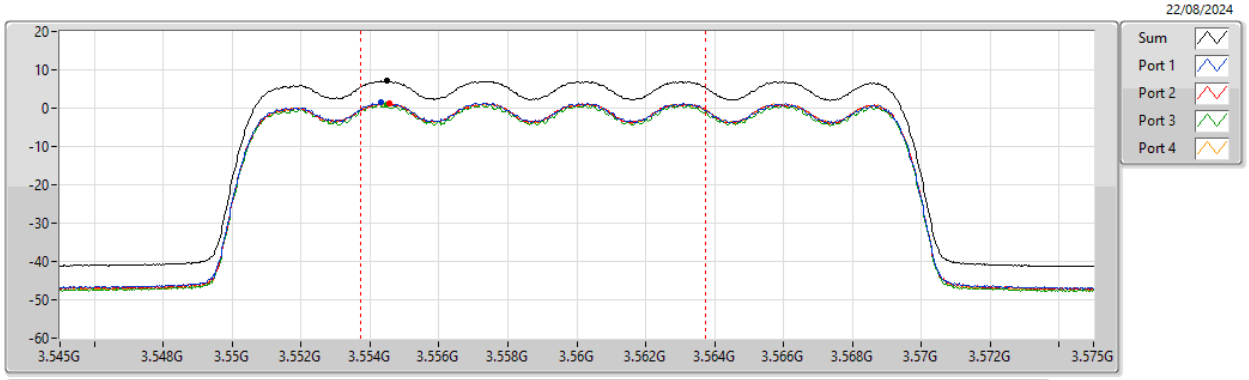
3690MHz_CP-OFDM_QPSK_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.80	3.69G	30M	1M	3M	100m	RMS	1
0.79	3.69G	30M	1M	3M	100m	RMS	2
0.32	3.69G	30M	1M	3M	100m	RMS	3
0.66	3.69G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.45	17.40						

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PSD**

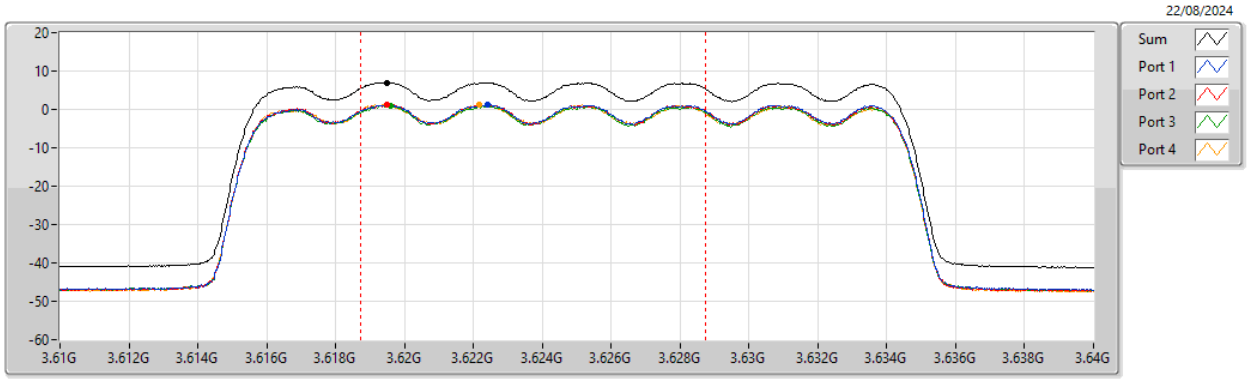
3560MHz_CP-OFDM_16QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
1.46	3.56G	30M	1M	3M	100m	RMS	1
1.26	3.56G	30M	1M	3M	100m	RMS	2
0.95	3.56G	30M	1M	3M	100m	RMS	3
1.17	3.56G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
7.08	16.56						

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PSD**

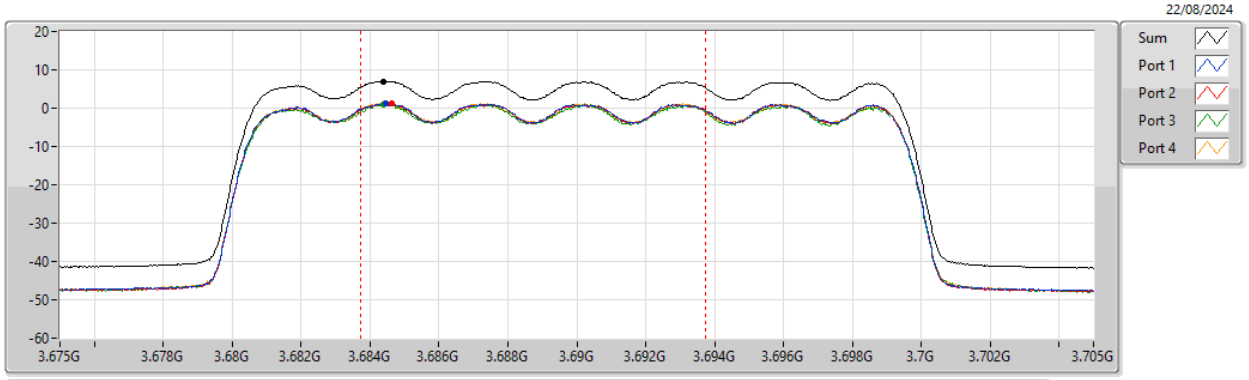
3625MHz_CP-OFDM_16QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
1.18	3.625G	30M	1M	3M	100m	RMS	1
1.13	3.625G	30M	1M	3M	100m	RMS	2
0.91	3.625G	30M	1M	3M	100m	RMS	3
1.23	3.625G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
7.03	16.55						

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PSD**

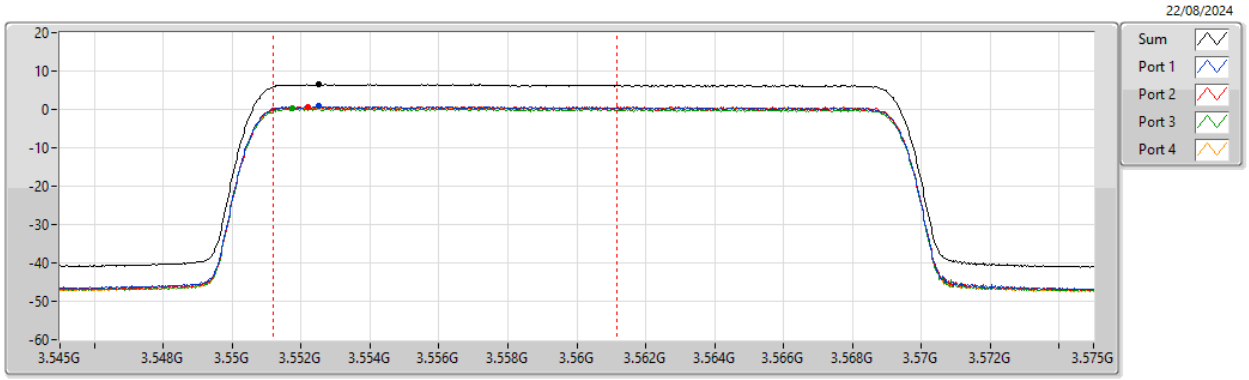
3690MHz_CP-OFDM_16QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
1.13	3.69G	30M	1M	3M	100m	RMS	1
1.12	3.69G	30M	1M	3M	100m	RMS	2
1.08	3.69G	30M	1M	3M	100m	RMS	3
1.25	3.69G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
7.01	16.51						

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PSD**

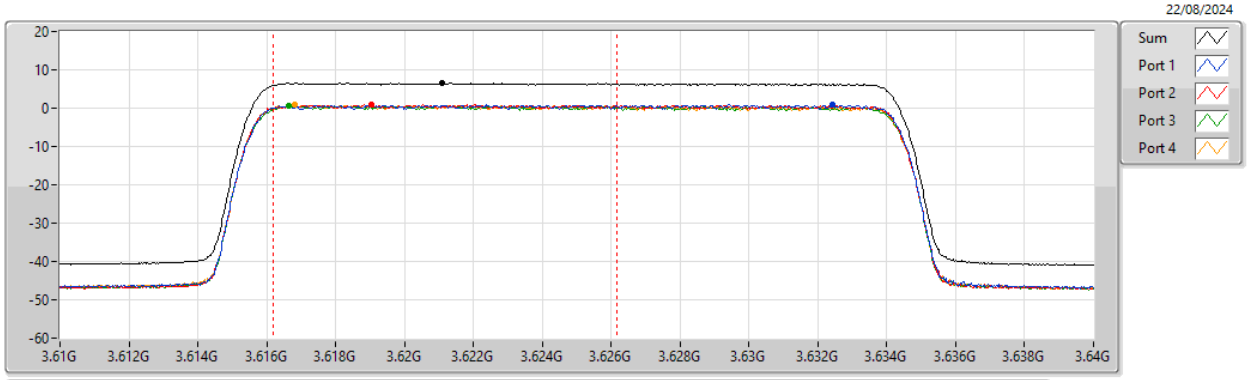
3560MHz_CP-OFDM_64QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.79	3.56G	30M	1M	3M	100m	RMS	1
0.77	3.56G	30M	1M	3M	100m	RMS	2
0.28	3.56G	30M	1M	3M	100m	RMS	3
0.65	3.56G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.50	17.45						

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PSD**

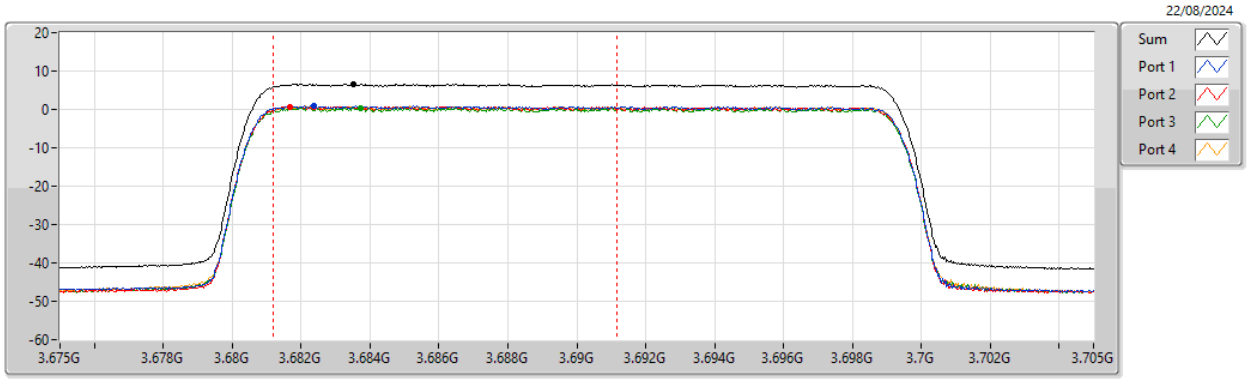
3625MHz_CP-OFDM_64QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.89	3.625G	30M	1M	3M	100m	RMS	1
0.88	3.625G	30M	1M	3M	100m	RMS	2
0.51	3.625G	30M	1M	3M	100m	RMS	3
0.81	3.625G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.52	17.48						

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PSD**

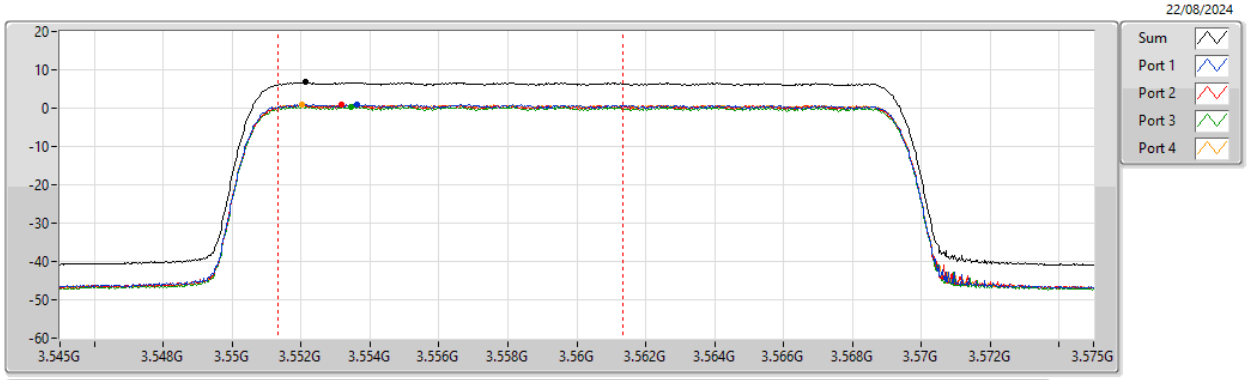
3690MHz_CP-OFDM_64QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.96	3.69G	30M	1M	3M	100m	RMS	1
0.78	3.69G	30M	1M	3M	100m	RMS	2
0.40	3.69G	30M	1M	3M	100m	RMS	3
0.84	3.69G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.55	17.45						

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PSD**

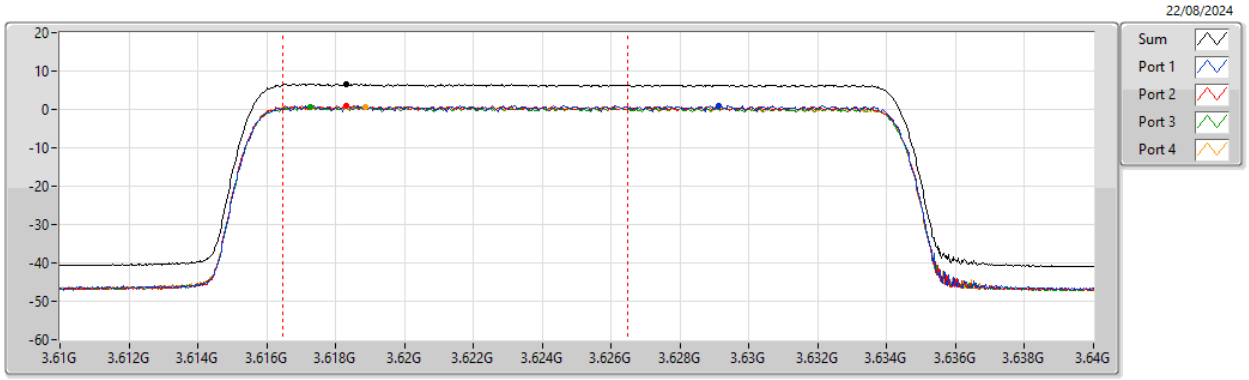
3560MHz_CP-OFDM_256QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
1.02	3.56G	30M	1M	3M	100m	RMS	1
0.80	3.56G	30M	1M	3M	100m	RMS	2
0.43	3.56G	30M	1M	3M	100m	RMS	3
0.83	3.56G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.72	17.53						

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PSD**

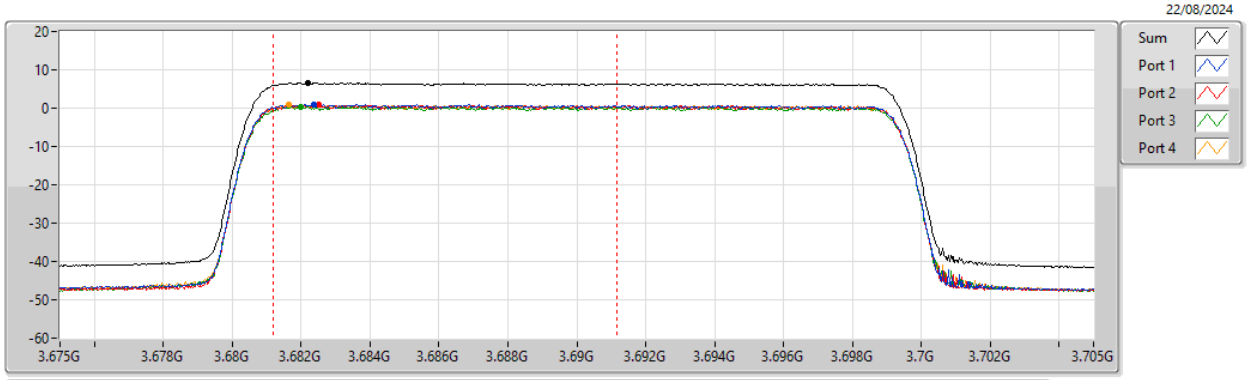
3625MHz_CP-OFDM_256QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
0.95	3.625G	30M	1M	3M	100m	RMS	1
0.91	3.625G	30M	1M	3M	100m	RMS	2
0.65	3.625G	30M	1M	3M	100m	RMS	3
0.71	3.625G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.57	17.48						

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PSD**

3690MHz_CP-OFDM_256QAM_Outer_Full



PD	CF	Span	RBW	VBW	Sweep	Detector	Port
	(Hz)	(Hz)	(Hz)	(Hz)	(s)		
1.03	3.69G	30M	1M	3M	100m	RMS	1
0.80	3.69G	30M	1M	3M	100m	RMS	2
0.32	3.69G	30M	1M	3M	100m	RMS	3
0.80	3.69G	30M	1M	3M	100m	RMS	4
Sum PD	Power						
(dBm/MHz)	(dBm/10MHz)						
6.59	17.44						

Summary

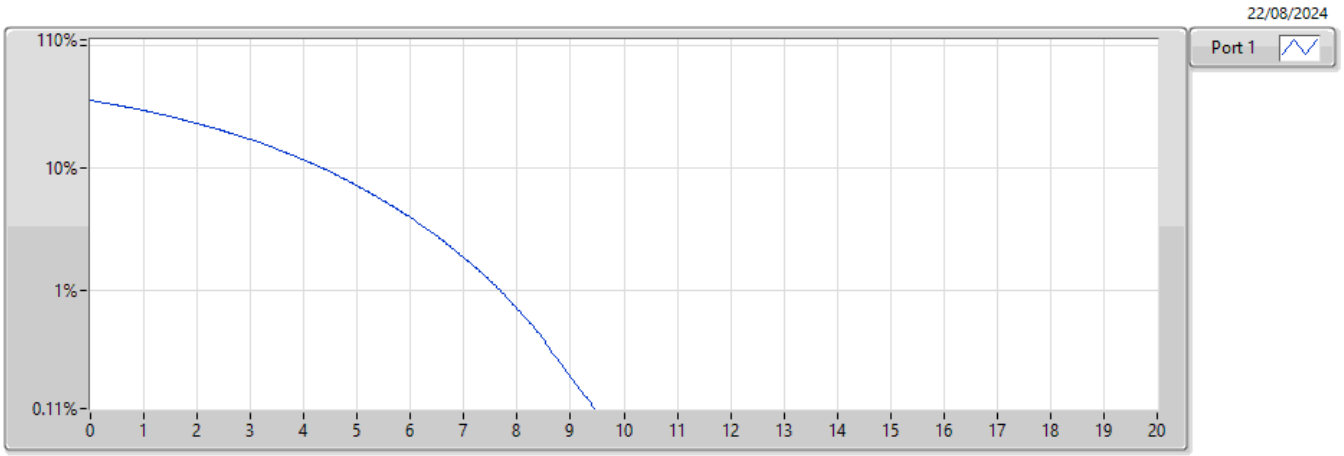
Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band n48	-	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	Pass	3625	13.00	9.56	1
NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	Pass	3690	13.00	9.48	1
NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	Pass	3625	13.00	9.60	1
NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	Pass	3625	13.00	9.64	1

Result

Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-
3560MHz_Outer_Full	Pass	3560	13.00	9.50	1
3625MHz_Outer_Full	Pass	3625	13.00	9.56	1
3690MHz_Outer_Full	Pass	3690	13.00	9.56	1
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	-	-	-	-	-
3560MHz_Outer_Full	Pass	3560	13.00	9.44	1
3625MHz_Outer_Full	Pass	3625	13.00	9.36	1
3690MHz_Outer_Full	Pass	3690	13.00	9.48	1
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	-	-	-	-	-
3560MHz_Outer_Full	Pass	3560	13.00	9.44	1
3625MHz_Outer_Full	Pass	3625	13.00	9.60	1
3690MHz_Outer_Full	Pass	3690	13.00	9.54	1
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	-	-	-	-	-
3560MHz_Outer_Full	Pass	3560	13.00	9.60	1
3625MHz_Outer_Full	Pass	3625	13.00	9.64	1
3690MHz_Outer_Full	Pass	3690	13.00	9.58	1

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PAPR**

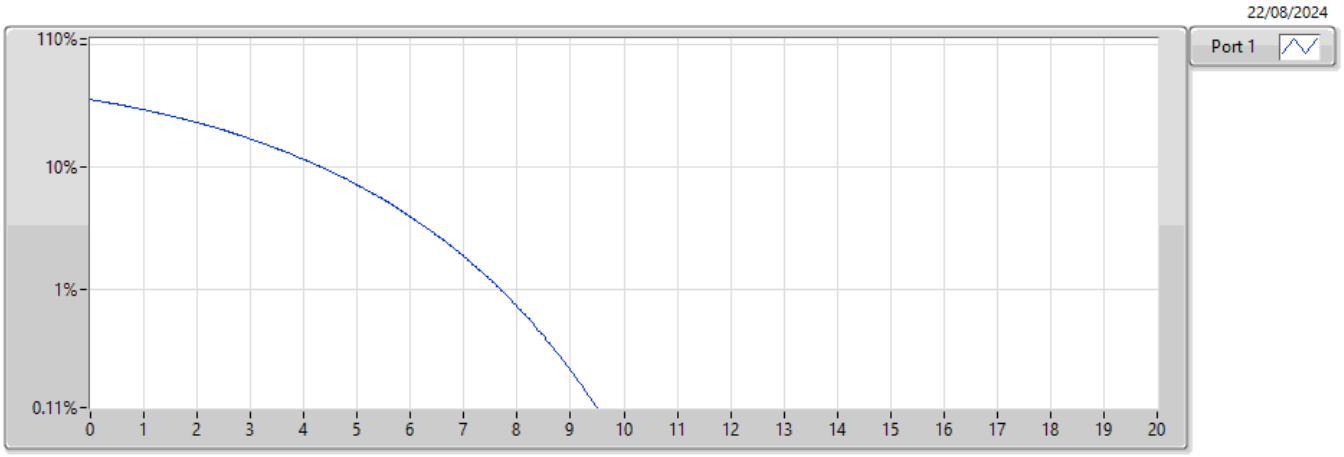
3560MHz_CP-OFDM_QPSK_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3560	20M	9.50	-3.50	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PAPR**

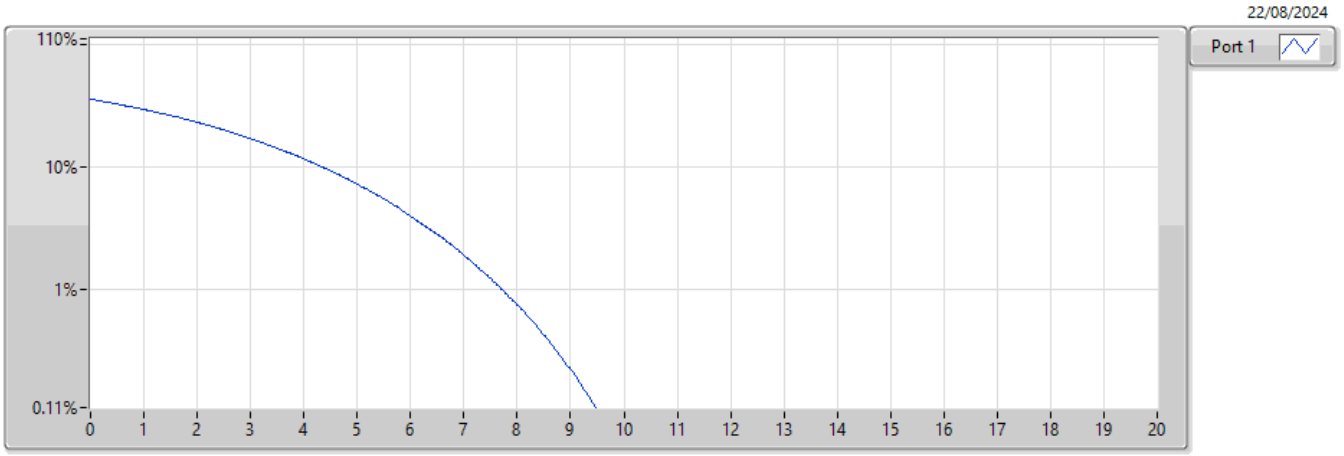
3625MHz_CP-OFDM_QPSK_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3625	20M	9.56	-3.44	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **PAPR**

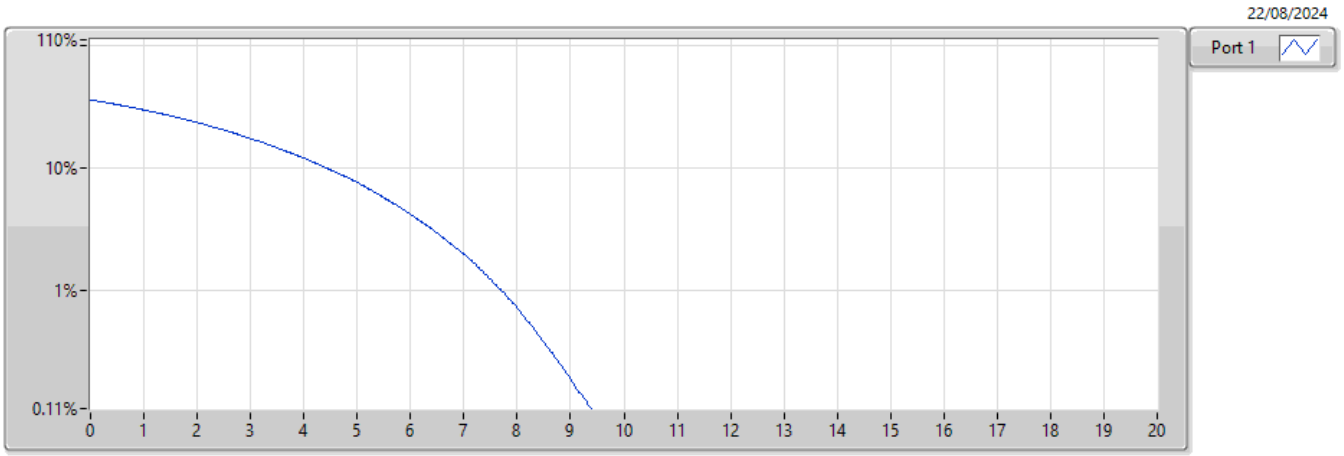
3690MHz_CP-OFDM_QPSK_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3690	20M	9.56	-3.44	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PAPR**

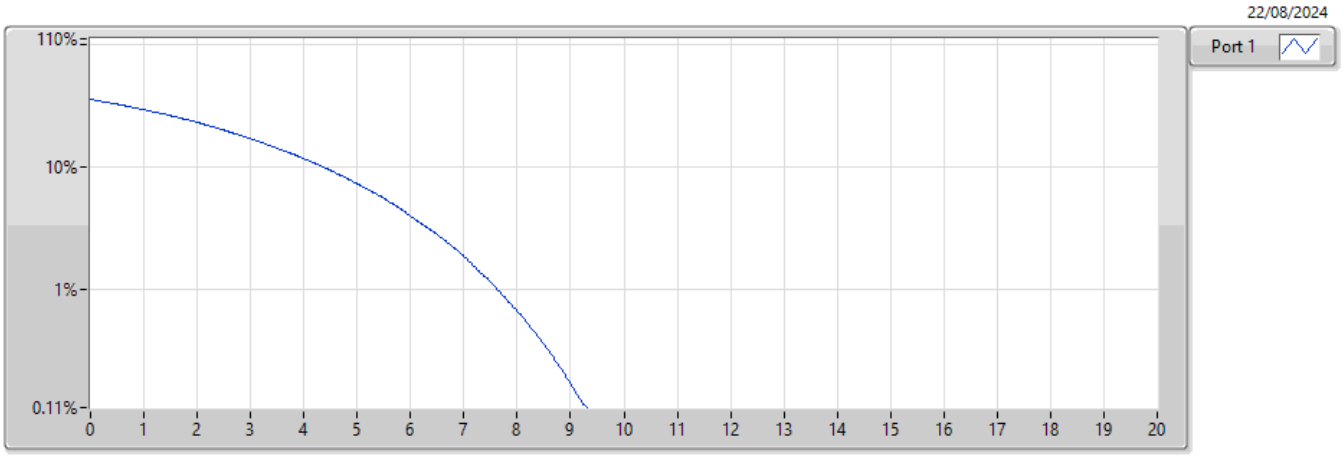
3560MHz_CP-OFDM_16QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3560	20M	9.44	-3.56	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PAPR**

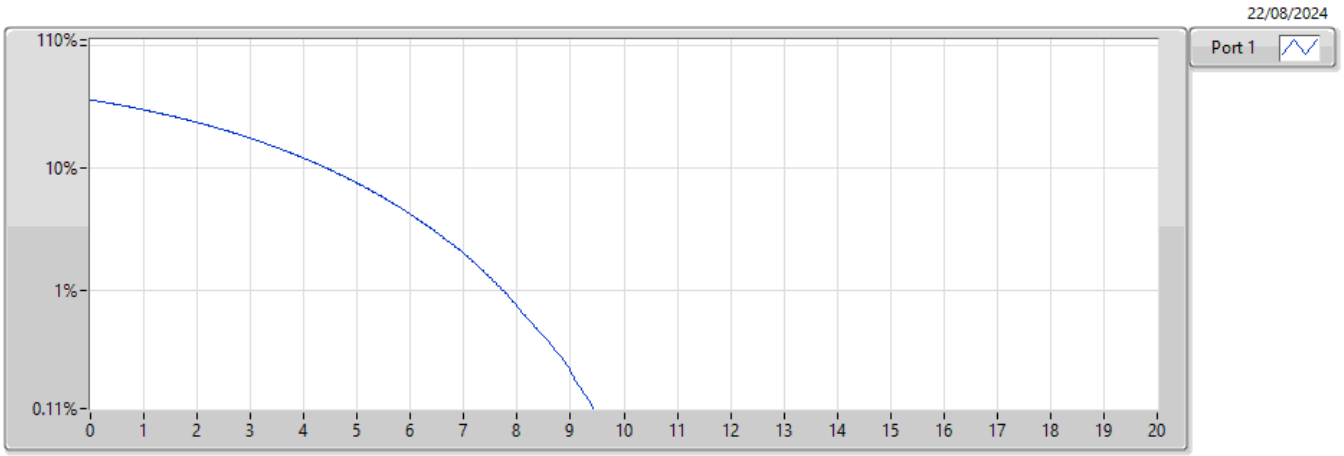
3625MHz_CP-OFDM_16QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3625	20M	9.36	-3.64	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **PAPR**

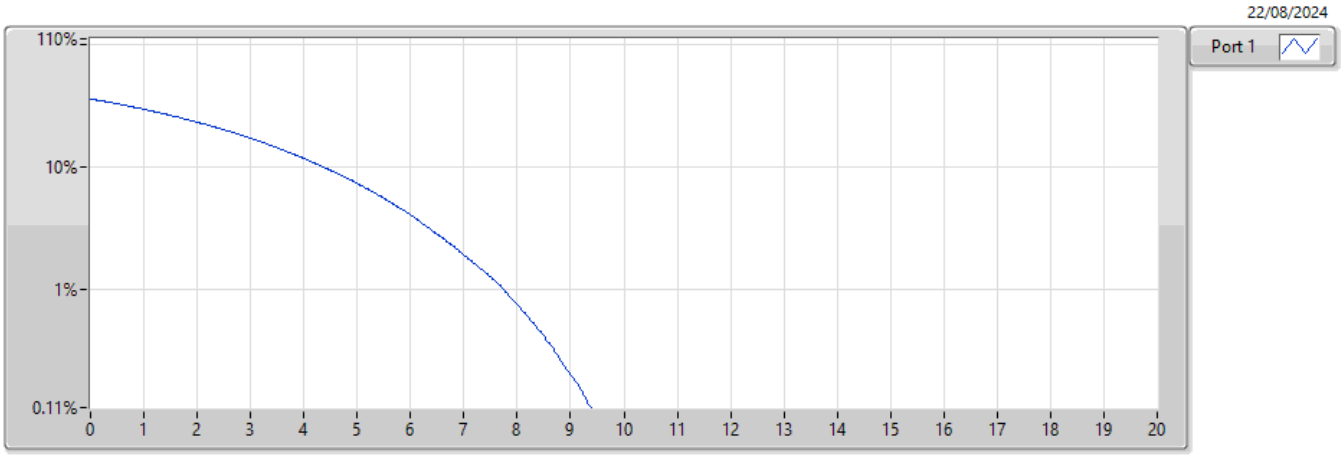
3690MHz_CP-OFDM_16QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3690	20M	9.48	-3.52	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PAPR**

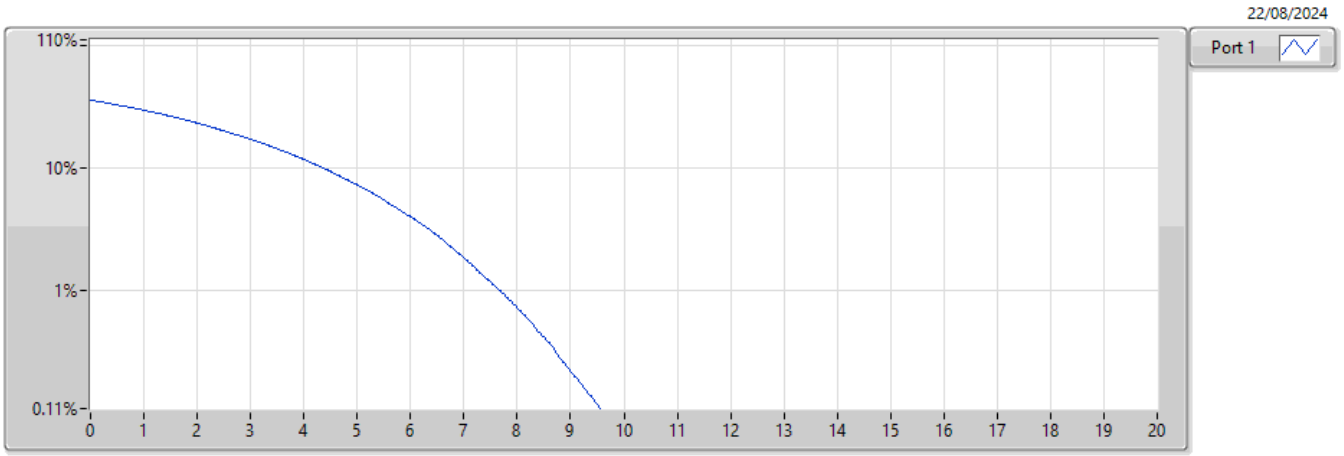
3560MHz_CP-OFDM_64QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3560	20M	9.44	-3.56	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PAPR**

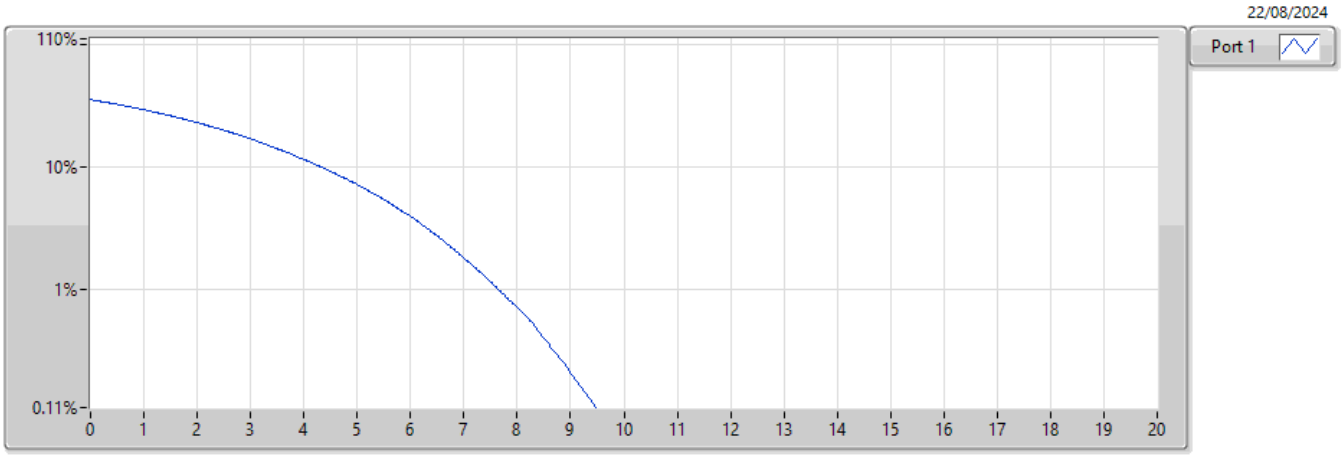
3625MHz_CP-OFDM_64QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3625	20M	9.60	-3.40	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **PAPR**

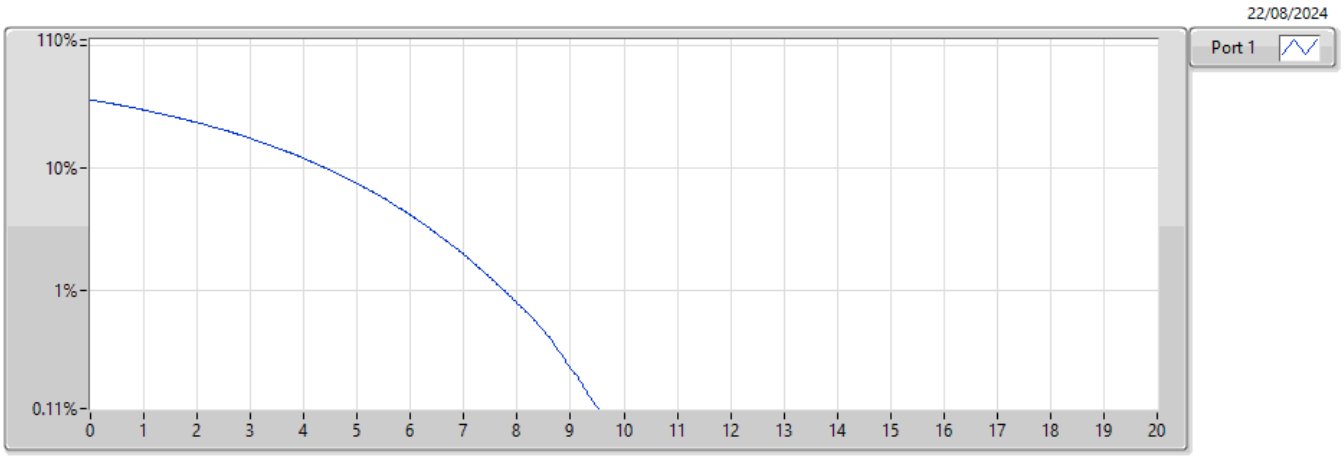
3690MHz_CP-OFDM_64QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3690	20M	9.54	-3.46	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PAPR**

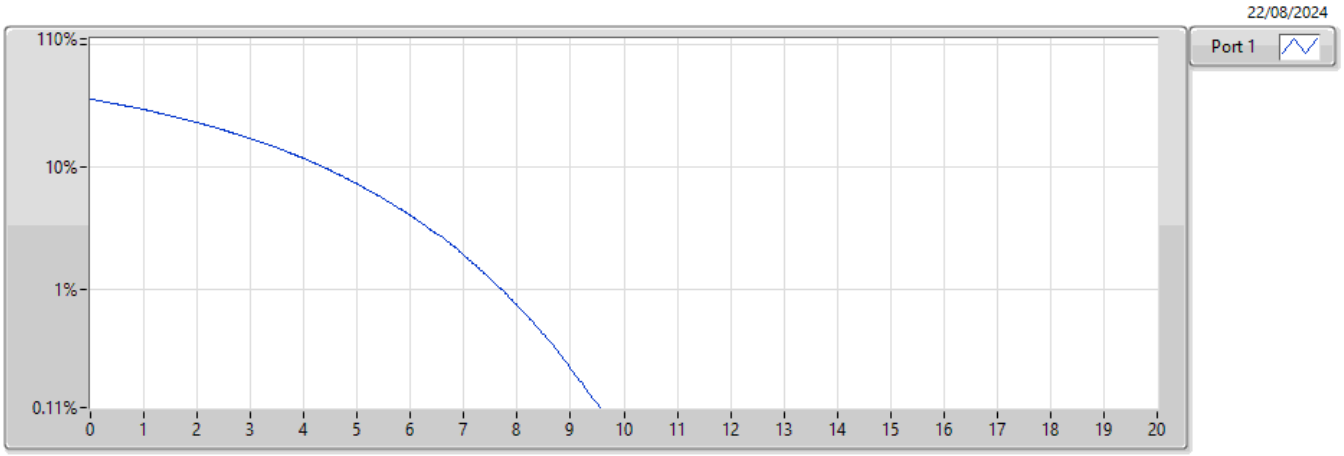
3560MHz_CP-OFDM_256QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3560	20M	9.60	-3.40	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PAPR**

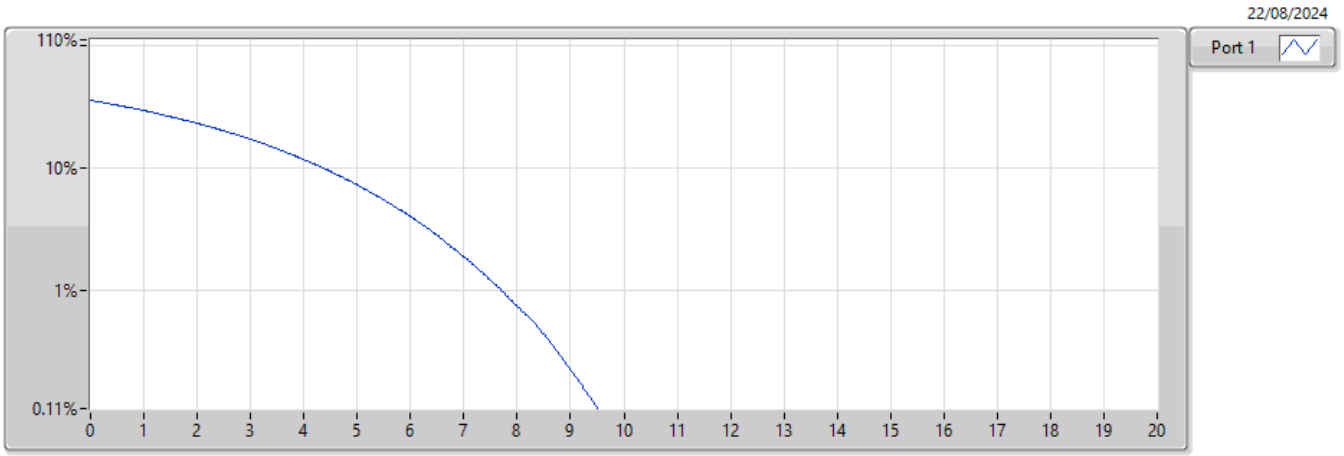
3625MHz_CP-OFDM_256QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3625	20M	9.64	-3.36	13.00	1

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **PAPR**

3690MHz_CP-OFDM_256QAM_Outer_Full



Freq (MHz)	MBW(Hz)	0.1%	Margin(dB)	Limit(dB)	Port
3690	20M	9.58	-3.42	13.00	1

Summary

Mode	Max-NdB (Hz)	Max-OBW (Hz)	ITU-Code	Min-NdB (Hz)	Min-OBW (Hz)
Band n48	-	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	19.625M	18.26M	18M3G7D	19.5M	18.195M
NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	19.65M	18.27M	18M3W7D	19.45M	18.256M
NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	19.55M	18.226M	18M2W7D	19.35M	18.204M
NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	19.45M	18.193M	18M2W7D	19.275M	18.171M

Max-N dB = Maximum 26dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 26dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

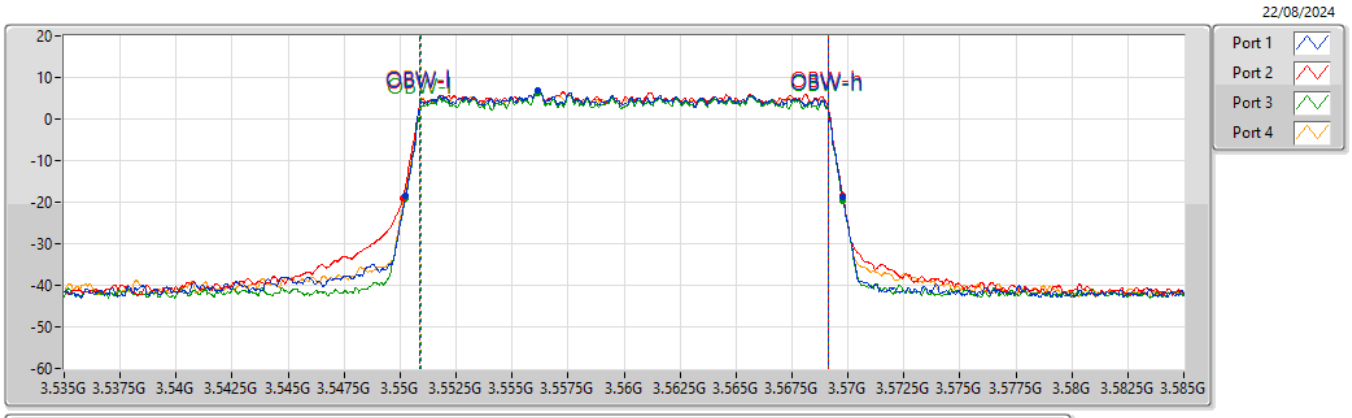
Result

Mode	Result	Port 1-NdB (Hz)	Port 1-OBW (Hz)	Limit (Hz)	Port 2-NdB (Hz)	Port 2-OBW (Hz)	Limit (Hz)	Port 3-NdB (Hz)	Port 3-OBW (Hz)	Limit (Hz)	Port 4-NdB (Hz)	Port 4-OBW (Hz)	Limit (Hz)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	19.5M	18.222M	Inf	19.625M	18.237M	Inf	19.525M	18.195M	Inf	19.575M	18.229M	Inf
3625MHz_Outer_Full	Pass	19.575M	18.23M	Inf	19.55M	18.23M	Inf	19.575M	18.233M	Inf	19.55M	18.235M	Inf
3690MHz_Outer_Full	Pass	19.625M	18.26M	Inf	19.625M	18.26M	Inf	19.625M	18.26M	Inf	19.625M	18.26M	Inf
Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX	-	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	19.45M	18.257M	Inf	19.45M	18.256M	Inf	19.45M	18.256M	Inf	19.45M	18.257M	Inf
3625MHz_Outer_Full	Pass	19.625M	18.264M	Inf	19.625M	18.265M	Inf	19.65M	18.269M	Inf	19.65M	18.27M	Inf
3690MHz_Outer_Full	Pass	19.525M	18.267M	Inf	19.55M	18.267M	Inf	19.55M	18.269M	Inf	19.55M	18.269M	Inf
Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX	-	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	19.375M	18.209M	Inf	19.375M	18.209M	Inf	19.35M	18.21M	Inf	19.35M	18.209M	Inf
3625MHz_Outer_Full	Pass	19.4M	18.205M	Inf	19.425M	18.207M	Inf	19.425M	18.204M	Inf	19.4M	18.205M	Inf
3690MHz_Outer_Full	Pass	19.525M	18.225M	Inf	19.525M	18.225M	Inf	19.525M	18.226M	Inf	19.55M	18.226M	Inf
Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX	-	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	19.45M	18.186M	Inf	19.425M	18.185M	Inf	19.45M	18.186M	Inf	19.45M	18.186M	Inf
3625MHz_Outer_Full	Pass	19.3M	18.171M	Inf	19.275M	18.172M	Inf	19.275M	18.176M	Inf	19.275M	18.177M	Inf
3690MHz_Outer_Full	Pass	19.35M	18.192M	Inf	19.35M	18.191M	Inf	19.35M	18.193M	Inf	19.35M	18.192M	Inf

Port X-N dB = Port X 26dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **EBW**

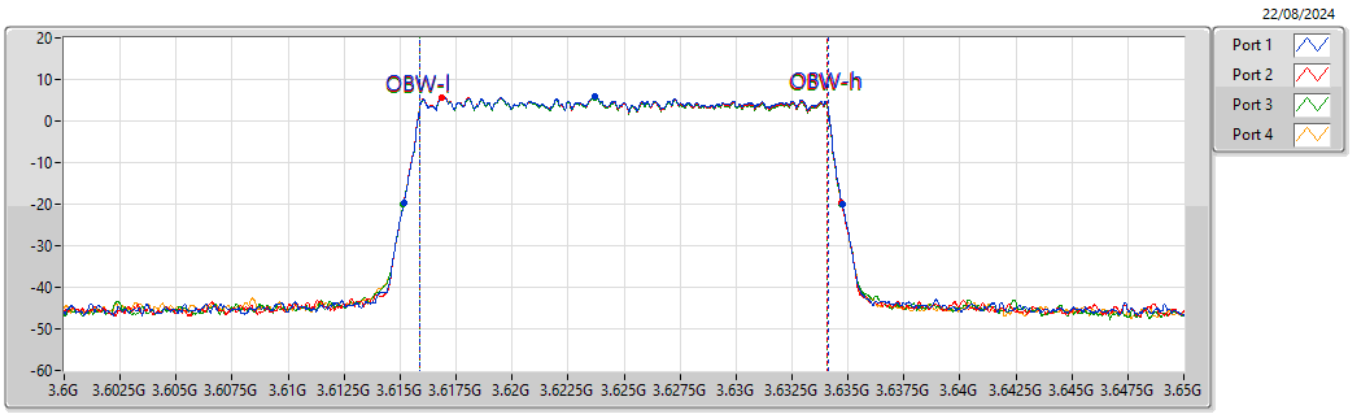
3560MHz_CP-OFDM_QPSK_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.5M	3.55025G	3.56975G	18.222M	3.550876G	3.569098G	1	3.56G	50M	300k	1M
19.625M	3.55015G	3.569775G	18.237M	3.550866G	3.569103G	2	3.56G	50M	300k	1M
19.525M	3.55025G	3.569775G	18.195M	3.55091G	3.569105G	3	3.56G	50M	300k	1M
19.575M	3.5502G	3.569775G	18.229M	3.550868G	3.569097G	4	3.56G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **EBW**

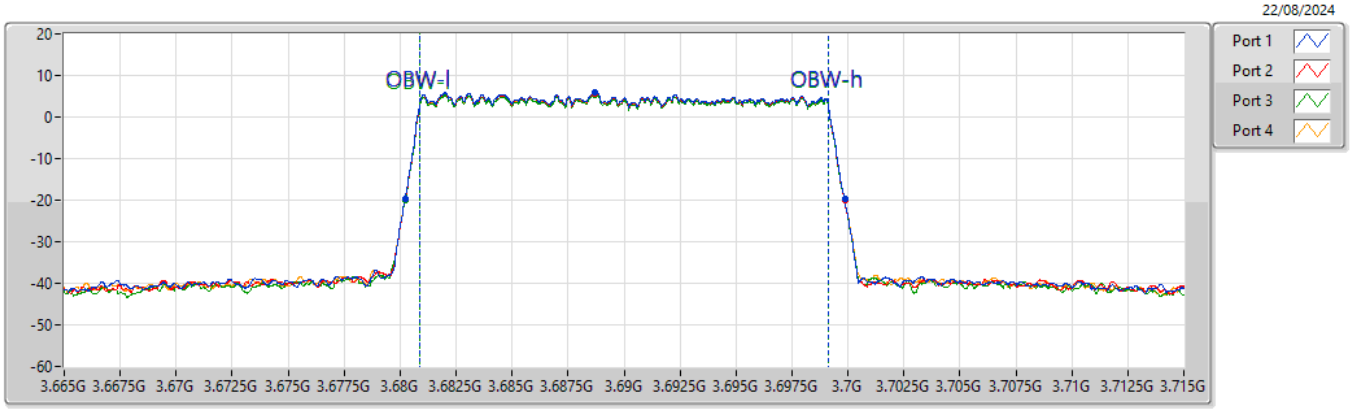
3625MHz_CP-OFDM_QPSK_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.575M	3.615175G	3.63475G	18.23M	3.615872G	3.634101G	1	3.625G	50M	300k	1M
19.55M	3.615175G	3.634725G	18.23M	3.615866G	3.634096G	2	3.625G	50M	300k	1M
19.575M	3.61515G	3.634725G	18.233M	3.615862G	3.634095G	3	3.625G	50M	300k	1M
19.55M	3.61515G	3.6347G	18.235M	3.615858G	3.634093G	4	3.625G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **EBW**

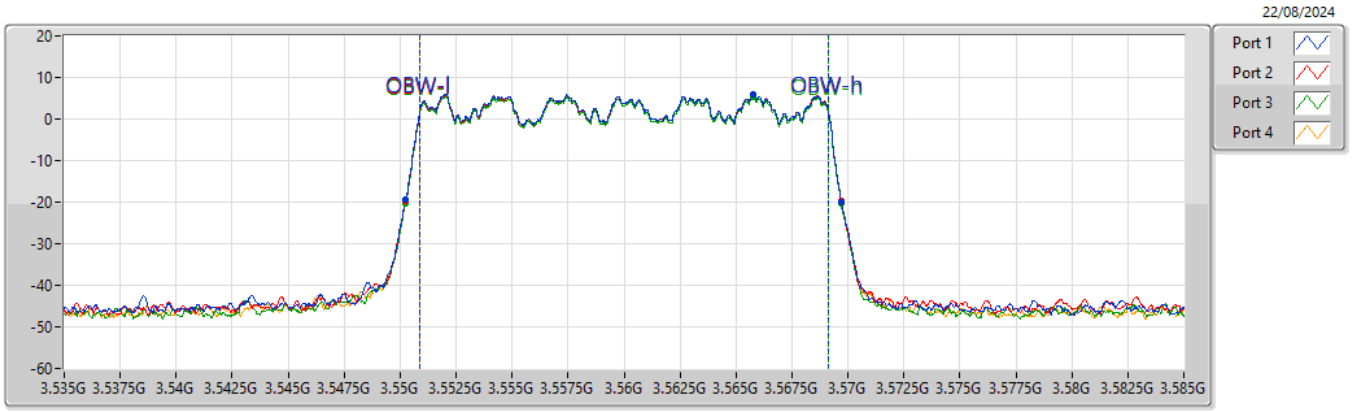
3690MHz_CP-OFDM_QPSK_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.625M	3.680225G	3.69985G	18.26M	3.680871G	3.699131G	1	3.69G	50M	300k	1M
19.625M	3.680225G	3.69985G	18.26M	3.680871G	3.699131G	2	3.69G	50M	300k	1M
19.625M	3.680225G	3.69985G	18.26M	3.680872G	3.699132G	3	3.69G	50M	300k	1M
19.625M	3.680225G	3.69985G	18.26M	3.680872G	3.699133G	4	3.69G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **EBW**

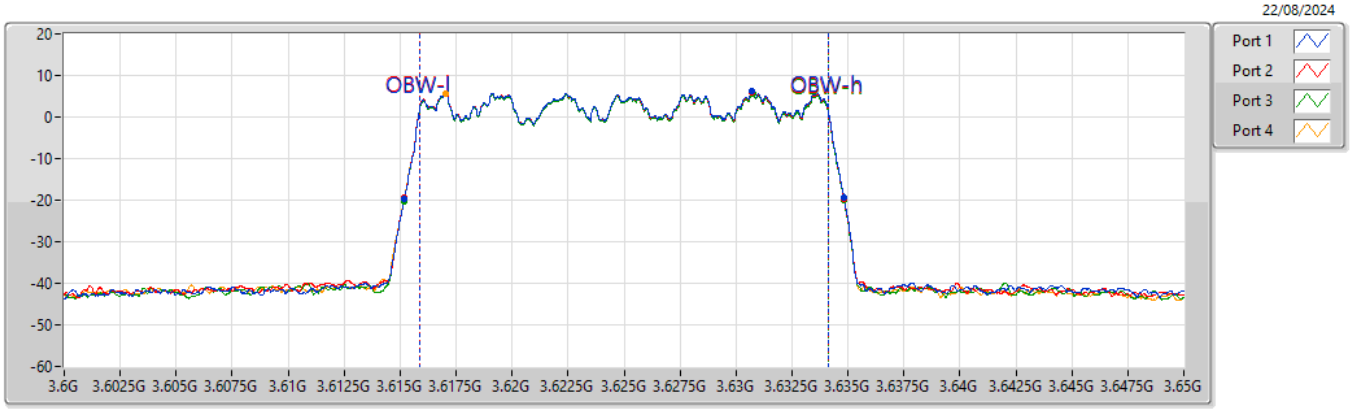
3560MHz_CP-OFDM_16QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.45M	3.55025G	3.5697G	18.257M	3.550871G	3.569128G	1	3.56G	50M	300k	1M
19.45M	3.55025G	3.5697G	18.256M	3.550875G	3.569131G	2	3.56G	50M	300k	1M
19.45M	3.55025G	3.5697G	18.256M	3.550873G	3.569129G	3	3.56G	50M	300k	1M
19.45M	3.55025G	3.5697G	18.257M	3.550875G	3.569132G	4	3.56G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **EBW**

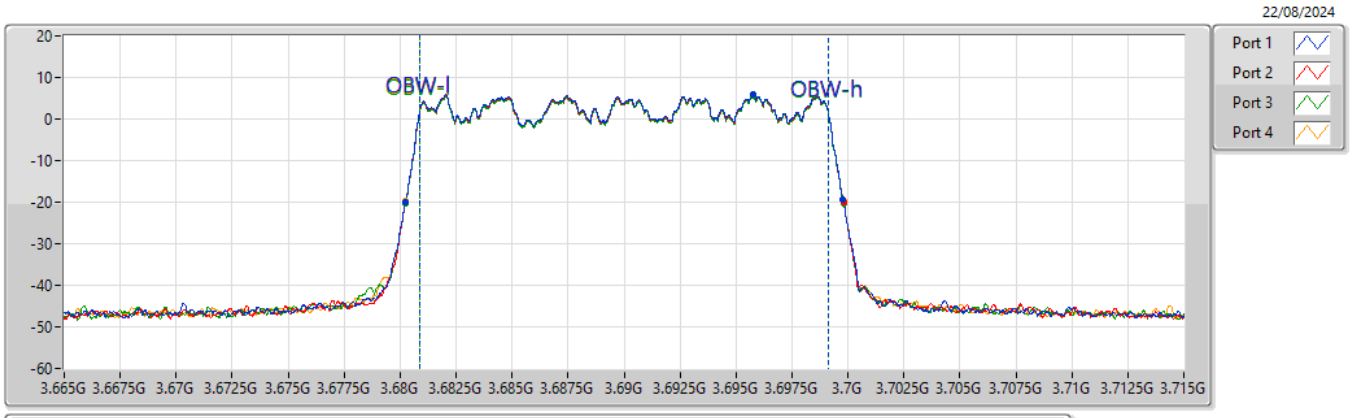
3625MHz_CP-OFDM_16QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.625M	3.6152G	3.634825G	18.264M	3.615865G	3.634129G	1	3.625G	50M	300k	1M
19.625M	3.6152G	3.634825G	18.265M	3.615861G	3.634126G	2	3.625G	50M	300k	1M
19.65M	3.615175G	3.634825G	18.269M	3.615858G	3.634127G	3	3.625G	50M	300k	1M
19.65M	3.615175G	3.634825G	18.27M	3.615854G	3.634124G	4	3.625G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_16QAM_4TX **EBW**

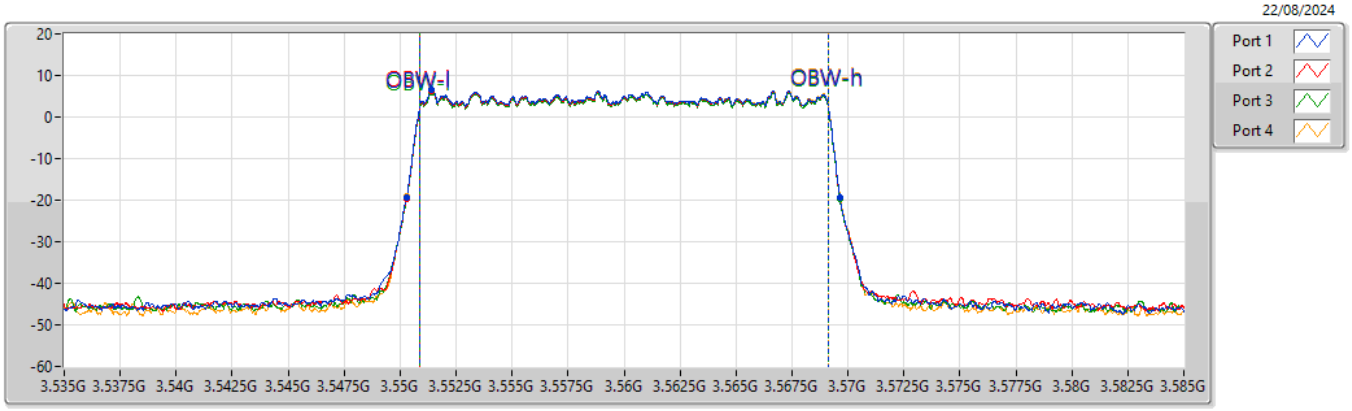
3690MHz_CP-OFDM_16QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.525M	3.68025G	3.699775G	18.267M	3.680867G	3.699134G	1	3.69G	50M	300k	1M
19.55M	3.68025G	3.6998G	18.267M	3.680868G	3.699135G	2	3.69G	50M	300k	1M
19.55M	3.68025G	3.6998G	18.269M	3.680867G	3.699136G	3	3.69G	50M	300k	1M
19.55M	3.68025G	3.6998G	18.269M	3.680868G	3.699137G	4	3.69G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **EBW**

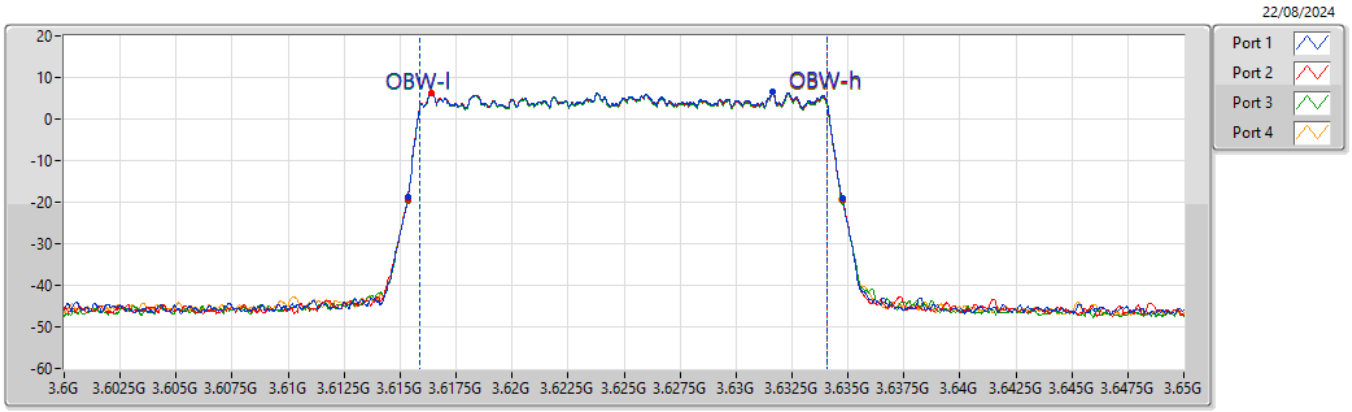
3560MHz_CP-OFDM_64QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.375M	3.550275G	3.56965G	18.209M	3.550889G	3.569098G	1	3.56G	50M	300k	1M
19.375M	3.550275G	3.56965G	18.209M	3.550892G	3.569101G	2	3.56G	50M	300k	1M
19.35M	3.5503G	3.56965G	18.21M	3.550891G	3.5691G	3	3.56G	50M	300k	1M
19.35M	3.5503G	3.56965G	18.209M	3.550893G	3.569103G	4	3.56G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **EBW**

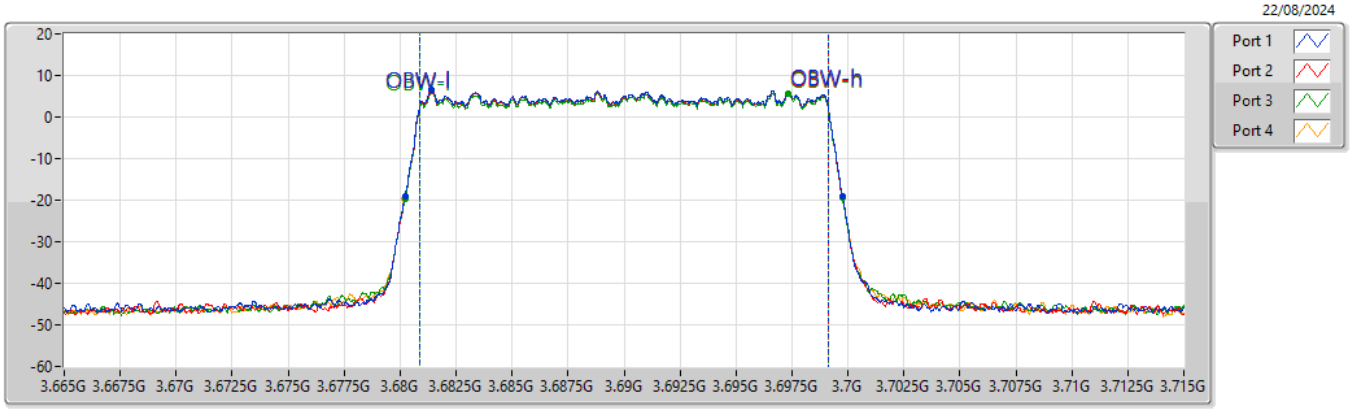
3625MHz_CP-OFDM_64QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.4M	3.61535G	3.63475G	18.205M	3.615887G	3.634093G	1	3.625G	50M	300k	1M
19.425M	3.615325G	3.63475G	18.207M	3.615882G	3.634088G	2	3.625G	50M	300k	1M
19.425M	3.615325G	3.63475G	18.204M	3.615882G	3.634086G	3	3.625G	50M	300k	1M
19.4M	3.615325G	3.634725G	18.205M	3.615878G	3.634082G	4	3.625G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_64QAM_4TX **EBW**

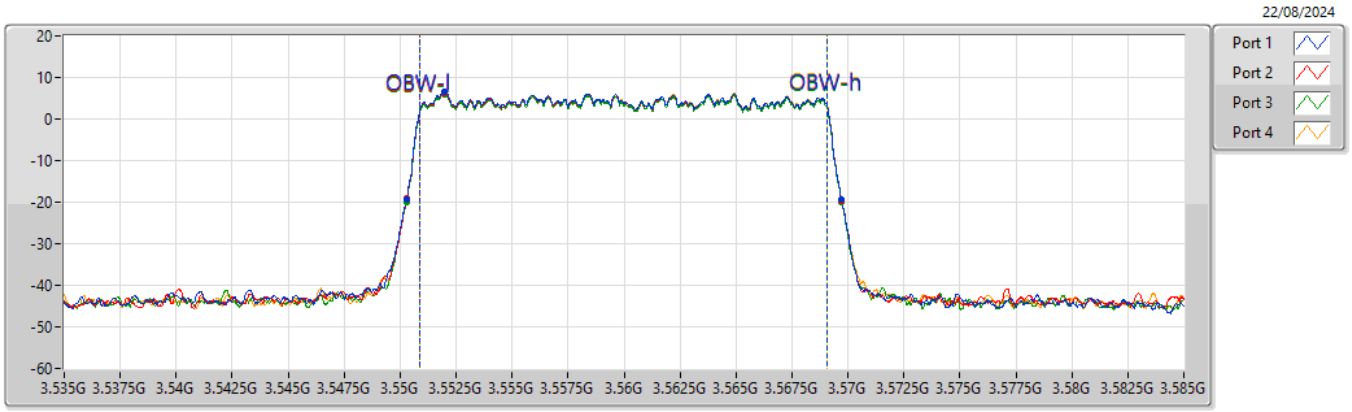
3690MHz_CP-OFDM_64QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.525M	3.680225G	3.69975G	18.225M	3.680878G	3.699103G	1	3.69G	50M	300k	1M
19.525M	3.680225G	3.69975G	18.225M	3.680878G	3.699103G	2	3.69G	50M	300k	1M
19.525M	3.680225G	3.69975G	18.226M	3.680879G	3.699105G	3	3.69G	50M	300k	1M
19.55M	3.6802G	3.69975G	18.226M	3.680879G	3.699104G	4	3.69G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **EBW**

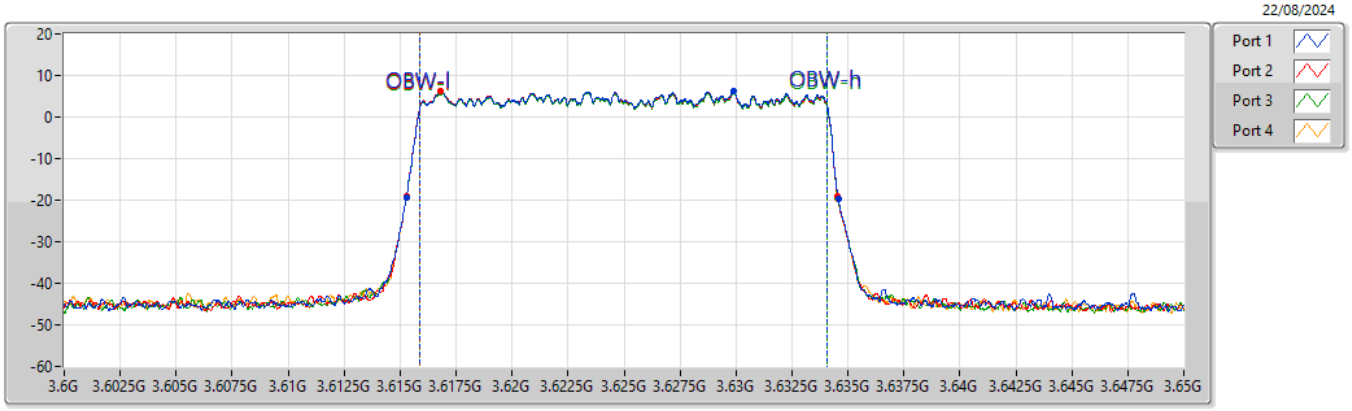
3560MHz_CP-OFDM_256QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.45M	3.550275G	3.569725G	18.186M	3.550897G	3.569083G	1	3.56G	50M	300k	1M
19.425M	3.5503G	3.569725G	18.185M	3.5509G	3.569086G	2	3.56G	50M	300k	1M
19.45M	3.550275G	3.569725G	18.186M	3.550899G	3.569085G	3	3.56G	50M	300k	1M
19.45M	3.550275G	3.569725G	18.186M	3.550902G	3.569088G	4	3.56G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **EBW**

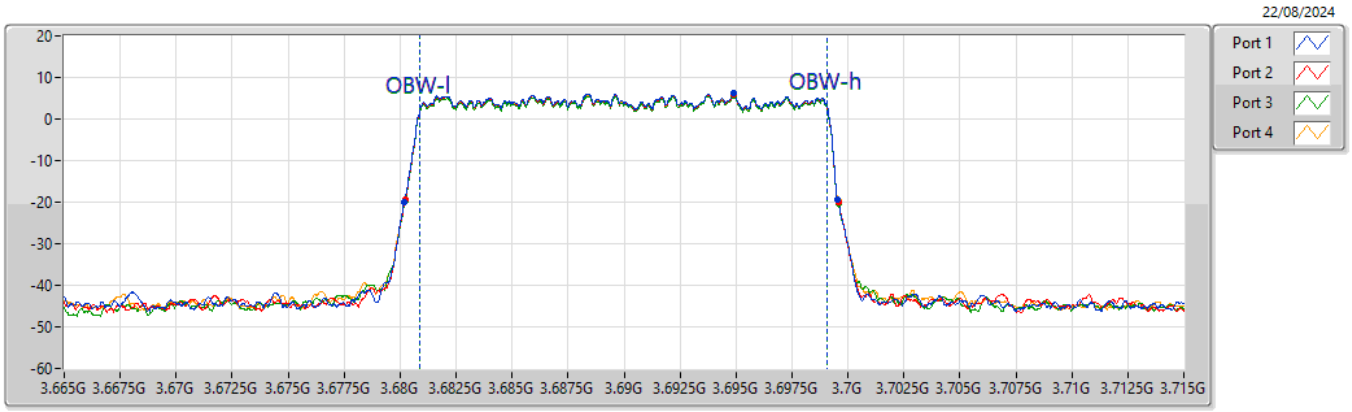
3625MHz_CP-OFDM_256QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.3M	3.615275G	3.634575G	18.171M	3.615896G	3.634066G	1	3.625G	50M	300k	1M
19.275M	3.615275G	3.63455G	18.172M	3.61589G	3.634061G	2	3.625G	50M	300k	1M
19.275M	3.615275G	3.63455G	18.176M	3.615885G	3.634061G	3	3.625G	50M	300k	1M
19.275M	3.615275G	3.63455G	18.177M	3.61588G	3.634057G	4	3.625G	50M	300k	1M

Band n48_NR_20MHz_Nss1,CP-OFDM_256QAM_4TX **EBW**

3690MHz_CP-OFDM_256QAM_Outer_Full



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.35M	3.6802G	3.69955G	18.192M	3.68088G	3.699072G	1	3.69G	50M	300k	1M
19.35M	3.680225G	3.699575G	18.191M	3.680881G	3.699072G	2	3.69G	50M	300k	1M
19.35M	3.680225G	3.699575G	18.193M	3.680881G	3.699074G	3	3.69G	50M	300k	1M
19.35M	3.680225G	3.699575G	18.192M	3.680881G	3.699073G	4	3.69G	50M	300k	1M

Summary

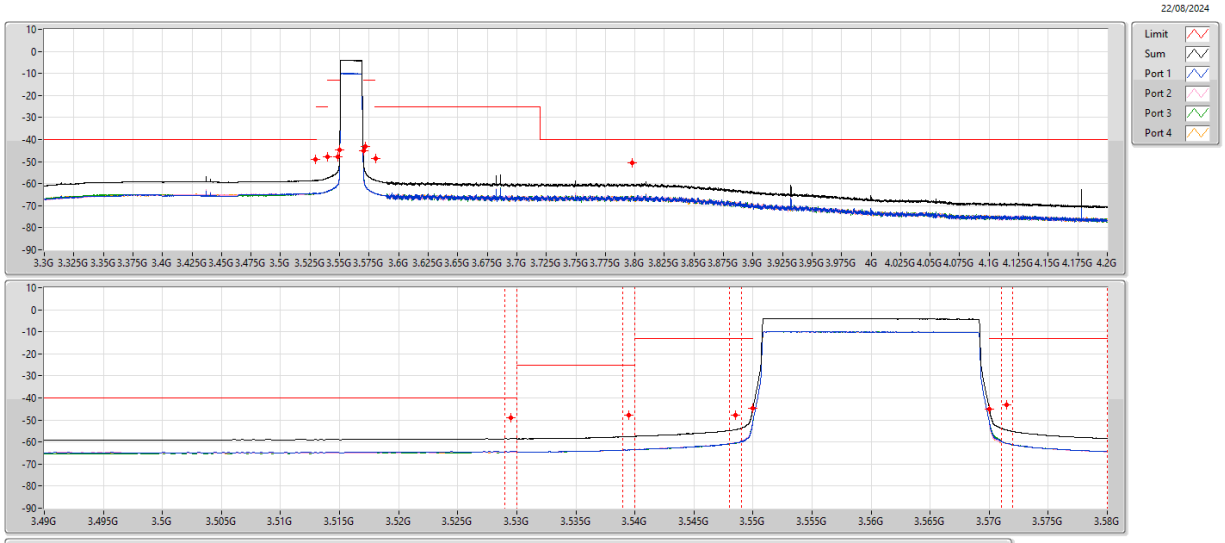
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band n48	-	-	-	-	-	-	-	-	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	Pass	3.3G	3.595G	100k	300k	RMS	3.4405G	-45.54	-40.00	-5.54	MBW 1M	-

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	3.3G	3.53G	100k	300k	RMS	3.5295G	-48.79	-40.00	-8.79	MBW 1M	-
3560MHz_Outer_Full	Pass	3.53G	3.54G	100k	300k	RMS	3.5395G	-47.82	-25.00	-22.82	MBW 1M	-
3560MHz_Outer_Full	Pass	3.54G	3.549G	200k	500k	RMS	3.5485G	-47.66	-13.00	-34.66	MBW 1M	-
3560MHz_Outer_Full	Pass	3.549G	3.55G	200k	500k	RMS	3.55G	-44.81	-13.00	-31.81	-	-
3560MHz_Outer_Full	Pass	3.57G	3.571G	200k	500k	RMS	3.57G	-45.00	-13.00	-32.00	-	-
3560MHz_Outer_Full	Pass	3.571G	3.58G	100k	300k	RMS	3.5715G	-43.32	-13.00	-30.32	MBW 1M	-
3560MHz_Outer_Full	Pass	3.58G	3.59G	100k	300k	RMS	3.5805G	-48.78	-25.00	-23.78	MBW 1M	-
3560MHz_Outer_Full	Pass	3.59G	4.2G	100k	300k	RMS	3.7975G	-50.67	-40.00	-10.67	MBW 1M	-
3625MHz_Outer_Full	Pass	3.3G	3.595G	100k	300k	RMS	3.4405G	-45.54	-40.00	-5.54	MBW 1M	-
3625MHz_Outer_Full	Pass	3.595G	3.605G	100k	300k	RMS	3.6045G	-48.09	-25.00	-23.09	MBW 1M	-
3625MHz_Outer_Full	Pass	3.605G	3.614G	200k	500k	RMS	3.6135G	-48.57	-13.00	-35.57	MBW 1M	-
3625MHz_Outer_Full	Pass	3.614G	3.615G	200k	500k	RMS	3.615G	-44.48	-13.00	-31.48	-	-
3625MHz_Outer_Full	Pass	3.635G	3.636G	200k	500k	RMS	3.635G	-45.26	-13.00	-32.26	-	-
3625MHz_Outer_Full	Pass	3.636G	3.645G	100k	300k	RMS	3.6365G	-43.71	-13.00	-30.71	MBW 1M	-
3625MHz_Outer_Full	Pass	3.645G	3.655G	100k	300k	RMS	3.6455G	-48.15	-25.00	-23.15	MBW 1M	-
3625MHz_Outer_Full	Pass	3.655G	4.2G	100k	300k	RMS	3.7475G	-49.27	-40.00	-9.27	MBW 1M	-
3690MHz_Outer_Full	Pass	3.3G	3.66G	100k	300k	RMS	3.4405G	-46.64	-40.00	-6.64	MBW 1M	-
3690MHz_Outer_Full	Pass	3.66G	3.67G	100k	300k	RMS	3.6695G	-47.87	-25.00	-22.87	MBW 1M	-
3690MHz_Outer_Full	Pass	3.67G	3.679G	200k	500k	RMS	3.6785G	-48.22	-13.00	-35.22	MBW 1M	-
3690MHz_Outer_Full	Pass	3.679G	3.68G	200k	500k	RMS	3.68G	-44.93	-13.00	-31.93	-	-
3690MHz_Outer_Full	Pass	3.7G	3.701G	200k	500k	RMS	3.7G	-44.66	-13.00	-31.66	-	-
3690MHz_Outer_Full	Pass	3.701G	3.71G	100k	300k	RMS	3.7015G	-43.85	-13.00	-30.85	MBW 1M	-
3690MHz_Outer_Full	Pass	3.71G	3.72G	100k	300k	RMS	3.7105G	-48.50	-25.00	-23.50	MBW 1M	-
3690MHz_Outer_Full	Pass	3.72G	4.2G	100k	300k	RMS	3.7205G	-49.24	-40.00	-9.24	MBW 1M	-

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

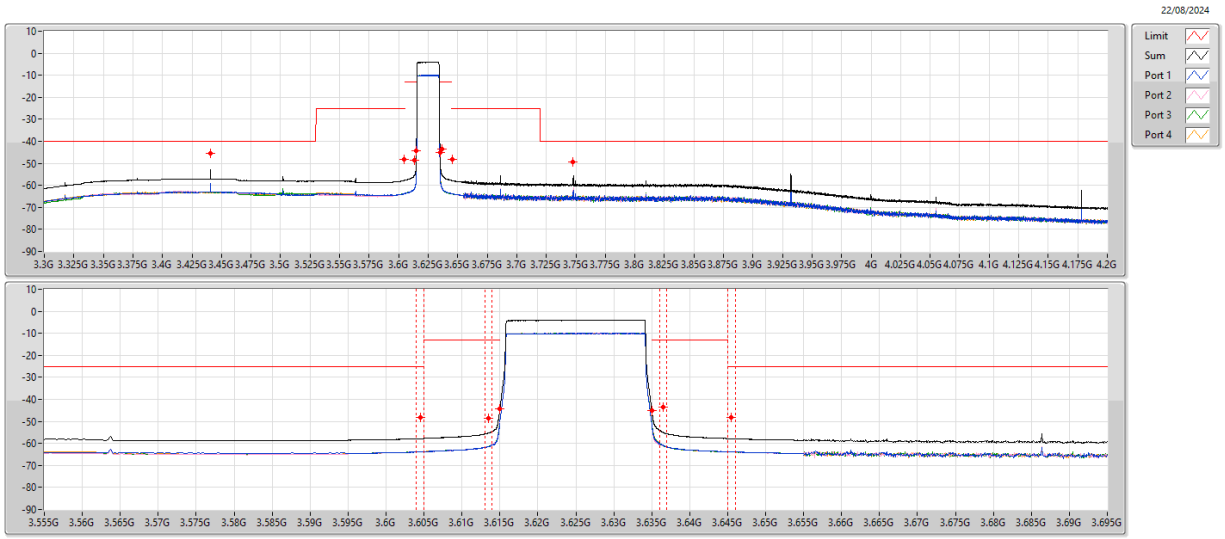
3560MHz_CP-OFDM_QPSK_Outer_Full



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
3.3G	3.53G	100k	300k	RMS	3.5295G	-48.79	-40.00	-8.79	MBW 1M	-	-	-	-	-
3.53G	3.54G	100k	300k	RMS	3.5395G	-47.82	-25.00	-22.82	MBW 1M	-	-	-	-	-
3.54G	3.549G	200k	500k	RMS	3.5485G	-47.66	-13.00	-34.66	MBW 1M	-	-	-	-	-
3.549G	3.55G	200k	500k	RMS	3.55G	-44.81	-13.00	-31.81	-	-	-64.35	-64.52	-64.67	-64.77
3.57G	3.571G	200k	500k	RMS	3.57G	-45.00	-13.00	-32.00	-	-	-67.06	-67.35	-66.86	-66.76
3.571G	3.58G	100k	300k	RMS	3.5715G	-43.32	-13.00	-30.32	MBW 1M	-	-	-	-	-
3.58G	3.59G	100k	300k	RMS	3.5805G	-48.78	-25.00	-23.78	MBW 1M	-	-	-	-	-
3.59G	4.2G	100k	300k	RMS	3.7975G	-50.67	-40.00	-10.67	MBW 1M	-	-	-	-	-

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

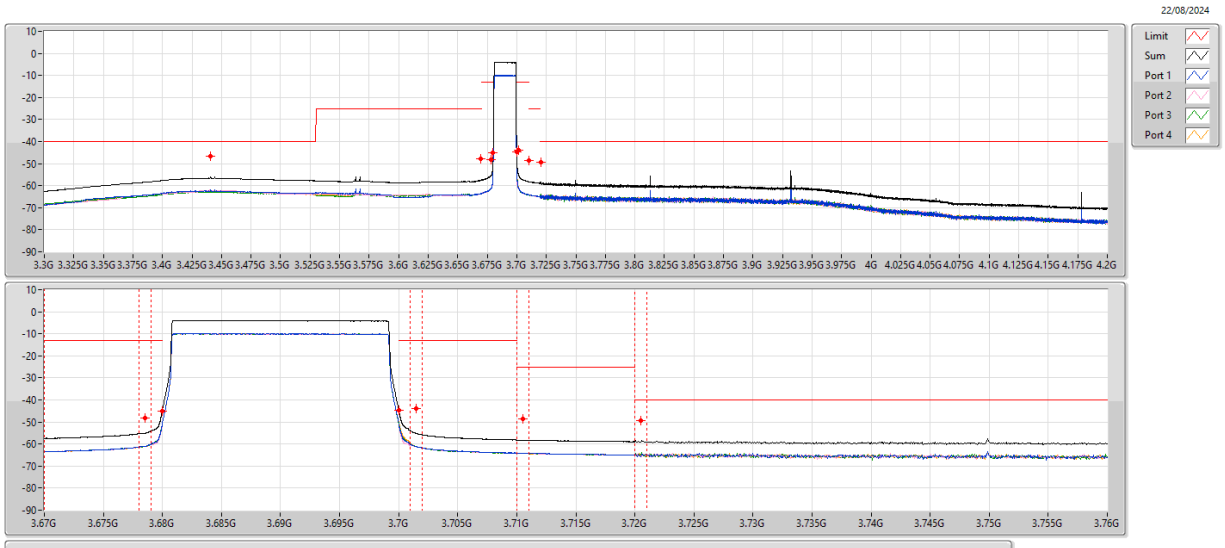
3625MHz_CP-OFDM_QPSK_Outer_Full



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
3.3G	3.595G	100k	300k	RMS	3.4405G	-45.54	-40.00	-5.54	MBW 1M	-	-	-	-	-
3.595G	3.605G	100k	300k	RMS	3.6045G	-48.09	-25.00	-23.09	MBW 1M	-	-	-	-	-
3.605G	3.614G	200k	500k	RMS	3.6135G	-48.57	-13.00	-35.57	MBW 1M	-	-	-	-	-
3.614G	3.615G	200k	500k	RMS	3.615G	-44.48	-13.00	-31.48	-	-	-64.43	-65.01	-65.04	-64.83
3.635G	3.636G	200k	500k	RMS	3.635G	-45.26	-13.00	-32.26	-	-	-67.35	-67.50	-68.00	-67.20
3.636G	3.645G	100k	300k	RMS	3.6365G	-43.71	-13.00	-30.71	MBW 1M	-	-	-	-	-
3.645G	3.655G	100k	300k	RMS	3.6455G	-48.15	-25.00	-23.15	MBW 1M	-	-	-	-	-
3.655G	4.2G	100k	300k	RMS	3.7475G	-49.27	-40.00	-9.27	MBW 1M	-	-	-	-	-

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

3690MHz_CP-OFDM_QPSK_Outer_Full



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
3.3G	3.66G	100k	300k	RMS	3.4405G	-46.64	-40.00	-6.64	MBW 1M	-	-	-	-	-
3.66G	3.67G	100k	300k	RMS	3.6695G	-47.87	-25.00	-22.87	MBW 1M	-	-	-	-	-
3.67G	3.679G	200k	500k	RMS	3.6785G	-48.22	-13.00	-35.22	MBW 1M	-	-	-	-	-
3.679G	3.68G	200k	500k	RMS	3.68G	-44.93	-13.00	-31.93	-	-	-64.09	-64.26	-64.02	-64.10
3.7G	3.701G	200k	500k	RMS	3.7G	-44.66	-13.00	-31.66	-	-	-68.90	-68.86	-68.36	-68.68
3.701G	3.71G	100k	300k	RMS	3.7015G	-43.85	-13.00	-30.85	MBW 1M	-	-	-	-	-
3.71G	3.72G	100k	300k	RMS	3.7105G	-48.50	-25.00	-23.50	MBW 1M	-	-	-	-	-
3.72G	4.2G	100k	300k	RMS	3.7205G	-49.24	-40.00	-9.24	MBW 1M	-	-	-	-	-

Summary

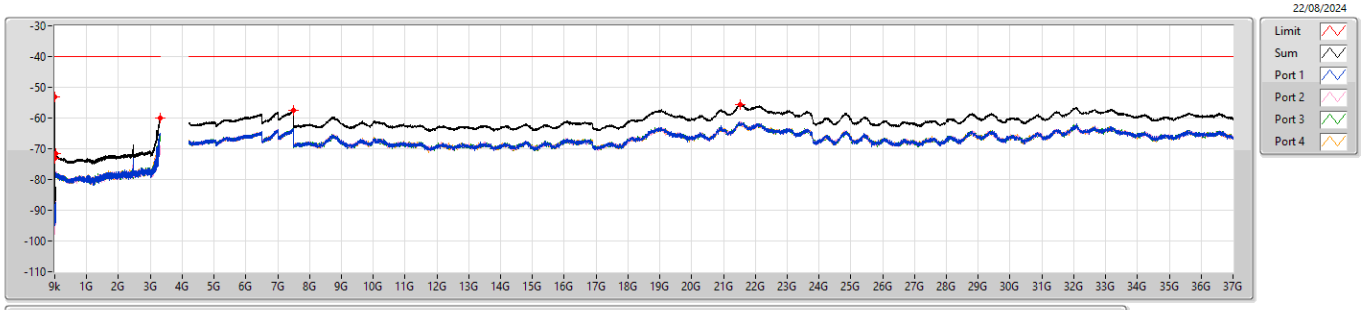
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band n48	-	-	-	-	-	-	-	-	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	Pass	9k	150k	1k	3k	RMS	119.826k	-52.86	-40.00	-12.86	-	-

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full	Pass	9k	150k	1k	3k	RMS	120.249k	-53.01	-40.00	-13.01	-	-
3560MHz_Outer_Full	Pass	150k	30M	10k	30k	RMS	717.15k	-72.97	-40.00	-32.97	-	-
3560MHz_Outer_Full	Pass	30M	1G	100k	300k	RMS	36.79M	-71.68	-40.00	-31.68	-	-
3560MHz_Outer_Full	Pass	1G	3.3G	100k	300k	RMS	3.3G	-60.13	-40.00	-20.13	-	-
3560MHz_Outer_Full	Pass	4.2G	8G	1M	3M	RMS	7.4965G	-57.56	-40.00	-17.56	-	-
3560MHz_Outer_Full	Pass	8G	37G	1M	3M	RMS	21.52125G	-55.66	-40.00	-15.66	-	-
3625MHz_Outer_Full	Pass	9k	150k	1k	3k	RMS	119.544k	-52.96	-40.00	-12.96	-	-
3625MHz_Outer_Full	Pass	150k	30M	10k	30k	RMS	717.15k	-72.61	-40.00	-32.61	-	-
3625MHz_Outer_Full	Pass	30M	1G	100k	300k	RMS	38.73M	-71.93	-40.00	-31.93	-	-
3625MHz_Outer_Full	Pass	1G	3.3G	100k	300k	RMS	3.3G	-60.90	-40.00	-20.90	-	-
3625MHz_Outer_Full	Pass	4.2G	8G	1M	3M	RMS	7.4908G	-57.61	-40.00	-17.61	-	-
3625MHz_Outer_Full	Pass	8G	37G	1M	3M	RMS	21.54663G	-55.52	-40.00	-15.52	-	-
3690MHz_Outer_Full	Pass	9k	150k	1k	3k	RMS	119.826k	-52.86	-40.00	-12.86	-	-
3690MHz_Outer_Full	Pass	150k	30M	10k	30k	RMS	508.2k	-73.14	-40.00	-33.14	-	-
3690MHz_Outer_Full	Pass	30M	1G	100k	300k	RMS	37.76M	-71.83	-40.00	-31.83	-	-
3690MHz_Outer_Full	Pass	1G	3.3G	100k	300k	RMS	3.29655G	-61.89	-40.00	-21.89	-	-
3690MHz_Outer_Full	Pass	4.2G	8G	1M	3M	RMS	7.49365G	-57.54	-40.00	-17.54	-	-
3690MHz_Outer_Full	Pass	8G	37G	1M	3M	RMS	21.53575G	-55.46	-40.00	-15.46	-	-

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

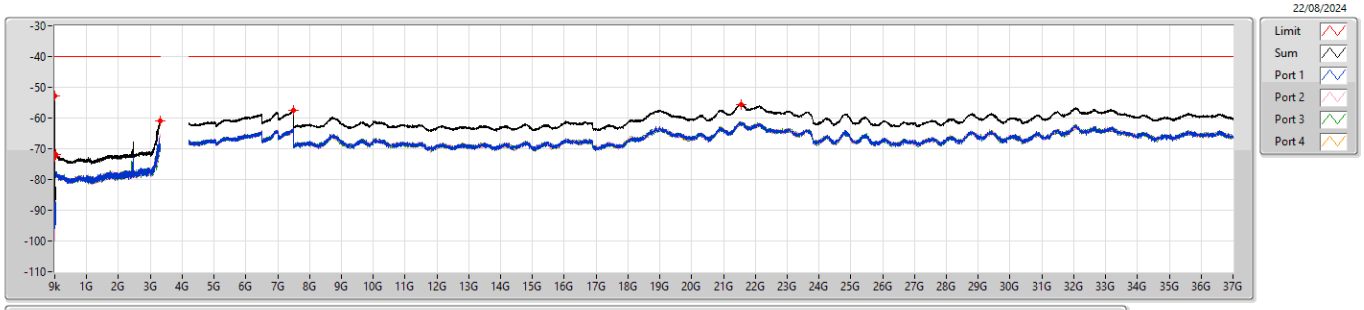
3560MHz_CP-OFDM_QPSK_Outer_Full



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
9k	150k	1k	3k	RMS	120.249k	-53.01	-40.00	-13.01	-	-	-61.39	-59.17	-56.95	-59.81
150k	30M	10k	30k	RMS	717.15k	-72.97	-40.00	-32.97	-	-	-78.72	-78.38	-83.84	-78.45
30M	1G	100k	300k	RMS	36.79M	-71.68	-40.00	-31.68	-	-	-77.88	-78.68	-79.35	-79.87
1G	3.3G	100k	300k	RMS	3.3G	-60.13	-40.00	-20.13	-	-	-91.77	-92.38	-89.68	-91.21
4.2G	8G	1M	3M	RMS	7.4965G	-57.56	-40.00	-17.56	-	-	-80.20	-78.91	-79.51	-79.20
8G	37G	1M	3M	RMS	21.52125G	-55.66	-40.00	-15.66	-	-	-77.98	-78.45	-78.48	-77.99

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

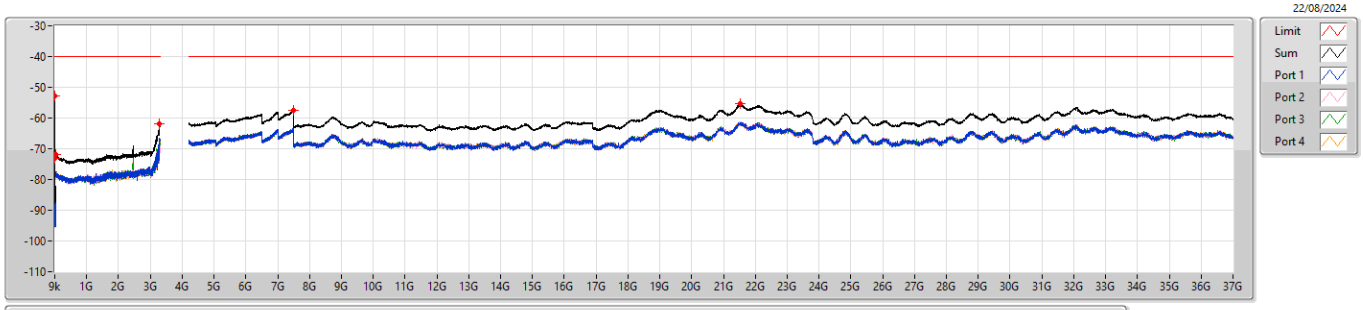
3625MHz_CP-OFDM_QPSK_Outer_Full



F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
9k	150k	1k	3k	RMS	119.544k	-52.96	-40.00	-12.96	-	-	-60.79	-56.49	-59.84	-60.23
150k	30M	10k	30k	RMS	717.15k	-72.61	-40.00	-32.61	-	-	-77.53	-78.62	-77.93	-78.85
30M	1G	100k	300k	RMS	38.73M	-71.93	-40.00	-31.93	-	-	-76.10	-80.35	-78.95	-78.77
1G	3.3G	100k	300k	RMS	3.3G	-60.90	-40.00	-20.90	-	-	-90.28	-88.89	-89.24	-92.10
4.2G	8G	1M	3M	RMS	7.4908G	-57.61	-40.00	-17.61	-	-	-79.83	-79.65	-78.92	-79.19
8G	37G	1M	3M	RMS	21.54663G	-55.52	-40.00	-15.52	-	-	-78.62	-79.28	-78.62	-78.41

Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX **CSE-TX-Sum**

3690MHz_CP-OFDM_QPSK_Outer_Full

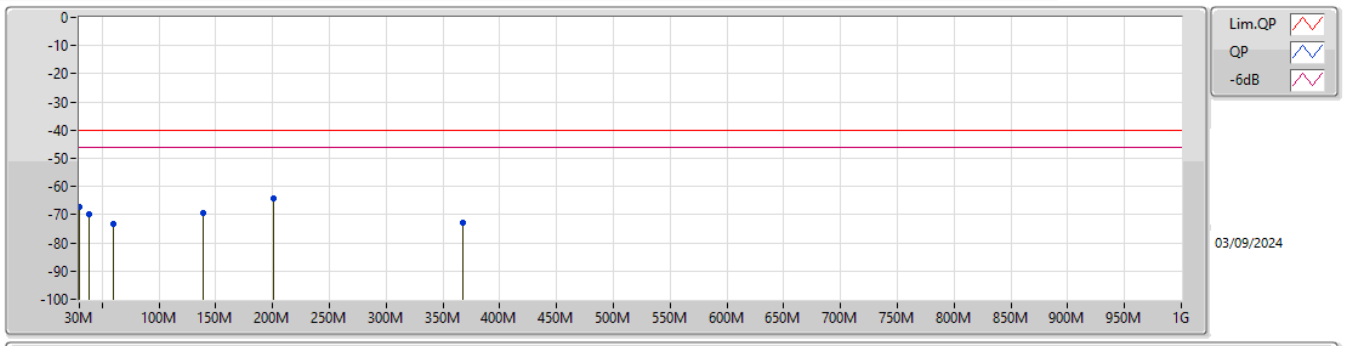


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)	P1(dBm)	P2(dBm)	P3(dBm)	P4(dBm)
9k	150k	1k	3k	RMS	119.826k	-52.86	-40.00	-12.86	-	-	-57.63	-59.44	-61.73	-57.84
150k	30M	10k	30k	RMS	508.2k	-73.14	-40.00	-33.14	-	-	-81.09	-79.68	-83.31	-80.14
30M	1G	100k	300k	RMS	37.76M	-71.83	-40.00	-31.83	-	-	-80.56	-78.95	-80.15	-79.00
1G	3.3G	100k	300k	RMS	3.29655G	-61.89	-40.00	-21.89	-	-	-92.96	-90.03	-89.12	-89.89
4.2G	8G	1M	3M	RMS	7.49365G	-57.54	-40.00	-17.54	-	-	-79.56	-79.20	-79.48	-79.84
8G	37G	1M	3M	RMS	21.53575G	-55.46	-40.00	-15.46	-	-	-78.68	-78.23	-79.60	-79.08

Summary

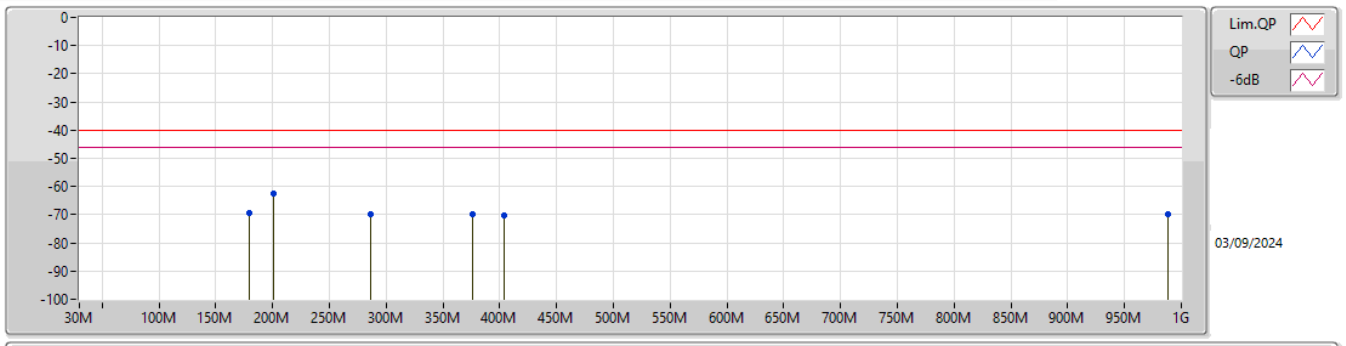
Mode	Result	Type	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Condition
Mode 2	Pass	PK	200.72M	-62.38	-40.00	-22.38	Horizontal

Mode 2



Freq	Level	Limit	Margin	Factor	Condition	Raw
(Hz)	(dBm)	(dBm)	(dB)	(dB/m)		(dBm)
30M	-67.31	-40.00	-27.31	-18.72	Vertical	-48.59
38.73M	-69.95	-40.00	-29.95	-23.00	Vertical	-46.95
60.07M	-73.46	-40.00	-33.46	-29.93	Vertical	-43.53
138.64M	-69.22	-40.00	-29.22	-24.28	Vertical	-44.94
200.72M	-64.34	-40.00	-24.34	-26.22	Vertical	-38.12
367.56M	-72.76	-40.00	-32.76	-18.84	Vertical	-53.92

Mode 2



Freq	Level	Limit	Margin	Factor	Condition	Raw
(Hz)	(dBm)	(dBm)	(dB)	(dB/m)		(dBm)
179.38M	-69.46	-40.00	-29.46	-26.02	Horizontal	-43.44
200.72M	-62.38	-40.00	-22.38	-26.22	Horizontal	-36.16
286.08M	-69.83	-40.00	-29.83	-21.61	Horizontal	-48.22
376.29M	-69.78	-40.00	-29.78	-18.66	Horizontal	-51.12
403.45M	-70.41	-40.00	-30.41	-17.29	Horizontal	-53.12
988.36M	-69.75	-40.00	-29.75	-9.37	Horizontal	-60.38

Summary

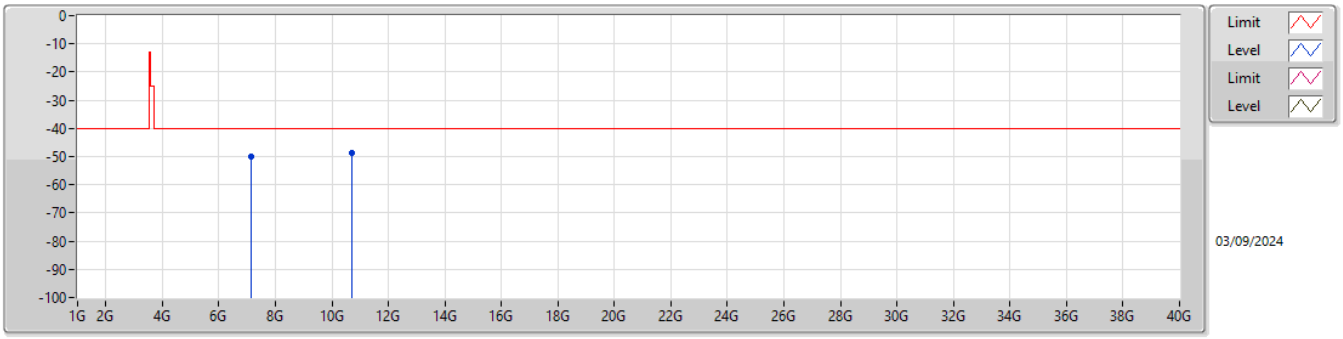
Mode	Result	Type	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Band n48	-	-	-	-	-	-	-	-	-	-	-	-
NR_20MHz_CP-OFDM_QPSK	Pass	PK	10.92117G	-47.45	-40.00	-7.45	14.70	3	Vertical	183	1.50	-

DG = Directional Gain; Port n = Port n output power

DG = Directional Gain; Port n = Port n output power

Band n48_NR_20MHz_CP-OFDM_QPSK

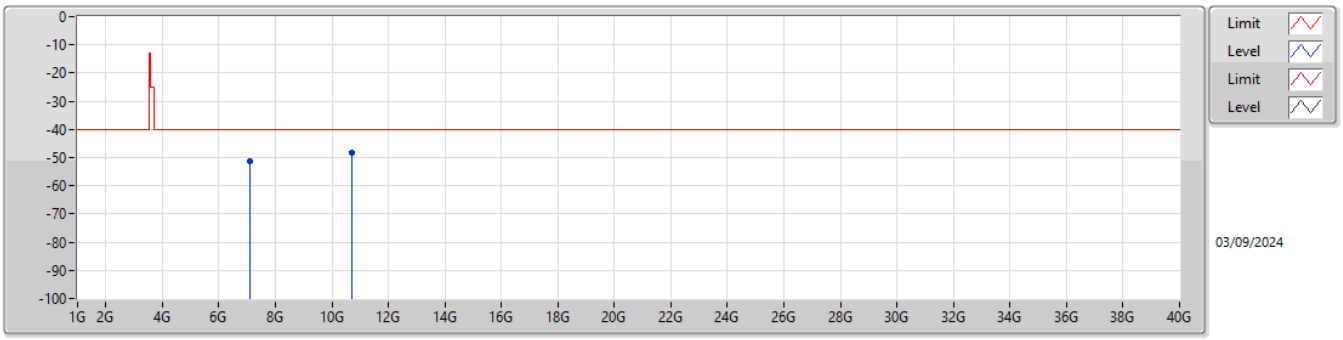
3560.01MHz_Traffic



Freq	Level	Limit	Margin	Factor	Condition	Raw
(Hz)	(dBm)	(dBm)	(dB)	(dB)		(dBm)
7.12322G	-50.14	-40.00	-10.14	9.08	Vertical	-59.22
10.71483G	-48.89	-40.00	-8.89	14.44	Vertical	-63.33

Band n48_NR_20MHz_CP-OFDM_QPSK

3560.01MHz_Traffic



Freq	Level	Limit	Margin	Factor	Condition	Raw
(Hz)	(dBm)	(dBm)	(dB)	(dB)		(dBm)
7.11782G	-51.29	-40.00	-11.29	9.06	Horizontal	-60.35
10.71183G	-48.28	-40.00	-8.28	14.44	Horizontal	-62.72

Summary

Mode	Result	Ch (Hz)	Center (Hz)	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)	Port	Remark
Band n48	-	-	-	-	-	-	-	-	-
NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	Pass	3.56G	3.559987G	3.550877G	3.569096G	-3.7012	3.55G,3.7G,Inf	1	-

Result

Mode	Result	Ch (Hz)	Center (Hz)	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)	Port	Remark
Band n48_NR_20MHz_Nss1,CP-OFDM_QPSK_4TX	-	-	-	-	-	-	-	-	-
3560MHz_Outer_Full_-30°C	Pass	3.56G	3.559983G	3.55088G	3.569086G	-4.7159	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_-20°C	Pass	3.56G	3.559983G	3.550883G	3.569083G	-4.6566	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_-10°C	Pass	3.56G	3.559995G	3.550887G	3.569103G	-1.3318	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_0°C	Pass	3.56G	3.559987G	3.550877G	3.569096G	-3.7012	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_10°C	Pass	3.56G	3.559988G	3.55089G	3.569086G	-3.276	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_20°C	Pass	3.56G	3.559997G	3.550897G	3.569097G	-0.9022	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_30°C	Pass	3.56G	3.559994G	3.550895G	3.569094G	-1.5637	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_40°C	Pass	3.56G	3.559992G	3.550885G	3.569099G	-2.2235	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_50°C	Pass	3.56G	3.559988G	3.550885G	3.56909G	-3.4957	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_138V	Pass	3.56G	3.559988G	3.550882G	3.569095G	-3.2477	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_120V	Pass	3.56G	3.559992G	3.550895G	3.569089G	-2.3345	3.55G,3.7G,Inf	1	-
3560MHz_Outer_Full_102V	Pass	3.56G	3.559988G	3.55089G	3.569086G	-3.3422	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_-30°C	Pass	3.625G	3.624973G	3.615878G	3.634068G	-7.5256	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_-20°C	Pass	3.625G	3.624982G	3.615883G	3.63408G	-5.0045	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_-10°C	Pass	3.625G	3.624976G	3.615877G	3.634076G	-6.5982	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_0°C	Pass	3.625G	3.624978G	3.615876G	3.634081G	-5.9689	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_10°C	Pass	3.625G	3.624981G	3.615882G	3.634079G	-5.3471	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_20°C	Pass	3.625G	3.624976G	3.615879G	3.634072G	-6.718	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_30°C	Pass	3.625G	3.624979G	3.615872G	3.634086G	-5.7873	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_40°C	Pass	3.625G	3.624975G	3.615878G	3.634071G	-6.9994	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_50°C	Pass	3.625G	3.624975G	3.615876G	3.634074G	-6.879	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_138V	Pass	3.625G	3.624978G	3.615876G	3.63408G	-5.9348	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_120V	Pass	3.625G	3.624984G	3.615886G	3.634082G	-4.3974	3.55G,3.7G,Inf	1	-
3625MHz_Outer_Full_102V	Pass	3.625G	3.624976G	3.615876G	3.634076G	-6.7277	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_-30°C	Pass	3.69G	3.689984G	3.680883G	3.699084G	-4.4151	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_-20°C	Pass	3.69G	3.689992G	3.680883G	3.6991G	-2.2748	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_-10°C	Pass	3.69G	3.689987G	3.680881G	3.699093G	-3.529	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_0°C	Pass	3.69G	3.689988G	3.680885G	3.699091G	-3.2836	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_10°C	Pass	3.69G	3.689986G	3.680886G	3.699087G	-3.6699	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_20°C	Pass	3.69G	3.689985G	3.680883G	3.699088G	-4.0106	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_30°C	Pass	3.69G	3.689984G	3.68088G	3.699089G	-4.2365	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_40°C	Pass	3.69G	3.689992G	3.680884G	3.699099G	-2.2412	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_50°C	Pass	3.69G	3.689981G	3.680877G	3.699084G	-5.2516	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_138V	Pass	3.69G	3.689985G	3.680875G	3.699094G	-4.158	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_120V	Pass	3.69G	3.689985G	3.680879G	3.699091G	-3.988	3.55G,3.7G,Inf	1	-
3690MHz_Outer_Full_102V	Pass	3.69G	3.689991G	3.680883G	3.699098G	-2.5346	3.55G,3.7G,Inf	1	-