FCC Test Report
(Part 96 – NR B48)

Report No.:	RFBEIH-WTW-P24110374-2
FCC ID:	P27-SCE5172N48
Test Model:	SCE5172-n48
Received Date:	2024/11/19
Test Date:	2024/12/04 ~ 2025/2/26
Issued Date:	2025/3/7
Applicant:	Sercomm Corp.
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Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
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Test Location (2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003 281270 / TW0032

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Table of Contents

Release Control Record 4

1 Certificate of Conformity 5

2 Summary of Test Results 6

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Test Mode Applicability and Tested Channel Detail 10
3.3 Description of Support Units 16
3.3.1 Configuration of System under Test 16
3.4 General Description of Applied Standards and References 18

4 Test Types and Results 19

4.1 Maximum Output Power Measurement 19
4.1.1 Limits of Maximum Output Power Measurement 19
4.1.2 Test Setup 19
4.1.3 Test Instruments 19
4.1.4 Test Procedures 20
4.1.5 Deviation from Test Standard 20
4.1.6 EUT Operating Conditions 20
4.1.7 Test Results 21
4.2 Maximum Power Spectral Density Measurement 31
4.2.1 Limits of Maximum Power Spectral Density Measurement 31
4.2.2 Test Setup 31
4.2.3 Test Instruments 31
4.2.4 Test Procedure 31
4.2.5 Deviation from Test Standard 31
4.2.6 EUT Operating Condition 31
4.2.7 Test Results 32
4.3 Modulation Characteristics Measurement 37
4.3.1 Limits of Modulation Characteristics 37
4.3.2 Test Setup 37
4.3.3 Test Instruments 37
4.3.4 Deviation from Test Standard 37
4.3.5 EUT Operating Conditions 37
4.3.6 Test Results 38
4.4 Frequency Stability Measurement 39
4.4.1 Limits of Frequency Stability Measurement 39
4.4.2 Test Setup 39
4.4.3 Test Instruments 39
4.4.4 Test Procedure 39
4.4.5 Test Results 40
4.5 Emission Bandwidth Measurement 64
4.5.1 Limits of Emission Bandwidth Measurement 64
4.5.2 Test Setup 64
4.5.3 Test Instruments 64
4.5.4 Test Procedure 64
4.5.5 Deviation from Test Standard 64
4.5.6 EUT Operating Conditions 64
4.5.7 Test Result 65
4.6 Peak to Average Ratio Measurement 77
4.6.1 Limits of Peak to Average Ratio Measurement 77
4.6.2 Test Setup 77

4.6.3 Test Instruments 77
4.6.4 Test Procedures 77
4.6.5 Deviation from Test Standard 77
4.6.6 EUT Operating Conditions 77
4.6.7 Test Results 78
4.7 Conducted Spurious Emissions 83
4.7.1 Limits of Conducted Spurious Emissions Measurement 83
4.7.2 Test Setup 83
4.7.3 Test Instruments 83
4.7.4 Test Procedure 83
4.7.5 Deviation from Test Standard 83
4.7.6 EUT Operating Conditions 83
4.7.7 Test Results 84
4.8 Radiated Emission Measurement 180
4.8.1 Limits of Radiated Emission Measurement 180
4.8.2 Test Set Up 180
4.8.3 Test Instruments 181
4.8.4 Test Procedures 182
4.8.5 Deviation from Test Standard 182
4.8.6 EUT Operating Conditions 182
4.8.7 Test Results 183
5 Pictures of Test Arrangements 221
Appendix – Information of the Testing Laboratories 222

Release Control Record

Issue No.	Description	Date Issued
RFBEIH-WTW-P24110374-2	Original Release	2025/3/7

1 Certificate of Conformity

Product:	Moso Canopy 5GID2, QuadBridge mini
Brand:	Mosolabs, Moso Networks, Sercomm
Test Model:	SCE5172-n48
Sample Status:	Engineering Sample
Applicant:	Sercomm Corp.
Test Date:	2024/12/04 ~ 2025/2/26
Standards:	47 CFR FCC Part 96

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen , **Date:** 2025/3/7

Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** 2025/3/7

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 96			
FCC Clause	Test Item	Result	Remarks
2.1046 96.41(b)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047 96.41(a)	Modulation Characteristics	Pass	Meet the requirement of limit.
2.1046 96.41(b)	Maximum Power Spectral Density	Pass	Meet the requirement of limit.
96.41(g)	Peak to Average Ration	Pass	Meet the requirement of limit.
2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1055	Frequency Stability	Pass	Meet the requirement of limit.
2.1051 96.41(e)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 96.41(e)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -2.60dB at 62.98MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Moso Canopy 5GID2, QuadBridge mini	
Brand	Mosolabs, Moso Networks, Sercomm	
Test Model	SCE5172-n48	
Sample Status	Engineering Sample	
Power Supply Rating	Refer to Note	
Modulation Type	QPSK, 64QAM, 256QAM	
Operating Frequency	NR Band 48 (Channel Bandwidth 10MHz)	3555.00MHz ~ 3694.98MHz
	NR Band 48 (Channel Bandwidth 20MHz)	3560.01MHz ~ 3690.00MHz
	NR Band 48 (Channel Bandwidth 40MHz)	3570.00MHz ~ 3679.98MHz

Note:

1. List of Accessory and Support Unit:

POE (Accessory)	Brand	Delta
	Model	ADH-90AR N
	AC Input	100-240Vac, 50/60Hz, 2A
	DC Output	56Vdc, 1.61A
	DC Output Cable	shielded cable (Cat. 6A and above)
AC Adapter (Support Unit)	Brand	Mass Power Electronics Inc.
	Model	NBS100A120600M2
	AC Input	100-240Vac, 50/60Hz, 1.6A
	DC Output	12.0V, 6.0A, 72.0W
	DC Output Cable	1.5m non-shielded cable without core

2. The EUT supports the following configuration.

5GNR	FCC 5G FR1	
	1CC_SCS_30kHz	2CC_SCS_30kHz
Bandwidth (MHz)	10/20/40	10+20 / 20+10 / 20+20

*2CC only supports non-contiguous channels.

3. The following antennas were provided to the EUT.

	Ant. 1	Ant. 2	Ant. 3	Ant. 4
Antenna Type	Dipole	Dipole	PIFA	PIFA
Connector Type	MMCX	MMCX	MMCX	MMCX
Frequency Range	Antenna Gain (dBi)			
3550MHz	3.83	4.12	4.33	4.15
3700MHz	4.37	4.06	4.58	4.32

Note:

a. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi

b. This device operates with Multiple Antennas Using Multiple-input, Multiple-output (MIMO) Technology for correlated Transmission.

c. The device has 4 FR1 antennas, where Ant 1 & 2 are horizontal polarization and Ant 3 & 4 are vertical polarization. These two co-polarized antenna pairs are with orthogonal polarization to each other.

d. According to the regulation KDB 662911, the correlated gain for Ant 1 & 2 and Ant 3 & 4 can be calculated respectively. Then select the maximum value between them as directional gain

e. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. EUT Overview

Mode A1

NR Band 48			
Bandwidth	Max. EIRP Power (Per 10M Power)		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz	799.834mW (29.03dBm/10MHz)	785.236mW (28.95dBm/10MHz)	770.903mW (28.87dBm/10MHz)
Channel Bandwidth 20MHz	857.038mW (29.33dBm/10MHz)	841.395mW (29.25dBm/10MHz)	827.942mW (29.18dBm/10MHz)
Channel Bandwidth 40MHz	837.529mW (29.23dBm/10MHz)	822.243mW (29.15dBm/10MHz)	807.235mW (29.07dBm/10MHz)
Bandwidth	Max. EIRP Power (Full power)		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz	799.834mW (29.03dBm/Channel Bandwidth)	785.236mW (28.95dBm/Channel Bandwidth)	770.903mW (28.87dBm/Channel Bandwidth)
Channel Bandwidth 20MHz	1541.700mW (31.88dBm/Channel Bandwidth)	1513.561mW (31.80dBm/Channel Bandwidth)	1489.361mW (31.73dBm/Channel Bandwidth)
Channel Bandwidth 40MHz	3564.511mW (35.52dBm/Channel Bandwidth)	3491.403mW (35.43dBm/Channel Bandwidth)	3427.678mW (35.35dBm/Channel Bandwidth)

NR Band 48			
Bandwidth	Emission Designator		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz	8M61G7D	8M62D7W	8M62D7W
Channel Bandwidth 20MHz	18M3G7D	18M3D7W	18M3D7W
Channel Bandwidth 40MHz	38M0G7D	38M0D7W	38M0D7W

Mode A2

NR Band 48			
Bandwidth	Max. EIRP Power (Per 10M Power)		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz+20MHz	824.138mW (29.16dBm/10MHz)	809.096mW (29.08dBm/10MHz)	794.328mW (29.00dBm/10MHz)
Channel Bandwidth 20MHz+10MHz	874.984mW (29.42dBm/10MHz)	857.038mW (29.33dBm/10MHz)	843.335mW (29.26dBm/10MHz)
Channel Bandwidth 20MHz+20MHz	909.913mW (29.59dBm/10MHz)	891.251mW (29.50dBm/10MHz)	877.001mW (29.43dBm/10MHz)
Bandwidth	Max. EIRP Power (Full power)		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz+20MHz	1191.242mW (30.76dBm/Channel Bandwidth)	1169.499mW (30.68dBm/Channel Bandwidth)	1148.154mW (30.60dBm/Channel Bandwidth)
Channel Bandwidth 20MHz+10MHz	1267.652mW (31.03dBm/Channel Bandwidth)	1244.515mW (30.95dBm/Channel Bandwidth)	1221.800mW (30.87dBm/Channel Bandwidth)
Channel Bandwidth 20MHz+20MHz	1606.941mW (32.06dBm/Channel Bandwidth)	1577.611mW (31.98dBm/Channel Bandwidth)	1548.817mW (31.90dBm/Channel Bandwidth)

NR Band 48			
Bandwidth	Emission Designator		
	QPSK	64QAM	256QAM
Channel Bandwidth 10MHz+20MHz	26M8G7D	26M8D7W	26M8D7W
Channel Bandwidth 20MHz+10MHz	26M8G7D	26M8D7W	26M8D7W
Channel Bandwidth 20MHz+20MHz	36M4G7D	36M4D7W	36M4D7W

3.2 Test Mode Applicability and Tested Channel Detail

Test results are presented in the report as below.

Test Mode	Test Condition		
A1	EUT only (remove 50 ohm terminator and Connect to the appropriate equipment)	1CC mode	
A2		2CC mode	
B1	EUT with 50 ohm terminator	1CC mode	Power from adapter
B2			Power from PoE
B3		2CC mode	Power from adapter
B4			Power from PoE
C1	EUT with internal antenna	1CC mode	Power from adapter
C2			Power from PoE
C3		2CC mode	Power from adapter
C4			Power from PoE

Pre-Scan:	1. For Unwanted Emission (below 1GHz) items: Adapter/PoE. Pre-scan these modes and find the worst case as a representative test condition. 2. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. 3. This device was tested under all bandwidths and modulations. The worst case was found in QPSK modulation. Therefore, only EIRP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 64QAM and 256QAM mode, the other items were performed under QPSK mode only. 4. For peak to average ratio and radiated spurious emissions, choose the maximum EIRP power worst case for final test.
Worst Case:	1. AC Adapter 2. X-axis/ Y-axis/ Z-axis Worst Condition: Z-axis

Following channel(s) was (were) selected for the final test as listed below:

Mode A1

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Maximum Output Power	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK / 64QAM / 256QAM
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK / 64QAM / 256QAM
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK / 64QAM / 256QAM
Maximum Power Spectral Density	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK
Modulation Characteristics	638000 to 645332	641666 (3624.99MHz)	40MHz	QPSK / 64QAM / 256QAM
Frequency Stability	637000 to 646332	637000 (3555.00MHz), 646332 (3694.98MHz)	10MHz	QPSK
	637334 to 646000	637334 (3560.01MHz), 646000 (3690.00MHz)	20MHz	QPSK
	638000 to 645332	638000 (3570.00MHz), 645332 (3679.98MHz)	40MHz	QPSK
Occupied Bandwidth	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK / 64QAM / 256QAM
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK / 64QAM / 256QAM
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK / 64QAM / 256QAM
Peak to Average Ratio	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK / 64QAM / 256QAM
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK / 64QAM / 256QAM
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK / 64QAM / 256QAM

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Conducted Emission	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK

Mode A2

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Maximum Output Power	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK / 64QAM / 256QAM
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK / 64QAM / 256QAM
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK / 64QAM / 256QAM
Maximum Power Spectral Density	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK
Frequency Stability	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Occupied Bandwidth	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK / 64QAM / 256QAM
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK / 64QAM / 256QAM
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK / 64QAM / 256QAM
Peak to Average Ratio	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK / 64QAM / 256QAM
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK / 64QAM / 256QAM
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK / 64QAM / 256QAM
Conducted Emission	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK

Mode B1, C1

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Radiated Emission Below 1GHz	638000 to 645332	638000 (3570.00MHz)	40MHz	QPSK
Radiated Emission Above 1GHz	637000 to 646332	637000 (3555.00MHz), 641666 (3624.99MHz), 646332 (3694.98MHz)	10MHz	QPSK
	637334 to 646000	637334 (3560.01MHz), 641666 (3624.99MHz), 646000 (3690.00MHz)	20MHz	QPSK
	638000 to 645332	638000 (3570.00MHz), 641666 (3624.99MHz), 645332 (3679.98MHz)	40MHz	QPSK

Mode B2, C2

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Radiated Emission Below 1GHz	638000 to 645332	638000 (3570.00MHz)	40MHz	QPSK

Mode B3, C3

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation
Radiated Emission Above 1GHz	637000 to 642502	637000 (3555.00MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 644000 (3660.00MHz), 641168 (3617.52MHz) + 642502 (3637.53MHz)	10MHz+20MHz	QPSK
	637334 to 642168	637334 (3560.01MHz) + 646332 (3694.98MHz), 639334 (3590.01MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642168 (3632.52MHz)	20MHz+10MHz	QPSK
	637334 to 642502	637334 (3560.01MHz) + 646000 (3690.00MHz), 639668 (3595.02MHz) + 643668 (3655.02MHz), 640834 (3612.51MHz) + 642502 (3637.53MHz)	20MHz+20MHz	QPSK

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
Maximum Output Power	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Maximum Power Spectral Density	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Modulation Characteristics	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Frequency Stability	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Occupied Bandwidth	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Peak To Average Ratio	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Conducted Emission	25deg. C, 60%RH	120 Vac, 60 Hz	Noah Chang
Radiated Emission	23deg. C, 67%RH	120 Vac, 60 Hz 56Vdc	Karl Lee

3.3 Description of Support Units

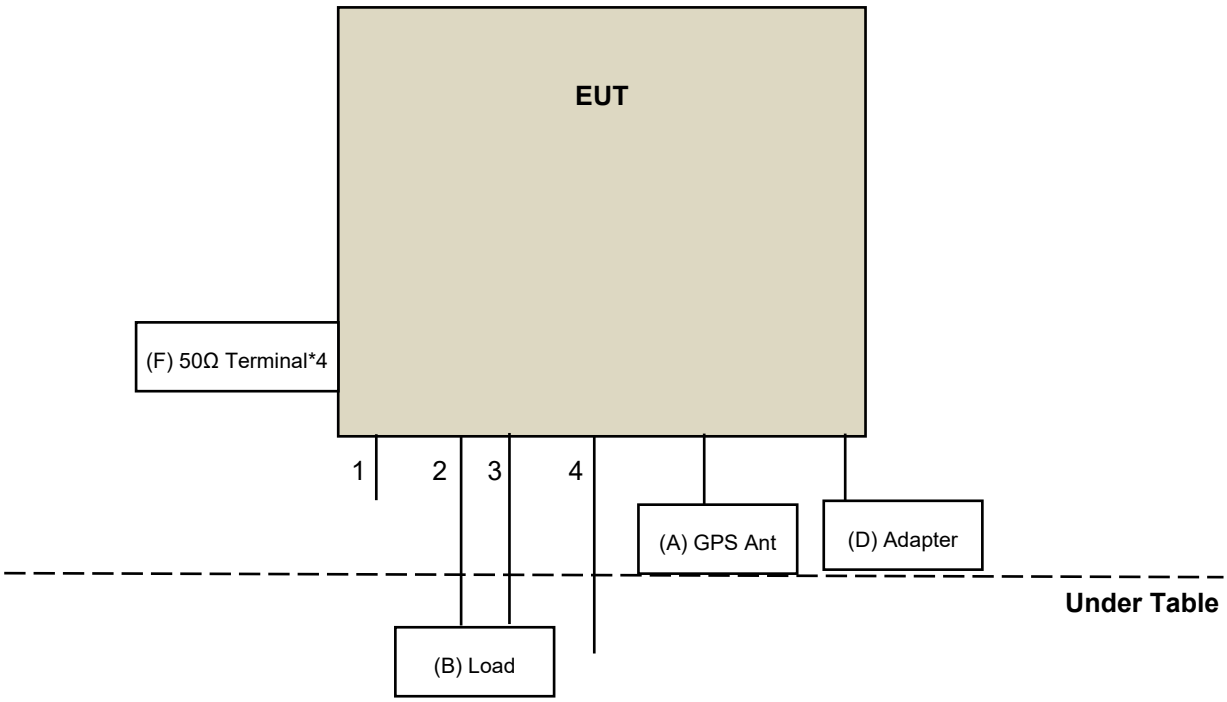
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	GPS Ant	HL tronics (kunshan) co., Ltd	GPS active antenna	N/A	N/A	Supplied by applicant
B.	LAN Load	BV	LP-04	N/A	N/A	Provided by Lab
C.	Notebook	Lenovo	TP00133C	N/A	N/A	Supplied by applicant
D.	Adapter	Mass Power Electronics Inc.	NBS100A120600M2	N/A	N/A	Supplied by applicant
E.	PoE	Delta	ADH-90AR N	N/A	N/A	Supplied by applicant
F.	50 ohm Terminal*4	N/A	N/A	N/A	N/A	Provided by Lab

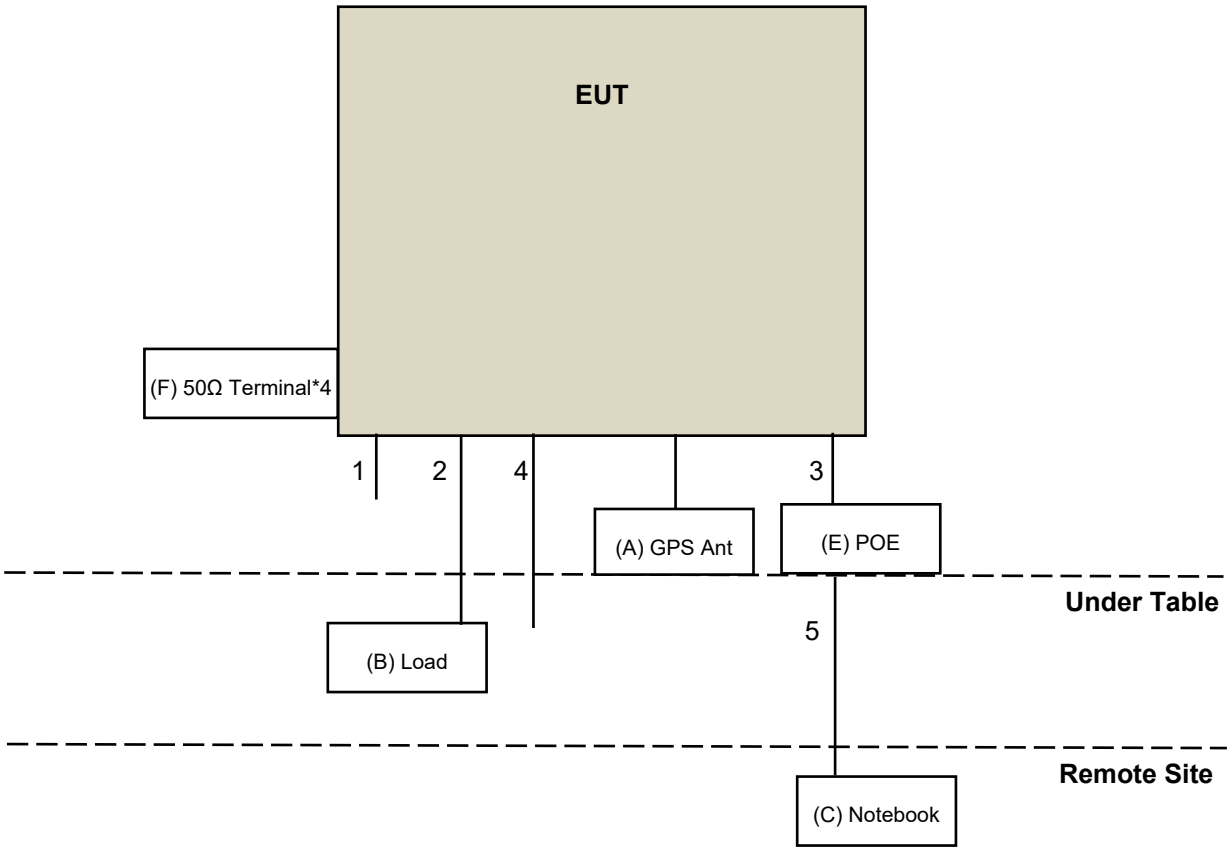
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Console Cable	1	0.25	No	0	Supplied by applicant
2.	RJ 45 Cable	1	1.5	No	0	Provided by Lab
3.	RJ 45 Cable	1	1.5	No	0	Provided by Lab
4.	Fiber Optical Cable	1	3	No	0	Provided by Lab
5.	RJ 45 Cable	1	10	No	0	Provided by Lab

3.3.1 Configuration of System under Test

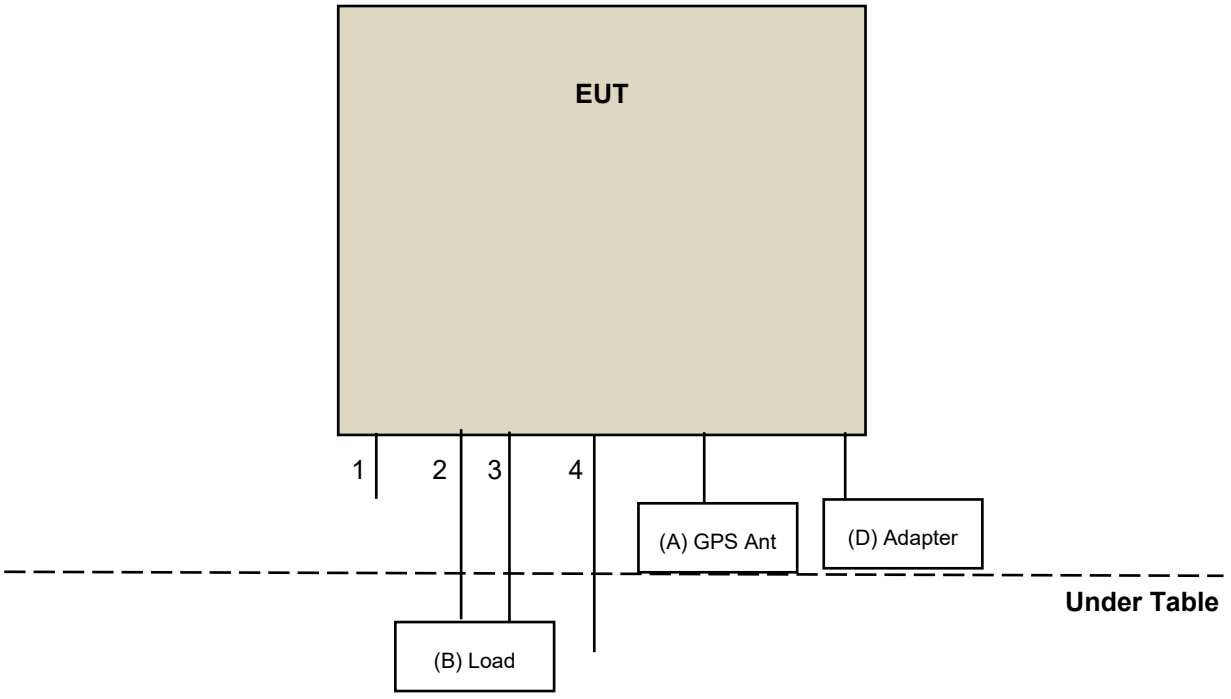
Mode B1, B3



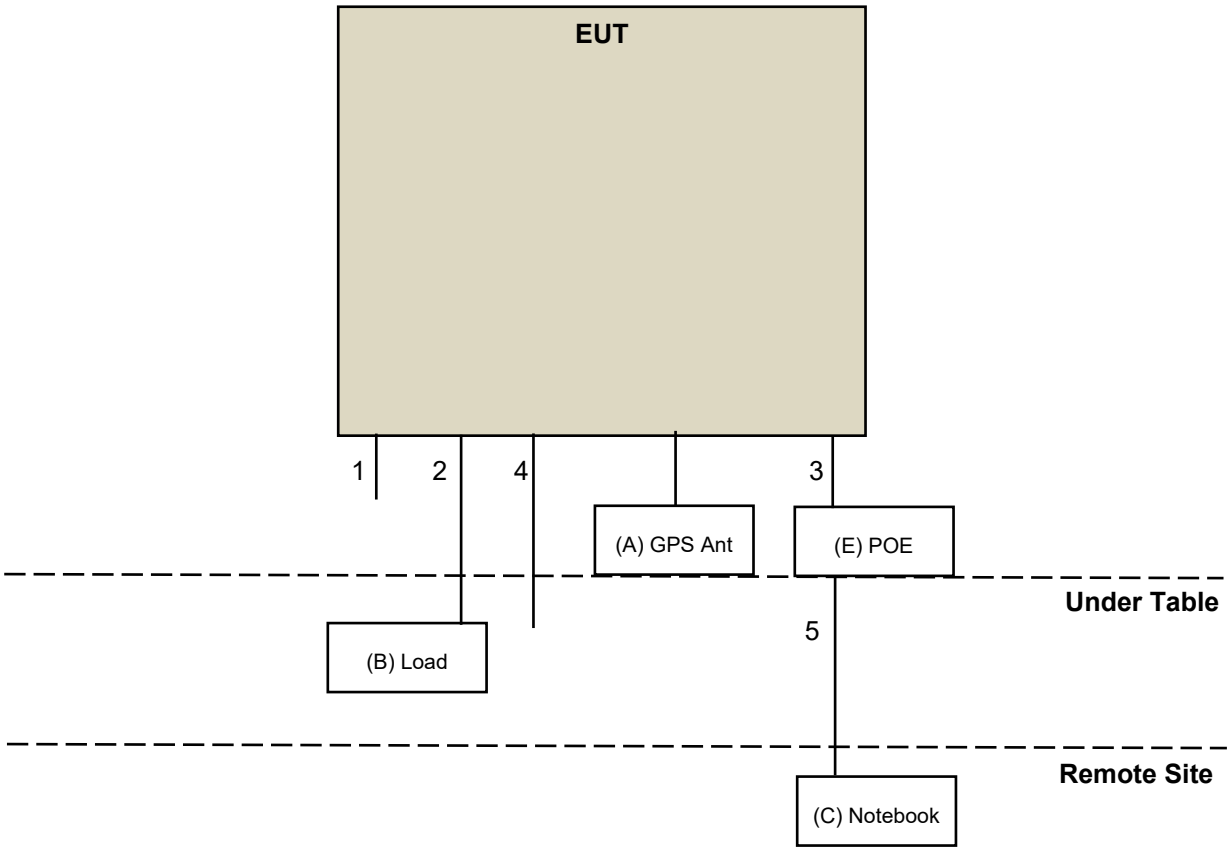
Mode B2



Mode C1, C3



Mode C2



3.4 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 96

ANSI/TIA/EIA-603-E-2016

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 940660 D01 Part 96 CBRS Eqpt v03

All test items have been performed as a reference to the above KDB test guidance.

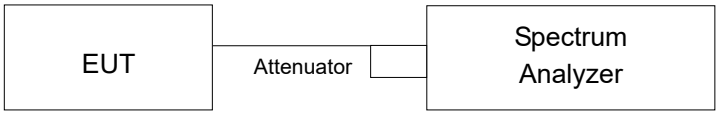
4 Test Types and Results

4.1 Maximum Output Power Measurement

4.1.1 Limits of Maximum Output Power Measurement

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

4.1.2 Test Setup



4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer KEYSIGHT	N9030B	MY57140488	2024/3/6	2025/3/5
RF cable	JB200	Cable-OVEN-02	NA	NA
DC-6GHz 20dB 50W Fixed attenuator Woken	MDC9331N-20	0724	2024/7/15	2026/7/14

Note: 1. The calibration interval of the above test instruments is 12/24 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1.4 Test Procedures

Conducted output power measurement

a. Connect the DUT transmitter output to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
b. Set span to at least 1.5 times the OBW.
c. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
d. Set VBW ≥ 3 × RBW.
e. Set number of points in sweep ≥ 2 × span / RBW.
f. Sweep time = auto-couple.
g. Detector = RMS (power averaging).
h. If the EUT can be configured to transmit continuously (i.e., burst duty cycle ≥ 98%), then set the trigger to free run.
i. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
j. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
k. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
l. For per 10MHz method, channel power integrating bandwidth 10MHz is used for bandwidth 10M, 20M, and 40M. For full power method, channel power integrating bandwidth 10MHz is used for bandwidth 10M, integrating bandwidth 20MHz is used for bandwidth 20M, integrating bandwidth 40MHz is used for bandwidth 40M.

Maximum EIRP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

ERP or EIRP = $P_{Meas} + G_T$
where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)
P_{Meas} measured transmitter output power or PSD, in dBm or dBW
G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

4.1.5 Deviation from Test Standard

No deviation.

4.1.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 Test Results

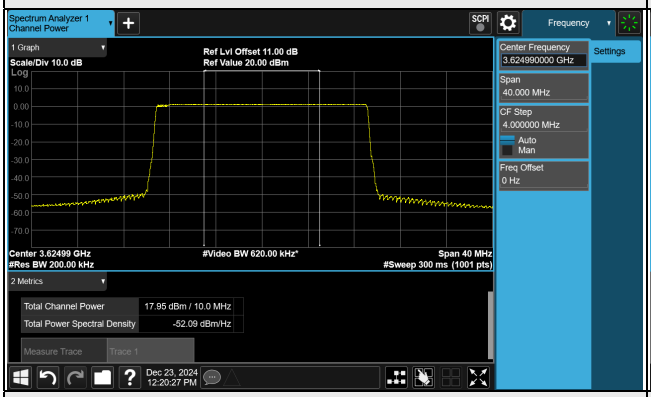
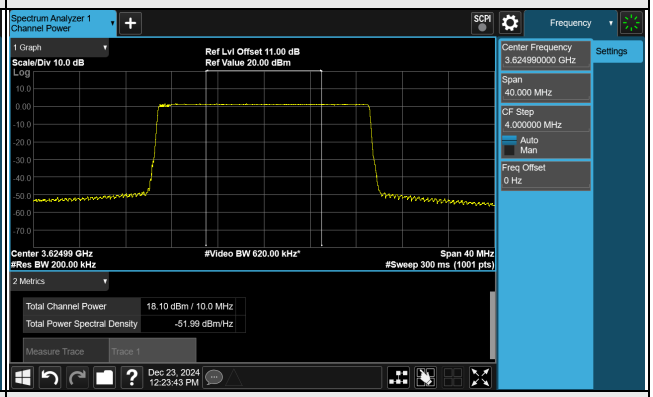
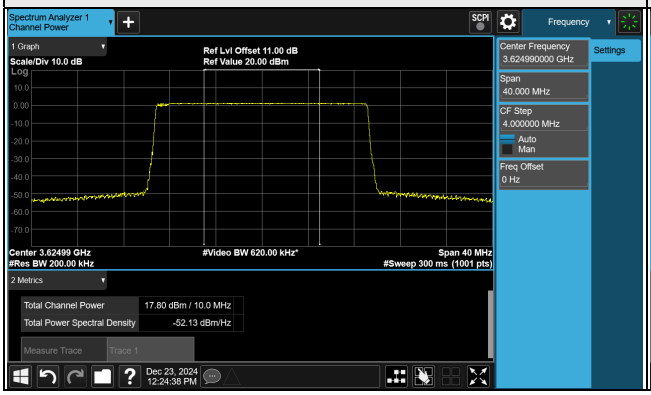
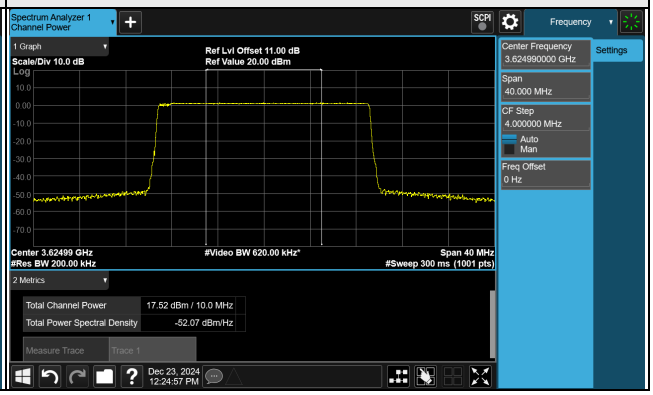
Mode A1

Conducted Output Power and EIRP Power (dBm/10MHz)

Bandwidth	Frequency (MHz)	Modulation	Antenna				Total	EIRP (dBm/ 10MHz)	Verdict
			1	2	3	4			
10M	3555	QPSK	17.36	17.18	17.42	17.14	23.30	28.76	PASS
		64QAM	17.27	17.11	17.34	17.05	23.21	28.67	PASS
		256QAM	17.2	17.04	17.27	16.96	23.14	28.60	PASS
	3624.99	QPSK	17.64	17.6	17.78	17.15	23.57	29.03	PASS
		64QAM	17.57	17.53	17.69	17.06	23.49	28.95	PASS
		256QAM	17.5	17.44	17.6	16.99	23.41	28.87	PASS
	3694.98	QPSK	17.16	17.32	17.23	17.08	23.22	28.68	PASS
		64QAM	17.09	17.24	17.14	17.01	23.14	28.60	PASS
		256QAM	17	17.17	17.07	16.94	23.07	28.53	PASS
20M	3560.01	QPSK	17.49	17.51	17.72	17.14	23.49	28.95	PASS
		64QAM	17.4	17.44	17.64	17.07	23.41	28.87	PASS
		256QAM	17.32	17.36	17.56	16.99	23.33	28.79	PASS
	3624.99	QPSK	17.95	18.1	17.8	17.52	**23.87**	29.33	PASS
		64QAM	17.88	18.01	17.72	17.44	23.79	29.25	PASS
		256QAM	17.81	17.94	17.64	17.37	23.72	29.18	PASS
	3690	QPSK	17.16	17.47	17.57	17.5	23.45	28.91	PASS
		64QAM	17.09	17.39	17.49	17.42	23.37	28.83	PASS
		256QAM	17.01	17.31	17.42	17.35	23.30	28.76	PASS
40M	3570	QPSK	17.57	17.51	17.2	17.44	23.45	28.91	PASS
		64QAM	17.49	17.44	17.11	17.37	23.38	28.84	PASS
		256QAM	17.42	17.35	17.02	17.29	23.29	28.75	PASS
	3624.99	QPSK	17.06	17.49	17.66	17.16	23.37	28.83	PASS
		64QAM	16.98	17.42	17.59	17.08	23.30	28.76	PASS
		256QAM	16.9	17.34	17.5	17.01	23.21	28.67	PASS
	3679.98	QPSK	17.4	17.95	17.9	17.73	23.77	29.23	PASS
		64QAM	17.32	17.86	17.82	17.65	23.69	29.15	PASS
		256QAM	17.23	17.79	17.75	17.57	23.61	29.07	PASS

Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP (dBm/10MHz) = Total Conducted Output Power (dBm/10MHz) + Directional Gain

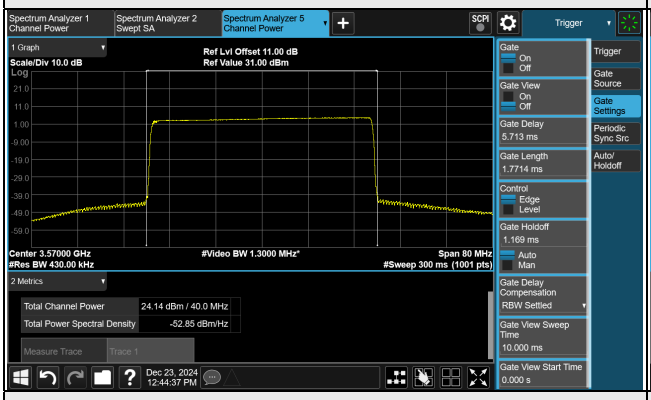
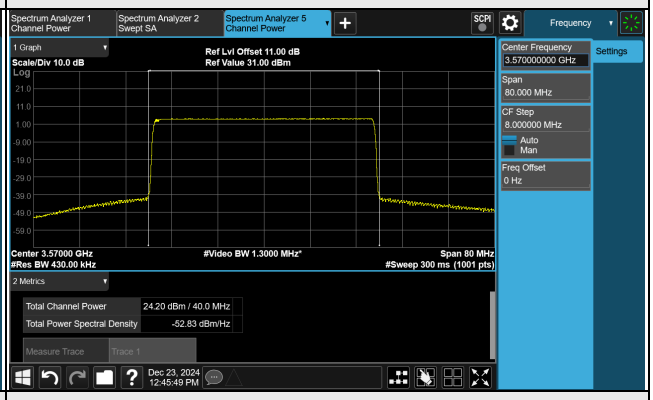
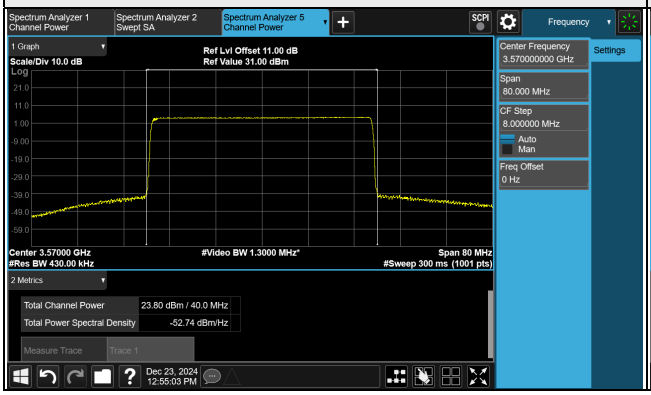
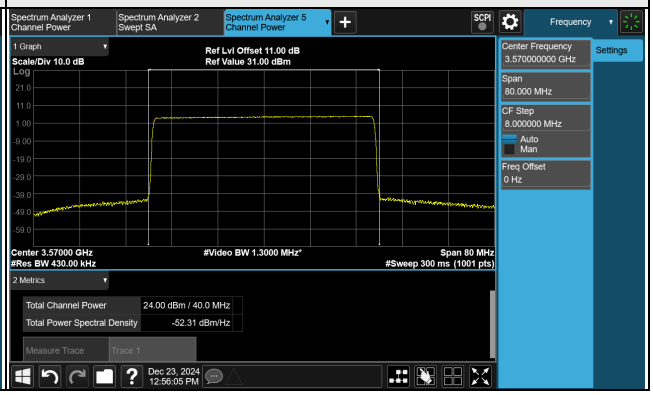
Spectrum Plot of Worst Value	
20MHz / QPSK	
Ant.1	Ant.2
	
Ant.3	Ant.4
	

Full Conducted Output Power and Full EIRP Power (dBm/Channel Bandwidth)

Bandwidth	Frequency (MHz)	Modulation	Antenna				Total	EIRP (dBm/Channel Bandwidth)	Verdict
			1	2	3	4			
10M	3555	QPSK	17.36	17.18	17.42	17.14	23.30	28.76	PASS
		64QAM	17.27	17.11	17.34	17.05	23.21	28.67	PASS
		256QAM	17.20	17.04	17.27	16.96	23.14	28.60	PASS
	3624.99	QPSK	17.64	17.60	17.78	17.15	23.57	29.03	PASS
		64QAM	17.57	17.53	17.69	17.06	23.49	28.95	PASS
		256QAM	17.50	17.44	17.60	16.99	23.41	28.87	PASS
	3694.98	QPSK	17.16	17.32	17.23	17.08	23.22	28.68	PASS
		64QAM	17.09	17.24	17.14	17.01	23.14	28.60	PASS
		256QAM	17.00	17.17	17.07	16.94	23.07	28.53	PASS
20M	3560.01	QPSK	20.20	20.07	20.33	19.75	26.11	31.57	PASS
		64QAM	20.13	19.98	20.26	19.66	26.03	31.49	PASS
		256QAM	20.05	19.90	20.18	19.58	25.95	31.41	PASS
	3624.99	QPSK	20.57	20.62	20.43	19.95	26.42	31.88	PASS
		64QAM	20.50	20.54	20.35	19.87	26.34	31.80	PASS
		256QAM	20.43	20.47	20.28	19.80	26.27	31.73	PASS
	3690	QPSK	19.69	19.97	19.82	20.11	25.92	31.38	PASS
		64QAM	19.60	19.88	19.73	20.03	25.83	31.29	PASS
		256QAM	19.53	19.80	19.66	19.94	25.76	31.22	PASS
40M	3570	QPSK	24.14	24.20	23.80	24.00	**30.06**	35.52	PASS
		64QAM	24.07	24.11	23.71	23.91	29.97	35.43	PASS
		256QAM	23.98	24.02	23.63	23.83	29.89	35.35	PASS
	3624.99	QPSK	23.25	23.56	23.46	22.75	29.29	34.75	PASS
		64QAM	23.17	23.47	23.37	22.66	29.20	34.66	PASS
		256QAM	23.10	23.40	23.28	22.57	29.12	34.58	PASS
	3679.98	QPSK	23.17	23.64	23.48	23.58	29.49	34.95	PASS
		64QAM	23.10	23.55	23.40	23.51	29.41	34.87	PASS
		256QAM	23.02	23.47	23.32	23.43	29.33	34.79	PASS

Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP (dBm/Channel Bandwidth) = Total Conducted Output Power (dBm/Channel Bandwidth) + Directional Gain

Spectrum Plot of Worst Value	
40MHz / QPSK	
Ant.1	Ant.2
	
Ant.3	Ant.4
	

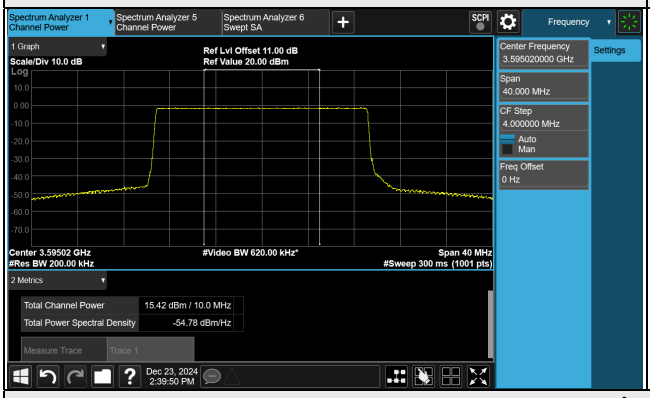
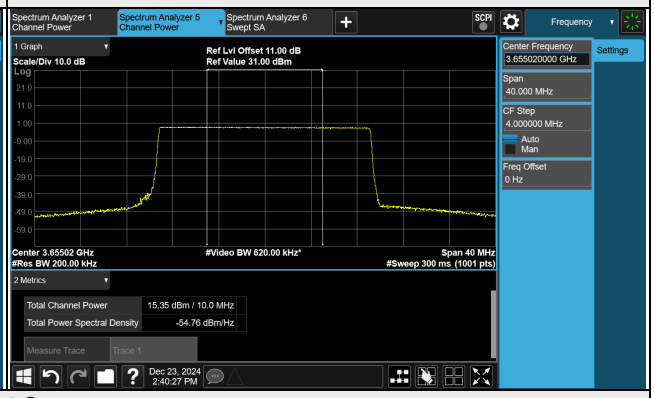
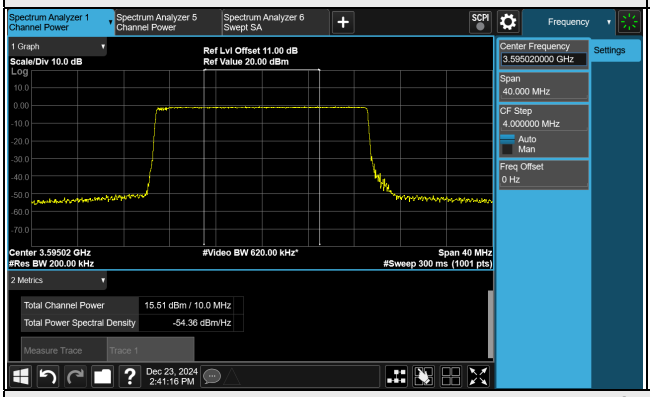
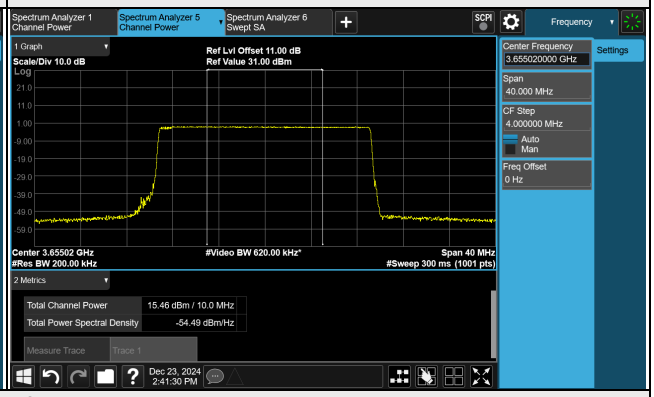
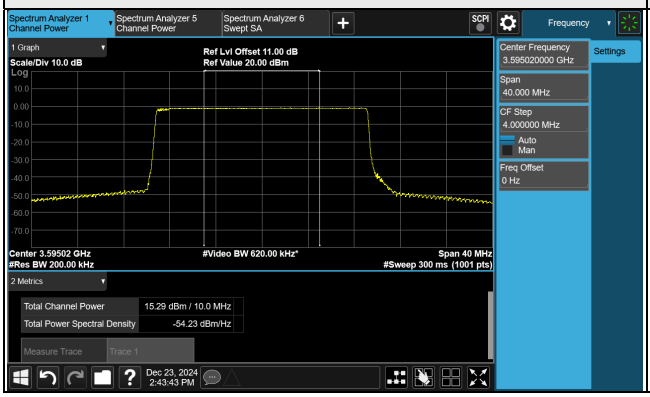
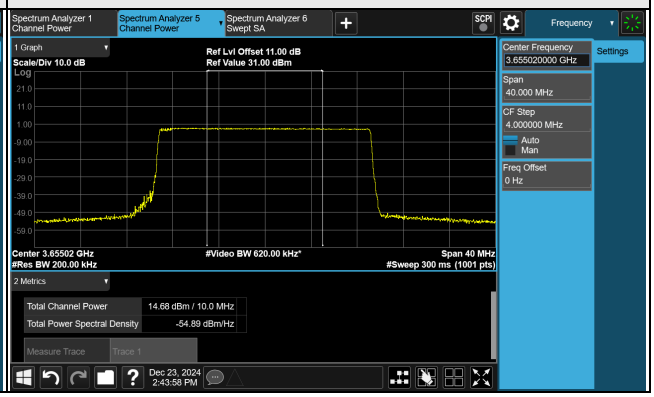
Mode A2

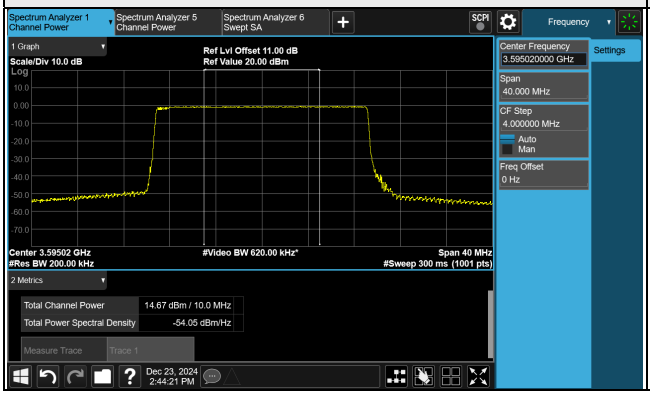
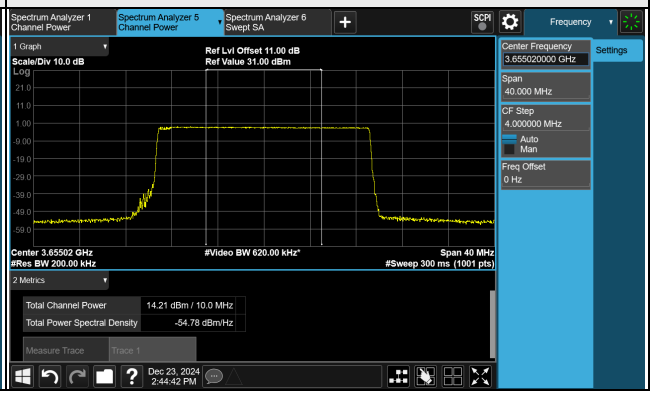
Conducted Output Power and EIRP Power (dBm/10MHz)

Bandwidth	Frequency (MHz)	Modulation	Carrier	Antenna				Total	EIRP (dBm/ 10MHz)	Verdict
				1	2	3	4			
10M+20M	3555+3690	QPSK	CC0	14.93	14.53	14.82	14.1	20.63	28.98	PASS
			CC1	15.04	14.13	14.18	14.07	20.39		
		64QAM	CC0	14.84	14.45	14.74	14.03	20.55	28.90	PASS
			CC1	14.96	14.05	14.11	13.99	20.32		
		256QAM	CC0	14.75	14.38	14.67	13.95	20.47	28.83	PASS
			CC1	14.89	13.97	14.04	13.91	20.24		
	3595.02+ 3660	QPSK	CC0	14.2	13.82	14.9	14.09	20.29	28.91	PASS
			CC1	14.7	14.33	14.84	14.33	20.58		
		64QAM	CC0	14.12	13.73	14.81	14.01	20.21	28.83	PASS
			CC1	14.63	14.24	14.76	14.26	20.50		
		256QAM	CC0	14.03	13.65	14.74	13.92	20.12	28.74	PASS
			CC1	14.55	14.15	14.68	14.19	20.42		
	3617.52+ 3637.53	QPSK	CC0	14.38	14.4	14.79	13.91	20.40	29.16	PASS
			CC1	14.92	15.08	15.17	14.57	20.96		
		64QAM	CC0	14.3	14.31	14.71	13.84	20.32	29.08	PASS
			CC1	14.85	15.01	15.08	14.5	20.89		
		256QAM	CC0	14.21	14.23	14.63	13.75	20.24	29.00	PASS
			CC1	14.76	14.94	14.99	14.42	20.80		
20M+10M	3560.01+ 3694.98	QPSK	CC0	15.63	14.83	15.31	14.73	21.16	28.76	PASS
			CC1	14.01	12.81	12.71	13.05	19.20		
		64QAM	CC0	15.55	14.74	15.22	14.64	21.07	28.67	PASS
			CC1	13.93	12.73	12.63	12.96	19.11		
		256QAM	CC0	15.48	14.67	15.14	14.56	21.00	28.60	PASS
			CC1	13.86	12.66	12.54	12.88	19.04		
	3590.01+ 3655.02	QPSK	CC0	15.59	15.2	15.37	14.96	21.31	29.42	PASS
			CC1	14.81	14.43	13.98	14.85	20.55		
		64QAM	CC0	15.51	15.13	15.28	14.87	21.22	29.33	PASS
			CC1	14.74	14.34	13.9	14.77	20.47		
		256QAM	CC0	15.43	15.04	15.21	14.8	21.15	29.26	PASS
			CC1	14.67	14.26	13.83	14.69	20.40		
	3612.51+ 3632.52	QPSK	CC0	14.85	15.03	15.2	14.54	20.93	29.03	PASS
			CC1	14.15	14.34	14.24	13.74	20.14		
		64QAM	CC0	14.78	14.96	15.11	14.47	20.86	28.95	PASS
			CC1	14.08	14.27	14.16	13.65	20.07		
		256QAM	CC0	14.71	14.87	15.04	14.39	20.78	28.87	PASS
			CC1	13.99	14.2	14.07	13.57	19.98		
20M+20M	3560.01+ 3690	QPSK	CC0	15.71	15.16	14.83	14.87	21.18	29.25	PASS
			CC1	15.21	14.27	13.56	14.11	20.35		
		64QAM	CC0	15.63	15.09	14.74	14.79	21.10	29.17	PASS
			CC1	15.13	14.19	13.48	14.03	20.27		
		256QAM	CC0	15.54	15	14.66	14.72	21.01	29.09	PASS
			CC1	15.04	14.11	13.39	13.94	20.18		
	3595.02+ 3655.02	QPSK	CC0	15.42	15.51	15.29	14.67	21.26	**29.59**	PASS
			CC1	15.35	15.46	14.68	14.21	20.98		
		64QAM	CC0	15.34	15.42	15.21	14.58	21.17	29.50	PASS
			CC1	15.26	15.38	14.6	14.14	20.89		
		256QAM	CC0	15.26	15.35	15.13	14.49	21.09	29.43	PASS
			CC1	15.17	15.31	14.52	14.07	20.82		
	3612.51+ 3637.53	QPSK	CC0	14.9	15	14.98	14.23	20.81	29.22	PASS
			CC1	14.84	14.98	14.7	14.13	20.69		
		64QAM	CC0	14.81	14.91	14.91	14.16	20.73	29.14	PASS
			CC1	14.76	14.9	14.62	14.06	20.62		
		256QAM	CC0	14.72	14.83	14.83	14.09	20.65	29.06	PASS
			CC1	14.67	14.81	14.54	13.99	20.53		

Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP (dBm/10MHz) = Total Conducted Output Power (dBm/10MHz) + Directional Gain

Spectrum Plot of Worst Value	
20MHz+20MHz / QPSK	
3595.02 MHz+3655.02 MHz	
Ant.1	
3595.02 MHz	3655.02 MHz
	
Ant.2	
3595.02 MHz	3655.02 MHz
	
Ant.3	
3595.02 MHz	3655.02 MHz
	

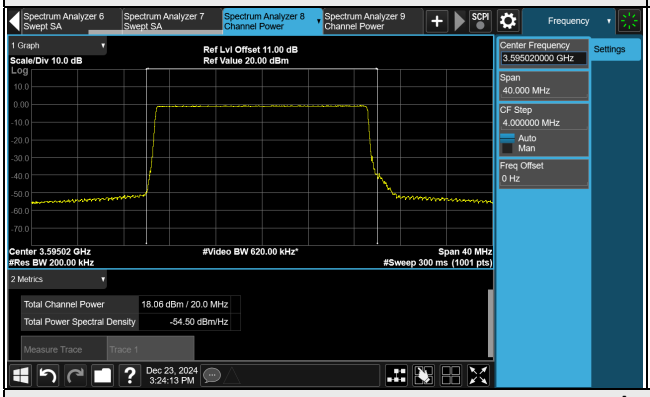
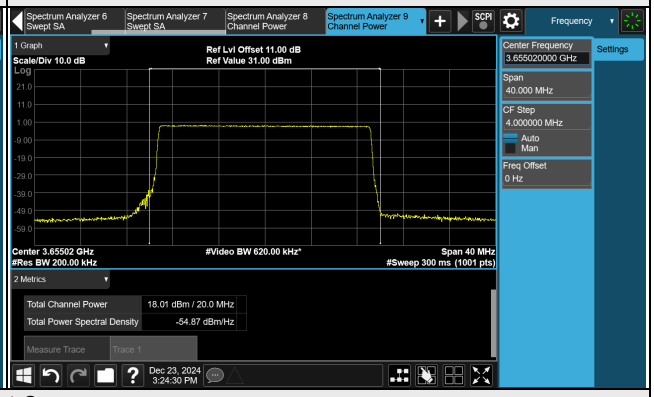
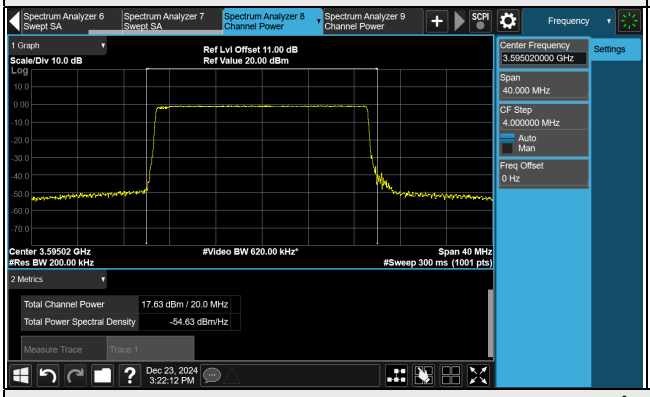
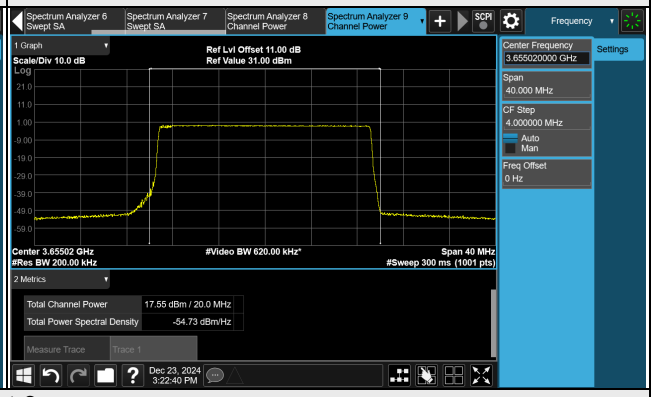
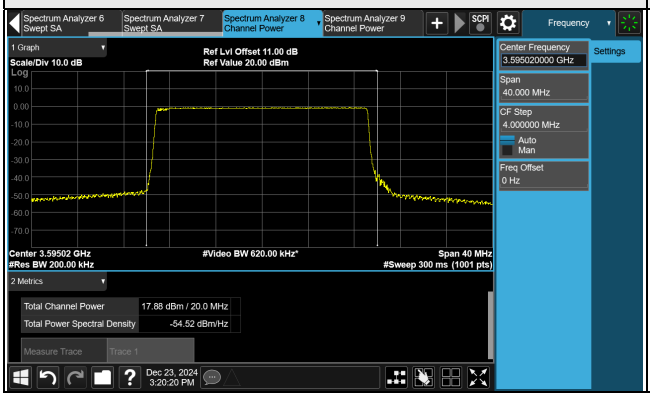
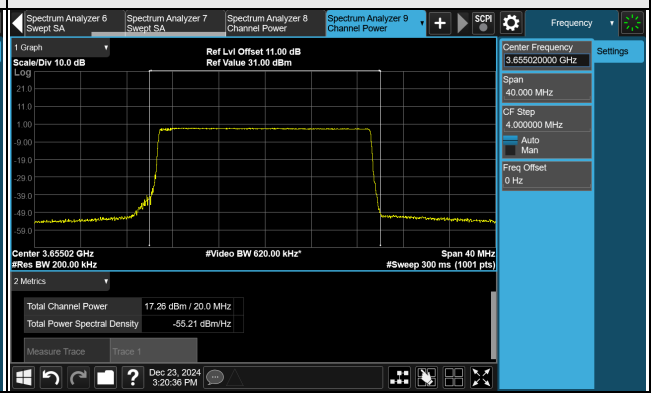
Ant.4	
3595.02 MHz	3655.02 MHz
	

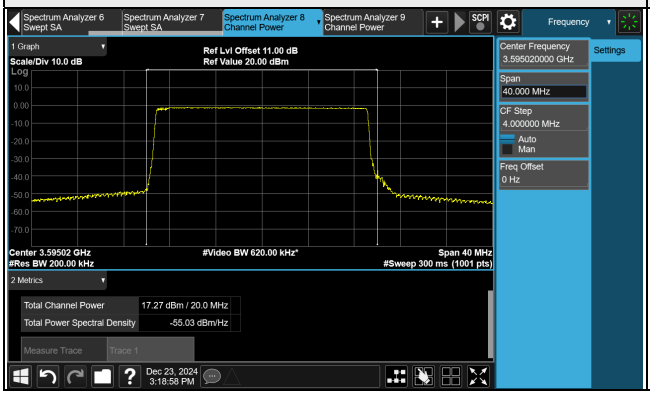
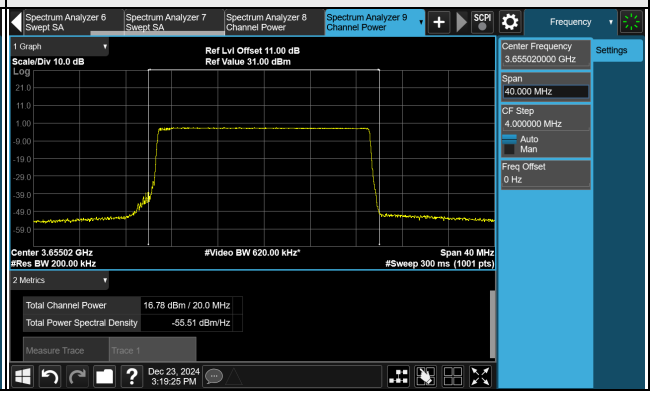
Full Conducted Output Power and Full EIRP Power (dBm/Channel Bandwidth)

Bandwidth	Frequency (MHz)	Modulation	Carrier	Antenna				Total	EIRP (dBm/ Channel Bandwidth)	Verdict
				1	2	3	4			
10M+20M	3555+3690	QPSK	CC0	14.93	14.53	14.82	14.1	20.63	30.40	PASS
			CC1	17.6	16.67	16.66	16.66	22.94		
		64QAM	CC0	14.84	14.45	14.74	14.03	20.55	30.32	PASS
			CC1	17.51	16.59	16.58	16.58	22.85		
		256QAM	CC0	14.75	14.38	14.67	13.95	20.47	30.24	PASS
			CC1	17.43	16.52	16.49	16.5	22.77		
	3595.02+ 3660	QPSK	CC0	14.2	13.82	14.9	14.09	20.29	30.44	PASS
			CC1	17.26	16.95	17.5	16.91	23.18		
		64QAM	CC0	14.12	13.73	14.81	14.01	20.21	30.36	PASS
			CC1	17.18	16.86	17.42	16.83	23.10		
		256QAM	CC0	14.03	13.65	14.74	13.92	20.12	30.28	PASS
			CC1	17.1	16.77	17.33	16.76	23.02		
	3617.52+ 3637.53	QPSK	CC0	14.38	14.4	14.79	13.91	20.40	30.76	PASS
			CC1	17.55	17.67	17.76	17.3	23.59		
		64QAM	CC0	14.3	14.31	14.71	13.84	20.32	30.68	PASS
			CC1	17.47	17.58	17.69	17.23	23.52		
		256QAM	CC0	14.21	14.23	14.63	13.75	20.24	30.60	PASS
			CC1	17.38	17.5	17.62	17.15	23.44		
20M+10M	3560.01+ 3694.98	QPSK	CC0	18.27	17.56	17.84	17.47	23.82	30.56	PASS
			CC1	14.01	12.81	12.71	13.05	19.20		
		64QAM	CC0	18.17	17.48	17.75	17.39	23.73	30.48	PASS
			CC1	13.93	12.73	12.63	12.96	19.11		
		256QAM	CC0	18.1	17.39	17.68	17.3	23.65	30.40	PASS
			CC1	13.86	12.66	12.54	12.88	19.04		
	3590.01+ 3655.02	QPSK	CC0	18.21	17.84	17.98	17.6	23.93	31.03	PASS
			CC1	14.81	14.43	13.98	14.85	20.55		
		64QAM	CC0	18.13	17.77	17.9	17.51	23.85	30.95	PASS
			CC1	14.74	14.34	13.9	14.77	20.47		
		256QAM	CC0	18.04	17.69	17.81	17.42	23.77	30.87	PASS
			CC1	14.67	14.26	13.83	14.69	20.40		
	3612.51+ 3632.52	QPSK	CC0	17.43	17.66	17.76	17.24	23.55	30.64	PASS
			CC1	14.15	14.34	14.24	13.74	20.14		
		64QAM	CC0	17.35	17.58	17.67	17.15	23.46	30.56	PASS
			CC1	14.08	14.27	14.16	13.65	20.07		
		256QAM	CC0	17.28	17.51	17.58	17.06	23.38	30.48	PASS
			CC1	13.99	14.2	14.07	13.57	19.98		
20M+20M	3560.01+ 3690	QPSK	CC0	18.34	17.76	17.56	17.47	23.82	31.86	PASS
			CC1	17.82	16.79	16.2	16.61	22.92		
		64QAM	CC0	18.25	17.67	17.47	17.38	23.73	31.77	PASS
			CC1	17.73	16.7	16.11	16.54	22.83		
		256QAM	CC0	18.18	17.58	17.38	17.3	23.64	31.69	PASS
			CC1	17.65	16.62	16.02	16.46	22.75		
	3595.02+ 3655.02	QPSK	CC0	18.06	17.63	17.88	17.27	23.74	**32.06**	PASS
			CC1	18.01	17.55	17.26	16.78	23.44		
		64QAM	CC0	17.97	17.54	17.8	17.19	23.66	31.98	PASS
			CC1	17.94	17.47	17.18	16.71	23.37		
		256QAM	CC0	17.89	17.47	17.71	17.1	23.57	31.90	PASS
			CC1	17.85	17.39	17.08	16.64	23.28		
	3612.51+ 3637.53	QPSK	CC0	17.53	17.55	17.62	16.85	23.42	31.82	PASS
			CC1	17.46	17.47	17.31	16.75	23.28		
		64QAM	CC0	17.46	17.46	17.55	16.78	23.34	31.74	PASS
			CC1	17.38	17.4	17.24	16.66	23.20		
		256QAM	CC0	17.37	17.38	17.47	16.71	23.26	31.66	PASS
			CC1	17.29	17.32	17.17	16.58	23.12		

Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP (dBm/Channel Bandwidth) = Total Conducted Output Power (dBm/Channel Bandwidth) + Directional Gain

Spectrum Plot of Worst Value	
20MHz+20MHz / QPSK	
3595.02 MHz+3655.02 MHz	
Ant.1	
3595.02 MHz	3655.02 MHz
	
Ant.2	
3595.02 MHz	3655.02 MHz
	
Ant.3	
3595.02 MHz	3655.02 MHz
	

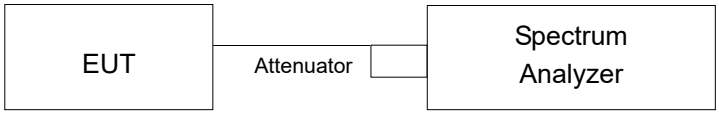
Ant.4	
3595.02 MHz	3655.02 MHz
	

4.2 Maximum Power Spectral Density Measurement

4.2.1 Limits of Maximum Power Spectral Density Measurement

Device		Maximum PSD (dBm/MHz)
☐	End User Device	n/a
☒	Category A CBSD	20
☐	Category B CBSD	37

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.2.4 Test Procedure

a. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
b. Set instrument center frequency to OBW center frequency.
c. Set span to 2 × to 3 × the OBW.
d. Set the RBW to the specified reference bandwidth (often 1 MHz).
e. Set VBW ≥ 3 × RBW.
f. Detector = RMS (power averaging).
g. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
h. Sweep time = auto couple.
i. Employ trace averaging (RMS) mode over a minimum of 100 traces.
j. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.7 Test Results

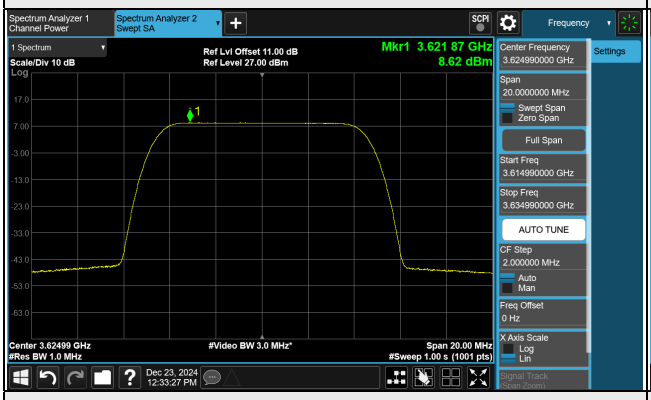
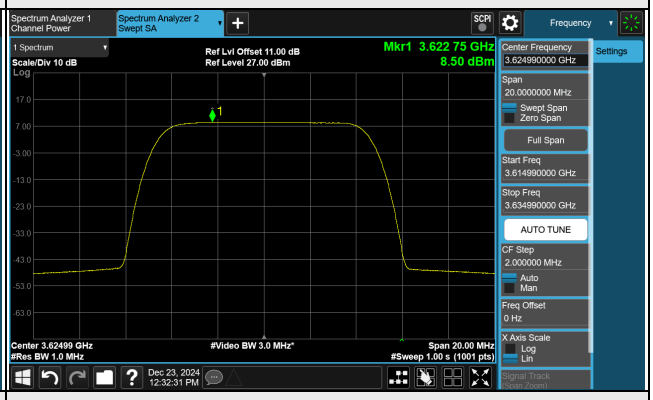
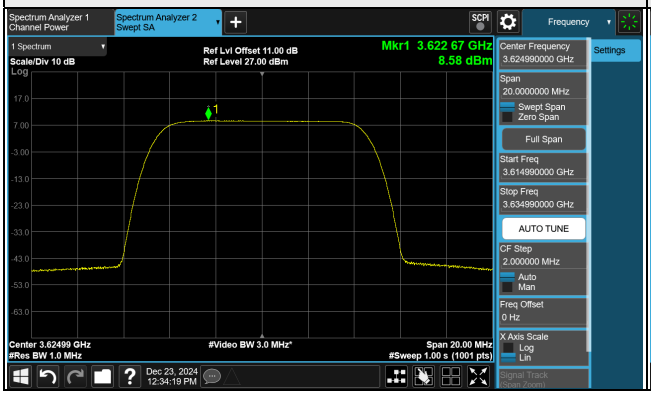
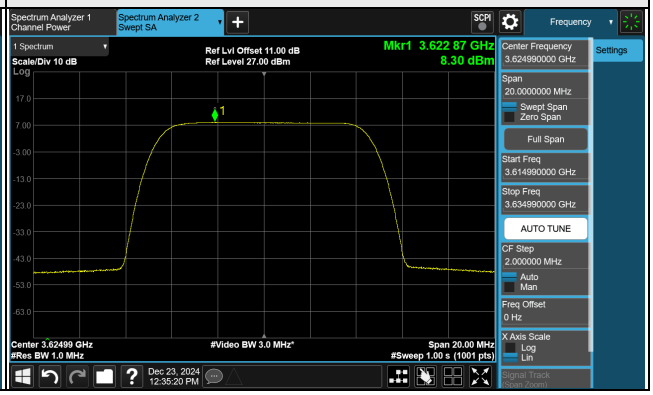
Mode A1

Power Spectral Density (dBm/MHz)

Bandwidth	Frequency (MHz)	Modulation	Antenna				Total	EIRP (dBm/MHz)	Verdict
			1	2	3	4			
10M	3555	QPSK	8.42	8.30	8.46	8.30	14.39	19.85	PASS
		64QAM	8.33	8.23	8.39	8.23	14.32	19.78	PASS
		256QAM	8.26	8.14	8.30	8.14	14.23	19.69	PASS
	3624.99	QPSK	8.62	8.50	8.58	8.30	14.52	**19.98**	PASS
		64QAM	8.53	8.41	8.50	8.22	14.44	19.90	PASS
		256QAM	8.45	8.33	8.41	8.14	14.35	19.81	PASS
	3694.98	QPSK	8.26	8.47	8.56	8.19	14.39	19.85	PASS
		64QAM	8.17	8.40	8.48	8.12	14.32	19.78	PASS
		256QAM	8.09	8.33	8.39	8.05	14.24	19.70	PASS
20M	3560.01	QPSK	8.16	8.12	8.38	8.04	14.20	19.66	PASS
		64QAM	8.09	8.05	8.31	7.95	14.12	19.58	PASS
		256QAM	8.01	7.97	8.23	7.86	14.04	19.50	PASS
	3624.99	QPSK	8.52	8.55	8.34	8.09	14.40	19.86	PASS
		64QAM	8.43	8.48	8.25	8.02	14.32	19.78	PASS
		256QAM	8.36	8.41	8.16	7.95	14.24	19.70	PASS
	3690	QPSK	7.99	8.15	8.12	7.99	14.08	19.54	PASS
		64QAM	7.91	8.08	8.05	7.90	14.01	19.47	PASS
		256QAM	7.83	8.01	7.96	7.81	13.92	19.38	PASS
40M	3570	QPSK	8.43	8.23	7.81	8.56	14.29	19.75	PASS
		64QAM	8.35	8.16	7.72	8.49	14.21	19.67	PASS
		256QAM	8.28	8.07	7.65	8.41	14.13	19.59	PASS
	3624.99	QPSK	7.68	7.93	8.23	7.81	13.94	19.40	PASS
		64QAM	7.61	7.85	8.14	7.74	13.86	19.32	PASS
		256QAM	7.54	7.78	8.07	7.66	13.79	19.25	PASS
	3679.98	QPSK	8.13	8.50	8.42	8.56	14.43	19.89	PASS
		64QAM	8.04	8.41	8.33	8.49	14.34	19.80	PASS
		256QAM	7.96	8.33	8.24	8.42	14.26	19.72	PASS

Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP Power Spectral Density (dBm/MHz) = Total Power Spectral Density (dBm/MHz) + Directional Gain

Spectrum Plot of Worst Value	
10MHz / QPSK	
Ant.1	Ant.2
	
Ant.3	Ant.4
	

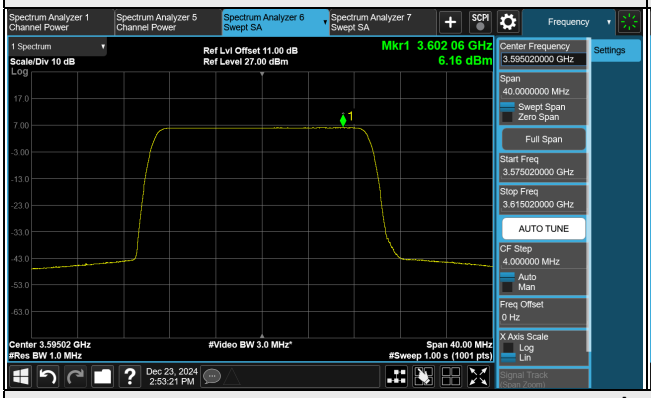
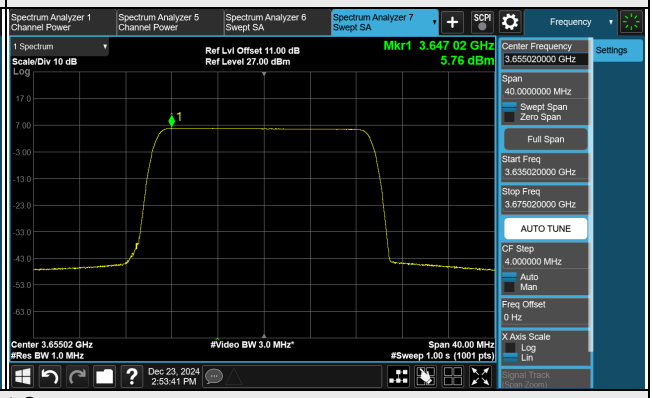
Mode A2

Bandwidth	Frequency (MHz)	Modulation	Carrier	Antenna				Total	EIRP (dBm/MHz)	Verdict
				1	2	3	4			
10M+20M	3555+3690	QPSK	CC0	5.73	5.74	5.95	5.23	11.69	19.73	PASS
			CC1	5.16	4.74	4.74	4.33	10.77		
		64QAM	CC0	5.66	5.67	5.87	5.14	11.61	19.65	PASS
			CC1	5.09	4.67	4.67	4.25	10.70		
		256QAM	CC0	5.58	5.59	5.79	5.07	11.54	19.57	PASS
			CC1	5.02	4.59	4.59	4.16	10.62		
	3595.02+ 3660	QPSK	CC0	5.2	5.18	5.89	5.15	11.39	19.66	PASS
			CC1	5.01	5.05	5.21	4.54	10.98		
		64QAM	CC0	5.11	5.11	5.8	5.07	11.30	19.57	PASS
			CC1	4.92	4.97	5.13	4.45	10.90		
		256QAM	CC0	5.03	5.04	5.73	5	11.23	19.50	PASS
			CC1	4.83	4.9	5.04	4.38	10.82		
	3617.52+ 3637.53	QPSK	CC0	5.38	5.37	5.83	4.87	11.40	19.83	PASS
			CC1	5.36	5.39	5.63	4.78	11.32		
		64QAM	CC0	5.29	5.28	5.75	4.78	11.31	19.75	PASS
			CC1	5.29	5.31	5.55	4.7	11.24		
		256QAM	CC0	5.2	5.21	5.68	4.71	11.23	19.66	PASS
			CC1	5.2	5.22	5.46	4.61	11.15		
20M+10M	3560.01+ 3694.98	QPSK	CC0	5.98	5.74	5.66	5.41	11.72	19.60	PASS
			CC1	5.16	4.37	4.03	4.01	10.44		
		64QAM	CC0	5.91	5.67	5.59	5.32	11.65	19.52	PASS
			CC1	5.07	4.28	3.94	3.94	10.35		
		256QAM	CC0	5.82	5.6	5.5	5.23	11.56	19.44	PASS
			CC1	4.99	4.19	3.87	3.86	10.27		
	3590.01+ 3655.02	QPSK	CC0	6.1	5.57	5.66	5.19	11.66	19.96	PASS
			CC1	5.98	5.42	4.96	4.65	11.30		
		64QAM	CC0	6.03	5.5	5.58	5.11	11.59	19.88	PASS
			CC1	5.91	5.33	4.89	4.58	11.23		
		256QAM	CC0	5.94	5.41	5.51	5.04	11.51	19.80	PASS
			CC1	5.83	5.24	4.81	4.51	11.15		
	3612.51+ 3632.52	QPSK	CC0	5.29	5.7	5.61	4.8	11.38	19.79	PASS
			CC1	5.24	5.67	5.38	4.54	11.25		
		64QAM	CC0	5.21	5.61	5.54	4.73	11.31	19.71	PASS
			CC1	5.16	5.6	5.31	4.46	11.17		
		256QAM	CC0	5.13	5.53	5.47	4.64	11.23	19.64	PASS
			CC1	5.09	5.53	5.24	4.39	11.10		
20M+20M	3560.01+ 3690	QPSK	CC0	6.4	5.69	5.19	5.54	11.75	19.81	PASS
			CC1	5.71	4.85	4.24	4.54	10.89		
		64QAM	CC0	6.32	5.6	5.12	5.45	11.67	19.73	PASS
			CC1	5.63	4.76	4.16	4.46	10.81		
		256QAM	CC0	6.23	5.52	5.03	5.37	11.58	19.65	PASS
			CC1	5.55	4.68	4.09	4.39	10.73		
	3595.02+ 3655.02	QPSK	CC0	6.16	5.57	5.79	5.19	11.71	**19.98**	PASS
			CC1	5.76	5.47	5.13	4.7	11.30		
		64QAM	CC0	6.07	5.5	5.7	5.11	11.63	19.90	PASS
			CC1	5.69	5.38	5.05	4.62	11.22		
		256QAM	CC0	5.99	5.41	5.62	5.03	11.55	19.82	PASS
			CC1	5.6	5.31	4.97	4.53	11.14		
	3612.51+ 3637.53	QPSK	CC0	5.37	5.73	5.31	4.9	11.36	19.73	PASS
			CC1	5.27	5.68	5.05	4.51	11.17		
		64QAM	CC0	5.28	5.66	5.24	4.83	11.28	19.65	PASS
			CC1	5.19	5.59	4.98	4.41	11.08		
		256QAM	CC0	5.19	5.59	5.17	4.74	11.20	19.57	PASS
			CC1	5.1	5.51	4.9	4.33	11.00		

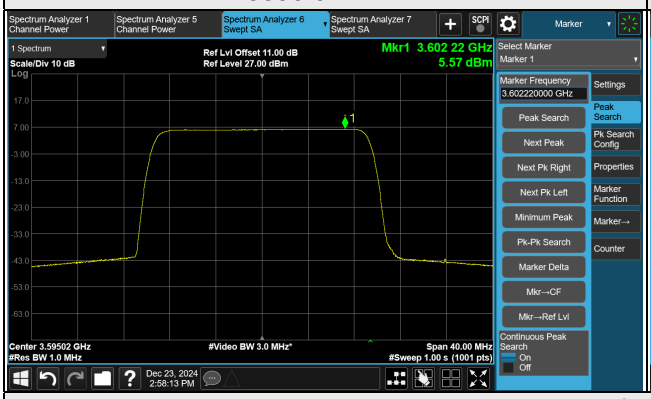
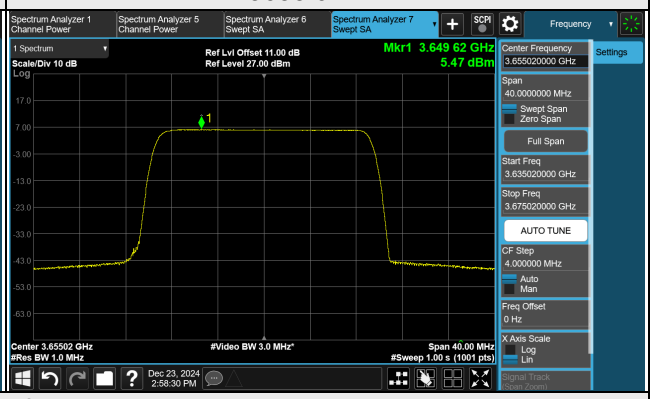
Note:

1. Correlated Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2/2$] = 5.46dBi
2. EIRP Power Spectral Density (dBm/MHz) = Total Power Spectral Density (dBm/MHz) + Directional Gain

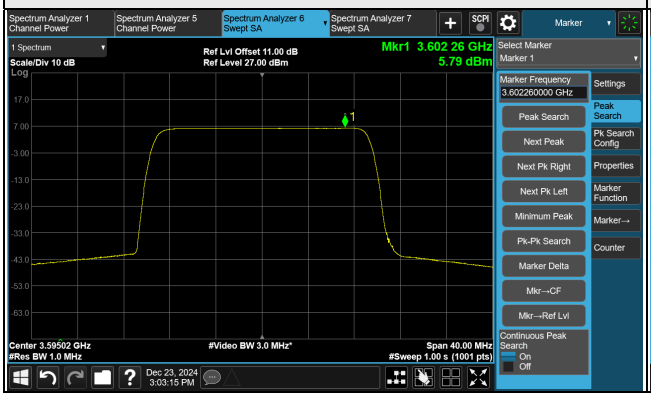
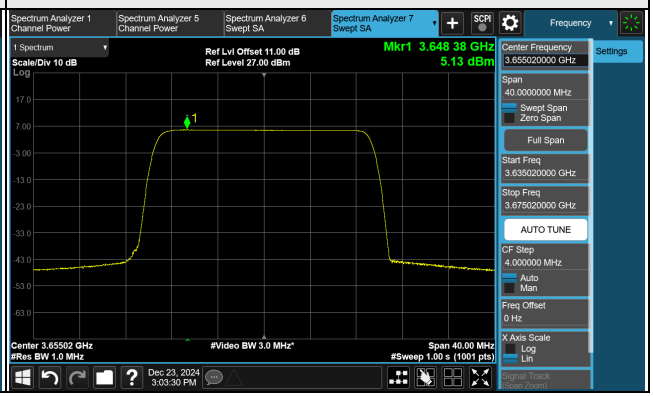
Spectrum Plot of Worst Value
20MHz+20MHz / QPSK
3595.02 MHz+3655.02 MHz
Ant.1

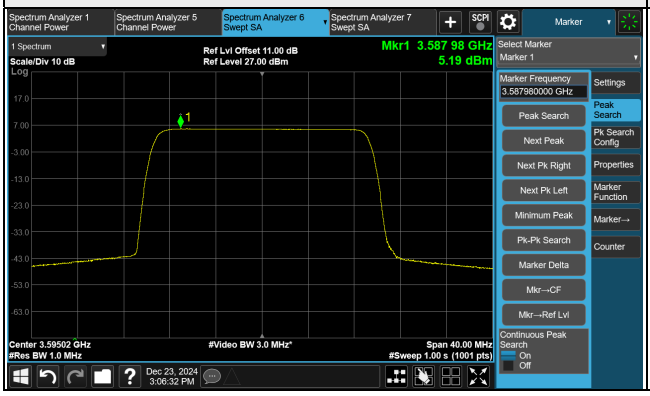
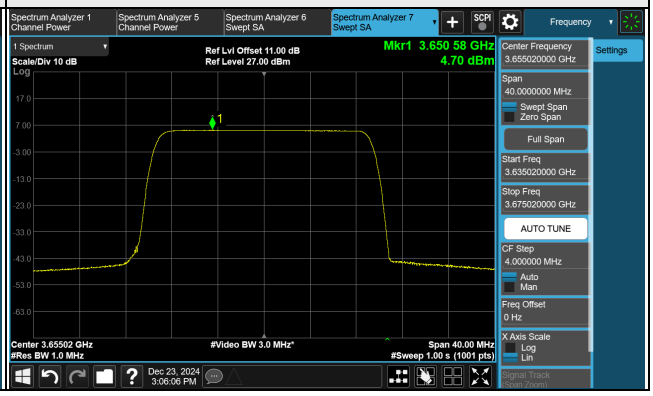
3595.02 MHz	3655.02 MHz
	

Ant.2

3595.02 MHz	3655.02 MHz
	

Ant.3

3595.02 MHz	3655.02 MHz
	

Ant.4	
3595.02 MHz	3655.02 MHz
	

4.3 Modulation Characteristics Measurement

4.3.1 Limits of Modulation Characteristics

N/A

4.3.2 Test Setup

4.3.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.3.4 Deviation from Test Standard

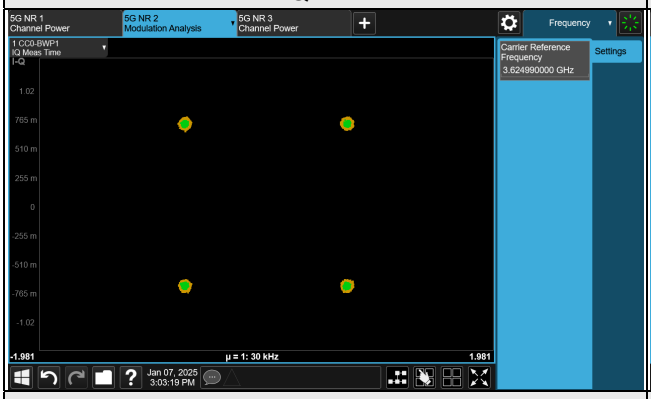
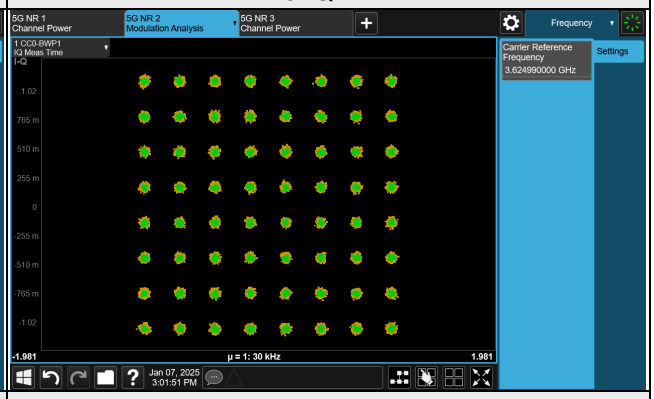
No deviation.

4.3.5 EUT Operating Conditions

Connect the EUT to Communication Simulator via the antenna connector, the frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.3.6 Test Results

Mode A1

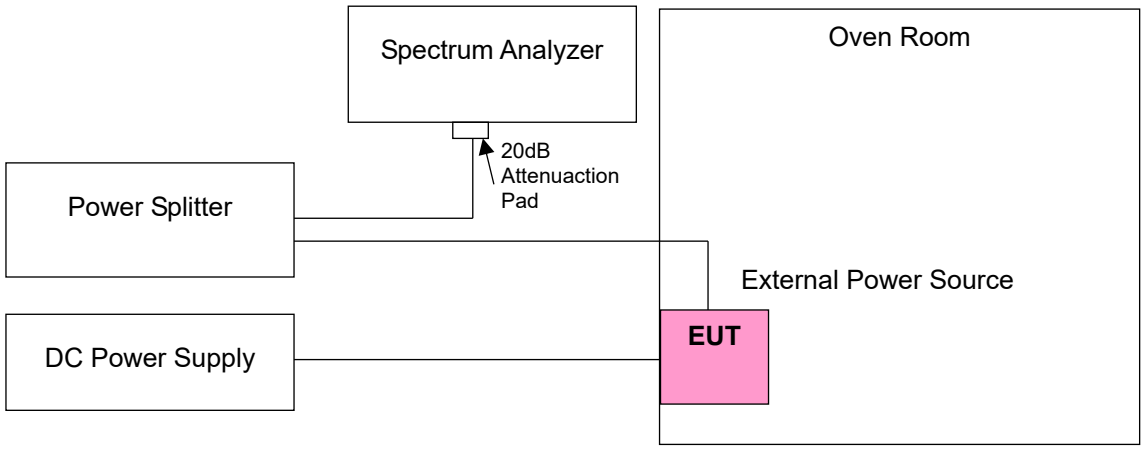
Spectrum Plot of Measurement Value	
Channel: 641666 (3624.99MHz)	
QPSK	64QAM
	
256QAM	
	

4.4 Frequency Stability Measurement

4.4.1 Limits of Frequency Stability Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer KEYSIGHT	N9030B	MY57140488	2024/3/6	2025/3/5
STANDARD TEMPERATURE &HUMIDITY CHAMBER TERCHY	MHU-225AU	911033	2024/10/29	2025/10/28
Three-phase coupling / decoupling network TESEQ	CDN 3063	4006	2024/3/7	2025/3/6
DC Power Supply Topward	6306A	727263	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.4 Test Procedure

a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

4.4.5 Test Results

Mode A1

Antenna 1

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3554.999999	-0.000281	3694.980003	0.000812
56	3554.999997	-0.000844	3694.979999	-0.000271
44	3554.999996	-0.001125	3694.979999	-0.000271

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999995	-0.001406	3694.979996	-0.001083
-20	3554.999995	-0.001406	3694.979997	-0.000812
-10	3554.999999	-0.000281	3694.980004	0.001083
0	3555.000001	0.000281	3694.979995	-0.001353
10	3554.999998	-0.000563	3694.979996	-0.001083
20	3554.999997	-0.000844	3694.979995	-0.001353
30	3555.000003	0.000844	3694.979999	-0.000271
40	3555.000003	0.000844	3694.979997	-0.000812
50	3555.000005	0.001406	3694.980004	0.001083

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009999	-0.000281	3690.000001	0.000271
56	3560.010001	0.000281	3689.999997	-0.000813
44	3560.009998	-0.000562	3689.999999	-0.000271

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009996	-0.001124	3690.000003	0.000813
-20	3560.010004	0.001124	3690.000002	0.000542
-10	3560.009998	-0.000562	3690.000001	0.000271
0	3560.010002	0.000562	3690.000003	0.000813
10	3560.009998	-0.000562	3690.000004	0.001084
20	3560.009997	-0.000843	3689.999998	-0.000542
30	3560.010003	0.000843	3690.000003	0.000813
40	3560.009996	-0.001124	3690.000001	0.000271
50	3560.009996	-0.001124	3690.000003	0.000813

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3570.000003	0.000840	3679.980001	0.000272
56	3569.999997	-0.000840	3679.980003	0.000815
44	3569.999998	-0.000560	3679.979997	-0.000815

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3570.000001	0.000280	3679.980005	0.001359
-20	3569.999995	-0.001401	3679.979999	-0.000272
-10	3570.000002	0.000560	3679.980002	0.000543
0	3570.000003	0.000840	3679.980004	0.001087
10	3569.999996	-0.001120	3679.979999	-0.000272
20	3570.000004	0.001120	3679.980001	0.000272
30	3569.999996	-0.001120	3679.980005	0.001359
40	3569.999996	-0.001120	3679.980003	0.000815
50	3570.000002	0.000560	3679.979999	-0.000272

Antenna 2

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3554.999996	-0.001125	3694.979996	-0.001083
56	3555.000004	0.001125	3694.979999	-0.000271
44	3554.999996	-0.001125	3694.979998	-0.000541

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999997	-0.000844	3694.980004	0.001083
-20	3555.000001	0.000281	3694.980003	0.000812
-10	3555.000001	0.000281	3694.980002	0.000541
0	3554.999999	-0.000281	3694.980004	0.001083
10	3554.999998	-0.000563	3694.980001	0.000271
20	3554.999999	-0.000281	3694.979995	-0.001353
30	3554.999999	-0.000281	3694.979996	-0.001083
40	3555.000002	0.000563	3694.980003	0.000812
50	3554.999997	-0.000844	3694.979995	-0.001353

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010002	0.000562	3689.999995	-0.001355
56	3560.009997	-0.000843	3689.999998	-0.000542
44	3560.009997	-0.000843	3690.000004	0.001084

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009995	-0.001404	3690.000004	0.001084
-20	3560.009997	-0.000843	3689.999996	-0.001084
-10	3560.009997	-0.000843	3690.000001	0.000271
0	3560.010005	0.001404	3690.000003	0.000813
10	3560.009995	-0.001404	3690.000001	0.000271
20	3560.009996	-0.001124	3690.000002	0.000542
30	3560.010005	0.001404	3689.999999	-0.000271
40	3560.010002	0.000562	3690.000004	0.001084
50	3560.010004	0.001124	3690.000002	0.000542

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3569.999998	-0.000560	3679.979996	-0.001087
56	3570.000004	0.001120	3679.980005	0.001359
44	3569.999996	-0.001120	3679.979999	-0.000272

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3570.000001	0.000280	3679.979995	-0.001359
-20	3569.999998	-0.000560	3679.979999	-0.000272
-10	3569.999998	-0.000560	3679.979995	-0.001359
0	3569.999997	-0.000840	3679.980005	0.001359
10	3570.000002	0.000560	3679.979998	-0.000543
20	3569.999998	-0.000560	3679.979999	-0.000272
30	3570.000001	0.000280	3679.980002	0.000543
40	3570.000002	0.000560	3679.979996	-0.001087
50	3569.999999	-0.000280	3679.980005	0.001359

Antenna 3

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3555.000002	0.000563	3694.979996	-0.001083
56	3555.000005	0.001406	3694.979999	-0.000271
44	3555.000002	0.000563	3694.980002	0.000541

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999998	-0.000563	3694.980001	0.000271
-20	3554.999995	-0.001406	3694.980001	0.000271
-10	3554.999999	-0.000281	3694.979999	-0.000271
0	3555.000005	0.001406	3694.979996	-0.001083
10	3555.000005	0.001406	3694.979995	-0.001353
20	3554.999999	-0.000281	3694.979996	-0.001083
30	3555.000005	0.001406	3694.979999	-0.000271
40	3555.000003	0.000844	3694.980002	0.000541
50	3555.000004	0.001125	3694.979995	-0.001353

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009995	-0.001404	3690.000001	0.000271
56	3560.010002	0.000562	3689.999995	-0.001355
44	3560.009996	-0.001124	3690.000003	0.000813

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010001	0.000281	3689.999995	-0.001355
-20	3560.009997	-0.000843	3690.000004	0.001084
-10	3560.010003	0.000843	3689.999995	-0.001355
0	3560.009997	-0.000843	3690.000002	0.000542
10	3560.010001	0.000281	3689.999999	-0.000271
20	3560.009998	-0.000562	3690.000005	0.001355
30	3560.009995	-0.001404	3689.999998	-0.000542
40	3560.009995	-0.001404	3689.999998	-0.000542
50	3560.010005	0.001404	3690.000005	0.001355

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3569.999997	-0.000840	3679.980001	0.000272
56	3569.999999	-0.000280	3679.979999	-0.000272
44	3569.999999	-0.000280	3679.979999	-0.000272

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3569.999997	-0.000840	3679.980005	0.001359
-20	3570.000001	0.000281	3679.979996	-0.001087
-10	3570.000002	0.000561	3679.980001	0.000272
0	3570.000001	0.000281	3679.980005	0.001359
10	3570.000005	0.001403	3679.979996	-0.001087
20	3569.999998	-0.000561	3679.979999	-0.000272
30	3570.000002	0.000561	3679.979997	-0.000815
40	3570.000004	0.001122	3679.979999	-0.000272
50	3569.999996	-0.001122	3679.980004	0.001087

Antenna 4

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3554.999999	-0.000281	3694.979995	-0.001353
56	3554.999999	-0.000281	3694.979998	-0.000541
44	3555.000003	0.000844	3694.980002	0.000541

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999997	-0.000844	3694.980004	0.001083
-20	3554.999999	-0.000281	3694.979996	-0.001083
-10	3554.999996	-0.001125	3694.980002	0.000541
0	3554.999999	-0.000281	3694.980002	0.000541
10	3554.999997	-0.000844	3694.979996	-0.001083
20	3554.999997	-0.000844	3694.979999	-0.000271
30	3555.000003	0.000844	3694.980003	0.000812
40	3555.000001	0.000281	3694.980003	0.000812
50	3555.000002	0.000563	3694.980002	0.000541

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010003	0.000843	3689.999998	-0.000542
56	3560.009997	-0.000843	3690.000004	0.001084
44	3560.009998	-0.000562	3689.999999	-0.000271

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010003	0.000843	3689.999998	-0.000542
-20	3560.009997	-0.000843	3690.000004	0.001084
-10	3560.010004	0.001124	3689.999995	-0.001355
0	3560.010003	0.000843	3690.000005	0.001355
10	3560.010004	0.001124	3689.999997	-0.000813
20	3560.009997	-0.000843	3689.999995	-0.001355
30	3560.010005	0.001404	3690.000005	0.001355
40	3560.009996	-0.001124	3690.000002	0.000542
50	3560.010005	0.001404	3690.000005	0.001355

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3570.000002	0.000560	3679.979998	-0.000543
56	3570.000005	0.001401	3679.979998	-0.000543
44	3570.000004	0.001120	3679.980003	0.000815

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 40MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3569.999996	-0.001120	3679.979997	-0.000815
-20	3569.999995	-0.001401	3679.979999	-0.000272
-10	3570.000004	0.001120	3679.980004	0.001087
0	3570.000002	0.000560	3679.979996	-0.001087
10	3569.999997	-0.000840	3679.979995	-0.001359
20	3569.999996	-0.001120	3679.979995	-0.001359
30	3570.000003	0.000840	3679.979998	-0.000543
40	3569.999995	-0.001401	3679.979998	-0.000543
50	3570.000004	0.001120	3679.979997	-0.000815

Mode A2

Antenna 1

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3555.000003	0.000844	3690.000005	0.001355
56	3555.000004	0.001125	3689.999998	-0.000542
44	3555.000003	0.000844	3690.000005	0.001355

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999997	-0.000844	3690.000002	0.000542
-20	3554.999997	-0.000844	3690.000003	0.000813
-10	3555.000001	0.000281	3689.999999	-0.000271
0	3555.000004	0.001125	3690.000004	0.001084
10	3555.000002	0.000563	3689.999997	-0.000813
20	3554.999997	-0.000844	3689.999996	-0.001084
30	3554.999997	-0.000844	3689.999996	-0.001084
40	3555.000003	0.000844	3690.000005	0.001355
50	3555.000002	0.000563	3690.000002	0.000542

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009997	-0.000843	3694.979996	-0.001083
56	3560.009997	-0.000843	3694.979995	-0.001353
44	3560.010002	0.000562	3694.979995	-0.001353

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010003	0.000843	3694.980003	0.000812
-20	3560.009998	-0.000562	3694.979995	-0.001353
-10	3560.010001	0.000281	3694.979998	-0.000541
0	3560.010001	0.000281	3694.979996	-0.001083
10	3560.010002	0.000562	3694.980004	0.001083
20	3560.009998	-0.000562	3694.979996	-0.001083
30	3560.009995	-0.001404	3694.979996	-0.001083
40	3560.010001	0.000281	3694.980004	0.001083
50	3560.009999	-0.000281	3694.980003	0.000812

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010003	0.000843	3690.000004	0.001084
56	3560.010004	0.001124	3690.000001	0.000271
44	3560.009997	-0.000843	3690.000002	0.000542

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009998	-0.000562	3690.000004	0.001084
-20	3560.009999	-0.000281	3689.999997	-0.000813
-10	3560.009995	-0.001404	3690.000003	0.000813
0	3560.010003	0.000843	3690.000004	0.001084
10	3560.009995	-0.001404	3690.000005	0.001355
20	3560.009998	-0.000562	3690.000003	0.000813
30	3560.009999	-0.000281	3690.000004	0.001084
40	3560.010002	0.000562	3689.999999	-0.000271
50	3560.010004	0.001124	3690.000004	0.001084

Antenna 2

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3555.000005	0.001406	3690.000005	0.001355
56	3555.000001	0.000281	3690.000001	0.000271
44	3554.999996	-0.001125	3690.000003	0.000813

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3555.000002	0.000563	3689.999997	-0.000813
-20	3554.999996	-0.001125	3689.999996	-0.001084
-10	3554.999996	-0.001125	3690.000001	0.000271
0	3554.999998	-0.000563	3690.000001	0.000271
10	3554.999996	-0.001125	3690.000001	0.000271
20	3555.000005	0.001406	3689.999997	-0.000813
30	3554.999997	-0.000844	3690.000005	0.001355
40	3555.000004	0.001125	3689.999995	-0.001355
50	3555.000001	0.000281	3690.000005	0.001355

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009995	-0.001404	3694.980003	0.000812
56	3560.010004	0.001124	3694.979997	-0.000812
44	3560.009997	-0.000843	3694.979996	-0.001083

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009996	-0.001124	3694.980005	0.001353
-20	3560.010004	0.001124	3694.979999	-0.000271
-10	3560.010004	0.001124	3694.979999	-0.000271
0	3560.010005	0.001404	3694.979998	-0.000541
10	3560.009999	-0.000281	3694.980005	0.001353
20	3560.009996	-0.001124	3694.979997	-0.000812
30	3560.009995	-0.001404	3694.979996	-0.001083
40	3560.010001	0.000281	3694.980001	0.000271
50	3560.009997	-0.000843	3694.979995	-0.001353

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009996	-0.001124	3689.999998	-0.000542
56	3560.010002	0.000562	3690.000002	0.000542
44	3560.010003	0.000843	3690.000004	0.001084

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010002	0.000562	3690.000001	0.000271
-20	3560.009995	-0.001404	3689.999997	-0.000813
-10	3560.009999	-0.000281	3690.000004	0.001084
0	3560.009998	-0.000562	3690.000003	0.000813
10	3560.010002	0.000562	3690.000002	0.000542
20	3560.010001	0.000281	3690.000001	0.000271
30	3560.010004	0.001124	3690.000005	0.001355
40	3560.010004	0.001124	3690.000002	0.000542
50	3560.009996	-0.001124	3689.999997	-0.000813

Antenna 3

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3554.999995	-0.001406	3689.999995	-0.001355
56	3555.000001	0.000281	3689.999996	-0.001084
44	3555.000002	0.000563	3689.999998	-0.000542

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999999	-0.000281	3689.999998	-0.000542
-20	3554.999996	-0.001125	3689.999995	-0.001355
-10	3555.000004	0.001125	3689.999995	-0.001355
0	3555.000004	0.001125	3689.999999	-0.000271
10	3554.999999	-0.000281	3690.000004	0.001084
20	3555.000004	0.001125	3689.999997	-0.000813
30	3554.999995	-0.001406	3690.000002	0.000542
40	3555.000001	0.000281	3689.999997	-0.000813
50	3554.999999	-0.000281	3690.000003	0.000813

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010004	0.001124	3694.980003	0.000812
56	3560.010003	0.000843	3694.979997	-0.000812
44	3560.010003	0.000843	3694.980002	0.000541

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009998	-0.000562	3694.980001	0.000271
-20	3560.009999	-0.000281	3694.979999	-0.000271
-10	3560.009999	-0.000281	3694.980005	0.001353
0	3560.009996	-0.001124	3694.980003	0.000812
10	3560.009996	-0.001124	3694.979997	-0.000812
20	3560.009999	-0.000281	3694.979997	-0.000812
30	3560.009996	-0.001124	3694.980001	0.000271
40	3560.009999	-0.000281	3694.980004	0.001083
50	3560.010003	0.000843	3694.980004	0.001083

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010004	0.001124	3689.999995	-0.001355
56	3560.009998	-0.000562	3690.000001	0.000271
44	3560.009997	-0.000843	3689.999999	-0.000271

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.009997	-0.000843	3690.000003	0.000813
-20	3560.009999	-0.000281	3689.999998	-0.000542
-10	3560.009996	-0.001124	3689.999995	-0.001355
0	3560.009998	-0.000562	3690.000001	0.000271
10	3560.009999	-0.000281	3690.000001	0.000271
20	3560.010005	0.001404	3689.999997	-0.000813
30	3560.010002	0.000562	3689.999998	-0.000542
40	3560.009996	-0.001124	3689.999995	-0.001355
50	3560.009998	-0.000562	3689.999995	-0.001355

Antenna 4

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3554.999997	-0.000844	3690.000004	0.001084
56	3554.999998	-0.000563	3690.000001	0.000271
44	3554.999998	-0.000563	3690.000005	0.001355

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 10MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3554.999996	-0.001125	3690.000005	0.001355
-20	3554.999996	-0.001125	3689.999996	-0.001084
-10	3554.999998	-0.000563	3690.000003	0.000813
0	3554.999999	-0.000281	3690.000004	0.001084
10	3555.000003	0.000844	3690.000004	0.001084
20	3555.000002	0.000563	3690.000004	0.001084
30	3555.000002	0.000563	3690.000004	0.001084
40	3554.999999	-0.000281	3689.999998	-0.000542
50	3554.999998	-0.000563	3689.999999	-0.000271

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.009998	-0.000562	3694.979996	-0.001083
56	3560.009999	-0.000281	3694.979996	-0.001083
44	3560.010003	0.000843	3694.980001	0.000271

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+10MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010003	0.000843	3694.979995	-0.001353
-20	3560.010005	0.001404	3694.980003	0.000812
-10	3560.009999	-0.000281	3694.979999	-0.000271
0	3560.009995	-0.001404	3694.980003	0.000812
10	3560.010005	0.001404	3694.980003	0.000812
20	3560.009997	-0.000843	3694.980003	0.000812
30	3560.009996	-0.001124	3694.980001	0.000271
40	3560.010003	0.000843	3694.980001	0.000271
50	3560.009998	-0.000562	3694.979996	-0.001083

Frequency Error vs. Voltage

Voltage (Vdc)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
57	3560.010005	0.001404	3690.000004	0.001084
56	3560.010004	0.001124	3689.999999	-0.000271
44	3560.009998	-0.000562	3689.999996	-0.001084

Note: The applicant defined the normal working voltage is from 44Vdc to 57Vdc.

Frequency Error vs. Temperature

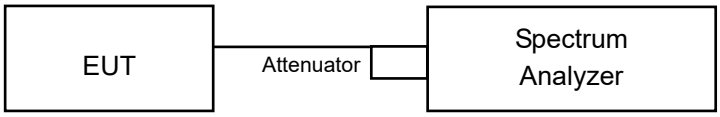
Temp. (℃)	NR Band 48, Channel Bandwidth: 20MHz+20MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	3560.010003	0.000843	3690.000004	0.001084
-20	3560.010001	0.000281	3690.000005	0.001355
-10	3560.009996	-0.001124	3690.000003	0.000813
0	3560.010001	0.000281	3690.000004	0.001084
10	3560.010005	0.001404	3690.000001	0.000271
20	3560.010003	0.000843	3689.999998	-0.000542
30	3560.010003	0.000843	3689.999997	-0.000813
40	3560.009995	-0.001404	3689.999999	-0.000271
50	3560.010002	0.000562	3690.000002	0.000542

4.5 Emission Bandwidth Measurement

4.5.1 Limits of Emission Bandwidth Measurement

According to FCC 47 CFR part 2.1049, the occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedure

Occupied Bandwidth & 26dBc Bandwidth

a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.

b. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.

c. Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation.
NOTE—Step 1), step 2), and step 3) may require iteration to adjust within the specified tolerances.

d. The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.

e. Set spectrum analyzer detection mode to peak, and the trace mode to max hold.

f. Determine the reference value by either of the following:
   a) 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).
   b) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.

g. Determine the "−X dB amplitude" as equal to (Reference Value − X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Result

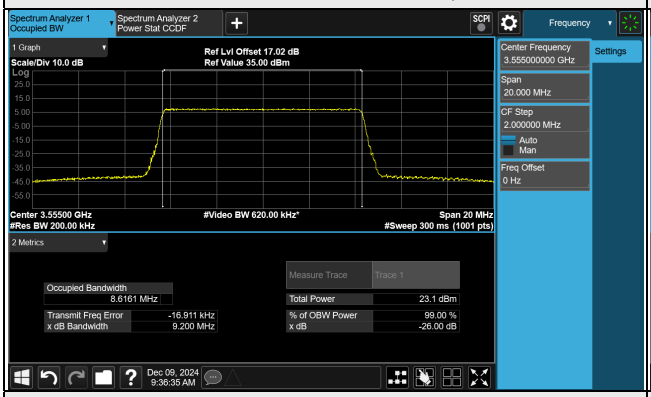
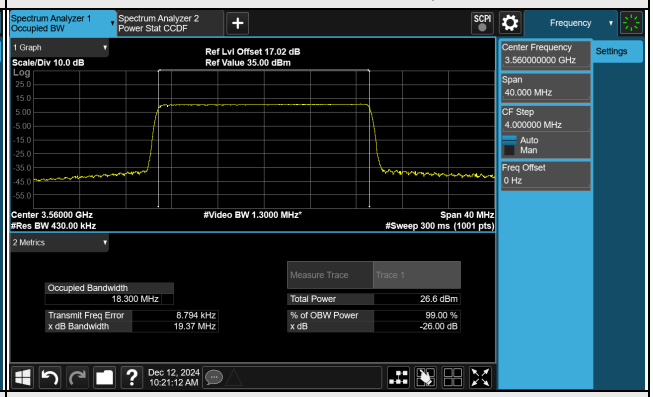
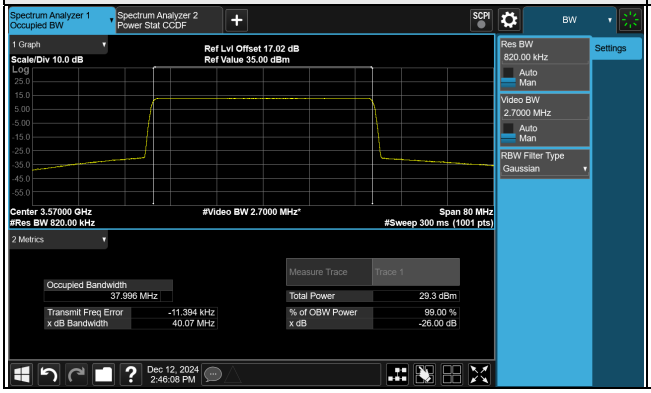
Mode A1

Occupied Bandwidth

NR Band 48, Channel Bandwidth 10MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	8.605	8.611	8.614	8.604	8.613	8.614
641666	3624.99	8.603	8.610	8.612	8.607	8.610	8.614
646332	3694.98	8.600	8.606	8.611	8.602	8.610	8.610
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	8.603	8.614	8.613	8.603	8.616	8.613
641666	3624.99	8.602	8.610	8.612	8.604	8.612	8.612
646332	3694.98	8.603	8.609	8.611	8.605	8.613	8.615

NR Band 48, Channel Bandwidth 20MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	18.295	18.294	18.296	18.289	18.278	18.295
641666	3624.99	18.287	18.289	18.286	18.278	18.283	18.288
646000	3690.00	18.279	18.277	18.280	18.276	18.272	18.272
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	18.292	18.289	18.274	18.300	18.296	18.295
641666	3624.99	18.286	18.279	18.281	18.289	18.287	18.285
646000	3690.00	18.266	18.257	18.266	18.289	18.282	18.284

NR Band 48, Channel Bandwidth 40MHz							
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	37.978	37.973	37.973	37.972	37.965	37.951
641666	3624.99	37.969	37.965	37.960	37.956	37.937	37.937
645332	3679.98	37.939	37.938	37.935	37.915	37.911	37.902
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	37.996	37.960	37.951	37.972	37.964	37.933
641666	3624.99	37.952	37.949	37.952	37.987	37.983	37.970
645332	3679.98	37.878	37.879	37.860	37.982	37.964	37.977

Spectrum Plot of Worst Value	
10MHz / Antenna 4 / 64QAM	20MHz / Antenna 4 / QPSK
	
40MHz / Antenna 3 / QPSK	
	

26dB Bandwidth

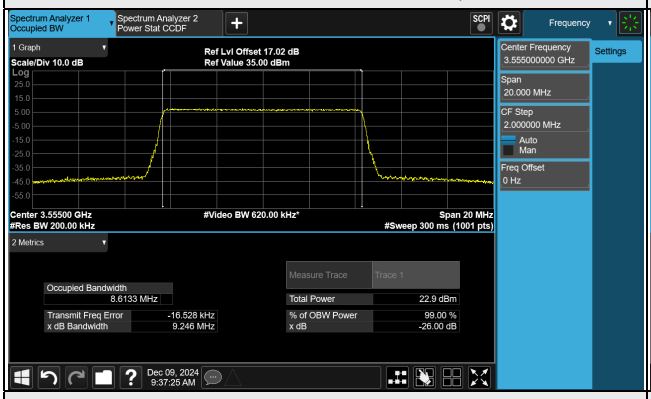
NR Band 48, Channel Bandwidth 10MHz							
Channel	Frequency (MHz)	26dB Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.157	9.232	9.230	9.182	9.190	9.227
641666	3624.99	9.237	9.232	9.172	9.190	9.170	9.216
646332	3694.98	9.178	9.164	9.165	9.167	9.168	9.181
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.176	9.237	9.219	9.169	9.200	9.246
641666	3624.99	9.178	9.235	9.217	9.145	9.170	9.234
646332	3694.98	9.177	9.169	9.169	9.204	9.235	9.234

NR Band 48, Channel Bandwidth 20MHz							
Channel	Frequency (MHz)	26dB Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	19.380	19.380	19.380	19.370	19.380	19.380
641666	3624.99	19.370	19.380	19.380	19.390	19.380	19.390
646000	3690.00	19.390	19.370	19.390	19.380	19.370	19.370
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	19.400	19.360	19.370	19.370	19.390	19.380
641666	3624.99	19.380	19.360	19.380	19.390	19.390	19.380
646000	3690.00	19.380	19.370	19.360	19.400	19.380	19.380

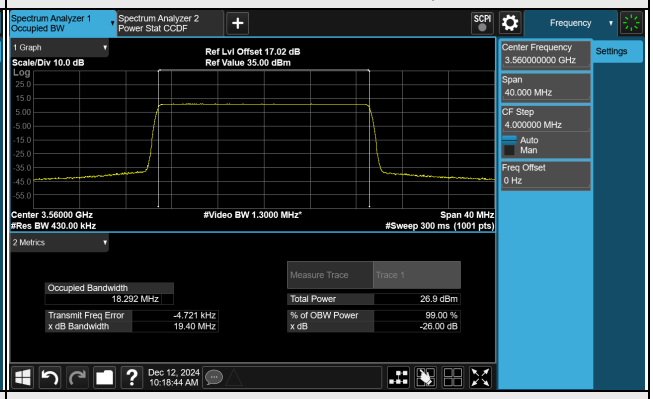
NR Band 48, Channel Bandwidth 40MHz							
Channel	Frequency (MHz)	26dB Bandwidth (MHz)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	40.060	40.050	40.040	40.060	40.050	40.040
641666	3624.99	40.060	40.060	40.050	40.050	40.040	40.050
645332	3679.98	40.050	40.040	40.050	40.030	40.040	40.030
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	40.070	40.030	40.050	40.050	40.030	40.010
641666	3624.99	40.050	40.050	40.040	40.070	40.060	40.050
645332	3679.98	40.020	40.030	40.010	40.060	40.050	40.050

Spectrum Plot of Worst Value

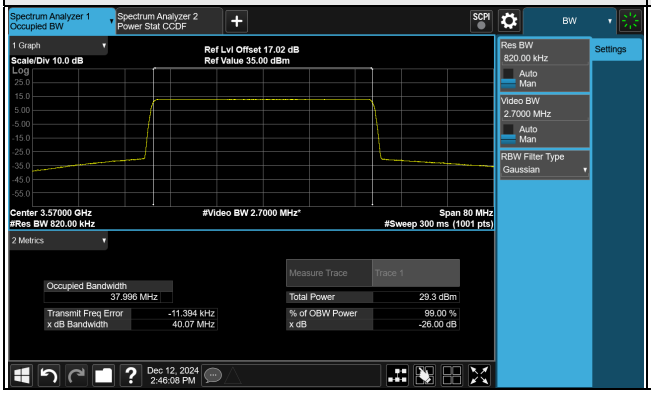
10MHz / Antenna 4 / 256QAM



20MHz / Antenna 3 / QPSK



40MHz / Antenna 3 / QPSK



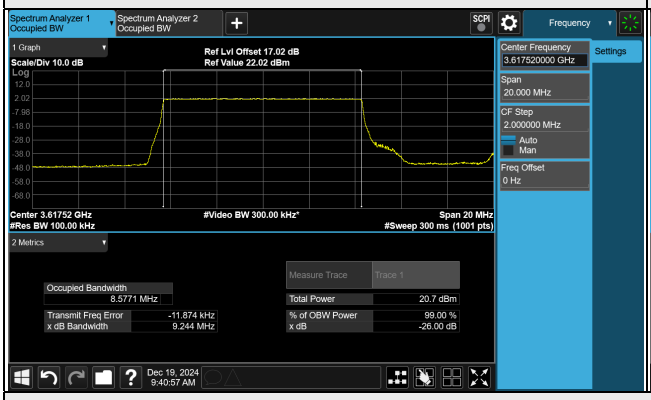
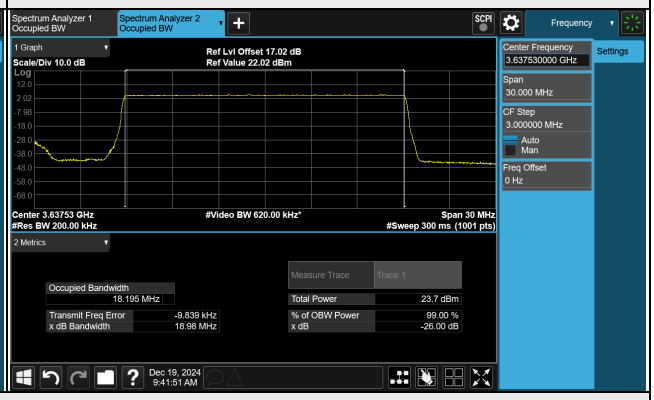
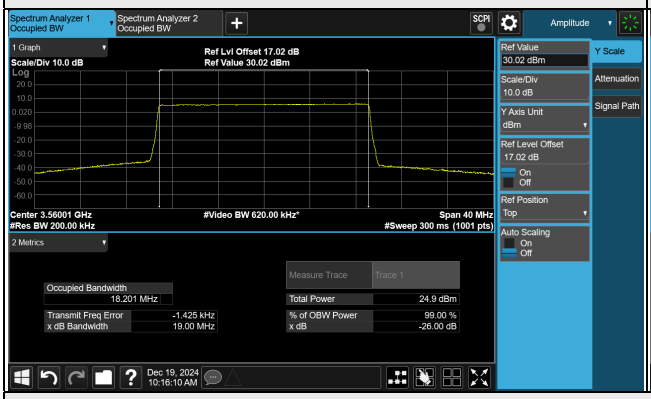
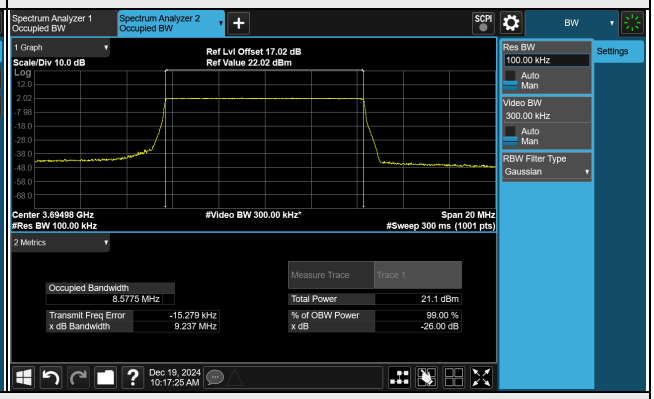
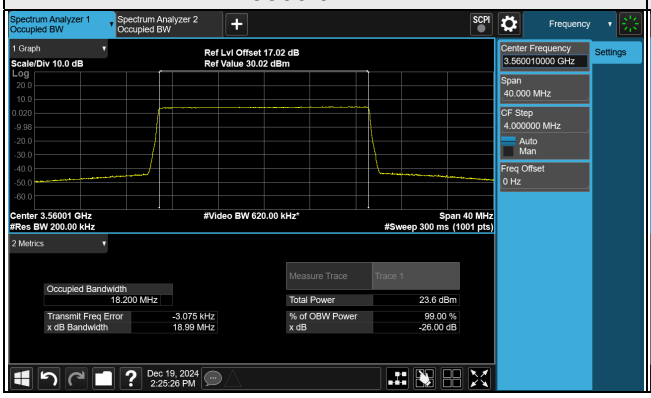
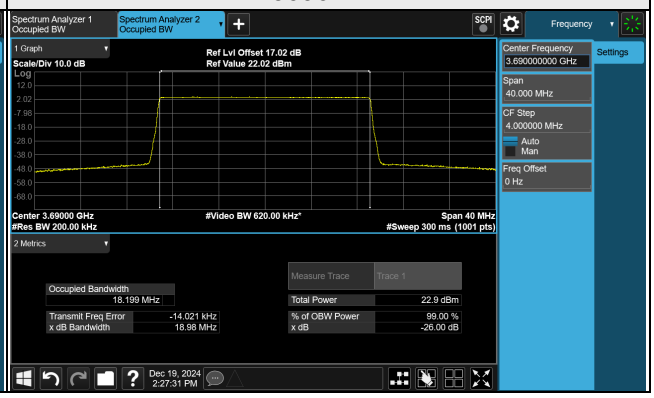
Mode A2

Occupied Bandwidth

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
10MHz+20MHz	3555.00+3690.00	QPSK	1	8.5656	18.179	26.7446
			2	8.5677	18.178	26.7457
			3	8.5654	18.171	26.7364
			4	8.573	18.193	26.766
		64QAM	1	8.5713	18.187	26.7583
			2	8.5657	18.178	26.7437
			3	8.5692	18.166	26.7352
			4	8.5664	18.193	26.7594
		256QAM	1	8.5697	18.188	26.7577
			2	8.5642	18.169	26.7332
			3	8.5705	18.156	26.7265
			4	8.5699	18.191	26.7609
	3595.02+3660.00	QPSK	1	8.5699	18.197	26.7669
			2	8.5688	18.193	26.7618
			3	8.5707	18.195	26.7657
			4	8.5699	18.197	26.7669
		64QAM	1	8.5719	18.195	26.7669
			2	8.5693	18.193	26.7623
			3	8.567	18.184	26.751
			4	8.564	18.185	26.749
		256QAM	1	8.5645	18.194	26.7585
			2	8.5639	18.187	26.7509
			3	8.5641	18.186	26.7501
			4	8.5641	18.182	26.7461
	3617.52+3637.53	QPSK	1	8.5711	18.196	26.7671
			2	8.5716	18.186	26.7576
			3	8.5746	18.189	26.7636
			4	8.5771	18.195	**26.7721**
		64QAM	1	8.567	18.195	26.762
			2	8.5676	18.19	26.7576
			3	8.5711	18.185	26.7561
			4	8.5672	18.186	26.7532
		256QAM	1	8.5616	18.195	26.7566
			2	8.5688	18.177	26.7458
			3	8.5644	18.181	26.7454
			4	8.5655	18.178	26.7435

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
20MHz+10MHz	3560.01+3694.98	QPSK	1	18.19	8.5723	26.7623
			2	18.182	8.581	26.763
			3	18.191	8.568	26.759
			4	18.201	8.5775	**26.7785**
		64QAM	1	18.191	8.5696	26.7606
			2	18.19	8.5819	26.7719
			3	18.185	8.5797	26.7647
			4	18.198	8.5622	26.7602
		256QAM	1	18.191	8.5604	26.7514
			2	18.188	8.5714	26.7594
			3	18.192	8.5638	26.7558
			4	18.186	8.5773	26.7633
	3590.01+3655.02	QPSK	1	18.196	8.5732	26.7692
			2	18.196	8.5701	26.7661
			3	18.199	8.5748	26.7738
			4	18.194	8.5762	26.7702
		64QAM	1	18.194	8.5691	26.7631
			2	18.186	8.568	26.754
			3	18.189	8.5761	26.7651
			4	18.186	8.5617	26.7477
		256QAM	1	18.195	8.5742	26.7692
			2	18.189	8.5633	26.7523
			3	18.184	8.5641	26.7481
			4	18.177	8.5656	26.7426
	3612.51+3632.52	QPSK	1	18.19	8.5763	26.7663
			2	18.19	8.5699	26.7599
			3	18.195	8.5716	26.7666
			4	18.196	8.5741	26.7701
		64QAM	1	18.193	8.569	26.762
			2	18.187	8.5651	26.7521
			3	18.193	8.5636	26.7566
			4	18.196	8.5616	26.7576
		256QAM	1	18.191	8.5668	26.7578
			2	18.187	8.5654	26.7524
			3	18.185	8.5649	26.7499
			4	18.188	8.5693	26.7573

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
20MHz+20MHz	3560.01+3690.00	QPSK	1	18.191	18.188	36.379
			2	18.192	18.182	36.374
			3	18.193	18.17	36.363
			4	18.2	18.199	**36.399**
		64QAM	1	18.189	18.192	36.381
			2	18.19	18.178	36.368
			3	18.193	18.163	36.356
			4	18.197	18.192	36.389
		256QAM	1	18.191	18.19	36.381
			2	18.179	18.18	36.359
			3	18.192	18.174	36.366
			4	18.184	18.192	36.376
	3595.02+3655.02	QPSK	1	18.192	18.195	36.387
			2	18.191	18.193	36.384
			3	18.196	18.196	36.392
			4	18.195	18.198	36.393
		64QAM	1	18.189	18.192	36.381
			2	18.179	18.181	36.36
			3	18.178	18.196	36.374
			4	18.182	18.188	36.37
		256QAM	1	18.189	18.192	36.381
			2	18.187	18.182	36.369
			3	18.182	18.185	36.367
			4	18.18	18.191	36.371
	3612.51+3637.53	QPSK	1	18.191	18.196	36.387
			2	18.189	18.192	36.381
			3	18.195	18.194	36.389
			4	18.199	18.199	36.398
		64QAM	1	18.191	18.197	36.388
			2	18.183	18.18	36.363
			3	18.188	18.189	36.377
			4	18.194	18.19	36.384
		256QAM	1	18.19	18.191	36.381
			2	18.181	18.177	36.358
			3	18.187	18.18	36.367
			4	18.189	18.191	36.38

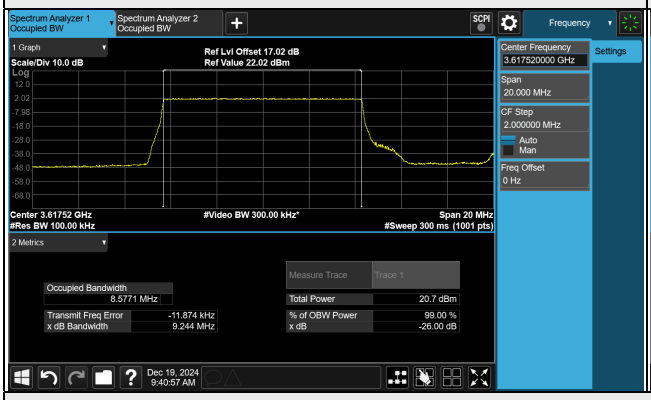
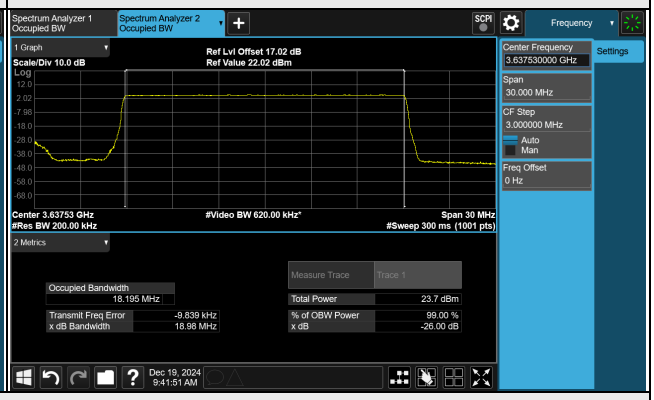
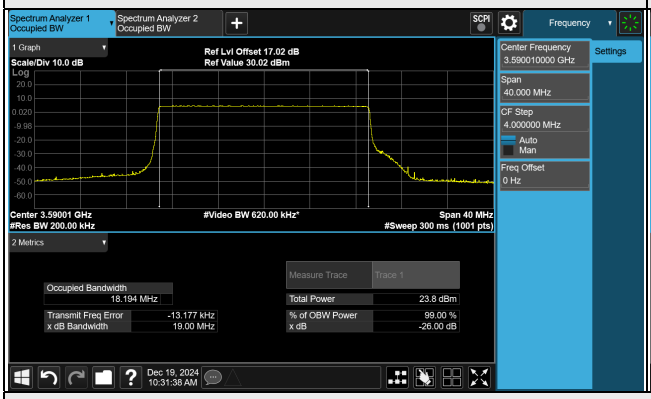
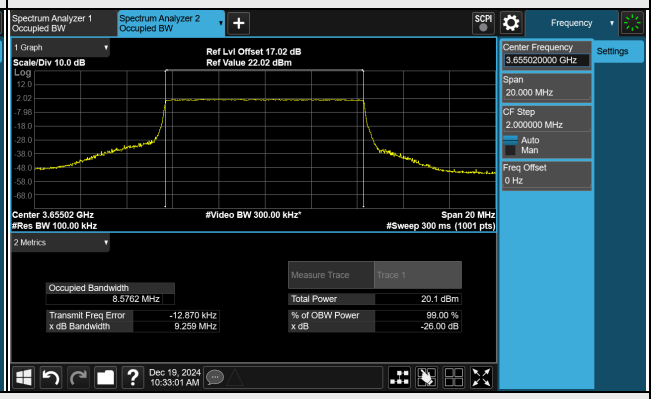
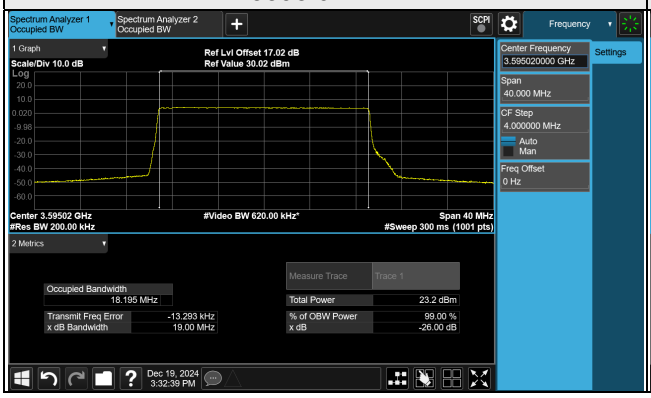
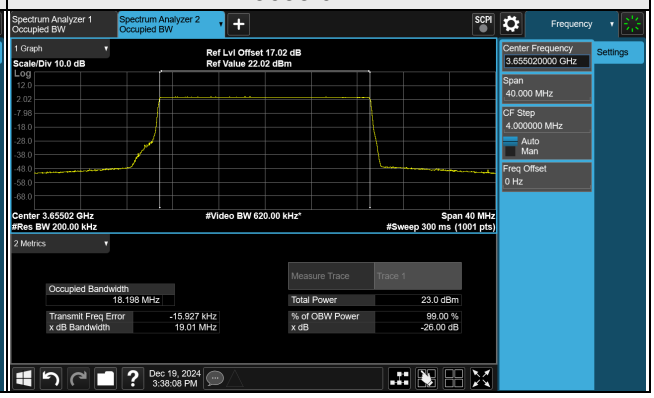
Spectrum Plot of Worst Value	
10MHz+20MHz / Antenna 4 / QPSK	
3617.52MHz	3637.53MHz
	
20MHz+10MHz / Antenna 4 / QPSK	
3560.01MHz	3694.98MHz
	
20MHz+20MHz / Antenna 4 / QPSK	
3560.01MHz	3690MHz
	

26dB Bandwidth

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
10MHz+20MHz	3555.00+3690.00	QPSK	1	9.225	18.96	28.185
			2	9.162	18.95	28.112
			3	9.138	18.92	28.058
			4	9.201	18.94	28.141
		64QAM	1	9.185	18.95	28.135
			2	9.13	18.91	28.04
			3	9.154	18.89	28.044
			4	9.134	18.92	28.054
		256QAM	1	9.205	18.95	28.155
			2	9.147	18.9	28.047
			3	9.155	18.9	28.055
			4	9.118	18.93	28.048
	3595.02+3660.00	QPSK	1	9.157	18.96	28.117
			2	9.185	18.93	28.115
			3	9.212	18.96	28.172
			4	9.183	18.98	28.163
		64QAM	1	9.156	18.92	28.076
			2	9.137	18.93	28.067
			3	9.197	18.94	28.137
			4	9.13	18.93	28.06
		256QAM	1	9.124	18.92	28.044
			2	9.114	18.91	28.024
			3	9.15	18.88	28.03
			4	9.141	18.91	28.051
	3617.52+3637.53	QPSK	1	9.188	18.98	28.168
			2	9.186	18.93	28.116
			3	9.211	18.92	28.131
			4	9.244	18.98	**28.224**
		64QAM	1	9.142	18.93	28.072
			2	9.118	18.89	28.008
			3	9.174	18.92	28.094
			4	9.121	18.91	28.031
		256QAM	1	9.119	18.92	28.039
			2	9.099	18.89	27.989
			3	9.09	18.93	28.02
			4	9.078	18.96	28.038

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
20MHz+10MHz	3560.01+3694.98	QPSK	1	18.96	9.213	28.173
			2	18.93	9.188	28.118
			3	18.99	9.174	28.164
			4	19	9.237	28.237
		64QAM	1	18.93	9.171	28.101
			2	18.94	9.226	28.166
			3	18.91	9.17	28.08
			4	18.95	9.167	28.117
		256QAM	1	18.94	9.174	28.114
			2	18.93	9.113	28.043
			3	18.92	9.128	28.048
			4	18.92	9.186	28.106
	3590.01+3655.02	QPSK	1	18.97	9.24	28.21
			2	18.96	9.198	28.158
			3	18.97	9.223	28.193
			4	19	9.259	**28.259**
		64QAM	1	18.93	9.126	28.056
			2	18.93	9.167	28.097
			3	18.94	9.204	28.144
			4	18.92	9.172	28.092
		256QAM	1	18.96	9.185	28.145
			2	18.91	9.178	28.088
			3	18.93	9.155	28.085
			4	18.96	9.151	28.111
	3612.51+3632.52	QPSK	1	18.98	9.212	28.192
			2	19	9.206	28.206
			3	18.96	9.211	28.171
			4	19	9.203	28.203
		64QAM	1	18.89	9.192	28.082
			2	18.95	9.133	28.083
			3	18.91	9.14	28.05
			4	18.92	9.209	28.129
		256QAM	1	18.94	9.17	28.11
			2	18.91	9.166	28.076
			3	18.9	9.146	28.046
			4	18.93	9.144	28.074

Bandwidth	Frequency (MHz)	Modulation	Antenna	CC0	CC1	Total (MHz)
20MHz+20MHz	3560.01+3690.00	QPSK	1	18.97	18.98	37.95
			2	18.99	18.95	37.94
			3	18.96	18.95	37.91
			4	18.99	18.98	37.97
		64QAM	1	18.95	18.96	37.91
			2	18.94	18.91	37.85
			3	18.95	18.91	37.86
			4	18.93	18.94	37.87
		256QAM	1	18.91	18.96	37.87
			2	18.91	18.92	37.83
			3	18.95	18.93	37.88
			4	18.92	18.94	37.86
	3595.02+3655.02	QPSK	1	18.98	18.99	37.97
			2	19	18.98	37.98
			3	18.98	18.98	37.96
			4	19	19.01	**38.01**
		64QAM	1	18.91	18.94	37.85
			2	18.89	18.95	37.84
			3	18.92	18.92	37.84
			4	18.93	18.93	37.86
		256QAM	1	18.93	18.92	37.85
			2	18.97	18.91	37.88
			3	18.95	18.91	37.86
			4	18.92	18.91	37.83
	3612.51+3637.53	QPSK	1	18.95	18.99	37.94
			2	18.96	18.93	37.89
			3	18.98	18.97	37.95
			4	18.99	18.99	37.98
		64QAM	1	18.9	18.93	37.83
			2	18.95	18.92	37.87
			3	18.9	18.93	37.83
			4	18.92	18.96	37.88
		256QAM	1	18.91	18.92	37.83
			2	18.9	18.9	37.8
			3	18.9	18.91	37.81
			4	18.9	18.91	37.81

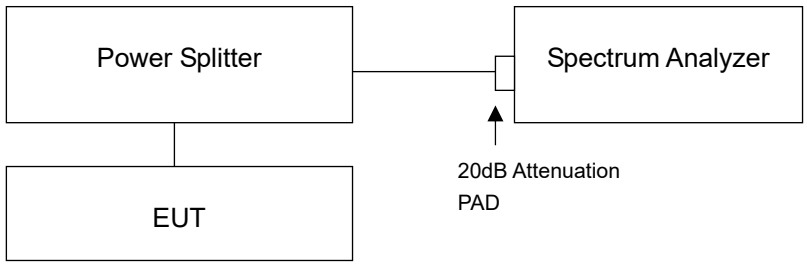
Spectrum Plot of Worst Value	
10MHz+20MHz / Antenna 4 / QPSK	
3617.52MHz	3637.53MHz
	
20MHz+10MHz / Antenna 4 / QPSK	
3590.01MHz	3655.02MHz
	
20MHz+20MHz / Antenna 4 / QPSK	
3595.02MHz	3655.02MHz
	

4.6 Peak to Average Ratio Measurement

4.6.1 Limits of Peak to Average Ratio Measurement

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.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.6.4 Test Procedures

a. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
b. Set the number of counts to a value that stabilizes the measured CCDF curve;
c. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

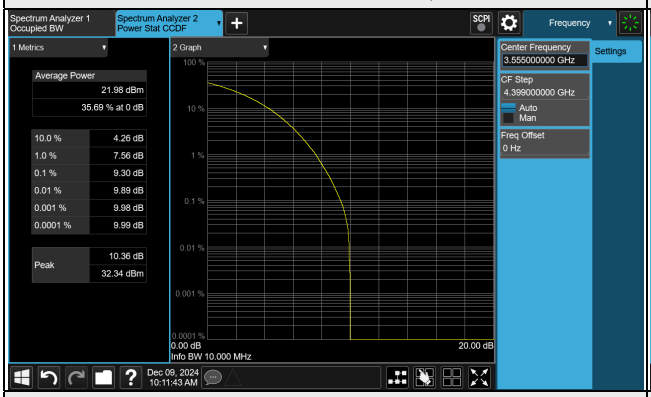
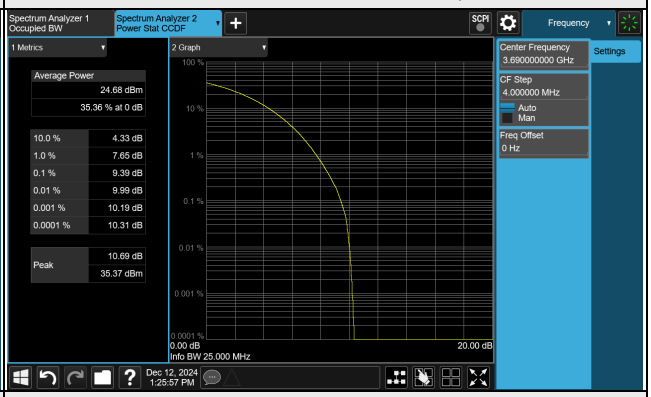
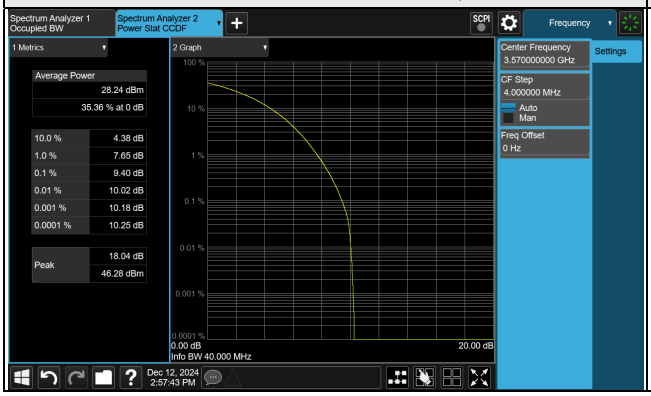
4.6.7 Test Results

Mode A1

NR Band 48, Channel Bandwidth 10MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.30	8.57	9.18	9.24	8.71	9.05
641666	3624.99	9.00	8.61	9.06	9.05	8.67	8.99
646332	3694.98	9.18	8.91	8.99	9.08	8.75	8.95
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637000	3555.00	9.05	8.63	8.86	9.23	9.09	9.15
641666	3624.99	9.09	8.70	8.93	9.22	9.10	8.88
646332	3694.98	9.26	8.74	9.08	9.23	9.13	9.01

NR Band 48, Channel Bandwidth 20MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	8.53	8.74	9.07	8.57	8.85	8.58
641666	3624.99	8.62	8.79	9.04	8.46	8.85	8.85
646000	3690.00	8.53	8.75	8.84	8.46	8.69	8.74
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
637334	3560.01	8.97	9.08	8.85	8.51	8.64	8.77
641666	3624.99	8.25	8.86	8.95	8.38	8.34	8.66
646000	3690.00	8.42	8.68	8.96	8.59	8.94	9.39

NR Band 48, Channel Bandwidth 40MHz							
Channel	Frequency (MHz)	Peak To Average Ratio (dB)					
		Antenna 1			Antenna 2		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	8.67	8.71	8.72	8.78	9.05	9.09
641666	3624.99	8.57	8.64	8.80	8.47	8.66	8.85
645332	3679.98	8.76	8.83	9.03	8.65	9.00	9.16
Channel	Frequency (MHz)	Antenna 3			Antenna 4		
		QPSK	64QAM	256QAM	QPSK	64QAM	256QAM
638000	3570.00	8.65	8.90	9.40	8.58	8.83	9.28
641666	3624.99	8.50	8.68	8.94	8.51	8.59	8.88
645332	3679.98	8.48	8.74	8.92	8.61	9.08	9.07

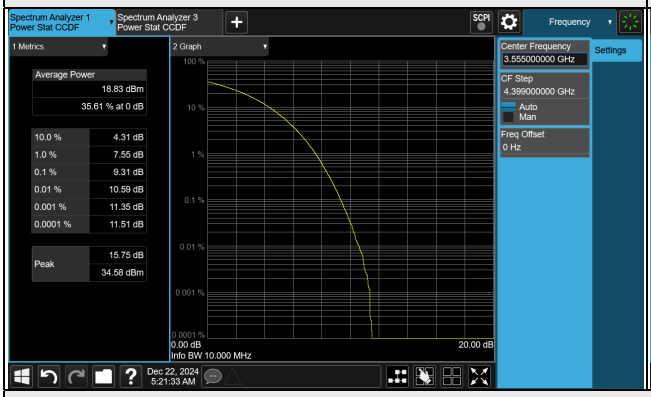
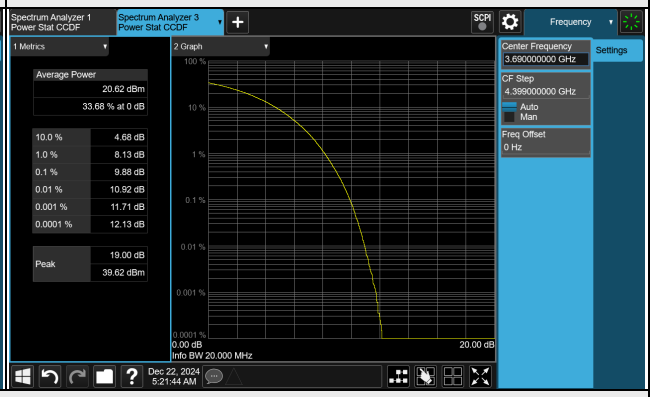
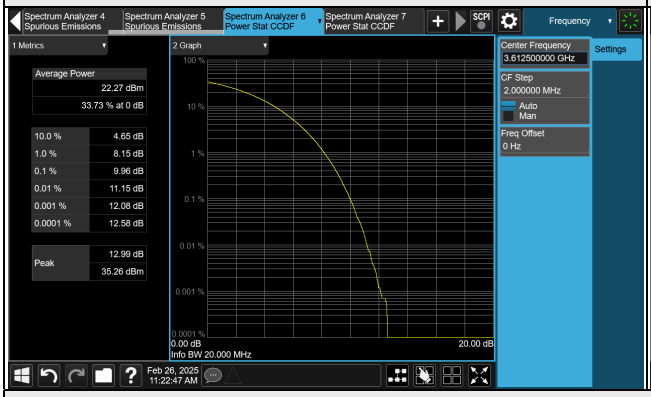
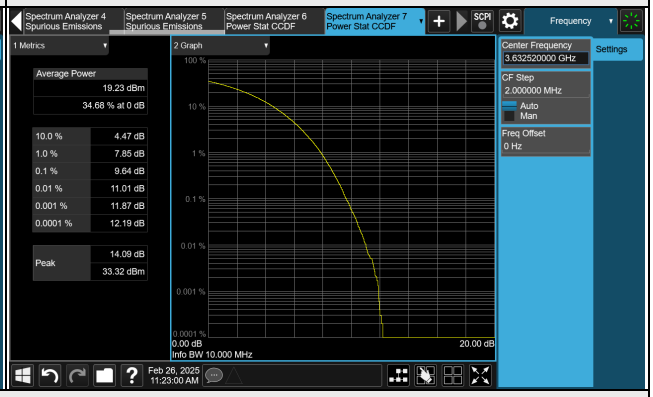
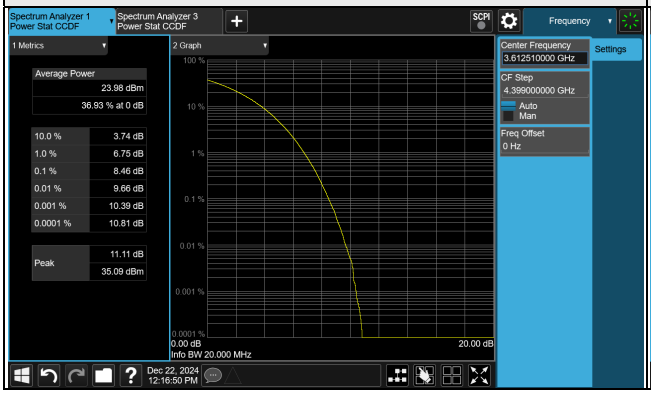
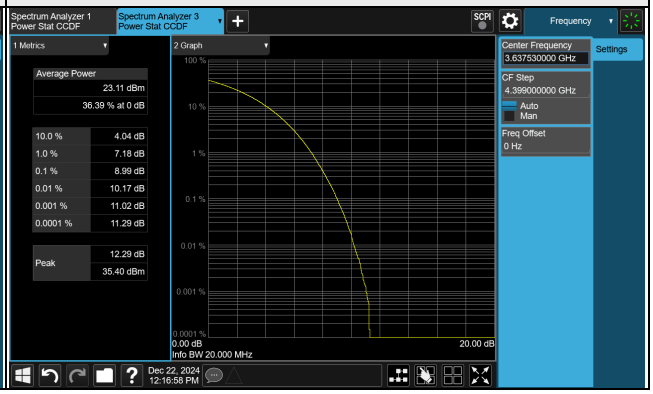
Spectrum Plot of Worst Value	
10MHz / Antenna 1 / QPSK	20MHz / Antenna 4 / 256QAM
	
40MHz / Antenna 3 / 256QAM	
	

Mode A2

NR Band 48, Channel Bandwidth 10MHz+20MHz													
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637000+ 646000	3555+3690	9.58	9.09	9.29	8.95	9.47	9.04	9.48	9.73	9.54	9.26	9.65	9.51
639668+ 644000	3595.02+ 3660	9.44	9.25	9.44	9.47	9.49	9.45	9.44	8.99	9.42	9.22	9.48	8.91
641168+ 642502	3617.52+ 3637.53	9.48	9.04	9.35	9.56	9.44	9.00	9.59	8.73	9.81	9.33	9.52	9.60
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637000+ 646000	3555+3690	9.33	9.13	9.31	9.88	9.28	9.50	9.52	9.70	9.61	9.20	9.57	8.65
639668+ 644000	3595.02+ 3660	9.36	8.70	9.53	9.55	9.43	9.21	9.48	9.13	9.64	9.36	9.49	8.88
641168+ 642502	3617.52+ 3637.53	8.92	8.48	8.86	8.59	8.99	8.74	8.87	8.53	8.84	8.43	8.97	8.51

NR Band 48, Channel Bandwidth 20MHz+10MHz													
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646332	3560.01+ 3694.98	8.40	8.97	8.47	8.94	8.48	8.91	8.41	8.88	8.57	9.04	8.28	8.96
639334+ 643668	3590.01+ 3655.02	8.58	8.76	8.24	8.83	8.49	8.74	8.35	8.78	8.39	8.75	8.23	8.83
640834+ 642168	3612.51+ 3632.52	9.08	9.18	9.47	9.56	9.31	9.49	9.65	9.39	9.77	9.32	9.74	9.68
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646332	3560.01+ 3694.98	8.41	8.92	8.41	8.98	8.48	8.79	8.57	8.78	8.29	8.90	8.28	9.00
639334+ 643668	3590.01+ 3655.02	8.25	8.83	8.41	8.79	8.45	8.84	8.29	8.78	8.27	8.77	8.31	8.85
640834+ 642168	3612.51+ 3632.52	9.10	9.23	9.47	9.40	9.96	9.64	8.64	9.26	8.80	9.42	9.64	9.48

NR Band 48, Channel Bandwidth 20MHz+20MHz													
Channel	Frequency (MHz)	Peak To Average Ratio (dB)											
		Antenna 1						Antenna 2					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646000	3560.01+ 3690	8.37	8.57	8.64	8.37	8.59	8.72	8.94	8.97	8.70	8.42	8.51	8.73
639668+ 643668	3595.02+ 3655.02	8.95	8.92	8.55	8.52	8.71	8.75	8.56	8.43	8.84	8.85	8.68	8.77
640834+ 642502	3612.51+ 3637.53	8.54	8.53	8.54	8.39	8.55	8.70	8.48	8.84	8.80	8.40	8.77	8.60
Channel	Frequency (MHz)	Antenna 3						Antenna 4					
		QPSK		64QAM		256QAM		QPSK		64QAM		256QAM	
		CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1	CC0	CC1
637334+ 646000	3560.01+ 3690	8.48	8.56	8.90	8.30	8.49	8.91	8.77	8.46	8.79	8.47	8.80	8.44
639668+ 643668	3595.02+ 3655.02	8.66	8.61	8.62	8.34	8.30	8.74	8.49	8.51	8.46	8.78	8.60	8.33
640834+ 642502	3612.51+ 3637.53	8.89	8.41	8.46	8.99	8.47	8.54	8.50	8.76	8.32	8.74	8.40	8.37

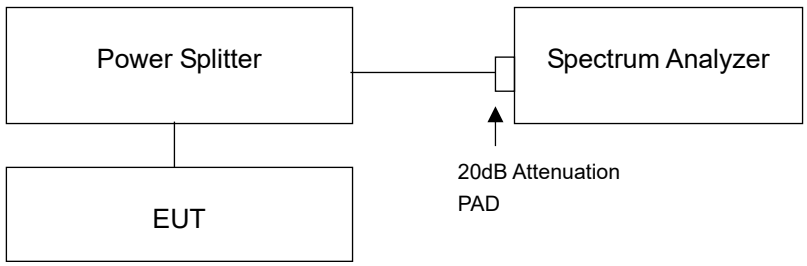
Spectrum Plot of Worst Value	
10MHz+20MHz / Antenna 3 / 64QAM	
3555 MHz	3690 MHz
	
20MHz+10MHz / Antenna 3 / 256QAM	
3612.51 MHz	3632.52 MHz
	
20MHz+20MHz / Antenna 3 / 64QAM	
3612.51 MHz	3632.53 MHz
	

4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

Power of any emissions outside the Fundamental	Limit
Within 0-10MHz above the Assigned Channel	-13 dBm/MHz
Within 0-10MHz below the Assigned Channel	
Greater than 10MHz above the Assigned Channel	-25 dBm/MHz
Greater than 10MHz below the Assigned Channel	
Power of any emission below 3530MHz	-40 dBm/MHz
Power of any emission above 3720MHz	

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range are from 9 kHz to 40GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement. Detector = Average.
c. Measuring frequency band edge, 20dB attenuation pad is connected with spectrum. 1% of the fundamental emission bandwidth is used for conducted emission measurement.

*Spectrum Ref Lvl offset 17.02dB = 1dB (Cable loss) + 10dB (Attenuator) + 6.02 (10log(4TX))

4.7.5 Deviation from Test Standard

No deviation.

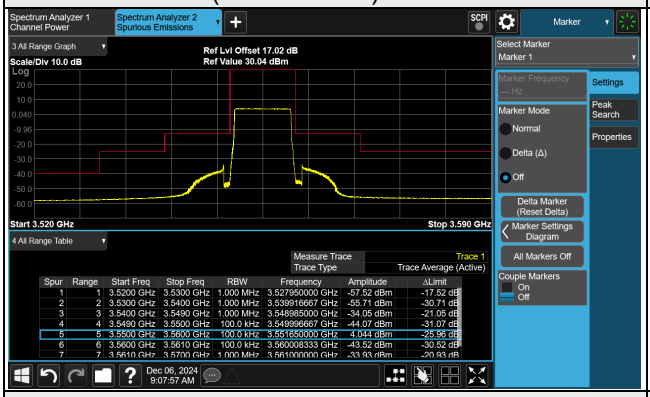
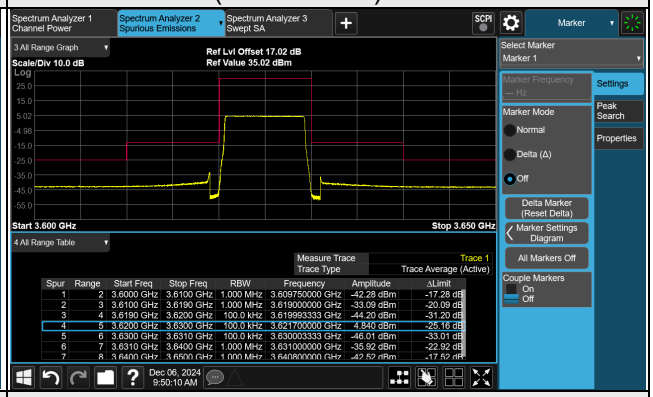
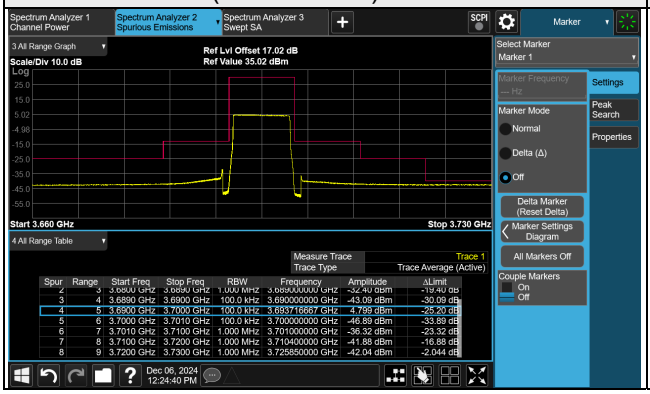
4.7.6 EUT Operating Conditions

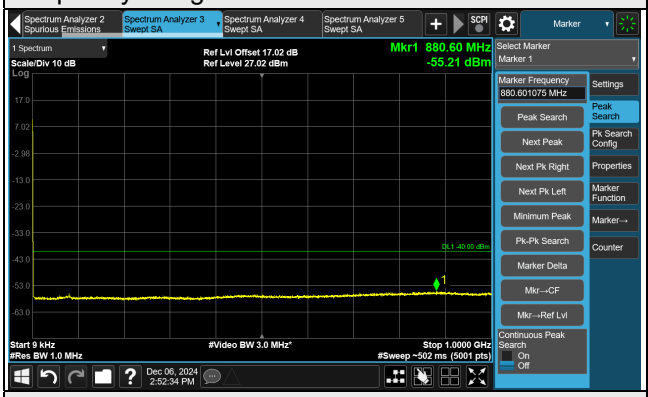
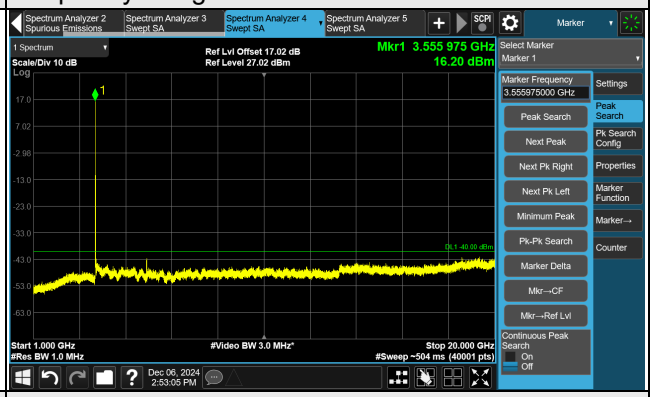
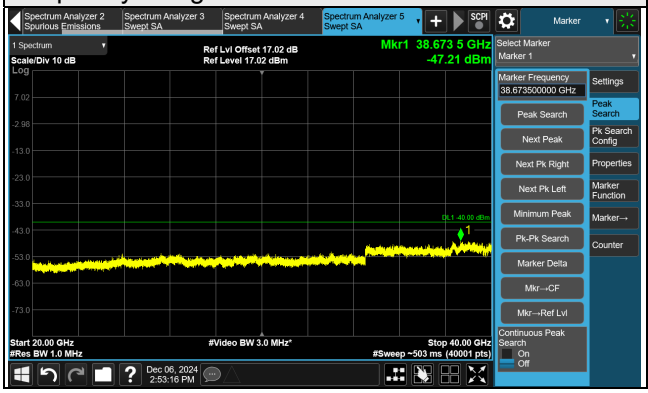
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

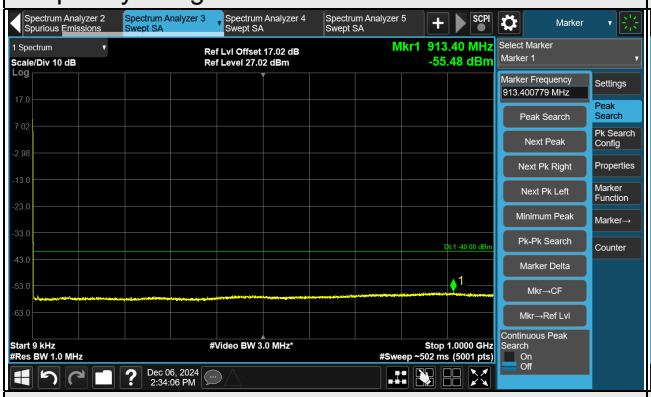
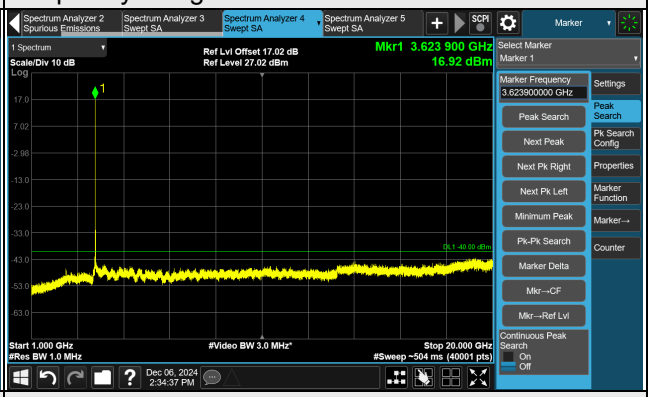
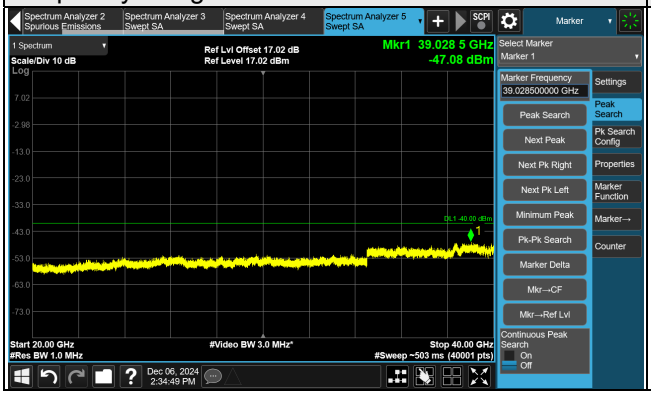
Mode A1

Antenna 1

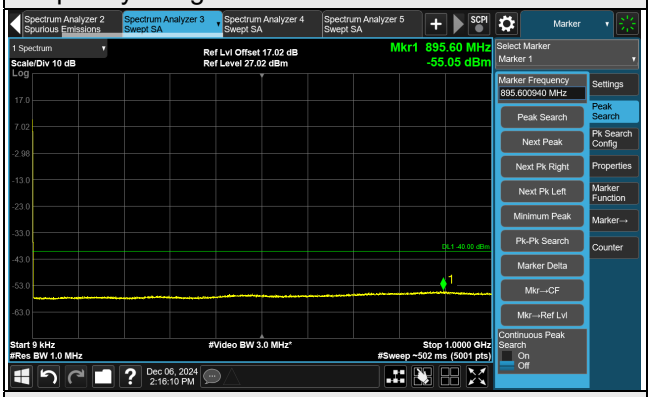
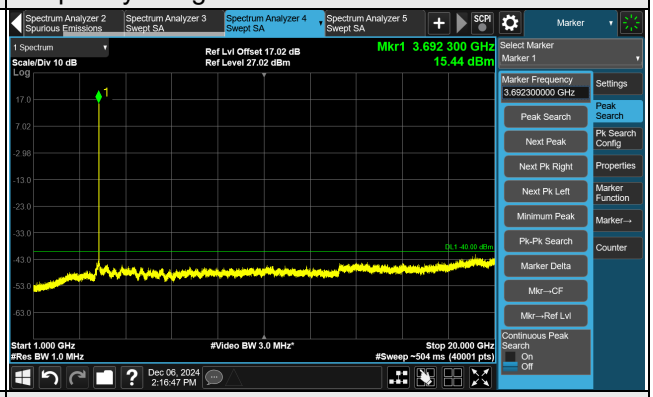
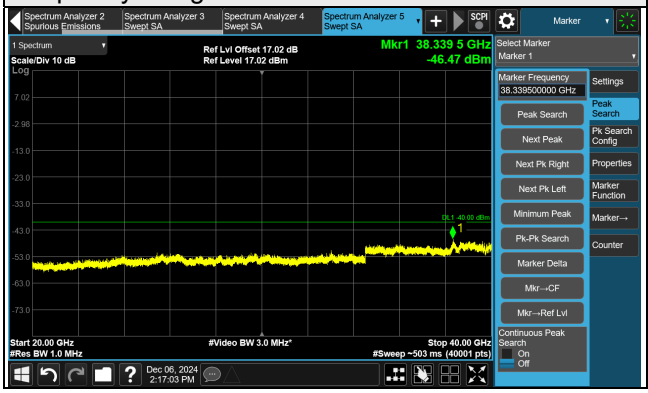
NR Band 48, Channel Bandwidth 10MHz	
Channel 637000 (3555.00MHz)	Channel 641666 (3624.99MHz)
	
Channel 646332 (3694.98MHz)	
	

NR Band 48, Channel Bandwidth 10MHz	
Channel 637000 (3555.00MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 20GHz
	
Frequency Range : 20GHz ~ 40GHz	
	

Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 10MHz	
Channel 641666 (3624.99MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 20GHz
	
Frequency Range : 20GHz ~ 40GHz	
	

Note: The signal at 9 kHz is IF signal from spectrum analyzer.

NR Band 48, Channel Bandwidth 10MHz	
Channel 646332 (3694.98MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 20GHz
	
Frequency Range : 20GHz ~ 40GHz	
	

Note: The signal at 9 kHz is IF signal from spectrum analyzer.