

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 96
47 CFR FCC Part 2

Report No.: RFCVSF-WTW-P25090814-8

FCC ID: PKRISGM4010

Product: Wireless Hotspot

Brand: Inseego

Model No.: M4010

Received Date: 2025/11/17

Test Date: 2025/11/30 ~ 2025/12/30

Issued Date: 2026/1/12

Applicant: Inseego Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration /
Designation Number: 788550 / TW0003

Approved by: Jeremy Lin , **Date:** 2026/1/12
Jeremy Lin / Project Engineer

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Prepared by : Pettie Chen / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFCVSF-WTW-P25090814-8	Original release.	2026/1/12

1 Certificate

Product: Wireless Hotspot

Brand: Inseego

Test Model: M4010

Sample Status: Engineering sample

Applicant: Inseego Corp.

Test Date: 2025/11/30 ~ 2025/12/30

Standard: 47 CFR FCC Part 96
47 CFR FCC Part 2

Measurement procedure: ANSI/TIA/EIA-603-E 2016
ANSI C63.26-2015
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 940660 D01 Part 96 CBRS Eqpt v03

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.

2 Summary of Test Results

Standard / Clause	Test Item	Result	Remark
Part 2.1046 Part 96.41(b)	Maximum EIRP	Pass	Meet the requirement of limit.
Part 2.1047	Modulation Characteristics	Pass	Meet the requirement of limit.
Part 2.1046 Part 96.41(b)	Maximum Power Spectral Density	N/A	This device is End User Device.
Part 96.41(g)	Peak to Average Ratio	Pass	Meet the requirement of limit.
Part 2.1049	Bandwidth	Pass	Meet the requirement of limit.
Part 2.1051 Part 96.41(e)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
Part 2.1053 Part 96.41(e)	Radiated Spurious Emissions below 1GHz	Pass	Minimum passing margin is -1.63 dB at 33.88 MHz
Part 2.1053 Part 96.41(e)	Radiated Spurious Emissions above 1GHz	Pass	Minimum passing margin is -2.20 dB at 7249.98 MHz
Part 2.1055	Frequency Stability	Pass	Meet the requirement of limit.

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:

Parameter	Specification	Uncertainty (±)
Effective Radiated Power and Equivalent Isotropically Radiated Power	-	1.371 dB
Peak to Average Ratio	-	0.920 dB
Bandwidth	-	960 Hz
Conducted Spurious Emissions	-	2.12 dB
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB
Frequency Stability	-	0.176 ppm

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Hotspot
Brand	Inseego
Test Model	M4010
Market Model Name	M4000, M4040
Model Difference	Marketing purpose
Status of EUT	Engineering sample
Power Supply Rating	5 Vdc or 9 Vdc or 12 Vdc from adapter 3.85 Vdc from battery
EUT Category	End User Device
Modulation Type	DFT-s-OFDM, CP-OFDM
5G NR support SISO bands	n48
PC3 for Power Class	n48

Note:

1. The EUT uses following accessories.

Item	Brand	Model	Specification	P/N
AC Adapter	SUNUN	P181	AC Input: 100-240 Vac, 50/60 Hz, 0.5 A max DC Output: 5 Vdc, 3 A; 9 Vdc, 2 A; 12 Vdc, 1.5 A	-
USB Cable	inseego	-	Signal Line: 1.0 m, shielded	CAB-60723090
Battery	inseego	754685	3.85 Vdc, 5050 mAh, 19.44 Wh	-

2. EUT Overview

Output Power: Full Power

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

Bandwidth	TX Frequency Range (MHz)	Modulation	Max. EIRP (W)	Max. EIRP (dBm)	Emission Designator
10 MHz	3555 ~ 3694.98	BPSK	0.187	22.71	8M60G7D
		QPSK	0.191	22.81	8M58G7D
		16QAM	0.122	20.87	8M59D7W
		64QAM	0.11	20.4	8M58D7W
		256QAM	0.072	18.59	8M59D7W
15 MHz	3557.52 ~ 3692.49	BPSK	0.19	22.78	12M9G7D
		QPSK	0.192	22.83	13M6G7D
		16QAM	0.121	20.83	13M6D7W
		64QAM	0.109	20.38	13M6D7W
		256QAM	0.07	18.48	13M6D7W
20 MHz	3560.01 ~ 3690	BPSK	0.189	22.76	17M9G7D
		QPSK	0.192	22.84	18M2G7D
		16QAM	0.122	20.87	18M2D7W
		64QAM	0.11	20.4	18M2D7W
		256QAM	0.072	18.57	18M2D7W
30 MHz	3565.02 ~ 3684.99	BPSK	0.188	22.75	26M8G7D
		QPSK	0.192	22.84	27M9G7D
		16QAM	0.124	20.92	27M9D7W
		64QAM	0.11	20.41	27M9D7W
		256QAM	0.072	18.58	27M9D7W
40 MHz	3570 ~ 3679.98	BPSK	0.188	22.75	35M8G7D
		QPSK	0.194	22.87	37M8G7D
		16QAM	0.126	20.99	37M8D7W
		64QAM	0.111	20.44	37M9D7W
		256QAM	0.072	18.58	37M9D7W

Output Power: dBm/10 MHz

Bandwidth	TX Frequency Range (MHz)	Modulation	Max. EIRP (W)	Max. EIRP (dBm)	Emission Designator
15 MHz	3557.52 ~ 3692.49	BPSK	0.189	22.76	12M9G7D
		QPSK	0.190	22.79	13M6G7D
		16QAM	0.119	20.75	13M6D7W
		64QAM	0.107	20.31	13M6D7W
		256QAM	0.069	18.4	13M6D7W
20 MHz	3560.01 ~ 3690	BPSK	0.186	22.7	17M9G7D
		QPSK	0.190	22.79	18M2G7D
		16QAM	0.121	20.82	18M2D7W
		64QAM	0.109	20.38	18M2D7W
		256QAM	0.070	18.48	18M2D7W
30 MHz	3565.02 ~ 3684.99	BPSK	0.187	22.73	26M8G7D
		QPSK	0.189	22.76	27M9G7D
		16QAM	0.123	20.89	27M9D7W
		64QAM	0.110	20.4	27M9D7W
		256QAM	0.071	18.49	27M9D7W
40 MHz	3570 ~ 3679.98	BPSK	0.188	22.75	35M8G7D
		QPSK	0.193	22.85	37M8G7D
		16QAM	0.124	20.95	37M8D7W
		64QAM	0.110	20.43	37M9D7W
		256QAM	0.071	18.52	37M9D7W

3. The EUT support n48 SA mode and SRS mode, after verification, SA mode was the worst case and chose for final test.
4. For detailed information about each WWAN bands frequency range, bandwidth mode of the product, please refer to section 3.3 of the report.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

Type		PIFA		
Connector		Contact spring		
Band		Freq. Range (MHz)	Gain (dBi)	
			WWAN (A2-TX0)	WWAN (A3-TX1)
5GNR B48	1TX (Diversity)	3550 ~ 3700	0.31	0.97

* For 1TX (Diversity), the maximum antenna gain for each band were chosen for final test.

* 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.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. 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. 2. Pre-Scan has been conducted to determine the worst-case from all possible combinations of EUT configure mode (1TX or 2TX if available), channel, bandwidth, modulation and RB mode. See below table(s) for details.
Worst Case:	X-axis/ Y-axis/ Z-axis Worst Condition: Y-axis

3.3.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

Test Item	EUT Configure Mode	Tested Channel	Channel Bandwidth	Modulation	Mode
Maximum EIRP	PC3 (1TX)	637000(3555.00 MHz) 641666(3624.99 MHz) 646333(3694.98 MHz)	10 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
		637168(3557.52 MHz) 641666(3624.99 MHz) 646166(3692.49 MHz)	15 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
		637334(3560.01 MHz) 641666(3624.99 MHz) 646000(3690.00 MHz)	20 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
		637668(3565.02 MHz) 641666(3624.99 MHz) 645666(3684.99 MHz)	30 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
		638000(3570.00 MHz) 641666(3624.99 MHz) 645332(3679.98 MHz)	40 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
Modulation Characteristics	PC3 (1TX)	641666(3624.99 MHz)	40 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB

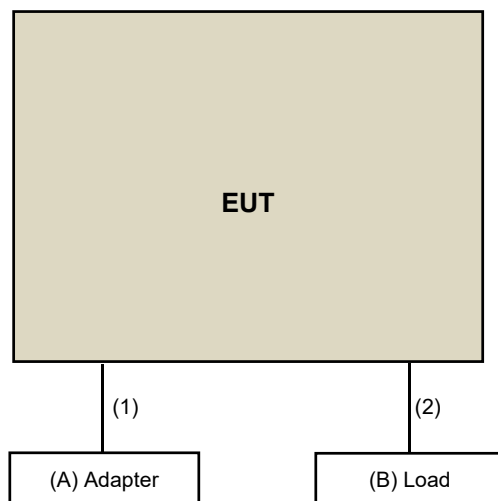
Test Item	EUT Configure Mode	Tested Channel	Channel Bandwidth	Modulation	Mode
Peak to Average Ratio	PC3 (1TX)	637000(3555.00 MHz) 641666(3624.99 MHz) 646333(3694.98 MHz)	10 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB
		637168(3557.52 MHz) 641666(3624.99 MHz) 646166(3692.49 MHz)	15 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB
		637334(3560.01 MHz) 641666(3624.99 MHz) 646000(3690.00 MHz)	20 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB
		637668(3565.02 MHz) 641666(3624.99 MHz) 645666(3684.99 MHz)	30 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB
		638000(3570.00 MHz) 641666(3624.99 MHz) 645332(3679.98 MHz)	40 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	1 RB
Bandwidth	PC3 (1TX)	637000(3555.00 MHz) 641666(3624.99 MHz) 646333(3694.98 MHz)	10 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB
		637168(3557.52 MHz) 641666(3624.99 MHz) 646166(3692.49 MHz)	15 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB
		637334(3560.01 MHz) 641666(3624.99 MHz) 646000(3690.00 MHz)	20 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB
		637668(3565.02 MHz) 641666(3624.99 MHz) 645666(3684.99 MHz)	30 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB
		638000(3570.00 MHz) 641666(3624.99 MHz) 645332(3679.98 MHz)	40 MHz	BPSK / QPSK / 16QAM / 64QAM / 256QAM	Full RB

Test Item	EUT Configure Mode	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted Spurious Emissions	PC3 (1TX)	637000(3555.00 MHz) 641666(3624.99 MHz) 646333(3694.98 MHz)	10 MHz	QPSK	1 RB Full RB
		637168(3557.52 MHz) 641666(3624.99 MHz) 646166(3692.49 MHz)	15 MHz	QPSK	1 RB Full RB
		637334(3560.01 MHz) 641666(3624.99 MHz) 646000(3690.00 MHz)	20 MHz	QPSK	1 RB Full RB
		637668(3565.02 MHz) 641666(3624.99 MHz) 645666(3684.99 MHz)	30 MHz	QPSK	1 RB Full RB
		638000(3570.00 MHz) 641666(3624.99 MHz) 645332(3679.98 MHz)	40 MHz	QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	PC3 (1TX)	641666(3624.99 MHz)	40 MHz	QPSK	1 RB
Radiated Spurious Emissions above 1GHz	PC3 (1TX)	637000(3555.00 MHz) 641666(3624.99 MHz) 646333(3694.98 MHz)	10 MHz	QPSK	1 RB
		637334(3560.01 MHz) 641666(3624.99 MHz) 646000(3690.00 MHz)	20 MHz	QPSK	1 RB
		638000(3570.00 MHz) 641666(3624.99 MHz) 645332(3679.98 MHz)	40 MHz	QPSK	1 RB
Frequency Stability	PC3 (1TX)	638000(3570.00 MHz) 645332(3679.98 MHz)	40 MHz	QPSK	1 RB

3.4 Test Program Used and Operation Descriptions

There is no need to controlling software during the test, and the EUT can be paired with the Radio Communication Analyzer to test the connection when it is powered on.

3.5 Connection Diagram of EUT and Peripheral Devices



Remote Site



3.1 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	SUNUN	P181	N/A	N/A	Accessory of EUT
B	Load	N/A	N/A	N/A	N/A	Provided by Lab
C	Radio Communication Analyzer	Anritsu	MT8000A	6272278596	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB Cable	1	1.0	Y	0	Accessory of EUT
2	RJ45 Cable	1	1.5	N	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Maximum EIRP

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
UXM 5G Wireless Test Platform Keysight	E7515B	MY60102115	2025/5/26	2026/5/25

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/11/30 ~ 2025/12/30

4.2 Modulation Characteristics

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
UXM 5G Wireless Test Platform Keysight	E7515B	MY60102115	2025/5/26	2026/5/25

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/1 ~ 2025/12/30

4.3 Peak to Average Ratio

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
UXM 5G Wireless Test Platform Keysight	E7515B	MY60102115	2025/5/26	2026/5/25

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/1 ~ 2025/12/29

4.4 Bandwidth

Refer to section 4.3 to get the tested date and information of the instruments.

4.5 Conducted Spurious Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
UXM 5G Wireless Test Platform Keysight	E7515B	MY60102115	2025/5/26	2026/5/25

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/8 ~ 2025/12/30

4.6 Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2025/9/16	2026/9/15
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 330H	980112	2025/9/21	2026/9/20
	EMC001340	980201	2025/9/21	2026/9/20
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/12/3

4.7 Radiated Spurious Emissions above 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2025/11/9	2026/11/8
	BBHA 9170	148	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 184045	980116	2025/9/21	2026/9/20
	EMC118A45SE	980809	2025/4/24	2026/4/23
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2025/6/30	2026/6/29
	EMC102-KM-KM-3000	150929	2025/6/30	2026/6/29
	EMC104-SM-SM- 8000+3000	171005	2025/9/21	2026/9/20
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/12/2

4.8 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
3-channel DC power supply OWON	ODP3033	ODP30332128138	N/A	N/A
Digital Multimeter Fluke	8050A	4660081	2025/6/6	2026/6/5
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Terchy	MHU-225AU	920842	2025/6/25	2026/6/24

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/24

5 Limits of Test Items

5.1 Maximum EIRP

For NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz):

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

5.2 Modulation Characteristics

Systems operating in the Citizens Broadband Radio Service must use digital modulation techniques.

A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

5.3 Peak to Average Ratio

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.

5.4 Bandwidth

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.

5.5 Conducted Spurious Emissions

For NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz):

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B MHz (where B is the bandwidth in MHz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B MHz below the lower CBSD-assigned channel edge. At all frequencies greater than B MHz above the upper CBSD assigned channel edge and less than B MHz below the lower CBSD-assigned channel edge, the conducted power of any end user device emission shall not exceed -25 dBm/MHz.

Additional protection levels: The conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

5.6 Radiated Spurious Emissions below 1GHz

For NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz):

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

5.7 Radiated Spurious Emissions above 1GHz

For NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz):

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

5.8 Frequency Stability

For NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz):

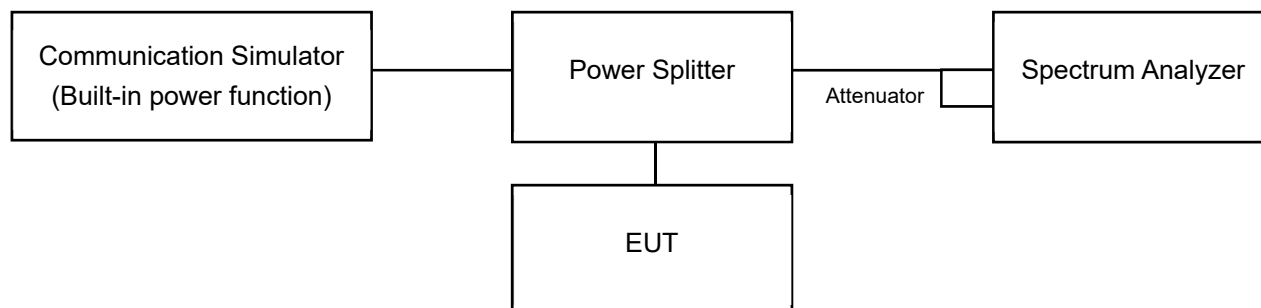
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation (authorized frequency block).

6 Test Arrangements

6.1 Maximum EIRP

6.1.1 Test Setup

Conducted Power Measurement:



6.1.2 Test Procedure

Conducted Power Measurement:

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology and link to spectrum analyzer measurements. Set the EUT to transmit under low, middle and high channel and record the power level shown on spectrum analyzer. Power measurements use detector average (rms).

Measurement method refers to ANSI C63.26 section 5.2.4.4.

- Set span to 2 × to 3 × the OBW.
- Set RBW = 1% to 5% of the OBW.
- Set VBW ≥ 3 × RBW.
- Set number of measurement points in sweep ≥ 2 × span / RBW.
- Set Sweep time = auto-couple.
- Detector = power averaging (rms).
- Set sweep trigger to “free run.”
- Trace average at least 100 traces in power averaging (rms) mode.
- Use the Band/Channel Power function to determine the integrated power per 10 MHz bandwidth and full bandwidth, according to the 47 CFR FCC Part 96 standard.
- If Duty cycle < 98%, Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

Maximum EIRP / ERP

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

$$\text{EIRP} = P_{\text{Meas}} + G_T$$

$$\text{ERP} = P_{\text{Meas}} + G_T - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively

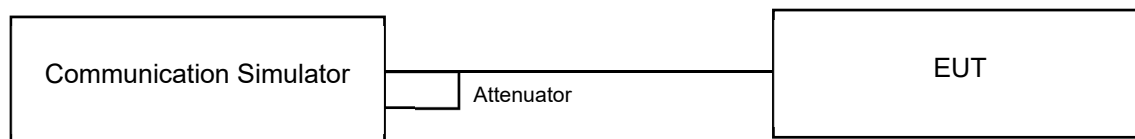
(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

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)

6.2 Modulation Characteristics

6.2.1 Test Setup

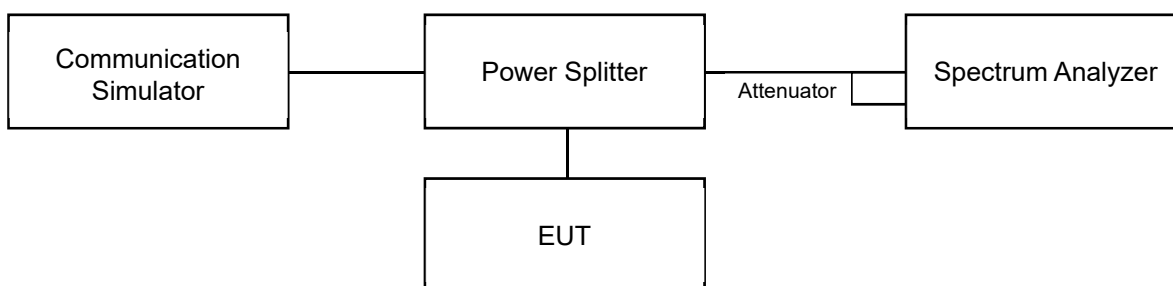


6.2.2 Test Procedure

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.

6.3 Peak to Average Ratio

6.3.1 Test Setup

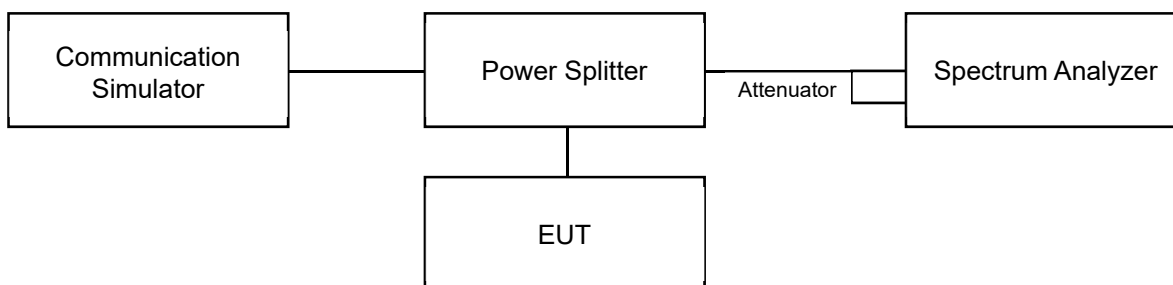


6.3.2 Test Procedure

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

6.4 Bandwidth

6.4.1 Test Setup



6.4.2 Test Procedure

For the 26 dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

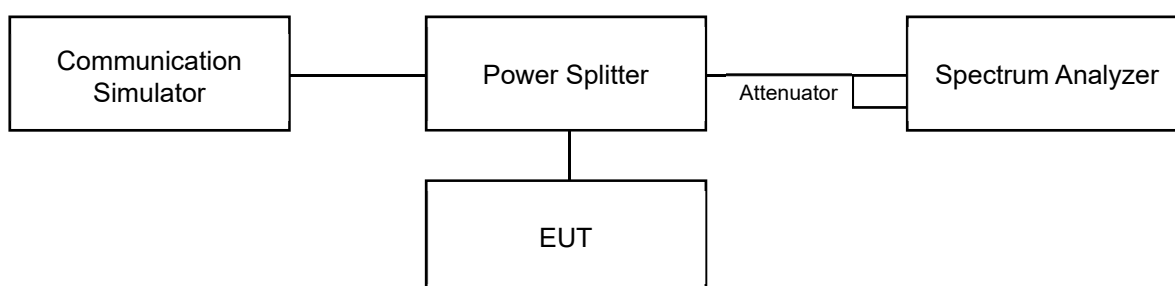
- a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
- b. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times$ 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. See guidance provided in 4.2.3.
- 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 following reference values: 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).
- 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.
- h. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
- i. The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

For the occupied bandwidth measurement method, please refer to section 5.4.4 of ANSI C63.26.

- 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 $\geq 3 \times$ 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. See guidance provided in 4.2.3.
- d. Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
- e. If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.
- f. The OBW shall be reported by providing plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).

6.5 Conducted Spurious Emissions

6.5.1 Test Setup



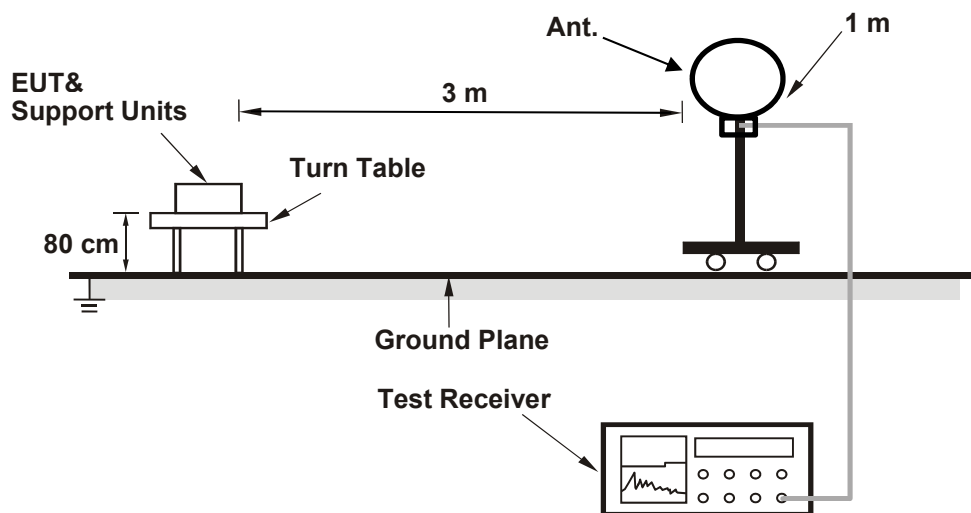
6.5.2 Test Procedure

- a. Measurement refer to ANSI C63.26 section 5.7.
- b. All measurements were done at 3 channels: low, middle and high operational frequency range.
- c. Measuring frequency range is from 9 kHz up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. 10 dB attenuation pad is connected with spectrum.
- d. The fundamental frequency above 1 GHz, the spectrum set RBW = 1 MHz, VBW = 3 MHz, Detector = Average.
- e. The fundamental frequency below 1 GHz, the spectrum set RBW ≥ 100 kHz, VBW $\geq 3 \times$ RBW, Detector = Average.
- f. Measuring frequency band edge, narrow RBW (no less than 1% of the OBW) is used for conducted emission measurement.
- g. For the emissions measurement method, certain channel BW modes demonstrate compliance by integrating with the smaller RBW allowed by the rule.
For example: Where Reference RBW = 1 MHz and a smaller RBW = 100 kHz is used, worst-case integrated BW power = [Max Measured Value (dBm) with RBW = 100 kHz] + $10 \times \log(1000/100)$. To compensate for this integration before comparison to the value, the adjusted reference level offset was increase by 10 dB accordingly.
- h. Record the maximum power value test plot.

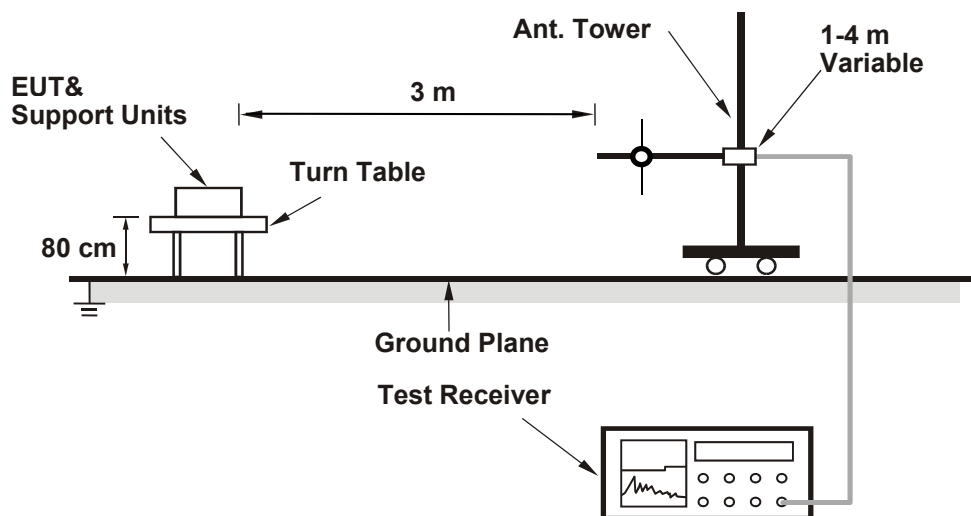
6.6 Radiated Spurious Emissions below 1GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.6.2 Test Procedure

The EUT is configured to set data modulation and maximum power using WWAN technology.

- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following ANSI C63.26 section 5.5 and 5.2.7
- e. $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- f. $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

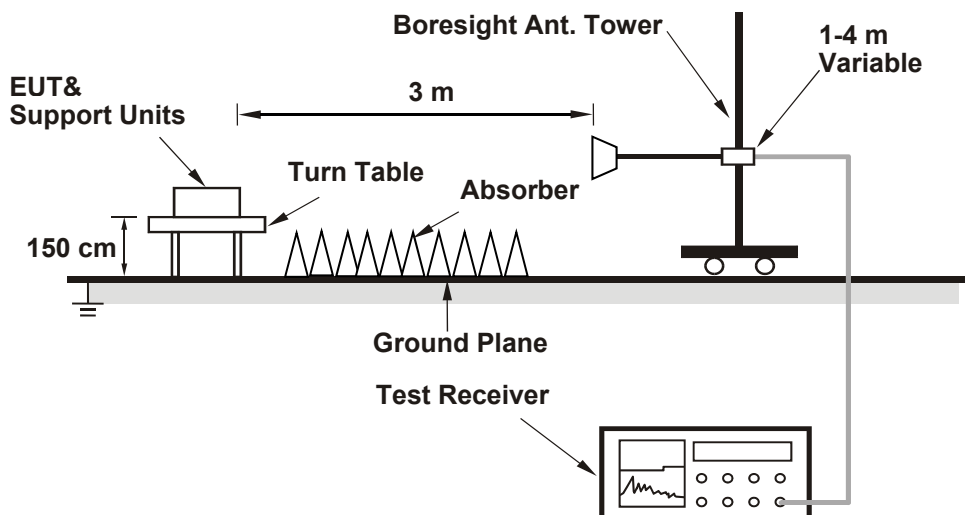
Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.
2. The amplitude of spurious emissions in the range 9 kHz to 30 MHz which are attenuated more than 20 dB below the permissible value need not be reported.

6.7 Radiated Spurious Emissions above 1GHz

6.7.1 Test Setup

For radiated emission above 1 GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

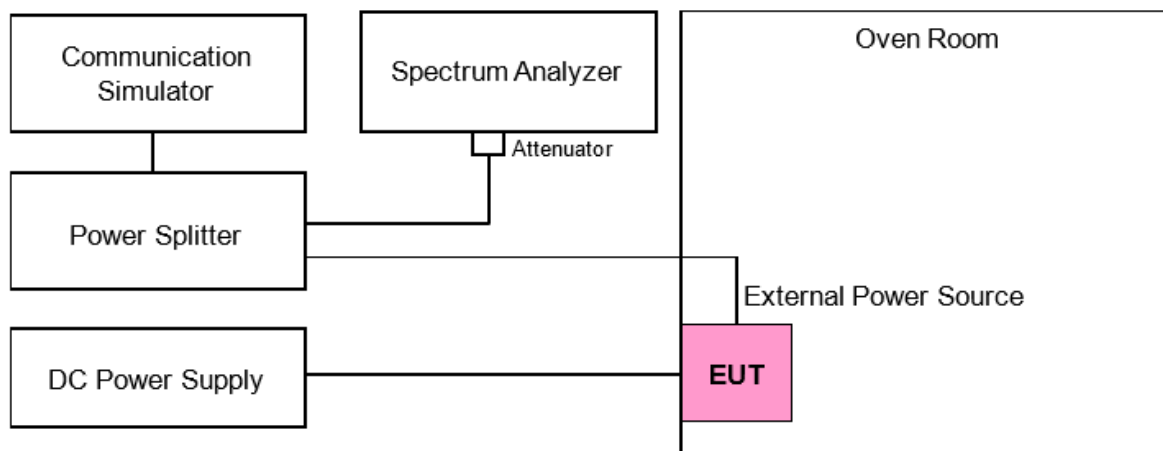
The EUT is configured to set data modulation and maximum power using WWAN technology.

- In the semi-anechoic chamber, EUT placed on the 1.5 m height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- Following ANSI C63.26 section 5.5 and 5.2.7
- $EIRP \text{ (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- $ERP \text{ (dBm)} = E \text{ (dB}\mu\text{V/m)} + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.

6.8 Frequency Stability

6.8.1 Test Setup



6.8.2 Test Procedure

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology.

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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.

7 Test Results of Test Item

7.1 Maximum EIRP

Input Power:	3.85 Vdc	Environmental Conditions:	23°C, 62% RH	Tested By:	Charles Hsiao
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7.1.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637000	CH 641666	CH 646332
			3555 MHz	3624.99 MHz	3694.98 MHz
BPSK	1	1	21.68	21.74	21.69
	1	0	21.25	21.31	21.07
QPSK	1	1	21.77	21.83	21.67
	1	0	20.82	20.89	20.73
	1	11	21.61	21.74	21.54
	1	22	21.56	21.76	21.64
	1	23	20.75	20.87	20.73
	12	0	21.00	21.11	20.91
	12	6	21.84	21.80	21.71
	12	12	20.83	21.02	20.84
	24	0	20.94	20.85	20.76
16QAM	1	0	19.90	19.82	19.86
64QAM	1	0	19.38	19.43	19.31
256QAM	1	0	17.39	17.62	17.40

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.07	21.74	22.04	22.71	23
QPSK	20.73	21.84	21.7	22.81	23
16QAM	19.82	19.9	20.79	20.87	23
64QAM	19.31	19.43	20.28	20.4	23
256QAM	17.39	17.62	18.36	18.59	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637168	CH 641666	CH 646166
			3557.52 MHz	3624.99 MHz	3692.49 MHz
BPSK	1	1	21.81	21.80	21.54
	1	0	21.29	21.24	21.14
QPSK	1	1	21.73	21.80	21.63
	1	0	20.92	20.96	20.72
	1	19	21.69	21.64	21.54
	1	36	21.66	21.73	21.56
	1	37	20.83	20.84	20.84
	18	0	21.12	21.09	21.00
	18	10	21.86	21.86	21.64
	18	20	20.96	20.97	20.74
	36	0	20.93	20.87	20.76
	38	0	18.92	18.93	18.88
16QAM	1	0	19.86	19.86	19.82
64QAM	1	0	19.41	19.39	19.20
256QAM	1	0	17.51	17.49	17.33

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.14	21.81	22.11	22.78	23
QPSK	18.88	21.86	19.85	22.83	23
16QAM	19.82	19.86	20.79	20.83	23
64QAM	19.2	19.41	20.17	20.38	23
256QAM	17.33	17.51	18.3	18.48	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637334	CH 641666	CH 646000
			3560.01 MHz	3624.99 MHz	3690 MHz
BPSK	1	1	21.70	21.79	21.66
	1	0	21.22	21.29	21.08
QPSK	1	1	21.83	21.86	21.64
	1	0	20.90	20.95	20.72
	1	26	21.63	21.67	21.52
	1	49	21.62	21.74	21.53
	1	50	20.81	20.82	20.83
	25	0	21.01	21.13	20.93
	25	13	21.83	21.87	21.75
	25	26	20.86	20.92	20.74
	50	0	20.85	20.93	20.82
	51	0	18.94	19.05	18.84
16QAM	1	0	19.87	19.90	19.76
64QAM	1	0	19.40	19.43	19.27
256QAM	1	0	17.44	17.60	17.37

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.08	21.79	22.05	22.76	23
QPSK	18.84	21.87	19.81	22.84	23
16QAM	19.76	19.9	20.73	20.87	23
64QAM	19.27	19.43	20.24	20.4	23
256QAM	17.37	17.6	18.34	18.57	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637668	CH 641666	CH 645666
			3565.02 MHz	3624.99 MHz	3684.99 MHz
BPSK	1	1	21.70	21.78	21.71
	1	0	21.22	21.25	21.18
QPSK	1	1	21.71	21.82	21.68
	1	0	20.81	20.89	20.80
	1	39	21.70	21.74	21.56
	1	76	21.55	21.65	21.54
	1	77	20.86	20.81	20.80
	36	0	21.00	21.04	20.93
	36	21	21.87	21.82	21.71
	36	42	20.89	20.94	20.78
	75	0	20.96	20.97	20.76
	78	0	18.95	18.93	18.81
16QAM	1	0	19.87	19.95	19.86
64QAM	1	0	19.42	19.44	19.22
256QAM	1	0	17.53	17.61	17.29

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.18	21.78	22.15	22.75	23
QPSK	18.81	21.87	19.78	22.84	23
16QAM	19.86	19.95	20.83	20.92	23
64QAM	19.22	19.44	20.19	20.41	23
256QAM	17.29	17.61	18.26	18.58	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 638000	CH 641666	CH 645332
			3570 MHz	3624.99 MHz	3679.98 MHz
BPSK	1	1	21.7	21.78	21.65
	1	0	21.26	21.38	21.17
QPSK	1	1	21.86	21.90	21.78
	1	0	20.95	21.00	20.85
	1	53	21.73	21.75	21.57
	1	104	21.70	21.77	21.67
	1	105	20.87	20.95	20.85
	50	0	21.13	21.15	21.02
	50	28	21.88	21.88	21.79
	50	56	20.98	21.04	20.89
	100	0	20.97	21.00	20.84
	106	0	19.03	19.06	18.96
16QAM	1	0	20.01	20.02	19.82
64QAM	1	0	19.47	19.26	19.35
256QAM	1	0	17.61	17.34	17.40

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.17	21.78	22.14	22.75	23
QPSK	18.96	21.9	19.93	22.87	23
16QAM	19.82	20.02	20.79	20.99	23
64QAM	19.26	19.47	20.23	20.44	23
256QAM	17.34	17.61	18.31	18.58	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637168	CH 641666	CH 646166
			3557.52 MHz	3624.99 MHz	3692.49 MHz
BPSK	1	1	21.74	21.79	21.48
	1	0	21.28	21.22	21.07
QPSK	1	1	21.68	21.77	21.53
	1	0	20.88	20.93	20.65
	1	19	21.6	21.61	21.46
	1	36	21.59	21.65	21.46
	1	37	20.81	20.75	20.78
	18	0	21.1	21.06	20.9
	18	10	21.8	21.82	21.54
	18	20	20.95	20.87	20.68
	36	0	19.5	19.42	19.29
	38	0	17.49	17.46	17.42
16QAM	1	0	19.78	19.78	19.74
64QAM	1	0	19.32	19.34	19.14
256QAM	1	0	17.43	17.41	17.3

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.07	21.79	22.04	22.76	23
QPSK	17.42	21.82	18.39	22.79	23
16QAM	19.74	19.78	20.71	20.75	23
64QAM	19.14	19.34	20.11	20.31	23
256QAM	17.3	17.43	18.27	18.4	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637334	CH 641666	CH 646000
			3560.01 MHz	3624.99 MHz	3690 MHz
BPSK	1	1	21.66	21.73	21.62
	1	0	21.14	21.22	20.99
QPSK	1	1	21.77	21.82	21.55
	1	0	20.89	20.9	20.62
	1	26	21.53	21.65	21.5
	1	49	21.58	21.69	21.48
	1	50	20.71	20.78	20.77
	25	0	20.93	21.08	20.86
	25	13	21.78	21.79	21.7
	25	26	20.81	20.87	20.64
	50	0	18.45	18.44	18.4
	51	0	16.48	16.57	16.38
16QAM	1	0	19.85	19.82	19.68
64QAM	1	0	19.38	19.41	19.26
256QAM	1	0	17.35	17.51	17.36

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	20.99	21.73	21.96	22.7	23
QPSK	16.38	21.82	17.35	22.79	23
16QAM	19.68	19.85	20.65	20.82	23
64QAM	19.26	19.41	20.23	20.38	23
256QAM	17.35	17.51	18.32	18.48	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 637668	CH 641666	CH 645666
			3565.02 MHz	3624.99 MHz	3684.99 MHz
BPSK	1	1	21.65	21.76	21.64
	1	0	21.2	21.18	21.1
QPSK	1	1	21.63	21.79	21.6
	1	0	20.74	20.83	20.75
	1	39	21.63	21.71	21.48
	1	76	21.53	21.55	21.49
	1	77	20.85	20.73	20.76
	36	0	19.97	19.95	19.86
	36	21	20.83	20.77	20.65
	36	42	19.84	19.86	19.78
	75	0	16.95	16.88	16.69
	78	0	14.93	14.88	14.73
16QAM	1	0	19.79	19.92	19.8
64QAM	1	0	19.37	19.43	19.12
256QAM	1	0	17.48	17.52	17.26

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.1	21.76	22.07	22.73	23
QPSK	14.73	21.79	15.7	22.76	23
16QAM	19.79	19.92	20.76	20.89	23
64QAM	19.12	19.43	20.09	20.4	23
256QAM	17.26	17.52	18.23	18.49	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

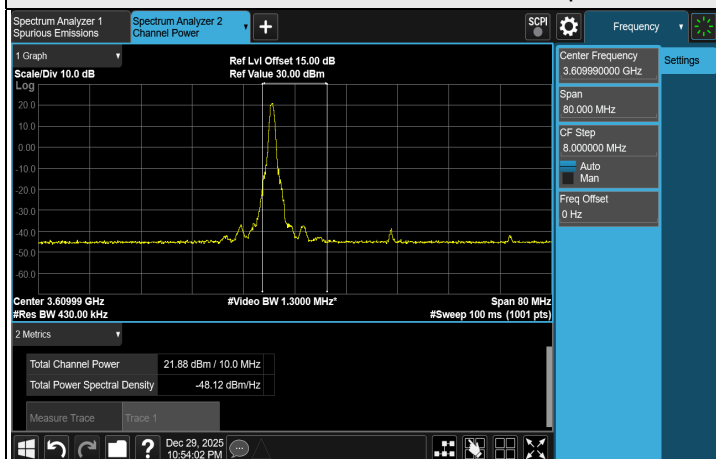
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 638000	CH 641666	CH 645332
			3570 MHz	3624.99 MHz	3679.98 MHz
BPSK	1	1	21.7	21.78	21.65
	1	0	21.26	21.38	21.17
QPSK	1	1	21.85	21.88	21.72
	1	0	20.85	20.91	20.78
	1	53	21.67	21.67	21.49
	1	104	21.62	21.73	21.65
	1	105	20.8	20.9	20.8
	50	0	18.73	18.67	18.58
	50	28	19.41	19.47	19.34
	50	56	18.58	18.61	18.41
	100	0	15.44	15.48	15.27
	106	0	12.94	13	12.93
16QAM	1	0	19.98	19.96	19.81
64QAM	1	0	19.46	19.23	19.32
256QAM	1	0	17.55	17.24	17.37

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
BPSK	21.17	21.78	22.14	22.75	23
QPSK	12.93	21.88	13.9	22.85	23
16QAM	19.81	19.98	20.78	20.95	23
64QAM	19.23	19.46	20.2	20.43	23
256QAM	17.24	17.55	18.21	18.52	23

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

Spectrum Plot of Worst Value



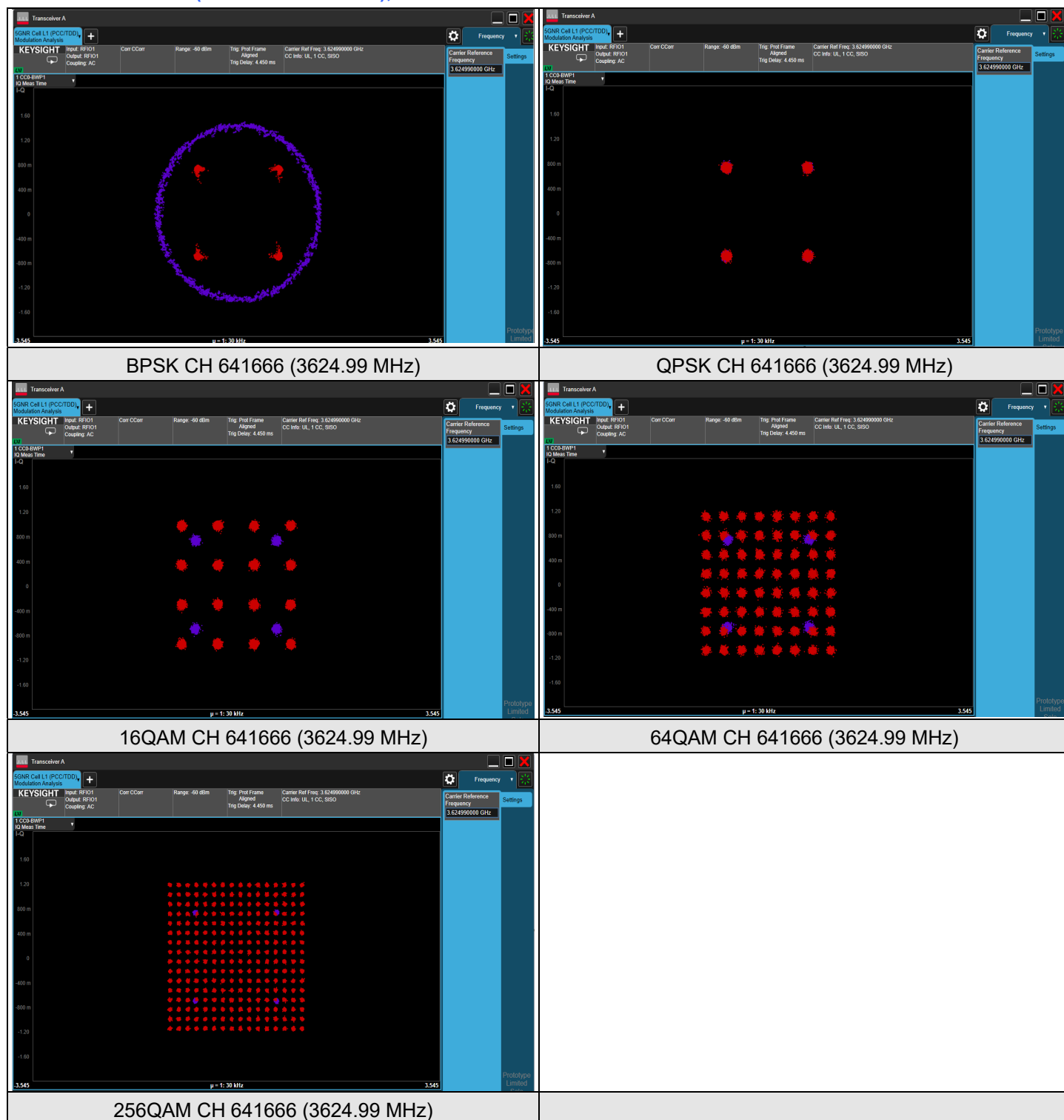
QPSK CH 641666 (3624.99 MHz)

7.2 Modulation Characteristics

Input Power:	3.85 Vdc	Environmental Conditions:	22°C, 73% RH	Tested By:	Willy Cheng
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7.2.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz



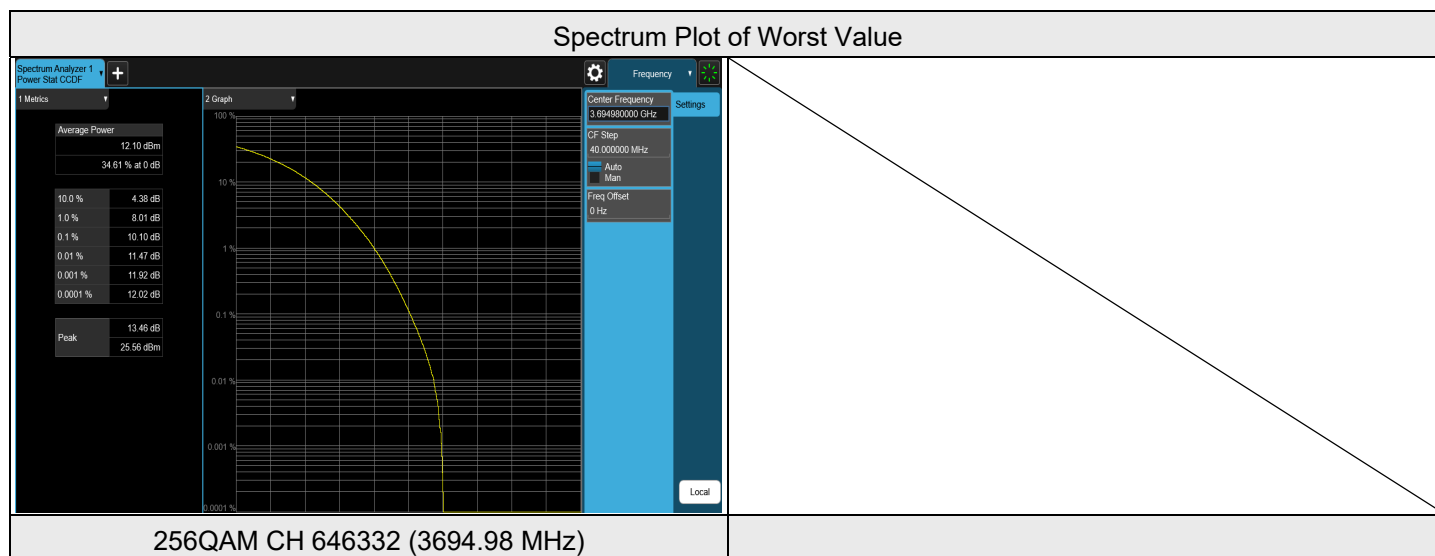
7.3 Peak to Average Ratio

Input Power:	3.85 Vdc	Environmental Conditions:	25°C, 66% RH	Tested By:	James Yang
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7.3.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

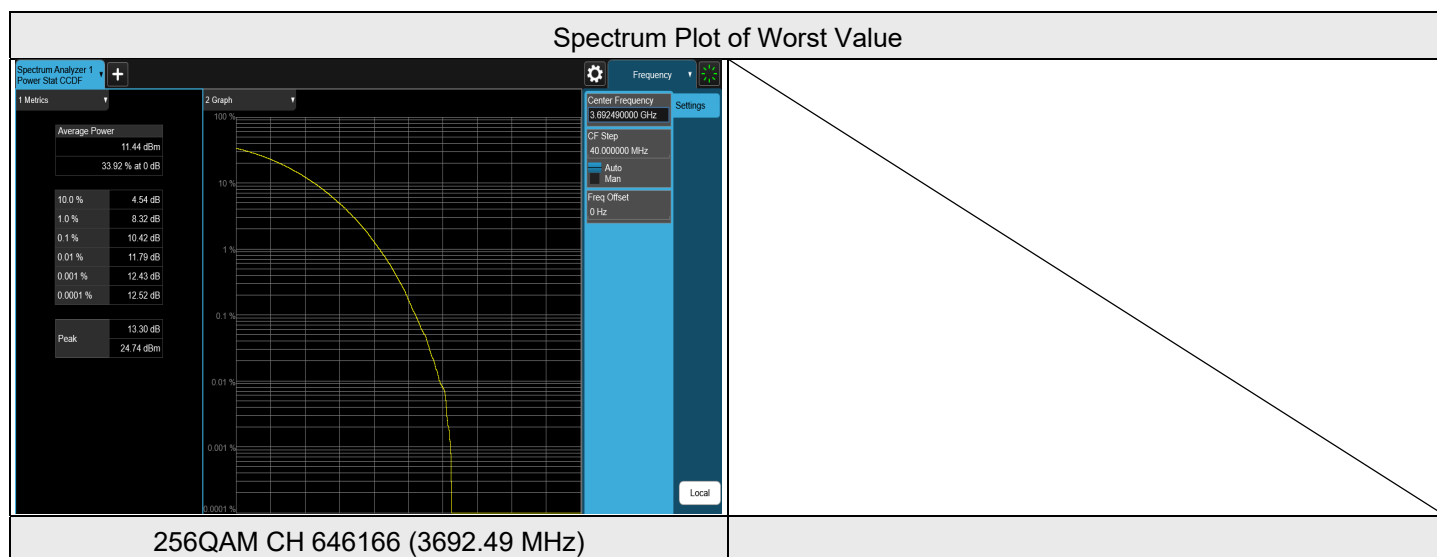
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 10 MHz

NR Band 48(3550-3700MHz) 10M					
Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	637000	3555	8.62	13	PASS
QPSK	641666	3624.99	9.09	13	PASS
QPSK	646332	3694.98	7.69	13	PASS
BPSK	637000	3555	5.85	13	PASS
BPSK	641666	3624.99	5.95	13	PASS
BPSK	646332	3694.98	5.39	13	PASS
16QAM	637000	3555	8.65	13	PASS
16QAM	641666	3624.99	9.99	13	PASS
16QAM	646332	3694.98	7.74	13	PASS
64QAM	637000	3555	9.59	13	PASS
64QAM	641666	3624.99	9.50	13	PASS
64QAM	646332	3694.98	9.19	13	PASS
256QAM	637000	3555	9.79	13	PASS
256QAM	641666	3624.99	9.72	13	PASS
256QAM	646332	3694.98	10.10	13	PASS



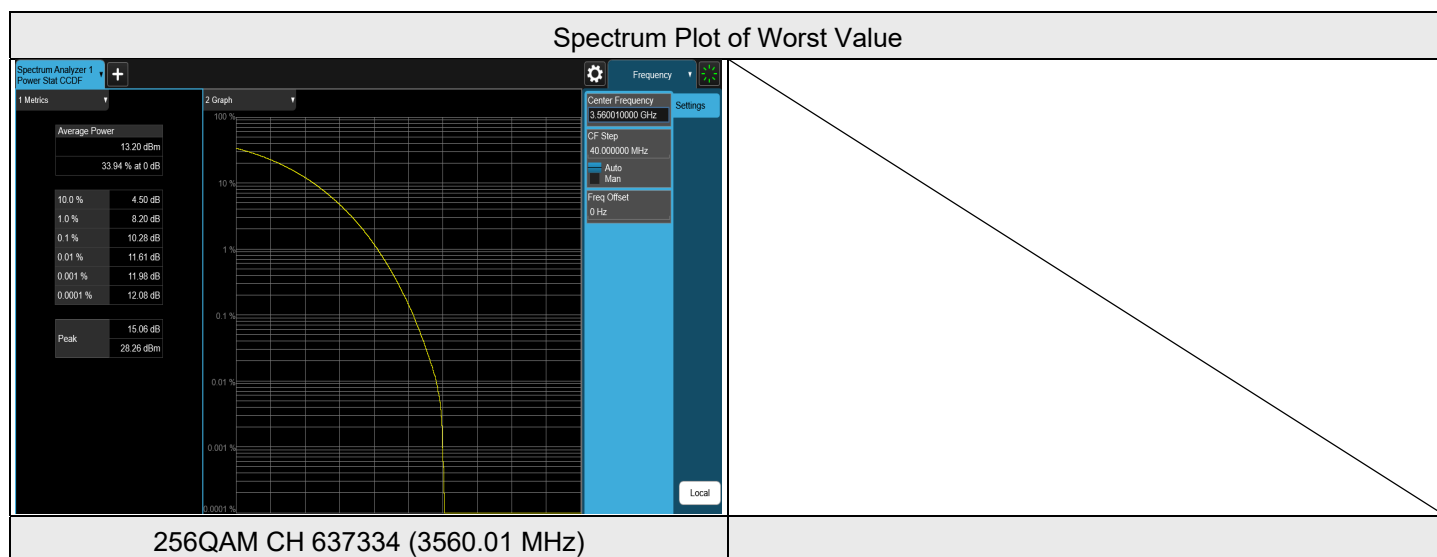
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz

NR Band 48(3550-3700MHz) 15M					
Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	637168	3557.52	8.83	13	PASS
QPSK	641666	3624.99	8.76	13	PASS
QPSK	646166	3692.49	8.27	13	PASS
BPSK	637168	3557.52	6.61	13	PASS
BPSK	641666	3624.99	5.91	13	PASS
BPSK	646166	3692.49	6.24	13	PASS
16QAM	637168	3557.52	9.52	13	PASS
16QAM	641666	3624.99	9.01	13	PASS
16QAM	646166	3692.49	8.21	13	PASS
64QAM	637168	3557.52	9.79	13	PASS
64QAM	641666	3624.99	9.83	13	PASS
64QAM	646166	3692.49	8.75	13	PASS
256QAM	637168	3557.52	10.41	13	PASS
256QAM	641666	3624.99	9.71	13	PASS
256QAM	646166	3692.49	10.42	13	PASS



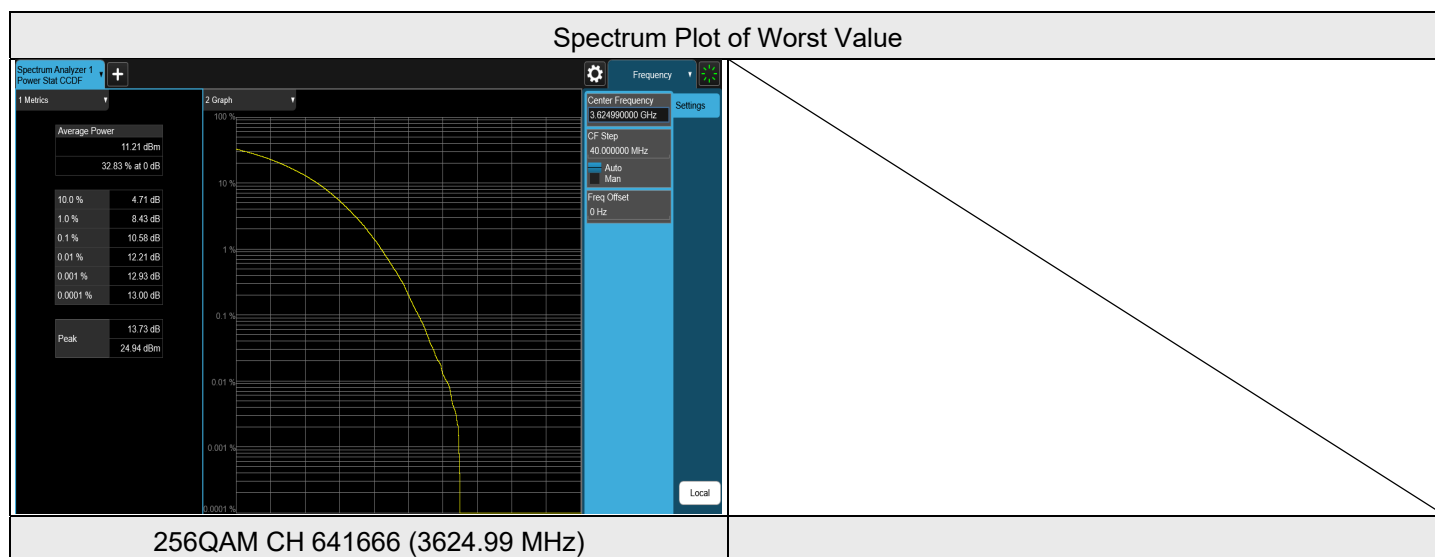
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz

NR Band 48(3550-3700MHz) 20M					
Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	637334	3560.01	8.78	13	PASS
QPSK	641666	3624.99	9.05	13	PASS
QPSK	646000	3690	9.07	13	PASS
BPSK	637334	3560.01	6.11	13	PASS
BPSK	641666	3624.99	5.92	13	PASS
BPSK	646000	3690	5.92	13	PASS
16QAM	637334	3560.01	9.24	13	PASS
16QAM	641666	3624.99	9.10	13	PASS
16QAM	646000	3690	8.48	13	PASS
64QAM	637334	3560.01	10.09	13	PASS
64QAM	641666	3624.99	9.28	13	PASS
64QAM	646000	3690	8.59	13	PASS
256QAM	637334	3560.01	10.28	13	PASS
256QAM	641666	3624.99	10.23	13	PASS
256QAM	646000	3690	10.12	13	PASS



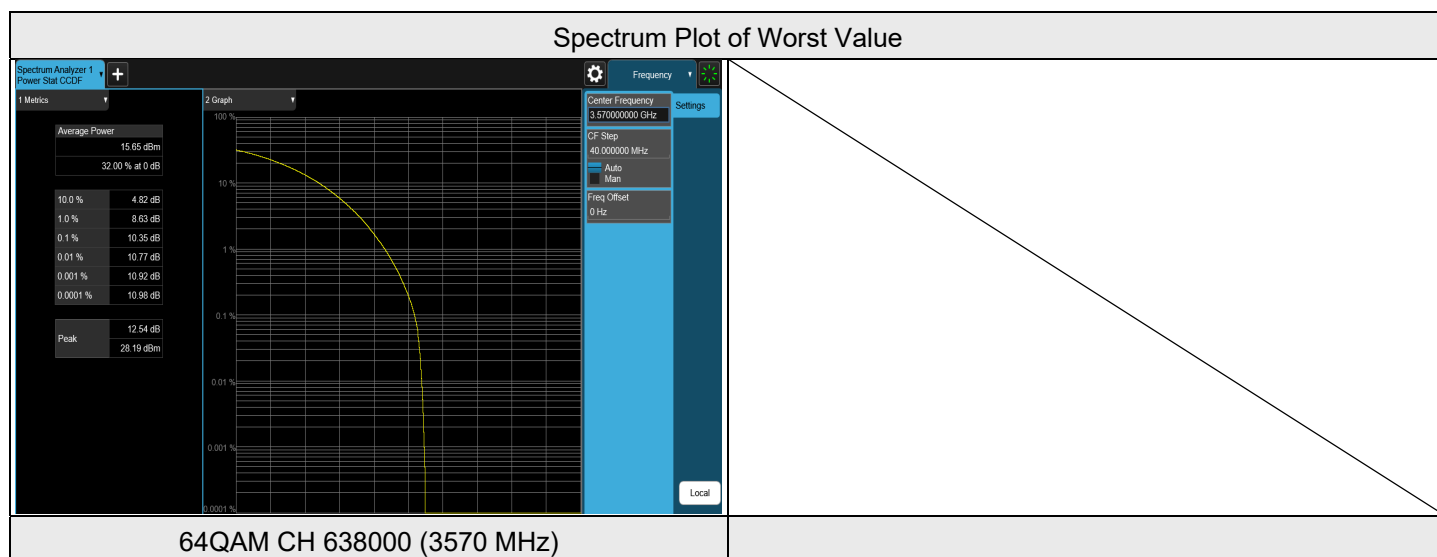
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz

NR Band 48(3550-3700MHz) 30M					
Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	637668	3565.02	9.34	13	PASS
QPSK	641666	3624.99	9.65	13	PASS
QPSK	645666	3684.99	10.23	13	PASS
BPSK	637668	3565.02	5.68	13	PASS
BPSK	641666	3624.99	5.54	13	PASS
BPSK	645666	3684.99	5.61	13	PASS
16QAM	637668	3565.02	9.76	13	PASS
16QAM	641666	3624.99	9.58	13	PASS
16QAM	645666	3684.99	9.01	13	PASS
64QAM	637668	3565.02	9.78	13	PASS
64QAM	641666	3624.99	9.51	13	PASS
64QAM	645666	3684.99	9.26	13	PASS
256QAM	637668	3565.02	10.31	13	PASS
256QAM	641666	3624.99	10.58	13	PASS
256QAM	645666	3684.99	10.20	13	PASS



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz

NR Band 48(3550-3700MHz) 40M					
Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	638000	3570	8.91	13	PASS
QPSK	641666	3624.99	9.59	13	PASS
QPSK	645332	3679.98	8.73	13	PASS
BPSK	638000	3570	6.37	13	PASS
BPSK	641666	3624.99	5.65	13	PASS
BPSK	645332	3679.98	5.31	13	PASS
16QAM	638000	3570	8.90	13	PASS
16QAM	641666	3624.99	9.95	13	PASS
16QAM	645332	3679.98	8.96	13	PASS
64QAM	638000	3570	10.35	13	PASS
64QAM	641666	3624.99	9.99	13	PASS
64QAM	645332	3679.98	8.86	13	PASS
256QAM	638000	3570	9.70	13	PASS
256QAM	641666	3624.99	9.76	13	PASS
256QAM	645332	3679.98	9.69	13	PASS



7.4 Bandwidth

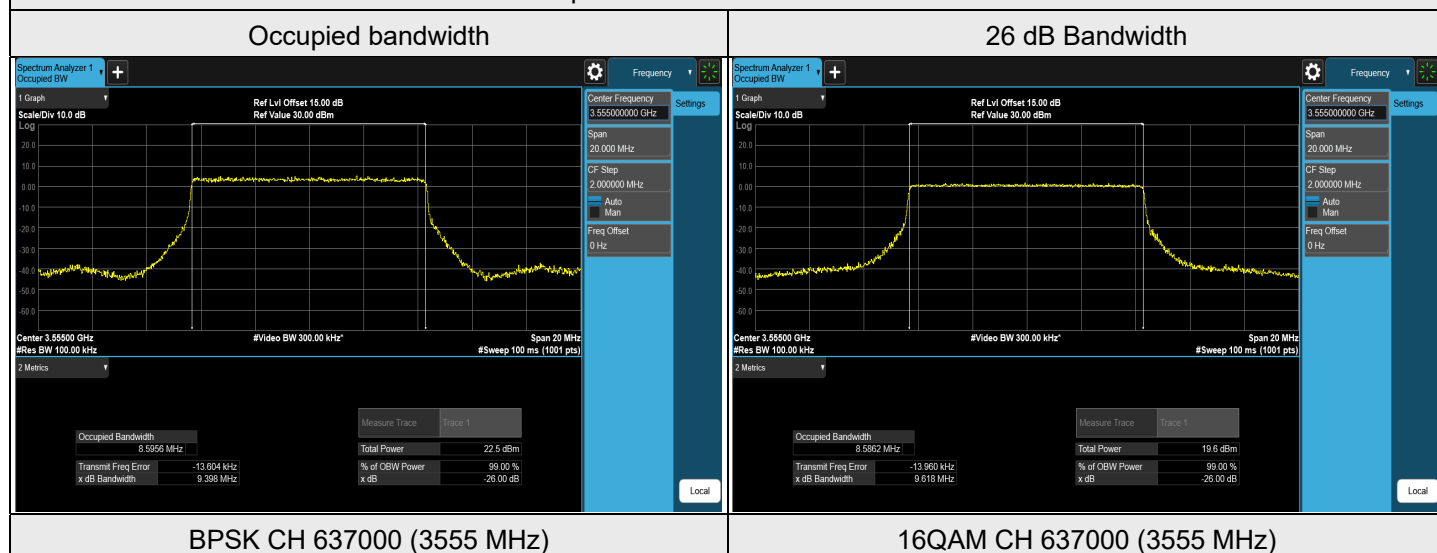
Input Power:	3.85 Vdc	Environmental Conditions:	25°C, 66% RH	Tested By:	James Yang
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7.4.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 10 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	637000	3555	8.5835	9.480
QPSK	641666	3624.99	8.5733	9.432
QPSK	646332	3694.98	8.5761	9.580
BPSK	637000	3555	8.5956	9.398
BPSK	641666	3624.99	8.5837	9.339
BPSK	646332	3694.98	8.5863	9.230
16QAM	637000	3555	8.5862	9.618
16QAM	641666	3624.99	8.5833	9.360
16QAM	646332	3694.98	8.5806	9.451
64QAM	637000	3555	8.5747	9.461
64QAM	641666	3624.99	8.5832	9.337
64QAM	646332	3694.98	8.5767	9.312
256QAM	637000	3555	8.5905	9.338
256QAM	641666	3624.99	8.5719	9.317
256QAM	646332	3694.98	8.5784	9.426

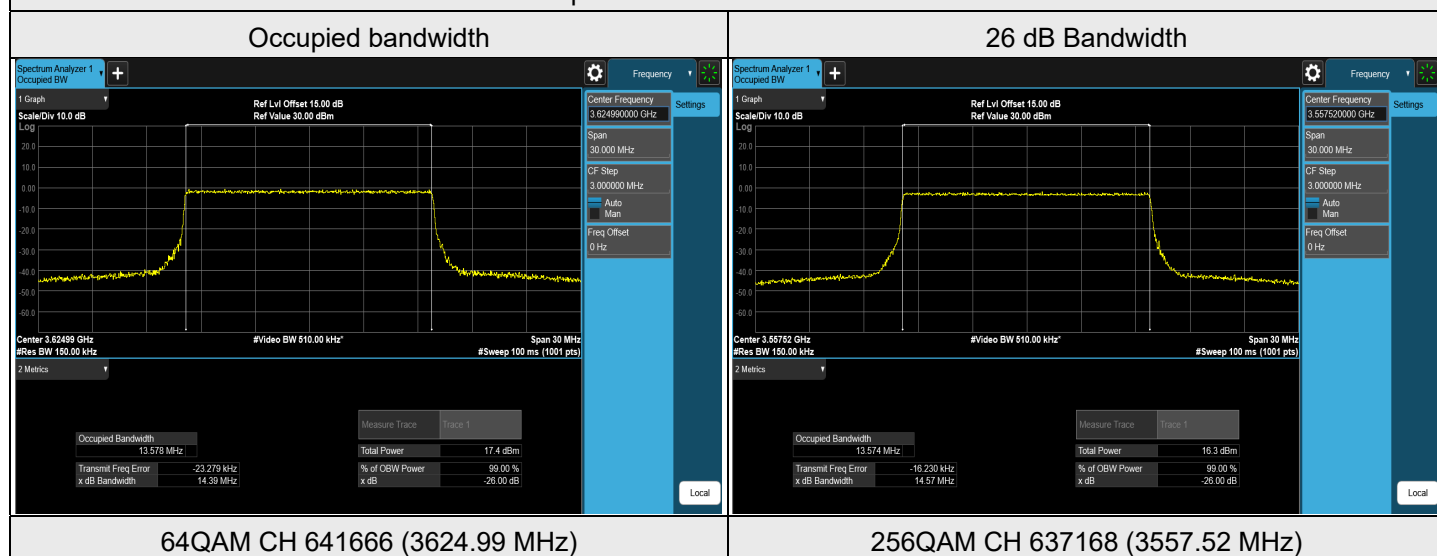
Spectrum Plot of Worst Value



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz

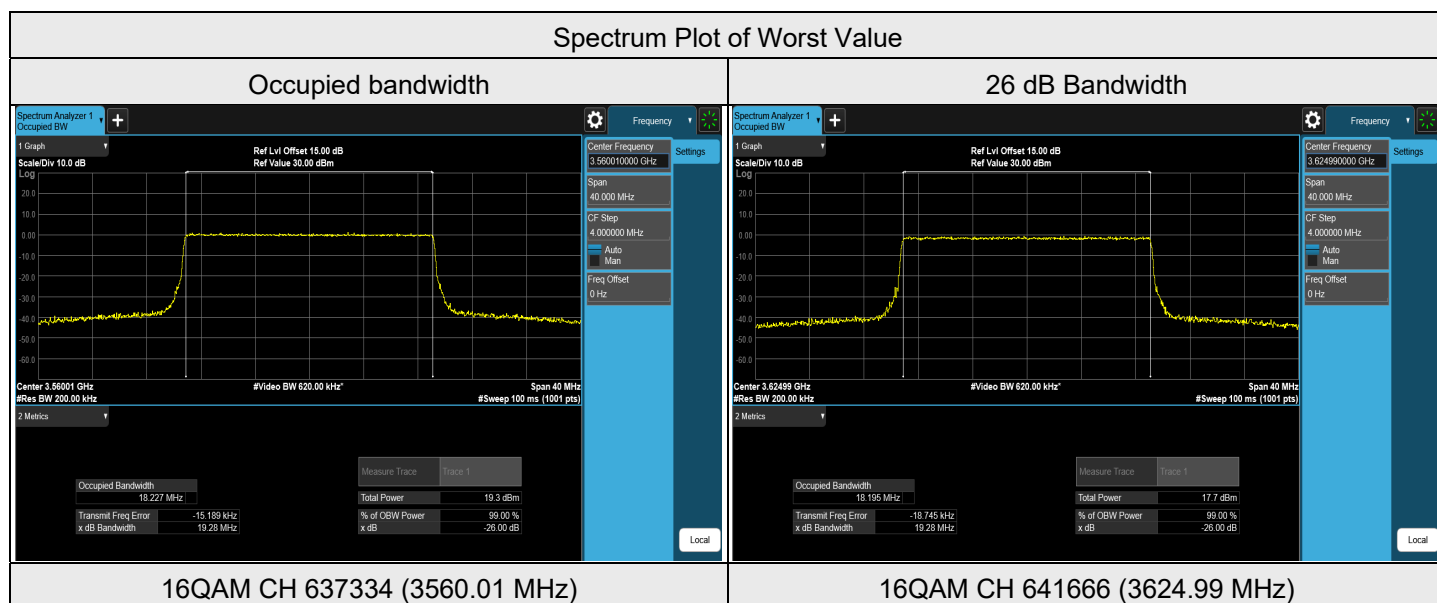
Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	637168	3557.52	13.5723	14.559
QPSK	641666	3624.99	13.5650	14.465
QPSK	646166	3692.49	13.5679	14.518
BPSK	637168	3557.52	12.8696	13.884
BPSK	641666	3624.99	12.8522	13.607
BPSK	646166	3692.49	12.8647	13.604
16QAM	637168	3557.52	13.5558	14.511
16QAM	641666	3624.99	13.5669	14.467
16QAM	646166	3692.49	13.5665	14.553
64QAM	637168	3557.52	13.5752	14.435
64QAM	641666	3624.99	13.5776	14.394
64QAM	646166	3692.49	13.5632	14.466
256QAM	637168	3557.52	13.5735	14.568
256QAM	641666	3624.99	13.5645	14.397
256QAM	646166	3692.49	13.5518	14.336

Spectrum Plot of Worst Value



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz

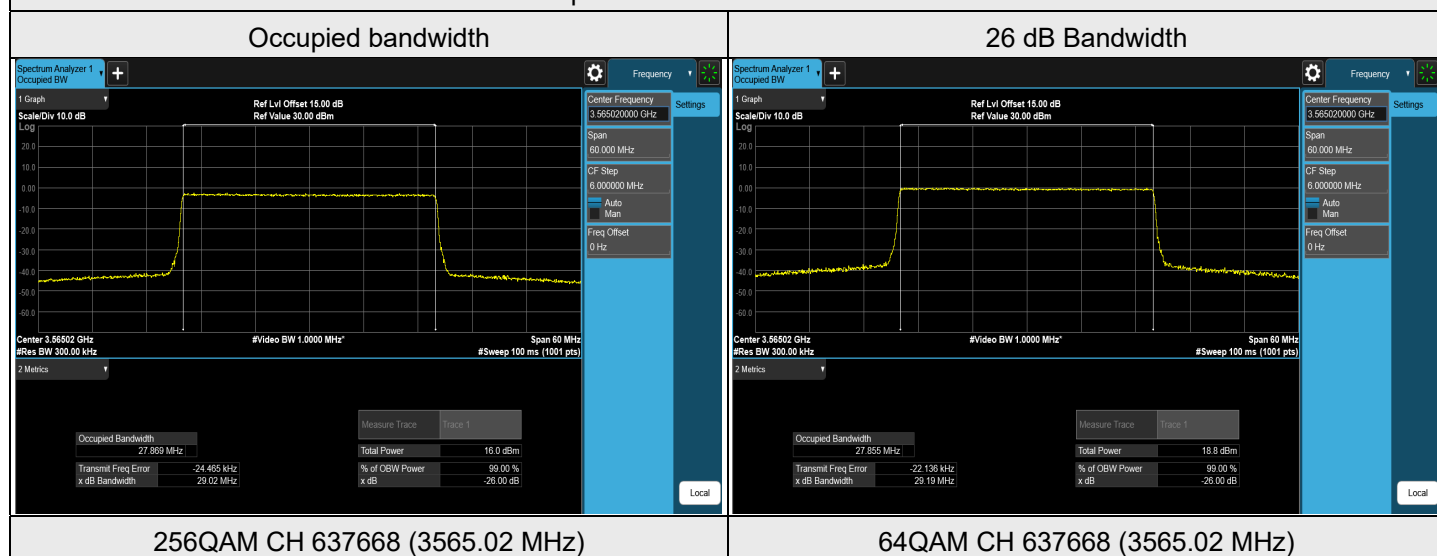
Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	637334	3560.01	18.2124	19.218
QPSK	641666	3624.99	18.1997	19.156
QPSK	646000	3690	18.2101	19.273
BPSK	637334	3560.01	17.8832	18.782
BPSK	641666	3624.99	17.8431	18.653
BPSK	646000	3690	17.8339	18.762
16QAM	637334	3560.01	18.2270	19.281
16QAM	641666	3624.99	18.1946	19.284
16QAM	646000	3690	18.2055	19.116
64QAM	637334	3560.01	18.2083	19.277
64QAM	641666	3624.99	18.2165	19.048
64QAM	646000	3690	18.2108	19.148
256QAM	637334	3560.01	18.2182	19.169
256QAM	641666	3624.99	18.2192	19.080
256QAM	646000	3690	18.2134	19.201



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	637668	3565.02	27.8525	29.003
QPSK	641666	3624.99	27.8379	29.003
QPSK	645666	3684.99	27.8441	29.083
BPSK	637668	3565.02	26.7943	27.917
BPSK	641666	3624.99	26.7908	27.856
BPSK	645666	3684.99	26.6725	27.824
16QAM	637668	3565.02	27.8500	29.021
16QAM	641666	3624.99	27.8512	28.975
16QAM	645666	3684.99	27.8645	29.044
64QAM	637668	3565.02	27.8549	29.187
64QAM	641666	3624.99	27.8527	29.049
64QAM	645666	3684.99	27.8519	28.916
256QAM	637668	3565.02	27.8694	29.018
256QAM	641666	3624.99	27.8311	28.964
256QAM	645666	3684.99	27.8435	28.919

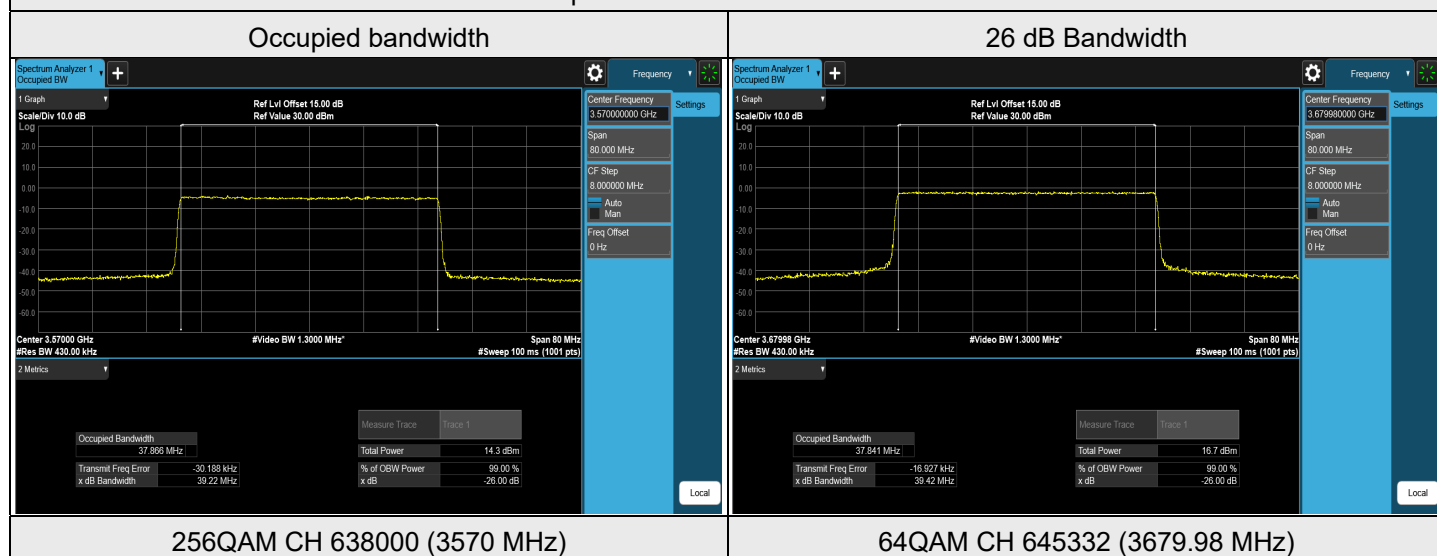
Spectrum Plot of Worst Value



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 40 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	638000	3570	37.8477	39.290
QPSK	641666	3624.99	37.8258	39.223
QPSK	645332	3679.98	37.8433	39.303
BPSK	638000	3570	35.7194	37.080
BPSK	641666	3624.99	35.7353	37.110
BPSK	645332	3679.98	35.7547	37.083
16QAM	638000	3570	37.8433	39.311
16QAM	641666	3624.99	37.8412	39.266
16QAM	645332	3679.98	37.8396	39.285
64QAM	638000	3570	37.8494	39.260
64QAM	641666	3624.99	37.8516	39.301
64QAM	645332	3679.98	37.8405	39.421
256QAM	638000	3570	37.8660	39.222
256QAM	641666	3624.99	37.8400	39.269
256QAM	645332	3679.98	37.8336	39.269

Spectrum Plot of Worst Value

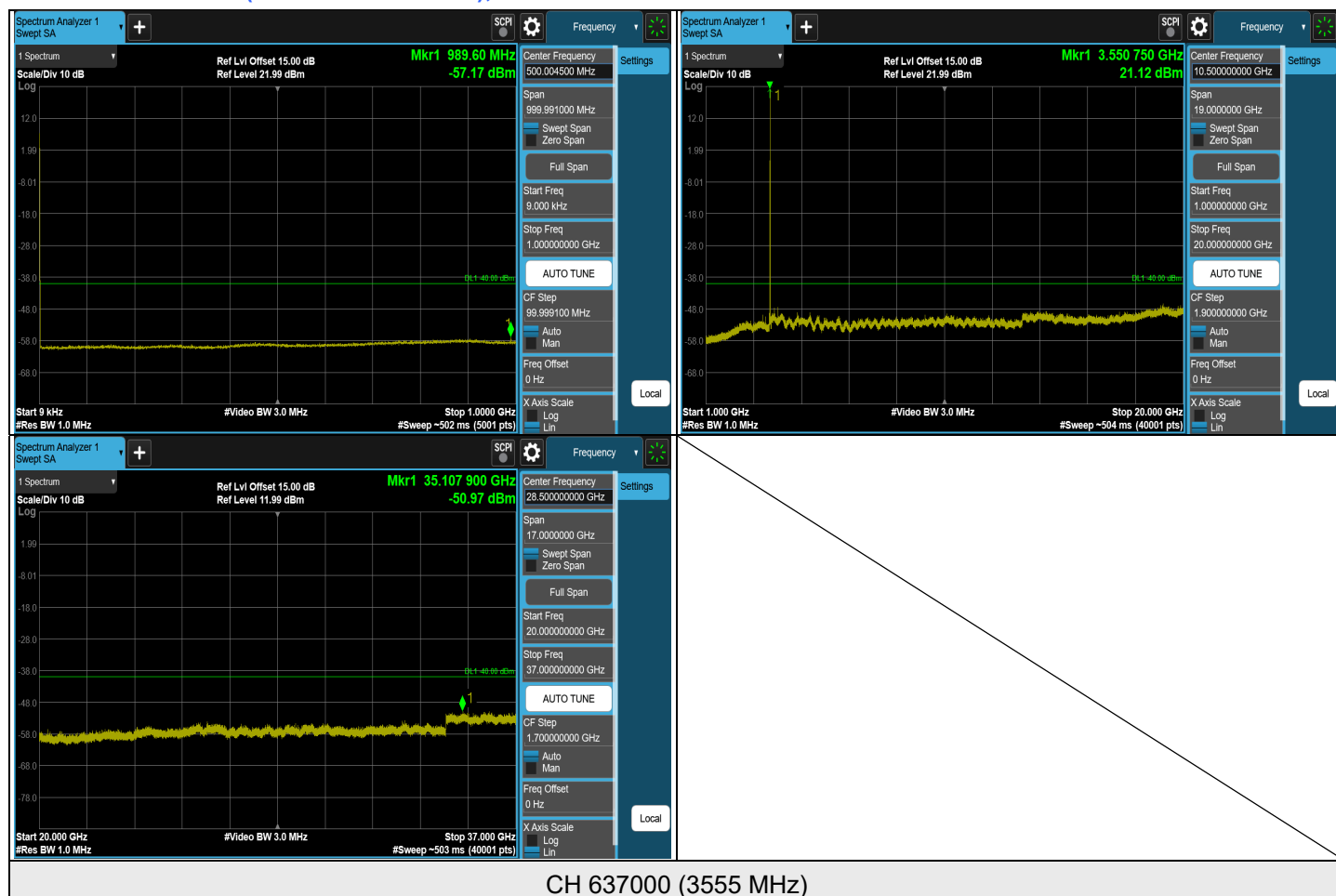


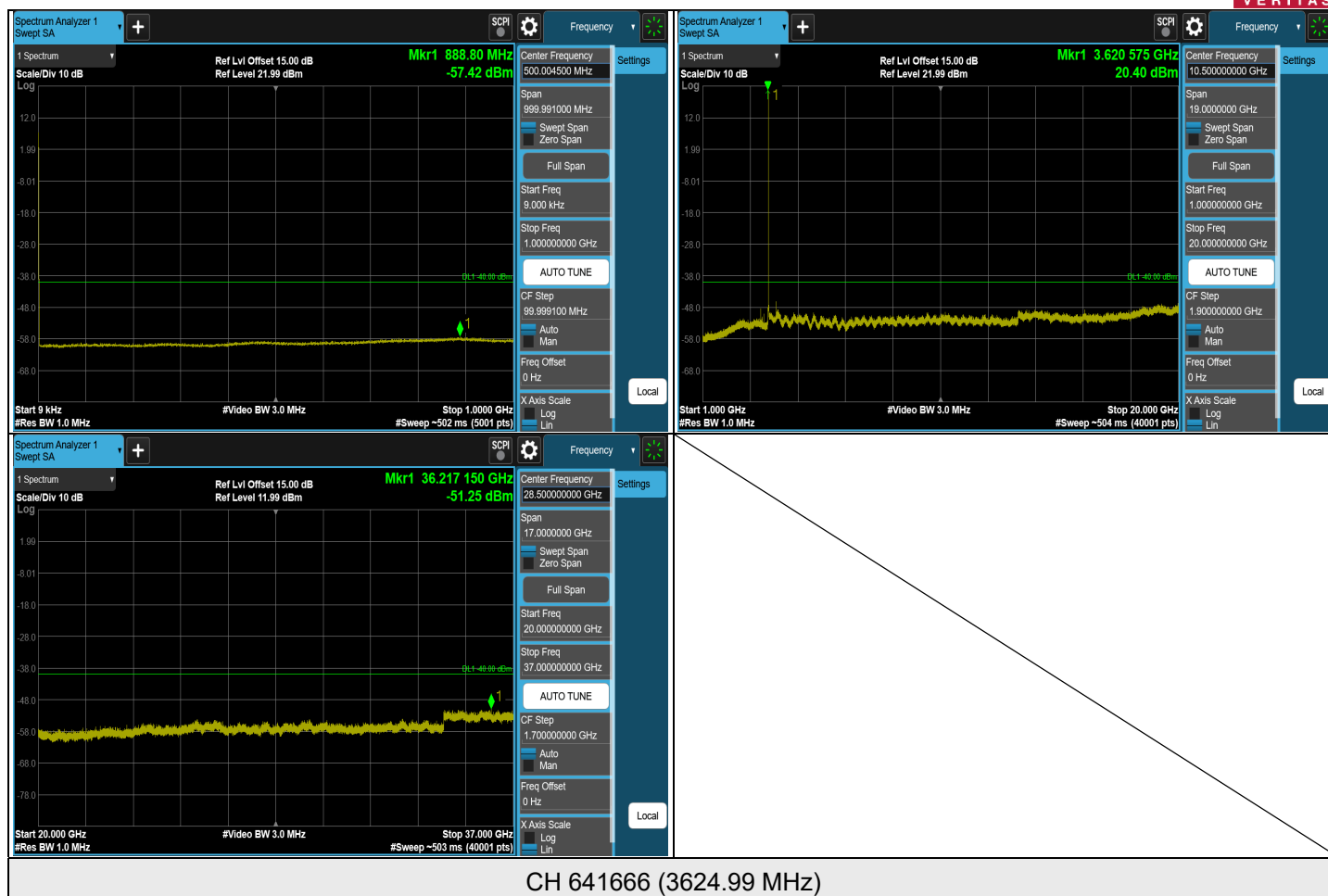
7.5 Conducted Spurious Emissions

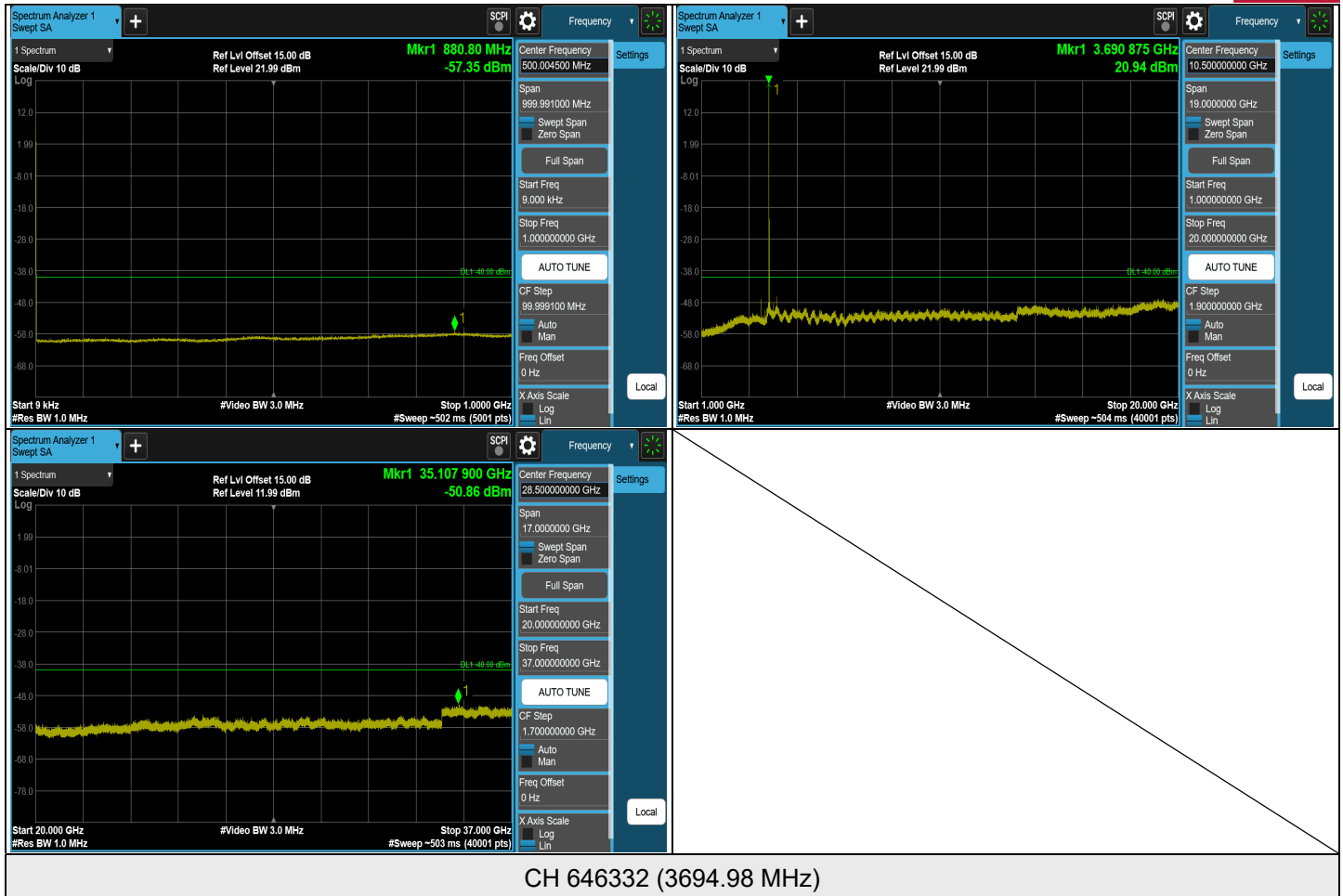
Input Power:	3.85 Vdc	Environmental Conditions:	25°C, 68% RH	Tested By:	Noah Chang
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7.5.1 NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz)

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 10 MHz







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

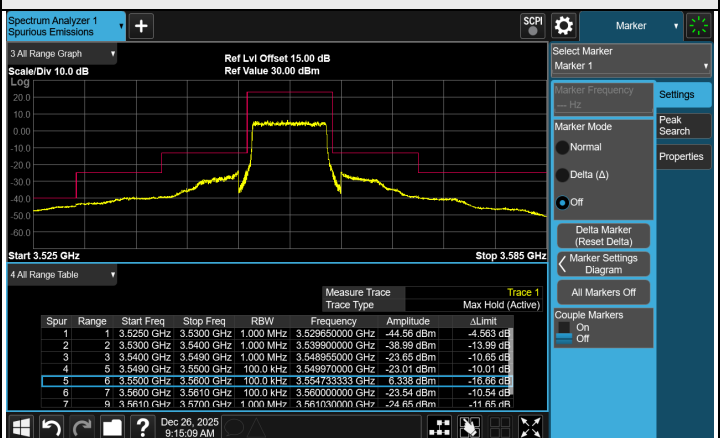
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 10 MHz

CH 637000 (3555 MHz)

1 RB

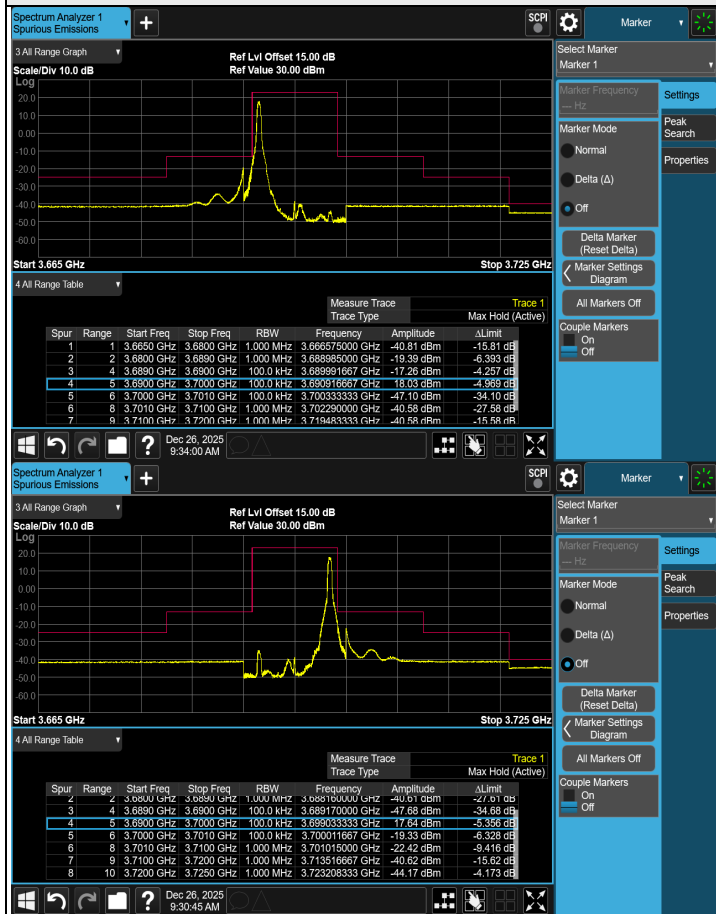


FULL RB

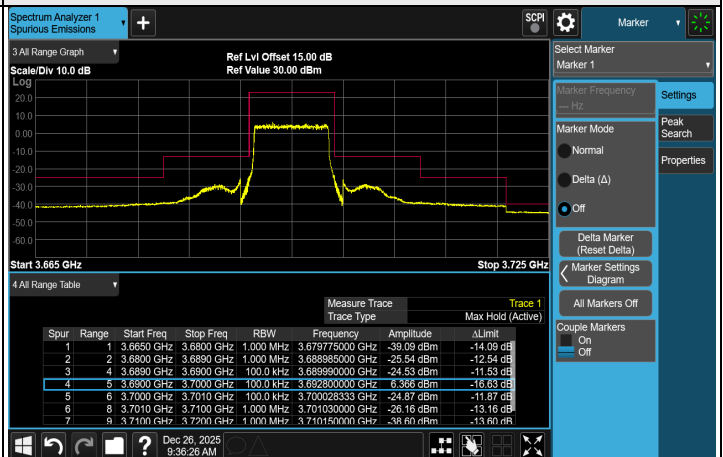


CH 646332 (3694.98 MHz)

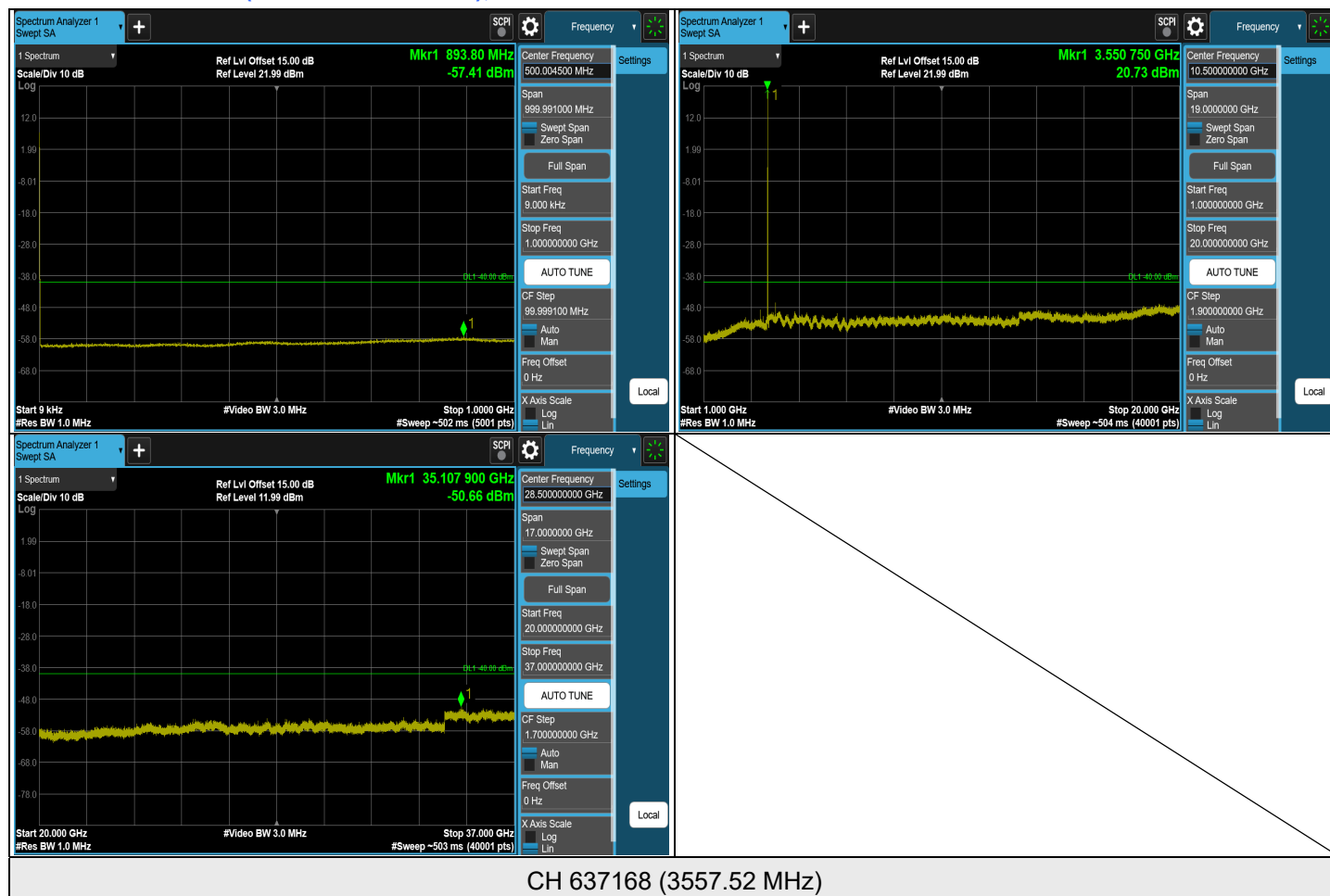
1 RB

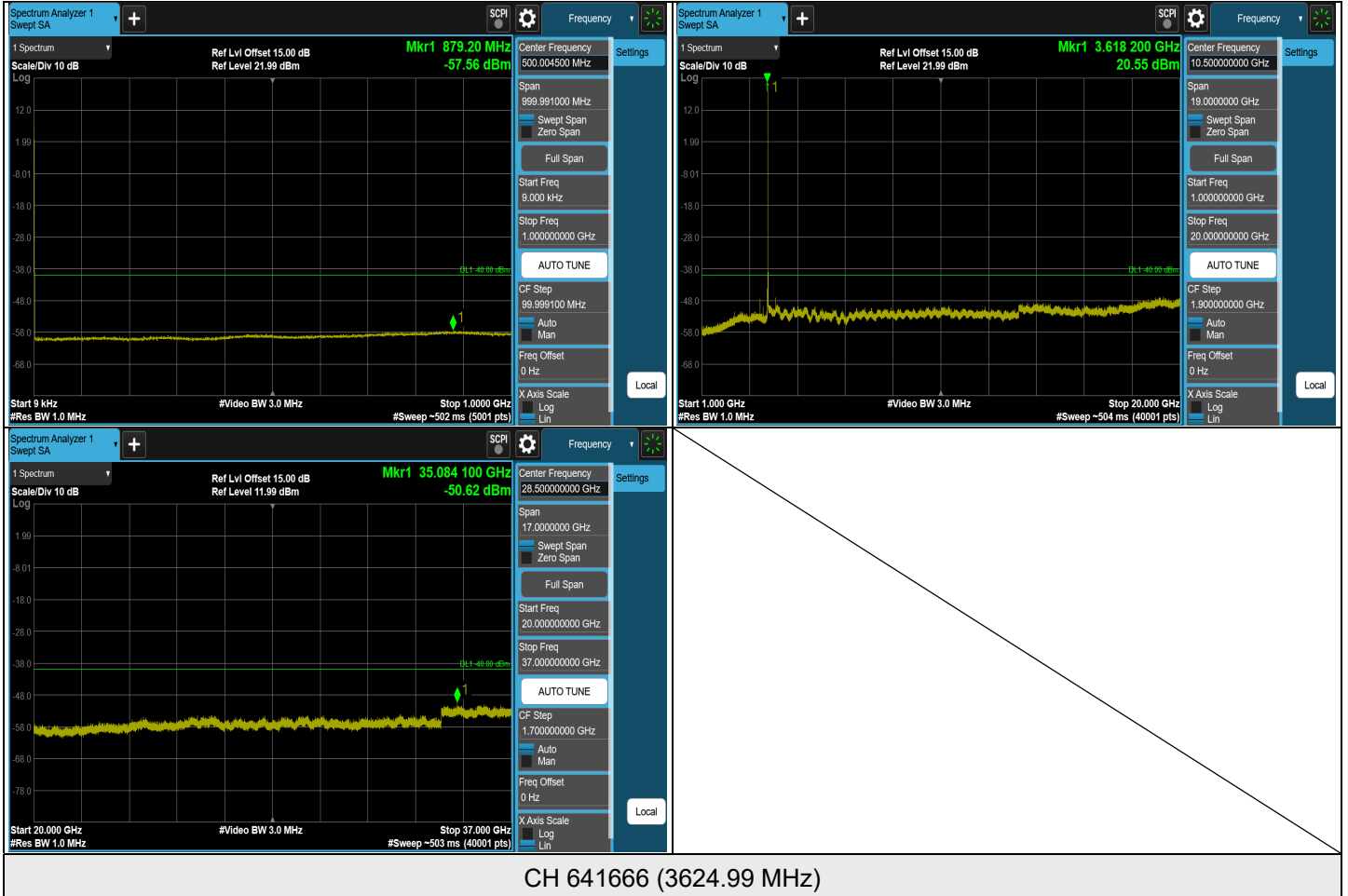


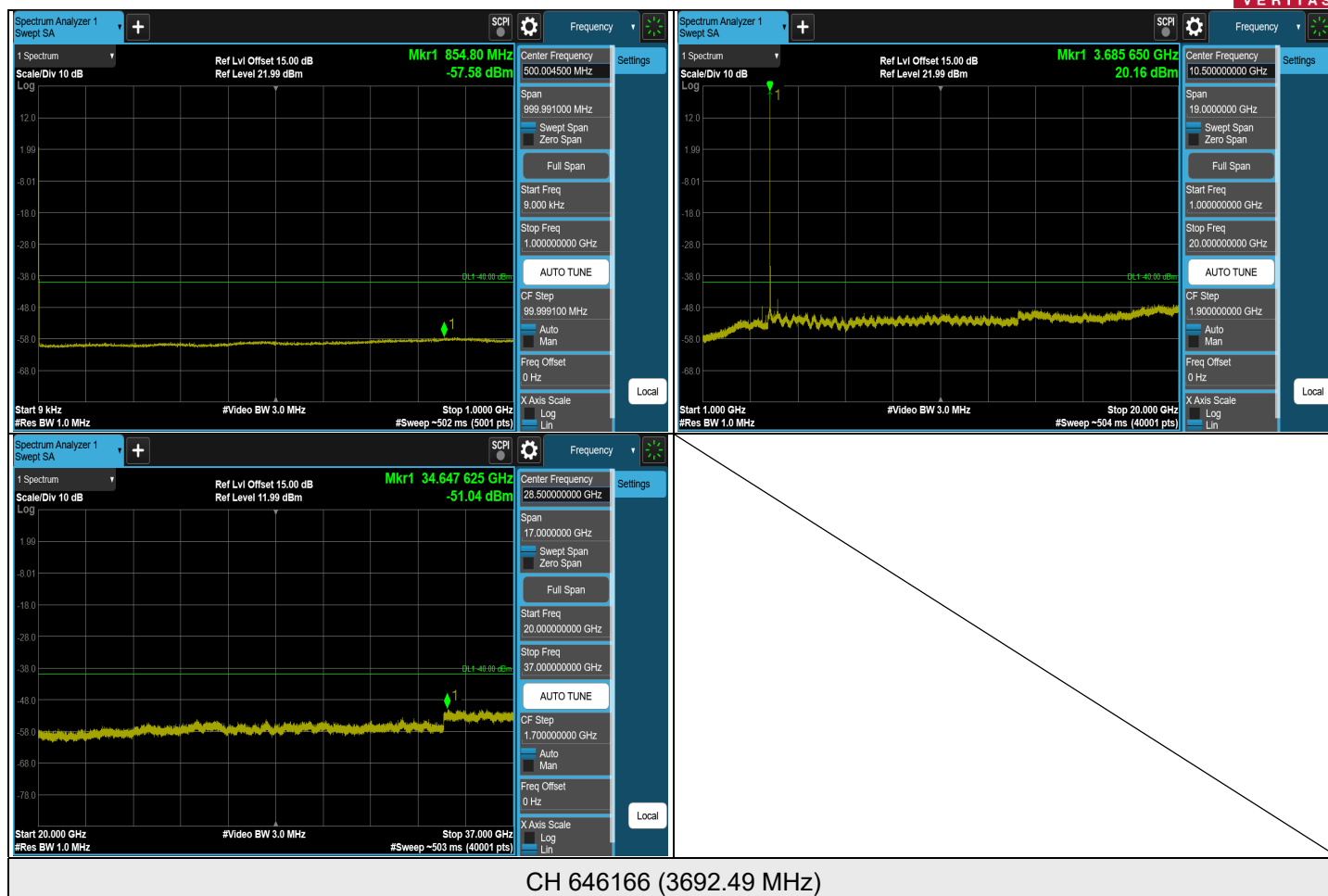
FULL RB



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz



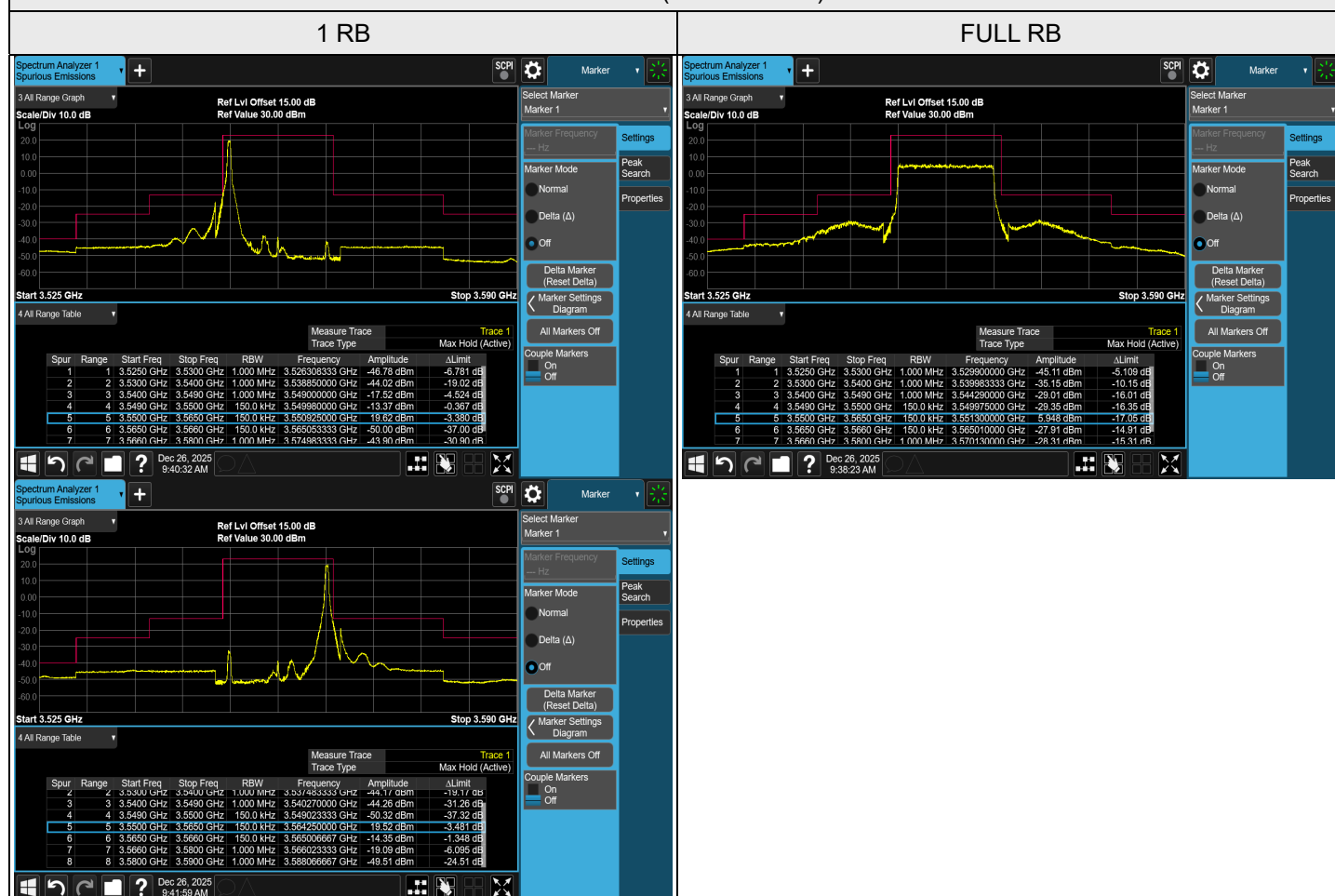




Note: The signal at 9 kHz is IF signal from spectrum analyzer.

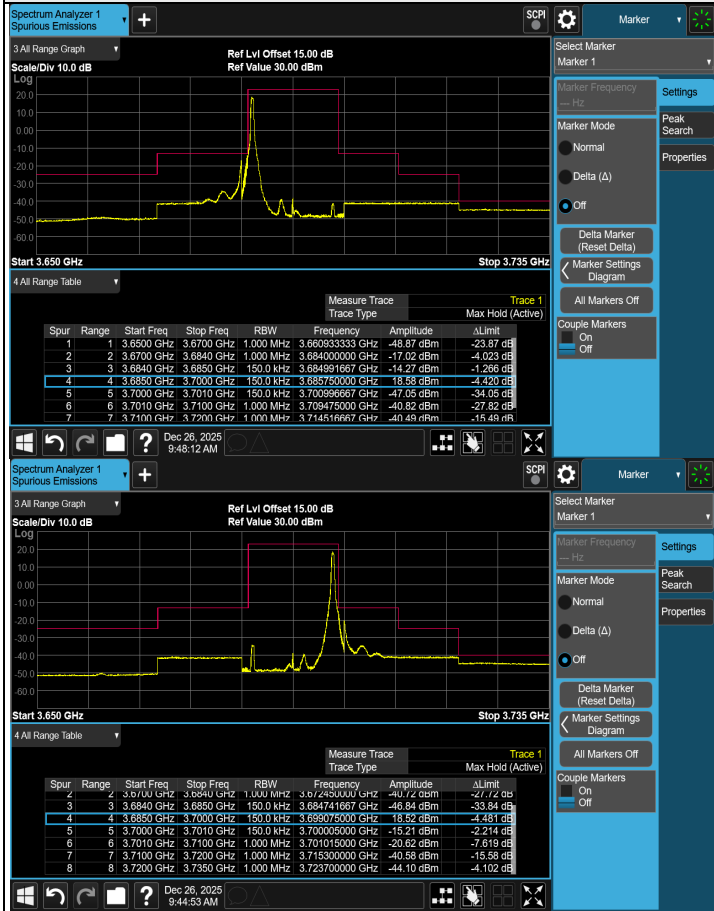
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 15 MHz

CH 637168 (3557.52 MHz)

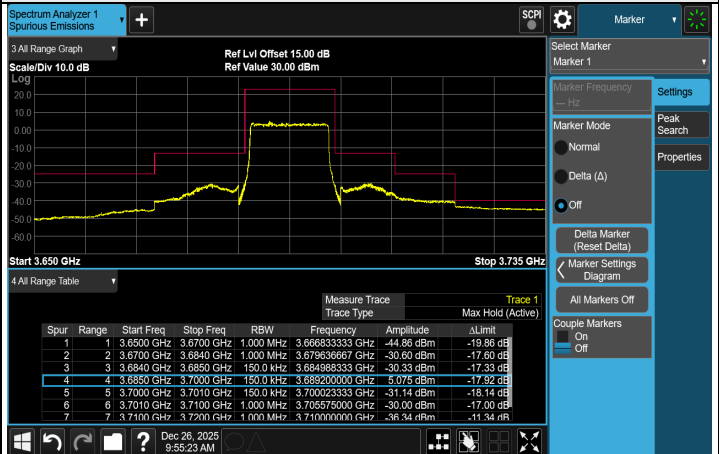


CH 646166 (3692.49 MHz)

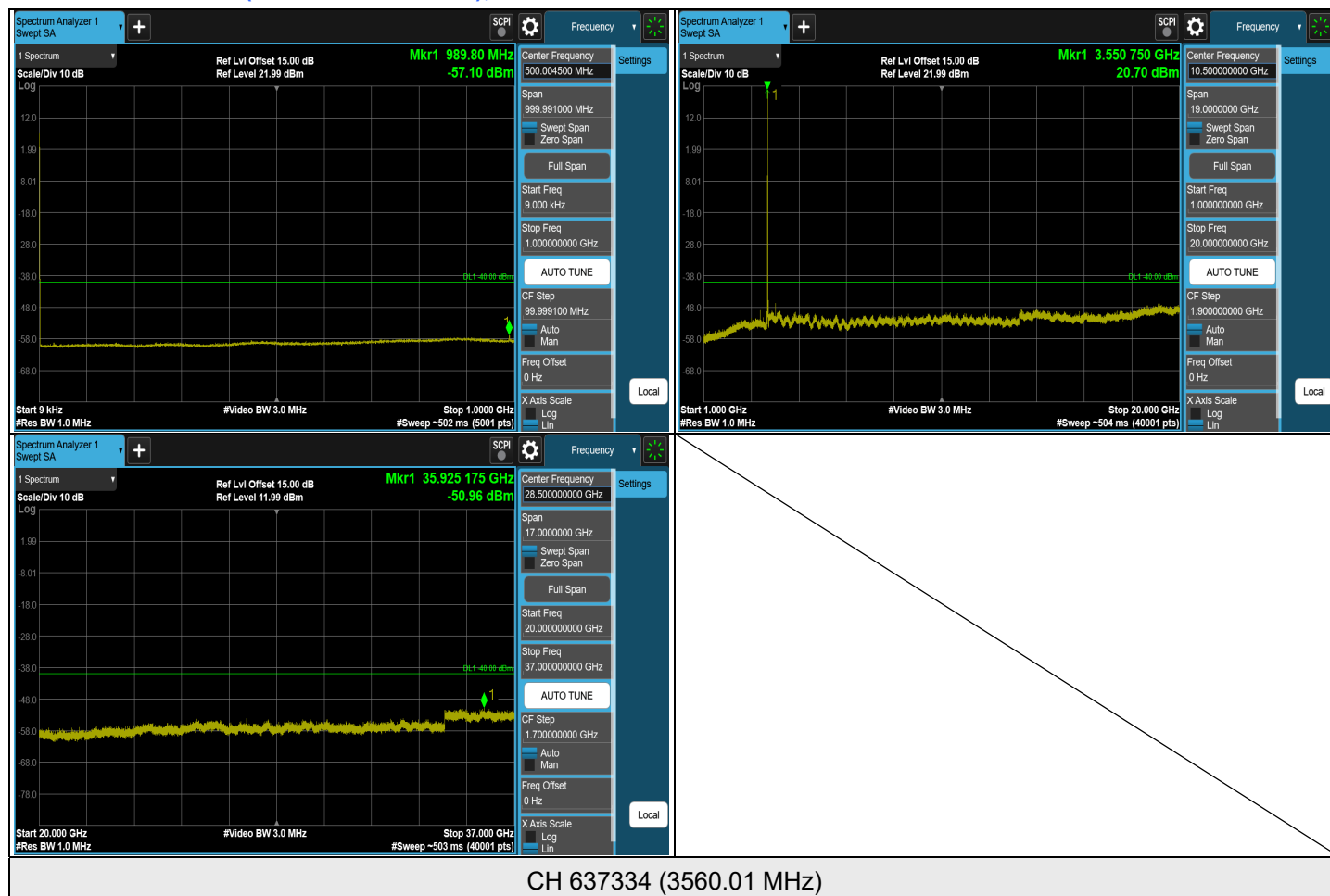
1 RB

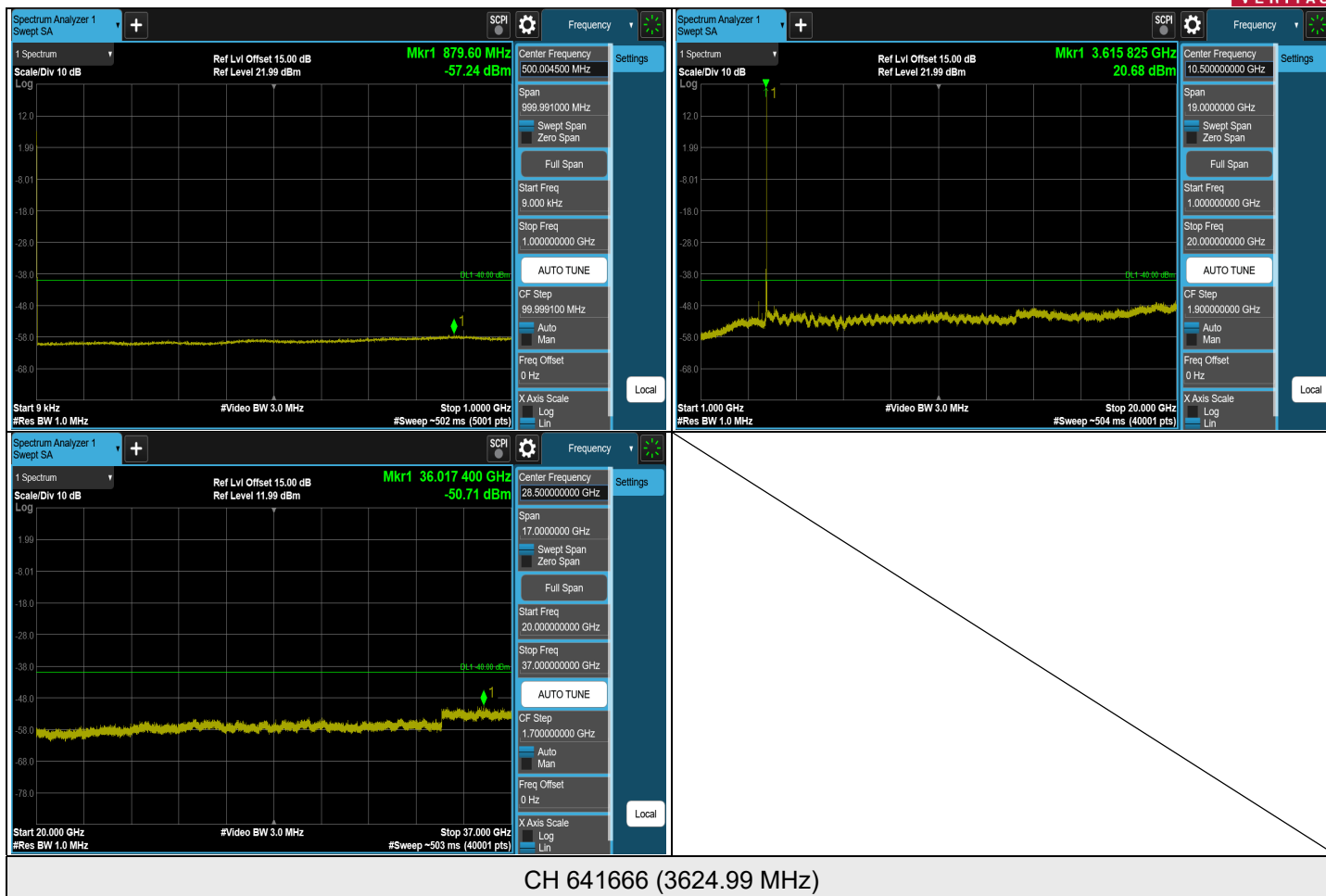


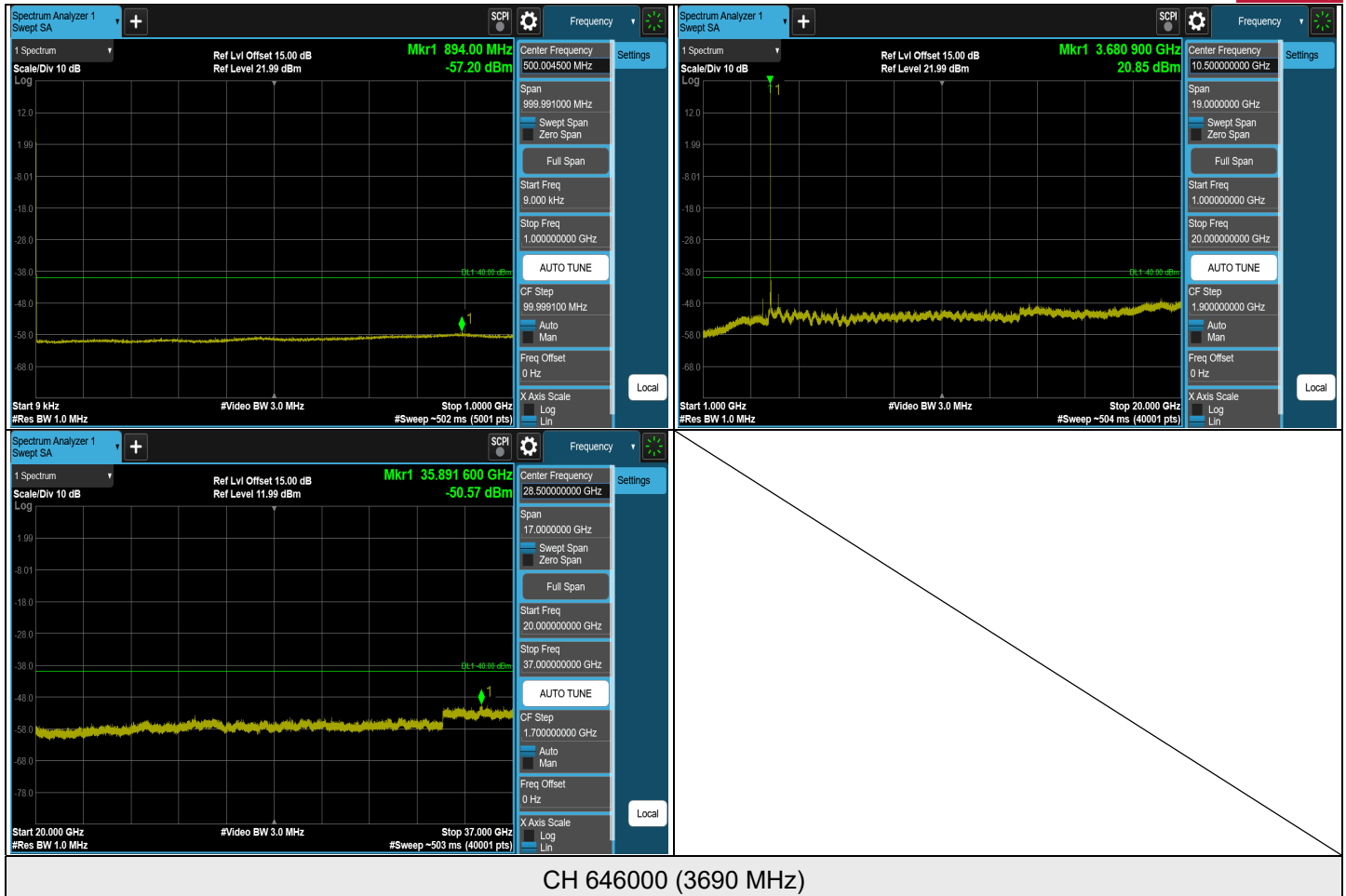
FULL RB



NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz



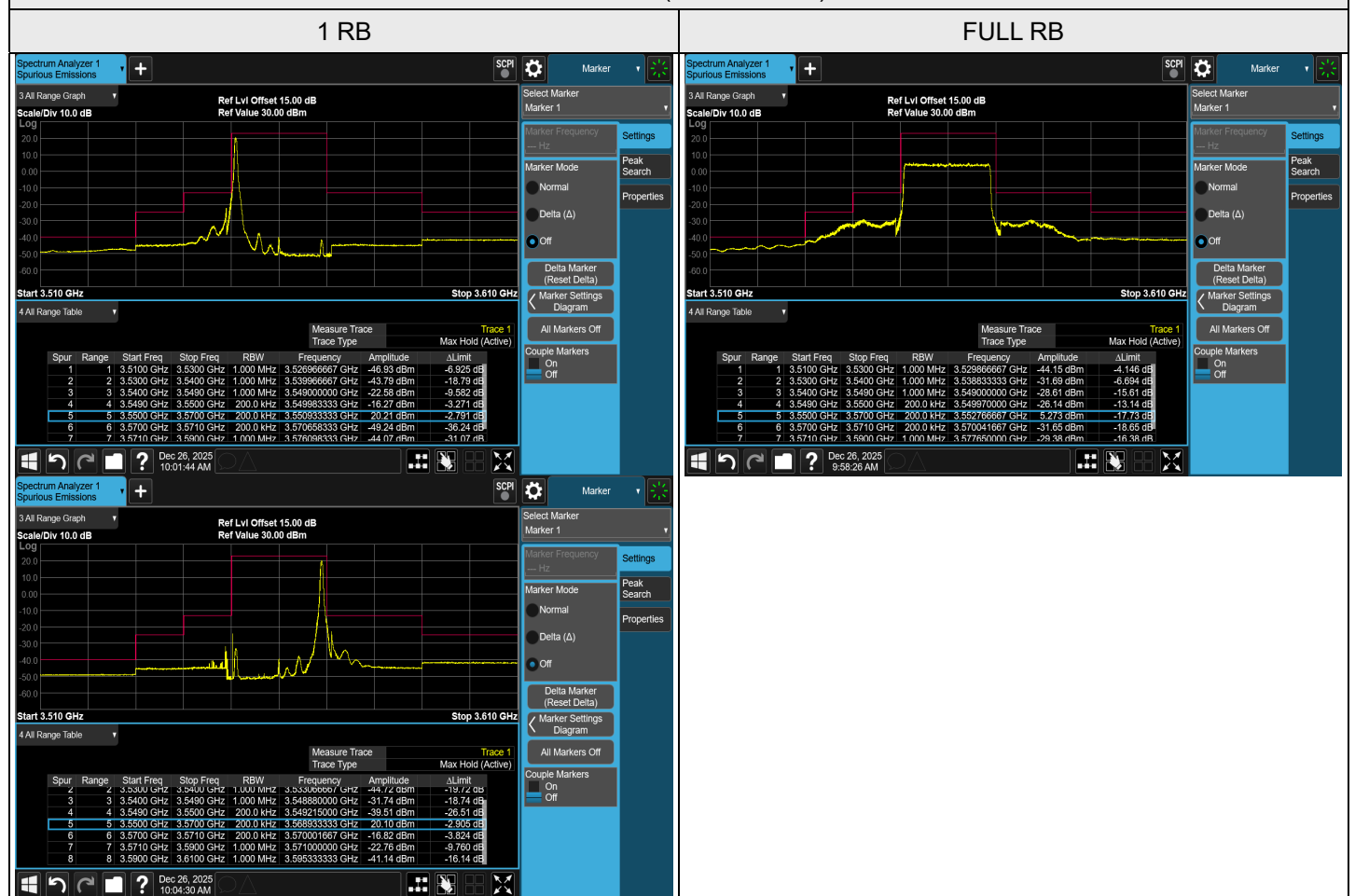


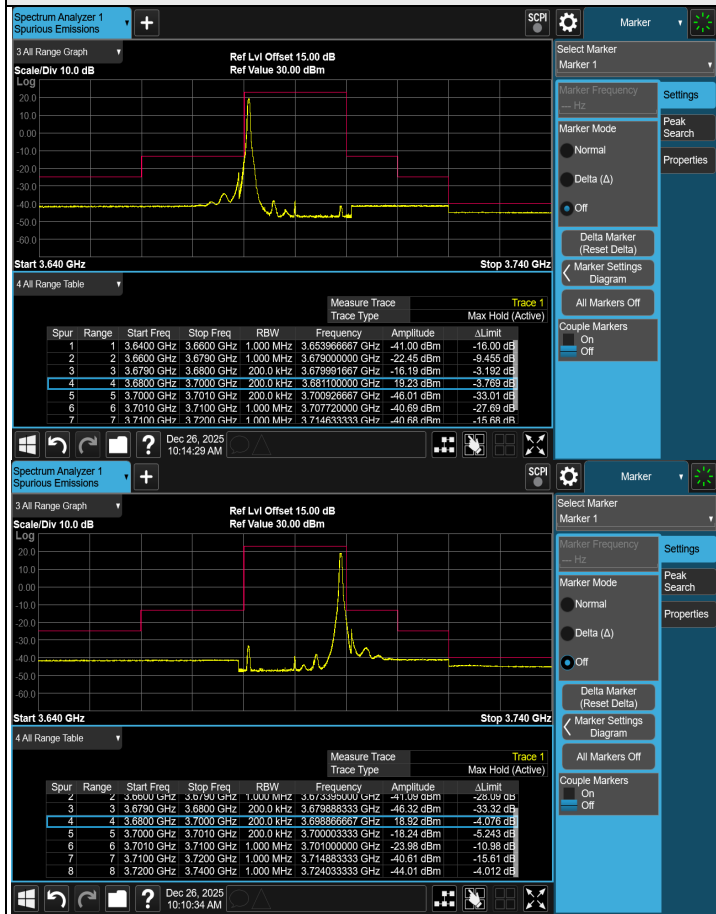
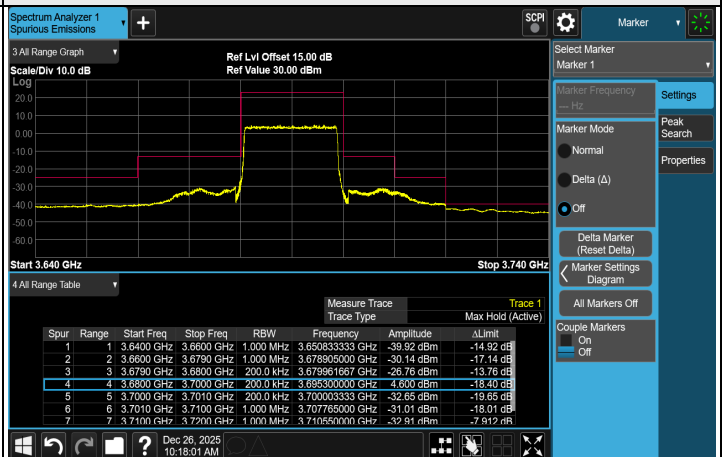


Note: The signal at 9 kHz is IF signal from spectrum analyzer.

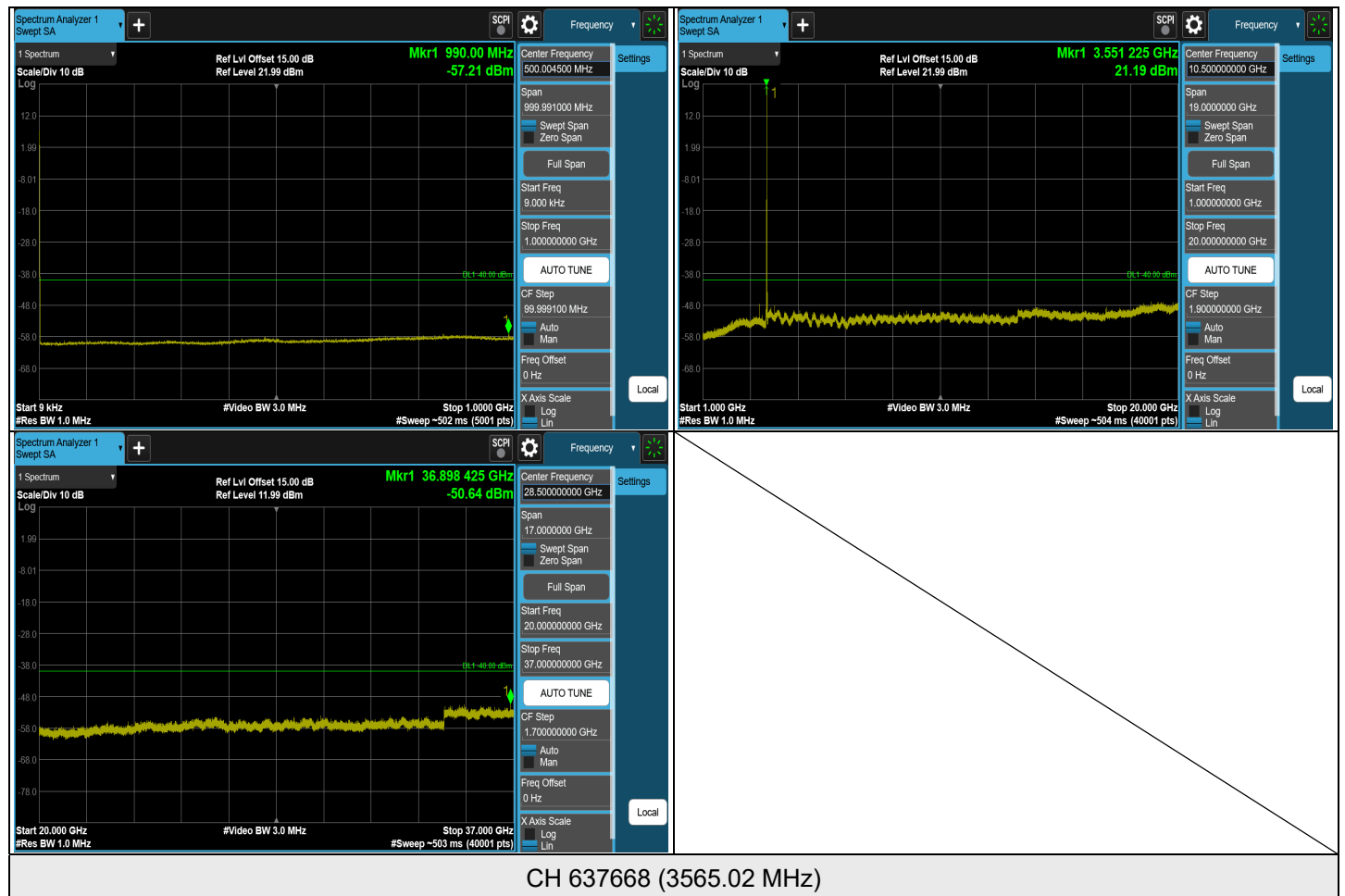
NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 20 MHz

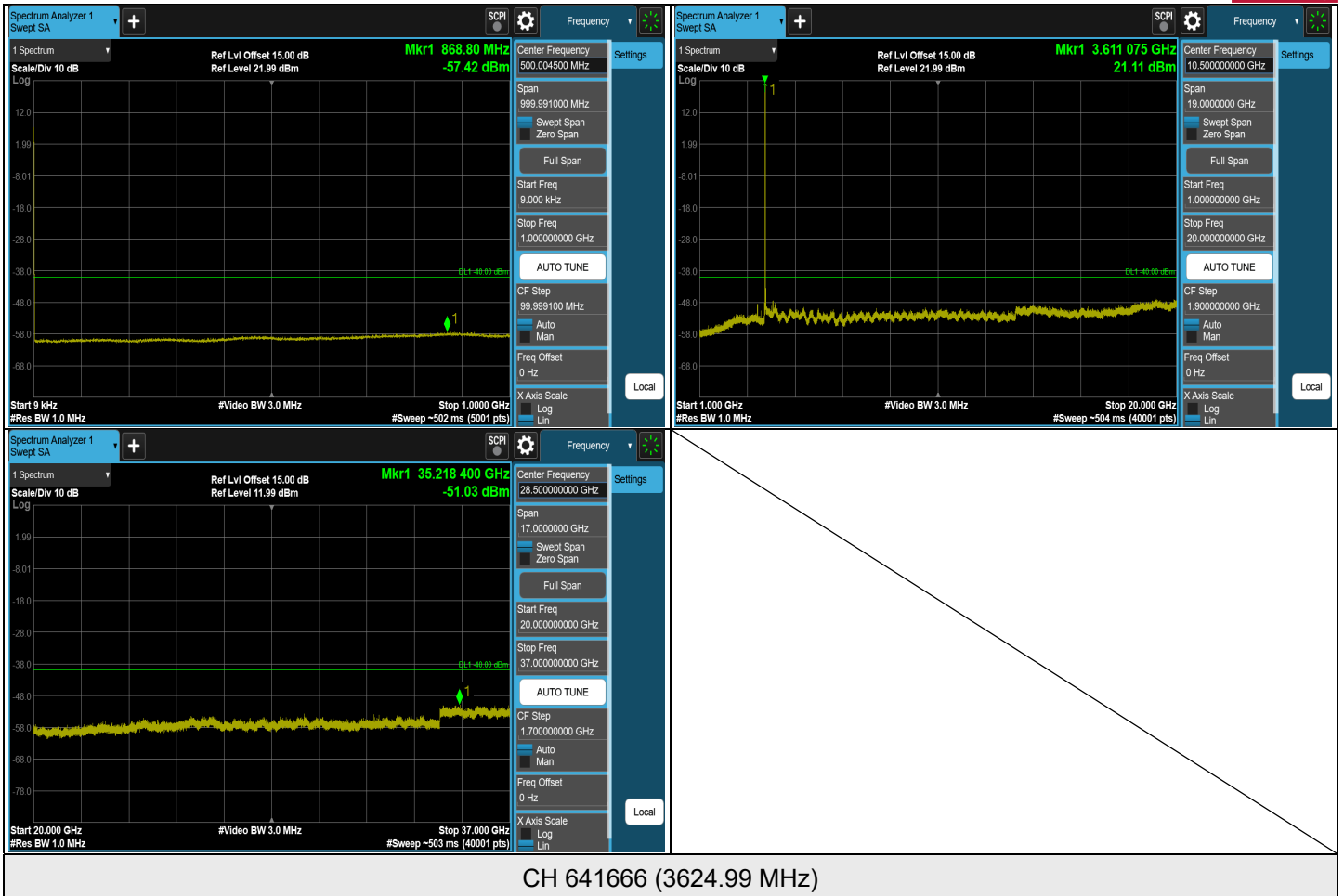
CH 637334 (3560.01 MHz)

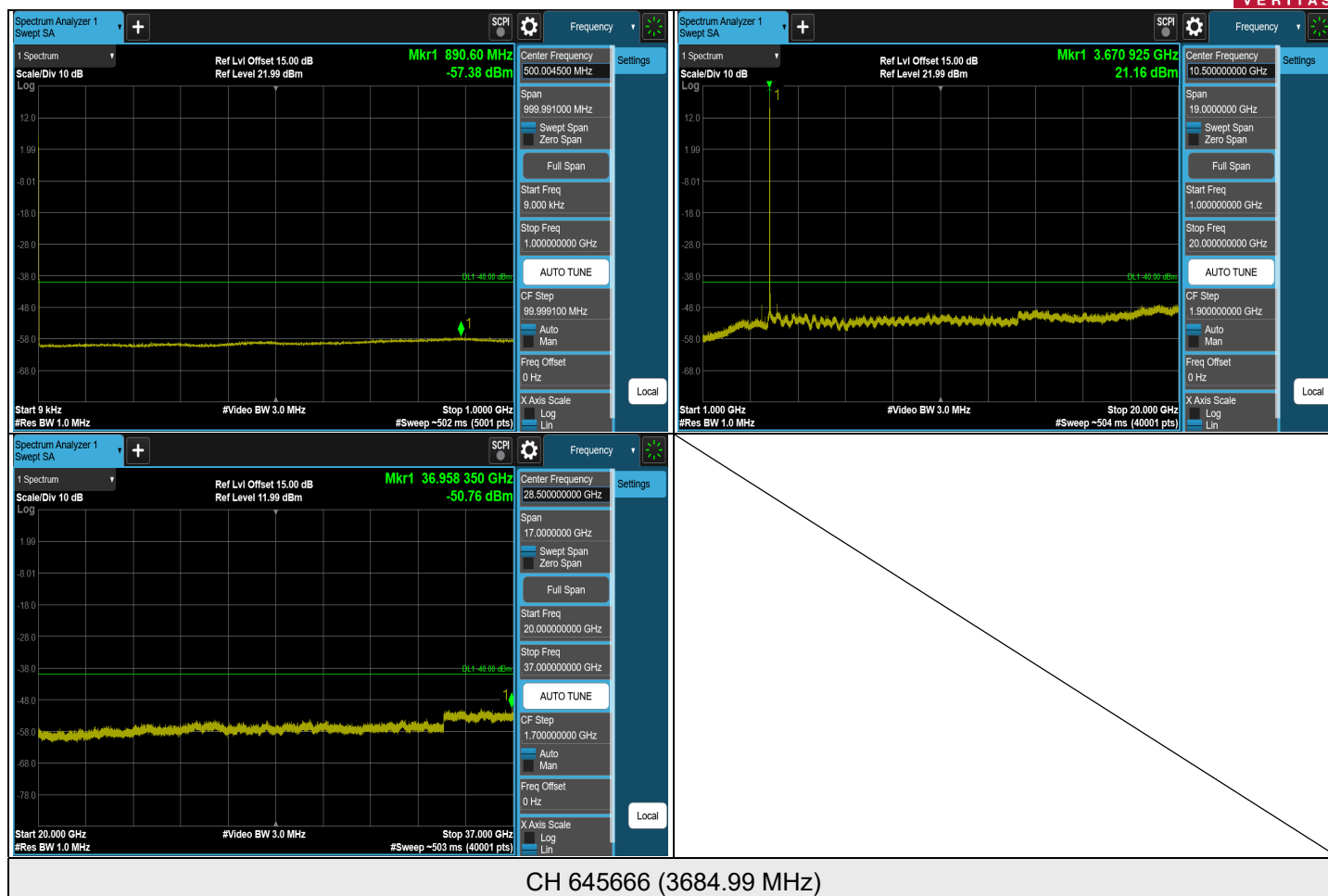


CH 646000 (3690 MHz)**1 RB****FULL RB**

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz







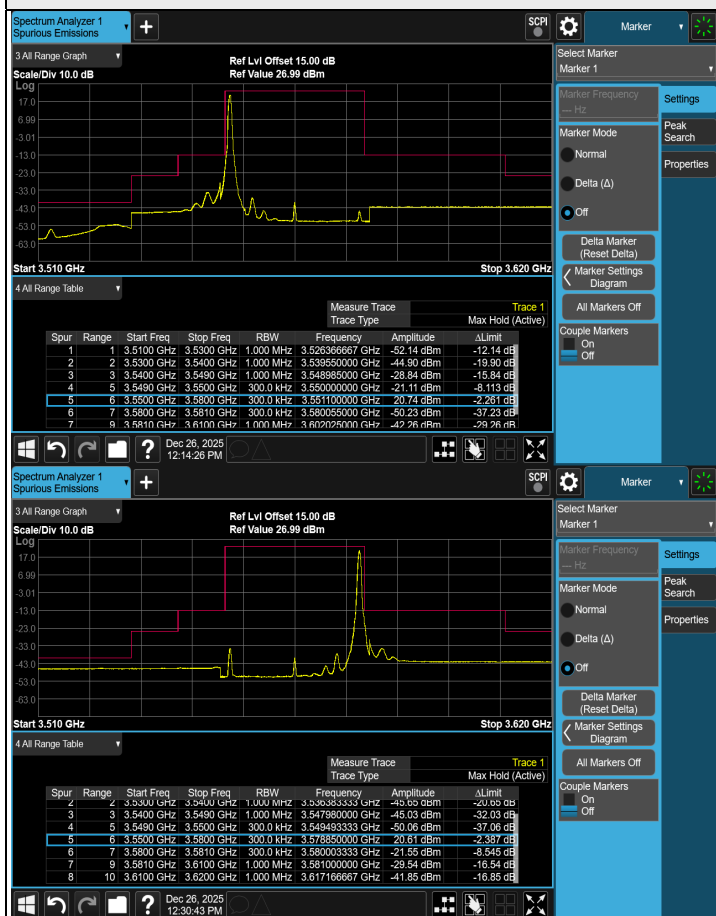
CH 645666 (3684.99 MHz)

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

NR n48 SCS 30 kHz (3.55 GHz ~ 3.7 GHz), Channel Bandwidth: 30 MHz

CH 637668 (3565.02 MHz)

1 RB



FULL RB

