TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 96** **47 CFR FCC Part 2**
Report No.:	RFBEDW-WTW-P25030825-2
FCC ID:	GKRRXLN3N
Product:	LGA Module
Brand:	COMPAL
Model No.:	RXL-N3n
Received Date:	2025/3/27
Test Date:	2025/6/13 ~ 2025/7/3
Issued Date:	2025/7/23
Applicant:	Compal Electronics, Inc.
Address:	No. 581 & 581-1, Ruiguang Rd., Neihu District, Taipei, (114) Taiwan
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
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** **2025/7/23**

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
RFBEDW-WTW-P25030825-2	Original release.	2025/7/23

1 Certificate

Product:	LGA Module
Brand:	COMPAL
Test Model:	RXL-N3n
Sample Status:	Engineering sample
Applicant:	Compal Electronics, Inc.
Test Date:	2025/6/13 ~ 2025/7/3
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

47 CFR FCC Part 96 & Part 2			
Standard / Clause	Test Item	Result	Remark
FCC 47 CFR Part 2.1046 FCC 47 CFR Part 96.41(b)	Maximum EIRP	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1047	Modulation Characteristics	Pass	Refer to Note 2
FCC 47 CFR Part 96.41(g)	Peak to Average Ratio	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1049	Bandwidth	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1051 FCC 47 CFR Part 96.41(e)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1053 FCC 47 CFR Part 96.41(e)	Radiated Spurious Emissions below 1GHz	Pass	Minimum passing margin is -5.84 dB at 31.94 MHz
FCC 47 CFR Part 2.1053 FCC 47 CFR Part 96.41(e)	Radiated Spurious Emissions above 1GHz	Pass	Minimum passing margin is -0.97 dB at 7380.00 MHz
FCC 47 CFR Part 2.1055	Frequency Stability	Pass	Meet the requirement of limit.

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. LTE CA mode is similar to digital modulation in LTE single frequency band, so please refer to BV CPS report no.: RFBEDW-WTW-P25030825-4 for the modulation characteristics data of CA mode.

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	Specification	Expanded Uncertainty (k=2) (±)
Maximum Output Power / Peak to Average Ratio	-	1.371 dB
26dB Bandwidth / Occupied Bandwidth	-	453.93 Hz / 72 Hz
Conducted emission / Spectrum Emission Mask	-	2.120 dB / 1.899 dB
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.6 dB
	30 MHz ~ 1 GHz	4.47 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	LGA Module
Brand	COMPAL
Test Model	RXL-N3n
Status of EUT	Engineering sample
Power Supply Rating	3.8Vdc

Note:

1. EUT Overview

Band / Bandwidth	TX Frequency Range (MHz)	Max. EIRP Power			
		QPSK	16QAM	64QAM	256QAM
LTE Band 48C (Full Power) (20MHz+20MHz)	3560.0-3690.0	169.044mW (22.28dBm)	132.739mW (21.23dBm)	106.660mW (20.28dBm)	106.170mW (20.26dBm)
LTE Band 48C (Per 10M Power) (20MHz+20MHz)	3560.0-3690.0	167.109mW (22.23dBm)	131.220mW (21.18dBm)	105.682mW (20.24dBm)	104.954mW (20.21dBm)

Band / Bandwidth	TX Frequency Range (MHz)	Emission Designator			
		QPSK	16QAM	64QAM	256QAM
LTE Band 48C (Full Power) (20MHz+20MHz)	3560.0-3690.0	37M7D7W	37M7D7W	37M7D7W	37M7G7D

2. The EUT uses following support units.

Jig	
Brand	Compal
Model	ZYN6
Adapter	
Brand	ChenzhouFrecom Electronics Co. Ltd
Model	F24L5-120200SPAU
Input Power	100-240V~50/60Hz 0.6A
Output Power	12.0V⎓2.0A 24.0W

3. The EUT uses following accessories.

Item	Brand	Model
Ant	INPAQ	ANT0/1/2/3 GNSS

4. For CA mode configuration, please consult the manufacturer to declare the test mode.
5. The EUT support the following CA Configuration.

Band Configuration
48C

6. 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.
7. CA 48C overlaps the entire frequency range of CA 42C (3550 – 3600 MHz) and CA 43C (3600 – 3700 MHz). Therefore, test data provided in this report covers CA 48C as well as CA 42C and CA 43C.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Type	External				
Brand	I-pex				
Band	Freq. Range (MHz)	Peak Gain without cable loss (dBi)			
		Ant. 0 (Main)	Ant. 1 (DRx)	Ant. 2 (DRx)	Ant. 3 (DRx)
CA 42C (Ant 0)	3400 ~ 3600	-1.5	-1.5	-1.5	-1.5
CA 43C (Ant 0)	3600 ~ 3800	-1	-1	-1	-1
CA 48C (Ant 0)	3550 ~ 3700	-1	-1	-1	-1

Ant. No.	Cable Loss (dB)	Cable Length (mm)
Ant. 0	1.5	141.1
Ant. 1	1.3	120.3
Ant. 2	1	78.2
Ant. 3	1.3	121.2

* 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. The antenna of EUT can be used in the following ways: 0 degree/90 degrees. 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:	1. 0 degree/90 degrees Worst Condition: 90 degrees

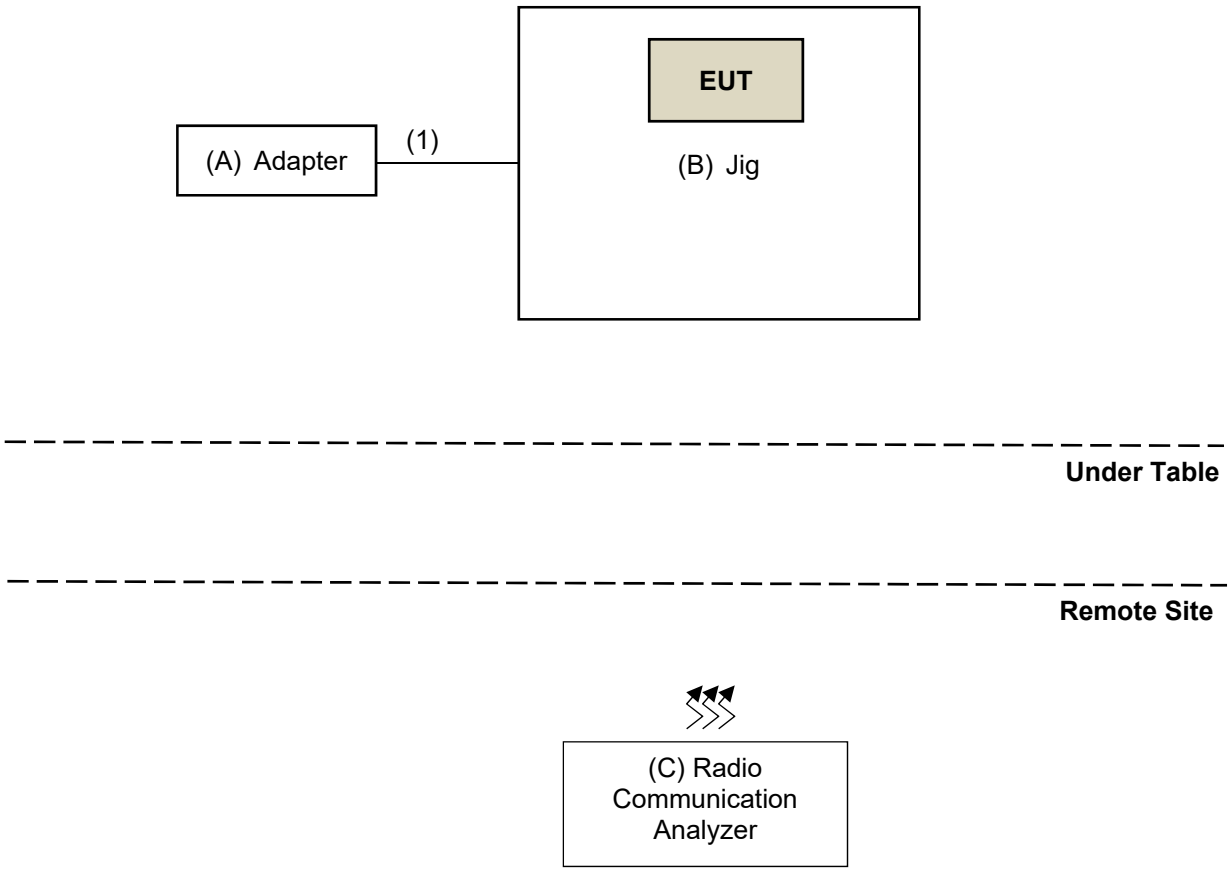
LTE Band 48 (CA 48C)

Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Equivalent Isotropically Radiated Power	55340 (3560.0MHz)+55538 (3579.8MHz), 55891 (3615.1MHz)+56089 (3634.9MHz), 56642 (3670.2MHz)+56640 (3690.0MHz)	20MHz+20MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB
Peak to Average Ratio	55891 (3615.1MHz)+56089 (3634.9MHz)	20MHz+20MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
Bandwidth	55891 (3615.1MHz)+56089 (3634.9MHz)	20MHz+20MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
Conducted Spurious Emissions	55340 (3560.0MHz)+55538 (3579.8MHz), 55891 (3615.1MHz)+56089 (3634.9MHz), 56642 (3670.2MHz)+56640 (3690.0MHz)	20MHz+20MHz	QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	55891 (3615.1MHz)+56089 (3634.9MHz)	20MHz+20MHz	QPSK	1 RB
Radiated Spurious Emissions above 1GHz	55340 (3560.0MHz)+55538 (3579.8MHz), 55891 (3615.1MHz)+56089 (3634.9MHz), 56642 (3670.2MHz)+56640 (3690.0MHz)	20MHz+20MHz	QPSK	1 RB
Frequency Stability	55891 (3615.1MHz)+56089 (3634.9MHz)	20MHz + 20MHz	QPSK	Full 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



3.6 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	ChenzhouFrecom Electronics Co. Ltd	F24L5-120200SPAU	NA	NA	Supplied by applicant
B	Jig	Compal	ZYN6	NA	NA	Supplied by applicant
C	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	AC Cable	1	1	No	0	Supplied by applicant

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	2024/5/29 2025/5/23	2025/5/28 2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/03/24	2026/03/23
Radio Communication Analyzer Anritsu	MT8821C	6261806803	2025/02/19	2026/02/18
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/6/13 ~ 2025/7/3

4.2 Peak to Average Ratio

Refer to section 4.1 to get information of the instruments.

4.3 Bandwidth

Refer to section 4.1 to get information of the instruments.

4.4 Conducted Spurious Emissions

Refer to section 4.1 to get information of the instruments.

4.5 Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
MXE EMI Receiver Agilent	N9038A	MY51210203	2024/8/27	2025/8/26
Signal & Spectrum Analyzer R&S	FSW43	101866	2025/3/25	2026/3/24
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2025/4/27	2026/4/26
Preamplifier Agilent	8447D	2944A10638	2025/4/27	2026/4/26
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2024/10/9	2025/10/8
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2025/4/27	2026/4/26

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2025/6/18

4.6 Radiated Spurious Emissions above 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
MXE EMI Receiver Agilent	N9038A	MY51210203	2024/8/27	2025/8/26
Signal & Spectrum Analyzer R&S	FSW43	101866	2025/3/25	2026/3/24
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1169	2024/11/10	2025/11/9
Preamplifier Agilent	8449B	3008A02367	2025/1/5	2026/1/4
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2025/1/5	2026/1/4
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2025/1/5	2026/1/4
Boresight antenna tower fixture BV	BAF-02	5	NA	NA
Preamplifier EMCI	EMC 184045	980116	2024/9/24	2025/9/23
Horn Antenna Schwarzbeck	BBHA 9170	9170-480	2024/11/10	2025/11/9
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170243	2024/11/10	2025/11/9
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	2024/7/6	2025/7/5
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2024/7/6	2025/7/5

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2025/6/18

4.7 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
3-channel DC power supply JIN YIH Technology	ODP3033	ODP30332128138	N/A	N/A
Digital Multimeter Fluke	8050A	4660081	2025/06/06	2026/06/05
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/03/24	2026/03/23
Radio Communication Analyzer Anritsu	MT8821C	6261806803	2025/02/19	2026/02/18
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Terchy	HRM-120RF	931022	2025/01/09	2026/01/08

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/7/3

5 Limits of Test Items

5.1 Maximum EIRP

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

5.2 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.

5.3 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.

5.4 Conducted Spurious Emissions

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	

5.5 Radiated Spurious Emissions below 1GHz

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	

5.6 Radiated Spurious Emissions above 1GHz

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	

5.7 Frequency Stability

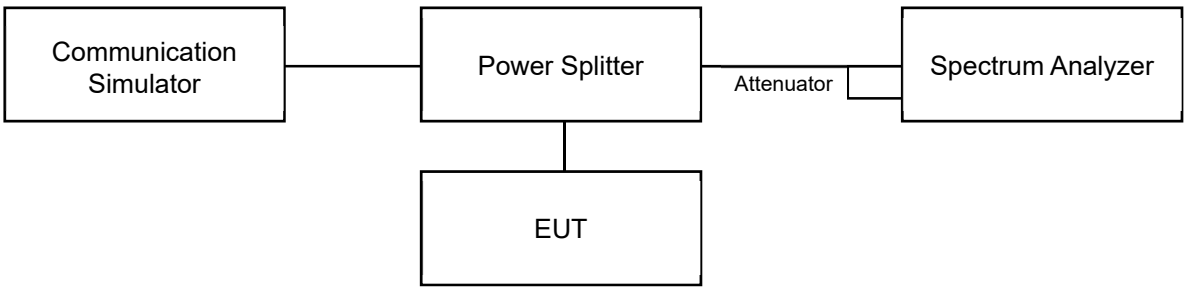
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation (authorized frequency block).

6 Test Arrangements

6.1 Maximum EIRP

6.1.1 Test Setup

Conducted Power Measurement:



6.1.2 Test Procedure

Conducted Power Measurement:

Measurement method refers to ANSI C63.26 section 5.2.4.4.

a. Set span to 2 × to 3 × the OBW.
b. Set RBW = 1% to 5% of the OBW.
c. Set VBW ≥ 3 × RBW.
d. Set number of measurement points in sweep ≥ 2 × span / RBW.
e. Set Sweep time = auto-couple.
f. Detector = power averaging (rms).
g. Set sweep trigger to “free run.”
h. Trace average at least 100 traces in power averaging (rms) mode.
i. Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band or channel power measurement function with band/channel limits set equal to the OBW band edges.
j. If Duty cycle < 98%, Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.
k. For per 10MHz method, channel power integrating bandwidth 10MHz is used for bandwidth 20M and 40M. For full power method, channel power integrating bandwidth 20MHz is used for bandwidth 20M, integrating bandwidth 40MHz is used for bandwidth 40M.

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:

$EIRP = P_{Meas} + G_T$

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

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

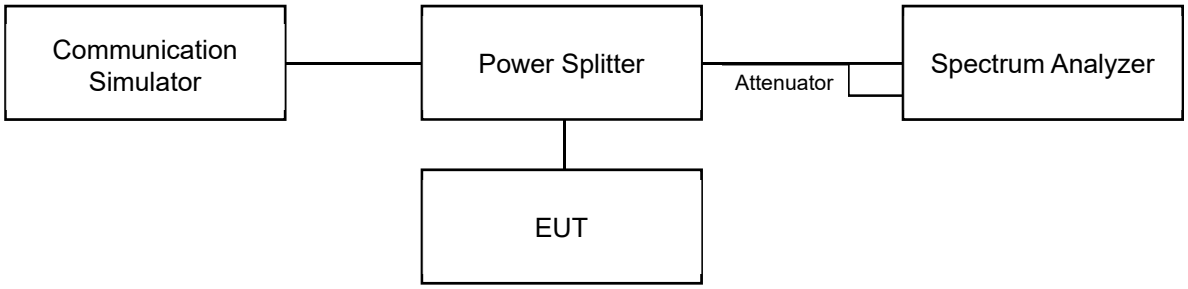
G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

6.1.3 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.

6.2 Peak to Average Ratio

6.2.1 Test Setup

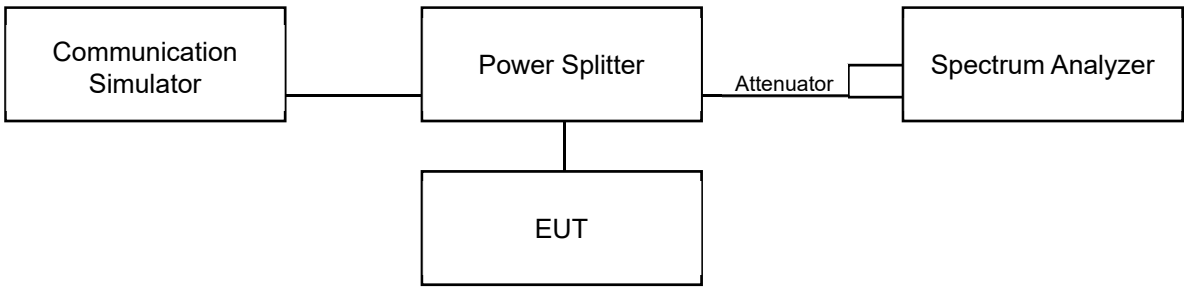


6.2.2 Test Procedure

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%.

6.3 Bandwidth

6.3.1 Test Setup



6.3.2 Test Procedure

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

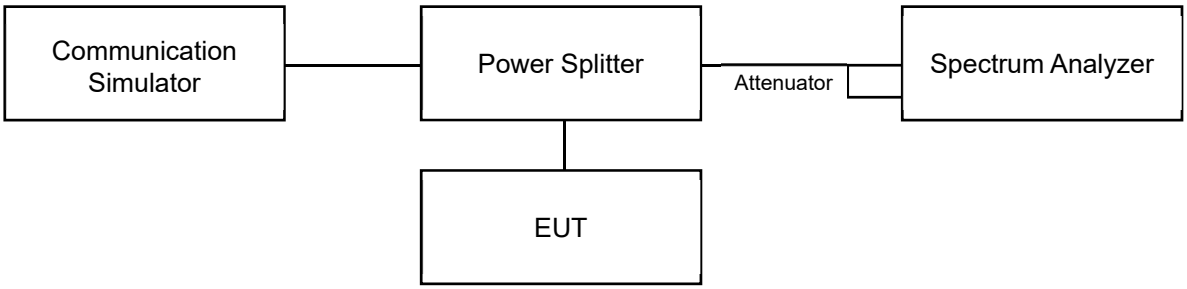
a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
b. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 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. 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 ≥ 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. 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 reference value by either of the following:
g. 1) 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).
h. 2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier.
i. 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.
j. If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).
k. 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. The spectral envelope can cross the "−X dB amplitude" at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the "−X dB amplitude."
l. 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).

6.4 Conducted Spurious Emissions

6.4.1 Test Setup



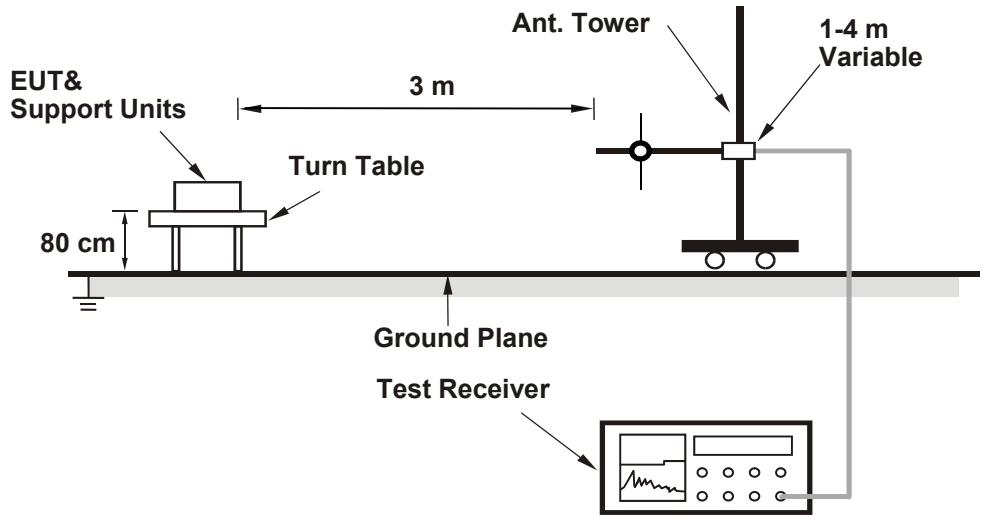
6.4.2 Test Procedure

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 hightest fundamental frequency or to 40 GHz, whichever is lower. 20 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 ≥ 3 x RBW, Detector = Average.
f. Measuring frequency band edge, narrow RBW (no less than 1% of the OBW) is used for conducted emission measurement.

6.5 Radiated Spurious Emissions below 1GHz

6.5.1 Test Setup

For radiated emission 30 MHz to 1 GHz



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

6.5.2 Test Procedure

The EUT is configured by emulator 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 C63.26 section 5.5 and 5.2.7

e. EIRP (dBm) = E (dBμV/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m.

f. ERP (dBm) = E (dBμV/m) + 20log(D) - 104.8 - 2.15; where D is the measurement distance (in the far field region) in m.

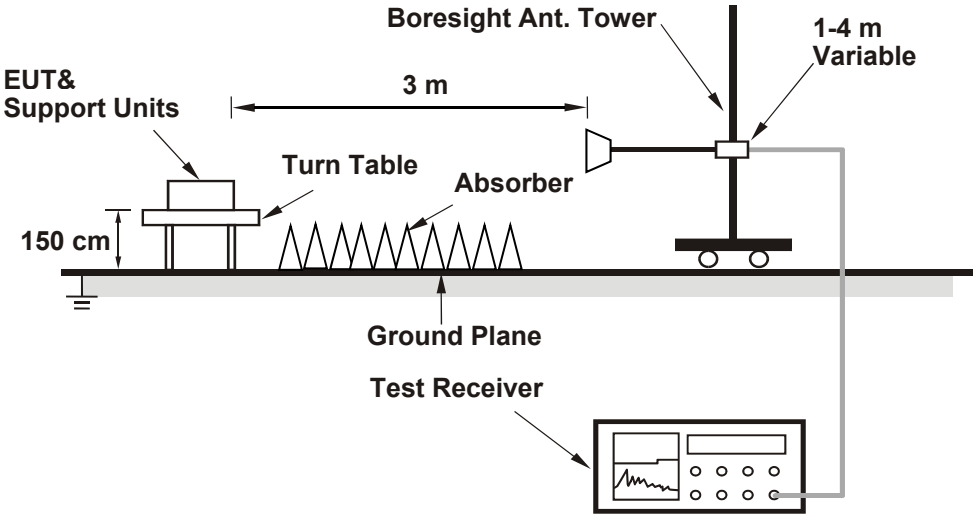
Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
   The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

6.6 Radiated Spurious Emissions above 1GHz

6.6.1 Test Setup

For radiated emission above 1 GHz



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

6.6.2 Test Procedure

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

a. 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.

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 C63.26 section 5.5 and 5.2.7

e. EIRP (dBm) = E (dBμV/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m.

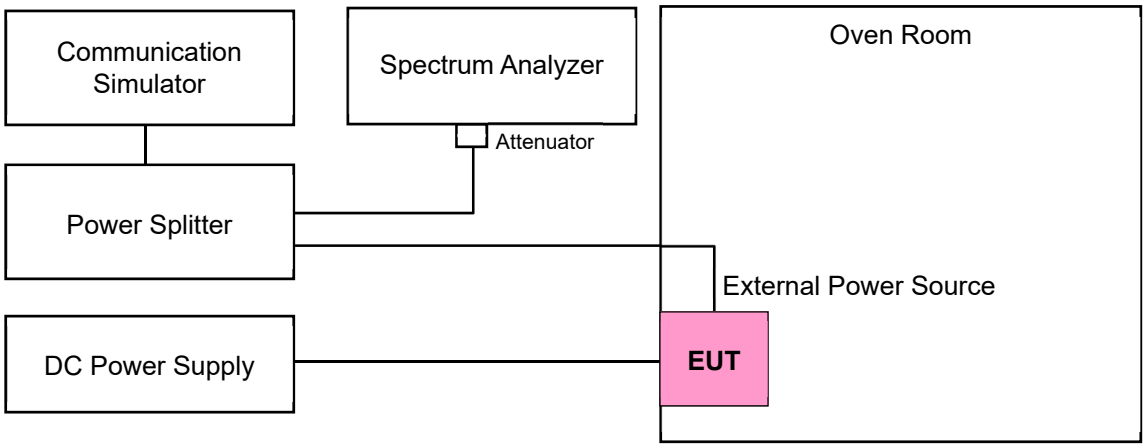
f. ERP (dBm) = E (dBμV/m) + 20log(D) - 104.8 - 2.15; where D is the measurement distance (in the far field region) in m.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

6.7 Frequency Stability

6.7.1 Test Setup



6.7.2 Test Procedure

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

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.

7 Test Results of Test Item

7.1 Maximum EIRP

Input Power:	3.8 Vdc	Environmental Conditions:	22°C, 70% RH	Tested By:	Noah Chang

7.1.1 LTE Band 48 (CA 48C)

Conducted Output Power (dBm) Full Power

Con fugure	Com-bination	PCC							SCC							Measurement Power
		Band	BW (MHz)	Modu lation	RB Size	RB Offset	UL Chan.	UL Freq. (MHz)	Band	BW (MHz)	Modu lation	RB Size	RB Offset	UL Chan.	UL Freq. (MHz)	Tx Power with UL-CA Active (dBm)
																Total
Intra Band Conti-guous	CA_48C	48	20	QPSK	1	0	55340	3560	48	20	QPSK	1	99	55538	3579.8	6.64
					1	99						1	0			20.09
		48	20	QPSK	1	0	55891	3615.1	48	20	QPSK	1	99	56089	3634.9	12.89
					1	99						1	0			23.28
		48	20	QPSK	1	0	56442	3670.2	48	20	QPSK	1	99	56640	3690	6.59
					1	99						1	0			20.06
Intra Band Conti-guous	CA_48C	48	20	16QAM	1	0	55340	3560	48	20	16QAM	1	99	55538	3579.8	5.55
					1	99						1	0			19.08
		48	20	16QAM	1	0	55891	3615.1	48	20	16QAM	1	99	56089	3634.9	11.86
					1	99						1	0			22.23
		48	20	16QAM	1	0	56442	3670.2	48	20	16QAM	1	99	56640	3690	5.52
					1	99						1	0			18.99
Intra Band Conti-guous	CA_48C	48	20	64QAM	1	0	55340	3560	48	20	64QAM	1	99	55538	3579.8	4.58
					1	99						1	0			18.07
		48	20	64QAM	1	0	55891	3615.1	48	20	64QAM	1	99	56089	3634.9	10.84
					1	99						1	0			21.28
		48	20	64QAM	1	0	56442	3670.2	48	20	64QAM	1	99	56640	3690	4.53
					1	99						1	0			18.04
Intra Band Conti-guous	CA_48C	48	20	256 QAM	1	0	55340	3560	48	20	256 QAM	1	99	55538	3579.8	4.60
					1	99						1	0			18.04
		48	20	256 QAM	1	0	55891	3615.1	48	20	256 QAM	1	99	56089	3634.9	10.87
					1	99						1	0			21.26
		48	20	256 QAM	1	0	56442	3670.2	48	20	256 QAM	1	99	56640	3690	4.50
					1	99						1	0			17.99

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	6.59	23.28	5.59	22.28	23
16QAM	5.52	22.23	4.52	21.23	23
64QAM	4.53	21.28	3.53	20.28	23
256QAM	4.50	21.26	3.50	20.26	23

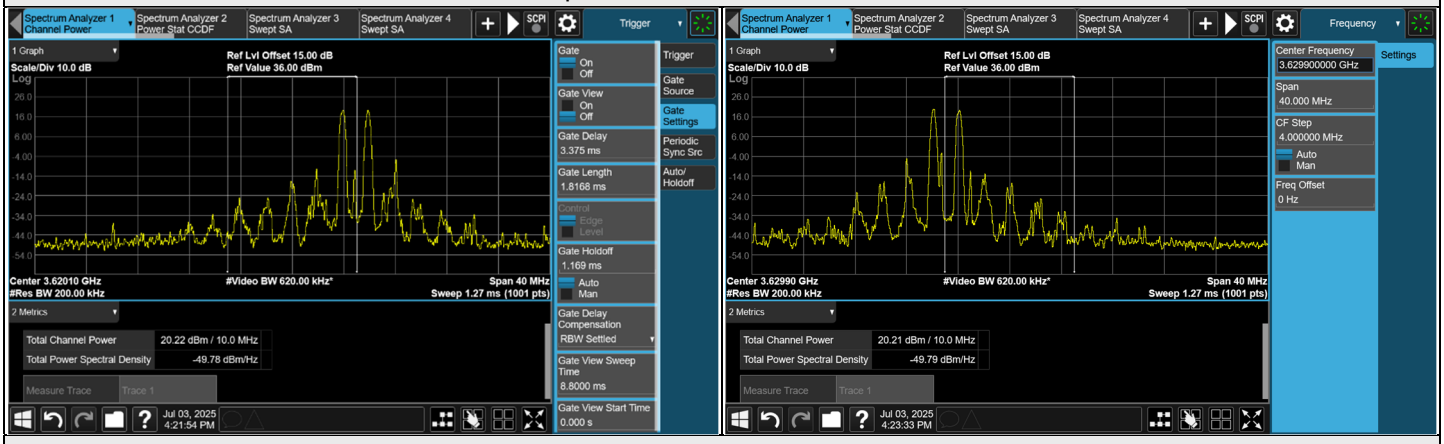
Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

Conducted Output Power_Per 10M Power (dBm)

Con fugure	Com-bination	PCC							SCC							Measurement Power
		Band	BW (MHz)	Modu lation	RB Size	RB Offset	UL Chan.	UL Freq. (MHz)	Band	BW (MHz)	Modu lation	RB Size	RB Offset	UL Chan.	UL Freq. (MHz)	Tx Power with UL-CA Active (dBm)
																Total
Intra Band Conti-guous	CA_48C	48	20	QPSK	1	0	55340	3560	48	20	QPSK	1	99	55538	3579.8	6.58
					1	99						1	0			20.03
		48	20	QPSK	1	0	55891	3615.1	48	20	QPSK	1	99	56089	3634.9	12.83
					1	99						1	0			23.23
		48	20	QPSK	1	0	56442	3670.2	48	20	QPSK	1	99	56640	3690	6.52
					1	99						1	0			20.00
Intra Band Conti-guous	CA_48C	48	20	16QAM	1	0	55340	3560	48	20	16QAM	1	99	55538	3579.8	5.51
					1	99						1	0			19.04
		48	20	16QAM	1	0	55891	3615.1	48	20	16QAM	1	99	56089	3634.9	11.80
					1	99						1	0			22.18
		48	20	16QAM	1	0	56442	3670.2	48	20	16QAM	1	99	56640	3690	5.46
					1	99						1	0			18.94
Intra Band Conti-guous	CA_48C	48	20	64QAM	1	0	55340	3560	48	20	64QAM	1	99	55538	3579.8	4.53
					1	99						1	0			18.02
		48	20	64QAM	1	0	55891	3615.1	48	20	64QAM	1	99	56089	3634.9	10.78
					1	99						1	0			21.24
		48	20	64QAM	1	0	56442	3670.2	48	20	64QAM	1	99	56640	3690	4.48
					1	99						1	0			17.99
Intra Band Conti-guous	CA_48C	48	20	256 QAM	1	0	55340	3560	48	20	256 QAM	1	99	55538	3579.8	4.55
					1	99						1	0			18.00
		48	20	256 QAM	1	0	55891	3615.1	48	20	256 QAM	1	99	56089	3634.9	10.83
					1	99						1	0			21.21
		48	20	256 QAM	1	0	56442	3670.2	48	20	256 QAM	1	99	56640	3690	4.46
					1	99						1	0			17.94

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	6.52	23.23	5.52	22.23	23
16QAM	5.46	22.18	4.46	21.18	23
64QAM	4.48	21.24	3.48	20.24	23
256QAM	4.46	21.21	3.46	20.21	23

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

Spectrum Plot of Worst Value

QPSK CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)

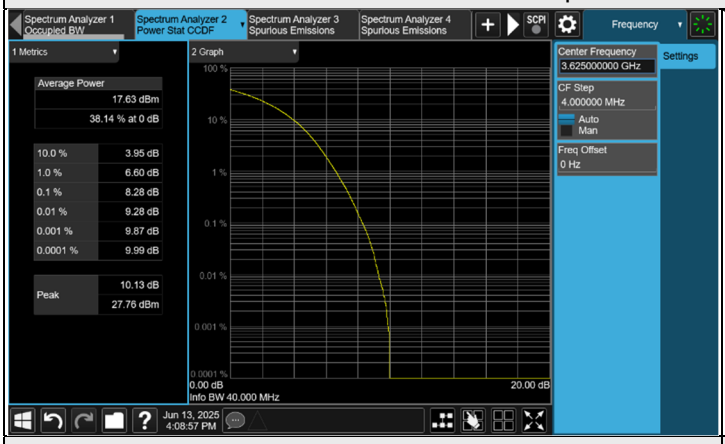
7.2 Peak to Average Ratio

Input Power:	3.8 Vdc	Environmental Conditions:	22°C, 70% RH	Tested By:	Noah Chang

7.2.1 LTE Band 48 (CA 48C)

Channel Bandwidth: 20 MHz+20 MHz

Channel	Frequency (MHz)	Peak to Average Ratio (dB)				Limit
		QPSK	16QAM	64QAM	256QAM	
55891+56089	3615.1+3634.9	5.25	6.44	8.23	8.28	13.00

Spectrum Plot of Worst Value	
	
256QAM CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)	

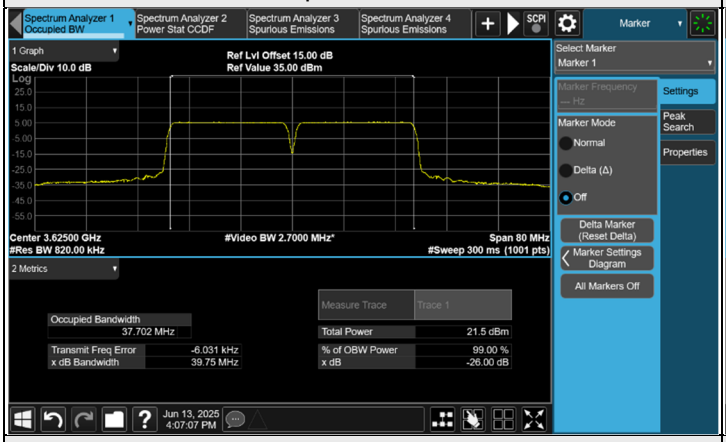
7.3 Bandwidth

Input Power:	3.8 Vdc	Environmental Conditions:	22°C, 70% RH	Tested By:	Noah Chang

7.3.1 TE Band 48 (CA 48C)

Channel Bandwidth: 20 MHz+20 MHz

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)				26 dB Bandwidth (MHz)			
		QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
55891+ 56089	3615.1+ 3634.9	37.70	37.68	37.66	37.67	39.75	39.72	39.70	39.75

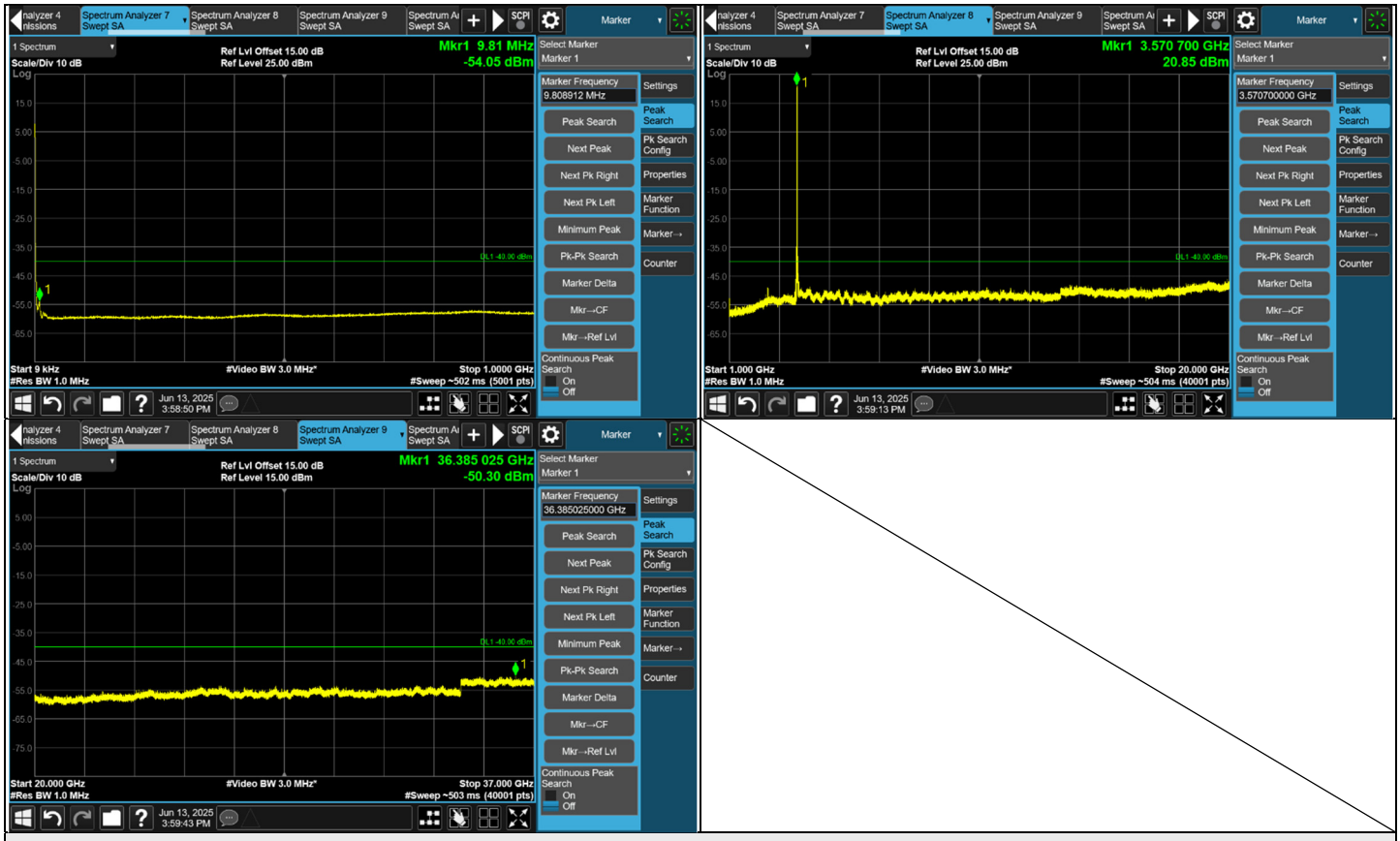
Spectrum Plot of Worst Value	
Occupied bandwidth	26 dB Bandwidth
	
QPSK CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)	QPSK CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)

7.4 Conducted Spurious Emissions

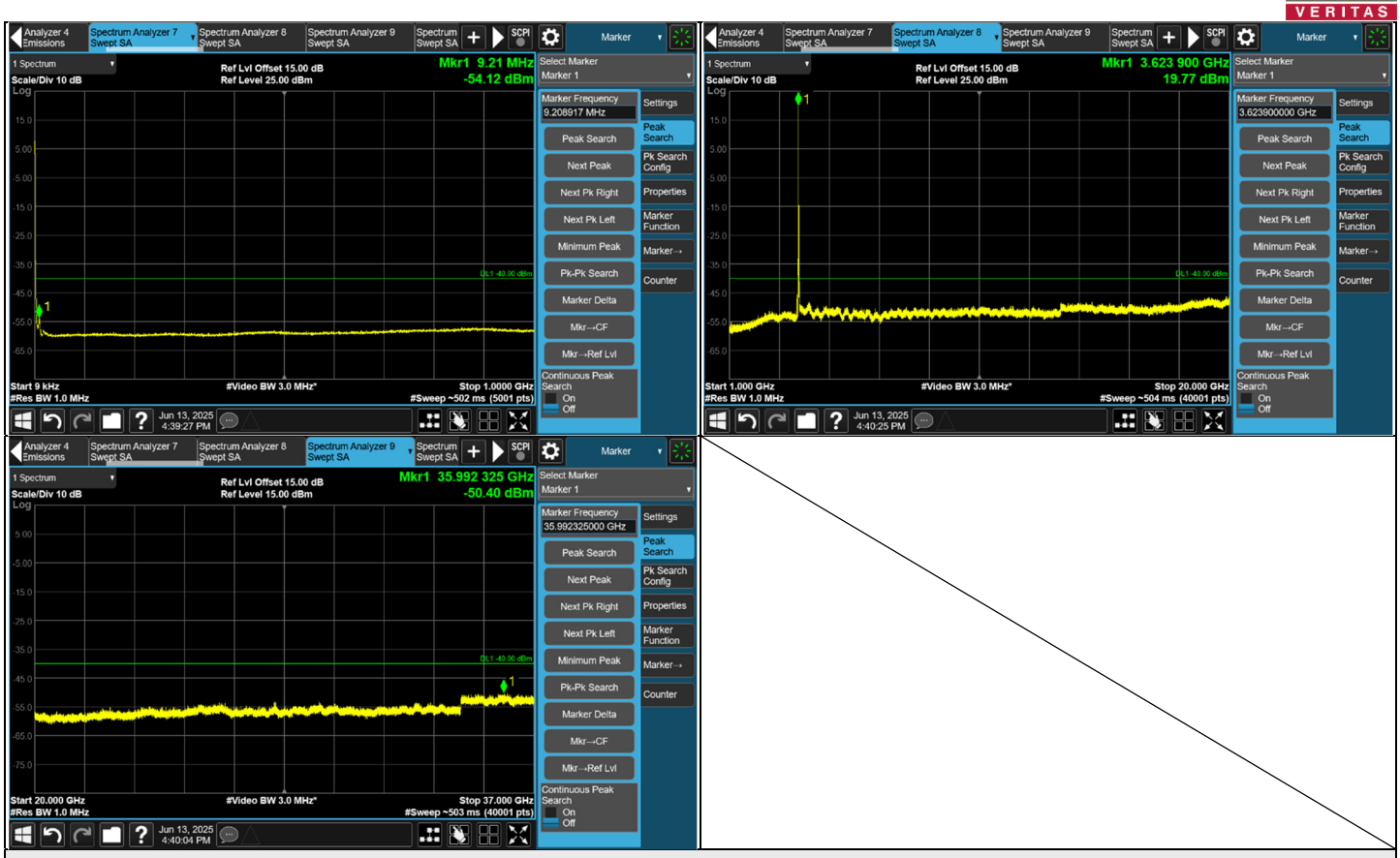
Input Power:	3.8 Vdc	Environmental Conditions:	22°C, 70% RH	Tested By:	Noah Chang

7.4.1 TE Band 48 (CA 48C)

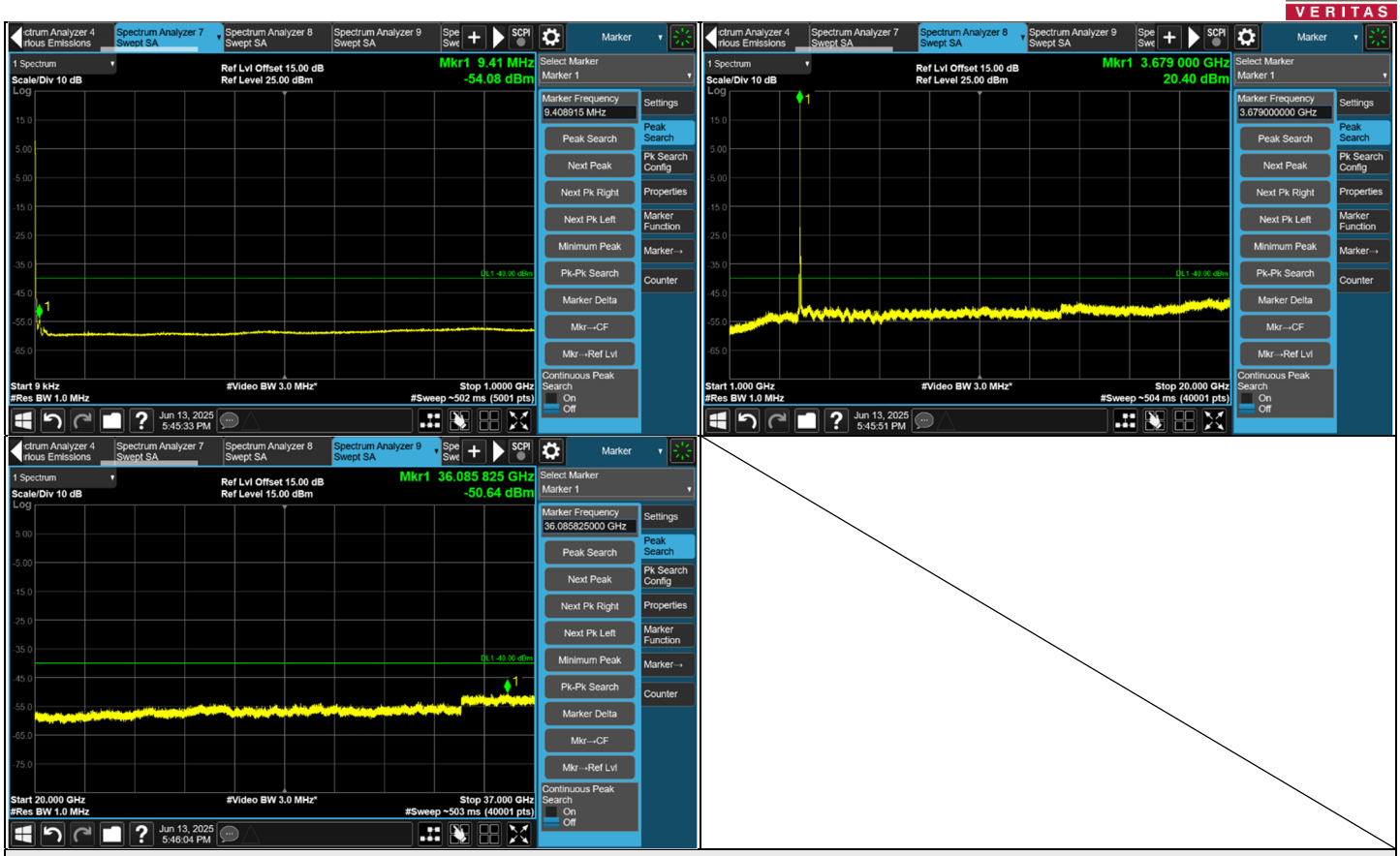
Channel Bandwidth: 20 MHz+20 MHz



CH 55340 (3560.0MHz)+CH 55538 (3579.8MHz)

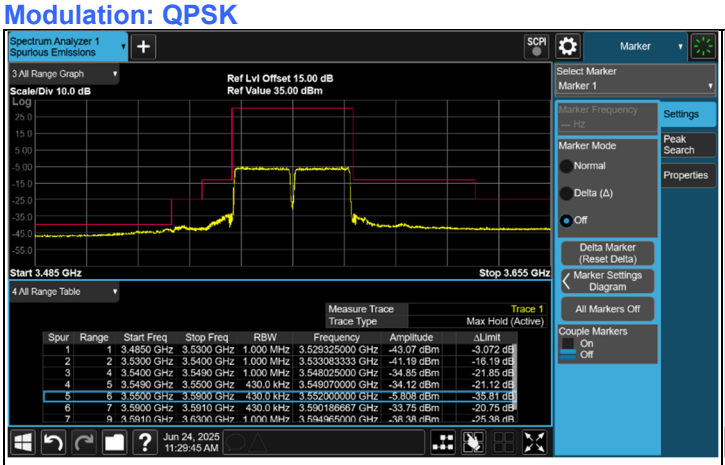


CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)

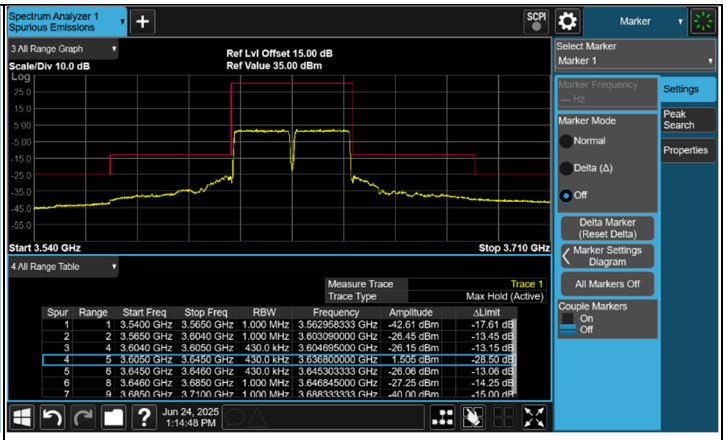


CH 56642 (3670.2MHz)+CH 56640 (3690.0MHz)

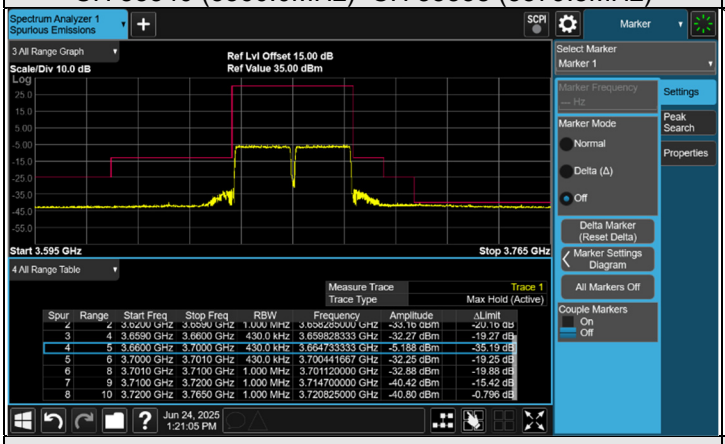
Modulation: QPSK



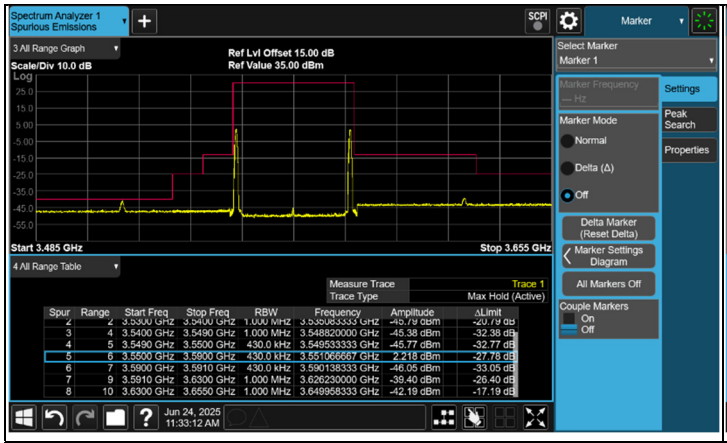
FULL
CH 55340 (3560.0MHz)+CH 55538 (3579.8MHz)



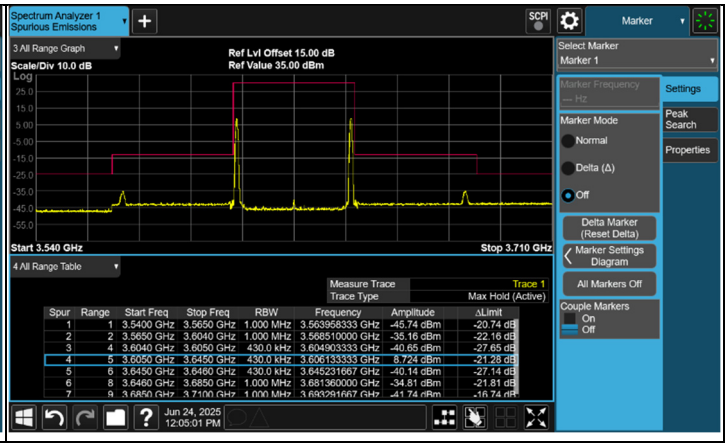
FULL
CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)



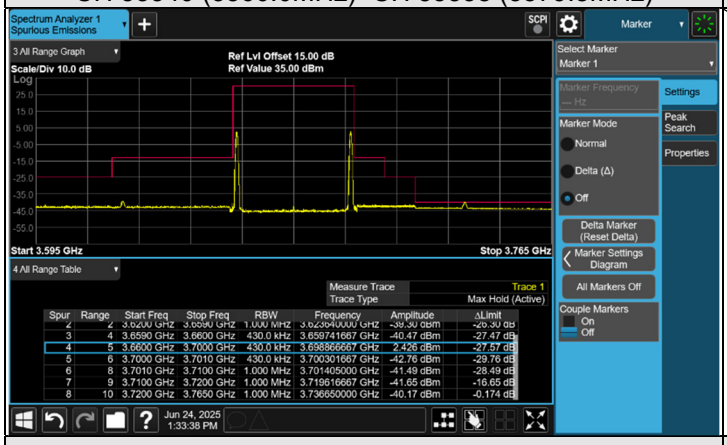
FULL
CH 56642 (3670.2MHz)+CH 56640 (3690.0MHz)



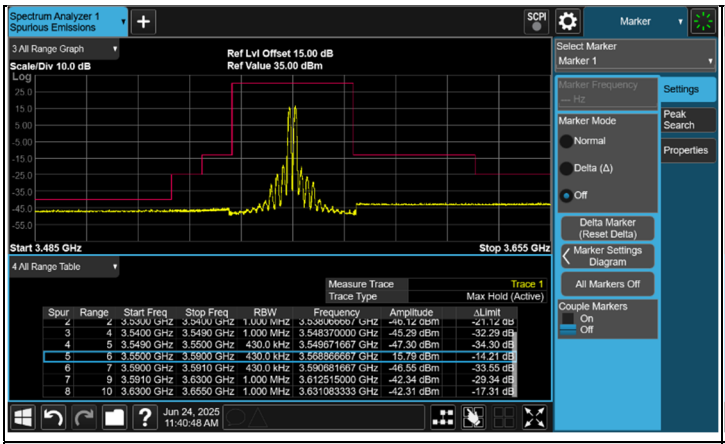
1RB / 0 RB Offset + 1 RB / 99 RB Offset
CH 55340 (3560.0MHz)+CH 55538 (3579.8MHz)



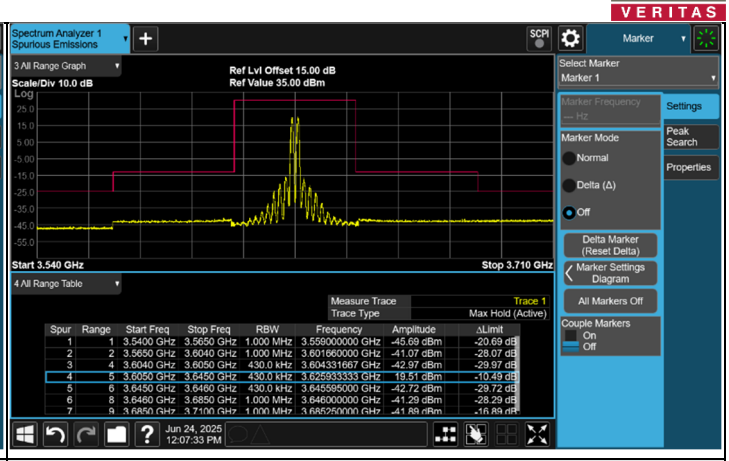
1RB / 0 RB Offset + 1 RB / 99 RB Offset
CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)



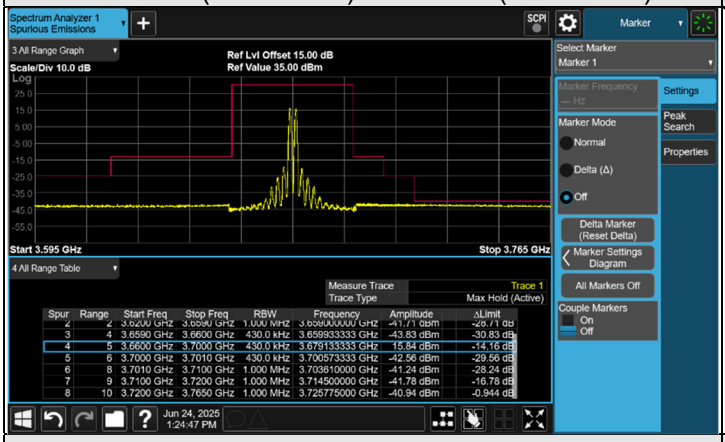
1RB / 0 RB Offset + 1 RB / 99 RB Offset
CH 56642 (3670.2MHz)+CH 56640 (3690.0MHz)



1RB / 99 RB Offset + 1 RB / 0 RB Offset
CH 55340 (3560.0MHz)+CH 55538 (3579.8MHz)



1RB / 99 RB Offset + 1 RB / 0 RB Offset
CH 55891 (3615.1MHz)+CH 56089 (3634.9MHz)



1RB / 99 RB Offset + 1 RB / 0 RB Offset
CH 56642 (3670.2MHz)+CH 56640 (3690.0MHz)