TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 96** **47 CFR FCC Part 2**
Report No.:	RFBCMA-WTW-P24070713-3
FCC ID:	RAXXC46BE
Product:	Dragon
Brand:	Verizon
Model No.:	XC46BE
Received Date:	2024/9/27
Test Date:	2024/10/15 ~ 2024/11/4
Issued Date:	2024/11/19
Applicant:	Arcadyan Technology Corporation
Address:	No.8, Sec.2, Guangfu Rd.,Hsinchu City 30071, Taiwan, R.O.C.
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(1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
Test Location(2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003 for Test Location(1) 281270 / TW0032 for Test Location(2)

Approved by: Jeremy Lin , **Date:** 2024/11/19

Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBCMA-WTW-P24070713-3	Original release.	2024/11/19

1 Certificate

Product:	Dragon
Brand:	Verizon
Test Model:	XC46BE
Sample Status:	Engineering sample
Applicant:	Arcadyan Technology Corporation
Test Date:	2024/10/15 ~ 2024/11/4
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 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 -2.13 dB at 176.47 MHz
Part 2.1053 Part 96.41(e)	Radiated Spurious Emissions above 1GHz	Pass	Minimum passing margin is -1.06 dB at 7395.00 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	3 dB
	30 MHz ~ 1 GHz	2.92 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 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	Dragon
Brand	Verizon
Test Model	XC46BE
Status of EUT	Engineering sample
Power Supply Rating	12.0Vdc from adapter 7.2 Vdc from battery

Note:

1. EUT Overview

LTE Band 48

Bandwidth	TX Frequency Range (MHz)	Modulation	Max. EIRP (W)	Max. EIRP (dBm)	Emission Designator
5 MHz	3552.5 ~ 3697.5	QPSK	0.169	22.28	4M50G7D
		16QAM	0.133	21.23	4M49D7W
		64QAM	0.104	20.18	4M50D7W
		256QAM	0.061	17.85	4M48D7W
10 MHz	3555 ~ 3695	QPSK	0.169	22.28	8M97G7D
		16QAM	0.136	21.33	8M98D7W
		64QAM	0.106	20.26	8M97D7W
		256QAM	0.062	17.93	8M97D7W
15 MHz	3557.5 ~ 3692.5	QPSK	0.172	22.35	13M5G7D
		16QAM	0.138	21.39	13M5D7W
		64QAM	0.108	20.35	13M5D7W
		256QAM	0.061	17.84	13M4D7W
20 MHz	3560 ~ 3690	QPSK	0.175	22.44	18M0G7D
		16QAM	0.138	21.41	17M9D7W
		64QAM	0.108	20.34	17M9D7W
		256QAM	0.061	17.85	17M9D7W

2. The EUT uses following accessories.

Adapter	
Brand	verizon
Model	1A105-1235
Input Power	105-125 Vac, 60Hz, 1.2A
Output Power	12.0Vdc, 3.5A, 42.0W
DC Output Cable	1.8meter unshielded cable, w/o ferrite core

Battery	
Brand	Atemitech
Model	XC46BE224T-F100
Power Rating	7.2Vdc, 9800mAh (70.56Wh)

3. 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

1. The antenna information is listed as below.

Antenna NO.	TX/RX	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
Ant.1	TX1/RX	2.86	FDD B2/n2: 1850 -1910 MHz	Dipole	SMA
	TX1/RX	2.77	FDD B5/n5: 824-849 MHz		
	TX0/RX	3.35	FDD B13: 777-787 MHz		
	TX0/RX	0.57	TDD B48/n48: 3550-3700 MHz		
	TX1/RX	2.54	FDD B66/n66: 1710-1780 MHz		
	TX0/RX	0.57	TDD n77: 3300-4200 MHz		
Ant.2	RX	2.82	FDD B2/n2: 1850 -1910 MHz	Dipole	SMA
		1.84	FDD B5/n5: 824-849 MHz		
		2.59	FDD B13: 777-787 MHz		
		0.91	TDD B48/n48: 3550-3700 MHz		
		2.83	FDD B66/n66: 1710-1780 MHz		
		0.91	TDD n77: 3300-4200 MHz		
Ant.3	RX	2.93	FDD B2/n2: 1850 -1910 MHz	Dipole	SMA
		2.7	FDD B5/n5: 824-849 MHz		
		2.18	FDD B13: 777-787 MHz		
		-0.13	TDD B48/n48: 3550-3700 MHz		
		3.08	FDD B66/n66: 1710-1780 MHz		
		0.78	TDD n77: 3300-4200 MHz		
Ant.4	TX0/RX	3.52	FDD B2/n2: 1850 -1910 MHz	Dipole	SMA
	TX0/RX	3.92	FDD B5/n5: 824-849 MHz		
	RX	4.23	FDD B13: 777-787 MHz		
	TX1/RX	0.33	TDD B48/n48: 3550-3700 MHz		
	TX0/RX	2.9	FDD B66/n66: 1710-1780 MHz		
	TX1/RX	0.74	TDD n77: 3300-4200 MHz		

*During SISO mode, FDD Band2/n2, FDD Band5/n5 & FDD Band66/n66 were fixed on Ant.4 and FDD Band13, TDD Band48/n48 & TDD n77 were fixed on Ant.1.

*For MIMO mode:

1. FDD:n2/n66 & TDD: n48/n77 were fixed on Ant.1 + Ant.4.
2. The MIMO mode signal was uncorrelated signal.
3. Regarding EIRP calculation that we will use the maximum antenna gain/frequency band as calculation parameters. Directional gain = 10 log[($10^{G1/10}$ + $10^{G2/10}$ + ... + $10^{GN/10}$)/2] dBi.

*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. For Unwanted Emission (below 1GHz) items: Battery/ POE/ AC Adapter. Pre-scan these modes 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 TX/RX condition, channel, bandwidth, modulation and RB mode. See below table(s) for details.
Worst Case:	1. For Unwanted Emission (below 1GHz) items worst condition: AC Adapter, frequency stability items worst condition: Battery and others test item the worst condition: AC Adapter. 2. EUT only operate on the specific X-axis for tested.

3.3.1 LTE Band 48

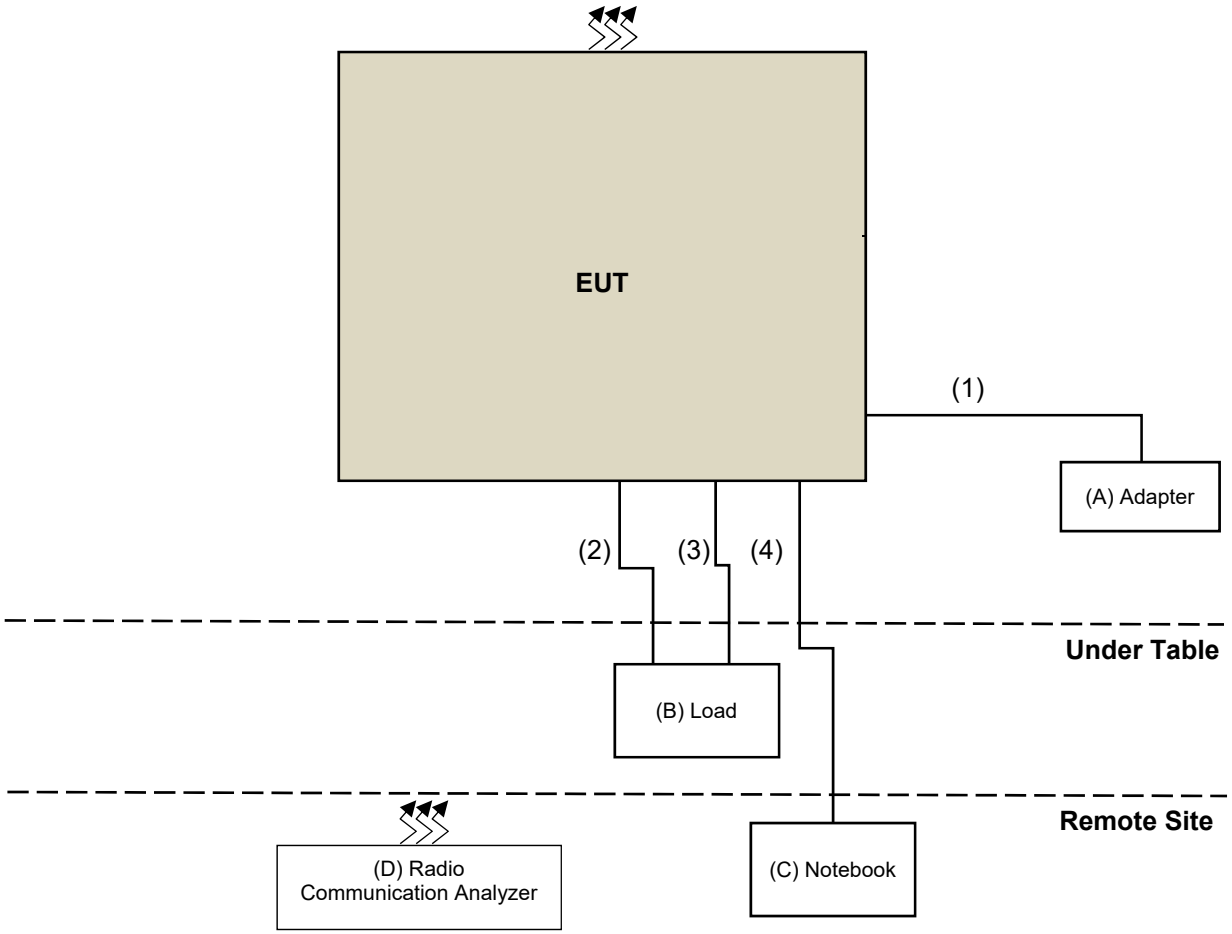
Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Maximum EIRP	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55290(3555.00 MHz) 55990(3625.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55315(3557.50 MHz) 55990(3625.00 MHz) 56665(3692.50 MHz)	15 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
Modulation Characteristics	55990(3625.00 MHz)	20 MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
Peak to Average Ratio	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB
	55290(3555.00 MHz) 55990(3625.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB
	55315(3557.50 MHz) 55990(3625.00 MHz) 56665(3692.50 MHz)	15 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB
Bandwidth	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
	55290(3555.00 MHz) 55990(3625.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
	55315(3557.50 MHz) 55990(3625.00 MHz) 56665(3692.50 MHz)	15 MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK / 16QAM / 64QAM / 256QAM	Full RB

Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted Spurious Emissions	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK	1 RB Full RB
	55290(3555.00 MHz) 55990(3625.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK	1 RB Full RB
	55315(3557.50 MHz) 55990(3625.00 MHz) 56665(3692.50 MHz)	15 MHz	QPSK	1 RB Full RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	56715(3697.50 MHz)	5 MHz	QPSK	1 RB
Radiated Spurious Emissions above 1GHz	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK	1 RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK	1 RB
Frequency Stability (Frequency range: 3550 MHz to 3700 MHz)	55265(3552.50 MHz) 56715(3697.50 MHz)	5 MHz	QPSK	Full RB
	55290(3555.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK	Full RB
	55315(3557.50 MHz) 56665(3692.50 MHz)	15 MHz	QPSK	Full RB
	55340(3560.00 MHz) 56640(3690.00 MHz)	20 MHz	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	verizon	1A105-1235	N/A	N/A	Supplied by applicant
B	Load	NA	NA	N/A	N/A	Provided by Lab
C	Notebook	Lenovo	20J4 MD A003TW	N/A	N/A	Provided by Lab
D	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Output Cable	1	1.8	No	0	Supplied by applicant
2	LAN cable	1	1.5	No	0	Provided by Lab
3	LAN cable	1	1.5	No	0	Provided by Lab
4	LAN cable	1	10	No	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
PXA Signal Analyzer Keysight	N9030B	MY57140938	2024/3/20	2025/3/19
Radio Communication Analyzer Anritsu	MT8821C	6261806803	2024/2/15	2025/2/14
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: 2024/10/15 ~ 2024/11/4

4.2 Modulation Characteristics

Refer to section 4.1 to get the tested date and information of the instruments.

4.3 Peak to Average Ratio

Refer to section 4.1 to get the tested date and information of the instruments.

4.4 Bandwidth

Refer to section 4.1 to get the tested date and information of the instruments.

4.5 Conducted Spurious Emissions

Refer to section 4.1 to get the tested date and information of the instruments.

4.6 Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower KaiTuo	N/A	N/A	N/A	N/A
Antenna Tower Controller KaiTuo	KT-2000	N/A	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-995	2024/10/9	2025/10/8
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Agilent	N9038A	MY52260177	2024/9/19	2025/9/18
Preamplifier EMCI	EMC330N	980783	2024/1/15	2025/1/14
	EMC001340	980201	2024/9/24	2025/9/23
PXA Signal Analyzer Keysight	N9030B	MY57140488	2024/3/6	2025/3/5
RF Coaxial Cable EMCI	EMCCFD400-NM-NM-500	201245	2024/1/15	2025/1/14
	EMCCFD400-NM-NM-3000	201250	2024/1/15	2025/1/14
	EMCCFD400-NM-NM-9000	201252(with PAD)	2024/1/15	2025/1/14
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208675	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 7.
2. Tested Date: 2024/11/3

4.7 Radiated Spurious Emissions above 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower KaiTuo	N/A	N/A	N/A	N/A
Antenna Tower Controller KaiTuo	KT-2000	N/A	N/A	N/A
Horn Antenna RFSPIN	DRH18-E	210104A18E	2023/11/12	2024/11/11
Horn Antenna Schwarzbeck	BBHA 9170	9170-1048	2023/11/12	2024/11/11
MXE EMI Receiver Agilent	N9038A	MY52260177	2024/9/19	2025/9/18
Preamplifier EMCI	EMC118A45SE	980810	2023/12/28	2024/12/27
	EMC184045SE	980787	2024/1/15	2025/1/14
PXA Signal Analyzer Keysight	N9030B	MY57140488	2024/3/6	2025/3/5
RF Coaxial Cable EMCI	EMC101G-KM-KM-2000	201254	2024/1/15	2025/1/14
	EMC101G-KM-KM-3000	201258	2024/1/15	2025/1/14
	EMC101G-KM-KM-5000	201261	2024/1/15	2025/1/14
	EMC104-SM-SM-1000	210101	2024/1/15	2025/1/14
	EMC104-SM-SM-3000	201242	2024/1/15	2025/1/14
	EMC104-SM-SM-9000	201230	2024/1/15	2025/1/14
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208675	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 7.
2. Tested Date: 2024/10/23

4.8 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	2024/6/14	2025/6/13
PXA Signal Analyzer Keysight	N9030B	MY57140938	2024/3/20	2025/3/19
Radio Communication Analyzer Anritsu	MT8821C	6261806803	2024/2/15	2025/2/14
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Temperature & Humidity Chamber Terchy	HRM-120RF	931022	2023/12/19	2024/12/18

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2024/11/1

5 Limits of Test Items

5.1 Maximum EIRP

For LTE Band 48:

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

5.2 Modulation Characteristics

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 LTE Band 48:

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 −40dBm/MHz.

5.6 Radiated Spurious Emissions below 1GHz

For LTE Band 48:

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 LTE Band 48:

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

5.8 Frequency Stability

For LTE Band 48:

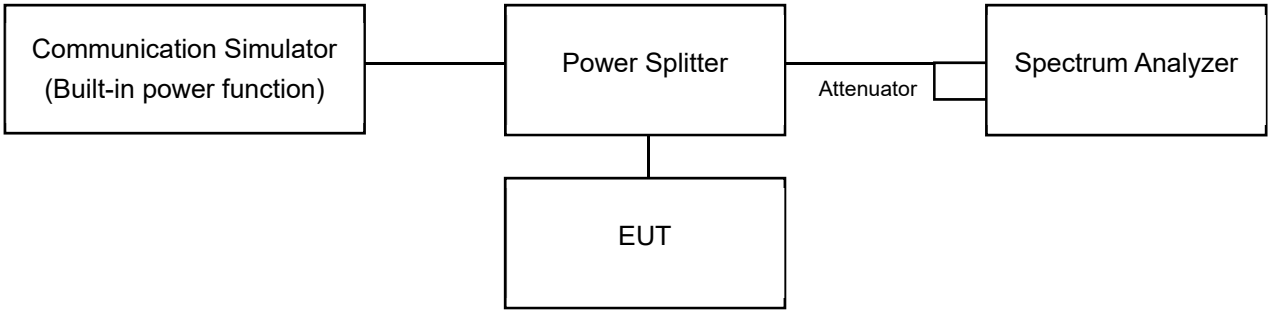
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation (authorized frequency block).

6 Test Arrangements

6.1 Maximum EIRP

6.1.1 Test Setup

Conducted Power Measurement:



6.1.2 Test Procedure

Channel Power Measurement:

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology. The average (rms) power measurement was performed on emulator and power value was measured from power function on emulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Power 10 MHz Measurement:

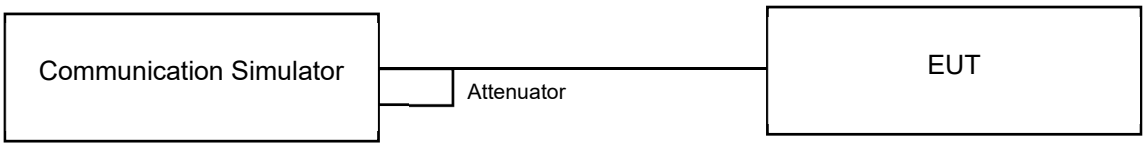
The EUT is configured by emulator to set data modulation and maximum power using WWAN technology and link to spectrum analyzer measurements. Set the EUT to transmit under low, middle and high channel and record the power level shown on spectrum analyzer. Power measurements use detector average (rms).

Measurement method refers to ANSI C63.26 section 5.2.4.4.

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. Use the Band/Channel Power function to determine the integrated power per 10 MHz bandwidth, according to the 47 CFR FCC Part 96 standard.
j. If Duty cycle < 98%, Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

6.2 Modulation Characteristics

6.2.1 Test Setup

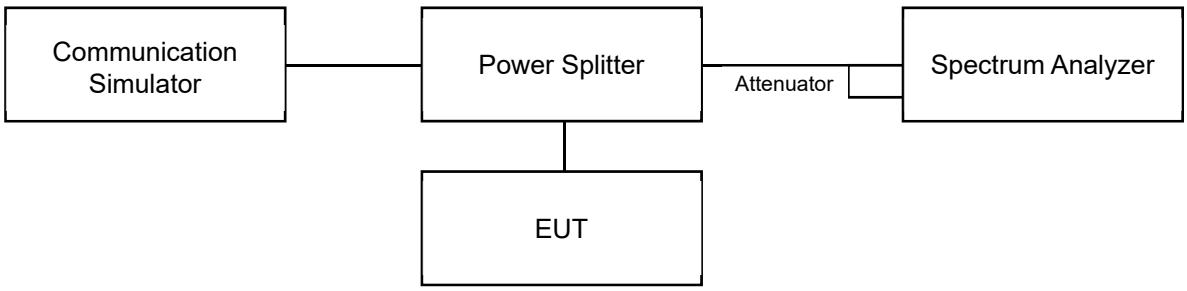


6.2.2 Test Procedure

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

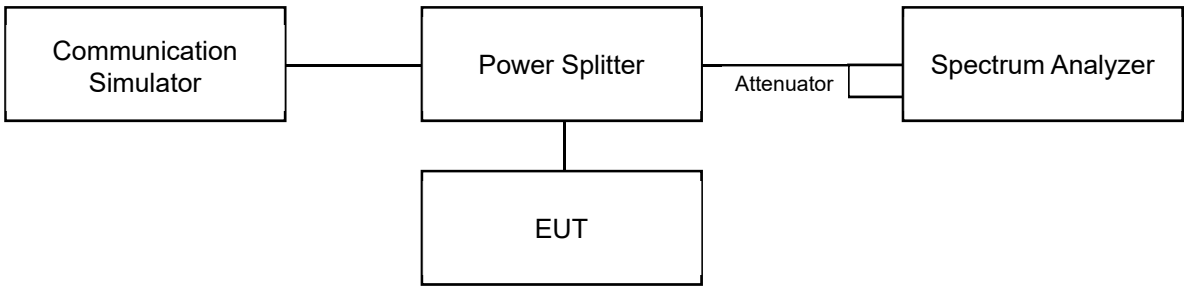


6.3.2 Test Procedure

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%.

6.4 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.

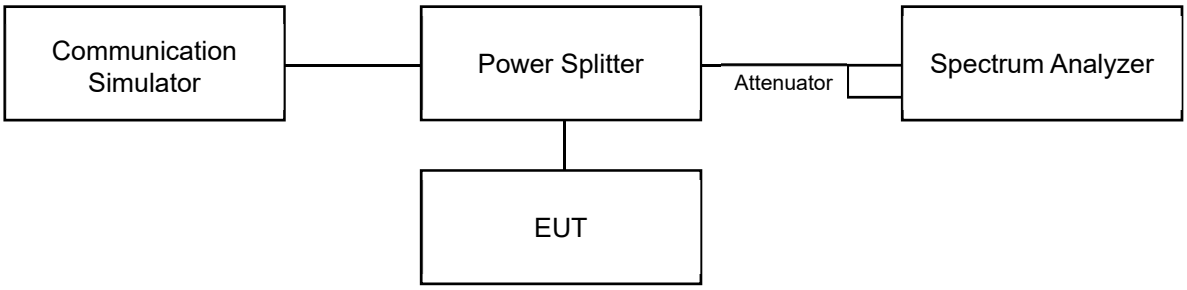
a. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
b. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 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).

6.5 Conducted Spurious Emissions

6.5.1 Test Setup



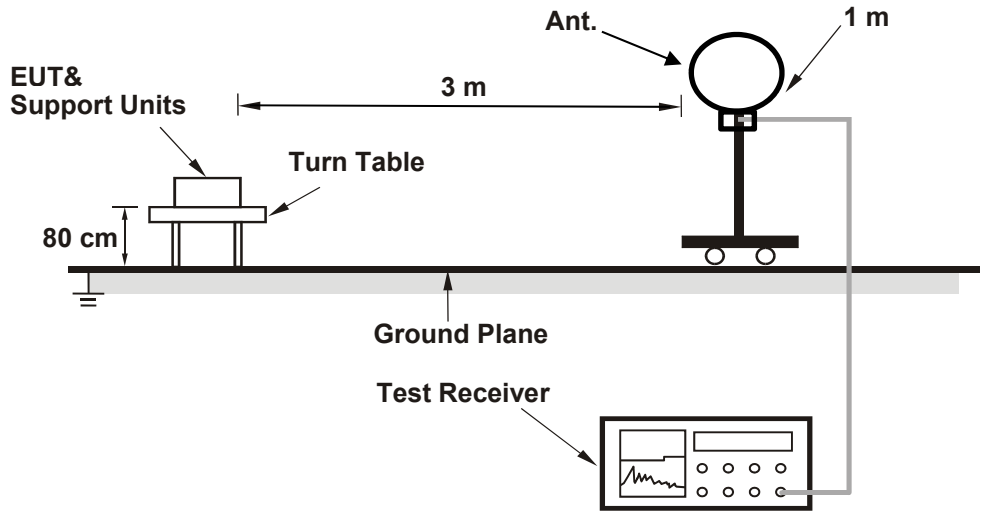
6.5.2 Test Procedure

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 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.
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* 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.

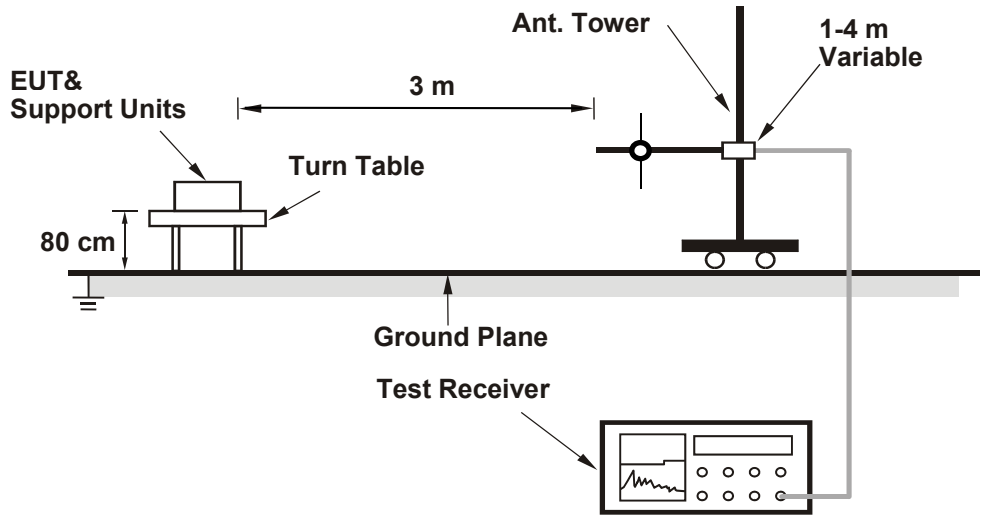
6.6 Radiated Spurious Emissions below 1GHz

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 (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.

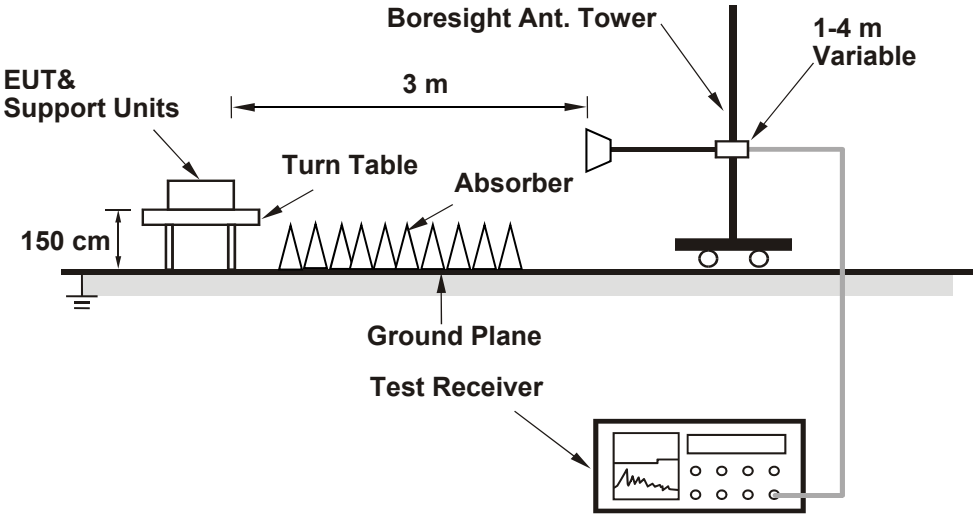
Note:

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

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 ANSI C63.26 section 5.5 and 5.2.7

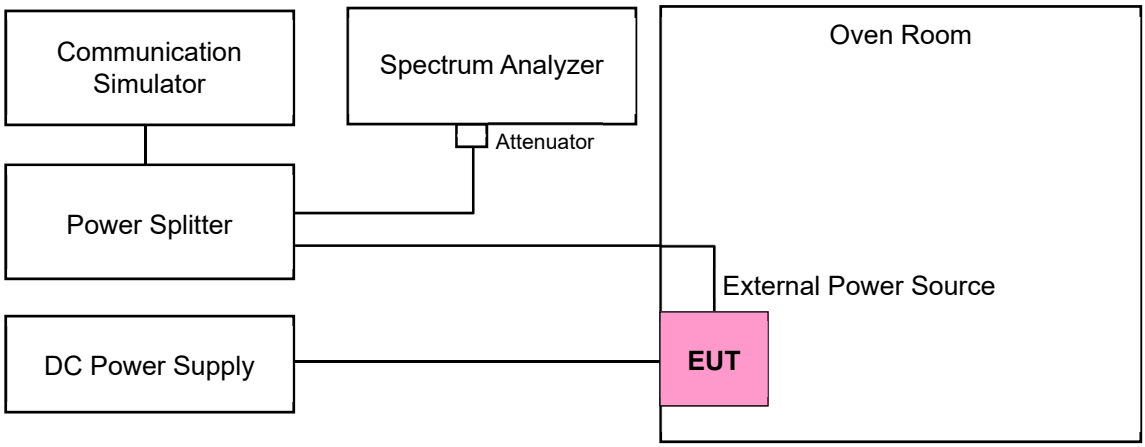
e. EIRP (dBm) = E (dBμV/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m.

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: 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.

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:	7.2 Vdc	Environmental Conditions:	23°C, 74% RH	Tested By:	Noah Chang

7.1.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55265	CH 55990	CH 56715
			3552.5 MHz	3625 MHz	3697.5 MHz
QPSK	1	0	21.60	21.66	21.61
	1	12	21.65	21.65	21.56
	1	24	21.65	21.71	21.63
	12	0	20.78	20.90	20.77
	12	6	20.75	20.79	20.78
	12	13	20.78	20.80	20.77
	25	0	20.78	20.87	20.83
16QAM	1	0	20.51	20.63	20.49
	1	12	20.58	20.60	20.52
	1	24	20.57	20.66	20.62
	12	0	19.69	19.79	19.75
	12	6	19.67	19.82	19.67
	12	13	19.64	19.77	19.66
	25	0	19.71	19.88	19.76
64QAM	1	0	19.45	19.53	19.47
	1	12	19.61	19.61	19.45
	1	24	19.60	19.54	19.60
	12	0	18.62	18.69	18.67
	12	6	18.69	18.74	18.61
	12	13	18.62	18.68	18.60
	25	0	18.67	18.75	18.63
256QAM	1	0	16.94	17.08	16.96
	1	12	17.12	17.09	16.95
	1	24	17.06	17.06	17.12
	12	0	17.17	17.18	17.23
	12	6	17.19	17.28	17.10
	12	13	17.14	17.16	17.13
	25	0	17.15	17.24	17.09

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	20.75	21.71	21.32	22.28	23.00
16QAM	19.64	20.66	20.21	21.23	23.00
64QAM	18.6	19.61	19.17	20.18	23.00
256QAM	16.94	17.28	17.51	17.85	23.00

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

LTE Band 48, Channel Bandwidth: 10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55290	CH 55990	CH 56690
			3555 MHz	3625 MHz	3695 MHz
QPSK	1	0	21.61	21.60	21.60
	1	24	21.71	21.71	21.70
	1	49	21.55	21.65	21.58
	25	0	20.76	20.82	20.76
	25	12	20.80	20.81	20.78
	25	25	20.77	20.89	20.80
	50	0	20.82	20.96	20.86
16QAM	1	0	20.50	20.52	20.53
	1	24	20.57	20.76	20.69
	1	49	20.50	20.67	20.53
	25	0	19.66	19.71	19.65
	25	12	19.75	19.78	19.75
	25	25	19.80	19.84	19.76
	50	0	19.87	19.84	19.77
64QAM	1	0	19.46	19.49	19.51
	1	24	19.56	19.69	19.68
	1	49	19.49	19.60	19.54
	25	0	18.60	18.71	18.59
	25	12	18.71	18.68	18.74
	25	25	18.71	18.76	18.64
	50	0	18.86	18.85	18.74
256QAM	1	0	17.00	17.02	17.02
	1	24	17.10	17.26	17.14
	1	49	17.04	17.07	16.98
	25	0	17.07	17.23	17.02
	25	12	17.19	17.21	17.23
	25	25	17.19	17.26	17.22
	50	0	17.36	17.32	17.27

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	20.76	21.71	21.33	22.28	23.00
16QAM	19.65	20.76	20.22	21.33	23.00
64QAM	18.59	19.69	19.16	20.26	23.00
256QAM	16.98	17.36	17.55	17.93	23.00

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

LTE Band 48, Channel Bandwidth: 15 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55315	CH 55990	CH 56665
			3557.5 MHz	3625 MHz	3692.5 MHz
QPSK	1	0	21.62	21.68	21.61
	1	37	21.73	21.78	21.76
	1	74	21.74	21.78	21.66
	36	0	20.61	20.68	20.69
	36	19	20.70	20.76	20.71
	36	39	20.74	20.76	20.69
	75	0	20.62	20.68	20.60
16QAM	1	0	20.61	20.60	20.57
	1	37	20.78	20.82	20.70
	1	74	20.70	20.72	20.59
	36	0	19.55	19.72	19.60
	36	19	19.62	19.72	19.64
	36	39	19.66	19.72	19.70
	75	0	19.68	19.64	19.59
64QAM	1	0	19.55	19.55	19.51
	1	37	19.71	19.73	19.78
	1	74	19.69	19.70	19.51
	36	0	18.59	18.56	18.49
	36	19	18.55	18.66	18.63
	36	39	18.69	18.65	18.65
	75	0	18.53	18.63	18.46
256QAM	1	0	17.05	17.10	17.05
	1	37	17.26	17.27	17.21
	1	74	17.13	17.24	17.09
	36	0	17.09	17.05	17.04
	36	19	17.05	17.20	17.15
	36	39	17.19	17.22	17.12
	75	0	17.08	17.14	16.97

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	20.6	21.78	21.17	22.35	23.00
16QAM	19.55	20.82	20.12	21.39	23.00
64QAM	18.46	19.78	19.03	20.35	23.00
256QAM	16.97	17.27	17.54	17.84	23.00

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

LTE Band 48, Channel Bandwidth: 20 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55340	CH 55990	CH 56640
			3560 MHz	3625 MHz	3690 MHz
QPSK	1	0	21.62	21.60	21.63
	1	50	21.79	21.87	21.73
	1	99	21.74	21.76	21.78
	50	0	20.73	20.82	20.82
	50	25	20.78	20.83	20.78
	50	50	20.86	20.84	20.82
	100	0	20.72	20.83	20.68
16QAM	1	0	20.49	20.59	20.52
	1	50	20.74	20.84	20.72
	1	99	20.67	20.76	20.74
	50	0	19.64	19.81	19.76
	50	25	19.73	19.80	19.80
	50	50	19.72	19.87	19.82
	100	0	19.68	19.71	19.70
64QAM	1	0	19.54	19.56	19.44
	1	50	19.70	19.75	19.67
	1	99	19.65	19.69	19.77
	50	0	18.61	18.72	18.62
	50	25	18.74	18.70	18.75
	50	50	18.75	18.71	18.78
	100	0	18.71	18.67	18.61
256QAM	1	0	17.05	17.05	16.91
	1	50	17.21	17.28	17.21
	1	99	17.14	17.17	17.22
	50	0	17.14	17.25	17.20
	50	25	17.27	17.25	17.20
	50	50	17.26	17.23	17.27
	100	0	17.18	17.19	17.16

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	20.68	21.87	21.25	22.44	23.00
16QAM	19.64	20.84	20.21	21.41	23.00
64QAM	18.61	19.77	19.18	20.34	23.00
256QAM	16.91	17.28	17.48	17.85	23.00

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

LTE Band 48, Channel Bandwidth: 15 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55315	CH 55990	CH 56665
			3557.5 MHz	3625 MHz	3692.5 MHz
QPSK	1	0	21.54	21.60	21.53
	1	37	21.65	21.70	21.68
	1	74	21.66	21.71	21.58
	36	0	20.54	20.60	20.61
	36	19	20.62	20.69	20.64
	36	39	20.67	20.69	20.62
	75	0	19.32	19.28	19.27
16QAM	1	0	20.53	20.52	20.50
	1	37	20.70	20.75	20.62
	1	74	20.63	20.65	20.52
	36	0	19.48	19.64	19.52
	36	19	19.55	19.64	19.56
	36	39	19.58	19.64	19.62
	75	0	18.35	18.32	18.26
64QAM	1	0	19.48	19.47	19.43
	1	37	19.63	19.65	19.70
	1	74	19.61	19.63	19.44
	36	0	18.52	18.48	18.41
	36	19	18.47	18.59	18.56
	36	39	18.61	18.57	18.58
	75	0	17.19	17.29	17.14
256QAM	1	0	16.97	17.03	16.97
	1	37	17.19	17.20	17.13
	1	74	17.05	17.16	17.02
	36	0	17.01	16.97	16.97
	36	19	16.97	17.13	17.07
	36	39	17.11	17.15	17.04
	75	0	15.73	15.79	15.65

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	19.27	21.71	19.84	22.28	23.00
16QAM	18.26	20.75	18.83	21.32	23.00
64QAM	17.14	19.7	17.71	20.27	23.00
256QAM	15.65	17.2	16.22	17.77	23.00

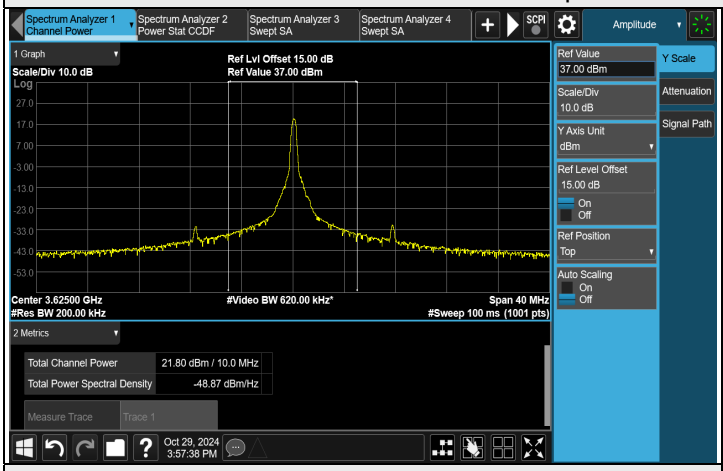
Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 20 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55340	CH 55990	CH 56640
			3560 MHz	3625 MHz	3690 MHz
QPSK	1	0	21.55	21.52	21.56
	1	50	21.72	21.80	21.65
	1	99	21.67	21.68	21.70
	50	0	20.66	20.75	20.75
	50	25	20.71	20.75	20.70
	50	50	20.78	20.76	20.75
	100	0	19.33	19.51	19.32
16QAM	1	0	20.42	20.52	20.44
	1	50	20.67	20.77	20.64
	1	99	20.59	20.68	20.66
	50	0	19.56	19.74	19.69
	50	25	19.66	19.72	19.72
	50	50	19.65	19.80	19.74
	100	0	18.30	18.40	18.38
64QAM	1	0	19.47	19.49	19.36
	1	50	19.63	19.67	19.60
	1	99	19.58	19.62	19.69
	50	0	18.53	18.65	18.55
	50	25	18.66	18.63	18.68
	50	50	18.67	18.63	18.70
	100	0	17.40	17.32	17.23
256QAM	1	0	16.98	16.98	16.84
	1	50	17.13	17.21	17.13
	1	99	17.06	17.10	17.15
	50	0	17.07	17.17	17.12
	50	25	17.20	17.17	17.13
	50	50	17.19	17.16	17.19
	100	0	15.85	15.86	15.82

Output Power					
Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	19.32	21.8	19.89	22.37	23.00
16QAM	18.3	20.77	18.87	21.34	23.00
64QAM	17.23	19.69	17.8	20.26	23.00
256QAM	15.82	17.21	16.39	17.78	23.00

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

Spectrum Plot of Worst Value	
	
QPSK CH 55990 (3625 MHz)	

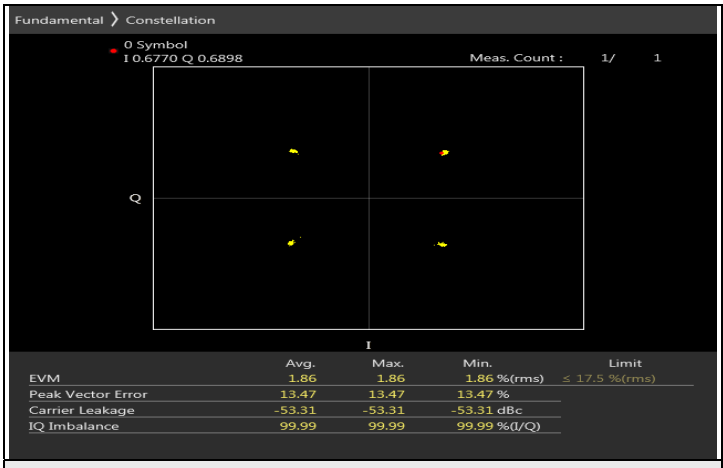
Note: For the channel bandwidth is less than or equal to 10 MHz, the full power test data please refer to the power per 10 MHz corresponding to the channel bandwidth.

7.2 Modulation Characteristics

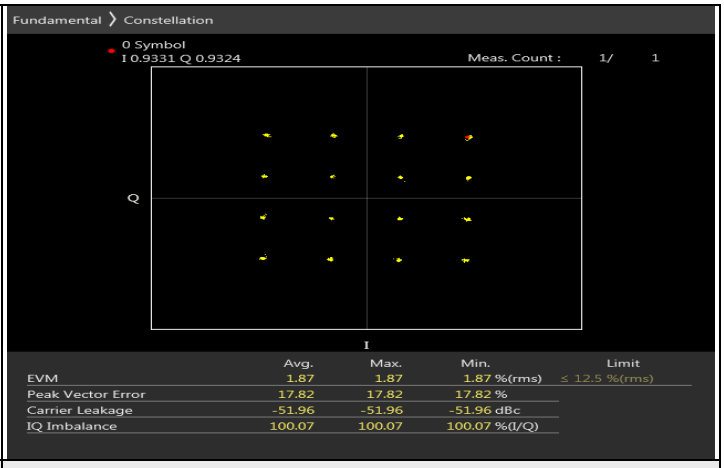
Input Power:	7.2 Vdc	Environmental Conditions:	25°C, 64% RH	Tested By:	Noah Chang

7.2.1 LTE Band 48

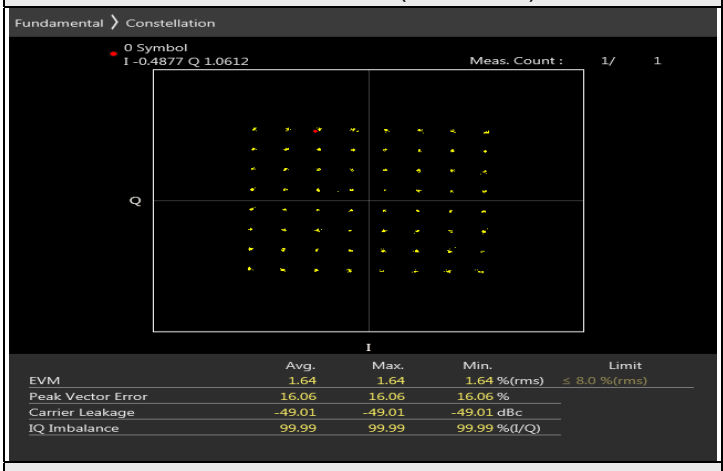
LTE Band 48, Channel Bandwidth: 20 MHz



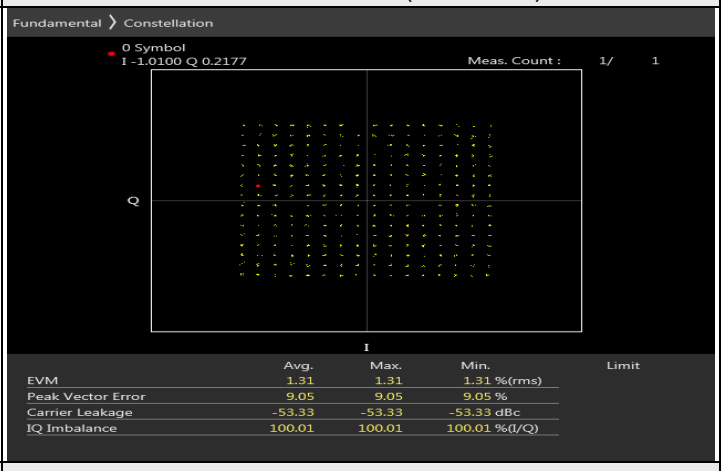
QPSK CH 55990 (3625 MHz)



16QAM CH 55990 (3625 MHz)



64QAM CH 55990 (3625 MHz)



256QAM CH 55990 (3625 MHz)

7.3 Peak to Average Ratio

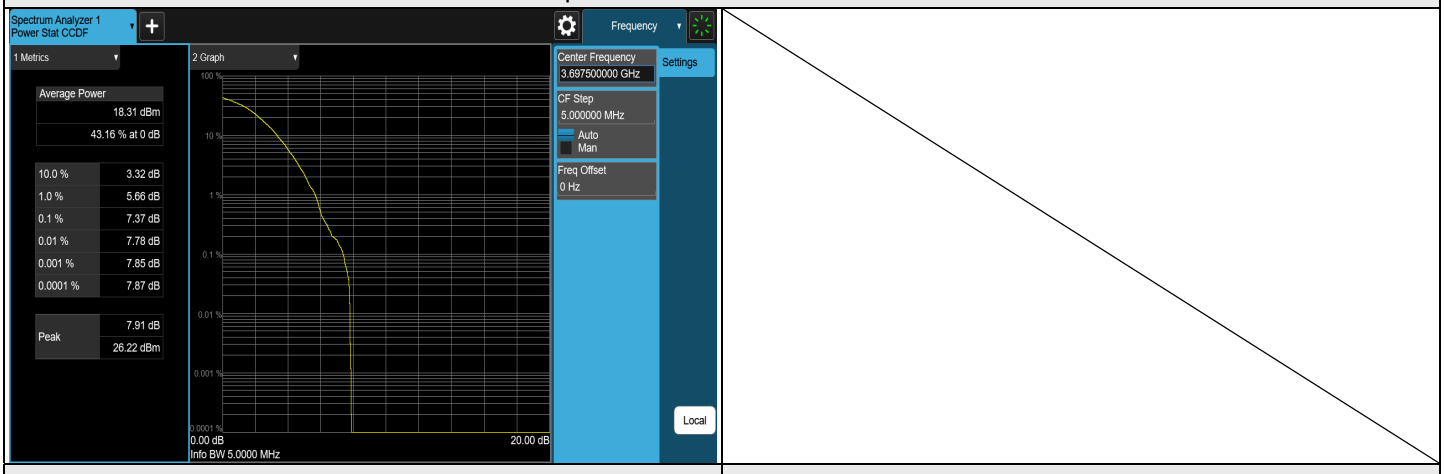
Input Power:	7.2 Vdc	Environmental Conditions:	25°C, 68% RH	Tested By:	Noah Chang

7.3.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	55265	3552.5	5.25	13	PASS
QPSK	55990	3625	5.43	13	PASS
QPSK	56715	3697.5	5.53	13	PASS
16QAM	55265	3552.5	6.69	13	PASS
16QAM	55990	3625	6.47	13	PASS
16QAM	56715	3697.5	6.83	13	PASS
64QAM	55265	3552.5	6.46	13	PASS
64QAM	55990	3625	6.40	13	PASS
64QAM	56715	3697.5	6.41	13	PASS
256QAM	55265	3552.5	7.07	13	PASS
256QAM	55990	3625	7.26	13	PASS
256QAM	56715	3697.5	7.37	13	PASS

Spectrum Plot of Worst Value

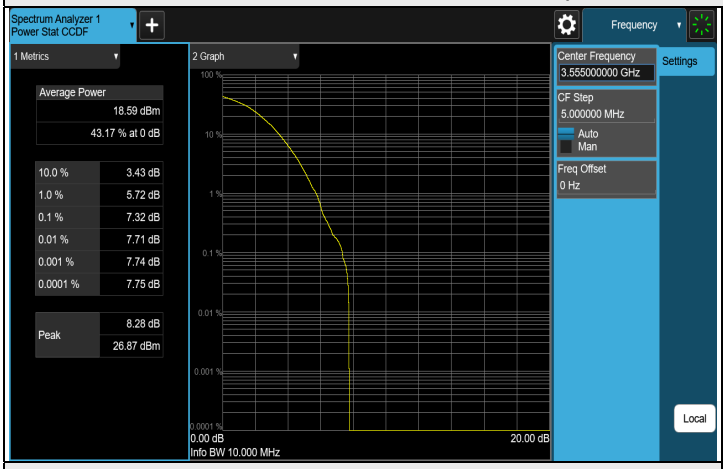


256QAM CH 56715 (3697.5 MHz)

LTE Band 48, Channel Bandwidth: 10 MHz

Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	55290	3555	5.32	13	PASS
QPSK	55990	3625	5.36	13	PASS
QPSK	56690	3695	5.71	13	PASS
16QAM	55290	3555	6.87	13	PASS
16QAM	55990	3625	6.55	13	PASS
16QAM	56690	3695	7.03	13	PASS
64QAM	55290	3555	6.16	13	PASS
64QAM	55990	3625	6.44	13	PASS
64QAM	56690	3695	6.48	13	PASS
256QAM	55290	3555	7.32	13	PASS
256QAM	55990	3625	6.93	13	PASS
256QAM	56690	3695	7.31	13	PASS

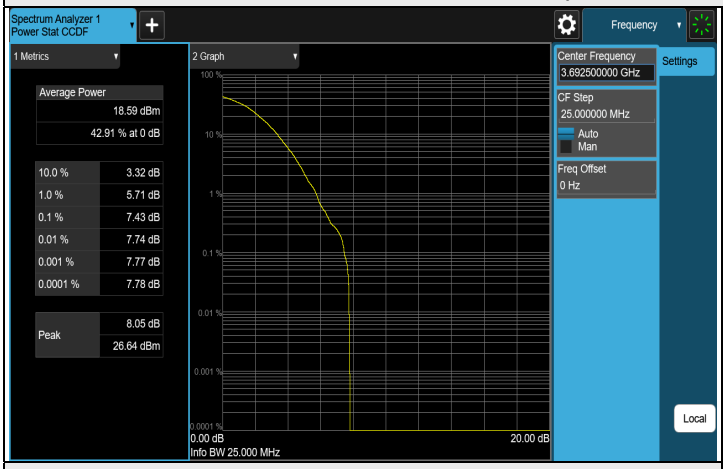
Spectrum Plot of Worst Value



256QAM CH 55290 (3555 MHz)

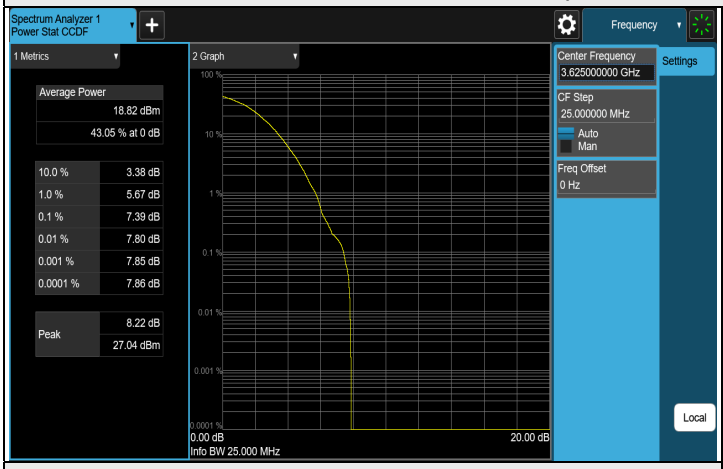
LTE Band 48, Channel Bandwidth: 15 MHz

Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	55315	3557.5	5.50	13	PASS
QPSK	55990	3625	5.19	13	PASS
QPSK	56665	3692.5	5.66	13	PASS
16QAM	55315	3557.5	6.70	13	PASS
16QAM	55990	3625	6.31	13	PASS
16QAM	56665	3692.5	7.20	13	PASS
64QAM	55315	3557.5	6.24	13	PASS
64QAM	55990	3625	6.24	13	PASS
64QAM	56665	3692.5	6.38	13	PASS
256QAM	55315	3557.5	7.13	13	PASS
256QAM	55990	3625	6.53	13	PASS
256QAM	56665	3692.5	7.43	13	PASS

Spectrum Plot of Worst Value	
	
256QAM CH 56665 (3692.5 MHz)	

LTE Band 48, Channel Bandwidth: 20 MHz

Modulation	Channel	Frequency (MHz)	Measurement Value(dB)	Limit (dB)	Result
QPSK	55340	3560	5.67	13	PASS
QPSK	55990	3625	5.40	13	PASS
QPSK	56640	3690	6.49	13	PASS
16QAM	55340	3560	6.60	13	PASS
16QAM	55990	3625	7.23	13	PASS
16QAM	56640	3690	6.64	13	PASS
64QAM	55340	3560	6.18	13	PASS
64QAM	55990	3625	6.63	13	PASS
64QAM	56640	3690	6.28	13	PASS
256QAM	55340	3560	7.11	13	PASS
256QAM	55990	3625	7.39	13	PASS
256QAM	56640	3690	7.24	13	PASS

Spectrum Plot of Worst Value	
	
256QAM CH 55990 (3625 MHz)	

7.4 Bandwidth

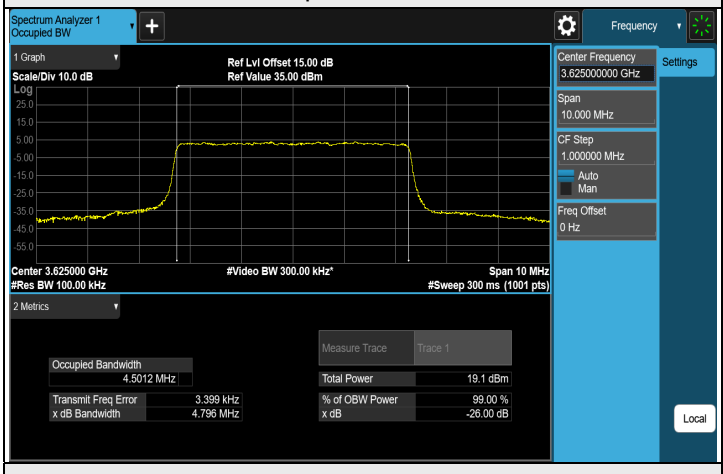
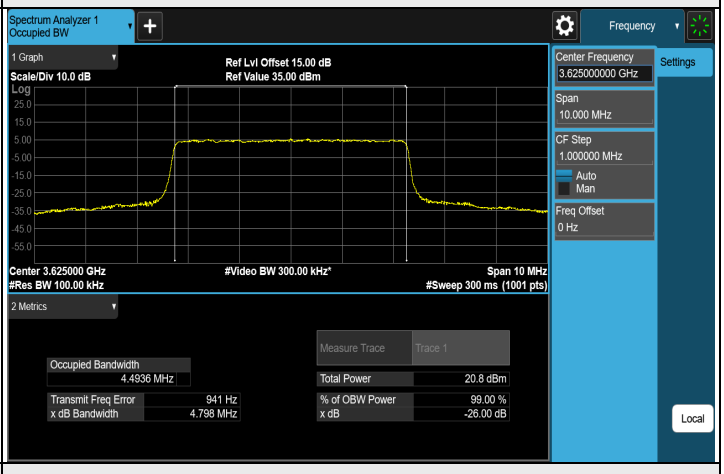
Input Power:	7.2 Vdc	Environmental Conditions:	25°C, 68% RH	Tested By:	Noah Chang

7.4.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

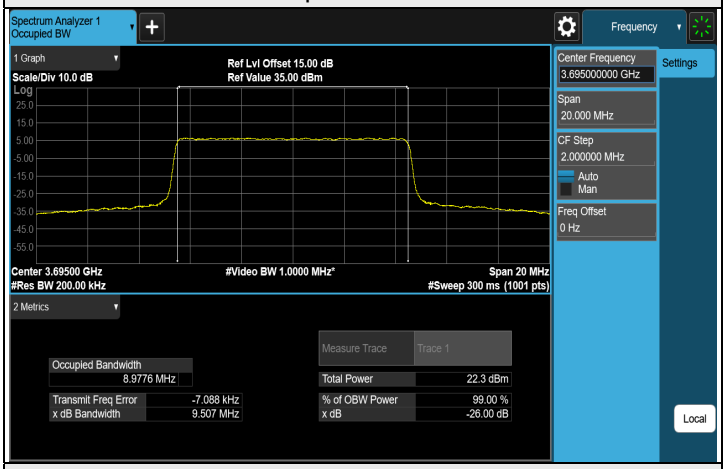
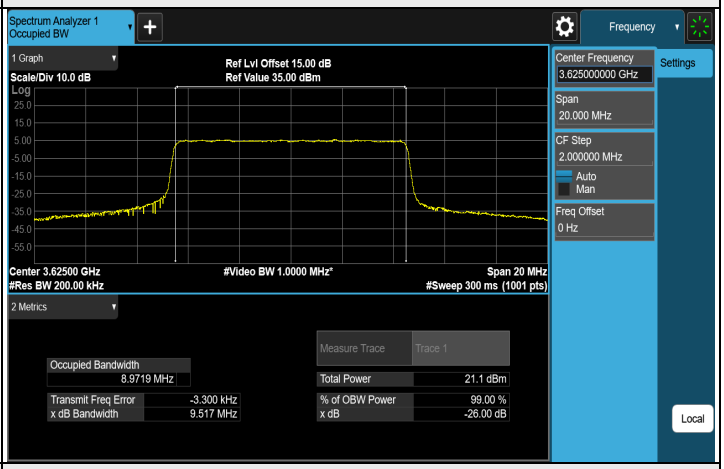
Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	55265	3552.5	4.4842	4.784
QPSK	55990	3625	4.4936	4.798
QPSK	56715	3697.5	4.4968	4.797
16QAM	55265	3552.5	4.4840	4.770
16QAM	55990	3625	4.4896	4.772
16QAM	56715	3697.5	4.4887	4.791
64QAM	55265	3552.5	4.4942	4.768
64QAM	55990	3625	4.5012	4.796
64QAM	56715	3697.5	4.4955	4.765
256QAM	55265	3552.5	4.4818	4.780
256QAM	55990	3625	4.4783	4.766
256QAM	56715	3697.5	4.4819	4.783

Spectrum Plot of Worst Value

Occupied bandwidth	26 dB Bandwidth
	
64QAM CH 55990 (3625 MHz)	QPSK CH 55990 (3625 MHz)

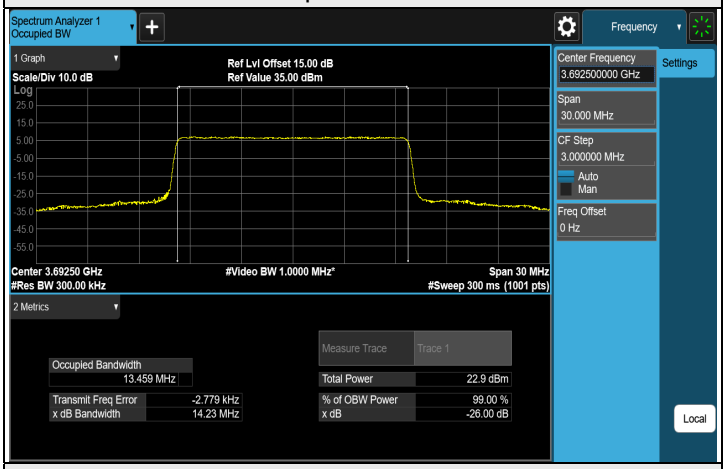
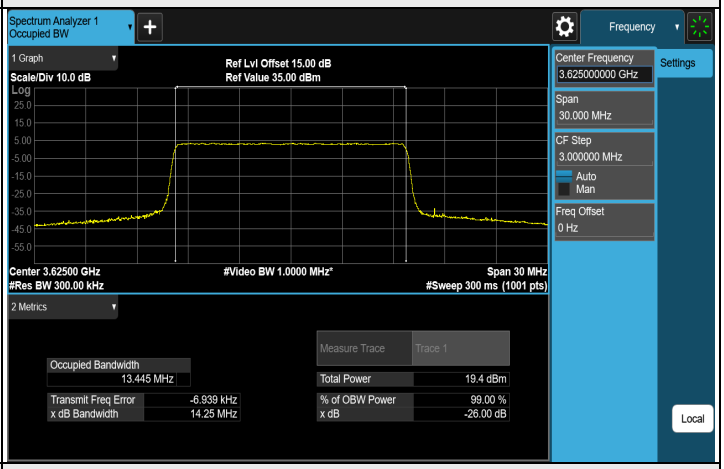
LTE Band 48, Channel Bandwidth: 10 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	55290	3555	8.9654	9.505
QPSK	55990	3625	8.9735	9.498
QPSK	56690	3695	8.9726	9.493
16QAM	55290	3555	8.9718	9.491
16QAM	55990	3625	8.9768	9.499
16QAM	56690	3695	8.9776	9.507
64QAM	55290	3555	8.9743	9.508
64QAM	55990	3625	8.9719	9.517
64QAM	56690	3695	8.9681	9.511
256QAM	55290	3555	8.9645	9.490
256QAM	55990	3625	8.9596	9.494
256QAM	56690	3695	8.9682	9.509

Spectrum Plot of Worst Value	
Occupied bandwidth	26 dB Bandwidth
	
16QAM CH 56690 (3695 MHz)	64QAM CH 55990 (3625 MHz)

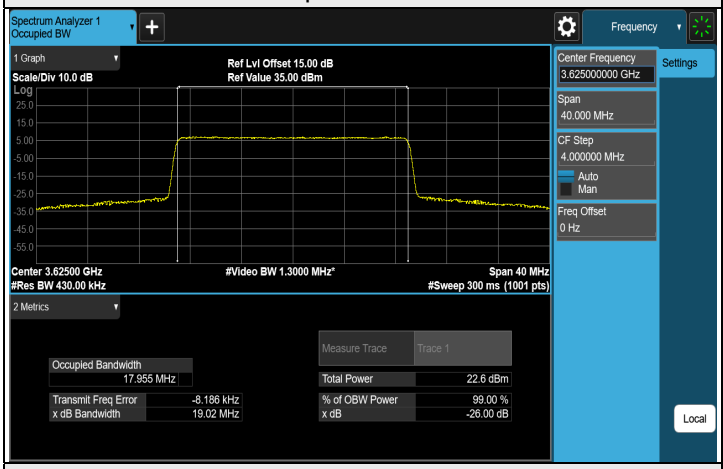
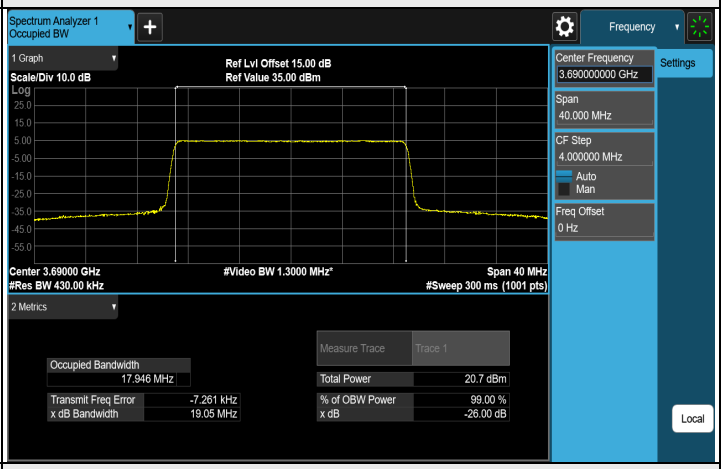
LTE Band 48, Channel Bandwidth: 15 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	55315	3557.5	13.4450	14.226
QPSK	55990	3625	13.4553	14.222
QPSK	56665	3692.5	13.4586	14.226
16QAM	55315	3557.5	13.4525	14.221
16QAM	55990	3625	13.4451	14.229
16QAM	56665	3692.5	13.4498	14.233
64QAM	55315	3557.5	13.4541	14.217
64QAM	55990	3625	13.4524	14.249
64QAM	56665	3692.5	13.4492	14.244
256QAM	55315	3557.5	13.4435	14.241
256QAM	55990	3625	13.4448	14.252
256QAM	56665	3692.5	13.4413	14.242

Spectrum Plot of Worst Value	
Occupied bandwidth	26 dB Bandwidth
	
QPSK CH 56665 (3692.5 MHz)	256QAM CH 55990 (3625 MHz)

LTE Band 48, Channel Bandwidth: 20 MHz

Modulation	Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
QPSK	55340	3560	17.9353	19.009
QPSK	55990	3625	17.9553	19.022
QPSK	56640	3690	17.9398	19.029
16QAM	55340	3560	17.9401	19.029
16QAM	55990	3625	17.9342	19.019
16QAM	56640	3690	17.9309	19.020
64QAM	55340	3560	17.9496	19.039
64QAM	55990	3625	17.9478	19.017
64QAM	56640	3690	17.9465	19.045
256QAM	55340	3560	17.9350	19.017
256QAM	55990	3625	17.9312	19.010
256QAM	56640	3690	17.9367	19.015

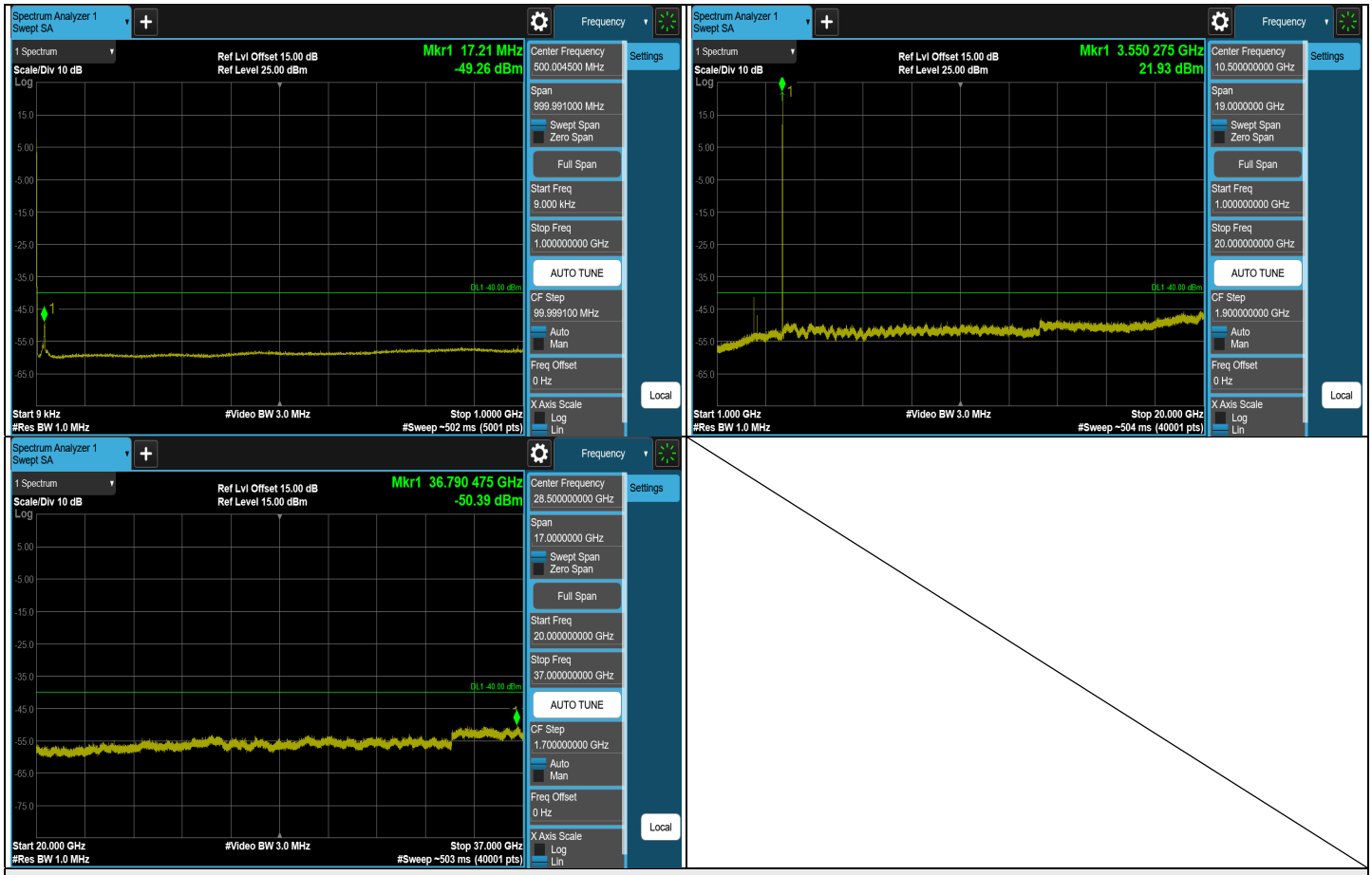
Spectrum Plot of Worst Value	
Occupied bandwidth	26 dB Bandwidth
	
QPSK CH 55990 (3625 MHz)	64QAM CH 56640 (3690 MHz)

7.5 Conducted Spurious Emissions

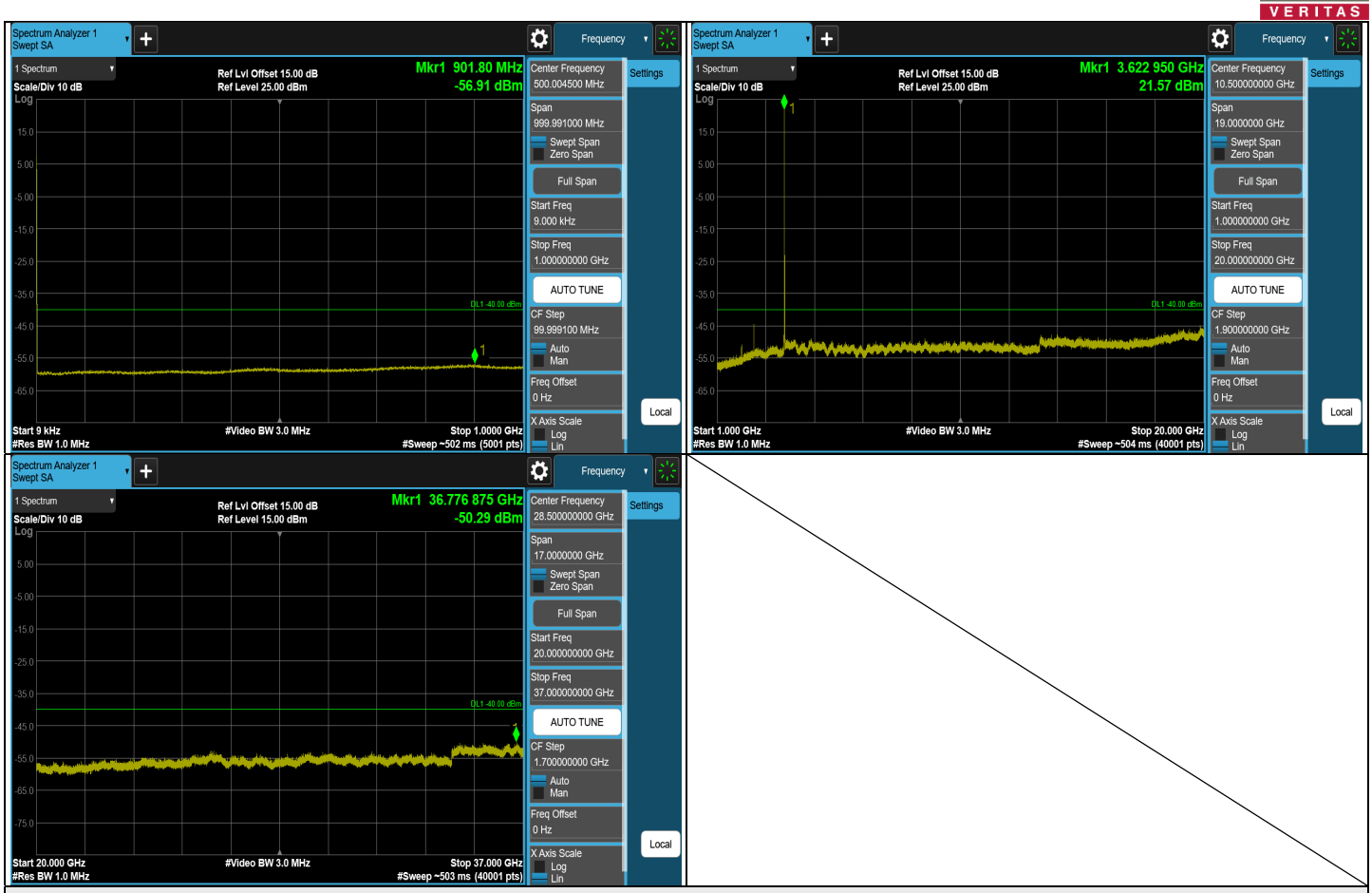
Input Power:	7.2 Vdc	Environmental Conditions:	25°C, 68% RH	Tested By:	Noah Chang

7.5.1 LTE Band 48

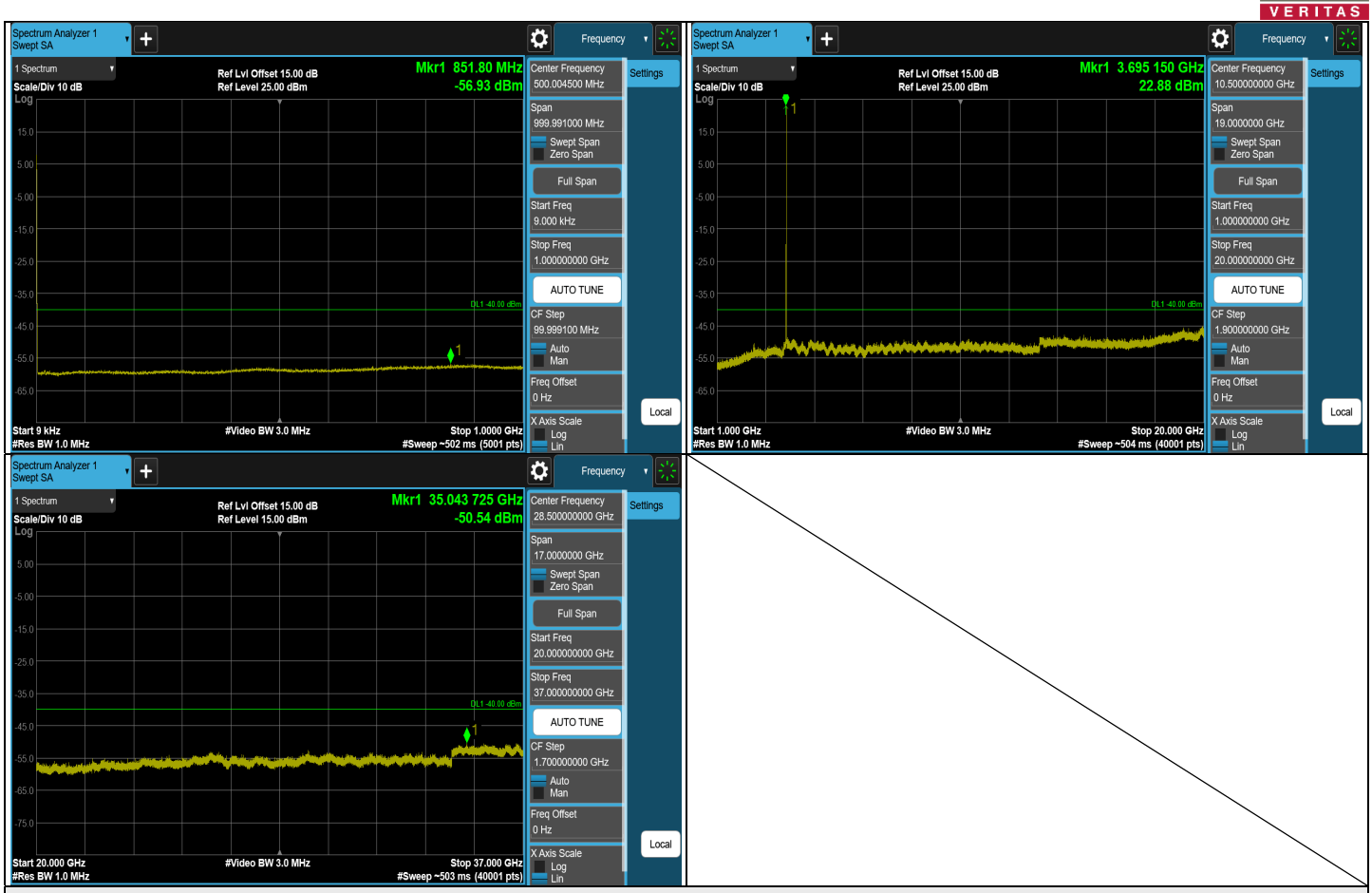
LTE Band 48, Channel Bandwidth: 5 MHz



CH 55265 (3552.5 MHz)



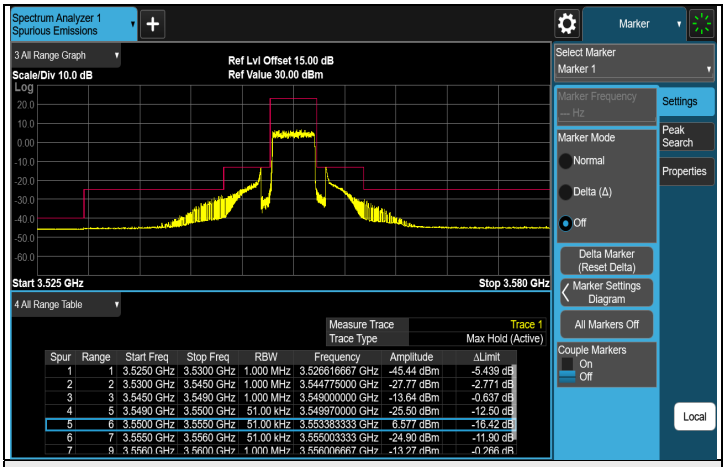
CH 55990 (3625 MHz)



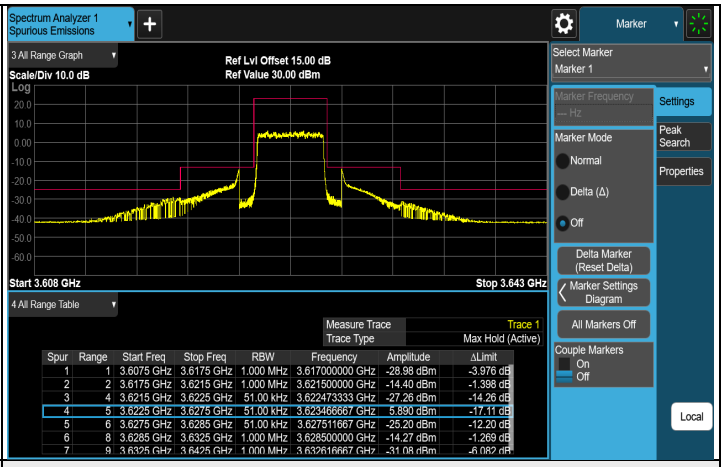
CH 56715 (3697.5 MHz)

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

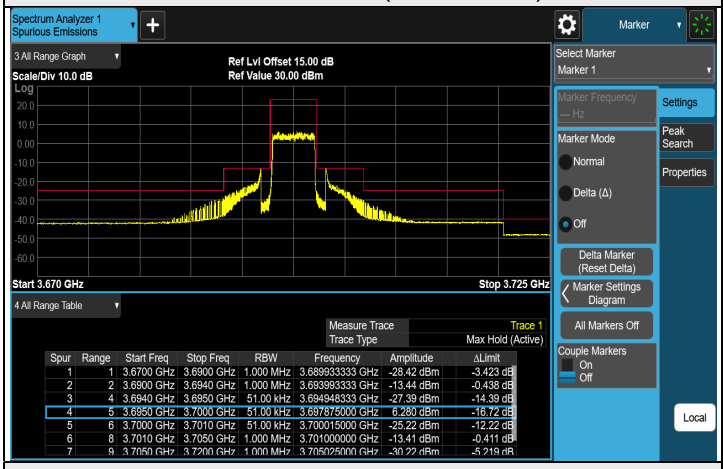
LTE Band 48, Channel Bandwidth: 5 MHz



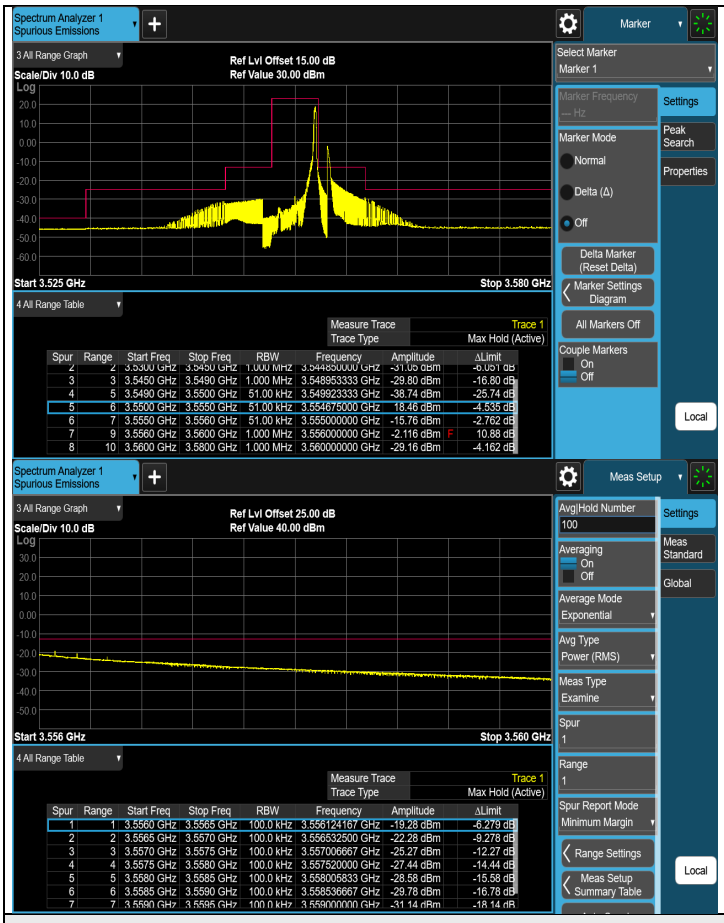
FULL CH 55265 (3552.5 MHz)



FULL CH 55990 (3625 MHz)

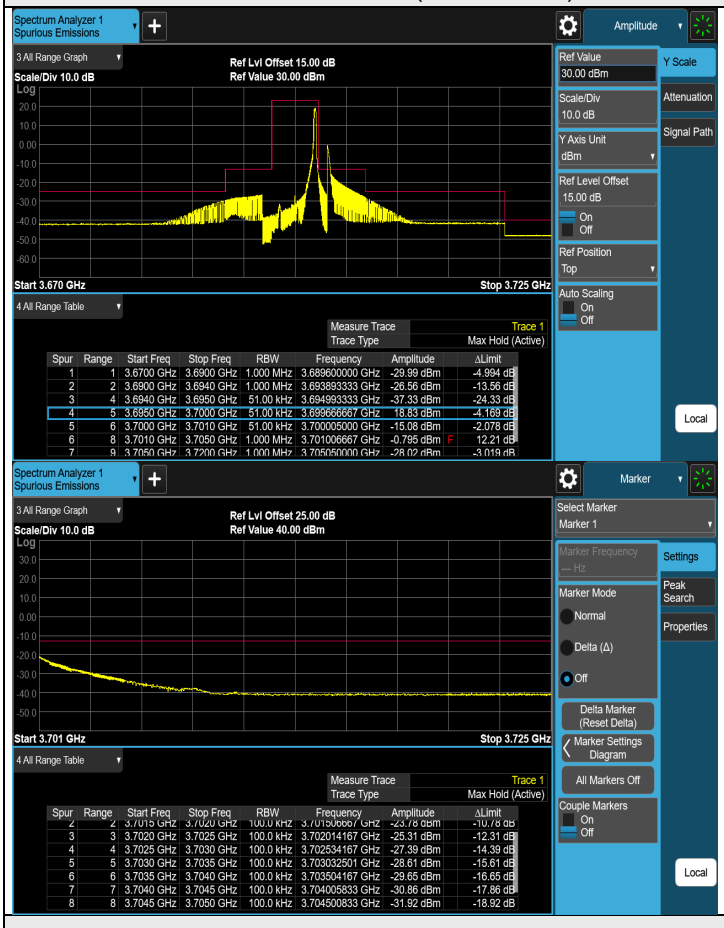


FULL CH 56715 (3697.5 MHz)

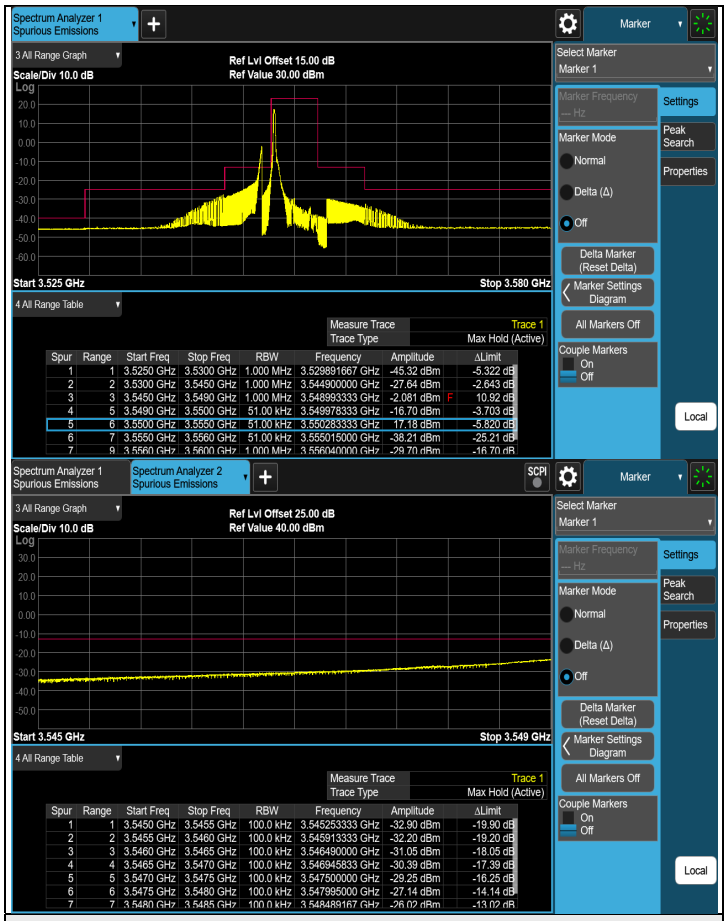


1RB#MAX CH 55265 (3552.5 MHz)

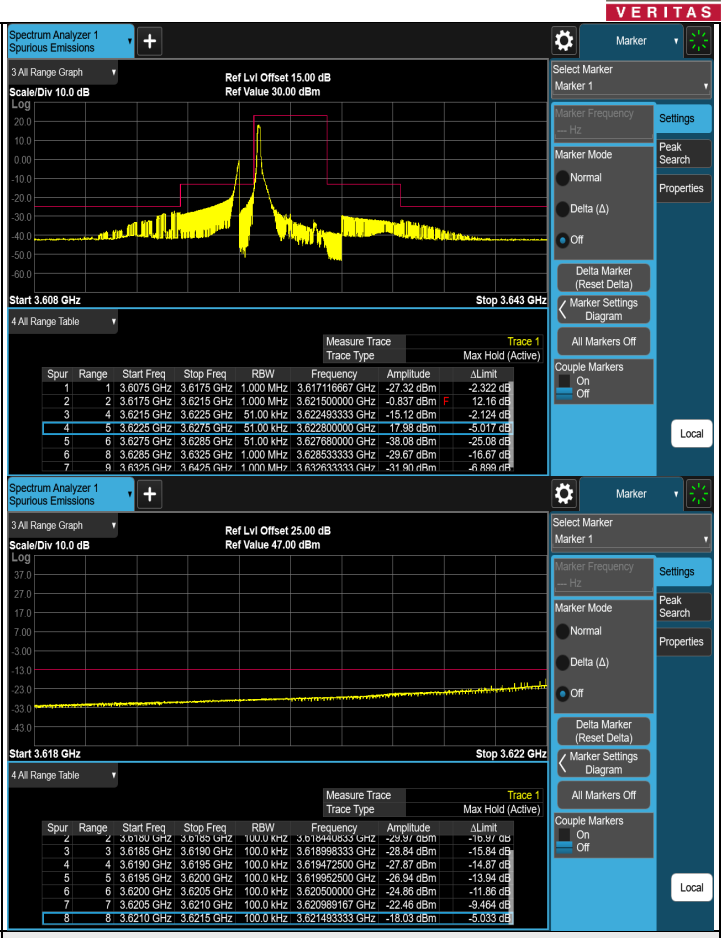
1RB#MAX CH 55990 (3625 MHz)



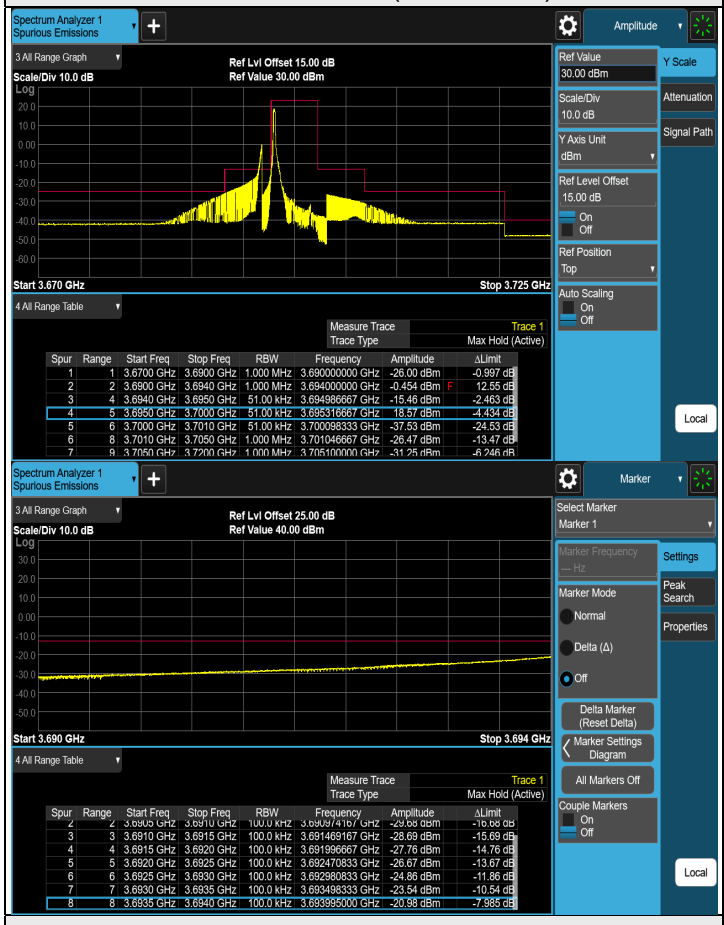
1RB#MAX CH 56715 (3697.5 MHz)



1RB#0 CH 55265 (3552.5 MHz)

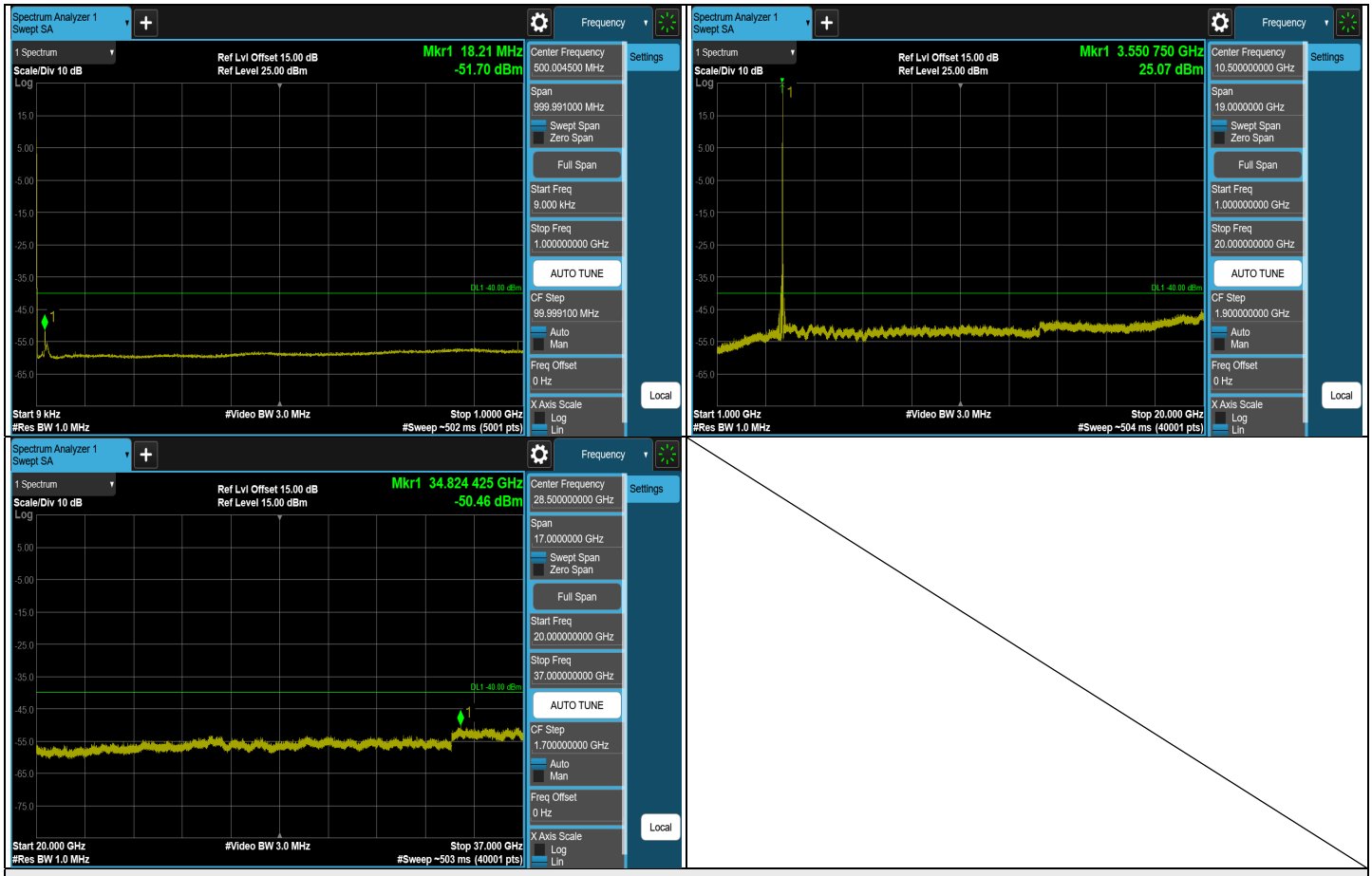


1RB#0 CH 55990 (3625 MHz)

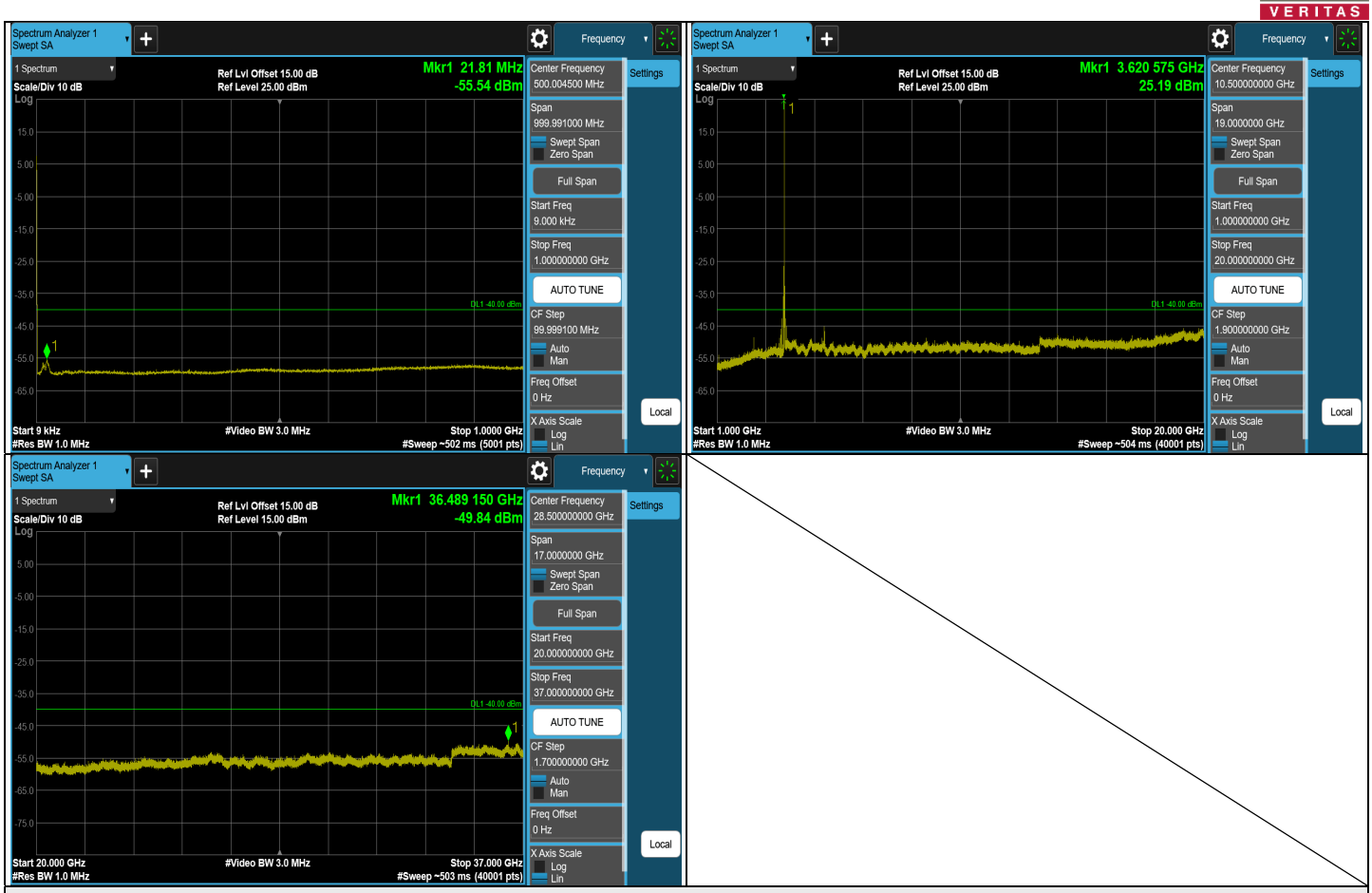


1RB#0 CH 56715 (3697.5 MHz)

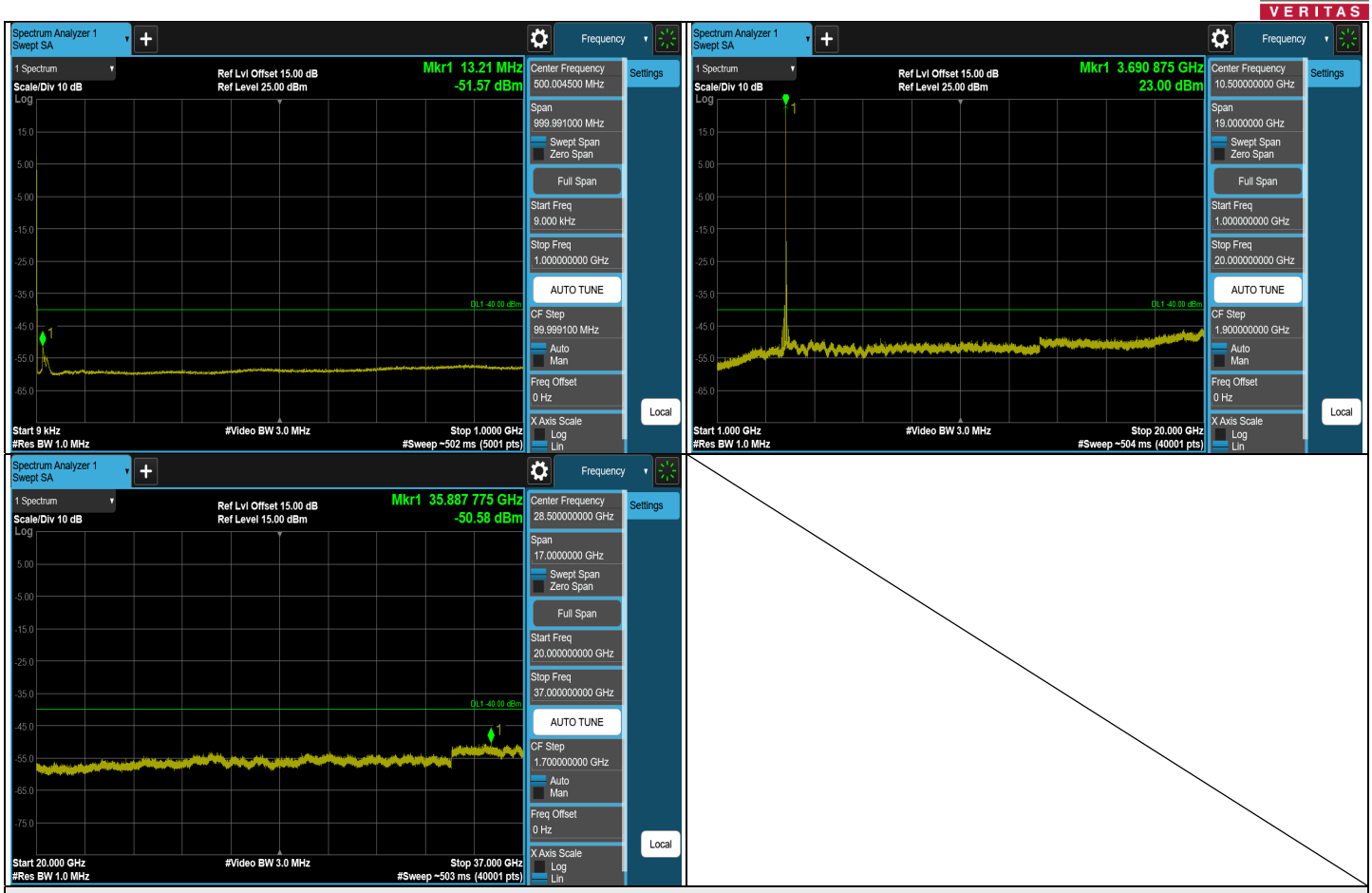
LTE Band 48, Channel Bandwidth: 10 MHz



CH 55290 (3555 MHz)



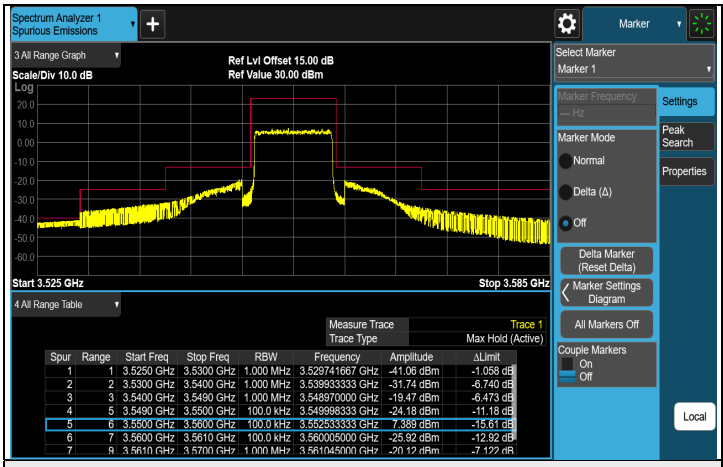
CH 55990 (3625 MHz)



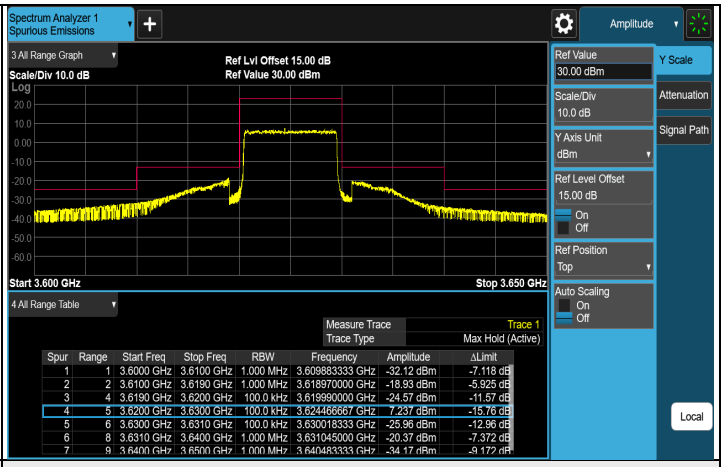
CH 56690 (3695 MHz)

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

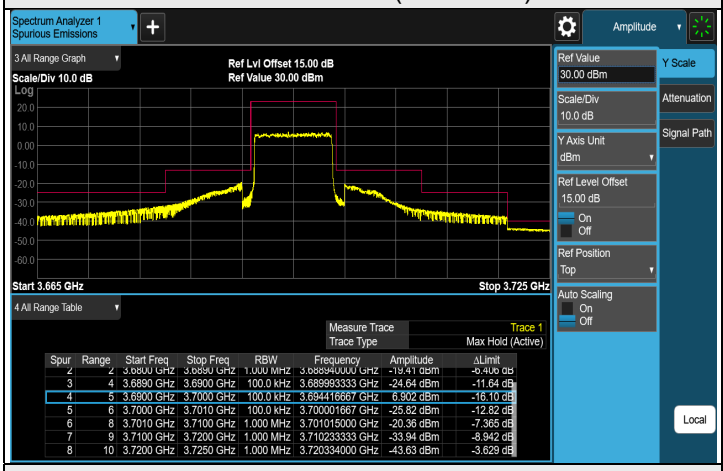
LTE Band 48, Channel Bandwidth: 10 MHz



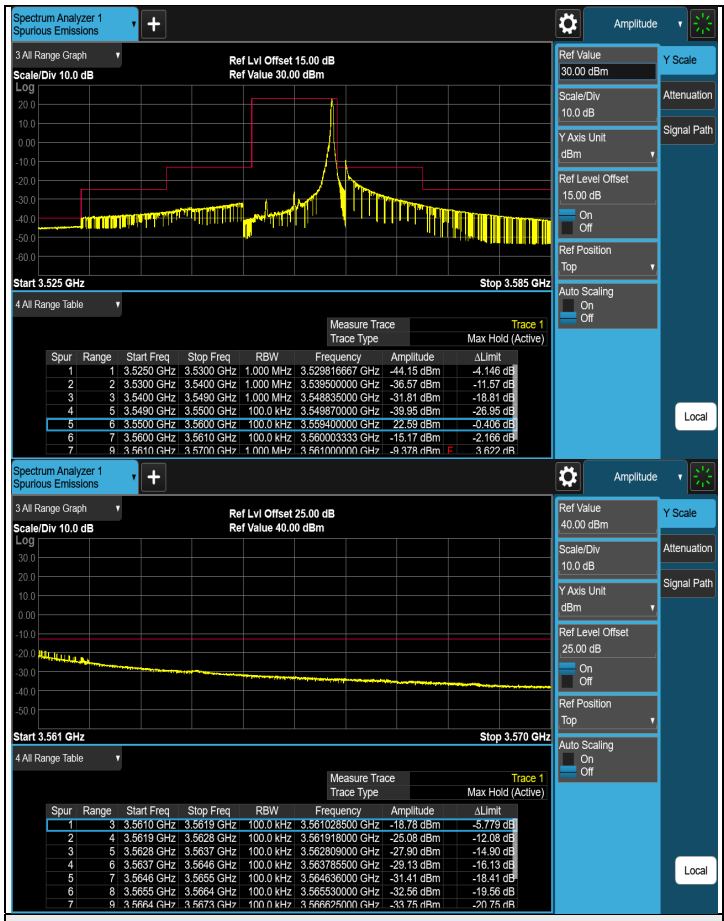
FULL CH 55290 (3555 MHz)

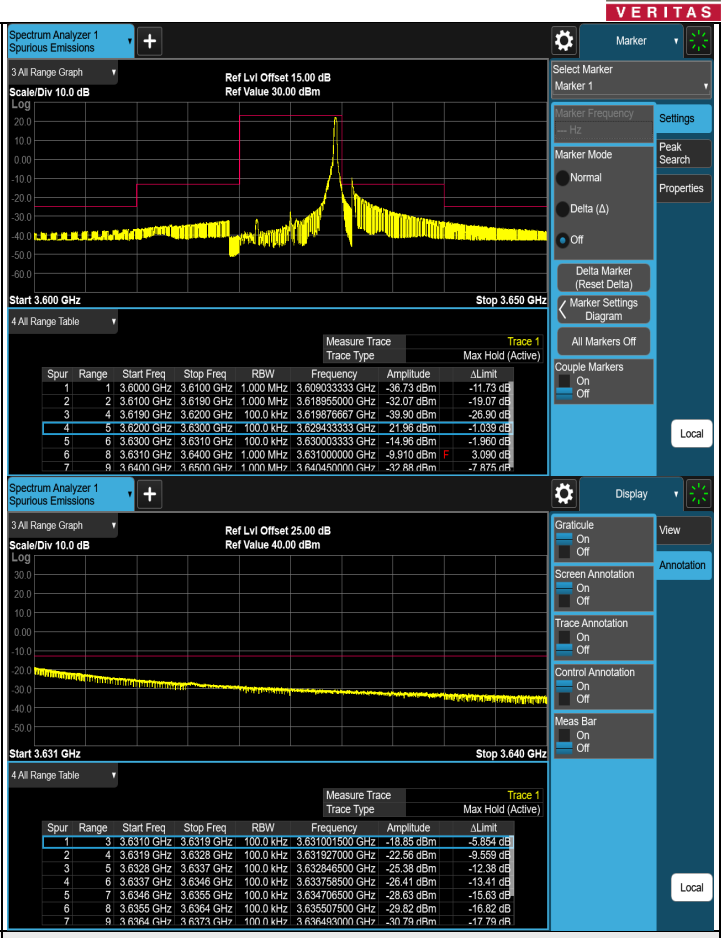


FULL CH 55990 (3625 MHz)



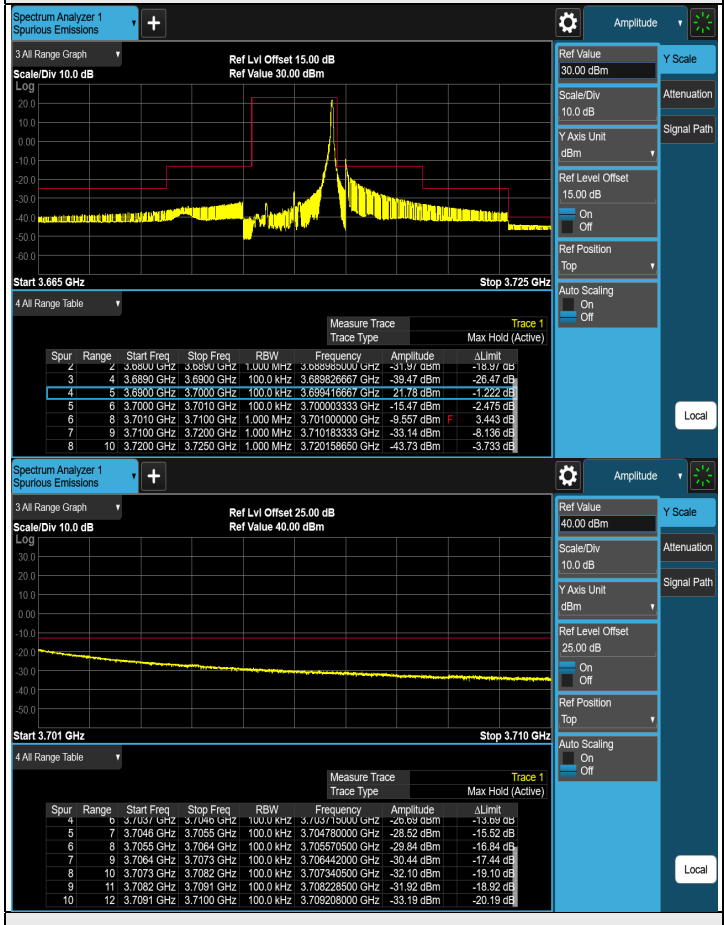
FULL CH 56690 (3695 MHz)

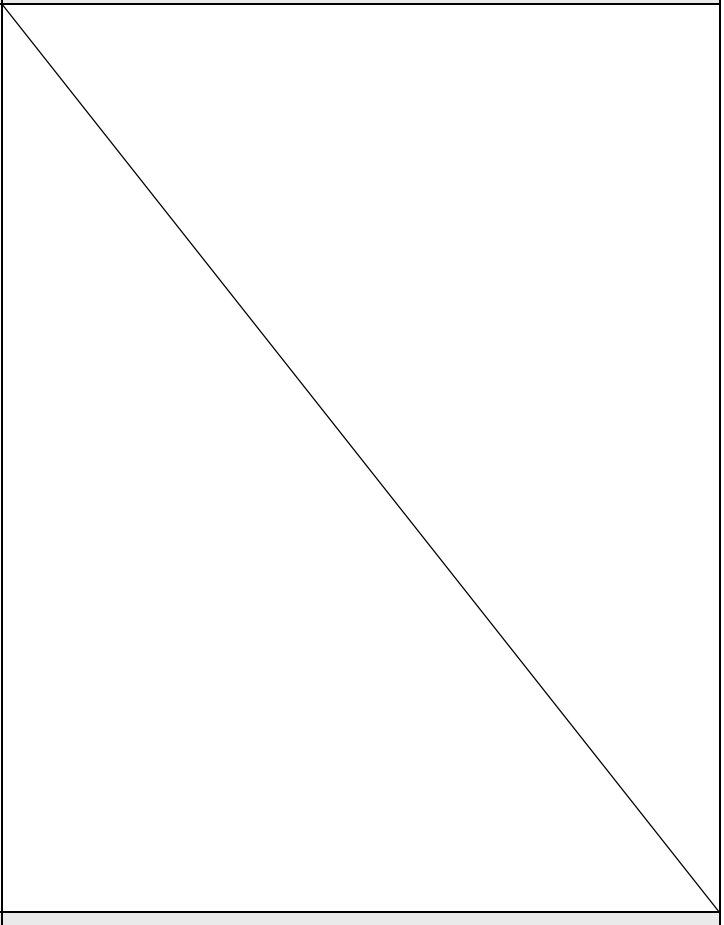




1RB#MAX CH 55290 (3555 MHz)

1RB#MAX CH 55990 (3625 MHz)





1RB#MAX CH 56690 (3695 MHz)