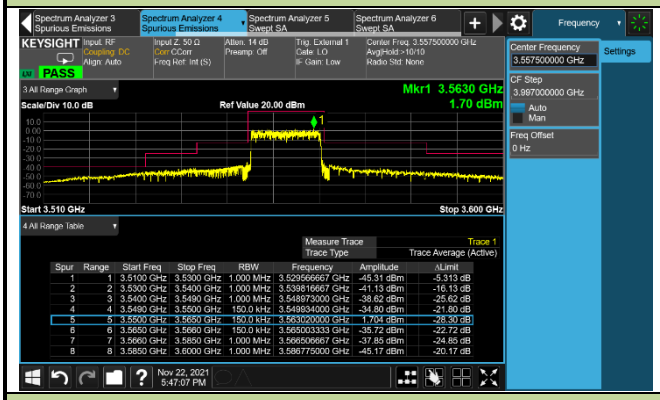
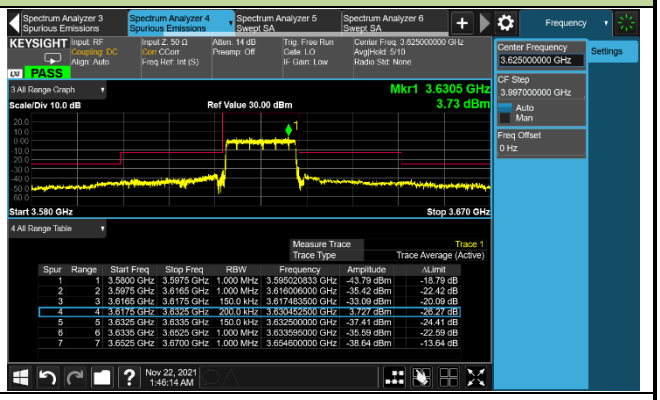
## 15MHz Channel Bandwidth - Full RB

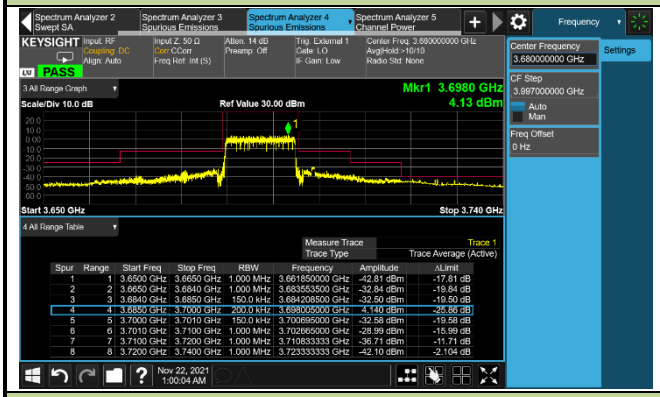
### Low Channel ACP




### Middle Channel ACP

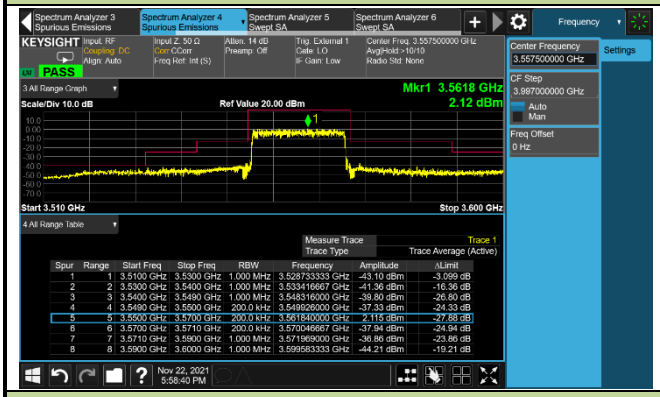



### High Channel ACP

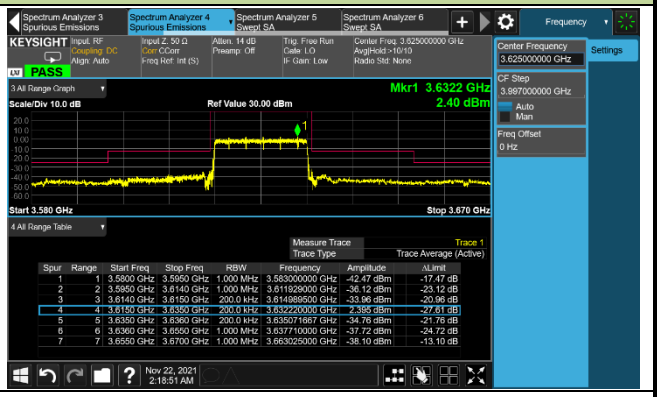



## 20MHz Channel Bandwidth - Full RB

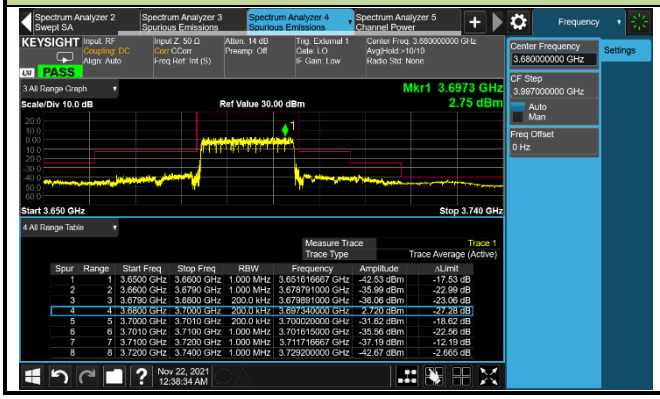
### Low Channel ACP




### Middle Channel ACP




### High Channel ACP



## 4.6. Conducted Spurious Emission Measurement

### 4.6.1.Test Limit

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10$^{th}$ harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated, and the worst-case configuration results are reported in this section.
The conducted power of any emissions below 3530MHz or above 3720MHz shall not exceed -40dBm/MHz.

### 4.6.2.Test Procedure

ANSI C63.26-2015 - Section 5.7

### 4.6.3.Test Setting

1. Set the analyzer frequency to low, mid, high channel.
2. RBW = 1MHz
3. VBW ≥ 3*RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to “free run.”
7. User gate triggered such that the analyzer only sweeps when the device is transmitting at full power.
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

### 4.6.4.Test Setup

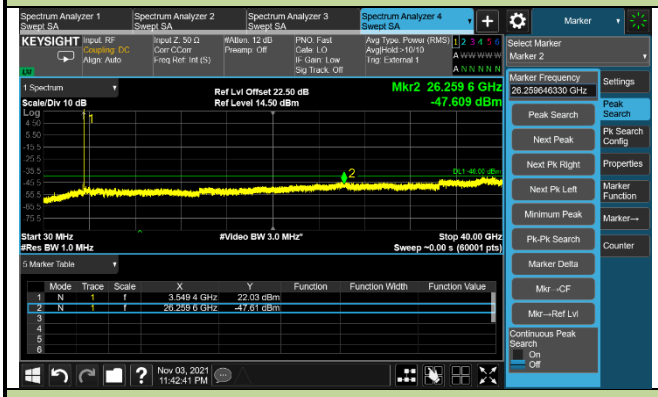
### 4.6.5.Test Result

| | | | |
|---|---|---|---|
| Test Engineer | Cloud Guo | Test Site | WZ-SR6 |
| Test Band | LTE Band 48_QPSK | Test Date | 2021/11/03 |

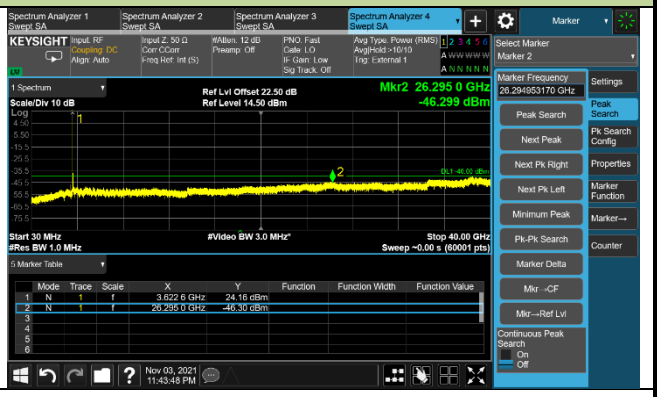
| Channel | Frequency (MHz) | Channel Bandwidth (MHz) | Frequency Range (MHz) | Max Spurious Emissions (dBm/MHz) | Limit (dBm/ MHz) | Result |
|---|---|---|---|---|---|---|
| 55265 | 3552.5 | 5 | 30 ~ 40000 | -47.61 | ≤ -40.00 | Pass |
| 55900 | 3625.0 | 5 | 30 ~ 40000 | -46.30 | ≤ -40.00 | Pass |
| 56715 | 3697.5 | 5 | 30 ~ 40000 | -47.82 | ≤ -40.00 | Pass |
| 55290 | 3555.0 | 10 | 30 ~ 40000 | -47.42 | ≤ -40.00 | Pass |
| 55900 | 3625.0 | 10 | 30 ~ 40000 | -47.33 | ≤ -40.00 | Pass |
| 56690 | 3695.0 | 10 | 30 ~ 40000 | -46.94 | ≤ -40.00 | Pass |
| 55315 | 3557.5 | 15 | 30 ~ 40000 | -48.67 | ≤ -40.00 | Pass |
| 55900 | 3625.0 | 15 | 30 ~ 40000 | -46.49 | ≤ -40.00 | Pass |
| 56665 | 3692.5 | 15 | 30 ~ 40000 | -46.84 | ≤ -40.00 | Pass |
| 55340 | 3550.0 | 20 | 30 ~ 40000 | -45.60 | ≤ -40.00 | Pass |
| 55900 | 3625.0 | 20 | 30 ~ 40000 | -47.45 | ≤ -40.00 | Pass |
| 56640 | 3690.0 | 20 | 30 ~ 40000 | -49.07 | ≤ -40.00 | Pass |

## 5MHz Channel Bandwidth

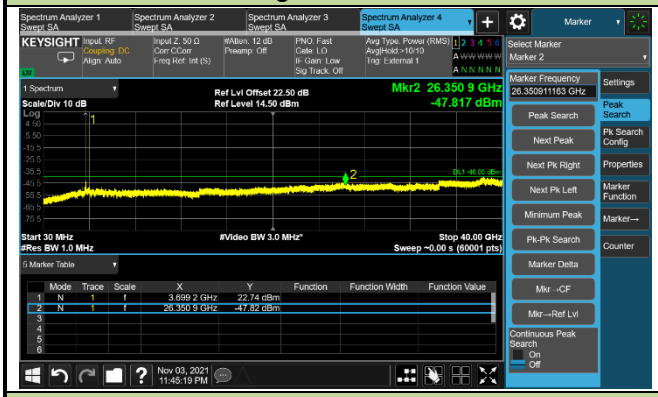
### Low Channel




### Middle Channel

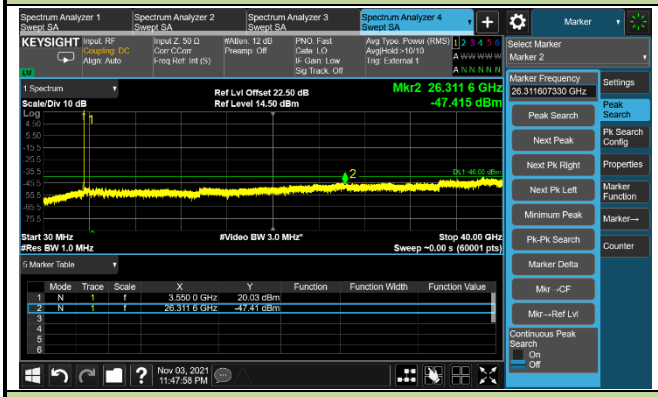



### High Channel

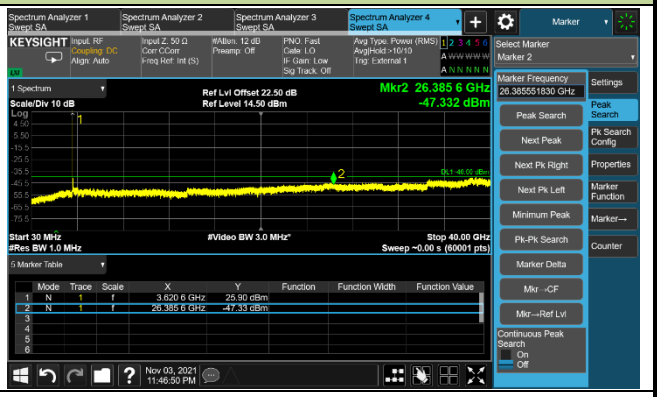



## 10MHz Channel Bandwidth

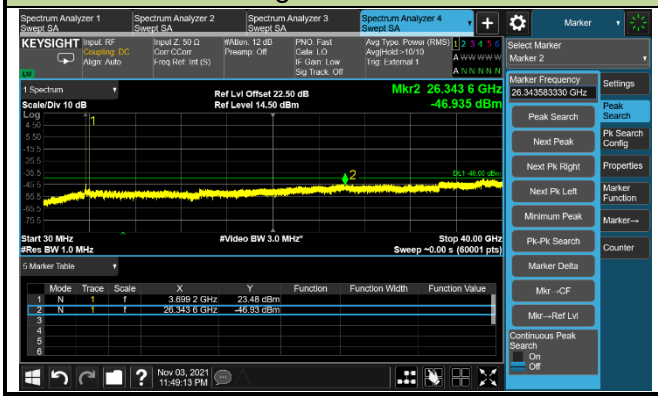
### Low Channel




### Middle Channel



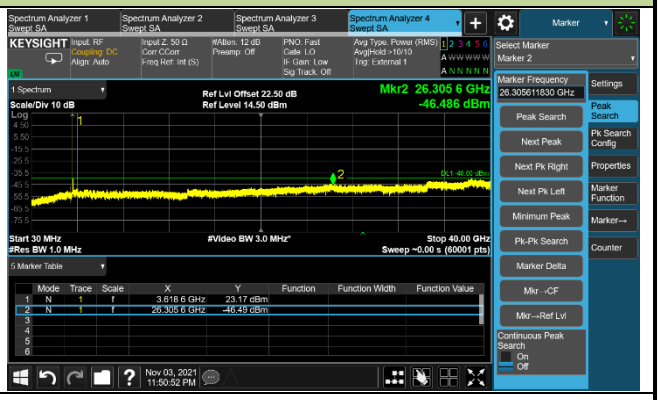

### High Channel



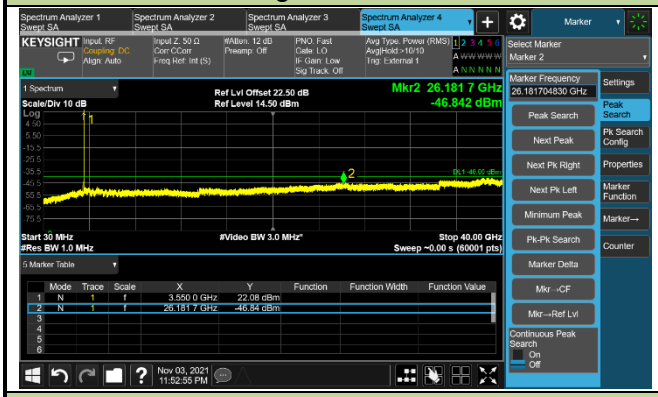
## 15MHz Channel Bandwidth

### Low Channel

### Middle Channel

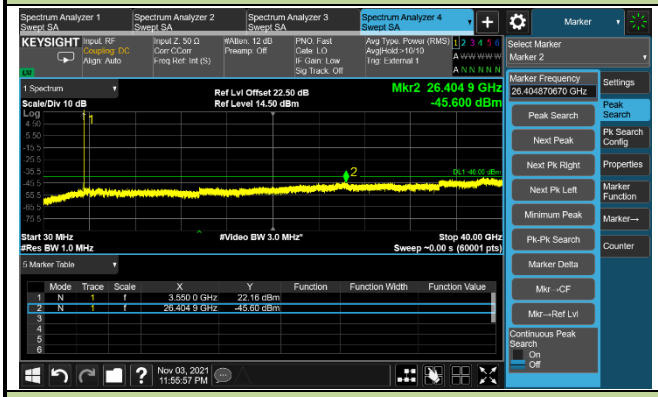



### High Channel

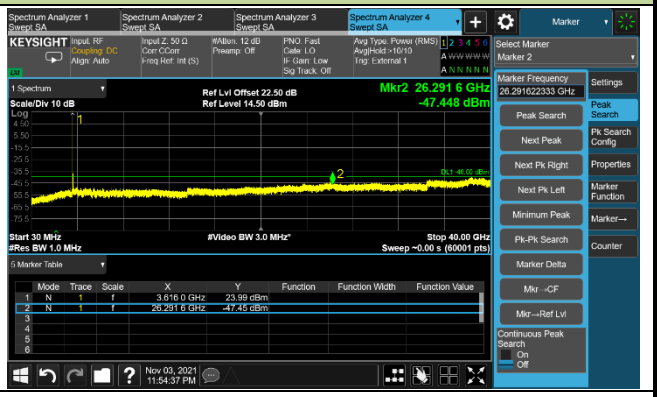



## 20MHz Channel Bandwidth

### Low Channel




### Middle Channel




### High Channel

## 4.7. Radiated Spurious Emission Measurement

### 4.7.1.Test Limit

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

E (dBμV/m) = EIRP (dBm) - 20 log D + 104.8; where D is the measurement distance in meters. The emission limit equal to 55.3dBμV/m.

### 4.7.2.Test Procedure

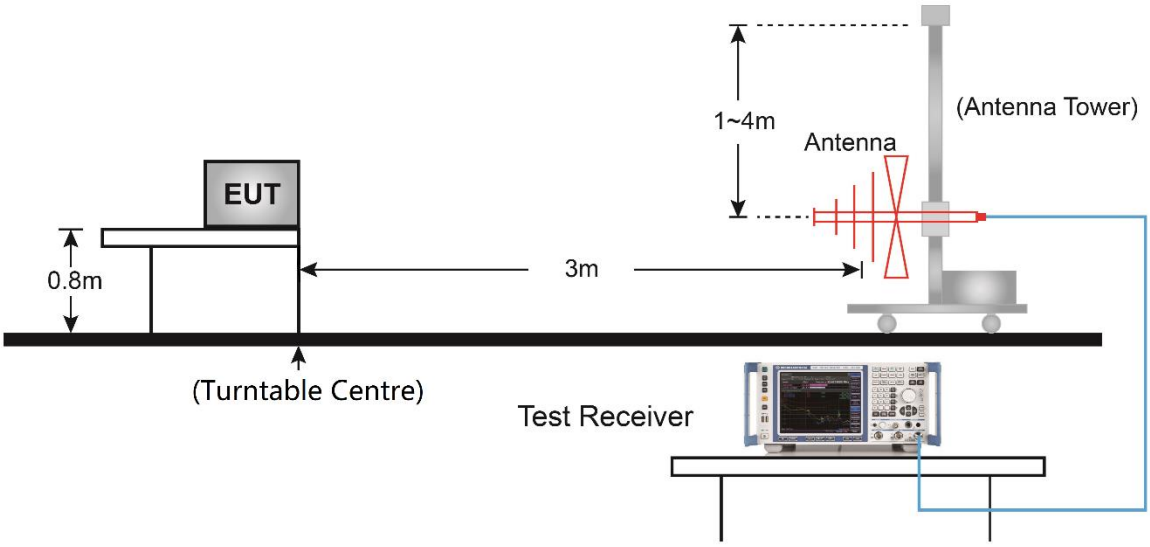
ANSI C63.26-2015 - Section 5.2.7 & 5.5

### 4.7.3.Test Setting

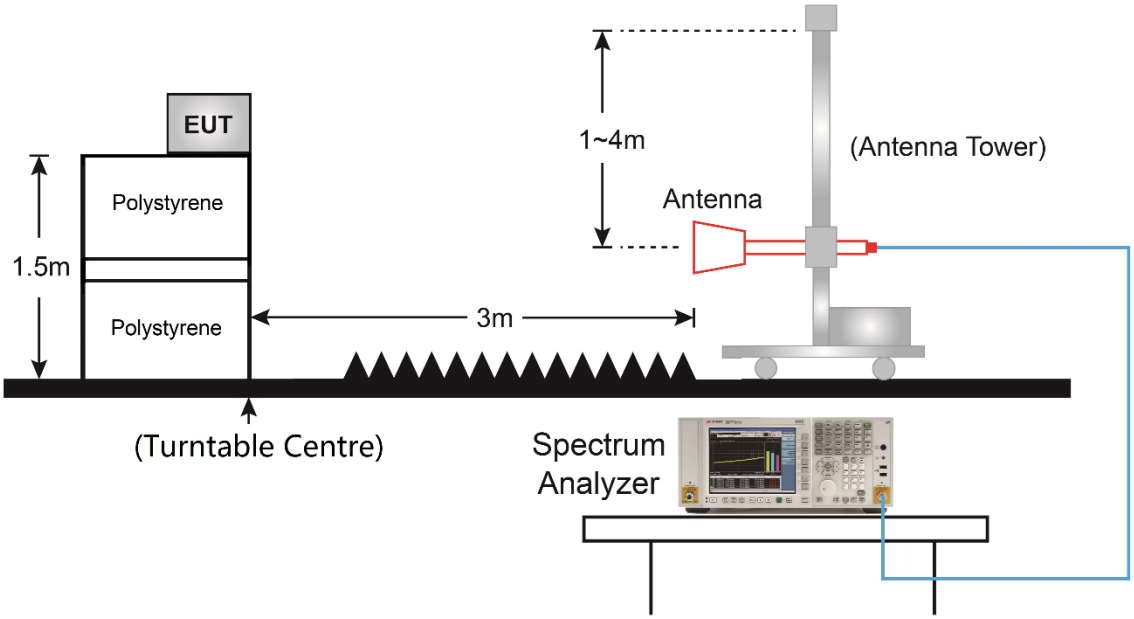
1. RBW = 1MHz
2. VBW ≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

### 4.7.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



### 4.7.5.Test Result

| | | | |
|---|---|---|---|
| Test Engineer | Tommy Tang | Test Site | WZ-AC2 |
| Test Mode | LTE Band 48_5MHz_1RB_QPSK | Test Date | 2021/11/02 |

| Frequency (MHz) | Reading Level (dBμV) | Factor (dB/m) | Measure Level(dBμV/m) | Limit (dBμV/m) | Margin (dB) | Detector | Polarization |
|---|---|---|---|---|---|---|---|
| Bottom Channel | | | | | | | |
| 160.95 | 19.81 | 15.77 | 35.58 | 55.30 | -19.72 | Peak | Horizontal |
| 181.32 | 18.51 | 16.89 | 35.40 | 55.30 | -19.90 | Peak | Horizontal |
| 38.25 | 15.86 | 18.83 | 34.69 | 55.30 | -20.61 | Peak | Vertical |
| 181.32 | 18.20 | 16.89 | 35.09 | 55.30 | -20.21 | Peak | Vertical |
| 7137.00 | 32.03 | 11.48 | 43.51 | 55.30 | -11.79 | Peak | Horizontal |
| 9848.50 | 33.36 | 14.29 | 47.65 | 55.30 | -7.65 | Peak | Horizontal |
| 7162.50 | 32.51 | 11.45 | 43.96 | 55.30 | -11.34 | Peak | Vertical |
| 9151.50 | 33.60 | 14.37 | 47.97 | 55.30 | -7.33 | Peak | Vertical |
| Middle Channel | | | | | | | |
| 130.40 | 9.85 | 15.64 | 25.49 | 55.30 | -29.81 | Peak | Horizontal |
| 160.95 | 20.36 | 15.77 | 36.13 | 55.30 | -19.17 | Peak | Horizontal |
| 37.76 | 16.65 | 18.70 | 35.35 | 55.30 | -19.95 | Peak | Vertical |
| 181.32 | 18.08 | 16.89 | 34.97 | 55.30 | -20.33 | Peak | Vertical |
| 6338.00 | 34.21 | 7.25 | 41.46 | 55.30 | -13.84 | Peak | Horizontal |
| 9134.50 | 33.62 | 14.22 | 47.84 | 55.30 | -7.46 | Peak | Horizontal |
| 6321.00 | 33.82 | 7.14 | 40.96 | 55.30 | -14.34 | Peak | Vertical |
| 9066.50 | 33.17 | 13.96 | 47.13 | 55.30 | -8.17 | Peak | Vertical |
| Top Channel | | | | | | | |
| 130.88 | 10.82 | 15.59 | 26.41 | 55.30 | -28.89 | Peak | Horizontal |
| 160.95 | 20.41 | 15.77 | 36.18 | 55.30 | -19.12 | Peak | Horizontal |
| 157.07 | 18.36 | 15.51 | 33.87 | 55.30 | -21.43 | Peak | Vertical |
| 181.81 | 17.40 | 16.94 | 34.34 | 55.30 | -20.96 | Peak | Vertical |
| 9389.50 | 33.19 | 14.29 | 47.48 | 55.30 | -7.82 | Peak | Horizontal |
| 11208.50 | 30.93 | 17.72 | 48.65 | 55.30 | -6.65 | Peak | Horizontal |
| 7196.50 | 31.53 | 11.61 | 43.14 | 55.30 | -12.16 | Peak | Vertical |
| 10639.00 | 31.57 | 16.47 | 48.04 | 55.30 | -7.26 | Peak | Vertical |
| Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m). | | | | | | | |

## 4.8. End User Device Additional Requirement (CBSD Protocol)

### 4.8.1.Test Limit

End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by aCBSD, including the frequencies and power limits for their operation.

An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD

### 4.8.2.Test Procedure

KDB 940660 D01 v02, WINNF-TS-0122 V1.0.0

### 4.8.3.Test Setting

The EUT was connected via an RF cable to a certified CBSD (Ruckus Wireless, Inc. FCC ID: S9GQ910US00) and spectrum analyzer. The following procedure is performed by applying WINNF-TS-0122 CBRS CBSD Test Specification.

Step 1:

a. Setup WINNF.PT.C.HBT.1 with 3570 ~ 3590MHz and power level at 13 dBm/MHz.

b. Enable AP service from Ruckus LTE Cloud management.

c. Check EUT Tx frequency and power.

d. Disable AP service from Ruckus LTE Cloud management and check EUT stop transmission within 10s.

Step 2:

a. Setup WINNF.PT.C.HBT.1 with 3670 ~ 3690MHz and power level at 8 dBm/MHz.

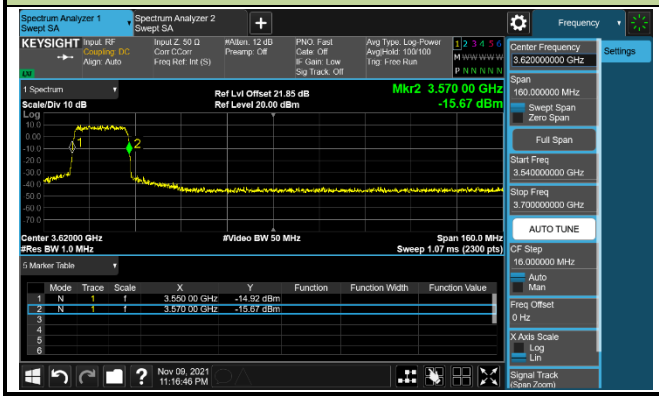
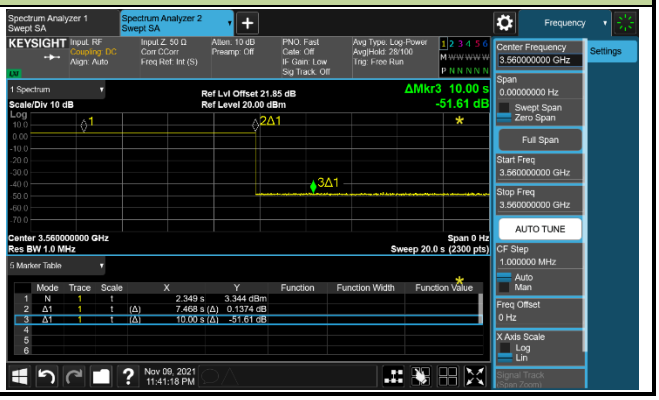
b. Enable AP service from Ruckus LTE Cloud management.

c. Check EUT Tx frequency and power.

d. Disable AP service from Ruckus LTE Cloud management and check EUT stop transmission within 10s.

### 4.8.4.Test Result

| | | | |
|---|---|---|---|
| Product | 5G High Power mmWave Outdoor CPE | Test Site | WZ-SR6 |
| Test Engineer | Larry Yan | Test Date | 2021/11/09 |
| Test Mode | CBSD transmit at 3560MHz (20MHz BW), 13dBm/MHz | | |

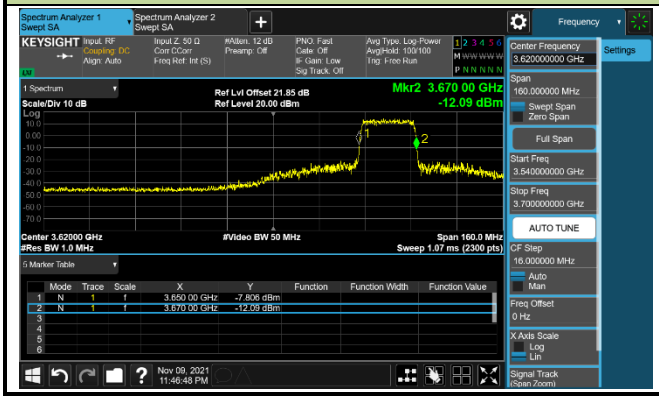
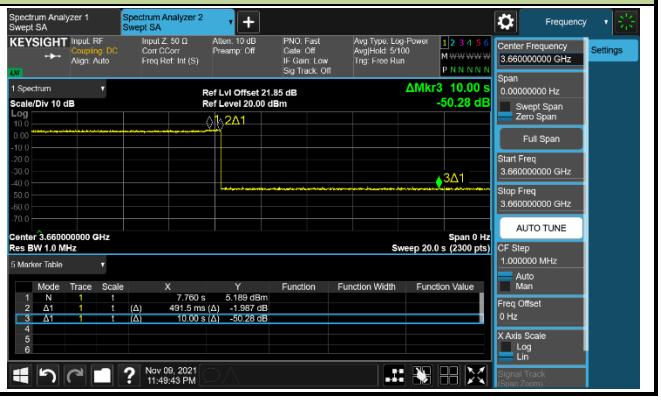
| Frequency Operation | Discontinues Operations within 10s |
|---|---|
|  |  |

Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation.

Marker 3: 10 seconds elapsed time from CBSD sending instructions to EUT.

| | | | |
|---|---|---|---|
| Product | 5G High Power mmWave Outdoor CPE | Test Site | WZ-SR6 |
| Test Engineer | Larry Yan | Test Date | 2021/11/09 |
| Test Mode | CBSD transmit at 3660MHz (20MHz BW), 8dBm/MHz | | |

| Frequency Operation | Discontinues Operations within 10s |
|---|---|
|  |  |

Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation.

Marker 3: 10 seconds elapsed time from CBSD sending instructions to EUT.

# 5. CONCLUSION

The data collected relate only the item(s) tested and show that uniti is compliance with FCC Rules.

The End

# Appendix A - Test Setup Photograph

Refer to “2110RSU037-UT” file.

# Appendix B - EUT Photograph

Refer to “2110RSU037-UE” file.