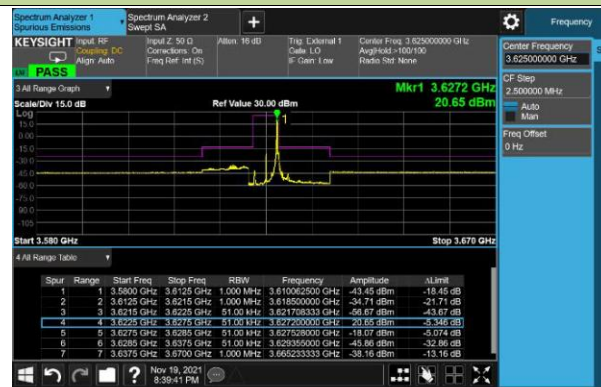


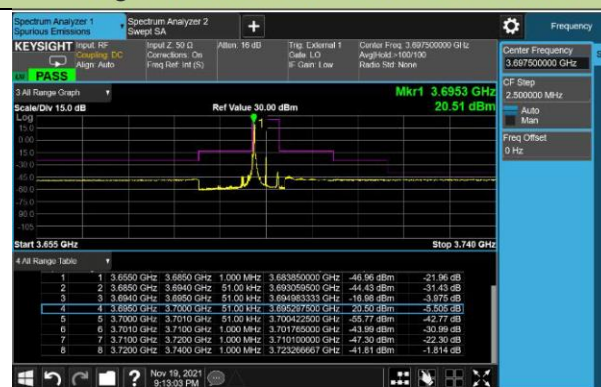
Middle Channel ACP - High RB Position



Extended Band Edge



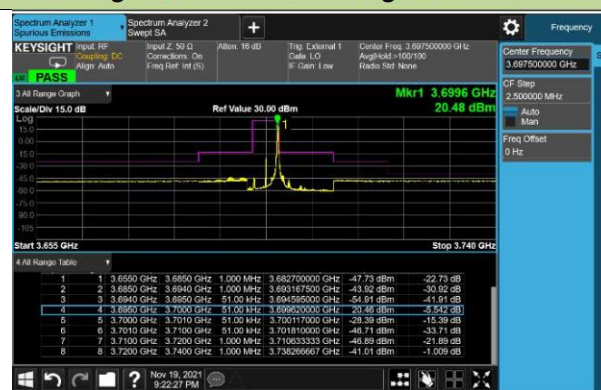
High Channel ACP - Low RB Position



Extended Band Edge



High Channel ACP - High RB Position

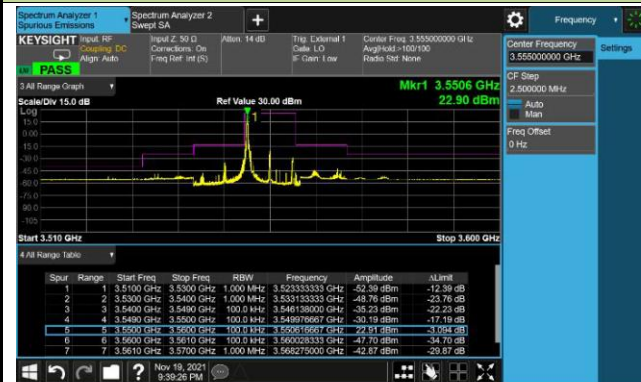


Extended Band Edge



10MHz Channel Bandwidth - 1RB

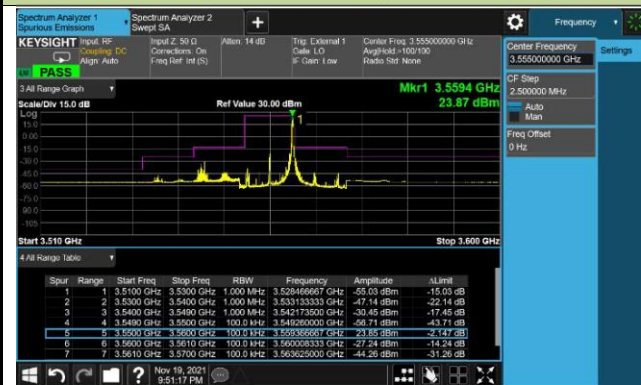
Low Channel ACP - Low RB Position



Extended Band Edge



Low Channel ACP - High RB Position



Extended Band Edge



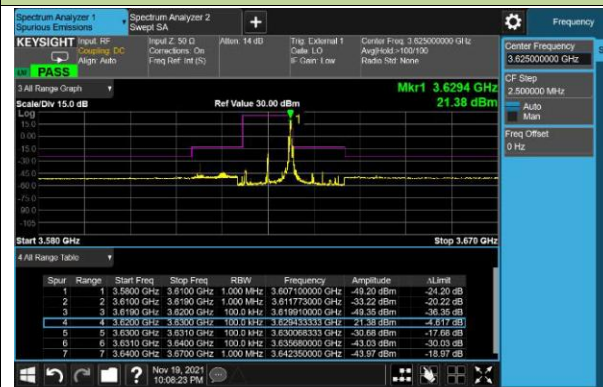
Middle Channel ACP - Low RB Position



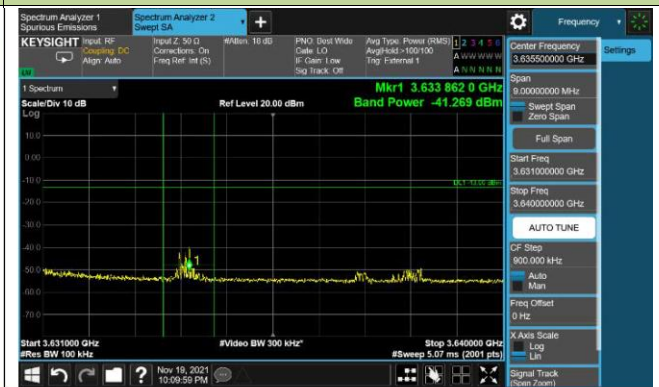
Extended Band Edge



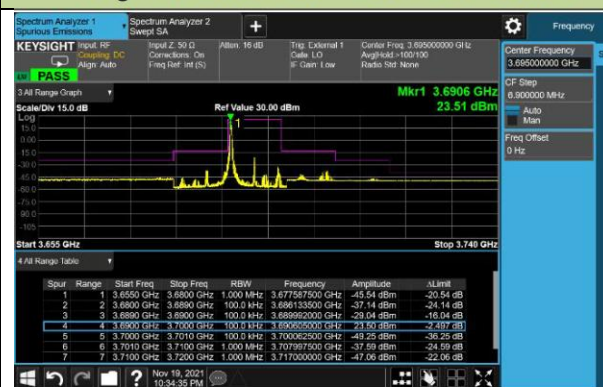
Middle Channel ACP - High RB Position



Extended Band Edge



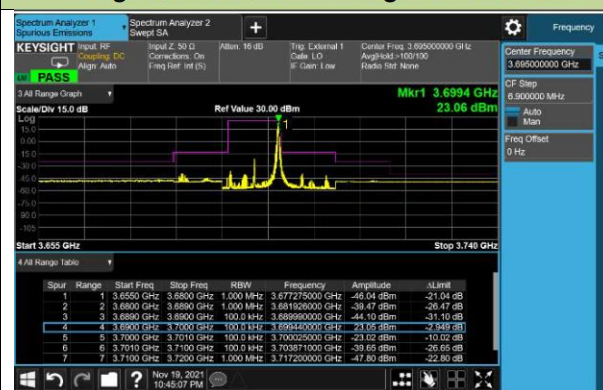
High Channel ACP - Low RB Position



Extended Band Edge



High Channel ACP - High RB Position

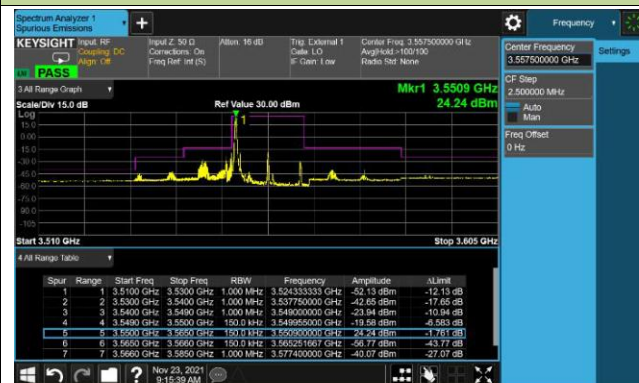


Extended Band Edge

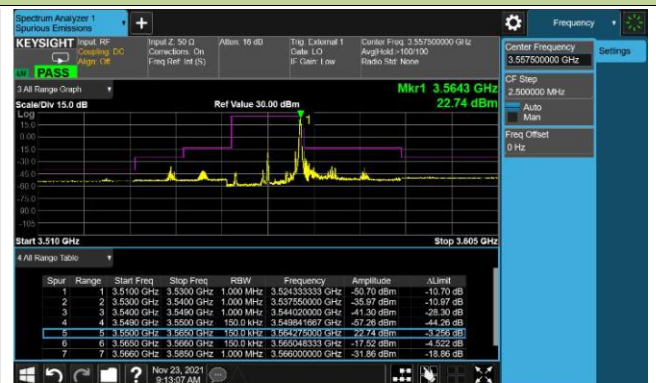


15MHz Channel Bandwidth - 1RB

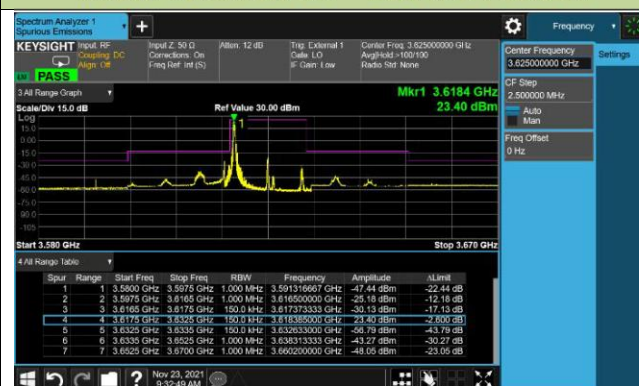
Low Channel ACP - Low RB Position



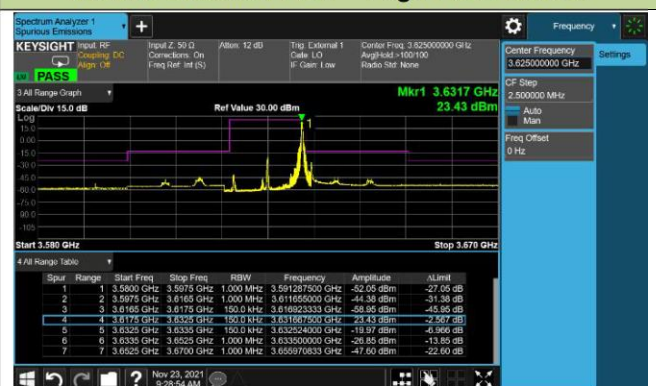
Low Channel ACP - High RB Position



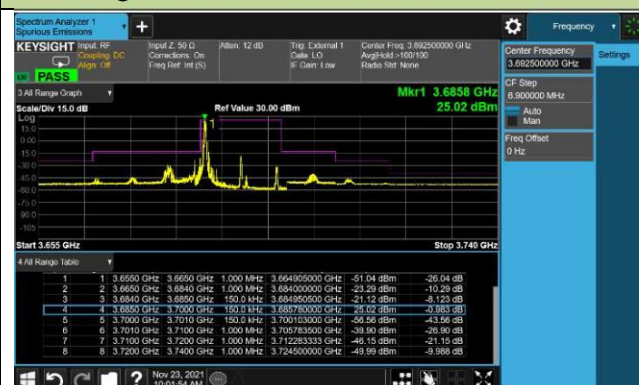
Middle Channel ACP - Low RB Position



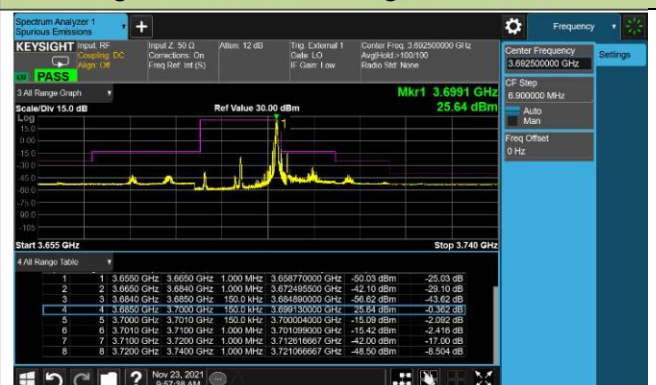
Middle Channel ACP - High RB Position



High Channel ACP - Low RB Position

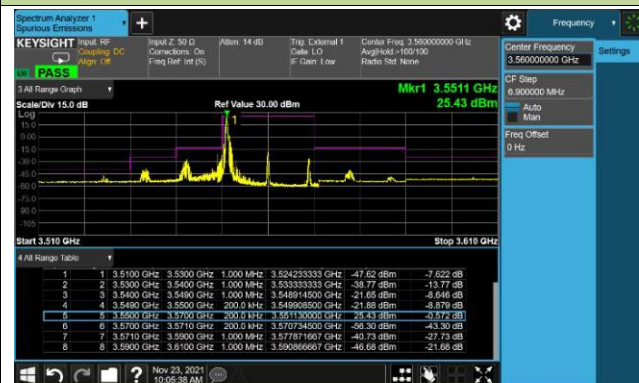


High Channel ACP - High RB Position

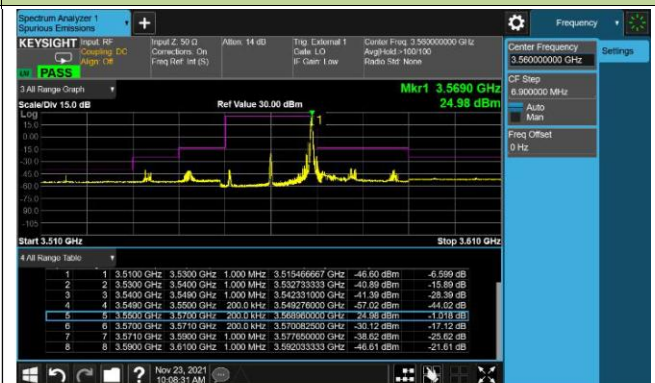


20MHz Channel Bandwidth - 1RB

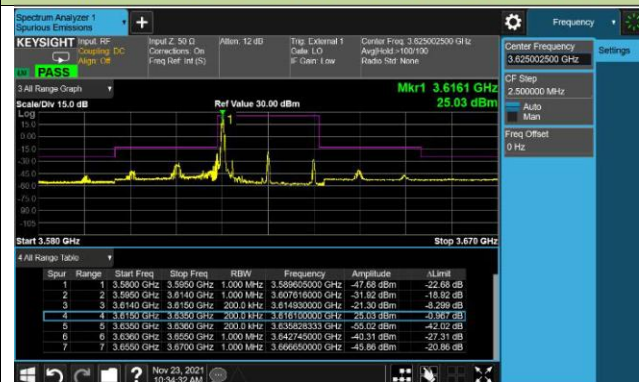
Low Channel ACP - Low RB Position



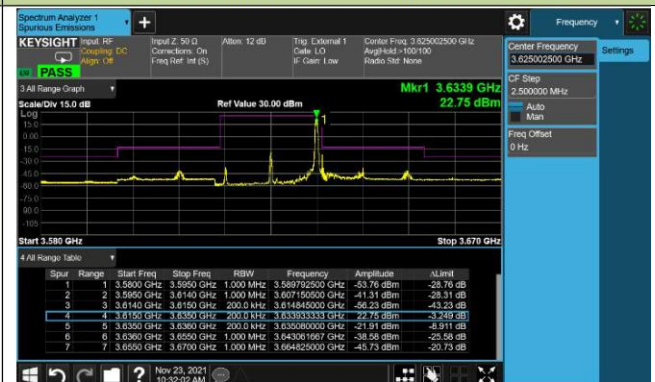
Low Channel ACP - High RB Position



Middle Channel ACP - Low RB Position



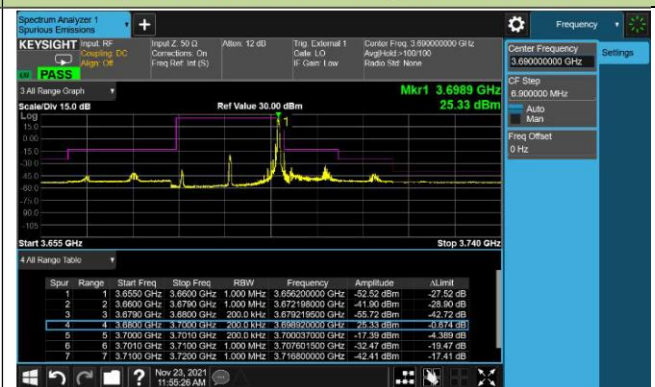
Middle Channel ACP - High RB Position



High Channel ACP - Low RB Position

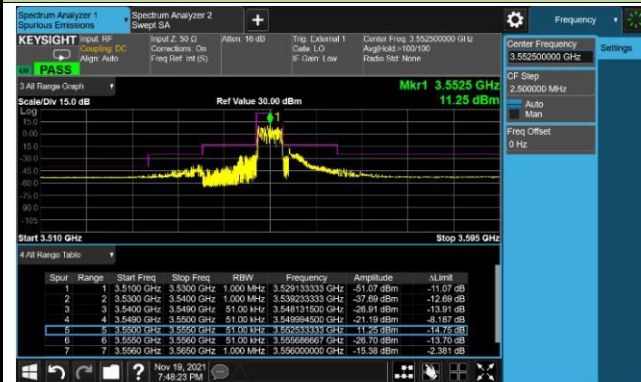


High Channel ACP - High RB Position



5MHz Channel Bandwidth - Full RB

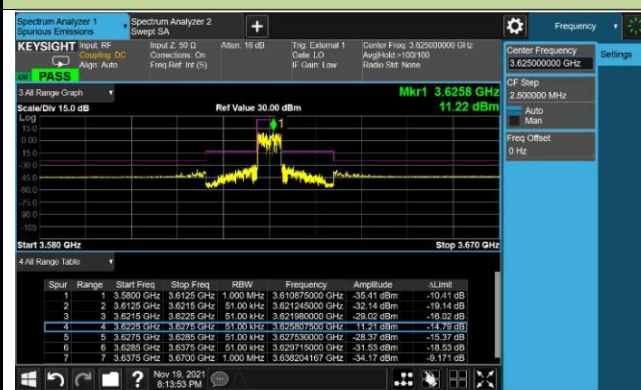
Low Channel ACP



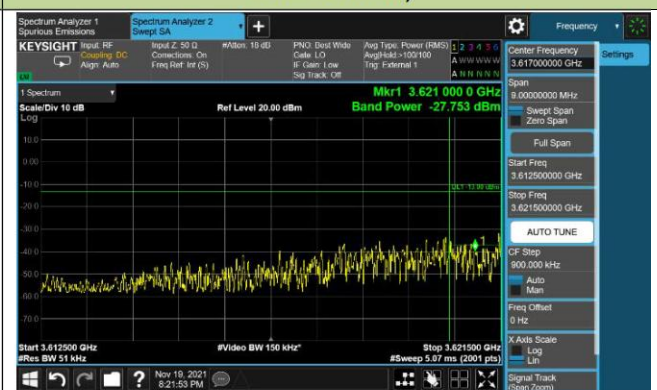
Extended Band Edge (3540 MHz ~ 3549MHz)



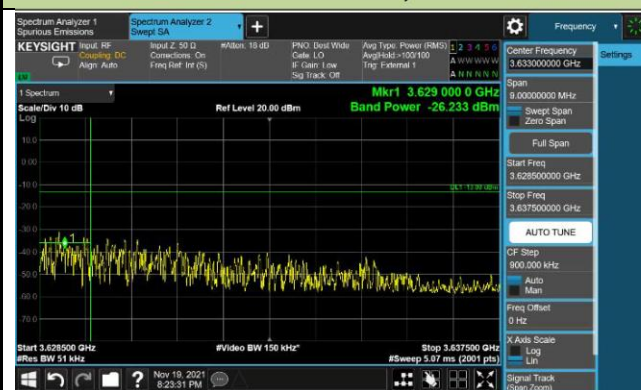
Middle Channel ACP



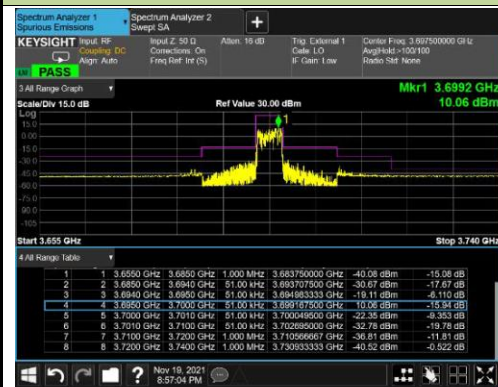
Extended Band Edge (3612.5 MHz ~ 3621.5MHz)



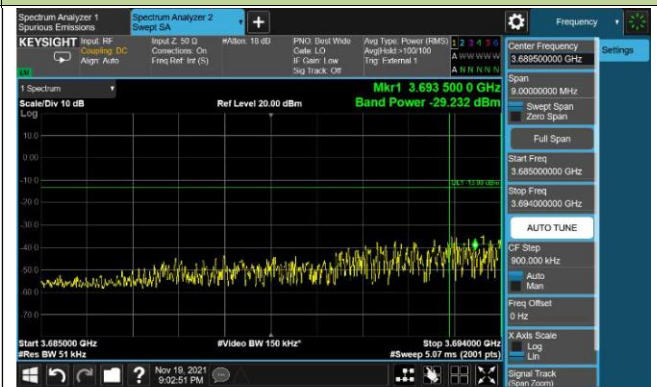
Extended Band Edge (3628.5 MHz ~ 3637.5MHz)



High Channel ACP - Low RB Position



Extended Band Edge (3685MHz ~ 3694MHz)

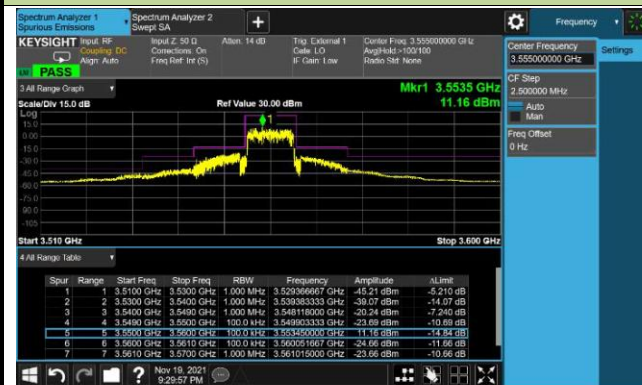


Extended Band Edge (3701MHz ~ 3710MHz)

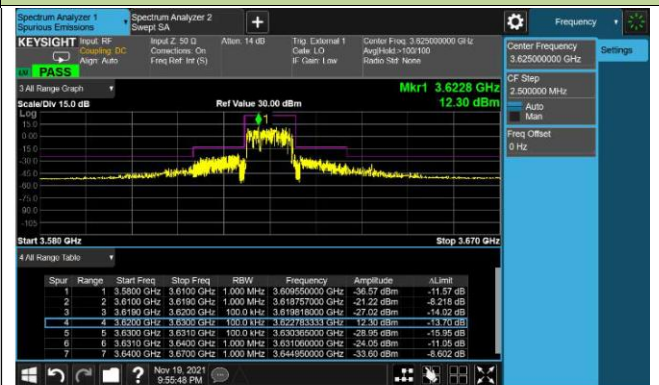


10MHz Channel Bandwidth - Full RB

Low Channel ACP - Low RB Position



Middle Channel ACP - Low RB Position

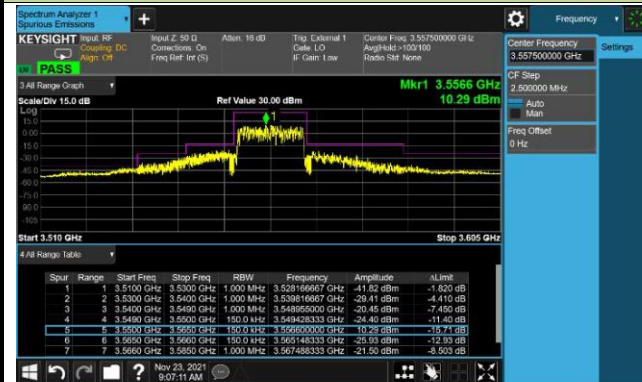


High Channel ACP - Low RB Position

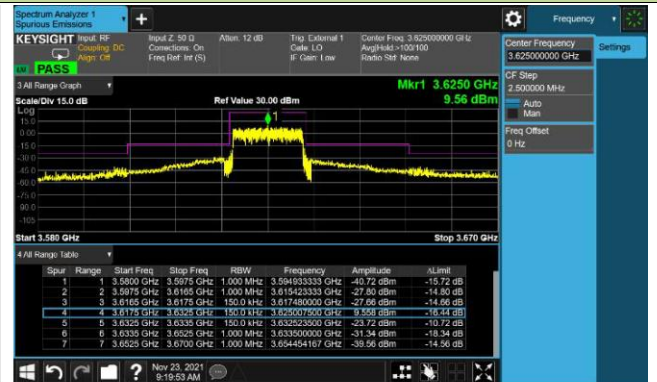


15MHz Channel Bandwidth - Full RB

Low Channel ACP - Low RB Position



Middle Channel ACP - Low RB Position

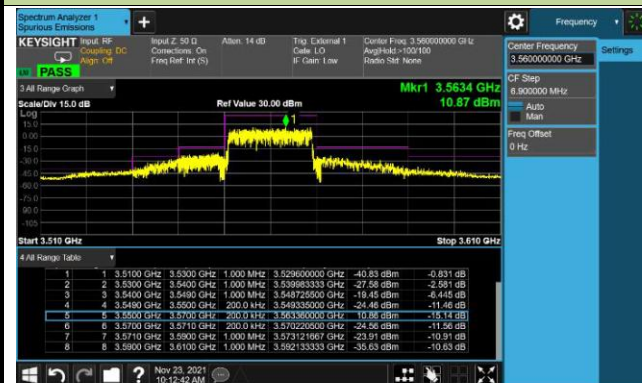


High Channel ACP - Low RB Position

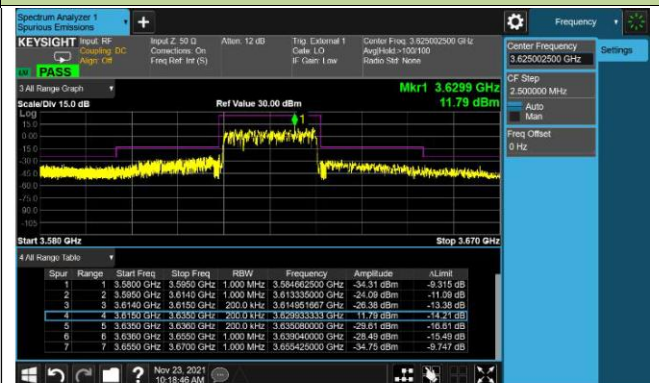


20MHz Channel Bandwidth - Full RB

Low Channel ACP - Low RB Position



Middle Channel ACP - Low RB Position



High Channel ACP - Low RB Position



5.6. Conducted Spurious Emission Measurement

5.6.1.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 10th 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.

5.6.2.Test Procedure

ANSI C63.26-2015 - Section 5.7

5.6.3.Test Setting

1. Set the analyzer frequency to low, mid, high channel.
2. RBW = 1MHz
3. VBW $\geq$ 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.

5.6.4.Test Setup



5.6.5.Test Result

Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/17
Test Band	LTE Band 42_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm/MHz)	Limit (dBm/MHz)	Result
43115	3552.50	5	30 ~ 37000	-42.06	≤ -40.00	Pass
43340	3575.00	5	30 ~ 37000	-42.29	≤ -40.00	Pass
43565	3597.50	5	30 ~ 37000	-42.36	≤ -40.00	Pass
43140	3555.00	10	30 ~ 37000	-41.41	≤ -40.00	Pass
43340	3575.00	10	30 ~ 37000	-40.85	≤ -40.00	Pass
43540	3595.00	10	30 ~ 37000	-42.29	≤ -40.00	Pass
43165	3557.50	15	30 ~ 37000	-42.05	≤ -40.00	Pass
43340	3575.00	15	30 ~ 37000	-41.27	≤ -40.00	Pass
43515	3592.50	15	30 ~ 37000	-41.68	≤ -40.00	Pass
43190	3560.00	20	30 ~ 37000	-42.39	≤ -40.00	Pass
43340	3575.00	20	30 ~ 37000	-41.26	≤ -40.00	Pass
43490	3590.00	20	30 ~ 37000	-42.18	≤ -40.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

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



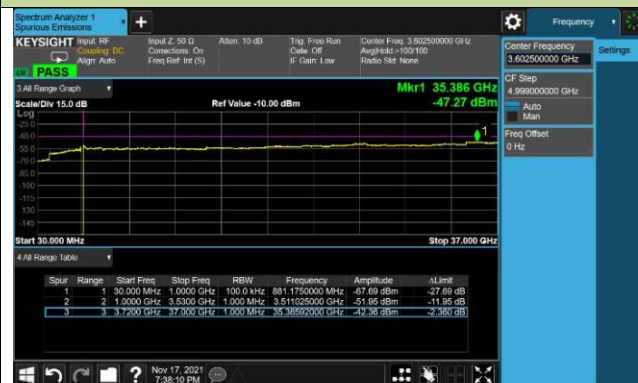
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/17
Test Band	LTE Band 43_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm/MHz)	Limit (dBm/MHz)	Result
43615	3602.50	5	30 ~ 40000	-42.36	≤ -40.00	Pass
44090	3650.00	5	30 ~ 40000	-41.92	≤ -40.00	Pass
44565	3697.50	5	30 ~ 40000	-41.78	≤ -40.00	Pass
43640	3605.00	10	30 ~ 40000	-40.94	≤ -40.00	Pass
44090	3650.00	10	30 ~ 40000	-41.38	≤ -40.00	Pass
44540	3695.00	10	30 ~ 40000	-40.09	≤ -40.00	Pass
43665	3607.50	15	30 ~ 40000	-41.05	≤ -40.00	Pass
44090	3650.00	15	30 ~ 40000	-42.53	≤ -40.00	Pass
44515	3692.50	15	30 ~ 40000	-41.76	≤ -40.00	Pass
43690	3610.00	20	30 ~ 40000	-41.96	≤ -40.00	Pass
44090	3650.00	20	30 ~ 40000	-42.06	≤ -40.00	Pass
44490	3690.00	20	30 ~ 40000	-42.12	≤ -40.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

5MHz Channel Bandwidth

Low Channel



Middle Channel



High Channel



10MHz Channel Bandwidth

Low Channel



Middle Channel

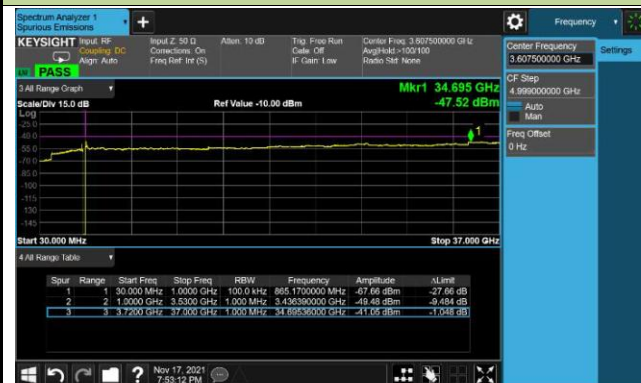


High Channel



15MHz Channel Bandwidth

Low Channel



Middle Channel



High Channel



20MHz Channel Bandwidth

Low Channel



Middle Channel



High Channel



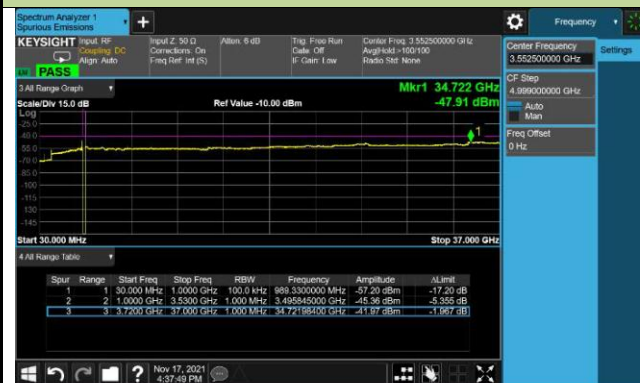
Product	LTE Module	Test Site	SIP-SR1
Test Engineer	Candy Luo	Test Date	2021/11/17
Test Band	LTE Band 48_QPSK		

Channel	Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm/MHz)	Limit (dBm/MHz)	Result
55265	3552.5	5	30 ~ 40000	-41.97	≤ -40.00	Pass
55900	3625.0	5	30 ~ 40000	-41.74	≤ -40.00	Pass
56715	3697.5	5	30 ~ 40000	-41.73	≤ -40.00	Pass
55290	3555.0	10	30 ~ 40000	-42.51	≤ -40.00	Pass
55900	3625.0	10	30 ~ 40000	-42.15	≤ -40.00	Pass
56690	3695.0	10	30 ~ 40000	-42.17	≤ -40.00	Pass
55315	3557.5	15	30 ~ 40000	-42.00	≤ -40.00	Pass
55900	3625.0	15	30 ~ 40000	-41.70	≤ -40.00	Pass
56665	3692.5	15	30 ~ 40000	-41.77	≤ -40.00	Pass
55340	3550.0	20	30 ~ 40000	-42.61	≤ -40.00	Pass
55900	3625.0	20	30 ~ 40000	-42.47	≤ -40.00	Pass
56640	3690.0	20	30 ~ 40000	-42.20	≤ -40.00	Pass

Note: Spurious emissions within 9kHz – 30MHz were found more than 20dB below limit line.

5MHz Channel Bandwidth

Low Channel



Middle Channel

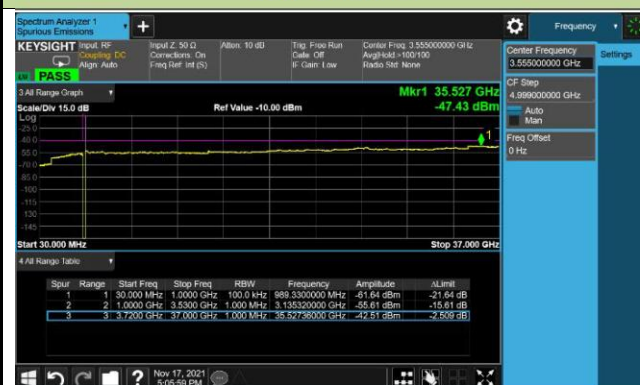


High Channel



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



5.7. Radiated Spurious Emission Measurement

5.7.1. Test Limit

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

$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20 \log D + 104.8$; where D is the measurement distance in meters. The emission limit equal to 55.3dB μ V/m.

5.7.2. Test Procedure

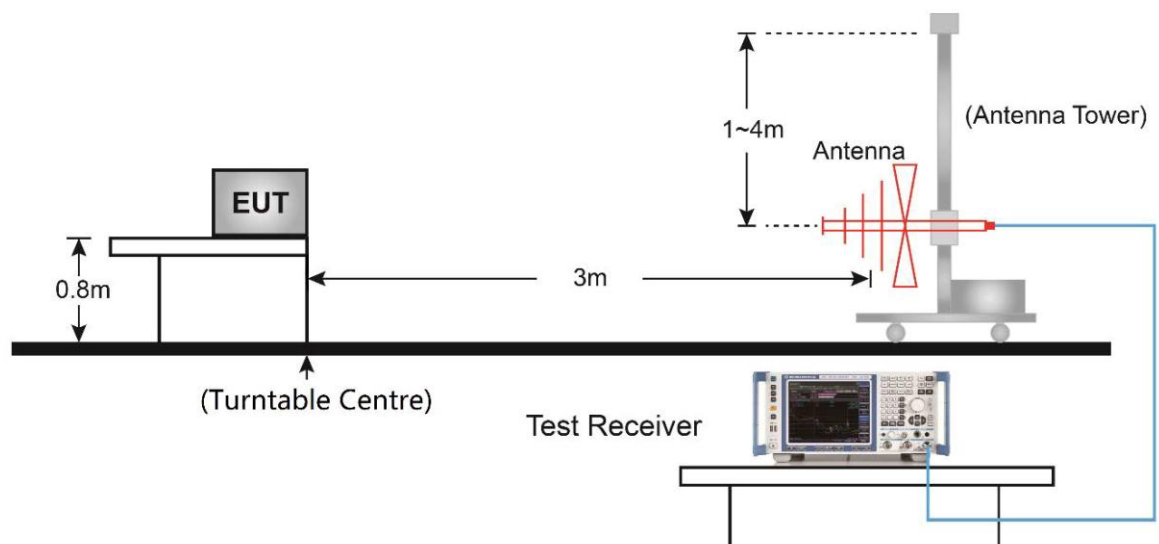
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.7.3. Test Setting

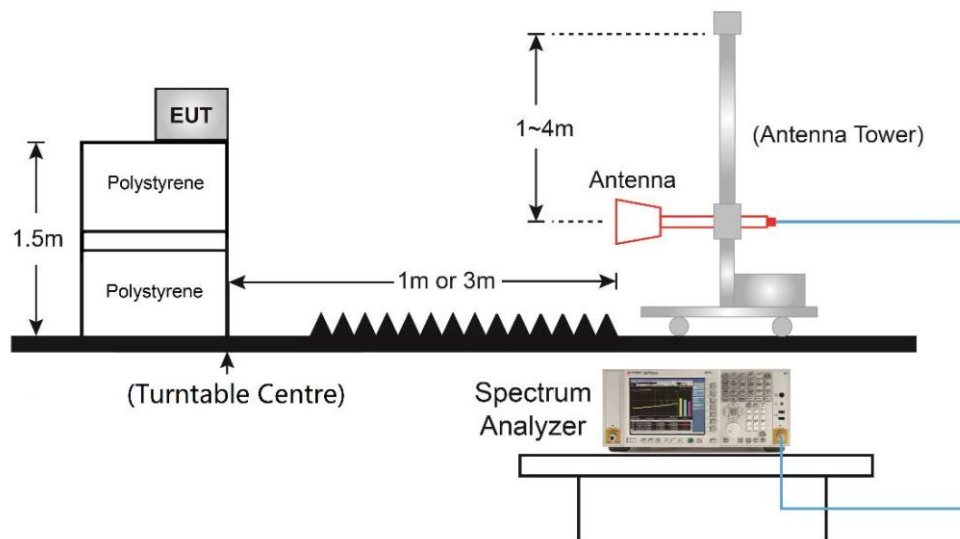
1. RBW = 1MHz
2. VBW $\geq 3 \times$ RBW
3. Sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})$
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

5.7.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.7.5.Test Result

Product	LTE Module	Test Site	SIP-AC2
Test Engineer	Allen Zou	Test Date	2021/11/04 ~ 2021/11/13
Test Mode	LTE Band 42_5MHz_1RB_QPSK		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level(dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
72.68	20.89	15.03	35.92	55.30	-19.38	Peak	Horizontal
925.80	2.60	29.89	32.49	55.30	-22.81	Peak	Horizontal
30.00	22.85	16.37	39.22	55.30	-16.08	Peak	Vertical
71.71	21.75	15.22	36.97	55.30	-18.33	Peak	Vertical
15263.00	45.31	2.68	47.99	55.30	-7.31	Peak	Horizontal
17923.50	45.91	5.43	51.34	55.30	-3.96	Peak	Horizontal
10647.50	46.77	-3.19	43.58	55.30	-11.72	Peak	Vertical
17753.50	43.35	5.37	48.72	55.30	-6.58	Peak	Vertical
Middle Channel							
71.71	21.32	15.22	36.54	55.30	-18.76	Peak	Horizontal
892.82	3.37	29.18	32.55	55.30	-22.75	Peak	Horizontal
30.00	23.69	16.37	40.06	55.30	-15.24	Peak	Vertical
71.71	21.51	15.22	36.73	55.30	-18.57	Peak	Vertical
16861.00	45.38	4.76	50.14	55.30	-5.16	Peak	Horizontal
17957.50	44.60	5.41	50.01	55.30	-5.29	Peak	Horizontal
10715.50	55.14	-3.03	52.11	55.30	-3.19	Peak	Vertical
17864.00	46.14	5.28	51.42	55.30	-3.88	Peak	Vertical
High Channel							
71.71	21.14	15.22	36.36	55.30	-18.94	Peak	Horizontal
949.56	2.69	30.18	32.87	55.30	-22.43	Peak	Horizontal
30.00	23.42	16.37	39.79	55.30	-15.51	Peak	Vertical
71.71	21.28	15.22	36.50	55.30	-18.80	Peak	Vertical
16487.00	45.97	4.26	50.23	55.30	-5.07	Peak	Horizontal
17745.00	44.97	5.11	50.08	55.30	-5.22	Peak	Horizontal
10783.50	53.76	-3.24	50.52	55.30	-4.78	Peak	Vertical
17974.50	43.55	5.48	49.03	55.30	-6.27	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Product	LTE Module	Test Site	SIP-AC2
Test Engineer	Allen Zou	Test Date	2021/11/04 ~ 2021/11/13
Test Mode	LTE Band 43_5MHz_1RB_QPSK		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level(dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
71.71	16.90	15.22	32.12	55.30	-23.18	Peak	Horizontal
944.23	3.06	30.10	33.16	55.30	-22.14	Peak	Horizontal
30.00	21.11	16.37	37.48	55.30	-17.82	Peak	Vertical
70.74	17.12	15.40	32.52	55.30	-22.78	Peak	Vertical
16461.50	45.70	4.43	50.13	55.30	-5.17	Peak	Horizontal
17668.50	44.56	5.34	49.90	55.30	-5.40	Peak	Horizontal
10800.50	51.85	-3.19	48.66	55.30	-6.64	Peak	Vertical
18000.00	45.81	5.63	51.44	55.30	-3.86	Peak	Vertical
Middle Channel							
72.20	17.33	15.12	32.45	55.30	-22.85	Peak	Horizontal
925.31	2.07	29.87	31.94	55.30	-23.36	Peak	Horizontal
31.46	19.57	16.63	36.20	55.30	-19.10	Peak	Vertical
71.23	17.16	15.31	32.47	55.30	-22.83	Peak	Vertical
16385.00	44.67	4.57	49.24	55.30	-6.06	Peak	Horizontal
17779.00	44.57	5.61	50.18	55.30	-5.12	Peak	Horizontal
16385.00	45.41	4.57	49.98	55.30	-5.32	Peak	Vertical
17813.00	45.16	5.19	50.35	55.30	-4.95	Peak	Vertical
High Channel							
71.71	17.07	15.22	32.29	55.30	-23.01	Peak	Horizontal
957.81	2.00	30.12	32.12	55.30	-23.18	Peak	Horizontal
30.00	21.59	16.37	37.96	55.30	-17.34	Peak	Vertical
957.81	2.70	30.12	32.82	55.30	-22.48	Peak	Vertical
16393.50	44.61	4.44	49.05	55.30	-6.25	Peak	Horizontal
17855.50	45.33	5.33	50.66	55.30	-4.64	Peak	Horizontal
7400.50	51.56	-6.37	45.19	55.30	-10.11	Peak	Vertical
11098.00	50.85	-3.42	47.43	55.30	-7.87	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Product	LTE Module	Test Site	SIP-AC2
Test Engineer	Allen Zou	Test Date	2021/11/04 ~ 2021/11/13
Test Mode	LTE Band 48_5MHz_1RB_QPSK		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level(dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
72.20	21.22	15.12	36.34	55.30	-18.96	Peak	Horizontal
953.93	2.95	30.16	33.11	55.30	-22.19	Peak	Horizontal
30.00	24.25	16.37	40.62	55.30	-14.68	Peak	Vertical
70.74	20.99	15.40	36.39	55.30	-18.91	Peak	Vertical
14413.00	45.80	1.56	47.36	55.30	-7.94	Peak	Horizontal
17532.50	46.08	4.99	51.07	55.30	-4.23	Peak	Horizontal
10647.50	49.88	-3.19	46.69	55.30	-8.61	Average	Vertical
17753.50	43.55	5.37	48.92	55.30	-6.38	Average	Vertical
Middle Channel							
72.20	21.17	15.12	36.29	55.30	-19.01	Peak	Horizontal
944.71	2.00	30.11	32.11	55.30	-23.19	Peak	Horizontal
30.00	24.37	16.37	40.74	55.30	-14.56	Peak	Vertical
71.23	21.00	15.31	36.31	55.30	-18.99	Peak	Vertical
16291.50	46.83	3.47	50.30	55.30	-5.00	Peak	Horizontal
17515.50	45.44	4.92	50.36	55.30	-4.94	Peak	Horizontal
7944.50	50.87	-5.64	45.23	55.30	-10.07	Peak	Vertical
10868.50	54.08	-3.46	50.62	55.30	-4.68	Peak	Vertical
High Channel							
71.71	21.00	15.22	36.22	55.30	-19.08	Peak	Horizontal
947.62	2.20	30.17	32.37	55.30	-22.93	Peak	Horizontal
30.00	23.95	16.37	40.32	55.30	-14.98	Peak	Vertical
71.23	20.91	15.31	36.22	55.30	-19.08	Peak	Vertical
16640.00	45.25	4.19	49.44	55.30	-5.86	Peak	Horizontal
17804.50	45.17	5.33	50.50	55.30	-4.80	Peak	Horizontal
11089.50	52.66	-3.35	49.31	55.30	-5.99	Peak	Vertical
17796.00	44.81	5.46	50.27	55.30	-5.03	Peak	Vertical

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

5.8. End User Device Additional Requirement (CBSD Protocol)

5.8.1.Test Limit

End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, 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

5.8.2.Test Procedure

KDB 940660 D01 v02, WINNF-TS-0122 V1.0.2

5.8.3.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:

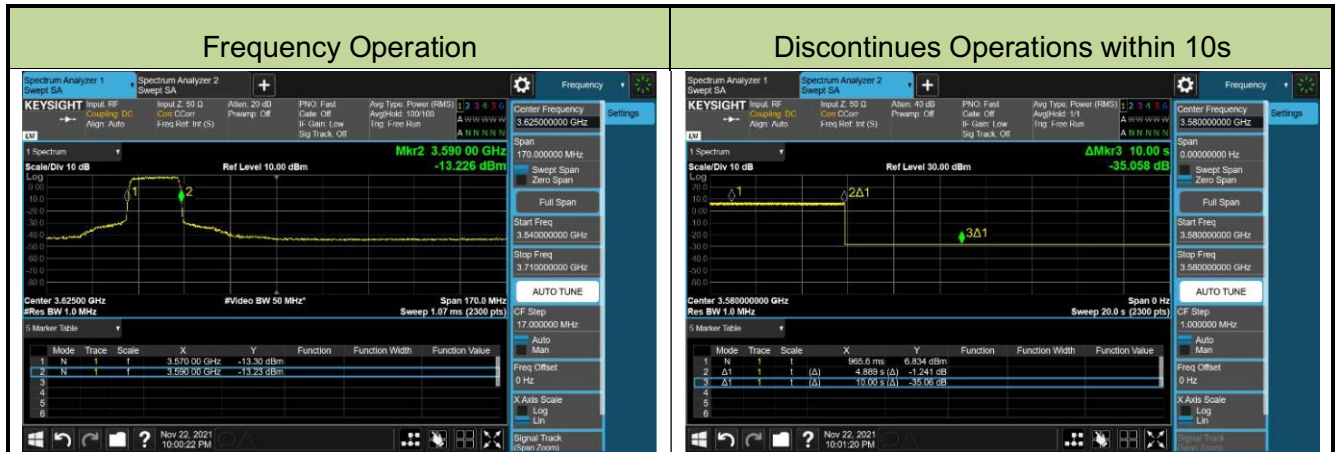
- a. Setup WINNF.PT.C.HBT.1 with 3570 ~ 3590MHz and power level at 13 dBm/MHz.
- b. Enable AP service from Ruckus LTE Cloud management.
- c. Check EUT Tx frequency and power.
- d. Disable AP service from Ruckus LTE Cloud management and check EUT stop transmission within 10s.

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.

5.8.4.Test Result

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Larry Yan	Test Date	2021/11/22
Test Mode	CBSD transmit at 3580MHz (20MHz BW), 13dBm/MHz		

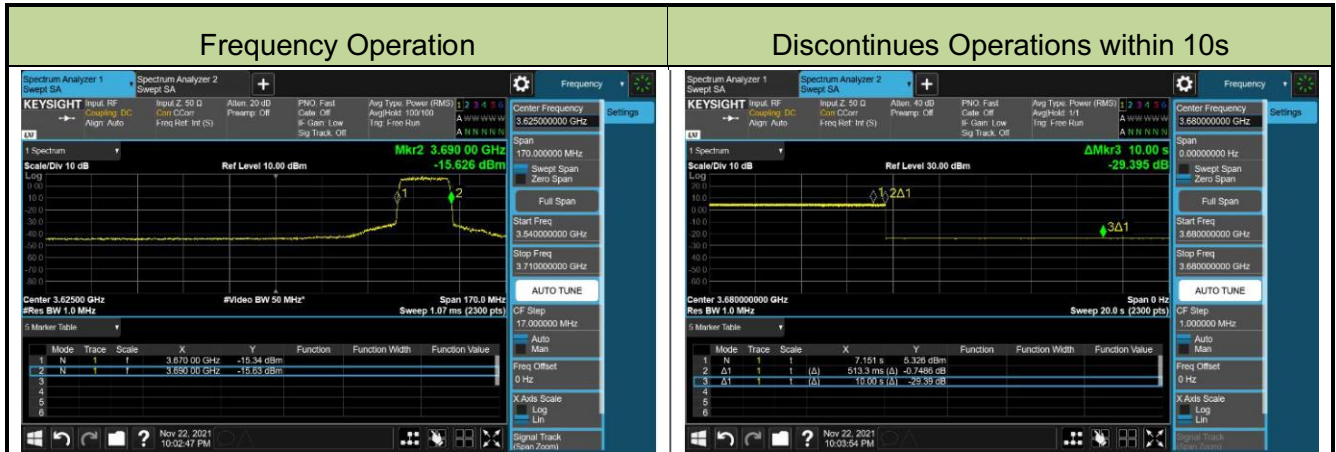


Marker 1: CBSD sends instructions to discontinue LTE operations.

Marker 2: EUT discontinues operation.

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

Product	LTE Module	Test Site	WZ-SR6
Test Engineer	Larry Yan	Test Date	2021/11/22
Test Mode	CBSD transmit at 3680MHz (20MHz BW), 8dBm/MHz		



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.

6. CONCLUSION

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

Appendix A - Test Setup Photograph

Refer to “2110RSU053-UT” file.

Appendix B - EUT Photograph

Refer to “2110RSU053-UE” file.