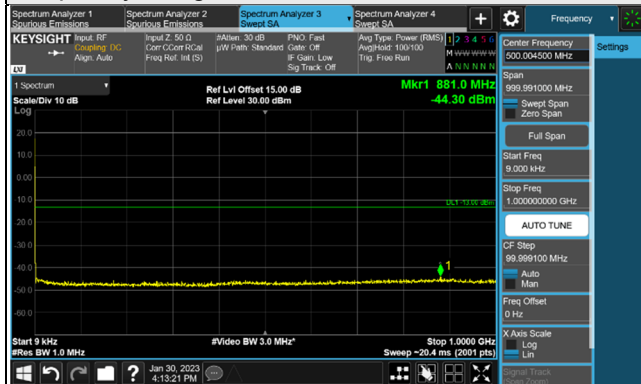


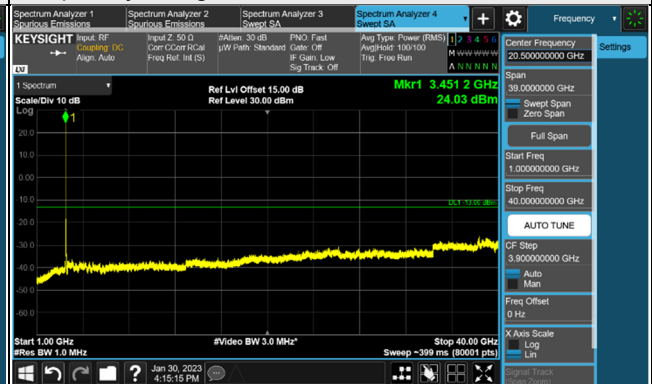
n77, Channel Bandwidth 50MHz

Channel 631668 (3475.02MHz)

Frequency Range : 9kHz ~ 1GHz

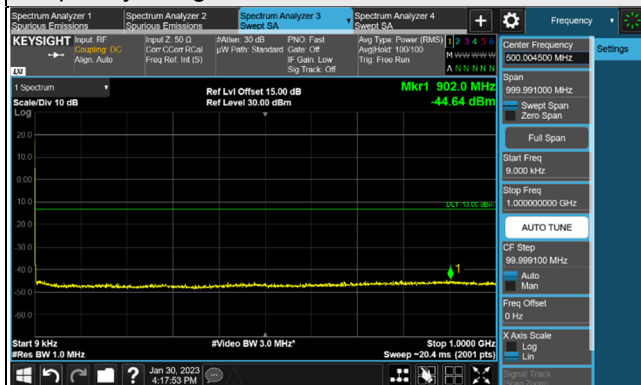


Frequency Range : 1GHz ~ 40GHz

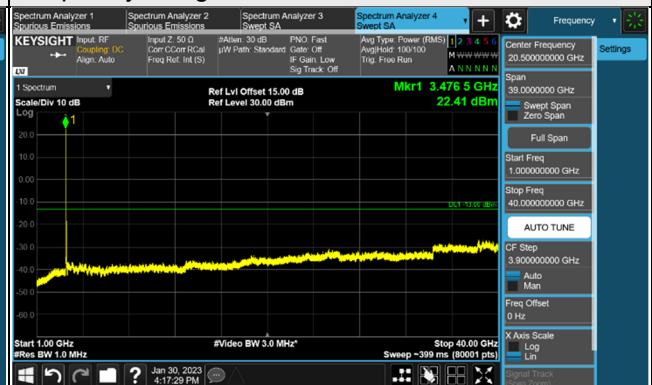


Channel 633334 (3500.01MHz)

Frequency Range : 9kHz ~ 1GHz

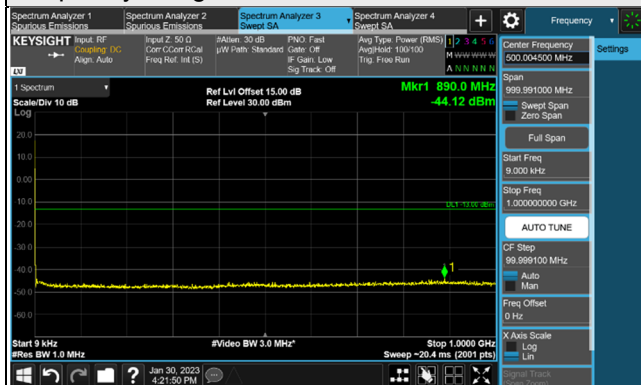


Frequency Range : 1GHz ~ 40GHz

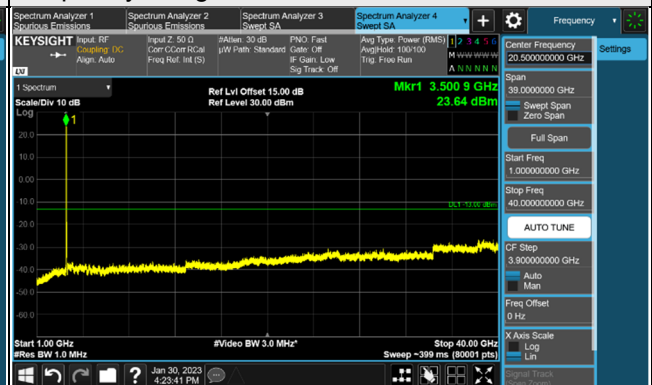


Channel 635000 (3525.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

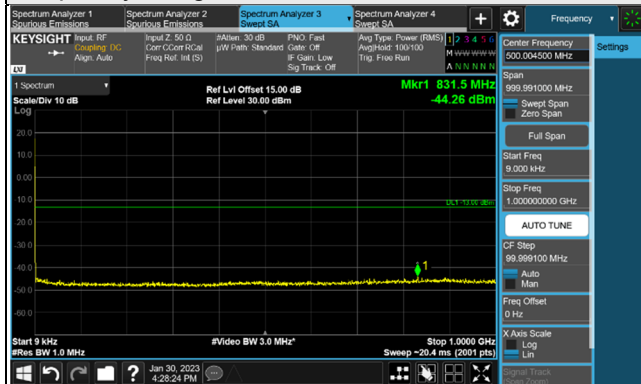


*The 9kHz signal over the limit is from Spectrum.

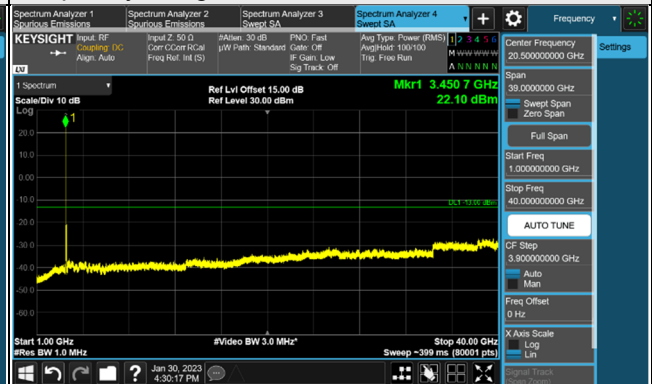
n77, Channel Bandwidth 60MHz

Channel 632000 (3480.00MHz)

Frequency Range : 9kHz ~ 1GHz

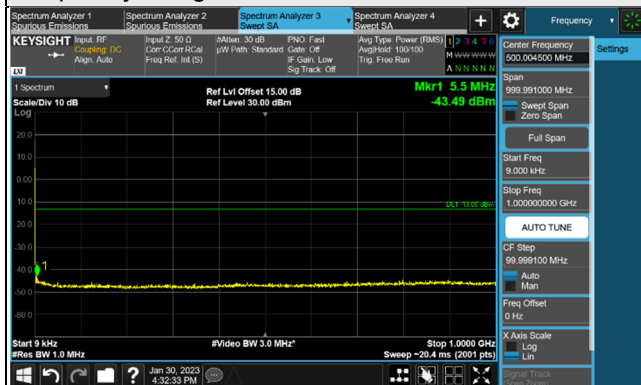


Frequency Range : 1GHz ~ 40GHz

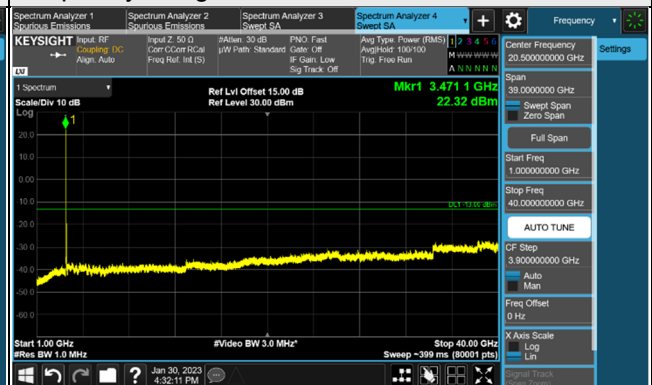


Channel 633334 (3500.01MHz)

Frequency Range : 9kHz ~ 1GHz

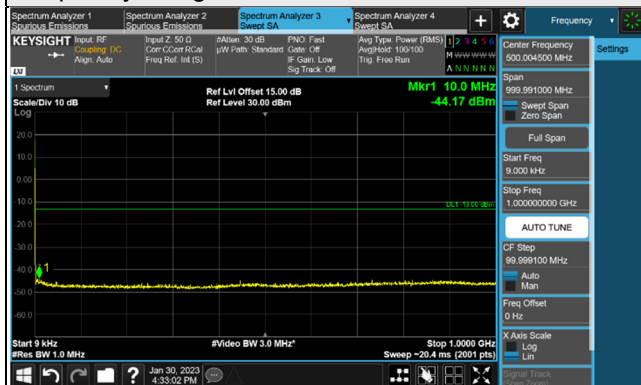


Frequency Range : 1GHz ~ 40GHz

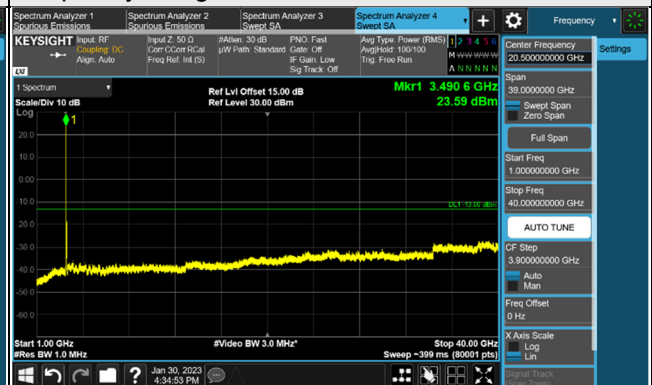


Channel 634666 (3519.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

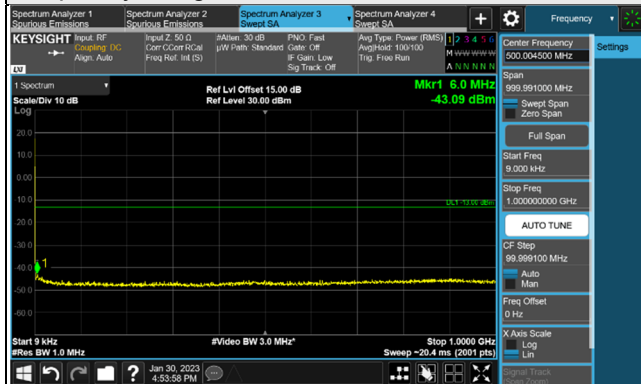


*The 9kHz signal over the limit is from Spectrum.

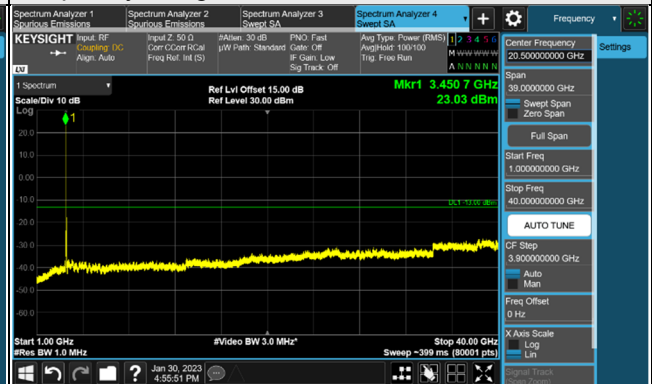
n77, Channel Bandwidth 80MHz

Channel 632668 (3490.02MHz)

Frequency Range : 9kHz ~ 1GHz

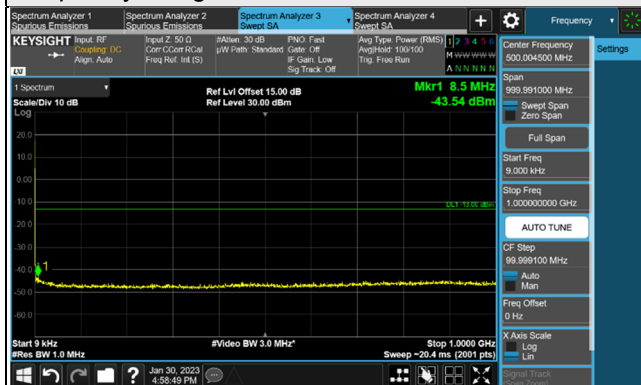


Frequency Range : 1GHz ~ 40GHz

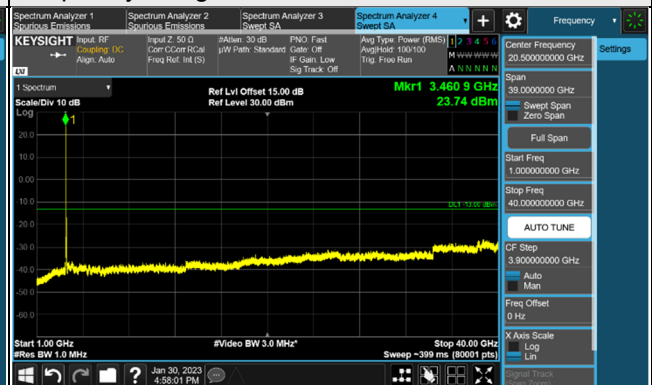


Channel 633334 (3500.01MHz)

Frequency Range : 9kHz ~ 1GHz

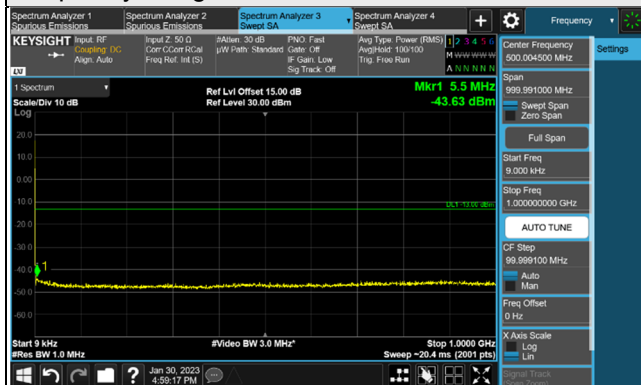


Frequency Range : 1GHz ~ 40GHz

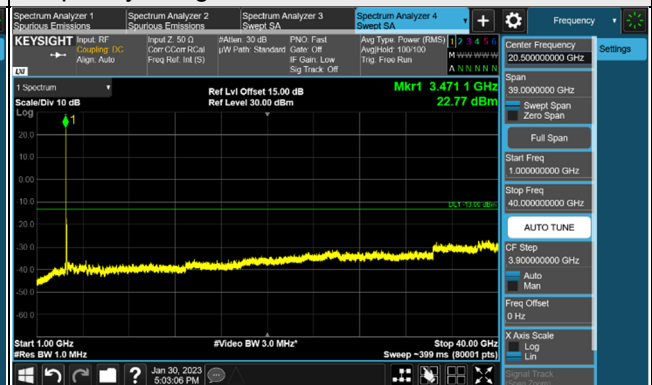


Channel 634000 (3510.00MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

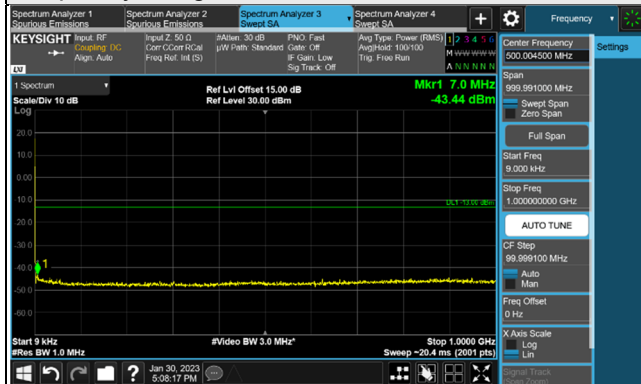


*The 9kHz signal over the limit is from Spectrum.

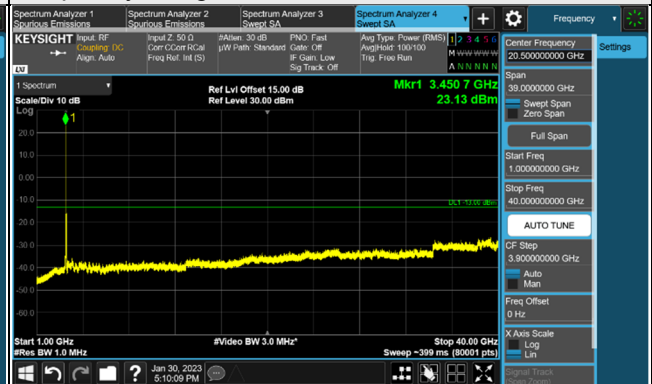
n77, Channel Bandwidth 90MHz

Channel 633000 (3495.00MHz)

Frequency Range : 9kHz ~ 1GHz

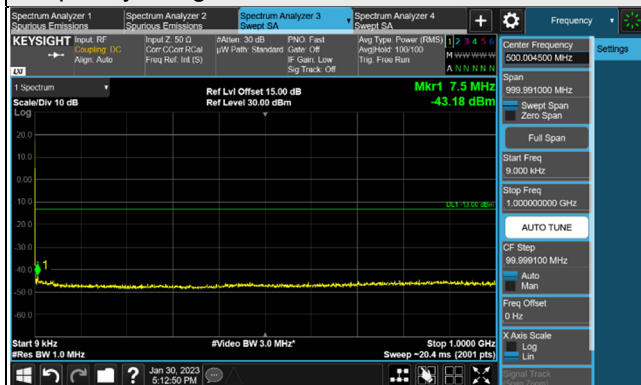


Frequency Range : 1GHz ~ 40GHz

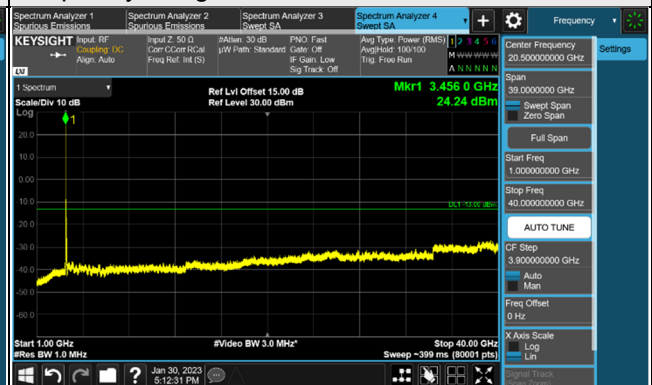


Channel 633334 (3500.01MHz)

Frequency Range : 9kHz ~ 1GHz

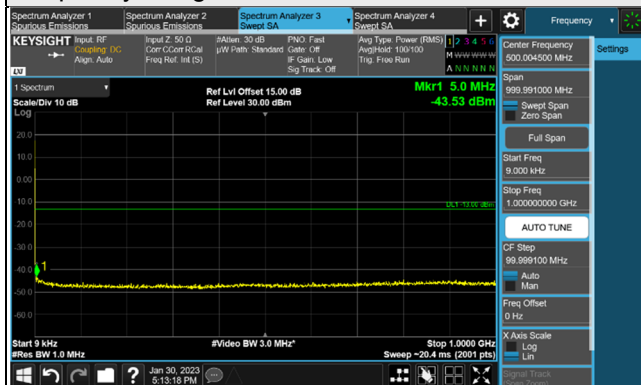


Frequency Range : 1GHz ~ 40GHz

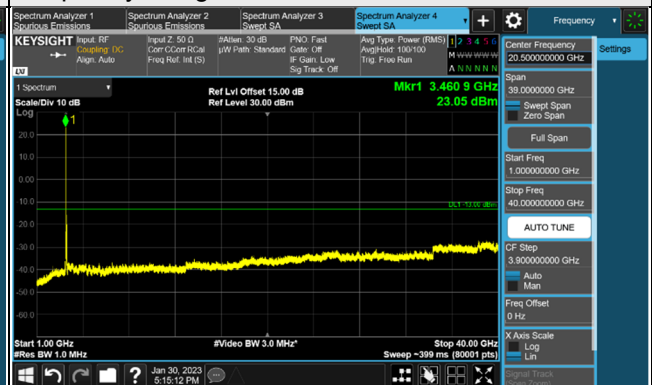


Channel 633666 (3504.99MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz

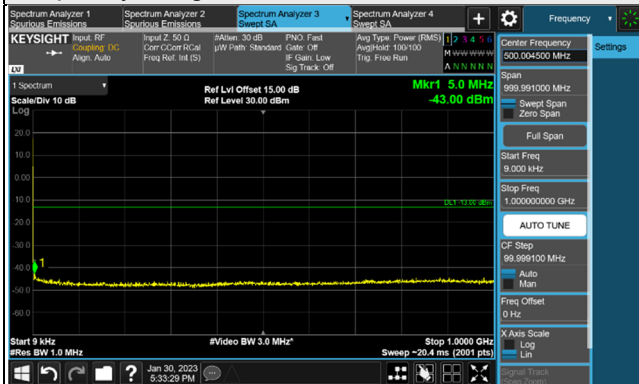


*The 9kHz signal over the limit is from Spectrum.

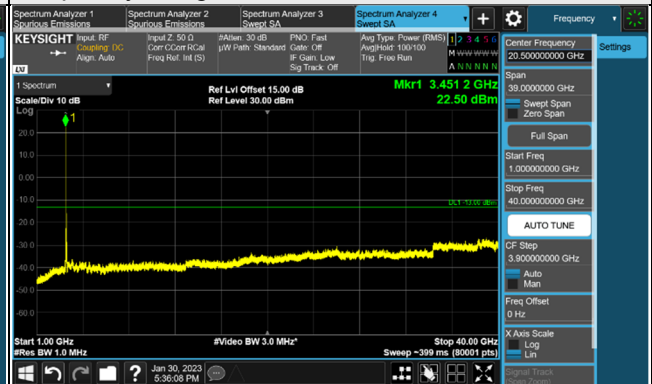
n77, Channel Bandwidth 100MHz

Channel 633334 (3500.01MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 40GHz



*The 9kHz signal over the limit is from Spectrum.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

According to FCC 27.53(n), for operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

4.8.2 Test Procedure

- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 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.
$$\text{EIRP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log (D) - 104.8;$$
 where D is the measurement distance (in the far field region) in m.
$$\text{ERP (dBm)} = E (\text{dB}\mu\text{V/m}) + 20\log (D) - 104.8 - 2.15;$$
 where D is the measurement distance (in the far field region) in m.

Note:

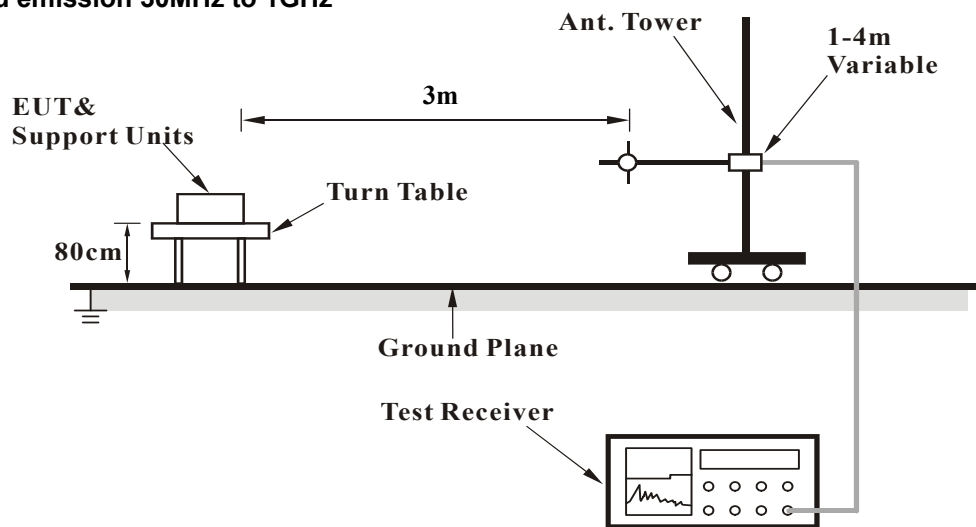
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

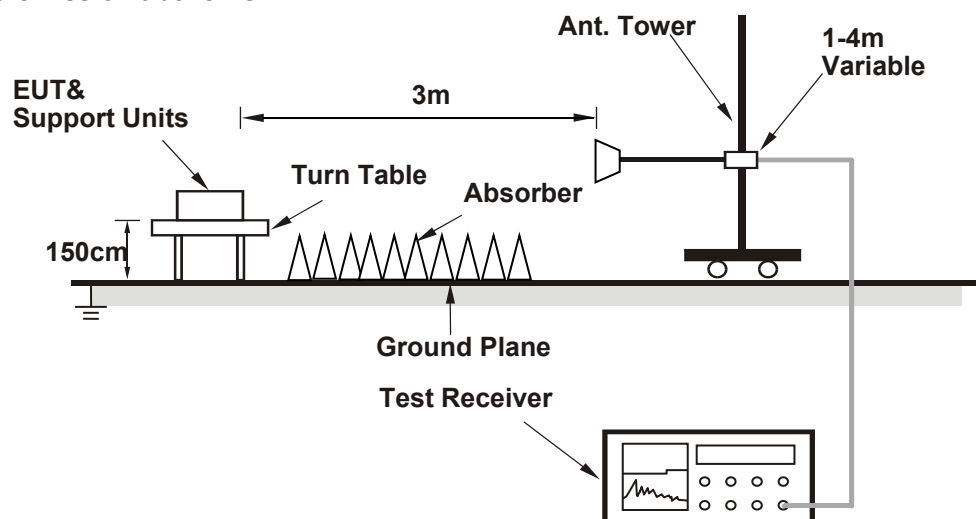
No deviation.

4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

4.8.5 Test Results

Below 1GHz

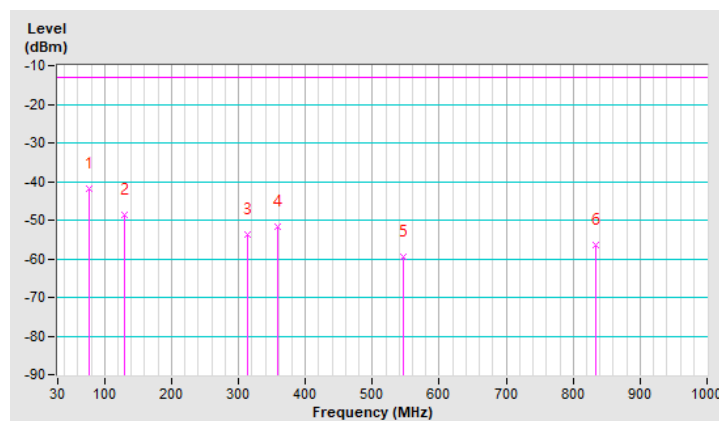
5GNR n77 (Part 27Q), Channel Bandwidth 10MHz

Mode	TX channel 636332 (3544.98MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 70%RH	Input Power	120Vac, 60Hz (System)
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	76.56	-41.80	-13.00	-28.80	1.49 H	89	69.43	-111.23
2	129.91	-48.74	-13.00	-35.74	3.07 H	254	59.93	-108.67
3	313.24	-53.70	-13.00	-40.70	2.61 H	127	52.99	-106.69
4	357.86	-51.70	-13.00	-38.70	1.34 H	238	54.11	-105.81
5	547.01	-59.55	-13.00	-46.55	3.06 H	104	42.01	-101.56
6	834.13	-56.38	-13.00	-43.38	2.86 H	263	40.36	-96.74

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

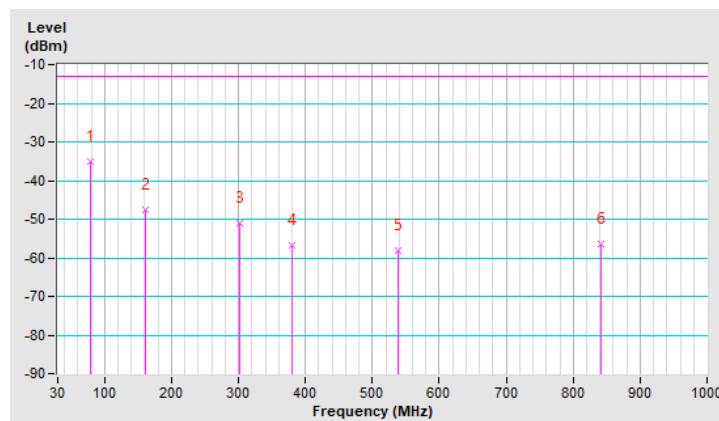


Mode	TX channel 636332 (3544.98MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 70%RH	Input Power	120Vac, 60Hz (System)
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	78.50	-35.13	-13.00	-22.13	1.95 V	145	76.55	-111.68
2	161.92	-47.68	-13.00	-34.68	2.40 V	200	60.17	-107.85
3	302.57	-50.88	-13.00	-37.88	3.56 V	224	56.07	-106.95
4	380.17	-56.64	-13.00	-43.64	2.14 V	43	48.43	-105.07
5	538.28	-58.29	-13.00	-45.29	2.34 V	148	43.28	-101.57
6	841.89	-56.45	-13.00	-43.45	3.23 V	169	40.33	-96.78

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.



Above 1GHz

5GNR n77 (Part 27Q), Channel Bandwidth 10MHz

Mode	TX channel 630334 (3455.01MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6910.02	-43.85	-13.00	-30.85	1.32 H	277	57.72	-101.57
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6910.02	-40.69	-13.00	-27.69	1.97 V	265	60.88	-101.57

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 633334 (3500.01MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-42.99	-13.00	-29.99	1.55 H	304	57.93	-100.92
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-39.85	-13.00	-26.85	2.04 V	257	61.07	-100.92

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 636332 (3544.98MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7089.96	-42.09	-13.00	-29.09	1.42 H	284	57.85	-99.94
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7089.96	-38.97	-13.00	-25.97	2.04 V	257	60.97	-99.94

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

5GNR n77 (Part 27Q), Channel Bandwidth 50MHz

Mode	TX channel 631668 (3475.02MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6950.04	-43.35	-13.00	-30.35	1.39 H	245	57.96	-101.31
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	6950.04	-40.26	-13.00	-27.26	1.88 V	221	61.05	-101.31

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 633334 (3500.01MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-42.89	-13.00	-29.89	1.42 H	299	58.03	-100.92
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-39.80	-13.00	-26.80	1.97 V	242	61.12	-100.92

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

Mode	TX channel 635000 (3525.00MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7050.00	-42.24	-13.00	-29.24	1.35 H	274	57.98	-100.22
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7050.00	-39.13	-13.00	-26.13	1.78 V	214	61.09	-100.22

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

5GNR n77 (Part 27Q), Channel Bandwidth 100MHz

Mode	TX channel 633334 (3500.01MHz)	Frequency Range	1GHz ~ 40GHz
Environmental Conditions	24deg. C, 78%RH	Input Power	120Vac, 60Hz (System)
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-42.80	-13.00	-29.80	1.33 H	274	58.12	-100.92
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7000.02	-39.67	-13.00	-26.67	2.03 V	196	61.25	-100.92

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Tel: 886-3-6668565

Fax: 886-3-6668323

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Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

The address and road map of all our labs can be found in our web site also.

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