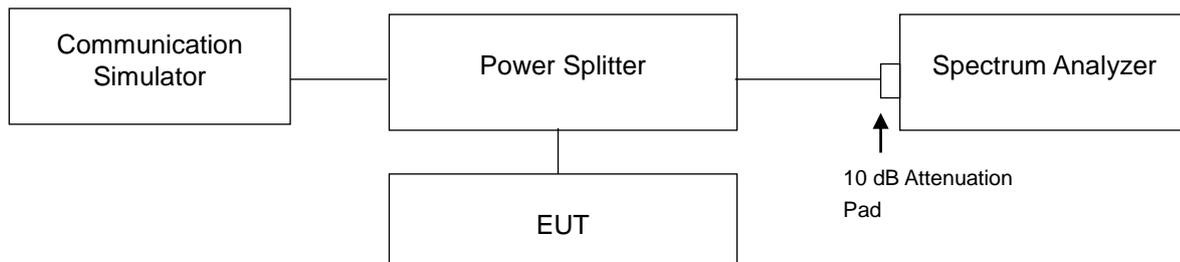### 4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

4.7.2 Test Setup

4.7.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 20 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

4.7.4   Test Results

GPRS

CH 512 (1850.2MHz)

CH 661 (1880MHz)

CH 810 (1909.8MHz)

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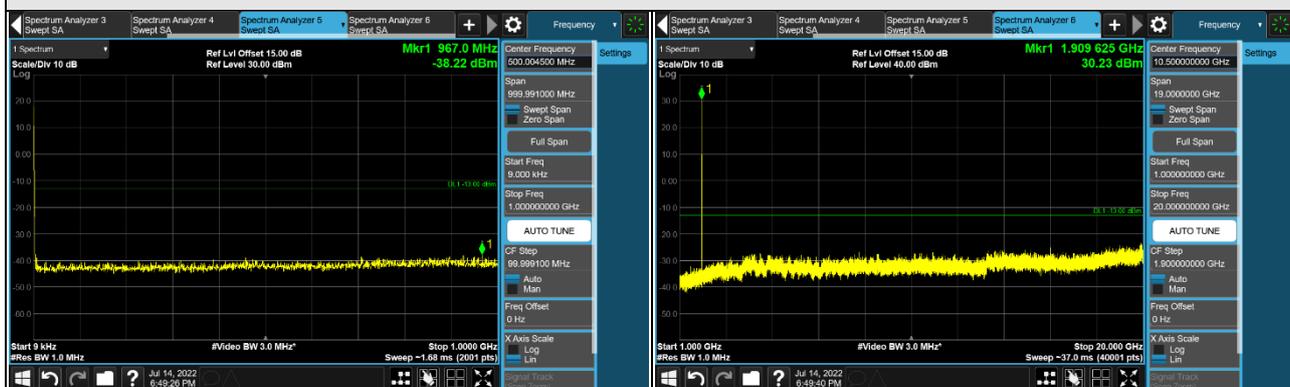
EDGE

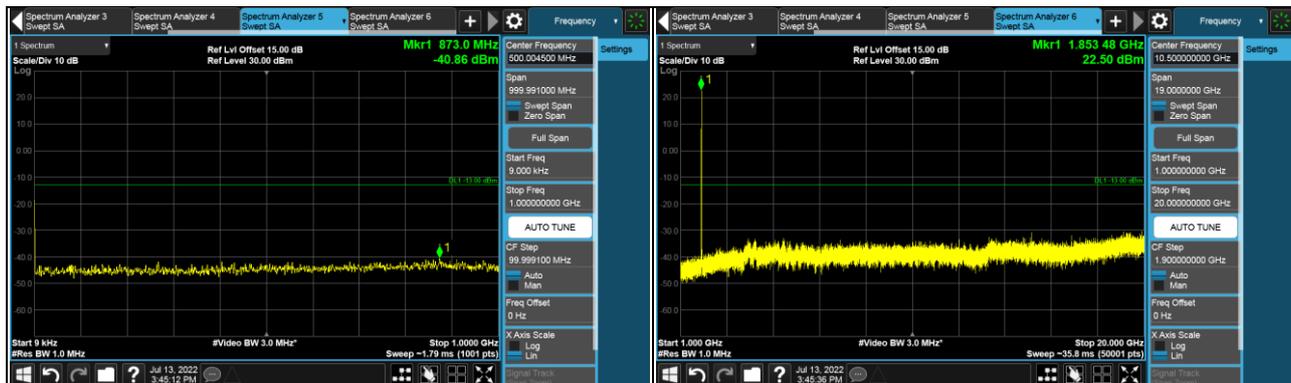### CH 512 (1850.2MHz)

CH 661 (1880MHz)

CH 810 (1909.8MHz)

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

WCDMA Band 2
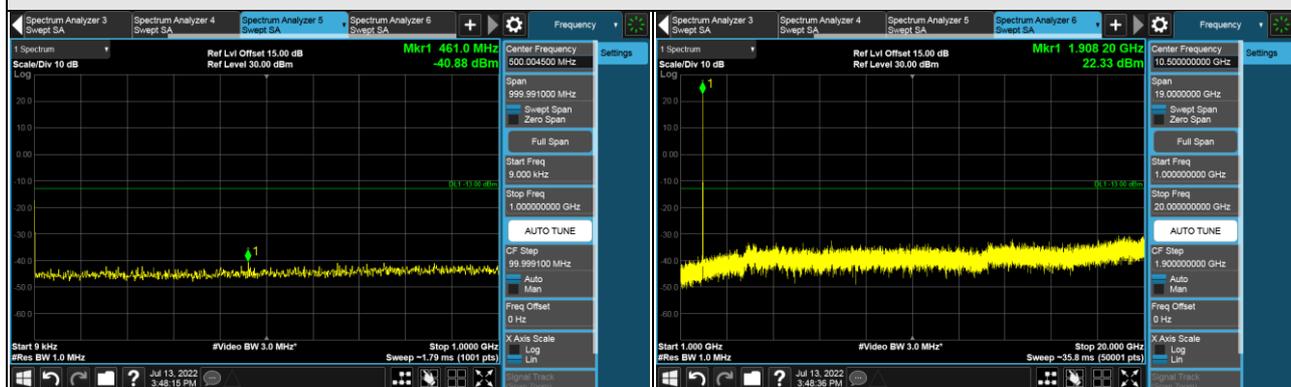

CH 9262 (1852.4MHz)

CH 9400 (1880MHz)

CH 9538 (1907.6MHz)

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

HSDPA

CH 9262 (1852.4MHz)
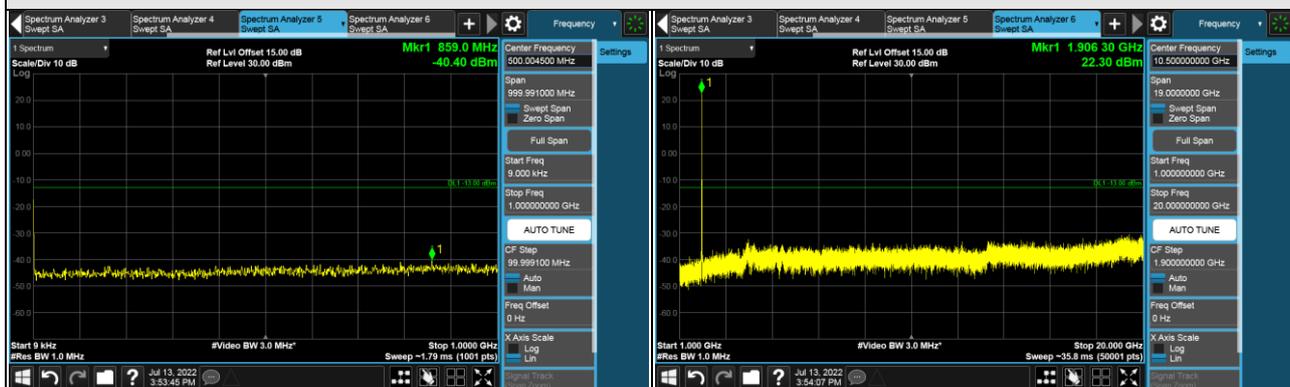
CH 9400 (1880MHz)
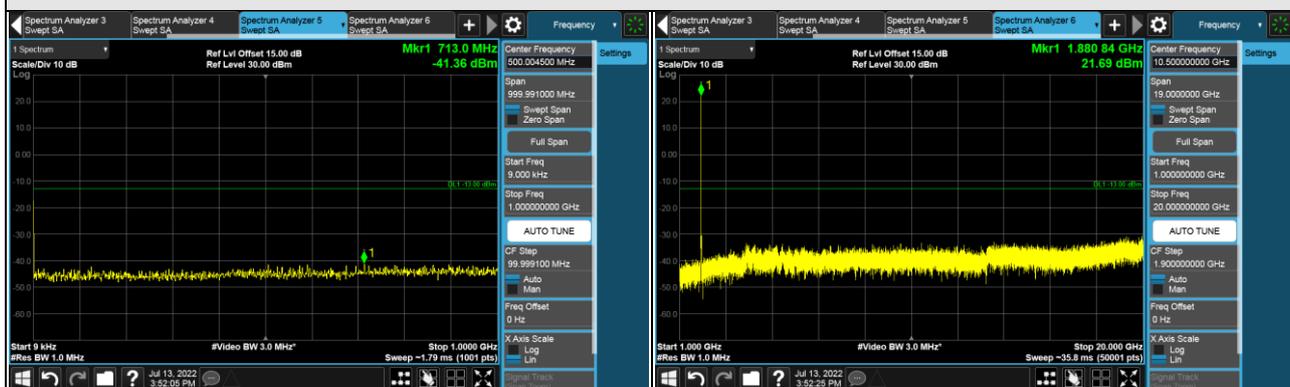

CH 9538 (1907.6MHz)

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

HSUPA

CH 9262 (1852.4MHz)

CH 9400 (1880MHz)

CH 9538 (1907.6MHz)

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

LTE Band 2 (Channel Bandwidth 1.4MHz)

CH 18607 (1850.7MHz)

CH 18900 (1880MHz)

CH 19193 (1909.3MHz)

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

LTE Band 2 (Channel Bandwidth 3MHz)

CH 18615 (1851.5MHz)

CH 18900 (1880MHz)

CH 19185 (1908.5MHz)

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

LTE Band 2 (Channel Bandwidth 5MHz)

CH 18625 (1852.5MHz)

CH 18900 (1880MHz)

CH 19175 (1907.5MHz)

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

LTE Band 2 (Channel Bandwidth 10MHz)
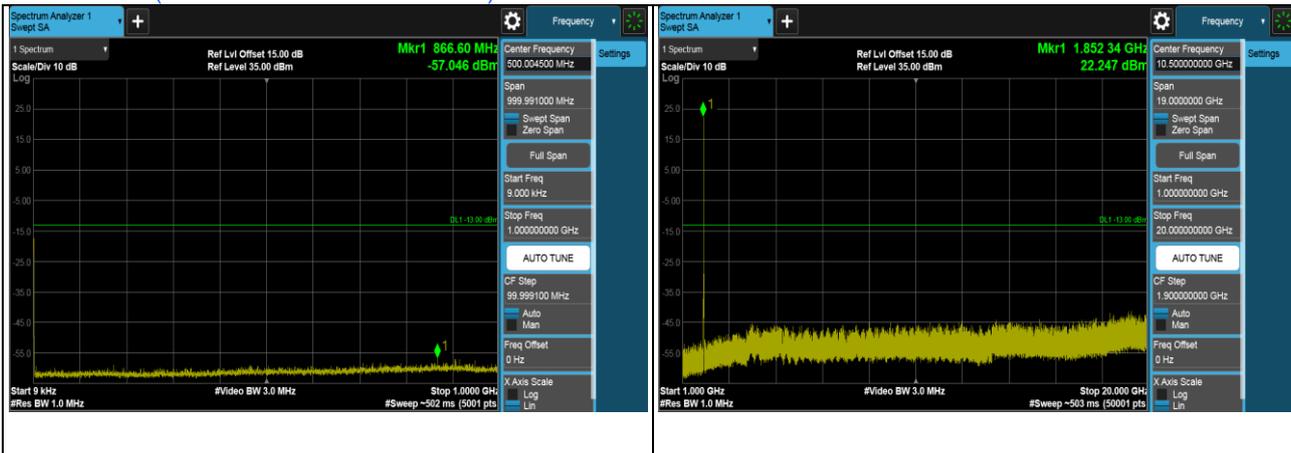
CH 18650 (1855MHz)
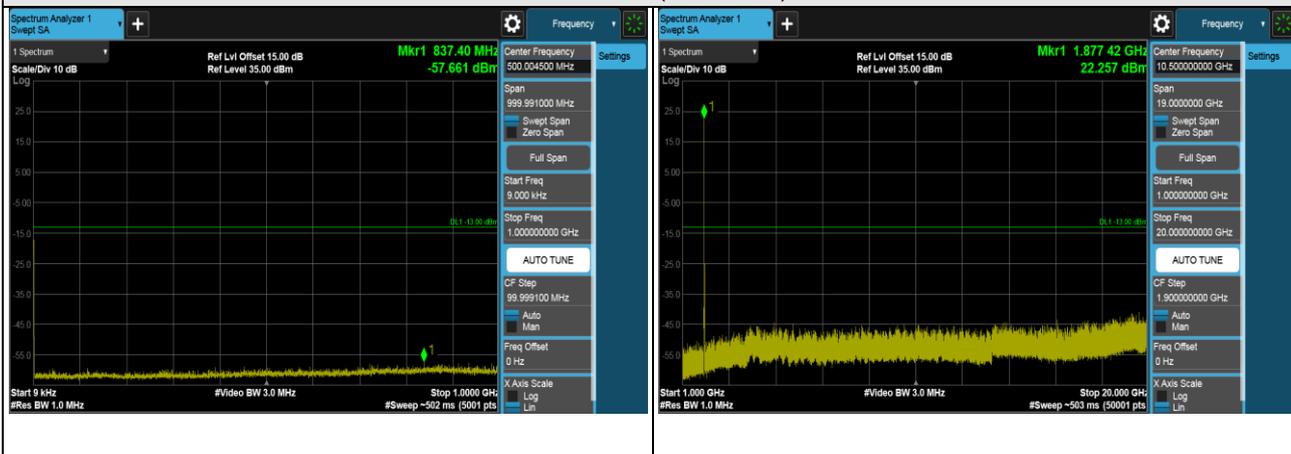
CH 18900 (1880MHz)
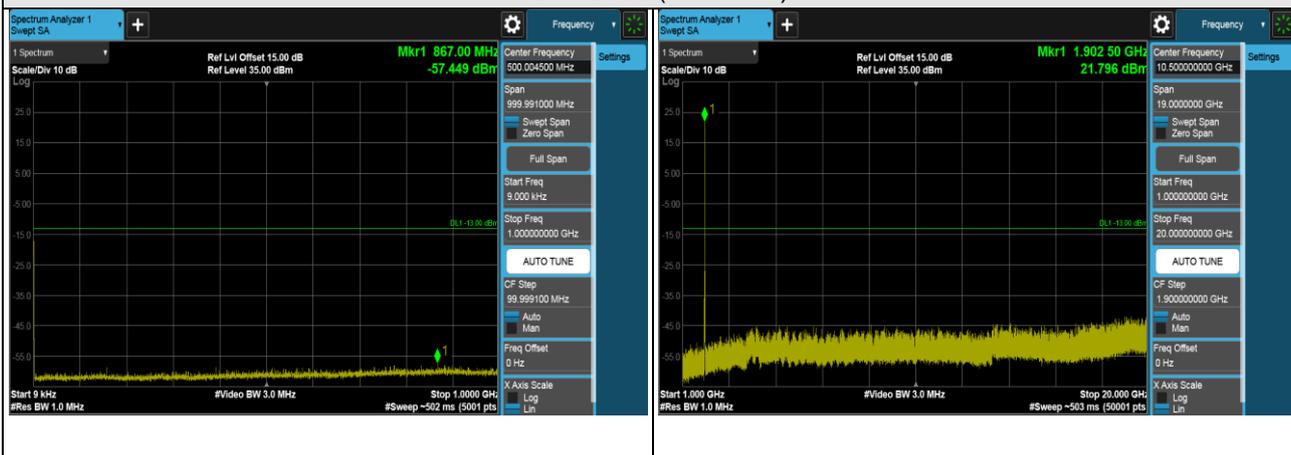
CH 19150 (1905MHz)

*The 9kHz signal over the limit is from Spectrum.
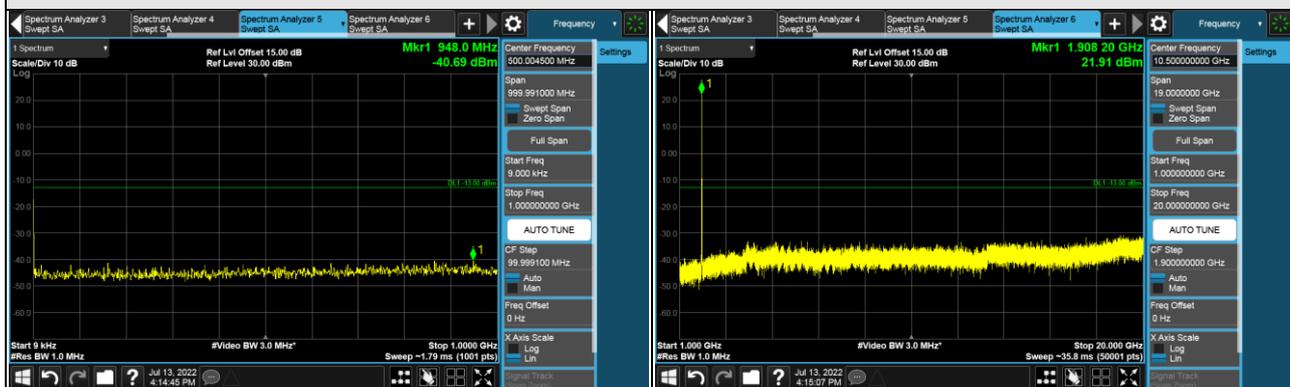
LTE Band 2 (Channel Bandwidth 15MHz)
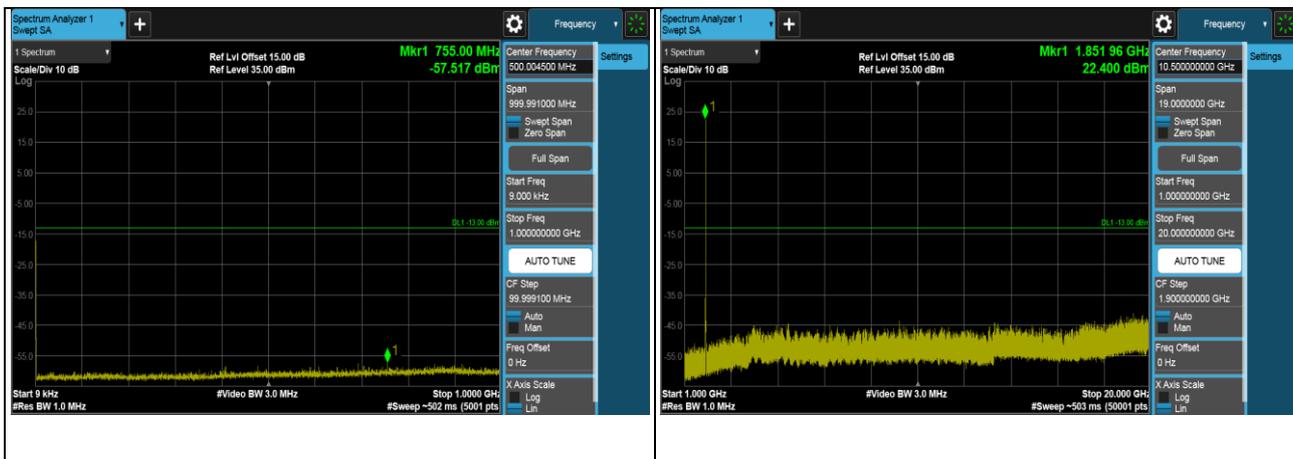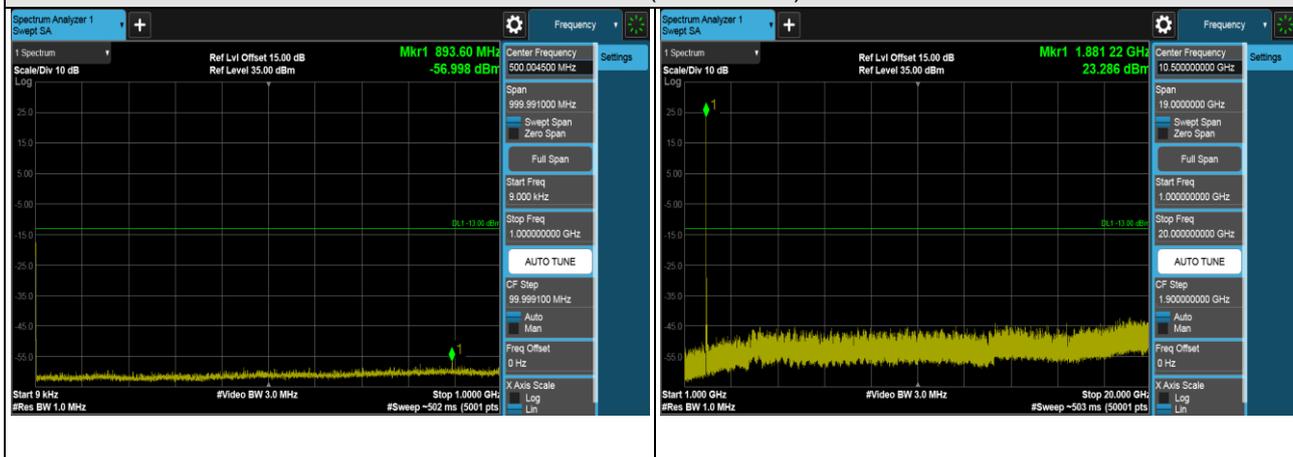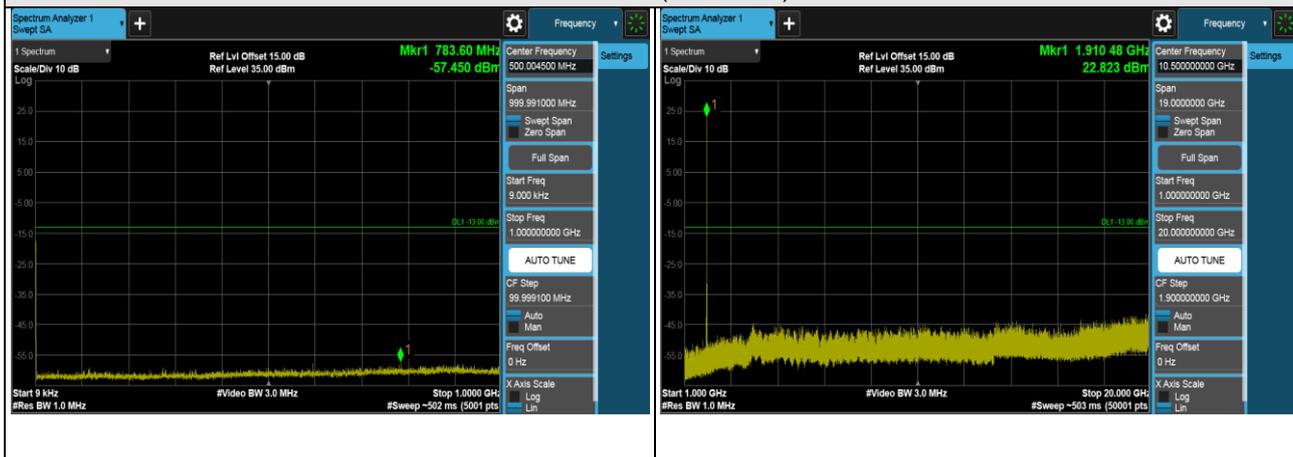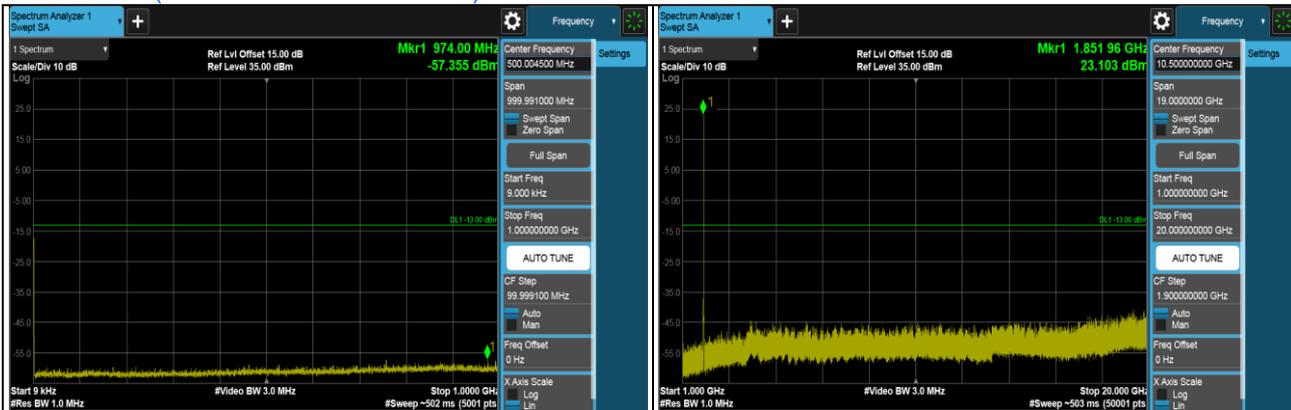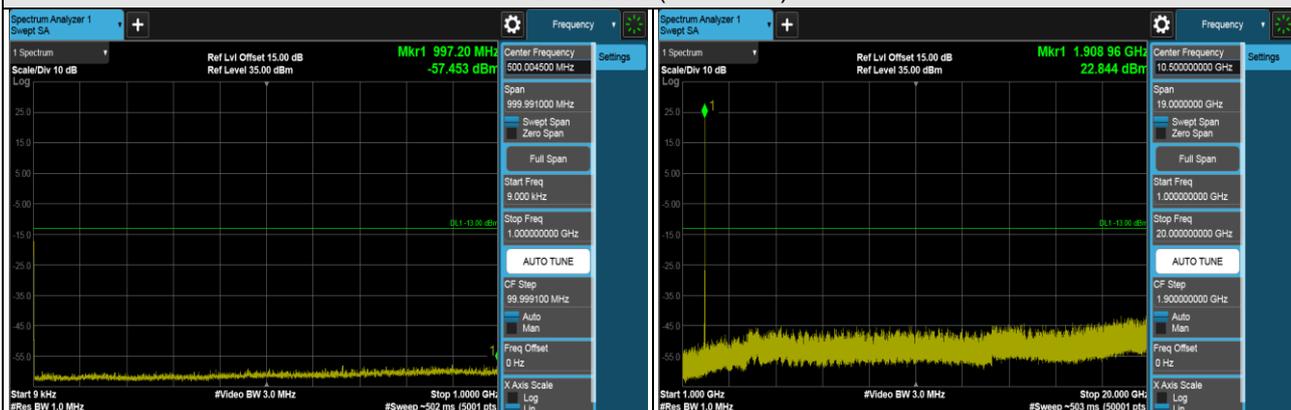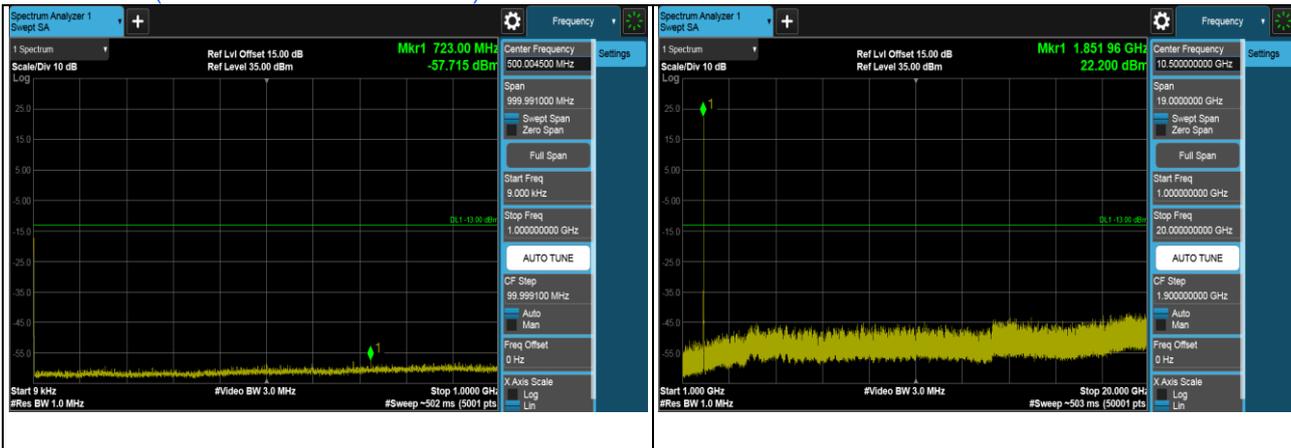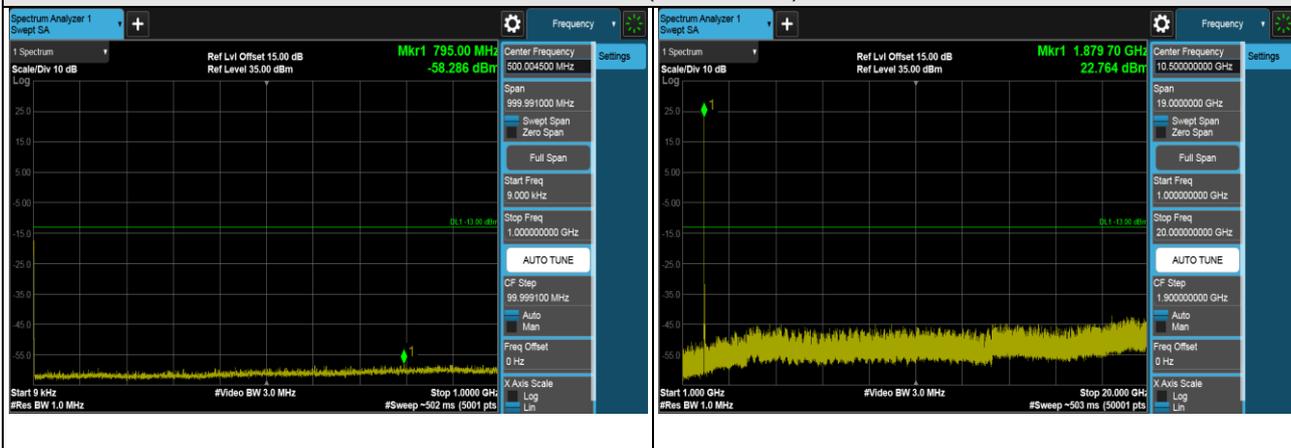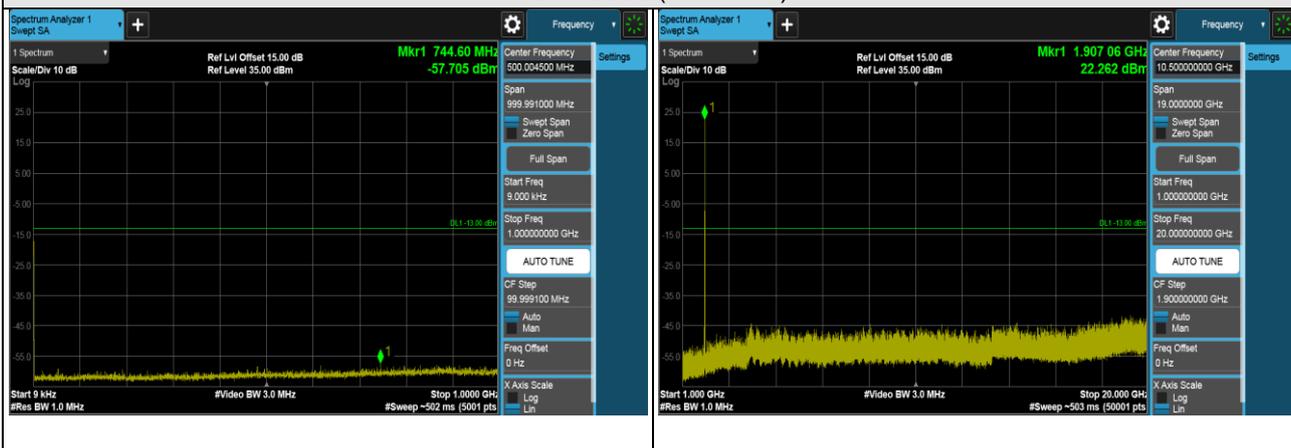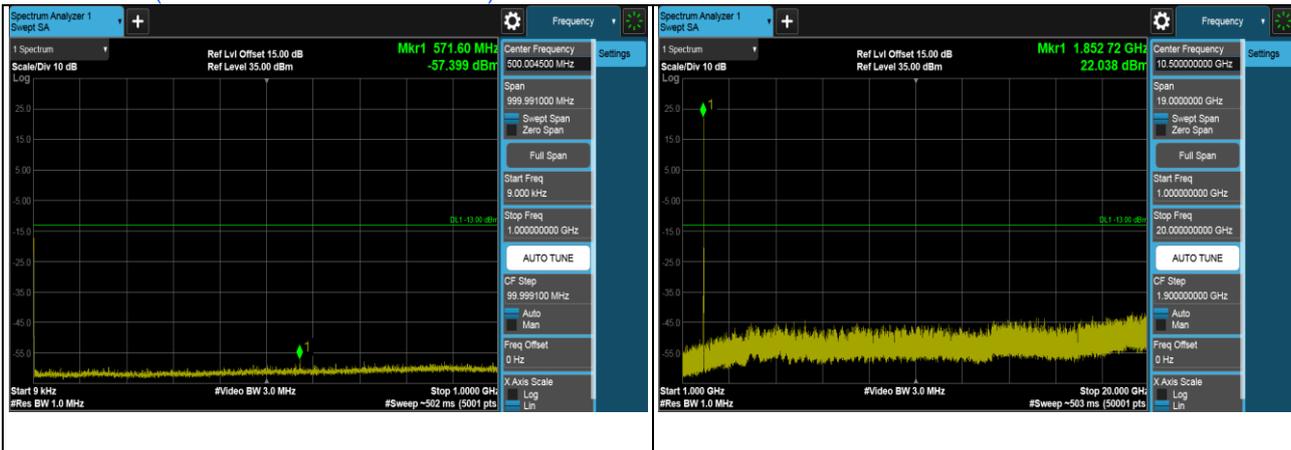

CH 18675 (1857.5MHz)
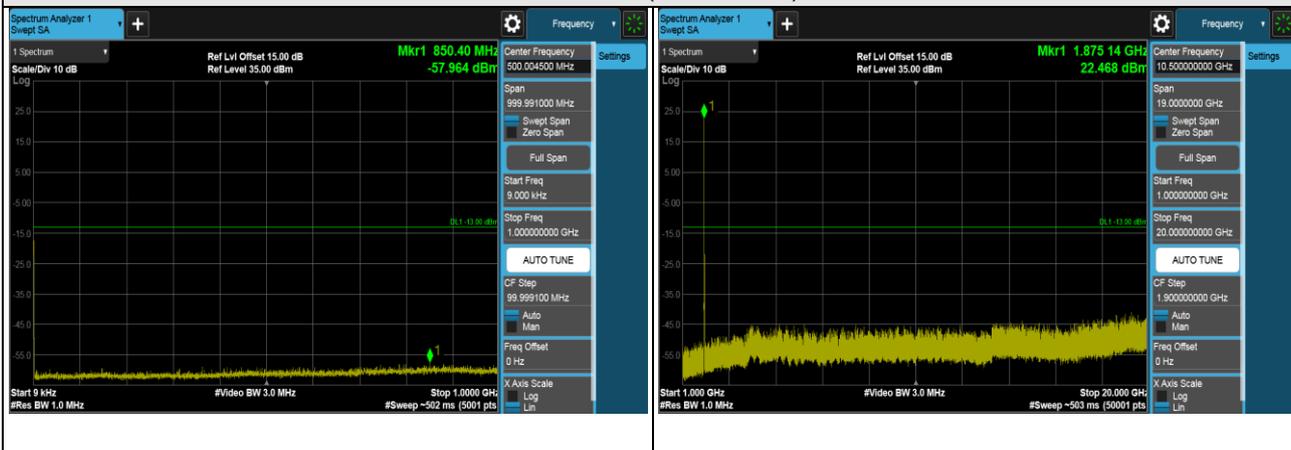
CH 18900 (1880MHz)
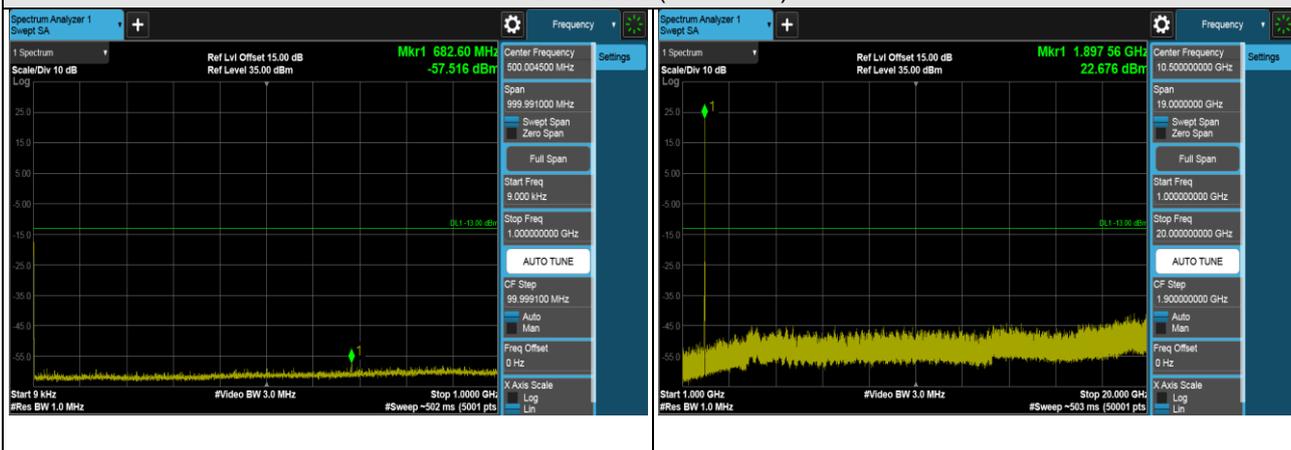
CH 19125 (1902.5MHz)

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

LTE Band 2 (Channel Bandwidth 20MHz)
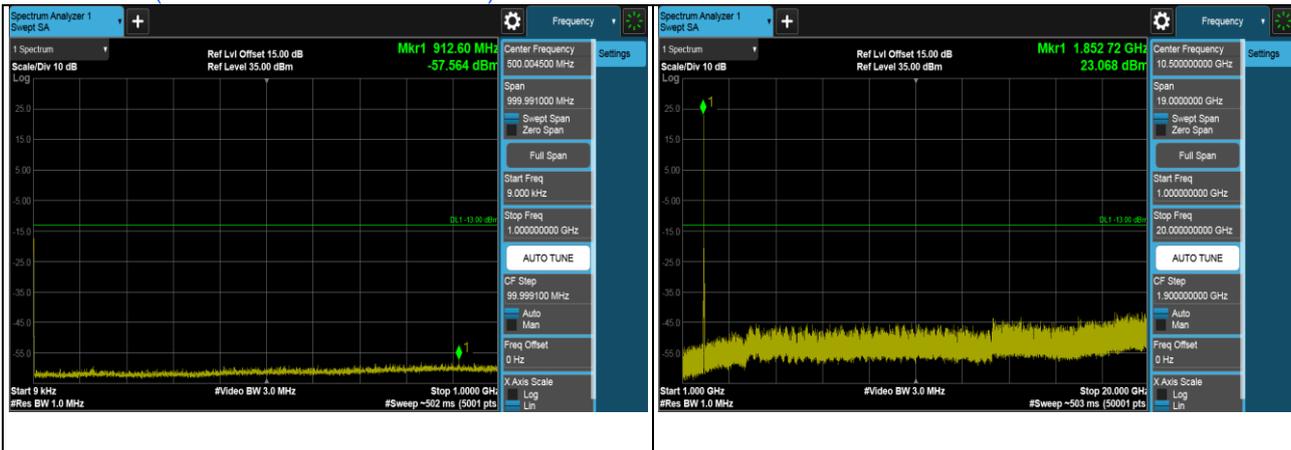
CH 18700 (1860MHz)
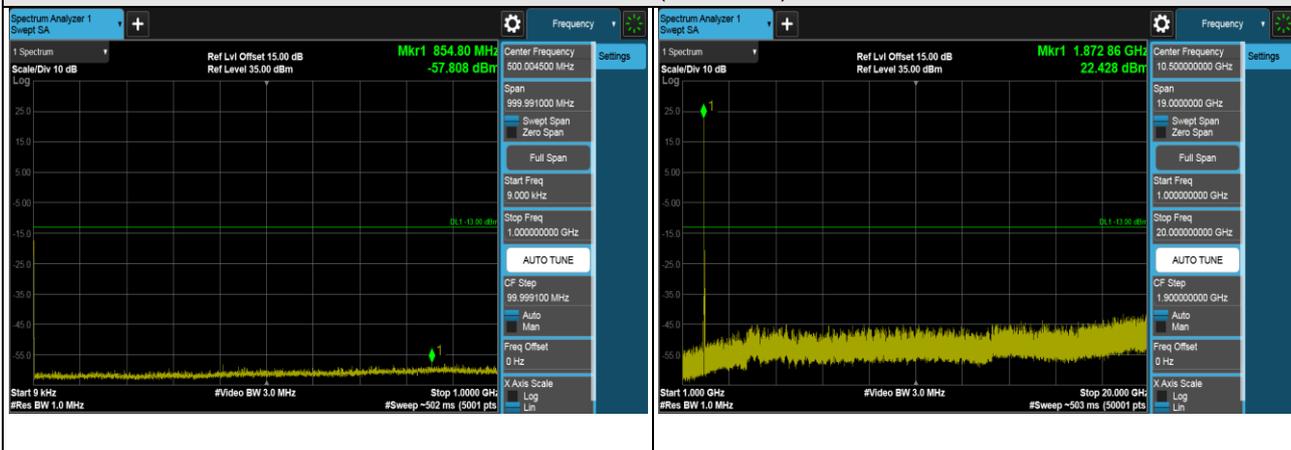
CH 18900 (1880MHz)
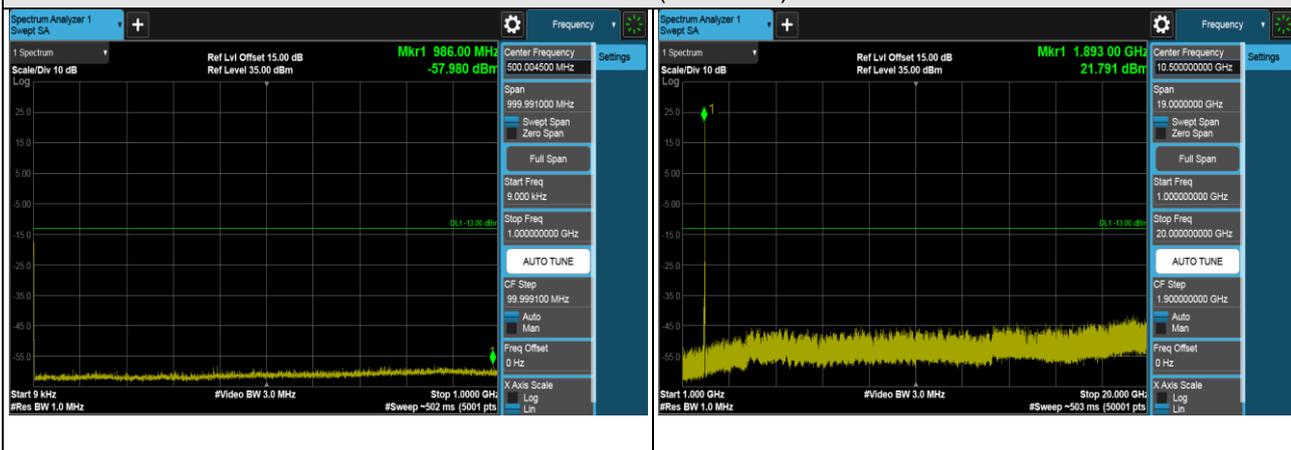
CH 19100 (1900MHz)

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

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit is equal to -13 dBm.

4.8.2 Test Procedure

a. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) 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 1m to 4m 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
   EIRP (dBm) = E (dBµV/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m.
   ERP (dBm) = E (dBµV/m) + 20log(D) - 104.8 - 2.15; where D is the measurement distance (in the far field region) in m.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

No deviation.

4.8.4   Test Setup

<Radiated Emission below or equal 1 GHz>

Ant. Tower

1-4m Variable

3 m

EUT& Support Units

Turn Table

80cm

Ground Plane

Test Receiver

<Radiated Emission above 1 GHz>

Ant. Tower

1-4 m Variable

3 m

EUT& Support Units

Turn Table

Absorber

150 cm

Ground Plane

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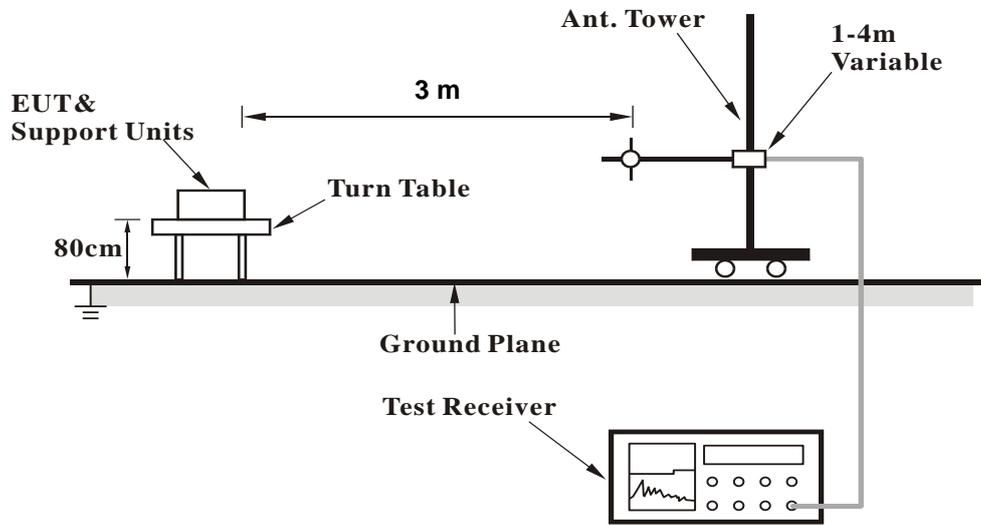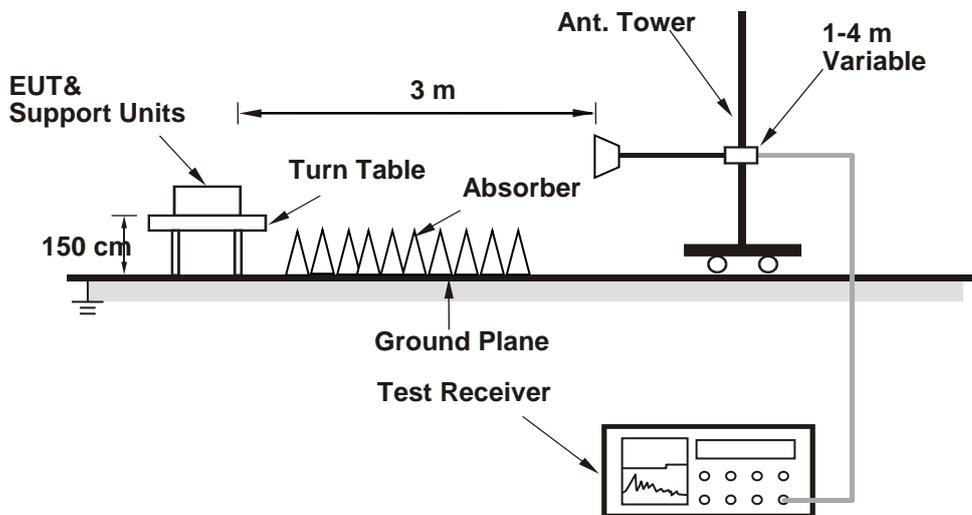
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.5 Test Results

Below 1GHz

GPRS

Mode	TX channel 661 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	127.00	-51.34	-13.00	-38.34	1.50 H	26	58.80	-110.14
2	276.38	-56.57	-13.00	-43.57	1.00 H	48	52.26	-108.83
3	328.76	-63.47	-13.00	-50.47	2.00 H	88	43.82	-107.29
4	440.31	-62.77	-13.00	-49.77	1.00 H	302	41.65	-104.42
5	586.78	-63.01	-13.00	-50.01	2.00 H	17	38.47	-101.48
6	656.62	-62.68	-13.00	-49.68	1.00 H	18	37.66	-100.34

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 661 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	70.74	-41.09	-13.00	-28.09	1.00 V	2	69.87	-110.96
2	261.83	-60.91	-13.00	-47.91	1.00 V	93	48.70	-109.61
3	333.61	-64.03	-13.00	-51.03	1.00 V	71	43.14	-107.17
4	442.25	-60.52	-13.00	-47.52	1.00 V	106	43.87	-104.39
5	596.48	-59.29	-13.00	-46.29	1.00 V	335	41.91	-101.20
6	700.27	-57.57	-13.00	-44.57	1.00 V	2	41.98	-99.55

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

EDGE

Mode	TX channel 661 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	70.74	-37.85	-13.00	-24.85	1.50 H	42	73.11	-110.96
2	174.53	-52.75	-13.00	-39.75	1.00 H	101	56.64	-109.39
3	210.42	-47.78	-13.00	-34.78	2.00 H	101	64.45	-112.23
4	320.03	-57.63	-13.00	-44.63	1.00 H	87	50.01	-107.64
5	482.99	-60.10	-13.00	-47.10	2.00 H	232	43.74	-103.84
6	581.93	-60.14	-13.00	-47.14	1.00 H	110	41.51	-101.65

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 661 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
				Antenna Polarity & Test Distance : Vertical at 3m				
1	71.71	-41.38	-13.00	-28.38	1.00 V	10	69.90	-111.28
2	166.77	-53.47	-13.00	-40.47	1.00 V	56	55.37	-108.84
3	280.26	-59.68	-13.00	-46.68	1.00 V	325	48.99	-108.67
4	434.49	-60.57	-13.00	-47.57	1.50 V	111	44.08	-104.65
5	527.61	-55.48	-13.00	-42.48	2.00 V	168	47.37	-102.85
6	575.14	-57.87	-13.00	-44.87	1.00 V	133	43.97	-101.84

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

WCDMA Band 2

Mode	TX channel 9262 (1852.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

			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	175.50	-51.82	-13.00	-38.82	1.00 H	118	57.66	-109.48
2	276.38	-56.59	-13.00	-43.59	1.49 H	36	52.24	-108.83
3	454.86	-58.86	-13.00	-45.86	1.49 H	59	45.27	-104.13
4	542.16	-58.08	-13.00	-45.08	1.49 H	253	44.60	-102.68
5	580.96	-56.55	-13.00	-43.55	2.00 H	253	45.13	-101.68
6	840.92	-56.25	-13.00	-43.25	1.49 H	357	41.05	-97.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

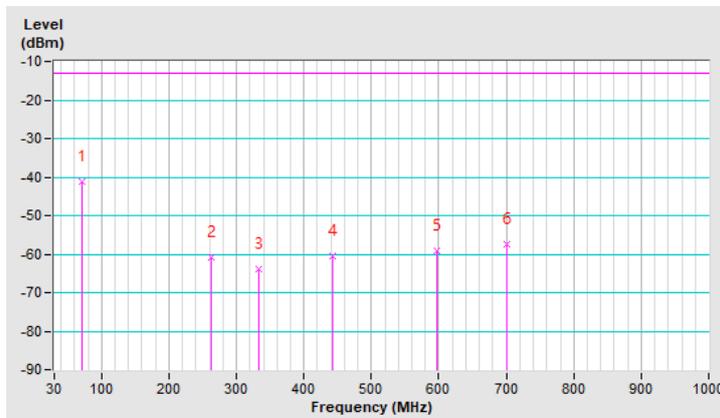| Mode	TX channel 9262 (1852.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	80.44	-42.74	-13.00	-29.74	1.00 V	4	70.92	-113.66
2	205.57	-58.96	-13.00	-45.96	1.49 V	55	53.26	-112.22
3	303.54	-59.66	-13.00	-46.66	1.49 V	2	48.55	-108.21
4	470.38	-61.37	-13.00	-48.37	1.49 V	305	42.62	-103.99
5	591.63	-58.83	-13.00	-45.83	1.00 V	301	42.48	-101.31
6	678.93	-58.94	-13.00	-45.94	1.00 V	324	41.04	-99.98

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
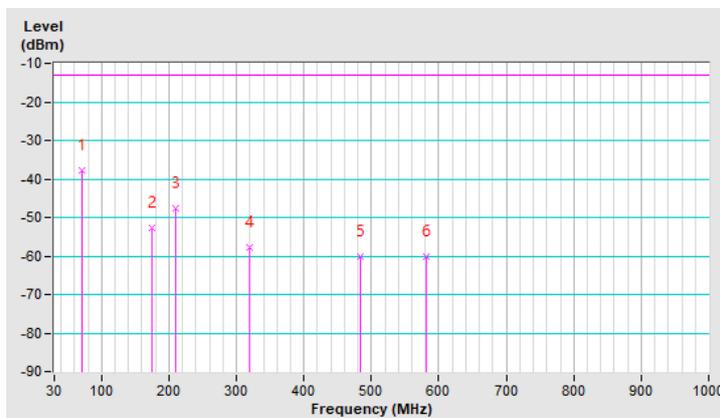4. The other EIRP levels were very low against the limit.

LTE Band 2 (Channel Bandwidth 20MHz)

Mode	TX channel 18900 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	**70.74**	**-34.58**	**-13.00**	**-21.58**	**1.50 H**	**0**	**76.38**	**-110.96**
2	127.97	-47.77	-13.00	-34.77	1.00 H	256	62.19	-109.96
3	211.39	-50.06	-13.00	-37.06	2.00 H	94	62.17	-112.23
4	276.38	-54.46	-13.00	-41.46	1.00 H	62	54.37	-108.83
5	383.08	-62.19	-13.00	-49.19	2.00 H	84	43.88	-106.07
6	493.66	-62.30	-13.00	-49.30	1.00 H	267	41.32	-103.62

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
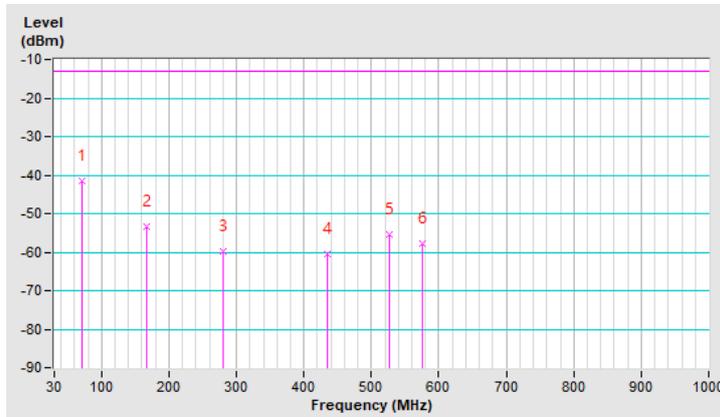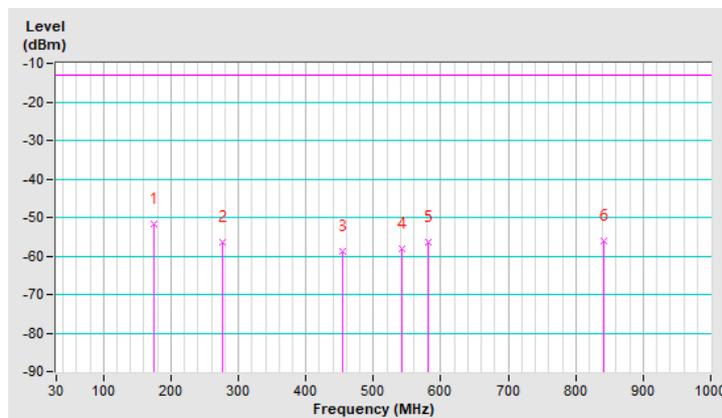4. The other EIRP levels were very low against the limit.

Mode	TX channel 18900 (1880.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	38.73	-41.10	-13.00	-28.10	1.50 V	49	68.03	-109.13
2	71.71	-39.70	-13.00	-26.70	1.00 V	76	71.58	-111.28
3	165.80	-53.30	-13.00	-40.30	1.00 V	136	55.43	-108.73
4	262.80	-58.79	-13.00	-45.79	2.00 V	100	50.76	-109.55
5	367.56	-65.21	-13.00	-52.21	1.00 V	35	41.30	-106.51
6	512.09	-61.16	-13.00	-48.16	1.50 V	117	41.99	-103.15

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
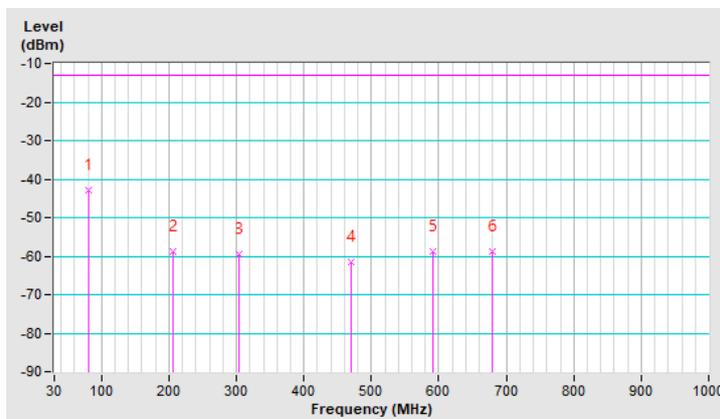4. The other EIRP levels were very low against the limit.

Mode	TX channel 512 (1850.2MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3700.40	-41.97	-13.00	-28.97	1.45 H	254	56.68	-98.65

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	3700.40	-46.26	-13.00	-33.26	1.02 V	3	52.39	-98.65

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
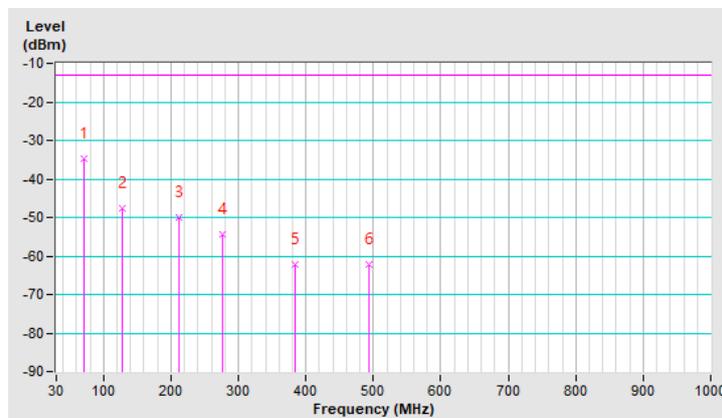4. The other EIRP levels were very low against the limit.

Mode	TX channel 661 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3760.00	-41.18	-13.00	-28.18	1.44 H	256	57.12	-98.30

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	3760.00	-45.65	-13.00	-32.65	1.00 V	0	52.65	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
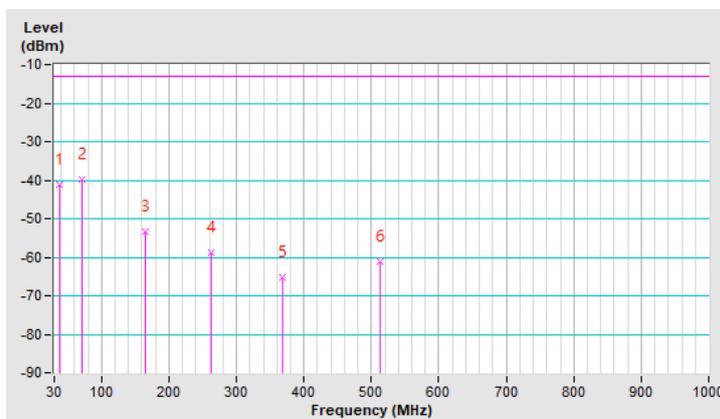4. The other EIRP levels were very low against the limit.

Mode	TX channel 810 (1909.8MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

	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	3819.60	-41.20	-13.00	-28.20	1.41 H	255	56.76	-97.96
	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	3819.60	-45.60	-13.00	-32.60	1.04 V	5	52.36	-97.96

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

EDGE

Mode	TX channel 512 (1850.2MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
Antenna Polarity & Test Distance : Horizontal at 3 m								
1	3700.40	-42.43	-13.00	-29.43	1.44 H	260	56.22	-98.65
Antenna Polarity & Test Distance : Vertical at 3 m								
1	3700.40	-46.88	-13.00	-33.88	1.03 V	7	51.77	-98.65

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 661 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
Antenna Polarity & Test Distance : Horizontal at 3 m								
1	3760.00	-41.54	-13.00	-28.54	1.49 H	250	56.76	-98.30
Antenna Polarity & Test Distance : Vertical at 3 m								
1	3760.00	-45.98	-13.00	-32.98	1.08 V	1	52.32	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 810 (1909.8MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3819.60	-41.66	-13.00	-28.66	1.40 H	250	56.30	-97.96
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	3819.60	-46.09	-13.00	-33.09	1.07 V	3	51.87	-97.96

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

WCDMA Band 2

Mode	TX channel 9262 (1852.4MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	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	9704.80	-46.85	-13.00	-33.85	1.20 H	140	44.90	-91.75

No	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	9704.80	-47.92	-13.00	-34.92	1.54 V	275	43.83	-91.75

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 9400 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	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	3760.00	-53.06	-13.00	-40.06	1.22 H	142	45.24	-98.30

No	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	3760.00	-53.85	-13.00	-40.85	1.50 V	279	44.45	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 9538 (1907.6MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

			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	3815.20	-53.18	-13.00	-40.18	1.26 H	146	44.80	-97.98
			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	3815.20	-53.93	-13.00	-40.93	1.57 V	278	44.05	-97.98

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

LTE Band 2 (Channel Bandwidth 1.4MHz)

Mode	TX channel 18607 (1850.7MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	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	3701.40	-48.57	-13.00	-35.57	1.28 H	255	50.07	-98.64

No	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	3701.40	-48.28	-13.00	-35.28	1.00 V	4	50.36	-98.64

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 18900 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	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	3760.00	-47.83	-13.00	-34.83	1.33 H	260	50.47	-98.30

No	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	3760.00	-47.50	-13.00	-34.50	1.07 V	5	50.80	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 19193 (1909.3MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

			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	3818.60	-48.15	-13.00	-35.15	1.25 H	254	49.81	-97.96
			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	3818.60	-48.06	-13.00	-35.06	1.03 V	7	49.90	-97.96

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

LTE Band 2 (Channel Bandwidth 5MHz)

Mode	TX channel 18625 (1852.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

No	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	3705.00	-48.62	-13.00	-35.62	1.27 H	255	50.00	-98.62

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	3705.00	-48.22	-13.00	-35.22	1.09 V	9	50.40	-98.62

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 18900 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3760.00	-48.18	-13.00	-35.18	1.28 H	254	50.12	-98.30

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	3760.00	-47.85	-13.00	-34.85	1.04 V	5	50.45	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 19175 (1907.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

| No | 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)
Antenna Polarity & Test Distance : Horizontal at 3 m
1	3815.00	-47.75	-13.00	-34.75	1.33 H	260	50.23	-97.98
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	3815.00	-47.22	-13.00	-34.22	1.04 V	11	50.76	-97.98

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

LTE Band 2 (Channel Bandwidth 20MHz)

Mode	TX channel 18700 (1860.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3720.00	-48.84	-13.00	-35.84	1.34 H	255	49.70	-98.54

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	3720.00	-48.01	-13.00	-35.01	1.07 V	11	50.53	-98.54

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 18900 (1880.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

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	3760.00	-47.20	-13.00	-34.20	1.29 H	256	51.10	-98.30

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	3760.00	-47.10	-13.00	-34.10	1.04 V	7	51.20	-98.30

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) + 20log(D) – 104.8
3. Margin value = EIRP – Limit value
4. The other EIRP levels were very low against the limit.

Mode	TX channel 19100 (1900.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 68%RH	Input Power	120Vdc, 60Hz
Tested By	Edison Lee		

		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	3800.00	-48.19	-13.00	-35.19	1.29 H	259	49.82	-98.01
		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	3800.00	-47.56	-13.00	-34.56	1.01 V	11	50.45	-98.01

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) + 20log(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 according to ISO/IEC 17025.

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

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

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