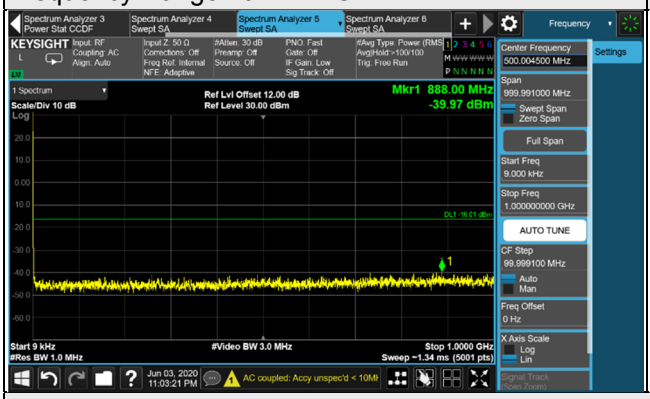
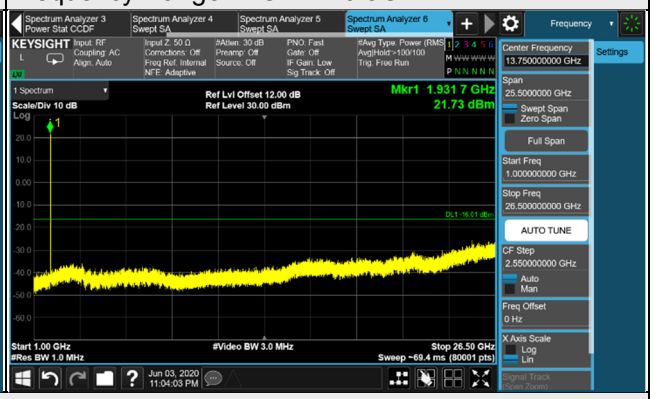
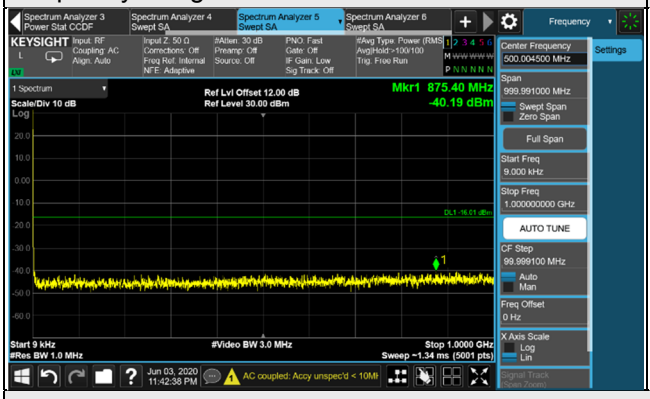
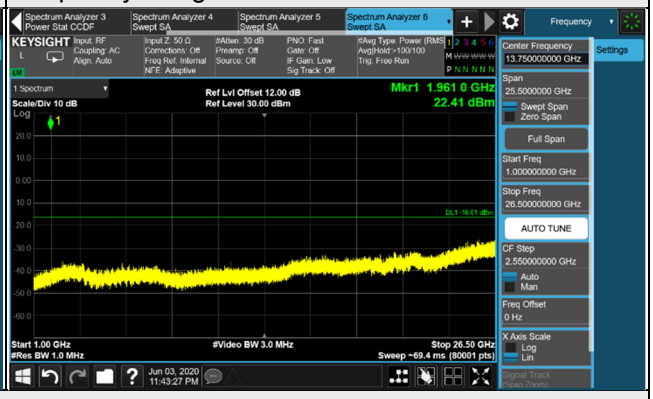
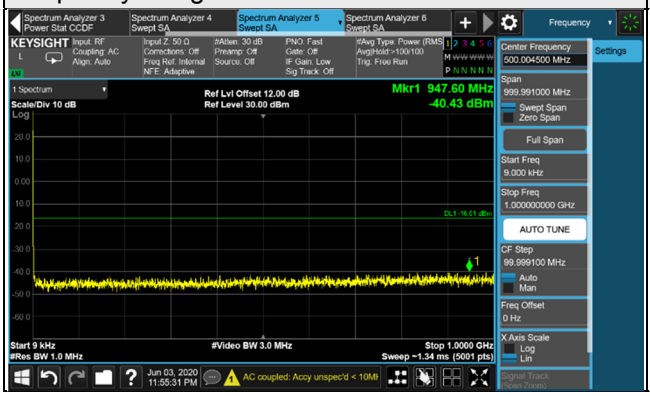
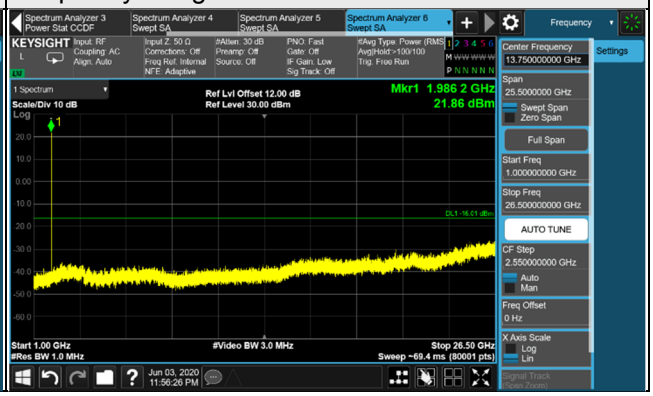
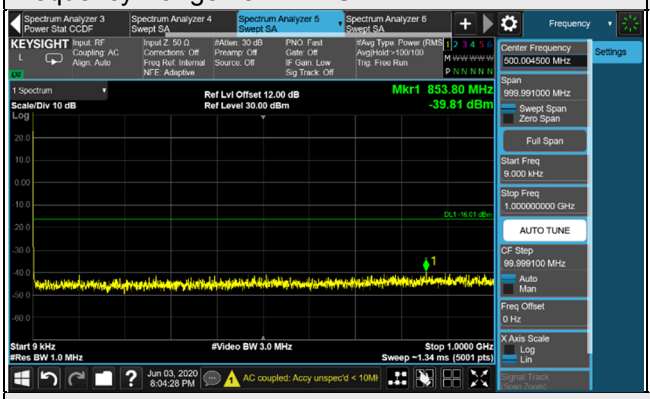
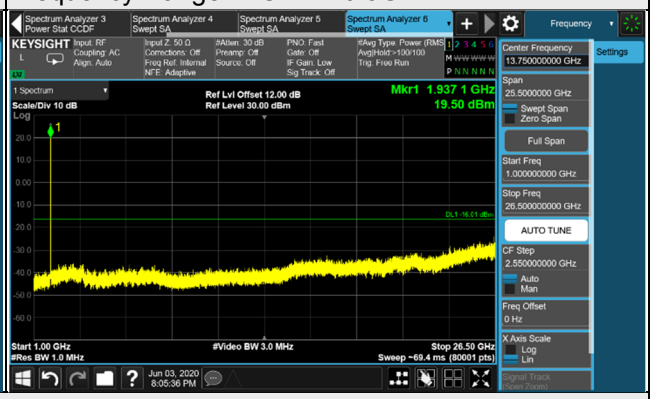
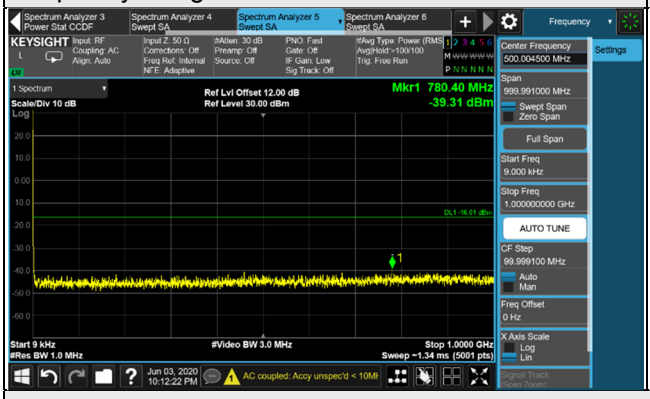
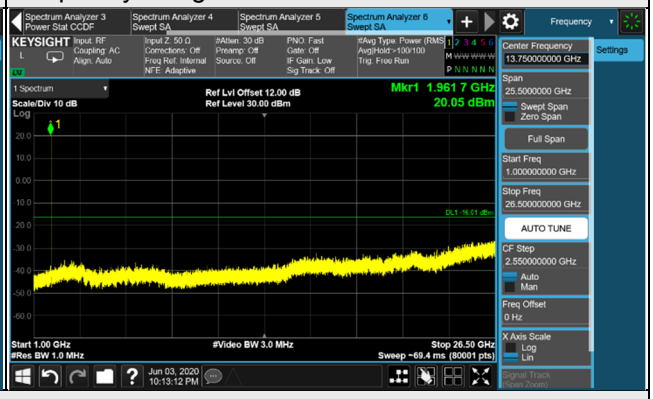
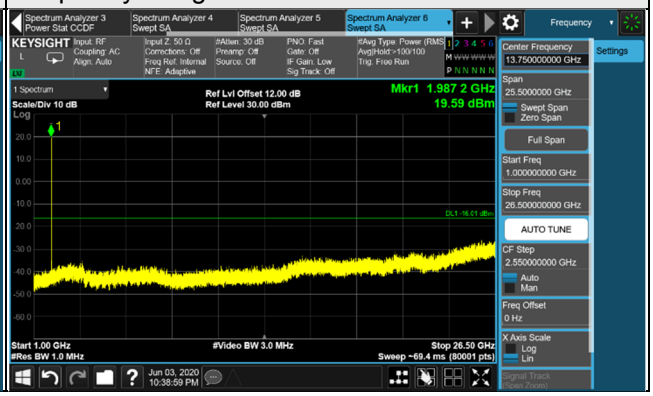
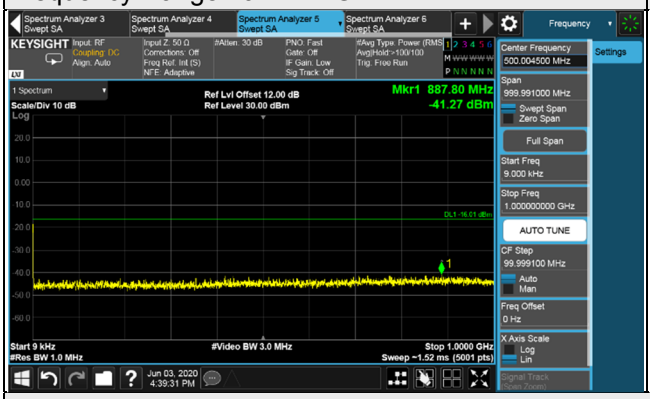
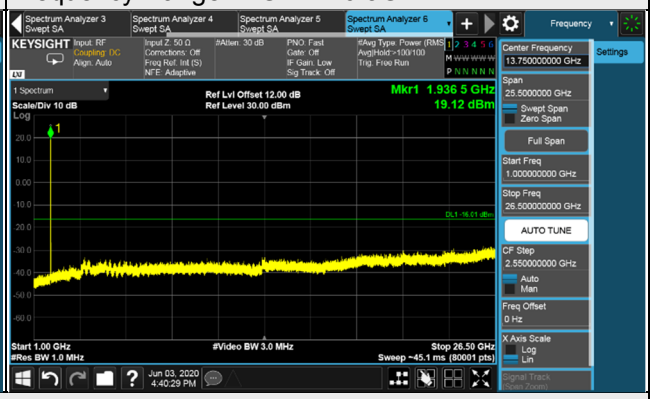
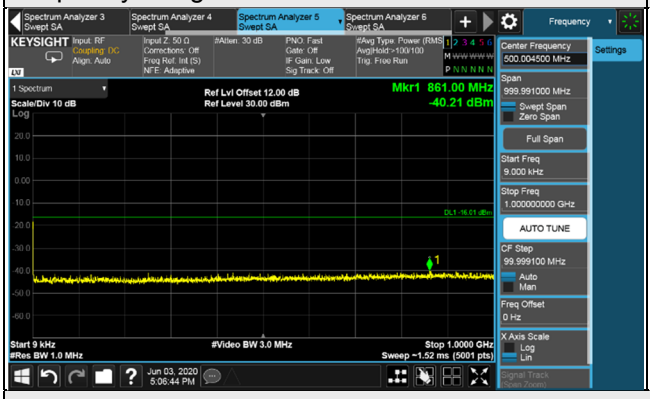
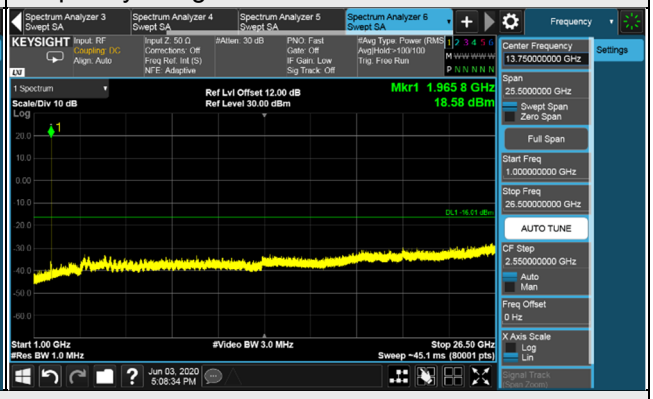
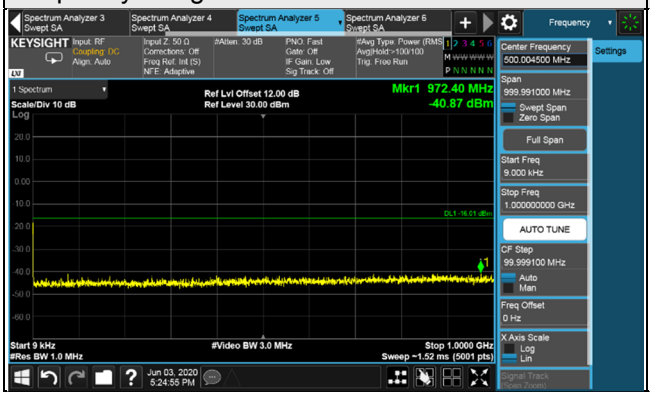
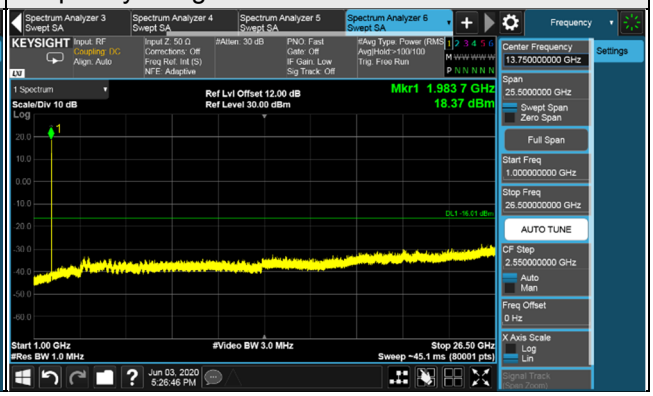
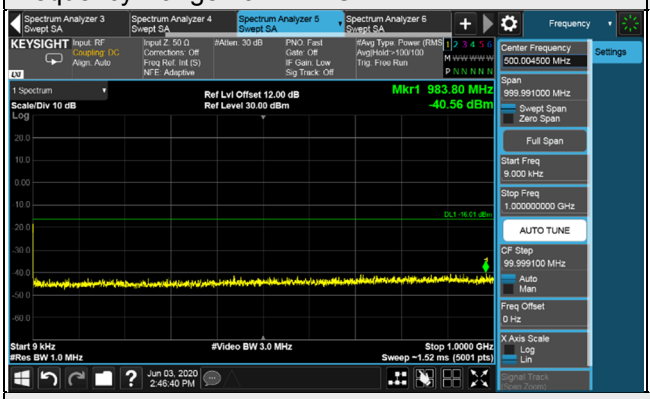
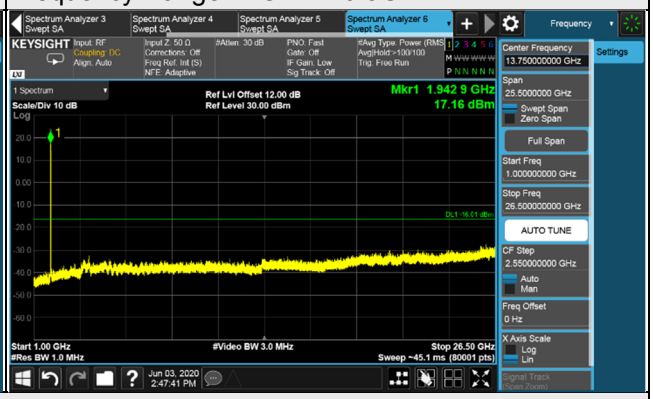
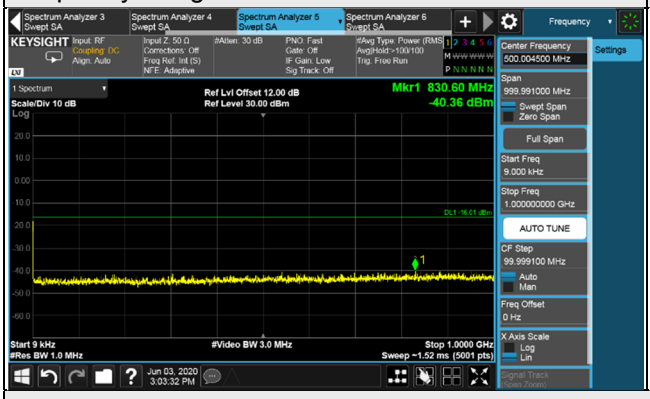
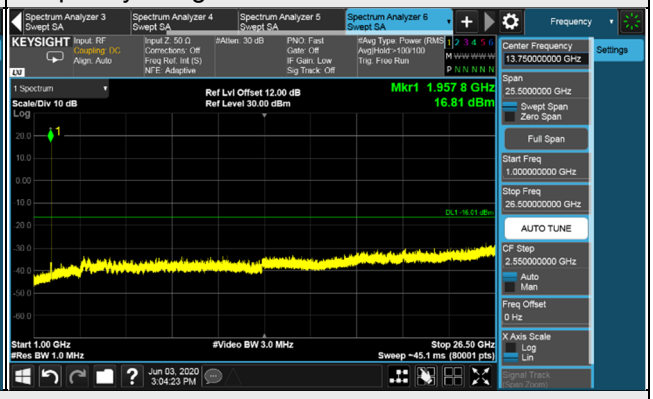
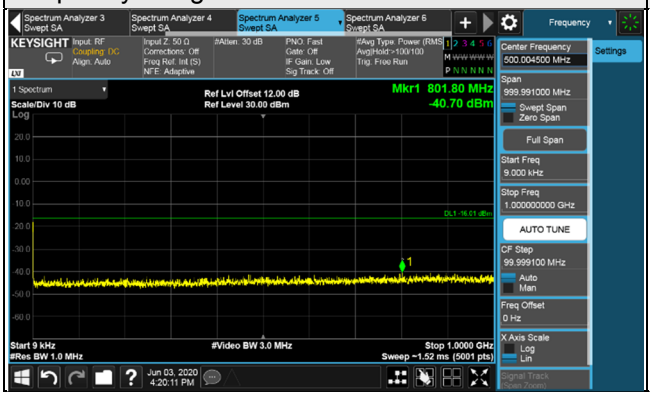
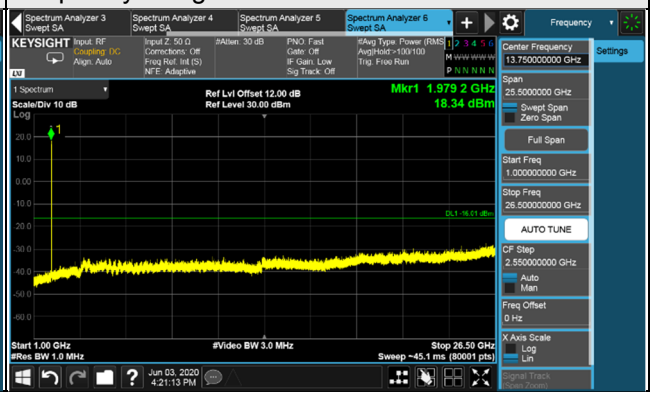
LTE Band 2 / Chain 1 / Channel Bandwidth: 5MHz	
Channel 625 (1932.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 900 (1960.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 1175 (1987.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	

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

LTE Band 2 / Chain 1 / Channel Bandwidth: 10MHz	
Channel 650 (1935.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 900 (1960.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 1150 (1985.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	

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

LTE Band 2 / Chain 1 / Channel Bandwidth: 15MHz	
Channel 675 (1937.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 900 (1960.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 1125 (1982.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	

LTE Band 2 / Chain 1 / Channel Bandwidth: 20MHz	
Channel 700 (1940.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 900 (1960.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	
Channel 1100 (1980.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~26.5GHz
	

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 equal to –13dBm.

4.8.2 Test Procedure

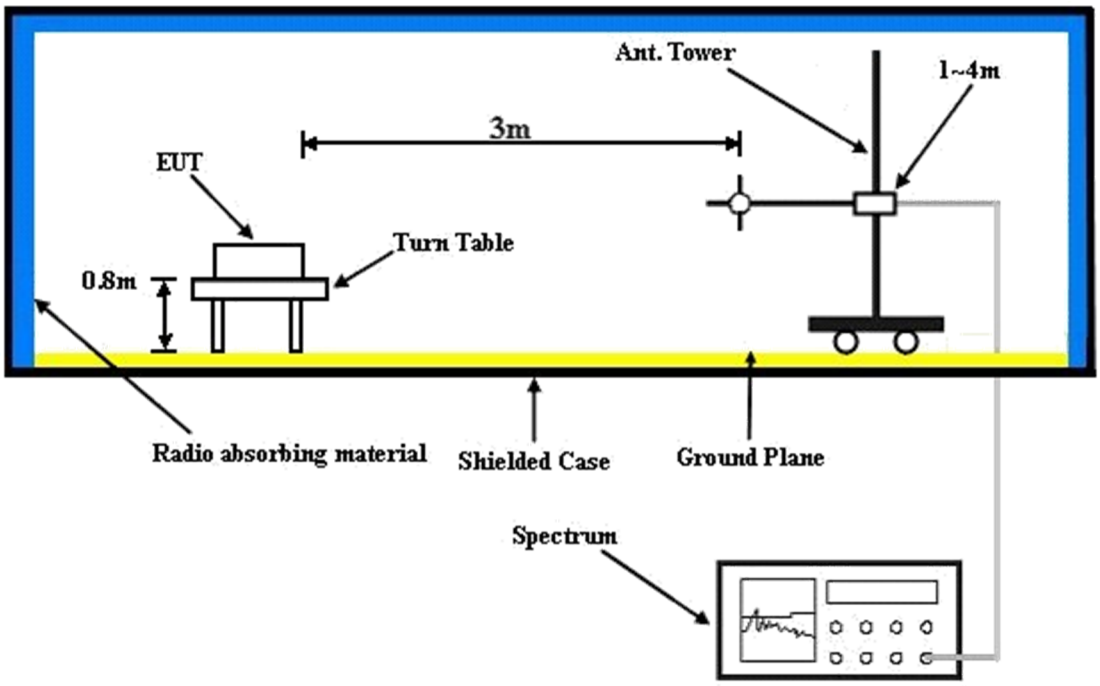
a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dB.

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

4.8.3 Deviation from Test Standard

No deviation.

4.8.4 Test Setup



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

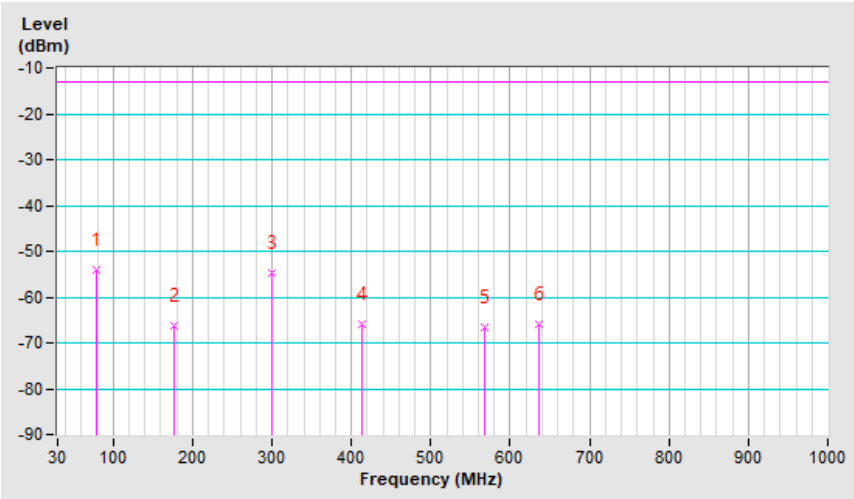
4.8.5 Test Results

Below 1GHz
WCDMA Band 2

Mode	TX channel 9800 (1960MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	78.50	-48.8	-54.5	0.6	-53.9	-13.0	-40.9
2	177.44	-58.5	-63.4	-3.0	-66.4	-13.0	-53.4
3	299.66	-50.5	-57.3	2.5	-54.8	-13.0	-41.8
4	414.12	-65.8	-69.3	3.4	-65.9	-13.0	-52.9
5	567.38	-67.5	-70.3	3.7	-66.6	-13.0	-53.6
6	635.28	-68.2	-69.7	3.7	-66.0	-13.0	-53.0

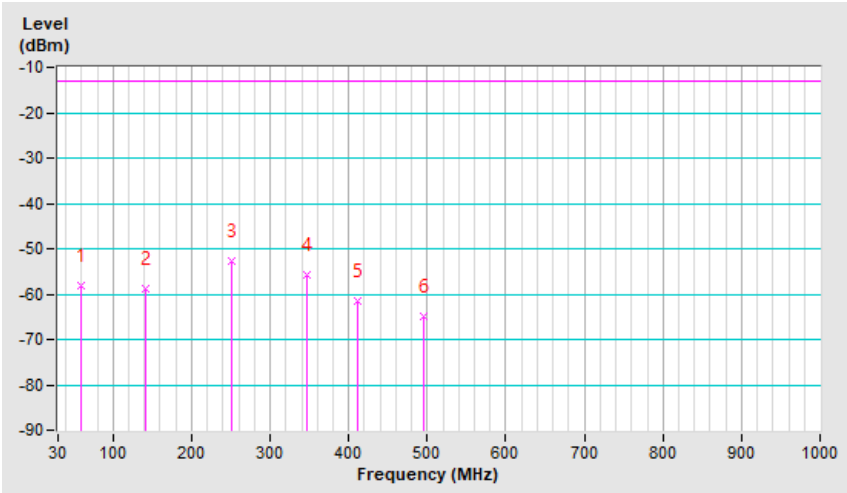
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 9800 (1960MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	59.10	-51.3	-54.3	-3.8	-58.1	-13.0	-45.1
2	140.58	-56.3	-55.9	-3.0	-58.9	-13.0	-45.9
3	251.16	-52.7	-51.3	-1.4	-52.7	-13.0	-39.7
4	346.22	-55.3	-59.8	3.9	-55.9	-13.0	-42.9
5	412.18	-61.2	-64.9	3.3	-61.6	-13.0	-48.6
6	495.60	-64.7	-68.6	3.8	-64.8	-13.0	-51.8

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

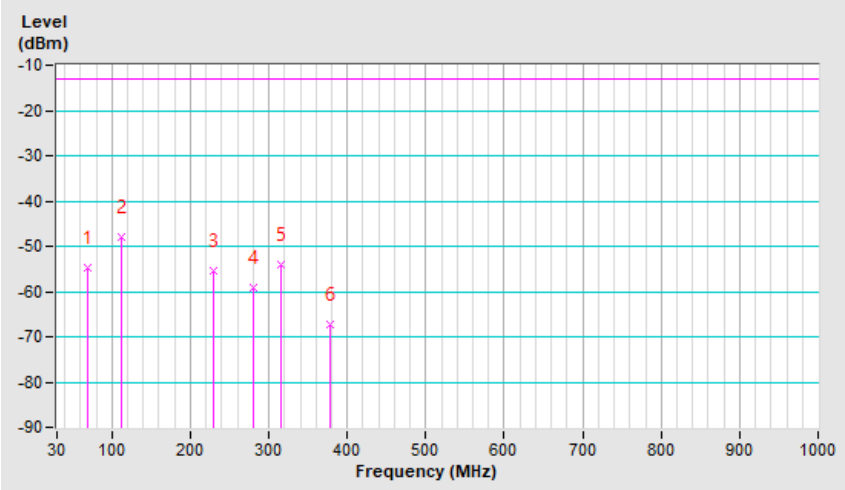


LTE Band 2, Channel Bandwidth: 5MHz

Mode	TX channel 900 (1960.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	68.80	-48.0	-53.8	-0.8	-54.6	-13.0	-41.6
2	**111.48**	**-40.4**	**-45.6**	**-2.5**	**-48.1**	**-13.0**	**-35.1**
3	229.82	-47.4	-53.6	-1.7	-55.3	-13.0	-42.3
4	280.26	-54.8	-57.6	-1.6	-59.2	-13.0	-46.2
5	315.18	-50.1	-58.1	4	-54.1	-13.0	-41.1
6	377.26	-65.6	-70.9	3.6	-67.3	-13.0	-54.3

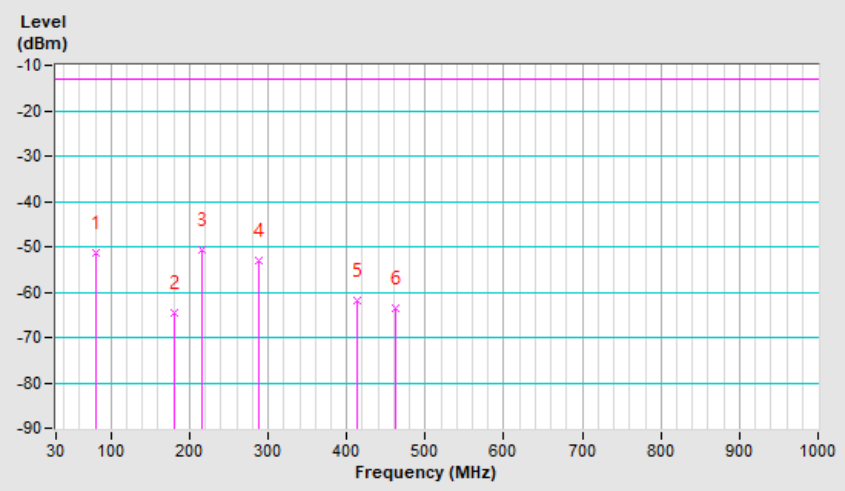
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 900 (1960.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	80.44	-46.6	-51.8	0.5	-51.3	-13.0	-38.3
2	181.32	-61.1	-61.5	-3.0	-64.5	-13.0	-51.5
3	216.24	-47.0	-48.8	-2.0	-50.8	-13.0	-37.8
4	288.02	-54.7	-51.4	-1.8	-53.2	-13.0	-40.2
5	414.12	-61.5	-65.3	3.4	-61.9	-13.0	-48.9
6	462.62	-63.5	-67	3.4	-63.6	-13.0	-50.6

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

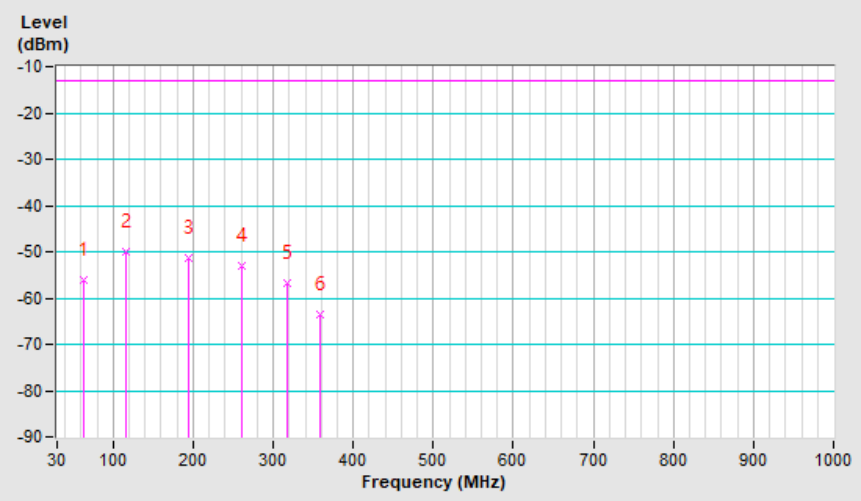


LTE Band 2, Channel Bandwidth: 20MHz

Mode	TX channel 900 (1960.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	62.98	-50.1	-53.6	-2.4	-56.0	-13.0	-43.0
2	115.36	-41.9	-47.0	-2.9	-49.9	-13.0	-36.9
3	194.90	-42.9	-48.8	-2.6	-51.4	-13.0	-38.4
4	260.86	-48.2	-51.4	-1.5	-52.9	-13.0	-39.9
5	317.12	-52.8	-60.9	4.1	-56.8	-13.0	-43.8
6	357.86	-60.7	-67.6	4.0	-63.6	-13.0	-50.6

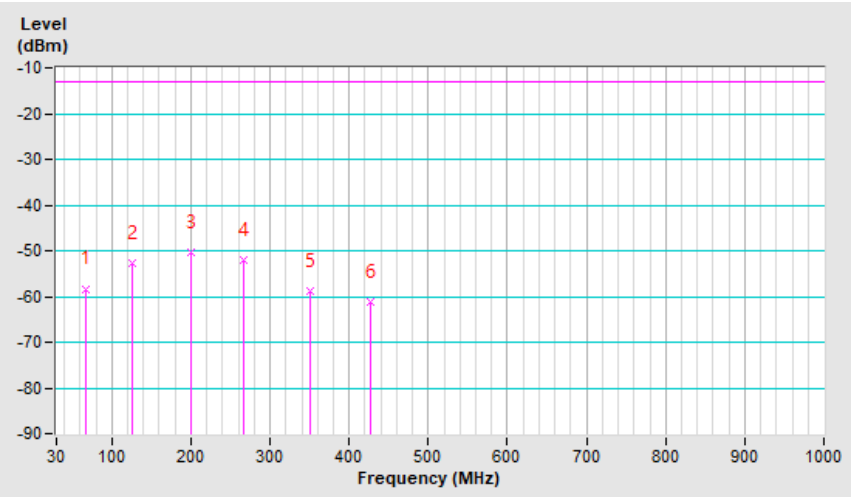
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 900 (1960.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	66.86	-51.1	-56.8	-1.5	-58.3	-13.0	-45.3
2	125.06	-46.5	-49.4	-3.2	-52.6	-13.0	-39.6
3	200.72	-49.0	-47.9	-2.3	-50.2	-13.0	-37.2
4	266.68	-53.2	-50.3	-1.6	-51.9	-13.0	-38.9
5	350.10	-58.3	-62.7	3.9	-58.8	-13.0	-45.8
6	427.70	-60.9	-64.8	3.5	-61.3	-13.0	-48.3

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Above 1GHz
WCDMA Band 2

Mode	TX channel 9662 (1932.4MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3864.80	-58.9	-50.5	1.3	-49.2	-13.0	-36.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3864.80	-59.7	-51.1	1.3	-49.8	-13.0	-36.8

Mode	TX channel 9800 (1960.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-58.6	-50.1	1.3	-48.8	-13.0	-35.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-59.1	-50.4	1.3	-49.1	-13.0	-36.1

Mode	TX channel 9938 (1987.6MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3975.20	-58.6	-50.1	1.3	-48.8	-13.0	-35.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3975.20	-59.7	-51.1	1.3	-49.8	-13.0	-36.8

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 2

Channel Bandwidth: 5MHz

Mode	TX channel 625 (1932.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3865.00	-61.3	-52.9	1.3	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3865.00	-61.9	-53.3	1.3	-52.0	-13.0	-39.0

Mode	TX channel 900 (1960.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-61.7	-53.2	1.3	-51.9	-13.0	-38.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-61.5	-52.8	1.3	-51.5	-13.0	-38.5

Mode	TX channel 1175 (1987.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3975.00	-61.4	-52.9	1.3	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3975.00	-62.1	-53.5	1.3	-52.2	-13.0	-39.2

Remarks:

1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Channel Bandwidth: 20MHz

Mode	TX channel 700 (1940.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3880.00	-61.9	-53.5	1.3	-52.2	-13.0	-39.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3880.00	-61.7	-53.0	1.3	-51.7	-13.0	-38.7

Mode	TX channel 900 (1960.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-61.4	-52.9	1.3	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3920.00	-61.0	-52.3	1.3	-51.0	-13.0	-38.0

Mode	TX channel 1100 (1980.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	22deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Han Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3960.00	-61.8	-53.3	1.3	-52.0	-13.0	-39.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3960.00	-62.1	-53.5	1.3	-52.2	-13.0	-39.2

Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

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 accredited and approved according to ISO/IEC 17025.

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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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